

**APPLICATION FOR FINANCIAL ASSISTANCE - SWIFT
FOR
COASTAL WATER AUTHORITY**



PREPARED FOR

TEXAS WATER DEVELOPMENT BOARD



35'JUN[2015

**APPLICATION FOR FINANCIAL ASSISTANCE
FOR WATER AND WASTEWATER INFRASTRUCTURE PROJECTS**

NOTICE TO ALL APPLICANTS

This application is comprehensive, covering all loan and grant assistance applications for water and wastewater infrastructure financing through the various Texas Water Development Board (TWDB) programs. The format of the application is intended to expedite the review process for both the applicant and TWDB staff. This application is intended for political subdivisions, including Water Supply Corporations.

Each applicant must submit **ONE** double-sided **ORIGINAL** and **ONE** indexed, electronic copy, via electronic storage media such as CD or flash drive using MS Word, Excel and/or Adobe Acrobat. The application must be submitted to:

Texas Water Development Board
Water Supply and Infrastructure-Regional Water Planning and Development
P O Box 13231
1700 N. Congress Avenue, 5th Floor
Austin, Texas 78711-3231
(78701 for courier deliveries)

Only **COMPLETE APPLICATIONS** for projects will be considered for funding. A **COMPLETE APPLICATION** consists of all of the applicable information and forms requested in this document.

IMPORTANT NOTICE

Applicants **MUST** use this form for application to ensure all requested information is included for review.

When preparing this application please review the Application and all Guidance and Forms, listed at the end.

TWDB Use Only

Name of Applicant: _____

Date application received: _____

Date administratively complete: _____

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

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Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part A: General Information

1. The legal authority under which the applicant was created and operates.
 - a) TYPE A GENERAL-LAW MUNICIPALITY (Texas Local Gov't Code Sec. 5.001)
 - b) TYPE B GENERAL-LAW MUNICIPALITY (Texas Local Gov't Code Sec. 5.002)
 - c) TYPE C GENERAL-LAW MUNICIPALITY (Texas Local Gov't Code Sec. 5.003)
 - d) HOME-RULE MUNICIPALITY (Texas Local Gov't Code Sec. 5.004)
 - e) SPECIAL-LAW MUNICIPALITY (Texas Local Gov't Code Sec. 5.005)
 - f) NONPROFIT ORGANIZATION (Business Organization Code Chapter 22)
 - g) NONPROFIT WATER SUPPLY OR SEWER SERVICE CORP. (Texas Water Code Chapter 67)
 - h) ALL DISTRICTS (Texas Water Code Chapter 49)
 - i) OTHER (attach)

2. Applicant Name and Contact Information:

Name:	Coastal Water Authority
County:	Harris
Physical Address:	1801 Main Street, Suite 800 Houston, Texas 77002
Mailing Address:	1801 Main Street, Suite 800 Houston, Texas 77002
Phone:	713-800-6253
Fax:	713-658-9429
Website:	www.coastalwaterauthority.org

2. The Luce Bayou Interbasin Transfer Project (Project) is being implemented by the CWA in response to a request made in May 2005 by the City of Houston. The Project includes infrastructure sized to transfer 450,000 acre-feet of water per year from the Trinity River to Lake Houston.

The primary components of the Project include a pump station to be constructed in Liberty County on property currently owned by the Coastal Water Authority, 3.0 miles of dual 96-inch force mains followed by 23 miles of earthen canal with final discharge into Lake Houston. Water will be treated at the City of Houston Northeast Water Purification Plant.

4. Applicant's Officers and Members:

<u>Name</u>	<u>Office Held</u>
D. Wayne Klotz	President
Tony Council	1 st Vice President
Alan Conner	2nd Vice President
Zebulun Nash	Secretary-Treasurer
Giti Zarinkelk	Director
John Odis Cobb	Director
Douglas Walker	Director

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

5. Applicant's **primary contact person** for day-to-day project implementation.

Name:	Donald Ripley
Title:	Executive Director
Address:	1801 Main St., Suite 800 Houston, Texas 77002
Phone:	713-658-1915
Fax:	713-658-9429
Email:	dripley@coastalwaterauthority.org

6. Applicant's Consultants (Attach copies of all draft and/or executed contracts for consultant services to be used by the Applicant in applying for financial assistance or constructing the proposed project.):

a) Applicant Engineer N/A

Firm Name:	Coastal Water Authority
Contact:	David A. Miller, P.E.
Address:	1801 Main St., Suite 800 Houston, TX 77002
Phone:	713-658-0855
Fax:	713-658-9429
Email:	dmiller@coastalwaterauthority.org

b) Bond Counsel N/A

Firm Name:	Norton, Rose & Fullbright, LLP
Contact:	Neil Thomas
Address:	1301 McKinney, Suite 5100 Houston, Texas 77010
Phone:	713-651-3613
Fax:	713-651-5246
Email:	neil.thomas@nortonrosefulbright.com

c) Financial Advisor N/A

Firm Name:	First Southwest Company
Contact:	Warren P. Cash, III
Address:	700 Milan Street, Suite 500 Houston, Texas 77002
Phone:	713-654-8651
Fax:	832-239-9015
Email:	trey.cash@firstsw.com

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

d) Certified Public Accountant (or other appropriate rep) N/A

Firm Name:	McConnell & Jones, LLP
Contact:	Wayne McConnell
Address:	4828 Central Drive, Suite 1000 Houston, Texas 77081
Phone:	713-968-1600
Fax:	713-968-1601
Email:	wmccconnell@mjilm.com

e) Legal Counsel (if other than Bond Counsel) N/A

Firm Name:	
Contact:	
Address:	
Phone:	
Fax:	
Email:	

f) Any other consultant representing the Applicant before the Board N/A

Firm Name:	
Contact:	
Address:	
Phone:	
Fax:	
Email:	

7. List the counties within the Applicant's service area. Chambers, Harris, Liberty (Harris County is the primary service area)

8. Identify the Applicant's total service area population:

From the 2013 Census:
Chambers County 2013 Population – 35,570
Harris County 2013 Population – 4,182,285
Liberty County 2013 Population – 76,013
Total 2013 Population – 4,293,868

9. Applicant is requesting funding from which programs? Check all that apply.

	PROGRAM	AMOUNT REQUESTED
a) <input type="checkbox"/>	Drinking Water State Revolving Fund (DWSRF)	\$ _____
b) <input type="checkbox"/>	Clean Water State Revolving Fund (CWSRF)	\$ _____
c) <input type="checkbox"/>	Texas Water Development Fund (DFund)	\$ _____
d) <input type="checkbox"/>	State Participation	\$ _____
e) <input type="checkbox"/>	Rural Water Assistance Fund (RWAF)	\$ _____
f) <input checked="" type="checkbox"/>	State Water Implementation Fund for Texas (SWIFT)	\$ <u>300,000,000</u>
g) <input type="checkbox"/>	Economically Distressed Areas Program (EDAP)	\$ _____
h) <input type="checkbox"/>	If other please explain: _____	\$ _____

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

10. Other Funding Sources: Provide a list of any other funding source(s) being utilized to complete the project, including Applicant's local contribution, if any, or commitments applied for and/or received from any other funding agency for this project or any aspect of this project. **Provide commitment letters if available. Additional funding sources must be included within the Project Budget (TWDB-1201).**

Funding Source	Type of Funds (Loan/Grant)	Amount (\$)	Date Applied for Funding	Anticipated or Funding Secured Date
Local Contribution	Cash Contribution	\$20,000,000	January 14, 2009	January 28, 2009
State (WIF-L080045)	Loan	\$28,000,000	December 21, 2007	February 26, 2009
State (WIF-L090102)	Loan	\$5,115,000	January 2, 2009	July 15, 2010
State (SP-1000087)	Loan	\$28,754,000	April 18, 2012	March 1, 2013
Total Funding from All Sources		\$81,869,000		

Comments: Local contribution accounts for the right-of-way acquisition contributed by regional partners (NFBWA, WHCRWA, NHCRWA, CHCRWA). State Funds were secured for environmental, permitting and design.

See attached for commitment letters for both WIF loans and the State loan.

11. Applicant is requesting funding for which phase(s)? Check all that apply.

- Planning
- Acquisition
- Design
- Construction

12. Is Applicant requesting funding to refinance existing debt?

- Yes If yes, attach a copy of the document securing the debt to be refinanced.
- Attached document**
- No

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part B: Legal Information

- 13. Cite the legal authority under which the Applicant can issue the proposed debt including the authority to make a proposed pledge of revenues. Article XVI, Section 59, of the Constitution of Texas Chapter 601, Acts of the 60th Legislature of the Texas, Regular Session, 1967 (codified as Article 8280-355, Texas Revised Civil Statutes Annotated).
- 14. What type of pledge will be used to repay the proposed debt?
 - Systems Revenue
 - Taxes
 - Combination of systems revenues and taxes
 - Other (Contract Revenue, etc.)
- 15. Provide the full legal name of the security for the proposed debt issue(s). The Texas Water Development Board's Board Participation Master Agreement between TWDB and Coastal Water Authority.
- 16. Describe the pledge being offered and any existing rate covenants. The Luce Bayou Projects Contract as Amended between the City of Houston and the Coastal Water Authority.
- 17. Attach the resolution from the governing body requesting financial assistance.
TWDB-0201A (<http://www.twdb.texas.gov/financial/instructions/>)
 Attached Resolution
- 18. Attach the Application Affidavit
TWDB-0201 (<http://www.twdb.texas.gov/financial/instructions/>)
 Attached Applicant Affidavit
- 19. Attach the Certificate of Secretary
TWDB-201B (<http://www.twdb.texas.gov/financial/instructions/>)
 Attached Certificate of Secretary
- 20. Is the applicant a Water Supply Corporation (WSC)?
 - Yes
 - If yes, attach each of the following:
 - Articles of Incorporation**
 - Certificate of Incorporation from the Texas Secretary of State evidencing that the current Articles of Incorporation are on file with the Secretary**
 - By-laws and any amendments**
 - Certificate of Status from the Texas Secretary of State (i.e. Certificate of Existence)**
 - Certificate of Account Status from the Texas Comptroller of Public Accounts (certifies that the WSC is exempt from the franchise tax and that the WSC is in good standing).**
 - No

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

21. Is the applicant proposing to issue revenue bonds?
 Yes If yes, attach copies of the most recent resolution/ordinance(s) authorizing any outstanding parity debt. This is essential to insure outstanding bond covenants are consistent with covenants that might be required for TWDB financing.
 Attached resolution/ordinance(s)
 No— Coastal Water Authority proposes an amended Luce Bayou Project contract with the City of Houston.
22. Does the applicant possess a Certificate of Convenience and Necessity (CCN)?
 Yes If yes, attach a copy of the CCN and service area map showing the areas the applicant is allowed to provide water or wastewater services.
 Attached CCN and service area map
 No If no, indicate the status of the CCN. _____
 N/A
23. Has the applicant been the subject of any enforcement action by the Texas Commission on Environmental Quality (TCEQ), the Environmental Protection Agency (EPA), or any other entity within the past three years?
 Yes If yes, attach a brief description of every enforcement action within the past three years and action(s) to address requirements.
 Attached
 No
24. Are any facilities to be constructed or the area to be served within the service area of a municipality or other public utility?
 Yes If yes, has the applicant obtained an affidavit stating that the utility does not object to the construction and operation of the services and facilities in its service area?
 If yes, attach a copy of the affidavit.
 Attached affidavit
 If no, provide an explanation as to why not. _____
 No
25. If the assistance requested is more than \$500,000 a Water Conservation Plan (WCP) is required. The WCP cannot be more than **FIVE** years old and must have been adopted by the applicant. Has the applicant adopted a Board-approved WCP? (Check one and attach requested information, if any.)
 Yes Enter date of Applicant's WCP adoption: September 2014.
 No If no, attach a copy of a draft Water Conservation Plan and Drought Contingency Plan prepared in accordance with the TWDB WCP Checklist (<http://www.twdb.state.tx.us/financial/instructions/doc/TWDB-1968.pdf>)
 Attached Draft WCP and Drought Contingency Plan
 Attached Utility Profile TWDB-1965
<http://www.twdb.state.tx.us/financial/instructions/doc/TWDB-1965.pdf>
 N/A (Request is \$500,000 or less per Water Code §§ 15.106(c), 17.125(c), 17.277(c), and 17.857(c))

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Note: If the applicant will utilize the project financed by the TWDB to furnish services to another entity that in turn will furnish services to the ultimate consumer, the requirements for the WCP may be met through contractual agreements between the applicant and the other entity providing for establishment of a water conservation plan. The provision requiring a WCP shall be included in the contract at the earliest of: the original execution, renewal or substantial amendment of that contract, or by other appropriate measures.

26. Does the applicant provide retail water services?
- Yes If yes, has the applicant already submitted to the TWDB the annual water use survey of groundwater and surface water for the last **THREE** years?
- Yes
- No If no, please download survey forms and attach a copy of the completed water use surveys to the application.
<http://www.twdb.texas.gov/waterplanning/waterusesurvey/index.asp>
- Attached Water Use Survey**
- No
27. Is the applicant a retail public utility that provides potable water?
- Yes If yes, has the applicant already submitted the most recently required water loss audit to the TWDB?
- Yes
- No If no, and if applying for a water supply project, please complete the online TWDB Water Audit worksheet found at <http://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp> and attach a copy to the application.
- Attached TWDB Water Audit worksheet**
- No
28. Does the Applicant provide wastewater services?
- Yes
- No

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part C: Financial Information

Regional or wholesale providers, complete questions 29-31.

Retail providers, complete questions 32-34.

29. List top **TEN** customers of the system by annual usage in gallons and percentage of total usage, including whether any are in bankruptcy.

Customer Name	Annual Usage (gal)	Percent of Usage	Bankruptcy (Y/N)

Comments: **Not Applicable**

30. List the top TEN customers of the system by gross revenues and percent of total revenues, including whether any are in bankruptcy

Customer Name	Annual Revenue(\$)	Percent of Revenue	Bankruptcy (Y/N)

Comments: **Not Applicable**

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

31. Provide a summary of the wholesale contracts with customers

Contract Type	Minimum annual amount	Usage fee per 1,000 gallons	Annual Operations and Maintenance	Annual Capital Costs	Annual Debt Service	Other

Comments: **Not Applicable**

Regional or wholesale providers, complete questions 29-31.

Retail providers, complete questions 32-34.

32. List top **TEN** customers of the water system by annual revenue with corresponding usage and percentage of total use, including whether any are in bankruptcy.

WATER - Treated

Customer Name	Annual Usage (1000 gal)	Percent of Total Water Revenue	Bankruptcy (Y/N)
North Harris Co Regional Water Authority	10,084,247	2.93%	N
North Fort Bend Co Regional Water Authority	4,618,955	1.73%	N
West Harris Co Regional Water Authority	7,949,312	1.55%	N
North Channel Water Authority	2,299,019	1.26%	N
City of Pasadena	6,825,575	0.92%	N
Anheuser Bush, Inc.	1,212,550	0.67%	N
Gulf Coast Water Authority (Galveston)	4,494,289	0.62%	N
Clear Lake City	3,430,187	0.47%	N
City of Pearland	709,301	0.41%	N
Memorial Villages Water Authority	602,657	0.34%	N

Source: City of Houston

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

WATER - Untreated

Customer Name	Annual Usage (1000 gal)	Percent of Total Water Revenue	Bankruptcy (Y/N)
Equistar Chemicals LP	11,464,830	1.57%	N
Shell Oil	7,653,813	1.05%	N
Air Liquide America Corp	6,128,469	0.84%	N
Battleground Water Company	5,835,808	0.80%	N
Baytown Area	5,014,298	0.69%	N
Houston Refining, LP (Lyondell-Citgo)	4,797,454	0.66%	N
Chevron Phillips Chemical Company	4,452,534	0.61%	N
Hoescht Celanese	3,310,230	0.45%	N
Occidental Chemical Corporation	2,770,611	0.38%	N
E.I Dupont De Nemours & Company	2,121,147	0.29%	N

Source: City of Houston

List top **TEN** customers of the wastewater system by annual revenue with corresponding usage and percentage of total use, including whether any are in bankruptcy.

WASTEWATER

Customer Name	Annual Usage (1000 gal)	Percent of Total Wastewater Revenue	Bankruptcy (Y/N)
Anheuser Bush, Inc.	664,963	0.94%	N
Harris County	725,511	0.91%	N
City of Houston	915,367	0.84%	N
Houston Independent School District	518,332	0.67%	N
University of Houston	502,167	0.63%	N
Oak Farms Dairies	87,286	0.49%	N
Maximus Coffee Group	154,660	0.44%	N
Methodist Hospital	299,747	0.38%	N
Hermann Hospital	294,330	0.37%	N
Dr. Pepper Bottling	191,664	0.24%	N

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

33. Current Average Residential Usage and Rate Information

The Authority will not recover payments related to the Luce Bayou SWIFT financing based on water and sewer rates directly, but will receive contract payments from the City, which depend in part upon the City's receipts from providing water and sewer services.

Service	Date of Last Rate Increase	Avg. Monthly Usage (gallons)	Avg. Monthly Bill (\$)	Avg. Monthly Increase Per Customer(\$)	Projected Monthly Increase Necessary (\$)
Water	4/1/2015	5.40	\$28.57	0.34	1.27
Wastewater	4/1/2015	5.40	\$34.63	0.41	1.54

34. Provide the number of customers for each of the past five years.

Water

Year	Number of Customers
2010	434,857
2011	436,133
2012	450,315
2013	453,750
2014	457,536

Wastewater

Year	Number of Customers
2010	417,668
2011	418,416
2012	433,771
2013	436,424
2014	439,495

Source: City of Houston

35. Disclose all issues that may affect the project or the applicant's ability to issue and/or repay debt (such as anticipated lawsuits, judgments, bankruptcies, major customer closings, etc.).
None.

36. Has the applicant ever defaulted on any debt?
 Yes If yes, disclose all circumstances surrounding prior default(s). _____
 No

37. Does the applicant have taxing authority?
 Yes
 No

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

38. Provide the last five-years of data showing total taxable assessed valuation including net ad valorem taxes levied, corresponding tax rate (detailing debt service and general purposes), and tax collection rate.

The Authority does not have taxing authority and therefore does not have debt and is supported by ad valorem taxes. The following is provided for informational purposes only.

The City of Houston reports assessed valuation and related tax rates in connection with the issuance of its general obligation bonds. Its most recent official statement dated July 22, 2014 reported the following:

Fiscal Year Ending	Net Taxable Assessed Value (\$) (in thousands)	Tax Rate	General Fund	Interest & Sinking Fund	Tax Levy \$	% Current Collections	% Total Collections
2010	150,270,904	0.63875	0.45728	0.18147	960,083	97.2%	99.6%
2011	142,964,244	0.63875	0.46336	0.17539	912,808	97.7%	100.7%
2012	145,042,978	0.63875	0.48071	0.15804	927,886	97.8%	100.4%
2013	152,801,703	0.63875	0.46221	0.17654	970,157	97.9%	101.0%
2014	167,749,927	0.63875	0.47709	0.16166	1,051,562	97.6%	100.4%

39. Attach the last five-years of tax assessed values delineated by Classification (Residential, Commercial and Industrial). **If applicant does not have taxing authority, provide the assessed values of the county.**

- a) 2010 attached
- b) 2011 attached
- c) 2012 attached
- d) 2013 attached
- e) 2014 attached

40. Attach the direct and overlapping tax rate table:
 Attached tax rate table

41. Provide the current top **TEN** taxpayers showing percentage of ownership to total assessed valuation. State if any are in bankruptcy and explain anticipated prospective impacts in the Comments blank, below. If any of these have changed in the past three years, please provide information on the changes to the top ten.

The Authority does not have taxing authority and therefore does not have debt that is supported by ad valorem taxes. For information related to the City of Houston, please see attached.

Comments: See attached table for additional details.

42. Provide the maximum tax rate permitted by law per \$100 of property value. N/A

As a home-rule city, the State constitution limits the maximum ad valorem tax rate to \$2.50 per \$100 of property value. However, the City through various local charter amendments has other limitations. For additional information we refer you to the discussion in the City's most recent Official Statement, City of Houston, Texas \$257,365,000 Public Improvement Refunding Bonds,

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Series 2014A. Pages 7 and 8 of this document contain a discussion of the various limitations on the City's tax rate.

43. Does the applicant collect sales tax?

Yes Provide the sales tax collection history for the past five years.

No

The Authority does not impose a sales tax and sales tax proceeds will not be pledged to the repayment of the Bonds. The following is provided for informational purposes only.

Fiscal Year Ending	Total Collections (\$s '000s)
2010	468,965
2011	492,824
2012	546,543
2013	600,256
2014	629,441

Source: City of Houston Comprehensive Annual Report, Combined Utility System Statistics, page 216

44. Indicate the tax status of the proposed loan?

Tax-Exempt

Taxable

45. Proforma (Select one of the four listed below) Please be sure the proforma reflects the schedule requested, including multi-phased funding options.

a. System revenues are anticipated to be used to repay the proposed debt. Attach a proforma indicating the following information for each year the debt is outstanding:

- projected gross revenues
- operating and maintenance expenditures
- outstanding and proposed debt service requirements
- net revenues available for debt service and coverage of current and proposed debt paid from revenues

b. Taxes are anticipated to be used to repay the proposed debt. Attach a pro forma indicating the following information for each year the debt is outstanding:

- outstanding and proposed debt service requirements
- the tax rate necessary to repay current and proposed debt paid from taxes
- list the assumed collection rate and tax base used to prepare the schedule

c. Combination of system revenues and taxes to be used to repay the proposed debt. Attach a pro forma indicating the following information for each year the debt is outstanding:

- projected gross revenues, operating and maintenance expenditures, net revenues available for debt service
- outstanding and proposed debt service requirements
- the tax rate necessary to pay the current and proposed debt
- list the assumed collection rate and tax base used to prepare the schedule

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

- d. Another type of pledge will be used to repay the proposed debt. Attach a pro forma with information for each year the debt is outstanding, which includes projected revenues, annual expenditures, outstanding debt requirements, and revenues available for debt service.
 Attached
46. Attach a **FIVE** year comparative system operating statement (not condensed) including audited prior years and an unaudited year-to-date statement. Unaudited year-to-date statement must reflect the financial status for a period not exceeding the latest six months.
 Attached Operating Statement.
47. Attach **ONE** copy of an annual audit of financial statements, including the management letter, for the preceding fiscal year prepared by a certified public accountant or firm of accountants and, if the last annual audit was more than 6 months ago, then, provide interim financial information.
 Attached Annual Audit
 Attached Management Letter
 If applicable, attached interim financial information
48. Does the applicant have any outstanding debt? (Check all that apply)
 Yes, General obligation debt
 Yes, Revenue debt
 Yes, Authorized but unissued debt
 No
49. Attach a listing of total outstanding debt and identify the debt holder. Segregate by type (General Obligation or Revenue) and present a consolidated schedule for each, showing total annual requirements. Note any authorized but unissued debt.
- a. General Obligation Debt:
 Yes
 Attached schedule. The schedule should also identify the debt holder.
 No
- b. Revenue:
 Yes
 Attached schedule. The schedule should also identify the debt holder.
 No
- c. Authorized by Unissued Debt:
 Yes
 Attached schedule. The schedule should also identify the debt holder.
 No

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

50. List the ten largest employers of the Applicant's service area:

Name	Number of Employees
Memorial Hermann	19,500
University of Texas – MD Anderson Cancer Center	19,290
United Airlines	17,000
ExxonMobil Corporation	13,191
Shell Oil Company	13,000
The Houston Methodist Hospital System	13,000
Kroger Company	12,000
National Oilwell Varco	10,000
Schlumberger Limited	10,000
B.P. America, Inc	9,537

Comments (example, any anticipated changes to the tax base, employers etc.). Employers excludes school districts and city, county, state, and federal government.

Source: *City of Houston 2014 Comprehensive Annual Financial Report, page 232.*

51. Provide any current bond ratings with date received.

The Authority's outstanding Series 2010 and 2014 Bonds are rated as follows:

	Standard & Poor's	Date Received	Moody's	Date Received	Fitch	Date Received
G.O.	N/A	N/A	N/A	N/A	N/A	N/A
Revenue	AA	11/19/2014	NR	N/A	AA+	11/20/14

52. Is the project intended to allow the applicant to provide or receive water or sewer services to or from another entity?

Yes. If yes, the applicant must attach, at a minimum, the proposed agreement, contract, or other documentation establishing the service relationship, with the final and binding agreements provided prior to loan closing.

Attached

No.

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part D: Project Information

53. Description of Project Need (for example, is the project needed to address a current compliance issue, avoid potential compliance issues, extend service, expand capacity, etc.):

The Luce Bayou Interbasin Transfer Project (Project) is being implemented by the Coastal Water Authority (CWA) in response to a request made in May 2005 by the City of Houston. The Project includes infrastructure sized to transfer 450,000 acre-feet of water per year from the Trinity River to Lake Houston.

This project will provide surface water to the City of Houston, West Harris County Regional Water Authority, Central Harris County Regional Water Authority, North Harris County Regional Water Authority, and the North Fort Bend Water Authority in order to provide compliance with the Houston Galveston Subsidence Districts groundwater reduction mandate by creating additional surface water sources.

54. Description of Project, including a bulleted list of project elements/components, and alternatives considered (including existing facilities):

The primary components of the Project include a pump station to be constructed in Liberty County on property currently owned by CWA, 3.0 miles of dual 96-inch transmission mains followed by 23 miles of canal with final discharge into Lake Houston. Water will be treated at the City of Houston Northeast Water Purification Plant (primarily) and the East Water Purification Plant.

Project Components:

- Environmental Surveys and USACE Section 404 and 401 Permits – all permits were approved by the USACE on February 4, 2014.
- Property Acquisition – All property and right-of-way has been acquired for the project, including 2,979 acres of property which has been donated to the U.S. Fish and Wildlife Service as mitigation for the project as required by the permit.
- Project Engineering/Design – This work is on-going.
 - Pump Station Design
 - Canal Design
 - SCADA Design
 - Access Road Design
 - Canal Bridges Design
 - Maintenance Station Design
 - Pipeline Design
- Construction – Future.
 - Pump Station Construction
 - Canal Construction
 - SCADA Construction
 - Access Road Construction
 - Canal Bridges Construction
 - Pipeline Construction
 - System Startup, Commissioning, and Training

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

A complete preliminary engineering feasibility report must include:

- a. A description and purpose of the project, including existing facilities.
• Note: CWSRF and DWSRF must address issues scored in Intended Use Plan submittal

Attached- The planning and environmental has been Uddfcj YX'VmHK 8 6 and there have been no changes to the scope of work.

- b. **If project is for Construction only, then attach** the appropriate Engineering Feasibility Report:

a) **Water** (TWDB-0555 at

<http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0555.pdf>)

Attached – The planning and environmental has been Uddfcj YX'VmHK 8 6 UbX there have been no changes to the scope of work.

b) **Wastewater** (TWDB-0556 at

<http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0556.pdf>)

Attached

- c. DWSRF applicants must complete a Projected Draw Schedule (TWDB-1202 at <http://www.twdb.texas.gov/financial/instructions/doc/TWDB-1202.xls>)

55. Water Made Available (For projects requesting a construction component):

a. *New supply: 450,000 (acre-feet/year) \$381,869,000(\$)* capital cost

- The **increase** in the total annual volume of water supply that will be made available to the recipient(s) by the proposed project.
- Water Plan project examples: new groundwater wells, reservoir development, pipelines to sources.

b. *New Conservation savings _____ (acre-feet/year) _____ (\$)* capital cost **N/A**

- Annual volume of anticipated water savings resulting from implementation of the proposed conservation project including water loss) and other conservation activities,
- Water Plan project examples: municipal conservation, advanced Water Conservation, on-farm conservation, brush control, irrigation conservation.

c. *New Reuse supply _____ (acre-feet/year) _____ (\$)* capital cost **N/A**

- Increase in the annual volume of (direct or indirect) reuse water supply that will be made available to the recipient(s) by the proposed project.
- Water Plan project examples: direct reuse, non-potable reuse, recycled water programs.

d. *Maintenance of Current Supply _____ (acre-feet/year) _____ (\$)* capital cost **N/A**

- Volume of recipients' current supplies that will be maintained by implementing the proposed project
- Water Plan project examples: None. Not a water plan project. (Examples of these type projects: treatment rehabilitation, system storage facilities, system upgrades).

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

56. Project Location:

The Luce Bayou Interbasin Transfer Project will take water from the Trinity River to Lake Houston.

Attach a map of the service area and drawings as necessary to locate and describe the project. The map should show the project footprint and major project components.

Attached

57. Attach the Census tract numbers in which the applicant's service area is within. The Census tracts within your area may be found at:

<http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>.

Please follow these steps:

- Select Advanced Search.
- Select the Geographies button located below Topics (left side of page).
- On the top of the window select the Name tab.
- In the text box, type "All Census Tracts within ___" (Fill in the blank with the name of a County Subdivision or a Place.) Select "Go".
- If your town is a County Subdivision, select the geography labeled "All Census Tracts (or parts) within City, County, State" from the Geography Results. If your town is a place select the geography labeled "All Census Tracts (or parts) full-or-partially within City, State" from the Geography Results.
- Close the Geographies Search window.
- Use the Topics on the left side of the page to further refine your search or to select a table(s) from your search results.

Attached Census tracts

58. Project Schedule:

a) Requested loan closing date.

Loan Closing Date	Board Participation	Low-Interest Loan	Draw Amount
12/15/2015	\$66,565,000.00	\$0.00	\$66,565,000.00
6/15/2016	\$0.00	\$0.00	\$0.00
12/15/2016	\$136,460,000.00	\$0.00	\$136,460,000.00
6/15/2017	\$0.00	\$0.00	\$0.00
12/15/2017	\$73,715,000.00	\$23,260,000.00	\$96,975,000.00
6/15/2018	\$0.00	\$0.00	\$0.00
TOTAL	\$276,740,000.00	\$23,260,000.00	\$300,000,000.00

b) Estimated date to submit environmental planning documents.

This task is already complete.

c) Estimated date to submit engineering planning documents.

This tasks is already complete.

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

d) Estimated date for completion of design.

Feature	Finish Date
Pump Station Design	September 2015
Canal Design	March 2016
SCADA Design	September 2015
Access Road Design (2 Phases)	July 2017
Canal Bridges Design	March 2016
Maintenance Station Design	April 2016
Pipeline Design	August 2016

e) Estimated Construction start date for first contract.

Feature	Start Date
Pump Station Construction	January 2016
Canal Construction	May 2016
SCADA Construction	March 2016
Access Road Construction (2 Phases)	January 2016
Canal Bridges Construction	May 2016
Maintenance Station Construction	August 2016
Pipeline Construction	December 2016
System Startup, Commissioning and Training	January 2019

f) Estimated Construction end date for last contract.

Feature	Finish Date
Pump Station Construction	December 2018
Canal Construction	December 2018
SCADA Construction	June 2019
Access Road Construction (2 Phases)	June 2019
Canal Bridges Construction	March 2017
Maintenance Station Construction	March 2017
Pipeline Construction	September 2017
System Startup, Commissioning and Training	June 2019

59. **Attach** a copy of current and future populations and projected water use or wastewater flows. Include entities to be served.
 Attached
60. Attach the most current itemized project cost estimate (include all costs and funding sources). Utilize the budget format provided (TWDB-1201 at <http://www.twdb.texas.gov/financial/instructions/>). If applying for pre-construction costs only (i.e., P, A, D) then itemize only the relevant portions in the attached budget template
 Attached
61. Attach the appropriate Project Information Form:
 Wastewater: Attached a completed Wastewater Project Information Form WRD-253a <http://www.twdb.texas.gov/financial/instructions/index.asp>
 Water: Attached a completed Water Project Information Form WRD-253d <http://www.twdb.texas.gov/financial/instructions/index.asp>

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

- c) List any major permits not identified elsewhere that are necessary for completion of project. Also, list any more necessary minor permits that may involve particular difficulty due to the nature of the proposed project. **N/A, no other major permits are necessary.**

Permit	Issuing Entity	Permit Acquired (Y/N)

65. Has the applicant obtained all necessary land and easements for the project?

Yes. If yes, attach the site certificate (ED-101 at <http://www.twdb.texas.gov/financial/instructions/index.asp>)
 Attached

No. If no, **fill out the table below** and describe the land or easements that will need to be acquired, provide the anticipated date by which the applicant expects to have the land or easements, and indicate if funding from TWDB is to be used for the acquisition.

Description of Land or Easement Permit	Entity from which the permit or right must be acquired	Acquired by lease or full ownership	Expected acquisition date	To Be Funded by TWDB (Yes/No)

66. Has a Categorical Exclusion (CE), Determination of No Effect (DNE), Finding of No Significant Impact (FONSI), Record of Decision (ROD), or any other environmental determination been issued for this project?

Yes
 Attach a copy of the finding.
 No

67. Is the project potentially eligible for a Categorical Exclusion (CE)/ Determination of No Effect (DNE) because it involves only minor rehabilitation or the functional replacement of existing equipment?

Yes
 No

68. Are there potentially adverse environmental or social impacts that may require mitigation or extensive regulatory agency or public coordination (e.g. known impacts to properties eligible for listing on the National Register of Historic Places; potentially significant public controversy; need for an individual permit from the U.S. Army Corps of Engineers)?

Yes
 If yes, attach additional information
Coastal Water Authority has an approved USACE individual project permit (attached).
 No

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part E: State Water Implementation Fund for Texas (SWIFT) Applicants Only:

69. Identify the type of SWIFT funding (If more than one funding option is being requested indicate the amount of funding for each):

<input type="checkbox"/>	Deferred	\$
<input checked="" type="checkbox"/>	Lo w Interest Loan	\$23,260,000
<input checked="" type="checkbox"/>	Board Participation	\$276,740,000

70. For multi-year funding request or phased commitments, provide a schedule reflecting the closing dates for each loan requested.

Attached

71. **Notice to SWIFT Applicants:** Texas Water Code Sec. 15.435(h) requires all recipients of financial assistance from the State Water Implementation Fund for Texas (SWIFT) to acknowledge any applicable legal obligations in federal law, related to contracting with disadvantaged business enterprises, and state law, related to contracting with historically underutilized businesses. Checking the box below serves as this acknowledgement.

As an applicant for financial assistance from the State Water for Implementation Fund for Texas (SWIFT), I acknowledge that that this project must with any applicable legal obligations in federal law related to contracting with disadvantaged business enterprises and state law (Texas Government Code Chapter 2161 and Texas Administrative Code Chapter 20, Subchapter B) related to contracting with historically underutilized businesses.

72. Provide drafts of the following documents:

a. Proposed Bond Ordinance

Attached

b. Private Placement Memorandum

Attached

A Master Agreement for the Board Participation Program is currently being developed by TWDB staff and will be the basis for securing CWA's loan with the TWDB.

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part F: Economically Distressed Programs (EDAP) Applicants Only:

In accordance with TWDB Rules (31 TAC Chapter 363), an application for EDAP will **not** be considered until the County has adopted and is enforcing the Model Subdivision Rules (MSRs) Texas Water Code § 16.343. If the proposed project is within a municipality or its extraterritorial jurisdiction (ETJ), or if the applicant is a municipality, the municipality must also have adopted and be enforcing MSRs.

73. Describe procedures for collecting monthly customer bills (include procedures for collection of delinquent accounts)

74. Is financing being requested for a **wastewater** project?
 Yes If yes, does the applicant have the required resolution/ordinance establishing a mandatory hookup policy?
 Yes. If yes, attach a copy of the resolution/ordinance.
 Attached
 No. If no, explain _____
 No
75. Required documentation for the project area for Preliminary EDAP Eligibility (31 TAC Chapter 363)
 Attached documentation of inadequacy of water and/or wastewater services.
 Attached documentation regarding the financial resources of the residential users in the EDAP area. Census data or documentation regarding median household income should be provided.
 Attached documentation demonstrating existence of a residence in the project area prior to **June 1, 2005**. This could include tax records of residence, dated aerial maps, or, other documentation demonstrating existence of a residence.
76. Has the Department of State Health Services issued a determination stating a public health nuisance exists in the project area?
 Yes If yes, attach a copy of the determination.
 Attached
 No If no determination exists, attach documentation demonstrating a public health nuisance exists in the project area. (*Photographs may be submitted, but they **must** be labeled with location and date when taken. If the soil types are mentioned in the project area as an issue, include soil profile maps*) *This documentation will be used by TWDB staff to request a determination from the Department of State Health Services*
 Attached
77. Is this project providing new service?
 Yes If yes, attach plats of the affected subdivisions.
 Attached
 No
78. Attach an EDAP Facility Engineering Plan/Scope of Services report that complies with the requirements of WRD-023A. <http://www.twdb.texas.gov/financial/instructions/index.asp>
 Attached

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part G: CWSRF/DWSRF Applicants Only

Only applicants applying for funding from the CWSRF and DWSRF Programs must complete this section.

Pursuant to Federal Funding Accountability and Transparency Act (FFATA) the applicant is required to obtain a DUNS number that will represent a universal identifier for all federal funding assistance. DUNS numbers can be obtained from Dun and Bradstreet at <http://fedgov.dnb.com/webform/>

79. Applicant's Data Universal Number System (DUNS) Number:
DUNS _____

Pursuant to Federal Funding Accountability and Transparency Act (FFATA) the applicant is required to register with System for Award Management (SAM) and maintain current registration at all times during which the Board loan agreement is active or under consideration by the Board. Register at: <https://sam.gov>.

80. The applicant has registered and will maintain current SAM registration at all times during which a federal subaward is active or under consideration by the Board.

- Yes
- No

81. Federal Awards information:

1. Did applicant receive over 80% of their revenue from Federal Awards last year?

- Yes
- No

2. Did applicant receive over \$25 million in Federal Awards last year?

- Yes
- No

3. Public does not have access to executive compensation information via SEC or IRS reports?

- Yes
- No

82. If applicant checked **YES** to **ALL** three boxes in 3 above, applicant is required to disclose the name and compensation of the five most highly compensated officers.

Officer's Name	Officer's Compensation (\$)

83. Complete form WRD 213 (<http://www.twdb.texas.gov/financial/instructions/index.asp>) - Certification Regarding Lobbying

- Attached**
- Yes
 - No
 - N/A

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

84. If applying for CWSRF Equivalency or DWSRF, **attach** the Certification Regarding Debarment, Suspension and Other Responsibility. SRF-404
(<http://www.twdb.texas.gov/financial/instructions/index.asp>)

Attached Yes
 No
 N/A

85. If applying for CWSRF Equivalency or DWSRF, **attach** the Assurances – Construction Programs. EPA-424D (<http://www.twdb.texas.gov/financial/instructions/index.asp>)

Attached Yes
 No
 N/A

86. The applicant must comply with the Davis-Bacon Act regarding prevailing wage rates. The applicant acknowledges that they are aware of, and will abide by, the Davis-Bacon Act requirements.

Yes
 No

Further information on the Davis-Bacon requirement is available through the TWDB Guidance document, DB-0156 (<http://www.twdb.texas.gov/financial/instructions/index.asp>)

All project costs funded by the TWDB through CWSRF Equivalency or DWSRF must comply with the federal Disadvantaged Business Enterprise (DBE) program rules and requirements. The federal DBE program requires a good faith effort to contract with DBE's for all procurements including: professional and non-professional consulting services, equipment, supplies and construction to be funded by federal equivalency dollars. Guidance and forms are found at:

TWDB-0210 (<http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0210.pdf>)

87. **At a minimum, you must complete and attach** the Applicant Affirmative Steps Certification and Goals. This form is required to obtain a financial assistance commitment.

TWDB-0215 (<http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0215.pdf>)

Attached Yes
 No

88. If you have already solicited contractors, complete and attach the Affirmative Steps Solicitation Report. This form is required prior to loan closing and release of any funds; therefore, if this question is not applicable at this time, select N/A.

TWDB-216 (<http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0216.pdf>)

Attached Yes
 No
 N/A

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

89. If you have awarded contracts to contractors, complete and attach the Loan/Grant Participation Summary. This form must be submitted for review prior to loan closing and release of funds. This form is required prior to loan closing and release of any funds; therefore, if this question is not applicable at this time, select N/A.

TWDB-0373 (<http://www.twdb.texas.gov/financial/instructions/index.asp>)

Attached Yes
 No
 N/A

90. All Contractors that have been awarded will need to complete and attach the Prime Contractor Affirmative Steps Certification and Goals This form is required prior to loan closing and release of any funds; therefore, if this question is not applicable at this time, select N/A.

TWDB-217 (<http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0217.pdf>)

Attached Yes
 No
 N/A

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part H: Documentation of "Green" Projects and Project Components CWSRF and DWSRF Applicants Only

All SRF applicants must complete this section if green benefits are all or part of the project (**more than an incidental benefit**). Project is defined as the entire project or a stand-alone component of the project. This section is required so that the TWDB may determine whether the project qualifies as "green" pursuant to Environmental Protection Agency (EPA) Guidance.

A project (or project component) is "green" if the primary purpose qualifies under EPA Guidance as one of the following:

- a. Green Infrastructure,
- b. Water Efficiency-related,
- c. Energy Efficiency-related, or
- d. Environmentally Innovative.

You must use the Green Project Reserve guidance to complete this section. Current guidance may be found at: **Green Project Reserve: Guidance for determining project eligibility**
TWDB-0161 (<http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0161.pdf>)

91. Does your project or a component of your project qualify as Green, per EPA guidance?
 Yes
 No

If Yes, Please complete the remainder of Section G.

92. Type of Green Project
 Water Efficiency Energy Efficiency Green Infrastructure Environmentally Innovative

93. The correct worksheets must be completed.
Green Project Reserve: CWSRF Green Project Worksheets
TWDB-0162 (<http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0162.pdf>)
Attached Yes
 No
 N/A

- Green Project Reserve: DWSRF Green Project Worksheets**
TWDB-0163 (<http://www.twdb.texas.gov/financial/instructions/doc/TWDB-0163.pdf>)
Attached Yes
 No
 N/A

TWDB will make the final determination whether your project (or project component) meets federal criteria as "green". You may be required to submit a **business case, utilizing the Green guidance**

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part I: Summary of attachments to application

Following is a list of the documents that may be necessary in order to process this application. While not all of the listed information below may be required for all projects, an applicant should review the application carefully because incomplete applications will not be processed until all of this information has been provided. In addition, please make sure your entity system name appears on every attachment. **Label each attachment with the number of the pertinent application section (i.e. "Part B5").**

Check list for your convenience

Part A

- No. 6
- No. 12

General Information

Draft or executed consulting contracts (engineering, financial advisor, bond counsel)
Existing security document for refinancing

Part B

- No. 17
- No. 18
- No. 19
- No. 20

Legal

Resolution (TWDB-0201A)
Application Affidavit (TWDB-0201)
Certificate of Secretary (TWDB-201B)
Water Supply Corporations

- Articles of Incorporation
- Certificate of incorporation from the Texas Secretary of State
- By-laws and any amendments
- Certificate of status from the Texas Secretary of State
- Certificate of account status from Texas Comptroller

- No. 21
- No. 22
- No. 23
- No. 24
- No. 25
- No. 26

Resolution/ordinance authorizing the issuance of parity debt
Certificate of Convenience & Necessity
Enforcement Actions
Affidavit of No Objection
Two copies of the Water Conservation Plan (TWDB-1968 and TWDB-1965)
Water use surveys

- No. 27

Water Loss Audit
<http://www.twdb.texas.gov/waterplanning/waterusesurvey/index.asp>
<http://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp>

Part C

- No. 39
- No. 40
- No. 45
- No. 46
- No. 47
- No. 49
- No. 52

Financial

Assessed Values by Classifications
Direct and Overlapping Tax Table
Proforma for each year of debt outstanding
Five year comparative system operating statement.
Annual audit and management letter
Outstanding debt schedule
Service provider contracts

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part D

Engineering

- No. 54a Preliminary Engineering Feasibility Report (PEFR)
- No. 54b Engineering Feasibility Report
 - Water (TWDB-0555)
 - Wastewater (TWDB-0556)
- No. 54c Project Draw Schedule (TWDB-1202)
- No. 56 Project Map
- No. 57 Census Tract(s)
- No. 59 Current and future populations and projected water use or wastewater flows
- No. 60 Project Cost Estimate Budget (TWDB-1201)
- No. 61 Wastewater Project Information Form (WRD-253a)
Water Project Information Form (WRD-253d)
- No. 62 Texas Pollution Discharge Elimination System Permit
- No. 63 Designated Management Agency (WRD-210)
- No. 64 If applicant has property rights and permits
 - a. WRD-208A (Surface Water)
 - b. WRD-208B (Groundwater)
- No. 64c Additional Permits
- No. 65 Site certificate, evidencing land ownership for the project. (ED-101)
- No. 66 Categorical Exclusion (CE), Finding of No Significant Impact (FONSI), Record of Decision or any other supporting document
- No. 68 Social or environmental issues

Part E

State Water Implementation Fund for Texas

- No. 72a Draft Bond Ordinance
- No. 72b Private Placement Memorandum

Part F

Economically Distressed Areas Program

- No. 74 Resolution/ordinance establishing a mandatory hookup policy
- No. 75 EDAP applicants
 - Inadequacy documentation
 - Financial resources documentation
 - Existence of residences prior to 06/01/2005
- No. 76 Public health nuisance
- No. 77 Plats
- No. 78 EDAP Planning Phase – Facility Engineering Plan/Scope of Services (WRD-023A)

Part G

CWSRF/DWSRF Questions

- No. 83 Lobbying Activities (WRD-213)
- No. 84 Certification Regarding Debarment, Suspension and Other Responsibility Requirements. (SRF-404)
- No. 85 Assurances – Construction Programs (EPA-424D)
Disadvantaged Business Requirements Guidance (TWDB-0210)
- No. 87 Affirmative Steps Certification and Goals (TWDB-0215)
- No. 88 Affirmative Steps Solicitation Report (TWDB-216)
- No. 89 Loan/ Grant Participation Summary (TWDB-0373)
- No. 90 Prime Contractor Affirmative Steps Certification and Goals (TWDB-217)

Part H

Green Projects

- No. 93 Guidance (TWDB-0161)
CWSRF Green Project Worksheets (TWDB-0162)
DWSRF Green Project Worksheets (TWDB-0163)

Please label each attachment with the number of the pertinent application section (i.e. "Part D5")

Part J: Guidance and Forms

Part A.

General Information

CWSRF – 31 TAC 375

DWSRF – 31 TAC 371

EDAP and SWIFT - 31 TAC 363

For more information visit, <http://www.twdb.texas.gov/about/rules/index.asp>.

Part E.

Environmental

[State Programs - 31 TAC 363](#)

[Drinking Water State Revolving Fund - 31 TAC 371](#)

[Clean Water State Revolving Fund / Equivalency - 31 TAC 375](#)

[Clean Water State Revolving Fund / Non-Equivalency - 31 TAC 375](#)

Guidelines for Environmental Assessment, Clean Water Non-Equivalency (ED-001A)

Clean Water EID Instructions (SRF-099)

Guidelines for Environmental Assessment, State Participation, DFund, RWAf and WIF,
(ED-001B)

Guidelines for Environmental Assessment, EDAP (ED-001C)

Drinking Water EID Instructions (DW-001)

Part G

Green Projects and Project Components

Green Project Reserve: Guidance for determining project eligibility
(TWDB-0161)

A6b. Bond Counsel and Legal
Counsel Contract

NORTON ROSE FULBRIGHT

March 3, 2015

Board of Directors
Coastal Water Authority
1801 Main St, Suite 800
Houston, Texas 77002-8119
Attention: Mr. John Baldwin

Norton Rose Fulbright US LLP
1301 McKinney, Suite 5100
Houston, Texas 77010-3095
United States

Tel +1 713 651 5151
Fax +1 713 651 5246
nortonrosefulbright.com

Re: Counsel Services for Coastal Water Authority
Master Agreement Regarding State Participation
in the Luce Bayou Interbasin Transfer Project (the "Matter")

Dear Mr. Baldwin:

We are pleased to submit to you a proposed agreement for Norton Rose Fulbright US LLP to serve as Counsel with respect to the captioned Matter. When approved by the Coastal Water Authority (the "Authority"), this letter will become effective and will evidence an agreement between the Authority and us.

This letter sets forth the terms of our engagement. Certain of those terms are included in the body of this letter, and additional terms are contained in the attached document, entitled *Additional Terms of Engagement*. That document is expressly incorporated into this letter, and it should be read carefully. The execution and return of the enclosed copy of this letter constitutes an unqualified agreement to all the terms set forth in this letter and in the attached *Additional Terms of Engagement*.

As Counsel, we will prepare, or assist the Authority in the preparation of, all required legal proceedings and will perform certain other necessary legal work in connection with the Authority's authorization and delivery of the Master Agreement. Our services as Counsel will include the following, which we will carry out directly or in concert with officials and staff of the Authority as follows:

- (1) Preparation of one or more resolutions authorizing the Program and all other instruments which comprise the transcript of legal proceedings pertaining to the authorization of the Program, as well as legal research, document preparation, and consultation with respect to related municipal finance legal issues;
- (2) Consultation with the Texas Water Development Board concerning terms and delivery and preparation of a Master Agreement with the Authority;
- (3) Attendance at meetings called by the board of directors or various members of Authority staff, to the extent required or requested by the Authority, to discuss legal issues arising from the Program;
- (4) Preparation and submission of transcripts of legal proceedings pertaining to the Master Agreement to the Attorney General of Texas to obtain an approving opinion;

Norton Rose Fulbright US LLP is a limited liability partnership registered under the laws of Texas.

Norton Rose Fulbright US LLP, Norton Rose Fulbright LLP, Norton Rose Fulbright Australia, Norton Rose Fulbright Canada LLP and Norton Rose Fulbright South Africa Inc are separate legal entities and all of them are members of Norton Rose Fulbright Verein, a Swiss Verein. Norton Rose Fulbright Verein helps coordinate the activities of the members but does not itself provide legal services to clients. Details of each entity, with certain regulatory information, are available at nortonrosefulbright.com.

- (5) At the closing of the transaction, delivery of an approving opinion, based on facts and law existing as of its date, as to the due authorization of the Program, the validity of the Master Agreement and the note evidencing the obligations of the Authority, and the tax exempt status of the interest thereon;
- (6) Prior to and in connection with the closing of the transaction, giving advice to the Authority to enable appropriate officials to comply with the arbitrage requirements of the Internal Revenue Code of 1986 as they affect the Program, including yield restrictions and arbitrage rebate requirements;

For the services performed hereunder, Norton Rose Fulbright US LLP will be paid a fee of \$80,000. In addition, prior to preparation of the Master Agreement and Note and their submittal to the Attorney General of Texas, we will amend this agreement to include Co-Counsel acceptable to us and the Authority, and Co-Counsel will be paid a fee of \$30,000. Each such fee shall be paid from the proceeds of the sale of the Matter. Each invoice will include an itemization of the hours worked by each attorney and legal assistant, the rate for each individual and description of the work performed by the individual. Payment of our fee shall be made after issuance and delivery of the Master Agreement, within 30 days after receipt by the Authority of an approved invoice therefor.

Each Co-Counsel will be separately engaged by the Authority and will be separately responsible for their own performance.

Co-Counsel will be reimbursed for their reasonable and actual out-of-pocket expenses, such as the cost of reproduction of documents, long distance telephone, telegraph, telex and similar expenses, deliveries, filing fees, and all items paid for by Co-Counsel on behalf of the Authority, incurred in connection with the performance of all services hereunder. All of such expenses will be reasonable and subject to approval of the City Attorney; provided, however, that aggregate maximum reimbursable expenses shall not exceed \$3,000. Co-Counsel will be reimbursed for the full amount of any filing fees advanced to the Attorney General of Texas.

Conflicts of Interest

Before accepting this Representation, we have undertaken reasonable and customary efforts to determine whether there are any potential conflicts of interest that would bar our firm from representing the Authority in this matter. Based on the information available to us, we are not aware of any potential disqualification. We reviewed that issue in accordance with the rules of professional responsibility adopted in Texas. We believe that those rules, rather than the rules of any other jurisdiction, are applicable to the representation; and the execution and return of the enclosed copy of this letter by you represents an express agreement to the applicability of those rules.

It is understood that each Co-Counsel is acting independently and no partnership or other entity or joint venture is formed hereby, and that neither counsel is responsible for the actions or failure to act of the other. With respect to Norton Rose Fulbright US LLP, this letter agreement incorporates as a whole, the terms of its prior agreement with the Authority governing its representation as general counsel to the extent any matter is not expressly addressed herein.

You understand that we represent many issuers, investment banking firms, commercial banks, and other parties to public finance transactions from time to time in connection with other

issues, including your financial advisor, FirstSouthwest Company, and you do not object to our continued representation (in connection with other issues) of any such firm, even if its interests are adverse to your own in those matters, since by doing so we are able to gain experience that is useful in representing you. If a controversy arises between you and any other client of our firm, we, after taking into account the rules of professional ethics applicable to us, may decline to represent either you or such other client or both you and such other client.

Conclusion


This letter and the attached *Additional Terms of Engagement* constitute the entire terms of the engagement in this Matter. These written terms of engagement are not subject to any oral agreements or understandings, and they can be modified only by further written agreement signed both by you as Representative of the Authority and us. Unless expressly stated in these terms of engagement, no obligation or undertaking shall be implied on the part of either the Authority or Co-Counsel.

Nothing herein shall be construed as creating personal liability on the part of any officer of the Authority, and this Agreement may be terminated by the Authority by giving 30 days' written notice.

If this proposed Agreement for the services is satisfactory, please evidence your acceptance and approval by signing in the space provided below.

Very truly yours,


NORTON ROSE FULBRIGHT US LLP

By 
Neil Thomas

APPROVED:


President, Coastal Water Authority

ATTEST:


Authority Secretary

Additional Terms of Engagement

This is a supplement to our engagement letter, dated October 1, 2014. The purpose of this document is to set out additional terms of our agreement to provide the representation described in our engagement letter (the "Representation") concerning the proposed Matter. Because these additional terms of engagement are a part of our agreement to provide legal services, you should review them carefully and should promptly communicate to us any questions concerning this document. We suggest that you retain this statement of additional terms along with our engagement letter and any related documents.

The Scope of the Representation

As lawyers, we undertake to provide representation and advice on the legal matters for which we are engaged. It is important for our clients to have a clear understanding of the legal services that we have agreed to provide. Thus, if there are any questions about the scope of the Representation that we are to provide in the Matter, please raise those questions promptly, so that we may resolve them at the outset of the Representation.

Any expressions on our part concerning the outcome of the Representation, or any other legal matters, are based on our professional judgment and are not guarantees. Such expressions, even when described as opinions, are necessarily limited by our knowledge of the facts and are based on our views of the state of the law at the time they are expressed.

Upon accepting this engagement on your behalf, we agree to do the following: (1) provide legal counsel in accordance with these terms of engagement and the related engagement letter, and in reliance upon information and guidance provided by you; and (2) keep you reasonably informed about the status and progress of the Representation.

To enable us to provide effective representation, you agree to do the following: (1) disclose to us, fully and accurately and on a timely basis, all facts and documents that are or might be material or that we may request, (2) keep us apprised on a timely basis of all developments relating to the Representation that are or might be material, (3) attend meetings, conferences, and other proceedings when it is reasonable to do so, and (4) otherwise cooperate fully with us.

Our firm has been engaged to provide legal services in connection with the Representation in the Matter, as specifically defined in our engagement letter. After completion of the Representation, changes may occur in the applicable laws or regulations that could affect your future rights and liabilities in regard to the Matter. Unless we are actually engaged after the completion of the Representation to provide additional advice on such issues, the firm has no continuing obligation to give advice with respect to any future legal developments that may pertain to the Matter.

Who Will Provide the Legal Services

As our engagement letter confirms, we, along with our Co-Counsel to be engaged by you, will represent you in the Matter.

Although our firms will be providing legal services, each client of our firm customarily have a relationship principally with one attorney, or perhaps a few attorneys. At the same time, however, the work required in the Representation, or parts of it, may be performed by other firm personnel, including lawyers and legal assistants. Such delegation may be for the purpose of involving other firm personnel with experience in a given area or for the purpose of providing

services on an efficient and timely basis.

Our Relationships With Others

Our law firms represent many companies and individuals. In some instances, the applicable rules of professional conduct may limit our ability to represent clients with conflicting or potentially conflicting interests. Those rules of conduct often allow us to exercise our independent judgment in determining whether our relationship with one client prevents us from representing another. In other situations, we may be permitted to represent a client only if the other clients consent to that representation.

Rules concerning conflicts of interest vary with the jurisdiction. In order to avoid any uncertainty, it is our policy that the governing rules will be those applicable to the particular office of our firm that prepares the engagement letter for a particular matter. The acceptance by you of our engagement letter constitutes an express agreement with that policy, unless the engagement letter specifically states that some other rules of professional responsibility will govern our attorney-client relationship.

If a controversy unrelated to the Matter develops between you and any other client of either firm, that firm will follow the applicable rules of professional responsibility to determine whether we may represent either you or the other client in the unrelated controversy.

In addition to our representation of other companies and individuals, we also regularly represent lawyers and law firms. As a result, opposing counsel in the Matter may be a lawyer or law firm that we may represent now or in the future. Likewise, opposing counsel in the Matter may represent our firm now or in the future. Further, we have professional and personal relationships with many other attorneys, often because of our participation in bar associations and other professional organizations. It is our professional judgment that such relationships with other attorneys do not adversely affect our ability to represent any client. The acceptance of these terms of engagement represents an unqualified consent to any such relationships between our firm and other lawyers or law firms, even counsel who is representing a party that is adverse to you in the Matter that is the subject of this engagement or in some other matter.

Disclaimer

We have made any promises or guarantees to you about the outcome of the Representation or the Matter, and nothing in these terms of engagement shall be construed as such a promise or guarantee.

Termination

At any time, you may, with or without cause, terminate the Representation by notifying us of your intention to do so. Any such termination of services will not affect the obligation to pay legal services rendered and expenses incurred before termination, as well as additional services and charges incurred in connection with an orderly transition of the Matter.

We are subject to the codes or rules of professional responsibility for the jurisdictions in which we practice. There are several types of conduct or circumstances that could result in our withdrawing from representing a client, including, for example, the following: non-payment of fees or costs; misrepresentation or failure to disclose material facts; fraudulent or criminal conduct; action contrary to our advice; and conflict of interest with another client. We try to identify in advance and discuss with our clients any situation that may lead to our withdrawal.

A failure by you to meet any obligations under these terms of engagement shall entitle us to terminate the Representation. In that event, you will take all steps necessary to release us from any further obligations in the Representation or the Matter, including without limitation the execution of any documents necessary to effectuate our withdrawal from the Representation or the Matter. Our right to withdraw in such circumstances is in addition to any rights created by statute or recognized by the governing rules of professional conduct.

Billing Arrangements and Terms of Payment

Our engagement letter specifically explains our fees for services in the Matter. It is agreed that you will make full payment within 30 days of receiving our statement. We will give notice if an account becomes delinquent, and it is further agreed that any delinquent account must be paid upon the giving of such notice. If the delinquency continues and you do not arrange satisfactory payment terms, we may withdraw from the Representation and pursue collection of our account.

Document Retention

At the close of any matter, we send our files in that matter to a storage facility for storage at our expense. The attorney closing the file determines how long we will maintain the files in storage. After that time, we will destroy the documents in the stored files.

At the conclusion of the Representation, we return to the client any documents that are specifically requested to be returned. As to any documents so returned, we may elect to keep a copy of the documents in our stored files.

Communications

We have available Internet communication procedures that allow our attorneys to use e-mail for client communications in many instances. Accordingly, unless you specifically direct us otherwise, we may use unencrypted e-mail sent on the Internet to communicate with you and to send documents we have prepared or reviewed.

Charges for Other Expenses and Services

Typically, our invoices will include amounts, not only for legal services rendered, but also for other expenses and services. Examples include charges for photocopying, long-distance telephone calls, travel and conference expenses, messenger deliveries, computerized research, and facsimile and other electronic transmissions. In addition, we reserve the right to send to you for direct payment any invoices delivered to us by others, including experts and any vendors.

It is not our policy to make any profit on any of these other expenses and services. Our invoices will reflect the cost to us of the products and services. In some situations, the actual cost of providing the product or service is difficult to establish, in which case we will use our professional judgment on the charges to be made. In some situations, we can arrange for ancillary services to be provided by third parties with direct billing to the client. Attached is a copy of our current recharge schedule for other expenses and services, which is subject to change from time to time.

No Partnership Formed

Each Co-Counsel is acting individually in the Matter and is in no manner responsible for the acts

of its Co-Counsel, and is not a partnership or other combined entity for purposes of this representation.

Standards of Professionalism and Attorney Complaint Information

Pursuant to rules promulgated by the Texas Supreme Court and the State Bar of Texas, we are to advise our clients of the contents of the Texas Lawyer's Creed, a copy of which is attached. In addition, we are to advise clients that the State Bar of Texas investigates and prosecutes complaints of professional misconduct against attorneys licensed in Texas. A brochure entitled *Attorney Complaint Information* is available at all of our Texas offices and is likewise available upon request. A client that has any questions about State Bar's disciplinary process should call the Office of the General Counsel of the State Bar of Texas at 1-800-932-1900 toll free.

THE TEXAS LAWYER'S CREED — A Mandate for Professionalism

The Texas Supreme Court and the Texas Court of Criminal Appeals adopted this Creed, with the requirement that lawyers advise their clients of its contents when undertaking representation.

I am a lawyer; I am entrusted by the People of Texas to preserve and improve our legal system. I am licensed by the Supreme Court of Texas. I must therefore abide by the Texas Disciplinary Rules of Professional Conduct, but I know that Professionalism requires more than merely avoiding the violation of laws and rules. I am committed to this Creed for no other reason than it is right.

I. OUR LEGAL SYSTEM. A lawyer owes to the administration of justice personal dignity, integrity, and independence. A lawyer should always adhere to the highest principles of professionalism. I am passionately proud of my profession. Therefore, "My word is my bond." I am responsible to assure that all persons have access to competent representation regardless of wealth or position in life. I commit myself to an adequate and effective pro bono program. I am obligated to educate my clients, the public, and other lawyers regarding the spirit and letter of this Creed. I will always be conscious of my duty to the judicial system.

II. LAWYER TO CLIENT. A lawyer owes to a client allegiance, learning, skill, and industry. A lawyer shall employ all appropriate means to protect and advance the client's legitimate rights, claims, and objectives. A lawyer shall not be deterred by any real or imagined fear of judicial disfavor or public unpopularity, nor be influenced by mere self-interest. I will advise my client of the contents of this Creed when undertaking representation. I will endeavor to achieve my client's lawful objectives in legal transactions and in litigation as quickly and economically as possible. I will be loyal and committed to my client's lawful objectives, but I will not permit that loyalty and commitment to interfere with my duty to provide objective and independent advice. I will advise my client that civility and courtesy are expected and are not a sign of weakness. I will advise my client of proper and expected behavior. I will treat adverse parties and witnesses with fairness and due consideration. A client has no right to demand that I abuse anyone or indulge in any offensive conduct. I will advise my client that we will not pursue conduct which is intended primarily to harass or drain the financial resources of the opposing party. I will advise my client that we will not pursue tactics which are intended primarily for delay. I will advise my client that we will not pursue any course of action which is without merit. I will advise my client that I reserve the right to determine whether to grant accommodations to opposing counsel in all matters that do not adversely affect my client's lawful objectives. A client has no right to instruct me to refuse reasonable requests made by other counsel. I will advise my client regarding the availability of mediation, arbitration, and other alternative methods of resolving and settling disputes.

III. LAWYER TO LAWYER. A lawyer owes to opposing counsel, in the conduct of legal transactions and the pursuit of litigation, courtesy, candor, cooperation, and scrupulous observance of all agreements and mutual understandings. Ill feelings between clients shall not influence a lawyer's conduct, attitude, or demeanor toward opposing counsel. A lawyer shall not engage in unprofessional conduct in retaliation against other unprofessional conduct. I will be courteous, civil, and prompt in oral and written communications. I will not quarrel over matters of form or style, but I will concentrate on matters of substance. I will identify for other counsel or parties all changes I have made in documents submitted for review. I will attempt to prepare documents which correctly reflect the agreement of the parties. I will not include provisions which have not been agreed upon or omit provisions which are necessary to reflect the agreement of the parties. I will notify opposing counsel, and, if appropriate, the Court or other persons, as soon as practicable, when hearings,

depositions, meetings, conferences or closings are canceled. I will agree to reasonable requests for extensions of time and for waiver of procedural formalities, provided legitimate objectives of my client will not be adversely affected. I will not serve motions or pleadings in any manner that unfairly limits another party's opportunity to respond. I will attempt to resolve by agreement my objections to matters contained in pleadings and discovery requests and responses. I can disagree without being disagreeable. I recognize that effective representation does not require antagonistic or obnoxious behavior. I will neither encourage nor knowingly permit my client or anyone under my control to do anything which would be unethical or improper if done by me. I will not, without good cause, attribute bad motives or unethical conduct to opposing counsel nor bring the profession into disrepute by unfounded accusations of impropriety. I will avoid disparaging personal remarks or acrimony towards opposing counsel, parties and witnesses. I will not be influenced by any ill feeling between clients. I will abstain from any allusion to personal peculiarities or idiosyncrasies of opposing counsel. I will not take advantage, by causing any default or dismissal to be rendered, when I know the identity of an opposing counsel, without first inquiring about that counsel's intention to proceed. I will promptly submit orders to the Court. I will deliver copies to opposing counsel before or contemporaneously with submission to the court. I will promptly approve the form of orders which accurately reflect the substance of the rulings of the Court. I will not attempt to gain an unfair advantage by sending the Court or its staff correspondence or copies of correspondence. I will not arbitrarily schedule a deposition, Court appearance, or hearing until a good faith effort has been made to schedule it by agreement. I will readily stipulate to undisputed facts in order to avoid needless costs or inconvenience for any party. I will refrain from excessive and abusive discovery. I will comply with all reasonable discovery requests. I will not resist discovery requests which are not objectionable. I will not make objections nor give instructions to a witness for the purpose of delaying or obstructing the discovery process. I will encourage witnesses to respond to all deposition questions which are reasonably understandable. I will neither encourage nor permit my witness to quibble about words where their meaning is reasonably clear. I will not seek Court intervention to obtain discovery which is clearly improper and not discoverable. I will not seek sanctions or disqualification unless it is necessary for protection of my client's lawful objectives or is fully justified by the circumstances.

IV. LAWYER AND JUDGE. Lawyers and judges owe each other respect, diligence, candor, punctuality, and protection against unjust and improper criticism and attack. Lawyers and judges are equally responsible to protect the dignity and independence of the Court and the profession. I will always recognize that the position of judge is the symbol of both the judicial system and administration of justice. I will refrain from conduct that degrades this symbol. I will conduct myself in court in a professional manner and demonstrate my respect for the Court and the law. I will treat counsel, opposing parties, the Court, and members of the Court staff with courtesy and civility. I will be punctual. I will not engage in any conduct which offends the dignity and decorum of proceedings. I will not knowingly misrepresent, mischaracterize, misquote or miscite facts or authorities to gain an advantage. I will respect the rulings of the Court. I will give the issues in controversy deliberate, impartial and studied analysis and consideration. I will be considerate of the time constraints and pressures imposed upon the Court, Court staff and counsel in efforts to administer justice and resolve disputes.

NORTON ROSE FULBRIGHT US LLP

Schedule of Standard Hourly Rates
for Attorneys and Legal Assistants

Norton Rose Fulbright US LLP maintains a schedule of standard hourly rates for its attorneys and legal assistants, which is subject to periodic revision and for this matter will be discounted at a rate of 10%. The schedule in effect as of January 1, 2015, is as follows:

	<u>Hourly Rate</u>
Associates:	\$210 - 675
Partners:	\$475 - 1,050
Paralegals:	\$165 - 420

FINANCIAL ADVISORY AGREEMENT

This Financial Advisory Agreement (the "Agreement") is made and entered into by and between Coastal Water Authority (the "Issuer") First Southwest Company, LLC ("FirstSouthwest") effective as of the date executed by the Issuer as set forth on the signature page hereof.

WITNESSETH:

WHEREAS, the Issuer will have under consideration from time to time the authorization and issuance of indebtedness in amounts and forms which cannot presently be determined and, in connection with the authorization, sale, issuance and delivery of such indebtedness, Issuer desires to retain an independent financial advisor; and

WHEREAS, the Issuer desires to obtain the professional services of FirstSouthwest to advise the Issuer regarding the issuance and sale of certain evidences of indebtedness or debt obligations that may be authorized and issued or otherwise created or assumed by the Issuer (hereinafter referred to collectively as the "Debt Instruments") in connection with Texas Water Development Board ("TWDB") from time to time during the period in which this Agreement shall be effective; and

WHEREAS, FirstSouthwest is willing to provide its professional services and its facilities as financial advisor in connection with all programs of financing as may be considered and authorized by Issuer during the period in which this Agreement shall be effective.

NOW, THEREFORE, the Issuer and FirstSouthwest, in consideration of the mutual covenants and agreements herein contained and other good and valuable consideration, do hereby agree as follows:

**SECTION I
DESCRIPTION OF SERVICES**

Upon the request of an authorized representative of the Issuer, FirstSouthwest agrees to perform the financial advisory services stated in the following provisions of this Section I; and for having rendered such services, the Issuer agrees to pay to FirstSouthwest the compensation as provided in Section V hereof.

A. Application for State Participation. At the direction of Issuer, FirstSouthwest shall:

1. Application and First Funding through Texas Water Development Board. Work with the Issuer to facilitate the Issuer's application for approximately \$300 million of Texas Water Development Board financing and/or participation, including the Issuer's interaction with the

Texas Water Development Board throughout the application process, and including preparing pro forma models and participating in other aspects of the application process, and further assisting the Issuer throughout the negotiation process, with the goal of closing on approximately \$67 million of such funding in calendar year 2015.

2. Future Financings. Consider and analyze future financing needs as projected by the Issuer's staff and consulting engineers or other experts, if any, employed by the Issuer.

3. Recommendations for Debt Instruments. On the basis of the information developed by the survey described above, and other information and experience available, submit to the Issuer recommendations regarding the Debt Instruments under consideration, including such elements as the date of issue, interest payment dates, schedule of principal maturities, options of prior payment, security provisions, and such other provisions as may be appropriate in order to make the issue attractive to investors while achieving the objectives of the Issuer. All recommendations will be consistent with the goal of designing the Debt Instruments to be sold on terms which are advantageous to the Issuer, including the lowest interest cost consistent with all other considerations.

4. Market Information. Advise the Issuer of our interpretation of current bond market conditions, other related forthcoming bond issues and general information, with economic data, which might normally be expected to influence interest rates or bidding conditions so that the date of sale of the Debt Instruments may be set at a favorable time.

B. Financial Implementation after the Initial Funding. This contract shall not include providing services related to implementation of the financing plan contemplated in A., above, other than the first funding expected to occur in December 2015. Fees associated with services related to implementation of any financing or other transaction contemplated herein other than the first funding (expected in December 2015) will be covered in a separate contract to be negotiated between the parties at such time as the need for such services arises, or some other time.

SECTION II OTHER CONTRACTS

This contract will not impact any other contracts that might be in place from time to time between the Issuer and FirstSouthwest.

**SECTION III
TERM OF AGREEMENT**

This Agreement shall become effective as of the date executed by the Issuer as set forth on the signature page hereof and, unless terminated by either party pursuant to Section IV of this Agreement, shall remain in effect thereafter until the closing and funding of the initial Texas Water Development Board financing described in Section I (expected to be December 2015), or the second annual anniversary of the date this Agreement is executed by the Issuer, whichever occurs earlier.

**SECTION IV
TERMINATION**

This Agreement may be terminated with or without cause by the Issuer or FirstSouthwest upon the giving of at least thirty (30) days' prior written notice to the other party of its intention to terminate, specifying in such notice the effective date of such termination. In the event of such termination, it is understood and agreed that only the amounts due FirstSouthwest for services provided and expenses incurred to the date of termination will be due and payable. No penalty will be assessed for termination of this Agreement.

**SECTION V
COMPENSATION AND EXPENSE REIMBURSEMENT**

The fees due to FirstSouthwest for the services set forth and described in Section I of this Agreement shall be calculated in accordance with the schedule set forth on Appendix A attached hereto. Unless specifically provided otherwise on Appendix A or in a separate written agreement between Issuer and FirstSouthwest, such fees, together with any other fees as may have been mutually agreed upon and all expenses, for which FirstSouthwest is entitled to reimbursement, shall become due and payable concurrently with the delivery of the Debt Instruments to the purchaser.

**SECTION VI
MISCELLANEOUS**

1. Choice of Law. This Agreement shall be construed and given effect in accordance with the laws of the State of Texas.

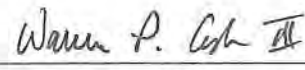
2. Binding Effect; Assignment. This Agreement shall be binding upon and inure to the benefit of the Issuer and FirstSouthwest, their respective successors and assigns; provided however, neither party hereto may assign or transfer any of its rights or obligations hereunder without the prior written consent of the other party.

3. Entire Agreement. This instrument contains the entire agreement between the parties relating to the rights herein granted and obligations herein assumed. Any oral or written representations or modifications concerning this Agreement shall be of no force or effect except for a subsequent modification in writing signed by all parties hereto.


4. This Agreement shall not affect any other agreement that the Issuer has with FirstSouthwest or any of its affiliates in any respect.

FIRST SOUTHWEST COMPANY, LLC

By: 
Michael G. Bartolotta, Vice Chairman

By: 
Warren P. Cash III
Senior Vice President

COASTAL WATER AUTHORITY

By: 
President, Board of Directors

ATTEST:


Secretary- Board of Directors

APPENDIX A

The financial advisory fee for the described services shall equal **\$167,000**. The Issuer shall also reimburse the expenses incurred by FirstSouthwest within 30 days after receipt of an invoice from FirstSouthwest itemizing the expenses, and shall not be contingent upon delivery of Debt Instruments. This agreement is subject to a total fee and expense cap of \$175,000.

In consultation with the Issuer, FirstSouthwest shall engage a co-financial advisor, which shall be a firm shall be certified through the City of Houston's MWBE program. The Chief Financial Officer of the Issuer shall have approval rights with respect to the selection of the co-financial advisor. From the fee described in the paragraph above, FirstSouthwest shall pay a co-financial advisor fee of \$41,750 (which is 25% of the total fee of \$167,000), plus reasonable expenses, all subject to the cap described in the paragraph above.

All fees provided herein are subject to closing the first portion of the financing described herein, which is expected to occur around December 2015. Expenses are not contingent upon closing. Fees associated with execution of any financing subsequent to the first portion are not included in this contract, and must be negotiated and agreed to separately by the parties.



McCONNELL & JONES LLP
CERTIFIED PUBLIC ACCOUNTANTS

January 26, 2015

The President, Board of Directors
Coastal Water Authority
1801 Main Street, Suite 800
Houston, Texas 77002

We are pleased to confirm our understanding of the services we are to provide Coastal Water Authority (the "Authority") for the year ended December 31, 2014. We will audit the Statement of Net Position of the Authority as of December 31, 2014 and the Statements of Revenues, Expenses, and Changes in Fund Net Position and Cash Flows, including the related notes to the financial statements which collectively comprise the basic financial statements of the Authority as of and for the year then ended.

Accounting standards generally accepted in the United States of America (U.S. GAAP) provide for certain required supplementary information (RSI), such as management's discussion and analysis, to supplement the Authority's basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. As part of our engagement, we will apply certain limited procedures to the Authority's RSI in accordance with auditing standards generally accepted in the United States of America. These limited procedures will consist of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We will not express an opinion or provide any assurance on the RSI because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance. The following RSI is required by U.S. GAAP and will be subjected to certain limited procedures as described above in this paragraph, but will not be audited:

- 1) Management's Discussion and Analysis; and
- 2) Schedule of Funding Progress for Other Postemployment Benefit.

We have also been engaged to report on supplementary information other than RSI that accompanies the Authority's basic financial statements. We will subject the following supplementary information to the auditing procedures applied in our audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America and will provide an opinion on the following supplementary information in relation to the financial statements as a whole:

- 1) Schedule of Net Position by System; and
- 2) Schedule of Revenues, Expenses, and Changes in Net Position by System.

3040 Post Oak Blvd., Suite 1600
Houston, TX 77056
Phone: 713.968.1600
Fax: 713.968.1601

WWW.McCONNELLJONES.COM

The following other information accompanying the financial statements will not be subjected to the auditing procedures applied in our audit of the financial statements, and our auditor's report will not provide an opinion or any assurance on that information:

- 1) Schedule of Revenues, Expenses, and Changes in Net Position – Budgetary and Actual (Cash Basis) – All Systems.

AUDIT OBJECTIVE

The objective of our audit is the expression of an opinion as to whether your financial statements are fairly presented, in all material respects, in conformity with U.S. GAAP and to report on the fairness of the supplementary information referred to in the third paragraph when considered in relation to the financial statements as a whole. Our audit will be conducted in accordance with auditing standards generally accepted in the United States of America and will include tests of the accounting records and other procedures we consider necessary to enable us to express such an opinion. We will issue a written report upon completion of our audit of the Authority's financial statements. Our report will be addressed to the Board of Directors of the Authority. We cannot provide assurance that an unmodified opinion will be expressed. Circumstances may arise in which it is necessary for us to modify our opinion or add emphasis-of-matter or other-matter paragraphs. If circumstances occur related to the condition of your records, the availability of sufficient, appropriate audit evidence, or the existence of a significant risk of material misstatement of the financial statements, caused by error, fraudulent financial reporting, or misappropriation of assets, which in our professional judgment prevent us from completing the audit or forming an opinion on the financial statements, we retain the right to take any course of action permitted by professional standards, including declining to express an opinion or issue a report, or withdrawing from the engagement.

MANAGEMENT RESPONSIBILITIES

Management is responsible for the basic financial statements and all accompanying information as well as all representations contained therein. Management agree to assume all management responsibilities for any nonattest services we provide; oversee the services by designating an individual, preferably from senior management, with suitable skill, knowledge, or experience; evaluate the adequacy and results of the services; and accept responsibility for them.

Management is responsible for establishing and maintaining effective internal controls, including monitoring ongoing activities; for the selection and application of accounting principles; and for the fair presentation in the basic financial statements of the financial position of the Authority, changes in financial position, and cash flows, in conformity with accounting principles generally accepted in the United States of America.

Management is also responsible for making all financial records and related information available to us and for the accuracy and completeness of that information. Management is also responsible for providing us with access to all information of which management is aware that is relevant to the preparation and fair presentation of the financial statements, additional information that we may request for the purpose of the audit, and unrestricted access to persons within the Authority from whom we determine it necessary to obtain audit evidence.



Management's responsibilities include adjusting the basic financial statements to correct material misstatements and confirming to us in the representation letter that the effects of any uncorrected misstatements aggregated by us during the current engagement and pertaining to the latest period presented are immaterial, both individually and in the aggregate, to the basic financial statements taken as a whole.

Management is responsible for the design and implementation of programs and controls to prevent and detect fraud, and for informing us about all known or suspected fraud or illegal acts affecting the Authority involving management, employees who have significant roles in internal control, and others where the fraud or illegal acts could have a material effect on the financial statements. Management's responsibilities include informing us of their knowledge of any allegations of fraud or suspected fraud affecting the Authority received in communications from employees, former employees, regulators, or others. In addition, management is responsible for identifying and ensuring that the Authority complies with applicable laws and regulations.

Management is responsible for the preparation of the supplementary information in conformity with U.S. GAAP. Management agrees to include our report on the supplementary information in any document that contains and indicates that we have reported on the supplementary information. Management also agrees to include the audited financial statements with any presentation of the supplementary information that includes our report thereon. Management's responsibilities include acknowledging to us in the representation letter that management is responsible for presentation of the supplementary information in accordance with U.S. GAAP; that management believes that the supplementary information, including its form and content, is fairly presented in accordance with U.S. GAAP; that the methods of measurement or presentation have not changed from those used in the prior period (or, if they have changed, the reasons for such changes); and management has disclosed to us any significant assumptions or interpretations underlying the measurement or presentation of the supplementary information.

With regard to using the auditor's report, you understand that you must obtain our prior written consent to reproduce or use our report in bond offering official statements or other documents.

With regard to the electronic dissemination of audited financial statements, including financial statements published electronically on your website, you understand that electronic sites are a means to distribute information and, therefore, we are not required to read the information contained in these sites or to consider the consistency of other information in the electronic site with the original document.

AUDIT PROCEDURES – GENERAL

An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements; therefore, our audit will involve judgment about the number of transactions to be examined and the areas to be tested. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We will plan and perform the audit to obtain

reasonable rather than absolute assurance about whether the financial statements are free of material misstatement, whether from errors, fraudulent financial reporting, misappropriation of assets, or violations of laws or governmental regulations that are attributable to the Authority or to acts by management or employees acting on behalf of the Authority.

Because of the inherent limitations of an audit, combined with the inherent limitations of internal control, and because we will not perform a detailed examination of all transactions, there is a risk that material misstatements may exist and not be detected by us, even though the audit is properly planned and performed in accordance with generally accepted auditing standards in the United States of America. In addition, an audit is not designed to detect immaterial misstatements, or violations of laws or governmental regulations that do not have a direct and material effect on the financial statements. However, we will inform you and the appropriate level of management of any material errors or any fraudulent financial reporting or misappropriation of assets that come to our attention. We will also inform you and the appropriate level of management of any violations of laws or governmental regulations that come to our attention, unless clearly inconsequential. Our responsibility as auditors is limited to the period covered by our audit and does not extend to any later periods for which we are not engaged as auditors.

Our procedures will include tests of documentary evidence supporting the transactions recorded in the accounts, and may include direct confirmation of receivables and certain other assets and liabilities by correspondence with selected individuals, funding sources, creditors, and financial institutions. We will request written representations from your attorneys as part of the engagement, and they may bill you for responding to this inquiry. At the conclusion of our audit, we will require certain written representations from you about the basic financial statements and related matters.

AUDIT PROCEDURES – INTERNAL CONTROL

Our audit will include obtaining an understanding of the Authority and its environment, including internal control, sufficient to assess the risks of material misstatement of the basic financial statements and to design the nature, timing, and extent of further audit procedures. An audit is not designed to provide assurance on internal control or to identify deficiencies in internal control. However, during the audit, we will communicate to management and those charged with governance internal control related matters that are required to be communicated under AICPA professional standards.

AUDIT PROCEDURES – COMPLIANCE

As part of obtaining reasonable assurance about whether the basic financial statements are free of material misstatement, we will perform tests of the Authority's compliance with the provisions of applicable laws, regulations, contracts and agreements. However, the objective of our audit will not be to provide an opinion on overall compliance and we will not express such an opinion.

ENGAGEMENT ADMINISTRATION, FEES AND OTHER

We understand that your employees will prepare all cash, investments, accounts receivable, or other confirmations we request and will locate any documents selected by us for testing.

The audit documentation for this engagement is the property of McConnell and Jones LLP and constitutes confidential information. However, subject to applicable laws and regulations, audit documentation and appropriate individuals will be made available upon request and in timely manner to the Oversight Agency or its designee. We will notify you of any such request. If requested, access to such audit documentation will be provided under the supervision of McConnell and Jones LLP personnel. Furthermore, upon request, we may provide copies of selected audit documentation to the aforementioned parties or its designee. These parties may intend, or decide, to distribute the copies or information contained therein to other, including other governmental agencies.

Mr. Wayne McConnell, CPA is the engagement partner and is responsible for supervising the engagement and signing the report or authorizing another individual to sign it. The following are the other key personnel for this engagement:

- Contact person – Olaniyi Oyedele, CPA, Audit Manager,
- On-site lead auditor – Eric Wilson, Senior Auditor

We expect to begin the audit fieldwork on approximately February 16, 2015 and to complete the audit and issue our draft report no later than April 6, 2015. The following are the anticipated timelines for the presentation and delivery of our audit reports:

- First draft of the audit report - due by the last week of March 2015
- Final draft of the audit report - due by the first week of April 2015

We estimate that our fees for these services inclusive of out-of-pocket costs (such as report reproduction, word processing, postage, travel, copies) will be \$49,425.

Our above fee estimate assumes that the Authority's financial activity has not significantly changed from prior year. Our fee estimate is also based on anticipated cooperation from the Authority's designated personnel and the assumption that unexpected circumstances will not be encountered during the audit. Our audit fee estimates are based on hours required to complete the audit work if all client preparations are completed accurately and timely. If during our audit testwork, we encounter internal control or compliance exceptions that require investigations and/or if any of the exceptions results in audit findings, our time and audit fees will increase. Other circumstances may arise that can also expand the scope of the audit resulting in additional time and audit fees. Some these include:

- Significant change in the scope of the Authority's operations such as additional locations, acquisition of other operating entities, or initiation of capital campaign;
- Changes in accounting or auditing rules and regulations;
- Deterioration in the quality or condition of the accounting records;
- Changes in the design or deterioration in the operations of internal controls
- Identification of deficiencies in internal control, audit exceptions or findings
- Client preparation of audit schedules not completed once fieldwork commences or significant management-proposed audit adjustments once fieldwork commences;
- Management prepared audit schedules or account reconciliations require significant revisions during the audit;
- Significant audit adjustments to the financial statements as a result of audit procedures.

MJ

If management anticipates particular changes, we would be pleased to discuss their expected impact on our audit fees. There will no additional charges for consultation throughout the year that is directly related to our audit services. We expect to stay in contact during the year and believe that it facilitates our audit work at year-end when we are aware of the Authority's current activities and when management has considered accounting implications of new transactions as they occur. We look forward to hearing from management frequently.

Our audit fees will be billed monthly as the work progresses, and are payable on presentation. In accordance with our firm policies, work may be suspended if your account becomes 30 days or more overdue and may not be resumed until your account is paid in full. If we elect to terminate our services for nonpayment, our engagement will be deemed to have been completed upon written notification of termination, even if we have not completed our report. You will be obligated to compensate us for all time expended and to reimburse us for all out-of-pocket costs through the date of termination.

Management may request that we perform additional services not addressed in this engagement letter. If this occurs, we will communicate with you regarding the scope of the additional services and the estimated fees. We also may issue a separate engagement letter covering the additional services. In the absence of any other written communication from us documenting such additional services, our services will continue to be governed by the terms of this engagement letter.

We appreciate the opportunity to be of service to Coastal Water Authority and believe this letter accurately summarizes the significant terms of our engagement. If you have any questions, please let us know. If you agree with the terms of our engagement as described in this letter, please sign the enclosed copy and return it to us.

Very truly yours,



RESPONSE:

This letter correctly sets forth the understanding of Coastal Water Authority:

Officer signature:



Title:

PRESIDENT, BOARD OF DIRECTORS

Date:

FEBRUARY 11, 2015

**MASTER AGREEMENT
BETWEEN
TEXAS WATER DEVELOPMENT BOARD
AND
COASTAL WATER AUTHORITY**

**REGARDING STATE PARTICIPATION
IN THE LUCE BAYOU INTERBASIN TRANSFER PROJECT
PROJECT NO. 21606**

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**MASTER AGREEMENT
BETWEEN
TEXAS WATER DEVELOPMENT BOARD
AND
COASTAL WATER AUTHORITY**

WHEREAS, the Texas Water Development Board, (the "TWDB"), a Texas agency created pursuant to Article 3, Section 49-c of the Texas Constitution, is authorized under the authority of Texas Water Code §§ 16.131, 16.1311, 16.181, and 17.957, to acquire, sell, transfer, and lease an interest in water supply projects using the State Participation Account of the Texas Water Development Fund II in order to encourage the optimum regional development of reservoirs and facilities for the transmission of water; and

WHEREAS, Coastal Water Authority (the "Authority"), a conservation and reclamation District duly created pursuant to Article XVI, Section 59 of the Texas Constitution and lawfully operating under the Authority Act, is proposing to develop a new water transmission project known as the Luce Bayou Interbasin Transfer Project, Project No. 21606; and

WHEREAS, the Project will consist of the planning, design, acquisition and construction of a raw water conveyance system to transfer water from the Trinity River in Liberty County to tributaries of Lake Houston in the San Jacinto River Basin in northeastern Harris County; and

WHEREAS, the TWDB has determined that the amount of surface water to be transferred from the Trinity River Basin to the San Jacinto River Basin contemplated by the Project will not be needed to supply the reasonably foreseeable future water requirements for the Trinity River Basin during the next 50 years; and

WHEREAS, the Project is a recommended water management strategy in the 2012 State Water Plan and in the 2012 Region "H" Regional Water Plan; and

WHEREAS, in accordance with Texas Water Code § 16.133, the water to be transported by the Project will be water available to the City of Houston, Texas (the "City") under TCEQ Certificate of Adjudication 08-4261, as amended;

WHEREAS, at its meeting on January 31, 2013, the TWDB, through adoption of TWDB Resolution No. 13-19 (the "TWDB Resolution"), approved the Authority's application for the TWDB's participation in the Project in an amount up to \$28,754,000 from the State Participation Account of the Texas Water Development Fund II; and

WHEREAS, under 31 Texas Administrative Code § 363.1003, the Authority will finance at least 20% of the Project and the TWDB may finance up to 80% of the Project; and

WHEREAS, the Authority will purchase the TWDB's interest with the proceeds of a future bond issue, with other revenue, or with other lawful sources of funds in accordance with a Master Agreement to be executed by and between the Authority and the TWDB; and

WHEREAS, in the TWDB Resolution, the TWDB authorized the Executive Administrator to

negotiate and execute a Master Agreement setting forth the duties, responsibilities and liabilities of the TWDB and the Authority; and

WHEREAS, this Master Agreement has been negotiated pursuant to the authority delegated to the Executive Administrator in the TWDB Resolution and is approved in substantially this form by the TWDB under the TWDB Resolution, subject to final terms approved by the Executive Administrator and is hereby entered into and executed between the TWDB and the Authority to authorize the TWDB's acquisition of an ownership interest in the Project and the subsequent purchase of the TWDB's ownership interest in such Project by the Authority.

NOW, THEREFORE, in consideration of the mutual covenants and agreements set forth in this Agreement, and in contemplation of and in accordance with the applicable laws of the State of Texas, the Authority, acting by and through its undersigned representatives as duly authorized by a resolution of its Board of Directors, and the TWDB, acting herein by and through its undersigned representative, as duly authorized by the TWDB Resolution, enter into this Agreement and mutually agree as follows:

ARTICLE 1. DEFINITIONS AND CONSTRUCTION

§1.1 **DEFINITIONS.** Words and phrases as used in this Agreement shall have the following meanings:

- (1) "*Additional Obligations*" means additional debt or other obligations for which the Authority pledges a parity lien on the same Contract Revenues as pledged herein.
- (2) "*Agreement*" means this Master Agreement.
- (3) "*Application*" means the Authority's application to the TWDB for State Participation funds for TWDB Project No. 21606, together with all attachments and any amendments thereto.
- (4) "*Authority*" means the Coastal Water Authority or its successors or assigns which succeed it as to any rights, powers or duties under this Agreement.
- (5) "*Authority Act*" means Article 16, Section 59 of the Texas Constitution; and Chapter 601, Acts of the 60th Legislature of Texas, Regular Session, 1967, as amended.
- (6) "*Call Date*" means the date prior to which the Authority cannot purchase the TWDB's portion of the Project, as set forth in the Schedules.
- (7) "*City*" means the City of Houston, Texas.
- (8) "*Code*" means the Internal Revenue Code of 1986, as amended.
- (9) "*Construction Fund*" means a separate account created under § 2.2 of this Agreement and maintained at the depository bank of the Authority for the purpose of paying and accounting for Project Costs, and into which any funds may be transferred either directly from the TWDB or from the Escrow Account pursuant to approval by the Executive Administrator. Funds in the Construction Fund may be used only for Project Costs or for the Authority's purchase of the TWDB's interest in the Project.

- (10) "*Construction Stage*" means that stage of the Project that involves the physical construction of the Project, including raw water intake pump station, electrical service, transmission mains, sedimentation basins, open channel canal, maintenance facility, siphons, drainage works, access roads and canal crossings, related appurtenances, and related engineering and inspection fees.
- (11) "*Contract Revenue Bonds*" means all bonds, notes, or other obligations of the Authority whether now outstanding or hereafter issued, payable from and secured by a lien on and pledge of the Authority's Contract Revenues that are pledged to the payment of the Authority's Contract Revenue Bonds (Luce Bayou Project), Series 2009 and Contract Revenue Bonds (Luce Bayou Project), Series 2010, issued to the TWDB under its Water Infrastructure Fund ("WIF") loan program.
- (12) "*Contract Revenues*" means those "Pledged Revenues" as defined in the Projects Contract, which are pledged on a parity basis to the payment of the Authority's outstanding Contract Revenue Bonds, and which are pledged to the payment of the Authority's obligation to purchase the TWDB's interest in the Project, as provided in Section 3.2 herein. The definition of "Pledged Revenues" in the Projects Contract means "Net Revenues held in the General Purpose Fund." "Net Revenues" is defined in the City's Ordinance No. 2004-299 (the "Master Ordinance"), which is "(i) all Gross Revenues remaining after deducting Maintenance and Operation Expenses, plus (ii) any Restricted Receipts deposited to the Revenue Fund that may be used to pay Debt Service Requirements on Obligations." The General Purpose Fund is established and maintained under the Master Ordinance.
- (13) "*Cost of Acquisition*" means the amount of funds deposited into the Construction Fund and/or the Escrow Account by the TWDB for the acquisition of an undivided interest in the Project.
- (14) "*Date of Acquisition*" means each date that TWDB delivers funds to the Construction Fund and/or the Escrow Account for the acquisition of an undivided interest in the Project.
- (15) "*Design Stage*" means that stage of the Project that involves the design of the Project.
- (16) "*Escrow*" means the TWDB's transfer of funds to a third-party custodian until such funds are authorized for release to the Authority by the Executive Administrator.
- (17) "*Escrow Account*" means the account created under this Agreement for the TWDB's delivery of funds to be held in Escrow upon closing for the TWDB's acquisition of an undivided interest in the Project. Funds in the Escrow Account may be used only for Project Costs or for the Authority's purchase of the TWDB's interest in the Project.
- (18) "*Escrow Agent*" means the third party appointed to hold the escrow funds which have not been authorized for release to the Authority.
- (19) "*Event of Default*" means the non-performance or violation by the Authority of any obligation or provision in this Agreement if such non-performance or violation is not cured within 30 days after written notice by the TWDB to the Authority of the non-performance or violation.

- (20) "*Executive Administrator*" means the Executive Administrator of the TWDB.
- (21) "*Parity Lien on the Contract Revenues*" means a lien on the Contract Revenues on parity with the revenues pledged by the Authority to the payment of the Contract Revenue Bonds, such lien being the security interest pledged by the Authority to secure its obligations hereunder, including its obligation to purchase the TWDB's interest in the Project under the terms of this Agreement.
- (22) "*Project*" means the planning, design and construction of a raw water conveyance system to transfer water from the Trinity River in Liberty County to tributaries of Lake Houston in the San Jacinto River Basin in northeastern Harris County, as described in the Application. "*Project*" does not include any of the water rights owned by the City.
- (23) "*Project Costs*" means costs of the Project associated with its construction, bond issuance costs, and all other costs and expenditures which under standard principles of accounting would constitute a capital cost of the Project, including specifically but not limited to: the cost of engineering design, supervision and inspection; the cost of testing laboratories and other professional services associated with construction of the Project; abstractors' costs; the cost of constructing the Project infrastructure; the cost of acquiring all lands and interests in land for the Project, including all costs associated with the planning, design, and construction of the Project. The term "*Project Costs*" does not include any capitalized interest, reserve funds or operational expenses.
- (24) "*Projects Contract*" means that certain "*Projects Contract Between the City of Houston, Texas and Coastal Water Authority,*" as amended by the "*First Supplement to Project Contract Between City of Houston, Texas, and the Coastal Water Authority,*" in form and substance acceptable to the TWDB.
- (25) "*Schedule(s)*" means the payment schedule(s) attached hereto from time to time, which show the payments that the Authority is obligated to make in order to purchase the TWDB's interest in the Project. Each Schedule is associated with the funds delivered by TWDB upon each Date of Acquisition. Such Schedules shall, at a minimum, detail the interest rate to be paid by the Authority, the TWDB's source of funds, and the Call Date associated with the Authority's purchase obligation.
- (26) "*State*" means the State of Texas.
- (27) "*TAC*" means Texas Administrative Code.
- (28) "*TCEQ*" means the Texas Commission on Environmental Quality or any other board, commission or agency which succeeds it as to any rights, powers or duties under this Agreement.
- (29) "*TWDB*" means Texas Water Development Board or any other board, commission or agency which succeeds it as to any rights, powers or duties under this Agreement.

- (30) “*TWDB Cost of Acquisition*” means the total of the payments made by TWDB to the Authority for purchase of an undivided interest in the Project pursuant to this Agreement, less any purchases of TWDB's interest by the Authority.
- (31) “*TWDB Resolution*” means TWDB Resolution No. 13-19, adopted at the TWDB’s meeting of January 31, 2013.
- (32) “*TWDB Rules*” means the applicable rules and regulations of the TWDB set forth in 31 TAC Part 10.
- (33) “*Water Permit*” means the Water Use Permit No. 5826, and Certificate of Adjudication 08-4261, as amended, issued to the City of Houston by the TCEQ.

§1.2 TITLES AND HEADINGS. The titles and headings of the articles and sections of this Agreement have been inserted for convenience of reference only and are not to be considered a part hereof and shall not in any way modify or restrict any of the terms or provisions contained in this Agreement.

ARTICLE 2. STATE PARTICIPATION

§2.1 TWDB ACQUISITION OF OWNERSHIP. The TWDB will participate in this Project by acquiring an undivided interest in the Project as a whole, including all work performed and all properties and facilities acquired or constructed as part of the Project, for the Cost of Acquisition, pursuant to the TWDB Resolution and this Agreement. The TWDB's undivided ownership interest in the Project will cost no more than \$28,754,000, to be allocated for the costs of the Design Stage and the Construction Stage in any manner determined to be acceptable by the Executive Administrator, in accordance with the provisions of this Agreement. The TWDB may consider providing additional funds if requested by the Authority in writing, and if additional funds are provided by the TWDB under the State Participation Program, then the TWDB and the Authority will amend this Master Agreement to evidence the increased Cost of Acquisition, the change in percentage of ownership, and to provide additional Schedules to reflect the Authority’s obligation to purchase the TWDB increased ownership interest.

§2.2 ESCROW ACCOUNT AND CONSTRUCTION FUND. Prior to the delivery of TWDB funds, the Authority will create (1) a Construction Fund, to be held by the Authority, and (2) an Escrow Account under an escrow agreement approved by the Executive Administrator, to be held by the Escrow Agent. Funds in the Escrow Account and Construction Fund, including interest and investment earnings, are to be used only for Project Costs or for the Authority’s purchase of the TWDB’s interest in the Project. Funds in the Escrow Account may be released by the Escrow Agent only upon direction by the Executive Administrator or his or her designee.

The funds to be placed in the Construction Fund and the Escrow Account are public funds and, as such, these funds shall be held at a designated state depository institution or other properly chartered and authorized institution and managed in accordance with the Public Funds Investment Act, Chapter 2256, Government Code (the “PFIA”), and the Public Funds Collateral Act, Chapter 2257, Government Code (the “PFCA”).

§2.3 DELIVERY OF TWDB FUNDS. Subject to the availability of funds and satisfactory documentation that the Authority has met all prerequisites for the delivery of TWDB funds under this Agreement, Texas Water Code, Chapter 16, Subchapters E and F, the TWDB's rules, and the TWDB Resolution authorizing TWDB participation in the Project, the TWDB shall provide funds in an amount not to exceed \$28,754,000. The Executive Administrator shall determine the amounts to be delivered to the Construction Fund and/or the Escrow Account as appropriate. The Executive Administrator, or his or her designee, shall authorize release of funds from the Escrow Account to the Construction Fund for the Design Stage and Construction Stage, as provided below, after the Authority has provided information, satisfactory to the Executive Administrator, that the funds are needed for eligible Project Costs. Upon each Date of Acquisition, Schedules shall be dated and signed by the Executive Administrator and by a duly authorized representative of the Authority to indicate agreement, and such agreed Schedules shall be appended to and incorporated into this Agreement.

- A. **DESIGN STAGE:** After completion of all prerequisites for the release of funds for work to be performed for the Design Stage satisfactory to the Executive Administrator, including, but not limited to those in 31 TAC Chapter 363, the Executive Administrator shall either deliver to the Construction Fund or authorize the release of funds from the Escrow Account to the Construction Fund for the costs associated with the Design Stage. Prior to the initial delivery of funds to the Construction Fund for the Design Stage, the Executive Administrator must make a favorable environmental determination relating to the Project.

- B. **CONSTRUCTION STAGE:** After the Design Stage releases have been completed, and after completion of all prerequisites to the release of funds for construction activities, including, but not limited to those in 31 TAC Chapter 363, the Executive Administrator shall either deliver to the Construction Fund or authorize the release from the Escrow Account to the Construction Fund of an amount up to the remainder of funds available under this Agreement for the costs associated with the Construction Stage. Prior to the initial delivery of funds to the Construction Fund for the Construction Stage, the Executive Administrator must make a favorable environmental determination relating to the Project.

§2.4 VESTING AND NATURE OF TWDB OWNERSHIP. Upon delivery of funds in any amount by the TWDB into the Construction Fund and/or the Escrow Account, there will be vested in the TWDB an undivided ownership interest in the Project along with the right to its use, as well as an undivided ownership right in all applicable operating permits with respect to the Project. The percentage of the TWDB's undivided ownership interest in the Project is initially set at 35% and shall remain at 35% until additional funding is provided under § 2.1 and this Master Agreement is amended or supplemented; or until all Stages of the Project are complete and a final accounting is performed under § 2.5 of this Agreement; or upon a determination by the TWDB that the Project will not be completed, and a final accounting is performed under § 2.5 of this Agreement.

It is expressly understood that the TWDB is purchasing an undivided interest, to the extent permitted by law, in the entire Project, including real estate purchased for site acquisition, facilities constructed for the Project infrastructure, and all related appurtenances and any structures of the Project. TWDB's ownership interest in the Project does not provide the TWDB with any ownership right in the City's Water Permit. The TWDB's undivided interest in the Project shall include, but not be limited to, the

right to operate the Project to the extent of the TWDB's undivided interest, subject to the Authority's preferential right to purchase the TWDB's interest under § 3.8 of this Agreement. The Authority, upon request of the TWDB, will execute and record any conveyances and assignments which may be necessary to place title of the Project in the TWDB, with the exception that the Authority shall hold title to any land and facilities that are part of the Project in trust for the TWDB to the extent of the TWDB's interest in the Project. Upon written request of the TWDB, the Authority shall execute and record documents necessary to convey or assign title to the Project land and facilities to the extent of the TWDB's ownership interest in the Project. The Authority acknowledges that the TWDB's interest shall constitute an ownership interest regardless of whether the TWDB ever requires execution of any conveyance documents to evidence such interest.

§2.5 CALCULATION OF TWDB OWNERSHIP INTEREST. The Authority shall provide TWDB a final accounting of all Project Costs within six (6) months of completion of all Stages of the Project and the issuance of a certificate of approval under 31 TAC § 363.55, or upon a determination by the TWDB that the Project will not be completed. Upon the TWDB's approval of the final accounting, the TWDB's total undivided ownership interest in the Project shall be calculated by dividing the TWDB Cost of Acquisition by the Project Costs incurred on the Project to that point in time. If, at the time that the TWDB approves the final accounting, the calculation of the TWDB's ownership interest exceeds 80%, the Authority shall, within 30 days after the TWDB's approval of the final accounting, take all actions necessary to remit to the TWDB the amount necessary to reduce the TWDB's ownership interest to 80%. The TWDB shall have the right to determine the schedule and method by which the funds are remitted to the TWDB. Upon remittance, any Schedule and any lease payment schedule calculated pursuant to the terms of this Agreement shall be amended to reflect the remitted amount.

Upon the TWDB's approval of the final accounting and any actions taken to adjust the parties' ownership interest, the TWDB shall then own that percentage interest in the Project, not to exceed 80%, and the Authority shall own the remainder, not less than 20%. Such ownership interests shall be documented in writing in Attachment C as agreed by both parties and made part of this Agreement for all purposes. The parties agree that, once completed, the Project will have a weighted average capacity of 396,350 acre-feet per year (354 MGD), based on the capacity of each component of the Project. Each party's ownership interest in the Project shall be reflected in Attachment C in acre-feet per year based on a percentage of the weighted average capacity.

The use of each party's ownership in the Project shall be determined annually thereafter, based on the amount of water transported by the Project, in accordance with § 3.6 of this Agreement.

§2.6 TAX-EXEMPT ASSURANCES.

- A. The TWDB has identified the source of funds for its share of the cost of the Project as the proceeds of tax-exempt obligations issued by the TWDB. As required by the TWDB Resolution, the Authority has provided a bond counsel opinion that is satisfactory and acceptable to the Executive Administrator as to any adverse effect of the Project, or the use thereof and the Authority's payments under this Agreement (**Attachment A**) on the excludability of interest on obligations issued by the TWDB to fund their undivided interest in the Project from gross income of the owners of such obligations for federal income tax purposes. The Authority agrees to take such actions, including the execution and delivery of such certificates and agreements, as are necessary to assure, or to refrain from such actions as would materially adversely affect such excludability from gross

income, including, but not limited to: (1) the filing of a Form 8038-G in connection with the execution of this Agreement by the Authority in connection with the financing of the Authority's interest in the Project; and (2) the adoption of written procedures relating to arbitrage compliance, private business use and record retention.

- B. At each Date of Acquisition, the Authority must submit a bond counsel opinion that is satisfactory and acceptable to the Executive Administrator as to any adverse impact of the Project, or the use thereof, and the Authority's payments under this Agreement on the tax-exempt status of TWDB bonds.
- C. To the extent that the TWDB and the Authority use proceeds from tax-exempt obligations to finance all or a portion of their respective interests in the Project, the TWDB and the Authority hereby agree that the proceeds of their respective tax-exempt obligations will not be used in a manner that will cause the obligations to be "private activity bonds" or arbitrage bonds." In furtherance thereof, the Authority agrees to make timely payments of arbitrage rebate to the United States required to be made by section 148 of the Code.

ARTICLE 3. AUTHORITY'S PURCHASE OBLIGATION

§3.1 PURCHASE BY AUTHORITY. The Authority will purchase the TWDB's ownership interest in the Project at the earliest possible date, which date shall be not later than the date(s) established by the Schedule(s), so that the State may fully recover its investment therein.

§3.2 PLEDGE BY AUTHORITY.

- A. In order to secure its obligations hereunder, including the ultimate purchase by the Authority of 100% of the TWDB's ownership interest in the Project, under the authority of the Authority Act, Texas Water Code § 49.108, and other applicable law, the Authority pledges and grants to the TWDB as security for the payments hereunder, a Parity Lien on the Contract Revenues in such amounts as may be necessary, when and as required by this Agreement, and the Schedules incorporated herein, to purchase the TWDB's ownership interest in the Project.
- B. The Authority agrees that it shall be unconditionally obligated to purchase 100% of the TWDB's interest in the Project with the Contract Revenues regardless of whether the Authority actually acquires or completes the Project, or whether the Authority actually approves, purchases, receives, accepts, or uses the Project; and such purchase shall not be subject to any abatement, set-off, recoupment, or counterclaim. The TWDB shall be entitled to rely on this Agreement and representation, notwithstanding any provision of this Agreement or any other contract or agreement to the contrary, and regardless of the validity of, or the performance of, the remainder of this Agreement or any other contract or agreement.
- C. The obligations of the Authority under this Agreement shall be a special limited obligation of the Authority, payable from the sources described herein, and shall be enforceable as provided under this Agreement.

D. The Authority may not pledge to the payment of Additional Obligations a lien on the Contract Revenues superior to the lien on and pledge of the Contract Revenues securing the obligations of the Authority under this Agreement. The Contract Revenues from the Authority shall not be pledged to the payment of any Additional Obligations of the Authority on parity with the pledge under this Agreement unless:

- (1) the Authority demonstrates to the Executive Administrator's satisfaction that the Contract Revenues will be sufficient for the payment of all Contract Revenue Bonds, the Authority's obligation to purchase the TWDB's interest in the Project, and the Additional Obligations, and
- (2) the Authority delivers to the Executive Administrator an executed certificate that Contract Revenues will be sufficient for the purpose described in clause (1) of this Section.

The governing body of the Authority may not take action to authorize or approve the issuance of Additional Obligations unless it has delivered the certificate described in clause (2) of this Section and received written notification from the Executive Administrator that the Authority has satisfactorily made the demonstration described in clause (1) of this section.

E. The Authority shall submit annual audits of contracting parties for the Executive Administrator's review.

F. The Projects Contract is approved, executed, and in effect. The Authority must maintain and enforce the Projects Contract so that revenues paid to the Authority by the City are sufficient to meet the revenue requirements of the Authority's obligation to purchase the TWDB's interest in the Project that are being supported by the pledged Contract Revenues and, prior to beginning operations and maintenance of the Project, must enter into additional contractual obligations with the City, in form and substance acceptable to the TWDB, so that payments from the City are sufficient to pay all of the Authority's revenue obligations arising from the operation and maintenance of the Project. The TWDB reserves the right to compel compliance of this obligation by mandamus or any other appropriate means including those under Texas Water Code § 6.114.

§3.3 PRICE OF SALE TO AUTHORITY. The TWDB agrees to sell its ownership interest to the Authority at the following price, as established by Texas Water Code § 16.186(b), to-wit: the sum of the TWDB Cost of Acquisition plus an amount of interest calculated by multiplying the lending rate in effect at the Date of Acquisition (and identified on the Schedules) by the amount of the TWDB money disbursed for the acquisition times the number of years and fraction of a year from the date or dates of purchase or acquisition to the date or dates of the sale or transfer of any portion of the TWDB's ownership interest in the Project to the Authority, plus the TWDB's cost, if any, of operating and maintaining the Project from the Date of Acquisition to the date of such purchase by the Authority, less any payments received by the TWDB from the lease of the Project or sale of capacity therefrom.

Pursuant to Texas Water Code § 16.186(c), the Authority shall assume, to the extent disclosed by the TWDB at or prior to the sale, any and all direct, conditional, or contingent liabilities of the TWDB

attributed to the Project in direct relation to the percentage of the Project acquired.

For purposes of this section, the dates of sale to the Authority shall be the dates on which the Authority provides payment to the TWDB to acquire part or all of the TWDB's ownership interest in the Project. After all principal and accrued interest under the Schedules have been paid, the Authority's scheduled payments of principal under the Schedules or the Authority's partial purchases of the TWDB's ownership interest made pursuant to § 3.4 or § 3.5 of this Agreement shall constitute the purchase of a proportion of the TWDB's ownership interest, such proportion to be calculated by dividing such principal payment by the TWDB Cost of Acquisition, provided the Authority also pays the same proportion of the TWDB's cost of operating and maintaining the Project to the date of each purchase.

The lending rate in effect at each Date of Acquisition shall be based upon the TWDB's methodology, established by rule, for computing such rates. Interest will accrue on outstanding principal based upon simple interest rate calculation on a basis of a 360-day year consisting of twelve (12) 30-day months.

§3.4 SCHEDULE OF AUTHORITY PAYMENTS. The Authority agrees to purchase the TWDB's ownership interest in the Project beginning with the first scheduled principal payment and in accordance with all subsequent scheduled principal payments on the Schedules attached to this Agreement as **Attachment B** and any revisions made thereto pursuant to this Agreement. The Authority shall wire all payments to the TWDB in accordance with the Schedules, without the need for an invoice and at no cost to the TWDB, to the following:

TEXAS COMPT - AUSTIN
ABA# 114900164
BNF = ACCT#463-6005-80
ATTN: TWDB - JOHNNY GREENWOOD (512) 463-6251

The Authority also agrees to make scheduled interest payments prior to the first scheduled principal payments as provided on the Schedules, and any revisions thereto pursuant this Agreement.

In exchange for having a preferential right to purchase the TWDB's ownership interest in the Project, the Authority agrees to pay all deferred interest and accrued interest attributed to the Project prior to the Authority's purchase of any ownership interest.

§3.5 EARLY PURCHASE BY AUTHORITY. The Authority shall have the right, the Schedules notwithstanding, to make an early purchase of all or a portion of the TWDB's ownership interest reflected in the Schedules on or after the Call Date specified in each Schedule by making principal payments in excess of the scheduled principal payments in the Schedules. Such early purchases may be made no more than once a year, unless otherwise allowed by the Executive Administrator. Early purchases under this section by the Authority must be made in minimum increments of \$1,000 principal amounts under any Schedule. Any partial early purchase will be applied in inverse order to the Schedules.

§3.6 LEASE OR PURCHASE UPON AUTHORITY'S USE OF TWDB OWNERSHIP.

- A. **DETERMINATION OF AUTHORITY'S USE OF TWDB OWNERSHIP.** The Authority shall report to the TWDB by March 1 of each year the Authority's actual use of

the Project's capacity for each calendar year, beginning upon the TWDB's approval of the final accounting under § 2.5 herein, in the format included herein as **Attachment C**. This report shall be submitted to:

Texas Water Development Board
Attn: Financial Monitoring
P.O. Box 13231
Austin, Texas 78711-3231

The Authority shall be considered to be using a portion of the TWDB's ownership interest in the Project when the Authority's transportation of water by the Project exceeds the TWDB's interest shown on Attachment C in acre-feet per year, as required under § 2.5 of this Agreement.

The Authority's transportation of water shall be metered by the Authority at locations acceptable to the Executive Administrator as may be necessary to accurately determine water transported by the Project. The water meters and water meter readings shall be accessible to the TWDB at all times, without notice. A minimum number of water meter readings will be made by the Authority as mutually agreed to by TWDB and the Authority. It shall be the responsibility of the Authority to ensure that such meters are installed prior to transportation of water by the Project and to monitor the accuracy of the meters at a minimum on an annual basis. If at any time the accuracy of the metering equipment is more than two percent (2%) in error, the Authority will, as soon as possible, correct the inaccuracy. Adjustments in the quantity of water measured during the period when the meters were not accurately measuring the quantity of water transported shall be the shorter of six months or the actual period of inaccuracy, if such period can be determined, or reasonably estimated by the authorized representatives of the Authority and the TWDB.

- B. METHOD OF AUTHORITY'S LEASE OR PURCHASE OF TWDB INTEREST.** In the event the Authority begins using any portion of the TWDB's ownership interest in the Project, either prior to or after any Call Date, the Authority will, at the TWDB's option, either: (1) lease from the TWDB that portion of the TWDB's ownership interest that the Authority is using; (2) upon written approval of the TWDB, issue revenue bonds to the TWDB as consideration to purchase that portion of the TWDB's ownership interest that the Authority is using; or (3) purchase the TWDB's ownership interest with money. The sales price of any of the TWDB's ownership interest under this Section shall be determined in accordance with § 3.3 of this Agreement.
- C. PROVISIONS RELATING TO PURCHASE USING REVENUE BONDS AS CONSIDERATION.** If the Authority issues revenue bonds to the TWDB as consideration to purchase all or a part of the TWDB's ownership interest in the Project, the principal amount of the revenue bonds shall be equal to the price for purchasing all or a portion of such ownership interest. The revenue bonds must be non-callable prior to the Call Dates of the Schedules. The interest rates on revenue bonds used by the Authority as consideration for an early purchase of the TWDB's ownership interest will be identical to the lending rates associated with rates on purchase of bonds for water supply projects, as

prescribed by Texas Water Code § 17.176. Terms and maturities of such revenue bonds will be subject to TWDB approval at the time of purchase. The revenue bonds may, at the TWDB's option, either be on parity with, or subordinate to, the outstanding Contract Revenue Bonds.

- D. **LEASE PAYMENTS.** If the Authority leases all or a portion of the TWDB's ownership interest in the Project, the lease payments will be the proportionate share that the percentage of the Authority's use of the TWDB's ownership interest bears to a lease payment schedule to be determined in accordance with the applicable provisions of Texas Water Code § 16.189 and Article 3 of this Agreement, or the payment amount in the Schedules, whichever is greater. As required by Texas Water Code § 16.189, such lease payment under this Agreement must be calculated to ensure that any such lease payments shall not be less than the proportionate share that the percentage of use bears to the annual principal and interest requirements attributable to the debt incurred by the State of Texas in acquiring its share of the Project, as determined by the TWDB. Lease payments shall be due and payable on each May 15 immediately following the Authority's calculation in which the Authority has used a portion of the TWDB's ownership interest. It is anticipated and agreed that any lease payments would be made with Contract Revenues.

§3.7 PROJECT SITE REVENUES. In exchange for the Authority's agreement to assume operation and maintenance costs of the Project, revenues derived from leases or other agreements related to the Project lands may be applied to pay costs of operation and maintenance for the Project and/or insuring the TWDB's interest pursuant to § 5.3 of this Agreement, to the extent permitted by law. Any revenues not annually used for such purposes will be deposited into an account of the Authority and applied to pay the costs of operation and maintenance for the Project, insurance costs for the Project, including insuring the TWDB's interest, or utilized as contingency funds for operation and maintenance of the Project. Such revenues will be accounted for in the Authority's annual comprehensive audits and budgets and provided to the TWDB when such comprehensive audits and budgets are provided pursuant to this Agreement.

§3.8 PREFERENTIAL RIGHT TO LEASE AND PURCHASE. Pursuant to this Agreement, the Authority has a right of first refusal and preferential right to lease the TWDB's undivided ownership interest in the Project, and, subject to the requirements of Texas Water Code § 16.196, the TWDB may not lease its interest in the Project without the Authority's consent, which shall not be unreasonably withheld. Upon an Event of Default, however, the Authority shall lose its preferential right to lease the TWDB's interest in the Project, and the TWDB may lease its interest in the Project without the Authority's consent.

The Authority has a right of first refusal prior to any sale of the board's interest in the project and the TWDB may not sell or transfer its interest in the Project to any other party besides the Authority without the Authority's consent, which shall not be unreasonably withheld. Upon an Event of Default by the Authority, however, the TWDB may sell or transfer its interest in the Project without the Authority's consent, subject to the requirements of Texas Water Code § 16.196.

The sale, transfer, or lease of the TWDB's interest in the Project to any entity other than the Authority would be subject to the requirement that the TWDB obtain the approval of the Attorney General as to

the legality of any contract for such sale, transfer, or lease, under Texas Water Code § 16.181.

§3.9 PURCHASE AND LEASE SCHEDULES.

- A. **PURCHASES - SCHEDULES.** The Authority obligates itself and agrees to purchase the TWDB's ownership interest in the Project as outlined in the attached Schedules, which are incorporated herein for all purposes. Prior to each Date of Acquisition, the Authority shall deliver a Schedule for the Authority's purchase of the TWDB's ownership interest in the Project that will be acquired by the TWDB at such Date of Acquisition. This new Schedule will be appropriately labeled and appended to this Agreement. All Schedules submitted by the Authority for the purchase of the TWDB's ownership interest in the Project are subject to the written approval of the TWDB. In addition, at each purchase of the TWDB's ownership interest by the Authority pursuant to § 3.5 or § 3.6 of this Agreement, the schedule of payments in the Schedules shall be amended to reflect the reduction in the TWDB's ownership interest in the Project.

- B. **LEASES.** The schedule for the Authority's lease payments for the use of the TWDB's ownership interest in the Project will be calculated in accordance with Texas Water Code § 16.189 and the terms of this Agreement. The TWDB and the Authority agree that upon each lease of the TWDB's ownership interest by the Authority pursuant to § 3.6 of this Agreement, and prior to each payment date in the Schedules, the schedule of payments established in the Schedules will be amended to credit each lease payment by the Authority as follows: first to deferred interest, then to current interest and then to principal.

- C. **REVISIONS TO SCHEDULES.** Revisions to Schedules and lease payment schedules, calculated in accordance with Texas Water Code § 16.189 and this Agreement, shall be dated and signed by the Executive Administrator and by a duly authorized representative of the Authority to indicate agreement to the revisions prior to being appended to and incorporated into this Agreement.

ARTICLE 4. PROCEDURES DURING PROJECT CONSTRUCTION

§4.1 PROJECT SCHEDULE. The Authority shall proceed with all studies and planning in an expeditious manner, and provide for acquisition, design, construction and operation of the Project on a reasonable schedule.

§4.2 AUTHORITY RESPONSIBILITIES. The Authority shall perform the duties and functions required of it and governing its operations, including such provisions of law as may relate to bidding, awarding of contracts, acquisition of land and improvements and shall provide such personnel as may be necessary to secure and protect the property and facilities as acquired and constructed in connection with the Project.

§4.3 SUPERVISION OF CONSTRUCTION. During the construction of the Project, the Authority shall provide for adequate supervision of the Project to assure that all work covered by this Agreement is performed in a satisfactory manner in accordance with final plans and specifications and approved change orders and in accordance with sound engineering principles and practices.

§4.4 TWDB INSPECTION. The TWDB or its authorized agent shall have the right to inspect construction of the Project at any time to assure compliance with the final plans and specifications. The inspections shall not subject the TWDB or the State to any claims or actions for damages.

§4.5 REPORTS TO BE PROVIDED. Upon the delivery of any funds by the TWDB, the Authority shall prepare and file with the TWDB quarterly reports on the status of the Project, including the Design and Construction Stages. Reports shall be provided to:

Texas Water Development Board
Attn: Construction Assistance
P.O. Box 13231
Austin Texas 78711-3231

ARTICLE 5. OPERATION AND MAINTENANCE

§5.1 OPERATION AND MAINTENANCE. It is understood and agreed by the parties to this Agreement that the Authority will be responsible for the operation and maintenance of the Project and no requirement shall be made of the TWDB to share in this responsibility or in the cost. The Authority shall take whatever measures are reasonable and prudent to insure that the Project is operated safely, efficiently and in accordance with the laws creating and governing it and the general laws of the State. The Authority binds itself to take such action as may be necessary to insure that the Project is adequately maintained and protected, and shall keep in good and operable state of repair the physical properties comprising the Project.

§5.2 INDEMNIFICATION.

- A. **GENERAL INDEMNIFICATION.** To the extent permitted by law, the Authority shall indemnify and hold the TWDB and the State harmless, from any and all losses, damages, liability, or claims therefore, on account of personal injury, death, or property damage of any nature whatsoever caused by the Authority, arising out of the activities and work conducted pursuant to this Agreement. The Authority is solely responsible for liability arising out of its acts or omissions during the performance of this Agreement. In the event insurance coverage may be inadequate to completely indemnify and hold the TWDB harmless and free of all costs or liability for any and all claims for injuries to persons or property, or otherwise resulting from ownership or operation of the Project, then the Authority shall utilize any and all other funds and resources lawfully available as may be required to indemnify and hold the TWDB and the State harmless and free of all costs or liability for any and all such claims.
- B. **ENVIRONMENTAL INDEMNIFICATION.** Proceeds of the TWDB's funds delivered for the TWDB's Cost of Acquisition shall not be used by the Authority to sample, test, remove or dispose of contaminated soils and/or media that may be present at or around the Project site or any sites upon which related facilities are located; nor shall such proceeds be used, either directly or indirectly, to acquire property or to remediate property(s) that contains known, hazardous wastes and hazardous substances. To the extent permitted by law, the Authority agrees to indemnify, hold harmless and protect the TWDB from any and all claims, causes of action or damages, however and whenever

arising, to the person or property of third parties caused either directly or indirectly by the sampling, analysis, transport, storage, treatment, recycling and disposal of any contaminated soil, surface water, groundwater and contaminated media that may be generated or encountered by the Authority, its contractors, consultants, agents, officials and employees as a result of design and construction activities undertaken by the Authority or its contractors, consultants, agents, officials and employees to complete this Project.

§5.3 INSURANCE. For so long as the TWDB maintains an ownership interest in the Project, the Authority agrees to maintain insurance in the type and amount that, in the judgment of the Authority and consistent with the standard practices of the Authority and in the industry, is necessary to protect the Authority, the TWDB, and employees and officials of the TWDB from liability arising out of this Agreement and the Project, including but not limited to worker's compensation, property damage, general liability and automobile liability, naming the TWDB as an additional insured, to the extent required to fulfill the requirements of this provision. Typically the Authority maintains single limit coverage limits of \$1,000,000 with excess liability coverage of \$4,000,000. These coverage limits are reviewed by the Authority from time to time and may be adjusted as necessary. The Authority will require all consultants and contractors involved with the project to maintain liability, automobile and workers compensation coverage in amounts necessary to protect the Authority and the TWDB and naming the Authority and TWDB as additional insured. The Authority must provide copies of all insurance policies relating to the TWDB and the State to the TWDB, and such insurance shall be effective at the time the TWDB acquires an ownership interest in the Project. Although the Authority does not currently intend to satisfy these insurance requirements through self-insurance, it may seek to self-insure in the future provided that (a) prior notification is forwarded to the Executive Administrator for approval along with copies of all pertinent insurance-related documentation, and (b) the Executive Administrator issues written approval allowing the Authority to self-insure.

§5.4 BUDGETS, AUDITS AND REPORTS. The Authority shall keep and maintain complete records, accounts and financial statements pertaining to the operation of the Project in accordance with generally accepted accounting principles as adopted by the American Institute of Certified Public Accountants. The Authority shall provide the TWDB with the reports required in this Section and any other report as the TWDB shall from time to time reasonably require. The Authority shall provide the TWDB with a copy of its annual budgets. The annual budget shall reflect Project revenues, maintenance and operation expenses and capital outlays anticipated for the next ensuing year. The Authority agrees to deliver copies of all minutes, monthly operating statements, contracts, leases, deeds, and other documents concerning the Project upon request of the TWDB. The Authority will submit comprehensive annual audits for each fiscal year to the TWDB within 30 days of the completion of such audits. The audits for each fiscal year must be prepared according to the generally accepted auditing standards adopted by the American Institute of Certified Public Accountants within one hundred and eighty (180) days from the end of the Authority's fiscal year. These reports shall be provided to:

Texas Water Development Board
Attn: Financial Monitoring
P.O. Box 13231
Austin, Texas 78711-3231

§5.5 RECORDS RETENTION. Unless otherwise directed by the TWDB, the Authority shall retain all records relating to the provision of services herein for a period of six (6) years following the termination of this Agreement. At the direction of the TWDB, the Authority shall allow representatives or designees of the State Auditor, Attorney General or TWDB to review and/or audit said records at all reasonable times. At the direction of the TWDB, after the expiration of the records retention period, the Authority shall return all files and records to the Agency. The Authority may destroy all records in whatever media that are not returned at the expiration of the record retention period.

§5.6 TWDB OPERATION AND MAINTENANCE. If the Authority fails at any time to operate and maintain the Project as provided in this Article, or in any manner fail to comply with any provisions of this Agreement, the TWDB, in addition to any other legal remedies it may seek, may take over, operate, and maintain the Project, or cause such to be done for the benefit of the TWDB. The TWDB shall give at least sixty (60) days written notice to the Authority of its intent to take over and operate and maintain the Project so as to provide the Authority with the opportunity to remedy the problem(s) identified by the TWDB. The Authority shall remain liable for any expenditures made by the TWDB with respect to notice, remedies, operation and maintenance of the Project.

ARTICLE 6. SALE AND LEASE OF PROPERTY BY AUTHORITY

§6.1 DISPOSAL AND ENCUMBRANCE OF PROJECT. During the time that the TWDB owns an undivided interest in the Project, the Authority will not sell, lease, or otherwise dispose of or encumber any part of the Project, except as provided herein.

§6.2 LEASE OF AUTHORITY PROPERTY. Subject to the provisions of § 6.3 of this Agreement, the Authority may lease any of the property that is part of the Project for any purpose, if such lease or the use of such property will not be detrimental to the operation and maintenance of the Project, as determined by the Authority. No lease shall be made which will result in any damage to or substantial diminution of the value of any of the property that is part of Project, or which will in any manner interfere with the Project or divert, endanger or contaminate water that is to be produced or transported by operation of the Project.

§6.3 TWDB APPROVAL OF SALES AND LEASES. Except for short term leases of less than two (2) years, any lease or sale by the Authority of real property in which the TWDB has an interest under this Agreement shall require prior written approval of the TWDB. Nothing contained in this Agreement shall be regarded or construed as creating a lien or encumbrance against the title to lands now or hereafter vested in the Authority insofar as the rights of third parties may be concerned. The Authority, however, hereby covenants not to sell or otherwise relinquish full right to the use of any lands and facilities acquired and necessary for the construction and operation of the Project for as long as the TWDB has an ownership interest in the Project.

§6.4 SALE OF CERTAIN ITEMS. The Authority may from time to time sell any machinery, fixtures, apparatus, tools, instruments, or other movable property and any materials used in connection with the Project if the Authority determines that such articles are no longer needed or are no longer useful in connection with the operation and maintenance of the Project. If the costs of such items were included as Project Costs, then the value received from the sale shall be deducted from total Project Costs.

§6.5 COMPLIANCE WITH TAX CODE. It is the Authority's responsibility to ensure that any sale, lease, or other disposition of Project-related assets and articles complies with the Code and applicable IRS regulations.

ARTICLE 7. EFFECTIVE DATE AND TERM OF AGREEMENT

§7.1 EFFECTIVE DATE. This Agreement shall become effective upon execution by all of the Parties and approval by the State Attorney General as to legality.

§7.2 TERM. This Agreement shall continue in full force and effect until the Authority has satisfied all of its obligations hereunder and all of the TWDB's undivided ownership interest in the Project has been purchased by the Authority.

ARTICLE 8. FURTHER COVENANTS

§8.1 NOTICES. For purposes of providing notifications to the TWDB in accordance with the notification and reporting requirements set forth in this Agreement, the following points of contact are hereby established:

Executive Director
Coastal Water Authority
Suite 800, 1801 Main Street
Houston, Texas 77002
Phone: 713-658-1915
FAX: 713-658-9429
Email: dripley@coastalwaterauthority.org

Executive Administrator
Texas Water Development Board
1700 North Congress Avenue
Austin, Texas 78701

It is the Authority's burden and responsibility to provide written notification to the Executive Administrator of any material change to the Authority's point of contact.

§8.2 PROJECT EXPANSION. The Authority will submit to TWDB for approval any plan for future expansion of the Project that will commence before the Authority has purchased all of the TWDB's interest in the Project. The TWDB will not unreasonably withhold approval of said plan submitted by the Authority.

§8.3 TITLE COVENANTS. Unless purchased through eminent domain proceedings, the Authority covenants that it will obtain title insurance to the land to be purchased for the Project. The Authority warrants, by executing this Agreement, that any and all title objections referenced by any title insurance commitment policy entered into that may impair the Project will be cured to the reasonable satisfaction of the Executive Administrator. Additionally, if required by the TWDB, the Authority agrees to provide a mortgagee's policy of title insurance for the benefit of the TWDB in the event that the TWDB requires the execution of documents evidencing the TWDB's ownership interest in the Project.

§8.4 PLEDGE COVENANTS. The Authority hereby covenants that it has the lawful power to pledge its Contract Revenues to the TWDB, on a parity lien basis, to the payment of its obligations pursuant to this Agreement in the manner herein contemplated and has lawfully exercised such power under the Authority Act, Texas Water Code § 49.108, and other applicable laws.

ARTICLE 9. LAWS GOVERNING THE AGREEMENT; REMEDIES

§9.1 RULES AND APPLICATIONS INCORPORATED IN AGREEMENT. The Authority sought the participation of the TWDB in the Project, as reflected in the Application. The TWDB and the Authority agree that the Application for State Participation funds filed by the Authority, as finally approved by the TWDB, are incorporated herein as a part of this Agreement and the Authority agrees to be bound by the TWDB's rules, the TWDB Resolution, and the representations made in its Application. The Authority represents that there are no material changes in the information contained in its Application and supplemental information submitted to the TWDB.

§9.2 APPLICABLE LAW. It is expressly understood by and between the parties hereto that the provisions of this Agreement are subject to the applicable provisions of the Constitution and laws of the State, and federal laws and regulations. The parties hereto reserve all rights at law and in equity to enforce the performance of this Agreement, and each respectively covenants to exercise all such rights to the extent necessary to perform or cure any default on the part of the respective party.

§9.3 REMEDIES. The TWDB, after providing notice and reasonable opportunity to cure, retains the discretion to pursue any remedy available to it through this Agreement or other law. The Authority agrees that the TWDB shall have available to it the remedies of mandamus and specific performance, even if failure of performance of the Authority could be adequately accomplished or compensated through some other method. The Authority's opportunity to cure shall be no less than 30 days from the date the Authority receives notice from the TWDB, and shall continue as long as the Authority uses good faith and diligence to cure any defect accurately identified by the TWDB. Specific remedies available to the TWDB include, but are not limited to, the TWDB's right to:

- A. by mandamus, or other suit, action or proceeding at law or in equity, enforce all rights of the TWDB under the Agreement and all rights of the TWDB, at law or in equity, whether or not any non-performance or violation has become an Event of Default, relating to the purchase, ownership, and lease or sale of the Project or the TWDB's interest in the Project, including to the Authority's obligation to purchase the TWDB's interest in the Project under the Agreement. These rights include, but are not limited to, the right to require the Authority to charge and collect moneys adequate to carry out the terms of the Agreement;
- B. by action or suit in equity require the Authority to account as if it were the trustee of an express trust for the TWDB;
- C. by action or suit in equity enjoin any acts which may be unlawful or in violation of the rights of the TWDB.

§9.4 VENUE. All amounts due and owing under this Agreement including, but not necessarily limited to, payments or damages for breach of this Agreement, shall be due and payable in Travis County, Texas, the county in which the principal offices of the TWDB are located. Jurisdiction and venue for any action on or related to the terms of this Agreement shall be exclusively in Travis County, Texas.

§9.5 AMENDMENT. This Agreement may be amended by agreement of the TWDB and the Authority in written form. Any such amendment shall be executed in the same manner as this Agreement was originally executed and shall be subject to approval of the State Attorney General regarding the legality of said amendment and the resolution of the TWDB authorizing the amendment.

§9.6 SEVERABILITY. The TWDB and the Authority specifically agree that in case any one or more of the sections, subsections, provisions, clauses or words in this Agreement or the application of such sections, subsections, provisions, clauses or words to any situation or circumstance should be, or should be held to be, for any reason whatsoever invalid or unconstitutional, or in contravention of any federal, state or local laws, rules and regulations, such invalidity, unconstitutionality, or contravention shall not affect any other sections, subsections, provisions, clauses or words in this Agreement or their application thereto. The parties intend that this Agreement be severable and it shall be construed and applied as if any such invalid or unconstitutional section, subsection, provision, clause or word had not been included herein, and the rights and obligations of the parties hereto shall be construed and remain in force accordingly.

§9.7 ENTIRE AGREEMENT. This Agreement, including the Application(s) for State Participation Funds incorporated by reference herein, constitutes the entire agreement between the parties with respect to the matters described herein.

§9.8 ARBITRATION. It is expressly understood that neither the Authority nor the TWDB shall, without its consent, be obligated to participate in, nor shall it be made a party to, any arbitration proceedings relating in any way to the Project or to any provisions of this Agreement.

§9.9 FORCE MAJEURE. If, by reason of Force Majeure, any Party hereto shall be rendered unable, wholly or in part, to carry out its obligations under this Agreement, then such Party shall give notice and the full particulars of such Force Majeure event in writing to the other Party within a reasonable time after the occurrence of the Force Majeure event. The obligations of the Party giving notice of such Force Majeure event may be suspended during the continuance of the event but for no longer period and any such Party shall endeavor to remove or overcome such inability with all reasonable dispatch. The term "*Force Majeure*" as employed herein shall mean Acts of God, natural phenomenon, or act of a third party, including but not limited to war, strikes, fires, explosions, governmental prohibition, judicial order or injunction, acts of upstream appropriators, sabotage, terrorism, explosions, and unforeseeable breakage, damage, or blockage to machinery, equipment, pipelines, or canals and other causes that are beyond the reasonable control of the Party claiming the inability to perform.

§9.10 SECURITY INTEREST IN CONTRACT REVENUES. The Parties expressly agree that the TWDB has a perfected security interest under Chapter 1208, Government Code, which provides that no filing, registering, recording or publication of this Agreement is required to establish a pledge of the Contract Revenues or to perfect, protect or maintain the lien created hereby on the Contract Revenues. In the event Chapter 1208, Government Code, is amended at any time while any obligations remain outstanding under this Agreement, such that the lien on the Contract Revenues is to be subject to the filing requirements of Chapter 9, Business & Commerce Code, the Authority agrees to take such action to comply with the applicable provisions of Chapter 9, Business & Commerce Code, to maintain perfection of the lien on and pledge of the Contract Revenues under this Agreement. Notwithstanding the applicability of Chapter 1208, Government Code, the TWDB has the right to further protect its lien

created hereby on the Contract Revenues by appropriate filing with the Secretary of State.

*****SIGNATURE PAGES TO FOLLOW*****

EXECUTED as of this 13 day of February, 2013

TEXAS WATER DEVELOPMENT BOARD

Melanie Callahan

Melanie Callahan, Executive Administrator

ATTEST:

Joyce Bourneane

EXECUTED as of this 13th day of February, 2013.

COASTAL WATER AUTHORITY

D. Wayne Klotz

D. Wayne Klotz, President-Board of Directors

ATTEST:

Zebulun Nash

Zebulun Nash, Secretary-Board of Directors

~~APPROVED as to Legality:~~

~~Greg Abbott, Attorney General
State of Texas~~

By: _____

~~Assistant Attorney General~~

ATTACHMENT A

BOND COUNSEL OPINION REGARDING
IMPACT OF THE PROJECT ON THE
TAX-EXEMPT STATUS OF TWDB BONDS

FULBRIGHT & JAWORSKI L.L.P.
1301 McKinney, Suite 5100
Houston, Texas 77010

BURNEY & FOREMAN
5445 Almeda, Suite 400
Houston, Texas 77004

[Date]

Re: Coastal Water Authority/Texas Water Development Board
Master Agreement Regarding State Participation in the Luce Bayou Interbasin Transfer Project

Texas Water Development Board
1700 North Congress Avenue
Austin, Texas 78701

Coastal Water Authority
Suite 800, 1801 Main Street
Houston, Texas 77002

Ladies and Gentlemen:

We have acted as co-counsel to the Coastal Water Authority (the "*CWA*") in connection with the captioned Master Agreement (the "*Master Agreement*"), pursuant to a Resolution authorizing the Master Agreement (the "*Resolution*") of the Board of Directors of the CWA. The Master Agreement is being entered into to fund a portion of the cost of the Luce Bayou Interbasin Transfer Project (the "*Project*").

In rendering the opinions herein we have examined and relied upon an executed Master Agreement; original or certified copies of the proceedings had in connection with approval of the Master Agreement, including the Resolution; certificates of officers of the CWA related to the expected use and investment of proceeds under the Master Agreement and certain other funds of the CWA, which are within its sole knowledge and control; and such other material and such matters of law as we deem relevant to the matters discussed below. In our examination, we have assumed the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified or photostatic copies, the authenticity of the originals of such latter documents, and the accuracy of statements of the CWA contained in certifications of even date herewith.

Based upon the foregoing, we are of the opinion that, under applicable laws of the State of Texas and the United States of America in force and effect on the date hereof, upon funding under the Master Agreement, neither the projected use of the funds to finance the Project nor CWA's payments to the Texas Water Development Board (the "*TWDB*") under the Master Agreement will adversely affect the excludability of interest on obligations issued by the TWDB to fund their undivided interest in the Project from gross income of the owners of such obligations for federal income tax purposes.

[Date]
Page 2

Our opinions are based on existing law, which is subject to change. Such opinions are further based on our knowledge of facts as of the date hereof. We assume no duty to update or supplement our opinions to reflect any changes in any law or fact that may hereafter come to our attention or to reflect any changes in any law that may thereafter occur or become effective. Moreover, our opinions are not a guarantee of result and are not binding on the Internal Revenue Service; rather, such opinions represent our legal judgment based upon our review of existing law that we deem relevant to such opinions and in reliance upon the representations and covenants referenced above.

This opinion is intended for your use only and may not be relied upon by any other party without our written permission. In rendering this opinion, we have acted as co-counsel to CWA, and except for the opinion herein neither firm has advised nor acted as counsel for the TWDB. By acting as co-counsel, each firm has acted independently in reaching the conclusions stated herein.

ATTACHMENT B

SCHEDULES

Call Date: 03/01/2023

Coastal Water Authority
Schedule 1

Par: \$ 28,754,000
Dated: 3/1/2013
Delivery: 3/1/2013
1st Interest: 6/15/2013
1st Principal: 12/15/2032
Last Principal: 12/15/2048
FY: 8/31
of Periods: 15

Deferred Interest

Total Deferred	Repayment Periods	Repayment Pd. Start	Repayment Pd. End
\$7,459,784	7	6/15/2025	12/15/2031

Yearly Deferred Int Payment: \$1,065,683
Semi-Annual: \$532,842

Semi-Annual
Loan Debt Service

FY	Dates	Principal	Rates	Interest	Deferral %	Deferral	Repayment	Adjusted Interest	Total
2013	6/15/2013			\$385,595	100%	(\$385,595)			
2014	12/15/2013			667,376	100%	(667,376)			
2014	6/15/2014			667,376	100%	(667,376)			
2015	12/15/2014			667,376	100%	(667,376)			
2015	6/15/2015			667,376	80%	(533,901)		133,475	133,475
2016	12/15/2015			667,376	80%	(533,901)		133,475	133,475
2016	6/15/2016			667,376	80%	(533,901)		133,475	133,475
2017	12/15/2016			667,376	80%	(533,901)		133,475	133,475
2017	6/15/2017			667,376	70%	(467,163)		200,213	200,213
2018	12/15/2017			667,376	70%	(467,163)		200,213	200,213
2018	6/15/2018			667,376	60%	(400,426)		266,951	266,951
2019	12/15/2018			667,376	60%	(400,426)		266,951	266,951
2019	6/15/2019			667,376	45%	(300,318)		367,057	367,057
2020	12/15/2019			667,376	45%	(300,318)		367,057	367,057
2020	6/15/2020			667,376	30%	(200,213)		467,163	467,163
2021	12/15/2020			667,376	30%	(200,213)		467,163	467,163
2021	6/15/2021			667,376	15%	(100,106)		567,270	567,270
2022	12/15/2021			667,376	15%	(100,106)		567,270	567,270
2022	6/15/2022			667,376				667,376	667,376
2023	12/15/2022			667,376				667,376	667,376
2023	6/15/2023			667,376				667,376	667,376
2024	12/15/2023			667,376				667,376	667,376
2024	6/15/2024			667,376				667,376	667,376
2025	12/15/2024			667,376				667,376	667,376
2025	6/15/2025			667,376			532,842	1,200,218	1,200,218
2026	12/15/2025			667,376			532,842	1,200,218	1,200,218
2026	6/15/2026			667,376			532,842	1,200,218	1,200,218
2027	12/15/2026			667,376			532,842	1,200,218	1,200,218
2027	6/15/2027			667,376			532,842	1,200,218	1,200,218
2028	12/15/2027			667,376			532,842	1,200,218	1,200,218
2028	6/15/2028			667,376			532,842	1,200,218	1,200,218
2029	12/15/2028			667,376			532,842	1,200,218	1,200,218
2029	6/15/2029			667,376			532,842	1,200,218	1,200,218
2030	12/15/2029			667,376			532,842	1,200,218	1,200,218
2030	6/15/2030			667,376			532,842	1,200,218	1,200,218
2031	12/15/2030			667,376			532,842	1,200,218	1,200,218
2031	6/15/2031			667,376			532,842	1,200,218	1,200,218
2032	12/15/2031			667,376			532,842	1,200,218	1,200,218
2032	6/15/2032			667,376			-	667,376	667,376
2033	12/15/2032	1,375,000	4.440%	667,376			-	667,376	2,042,376
2033	6/15/2033			636,851			-	636,851	636,851
2034	12/15/2033	1,435,000	4.540%	636,851			-	636,851	2,071,851
2034	6/15/2034			604,277			-	604,277	604,277
2035	12/15/2034	1,500,000	4.590%	604,277			-	604,277	2,104,277
2035	6/15/2035			569,852			-	569,852	569,852
2036	12/15/2035	1,570,000	4.590%	569,852			-	569,852	2,139,652
2036	6/15/2036			533,820			-	533,820	533,820
2037	12/15/2036	1,640,000	4.590%	533,820			-	533,820	2,173,820
2037	6/15/2037			496,182			-	496,182	496,182
2038	12/15/2037	1,715,000	4.590%	496,182			-	496,182	2,211,182
2038	6/15/2038			456,823			-	456,823	456,823
2039	12/15/2038	1,795,000	4.590%	456,823			-	456,823	2,251,823
2039	6/15/2039			415,628			-	415,628	415,628
2040	12/15/2039	1,875,000	4.690%	415,628			-	415,628	2,290,628
2040	6/15/2040			371,659			-	371,659	371,659
2041	12/15/2040	1,965,000	4.690%	371,659			-	371,659	2,336,659
2041	6/15/2041			325,580			-	325,580	325,580
2042	12/15/2041	2,055,000	4.690%	325,580			-	325,580	2,360,580
2042	6/15/2042			277,390			-	277,390	277,390
2043	12/15/2042	2,155,000	4.690%	277,390			-	277,390	2,432,390
2043	6/15/2043			226,855			-	226,855	226,855
2044	12/15/2043	2,255,000	4.690%	226,855			-	226,855	2,461,855
2044	6/15/2044			173,976			-	173,976	173,976
2045	12/15/2044	2,360,000	4.690%	173,976			-	173,976	2,533,976
2045	6/15/2045			118,634			-	118,634	118,634
2046	12/15/2045	2,470,000	4.690%	118,634			-	118,634	2,588,634
2046	6/15/2046			60,712			-	60,712	60,712
2047	12/15/2046	2,589,000	4.690%	60,712			-	60,712	2,649,712
2047	6/15/2047			-			-	-	-
2048	12/15/2047			-			-	-	-
2048	6/15/2048			-			-	-	-
		\$28,754,000		\$36,949,748		(\$7,459,784)	\$7,459,784	\$36,949,748	\$65,703,748

ATTACHMENT C

FORMAT FOR DETERMINATION OF AUTHORITY USE OF TWDB OWNERSHIP

**ATTACHMENT C
 MASTER AGREEMENT
 BETWEEN
 TEXAS WATER DEVELOPMENT BOARD
 AND
 COASTAL WATER AUTHORITY**

**Determination of Coastal Water Authority's Use of TWDB Ownership
 Due March 1 Annually per §3.6 of the Agreement**

The Authority shall be considered using a portion of TWDB's ownership interest in the Project when the Authority's annual transmission of water from the Project is in excess of Authority's interest in the transmission of the Project's weighted average capacity of 396,350 acre-feet per year (354 MGD) of water, as determined under §2.5 of this Agreement.

Authority's ownership interest in the Project = _____ acre-feet per year (____% of Project Costs)
 TWDB's ownership interest in the Project = _____ acre-feet per year (____% of Project Costs)

Year	Annual Usage (acre-feet)	Annual Usage Exceeds _____ acre-feet (Yes/No)	Lease Payment or Purchase Due by May 15 (Yes/No)
2013			
2014			
2015			
2016			
2017			
2018			
2019			
2020			
2021			
2022			
2023			
2024			
2025			
2026			
2027			
2028			
2029			
2030			
2031			
2032			

Completed form to be submitted by March 1 annually to:
 Texas Water Development Board
 Financial Monitoring
 P.O. Box 13231
 Austin, Texas 78711-3231

CERTIFICATE FOR RESOLUTION

I, the undersigned Officer of the Board of Directors of the Coastal Water Authority, hereby certify as follows:

1. The Board of Directors of Coastal Water Authority convened in regular session on January 14, 2009, at the regular meeting place thereof within said district; and the roll was called of the duly constituted officers and members of said Board, to-wit:

Dionel E. Aviles	President
Kurt F. Metyko	First Vice-President
Tony L. Council	Second Vice-President
Rick Cloutier	Secretary
Rusty Senac	Director
Zebulun Nash	Director
Ray Stoesser	Director

and all of said persons were present except for the following: Ray Stoesser thus constituting a quorum. Whereupon, among other business, the following was transacted at said meeting: a written Resolution entitled

RESOLUTION AUTHORIZING THE ISSUANCE AND SALE OF COASTAL WATER AUTHORITY CONTRACT REVENUE BONDS (LUCE BAYOU PROJECT), SERIES 2009, IN AN AGGREGATE PRINCIPAL AMOUNT OF \$28,000,000; AWARDED THE SALE OF SAID BONDS, APPROVING AN ESCROW AGREEMENT AND A PAYING AGENT/REGISTRAR AGREEMENT; PRESCRIBING THE FORM OF SAID BONDS; AUTHORIZING CO-BOND COUNSEL AND THE FINANCIAL ADVISOR TO TAKE ALL ACTIONS REQUIRED TO ISSUE SAID BONDS AT THE DIRECTION OF COASTAL WATER AUTHORITY; AND ENACTING OTHER PROVISIONS RELATING THERETO

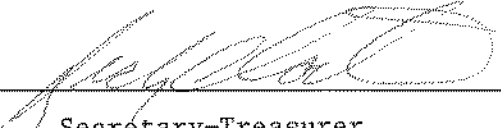
was duly introduced for consideration. It was then duly moved and seconded that said Resolution be adopted; and, after due discussion, said motion, carrying with it the adoption of said Resolution, prevailed and carried by the following vote:

AYES: 6 NOES: 0 ABSTENTIONS: 0

2. A true, full and correct copy of the aforesaid Resolution passed at the meeting described in the above and foregoing paragraph is attached to and follows this Certificate; said Resolution has been duly recorded in the official minutes of said Board; the above and foregoing paragraph is a true, full and correct excerpt from said minutes of said meeting pertaining to the passage of said Resolution; the persons named in the above and foregoing paragraph, at the time of said meeting and the passage of said Resolution, were the duly chosen, qualified and acting officers and members of said Board as indicated therein; each of said officers and members was duly and sufficiently notified officially and personally in advance, of the time, place and purpose of the aforesaid meeting and that said Resolution would be introduced and considered for passage at said meeting, and each of said officers and members

consented in advance to the holding of said meeting for such purpose; and said meeting was open to the public, and public notice of the time, place and purpose of said meeting was given, all as required by the Texas Open Meeting Act, Chapter 551, Texas Government Code, as amended.

SIGNED this 14th day of January, 2009.

By: 
Title: Secretary-Treasurer

(SEAL)

BOND RESOLUTION

COASTAL WATER AUTHORITY
CONTRACT REVENUE BONDS (LUCE BAYOU PROJECT)
SERIES 2009

Adopted: January 14, 2009

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RESOLUTION AUTHORIZING THE ISSUANCE AND SALE OF COASTAL WATER AUTHORITY CONTRACT REVENUE BONDS (LUCE BAYOU PROJECT), SERIES 2009, IN AN AGGREGATE PRINCIPAL AMOUNT OF \$28,000,000; AWARDED THE SALE OF SAID BONDS, APPROVING AN ESCROW AGREEMENT AND A PAYING AGENT/REGISTRAR AGREEMENT; PRESCRIBING THE FORM OF SAID BONDS; AUTHORIZING CO-BOND COUNSEL AND THE FINANCIAL ADVISOR TO TAKE ALL ACTIONS REQUIRED TO ISSUE SAID BONDS AT THE DIRECTION OF COASTAL WATER AUTHORITY; AND ENACTING OTHER PROVISIONS RELATING THERETO

WHEREAS, Pursuant to the provisions of Article XVI, Section 59 of the Texas Constitution, Coastal Water Authority (the "Authority") was created by Chapter 601, Acts of the 60th Legislature of Texas, Regular Session, 1967 (codified as Article 8280 355, Texas Revised Civil Statutes Annotated) (the "Act"), as a conservation and reclamation district, a body politic and corporate and a governmental agency of the State of Texas (the "State"). Pursuant to the laws of the State, including particularly the Act, the Authority is authorized and has the power to issue, sell, and deliver revenue bonds, for and on behalf of the Authority, for the purpose, among others, of financing the construction of water conveyance and treatment facilities.

WHEREAS, The Authority is authorized by the Act to treat the water of and transport and deliver the water to customers situated within and without the Authority and to acquire all properties and facilities necessary for such purposes, and for any and all such purposes may enter into contracts with municipal, public, and private corporations and any political subdivision of the State for such periods of time, not exceeding forty (40) years, and on such terms and conditions as its Board of Directors may deem desirable, fair, and advantageous and to which the parties may agree, and such contracts may provide that they shall continue in effect until bonds issued by the Authority to finance the cost of the water conveyance system and treatment facilities and refunding bonds issued in lieu thereof are paid; and

WHEREAS, The City of Houston, Texas, (the "City") owns the right to appropriate water from the Trinity River.

WHEREAS, The City is authorized by its charter and by the statutes of the State, particularly §§ 402.021 and 402.014, Texas Local Government Code, to enter into contracts and joint enterprises with conservation and reclamation districts created under Article XVI, Section 59, of the Constitution of Texas, for the treatment, conveyance, transportation, and distribution of water for and on behalf of the City.

WHEREAS, the Authority has entered into Projects Contracts between the City of Houston, Texas (the "City") and the Authority (the "Luce Bayou Contract") to acquire and develop the Luce Bayou Interbasin, which will include approximately 450,000 acre feet per year of the City's permitted surface water from the Trinity River to Lake Houston, as further set forth in the Luce Bayou Contract (the "Project"); and

WHEREAS, Payments made by the City to the Authority pursuant to the Contract, along with certain interest income earned on all funds and accounts established in this Resolution (except the Rebate Fund), will be sufficient to pay Debt Service on the Authority's obligations and make all required sinking fund payments thereon required by this Resolution; and

WHEREAS, with respect to this Project, the Authority has no outstanding Parity Bonds or other obligations; and

WHEREAS, the Authority has reserved the right and option to issue, under certain conditions, Additional Bonds, payable from the Pledged Revenues and on a parity as to lien and right with Parity Bonds; and

WHEREAS, the Authority has requested financial assistance from the Texas Water Development Board ("TWDB") through TWDB's Water Infrastructure Fund ("WIF") to assist in the planning, environmental, and permitting phases of the Project; and

WHEREAS, the Board of Directors (the "Board") of the Authority finds and determines that it is in the best interests of the Authority that it issue its contract revenue bonds payable as provided herein; and

WHEREAS, the Board hereby finds and determines that the issuance of the Bonds herein authorized shall be secured by a lien on and pledge of the Pledged Revenues, equally and ratably with the Outstanding Parity Bonds and with any Additional Bonds; and

WHEREAS, the Board hereby authorizes Vinson & Elkins LLP to retain co-bond counsel at the direction of the Authority; and

WHEREAS, the meeting at which this Resolution is considered is open to the public as required by law, and the public notice of the time, place and purpose of said meeting was given as required by Section 551.041, Texas Government Code, as amended.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF COASTAL WATER AUTHORITY, THAT:

ARTICLE I

DEFINITIONS, FINDINGS AND INTERPRETATION

Section 1.01. Definitions.

Unless otherwise expressly provided or unless the context clearly requires otherwise, in this Resolution, the following terms shall have the meanings specified below:

"Act" shall mean Article 8280-355, Tex. Rev. Civ. Stat. Ann. (Chap.601, Acts of the 60th Legislature of Texas, Regular Session, 1967, as amended by Chap.767, Acts of the 61st Legislature of Texas, Regular Session, 1969, Chap. 706, Acts of the 68th Legislature of Texas, Regular Session, 1983, and Chap.674, Acts of the 69th Legislature of Texas, Regular Session, 1985, and any future amendments or codifications).

“Additional Bonds” means additional parity revenue bonds permitted to be issued by Section 9.02.

“Application” means the Application filed by the Authority with the Texas Water Development Board requesting financial assistance for the planning, environmental, and permitting phases of the Authority’s Project, as more fully described in such Application.

“Authority” means the Coastal Water Authority.

“Board” means the Board of Directors of the Authority, being the duly authorized and governing body of the Authority, and it is further resolved that the declarations and covenants of the Authority contained in this Resolution are made by, and for and on behalf of the Board and the Authority in accordance with and as authorized by the Act, and are binding upon the Board and the Authority for all purposes.

“Bond” means any of the Bonds.

“Bonds” means the Authority’s Contract Revenue Bonds (Luce Bayou Project), Series 2009, authorized to be issued by Section 3.01 of this Resolution.

“City” shall mean the City of Houston, Texas, a municipal corporation and home rule city located principally in Harris County, Texas.

“City Controller” shall mean the City Controller of the City or any official that may succeed the City Controller.

“City Council” shall mean the City Council of the City which is the governing body thereof.

“Closing Date” means the date of the initial delivery of and payment for the Bonds.

“Code” means the Internal Revenue Code of 1986, as amended, including applicable regulations, published rulings and court decisions relating thereto.

“Contract” or “Luce Bayou Contract” shall mean that certain contract entitled “Projects Contract Between City of Houston, Texas, and Coastal Water Authority”, dated as of January 28, 2009, as it may be amended and supplemented from time to time relating to the design acquisition, construction and finance of the Project.

“Construction Fund” shall mean the Construction Fund to be maintained by the Authority pursuant to Section 704 of this Resolution and any separate accounts maintained.

“Costs of Issuance” shall mean the items of expense payable or reimbursable directly or indirectly by the Authority and related to the authorization, sale and issuance of Bonds, as further set forth in the Contract.

“Date of Delivery” shall mean the date the Bonds are delivered to the Purchaser.

“Debt Service” shall mean, with respect to any particular Fiscal Year or other period and any Series of Bonds an amount equal to the sum of (a) all interest payable on such Bonds during such period, except to the extent that such interest is to be paid from amounts (including any investment earnings thereon) deposited in the Bond Fund, Construction Fund, or elsewhere for the purpose of providing capitalized interest, plus (b) that portion of the principal amount of such Bonds which are due and payable during such period. For purposes of calculating Debt Service, the following rules shall apply.

(A) Principal amount for any Series of Bonds shall be calculated on the assumption that no Bonds of any Series Outstanding on the date of calculation will cease to be Outstanding except by reason of the payment of each principal amount on the due date thereof.

(B) Future Debt Service for any Series of Bonds which bears interest at variable rates or which will at some future date bear interest at a rate or rates to be determined or which will be subject to conversion to an interest rate or interest rate mode such that rates cannot then be ascertained shall be calculated using a rate which shall be estimated and certified by the Financial Advisor to the Authority as the rate that would have been borne by such Bonds if they were at the date of certification issued (or remarketed as the case may be) bearing a fixed rate of interest to their scheduled maturity or maturities.

(C) Interest accruing on Bonds issued as capital appreciation bonds or capital appreciation notes shall be treated as principal payable at maturity of such bonds or notes.

(D) Interest (other than on capital appreciation bonds or notes) shall be deemed to accrue monthly and principal also shall be deemed to accrue monthly but only during the twelve months immediately preceding any scheduled principal payment (or during such shorter periods as may be appropriate if principal payments are more frequent than every twelve months).

“Debt Service Payments Under the Contract” shall mean the Debt Service payments which the City is required to pay into the Bond Fund, or at the request of the Authority, to the Securities Depository for the applicable Bonds, prior to each Interest Payment Date pursuant to the Contract.

“Designated Payment/Transfer Office” means (i) with respect to the initial Paying Agent/Registrar named in this Resolution, the Designated Payment/Transfer Office as designated in the Paying Agent/Registrar Agreement, or at such other location designated by the Paying Agent/Registrar and (ii) with respect to any successor Paying Agent/Registrar, the office of such successor designated and located as may be agreed upon by the Authority and such successor.

“DTC” means The Depository Trust Company of New York, New York, or any successor securities depository.

“DTC Participant” means any broker, dealer, bank, trust company, clearing corporation or certain other organizations with Bonds credited to an account maintained on its behalf by DTC.

“Escrow Agent” means The Bank of New York Mellon Trust Company, N.A., its successors and assigns.

“Escrow Agreement” means that certain Escrow Agreement, between the Authority and the Escrow Agent, dated as of February 1, 2009, pertaining to the deposit of the proceeds of the Bonds.

“Executive Director” means the Executive Director of the Coastal Water Authority or his/her designee.

“Fiscal Year” or “year” means a fiscal year as established by the Authority which is currently the 12 month period ending the last day of December, but which may be changed from time to time.

“Government Obligations” means direct, noncallable obligations of the United States of America, including obligations that are unconditionally guaranteed by the United States of America.

“Initial Bond” means the Initial Bond authorized by Section 3.04(d) and described in Section 6.02(d).

“Interest and Sinking Fund” means the fund by that name established pursuant to Section 7.02.

“Interest Accrual Date” means the earlier of (i) ten (10) years from the Date of Delivery or (ii) the date the construction of the Authority’s Project is complete as evidenced by an engineer’s certificate acceptable to TWDB.

“Interest Payment Date” means the date or dates upon which interest on the Bonds is scheduled to be paid until their respective dates of maturity or prior redemption, such dates being June 15 and December 15 of each year, commencing on the first June 15 or December 15 following the Interest Accrual Date.

“Mayor” shall mean the Mayor of the City or any other official that may succeed the Mayor.

“Net Revenues” has the meaning set forth in the Luce Bayou Contract.

“Outstanding” shall mean as of any date, Bonds theretofore or thereupon being authenticated and delivered under this Resolution except:

- (i) Bonds canceled by the Registrar or delivered to the Registrar for cancellation at or prior to such date;
- (ii) Bonds in lieu of or in substitution for which other Bonds or Parity Notes shall have been authenticated and delivered pursuant to this Resolution; and
- (iii) Bonds deemed to have been paid or defeased as provided in this Resolution or as provided by law.

“Owner” means the person who is the registered owner of a Bond or Bonds, as shown in the Register.

“Parity Bonds” means the Bonds and any Additional Bonds as the same may be from time to time outstanding.

“Paying Agent/Registrar” means initially The Bank of New York Mellon Trust Company, N.A., or any successor thereto as provided in this Resolution.

“Paying Agent/Registrar Office” means (i) with respect to the initial Paying Agent/Registrar named herein, its corporate trust office in Dallas, Texas or at such other location designated by the Paying Agent/Registrar, and (2) with respect to any successor Paying Agent/Registrar, the office of such successor designated and located as may be agreed upon by the Authority and such successor.

“Pledged Revenues” shall mean the Net Revenues held in the Revenue Fund.

“Project” means the Luce Bayou Project, as further described in the Contract.

“Purchaser” or “TWDB” means the Texas Water Development Board.

“Record Date” means the fifteenth day of the month next preceding an Interest Payment Date.

“Register” means the Register specified in Section 3.06(a).

“Representation Letter” means the Blanket Letter of Representations between the Authority and DTC.

“Revenue Fund” means the fund by that name established with respect to the Parity Bonds and confirmed pursuant to Section 7.01.

“Special Payment Date” means the Special Payment Date as prescribed in Section 3.03(b).

“Special Record Date” means the Special Record Date as prescribed in Section 3.03(b).

“Unclaimed Payments” means money deposited with the Paying Agent/Registrar for the payment of principal of or interest on the Bonds as the same come due and payable and remaining unclaimed by the Owners of such Bonds for 90 days after the applicable payment or redemption date.

Section 1.02. Findings.

The declarations, determinations and findings declared, made and found in the preambles to this Resolution are hereby adopted, restated and made a part of the operative provisions hereof.

Section 1.03. Table of Contents, Titles and Headings.

The table of contents, titles and headings of the Articles and Sections of this Resolution have been inserted for convenience of reference only and are not to be considered a part hereof and shall not in any way modify or restrict any of the terms or provisions hereof and shall never be considered or given any effect in construing this Resolution or any provision hereof or in ascertaining intent, if any question of intent should arise.

Section 1.04. Interpretation.

(a) Unless the context requires otherwise, words of the masculine gender shall be construed to include correlative words of the feminine and neuter genders and vice versa, and words of the singular number shall be construed to include correlative words of the plural number and vice versa.

(b) This Resolution and all the terms and provisions hereof shall be liberally construed to effectuate the purposes set forth herein to sustain the validity of this Resolution.

(c) Unless designated otherwise, references to Articles and Sections shall mean Articles and Sections of this Resolution.

Section 1.05. Other Definitions.

The capitalized terms defined in the preamble to this Resolution shall have the meanings assigned to them in the preamble of this Resolution.

ARTICLE II

SECURITY FOR THE BONDS

Section 2.01. Pledge.

Payment of the principal, premium, if any, and interest on the Parity Bonds shall be secured by and payable from a first lien on and pledge of the Pledged Revenues, are further pledged to the establishment and maintenance of the funds created by this Resolution, and any funds created by any resolution authorizing the issuance of Parity Bonds. The Parity Bonds are not and will not be secured by or payable from a mortgage or deed of trust on any real, personal, or mixed properties constituting the Project.

Section 2.02. Bonds as Special Obligations.

The Bonds are special obligations of the Authority payable solely from the Pledged Revenues, and the Owners thereof shall never have the right to demand payment thereof out of any funds raised or to be raised by taxation by the Authority.

Section 2.03. Security Interest.

The Authority represents that, under Chapter 1208.002, Texas Government Code, a security interest in property, other than real property, that is created by the Authority is valid and effective according to the terms of the security agreement and is perfected from the time the security agreement is entered into or adopted continuously through the termination of the security interest, without physical delivery or transfer of control of the property, filing of a document, or another act. The Authority covenants that if Chapter 1208.002 is amended at any time while the Bonds are outstanding and unpaid, the Authority shall take all actions required in order to preserve for the Owners of the Bonds a perfected security interest in the property in which such security interest is granted pursuant to Section 2.01 hereof.

ARTICLE III

AUTHORIZATION; GENERAL TERMS AND PROVISIONS REGARDING THE BONDS

Section 3.01. Authorization.

The Authority's bonds to be designated the "Coastal Water Authority Contract Revenue Bonds (Luce Bayou Project), Series 2009," are hereby authorized to be issued and delivered in accordance with the laws of the State of Texas, including particularly the Act. The Bonds shall be issued in the original aggregate principal amount of \$28,000,000, for purposes of (i) paying the costs of the Project; and (ii) paying the costs and expenses of issuing the Bonds.

Section 3.02. Date, Denomination, Maturities and Interest.

(a) The Bonds shall be dated February 1, 2009, shall be in fully registered form, without coupons, in the denomination of \$5,000 or any integral multiple thereof and shall be numbered separately from one upward or such other designation acceptable to the Authority and the Paying Agent/Registrar, except the Initial Bond, which shall be numbered T-1.

(b) The Bonds shall mature on December 15 in the years and in the principal amounts set forth in the following schedule:

<u>Years</u>	<u>Principal Amounts</u>	<u>Interest Rates</u>
2019	\$2,500,000	2.133%
2020	2,555,000	2.367%
2021	2,615,000	2.489%
2022	2,680,000	2.573%
2023	2,750,000	2.649%
2024	2,820,000	2.710%
2025	2,900,000	2.759%
2026	2,975,000	2.797%
2027	3,060,000	2.832%

2028

3,145,000

2.877%

(c) Interest shall accrue and be paid on each Bond respectively until its maturity or prior redemption, from the later of the Interest Accrual Date or the most recent Interest Payment Date to which interest has been paid or provided for at the rates per annum for each respective maturity specified in the schedule contained in subsection (b) above. Such interest shall be payable semiannually on each Interest Payment Date. Interest on the Bonds shall be calculated on the basis of a three hundred sixty (360) day year composed of twelve (12) months of thirty (30) days each.

Section 3.03. Medium, Method and Place of Payment.

(a) The principal of, redemption premium, if any, and interest on the Bonds shall be paid in lawful money of the United States of America.

(b) Interest on the Bonds shall be payable to the Owners as shown in the Register on the Record Date. However, in the event that interest on the Bonds is not paid on a scheduled Interest Payment Date and remains unpaid for thirty (30) days thereafter, a new record date for such interest payment (a "Special Record Date") shall be established by the Paying Agent/Registrar, if and when funds for the payment of such interest have been received from the Authority. Notice of the Special Record Date and of the scheduled payment date of the past due interest (the "Special Payment Date," which shall be at least 15 days after the Special Record Date) shall be sent at least five business days prior to the Special Record Date by United States mail, first class, postage prepaid, to the address of each Owner of a Bond appearing on the Register at the close of business on the last business day next preceding the date of mailing of such notice.

(c) Interest shall be paid by check, dated as of the Interest Payment Date, and mailed on or before such Interest Payment Date, by first class United States mail, postage prepaid, by the Paying Agent/Registrar to each Owner at the address of each Owner as such appears in the Register, or by such other customary banking arrangement acceptable to the Paying Agent/Registrar and the person to whom interest is to be paid; provided, however, that such person shall bear all risk and expenses of such customary banking arrangement.

(d) The principal of each Bond shall be paid to the Owner thereof on the due date, whether at the maturity date or the date of prior redemption thereof, upon presentation and surrender of such Bond at the Paying Agent/Registrar Office.

(e) So long as TWDB is the owner of the Bonds, payments of interest and principal shall be made in wire transfer form at no cost to TWDB.

(f) If the date for the payment of the principal of or interest on the Bonds shall be a Saturday, Sunday, legal holiday or day on which banking institutions in the city where the Paying Agent/Registrar Office is located are required or authorized by law or executive order to close, then the date for such payment shall be the next succeeding day which is not a Saturday, Sunday, legal holiday or day on which banking institutions are required or authorized to close,

and payment on such date shall for all purposes be deemed to have been made on the due date thereof as specified in this Section.

(g) Unclaimed Payments shall be segregated in a special account and held in trust, uninvested by the Paying Agent/Registrar, for the account of the Owner of the Bonds to which the Unclaimed Payments pertain. Subject to Title 6 of the Texas Property Code, as amended, Unclaimed Payments remaining unclaimed by the Owners entitled thereto for three years after the applicable payment or redemption date shall be applied to the next payment or payments on the Bonds thereafter coming due and, to the extent any such money remains after the retirement of all outstanding Bonds, shall be paid to the Authority to be used for any lawful purpose. Thereafter, neither the Authority, the Paying Agent/Registrar nor any other person shall be liable or responsible to any holders of such Bonds for any further payment of such unclaimed moneys or on account of any such Bonds, subject to any applicable escheat law or similar law.

Section 3.04. Execution and Registration of Bonds.

(a) The Bonds shall be executed on behalf of the Authority by the President and Secretary of the Board of Directors, by their manual or facsimile signatures, and the official seal of the Authority shall be impressed or placed in facsimile thereon. Such facsimile signatures on the Bonds shall have the same effect as if each of the Bonds had been signed manually and in person by each of said officers, and such facsimile seal on the Bonds shall have the same effect as if the official seal of the Authority had been manually impressed upon each of the Bonds.

(b) In the event that any officer of the Authority whose manual or facsimile signature appears on the Bonds ceases to be such officer before the authentication of such Bonds or before the delivery thereof, such facsimile signature nevertheless shall be valid and sufficient for all purposes as if such officer had remained in such office.

(c) Except as provided below, no Bond shall be valid or obligatory for any purpose or be entitled to any security or benefit of this Resolution unless and until there appears thereon the Certificate of Paying Agent/Registrar substantially in the form provided herein, duly authenticated by manual execution by an officer or duly authorized signatory of the Paying Agent/Registrar. It shall not be required that the same officer or authorized signatory of the Paying Agent/Registrar sign the Certificate of Paying Agent/Registrar on all of the Bonds. In lieu of the executed Certificate of Paying Agent/Registrar described above, the Initial Bond delivered on the Closing Date shall have attached thereto the Comptroller's Registration Certificate substantially in the form provided herein, manually executed by the Comptroller of Public Accounts of the State of Texas, or by his duly authorized agent, which certificate shall be evidence that the Initial Bond has been duly approved by the Attorney General of the State of Texas and that it is a valid and binding obligation of the Authority, and has been registered by the Comptroller of Public Accounts of the State of Texas.

(d) On the Closing Date, one Initial Bond representing the entire principal amount of all Bonds, payable in stated installments to the Purchaser, or its designee, executed by the President and Secretary by their manual or facsimile signature, approved by the Attorney General, and registered and manually signed by the Comptroller of Public Accounts, will be delivered to the purchasers or their designee. Upon payment for the Initial Bond, the Paying

Agent/Registrar shall cancel the Initial Bond and deliver registered definitive Bonds to DTC in accordance with Section 3.10.

Section 3.05. Ownership.

(a) The Authority, the Paying Agent/Registrar and any other person may treat the person in whose name any Bond is registered as the absolute owner of such Bond for the purpose of making and receiving payment of the principal thereof and redemption premium, if any, thereon, for the further purpose of making and receiving payment of the interest thereon (subject to the provisions herein that interest is to be paid to the person in whose name the Bond is registered on the Record Date), and for all other purposes, whether or not such Bond is overdue, and neither the Authority nor the Paying Agent/Registrar shall be bound by any notice or knowledge to the contrary.

(b) All payments made to the Owner of a Bond shall be valid and effectual and shall discharge the liability of the Authority and the Paying Agent/Registrar upon such Bond to the extent of the sums paid.

Section 3.06. Registration, Transfer and Exchange.

(a) So long as any Bond remains outstanding, the Authority shall cause the Paying Agent/Registrar to keep at the Designated Payment/Transfer Office a register (the "Register") in which, subject to such reasonable regulations as it may prescribe, the Paying Agent/Registrar shall provide for the registration and transfer of Bonds in accordance with this Resolution.

(b) The ownership of a Bond may be transferred only upon the presentation and surrender of the Bond at the Designated Payment/Transfer Office with such endorsement or other evidence of transfer as is acceptable to the Paying Agent/Registrar. No transfer of any Bond shall be effective until entered in the Register.

(c) The Bonds shall be exchangeable upon the presentation and surrender thereof at the Paying Agent/Registrar Office for a Bond or Bonds of the same maturity and interest rate and in any denomination or denominations of any integral multiple of \$5,000 and in an aggregate principal amount equal to the unpaid principal amount of the Bonds presented for exchange. The Paying Agent/Registrar is hereby authorized to authenticate and deliver Bonds exchanged for other Bonds in accordance with this Section.

(d) Each exchange Bond delivered by the Paying Agent/Registrar in accordance with this Section shall constitute an original contractual obligation of the Authority and shall be entitled to the benefits and security of this Resolution to the same extent as the Bond or Bonds in lieu of which such exchange Bond is delivered.

(e) No service charge shall be made to the Owner for the initial registration and any subsequent transfer or exchange for a different denomination of any of the Bonds. The Paying Agent/Registrar, however, may require the Owner to pay a sum sufficient to cover any tax or other governmental charge that is authorized to be imposed in connection with the registration, transfer or exchange of a Bond.

(f) Neither the Authority nor the Paying Agent/Registrar shall be required to issue, transfer or exchange any Bond called for redemption, in whole or in part, where such redemption is scheduled to occur within 45 calendar days after the transfer or exchange date; provided, however, such limitation of transfer shall not be applicable to an exchange by the Owner of the uncalled principal balance of a Bond.

Section 3.07. Cancellation.

All Bonds paid or redeemed before scheduled maturity in accordance with this Resolution and all Bonds in lieu of which exchange Bonds or replacement Bonds are authenticated and delivered in accordance with this Resolution shall be canceled and destroyed upon the making of proper records regarding such payment, redemption, exchange or replacement. The Paying Agent/Registrar shall then return such canceled Bonds to the Authority or may, in accordance with law, destroy such canceled Bonds and periodically furnish the Authority with certificates of destruction of such Bonds.

Section 3.08. Temporary Bonds.

(a) Following the delivery and registration of the Initial Bond and pending the preparation of definitive Bonds, the proper officers of the Authority may execute and, upon the Authority's request, the Paying Agent/Registrar shall authenticate and deliver, one or more temporary Bonds that are printed, lithographed, typewritten, mimeographed or otherwise produced, in any denomination, substantially of the tenor of the definitive Bonds in lieu of which they are delivered, without coupons, and with such appropriate insertions, omissions, substitutions and other variations as the officers of the Authority executing such temporary Bonds may determine, as evidenced by their signing of such temporary Bonds.

(b) Until exchanged for Bonds in definitive form, such Bonds in temporary form shall be entitled to the benefit and security of this Resolution.

(c) The Authority, without unreasonable delay, shall prepare, execute and deliver to the Paying Agent/Registrar, the Bonds in definitive form; thereupon, upon the presentation and surrender of the Bond or Bonds in temporary form to the Paying Agent/Registrar, the Paying Agent/Registrar shall cancel the Bonds in temporary form and authenticate and deliver in exchange therefor a Bond or Bonds of the same maturity and series, in definitive form, in the authorized denomination, and in the same aggregate principal amount, as the Bond or Bonds in temporary form surrendered. Such exchange shall be made without the making of any charge therefor to any Owner.

Section 3.09. Replacement Bonds.

(a) Upon the presentation and surrender to the Paying Agent/Registrar of a mutilated Bond, the Paying Agent/Registrar shall authenticate and deliver in exchange therefor a replacement Bond of like tenor and principal amount, bearing a number not contemporaneously outstanding. The Authority or the Paying Agent/Registrar may require the Owner of such Bond to pay a sum sufficient to cover any tax or other governmental charge that is authorized to be imposed in connection therewith and any other expenses connected therewith.

(b) In the event that any Bond is lost, apparently destroyed or wrongfully taken, the Paying Agent/Registrar, pursuant to the applicable laws of the State of Texas and in the absence of notice or knowledge that such Bond has been acquired by a bona fide purchaser, shall authenticate and deliver a replacement Bond of like tenor and principal amount, bearing a number not contemporaneously outstanding, provided that the Owner first complies with the following requirements:

(i) furnishes to the Paying Agent/Registrar satisfactory evidence of his or her ownership of and the circumstances of the loss, destruction or theft of such Bond;

(ii) furnishes such security or indemnity as may be required by the Paying Agent/Registrar to save it and the Authority harmless;

(iii) pays all expenses and charges in connection therewith, including, but not limited to, printing costs, legal fees, fees of the Paying Agent/Registrar and any tax or other governmental charge that is authorized to be imposed; and

(iv) satisfies any other reasonable requirements imposed by the Authority and the Paying Agent/Registrar.

(c) After the delivery of such replacement Bond, if a bona fide purchaser of the original Bond in lieu of which such replacement Bond was issued presents for payment such original Bond, the Authority and the Paying Agent/Registrar shall be entitled to recover such replacement Bond from the person to whom it was delivered or any person taking therefrom, except a bona fide purchaser, and shall be entitled to recover upon the security or indemnity provided therefor to the extent of any loss, damage, cost or expense incurred by the Authority or the Paying Agent/Registrar in connection therewith.

(d) In the event that any such mutilated, lost, apparently destroyed or wrongfully taken Bond has become or is about to become due and payable, the Paying Agent/Registrar, in its discretion, instead of issuing a replacement Bond, may pay such Bond if it has become due and payable, or may pay such Bond when it becomes due and payable.

(e) Each replacement Bond delivered in accordance with this Section shall constitute an original additional contractual obligation of the Authority and shall be entitled to the benefits and security of this Resolution to the same extent as the Bond or Bonds in lieu of which such replacement Bond is delivered.

Section 3.10. Book-Entry-Only System.

(a) The definitive Bonds shall be initially issued in the form of a separate single fully registered Bond for each of the maturities thereof. Upon initial issuance, the ownership of each such Bond shall be registered in the name of Cede & Co., as nominee of DTC, and, except as provided in Section 3.11 hereof, all of the outstanding Bonds shall be registered in the name of Cede & Co., as nominee of DTC.

(b) With respect to Bonds registered in the name of Cede & Co., as nominee of DTC, the Authority and the Paying Agent/Registrar shall have no responsibility or obligation to any

DTC Participant or to any person on behalf of whom such a DTC Participant holds an interest in the Bonds, except as provided in this Resolution. Without limiting the immediately preceding sentence, the Authority and the Paying Agent/Registrar shall have no responsibility or obligation with respect to (i) the accuracy of the records of DTC, Cede & Co. or any DTC Participant with respect to any ownership interest in the Bonds, (ii) the delivery to any DTC Participant or any other person, other than an Owner, as shown on the Register, of any notice with respect to the Bonds, including any notice of redemption, or (iii) the payment to any DTC Participant or any other person, other than an Owner, as shown in the Register, of any amount with respect to principal of, premium, if any, or interest on the Bonds. Notwithstanding any other provision of this Resolution to the contrary, the Authority and the Paying Agent/Registrar shall be entitled to treat and consider the person in whose name each Bond is registered in the Register as the absolute Owner of such Bond for the purpose of payment of principal of, premium, if any, and interest on the Bonds, for the purpose of giving notices of redemption and other matters with respect to such Bond, for the purpose of registering transfer with respect to such Bond, and for all other purposes whatsoever. The Paying Agent/Registrar shall pay all principal of, premium, if any, and interest on the Bonds only to or upon the order of the respective Owners, as shown in the Register, as provided in this Resolution, or their respective attorneys duly authorized in writing, and all such payments shall be valid and effective to fully satisfy and discharge the Authority's obligations with respect to payment of principal of, premium, if any, and interest on the Bonds to the extent of the sum or sums so paid. No person other than an Owner, as shown in the Register, shall receive a Bond certificate evidencing the obligation of the Authority to make payments of amounts due pursuant to this Resolution. Upon delivery by DTC to the Paying Agent/Registrar of written notice to the effect that DTC has determined to substitute a new nominee in place of Cede & Co., and subject to the provisions in this Resolution with respect to interest checks or drafts being mailed to the registered Owner at the close of business on the Record Date, the word "Cede & Co." in this Resolution shall refer to such new nominee of DTC.

Section 3.11. Successor Securities Depository; Transfer Outside Book-Entry Only System.

In the event that the Authority or the Paying Agent/Registrar determines that DTC is incapable of discharging its responsibilities described herein and in the Representation Letter, and that it is in the best interest of the beneficial owners of the Bonds that they be able to obtain certificated Bonds, or in the event DTC discontinues the services described herein, the Authority or the Paying Agent/Registrar shall (i) appoint a successor securities depository, qualified to act as such under Section 17(a) of the Securities and Exchange Act of 1934, as amended, notify DTC and DTC Participants, as identified by DTC, of the appointment of such successor securities depository and transfer one or more separate Bonds to such successor securities depository or (ii) notify DTC and DTC Participants, as identified by DTC, of the availability through DTC of Bonds and transfer one or more separate Bonds to DTC Participants having Bonds credited to their DTC Accounts, as identified by DTC. In such event, the Bonds shall no longer be restricted to being registered in the Register in the name of Cede & Co., as nominee of DTC, but may be registered in the name of the successor securities depository, or its nominee, or in whatever name or names Owners transferring or exchanging Bonds shall designate, in accordance with the provisions of this Resolution.

Section 3.12. Payments to Cede & Co.

Notwithstanding any other provision of this Resolution to the contrary, so long as any Bonds are registered in the name of Cede & Co., as nominee of DTC, all payments with respect to principal of, premium, if any, and interest on such Bonds, and all notices with respect to such Bonds, shall be made and given, respectively, in accordance with the agreement between the Authority and DTC.

ARTICLE IV

REDEMPTION OF BONDS BEFORE MATURITY

Section 4.01. Limitation on Redemption.

The Bonds shall be subject to redemption before scheduled maturity only as provided in this Article IV.

Section 4.02. Optional Redemption.

(a) The Authority reserves the option to redeem Bonds maturing on and after December 15, 2019, in whole or in part in inverse order of maturity, before their respective scheduled maturity dates, on June 15, 2019 or on any date thereafter, such redemption date or dates to be fixed by the Authority, at a price equal to the principal amount of the Bonds so called for redemption plus accrued interest to the date fixed for redemption.

(b) The Authority, at least 45 days before the redemption date, unless a shorter period shall be satisfactory to the Paying Agent/Registrar, shall notify the Paying Agent/Registrar of such redemption date and of the principal amount of Bonds to be redeemed.

Section 4.03. Partial Redemption.

(a) If less than all of the Bonds are to be redeemed pursuant to Section 4.02, the Authority shall determine the amounts and maturities thereof to be redeemed and, if less than all of the Bonds of a stated maturity are to be redeemed, the Authority shall direct the Paying Agent/Registrar to call by lot Bonds, or portions thereof within such maturity and in such principal amounts, for redemption.

(b) A portion of a single Bond of a denomination greater than \$5,000 may be redeemed, but only in a principal amount equal to \$5,000 or any integral multiple thereof. If such a Bond is to be partially redeemed, the Paying Agent/Registrar shall treat each \$5,000 portion of a Bond as though it were a single bond for purposes of selection for redemption.

(c) Upon surrender of any Bond for redemption in part, the Paying Agent/Registrar, in accordance with Section 3.06 of this Resolution, shall authenticate and deliver an exchange Bond or Bonds in an aggregate principal amount equal to the unredeemed portion of the Bond so surrendered.

(d) The Paying Agent/Registrar shall promptly notify the Authority in writing of the principal amount to be redeemed of any Bond as to which only a portion thereof is to be redeemed.

Section 4.04. Notice of Redemption to Owners.

(a) The Paying Agent/Registrar shall give notice of any redemption of Bonds by sending notice by first class United States mail, postage prepaid, not less than 30 days before the date fixed for redemption, to the Owner of each Bond (or part thereof) to be redeemed, at the address shown in the Register.

(b) The notice shall state the redemption date, the redemption price, the place at which the Bonds are to be surrendered for payment, and, if less than all the Bonds outstanding are to be redeemed, an identification of the Bonds or portions thereof to be redeemed.

(c) Any notice given as provided in this Section shall be conclusively presumed to have been duly given, whether or not the Owner receives such notice.

Section 4.05. Payment Upon Redemption.

(a) Before or on each redemption date, the Authority shall deposit with the Paying Agent/Registrar money sufficient to pay all amounts due on the redemption date and the Paying Agent/Registrar shall make provision for the payment of the Bonds to be redeemed on such date by setting aside and holding in trust an amount from the Interest and Sinking Fund or otherwise received by the Paying Agent/Registrar from the Authority and shall use such funds solely for the purpose of paying the principal of, redemption premium, if any, and accrued interest on the Bonds being redeemed.

(b) Upon presentation and surrender of any Bond called for redemption at the Designated Payment/Transfer Office on or after the date fixed for redemption, the Paying Agent/Registrar shall pay the principal of, redemption premium, if any, and accrued interest on such Bond to the date of redemption from the money set aside for such purpose.

Section 4.06. Effect of Redemption.

(a) Notice of redemption having been given as provided in Section 4.05 of this Resolution, the Bonds or portions thereof called for redemption shall become due and payable on the date fixed for redemption and, unless the Authority defaults in the payment of the principal thereof, redemption premium, if any, or accrued interest thereon, such Bonds or portions thereof shall cease to bear interest from and after the date fixed for redemption, whether or not such Bonds are presented and surrendered for payment on such date.

(b) If the Authority shall fail to make provision for payment of all sums due on a redemption date, then any Bond or portion thereof shall continue to bear interest at the rate stated on the Bond until due provision is made for the payment of same.

ARTICLE V

PAYING AGENT/REGISTRAR

Section 5.01. Appointment of Initial Paying Agent/Registrar.

The Bank of New York Mellon Trust Company, N.A., is hereby appointed as the initial Paying Agent/Registrar for the Bonds. The Paying Agent/Registrar Agreement in substantially the form attached hereto as Exhibit C, is hereby approved. The Executive Director is hereby authorized to execute on behalf of the Authority.

Section 5.02. Qualifications.

Each Paying Agent/Registrar shall be (i) a commercial bank, a trust company organized under the laws of the State of Texas, or any other entity duly qualified and legally authorized to serve as and perform the duties and services of paying agent and registrar for the Bonds and (ii) a DTC Participant.

Section 5.03. Maintaining Paying Agent/Registrar.

(a) At all times while any Bonds are outstanding, the Authority will maintain a Paying Agent/Registrar that is qualified under Section 5.02 of this Resolution. The Executive Director or the president is hereby authorized and directed to execute an agreement with the Paying Agent/Registrar specifying the duties and responsibilities of the Authority and the Paying Agent/Registrar, in substantially the form presented to and hereby approved by the Board.

(b) If the Paying Agent/Registrar resigns or otherwise ceases to serve as such, the Authority will promptly appoint a replacement.

Section 5.04. Termination.

The Authority, upon not less than 60 days notice, reserves the right to terminate the appointment of any Paying Agent/Registrar by delivering to the entity whose appointment is to be terminated written notice of such termination; provided, that no such termination shall be effective until a successor Paying Agent/Registrar has been appointed and has accepted the duties of Paying Agent/Registrar for the Bonds.

Section 5.05. Notice of Change to Owners.

Promptly upon each change in the entity serving as Paying Agent/Registrar, the Authority will cause notice of the change to be sent to each Owner by first class United States mail, postage prepaid, at the address in the Register, stating the effective date of the change and the name and mailing address of the replacement Paying Agent/Registrar.

Section 5.06. Agreement to Perform Duties and Functions.

By accepting the appointment as Paying Agent/Registrar, and executing the Paying Agent/Registrar Agreement, the Paying Agent/Registrar is deemed to have agreed to the

provisions of this Resolution and that it will perform the duties and functions of Paying Agent/Registrar prescribed thereby.

Section 5.07. Delivery of Records to Successor.

If a Paying Agent/Registrar is replaced, such Paying Agent, promptly upon the appointment of the successor, will deliver the Register (or a copy thereof) and all other pertinent books and records relating to the Bonds to the successor Paying Agent/Registrar.

ARTICLE VI

FORM OF THE BONDS

Section 6.01. Form Generally.

(a) The Bonds, including the Registration Certificate of the Comptroller of Public Accounts of the State of Texas, the Certificate of the Paying Agent/Registrar and the Assignment form to appear on each of the Bonds, (i) shall be substantially in the form set forth in this Article with such appropriate insertions, omissions, substitutions and other variations as are permitted or required by this Resolution, and (ii) may have such letters, numbers or other marks of identification (including identifying numbers and letters of the Committee on Uniform Securities Identification Procedures of the American Bankers Association) and such legends and endorsements (including any reproduction of an opinion of counsel) thereon as, consistently herewith, may be determined by the Authority or by the officers executing such Bonds, as evidenced by their execution thereof.

(b) Any portion of the text of any Bonds may be set forth on the reverse side thereof, with an appropriate reference thereto on the face of the Bonds.

(c) The definitive Bonds, if any, shall be typewritten, printed, lithographed or engraved, and may be produced by any combination of these methods or produced in any other similar manner, all as determined by the officers executing such Bonds, as evidenced by their execution thereof.

(d) The Initial Bond submitted to the Attorney General of the State of Texas may be typewritten and photocopied or otherwise reproduced.

Section 6.02. Form of the Bonds.

The form of the Bonds, including the form of the Registration Certificate of the Comptroller of Public Accounts of the State of Texas, the form of Certificate of the Paying Agent/Registrar and the form of Assignment appearing on the Bonds shall be substantially as follows:

(a) Form of Bonds.

REGISTERED
No. _____

REGISTERED
\$ _____

United States of America
State of Texas
County of Harris

COASTAL WATER AUTHORITY
CONTRACT REVENUE BONDS (LUCE BAYOU PROJECT)
SERIES 2009

INTEREST RATE: _____% MATURITY DATE: December 15, _____
INTEREST ACCRUAL DATE¹: _____ CUSIP NUMBER: _____

The Coastal Water Authority (the "Authority"), in the County of Harris, State of Texas, for value received, hereby promises to pay to

Texas Water Development Board

or registered assigns, but solely from the sources and in the manner hereinafter provided, on the Maturity Date specified above, the sum of

_____ DOLLARS

unless this Bond shall have been sooner called for redemption and the payment of the principal hereof shall have been paid or provided for, and to pay interest on such principal amount from the later of the Interest Accrual Date or the most recent interest payment date to which interest has been paid or provided for until maturity or prior redemption, at the per annum rate of interest specified above, computed on the basis of a 360-day year of twelve 30-day months, such interest to be paid semiannually on June 15 and December 15 of each year, commencing the first June 15 or December 15 following the Interest Accrual Date.

The principal of this Bond shall be payable without exchange or collection charges in lawful money of the United States of America upon presentation and surrender of this Bond at the corporate trust office in _____, Texas (the "Designated Payment/Transfer Office") of The Bank of New York Mellon Trust Company, N.A., as Paying Agent/Registrar, or the designated payment/transfer office of any successor Paying Agent/Registrar. Interest on this Bond is payable by check dated as of the interest payment date, mailed on or before such interest payment date, by first class United States mail, postage prepaid, by the Paying Agent/Registrar to the registered owner at the address shown on the registration books kept by the Paying

¹ The "Interest Accrual Date" means the earlier of (i) ten (10) years from the Date of Delivery or (ii) the date the construction of the Authority's Project is complete as evidenced by an engineer's certificate acceptable to the Texas Water Development Board.

Agent/Registrar, or by such other customary banking arrangement acceptable to the Paying Agent/Registrar and the person to whom interest is to be paid; provided, however, that such person shall bear all risk and expenses of such customary banking arrangement. For the purpose of the payment of interest on this Bond, the registered owner shall be the person in whose name this Bond is registered at the close of business on the "Record Date," which shall be the fifteenth day of the month next preceding such interest payment date. However, in the event that interest is not paid on a scheduled payment date and remains unpaid for 30 days thereafter, a new record date for such interest payment (a "Special Record Date") will be established by the Paying Agent/Registrar, if and when funds for the payment of such interest have been received from the Authority. Notice of the Special Record Date and of the scheduled payment date of the past due interest (the "Special Payment Date," which date shall be at least 15 days after the Special Record Date) shall be sent at least five business days prior to the Special Record Date by United States mail, first class, postage prepaid, to the address of each registered owner of a Bond appearing on the books of the Paying Agent/Registrar at the close of business on the last business day preceding the date of mailing of such notice.

So long as the Texas Water Development Board is the owner of the Bonds, payments of interest and principal shall be made in wire transfer form at no cost to the Texas Water Development Board.

Capitalized terms used in this Bond and not otherwise defined shall have the meaning assigned thereto in the Resolution authorizing the issuance of the Bonds described below.

If the date for the payment of the principal or interest on this Bond shall be a Saturday, Sunday, legal holiday or day on which banking institutions in the city in which the Paying Agent/Registrar is located are required or authorized by law or executive order to close, the date for such payment shall be the next succeeding day which is not a Saturday, Sunday, legal holiday or day on which such banking institutions are required or authorized to close and payment on such date shall for all purposes be deemed to have been made on the original date payment was due.

This Bond is one of the series of fully registered bonds specified in its title issued in the aggregate principal amount of \$28,000,000 issued pursuant to a resolution adopted by the governing body of the Authority (the "Resolution"), for the purposes of (i) paying the costs of the Project, and (ii) paying the costs of issuing the Bonds. The Bonds shall be dated February 1, 2009.

The Bonds constitute special obligations of the Authority and, together with any of the outstanding Parity Bonds, are payable solely from and equally secured by a first lien on and pledge of Pledged Revenues. The Bonds do not constitute a legal or equitable pledge, charge, lien or encumbrance upon any property of the Authority or the Project, except with respect to the Pledged Revenues.

The Authority expressly reserves the right to issue Additional Bonds in all things on a parity with the Bonds and the outstanding Parity Bonds, payable solely from and equally secured by a lien on and pledge of the Pledged Revenues; provided, however, that any and all such additional obligations may be so issued only in accordance with and subject to the covenants,

conditions, limitations and restrictions relating thereto which are set out and contained in the Resolution to which reference is hereby made for more complete and full particulars.

The Authority has reserved the option to redeem the Bonds maturing on or after December 15, 2019, in whole or in part in inverse order of maturity before their respective scheduled maturity dates on June 15, 2019, or on any date thereafter, at a price equal to the principal amount of the Bonds so called for redemption plus accrued interest to the date fixed for redemption. If less than all of the Bonds are to be redeemed, the Authority shall determine the amounts and maturities thereof to be redeemed and, if less than all of the Bonds of a stated maturity are to be redeemed, the Authority shall direct the Paying Agent/Registrar to call by lot Bonds, or portions thereof within such maturity and in such amounts, for redemption.

Notice of such redemption or redemptions shall be given by first class mail, postage prepaid, not less than 30 days before the date fixed for redemption, to the registered owner of each of the Bonds to be redeemed in whole or in part. Notice having been so given, the Bonds or portions thereof designated for redemption shall become due and payable on the redemption date specified in such notice; and, from and after such date, notwithstanding that any of the Bonds or portions thereof so called for redemption shall not have been surrendered for payment, interest on such Bonds or portions thereof shall cease to accrue.

As provided in the Resolution, and subject to certain limitations therein set forth, this Bond is transferable upon surrender of this Bond for transfer at the Designated Payment/Transfer Office with such endorsement or other evidence of transfer as is acceptable to the Paying Agent/Registrar; thereupon, one or more new fully registered Bonds of the same stated maturity, of authorized denominations, bearing the same rate of interest, and for the same aggregate principal amount will be issued to the designated transferee or transferees.

The Authority, the Paying Agent/Registrar and any other person may treat the person in whose name this Bond is registered as the owner hereof for the purpose of receiving payment as herein provided (except interest shall be paid to the person in whose name this Bond is registered on the "Record Date" or "Special Record Date," as applicable) and for all other purposes, whether or not this Bond be overdue, and neither the Authority, the Paying Agent/Registrar nor any other person shall be affected by notice to the contrary.

Neither the Authority nor the Paying Agent/Registrar shall be required to issue, transfer or exchange any Bond called for redemption where such redemption is scheduled to occur within 45 calendar days of the transfer or exchange date; provided, however, such limitation shall not be applicable to an exchange by the registered owner of the uncalled principal balance of a Bond.

IT IS HEREBY CERTIFIED AND RECITED that the issuance of this Bond and the series of which it is a part is duly authorized by law; that all acts, conditions and things required to be done precedent to and in the issuance of the Bonds to render the same lawful and valid have been properly done and have happened in regular and due time, form and manner as required by law; that the Bonds do not exceed any constitutional or statutory limitation; and that provision has been made for the payment of the principal of and interest on the Bonds by irrevocably pledging the Pledged Revenues, as hereinabove recited.

The owner hereof shall never have the right to demand payment of this Bond out of any funds raised or to be raised by taxation by the Authority, other than certain amounts payable under certain of the Contract.

IN WITNESS WHEREOF, the Authority has caused this Bond to be executed in its name by the manual or facsimile signature of the President of the Authority and countersigned by the manual or facsimile signature of the Secretary, and the official seal of the Authority has been duly impressed or placed in facsimile on this Bond.

President, Board of Directors,
Coastal Water Authority

ATTEST:

Secretary, Board of Directors,
Coastal Water Authority

[SEAL]

(b) Form of Comptroller's Registration Certificate.

The following Comptroller's Registration Certificate may be deleted from the definitive Bonds if such Certificate on the Initial Bond is fully executed.

OFFICE OF THE COMPTROLLER §
OF PUBLIC ACCOUNTS § REGISTER NO. _____
OF THE STATE OF TEXAS §

I hereby certify that there is on file and of record in my office a certificate of the Attorney General of the State of Texas to the effect that this Bond has been examined by him as required by law, that he finds that it has been issued in conformity with the Constitution and laws of the State of Texas, and that it is a valid and binding special obligation of the Coastal Water Authority payable from the revenues pledged to its payment by and in the resolution authorizing same and that said Bond has this day been registered by me.

Witness my hand and seal of office at Austin, Texas, _____.

Comptroller of Public Accounts
of the State of Texas

[SEAL]

(c) Form of Certificate of Paying Agent/Registrar.

The following Certificate of Paying Agent/Registrar may be deleted from the Initial Bond if the Comptroller's Registration Certificate appears thereon.

CERTIFICATE OF PAYING AGENT/REGISTRAR

The records of the Paying Agent/Registrar show that the Initial Bond of this series of Bonds was approved by the Attorney General of the State of Texas and registered by the Comptroller of Public Accounts of the State of Texas, and that this is one of the Bonds referred to in the within-mentioned Resolution.

as Paying Agent/Registrar

Dated: _____

By: _____

(d) Form of Assignment:

ASSIGNMENT

FOR VALUE RECEIVED, the undersigned hereby sells, assigns, and transfers unto (print or typewrite name, address and Zip Code of transferee): _____

(Social Security or other identifying number: _____) the within Bond and all rights hereunder and hereby irrevocably constitutes and appoints _____ attorney to transfer the within Bond on the books kept for registration hereof, with full power of substitution in the premises.

Date: _____

NOTICE: The signature on this Assignment must correspond with the name of the registered owner as it appears on the face of the within Bond in every particular and must be guaranteed in a manner acceptable to the Paying Agent/Registrar.

Signature Guaranteed By:

Authorized Signatory

(e) The Initial Bond shall be in the form set forth in paragraphs (a) through (d) of this Section, except for the following alterations:

(i) immediately under the name of the Bond, the headings "INTEREST RATE" and "MATURITY DATE" shall both be completed with the words "As shown below" and the heading "CUSIP NUMBER" shall be deleted; and

(ii) in the first paragraph of the Bond, the words "on the Maturity Date specified above" shall be deleted and the following will be inserted: "on December 15 in each of the years, in principal amounts, and bearing interest at the per annum rates in accordance with the following schedule:

<u>Years</u>	<u>Principal Amounts</u>	<u>Interest Rate</u>
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(Information to be inserted from
Section 3.02(b))

Section 6.03. CUSIP Registration.

The Authority may secure identification numbers through the CUSIP Service Bureau Division of Standard & Poor's Corporation, New York, New York, and may authorize the printing of such numbers on the face of the Bonds. It is expressly provided, however, that the presence or absence of CUSIP numbers on the Bonds shall be of no significance or effect as regards the legality thereof and neither the Authority nor Co-Bond counsel to the Authority are to be held responsible for CUSIP numbers incorrectly printed on the Bonds.

Section 6.04. Co-Bond Counsel; Legal Opinion.

Pursuant to a previous engagement letter, Vinson & Elkins L.L.P. is designated Bond Counsel to the Authority. Bates & Coleman, PC is hereby designated as Co-Bond Counsel. Bond Counsel is authorized to retain Co-Bond Counsel on behalf of the Authority. The approving legal opinions of Vinson & Elkins L.L.P. and Bates & Coleman, PC, Co-Bond Counsel, respectively, may be attached to or printed on the reverse side of each Bond over the certification of the Secretary of the Authority, which may be executed in facsimile.

ARTICLE VII

FUNDS AND ACCOUNTS

Section 7.01. Revenue Fund.

The Authority hereby confirms the creation and establishment of the "Coastal Water Authority Revenue Fund" (the "Revenue Fund") to be maintained on the books of the Authority, and accounted for separate and apart from all other funds of the Authority so long as any of the Parity Bonds are outstanding.

Section 7.02. Interest and Sinking Fund.

For the sole purpose of paying the principal of and interest on the Parity Bonds, the Authority hereby confirms the creation and establishment on the books of the Authority, and there shall be maintained so long as any of the Parity Bonds remain outstanding, accounted for separate and apart from all other funds of the Authority, a separate fund entitled the "Coastal Water Authority Series 2009 Interest and Sinking Fund" (the "Interest and Sinking Fund").

Section 7.03. Issuance Costs Fund.

There is hereby established a separate fund entitled "Coastal Water Authority Series 2009 Costs Fund" (the "Issuance Costs Fund"). Amounts on deposit in the Issuance Costs Fund shall be applied by the Authority to pay the costs of issuing the Bonds. All amounts remaining in the Issuance Costs Fund after the payment of costs of issuance and in any event no later than six months after the Closing date, including investment earnings of the Issuance Costs Fund, shall be deposited to the Interest and Sinking Fund and shall be used to pay debt service on or redeem Bonds.

Section 7.04. Construction Fund.

There is hereby established a separate fund entitled "Coastal Water Authority Series 2009 Construction Fund" (the "Construction Fund"). Amounts on deposit in the Construction Fund shall be applied by the Authority to pay the costs of the Project. The Authority is authorized to create one or more sub accounts within the Construction Fund as may be required to carry out the purposes of this Resolution.

Section 7.05. Deposits of Pledged Revenues.

Pledged Revenues shall be credited to or deposited in the Interest and Sinking Fund and other funds when and as required by this Resolution and any resolution authorizing the issuance of any Parity Bonds.

Section 7.06. Investments.

To the extent authorized by the Public Funds Investment Act, Chapter 2256, Texas Government Code, as amended, money in any Fund established pursuant to this Resolution or any resolution authorizing the issuance of any Parity Bonds, may, at the option of the Authority, be placed in time deposits or certificates of deposit secured by obligations of the type hereinafter described, or be invested in direct obligations of the United States of America or obligations guaranteed or insured by the United States of America, which, in the opinion of the Attorney General of the United States, are backed by its full faith and credit or represent its general obligations, or invested in obligations of instrumentalities of the United States of America, including, but not limited to, evidences of indebtedness issued, insured, or guaranteed by such governmental agencies as the Federal Land Banks, Federal Intermediate Credit Banks, Banks for Cooperatives, Federal Home Loan Banks, Government National Mortgage Association, United States Postal Service, Farmers Home Administration, Federal Home Loan Mortgage Association, Small Business Administration, Federal Housing Association, or Participation Certificates in the Federal Assets Financing Trust; provided that all such deposits and investments shall be made in

such manner as will, in the opinion of the Authority, permit the money required to be expended from any Fund to be available at the proper time or times as expected to be needed. Such investments (except United States Treasury Obligations--State and Local Government Series investments held in book entry form, which shall at all times be valued at cost) shall be valued in terms of current market value as of the last day of each fiscal year. Unless otherwise set forth herein, all interest and income derived from such deposits and investments immediately shall be credited to, and any losses debited to, the Fund from which the deposit or investment was made, and surpluses in any Fund shall or may be disposed of as hereinafter provided. Such investments shall be sold promptly when necessary to prevent any default in connection with the Bonds and any Additional Bonds consistent with the respective resolutions authorizing their issuance.

Section 7.07. Funds Secured.

Money in all Funds created or confirmed by this Resolution, to the extent not invested, shall be secured in the manner prescribed by law.

Section 7.08. Priority of Deposits and Payments from Revenue Fund.

The Authority shall make all deposits and payments from the Pledged Revenues in the Revenue Fund when and as required by this Resolution or resolutions authorizing Parity Bonds and such deposits shall be made to the Interest and Sinking Fund, when and in the amounts required by this Resolution, and any resolution authorizing the Parity Bonds.

Section 7.09. Interest and Sinking Fund Requirements.

(a) Promptly after the delivery of the Bonds the Authority shall cause to be deposited to the credit of the Interest and Sinking Fund any accrued interest received from the sale and delivery of the Bonds, and any such deposit shall be used to pay a portion of the interest next coming due on the Bonds.

Section 7.10. Deficiencies; Excess Pledged Revenues.

(a) If on any occasion there shall not be sufficient Pledged Revenues to make the required deposits into the Interest and Sinking Fund, such deficiency shall be made up as soon as possible from the next available Pledged Revenues.

(b) Subject to making the required deposits to the credit of the various Funds when and as required by this Resolution, any resolution authorizing the issuance of any Additional Bonds, any surplus Pledged Revenues may be used by the Authority for any lawful purpose.

ARTICLE VIII

SALE AND DELIVERY OF BONDS; DEPOSIT OF PROCEEDS

Section 8.01. Sale of Bonds.

(a) The Bonds are hereby officially sold and awarded to the Texas Water Development Board (the "Purchaser") at a price equal to the principal amount thereof pursuant to

the terms of the commitment issued by the Purchaser. It is hereby officially found, determined and declared that the terms of this sale are the most advantageous reasonably available. The Bonds shall initially be registered in the name of such Purchaser, or its designee.

(b) The President of the Board, the Executive Director and all other officers of the Authority are authorized to take such actions, to obtain such consents or approvals and to execute such documents, certificates and receipts as they may deem necessary and appropriate in order to consummate the delivery of the Bonds, to pay the costs of issuance of the Bonds, and to effectuate the terms and provisions of this Resolution.

(c) The obligation of the Purchaser to accept delivery of the Bonds is subject to the Purchasers being furnished with the final, approving opinion of Vinson & Elkins L.L.P. and Bates & Coleman, PC., Co-Bond Counsel, which opinion shall be dated and delivered on the Closing Date.

Section 8.02. Control and Delivery of Bonds.

(a) The President of the Board and the Authority Co-Bond Counsel are hereby authorized to have control of the Initial Bond and all necessary records and proceedings pertaining thereto pending investigation, examination and approval of the Attorney General of the State of Texas, registration by the Comptroller of Public Accounts of the State of Texas and registration with, and initial exchange or transfer by, the Paying Agent/Registrar. Further, in connection with the submission of the record of proceedings for the Bonds to the Attorney General of the State of Texas for examination and approval of such Bonds, the appropriate officer of the Authority is hereby authorized and directed to issue a check of the Authority payable to the Attorney General of the State of Texas as a nonrefundable examination fee in the amount required by Chapter 1202, Texas Government Code (such amount not to exceed \$9,500).

(b) After registration by the Comptroller of Public Accounts of the State of Texas, delivery of the Bonds shall be made to the initial purchasers thereof under and subject to the general supervision and direction of the President of the Board, against receipt by the Authority of all amounts due to the Authority under the terms of sale.

Section 8.03. Deposit of Proceeds.

(a) Pursuant to written instructions from First Southwest Company, the Authority's Financial Advisor, on the Closing Date the Paying Agent/Registrar shall pay, from the proceeds of the Bonds received on the Closing Date, to the Authority an amount sufficient to pay the costs and expenses pertaining to the issuance of the Bonds. To the extent such amount is not required or used for such purpose, such excess shall be deposited to the Construction Fund, minus the amount to be deposited into the Escrow Fund pursuant to Section 8.03(b).

(b) After giving effect to the payment required in Section 8.03(a), of the remaining proceeds of the Bonds, \$12,308,981 shall be deposited to the "Escrow Fund" (as defined in the Escrow Agreement), and, to the extent directed in writing by TWDB, to the Construction Fund. Moneys deposited to the Escrow Fund shall be applied as provided in the Escrow Agreement.

Section 8.04. Approval of Escrow Agreement.

The Escrow Agreement, in substantially the form presented in Exhibit D to this Resolution is hereby approved, and its execution and delivery by the Executive Director, is hereby authorized and approved.

ARTICLE IX

**PARTICULAR REPRESENTATIONS AND
COVENANTS; ADDITIONAL BONDS**

Section 9.01. Payment of Parity Bonds.

Semiannually, on or before each June 15 and December 15 while any of the Bonds are outstanding and unpaid, the Authority shall make available to the Paying Agent/Registrar therefor, out of the Interest and Sinking Fund, money sufficient to pay, on each of such dates, the principal of and interest on the Bonds as the same mature and come due, or to redeem the Bonds prior to maturity, either upon mandatory redemption or at the option of the Authority. At the direction of the Authority, the Paying Agent/Registrar shall either deliver canceled paid Bonds to the Authority or furnish the Authority with an appropriate certificate of cancellation.

Section 9.02. Additional Bonds.

(a) The Authority shall have the right and power at any time and from time to time, and in one or more series or issues, to authorize, issue, and deliver additional parity revenue bonds (herein called "Additional Bonds"), in accordance with law, in any amounts, for any lawful purpose, including the refunding of any Bonds, Additional Bonds, or other obligations. Such Additional Bonds, if and when authorized, issued, and delivered in accordance with this Resolution, shall be payable from and secured by a lien on and pledge of the Pledged Revenues, equally and ratably on a parity in all respects with the Bonds.

(b) The principal of all Additional Bonds must be scheduled to be paid or mature on June 15 or December 15 (or both) of the years in which such principal is scheduled to be paid or mature.

Section 9.03. General Covenants.

The Authority further covenants and agrees that in accordance with and to the extent required or permitted by law:

(a) Performance. It will faithfully perform at all times any and all covenants, undertakings, stipulations, and provisions contained in this Resolution, and each resolution authorizing the issuance of the Parity Bonds, and in each and every Parity Bond; that it will promptly pay or cause to be paid the principal of and interest on every Parity Bond, on the dates and in the places and manner prescribed in such resolutions, and Parity Bonds; and that it will, at the times and in the manner prescribed, deposit or cause to be deposited the amounts required to be deposited into the Interest and Sinking Fund; and any holder of the Parity Bonds may require the Authority, its officials, and employees, to carry out, respect, or enforce the covenants and

obligations of this Resolution, or any resolution authorizing the issuance of the Parity Bonds, by all legal and equitable means, including specifically, but without limitation, the use and filing of mandamus proceedings, in any court of competent jurisdiction, against the Authority, its officials, and employees.

(b) Legal Authority. The Authority is a duly created and existing political subdivision of the State of Texas, and is duly authorized under the laws of the State of Texas to create and issue the Parity Bonds; that all action on its part for the creation and issuance of the said obligations has been or will be duly and effectively taken; and said obligations in the hands of the holders and owners thereof are and will be valid and enforceable special obligations of the Authority in accordance with their terms.

(c) Further Encumbrance. While any Parity Bonds are outstanding and unpaid, the Authority shall not additionally encumber the Pledged Revenues in any manner, except as expressly permitted in this Resolution in connection with Additional Bonds, unless said encumbrance is made junior and subordinate in all respects to the liens, pledges, covenants, and agreements of any Resolution authorizing the issuance of Parity Bonds; but the right of the Authority to issue revenue bonds payable from a subordinate lien on surplus Pledged Revenues is specifically recognized and retained.

(d) Covenant to Enforce Rates. The Authority covenants and agrees that it will, to the extent set forth in the Contract, cause the City (a) to fix, establish, maintain, and collect such rates and charges as are necessary to pay Debt Service on Parity Bonds and (b) to pay all other legal obligations of the Authority, including any operation, maintenance and insurance coverage related to the Project as required under the Contract.

(e) Contract. The Authority covenants and agrees that it will comply with the terms and conditions of the Contract and any amendments thereto, and will, by all lawful means, enforce the same and cause the parties to comply with all of their obligations thereunder. The Authority will not rescind, modify or amend the Contract in any way which would materially adversely affect the operation of the Project or the rights of the owners of the Parity Bonds.

(f) Records. The Authority shall keep proper books of record and account in which full, true, proper, and correct entries will be made of all dealings, activities, and transactions relating to the Project, the Pledged Revenues, and the Funds created pursuant to this Resolution, and all books, documents, and vouchers relating thereto shall at all reasonable times be made available for inspection upon request of any Bondholder.

(g) Audits. After the close of each fiscal year while any of the Bonds or Additional Bonds are outstanding, an audit will be made of the books and accounts relating to the Project and the Pledged Revenues by an independent certified public accountant or an independent firm of certified public accountants. As soon as practicable after the close of each such year, and when said audit has been completed and made available to the Authority, a copy of such audit for the preceding year shall be mailed to the Municipal Advisory Council of Texas, to the paying agent for any bonds payable from Pledged Revenues, to any registered owner of the Bonds who shall so request in writing, and to First Southwest Company. The annual audit reports shall be

open to the inspection of the registered owners of Parity Bonds, and their agents and representatives at all reasonable times.

(h) Governmental Agencies. The Authority will comply with all of the terms and conditions of any and all franchises, permits, and authorizations applicable to or necessary with respect to the Project, and which have been obtained from any governmental agency; and the Authority has or will obtain and keep in full force and effect all franchises, permits, authorization, and other requirements applicable to or necessary with respect to the acquisition, construction, equipment, operation, and maintenance of the Project.

ARTICLE X

TAX MATTERS

Section 10.01. Provisions Concerning Federal Income Tax Exclusion.

The Authority intends that the interest on the Bonds shall be excludable from gross income for purposes of federal income taxation pursuant to sections 103 and 141 through 150 of the Internal Revenue Code of 1986, as amended (the "Code"), and the applicable regulations promulgated thereunder (the "Regulations"). The Authority covenants and agrees not to take any action, or knowingly omit to take any action within its control, that if taken or omitted, respectively, would cause the interest on the Bonds to be includable in the gross income, as defined in section 61 of the Code, of the holders thereof for purposes of federal income taxation. In particular, the Authority covenants and agrees to comply with each requirement of this Article X; provided, however, that the Authority shall not be required to comply with any particular requirement of this Article X if the Authority has received an opinion of nationally recognized bond counsel ("Counsel's Opinion") that such noncompliance will not adversely affect the exclusion from gross income for federal income tax purposes of interest on the Bonds or if the Authority has received a Counsel's Opinion to the effect that compliance with some other requirement set forth in this Article X will satisfy the applicable requirements of the Code, in which case compliance with such other requirement specified in such Counsel's Opinion shall constitute compliance with the corresponding requirement specified in this Article X.

Section 10.02. No Private Use or Payment and No Private Loan Financing.

The Authority shall certify, through an authorized officer, employee or agent, that, based upon all facts and estimates known or reasonably expected to be in existence on the date the Bonds are delivered, the proceeds of the Bonds will not be used in a manner that would cause the Bonds to be "private activity bonds" within the meaning of section 141 of the Code and the Regulations. The Authority covenants and agrees that it will make such use of the proceeds of the bonds, including interest or other investment income derived from the proceeds of bonds or other obligations, regulate the use of property financed, directly or indirectly, with such proceeds, and take such other and further action as may be required so that the bonds will not be "private activity bonds" within the meaning of section 141 of the Code and the Regulations.

Section 10.03. No Federal Guaranty.

The Authority covenants and agrees not to take any action, or knowingly omit to take any action within its control, that, if taken or omitted, respectively, would cause the Bonds to be “federally guaranteed” within the meaning of section 149(b) of the Code and the Regulations, except as permitted by section 149(b)(3) of the Code and the Regulations.

Section 10.04. Bonds are not Hedge Bonds.

The Authority covenants and agrees not to take any action, or knowingly omit to take any action, and has not knowingly omitted and will not knowingly omit to take any action, within its control, that, if taken or omitted, respectively, would cause the Bonds to be “hedge bonds” within the meaning of section 149(g) of the Code and the Regulations.

Section 10.05. No-Arbitrage Covenant.

The Authority shall certify, through an authorized officer, employee or agent, that, based upon all facts and estimates known or reasonably expected to be in existence on the date the Bonds are delivered, the Authority will reasonably expect that the proceeds of the Bonds will not be used in a manner that would cause the Bonds to be “arbitrage bonds” within the meaning of section 148(a) of the Code and the Regulations. Moreover, the Authority covenants and agrees that it will make such use of the proceeds of the Bonds including interest or other investment income derived from Bond proceeds, regulate investments of proceeds of the Bonds, and take such other and further action as may be required so that the Bonds will not be “arbitrage bonds” within the meaning of section 148(a) of the Code and the Regulations.

Section 10.06. Arbitrage Rebate.

If the Authority does not qualify for an exception to the requirements of Section 148(f) of the Code, the Authority will take all necessary steps to comply with the requirement that certain amounts earned by the Authority on the investment of the “gross proceeds” of the Bonds (within the meaning of section 148(f)(6)(B) of the Code), be rebated to the federal government. Specifically, the Authority will (i) maintain records regarding the investment of the gross proceeds of the Bonds as may be required to calculate the amount earned on the investment of the gross proceeds of the Bonds separately from records of amounts on deposit in the funds and accounts of the Authority allocable to other bond issue of the Authority or moneys which do not represent gross proceeds of any bonds of the Authority, (ii) calculate at such times as are required by the Regulations, the amount earned from the investment of the gross proceeds of the Bonds which is required to be rebated to the federal government, and (iii) pay, not less often than every fifth anniversary date of the delivery of the Bonds or on such other dates as may be permitted under the Regulations, all amounts required to be rebated to the federal government. Further, the Authority will not indirectly pay any amount otherwise payable to the federal government pursuant to the foregoing requirements to any person other than the federal government by entering into any investment arrangement with respect to the gross proceeds of the Bonds that might result in a reduction in the amount required to be paid to the federal government because such arrangement results in a smaller profit or a larger loss than would have

resulted if the arrangement had been at arm's length and had the yield on the issue not been relevant to either party.

Section 10.07. Information Reporting.

The Authority covenants and agrees to file or cause to be filed with the Secretary of the Treasury, not later than the 15th day of the second calendar month after the close of the calendar quarter in which the Bonds are issued, an information statement concerning the Bonds, all under and in accordance with section 149(e) of the Code and the Regulations.

Section 10.08. Continuing Obligation.

Notwithstanding any other provision of this Resolution, the Authority's obligations under the covenants and provisions of this Article X shall survive the defeasance and discharge of the Bonds.

ARTICLE XI

DISCHARGE

Section 11.01. Discharge.

Subject to the provisions of Article XV, the Authority reserves the right to defease, refund or discharge the Bonds in any manner permitted by law.

Section 11.02. Bonds as Negotiable Instruments.

Each of the Bonds shall be deemed and construed to be an "Investment Security" and, as such, a negotiable instrument, within the meaning of Article 8 of the Texas Uniform Commercial Code.

ARTICLE XII

MODIFICATIONS AND AMENDMENTS

Section 12.01. Amendments and Modifications of Resolution.

(a) Subject to the provisions of Article XIII, the owners of 51% in principal amount of the Parity Bonds then outstanding shall have the right from time to time to approve any amendment to any resolution authorizing the issuance of any Parity Bonds, which may be deemed necessary or desirable by the Authority, provided, however, that nothing herein contained shall permit or be construed to permit the amendment of the terms and conditions in said resolutions or in the Parity Bonds so as to:

1. Make any change in the maturity of the outstanding Parity Bonds;
2. Reduce the rate of interest borne by any of the outstanding Parity Bonds;

3. Reduce the amount of the principal payable on the outstanding Parity Bonds;
4. Modify the terms of payment of principal of or interest on the outstanding Parity Bonds, or impose any conditions with respect to such payment;
5. Affect the rights of the owners of less than all of the Parity Bonds then outstanding;
6. Change the minimum percentage of the principal amount of Parity Bonds necessary for consent to such amendment.

(b) If at any time the Authority shall desire to amend a resolution under this Section, the Authority shall cause notice of the proposed amendment to be published in a financial newspaper or journal published in The City of New York, New York once during each calendar week for at least two successive calendar weeks. Such notice shall briefly set forth the nature of the proposed amendment and shall state that a copy thereof is on file at the principal office of each paying agent for any of the Parity Bonds, for inspection by all owners of Parity Bonds. Such publication is not required, however, if notice in writing is given to each owner of Parity Bonds.

(c) Whenever at any time not less than thirty days, and within one year, from the date of the first publication of said notice or other service of written notice the Authority shall receive an instrument or instruments executed by the owners of at least 51% in aggregate principal amount of all Parity Bonds then outstanding, which instrument or instruments shall refer to the proposed amendment described in said notice and which specifically consent to and approve such amendment in substantially the form of the copy thereof on file as aforesaid, the Authority may adopt the amendatory resolution in substantially the same form.

(d) Upon the adoption of any amendatory resolution pursuant to the provisions of this Section, the resolution being amended shall be deemed to be amended in accordance with the amendatory resolution, and the respective rights, duties, and obligations of the Authority and all the owners of then outstanding Parity Bonds and all future Additional Bonds shall thereafter be determined, exercised, and enforced hereunder, subject in all respects to such amendment.

(e) Any consent given by the owner of a Parity Bond pursuant to the provisions of this Section shall be irrevocable for a period of six months from the date of the first publication or giving of the notice provided for in this Section, and shall be conclusive and binding upon all future owners of the same Parity Bond during such period. Such consent may be revoked at any time after six months from the date of the first publication of such notice by the owner who gave such consent, or by a successor in title, by filing notice thereof with the paying agent for such Bond and the Authority, but such revocation shall not be effective if the owners of 51% in aggregate principal amount of the then outstanding Parity Bonds as in this Section defined have, prior to the attempted revocation, consented to and approved the amendment.

(f) For the purpose of this Section, the ownership of and other matters relating to the Bonds shall be determined from the registration books kept by the registrar therefor.

ARTICLE XIII

CONTINUING DISCLOSURE UNDERTAKING

Section 13.01. Definitions of Continuing Disclosure Terms.

As used in this Article, the following terms have the meanings assigned to such terms below:

“MSRB” means the Municipal Securities Rulemaking Board.

“NRMSIR” means each person whom the SEC or its staff has determined to be a nationally recognized municipal securities information repository within the meaning of the Rule from time to time.

“Rule” means SEC Rule 15c2-12, as amended from time to time.

“SEC” means the United States Securities and Exchange Commission.

“SID” means any person designated by the State of Texas or an authorized department, officer, or agency thereof as, and determined by the SEC or its staff to be, a state information depository within the meaning of the Rule from time to time.

Section 13.02. Annual Reports.

(a) The Authority shall provide annually to each NRMSIR and to any SID, within six (6) months after the end of each fiscal year, financial information and operating data with respect to the Authority of the general type included in the Application, being the information described in Exhibit A hereto. Any financial statements so to be provided shall be (i) prepared in accordance with the accounting principles described in Exhibit A hereto, and (ii) audited, if the Authority commissions an audit of such statements and the audit is completed within the period during which they must be provided. If the audit of such financial statements is not complete within such period, then the Authority shall provide notice that audited financial statements are not available and shall provide unaudited financial statements for the applicable fiscal year to each NRMSIR and any SID. The Authority shall provide audited financial statements for the applicable fiscal year to each NRMSIR and to any SID, when and if audited financial statements become available.

(b) If the Authority changes its fiscal year, it will notify each NRMSIR and any SID of the change (and of the date of the new fiscal year end) prior to the next date by which the Authority otherwise would be required to provide financial information and operating data pursuant to this Section.

(c) The financial information and operating data to be provided pursuant to this Section may be set forth in full in one or more documents or may be included by specific referenced to any document (including an official statement or other offering document, if it is available from the MSRB) that theretofore has been provided to each NRMSIR and any SID or filed with the SEC.

Section 13.03. Material Event Notices.

(a) The Authority shall notify any SID and either each NRMSIR or the MSRB, in a timely manner, of any of the following events with respect to the Bonds, if such event is material within the meaning of the federal securities laws:

- (i) principal and interest payment delinquencies;
 - (ii) nonpayment related defaults;
 - (iii) unscheduled draws on debt service reserves reflecting financial difficulties;
 - (iv) unscheduled draws on credit enhancements reflecting financial difficulties;
 - (v) substitution of credit or liquidity providers, or their failure to perform;
 - (vi) adverse tax opinions or events affecting the tax exempt status of the Bonds;
 - (vii) modifications to rights of Owners;
 - (viii) bond calls;
 - (ix) defeasances;
 - (x) release, substitution, or sale of property securing repayment of the Bonds;
- and
- (xi) rating changes.

(b) The Authority shall notify any SID and either each NRMSIR or the MSRB, in a timely manner, of any failure by the Authority to provide financial information or operating data in accordance with Section 13.02 of this Resolution by the time required by such Section.

Section 13.04. Limitations, Disclaimers and Amendments.

(a) The Authority shall be obligated to observe and perform the covenants specified in this Article for so long as, but only for so long as, the Authority remains an "obligated person" with respect to the Bonds within the meaning of the Rule, except that the Authority in any event will give notice of any Bond calls and any defeasances that cause the Authority to be no longer an "obligated person."

(b) The provisions of this Article are for the sole benefit of the Owners and beneficial owners of the Bonds, and nothing in this Article, express or implied, shall give any benefit or any legal or equitable right, remedy, or claim hereunder to any other person. The Authority undertakes to provide only the financial information, operating data, financial statements, and notices which it has expressly agreed to provide pursuant to this Article and does not hereby

undertake to provide any other information that may be relevant or material to a complete presentation of the Authority's financial results, condition, or prospects or hereby undertake to update any information provided in accordance with this Article or otherwise, except as expressly provided herein. The Authority does not make any representation or warranty concerning such information or its usefulness to a decision to invest in or sell Bonds at any future date.

UNDER NO CIRCUMSTANCES SHALL THE DISTRICT BE LIABLE TO THE OWNER OR BENEFICIAL OWNER OF ANY BOND OR ANY OTHER PERSON, IN CONTRACT OR TORT, FOR DAMAGES RESULTING IN WHOLE OR IN PART FROM ANY BREACH BY THE DISTRICT, WHETHER NEGLIGENT OR WITHOUT FAULT ON ITS PART, OF ANY COVENANT SPECIFIED IN THIS ARTICLE, BUT EVERY RIGHT AND REMEDY OF ANY SUCH PERSON, IN CONTRACT OR TORT, FOR OR ON ACCOUNT OF ANY SUCH BREACH SHALL BE LIMITED TO AN ACTION FOR MANDAMUS OR SPECIFIC PERFORMANCE.

(c) No default by the Authority in observing or performing its obligations under this Article shall constitute a breach of or default under the Resolution for purposes of any other provisions of this Ordinance.

(d) Nothing in this Article is intended or shall act to disclaim, waive, or otherwise limit the duties of the Authority under federal and state securities laws.

(e) The provisions of this Article may be amended by the Authority from time to time to adapt to changed circumstances that arise from a change in legal requirements, a change in law, or a change in the identity, nature, status, or type of operations of the Authority, but only if (i) the provisions of this Article, as so amended, would have permitted an underwriter to purchase or sell Bonds in the primary offering of the Bonds in compliance with the Rule, taking into account any amendments or interpretations of the Rule to the date of such amendment, as well as such changed circumstances, and (ii) either (A) the Owners of a majority in aggregate principal amount (or any greater amount required by any other provisions of this Ordinance that authorizes such an amendment) of the Outstanding Parity Bonds consent to such amendment or (B) an entity or individual person that is unaffiliated with the Authority (such as nationally recognized bond counsel) determines that such amendment will not materially impair the interests of the Owners and beneficial owners of the Bonds. If the Authority so amends the provisions of this Article, it shall include with any amended financial information or operating data next provided in accordance with Section 10.1 an explanation, in narrative form, of the reasons for the amendment and of the impact of any change in type of financial information or operating data so provided.

ARTICLE XIV

SPECIAL PROVISIONS RELATING TO THE TEXAS WATER DEVELOPMENT BOARD

Section 14.01. Application of Article XIV.

The provisions of this Article shall apply so long as the Bonds, or any of them, are owned by the TWDB.

Section 14.02. Covenant to Abide with Rules.

The Authority will abide with all applicable laws of the State of Texas and Rules of the TWDB relating to the loan of funds evidenced by the Bonds and the Project.

Section 14.03. Tax Covenant.

The Authority will not take, or omit to take, any action which action or omission would adversely affect the excludability for federal income tax purposes of interest payable on the Bonds or on any series of bonds issued by the TWDB or the Texas Water Resources Finance Authority.

Section 14.04. Final Accounting.

(a) Subject to subparagraph (b) of this Section 14.04, upon completion of the Project, the Authority shall render a final accounting of the cost of the Project to the TWDB; and, if the total cost of the Project, as finally completed, is less than originally estimated, so that the proper share of the participation of the TWDB in the Project is reduced, the Authority shall return to the TWDB the amount of such excess to the nearest multiple of the denomination of the Bonds, whereupon the TWDB shall cancel and return to the Authority a like amount of said Bonds held by the TWDB. The Bonds to be canceled and returned shall be chosen in inverse order of maturity. The remainder of such excess (an amount less than \$5,000) shall be deposited into the Interest and Sinking Fund.

(b) Notwithstanding the provisions of Section 14.04(a), in accordance with the rules and regulations of the TWDB, any surplus moneys remaining after completion of the Project may be used for improvements and extensions to the Project which could otherwise be financed with the proceeds of bonds in any manner approved in writing by the executive administrator of the TWDB.

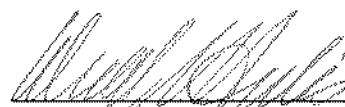
Section 14.05. Annual Audit Reports.

The Authority shall provide to the Executive Administrator of the TWDB, without necessity of a written request therefor, a copy of the Authority's annual audit report within 120 days after the end of the Authority's fiscal year.

Section 14.06. Water Conservation.

The Authority agrees to work with its customers to create and implement a TWDB approved water conservation plan.

FINALLY ADOPTED, APPROVED AND EFFECTIVE this January 14, 2009.



President, Board of Directors,
Coastal Water Authority

ATTEST:



Secretary, Board of Directors,
Coastal Water Authority



EXHIBIT A

DESCRIPTION OF ANNUAL DISCLOSURE OF FINANCIAL INFORMATION

The following information is referred to in Article XIII of this Resolution.

Annual Financial Statements and Operating Data

The financial information and operating data with respect to the Authority to be provided annually in accordance with such Section are as specified (and included in the Appendix or other headings of the Official Statement referred to) below:

1. The portions of the financial statements of the Authority appended to the Application, but for the most recently concluded fiscal year.
2. Statistical and financial data set forth in Tables set for in the Application.

Accounting Principles

The accounting principles referred to in such Section are the accounting principles described in the notes to the financial statements referred to in Paragraph 1 above.

EXHIBIT B
LUCE BAYOU CONTRACT

**PROJECTS CONTRACT
BETWEEN
CITY OF HOUSTON, TEXAS
AND
COASTAL WATER AUTHORITY**

C73168
2009-0053

THE STATE OF TEXAS §
 §
COUNTY OF HARRIS §

This Projects Contract is entered into as of the date of countersignature herein, by and between the CITY OF HOUSTON, TEXAS, a municipal corporation and Home-Rule City situated principally in Harris County, Texas (hereinafter called the "City"), and COASTAL WATER AUTHORITY, a political subdivision and conservation district of the State of Texas created by Chapter 601, Acts of the 60th Legislature of Texas, Regular Session, 1967 (Article 8280-355, Vernon's Texas Civil Statutes) (hereinafter called the "CWA") (together, the "Parties").

WITNESSETH:

RECITALS

A. The Parties desire to cooperate on the planning, design, property acquisition, construction and financing of the project known as the "Luce Bayou Interbasin Transfer Project," which as currently contemplated will include infrastructure sized to transfer approximately 450,000 acre feet per year of the City's permitted surface water from the Trinity River to Lake Houston (as further described in Section 2.01 herein, the "Luce Bayou Project").

B. This Projects Contract will among other things set forth the terms and conditions: (i) by which the Parties will collaborate on the construction of the Luce Bayou Project, which includes all costs associated with the Preliminary Project Costs, the Land and Mitigation Costs, and the Construction Costs (all as further defined

herein); and (ii) of the financing of the Luce Bayou Project through the WIF Bonds for Preliminary Project Costs, use of CWA Available Revenues for the City's portion of Land and Mitigation Costs, and the use of future available financing for the Construction Costs.

C. The Luce Bayou Project shall consist of certain elements described within and among the following categories: Preliminary Project Costs, Land and Mitigation Costs, and Construction Costs. The Preliminary Project Costs shall be for design, permitting, and other preliminary matters related to the Luce Bayou Project; Land and Mitigation Costs shall be for costs related to the acquisition of land and costs of environmental mitigation necessary for the Luce Bayou Project; and Construction Costs shall be for the costs related to the construction of the Luce Bayou Project.

D. Preliminary Project Costs will be financed and paid through the issuance of CWA contract revenue bonds which are to be purchased by the Texas Water Development Board (the "TWDB") through its Water Infrastructure Fund ("WIF") loan program, under which the TWDB will loan funds to CWA (the "WIF Bonds"). The WIF Bonds will be secured by the City's pledge under this Projects Contract to pay Debt Service on the WIF Bonds from Pledged Revenues (as defined herein).

E. The Projects Contract further contemplates that CWA shall advance funds to pay for the City's share of Land and Mitigation Costs from Available CWA Revenues (as defined herein), and the City shall repay CWA pursuant to the Amortization Payment (as defined herein), and Construction Costs will be financed by the most economical means available at the time of construction of the Luce Bayou Project, which is currently contemplated to be through financing from one or a combination of potential sources,

including 1) TWDB state assistance programs; 2) state or federal grants; 3) City Pledged Revenues; or 4) other CWA funds.

F. The Parties further intend to enter into one or more additional contracts for the operation and maintenance of the Luce Bayou Project.

AGREEMENT

For and in consideration of the respective promises and the mutual covenants and benefits hereinafter set forth, the City and CWA agree as follows:

ARTICLE I

DEFINITIONS

Section 1.01. Definitions. The terms defined in the recitals have the meanings set forth in such recitals, and the following terms have the following meanings:

“Act” shall mean Article 8280-355, Tex. Rev. Civ. Stat. Ann. (Chap.601, Acts of the 60th Legislature of Texas, Regular Session, 1967, as amended by Chap.767, Acts of the 61st Legislature of Texas, Regular Session, 1969, Chap. 706, Acts of the 68th Legislature of Texas, Regular Session, 1983, and Chap.674, Acts of the 69th Legislature of Texas, Regular Session, 1985, and any future amendments or codifications).

“Amortization Payment” shall mean the amount payable by the City to CWA necessary to reimburse CWA for the expenditure of its Available CWA Revenues on the Preliminary Project Costs and Land and Mitigation Costs (excluding the Pro Rata Share of Land and Mitigation Costs paid by the City to CWA from deposits made by the Authorities under Section 3.09 and the Pro Rata Share of Preliminary Project Costs paid from the City to CWA from deposits made by the Authorities under Section 3.10) as further set forth in Exhibit “A” hereto.

"Authorities" shall mean Central Harris County Regional Water Authority, North Harris County Regional Water Authority, West Harris County Regional Water Authority, and North Fort Bend Water Authority, and any successor-in-interest to any such entities.

"Available CWA Revenues" shall mean the certain revenues derived by CWA from the sale of certain Certificates of Participation, Series 1993A-J with respect to the City of Houston, Texas, Water Conveyance System Contract.

"Board of Directors" shall mean the Board of Directors of CWA which is the governing body of CWA.

"Bonds" means the bonds, notes and other obligations (other than WIF Bonds) issued or to be issued by CWA for the Luce Bayou Project and secured by contract revenues from the City, as the terms of such bonds, notes and other obligations may be agreed to in a Supplemental Agreement.

"City" is defined in the preamble of this Projects Contract and includes its successors and assigns.

"City Council" shall mean the City Council of the City which is the governing body thereof.

"Construction Costs" shall mean all costs and related costs of CWA reasonably incurred for labor and to Consultants, contractors, builders and materialmen in connection with the construction of the Luce Bayou Project, including but not limited to the cost of, (a) labor and equipment necessary for obtaining any electrical power; (b) contract bonds and insurance of all kinds that may be required or necessary during the course of construction that is not paid by the contractor or contractors or otherwise provided for; and (c) supervising construction, as well as for the performance of all other duties required by or consequent upon the proper construction of a project, including

engineering costs during the construction phase of the Luce Bayou Project. Additionally, to the extent any other Costs are not paid or reimbursed through the WIF Bonds or otherwise, such Costs are deemed to be Construction Costs.

“Consultants” shall mean the engineering firm or firms or other professional service firms at the time engaged by CWA to carry out any duties relating to the planning, design, acquisition, or construction of the Luce Bayou Project.

“Costs” shall mean Preliminary Project Costs, Land and Mitigation Costs, and Construction Costs.

“Costs of Issuance” shall mean cost of financing, legal, printing and other costs attributable to the issuance of the WIF Bonds and the Bonds within the meaning of Section 147(g) of the Internal Revenue Code.

“CWA” is defined in the preamble of this Projects Contract and includes its successors and assigns.

“Debt Service” shall mean, with respect to any particular fiscal year or other twelve (12) month period, for the WIF Bonds or any series of Bonds, an amount equal to the sum of (a) all interest payable on such WIF Bonds or Bonds during such period, except to the extent that such interest is to be paid from amounts (including any investment earnings thereon) deposited in the applicable debt service fund, debt service reserve fund, construction fund, or elsewhere for the purpose of providing capitalized interest, plus (b) that portion of the principal amount of such WIF Bonds or Bonds which are due and payable during such period, plus or minus (c) net amounts payable or receivable under any credit agreements or hedge agreements during such period, plus (d) Obligation Expenses for the WIF Bonds or Bonds during such period.

"Executive Director" shall mean the executive director of CWA or anyone designated in writing by the executive director to perform a specified task.

"Financial Officer" shall mean the chief financial officer of CWA or anyone designated in writing by the chief financial officer to perform a specified task.

"Generally Accepted Accounting Principles" shall mean, such accepted accounting practice as, in the opinion of CWA's accountant, conforms at the time to a body of generally accepted accounting principles.

"General Purpose Fund" shall mean the System fund so designated in the Master Ordinance and established and maintained by the City thereunder.

"Land and Mitigation Costs" shall mean all costs and related costs incurred by CWA in connection with the acquisition of Project Property, including but not limited to (a) acquiring Project Property whether by purchase or by condemnation; (b) any costs of purchasing environmental mitigation credits or other expense relating to mitigating the environmental impact of the Luce Bayou Project; (c) due diligence; (d) all other costs, including damages awarded by a court, which CWA shall be required to pay for the acquisition of Project Property and/or arising out of the acquisition of Project Property.

"Master Ordinance" shall mean City of Houston Ordinance No. 2004-299, and any amendments and supplements thereto, which provides for the establishment and maintenance of the General Purpose Fund.

"Net Revenues" shall have the meaning as defined in the Master Ordinance.

"Obligation Expenses" shall mean the ongoing fees and expenses of CWA (other than Costs of Issuance) relating to the WIF Bonds or any obligation issued to finance Construction Costs pursuant to Section 3.03, including its fees and expenses relating to:

(1) paying agents, registrars, authenticating agents, securities dealer, securities depositories, or other fiduciaries; (2) tax rebate, financial and legal consultants; (3) insurers; (4) remarketing, indexing, or similar agreements; (5) credit agreements, hedge agreements, investment liquidity facility agreements, consented to by the City, or bond reserve fund surety policies.

“Pledged Revenues” shall mean the Net Revenues held in the General Purpose Fund.

“Preliminary Project Costs” shall mean all costs and related costs reasonably incurred by CWA in connection with the planning, design and engineering of the Luce Bayou Project, including but not limited to (a) all costs that are eligible to be financed through the WIF Bonds, including (I) geotechnical investigations, surveys, estimates, plans and specifications and preliminary Investigations therefor, as well as for the performance of all other duties required by or consequent upon the proper design of a project; (II) analysis of the environmental impact of the Luce Bayou Project and the mitigation of any environmental impact of the Luce Bayou Project; (III) applying for and obtaining any permits necessary for the design, acquisition or construction of the Luce Bayou Project or for the acquisition of Project Property (IV) Costs of Issuance for the WIF Bonds or other financing of the Preliminary Project Costs; (V) all other costs, including damages awarded by a court, which CWA shall be required to pay, under the terms of any contract or contracts, for the design of the Luce Bayou Project; and (b) any sums required to reimburse CWA for advances made by CWA or the City for any of the above items, or for any other costs incurred and for work done by it (including overhead charges), which are properly chargeable to the Luce Bayou Project.

“Pro Rata Share of Land and Mitigation Costs” means, with respect to the Authorities, 35.3% of the total costs of the Land and Mitigation Costs, and with respect to the City, 64.7 % of the Land and Mitigation Costs.

“Pro Rata Share of Preliminary Project Costs Interest Expense” means, with respect to the Authorities, 35.3% of the total costs of interest on the Preliminary Project Costs identified as Component A in Exhibit A, and with respect to the City, 64.7% of the total costs of interest on the Preliminary Project Costs identified as Component A in Exhibit A.

“Project Property” shall mean all necessary land or rights in land for the Luce Bayou Project, including any land necessary to comply with any legal requirements to mitigate the environmental impact of the Luce Bayou Project, and any items or costs incidental thereto.

“Projects Contract” shall mean this agreement between CWA and the City.

“Public Works Director” shall mean the Director of the Department of Public Works and Engineering of the City (or the successor equivalent position), or such person as he or she shall designate.

“Substantial Completion” shall mean the time at which the Luce Bayou Project is available for use for its intended purposes as certified by an engineer engaged by CWA.

“Supplemental Agreement” shall mean one or more agreements between the City and CWA necessary to carry out the terms of this Projects Contract.

“System” has the meaning stated in the Master Ordinance.

ARTICLE II

PROJECT DESIGN, ACQUISITION, AND CONSTRUCTION

Section 2.01. Luce Bayou Project. As currently reflected in the State of Texas 2007 Water Plan, and as described in the application for the WIF Bonds, it is contemplated that the Luce Bayou Project would include the construction of infrastructure sized to transfer approximately 450,000 acre feet per year of the City's permitted surface water from the Trinity River to Lake Houston. Such infrastructure is envisioned to include the construction of a new pump station on the banks of the Trinity River, and necessary pipelines and canals. The Parties acknowledge that components and details of the Luce Bayou Project may change as design, permitting, and other requirements may dictate.

Section 2.02. Cooperation Among Parties and Authorities. CWA will be solely responsible for all decisions and actions relating to the design, development, procurement and construction of all aspects of the Luce Bayou Project. CWA shall regularly communicate with the Authorities with respect to the design, development, procurement and construction of the Luce Bayou Project, by i) inviting the Authorities to participate in certain development and planning meetings between CWA and its consultants in order to facilitate communication and input from the Authorities; and ii) providing that CWA will provide the Authorities with written monthly (or other than monthly if mutually agreed to by CWA and the Authorities) updates regarding the progress, status of contracts and other relevant aspects of the Luce Bayou Project. While CWA will consider the Authorities' input regarding the Luce Bayou Project, the City and the Authorities recognize that such input, communication and status reports provided for in this paragraph do not alter CWA's role as the sole project manager of the

Luce Bayou Project. In addition, CWA will invite the Authorities and the City to all meetings between CWA and its consultants, and between CWA and its construction contractors, where substantive issues that have a financial or project development impact on the Authorities or the City are being discussed.

Section 2.03. Design, Permitting, Property Acquisition, and Construction.

(a) **Phase I Preliminary Design.** Preliminary engineering reports for the Luce Bayou Project shall be prepared by the Consultants which shall be submitted to and approved by both the Executive Director and the Public Works Director before proceeding with Phase II--Final Design of the Luce Bayou Project.

(b) **Phase II Final Design.** CWA intends to commence with Phase II Final Design of the Luce Bayou Project by January 1, 2011. Final plans for the Luce Bayou Project shall be prepared by the consulting engineers and shall be approved by the Public Works Director and the Executive Director prior to advertising for construction contracts.

(c) **Permits.** Before awarding a construction contract, CWA shall cause to be secured all necessary permits for the Luce Bayou Project.

(d) **Land Costs and Mitigation.** CWA shall acquire all Project Property. CWA intends to use its Available CWA Funds, and the Authorities' funds paid to CWA by the City under Section 3.09 to acquire all or a portion of the Project Property to be used for right of way and for certain environmental mitigation purposes and to pay the Land and Mitigation Costs. If CWA expends such Available CWA Funds for Project Property and to pay the Land and Mitigation Costs, the City shall reimburse CWA for such expenditures in accordance with Section 3.09 herein. After all Debt Service

payments on the WIF Bond and Bonds have been paid and all other obligations under this Projects Contract are paid, CWA shall at any time thereafter, upon the request of the City, assign to the City all of CWA's rights, title and interest in the Project Property and shall execute all documents necessary to effectuate said conveyance.

CWA will keep an accurate record of all costs of land acquisition and mitigation, including appraisals, surveying, negotiations, abstracts, legal opinions and condemnation costs which shall be Included in the Land and Mitigation Costs as Costs of the Luce Bayou Project and shall make this information available to the City. Once CWA has completed land acquisition and mitigation, but no later than June 30, 2014, CWA will notify the City of the completion (or of any land acquisition and mitigation remaining to be completed). CWA agrees to an accounting of the total Land and Mitigation Costs. CWA will provide to the City and Authorities a 65-day review and comment prior to finalizing the accounting. The payments made by the Authorities and the City for Land and Mitigation Costs such that if the City has underpaid the City Pro Rata Share of Land and Mitigation Costs or the Authorities' Pro Rata Share of Land and Mitigation Costs, taking into account interest accrued, the City will pay such shortfall within 60 days of receiving the final accounting, and CWA agrees to refund to the City any overpayment, taking into account interest accrued, within 65 days of the final accounting if the City has overpaid.

(e) **Construction Documents.** Construction contract documents for the Luce Bayou Project shall be prepared by CWA and shall be approved by the Public Works Director and the Executive Director prior to advertising for construction contracts, in the case of a competitive bid, or, in the case of alternative delivery methods used by

CWA, construction contract documents shall be approved by the Public Works Director at such time as provided by applicable law for completion of such documents.

(f) **Construction Bids; Construction Contracts.** After plans, specifications, contract documents, and preliminary plans for financing the Luce Bayou Project have been approved by CWA and the City, and CWA has secured financing to pay the Construction Costs, CWA shall either take competitive bids on the construction of the Luce Bayou Project, or, if CWA and the City determine that it would be more advantageous and result in the best and most economical completion of the Luce Bayou Project, CWA may utilize alternative delivery methods that may be allowed by applicable law.

(g) **Construction.** Upon approval by the Public Works Director of the award, CWA shall promptly award construction contracts and proceed promptly with construction of the Luce Bayou Project. CWA intends that the Luce Bayou Project will reach Substantial Completion no later than July 1, 2019.

(h) **Inspection by City.** The City's representatives shall have access at all times to all work in progress and may make such inspections thereof as it deems necessary or desirable and direct attention to the resident engineer in charge of supervision of construction on behalf of the Consultant to any deviations from the plans and specifications. The City shall also have full access to all contracts, books, records, accounts, and physical properties of, or relating to, the Luce Bayou Project during and after construction and, upon request of the City, CWA shall furnish the City copies of annual audit reports and other periodic reports relating to the construction of the Luce

Bayou Project. CWA will respond immediately to any issues raised by the City with respect to Luce Bayou Project construction.

ARTICLE III

PROJECT FINANCE; PAYMENTS BY THE CITY

Section 3.01. Preliminary Project Costs--Debt Service on the WIF Bonds.

To finance the Preliminary Project Costs, the City agrees to remit Pledged Revenues to CWA or to such other paying agent the amounts necessary to pay Debt Service on the WIF Bonds and any refunding thereof, provided that the City consents to such refunding.

Section 3.02. Payments to CWA by City. The City is authorized under Section 5.9 of the Master Ordinance to pledge payments from funds in the General Purpose Fund for various costs, including the Costs of the Luce Bayou Project. The City is further obligated, pursuant to Section 7.2 of the Master Ordinance to exercise all necessary power and authority to establish, fix, increase, impose and collect rates and charges for the use and services of the City's water and sewer system in the amounts required to comply with covenants made pursuant to the Master Ordinance ("Rate Order Authority"), together with other available funds (including payments from the Authorities). In consideration of the design, construction and acquisition by CWA of the Luce Bayou Project, the City agrees to cause the financing of the Luce Bayou Project through its unconditional obligation of the City to pay Debt Service solely from the Pledged Revenues as set forth in this Article III, without demand, notice, or counterclaim. The City hereby acknowledges that through its Rate Order Authority the City has the authority to and is obligated by entering into this Agreement to maintain rates and charges for its water and sewer system, together with other available funds

(including payments from the Authorities) sufficient to pay the Debt Service from the Pledged Revenues.

Section 3.03. Construction Costs--Plan of Construction Financing. The Parties anticipate that Construction Costs will be financed from Pledged Revenues under the "State Participation Program." The City and CWA shall agree upon, in one or more Supplemental Agreements, the terms and conditions for financing the cost of constructing the Luce Bayou Project. The City agrees that it will secure Pledged Revenues that may be pledged to CWA in a Supplemental Agreement that provides for such Pledged Revenues to be used to pay Debt Service on any Bonds issued by CWA for the construction of the Luce Bayou Project. CWA agrees that, with respect to financing of the construction of the Luce Bayou Project, it shall use its best efforts to issue Bonds secured by Pledged Revenues from the City from a Supplemental Agreement, however, in addition to or instead of such a financing, CWA reserves the right to utilize other financing sources (subject to City consent) that would result in the most economical financing or an overall savings for the total Costs of the Luce Bayou Project. Such financing sources may include other state funding programs, grant funds, or other City or CWA revenues.

Section 3.04. Debt Service on CWA's Bonds. With respect to the WIF Bonds, and, if the City and CWA enter into an agreement pursuant to Section 3.03, with respect to Bonds, the City agrees, so long as the WIF Bonds or Bonds (including refunding bonds) issued by CWA remain outstanding, the City shall remit, with the approval of the City to provide funds for any aspect of the Luce Bayou Project, to the paying agent at which such WIF Bonds or Bonds are payable, or upon the request of CWA, to the securities depository for the WIF Bonds or Bonds, the respective sums necessary to

pay the portion of Debt Service on the WIF Bonds or Bonds, comprising principal and interest thereon at the respective times and in the respective amounts as fixed and prescribed in the bond resolution under authority of which said WIF Bonds or Bonds are issued by CWA. CWA agrees to obtain consent from the City prior to issuing any refunding Bonds, or before entering into any credit agreement or other obligation authorized under Texas Government Code, Chapter 1371 with respect to the WIF Bonds or any other Bonds. Promptly after the WIF Bonds or each series of original or refunding Bonds is issued, CWA shall furnish the City a schedule of payments to be made on the WIF Bonds or such series of Bonds.

Section 3.05. Bond Reserve Funds Payments. It is the intent of the Parties that any reserve funds required in connection with the issuance of future Bonds will be funded with Bond proceeds. The City shall also pay as Debt Service to CWA such sums not financed with Bond proceeds as are necessary to restore an amount equal to any bond reserve fund requirement in any bond reserve fund created in the bond resolution authorizing the issuance of such Bonds if there is an unanticipated draw on any bond reserve fund required to pay Debt Service on any future Bonds. Such payments shall be made at such times and in such amounts as provided in the bond resolution authorizing the Bonds. CWA will consider using Available CWA Revenues for reserves if appropriate.

At no time will the amount held in any reserve fund exceed the amount authorized for a "bona fide debt service fund" for tax-exempt obligations, and, to the extent not required to pay rebate amounts to the United States, surplus or other remaining amounts in the reserve funds will be applied upon the final maturities of

principal of and interest on the bonds to pay principal of and interest then due, so that on final maturity of the Bonds no balances will remain in any reserve fund.

Section 3.06. Obligation Expenses. The City shall also pay Obligation Expenses as part of Debt Service as directed by CWA. CWA shall either create a separate fund or establish a subaccount in another CWA fund into which the payments shall be deposited. Moneys in the fund or subaccount shall be used only to pay Obligation Expenses.

Section 3.07. Arbitrage Required to Be Rebated. It is the intent of the parties hereto that funds and accounts will be managed to minimize rebate payments, and so that payments are matched to earnings. To the extent practicable, Bonds will be issued so that construction funds are expected to be held for periods which qualify for rebate exceptions. Earnings on construction funds will be held until the end of the construction period, and following a rebate calculation with respect to each series of Bonds at the end of such period, will be applied *first*, (if required) to pay rebate amounts, *second*, to pay additional Luce Bayou Project Costs, and *third*, to pay Debt Service. To the extent of any earnings on any debt service or debt service reserve fund which represent surplus in such funds, such surplus will be applied at least annually *first*, (if required) to pay rebate amounts, and *second*, to pay Debt Service.

If CWA does not have funds available for such purposes, the City shall also pay to CWA as part of Debt Service for deposit into any rebate fund created in a bond resolution (or, at the option of the City, pay directly to the United States Treasury Department on behalf of CWA if the City receives CWA's counsel's opinion concurring with the amount to be paid) an amount equal to the rebate amount on gross proceeds of the WIF Bonds or any Bonds which are issued by CWA with the approval of the City to

provide funds to design, construct or acquire the Luce Bayou Project required to be rebated by CWA to the United States Treasury Department, if any, in order to maintain the exemption of interest on the WIF Bonds or Bonds from federal income taxes. CWA agrees to the extent reasonably practicable and cost effective to draw amounts for construction in a manner that minimizes the likelihood of rebate payments. CWA shall maintain an accounting of such arbitrage required to be rebated, and shall furnish to the City (a) a calculation of payments to be made by the City (prepared in a manner and by a firm acceptable to CWA and the City) as soon as possible, in no event less than 15 days, prior to the date such payments are required to be made by CWA to the United States Treasury Department and (b) such other reports as the City may reasonably from time to time (but not more often than annually) request regarding CWA's accounting, as of the close of CWA's most recent fiscal year, for amounts required to be rebated to the United States. The City's obligation to make such payments shall not be reduced except to the extent that funds are on hand and lawfully available to CWA to make such payments when due.

Section 3.08. Covenants of Payment. CWA covenants that any interest earnings from any funds created by any bond resolutions relating to the Bonds shall be applied to Debt Service, additional Costs, or payments of rebate amounts as provided in Section 3.07.

Section 3.09. Land and Mitigation Cost-Amortization Payment. It is the intent of the City that the Authorities will pay the estimate of their Pro Rata Share of Land and Mitigation Costs to the City and that the City will pay such amounts to CWA. The Land and Mitigation Costs are estimated to be \$15,000,000. The City shall pay to CWA the Authorities' Pro Rata Share of Land and Mitigation Costs in two lump sum

payments as follows: \$3,530,000 to be paid no later than five business days after June 15, 2009, and \$1,765,000 to be paid no later than five business days after June 15, 2010. CWA agrees to maintain such payments in an interest bearing account.

If CWA incurs Land and Mitigation Costs prior to receiving payment from the City of the Authorities' Pro Rata Share of Land and Mitigation Costs, if the City fails to make its payments derived from the Authorities on a timely basis, or if any Authorities' Pro Rata Share of Land and Mitigation Costs exceed the estimated Land and Mitigation Costs, then to the extent of availability of Available CWA Funds, CWA may fund such payments and charge interest to the City until reimbursed at the prime rate then in effect accordance with the Component B Amortization Payments described in Exhibit A.

The City's Pro Rata Share of Land and Mitigation Costs, which CWA intends to advance on behalf of the City from Available CWA Revenues, are estimated to be advanced by CWA in two lump sum advances as follows: \$6,470,000 to be advanced no later than June 15, 2009, and \$3,235,000 to be advanced no later than June 15, 2010. As further detailed in the attached Exhibit A, during the period starting June 15, 2009 through December 15, 2016 the interest rate to be applied to the City's Pro Rata Share of Land and Mitigation Costs will be the prime rate published by the Wall Street Journal on the respective January 1 or July 1st or the next business day following the respective advance. As further described in Exhibit A, starting December 15, 2016 the interest rate will be fixed through the ultimate repayment period using the 10 year Bond Buyer Revenue Bond Index on December 15, 2016. The repayment schedule will begin June 15, 2019 using the 10 year Bond Buyer Revenue Bond Index from December 15, 2016. The repayment term is 20 years with once annual principal payments and twice annual interest payments. Notwithstanding anything in this Agreement to the contrary,

the City may repay the City's Pro Rata Share of the Land and Mitigation Costs owed at any time by paying the full amount of such costs plus any outstanding interest after 15 days written notice to CWA (or written waiver of such notice by CWA).

The City agrees to remit to CWA, from the Pledged Revenues, the Amortization Payment on the dates, in the manner, and in the amounts necessary to fully reimburse CWA for Land and Mitigation Costs not funded by the City from the Authorities' or City's Pro Rata Share of Land and Mitigation Costs in accordance with this Agreement, to the extent of the portion of such Project Property utilized for the Luce Bayou Project ("Component B"), all as further described in Exhibit "A" attached hereto and incorporated herein for all purposes as such Exhibit may be modified to reflect actual expenditures and payments from the City as provided in this Section.

Section 3.10. Interest Expenses-Amortization Payment.

CWA has expended or will expend prior to receiving funding from the WIF Loan Available CWA Funds for Preliminary Project Costs, which expenditures have a cost of interest due to CWA as a result of CWA advancing such funds (as further detailed in Exhibit A, "Component A"). It is the intent of the City that the Authorities will pay the estimate of their Pro Rata Share of Preliminary Project Costs Interest Expense to the City and that the City will pay such amounts to CWA. The total of such interest expense prior to the effective date of this Agreement is \$360,836. It is the intent of the City that the Authorities will pay to the City the Authorities' Pro Rata Share of Preliminary Project Costs Interest Expense, equal to \$127,375 no later than January 31, 2009, and that the City will pay such amounts to CWA within five business days thereafter.

The remaining interest expense equal to \$233,461 is the City's Pro Rata Share of the Preliminary Project Costs Interest Expense, and the City intends for CWA to continue to finance such costs using Available CWA Revenues. If CWA incurs

additional Preliminary Project Costs prior to receiving funds therefore from the WIF Loan or prior to receiving payment from the City of the Authorities' Pro Rata Share of Preliminary Project Costs Interest Expense, if the City fails to make its payments derived from the Authorities on a timely basis, or if the Authorities' Pro Rata Share of Preliminary Project Costs Interest Expense exceed the actual interest costs on the Preliminary Project Costs, then to the extent of availability of Available CWA Funds, CWA may fund such payments and charge interest to the City until reimbursed at the prime rate then in effect accordance with the Amortization Payments described in Exhibit A.

As further described in Exhibit A, during the period starting February 1, 2009 through December 15, 2016 the interest rate will be the prime rate published by the Wall Street Journal and will change semi annually on January 1 or July 1st. As further described in Exhibit A, starting December 15, 2016 the interest rate charged will be fixed through the ultimate repayment period using the 10 year Bond Buyer Revenue Bond index beginning December 15, 2016. The repayment term is 20 years with once annual principal payments and twice annual interest payments. The payment dates are December 15th and June 15th. Notwithstanding anything in this Agreement to the contrary, the City may repay the City's Pro Rata Share of the Preliminary Project Costs Interest Expense owed at any time by paying the full amount of such costs plus any outstanding interest after 15 days written notice to CWA (or written waiver of such notice by CWA).

The City agrees to remit to CWA, from the Pledged Revenues, the Amortization Payment on the dates, in the manner, and in the amounts necessary to fully reimburse CWA for the Component A interest costs not funded by the City from the Authorities'

Pro Rata Share of Preliminary Project Costs Interest Expense in accordance with this Agreement, on expenditures for Preliminary Project Costs, all as further described in Exhibit "A" attached hereto and incorporated herein for all purposes as such Exhibit may be modified to reflect actual expenditures and payments from the City as provided in this Section.

ARTICLE IV

AUDITS, ACCOUNTS, RECORDS AND REPORTS

Section 4.01. Accounts, Records, and Accounting Reports. CWA covenants and agrees that it will maintain books, records and accounts relating to the design, acquisition, and construction of the Luce Bayou Project in keeping with Generally Accepted Accounting Principles, and same shall be available for inspection by the City at reasonable hours and under reasonable circumstances.

Section 4.02. Audits, Progress of Construction. At the request of the City, CWA will have its books, records, and accounts relating to the construction of the Luce Bayou Project audited by a Certified Public Accountant. CWA shall cause its engineers to furnish to the City copies of all estimates and progress reports on construction as such estimates and reports are prepared and become available.

ARTICLE V

TERM, CONVEYANCE OF PROJECT, BONDS, PARITY NOTES, AND OTHER OBLIGATIONS AND INITIAL CONTRACT TERMINATION

Section 5.01. Term and Termination. This Projects Contract shall remain in effect until the WIF Bonds and Bonds issued by CWA to finance the Costs of the Luce Bayou Project, refunding Bonds issued in lieu of such Bonds, and the City's Amortization Payment obligations under Section 3.09, are paid. This Projects Contract may be amended, supplemented, and extended by mutual agreement of the parties, but

not in such manner as to impair the rights of the TWDB or the owners of Bonds issued by CWA and secured by a pledge of the payments to be made by the City hereunder.

Section 5.02. Completion Bonds. Subject to approval of the City Council, the City and CWA agree (i) that CWA will be able to issue additional Bonds as may be necessary to pay for completion of the Luce Bayou Project incurred in connection with the Costs of the Luce Bayou Project, to the extent of unforeseen circumstances resulting in shortfalls in available amounts for Luce Bayou Project completion, and (ii) agree to enter into such Supplemental Agreements to this Projects Contract as shall from time to time be needed to provide for the payment of principal, interest and redemption price on such completion Bonds.

ARTICLE VI

CITY COMMITMENT TO MOVE DIVERSION POINT

Section 6.01. City Commitment. The Parties acknowledge that it is a condition precedent to CWA proceeding with the construction of the Luce Bayou Project, that the City resolve any water rights or permitting issues relating to moving the diversion point on the Trinity River to a point necessary for the Luce Bayou Project to be completed and operational.

ARTICLE VII

MISCELLANEOUS

Section 7.01. Force Majeure. Except for the City's unconditional obligation to make the payments to CWA as provided in this Projects Contract, neither party shall be liable in damages or otherwise suffer any default for any delays, failures or omissions whatsoever hereunder if caused by force majeure. As used herein, the term "force majeure" includes acts of God, drought, insufficiency of water in the Trinity River, fire,

storm, flood, landslide, subsidences of land, lightning, earthquake, washout, explosion, epidemic, war, acts of enemies or belligerents, sabotage, interference by, orders of, or compliance with requests or recommendations of civil or military courts or other authorities, federal, state or local, including any agency or person appointed by any such authority or by any official thereof (whether de jure or de facto and whether acting legally or not), inability to obtain materials, strikes or other differences with labor (whether or not within the power of the party to settle the same), breakage or accident to machinery, canals, reservoirs or lines of pipe, or to any other cause (whether or not of the same class or kind as those set forth above) not due to the willful fault or gross negligence of such party, while or so long as performance is prevented by such cause and due diligence is being used to resume performance at the earliest practicable time. In any such event, prompt notice shall be given by the affected party to the other of the existence of such cause and of readiness to resume performance.

Section 7.02. Third Parties. This Projects Contract shall be for the sole and exclusive benefit of the City, CWA, the TWDB, and the owners of the WIF Bonds or the Bonds issued by CWA to finance the Costs of the Luce Bayou Project.

Section 7.03. Severability. In the event any term, covenant or condition herein contained shall be held to be invalid by any court of competent jurisdiction, such invalidity shall not affect any other term, covenant or condition herein contained, provided that such invalidity does not materially prejudice either CWA or the City in their respective rights and obligations contained in the valid terms, covenants or conditions hereof.

Section 7.04. Entire Agreement. This Projects Contract merges the prior negotiations and understandings of the parties hereto and embodies the entire

agreement of the parties, and there are not other agreements, assurances, conditions, covenants (expressed or implied) or other terms with respect to the Luce Bayou Project, whether written or verbal, antecedent or contemporaneous, with the execution hereof.

Section 7.05. Written Amendment. Unless otherwise provided herein, this Projects Contract may be amended only by written instrument duly executed on behalf of the City (by authority of an ordinance duly adopted by the City Council) and CWA.

Section 7.06. Notices. All notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third (3rd) day following deposit in a United States Postal Service post office or receptacle with proper postage affixed (certified mail, return receipt requested) addressed to the respective other party at the following address or at such other address as the receiving party may prescribe by written notice to the sending party:

To CWA:

Gary Oradat
Coastal Water Authority
One Allen Center
500 Dallas Street
Suite 2800
Houston, Texas 77002

with copies to:

Barron F. Wallace
Vinson & Elkins L.L.P.
1001 Fannin, Suite 2500
Houston, Texas 77002

To the City:

The City of Houston
611 Walker
Houston, Texas 77002
Attn: Director of Public Works and Engineering

with copies to:

Legal Department
900 Bagby, 4th Floor
Houston, Texas 77002

Section 7.07. Independent Contractor. CWA is engaged as an independent contractor, and all of the services provided for herein shall be accomplished by CWA in such capacity. Except as expressly provided herein, the City will have no control or supervisory powers as to the manner or method of CWA's performance of the subject matter of this Projects Contract. All personnel supplied or used by CWA shall be deemed employees or subcontractors of CWA and will not be considered employees, agents or subcontractors of the City for any purpose whatsoever. CWA shall be solely responsible for the compensation of all such personnel, for the withholding of income, social security and other payroll taxes and for the coverage of all workers' compensation benefits.

Section 7.08. Non-Waiver. Failure of either party hereto to insist on the strict performance of any of the agreements herein or to exercise any rights or remedies accruing hereunder upon default or failure of performance shall not be considered a waiver of the right to insist on, and to enforce by any appropriate remedy, strict compliance with any other obligation hereunder or to exercise any right or remedy occurring as a result of any future default or failure of performance.

Section 7.09. Remedies Cumulative. Except as otherwise provided herein, the rights and remedies contained in this Projects Contract shall not be exclusive, but shall be cumulative of all rights and remedies now or hereafter existing whether by statute, at law, or in equity; provided, however, that neither party may terminate its duties under this Projects Contract except in accordance with the provisions hereof.

EXECUTED in multiple counterparts at Houston, Texas, as of the date first above written.

CITY OF HOUSTON, TEXAS

By: Bill White
Mayor *Amador W. White*

ATTEST:

Barbara J. [Signature]
ACTING ASSISTANT CITY SECRETARY

COUNTERSIGNED:

Annice D. Parker
City Controller *[Signature]*

APPROVED AS TO FORM:

[Signature]
Senior Assistant City Attorney

APPROVED:

[Signature]
Director
Department of Public Works
and Engineering

COASTAL WATER AUTHORITY

By: [Signature]
President
Board of Directors

ATTEST:

[Signature]
Secretary/Treasurer
Board of Directors

**EXHIBIT A
AMORTIZATION PAYMENT SCHEDULE**

Calculation of Payments

The City will make the Amortization Payments as follows:

The Amortization Payments will consist of the sum of two components, Component A and Component B. Component A consists of the cost of interest on the expenditure of Available CWA Funds expended by CWA for Preliminary Project Costs. Component B consists of Land and Mitigation Costs, to the extent of the portion of such Project Property utilized for the Luce Bayou Project, including carrying costs due to deferral of payments associated with Land and Mitigation Costs.

Component A

Preliminary Project Costs were or will be advanced by CWA from Available CWA Revenues prior to funding of the WIF Bonds, and will be reimbursed by proceeds from the WIF Bonds. The table below indicates the amounts and the dates for such Preliminary Project Costs.

FOR ILLUSTRATION PURPOSES ONLY

Coastal Water Authority

Component A - SEAL's Funding of Development Costs
 Calculation of Carrying Costs to 12/15/2008
 Estimated as of Jan. 7, 2009

Timing, rates, and other factors may, and probably will, impact the values reflected in these schedules. The schedules should be adjusted over time as the actual timing and rates become known and can replace related assumptions.

Date	Amount	Source	Beg. Bal.	Applicable Rate*	Accrual	Compounding	End Bal.
6/13/2006	200,000.00	Per CWA records					200,000.00
6/15/2006			200,000.00	8.000%	88.89	88.89	200,088.89
7/11/2006	92,410.59	Per CWA records	200,088.89	8.000%	1,156.07		292,499.48
8/18/2006	111,340.01	Per CWA records	292,499.48	8.000%	2,405.00		403,839.49
9/13/2006	136,436.07	Per CWA records	403,839.49	8.000%	2,243.55		540,275.58
10/10/2006	293,644.53	Per CWA records	540,275.58	8.000%	3,241.65		743,920.09
11/14/2006	202,722.96	Per CWA records	743,920.09	8.000%	5,620.73		946,543.06
12/13/2006	161,356.85	Per CWA records	946,543.05	8.000%	6,100.59		1,107,999.90
12/15/2006			1,107,999.90	6.000%	492.44	21,260.03	1,129,259.93
1/10/2007	175,703.05	Per CWA records	1,129,259.93	8.000%	8,273.67		1,304,962.88
2/14/2007	133,077.80	Per CWA records	1,304,962.88	8.000%	9,859.72		1,438,040.78
3/14/2007	98,452.14	Per CWA records	1,438,040.78	8.000%	9,586.94		1,536,492.92
4/11/2007	123,096.89	Per CWA records	1,536,492.92	8.000%	9,218.96		1,659,589.81
5/9/2007	154,863.30	Per CWA records	1,659,589.81	8.000%	10,326.34		1,814,453.11
6/13/2007	87,516.77	Per CWA records	1,814,453.11	8.000%	13,709.20		1,901,969.88
6/15/2007			1,901,969.88	8.000%	845.32	59,820.14	1,961,790.02
7/11/2007	61,221.10	Per CWA records	1,961,790.02	8.250%	11,689.00		2,023,011.12
8/15/2007	51,398.93	Per CWA records	2,023,011.12	8.250%	15,762.63		2,074,410.05
9/12/2007	48,556.10	Per CWA records	2,074,410.05	8.250%	12,835.41		2,122,966.15
10/10/2007	38,969.78	Per CWA records	2,122,966.15	8.250%	13,622.37		2,181,955.93
11/21/2007	38,037.70	Per CWA records	2,181,955.93	8.250%	20,313.38		2,199,993.63
12/15/2007			2,199,993.63	8.250%	12,099.86	86,322.75	2,286,316.38
12/22/2007	29,020.36	Per CWA records	2,286,316.38	8.250%	3,887.63		2,315,336.74
1/9/2008	46,021.32	Per CWA records	2,315,336.74	8.250%	9,020.17		2,360,358.06
2/13/2008	34,378.88	Per CWA records	2,360,358.06	8.250%	18,391.12		2,394,736.74
3/12/2008	29,775.83	Per CWA records	2,394,736.74	8.250%	15,915.02		2,424,512.57
4/9/2008	35,959.62	Per CWA records	2,424,512.57	8.250%	15,001.67		2,460,472.19
5/14/2008	51,764.20	Per CWA records	2,460,472.19	8.250%	19,735.04		2,512,236.39
6/15/2008			2,512,236.39	8.250%	17,847.35	89,578.00	2,611,814.39
6/18/2008	42,828.09	Per CWA records	2,611,814.39	5.000%	1,088.26		2,654,642.48
7/23/2008	64,357.34	Per CWA records	2,654,642.48	5.000%	12,904.51		2,718,999.82
8/27/2008	70,394.03	Per CWA records	2,718,999.82	5.000%	12,839.72		2,759,393.85
9/16/2008	117,727.48	Per CWA records	2,759,393.85	5.000%	6,973.48		2,907,121.33
10/16/2008	206,881.45	Per CWA records	2,907,121.33	5.000%	12,113.01		3,114,002.78
11/15/2008	134,714.00	Per CWA records	3,114,002.78	5.000%	12,975.01		3,248,718.78
12/15/2008	18,353.03	Assumed	3,248,718.78	5.000%	13,538.32	72,430.31	3,339,600.12
1/15/2009			3,339,600.12	5.000%	13,914.58		3,339,600.12
1/31/2009			3,339,600.12	5.000%	7,421.11	21,335.70	3,360,835.82
TOTAL	3,000,000.00				360,835.82	360,835.82	3,360,835.82

* Prime Rates (per Bloomberg)	1/31/2009 Repayment of Expenditures by WIF Loan Proceeds (\$3 million)	(3,000,000.00)
6/13/2006	8.00%	
6/15/2006	8.00%	1/31/2009 Balance in Carrying Costs - Component A
12/15/2006	8.25%	
6/15/2007	8.25%	Authorities' Ratio
12/17/2007	7.25%	Authorities' Share
6/16/2008	5.00%	City's Share at 1/31/2009

To the extent there are further distributions by CWA for such Component A costs prior to funding of the WIF Bonds these expenditures will be recorded by CWA in a similar table, which will be provided to the City at the time the WIF Bonds is closed.

Carrying costs associated with Component A costs incurred prior to funding and reimbursement by the WIF Bonds will not be reimbursed by the WIF Bonds proceeds. These carrying costs will continue to accrue at the rates as provided in the following table, as such rates are determined in accordance with the footnotes appended to such table, until repaid by the City through this Component A of the Amortization Payments:

FOR ILLUSTRATION PURPOSES ONLY

Coastal Water Authority
Houston Comb. Utility
Contract Payments
Draft Calculation
Estimated as of Jan. 7, 2009

Timing, rates, and other factors may, and probably will, impact the values reflected in these schedules. The schedules should be adjusted over time as the actual timing and rates become known and can replace related assumptions.

Component A - Carrying Costs on Development Cost Advances (City Share Only, 64.70%)

Payment #	Date	Beginning Balance	Rate	Carry Cost Repayment [1], [6]	Accrued Interest	Interest Payment [2]	Total Payment [2]	Ending Balance [A]
	1/31/2009							233,461
	6/15/2008	233,461	7.000%	[3], [5]	6,128			239,589
	12/15/2009	239,589	7.000%		8,366			247,975
	6/15/2010	247,975	7.000%		8,679			256,654
	12/15/2010	256,654	7.000%		8,963			265,637
	6/15/2011	265,637	7.000%		9,297			274,934
	12/15/2011	274,934	7.000%		9,623			284,557
	6/15/2012	284,557	7.000%		9,959			294,516
	12/15/2012	294,516	7.000%		10,308			304,824
	6/15/2013	304,824	7.000%		10,669			315,493
	12/15/2013	315,493	7.000%		11,042			326,535
	6/15/2014	326,535	7.000%		11,429			337,964
	12/15/2014	337,964	7.000%		11,829			349,793
	6/15/2015	349,793	7.000%		12,243			362,036
	12/15/2015	362,036	7.000%		12,671			374,707
	6/15/2016	374,707	7.000%		13,115			387,822
	12/15/2016	387,822	7.000%		13,574			401,395
	6/15/2017	401,395	5.500%	[4], [5]	11,038			412,434
	12/15/2017	412,434	5.500%		11,342			423,776
	6/15/2018	423,776	5.500%		11,654			435,430
	12/15/2018	435,430	5.500%		11,974			447,404
1	6/15/2019	447,404	5.500%	[6]	6,276	12,304	18,581	441,126
2	12/15/2019	441,126	5.500%		6,450	12,131	18,581	434,676
3	6/15/2020	434,676	5.500%		6,628	11,964	18,581	428,048
4	12/15/2020	428,048	5.500%		6,810	11,771	18,581	421,238
5	6/15/2021	421,238	5.500%		6,997	11,584	18,581	414,241
6	12/15/2021	414,241	5.500%		7,190	11,392	18,581	407,051
7	6/15/2022	407,051	5.500%		7,387	11,194	18,581	399,663
8	12/15/2022	399,663	5.500%		7,581	10,991	18,581	392,073
9	6/15/2023	392,073	5.500%		7,779	10,782	18,581	384,273
10	12/15/2023	384,273	5.500%		6,014	10,568	18,581	376,260
11	6/15/2024	376,260	5.500%		6,234	10,347	18,581	368,025
12	12/15/2024	368,025	5.500%		6,461	10,121	18,581	359,565
13	6/15/2025	359,565	5.500%		6,693	9,888	18,581	350,871
14	12/15/2025	350,871	5.500%		6,932	9,649	18,581	341,939
15	6/15/2026	341,939	5.500%		7,178	9,403	18,581	332,761
16	12/15/2026	332,761	5.500%		7,430	9,151	18,581	323,330
17	6/15/2027	323,330	5.500%		7,689	8,892	18,581	313,641
18	12/15/2027	313,641	5.500%		7,956	8,625	18,581	303,684
19	6/15/2028	303,684	5.500%		8,230	8,351	18,581	293,454
20	12/15/2028	293,454	5.500%		8,511	8,070	18,581	282,943
21	6/15/2029	282,943	5.500%		8,800	7,781	18,581	272,143
22	12/15/2029	272,143	5.500%		9,097	7,484	18,581	261,045
23	6/15/2030	261,045	5.500%		9,403	7,179	18,581	249,643
24	12/15/2030	249,643	5.500%		9,718	6,865	18,581	237,926
25	6/15/2031	237,926	5.500%		10,038	6,543	18,581	225,888
26	12/15/2031	225,888	5.500%		10,369	6,212	18,581	213,519
27	6/15/2032	213,519	5.500%		10,710	5,872	18,581	200,809
28	12/15/2032	200,809	5.500%		11,069	5,522	18,581	187,750
29	6/15/2033	187,750	5.500%		11,448	5,163	18,581	174,332
30	12/15/2033	174,332	5.500%		11,837	4,794	18,581	160,544
31	6/15/2034	160,544	5.500%		12,236	4,415	18,581	146,378
32	12/15/2034	146,378	5.500%		12,645	4,025	18,581	131,822
33	6/15/2035	131,822	5.500%		13,064	3,625	18,581	116,866
34	12/15/2035	116,866	5.500%		13,493	3,214	18,581	101,498
35	6/15/2036	101,498	5.500%		13,932	2,791	18,581	85,708
36	12/15/2036	85,708	5.500%		14,381	2,357	18,581	69,484
37	6/15/2037	69,484	5.500%		14,840	1,911	18,581	52,813
38	12/15/2037	52,813	5.500%		15,309	1,452	18,581	35,684
39	6/15/2038	35,684	5.500%		15,788	981	18,581	18,064
40	12/15/2038	18,064	5.500%		16,267	497	18,581	-
					447,404	509,794	206,851	743,254

- [A] See separate page for calculation of 12/15/2008 balance.
- [1] Principal amortization schedule based on level estimated P + I semi-annual payments based on assumed 7.000% and 5.500% rates (see above) and 40 equal semi-annual payments.
- [2] Actual payments will fluct with changes in the actual interest rate.
- [3] 10-year average for Prime is 9.6% and 20-year average is 7.5%, as of Aug. 2008
- [4] 10-year average for Bond Buyer Rev Bond Index is 5.236% and 20-year average is 5.882% as of Aug 2008
- [5] Rate is reset based on published "Prime" lending rate or Bond Buyer Revenue Bond Index, as appropriate, once per year on June 15 (or next business date).
- [6] Rate and amortization are "frozen" at start of repayment period (12/15/2018), based on index at that point in time.
- [7] The rates reflected in this table are assumptions for modeling purposes only.

Component B

CWA expects to expend funds from Available CWA Revenues for Land and Mitigation Costs. The following table lists anticipated timing of such expenditures, and CWA will provide notice to the City of Land and Mitigation Costs from time to time as such expenditures occur, and CWA shall update the table below to reflect such changes. Land and Mitigation Cost expenditures may not be funded from proceeds of the WIF Bonds. Similar to Component A, CWA will incur carrying costs associated with the Land and Mitigation Costs for which the City will not compensate CWA for a number of years, until the Amortization Payments commence. The Land and Amortization Costs as listed and the carrying costs therefore will accrue at the rates as provided in the following table, as such rates are determined in accordance with the footnotes appended to such table, until repaid by the City through this Component B of the Amortization Payments:

FOR ILLUSTRATION PURPOSES ONLY

Coastal Water Authority
Houston Comb. Utility
Contract Payments
Draft Calculation
Estimated as of Jan. 7, 2009

Timing, rates, and other factors may, and probably will, impact the values reflected in these schedules. The schedules should be adjusted over time as the actual timing and rates become known and can replace related assumptions.

Component B - Lend/ROW/Mitigation Purchases (City Share Only, 84.70%)

Payment #	Date	Beginning Balance	Rate	Principal Distribution	Principal and Carry Cost Repayment [1], [6]	Accrued Interest	Interest Payment	Total Payment [2]	Ending Balance
	1/31/2009								
	6/15/2009		7.000%	[3], [5]	6,470,000	-	-		6,470,000
	12/15/2009	6,470,000	7.000%			226,450	226,450		6,696,450
	6/15/2010	6,696,450	7.000%		3,235,000	234,376	355,804		10,165,826
	12/15/2010	10,165,826	7.000%			368,257	381,146		10,869,867
	6/15/2011	10,869,867	7.000%			384,466	408,293		11,665,519
	12/15/2011	11,665,519	7.000%			422,583	437,374		12,496,395
	6/15/2012	12,496,395	7.000%			452,682	468,526		13,388,451
	12/15/2012	13,388,451	7.000%			484,924	501,897		14,339,901
	6/15/2013	14,339,901	7.000%			519,465	537,644		15,388,905
	12/15/2013	15,388,905	5.500%		[4], [5]	437,220	462,220		16,336,125
	6/15/2014	16,336,125	5.500%			449,243	481,598		17,248,966
	12/15/2014	17,248,966	5.500%			474,292	487,335	735,991	17,721,257
1	6/15/2019	17,721,257	5.500%	[6]	248,856	480,497	487,335	735,991	17,472,601
2	12/15/2019	17,472,601	5.500%		255,494	473,470	480,497	735,991	17,217,107
3	6/15/2020	17,217,107	5.500%		262,520	468,251	473,470	735,991	16,964,587
4	12/15/2020	16,964,587	5.500%		277,157	451,211	468,251	735,991	16,684,847
5	6/15/2021	16,684,847	5.500%		282,611	443,380	458,833	735,991	16,407,690
6	12/15/2021	16,407,690	5.500%		290,657	435,333	451,211	735,991	16,122,911
7	6/15/2022	16,122,911	5.500%		308,925	427,065	443,380	735,991	15,830,300
8	12/15/2022	15,830,300	5.500%		317,421	418,570	435,333	735,991	15,529,643
9	6/15/2023	15,529,643	5.500%		326,150	409,841	427,065	735,991	15,220,717
10	12/15/2023	14,977,146	5.500%		335,119	400,872	418,570	735,991	14,903,296
11	6/15/2024	14,903,296	5.500%		344,335	391,696	409,841	735,991	14,577,146
12	12/15/2024	14,577,146	5.500%		353,894	382,187	400,872	735,991	14,242,627
13	6/15/2025	14,242,627	5.500%		363,534	372,457	391,696	735,991	13,897,692
14	12/15/2025	13,897,692	5.500%		373,531	362,460	382,187	735,991	13,543,886
15	6/15/2026	13,543,886	5.500%		383,893	352,188	372,457	735,991	13,180,355
16	12/15/2026	13,180,355	5.500%		394,356	341,633	362,460	735,991	12,809,824
17	6/15/2027	12,809,824	5.500%		405,202	330,788	352,188	735,991	12,423,021
18	12/15/2027	12,423,021	5.500%		416,345	319,645	341,633	735,991	12,028,663
19	6/15/2028	12,028,663	5.500%		427,795	308,196	330,788	735,991	11,623,481
20	12/15/2028	11,623,481	5.500%		439,569	298,431	319,645	735,991	11,207,115
21	6/15/2029	11,207,115	5.500%		451,847	284,343	308,196	735,991	10,779,320
22	12/15/2029	10,779,320	5.500%		464,668	271,923	298,431	735,991	10,339,781
23	6/15/2030	10,339,781	5.500%		478,829	259,161	284,343	735,991	9,888,114
24	12/15/2030	9,888,114	5.500%		489,942	246,048	271,923	735,991	9,424,046
25	6/15/2031	9,424,046	5.500%		503,416	232,575	259,161	735,991	8,947,217
26	12/15/2031	8,947,217	5.500%		517,290	218,731	246,048	735,991	8,457,275
27	6/15/2032	8,457,275	5.500%		531,484	204,506	232,575	735,991	7,953,699
28	12/15/2032	7,953,699	5.500%		546,100	189,891	218,731	735,991	7,436,598
29	6/15/2033	7,436,598	5.500%		561,118	174,873	204,506	735,991	6,906,115
30	12/15/2033	6,906,115	5.500%		576,548	159,442	189,891	735,991	6,359,015
31	6/15/2034	6,359,015	5.500%		592,404	143,587	174,873	735,991	5,797,898
32	12/15/2034	5,797,898	5.500%		608,686	127,296	159,442	735,991	5,221,349
33	6/15/2035	5,221,349	5.500%		625,434	110,567	143,587	735,991	4,628,946
34	12/15/2035	4,628,946	5.500%		642,693	93,357	127,296	735,991	4,029,251
35	6/15/2036	4,029,251	5.500%		660,368	75,685	110,567	735,991	3,394,617
36	12/15/2036	3,394,617	5.500%		678,484	57,527	93,357	735,991	2,752,184
37	6/15/2037	2,752,184	5.500%		697,122	38,669	75,685	735,991	2,091,876
38	12/15/2037	2,091,876	5.500%		716,293	19,696	57,527	735,991	1,413,414
39	6/15/2038	1,413,414	5.500%				38,669	735,991	716,293
40	12/15/2038	716,293	5.500%				19,696	735,991	
					9,795,000	17,721,257	19,734,826	11,718,369	29,439,626

- [1] Principal amortization schedule based on level estimated P + I semi-annual payments based on assumed 7.000% and 5.500% rates (see above) and 40 equal semi-annual payments.
[2] Actual payments will float with changes in the actual interest rate.
[3] 10-year average for Prime is 6.8% and 20-year average is 7.5%, as of Aug. 2009
[4] 10-year average for Bond Buyer Rev Bond Index is 5.236% and 20-year average is 5.682% as of Aug 2008
[5] Rate is reset based on published "Prime" lending rate or Bond Buyer Revenue Bond Index, as appropriate, once per year on June 15 (or next business date).
[6] Rate and amortization are "frozen" at start of repayment period (12/15/2018), based on index at that point in time.
[7] The rates reflected in this table are assumptions for modeling purposes only.

EXHIBIT C
ESCROW AGREEMENT

ESCROW AGREEMENT

THIS ESCROW AGREEMENT, dated as of February 1, 2009, made by and between Coastal Water Authority, a political subdivision of the State of Texas in Harris County, Texas, (the "Authority"), acting by and through the Bank of New York Mellon Trust Company, N.A., (the "Bank"), as Escrow Agent (the "Escrow Agent") together with any successor in such capacity;

W I T N E S S E T H:

WHEREAS, pursuant to the Bond Resolution adopted on January 14, 2009, the Authority authorized the issuance of \$28,000,000 "Coastal Water Authority Contract Revenue Bonds, Series 2009", dated February 1, 2009 (the "Bonds") for the purpose of designing the Luce Bayou Interbasin Transfer System (the "Project"); and

WHEREAS, such ordinance also confirmed the sale of the Bonds to the Texas Water Development Board (the "TWDB"); and

WHEREAS, the Escrow Agent is a national bank located in the State of Texas, an insured depository institution with the Federal Deposit Insurance Corporation, ("FDIC"), and is otherwise qualified and empowered to enter into this Escrow Agreement, and hereby acknowledges its acceptance of the terms and provisions hereof; and

WHEREAS, a condition to the purchase of the Bonds by the TWDB is the deposit of the proceeds of sale (less amounts to pay costs of issuance) in escrow subject to being withdrawn only with the approval of the Executive Administrator of the TWDB or an authorized representative; provided, however, the funds can be transferred to different investments so long as all parties hereto consent to such transfer;

NOW, THEREFORE, in consideration of the mutual agreements herein contained and in consideration of the amount to be paid by the Authority to the Escrow Agent, as set forth on Exhibit A, the receipt of which is hereby acknowledged, and in order to secure the delivery of the Bonds, the parties hereto mutually undertake, promise and agree for themselves, their respective representatives and successors, as follows:

SECTION 1: Upon the delivery of the Bonds described above, proceeds of sale designated in the Bond Resolution to be deposited into the Escrow Fund (less amounts to pay costs of issuance) shall be deposited to the credit of a special escrow account maintained at the Authority on behalf of the Authority and the TWDB and shall not be commingled with other accounts or funds ("Escrow Fund"). The amounts received by the Escrow Agent under this Agreement shall not be considered as a banking deposit by the Authority, and the Escrow Agent shall have no right to title with respect thereto except as a fiduciary and Escrow Agent under the terms of this Agreement.

These escrowed funds shall be kept in a separate account entitled "Coastal Water Authority Contract Revenue Bonds, Series 2009 Escrow Account" and shall not be subject to warrants, drafts or checks drawn by the Authority but shall be disbursed or withdrawn to pay the

costs of the project for which the Bonds were issued (the "*Project Costs*") in accordance with the Bond Resolution and solely upon written authorization from the Executive Administrator, or his authorized representative.

SECTION 2: All cash deposited to the credit of such escrow account and any accrued interest in excess of the amounts insured by the FDIC and remaining uninvested under the terms of this Agreement shall be continuously secured by a valid pledge of direct obligations of the United States of America or other collateral meeting the requirements of the Public Funds Collateral Act, Chapter 2257, TEX. GOV'T CODE ANN., as amended.

SECTION 3: While funds are held in escrow, the Bank shall only invest escrowed funds in investments that are authorized by the Public Funds Investment Act, Chapter 2256, TEX. GOV'T CODE ANN., as amended. It is the Authority's responsibility to direct the Escrow Agent to invest all public funds in a manner that is consistent not only with the Public Funds Investment Act but also with its own written investment policy. The Escrow Agent shall not be liable or responsible for any diminution in value of any assets held hereunder which may result from any investments or reinvestment made in accordance with any provision which may be contained herein.

SECTION 4: The Bank shall not honor any disbursement from the escrow fund, or any portion thereof, unless and until it has been supplied with written approval and consent by the Executive Administrator of the TWDB or an authorized TWDB representative. However, no written approval and consent by the Executive Administrator shall be required if the disbursement involves transferring funds from one investment to another provided that all such investments are consistent with the requirements of the Public Funds Investment Act.

SECTION 5: Any sums remaining unexpended in the escrow account after completion of the Project and after the final accounting has been submitted to and approved by the TWDB shall be transferred to the Authority within thirty (30) days of such approval by the TWDB.

SECTION 6: The Bank shall be authorized to accept and rely upon the certifications and documents furnished to the Bank by the Authority and shall not be liable for the payment of any funds made in reliance in good faith upon such certifications or other documents or approvals, as herein recited.

SECTION 7: LIABILITY. To the extent permitted by law, the Escrow Agent shall not be liable for any act done or step taken or omitted by it or any mistake of fact or law, except for its negligence or default or failure in the performance of any obligation imposed upon it hereunder. The Escrow Agent shall not be responsible in any manner for any proceedings in connection with the Bonds or any recitation contained in the Bonds. If the Escrow Agent renders any service hereunder not provided for in this Agreement, or the Escrow Agent is made a party to or intervenes in any litigation pertaining to this Agreement or institutes interpleader proceedings relative hereto, the Escrow Agent shall be compensated reasonably by the Authority for such extraordinary services and reimbursed for any and all claims, liabilities, losses, damages, fines, penalties, and expenses, including out-of-pocket and incidental expenses and legal fees occasioned thereby.

SECTION 8: RECORDS. The Escrow Agent will keep complete and correct books of record and account relating to the receipts, disbursements, allocations and application of the money deposited to the Escrow Fund, and investments of the Escrow Fund and all proceeds thereof. The records shall be available for inspection at reasonable hours and under reasonable conditions by the Authority and the TWDB.

SECTION 9: MERGER/CONSOLIDATION. In the event that the Escrow Agent merges or consolidates with another bank or sells or transfers substantially all of its assets or corporate trust business, then the successor bank shall be the successor Escrow Agent without the necessity of further action as long as the successor bank is a state or national bank as well as an FDIC-insured depository institution. If the merger, consolidation or other transfer has occurred between state banks, the newly-created entity shall forward the certificate of merger or exchange issued by the Texas Department of Banking as well as the statement filed with the pertinent chartering authority, if applicable, to the TWDB within a reasonable time of such merger, consolidation or exchange.

SECTION 10: AMENDMENT. This Agreement may be amended from time to time as necessary with the consent of the Authority and the TWDB, but no such amendments shall increase the liabilities or responsibilities or diminish the rights of the Bank without its consent.

SECTION 11: TERMINATION. In the event that this escrow agreement is terminated by either the Authority or by the Bank, the Escrow Agent must report said termination in writing to the TWDB within 5 business days of such termination. The Authority is responsible for ensuring that the following criteria are satisfied in selecting the successor escrow agent and notifying the TWDB of the change in escrow agents: (a) the successor escrow agent must be an FDIC-insured state or national bank designated by the Texas Comptroller as a state depository; (b) the successor escrow agent must be retained prior to or at the time of the termination; (c) an escrow agreement must be executed by and between the Authority and the successor escrow agent and must contain the same or substantially similar terms and conditions as are present in this escrow agreement; and (d) the Authority must forward a copy of the executed escrow agreement with the successor escrow agent within 5 business days of said termination. No funds shall be released by the TWDB until it has received, reviewed and approved the escrow agreement with the successor escrow agent. The Escrow Agent may resign as such following the giving of thirty (30) days prior written notice to the other parties hereto. Similarly, the Escrow Agent may be removed and replaced following the giving of thirty (30) days prior written notice to the Escrow Agent by the other parties hereto. In either event, the duties of the Escrow Agent shall terminate thirty (30) days after receipt of such notice (or as of such earlier date as may be mutually agreeable); and the Escrow Agent shall then deliver the balance of the moneys or assets then in its possession to a successor escrow agent as shall be appointed by the other parties hereto as evidenced by a written notice filed with the Escrow Agent. If the other parties hereto have failed to appoint a successor prior to the expiration of thirty (30) days following receipt of the notice of resignation or removal, the Escrow Agent may appoint a successor or petition any court of competent jurisdiction for the appointment of a successor escrow agent or for other appropriate relief, and any such resulting appointment shall be binding upon all of the parties hereto.

SECTION 12: EXPIRATION. This Escrow Agreement shall expire upon final transfer of the funds in the Escrow Account to the Authority.

SECTION 13: ASSIGNABILITY. This Agreement shall not be assignable by the parties hereto, in whole or in part, and any attempted assignment shall be void and of no force and effect.

SECTION 14: CHOICE OF LAW. This Agreement shall be governed exclusively by the applicable laws of the State of Texas. Should a controversy arise, either party hereto may introduce the dispute into the Travis County District Court for adjudication thereof.

SECTION 15: This Agreement evidences the entire Escrow Agreement between the Escrow Agent and the Authority and supercedes any other agreements, whether oral or written, between the parties regarding the Funds or this escrow account. No modification or amendment of this Agreement shall be valid unless the same is in writing and is signed by the Authority and consented to by the Escrow Agent and the TWDB.

SECTION 16: If any term, covenant, condition or provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the provisions shall remain in full force and effect and shall in no way be affected, impaired or invalidated thereby.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

COASTAL WATER AUTHORITY

By: _____
Executive Director

Address:

(Seal)

THE BANK OF NEW YORK MELLON TRUST COMPANY, N.A.,
as Escrow Agent

By: _____
Title: _____

Address:

(Bank Seal)

CERTIFICATE FOR RESOLUTION

I, the undersigned Officer of the Board of Directors of the Coastal Water Authority, hereby certify as follows:

1. The Board of Directors of the Coastal Water Authority (the "Authority") convened in regular session on the 9th day of June 2010, at the regular meeting place thereof, inside the boundaries of the Authority, and the roll was called of the duly constituted officers and members of the board to-wit:

Kurt F. Metyko, P.E.	President
A. R. "Rusty" Senac	1 st Vice-President
F. William Othon, P.E.	2 nd Vice President
Zebulun Nash	Secretary-Treasurer
Giti Zarinkelk, P.E.	Director
Ray Stoesser	Director
John Otis Cobb, P.E.	Director

and all of said persons were present except for the following: none thus constituting a quorum. Whereupon, among other business, the following was transacted at said meeting: a written

RESOLUTION AUTHORIZING THE ISSUANCE AND SALE OF COASTAL WATER AUTHORITY CONTRACT REVENUE BONDS (LUCE BAYOU PROJECT), SERIES 2010, IN AN AGGREGATE PRINCIPAL AMOUNT OF \$5,115,000; AWARDEDING THE SALE OF SAID BONDS, APPROVING AN ESCROW AGREEMENT AND A PAYING AGENT/REGISTRAR AGREEMENT; PRESCRIBING THE FORM OF SAID BONDS; AUTHORIZING CO-BOND COUNSEL AND THE FINANCIAL ADVISOR TO TAKE ALL ACTIONS REQUIRED TO ISSUE SAID BONDS AT THE DIRECTION OF COASTAL WATER AUTHORITY; AND ENACTING OTHER PROVISIONS RELATING THERETO

was introduced for the consideration of the board. It was then duly moved and seconded that the resolution be adopted, and, after due discussion, the motion, carrying with it the adoption of the resolution, prevailed and carried unanimously.

2. That a true, full and correct copy of the aforesaid resolution adopted at the meeting described in the above and foregoing paragraph is attached to and follows this certificate; that the resolution has been duly recorded in the board's minutes of the meeting; that the persons named in the above and foregoing paragraph are the duly chosen, qualified and acting officers and members of the board as indicated therein; that each of the officers and members of the board was duly and sufficiently notified officially and personally, in advance, of the time, place and purpose of the aforesaid meeting, and that the resolution would be introduced and considered for adoption at the meeting, and each of the officers and members consented, in advance, to the holding of the meeting for such purpose; that the meeting was open to the public

as required by law; and that public notice of the time, place and subject of the meeting was given as required by Chapter 551, Texas Government Code, and Section 49.063, Texas Water Code.

SIGNED AND SEALED on this 9th day of June 2010.


Secretary, Board of Directors

(SEAL)

BOND RESOLUTION

COASTAL WATER AUTHORITY
CONTRACT REVENUE BONDS (LUCE BAYOU PROJECT)
SERIES 2010

Adopted: June 9, 2010

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RESOLUTION AUTHORIZING THE ISSUANCE AND SALE OF COASTAL WATER AUTHORITY CONTRACT REVENUE BONDS (LUCE BAYOU PROJECT), SERIES 2010, IN AN AGGREGATE PRINCIPAL AMOUNT OF \$5,115,000; AWARDING THE SALE OF SAID BONDS, APPROVING AN ESCROW AGREEMENT AND A PAYING AGENT/REGISTRAR AGREEMENT; PRESCRIBING THE FORM OF SAID BONDS; AUTHORIZING CO-BOND COUNSEL AND THE FINANCIAL ADVISOR TO TAKE ALL ACTIONS REQUIRED TO ISSUE SAID BONDS AT THE DIRECTION OF COASTAL WATER AUTHORITY; AND ENACTING OTHER PROVISIONS RELATING THERETO

WHEREAS, Pursuant to the provisions of Article XVI, Section 59 of the Texas Constitution, Coastal Water Authority (the "Authority") was created by Chapter 601, Acts of the 60th Legislature of Texas, Regular Session, 1967 (codified as Article 8280-355, Texas Revised Civil Statutes Annotated) (the "Act"), as a conservation and reclamation district, a body politic and corporate and a governmental agency of the State of Texas (the "State"). Pursuant to the laws of the State, including particularly the Act, the Authority is authorized and has the power to issue, sell, and deliver revenue bonds, for and on behalf of the Authority, for the purpose, among others, of financing the construction of water conveyance and treatment facilities.

WHEREAS, The Authority is authorized by the Act to treat the water of and transport and deliver the water to customers situated within and without the Authority and to acquire all properties and facilities necessary for such purposes, and for any and all such purposes may enter into contracts with municipal, public, and private corporations and any political subdivision of the State for such periods of time, not exceeding forty (40) years, and on such terms and conditions as its Board of Directors may deem desirable, fair, and advantageous and to which the parties may agree, and such contracts may provide that they shall continue in effect until bonds issued by the Authority to finance the cost of the water conveyance system and treatment facilities and refunding bonds issued in lieu thereof are paid; and

WHEREAS, The City of Houston, Texas, (the "City") owns the water rights to appropriate water from the Trinity River.

WHEREAS, The City is authorized by its charter and by the statutes of the State, particularly §§ 402.021 and 402.014, Texas Local Government Code, to enter into contracts and joint enterprises with conservation and reclamation districts created under Article XVI, Section 59, of the Constitution of Texas, for the treatment, conveyance, transportation, and distribution of water for and on behalf of the City.

WHEREAS, the Authority has entered into Projects Contracts between the City of Houston, Texas (the "City") and the Authority (the "Luce Bayou Contract") to acquire and develop the Luce Bayou Interbasin, which will include approximately 450,000 acre feet per year of the City's permitted surface water from the Trinity River to Lake Houston, as further set forth in the Luce Bayou Contract (the "Project"); and

WHEREAS, the Authority previously issued its \$28,000,000 Contract Revenue Bonds (Luce Bayou Project), Series 2009 (the “2009 Bonds”); and

WHEREAS, the Authority is authorized pursuant to section 9.02 herein, to use Additional Bonds secured by Pledged Revenues; and

WHEREAS, payments made by the City to the Authority pursuant to the Contract, along with certain interest income earned on all funds and accounts established in this Resolution (except the Rebate Fund), will be sufficient to pay Debt Service on the Authority’s obligations and make all required sinking fund payments thereon required by this Resolution; and

WHEREAS, with respect to this Project, the Authority has no outstanding Parity Bonds or other obligations other than the 2009 Bonds; and

WHEREAS, the Authority has reserved the right and option to issue, under certain conditions, Additional Bonds, payable from the Pledged Revenues and on a parity as to lien and right with Parity Bonds; and

WHEREAS, the Authority has requested financial assistance from the Texas Water Development Board (“TWDB”) through TWDB’s Water Infrastructure Fund (“WIF”) to assist in the planning, environmental, and permitting phases of the Project; and

WHEREAS, the Board of Directors (the “Board”) of the Authority finds and determines that it is in the best interests of the Authority that it issue its contract revenue bonds payable as provided herein; and

WHEREAS, the Board hereby finds and determines that the issuance of the Bonds herein authorized shall be secured by a lien on and pledge of the Pledged Revenues, equally and ratably with the Outstanding Parity Bonds and with any Additional Bonds; and

WHEREAS, the Board hereby authorizes Vinson & Elkins LLP and Bates & Coleman, P.C. to serve as co-bond counsel to the Authority; and

WHEREAS, the meeting at which this Resolution is considered is open to the public as required by law, and the public notice of the time, place and purpose of said meeting was given as required by Section 551.041, Texas Government Code, as amended.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF COASTAL WATER AUTHORITY, THAT:

ARTICLE I

DEFINITIONS, FINDINGS AND INTERPRETATION

Section 1.01. Definitions.

Unless otherwise expressly provided or unless the context clearly requires otherwise, in this Resolution, the following terms shall have the meanings specified below:

“Act” shall mean Article 8280-355, Tex. Rev. Civ. Stat. Ann. (Chap.601, Acts of the 60th Legislature of Texas, Regular Session, 1967, as amended by Chap.767, Acts of the 61st Legislature of Texas, Regular Session, 1969, Chap. 706, Acts of the 68th Legislature of Texas, Regular Session, 1983, and Chap.674, Acts of the 69th Legislature of Texas, Regular Session, 1985, and any future amendments or codifications).

“Additional Bonds” means additional parity revenue bonds permitted to be issued by Section 9.02.

“Application” means the Application dated January 2, 2009, filed by the Authority with the Texas Water Development Board requesting financial assistance for the planning, environmental, and permitting phases of the Authority’s Project, as more fully described in such Application.

“Authority” means the Coastal Water Authority.

“Board” means the Board of Directors of the Authority, being the duly authorized and governing body of the Authority, and it is further resolved that the declarations and covenants of the Authority contained in this Resolution are made by, and for and on behalf of the Board and the Authority in accordance with and as authorized by the Act, and are binding upon the Board and the Authority for all purposes.

“Bond” means any of the Bonds.

“Bonds” means the Authority’s Contract Revenue Bonds (Luce Bayou Project), Series 2010, authorized to be issued by Section 3.01 of this Resolution.

“Bond Resolution, 2009” means the Bond Resolution, Contract Revenue Bonds (Luce Bayou Project), Series 2009, adopted by the board on January 14, 2009.

“City” shall mean the City of Houston, Texas, a municipal corporation and home rule city located principally in Harris County, Texas.

“City Controller” shall mean the City Controller of the City or any official that may succeed the City Controller.

“City Council” shall mean the City Council of the City which is the governing body thereof.

“Closing Date” means the date of the initial delivery of and payment for the Bonds.

“Code” means the Internal Revenue Code of 1986, as amended, including applicable regulations, published rulings and court decisions relating thereto.

“Contract” or “Luce Bayou Contract” shall mean that certain contract entitled “Projects Contract Between City of Houston, Texas, and Coastal Water Authority”, dated as of January 28, 2009, as it may be amended and supplemented from time to time relating to the design acquisition, construction and finance of the Project.

“Construction Fund” shall mean the Construction Fund to be maintained by the Authority pursuant to Section 7.04 of this Resolution and any separate accounts maintained.

“Costs of Issuance” shall mean the items of expense payable or reimbursable directly or indirectly by the Authority and related to the authorization, sale and issuance of Bonds, as further set forth in the Contract.

“Date of Delivery” shall mean the date the Bonds are delivered to the Purchaser.

“Debt Service” shall mean, with respect to any particular Fiscal Year or other period and any Series of Bonds an amount equal to the sum of (a) all interest payable on such Bonds during such period, except to the extent that such interest is to be paid from amounts (including any investment earnings thereon) deposited in the Bond Fund, Construction Fund, or elsewhere for the purpose of providing capitalized interest, plus (b) that portion of the principal amount of such Bonds which are due and payable during such period. For purposes of calculating Debt Service, the following rules shall apply.

(A) Principal amount for any Series of Bonds shall be calculated on the assumption that no Bonds of any Series Outstanding on the date of calculation will cease to be Outstanding except by reason of the payment of each principal amount on the due date thereof.

(B) Future Debt Service for any Series of Bonds which bears interest at variable rates or which will at some future date bear interest at a rate or rates to be determined or which will be subject to conversion to an interest rate or interest rate mode such that rates cannot then be ascertained shall be calculated using a rate which shall be estimated and certified by the Financial Advisor to the Authority as the rate that would have been borne by such Bonds if they were at the date of certification issued (or remarketed as the case may be) bearing a fixed rate of interest to their scheduled maturity or maturities.

(C) Interest accruing on Bonds issued as capital appreciation bonds or capital appreciation notes shall be treated as principal payable at maturity of such bonds or notes.

(D) Interest (other than on capital appreciation bonds or notes) shall be deemed to accrue monthly and principal also shall be deemed to accrue monthly but only during the twelve months immediately preceding any scheduled principal payment (or during such shorter periods as may be appropriate if principal payments are more frequent than every twelve months).

“Debt Service Payments Under the Contract” shall mean the Debt Service payments which the City is required to pay into the Bond Fund, or at the request of the Authority, to the Securities Depository for the applicable Bonds, prior to each Interest Payment Date pursuant to the Contract.

“Designated Payment/Transfer Office” means (i) with respect to the initial Paying Agent/Registrar named in this Resolution, the Designated Payment/Transfer Office as designated in the Paying Agent/Registrar Agreement, or at such other location designated by the Paying Agent/Registrar and (ii) with respect to any successor Paying Agent/Registrar, the office of such successor designated and located as may be agreed upon by the Authority and such successor.

“DTC” means The Depository Trust Company of New York, New York, or any successor securities depository.

“DTC Participant” means any broker, dealer, bank, trust company, clearing corporation or certain other organizations with Bonds credited to an account maintained on its behalf by DTC.

“Escrow Agent” means The Bank of New York Mellon Trust Company, N.A., its successors and assigns.

“Escrow Agreement” means that certain Escrow Agreement, between the Authority and the Escrow Agent, dated as of July 1, 2010, pertaining to the deposit of the proceeds of the Bonds.

“Executive Director” means the Executive Director of the Coastal Water Authority or his/her designee.

“Fiscal Year” or “year” means a fiscal year as established by the Authority which is currently the 12 month period ending the last day of December, but which may be changed from time to time.

“Government Obligations” means direct, noncallable obligations of the United States of America, including obligations that are unconditionally guaranteed by the United States of America.

“Initial Bond” means the Initial Bond authorized by Section 3.04(d) and described in Section 6.02(d).

“Interest and Sinking Fund” means the fund by that name established pursuant to Section 7.02.

“Interest Accrual Date” means the earlier of (i) ten (10) years from the Date of Delivery or (ii) the date the construction of the Authority’s Project is complete as evidenced by an engineer’s certificate acceptable to TWDB.

“Interest Payment Date” means the date or dates upon which interest on the Bonds is scheduled to be paid until their respective dates of maturity or prior redemption, such dates being June 15 and December 15 of each year, commencing on the first June 15 or December 15 following the Interest Accrual Date.

“Mayor” shall mean the Mayor of the City or any other official that may succeed the Mayor.

“Net Revenues” has the meaning set forth in the Luce Bayou Contract.

“Outstanding” shall mean as of any date, Bonds theretofore or thereupon being authenticated and delivered under this Resolution except:

(i) Bonds canceled by the Registrar or delivered to the Registrar for cancellation at or prior to such date;

(ii) Bonds in lieu of or in substitution for which other Bonds or Parity Notes shall have been authenticated and delivered pursuant to this Resolution; and

(iii) Bonds deemed to have been paid or defeased as provided in this Resolution or as provided by law.

“Owner” means the person who is the registered owner of a Bond or Bonds, as shown in the Register.

“Parity Bonds” means the 2009 Bonds, the Bonds and any Additional Bonds as the same may be from time to time outstanding.

“Paying Agent/Registrar” means initially The Bank of New York Mellon Trust Company, N.A., or any successor thereto as provided in this Resolution.

“Paying Agent/Registrar Office” means (i) with respect to the initial Paying Agent/Registrar named herein, its corporate trust office in Dallas, Texas or at such other location designated by the Paying Agent/Registrar, and (2) with respect to any successor Paying Agent/Registrar, the office of such successor designated and located as may be agreed upon by the Authority and such successor.

“Pledged Revenues” shall mean the Net Revenues held in the Revenue Bond Fund.

“Project” means the Luce Bayou Project, as further described in the Contract.

“Purchaser” or “TWDB” means the Texas Water Development Board.

“Record Date” means the fifteenth day of the month next preceding an Interest Payment Date.

“Register” means the Register specified in Section 3.06(a).

“Representation Letter” means the Blanket Letter of Representations between the Authority and DTC.

“Revenue Bond Fund” means the fund by that name established with respect to the Parity Bonds and confirmed pursuant to Section 7.01.

“Special Payment Date” means the Special Payment Date as prescribed in Section 3.03(b).

“Special Record Date” means the Special Record Date as prescribed in Section 3.03(b).

“Unclaimed Payments” means money deposited with the Paying Agent/Registrar for the payment of principal of or interest on the Bonds as the same come due and payable and

remaining unclaimed by the Owners of such Bonds for 90 days after the applicable payment or redemption date.

Section 1.02. Findings.

The declarations, determinations and findings declared, made and found in the preambles to this Resolution are hereby adopted, restated and made a part of the operative provisions hereof.

Section 1.03. Table of Contents, Titles and Headings.

The table of contents, titles and headings of the Articles and Sections of this Resolution have been inserted for convenience of reference only and are not to be considered a part hereof and shall not in any way modify or restrict any of the terms or provisions hereof and shall never be considered or given any effect in construing this Resolution or any provision hereof or in ascertaining intent, if any question of intent should arise.

Section 1.04. Interpretation.

(a) Unless the context requires otherwise, words of the masculine gender shall be construed to include correlative words of the feminine and neuter genders and vice versa, and words of the singular number shall be construed to include correlative words of the plural number and vice versa.

(b) This Resolution and all the terms and provisions hereof shall be liberally construed to effectuate the purposes set forth herein to sustain the validity of this Resolution.

(c) Unless designated otherwise, references to Articles and Sections shall mean Articles and Sections of this Resolution.

Section 1.05. Other Definitions.

The capitalized terms defined in the preamble to this Resolution shall have the meanings assigned to them in the preamble of this Resolution.

ARTICLE II

SECURITY FOR THE BONDS

Section 2.01. Pledge.

Payment of the principal, premium, if any, and interest on the Parity Bonds shall be secured by and payable from a first lien on and pledge of the Pledged Revenues, are further pledged to the establishment and maintenance of the funds created by this Resolution, and any funds created by any resolution authorizing the issuance of Parity Bonds. The Parity Bonds are not and will not be secured by or payable from a mortgage or deed of trust on any real, personal, or mixed properties constituting the Project.

Section 2.02. Bonds as Special Obligations.

The Bonds are special obligations of the Authority payable solely from the Pledged Revenues, and the Owners thereof shall never have the right to demand payment thereof out of any funds raised or to be raised by taxation by the Authority.

Section 2.03. Security Interest.

The Authority represents that, under Chapter 1208.002, Texas Government Code, a security interest in property, other than real property, that is created by the Authority is valid and effective according to the terms of the security agreement and is perfected from the time the security agreement is entered into or adopted continuously through the termination of the security interest, without physical delivery or transfer of control of the property, filing of a document, or another act. The Authority covenants that if Chapter 1208.002 is amended at any time while the Bonds are outstanding and unpaid, the Authority shall take all actions required in order to preserve for the Owners of the Bonds a perfected security interest in the property in which such security interest is granted pursuant to Section 2.01 hereof.

ARTICLE III

AUTHORIZATION; GENERAL TERMS AND PROVISIONS REGARDING THE BONDS

Section 3.01. Authorization.

The Authority's bonds to be designated the "Coastal Water Authority Contract Revenue Bonds (Luce Bayou Project), Series 2010," are hereby authorized to be issued and delivered in accordance with the laws of the State of Texas, including particularly the Act. The Bonds shall be issued in the original aggregate principal amount of \$5,115,000, for purposes of (i) paying the costs of the Project; and (ii) paying the costs and expenses of issuing the Bonds.

Section 3.02. Date, Denomination, Maturities and Interest.

(a) The Bonds shall be dated July 15, 2010, shall be in fully registered form, without coupons, in the denomination of \$5,000 or any integral multiple thereof and shall be numbered separately from one upward or such other designation acceptable to the Authority and the Paying Agent/Registrar, except the Initial Bond, which shall be numbered T-1.

(b) The Bonds shall mature on June 15 in the years and in the principal amounts set forth in the following schedule:

<u>Years</u>	<u>Principal Amounts</u>	<u>Interest Rates</u>
2020	415,000	1.642%
2021	420,000	1.947%
2022	430,000	2.131%
2023	440,000	2.280%
2024	450,000	2.351%
2025	460,000	2.532%
2026	475,000	2.463%
2027	485,000	2.706%
2028	500,000	2.661%
2029	515,000	2.815%
2030	525,000	2.822%

(c) Interest shall accrue and be paid on each Bond respectively until its maturity or prior redemption, from the later of the Interest Accrual Date or the most recent Interest Payment Date to which interest has been paid or provided for at the rates per annum for each respective maturity specified in the schedule contained in subsection (b) above. Such interest shall be payable semiannually on each Interest Payment Date. Interest on the Bonds shall be calculated on the basis of a three hundred sixty (360) day year composed of twelve (12) months of thirty (30) days each.

Section 3.03. Medium, Method and Place of Payment.

(a) The principal of, redemption premium, if any, and interest on the Bonds shall be paid in lawful money of the United States of America.

(b) Interest on the Bonds shall be payable to the Owners as shown in the Register on the Record Date. However, in the event that interest on the Bonds is not paid on a scheduled Interest Payment Date and remains unpaid for thirty (30) days thereafter, a new record date for such interest payment (a "Special Record Date") shall be established by the Paying Agent/Registrar, if and when funds for the payment of such interest have been received from the Authority. Notice of the Special Record Date and of the scheduled payment date of the past due interest (the "Special Payment Date," which shall be at least 15 days after the Special Record Date) shall be sent at least five business days prior to the Special Record Date by United States mail, first class, postage prepaid, to the address of each Owner of a Bond appearing on the Register at the close of business on the last business day next preceding the date of mailing of such notice.

(c) Interest shall be paid by check, dated as of the Interest Payment Date, and mailed on or before such Interest Payment Date, by first class United States mail, postage prepaid, by the Paying Agent/Registrar to each Owner at the address of each Owner as such appears in the Register, or by such other customary banking arrangement acceptable to the Paying

Agent/Registrar and the person to whom interest is to be paid; provided, however, that such person shall bear all risk and expenses of such customary banking arrangement.

(d) The principal of each Bond shall be paid to the Owner thereof on the due date, whether at the maturity date or the date of prior redemption thereof, upon presentation and surrender of such Bond at the Paying Agent/Registrar Office.

(e) So long as TWDB is the owner of the Bonds, payments of interest and principal shall be made in wire transfer form at no cost to TWDB.

(f) If the date for the payment of the principal of or interest on the Bonds shall be a Saturday, Sunday, legal holiday or day on which banking institutions in the city where the Paying Agent/Registrar Office is located are required or authorized by law or executive order to close, then the date for such payment shall be the next succeeding day which is not a Saturday, Sunday, legal holiday or day on which banking institutions are required or authorized to close, and payment on such date shall for all purposes be deemed to have been made on the due date thereof as specified in this Section.

(g) Unclaimed Payments shall be segregated in a special account and held in trust, uninvested by the Paying Agent/Registrar, for the account of the Owner of the Bonds to which the Unclaimed Payments pertain. Subject to Title 6 of the Texas Property Code, as amended, Unclaimed Payments remaining unclaimed by the Owners entitled thereto for three years after the applicable payment or redemption date shall be applied to the next payment or payments on the Bonds thereafter coming due and, to the extent any such money remains after the retirement of all outstanding Bonds, shall be paid to the Authority to be used for any lawful purpose. Thereafter, neither the Authority, the Paying Agent/Registrar nor any other person shall be liable or responsible to any holders of such Bonds for any further payment of such unclaimed moneys or on account of any such Bonds, subject to any applicable escheat law or similar law.

Section 3.04. Execution and Registration of Bonds.

(a) The Bonds shall be executed on behalf of the Authority by the President and Secretary of the Board of Directors, by their manual or facsimile signatures, and the official seal of the Authority shall be impressed or placed in facsimile thereon. Such facsimile signatures on the Bonds shall have the same effect as if each of the Bonds had been signed manually and in person by each of said officers, and such facsimile seal on the Bonds shall have the same effect as if the official seal of the Authority had been manually impressed upon each of the Bonds.

(b) In the event that any officer of the Authority whose manual or facsimile signature appears on the Bonds ceases to be such officer before the authentication of such Bonds or before the delivery thereof, such facsimile signature nevertheless shall be valid and sufficient for all purposes as if such officer had remained in such office.

(c) Except as provided below, no Bond shall be valid or obligatory for any purpose or be entitled to any security or benefit of this Resolution unless and until there appears thereon the Certificate of Paying Agent/Registrar substantially in the form provided herein, duly authenticated by manual execution by an officer or duly authorized signatory of the Paying Agent/Registrar. It shall not be required that the same officer or authorized signatory of the

Paying Agent/Registrar sign the Certificate of Paying Agent/Registrar on all of the Bonds. In lieu of the executed Certificate of Paying Agent/Registrar described above, the Initial Bond delivered on the Closing Date shall have attached thereto the Comptroller's Registration Certificate substantially in the form provided herein, manually executed by the Comptroller of Public Accounts of the State of Texas, or by his duly authorized agent, which certificate shall be evidence that the Initial Bond has been duly approved by the Attorney General of the State of Texas and that it is a valid and binding obligation of the Authority, and has been registered by the Comptroller of Public Accounts of the State of Texas.

(d) On the Closing Date, one Initial Bond representing the entire principal amount of all Bonds, payable in stated installments to the Purchaser, or its designee, executed by the President and Secretary by their manual or facsimile signature, approved by the Attorney General, and registered and manually signed by the Comptroller of Public Accounts, will be delivered to the purchasers or their designee. Upon payment for the Initial Bond, the Paying Agent/Registrar shall cancel the Initial Bond and deliver registered definitive Bonds to DTC in accordance with Section 3.10.

Section 3.05. Ownership.

(a) The Authority, the Paying Agent/Registrar and any other person may treat the person in whose name any Bond is registered as the absolute owner of such Bond for the purpose of making and receiving payment of the principal thereof and redemption premium, if any, thereon, for the further purpose of making and receiving payment of the interest thereon (subject to the provisions herein that interest is to be paid to the person in whose name the Bond is registered on the Record Date), and for all other purposes, whether or not such Bond is overdue, and neither the Authority nor the Paying Agent/Registrar shall be bound by any notice or knowledge to the contrary.

(b) All payments made to the Owner of a Bond shall be valid and effectual and shall discharge the liability of the Authority and the Paying Agent/Registrar upon such Bond to the extent of the sums paid.

Section 3.06. Registration, Transfer and Exchange.

(a) So long as any Bond remains outstanding, the Authority shall cause the Paying Agent/Registrar to keep at the Designated Payment/Transfer Office a register (the "Register") in which, subject to such reasonable regulations as it may prescribe, the Paying Agent/Registrar shall provide for the registration and transfer of Bonds in accordance with this Resolution.

(b) The ownership of a Bond may be transferred only upon the presentation and surrender of the Bond at the Designated Payment/Transfer Office with such endorsement or other evidence of transfer as is acceptable to the Paying Agent/Registrar. No transfer of any Bond shall be effective until entered in the Register.

(c) The Bonds shall be exchangeable upon the presentation and surrender thereof at the Paying Agent/Registrar Office for a Bond or Bonds of the same maturity and interest rate and in any denomination or denominations of any integral multiple of \$5,000 and in an aggregate principal amount equal to the unpaid principal amount of the Bonds presented for exchange. The

Paying Agent/Registrar is hereby authorized to authenticate and deliver Bonds exchanged for other Bonds in accordance with this Section.

(d) Each exchange Bond delivered by the Paying Agent/Registrar in accordance with this Section shall constitute an original contractual obligation of the Authority and shall be entitled to the benefits and security of this Resolution to the same extent as the Bond or Bonds in lieu of which such exchange Bond is delivered.

(e) No service charge shall be made to the Owner for the initial registration and any subsequent transfer or exchange for a different denomination of any of the Bonds. The Paying Agent/Registrar, however, may require the Owner to pay a sum sufficient to cover any tax or other governmental charge that is authorized to be imposed in connection with the registration, transfer or exchange of a Bond.

(f) Neither the Authority nor the Paying Agent/Registrar shall be required to issue, transfer or exchange any Bond called for redemption, in whole or in part, where such redemption is scheduled to occur within 45 calendar days after the transfer or exchange date; provided, however, such limitation of transfer shall not be applicable to an exchange by the Owner of the uncalled principal balance of a Bond.

Section 3.07. Cancellation.

All Bonds paid or redeemed before scheduled maturity in accordance with this Resolution and all Bonds in lieu of which exchange Bonds or replacement Bonds are authenticated and delivered in accordance with this Resolution shall be canceled and destroyed upon the making of proper records regarding such payment, redemption, exchange or replacement. The Paying Agent/Registrar shall then return such canceled Bonds to the Authority or may, in accordance with law, destroy such canceled Bonds and periodically furnish the Authority with certificates of destruction of such Bonds.

Section 3.08. Temporary Bonds.

(a) Following the delivery and registration of the Initial Bond and pending the preparation of definitive Bonds, the proper officers of the Authority may execute and, upon the Authority's request, the Paying Agent/Registrar shall authenticate and deliver, one or more temporary Bonds that are printed, lithographed, typewritten, mimeographed or otherwise produced, in any denomination, substantially of the tenor of the definitive Bonds in lieu of which they are delivered, without coupons, and with such appropriate insertions, omissions, substitutions and other variations as the officers of the Authority executing such temporary Bonds may determine, as evidenced by their signing of such temporary Bonds.

(b) Until exchanged for Bonds in definitive form, such Bonds in temporary form shall be entitled to the benefit and security of this Resolution.

(c) The Authority, without unreasonable delay, shall prepare, execute and deliver to the Paying Agent/Registrar, the Bonds in definitive form; thereupon, upon the presentation and surrender of the Bond or Bonds in temporary form to the Paying Agent/Registrar, the Paying Agent/Registrar shall cancel the Bonds in temporary form and authenticate and deliver in

exchange therefor a Bond or Bonds of the same maturity and series, in definitive form, in the authorized denomination, and in the same aggregate principal amount, as the Bond or Bonds in temporary form surrendered. Such exchange shall be made without the making of any charge therefor to any Owner.

Section 3.09. Replacement Bonds.

(a) Upon the presentation and surrender to the Paying Agent/Registrar of a mutilated Bond, the Paying Agent/Registrar shall authenticate and deliver in exchange therefor a replacement Bond of like tenor and principal amount, bearing a number not contemporaneously outstanding. The Authority or the Paying Agent/Registrar may require the Owner of such Bond to pay a sum sufficient to cover any tax or other governmental charge that is authorized to be imposed in connection therewith and any other expenses connected therewith.

(b) In the event that any Bond is lost, apparently destroyed or wrongfully taken, the Paying Agent/Registrar, pursuant to the applicable laws of the State of Texas and in the absence of notice or knowledge that such Bond has been acquired by a bona fide purchaser, shall authenticate and deliver a replacement Bond of like tenor and principal amount, bearing a number not contemporaneously outstanding, provided that the Owner first complies with the following requirements:

(i) furnishes to the Paying Agent/Registrar satisfactory evidence of his or her ownership of and the circumstances of the loss, destruction or theft of such Bond;

(ii) furnishes such security or indemnity as may be required by the Paying Agent/Registrar to save it and the Authority harmless;

(iii) pays all expenses and charges in connection therewith, including, but not limited to, printing costs, legal fees, fees of the Paying Agent/Registrar and any tax or other governmental charge that is authorized to be imposed; and

(iv) satisfies any other reasonable requirements imposed by the Authority and the Paying Agent/Registrar.

(c) After the delivery of such replacement Bond, if a bona fide purchaser of the original Bond in lieu of which such replacement Bond was issued presents for payment such original Bond, the Authority and the Paying Agent/Registrar shall be entitled to recover such replacement Bond from the person to whom it was delivered or any person taking therefrom, except a bona fide purchaser, and shall be entitled to recover upon the security or indemnity provided therefor to the extent of any loss, damage, cost or expense incurred by the Authority or the Paying Agent/Registrar in connection therewith.

(d) In the event that any such mutilated, lost, apparently destroyed or wrongfully taken Bond has become or is about to become due and payable, the Paying Agent/Registrar, in its discretion, instead of issuing a replacement Bond, may pay such Bond if it has become due and payable, or may pay such Bond when it becomes due and payable.

(e) Each replacement Bond delivered in accordance with this Section shall constitute an original additional contractual obligation of the Authority and shall be entitled to the benefits and security of this Resolution to the same extent as the Bond or Bonds in lieu of which such replacement Bond is delivered.

Section 3.10. Book-Entry-Only System.

(a) The definitive Bonds shall be initially issued in the form of a separate single fully registered Bond for each of the maturities thereof. Upon initial issuance, the ownership of each such Bond shall be registered in the name of Cede & Co., as nominee of DTC, and, except as provided in Section 3.11 hereof, all of the outstanding Bonds shall be registered in the name of Cede & Co., as nominee of DTC.

(b) With respect to Bonds registered in the name of Cede & Co., as nominee of DTC, the Authority and the Paying Agent/Registrar shall have no responsibility or obligation to any DTC Participant or to any person on behalf of whom such a DTC Participant holds an interest in the Bonds, except as provided in this Resolution. Without limiting the immediately preceding sentence, the Authority and the Paying Agent/Registrar shall have no responsibility or obligation with respect to (i) the accuracy of the records of DTC, Cede & Co. or any DTC Participant with respect to any ownership interest in the Bonds, (ii) the delivery to any DTC Participant or any other person, other than an Owner, as shown on the Register, of any notice with respect to the Bonds, including any notice of redemption, or (iii) the payment to any DTC Participant or any other person, other than an Owner, as shown in the Register, of any amount with respect to principal of, premium, if any, or interest on the Bonds. Notwithstanding any other provision of this Resolution to the contrary, the Authority and the Paying Agent/Registrar shall be entitled to treat and consider the person in whose name each Bond is registered in the Register as the absolute Owner of such Bond for the purpose of payment of principal of, premium, if any, and interest on the Bonds, for the purpose of giving notices of redemption and other matters with respect to such Bond, for the purpose of registering transfer with respect to such Bond, and for all other purposes whatsoever. The Paying Agent/Registrar shall pay all principal of, premium, if any, and interest on the Bonds only to or upon the order of the respective Owners, as shown in the Register, as provided in this Resolution, or their respective attorneys duly authorized in writing, and all such payments shall be valid and effective to fully satisfy and discharge the Authority's obligations with respect to payment of principal of, premium, if any, and interest on the Bonds to the extent of the sum or sums so paid. No person other than an Owner, as shown in the Register, shall receive a Bond certificate evidencing the obligation of the Authority to make payments of amounts due pursuant to this Resolution. Upon delivery by DTC to the Paying Agent/Registrar of written notice to the effect that DTC has determined to substitute a new nominee in place of Cede & Co., and subject to the provisions in this Resolution with respect to interest checks or drafts being mailed to the registered Owner at the close of business on the Record Date, the word "Cede & Co." in this Resolution shall refer to such new nominee of DTC.

Section 3.11. Successor Securities Depository; Transfer Outside Book-Entry Only System.

In the event that the Authority or the Paying Agent/Registrar determines that DTC is incapable of discharging its responsibilities described herein and in the Representation Letter,

and that it is in the best interest of the beneficial owners of the Bonds that they be able to obtain certificated Bonds, or in the event DTC discontinues the services described herein, the Authority or the Paying Agent/Registrar shall (i) appoint a successor securities depository, qualified to act as such under Section 17(a) of the Securities and Exchange Act of 1934, as amended, notify DTC and DTC Participants, as identified by DTC, of the appointment of such successor securities depository and transfer one or more separate Bonds to such successor securities depository or (ii) notify DTC and DTC Participants, as identified by DTC, of the availability through DTC of Bonds and transfer one or more separate Bonds to DTC Participants having Bonds credited to their DTC Accounts, as identified by DTC. In such event, the Bonds shall no longer be restricted to being registered in the Register in the name of Cede & Co., as nominee of DTC, but may be registered in the name of the successor securities depository, or its nominee, or in whatever name or names Owners transferring or exchanging Bonds shall designate, in accordance with the provisions of this Resolution.

Section 3.12. Payments to Cede & Co.

Notwithstanding any other provision of this Resolution to the contrary, so long as any Bonds are registered in the name of Cede & Co., as nominee of DTC, all payments with respect to principal of, premium, if any, and interest on such Bonds, and all notices with respect to such Bonds, shall be made and given, respectively, in accordance with the agreement between the Authority and DTC.

ARTICLE IV

REDEMPTION OF BONDS BEFORE MATURITY

Section 4.01. Limitation on Redemption.

The Bonds shall be subject to redemption before scheduled maturity only as provided in this Article IV.

Section 4.02. Optional Redemption.

(a) The Authority reserves the option to redeem Bonds maturing on and after June 15, 2020, in whole or in part in inverse order of maturity, before their respective scheduled maturity dates, on December 15, 2019, or on any date thereafter, such redemption date or dates to be fixed by the Authority, at a price equal to the principal amount of the Bonds so called for redemption plus accrued interest to the date fixed for redemption.

(b) The Authority, at least 45 days before the redemption date, unless a shorter period shall be satisfactory to the Paying Agent/Registrar, shall notify the Paying Agent/Registrar of such redemption date and of the principal amount of Bonds to be redeemed.

Section 4.03. Partial Redemption.

(a) If less than all of the Bonds are to be redeemed pursuant to Section 4.02, the Authority shall determine the amounts and maturities thereof to be redeemed and, if less than all of the Bonds of a stated maturity are to be redeemed, the Authority shall direct the Paying

Agent/Registrar to call by lot Bonds, or portions thereof within such maturity and in such principal amounts, for redemption.

(b) A portion of a single Bond of a denomination greater than \$5,000 may be redeemed, but only in a principal amount equal to \$5,000 or any integral multiple thereof. If such a Bond is to be partially redeemed, the Paying Agent/Registrar shall treat each \$5,000 portion of a Bond as though it were a single bond for purposes of selection for redemption.

(c) Upon surrender of any Bond for redemption in part, the Paying Agent/Registrar, in accordance with Section 3.06 of this Resolution, shall authenticate and deliver an exchange Bond or Bonds in an aggregate principal amount equal to the unredeemed portion of the Bond so surrendered.

(d) The Paying Agent/Registrar shall promptly notify the Authority in writing of the principal amount to be redeemed of any Bond as to which only a portion thereof is to be redeemed.

Section 4.04. Notice of Redemption to Owners.

(a) The Paying Agent/Registrar shall give notice of any redemption of Bonds by sending notice by first class United States mail, postage prepaid, not less than 30 days before the date fixed for redemption, to the Owner of each Bond (or part thereof) to be redeemed, at the address shown in the Register.

(b) The notice shall state the redemption date, the redemption price, the place at which the Bonds are to be surrendered for payment, and, if less than all the Bonds outstanding are to be redeemed, an identification of the Bonds or portions thereof to be redeemed.

(c) Any notice given as provided in this Section shall be conclusively presumed to have been duly given, whether or not the Owner receives such notice.

Section 4.05. Payment Upon Redemption.

(a) Before or on each redemption date, the Authority shall deposit with the Paying Agent/Registrar money sufficient to pay all amounts due on the redemption date and the Paying Agent/Registrar shall make provision for the payment of the Bonds to be redeemed on such date by setting aside and holding in trust an amount from the Interest and Sinking Fund or otherwise received by the Paying Agent/Registrar from the Authority and shall use such funds solely for the purpose of paying the principal of, redemption premium, if any, and accrued interest on the Bonds being redeemed.

(b) Upon presentation and surrender of any Bond called for redemption at the Designated Payment/Transfer Office on or after the date fixed for redemption, the Paying Agent/Registrar shall pay the principal of, redemption premium, if any, and accrued interest on such Bond to the date of redemption from the money set aside for such purpose.

Section 4.06. Effect of Redemption.

(a) Notice of redemption having been given as provided in Section 4.05 of this Resolution, the Bonds or portions thereof called for redemption shall become due and payable on the date fixed for redemption and, unless the Authority defaults in the payment of the principal thereof, redemption premium, if any, or accrued interest thereon, such Bonds or portions thereof shall cease to bear interest from and after the date fixed for redemption, whether or not such Bonds are presented and surrendered for payment on such date.

(b) If the Authority shall fail to make provision for payment of all sums due on a redemption date, then any Bond or portion thereof shall continue to bear interest at the rate stated on the Bond until due provision is made for the payment of same.

ARTICLE V

PAYING AGENT/REGISTRAR

Section 5.01. Appointment of Initial Paying Agent/Registrar.

The Bank of New York Mellon Trust Company, N.A., is hereby appointed as the initial Paying Agent/Registrar for the Bonds. The Paying Agent/Registrar Agreement in substantially the form attached hereto as Exhibit C, is hereby approved. The Executive Director is hereby authorized to execute on behalf of the Authority.

Section 5.02. Qualifications.

Each Paying Agent/Registrar shall be (i) a commercial bank, a trust company organized under the laws of the State of Texas, or any other entity duly qualified and legally authorized to serve as and perform the duties and services of paying agent and registrar for the Bonds and (ii) a DTC Participant.

Section 5.03. Maintaining Paying Agent/Registrar.

(a) At all times while any Bonds are outstanding, the Authority will maintain a Paying Agent/Registrar that is qualified under Section 5.02 of this Resolution. The Executive Director or the president is hereby authorized and directed to execute an agreement with the Paying Agent/Registrar specifying the duties and responsibilities of the Authority and the Paying Agent/Registrar, in substantially the form presented to and hereby approved by the Board.

(b) If the Paying Agent/Registrar resigns or otherwise ceases to serve as such, the Authority will promptly appoint a replacement.

Section 5.04. Termination.

The Authority, upon not less than 60 days notice, reserves the right to terminate the appointment of any Paying Agent/Registrar by delivering to the entity whose appointment is to be terminated written notice of such termination; provided, that no such termination shall be

effective until a successor Paying Agent/Registrar has been appointed and has accepted the duties of Paying Agent/Registrar for the Bonds.

Section 5.05. Notice of Change to Owners.

Promptly upon each change in the entity serving as Paying Agent/Registrar, the Authority will cause notice of the change to be sent to each Owner by first class United States mail, postage prepaid, at the address in the Register, stating the effective date of the change and the name and mailing address of the replacement Paying Agent/Registrar.

Section 5.06. Agreement to Perform Duties and Functions.

By accepting the appointment as Paying Agent/Registrar, and executing the Paying Agent/Registrar Agreement, the Paying Agent/Registrar is deemed to have agreed to the provisions of this Resolution and that it will perform the duties and functions of Paying Agent/Registrar prescribed thereby.

Section 5.07. Delivery of Records to Successor.

If a Paying Agent/Registrar is replaced, such Paying Agent, promptly upon the appointment of the successor, will deliver the Register (or a copy thereof) and all other pertinent books and records relating to the Bonds to the successor Paying Agent/Registrar.

ARTICLE VI

FORM OF THE BONDS

Section 6.01. Form Generally.

(a) The Bonds, including the Registration Certificate of the Comptroller of Public Accounts of the State of Texas, the Certificate of the Paying Agent/Registrar and the Assignment form to appear on each of the Bonds, (i) shall be substantially in the form set forth in this Article with such appropriate insertions, omissions, substitutions and other variations as are permitted or required by this Resolution, and (ii) may have such letters, numbers or other marks of identification (including identifying numbers and letters of the Committee on Uniform Securities Identification Procedures of the American Bankers Association) and such legends and endorsements (including any reproduction of an opinion of counsel) thereon as, consistently herewith, may be determined by the Authority or by the officers executing such Bonds, as evidenced by their execution thereof.

(b) Any portion of the text of any Bonds may be set forth on the reverse side thereof, with an appropriate reference thereto on the face of the Bonds.

(c) The definitive Bonds, if any, shall be typewritten, printed, lithographed or engraved, and may be produced by any combination of these methods or produced in any other similar manner, all as determined by the officers executing such Bonds, as evidenced by their execution thereof.

(d) The Initial Bond submitted to the Attorney General of the State of Texas may be typewritten and photocopied or otherwise reproduced.

Section 6.02. Form of the Bonds.

The form of the Bonds, including the form of the Registration Certificate of the Comptroller of Public Accounts of the State of Texas, the form of Certificate of the Paying Agent/Registrar and the form of Assignment appearing on the Bonds shall be substantially as follows:

(a) Form of Bonds.

REGISTERED
No. _____

REGISTERED
\$ _____

United States of America
State of Texas
County of Harris

COASTAL WATER AUTHORITY
CONTRACT REVENUE BONDS (LUCE BAYOU PROJECT)
SERIES 2010

INTEREST RATE: MATURITY DATE: INTEREST ACCRUAL DATE¹: CUSIP NUMBER:
_____ % June 15, _____ _____

The Coastal Water Authority (the "Authority"), in the County of Harris, State of Texas, for value received, hereby promises to pay to

Texas Water Development Board

or registered assigns, but solely from the sources and in the manner hereinafter provided, on the Maturity Date specified above, the sum of

_____ DOLLARS

unless this Bond shall have been sooner called for redemption and the payment of the principal hereof shall have been paid or provided for, and to pay interest on such principal amount from the later of the Interest Accrual Date or the most recent interest payment date to which interest has been paid or provided for until maturity or prior redemption, at the per annum rate of interest specified above, computed on the basis of a 360-day year of twelve 30-day months, such interest

¹ The "Interest Accrual Date" means the earlier of (i) ten (10) years from the Date of Delivery or (ii) the date the construction of the Authority's Project is complete as evidenced by an engineer's certificate acceptable to the Texas Water Development Board.

to be paid semiannually on June 15 and December 15 of each year, commencing the first June 15 or December 15 following the Interest Accrual Date.

The principal of this Bond shall be payable without exchange or collection charges in lawful money of the United States of America upon presentation and surrender of this Bond at the corporate trust office in Dallas, Texas (the "Designated Payment/Transfer Office") of The Bank of New York Mellon Trust Company, N.A., as Paying Agent/Registrar, or the designated payment/transfer office of any successor Paying Agent/Registrar. Interest on this Bond is payable by check dated as of the interest payment date, mailed on or before such interest payment date, by first class United States mail, postage prepaid, by the Paying Agent/Registrar to the registered owner at the address shown on the registration books kept by the Paying Agent/Registrar, or by such other customary banking arrangement acceptable to the Paying Agent/Registrar and the person to whom interest is to be paid; provided, however, that such person shall bear all risk and expenses of such customary banking arrangement. For the purpose of the payment of interest on this Bond, the registered owner shall be the person in whose name this Bond is registered at the close of business on the "Record Date," which shall be the fifteenth day of the month next preceding such interest payment date. However, in the event that interest is not paid on a scheduled payment date and remains unpaid for 30 days thereafter, a new record date for such interest payment (a "Special Record Date") will be established by the Paying Agent/Registrar, if and when funds for the payment of such interest have been received from the Authority. Notice of the Special Record Date and of the scheduled payment date of the past due interest (the "Special Payment Date," which date shall be at least 15 days after the Special Record Date) shall be sent at least five business days prior to the Special Record Date by United States mail, first class, postage prepaid, to the address of each registered owner of a Bond appearing on the books of the Paying Agent/Registrar at the close of business on the last business day preceding the date of mailing of such notice.

So long as the Texas Water Development Board is the owner of the Bonds, payments of interest and principal shall be made in wire transfer form at no cost to the Texas Water Development Board.

Capitalized terms used in this Bond and not otherwise defined shall have the meaning assigned thereto in the Resolution authorizing the issuance of the Bonds described below.

If the date for the payment of the principal of or interest on this Bond shall be a Saturday, Sunday, legal holiday or day on which banking institutions in the city in which the Paying Agent/Registrar is located are required or authorized by law or executive order to close, the date for such payment shall be the next succeeding day which is not a Saturday, Sunday, legal holiday or day on which such banking institutions are required or authorized to close and payment on such date shall for all purposes be deemed to have been made on the original date payment was due.

This Bond is one of the series of fully registered bonds specified in its title issued in the aggregate principal amount of \$5,115,000 issued pursuant to a resolution adopted by the governing body of the Authority (the "Resolution"), for the purposes of (i) paying the costs of the Project, and (ii) paying the costs of issuing the Bonds. The Bonds shall be dated July 15, 2010.

The Bonds constitute special obligations of the Authority and, together with any of the outstanding Parity Bonds, are payable solely from and equally secured by a first lien on and pledge of Pledged Revenues. The Bonds do not constitute a legal or equitable pledge, charge, lien or encumbrance upon any property of the Authority or the Project, except with respect to the Pledged Revenues.

The Authority expressly reserves the right to issue Additional Bonds in all things on a parity with the Bonds and the outstanding Parity Bonds, payable solely from and equally secured by a lien on and pledge of the Pledged Revenues; provided, however, that any and all such additional obligations may be so issued only in accordance with and subject to the covenants, conditions, limitations and restrictions relating thereto which are set out and contained in the Resolution to which reference is hereby made for more complete and full particulars.

The Authority has reserved the option to redeem the Bonds maturing on or after June 15, 2020, in whole or in part in inverse order of maturity, before their respective scheduled maturity dates, on December 15, 2019, or on any date thereafter, at a price equal to the principal amount of the Bonds so called for redemption plus accrued interest to the date fixed for redemption. If less than all of the Bonds are to be redeemed, the Authority shall determine the amounts and maturities thereof to be redeemed and, if less than all of the Bonds of a stated maturity are to be redeemed, the Authority shall direct the Paying Agent/Registrar to call by lot Bonds, or portions thereof within such maturity and in such amounts, for redemption.

Notice of such redemption or redemptions shall be given by first class mail, postage prepaid, not less than 30 days before the date fixed for redemption, to the registered owner of each of the Bonds to be redeemed in whole or in part. Notice having been so given, the Bonds or portions thereof designated for redemption shall become due and payable on the redemption date specified in such notice; and, from and after such date, notwithstanding that any of the Bonds or portions thereof so called for redemption shall not have been surrendered for payment, interest on such Bonds or portions thereof shall cease to accrue.

As provided in the Resolution, and subject to certain limitations therein set forth, this Bond is transferable upon surrender of this Bond for transfer at the Designated Payment/Transfer Office with such endorsement or other evidence of transfer as is acceptable to the Paying Agent/Registrar; thereupon, one or more new fully registered Bonds of the same stated maturity, of authorized denominations, bearing the same rate of interest, and for the same aggregate principal amount will be issued to the designated transferee or transferees.

The Authority, the Paying Agent/Registrar and any other person may treat the person in whose name this Bond is registered as the owner hereof for the purpose of receiving payment as herein provided (except interest shall be paid to the person in whose name this Bond is registered on the "Record Date" or "Special Record Date," as applicable) and for all other purposes, whether or not this Bond be overdue, and neither the Authority, the Paying Agent/Registrar nor any other person shall be affected by notice to the contrary.

Neither the Authority nor the Paying Agent/Registrar shall be required to issue, transfer or exchange any Bond called for redemption where such redemption is scheduled to occur within

45 calendar days of the transfer or exchange date; provided, however, such limitation shall not be applicable to an exchange by the registered owner of the uncalled principal balance of a Bond.

IT IS HEREBY CERTIFIED AND RECITED that the issuance of this Bond and the series of which it is a part is duly authorized by law; that all acts, conditions and things required to be done precedent to and in the issuance of the Bonds to render the same lawful and valid have been properly done and have happened in regular and due time, form and manner as required by law; that the Bonds do not exceed any constitutional or statutory limitation; and that provision has been made for the payment of the principal of and interest on the Bonds by irrevocably pledging the Pledged Revenues, as hereinabove recited.

The owner hereof shall never have the right to demand payment of this Bond out of any funds raised or to be raised by taxation by the Authority, other than certain amounts payable under certain of the Contract.

IN WITNESS WHEREOF, the Authority has caused this Bond to be executed in its name by the manual or facsimile signature of the President of the Authority and countersigned by the manual or facsimile signature of the Secretary, and the official seal of the Authority has been duly impressed or placed in facsimile on this Bond.

President, Board of Directors,
Coastal Water Authority

ATTEST:

Secretary, Board of Directors,
Coastal Water Authority

[SEAL]

(b) Form of Comptroller's Registration Certificate.

The following Comptroller's Registration Certificate may be deleted from the definitive Bonds if such Certificate on the Initial Bond is fully executed.

OFFICE OF THE COMPTROLLER §
OF PUBLIC ACCOUNTS § REGISTER NO. _____
OF THE STATE OF TEXAS §

I hereby certify that there is on file and of record in my office a certificate of the Attorney General of the State of Texas to the effect that this Bond has been examined by him as required by law, that he finds that it has been issued in conformity with the Constitution and laws of the

State of Texas, and that it is a valid and binding special obligation of the Coastal Water Authority payable from the revenues pledged to its payment by and in the resolution authorizing same and that said Bond has this day been registered by me.

Witness my hand and seal of office at Austin, Texas, _____.

Comptroller of Public Accounts
of the State of Texas

[SEAL]

(c) Form of Certificate of Paying Agent/Registrar.

The following Certificate of Paying Agent/Registrar may be deleted from the Initial Bond if the Comptroller's Registration Certificate appears thereon.

CERTIFICATE OF PAYING AGENT/REGISTRAR

The records of the Paying Agent/Registrar show that the Initial Bond of this series of Bonds was approved by the Attorney General of the State of Texas and registered by the Comptroller of Public Accounts of the State of Texas, and that this is one of the Bonds referred to in the within-mentioned Resolution.

as Paying Agent/Registrar

Dated: _____

By: _____

(d) Form of Assignment.

ASSIGNMENT

FOR VALUE RECEIVED, the undersigned hereby sells, assigns, and transfers unto (print or typewrite name, address and Zip Code of transferee): _____

(Social Security or other identifying number: _____) the within Bond and all rights hereunder and hereby irrevocably constitutes and appoints _____ attorney to transfer the within Bond on the hooks kept for registration hereof, with full power of substitution in the premises.

Date: _____

NOTICE: The signature on this Assignment

must correspond with the name of the registered owner as it appears on the face of the within Bond in every particular and must be guaranteed in a manner acceptable to the Paying Agent/Registrar.

Signature Guaranteed By:

Authorized Signatory

(e) The Initial Bond shall be in the form set forth in paragraphs (a) through (d) of this Section, except for the following alterations:

(i) immediately under the name of the Bond, the headings "INTEREST RATE" and "MATURITY DATE" shall both be completed with the words "As shown below" and the heading "CUSIP NUMBER" shall be deleted; and

(ii) in the first paragraph of the Bond, the words "on the Maturity Date specified above" shall be deleted and the following will be inserted: "on June 15 in each of the years, in principal amounts, and bearing interest at the per annum rates in accordance with the following schedule:

<u>Years</u>	<u>Principal Amounts</u>	<u>Interest Rate</u>
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(Information to be inserted from
Section 3.02(b))

Section 6.03. CUSIP Registration.

The Authority may secure identification numbers through the CUSIP Service Bureau Division of Standard & Poor's Corporation, New York, New York, and may authorize the printing of such numbers on the face of the Bonds. It is expressly provided, however, that the presence or absence of CUSIP numbers on the Bonds shall be of no significance or effect as regards the legality thereof and neither the Authority nor Co-Bond counsel to the Authority are to be held responsible for CUSIP numbers incorrectly printed on the Bonds.

Section 6.04. Co-Bond Counsel; Legal Opinion.

Pursuant to a previous engagement letter, Vinson & Elkins LLP is designated Bond Counsel to the Authority. Bates & Coleman, P.C is hereby designated as Co-Bond Counsel. Bond Counsel is authorized to retain Co-Bond Counsel on behalf of the Authority. The approving legal opinions of Vinson & Elkins LLP and Bates & Coleman, P.C., Co-Bond Counsel, respectively, may be attached to or printed on the reverse side of each Bond over the certification of the Secretary of the Authority, which may be executed in facsimile.

ARTICLE VII

FUNDS AND ACCOUNTS

Section 7.01. Revenue Bond Fund.

The Authority hereby confirms the creation and establishment of the "Coastal Water Authority Series 2010 Revenue Bond Fund" (the "Revenue Bond Fund") to be maintained on the books of the Authority, and accounted for separate and apart from all other funds of the Authority so long as any of the Parity Bonds are outstanding.

Section 7.02. Interest and Sinking Fund.

For the sole purpose of paying the principal of and interest on the Parity Bonds, the Authority hereby confirms the creation and establishment on the books of the Authority, and there shall be maintained so long as any of the Parity Bonds remain outstanding, accounted for separate and apart from all other funds of the Authority, a separate fund entitled the "Coastal Water Authority Series 2010 Interest and Sinking Fund" (the "Interest and Sinking Fund").

Section 7.03. Issuance Costs Fund.

There is hereby established a separate fund entitled "Coastal Water Authority Series 2010 Issuance Costs Fund" (the "Issuance Costs Fund"). Amounts on deposit in the Issuance Costs Fund shall be applied by the Authority to pay the costs of issuing the Bonds: All amounts remaining in the Issuance Costs Fund after the payment of costs of issuance and in any event no later than six months after the Closing date, including investment earnings of the Issuance Costs Fund, shall be deposited to the Interest and Sinking Fund and shall be used to pay debt service on or redeem Bonds.

Section 7.04. Construction Fund.

There is hereby established a separate fund entitled "Coastal Water Authority Series 2010 Construction Fund" (the "Construction Fund"). Amounts on deposit in the Construction Fund shall be applied by the Authority to pay the costs of the Project. The Authority is authorized to create one or more sub accounts within the Construction Fund as may be required to carry out the purposes of this Resolution.

Section 7.05. Deposits of Pledged Revenues.

Pledged Revenues shall be credited to or deposited in the Interest and Sinking Fund and other funds when and as required by this Resolution and any resolution authorizing the issuance of any Parity Bonds.

Section 7.06. Investments.

To the extent authorized by the Public Funds Investment Act, Chapter 2256, Texas Government Code, as amended, money in any Fund established pursuant to this Resolution or any resolution authorizing the issuance of any Parity Bonds, may, at the option of the Authority,

be placed in time deposits or certificates of deposit secured by obligations of the type hereinafter described, or be invested in direct obligations of the United States of America or obligations guaranteed or insured by the United States of America, which, in the opinion of the Attorney General of the United States, are backed by its full faith and credit or represent its general obligations, or invested in obligations of instrumentalities of the United States of America, including, but not limited to, evidences of indebtedness issued, insured, or guaranteed by such governmental agencies as the Federal Land Banks, Federal Intermediate Credit Banks, Banks for Cooperatives, Federal Home Loan Banks, Government National Mortgage Association, United States Postal Service, Farmers Home Administration, Federal Home Loan Mortgage Association, Small Business Administration, Federal Housing Association, or Participation Certificates in the Federal Assets Financing Trust; provided that all such deposits and investments shall be made in such manner as will, in the opinion of the Authority, permit the money required to be expended from any Fund to be available at the proper time or times as expected to be needed. Such investments (except United States Treasury Obligations--State and Local Government Series investments held in book entry form, which shall at all times be valued at cost) shall be valued in terms of current market value as of the last day of each fiscal year. Unless otherwise set forth herein, all interest and income derived from such deposits and investments immediately shall be credited to, and any losses debited to, the Fund from which the deposit or investment was made, and surpluses in any Fund shall or may be disposed of as hereinafter provided. Such investments shall be sold promptly when necessary to prevent any default in connection with the Bonds and any Additional Bonds consistent with the respective resolutions authorizing their issuance.

Section 7.07. Funds Secured.

Money in all Funds created or confirmed by this Resolution, to the extent not invested, shall be secured in the manner prescribed by law, and in compliance with the Public Funds Collateral Act, Chapter 2257, Government Code.

Section 7.08. Priority of Deposits and Payments from Revenue Fund.

The Authority shall make all deposits and payments from the Pledged Revenues in the Revenue Fund when and as required by this Resolution or resolutions authorizing Parity Bonds and such deposits shall be made to the Interest and Sinking Fund, when and in the amounts required by this Resolution, and any resolution authorizing the Parity Bonds.

Section 7.09. Interest and Sinking Fund Requirements.

(a) Promptly after the delivery of the Bonds the Authority shall cause to be deposited to the credit of the Interest and Sinking Fund any accrued interest received from the sale and delivery of the Bonds, and any such deposit shall be used to pay a portion of the interest next coming due on the Bonds.

Section 7.10. Deficiencies; Excess Pledged Revenues.

(a) If on any occasion there shall not be sufficient Pledged Revenues to make the required deposits into the Interest and Sinking Fund, such deficiency shall be made up as soon as possible from the next available Pledged Revenues.

(b) Subject to making the required deposits to the credit of the various Funds when and as required by this Resolution, any resolution authorizing the issuance of any Additional Bonds, any surplus Pledged Revenues may be used by the Authority for any lawful purpose.

ARTICLE VIII

SALE AND DELIVERY OF BONDS; DEPOSIT OF PROCEEDS

Section 8.01. Sale of Bonds.

(a) The Bonds are hereby officially sold and awarded to the Texas Water Development Board (the "Purchaser") at a price equal to the principal amount thereof pursuant to the terms of the commitment issued by the Purchaser. It is hereby officially found, determined and declared that the terms of this sale are the most advantageous reasonably available. The Bonds shall initially be registered in the name of such Purchaser, or its designee.

(b) The President of the Board, the Executive Director and all other officers of the Authority are authorized to take such actions, to obtain such consents or approvals and to execute such documents, certificates and receipts as they may deem necessary and appropriate in order to consummate the delivery of the Bonds, to pay the costs of issuance of the Bonds, and to effectuate the terms and provisions of this Resolution.

(c) The obligation of the Purchaser to accept delivery of the Bonds is subject to the Purchasers being furnished with the final, approving opinion of Vinson & Elkins L.L.P. and Bates & Coleman, PC., Co-Bond Counsel, which opinion shall be dated and delivered on the Closing Date.

Section 8.02. Control and Delivery of Bonds.

(a) The President of the Board and the Authority Co-Bond Counsel are hereby authorized to have control of the Initial Bond and all necessary records and proceedings pertaining thereto pending investigation, examination and approval of the Attorney General of the State of Texas, registration by the Comptroller of Public Accounts of the State of Texas and registration with, and initial exchange or transfer by, the Paying Agent/Registrar. Further, in connection with the submission of the record of proceedings for the Bonds to the Attorney General of the State of Texas for examination and approval of such Bonds, the appropriate officer of the Authority is hereby authorized and directed to issue a check of the Authority payable to the Attorney General of the State of Texas as a nonrefundable examination fee in the amount required by Chapter 1202, Texas Government Code (such amount not to exceed \$9,500).

(b) After registration by the Comptroller of Public Accounts of the State of Texas, delivery of the Bonds shall be made to the initial purchasers thereof under and subject to the general supervision and direction of the President of the Board, against receipt by the Authority of all amounts due to the Authority under the terms of sale.

Section 8.03. Deposit of Proceeds.

(a) Pursuant to written instructions from First Southwest Company, the Authority's Financial Advisor, on the Closing Date the Paying Agent/Registrar shall pay, from the proceeds of the Bonds received on the Closing Date, to the Authority an amount sufficient to pay the costs and expenses pertaining to the issuance of the Bonds. To the extent such amount is not required or used for such purpose, such excess shall be deposited to the Construction Fund, minus the amount to be deposited into the Escrow Fund pursuant to Section 8.03(b).

(b) After giving effect to the payment required in Section 8.03(a), of the remaining proceeds of the Bonds, \$1,792,000 shall be deposited to the "Escrow Fund" (as defined in the Escrow Agreement), and, to the extent directed in writing by TWDB, to the Construction Fund. Moneys deposited to the Escrow Fund shall be applied as provided in the Escrow Agreement.

Section 8.04. Approval of Escrow Agreement.

The Escrow Agreement, in substantially the form presented in Exhibit D to this Resolution is hereby approved, and its execution and delivery by the Executive Director, is hereby authorized and approved.

ARTICLE IX

**PARTICULAR REPRESENTATIONS AND
COVENANTS; ADDITIONAL BONDS**

Section 9.01. Payment of Parity Bonds.

Semiannually, on or before each June 15 and December 15 while any of the Bonds are outstanding and unpaid, the Authority shall make available to the Paying Agent/Registrar therefor, out of the Interest and Sinking Fund, money sufficient to pay, on each of such dates, the principal of and interest on the Bonds as the same mature and come due, or to redeem the Bonds prior to maturity, either upon mandatory redemption or at the option of the Authority. At the direction of the Authority, the Paying Agent/Registrar shall either deliver canceled paid Bonds to the Authority or furnish the Authority with an appropriate certificate of cancellation.

Section 9.02. Additional Bonds.

(a) The Authority shall have the right and power at any time and from time to time, and in one or more series or issues, to authorize, issue, and deliver additional parity revenue bonds (herein called "Additional Bonds"), in accordance with law, in any amounts, for any lawful purpose, including the refunding of any Bonds, Additional Bonds, or other obligations. Such Additional Bonds, if and when authorized, issued, and delivered in accordance with this Resolution, shall be payable from and secured by a lien on and pledge of the Pledged Revenues, equally and ratably on a parity in all respects with the Bonds.

(b) The principal of all Additional Bonds must be scheduled to be paid or mature on June 15 or December 15 (or both) of the years in which such principal is scheduled to be paid or mature.

Section 9.03. General Covenants.

The Authority further covenants and agrees that in accordance with and to the extent required or permitted by law:

(a) Performance. It will faithfully perform at all times any and all covenants, undertakings, stipulations, and provisions contained in this Resolution, and each resolution authorizing the issuance of the Parity Bonds, and in each and every Parity Bond; that it will promptly pay or cause to be paid the principal of and interest on every Parity Bond, on the dates and in the places and manner prescribed in such resolutions, and Parity Bonds; and that it will, at the times and in the manner prescribed, deposit or cause to be deposited the amounts required to be deposited into the Interest and Sinking Fund; and any holder of the Parity Bonds may require the Authority, its officials, and employees, to carry out, respect, or enforce the covenants and obligations of this Resolution, or any resolution authorizing the issuance of the Parity Bonds, by all legal and equitable means, including specifically, but without limitation, the use and filing of mandamus proceedings, in any court of competent jurisdiction, against the Authority, its officials, and employees.

(b) Legal Authority. The Authority is a duly created and existing political subdivision of the State of Texas, and is duly authorized under the laws of the State of Texas to create and issue the Parity Bonds; that all action on its part for the creation and issuance of the said obligations has been or will be duly and effectively taken; and said obligations in the hands of the holders and owners thereof are and will be valid and enforceable special obligations of the Authority in accordance with their terms.

(c) Further Encumbrance. While any Parity Bonds are outstanding and unpaid, the Authority shall not additionally encumber the Pledged Revenues in any manner, except as expressly permitted in this Resolution in connection with Additional Bonds, unless said encumbrance is made junior and subordinate in all respects to the liens, pledges, covenants, and agreements of any Resolution authorizing the issuance of Parity Bonds; but the right of the Authority to issue revenue bonds payable from a subordinate lien on surplus Pledged Revenues is specifically recognized and retained.

(d) Covenant to Enforce Rates. The Authority covenants and agrees that it will, to the extent set forth in the Contract, cause the City (a) to fix, establish, maintain, and collect such rates and charges as are necessary to pay Debt Service on Parity Bonds and (b) to pay all other legal obligations of the Authority, including any operation, maintenance and insurance coverage related to the Project as required under the Contract, and in an amount sufficient to protect TWDB's interest in the Project.

(e) Contract. The Authority covenants and agrees that it will comply with the terms and conditions of the Contract and any amendments thereto, and will, by all lawful means, enforce the same and cause the parties to comply with all of their obligations thereunder. The Authority will not rescind, modify or amend the Contract in any way which would materially adversely affect the operation of the Project or the rights of the owners of the Parity Bonds.

(f) Records. The Authority shall keep proper books of record and account in which full, true, proper, and correct entries will be made of all dealings, activities, and transactions relating to the Project, the Pledged Revenues, and the Funds created pursuant to this Resolution, and all books, documents, and vouchers relating thereto shall at all reasonable times be made available for inspection upon request of any Bondholder.

(g) Audits. After the close of each fiscal year while any of the Bonds or Additional Bonds are outstanding, an audit will be made of the books and accounts relating to the Project and the Pledged Revenues by an independent certified public accountant or an independent firm of certified public accountants. As soon as practicable after the close of each such year, and when said audit has been completed and made available to the Authority, a copy of such audit for the preceding year shall be filed with the Municipal Securities Rulemaking Board ("MSRB"), to the paying agent for any bonds payable from Pledged Revenues, to any registered owner of the Bonds who shall so request in writing, and to First Southwest Company. The annual audit reports shall be open to the inspection of the registered owners of Parity Bonds, and their agents and representatives at all reasonable times.

(h) Governmental Agencies. The Authority will comply with all of the terms and conditions of any and all franchises, permits, and authorizations applicable to or necessary with respect to the Project, and which have been obtained from any governmental agency; and the Authority has or will obtain and keep in full force and effect all franchises, permits, authorization, and other requirements applicable to or necessary with respect to the acquisition, construction, equipment, operation, and maintenance of the Project.

(i) Environmental Determinations. The Authority covenants that to the extent required by TWDB, the Authority will comply with any special conditions specified by TWDB's environmental determination in connection with the sale of the Bonds to TWDB, for so long as any outstanding Bond or Bonds are owned by the TWDB.

(j) Environmental Indemnification. The Authority shall not use proceeds from the Bonds for sampling, testing, removing or disposing of contaminated soils and/or media at the project site. The Authority agrees to indemnify, hold harmless and protect TWDB from any and all claims, causes of action or damages to the person or property of third parties arising from the sampling analysis, transport, storage, treatment and disposition of any contaminated sewage sludge, contaminated sediments and/or contaminated media that may be generated by the Authority, its contractors, consultants, agents, officials and employees as a result of activities relating to the project to the extent permitted by law.

ARTICLE X

TAX MATTERS

Section 10.01. Provisions Concerning Federal Income Tax Exclusion.

The Authority intends that the interest on the Bonds shall be excludable from gross income for purposes of federal income taxation pursuant to sections 103 and 141 through 150 of the Internal Revenue Code of 1986, as amended (the "Code"), and the applicable regulations

promulgated thereunder (the "Regulations"). The Authority covenants and agrees not to take any action, or knowingly omit to take any action within its control, that if taken or omitted, respectively, would cause the interest on the Bonds to be includable in the gross income, as defined in section 61 of the Code, of the holders thereof for purposes of federal income taxation. In particular, the Authority covenants and agrees to comply with each requirement of this Article X; provided, however, that the Authority shall not be required to comply with any particular requirement of this Article X if the Authority has received an opinion of nationally recognized bond counsel ("Counsel's Opinion") that such noncompliance will not adversely affect the exclusion from gross income for federal income tax purposes of interest on the Bonds or if the Authority has received a Counsel's Opinion to the effect that compliance with some other requirement set forth in this Article X will satisfy the applicable requirements of the Code, in which case compliance with such other requirement specified in such Counsel's Opinion shall constitute compliance with the corresponding requirement specified in this Article X.

Section 10.02. No Private Use or Payment and No Private Loan Financing.

The Authority shall certify, through an authorized officer, employee or agent, that, based upon all facts and estimates known or reasonably expected to be in existence on the date the Bonds are delivered, the proceeds of the Bonds will not be used in a manner that would cause the Bonds to be "private activity bonds" within the meaning of section 141 of the Code and the Regulations. The Authority covenants and agrees that it will make such use of the proceeds of the bonds, including interest or other investment income derived from the proceeds of bonds or other obligations, regulate the use of property financed, directly or indirectly, with such proceeds, and take such other and further action as may be required so that the bonds will not be "private activity bonds" within the meaning of section 141 of the Code and the Regulations.

Section 10.03. No Federal Guaranty.

The Authority covenants and agrees not to take any action, or knowingly omit to take any action within its control, that, if taken or omitted, respectively, would cause the Bonds to be "federally guaranteed" within the meaning of section 149(b) of the Code and the Regulations, except as permitted by section 149(b)(3) of the Code and the Regulations.

Section 10.04. Bonds are not Hedge Bonds.

The Authority covenants and agrees not to take any action, or knowingly omit to take any action, and has not knowingly omitted and will not knowingly omit to take any action, within its control, that, if taken or omitted, respectively, would cause the Bonds to be "hedge bonds" within the meaning of section 149(g) of the Code and the Regulations.

Section 10.05. No-Arbitrage Covenant.

The Authority shall certify, through an authorized officer, employee or agent, that, based upon all facts and estimates known or reasonably expected to be in existence on the date the Bonds are delivered, the Authority will reasonably expect that the proceeds of the Bonds will not be used in a manner that would cause the Bonds to be "arbitrage bonds" within the meaning of section 148(a) of the Code and the Regulations. Moreover, the Authority covenants and agrees that it will make such use of the proceeds of the Bonds including interest or other investment

income derived from Bond proceeds, regulate investments of proceeds of the Bonds, and take such other and further action as may be required so that the Bonds will not be “arbitrage bonds” within the meaning of section 148(a) of the Code and the Regulations.

Section 10.06. Arbitrage Rebate.

If the Authority does not qualify for an exception to the requirements of Section 148(f) of the Code, the Authority will take all necessary steps to comply with the requirement that certain amounts earned by the Authority on the investment of the “gross proceeds” of the Bonds (within the meaning of section 148(f)(6)(B) of the Code), be rebated to the federal government. Specifically, the Authority will (i) maintain records regarding the investment of the gross proceeds of the Bonds as may be required to calculate the amount earned on the investment of the gross proceeds of the Bonds separately from records of amounts on deposit in the funds and accounts of the Authority allocable to other bond issue of the Authority or moneys which do not represent gross proceeds of any bonds of the Authority, (ii) calculate at such times as are required by the Regulations, the amount earned from the investment of the gross proceeds of the Bonds which is required to be rebated to the federal government, and (iii) pay, not less often than every fifth anniversary date of the delivery of the Bonds or on such other dates as may be permitted under the Regulations, all amounts required to be rebated to the federal government. Further, the Authority will not indirectly pay any amount otherwise payable to the federal government pursuant to the foregoing requirements to any person other than the federal government by entering into any investment arrangement with respect to the gross proceeds of the Bonds that might result in a reduction in the amount required to be paid to the federal government because such arrangement results in a smaller profit or a larger loss than would have resulted if the arrangement had been at arm’s length and had the yield on the issue not been relevant to either party.

Section 10.07. Information Reporting.

The Authority covenants and agrees to file or cause to be filed with the Secretary of the Treasury, not later than the 15th day of the second calendar month after the close of the calendar quarter in which the Bonds are issued, an information statement concerning the Bonds, all under and in accordance with section 149(e) of the Code and the Regulations.

Section 10.08. Continuing Obligation.

Notwithstanding any other provision of this Resolution, the Authority’s obligations under the covenants and provisions of this Article X shall survive the defeasance and discharge of the Bonds.

ARTICLE XI

DISCHARGE

Section 11.01. Discharge.

Subject to the provisions of Article XV, the Authority reserves the right to defease, refund or discharge the Bonds in any manner permitted by law.

Section 11.02. Bonds as Negotiable Instruments.

Each of the Bonds shall be deemed and construed to be an "Investment Security" and, as such, a negotiable instrument, within the meaning of Article 8 of the Texas Uniform Commercial Code.

ARTICLE XII

MODIFICATIONS AND AMENDMENTS

Section 12.01. Amendments and Modifications of Resolution.

(a) Subject to the provisions of Article XIII, the owners of 51% in principal amount of the Parity Bonds then outstanding shall have the right from time to time to approve any amendment to any resolution authorizing the issuance of any Parity Bonds, which may be deemed necessary or desirable by the Authority, provided, however, that nothing herein contained shall permit or be construed to permit the amendment of the terms and conditions in said resolutions or in the Parity Bonds so as to:

1. Make any change in the maturity of the outstanding Parity Bonds;
2. Reduce the rate of interest borne by any of the outstanding Parity Bonds;
3. Reduce the amount of the principal payable on the outstanding Parity Bonds;
4. Modify the terms of payment of principal or interest on the outstanding Parity Bonds, or impose any conditions with respect to such payment;
5. Affect the rights of the owners of less than all of the Parity Bonds then outstanding;
6. Change the minimum percentage of the principal amount of Parity Bonds necessary for consent to such amendment.

(b) If at any time the Authority shall desire to amend a resolution under this Section, the Authority shall cause notice of the proposed amendment to be published in a financial newspaper or journal published in The City of New York, New York once during each calendar week for at least two successive calendar weeks. Such notice shall briefly set forth the nature of the proposed amendment and shall state that a copy thereof is on file at the principal office of each paying agent for any of the Parity Bonds, for inspection by all owners of Parity Bonds. Such publication is not required, however, if notice in writing is given to each owner of Parity Bonds.

(c) Whenever at any time not less than thirty days, and within one year, from the date of the first publication of said notice or other service of written notice the Authority shall receive an instrument or instruments executed by the owners of at least 51% in aggregate principal amount of all Parity Bonds then outstanding, which instrument or instruments shall refer to the

proposed amendment described in said notice and which specifically consent to and approve such amendment in substantially the form of the copy thereof on file as aforesaid, the Authority may adopt the amendatory resolution in substantially the same form.

(d) Upon the adoption of any amendatory resolution pursuant to the provisions of this Section, the resolution being amended shall be deemed to be amended in accordance with the amendatory resolution, and the respective rights, duties, and obligations of the Authority and all the owners of then outstanding Parity Bonds and all future Additional Bonds shall thereafter be determined, exercised, and enforced hereunder, subject in all respects to such amendment.

(e) Any consent given by the owner of a Parity Bond pursuant to the provisions of this Section shall be irrevocable for a period of six months from the date of the first publication or giving of the notice provided for in this Section, and shall be conclusive and binding upon all future owners of the same Parity Bond during such period. Such consent may be revoked at any time after six months from the date of the first publication of such notice by the owner who gave such consent, or by a successor in title, by filing notice thereof with the paying agent for such Bond and the Authority, but such revocation shall not be effective if the owners of 51% in aggregate principal amount of the then outstanding Parity Bonds as in this Section defined have, prior to the attempted revocation, consented to and approved the amendment.

(f) For the purpose of this Section, the ownership of and other matters relating to the Bonds shall be determined from the registration books kept by the registrar therefor.

ARTICLE XIII

CONTINUING DISCLOSURE UNDERTAKING

Section 13.01. Definitions of Continuing Disclosure Terms.

As used in this Article, the following terms have the meanings assigned to such terms below:

“EMMA” means Electronic Municipal Market Access System at www.emma.msrb.org.

“MSRB” means the Municipal Securities Rulemaking Board.

“Rule” means SEC Rule 15c2-12, as amended from time to time.

“SEC” means the United States Securities and Exchange Commission.

Section 13.02. Annual Reports.

(a) The Authority shall provide annually to the MSRB in electronic format as prescribed by the MSRB, within six (6) months after the end of each fiscal year, financial information and operating data with respect to the Authority of the general type included in the Application, being the information described in Exhibit A hereto. Any financial statements so to be provided shall be (i) prepared in accordance with the accounting principles described in Exhibit A hereto, and (ii) audited, if the Authority commissions an audit of such statements and

the audit is completed within the period during which they must be provided. If the audit of such financial statements is not complete within such period, then the Authority shall provide notice that audited financial statements are not available and shall provide unaudited financial statements for the applicable fiscal year to the MSRB. The Authority shall provide audited financial statements for the applicable fiscal year to the MSRB, when and if audited financial statements become available. All such information and operating data shall be provided to the MSRB, in an electronic format, accompanied by identifying information, as prescribed by the MSRB, and will be available via the EMMA.

(b) If the Authority changes its fiscal year, it will notify the MSRB of the change (and of the date of the new fiscal year end) prior to the next date by which the Authority otherwise would be required to provide financial information and operating data pursuant to this Section.

(c) The financial information and operating data to be provided pursuant to this Section may be set forth in full in one or more documents or may be included by specific referenced to any document (including an official statement or other offering document, if it is available from the MSRB) that theretofore has been provided to the MSRB or filed with the SEC.

Section 13.03. Material Event Notices.

(a) The Authority shall notify the MSRB, in a timely manner, of any of the following events with respect to the Bonds, if such event is material within the meaning of the federal securities laws:

- (i) principal and interest payment delinquencies;
- (ii) nonpayment related defaults;
- (iii) unscheduled draws on debt service reserves reflecting financial difficulties;
- (iv) unscheduled draws on credit enhancements reflecting financial difficulties;
- (v) substitution of credit or liquidity providers, or their failure to perform;
- (vi) adverse tax opinions or events affecting the tax exempt status of the Bonds;
- (vii) modifications to rights of Owners;
- (viii) bond calls;
- (ix) defeasances;
- (x) release, substitution, or sale of property securing repayment of the Bonds;
and

(xi) rating changes.

(b) The Authority shall notify the MSRB, in a timely manner, of any failure by the Authority to provide financial information or operating data in accordance with Section 13.02 of this Resolution by the time required by such Section.

Section 13.04. Limitations, Disclaimers and Amendments.

(a) The Authority shall be obligated to observe and perform the covenants specified in this Article for so long as, but only for so long as, the Authority remains an "obligated person" with respect to the Bonds within the meaning of the Rule, except that the Authority in any event will give notice of any Bond calls and any defeasances that cause the Authority to be no longer an "obligated person."

(b) The provisions of this Article are for the sole benefit of the Owners and beneficial owners of the Bonds, and nothing in this Article, express or implied, shall give any benefit or any legal or equitable right, remedy, or claim hereunder to any other person. The Authority undertakes to provide only the financial information, operating data, financial statements, and notices which it has expressly agreed to provide pursuant to this Article and does not hereby undertake to provide any other information that may be relevant or material to a complete presentation of the Authority's financial results, condition, or prospects or hereby undertake to update any information provided in accordance with this Article or otherwise, except as expressly provided herein. The Authority does not make any representation or warranty concerning such information or its usefulness to a decision to invest in or sell Bonds at any future date.

UNDER NO CIRCUMSTANCES SHALL THE DISTRICT BE LIABLE TO THE OWNER OR BENEFICIAL OWNER OF ANY BOND OR ANY OTHER PERSON, IN CONTRACT OR TORT, FOR DAMAGES RESULTING IN WHOLE OR IN PART FROM ANY BREACH BY THE DISTRICT, WHETHER NEGLIGENT OR WITHOUT FAULT ON ITS PART, OF ANY COVENANT SPECIFIED IN THIS ARTICLE, BUT EVERY RIGHT AND REMEDY OF ANY SUCH PERSON, IN CONTRACT OR TORT, FOR OR ON ACCOUNT OF ANY SUCH BREACH SHALL BE LIMITED TO AN ACTION FOR MANDAMUS OR SPECIFIC PERFORMANCE.

(c) No default by the Authority in observing or performing its obligations under this Article shall constitute a breach of or default under the Resolution for purposes of any other provisions of this Resolution.

(d) Nothing in this Article is intended or shall act to disclaim, waive, or otherwise limit the duties of the Authority under federal and state securities laws.

(e) The provisions of this Article may be amended by the Authority from time to time to adapt to changed circumstances that arise from a change in legal requirements, a change in law, or a change in the identity, nature, status, or type of operations of the Authority, but only if (i) the provisions of this Article, as so amended, would have permitted an underwriter to purchase or sell Bonds in the primary offering of the Bonds in compliance with the Rule, taking into account any amendments or interpretations of the Rule to the date of such amendment, as

well as such changed circumstances, and (ii) either (A) the Owners of a majority in aggregate principal amount (or any greater amount required by any other provisions of this Resolution that authorizes such an amendment) of the Outstanding Parity Bonds consent to such amendment or (B) an entity or individual person that is unaffiliated with the Authority (such as nationally recognized bond counsel) determines that such amendment will not materially impair the interests of the Owners and beneficial owners of the Bonds. If the Authority so amends the provisions of this Article, it shall include with any amended financial information or operating data next provided in accordance with Section 10.1 an explanation, in narrative form, of the reasons for the amendment and of the impact of any change in type of financial information or operating data so provided.

ARTICLE XIV

SPECIAL PROVISIONS RELATING TO THE TEXAS WATER DEVELOPMENT BOARD

Section 14.01. Application of Article XIV.

The provisions of this Article shall apply so long as the Bonds, or any of them, are owned by the TWDB.

Section 14.02. Covenant to Abide with Rules.

The Authority will abide with all applicable laws of the State of Texas and Rules of the TWDB relating to the loan of funds evidenced by the Bonds and the Project.

Section 14.03. Tax Covenant.

The Authority will not take, or omit to take, any action which action or omission would adversely affect the excludability for federal income tax purposes of interest payable on the Bonds or on any series of bonds issued by the TWDB or the Texas Water Resources Finance Authority.

Section 14.04. Final Accounting.

(a) Subject to subparagraph (b) of this Section 14.04, upon completion of the Project, the Authority shall render a final accounting of the cost of the Project to the TWDB; and, if the total cost of the Project, as finally completed, is less than originally estimated, so that the proper share of the participation of the TWDB in the Project is reduced, the Authority shall return to the TWDB the amount of such excess to the nearest multiple of the denomination of the Bonds, whereupon the TWDB shall cancel and return to the Authority a like amount of said Bonds held by the TWDB. The Bonds to be canceled and returned shall be chosen in inverse order of maturity. The remainder of such excess (an amount less than \$5,000) shall be deposited into the Interest and Sinking Fund.

(b) Notwithstanding the provisions of Section 14.04(a), in accordance with the rules and regulations of the TWDB, any surplus moneys remaining after completion of the Project may be used for improvements and extensions to the Project which could otherwise be financed

with the proceeds of bonds in any manner approved in writing by the executive administrator of the TWDB.

Section 14.05. Annual Audit Reports.

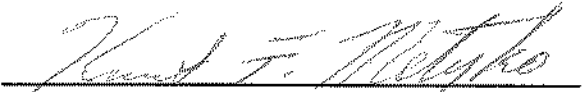
The Authority shall provide to the Executive Administrator of the TWDB, without necessity of a written request therefor, a copy of the Authority's annual audit report within 120 days after the end of the Authority's fiscal year.

Section 14.06. Water Conservation.

The Authority agrees to work with its customers to create and implement a TWDB approved water conversation plan.

[Intentionally left blank]

FINALLY ADOPTED, APPROVED AND EFFECTIVE this 9th day of June 2010.



President, Board of Directors,
Coastal Water Authority

ATTEST:



Secretary, Board of Directors,
Coastal Water Authority

EXHIBIT A

DESCRIPTION OF ANNUAL DISCLOSURE OF FINANCIAL INFORMATION

The following information is referred to in Article XIII of this Resolution.

Annual Financial Statements and Operating Data

The financial information and operating data with respect to the Authority to be provided annually in accordance with such Section are as specified (and included in the Appendix or other headings of the Official Statement referred to) below:

1. The portions of the financial statements of the Authority appended to the Application, but for the most recently concluded fiscal year.
2. Statistical and financial data set forth in Tables set for in the Application.

Accounting Principles

The accounting principles referred to in such Section are the accounting principles described in the notes to the financial statements referred to in Paragraph 1 above.

EXHIBIT B
LUCE BAYOU CONTRACT

Controller's Office

To the Honorable Mayor and City Council of the City of Houston, Texas:

I hereby certify, with respect to the money required for the contract, agreement, obligation or expenditure contemplated by the ordinance set out below that:

- () Fuuds have been encumbered out of funds previously appropriated for such purpose.
- () Funds have been certified and designated to be appropriated by separate ordinance to be approved prior to the approval of the ordinance set out below.
- () Fuuds will be available out of current or general revenue prior to the maturity of any such obligation.
- () No pecuniary obligation is to be incurred as a result of approving the ordinance set out below.
- (✓) The mouey required for the expenditure or expenditures specified below is in the treasury, in the fund or funds specified below, and is not appropriated for any other purposes.
- () A certificate with respect to the money required for the expediture or expeditures specified below is attached hereto and lucorporated herein by this refereuce.
- () Other - Grant Funds Available

Angie D. Parker
Janet Palk

City Controller of the City of Houston, Texas

Date: 1-27, 2009

FUND REF: 9311200.520111

AMOUNT: \$3,657,375.00 FmBB 360005776
ENCUMB. NO.:

City of Houston, Texas Ordinance No. 2009-53

AN ORDINANCE APPROPRIATING THE SUM OF \$3,657,375.00 OUT OF THE WATER AND SEWER CONTRIBUTED CAPITAL FUND; AUTHORIZING A PLEDGE FOR ADDITIONAL FUNDS OUT OF THE WATER AND SEWER SYSTEM GENERAL PURPOSE FUND ESTABLISHED UNDER ORDINANCE NO. 2004-299; APPROVING AND AUTHORIZING THE PROJECTS CONTRACT BETWEEN THE CITY OF HOUSTON, AND THE COASTAL WATER AUTHORITY FOR THE CONSTRUCTION OF THE LUCE BAYOU INTERBASIN TRANSFER PROJECT; MAKING VARIOUS FINDINGS AND PROVISIONS RELATING TO THE SUBJECT; AND DECLARING AN EMERGENCY.

* * * *

WHEREAS, the City of Houston owns water rights in the Trinity River Basin; and

WHEREAS, currently Trinity River water is transported to the Houston metropolitan area through the Coastal Water Authority's Main Canal; and

WHEREAS, the City Council has determined that it is expedient to construct a second conveyance system which will pump Trinity River water into Lake Houston; and

WHEREAS, the City Council has determined that the Coastal Water Authority has the competence and experience to deliver the Luce Bayou Interbasin Transfer Project for the City of Houston;

NOW, THEREFORE,

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF HOUSTON, TEXAS:

Section 1. That the City Council hereby ratifies and adopts the findings and recitals contained in the Preamble of this Ordinance.

Section 2. The City Council hereby appropriates the sum or sums of money set out in the title of this Ordinance, out of the respective fund or funds set out in such title for the purpose or purposes set out in such title.

* Section 3. The City Council authorizes the pledge of payments to the Coastal Water Authority for the design and construction of the Luce Bayou Interbasin Transfer Project, which payments shall come solely from Houston's General Purpose Fund established under City of Houston Ordinance No. 2004-299, including any amendments thereto.

Section 4. The City Council hereby approves and authorizes the contract, agreement or other undertaking described in the title of this Ordinance, in substantially the form as shown in the document which is attached hereto and incorporated herein by this reference. The Mayor is hereby authorized to execute such document and all related documents on behalf of the City of Houston. The City Secretary is hereby authorized to attest to all such signatures and to affix the seal of the City to all such documents.

Section 5. The Mayor is hereby authorized to take all actions necessary to effectuate the City's intent and objectives in approving such agreement, agreements or other undertaking described in the title of this ordinance, in the event of changed circumstances.

Section 6. The City Attorney is hereby authorized to take all action necessary to enforce all legal obligations under said contract without further authorization from Council.

Section 7. There exists a public emergency requiring that this Ordinance be passed finally on the date of its introduction as requested in writing by the Mayor; therefore, this Ordinance shall be passed finally on such date and shall take effect immediately upon its passage and approval by the Mayor; however, in the event that the Mayor fails to sign this Ordinance within five days after its passage and adoption, it shall take effect in accordance with Article VI, Section 6, Houston City Charter.

PASSED AND ADOPTED this 28th day of January, 2009.
 APPROVED this _____ day of _____, 20____.

 Mayor of the City of Houston, Texas

Pursuant to Article VI, Section 6, Houston City Charter, the effective date of the foregoing Ordinance is FEB 03 2008.

Barbara Jones
 ACTING ASSISTANT CITY SECRETARY

Gregory
 (Prepared by Legal Dept. _____)
 EWB:bt:01/23/2009) Senior Assistant City Attorney
 (Requested by Michael S. Marcotte, P.E., D.WRE, BCEE, Director)
 (L.D. File No. 0700900003001)

AYE	NO	
✓		MAYOR WHITE
••••	••••	COUNCIL MEMBERS
✓		LAWRENCE
✓		JOHNSON
✓		CLUTTERBUCK
✓		ADAMS
✓		SULLIVAN
✓		KHAN
	ABSENT	HOLM
		<i>Vacant</i>
✓		RODRIGUEZ
✓		BROWN
✓		LOVELL
✓		NORIEGA
✓		GREEN
✓		JONES
CAPTION	ADOPTED	

OPTION PUBLISHED IN DAILY COURT
 REVIEW
 DATE: FEB 03 2008

**PROJECTS CONTRACT
BETWEEN
CITY OF HOUSTON, TEXAS
AND
COASTAL WATER AUTHORITY**

THE STATE OF TEXAS §
 §
COUNTY OF HARRIS §

This Projects Contract is entered into as of the date of countersignature herein, by and between the CITY OF HOUSTON, TEXAS, a municipal corporation and Home-Rule City situated principally in Harris County, Texas (hereinafter called the "City"), and COASTAL WATER AUTHORITY, a political subdivision and conservation district of the State of Texas created by Chapter 601, Acts of the 60th Legislature of Texas, Regular Session, 1967 (Article 8280-355, Vernon's Texas Civil Statutes) (hereinafter called the "CWA") (together, the "Parties").

WITNESSETH:

RECITALS

A. The Parties desire to cooperate on the planning, design, property acquisition, construction and financing of the project known as the "Luce Bayou Interbasin Transfer Project," which as currently contemplated will include infrastructure sized to transfer approximately 450,000 acre feet per year of the City's permitted surface water from the Trinity River to Lake Houston (as further described in Section 2.01 herein, the "Luce Bayou Project").

B. This Projects Contract will among other things set forth the terms and conditions: (i) by which the Parties will collaborate on the construction of the Luce Bayou Project, which includes all costs associated with the Preliminary Project Costs, the Land and Mitigation Costs, and the Construction Costs (all as further defined

herein); and (ii) of the financing of the Luce Bayou Project through the WIF Bonds for Preliminary Project Costs, use of CWA Available Revenues for the City's portion of Land and Mitigation Costs, and the use of future available financing for the Construction Costs.

C. The Luce Bayou Project shall consist of certain elements described within and among the following categories: Preliminary Project Costs, Land and Mitigation Costs, and Construction Costs. The Preliminary Project Costs shall be for design, permitting, and other preliminary matters related to the Luce Bayou Project; Land and Mitigation Costs shall be for costs related to the acquisition of land and costs of environmental mitigation necessary for the Luce Bayou Project; and Construction Costs shall be for the costs related to the construction of the Luce Bayou Project.

D. Preliminary Project Costs will be financed and paid through the issuance of CWA contract revenue bonds which are to be purchased by the Texas Water Development Board (the "TWDB") through its Water Infrastructure Fund ("WIF") loan program, under which the TWDB will loan funds to CWA (the "WIF Bonds"). The WIF Bonds will be secured by the City's pledge under this Projects Contract to pay Debt Service on the WIF Bonds from Pledged Revenues (as defined herein).

E. The Projects Contract further contemplates that CWA shall advance funds to pay for the City's share of Land and Mitigation Costs from Available CWA Revenues (as defined herein), and the City shall repay CWA pursuant to the Amortization Payment (as defined herein), and Construction Costs will be financed by the most economical means available at the time of construction of the Luce Bayou Project, which is currently contemplated to be through financing from one or a combination of potential sources,

including 1) TWDB state assistance programs; 2) state or federal grants; 3) City Pledged Revenues; or 4) other CWA funds.

F. The Parties further intend to enter into one or more additional contracts for the operation and maintenance of the Luce Bayou Project.

AGREEMENT

For and in consideration of the respective promises and the mutual covenants and benefits hereinafter set forth, the City and CWA agree as follows:

ARTICLE I

DEFINITIONS

Section 1.01. Definitions. The terms defined in the recitals have the meanings set forth in such recitals, and the following terms have the following meanings:

"Act" shall mean Article 8280-355, Tex. Rev. Civ. Stat. Ann. (Chap.601, Acts of the 60th Legislature of Texas, Regular Session, 1967, as amended by Chap.767, Acts of the 61st Legislature of Texas, Regular Session, 1969, Chap. 706, Acts of the 68th Legislature of Texas, Regular Session, 1983, and Chap.674, Acts of the 69th Legislature of Texas, Regular Session, 1985, and any future amendments or codifications).

"Amortization Payment" shall mean the amount payable by the City to CWA necessary to reimburse CWA for the expenditure of its Available CWA Revenues on the Preliminary Project Costs and Land and Mitigation Costs (excluding the Pro Rata Share of Land and Mitigation Costs paid by the City to CWA from deposits made by the Authorities under Section 3.09 and the Pro Rata Share of Preliminary Project Costs paid from the City to CWA from deposits made by the Authorities under Section 3.10) as further set forth in Exhibit "A" hereto.

"Authorities" shall mean Central Harris County Regional Water Authority, North Harris County Regional Water Authority, West Harris County Regional Water Authority, and North Fort Bend Water Authority, and any successor-in-interest to any such entities.

"Available CWA Revenues" shall mean the certain revenues derived by CWA from the sale of certain Certificates of Participation, Series 1993A-J with respect to the City of Houston, Texas, Water Conveyance System Contract.

"Board of Directors" shall mean the Board of Directors of CWA which is the governing body of CWA.

"Bonds" means the bonds, notes and other obligations (other than WIF Bonds) issued or to be issued by CWA for the Luce Bayou Project and secured by contract revenues from the City, as the terms of such bonds, notes and other obligations may be agreed to in a Supplemental Agreement.

"City" is defined in the preamble of this Projects Contract and includes its successors and assigns.

"City Council" shall mean the City Council of the City which is the governing body thereof.

"Construction Costs" shall mean all costs and related costs of CWA reasonably incurred for labor and to Consultants, contractors, builders and materialmen in connection with the construction of the Luce Bayou Project, including but not limited to the cost of, (a) labor and equipment necessary for obtaining any electrical power; (b) contract bonds and insurance of all kinds that may be required or necessary during the course of construction that is not paid by the contractor or contractors or otherwise provided for; and (c) supervising construction, as well as for the performance of all other duties required by or consequent upon the proper construction of a project, including

engineering costs during the construction phase of the Luce Bayou Project. Additionally, to the extent any other Costs are not paid or reimbursed through the WIF Bonds or otherwise, such Costs are deemed to be Construction Costs.

"Consultants" shall mean the engineering firm or firms or other professional service firms at the time engaged by CWA to carry out any duties relating to the planning, design, acquisition, or construction of the Luce Bayou Project.

"Costs" shall mean Preliminary Project Costs, Land and Mitigation Costs, and Construction Costs.

"Costs of Issuance" shall mean cost of financing, legal, printing and other costs attributable to the issuance of the WIF Bonds and the Bonds within the meaning of Section 147(g) of the Internal Revenue Code.

"CWA" is defined in the preamble of this Projects Contract and includes its successors and assigns.

"Debt Service" shall mean, with respect to any particular fiscal year or other twelve (12) month period, for the WIF Bonds or any series of Bonds, an amount equal to the sum of (a) all interest payable on such WIF Bonds or Bonds during such period, except to the extent that such interest is to be paid from amounts (including any investment earnings thereon) deposited in the applicable debt service fund, debt service reserve fund, construction fund, or elsewhere for the purpose of providing capitalized interest, plus (b) that portion of the principal amount of such WIF Bonds or Bonds which are due and payable during such period, plus or minus (c) net amounts payable or receivable under any credit agreements or hedge agreements during such period, plus (d) Obligation Expenses for the WIF Bonds or Bonds during such period.

"Executive Director" shall mean the executive director of CWA or anyone designated in writing by the executive director to perform a specified task.

"Financial Officer" shall mean the chief financial officer of CWA or anyone designated in writing by the chief financial officer to perform a specified task.

"Generally Accepted Accounting Principles" shall mean, such accepted accounting practice as, in the opinion of CWA's accountant, conforms at the time to a body of generally accepted accounting principles.

"General Purpose Fund" shall mean the System fund so designated in the Master Ordinance and established and maintained by the City thereunder.

"Land and Mitigation Costs" shall mean all costs and related costs incurred by CWA in connection with the acquisition of Project Property, including but not limited to (a) acquiring Project Property whether by purchase or by condemnation; (b) any costs of purchasing environmental mitigation credits or other expense relating to mitigating the environmental impact of the Luce Bayou Project; (c) due diligence; (d) all other costs, including damages awarded by a court, which CWA shall be required to pay for the acquisition of Project Property and/or arising out of the acquisition of Project Property.

"Master Ordinance" shall mean City of Houston Ordinance No. 2004-299, and any amendments and supplements thereto, which provides for the establishment and maintenance of the General Purpose Fund.

"Net Revenues" shall have the meaning as defined in the Master Ordinance.

"Obligation Expenses" shall mean the ongoing fees and expenses of CWA (other than Costs of Issuance) relating to the WIF Bonds or any obligation issued to finance Construction Costs pursuant to Section 3.03, including its fees and expenses relating to:

(1) paying agents, registrars, authenticating agents, securities dealer, securities depositories, or other fiduciaries; (2) tax rebate, financial and legal consultants; (3) insurers; (4) remarketing, indexing, or similar agreements; (5) credit agreements, hedge agreements, investment liquidity facility agreements, consented to by the City, or bond reserve fund surety policies.

"Pledged Revenues" shall mean the Net Revenues held in the General Purpose Fund.

"Preliminary Project Costs" shall mean all costs and related costs reasonably incurred by CWA in connection with the planning, design and engineering of the Luce Bayou Project, including but not limited to (a) all costs that are eligible to be financed through the WIF Bonds, including (i) geotechnical investigations, surveys, estimates, plans and specifications and preliminary investigations therefor, as well as for the performance of all other duties required by or consequent upon the proper design of a project; (ii) analysis of the environmental impact of the Luce Bayou Project and the mitigation of any environmental impact of the Luce Bayou Project; (iii) applying for and obtaining any permits necessary for the design, acquisition or construction of the Luce Bayou Project or for the acquisition of Project Property (iv) Costs of Issuance for the WIF Bonds or other financing of the Preliminary Project Costs; (v) all other costs, including damages awarded by a court, which CWA shall be required to pay, under the terms of any contract or contracts, for the design of the Luce Bayou Project; and (b) any sums required to reimburse CWA for advances made by CWA or the City for any of the above items, or for any other costs incurred and for work done by it (including overhead charges), which are properly chargeable to the Luce Bayou Project.

"Pro Rata Share of Land and Mitigation Costs" means, with respect to the Authorities, 35.3% of the total costs of the Land and Mitigation Costs, and with respect to the City, 64.7 % of the Land and Mitigation Costs.

"Pro Rata Share of Preliminary Project Costs Interest Expense" means, with respect to the Authorities, 35.3% of the total costs of Interest on the Preliminary Project Costs identified as Component A in Exhibit A, and with respect to the City, 64.7% of the total costs of interest on the Preliminary Project Costs identified as Component A in Exhibit A.

"Project Property" shall mean all necessary land or rights in land for the Luce Bayou Project, including any land necessary to comply with any legal requirements to mitigate the environmental impact of the Luce Bayou Project, and any items or costs incidental thereto.

"Projects Contract" shall mean this agreement between CWA and the City.

"Public Works Director" shall mean the Director of the Department of Public Works and Engineering of the City (or the successor equivalent position), or such person as he or she shall designate.

"Substantial Completion" shall mean the time at which the Luce Bayou Project is available for use for its intended purposes as certified by an engineer engaged by CWA.

"Supplemental Agreement" shall mean one or more agreements between the City and CWA necessary to carry out the terms of this Projects Contract.

"System" has the meaning stated in the Master Ordinance.

ARTICLE II

PROJECT DESIGN, ACQUISITION, AND CONSTRUCTION

Section 2.01. Luce Bayou Project. As currently reflected in the State of Texas 2007 Water Plan, and as described in the application for the WIF Bonds, it is contemplated that the Luce Bayou Project would include the construction of infrastructure sized to transfer approximately 450,000 acre feet per year of the City's permitted surface water from the Trinity River to Lake Houston. Such infrastructure is envisioned to include the construction of a new pump station on the banks of the Trinity River, and necessary pipelines and canals. The Parties acknowledge that components and details of the Luce Bayou Project may change as design, permitting, and other requirements may dictate.

Section 2.02. Cooperation Among Parties and Authorities. CWA will be solely responsible for all decisions and actions relating to the design, development, procurement and construction of all aspects of the Luce Bayou Project. CWA shall regularly communicate with the Authorities with respect to the design, development, procurement and construction of the Luce Bayou Project, by i) inviting the Authorities to participate in certain development and planning meetings between CWA and its consultants in order to facilitate communication and input from the Authorities; and ii) providing that CWA will provide the Authorities with written monthly (or other than monthly if mutually agreed to by CWA and the Authorities) updates regarding the progress, status of contracts and other relevant aspects of the Luce Bayou Project. While CWA will consider the Authorities' input regarding the Luce Bayou Project, the City and the Authorities recognize that such input, communication and status reports provided for in this paragraph do not alter CWA's role as the sole project manager of the

Luce Bayou Project. In addition, CWA will invite the Authorities and the City to all meetings between CWA and its consultants, and between CWA and its construction contractors, where substantive issues that have a financial or project development impact on the Authorities or the City are being discussed.

Section 2.03. Design, Permitting, Property Acquisition, and Construction.

(a) **Phase I Preliminary Design.** Preliminary engineering reports for the Luce Bayou Project shall be prepared by the Consultants which shall be submitted to and approved by both the Executive Director and the Public Works Director before proceeding with Phase II--Final Design of the Luce Bayou Project.

(b) **Phase II Final Design.** CWA intends to commence with Phase II Final Design of the Luce Bayou Project by January 1, 2011. Final plans for the Luce Bayou Project shall be prepared by the consulting engineers and shall be approved by the Public Works Director and the Executive Director prior to advertising for construction contracts.

(c) **Permits.** Before awarding a construction contract, CWA shall cause to be secured all necessary permits for the Luce Bayou Project.

(d) **Land Costs and Mitigation.** CWA shall acquire all Project Property. CWA intends to use its Available CWA Funds, and the Authorities' funds paid to CWA by the City under Section 3.09 to acquire all or a portion of the Project Property to be used for right of way and for certain environmental mitigation purposes and to pay the Land and Mitigation Costs. If CWA expends such Available CWA Funds for Project Property and to pay the Land and Mitigation Costs, the City shall reimburse CWA for such expenditures in accordance with Section 3.09 herein. After all Debt Service

payments on the WIF Bond and Bonds have been paid and all other obligations under this Projects Contract are paid, CWA shall at any time thereafter, upon the request of the City, assign to the City all of CWA's rights, title and interest in the Project Property and shall execute all documents necessary to effectuate said conveyance.

CWA will keep an accurate record of all costs of land acquisition and mitigation, including appraisals, surveying, negotiations, abstracts, legal opinions and condemnation costs which shall be included in the Land and Mitigation Costs as Costs of the Luce Bayou Project and shall make this information available to the City. Once CWA has completed land acquisition and mitigation, but no later than June 30, 2014, CWA will notify the City of the completion (or of any land acquisition and mitigation remaining to be completed). CWA agrees to an accounting of the total Land and Mitigation Costs. CWA will provide to the City and Authorities a 65-day review and comment prior to finalizing the accounting. The payments made by the Authorities and the City for Land and Mitigation Costs such that if the City has underpaid the City Pro Rata Share of Land and Mitigation Costs or the Authorities' Pro Rata Share of Land and Mitigation Costs, taking into account interest accrued, the City will pay such shortfall within 60 days of receiving the final accounting, and CWA agrees to refund to the City any overpayment, taking into account interest accrued, within 65 days of the final accounting if the City has overpaid.

(e) **Construction Documents.** Construction contract documents for the Luce Bayou Project shall be prepared by CWA and shall be approved by the Public Works Director and the Executive Director prior to advertising for construction contracts, in the case of a competitive bid, or, in the case of alternative delivery methods used by

CWA, construction contract documents shall be approved by the Public Works Director at such time as provided by applicable law for completion of such documents.

(f) **Construction Bids; Construction Contracts.** After plans, specifications, contract documents, and preliminary plans for financing the Luce Bayou Project have been approved by CWA and the City, and CWA has secured financing to pay the Construction Costs, CWA shall either take competitive bids on the construction of the Luce Bayou Project, or, if CWA and the City determine that it would be more advantageous and result in the best and most economical completion of the Luce Bayou Project, CWA may utilize alternative delivery methods that may be allowed by applicable law.

(g) **Construction.** Upon approval by the Public Works Director of the award, CWA shall promptly award construction contracts and proceed promptly with construction of the Luce Bayou Project. CWA intends that the Luce Bayou Project will reach Substantial Completion no later than July 1, 2019.

(h) **Inspection by City.** The City's representatives shall have access at all times to all work in progress and may make such inspections thereof as it deems necessary or desirable and direct attention to the resident engineer in charge of supervision of construction on behalf of the Consultant to any deviations from the plans and specifications. The City shall also have full access to all contracts, books, records, accounts, and physical properties of, or relating to, the Luce Bayou Project during and after construction and, upon request of the City, CWA shall furnish the City copies of annual audit reports and other periodic reports relating to the construction of the Luce

Bayou Project. CWA will respond immediately to any issues raised by the City with respect to Luce Bayou Project construction.

ARTICLE III

PROJECT FINANCE; PAYMENTS BY THE CITY

Section 3.01. Preliminary Project Costs--Debt Service on the WIF Bonds.

To finance the Preliminary Project Costs, the City agrees to remit Pledged Revenues to CWA or to such other paying agent the amounts necessary to pay Debt Service on the WIF Bonds and any refunding thereof, provided that the City consents to such refunding.

Section 3.02. Payments to CWA by City. The City is authorized under Section 5.9 of the Master Ordinance to pledge payments from funds in the General Purpose Fund for various costs, including the Costs of the Luce Bayou Project. The City is further obligated, pursuant to Section 7.2 of the Master Ordinance to exercise all necessary power and authority to establish, fix, increase, impose and collect rates and charges for the use and services of the City's water and sewer system in the amounts required to comply with covenants made pursuant to the Master Ordinance ("Rate Order Authority"), together with other available funds (including payments from the Authorities). In consideration of the design, construction and acquisition by CWA of the Luce Bayou Project, the City agrees to cause the financing of the Luce Bayou Project through its unconditional obligation of the City to pay Debt Service solely from the Pledged Revenues as set forth in this Article III, without demand, notice, or counterclaim. The City hereby acknowledges that through its Rate Order Authority the City has the authority to and is obligated by entering into this Agreement to maintain rates and charges for its water and sewer system, together with other available funds

(including payments from the Authorities) sufficient to pay the Debt Service from the Pledged Revenues.

Section 3.03. Construction Costs--Plan of Construction Financing. The Parties anticipate that Construction Costs will be financed from Pledged Revenues under the "State Participation Program." The City and CWA shall agree upon, in one or more Supplemental Agreements, the terms and conditions for financing the cost of constructing the Luce Bayou Project. The City agrees that it will secure Pledged Revenues that may be pledged to CWA in a Supplemental Agreement that provides for such Pledged Revenues to be used to pay Debt Service on any Bonds issued by CWA for the construction of the Luce Bayou Project. CWA agrees that, with respect to financing of the construction of the Luce Bayou Project, it shall use its best efforts to issue Bonds secured by Pledged Revenues from the City from a Supplemental Agreement, however, in addition to or instead of such a financing, CWA reserves the right to utilize other financing sources (subject to City consent) that would result in the most economical financing or an overall savings for the total Costs of the Luce Bayou Project. Such financing sources may include other state funding programs, grant funds, or other City or CWA revenues.

Section 3.04. Debt Service on CWA's Bonds. With respect to the WIF Bonds, and, if the City and CWA enter into an agreement pursuant to Section 3.03, with respect to Bonds, the City agrees, so long as the WIF Bonds or Bonds (including refunding bonds) issued by CWA remain outstanding, the City shall remit, with the approval of the City to provide funds for any aspect of the Luce Bayou Project, to the paying agent at which such WIF Bonds or Bonds are payable, or upon the request of CWA, to the securities depository for the WIF Bonds or Bonds, the respective sums necessary to

pay the portion of Debt Service on the WIF Bonds or Bonds, comprising principal and interest thereon at the respective times and in the respective amounts as fixed and prescribed in the bond resolution under authority of which said WIF Bonds or Bonds are issued by CWA. CWA agrees to obtain consent from the City prior to issuing any refunding Bonds, or before entering into any credit agreement or other obligation authorized under Texas Government Code, Chapter 1371 with respect to the WIF Bonds or any other Bonds. Promptly after the WIF Bonds or each series of original or refunding Bonds is issued, CWA shall furnish the City a schedule of payments to be made on the WIF Bonds or such series of Bonds.

Section 3.05. Bond Reserve Funds Payments. It is the intent of the Parties that any reserve funds required in connection with the issuance of future Bonds will be funded with Bond proceeds. The City shall also pay as Debt Service to CWA such sums not financed with Bond proceeds as are necessary to restore an amount equal to any bond reserve fund requirement in any bond reserve fund created in the bond resolution authorizing the issuance of such Bonds if there is an unanticipated draw on any bond reserve fund required to pay Debt Service on any future Bonds. Such payments shall be made at such times and in such amounts as provided in the bond resolution authorizing the Bonds. CWA will consider using Available CWA Revenues for reserves if appropriate.

At no time will the amount held in any reserve fund exceed the amount authorized for a "bona fide debt service fund" for tax-exempt obligations, and, to the extent not required to pay rebate amounts to the United States, surplus or other remaining amounts in the reserve funds will be applied upon the final maturities of

principal of and interest on the bonds to pay principal of and interest then due, so that on final maturity of the Bonds no balances will remain in any reserve fund.

Section 3.06. Obligation Expenses. The City shall also pay Obligation Expenses as part of Debt Service as directed by CWA. CWA shall either create a separate fund or establish a subaccount in another CWA fund into which the payments shall be deposited. Moneys in the fund or subaccount shall be used only to pay Obligation Expenses.

Section 3.07. Arbitrage Required to Be Rebated. It is the intent of the parties hereto that funds and accounts will be managed to minimize rebate payments, and so that payments are matched to earnings. To the extent practicable, Bonds will be Issued so that construction funds are expected to be held for periods which qualify for rebate exceptions. Earnings on construction funds will be held until the end of the construction period, and following a rebate calculation with respect to each series of Bonds at the end of such period, will be applied *first*, (if required) to pay rebate amounts, *second*, to pay additional Luce Bayou Project Costs, and *third*, to pay Debt Service. To the extent of any earnings on any debt service or debt service reserve fund which represent surplus in such funds, such surplus will be applied at least annually *first*, (if required) to pay rebate amounts, and *second*, to pay Debt Service.

If CWA does not have funds available for such purposes, the City shall also pay to CWA as part of Debt Service for deposit into any rebate fund created in a bond resolution (or, at the option of the City, pay directly to the United States Treasury Department on behalf of CWA if the City receives CWA's counsel's opinion concurring with the amount to be paid) an amount equal to the rebate amount on gross proceeds of the WIF Bonds or any Bonds which are issued by CWA with the approval of the City to

provide funds to design, construct or acquire the Luce Bayou Project required to be rebated by CWA to the United States Treasury Department, if any, in order to maintain the exemption of interest on the WIF Bonds or Bonds from federal income taxes. CWA agrees to the extent reasonably practicable and cost effective to draw amounts for construction in a manner that minimizes the likelihood of rebate payments. CWA shall maintain an accounting of such arbitrage required to be rebated, and shall furnish to the City (a) a calculation of payments to be made by the City (prepared in a manner and by a firm acceptable to CWA and the City) as soon as possible, in no event less than 15 days, prior to the date such payments are required to be made by CWA to the United States Treasury Department and (b) such other reports as the City may reasonably from time to time (but not more often than annually) request regarding CWA's accounting, as of the close of CWA's most recent fiscal year, for amounts required to be rebated to the United States. The City's obligation to make such payments shall not be reduced except to the extent that funds are on hand and lawfully available to CWA to make such payments when due.

Section 3.08. Covenants of Payment. CWA covenants that any interest earnings from any funds created by any bond resolutions relating to the Bonds shall be applied to Debt Service, additional Costs, or payments of rebate amounts as provided in Section 3.07.

Section 3.09. Land and Mitigation Cost-Amortization Payment. It is the intent of the City that the Authorities will pay the estimate of their Pro Rata Share of Land and Mitigation Costs to the City and that the City will pay such amounts to CWA. The Land and Mitigation Costs are estimated to be \$15,000,000. The City shall pay to CWA the Authorities' Pro Rata Share of Land and Mitigation Costs in two lump sum

payments as follows: \$3,530,000 to be paid no later than five business days after June 15, 2009, and \$1,765,000 to be paid no later than five business days after June 15, 2010. CWA agrees to maintain such payments in an interest bearing account.

If CWA incurs Land and Mitigation Costs prior to receiving payment from the City of the Authorities' Pro Rata Share of Land and Mitigation Costs, if the City fails to make its payments derived from the Authorities on a timely basis, or if any Authorities' Pro Rata Share of Land and Mitigation Costs exceed the estimated Land and Mitigation Costs, then to the extent of availability of Available CWA Funds, CWA may fund such payments and charge interest to the City until reimbursed at the prime rate then in effect accordance with the Component B Amortization Payments described in Exhibit A.

The City's Pro Rata Share of Land and Mitigation Costs, which CWA intends to advance on behalf of the City from Available CWA Revenues, are estimated to be advanced by CWA in two lump sum advances as follows: \$6,470,000 to be advanced no later than June 15, 2009, and \$3,235,000 to be advanced no later than June 15, 2010. As further detailed in the attached Exhibit A, during the period starting June 15, 2009 through December 15, 2016 the interest rate to be applied to the City's Pro Rata Share of Land and Mitigation Costs will be the prime rate published by the Wall Street Journal on the respective January 1 or July 1st or the next business day following the respective advance. As further described in Exhibit A, starting December 15, 2016 the interest rate will be fixed through the ultimate repayment period using the 10 year Bond Buyer Revenue Bond index on December 15, 2016. The repayment schedule will begin June 15, 2019 using the 10 year Bond Buyer Revenue Bond index from December 15, 2016. The repayment term is 20 years with once annual principal payments and twice annual interest payments. Notwithstanding anything in this Agreement to the contrary,

the City may repay the City's Pro Rata Share of the Land and Mitigation Costs owed at any time by paying the full amount of such costs plus any outstanding interest after 15 days written notice to CWA (or written waiver of such notice by CWA).

The City agrees to remit to CWA, from the Pledged Revenues, the Amortization Payment on the dates, in the manner, and in the amounts necessary to fully reimburse CWA for Land and Mitigation Costs not funded by the City from the Authorities' or City's Pro Rata Share of Land and Mitigation Costs in accordance with this Agreement, to the extent of the portion of such Project Property utilized for the Luce Bayou Project ("Component B"), all as further described in Exhibit "A" attached hereto and incorporated herein for all purposes as such Exhibit may be modified to reflect actual expenditures and payments from the City as provided in this Section.

Section 3.10. Interest Expenses-Amortization Payment.

CWA has expended or will expend prior to receiving funding from the WIF Loan Available CWA Funds for Preliminary Project Costs, which expenditures have a cost of interest due to CWA as a result of CWA advancing such funds (as further detailed in Exhibit A, "Component A"). It is the intent of the City that the Authorities will pay the estimate of their Pro Rata Share of Preliminary Project Costs Interest Expense to the City and that the City will pay such amounts to CWA. The total of such interest expense prior to the effective date of this Agreement is \$360,836. It is the intent of the City that the Authorities will pay to the City the Authorities' Pro Rata Share of Preliminary Project Costs Interest Expense, equal to \$127,375 no later than January 31, 2009, and that the City will pay such amounts to CWA within five business days thereafter.

The remaining interest expense equal to \$233,461 is the City's Pro Rata Share of the Preliminary Project Costs Interest Expense, and the City intends for CWA to continue to finance such costs using Available CWA Revenues. If CWA incurs

additional Preliminary Project Costs prior to receiving funds therefore from the WIF Loan or prior to receiving payment from the City of the Authorities' Pro Rata Share of Preliminary Project Costs Interest Expense, if the City fails to make its payments derived from the Authorities on a timely basis, or if the Authorities' Pro Rata Share of Preliminary Project Costs Interest Expense exceed the actual interest costs on the Preliminary Project Costs, then to the extent of availability of Available CWA Funds, CWA may fund such payments and charge interest to the City until reimbursed at the prime rate then in effect accordance with the Amortization Payments described in Exhibit A.

As further described in Exhibit A, during the period starting February 1, 2009 through December 15, 2016 the interest rate will be the prime rate published by the Wall Street Journal and will change semi annually on January 1 or July 1st. As further described in Exhibit A, starting December 15, 2016 the interest rate charged will be fixed through the ultimate repayment period using the 10 year Bond Buyer Revenue Bond index beginning December 15, 2016. The repayment term is 20 years with once annual principal payments and twice annual interest payments. The payment dates are December 15th and June 15th. Notwithstanding anything in this Agreement to the contrary, the City may repay the City's Pro Rata Share of the Preliminary Project Costs Interest Expense owed at any time by paying the full amount of such costs plus any outstanding interest after 15 days written notice to CWA (or written waiver of such notice by CWA).

The City agrees to remit to CWA, from the Pledged Revenues, the Amortization Payment on the dates, in the manner, and in the amounts necessary to fully reimburse CWA for the Component A interest costs not funded by the City from the Authorities'

Pro Rata Share of Preliminary Project Costs Interest Expense in accordance with this Agreement, on expenditures for Preliminary Project Costs, all as further described in Exhibit "A" attached hereto and incorporated herein for all purposes as such Exhibit may be modified to reflect actual expenditures and payments from the City as provided in this Section.

ARTICLE IV

AUDITS, ACCOUNTS, RECORDS AND REPORTS

Section 4.01. Accounts, Records, and Accounting Reports. CWA covenants and agrees that it will maintain books, records and accounts relating to the design, acquisition, and construction of the Luce Bayou Project in keeping with Generally Accepted Accounting Principles, and same shall be available for inspection by the City at reasonable hours and under reasonable circumstances.

Section 4.02. Audits, Progress of Construction. At the request of the City, CWA will have its books, records, and accounts relating to the construction of the Luce Bayou Project audited by a Certified Public Accountant. CWA shall cause its engineers to furnish to the City copies of all estimates and progress reports on construction as such estimates and reports are prepared and become available.

ARTICLE V

TERM, CONVEYANCE OF PROJECT, BONDS, PARITY NOTES, AND OTHER OBLIGATIONS AND INITIAL CONTRACT TERMINATION

Section 5.01. Term and Termination. This Projects Contract shall remain in effect until the WIF Bonds and Bonds issued by CWA to finance the Costs of the Luce Bayou Project, refunding Bonds issued in lieu of such Bonds, and the City's Amortization Payment obligations under Section 3.09, are paid. This Projects Contract may be amended, supplemented, and extended by mutual agreement of the parties, but

not in such manner as to impair the rights of the TWDB or the owners of Bonds issued by CWA and secured by a pledge of the payments to be made by the City hereunder.

Section 5.02. Completion Bonds. Subject to approval of the City Council, the City and CWA agree (i) that CWA will be able to issue additional Bonds as may be necessary to pay for completion of the Luce Bayou Project incurred in connection with the Costs of the Luce Bayou Project, to the extent of unforeseen circumstances resulting in shortfalls in available amounts for Luce Bayou Project completion, and (ii) agree to enter into such Supplemental Agreements to this Projects Contract as shall from time to time be needed to provide for the payment of principal, interest and redemption price on such completion Bonds.

ARTICLE VI

CITY COMMITMENT TO MOVE DIVERSION POINT

Section 6.01. City Commitment. The Parties acknowledge that it is a condition precedent to CWA proceeding with the construction of the Luce Bayou Project, that the City resolve any water rights or permitting issues relating to moving the diversion point on the Trinity River to a point necessary for the Luce Bayou Project to be completed and operational.

ARTICLE VII

MISCELLANEOUS

Section 7.01. Force Majeure. Except for the City's unconditional obligation to make the payments to CWA as provided in this Projects Contract, neither party shall be liable in damages or otherwise suffer any default for any delays, failures or omissions whatsoever hereunder if caused by force majeure. As used herein, the term "force majeure" includes acts of God, drought, insufficiency of water in the Trinity River, fire,

storm, flood, landslide, subsidences of land, lightning, earthquake, washout, explosion, epidemic, war, acts of enemies or belligerents, sabotage, interference by, orders of, or compliance with requests or recommendations of civil or military courts or other authorities, federal, state or local, including any agency or person appointed by any such authority or by any official thereof (whether de jure or de facto and whether acting legally or not), inability to obtain materials, strikes or other differences with labor (whether or not within the power of the party to settle the same), breakage or accident to machinery, canals, reservoirs or lines of pipe, or to any other cause (whether or not of the same class or kind as those set forth above) not due to the willful fault or gross negligence of such party, while or so long as performance is prevented by such cause and due diligence is being used to resume performance at the earliest practicable time. In any such event, prompt notice shall be given by the affected party to the other of the existence of such cause and of readiness to resume performance.

Section 7.02. Third Parties. This Projects Contract shall be for the sole and exclusive benefit of the City, CWA, the TWDB, and the owners of the WIF Bonds or the Bonds issued by CWA to finance the Costs of the Luce Bayou Project.

Section 7.03. Severability. In the event any term, covenant or condition herein contained shall be held to be invalid by any court of competent jurisdiction, such invalidity shall not affect any other term, covenant or condition herein contained, provided that such invalidity does not materially prejudice either CWA or the City in their respective rights and obligations contained in the valid terms, covenants or conditions hereof.

Section 7.04. Entire Agreement. This Projects Contract merges the prior negotiations and understandings of the parties hereto and embodies the entire

agreement of the parties, and there are not other agreements, assurances, conditions, covenants (expressed or implied) or other terms with respect to the Luce Bayou Project, whether written or verbal, antecedent or contemporaneous, with the execution hereof.

Section 7.05. Written Amendment. Unless otherwise provided herein, this Projects Contract may be amended only by written instrument duly executed on behalf of the City (by authority of an ordinance duly adopted by the City Council) and CWA.

Section 7.06. Notices. All notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third (3rd) day following deposit in a United States Postal Service post office or receptacle with proper postage affixed (certified mail, return receipt requested) addressed to the respective other party at the following address or at such other address as the receiving party may prescribe by written notice to the sending party:

To CWA:

Gary Oradat
Coastal Water Authority
One Allen Center
500 Dallas Street
Suite 2800
Houston, Texas 77002

with copies to:

Barron F. Wallace
Vinson & Elkins L.L.P.
1001 Fannin, Suite 2500
Houston, Texas 77002

To the City:

The City of Houston
611 Walker
Houston, Texas 77002
Attn: Director of Public Works and Engineering

with copies to:

Legal Department
900 Bagby, 4th Floor
Houston, Texas 77002

Section 7.07. Independent Contractor. CWA is engaged as an independent contractor, and all of the services provided for herein shall be accomplished by CWA in such capacity. Except as expressly provided herein, the City will have no control or supervisory powers as to the manner or method of CWA's performance of the subject matter of this Projects Contract. All personnel supplied or used by CWA shall be deemed employees or subcontractors of CWA and will not be considered employees, agents or subcontractors of the City for any purpose whatsoever. CWA shall be solely responsible for the compensation of all such personnel, for the withholding of income, social security and other payroll taxes and for the coverage of all workers' compensation benefits.

Section 7.08. Non-Waiver. Failure of either party hereto to insist on the strict performance of any of the agreements herein or to exercise any rights or remedies accruing hereunder upon default or failure of performance shall not be considered a waiver of the right to insist on, and to enforce by any appropriate remedy, strict compliance with any other obligation hereunder or to exercise any right or remedy occurring as a result of any future default or failure of performance.

Section 7.09. Remedies Cumulative. Except as otherwise provided herein, the rights and remedies contained in this Projects Contract shall not be exclusive, but shall be cumulative of all rights and remedies now or hereafter existing whether by statute, at law, or in equity; provided, however, that neither party may terminate its duties under this Projects Contract except in accordance with the provisions hereof.

EXECUTED in multiple counterparts at Houston, Texas, as of the date first above written.

CITY OF HOUSTON, TEXAS

By: _____
Mayor

ATTEST:

COUNTERSIGNED:

City Secretary

City Controller

APPROVED AS TO FORM:

APPROVED:

Senior Assistant City Attorney

SA [Signature]

Director
Department of Public Works
and Engineering

COASTAL WATER AUTHORITY

By: *[Signature]*

President
Board of Directors

ATTEST:

[Signature]

Secretary/Treasurer
Board of Directors

**EXHIBIT A
AMORTIZATION PAYMENT SCHEDULE**

Calculation of Payments

The City will make the Amortization Payments as follows:

The Amortization Payments will consist of the sum of two components, Component A and Component B. Component A consists of the cost of interest on the expenditure of Available CWA Funds expended by CWA for Preliminary Project Costs. Component B consists of Land and Mitigation Costs, to the extent of the portion of such Project Property utilized for the Luce Bayou Project, including carrying costs due to deferral of payments associated with Land and Mitigation Costs.

Component A

Preliminary Project Costs were or will be advanced by CWA from Available CWA Revenues prior to funding of the WIF Bonds, and will be reimbursed by proceeds from the WIF Bonds. The table below indicates the amounts and the dates for such Preliminary Project Costs.

FOR ILLUSTRATION PURPOSES ONLY

Coastal Water Authority

Component A - SEAL's Funding of Development Costs
 Calculation of Carrying Costs to 12/15/2008
 Estimated as of Jan. 7, 2009

Timing, rates, and other factors may, and probably will, impact the values reflected in these schedules. The schedules should be adjusted over time as the actual timing and rates become known and can replace related assumptions.

Date	Amount	Source	Req. Bal.	Applicable Rate*	Accrual	Compounding	End Bal.
8/13/2006	200,000.00	Per CWA records					200,000.00
6/15/2006			200,000.00	6.000%	68.89	68.89	200,068.89
7/11/2006	92,410.59	Per CWA records	292,489.48	6.000%	1,186.07		292,489.48
8/16/2006	111,340.01	Per CWA records	403,839.49	6.000%	2,405.00		403,839.49
9/13/2006	136,436.07	Per CWA records	540,275.56	6.000%	3,241.85		540,275.56
10/10/2006	203,644.53	Per CWA records	743,920.09	6.000%	5,820.73		743,920.09
11/14/2006	202,722.96	Per CWA records	946,643.05	6.000%	6,100.59		946,643.05
12/13/2006	161,358.85	Per CWA records	1,107,999.89	6.000%	462.44	21,260.03	1,107,999.89
12/15/2006			1,107,999.89	6.000%			1,128,259.93
1/10/2007	175,703.05	Per CWA records	1,283,962.98	6.000%	6,273.67		1,283,962.98
2/14/2007	133,077.80	Per CWA records	1,417,040.78	6.000%	9,859.72		1,417,040.78
3/14/2007	88,452.14	Per CWA records	1,505,492.82	6.000%	9,588.94		1,505,492.82
4/11/2007	123,096.99	Per CWA records	1,628,589.81	6.000%	8,218.66		1,628,589.81
5/9/2007	154,963.30	Per CWA records	1,783,553.11	6.000%	10,326.34		1,783,553.11
6/13/2007	87,616.77	Per CWA records	1,871,169.88	6.000%	13,709.20		1,871,169.88
6/15/2007			1,871,169.88	6.000%	845.32	69,820.14	1,871,169.88
7/11/2007	61,221.10	Per CWA records	1,932,391.02	6.250%	11,889.00		1,932,391.02
8/16/2007	61,398.93	Per CWA records	2,023,011.12	6.250%	15,762.83		2,023,011.12
9/12/2007	48,666.10	Per CWA records	2,074,410.05	6.250%	12,826.41		2,074,410.05
10/10/2007	38,989.79	Per CWA records	2,122,968.16	6.250%	13,622.37		2,122,968.16
11/21/2007	36,037.70	Per CWA records	2,161,955.63	6.250%	20,313.38		2,161,955.63
12/15/2007			2,161,955.63	6.250%	12,009.98	66,322.75	2,161,955.63
12/22/2007	29,020.36	Per CWA records	2,288,316.38	6.250%	3,607.83		2,288,316.38
1/9/2008	45,021.32	Per CWA records	2,315,338.74	6.250%	9,020.17		2,315,338.74
2/13/2008	34,378.68	Per CWA records	2,390,368.00	6.250%	16,391.12		2,390,368.00
3/12/2008	29,775.83	Per CWA records	2,394,736.74	6.250%	16,815.09		2,394,736.74
4/9/2008	35,958.82	Per CWA records	2,424,512.57	6.250%	16,001.67		2,424,512.57
5/14/2008	51,784.20	Per CWA records	2,480,472.19	6.250%	19,738.04		2,480,472.19
6/15/2008			2,480,472.19	6.250%	17,847.38	99,578.00	2,480,472.19
6/19/2008	42,828.09	Per CWA records	2,511,814.39	5.000%	1,066.26		2,511,814.39
7/23/2008	64,367.34	Per CWA records	2,624,642.48	5.000%	12,804.51		2,624,642.48
8/27/2008	70,394.03	Per CWA records	2,718,989.82	5.000%	12,839.72		2,718,989.82
9/16/2008	117,727.48	Per CWA records	2,789,393.85	5.000%	6,673.48		2,789,393.85
10/15/2008	206,661.45	Per CWA records	2,907,121.33	5.000%	12,113.01		2,907,121.33
11/15/2008	134,714.00	Per CWA records	3,114,002.78	5.000%	12,975.01		3,114,002.78
12/15/2008	18,353.03	Assumed	3,248,716.78	5.000%	13,836.32	72,430.31	3,248,716.78
1/15/2009			3,339,500.12	5.000%	13,914.58		3,339,500.12
1/31/2009			3,339,500.12	5.000%	7,421.11	21,335.78	3,339,500.12
TOTAL	3,000,000.00				360,835.62	380,835.62	3,360,835.62

* Prime Rates (per Bloomberg)

6/13/2006	6.00%
6/15/2006	6.00%
12/15/2006	6.25%
6/15/2007	6.25%
12/17/2007	7.25%
6/16/2008	6.00%

1/31/2009 Repayment of Expenditures by WIF Loan Proceeds (\$3 million)

(3,000,000.00)

1/31/2009 Balance in Carrying Costs - Component A

360,835.62

Authorizee' Ratio 35.30%

Authorizee' Share 127,375.04

City's Share at 1/31/2009 233,460.78

To the extent there are further distributions by CWA for such Component A costs prior to funding of the WIF Bonds these expenditures will be recorded by CWA in a similar table, which will be provided to the City at the time the WIF Bonds is closed.

Carrying costs associated with Component A costs incurred prior to funding and reimbursement by the WIF Bonds will not be reimbursed by the WIF Bonds proceeds. These carrying costs will continue to accrue at the rates as provided in the following table, as such rates are determined in accordance with the footnotes appended to such table, until repaid by the City through this Component A of the Amortization Payments:

FOR ILLUSTRATION PURPOSES ONLY

Coastal Water Authority
Houston Comb. Utility
Contract Payments
Draft Calculation
Estimated as of Jan. 7, 2009

Timing, rates, and other factors may, and probably will, impact the values reflected in these schedules. The schedules should be adjusted over time as the actual timing and rates become known and can replace related assumptions.

Component A - Carrying Costs on Development Cost Advances (City Share Only, 64.70%)

Payment #	Date	Beginning Balance	Rate	Carry Cost Repayment (1), (6)	Accrued Interest	Interest Payment	Total Payment (2)	Ending Balance (A)
	1/1/2008							233,461
	6/15/2009	233,461	7.000%	(3), (5)	6,126			239,586
	12/15/2009	239,586	7.000%		6,388			247,975
	6/15/2010	247,975	7.000%		6,679			256,654
	12/15/2010	256,654	7.000%		6,993			265,637
	6/15/2011	265,637	7.000%		7,297			274,934
	12/15/2011	274,934	7.000%		7,623			284,557
	6/15/2012	284,557	7.000%		7,969			294,516
	12/15/2012	294,516	7.000%		8,306			304,824
	6/15/2013	304,824	7.000%		8,669			315,493
	12/15/2013	315,493	7.000%		9,042			326,535
	6/15/2014	326,535	7.000%		9,429			337,964
	12/15/2014	337,964	7.000%		9,828			349,793
	6/15/2015	349,793	7.000%		10,243			362,036
	12/15/2015	362,036	7.000%		10,671			374,707
	6/15/2016	374,707	7.000%		11,115			387,822
	12/15/2016	387,822	7.000%		11,574			401,396
	6/15/2017	401,396	6.500%	(4), (5)	11,038			412,434
	12/15/2017	412,434	6.500%		11,342			423,776
	6/15/2018	423,776	6.500%		11,684			435,430
	12/15/2018	435,430	6.500%		11,974			447,404
1	6/15/2018	447,404	6.500%	(6)	6,276	12,304	18,581	441,126
2	12/15/2018	441,126	6.500%		6,456	12,131	18,581	434,678
3	6/15/2020	434,678	6.500%		6,629	11,964	18,593	428,048
4	12/15/2020	428,048	6.500%		6,810	11,771	18,581	421,238
5	6/15/2021	421,238	6.500%		6,997	11,594	18,591	414,241
6	12/15/2021	414,241	6.500%		7,190	11,392	18,581	407,051
7	6/15/2022	407,051	6.500%		7,387	11,194	18,581	399,663
8	12/15/2022	399,663	6.500%		7,591	10,991	18,581	392,073
9	6/15/2023	392,073	6.500%		7,799	10,782	18,581	384,273
10	12/15/2023	384,273	6.500%		8,014	10,568	18,581	376,260
11	6/15/2024	376,260	6.500%		8,234	10,347	18,581	368,026
12	12/15/2024	368,026	6.500%		8,461	10,121	18,581	359,565
13	6/15/2025	359,565	6.500%		8,693	9,889	18,581	350,871
14	12/15/2025	350,871	6.500%		8,932	9,649	18,581	341,939
15	6/15/2026	341,939	6.500%		9,178	9,403	18,581	332,761
16	12/15/2026	332,761	6.500%		9,430	9,151	18,581	323,330
17	6/15/2027	323,330	6.500%		9,689	8,892	18,581	313,641
18	12/15/2027	313,641	6.500%		9,956	8,628	18,581	303,684
19	6/15/2028	303,684	6.500%		10,230	8,351	18,581	293,454
20	12/15/2028	293,454	6.500%		10,511	8,070	18,581	282,943
21	6/15/2029	282,943	6.500%		10,800	7,784	18,581	272,143
22	12/15/2029	272,143	6.500%		11,097	7,484	18,581	261,045
23	6/15/2030	261,045	6.500%		11,403	7,179	18,581	249,643
24	12/15/2030	249,643	6.500%		11,718	6,865	18,581	237,928
25	6/15/2031	237,928	6.500%		12,039	6,543	18,581	225,898
26	12/15/2031	225,898	6.500%		12,366	6,212	18,581	213,519
27	6/15/2032	213,519	6.500%		12,710	5,872	18,581	200,809
28	12/15/2032	200,809	6.500%		13,069	5,522	18,581	187,790
29	6/15/2033	187,790	6.500%		13,448	5,163	18,581	174,332
30	12/15/2033	174,332	6.500%		13,837	4,794	18,581	160,544
31	6/15/2034	160,544	6.500%		14,236	4,415	18,581	146,378
32	12/15/2034	146,378	6.500%		14,646	4,025	18,581	131,822
33	6/15/2035	131,822	6.500%		15,066	3,625	18,581	116,898
34	12/15/2035	116,898	6.500%		15,508	3,214	18,581	101,499
35	6/15/2036	101,499	6.500%		15,970	2,791	18,581	85,706
36	12/15/2036	85,706	6.500%		16,424	2,357	18,581	69,484
37	6/15/2037	69,484	6.500%		16,871	1,911	18,581	52,813
38	12/15/2037	52,813	6.500%		17,299	1,452	18,581	35,684
39	6/15/2038	35,684	6.500%		17,699	991	18,581	18,934
40	12/15/2038	18,934	6.500%		18,084	497	18,581	
		447,404			508,794	295,661	743,254	

- (A) See separate page for calculation of 12/15/2008 balance.
- (1) Principal amortization schedule based on level estimated P + 1 semi-annual payments based on assumed 7.000% and 6.500% rates (see above) and 40 equal semi-annual payments.
- (2) Actual payments will fluct with changes in the actual interest rate.
- (3) 10-year average for Prime is 6.6% and 20-year average is 7.3%, as of Aug. 2008
- (4) 10-year average for Bond Buyer Rev Bond Index is 5.238% and 20-year average is 5.852% as of Aug 2008
- (5) Rate is reset based on published 'Prime' lending rate or Bond Buyer Revenue Bond Index, as appropriate, once per year on June 15 (or next business date).
- (6) Rate and amortization are "frozen" at start of repayment period (12/15/2018), based on index at that point in time.
- (7) The rates reflected in this table are assumptions for modeling purposes only.

Component B

CWA expects to expend funds from Available CWA Revenues for Land and Mitigation Costs. The following table lists anticipated timing of such expenditures, and CWA will provide notice to the City of Land and Mitigation Costs from time to time as such expenditures occur, and CWA shall update the table below to reflect such changes. Land and Mitigation Cost expenditures may not be funded from proceeds of the WIF Bonds. Similar to Component A, CWA will incur carrying costs associated with the Land and Mitigation Costs for which the City will not compensate CWA for a number of years, until the Amortization Payments commence. The Land and Amortization Costs as listed and the carrying costs therefore will accrue at the rates as provided in the following table, as such rates are determined in accordance with the footnotes appended to such table, until repaid by the City through this Component B of the Amortization Payments:

FOR ILLUSTRATION PURPOSES ONLY

Coastal Water Authority
Houston Comb. Utility
Contract Payments
Draft Calculation
Estimated as of Jan. 7, 2008

Timing, rates, and other factors may, and probably will, impact the values reflected in these schedules. The schedules should be adjusted over time as the actual timing and rates become known and can replace related assumptions.

Component B - Landfill/Affiliation Purchases (City Share Only, 64.76%)

Payment #	Date	Beginning Balance	Rate	Principal Distribution	Principal and Carry Cost Repayment (1), (6)	Accrued Interest	Interest Payment	Total Payment (2)	Ending Balance	
	1/31/2009									
	6/15/2009		7.000%	[3], [5]	6,470,000				6,470,000	
	12/15/2009	6,470,000	7.000%			228,450			6,698,450	
	6/15/2010	6,698,450	7.000%		3,238,000	234,376			10,166,826	
	12/15/2010	10,166,826	7.000%			355,804			10,521,630	
	6/15/2011	10,521,630	7.000%			368,257			10,889,887	
	12/15/2011	10,889,887	7.000%			381,146			11,271,033	
	6/15/2012	11,271,033	7.000%			394,486			11,665,519	
	12/15/2012	11,665,519	7.000%			408,293			12,073,812	
	6/15/2013	12,073,812	7.000%			422,563			12,496,375	
	12/15/2013	12,496,375	7.000%			437,374			12,933,749	
	6/15/2014	12,933,749	7.000%			452,662			13,386,411	
	12/15/2014	13,386,411	7.000%			468,426			13,854,837	
	6/15/2015	13,854,837	7.000%			484,674			14,339,511	
	12/15/2015	14,339,511	7.000%			501,407			14,841,798	
	6/15/2016	14,841,798	7.000%			518,643			15,361,281	
	12/15/2016	15,361,281	7.000%			537,444			15,898,905	
	6/15/2017	15,898,905	8.500%	[4], [5]		437,220			16,336,125	
	12/15/2017	16,336,125	8.500%			449,243			16,785,368	
	6/15/2018	16,785,368	8.500%			461,599			17,246,967	
	12/15/2018	17,246,967	8.500%			474,292			17,721,259	
1	6/15/2019	17,721,259	5.500%	[7]		248,668	487,335	735,991	17,472,601	
2	12/15/2019	17,472,601	5.500%			255,484	480,497	735,991	17,217,107	
3	6/15/2020	17,217,107	5.500%			262,520	473,470	735,991	16,964,587	
4	12/15/2020	16,964,587	5.500%			269,740	466,261	735,991	16,714,847	
5	6/15/2021	16,714,847	5.500%			277,167	458,933	735,991	16,467,690	
6	12/15/2021	16,467,690	5.500%			284,779	451,211	735,991	16,222,911	
7	6/15/2022	16,222,911	5.500%			292,611	443,360	735,991	15,980,300	
8	12/15/2022	15,980,300	5.500%			300,667	435,333	735,991	15,739,643	
9	6/15/2023	15,739,643	5.500%			308,925	427,065	735,991	15,500,717	
10	12/15/2023	15,220,717	5.500%			317,421	418,570	735,991	14,963,296	
11	6/15/2024	14,963,296	5.500%			326,166	409,841	735,991	14,577,148	
12	12/15/2024	14,577,148	5.500%			335,119	400,872	735,991	14,242,927	
13	6/15/2025	14,242,927	5.500%			344,335	391,659	735,991	13,867,692	
14	12/15/2025	13,867,692	5.500%			353,804	382,187	735,991	13,544,388	
15	6/15/2026	13,544,388	5.500%			363,534	372,457	735,991	13,180,320	
16	12/15/2026	13,180,320	5.500%			373,551	362,460	735,991	12,866,824	
17	6/15/2027	12,866,824	5.500%			383,863	352,188	735,991	12,482,821	
18	12/15/2027	12,482,821	5.500%			394,335	341,633	735,991	12,099,393	
19	6/15/2028	12,099,393	5.500%			405,202	330,798	735,991	11,723,481	
20	12/15/2028	11,723,481	5.500%			416,345	319,645	735,991	11,351,116	
21	6/15/2029	11,351,116	5.500%			427,795	308,190	735,991	10,979,320	
22	12/15/2029	10,979,320	5.500%			439,560	296,431	735,991	10,639,781	
23	6/15/2030	10,639,781	5.500%			451,647	284,343	735,991	10,288,114	
24	12/15/2030	10,288,114	5.500%			464,068	271,923	735,991	9,944,048	
25	6/15/2031	9,944,048	5.500%			476,829	259,161	735,991	9,647,217	
26	12/15/2031	9,647,217	5.500%			489,942	246,048	735,991	9,387,275	
27	6/15/2032	9,387,275	5.500%			503,416	232,575	735,991	9,163,899	
28	12/15/2032	9,163,899	5.500%			517,260	218,731	735,991	8,974,999	
29	6/15/2033	8,974,999	5.500%			531,484	204,506	735,991	8,820,115	
30	12/15/2033	8,820,115	5.500%			546,100	189,891	735,991	8,698,015	
31	6/15/2034	8,698,015	5.500%			561,118	174,873	735,991	8,607,898	
32	12/15/2034	8,607,898	5.500%			576,544	159,442	735,991	8,521,348	
33	6/15/2035	8,521,348	5.500%			592,484	143,587	735,991	8,428,946	
34	12/15/2035	8,428,946	5.500%			608,935	127,296	735,991	8,329,301	
35	6/15/2036	8,329,301	5.500%			625,434	110,557	735,991	8,222,817	
36	12/15/2036	8,222,817	5.500%			642,833	93,357	735,991	8,109,984	
37	6/15/2037	8,109,984	5.500%			660,306	75,685	735,991	7,991,778	
38	12/15/2037	7,991,778	5.500%			678,484	57,527	735,991	7,868,301	
39	6/15/2038	7,868,301	5.500%			697,122	38,988	735,991	7,748,283	
40	12/15/2038	7,748,283	5.500%			716,283	19,998	735,991		
						<u>9,765,000</u>	<u>17,721,257</u>	<u>19,734,628</u>	<u>11,718,369</u>	<u>28,439,628</u>

- (1) Principal amortization schedule based on level estimated P + I semi-annual payments based on assumed 7.000% and 5.500% rates (see above) and 40 equal semi-annual payments.
- (2) Actual payments will fluct with changes in the actual interest rate.
- (3) 10-year average for Prime is 6.5% and 20-year average is 7.5%, as of Aug. 2008
- (4) 10-year average for Bond Buyer Rev Bond Index is 5.235% and 20-year average is 5.882%, as of Aug 2008
- (5) Rate is reset based on published "Prime" lending rate or Bond Buyer Revenue Bond Index, as appropriate, once per year on June 15 (or next business date).
- (6) Rate and amortization are "frozen" at start of repayment period (12/15/2018), based on index at that point in time.
- (7) The rates reflected in this table are assumptions for modeling purposes only.

I, ANNA RUSSELL, City Secretary of the City of Houston, Texas, do hereby certify that the within and foregoing is a true and correct copy of Ordinance 2009-53 passed and adopted by the City Council of said City on the 28th day of January, 2009, as the same appears in the records in my office.

WITNESS my hand and the Seal of said City this 18th day of May, 2010.

A handwritten signature in cursive script, reading "Anna Russell". The signature is written in black ink and is positioned above a horizontal line.

Anna Russell
City Secretary of the City of Houston

EXHIBIT C
ESCROW AGREEMENT

ESCROW AGREEMENT

THIS ESCROW AGREEMENT, dated as of July 1, 2010, made by and between Coastal Water Authority, a political subdivision of the State of Texas in Harris County, Texas, (the "Authority"), acting by and through the Bank of New York Mellon Trust Company, N.A., (the "Bank"), as Escrow Agent (the "Escrow Agent") together with any successor in such capacity;

WITNESSETH:

WHEREAS, pursuant to the Bond Resolution adopted on June 9, 2010, the Authority authorized the issuance of \$5,115,000 "Coastal Water Authority Contract Revenue Bonds, Series 2010", dated July 15, 2010, (the "Bonds") for the purpose of designing the Luce Bayou Interbasin Transfer System (the "Project"); and

WHEREAS, such resolution also confirmed the sale of the Bonds to the Texas Water Development Board (the "TWDB"); and

WHEREAS, the Escrow Agent is a national bank located in the State of Texas, an insured depository institution with the Federal Deposit Insurance Corporation, ("FDIC"), and is otherwise qualified and empowered to enter into this Escrow Agreement, and hereby acknowledges its acceptance of the terms and provisions hereof; and

WHEREAS, a condition to the purchase of the Bonds by the TWDB is the deposit of the proceeds of sale (less amounts to pay costs of issuance) in escrow subject to being withdrawn only with the approval of the Executive Administrator of the TWDB or an authorized representative; provided, however, the funds can be transferred to different investments so long as all parties hereto consent to such transfer;

NOW, THEREFORE, in consideration of the mutual agreements herein contained and in consideration of the amount to be paid by the Authority to the Escrow Agent, as set forth on Exhibit A, the receipt of which is hereby acknowledged, and in order to secure the delivery of the Bonds, the parties hereto mutually undertake, promise and agree for themselves, their respective representatives and successors, as follows:

SECTION 1: Upon the delivery of the Bonds described above, proceeds of sale designated in the Bond Resolution to be deposited into the Escrow Fund (less amounts to pay costs of issuance) shall be deposited to the credit of a special escrow account maintained at the Authority on behalf of the Authority and the TWDB and shall not be commingled with other accounts or funds ("Escrow Fund"). The amounts received by the Escrow Agent under this Agreement shall not be considered as a banking deposit by the Authority, and the Escrow Agent shall have no right to title with respect thereto except as a fiduciary and Escrow Agent under the terms of this Agreement.

These escrowed funds shall be kept in a separate account entitled "Coastal Water Authority Contract Revenue Bonds, Series 2010 Escrow Account" and shall not be subject to warrants, drafts or checks drawn by the Authority but shall be disbursed or withdrawn to pay the

costs of the project for which the Bonds were issued (the "Project Costs") in accordance with the Bond Resolution and solely upon written authorization from the Executive Administrator, or his authorized representative.

SECTION 2: All cash deposited to the credit of such escrow account and any accrued interest in excess of the amounts insured by the FDIC and remaining uninvested under the terms of this Agreement shall be continuously secured by a valid pledge of direct obligations of the United States of America or other collateral meeting the requirements of the Public Funds Collateral Act, Chapter 2257, TEX. GOV'T CODE ANN., as amended.

SECTION 3: While funds are held in escrow, the Bank shall only invest escrowed funds in investments that are authorized by the Public Funds Investment Act, Chapter 2256, TEX. GOV'T CODE ANN., as amended. It is the Authority's responsibility to direct the Escrow Agent to invest all public funds in a manner that is consistent not only with the Public Funds Investment Act but also with its own written investment policy. The Escrow Agent shall not be liable or responsible for any diminution in value of any assets held hereunder which may result from any investments or reinvestment made in accordance with any provision which may be contained herein.

SECTION 4: The Bank shall not honor any disbursement from the escrow fund, or any portion thereof, unless and until it has been supplied with written approval and consent by the Executive Administrator of the TWDB or an authorized TWDB representative. However, no written approval and consent by the Executive Administrator shall be required if the disbursement involves transferring funds from one investment to another provided that all such investments are consistent with the requirements of the Public Funds Investment Act.

SECTION 5: Any sums remaining unexpended in the escrow account after completion of the Project and after the final accounting has been submitted to and approved by the TWDB shall be transferred to the Authority within thirty (30) days of such approval by the TWDB.

SECTION 6: The Bank shall be authorized to accept and rely upon the certifications and documents furnished to the Bank by the Authority and shall not be liable for the payment of any funds made in reliance in good faith upon such certifications or other documents or approvals, as herein recited.

SECTION 7: LIABILITY. To the extent permitted by law, the Escrow Agent shall not be liable for any act done or step taken or omitted by it or any mistake of fact or law, except for its negligence or default or failure in the performance of any obligation imposed upon it hereunder. The Escrow Agent shall not be responsible in any manner for any proceedings in connection with the Bonds or any recitation contained in the Bonds. If the Escrow Agent renders any service hereunder not provided for in this Agreement, or the Escrow Agent is made a party to or intervenes in any litigation pertaining to this Agreement or institutes interpleader proceedings relative hereto, the Escrow Agent shall be compensated reasonably by the Authority for such extraordinary services and reimbursed for any and all claims, liabilities, losses, damages, fines, penalties, and expenses, including out-of-pocket and incidental expenses and legal fees occasioned thereby.

SECTION 8: RECORDS. The Escrow Agent will keep complete and correct books of record and account relating to the receipts, disbursements, allocations and application of the money deposited to the Escrow Fund, and investments of the Escrow Fund and all proceeds thereof. The records shall be available for inspection at reasonable hours and under reasonable conditions by the Authority and the TWDB.

SECTION 9: MERGER/CONSOLIDATION. In the event that the Escrow Agent merges or consolidates with another bank or sells or transfers substantially all of its assets or corporate trust business, then the successor bank shall be the successor Escrow Agent without the necessity of further action as long as the successor bank is a state or national bank as well as an FDIC-insured depository institution. If the merger, consolidation or other transfer has occurred between state banks, the newly-created entity shall forward the certificate of merger or exchange issued by the Texas Department of Banking as well as the statement filed with the pertinent chartering authority, if applicable, to the TWDB within a reasonable time of such merger, consolidation or exchange.

SECTION 10: AMENDMENT. This Agreement may be amended from time to time as necessary with the consent of the Authority and the TWDB, but no such amendments shall increase the liabilities or responsibilities or diminish the rights of the Bank without its consent.

SECTION 11: TERMINATION. In the event that this escrow agreement is terminated by either the Authority or by the Bank, the Escrow Agent must report said termination in writing to the TWDB within 5 business days of such termination. The Authority is responsible for ensuring that the following criteria are satisfied in selecting the successor escrow agent and notifying the TWDB of the change in escrow agents: (a) the successor escrow agent must be an FDIC-insured state or national bank designated by the Texas Comptroller as a state depository; (b) the successor escrow agent must be retained prior to or at the time of the termination; (c) an escrow agreement must be executed by and between the Authority and the successor escrow agent and must contain the same or substantially similar terms and conditions as are present in this escrow agreement; and (d) the Authority must forward a copy of the executed escrow agreement with the successor escrow agent within 5 business days of said termination. No funds shall be released by the TWDB until it has received, reviewed and approved the escrow agreement with the successor escrow agent. The Escrow Agent may resign as such following the giving of thirty (30) days prior written notice to the other parties hereto. Similarly, the Escrow Agent may be removed and replaced following the giving of thirty (30) days prior written notice to the Escrow Agent by the other parties hereto. In either event, the duties of the Escrow Agent shall terminate thirty (30) days after receipt of such notice (or as of such earlier date as may be mutually agreeable); and the Escrow Agent shall then deliver the balance of the moneys or assets then in its possession to a successor escrow agent as shall be appointed by the other parties hereto as evidenced by a written notice filed with the Escrow Agent. If the other parties hereto have failed to appoint a successor prior to the expiration of thirty (30) days following receipt of the notice of resignation or removal, the Escrow Agent may appoint a successor or petition any court of competent jurisdiction for the appointment of a successor escrow agent or for other appropriate relief, and any such resulting appointment shall be binding upon all of the parties hereto.

SECTION 12: EXPIRATION. This Escrow Agreement shall expire upon final transfer of the funds in the Escrow Account to the Authority.

SECTION 13: ASSIGNABILITY. This Agreement shall not be assignable by the parties hereto, in whole or in part, and any attempted assignment shall be void and of no force and effect.

SECTION 14: CHOICE OF LAW. This Agreement shall be governed exclusively by the applicable laws of the State of Texas. Should a controversy arise, either party hereto may introduce the dispute into the Travis County District Court for adjudication thereof.

SECTION 15: This Agreement evidences the entire Escrow Agreement between the Escrow Agent and the Authority and supercedes any other agreements, whether oral or written, between the parties regarding the Funds or this escrow account. No modification or amendment of this Agreement shall be valid unless the same is in writing and is signed by the Authority and consented to by the Escrow Agent and the TWDB.

SECTION 16: If any term, covenant, condition or provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the provisions shall remain in full force and effect and shall in no way be affected, impaired or invalidated thereby.

[Intentionally left blank, signature pages follow]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

COASTAL WATER AUTHORITY

By: 
Executive Director

Address: 500 Dallas, Suite 2800
Houston, Texas 77002

(SEAL)

[Intentionally left blank, additional signature page follows]

THE BANK OF NEW YORK MELLON TRUST COMPANY, N.A.,
as Escrow Agent

By: *D. Melle*
Title: VICE-PRESIDENT

Address: 919 CONGRESS AVE
SUITE 500
ASTORIA, OR 97101

(SEAL)

Exhibit A

Fee Schedule



BNY MELLON

Fee Schedule

Coastal Water Authority 2010 Luce Bayou Project Escrow

Acceptance Fee

waived

A one-time charge covering the Bank Officer's review of governing documents, communication with members of the closing party, including representatives of the issuer, investment banker(s) and attorney(s), establishment of procedures and controls, set-up of trust accounts and tickler suspense items and the receipt and disbursement/investment of bond proceeds. This fee is payable on the closing date.

Annual Administration Fee

\$500

An annual charge covering the duties and responsibilities related to account administration. Fees will not be pro-rated. This fee is payable in advance.

Investment Compensation

Waived

With respect to investments in money market mutual funds, the investment maintenance fee will be calculated at an annual rate of 0 (WAIVED) basis points on average total monthly account balances. With respect to investments in money market mutual funds for which BNYM provides shareholder services BNYM (or its affiliates) may also receive and retain additional fees from the mutual funds (or their affiliates) for shareholder services as set forth in the Authorization and Direction to BNYM to Invest Cash Balances in Money Market Mutual Funds.

BNYM will charge a \$125 transaction fee for the purchase or sale of commercial paper and U.S. treasuries and agencies, and other securities.

Requisition/Disbursement Fee (Check or Wire) Per Transaction

A fee of \$25 per disbursement will be assessed for each cash disbursement or requisition.

Out-of-Pocket Expenses

6% of Annual Fee

Additional out-of-pocket expenses may include, but are not limited to, telephone, facsimile, courier, copying, postage, and supplies.

Extraordinary Services/Misc Fees:

At Appraisal

The charges for performing extraordinary or other services not contemplated at the time of the execution of the transaction or not specifically covered elsewhere in this schedule will be commensurate with the service to be provided and may be charged in BNYM's sole discretion. If it is contemplated that the Trustee hold and/or



BNY MELLON

value collateral or enter into any investment contract, forward purchase or similar or other agreement, additional acceptance, administration and counsel review fees will be applicable to the agreement governing such services. If the bonds are converted to certificated form, additional annual fees will be charged for any applicable tender agent and/or registrar/paying agent services. Additional information will be provided at such time. Should this transaction terminate prior to closing, all out-of-pocket expenses incurred, including legal fees, will be billed at cost. If all outstanding bonds of a series are defeased or called in full prior to their maturity, a termination fee may be assessed at that time.

These extraordinary services may include, but are not limited to, supplemental agreements, consent operations, unusual releases, sinking fund redemptions the preparation of special or interim reports, custody of collateral, a one-time fee to be charged upon termination of an engagement. Additional fees may be required for remarketing processing (e.g., \$50 per tender settled). A failed remarketing would entail additional handling of the bonds with fees dependent on the custody and disposition of the bonds. Counsel, accountants, special agents and others will be charged at the actual amount of fees and expenses billed, UCC filing fees, money market sweep fees, auditor confirmation fees, wire transfer fees, transaction fees to settle third-party trades and reconciliation fees to balance trust account balances to third-party investment provider statements

Annual fees include one standard audit confirmation per year without charge. Standard audit confirmations include the final maturity date, principal paid, principal outstanding, interest cycle, interest paid, cash and asset information, interest rate, and asset statement information. Non-standard audit confirmation requests may be assessed an additional fee.

Terms and Disclosures

Terms of Proposal

Final acceptance of the appointment under the Indenture is subject to approval of authorized officers of BNYM and full review and execution of all documentation related hereto. Please note that if this transaction does not close, you will be responsible for paying any expenses incurred, including Counsel Fees. We reserve the right to terminate this offer if we do not enter into final written documents within three months from the date this document is first transmitted to you. Fees may be subject to adjustment during the life of the engagement.

Customer Notice Required by the USA Patriot Act

To help the US government fight the funding of terrorism and money laundering activities, US Federal law requires all financial institutions to obtain, verify, and record information that identifies each person (whether an individual or organization) for which a relationship is established.

What this means to you: When you establish a relationship with BNYM, we will ask you to provide certain information (and documents) that will help us to identify you. We will ask for your organization's name, physical address, tax identification or other government registration number and other information that will help us to identify you. We may also ask for a Certificate of Incorporation or similar document or other pertinent identifying documentation for your type of organization.

We thank you for your assistance.



BNY MELLON

Accepted By:

Signature: John J. Baldwin
Date: July 2, 2010
Name: John J. Baldwin
Title: Chief Financial Officer

For BNYM:

Seth Crone
June 7, 2010
Seth Crone
Vice President S.P.

Upon acceptance, an authorized representative of the Obligor is responsible for signing the fee schedule and returning an original to the administrator listed in the cover letter.

Application Filing and Authorized Representative Resolution

A RESOLUTION by the Board of Directors of the Coastal Water Authority requesting financial assistance from the Texas Water Development Board; authorizing the filing of an application for assistance; and making certain findings in connection therewith.

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE COASTAL WATER AUTHORITY:

SECTION 1: That an application is hereby approved and authorized to be filed with the Texas Water Development Board seeking financial assistance in an amount not to exceed \$300,000,000 to provide for the costs of planning, designing, property acquisition, construction, and financing of the Luce Bayou Interbasin Transfer Project.

SECTION 2: That Donald R. Ripley, P.E., Executive Director, Coastal Water Authority be and is hereby designated the authorized representative of the Coastal Water Authority for purposes of furnishing such information and executing such documents as may be required in connection with the preparation and filing of such application for financial assistance and the rules of the Texas Water Development Board.

SECTION 3: That the following firms and individuals are hereby authorized and directed to aid and assist in the preparation and submission of such application and appear on behalf of and represent the Coastal Water Authority before any hearing held by the Texas Water Development Board on such application, to wit:

Financial Advisor: First Southwest Company
700 Milam Street, Suite 500
Houston, Texas 77002

Engineer: David Miller, P.E., Chief Engineer, Coastal Water Authority
1801 Main Street, Suite 800
Houston, Texas 77002

Bond Counsel: Norton Rose Fulbright US LLP
1301 McKinney, Suite 5100
Houston, Texas 77010

PASSED AND APPROVED, this the 13th day of May, 2015.

ATTEST: 

By: 

(Seal)

Application Affidavit

THE STATE OF TEXAS §
COUNTY OF HARRIS §
COASTAL WATER AUTHORITY §

BEFORE ME, the undersigned, a Notary Public in and for the State of Texas, on this day personally appeared Donald R. Ripley, as the Authorized Representative of the Coastal Water Authority, who being by me duly sworn, upon oath says that:

1. the decision by the Coastal Water Authority to request financial assistance from the Texas Water Development Board ("Board") was made in a public meeting held in accordance with the Open Meetings Act (Government Code, §551.001, et seq.) and after providing all such notice as required by such Act as is applicable to the Coastal Water Authority;

2. the information submitted in the application is true and correct according to my best knowledge and belief;

3. the Coastal Water Authority has no pending, threatened, or outstanding judgments, orders, fines, penalties, taxes, assessment or other enforcement or compliance issue of any kind or nature by the Environmental Protection Agency, Texas Commission on Environmental Quality, Texas Comptroller, Texas Secretary of State, or any other federal, state or local government, except for the following:

None.

4. the Coastal Water Authority warrants compliance with the representations made in the application in the event that the Board provides the financial assistance; and

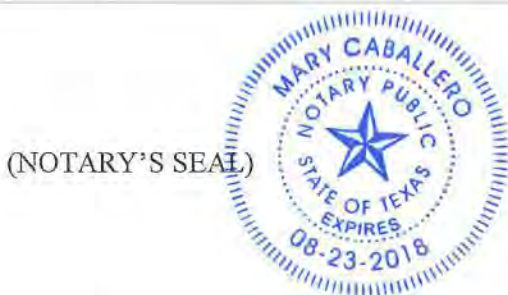
5. the Coastal Water Authority will comply with all applicable federal laws, rules, and regulations as well as the laws of this state and the rules and regulations of the Board.




Official Representative

Title: Executive Director

SWORN TO AND SUBSCRIBED BEFORE ME, by Donald R. Ripley,
this 13th day of May, 2015.





Notary Public, State of Texas

Application Resolution - Certificate of Secretary

THE STATE OF TEXAS §
COUNTY OF HARRIS §
COASTAL WATER AUTHORITY §

I, the undersigned, Secretary of the Coastal Water Authority, DO HEREBY CERTIFY as follows:

1. That on the 13th day of May, 2015, a regular/special meeting of the Coastal Water Authority was held inside the boundaries of the Coastal Water Authority; the duly constituted members of the Coastal Water Authority being as follows:

D. Wayne Klotz, Tony L. Council, Alan Conner, Zeb Nash, Doug Walker, Odis Cobb, Giti Zarinkelk

and all of said persons were present at said meeting, except the following:

- All Present -

Among other business considered at said meeting, the attached resolution entitled:

"A RESOLUTION by the Board of Directors of the Coastal Water Authority, requesting financial participation from the Texas Water Development Board; authorizing the filing of an application for financial participation; and making certain findings in connection therewith."

was introduced and submitted to the Board of Directors for passage and adoption. After presentation and due consideration of the resolution, and upon a motion made by Tony L. Council and seconded by Giti Zarinkelk, the resolution was duly passed and adopted by the Board of Directors by the following vote:

7 voted "For" 0 voted "Against" 0 abstained

all as shown in the official Minutes of the CWA Board for the meeting held on the aforesaid date.

2. That the attached resolution is a true and correct copy of the original on file in the official records of the Coastal Water Authority; the duly qualified and acting members of the Board of Directors on the date of the aforesaid meeting are those persons shown above and, according to the records of my office, advance notice of the time, place and purpose of said meeting was given to each member of the Board of Directors; and that said meeting, and deliberation of the aforesaid public business, was open to the public and written notice of said meeting, including the subject of the above entitled resolution, was posted and given in advance thereof in compliance with the provisions of Chapter 551 of the Texas Government Code.

IN WITNESS WHEREOF, I have hereunto signed my name officially and affixed the seal of said Coastal Water Authority, this the 13th of May, 2015.


Secretary

(SEAL)

C39. Tax Assessed Values

CITY OF HOUSTON
 ASSESSED VALUE AND ESTIMATED VALUE OF TAXABLE PROPERTY
 Last Ten Fiscal Years
 (amounts expressed in thousands)
 (unaudited)

Fiscal Year	Residential Property	Commercial Property	Industrial Property	Personal Property	Less: Tax Exempt Property	Total Taxable Assessed Value	Total Direct Tax Rate
2005	\$ 67,298,102	\$ 44,051,724	\$ 7,923,377	\$ 2,532,851	\$ 15,924,828	\$ 105,881,226	6.5000
2006	\$ 71,997,166	\$ 60,214,783	\$ 8,149,890	\$ 2,023,823	\$ 31,298,860	\$ 111,086,802	6.4750
2007	\$ 76,997,953	\$ 65,711,310	\$ 9,198,065	\$ 2,568,995	\$ 33,880,872	\$ 120,595,451	6.4500
2008	\$ 84,322,788	\$ 75,245,892	\$ 11,740,472	\$ 2,515,631	\$ 38,060,662	\$ 135,764,121	6.4375
2009	\$ 90,065,098	\$ 88,374,034	\$ 12,148,055	\$ 2,380,333	\$ 44,198,187	\$ 148,769,333	6.3875
2010	\$ 91,451,713	\$ 89,110,300	\$ 12,911,034	5 2,344,315	\$ 46,805,799	\$ 149,011,563	6.3875
2011	\$ 89,957,336	\$ 84,250,876	\$ 11,500,552	5 2,276,946	\$ 46,201,271	\$ 141,784,439	6.3875
2012	\$ 90,484,912	\$ 86,617,837	\$ 11,826,503	5 2,159,964	\$ 47,104,376	\$ 143,984,840	6.3875
2013	\$ 91,402,063	\$ 93,629,148	\$ 14,232,884	\$ 2,143,660	\$ 50,417,778	\$ 150,989,977	6.3875
2014	\$ 96,665,925	\$ 103,323,330	\$ 17,601,808	\$ 2,341,556	\$ 52,006,243	\$ 167,926,376	6.3108

The tax rates are based on a 100% assessment ratio, Tax rates are stated per \$1,000 assessed value.

C40. Tax Rate Table

CITY OF HOUSTON, TEXAS
 DIRECT AND OVERLAPPING PROPERTY TAX RATES
 Last Ten Fiscal Years
 (unaudited)

Purpose	2014	2013	2012	2011	2010
City					
General Purposes	4.74635	4.6221	4.8071	4.6336	4.5728
Debt Service	1.56445	1.7654	1.5804	1.7539	1.8147
City of Houston (t)	6.31080	6.3875	6.3875	6.3875	6.3875
County					
Fort Bend County	4.9976	4.9976	4.9976	4.9976	5.0660
Harris County (2)	4.4300	4.2830	4.1926	4.1728	4.2146
Montgomery County	4.8380	4.8380	4.8380	4.8380	4.8380
School District					
Aldine I.S.D.	13.0580	13.2839	13.2839	13.0054	13.0054
Alief I.S.D.	12.9000	13.2000	13.3000	13.4000	13.4000
Clear Creek I.S.D.	14.0000	13.6000	13.6000	13.6000	13.6000
Conroe I.S.D.	12.9000	12.9500	12.9500	12.9500	12.8500
Crosby I.S.D.	16.7000	14.4000	14.4000	14.4000	14.4000
Cypress-Fairbanks I.S.D.	14.5000	14.5000	14.3000	14.3000	14.1000
Deer Park I.S.D.	15.5670	15.2670	13.9670	13.9670	13.6670
Fort Bend I. S. D.	13.4000	13.4000	13.4000	12.7000	12.7000
Galena Park I.S.D.	15.1340	15.1340	15.1340	15.1340	14.7840
Goose Creek I.S.D.	13.3213	13.3213	13.3213	13.0213	12.8213
Houston I.S.D.	11.5670	11.5670	11.5670	11.5670	11.5670
Huffman I.S.D.	14.2000	14.4500	14.7000	14.7000	14.7000
Humble I.S.D.	15.2000	15.2000	15.2000	15.2000	15.2000
Katy I.S.D.	15.2660	15.2660	15.2660	15.2660	15.2660
Klein I.S.D.	14.3000	14.4000	14.3000	14.1000	13.6000
New Caney I.S.D.	15.4000	15.4000	15.4000	15.4000	14.8000
North Forest I.S.D.(3)	13.5000	13.5000	14.6929	13.7000	13.5000
Pasadena I.S.D.	14.3000	14.3000	14.3000	14.3000	14.3000
Sheldon I.S.D.	14.3000	14.3000	14.3000	14.3000	14.3000
Spring I.S.D.	15.7000	15.7000	15.7000	14.6000	14.6000
Spring Branch I.S.D.	13.9450	13.9450	13.9450	13.9450	13.9450
Municipal Utility District					
Harris County MUD # 355	2.0000	2.3500	2.3500	2.5500	2.9500
Harris County MUD # 359	3.0000	3.0500	3.0500	3.0500	2.9500
Harris County MUD # 366	2.5000	2.5000	2.5000	2.5000	2.5000
Harris County MUD # 372	1.9040	1.9000	1.9000	1.9000	1.9000
Harris County MUD # 390	7.0000	7.0000	7.0000	7.0000	7.0000
Harris County MUD # 450	7.6125	7.6125	7.7125	7.6125	7.6125
Northwood MUD #1	12.5000	12.5000	12.5000	12.5000	12.5000
Other Jurisdictions					
Clear Lake City Water Authority	2.8000	2.8000	2.8000	2.8000	2.8000
Fort Bend Parkway Road	(4)	0.5443	0.5443	0.5443	0.5443
Harris County Dept. of Education	0.0636	0.0658	0.0658	0.0658	0.4605
Houston Community College	0.2012	0.1750	0.1382	0.9222	0.9222
Lee College District	2.6070	2.4100	2.5200	2.5200	2.2120
Lone Star College System	1.1600	1.2100	1.2100	1.1760	1.1010
Harris County Port of Houston Authority	0.1716	0.1952	0.1856	0.2054	0.1636
San Jacinto Jr. College	1.8560	1.8560	1.8560	1.7628	1.7080

- (1) The tax rates are based on a 100% assessment ratio. Tax rates are stated per \$1,000 assessed value.
- (2) Harris County includes the Harris County Flood Control District and the Harris County Toll Road. The Toll Road rate is zero.
- (3) North Forest I.S.D. was closed and merged with Houston I.S.D.
- (4) Debt has been paid off

CITY OF HOUSTON, TEXAS
 PRINCIPAL PROPERTY TAXPAYERS
 June 30, 2014
 Current Year and Nine Years Ago
 (amounts expressed in thousands)
 (unaudited)

Taxpayer	2014			2005		
	Taxable Assessed	Rank	Percentage of Total Taxable Assessed	Taxable Assessed	Rank	Percentage of Total Taxable Assessed
	Value		Value	Value	Value	Value
Centerpoint Energy, Inc (Reliant H L & P)	\$ 1,654,700	1	0.99%	1,527,791	1	1.44%
Chevron Chemical Company	1,013,970	2	0.60%	307,238	7	0.29%
Crescent HC Investors LP	776,216	3	0.46%	868,962	2	0.82%
Shell Oil Company	770,380	4	0.46%			
United Airlines, Inc.	714,957	5	0.43%			
Busycon Properties LLC	536,990	6	0.32%			
1000 Louisiana LP	504,064	7	0.30%			
Texas Tower Ltd	499,4169	8	0.30%			
Amoco Chemical Company	497,306	9	0.30%			
FIG Galleria 111111, LP	475,504	10	0.28%	266,443	10	0.25%
Hines Interests Ltd Partnership				851,876	3	0.80%
Southwestern Bell				689,507	4	0.65%
Anheuser Busch, Inc.				473,881	5	0.45%
Trizechahn Allen Center LP				415,503	6	0.39%
Lyondell-Citgo Refining L.P.				305,048	8	0.29%
Continental Airlines, Inc.				302,384	9	0.29%
Total	\$ 7,443,556		4.44%	6,008,633		5.67%

Coastal Water Authority - Luce Bayou Financing Plan
Based on Calendar Year Annual Totals
Draft Prepared as of July 9, 2015

Summary Cash Flow Estimate (Excluding Operating Costs)

YE 12/31	Contract Payment from City of Houston Combined Utility System	Expected Debt Service Reserve Funds Available	Series 2010 Bonds	Series 2014 Bonds	Total Debt Service (Net of Expected DS Reserve Fund Release)	Contract Payment from City of Houston Combined Utility System	Proposed										Combined Contract Payments from City	Combined Debt Service Payments
							2009 and 2010 WIF Repayment	2013 Participation Repayment	2015 Participation Repayment	2016 Participation Repayment	2017 Participation Repayment	Combined Participation Repayment	2017 Bond Repayment	Estimated Financing Payments				
2015	5,479,181		3,037,050	2,442,131	5,479,181	266,951	-	-	-	266,951	-	-	-	266,951	-	266,951	5,746,132	5,746,132
2016	6,467,331		4,025,850	2,441,481	6,467,331	266,951	-	-	-	266,951	-	-	-	266,951	-	266,951	6,734,282	6,734,282
2017	6,467,931		4,027,850	2,440,081	6,467,931	400,426	-	-	-	400,426	-	-	-	400,426	-	400,426	6,868,357	6,868,357
2018	6,464,731		4,020,850	2,443,881	6,464,731	2,122,450	-	-	-	533,901	-	-	-	1,099,010	1,023,440	2,122,450	8,587,181	8,587,181
2019	6,469,681		4,023,600	2,446,081	6,469,681	7,231,806	3,092,031	56,423	3,148,453	734,114	565,109	1,364,600	-	2,663,823	1,419,530	7,231,806	13,701,488	13,701,488
2020	6,496,931		4,025,100	2,471,831	6,496,931	9,079,611	3,239,153	535,448	3,774,600	934,327	847,664	1,364,600	737,150	3,883,740	1,421,270	9,079,611	15,576,542	15,576,542
2021	6,463,931		4,020,100	2,443,831	6,463,931	10,242,566	3,238,676	532,952	3,771,628	1,134,540	1,130,218	2,046,900	737,150	5,048,808	1,422,130	10,242,566	16,706,497	16,706,497
2022	6,463,081		4,018,500	2,444,581	6,463,081	11,913,818	3,238,589	534,281	3,772,870	1,334,753	1,554,050	2,729,200	1,105,725	6,723,728	1,417,220	11,913,818	18,376,899	18,376,899
2023	6,463,081		4,015,500	2,447,581	6,463,081	13,735,330	3,239,632	534,684	3,774,316	1,334,753	1,977,882	3,752,650	1,474,300	8,539,584	1,421,430	13,735,330	20,198,412	20,198,412
2024	6,457,331		4,014,750	2,442,581	6,457,331	15,730,541	3,236,785	534,378	3,771,163	1,334,753	2,401,714	4,776,100	2,027,163	10,539,729	1,419,650	15,730,541	22,187,873	22,187,873
2025	6,699,254	4,321,327	7,575,750	3,444,831	6,699,254	18,801,064	3,240,363	533,265	3,773,627	2,400,436	2,825,546	5,799,550	2,580,025	13,605,557	1,421,880	18,801,064	25,500,318	25,500,318
2026	3,438,831			3,438,831	3,438,831	20,371,932	3,235,352	536,591	3,771,943	2,400,436	2,825,546	6,823,000	3,132,888	15,181,869	1,418,120	20,371,932	23,810,763	23,810,763
2027	3,442,331			3,442,331	3,442,331	20,924,422	3,237,141	534,180	3,771,321	2,400,436	2,825,546	6,823,000	3,685,750	15,734,732	1,418,370	20,924,422	24,366,753	24,366,753
2028	3,444,581			3,444,581	3,444,581	22,094,282	3,235,482	535,965	3,771,447	2,400,436	3,996,129	6,823,000	3,685,750	16,905,315	1,417,520	22,094,282	25,538,863	25,538,863
2029	3,444,031			3,444,031	3,444,031	22,860,093		537,064	537,064	2,400,436	5,166,712	9,649,671	3,685,750	20,902,569	1,420,460	22,860,093	26,304,125	26,304,125
2030	3,442,625			3,442,625	3,442,625	27,210,682		532,408	532,408	2,400,436	5,166,712	12,476,343	5,212,704	25,256,194	1,422,080	27,210,682	30,653,307	30,653,307
2031	3,445,000			3,445,000	3,445,000	28,200,638		-	-	2,400,436	5,166,712	12,476,343	6,739,657	26,783,148	1,417,490	28,200,638	31,645,638	31,645,638
2032	3,442,200			3,442,200	3,442,200	28,514,044		-	-	2,709,753	5,166,712	12,476,343	6,739,657	27,092,464	1,421,580	28,514,044	31,956,244	31,956,244
2033	3,439,800			3,439,800	3,439,800	28,510,654		-	-	2,708,703	5,166,712	12,476,343	6,739,657	27,091,414	1,419,240	28,510,654	31,950,454	31,950,454
2034	-	3,447,600		3,447,600	-	28,511,735		-	-	2,708,554	5,166,712	12,476,343	6,739,657	27,091,265	1,420,470	28,511,735	28,511,735	28,511,735
2035	-			-	-	27,341,992		-	-	2,709,704	3,996,129	12,476,343	6,739,657	25,921,832	1,420,160	27,341,992	27,341,992	27,341,992
2036	-			-	-	26,541,178		-	-	2,707,641	6,025,899	9,649,671	6,739,657	25,122,868	1,418,310	26,541,178	26,541,178	26,541,178
2037	-			-	-	28,300,015		-	-	2,707,365	6,028,762	12,931,375	5,212,704	26,880,205	1,419,810	28,300,015	28,300,015	28,300,015
2038	-			-	-	30,070,548		-	-	2,708,646	6,026,102	12,930,125	6,986,125	28,650,998	1,419,550	30,070,548	30,070,548	30,070,548
2039	-			-	-	30,061,795		-	-	2,706,256	6,027,884	12,927,500	6,982,625	28,644,265	1,417,530	30,061,795	30,061,795	30,061,795
2040	-			-	-	30,068,644		-	-	2,708,318	6,028,811	12,927,625	6,985,250	28,650,004	1,418,640	30,068,644	30,068,644	30,068,644
2041	-			-	-	30,064,528		-	-	2,706,160	6,027,599	12,929,500	6,983,500	28,646,758	1,417,770	30,064,528	30,064,528	30,064,528
2042	-			-	-	30,071,788		-	-	2,709,780	6,028,073	12,927,250	6,986,875	28,651,978	1,419,810	30,071,788	30,071,788	30,071,788
2043	-			-	-	30,073,319		-	-	2,708,711	6,030,209	12,929,875	6,984,875	28,653,669	1,419,650	30,073,319	30,073,319	30,073,319
2044	-			-	-	30,067,236		-	-	2,707,951	6,028,620	12,931,250	6,982,125	28,649,946	1,417,290	30,067,236	30,067,236	30,067,236
2045	-			-	-	30,066,197		-	-	2,707,267	6,027,935	12,930,375	6,983,000	28,648,577	1,417,620	30,066,197	30,066,197	30,066,197
2046	-			-	-	30,076,123		-	-	2,710,424	6,027,404	12,931,125	6,986,750	28,655,703	1,420,420	30,076,123	30,076,123	30,076,123
2047	-			-	-	27,357,359		-	-	-	6,026,529	12,927,375	6,982,875	25,936,779	1,420,580	27,357,359	27,357,359	27,357,359
2048	-			-	-	25,943,820		-	-	-	6,030,195	12,927,875	6,985,750	25,943,820	-	25,943,820	25,943,820	25,943,820
2049	-			-	-	25,943,668		-	-	-	6,027,918	12,931,125	6,984,625	25,943,668	-	25,943,668	25,943,668	25,943,668
2050	-			-	-	25,944,130		-	-	-	6,029,505	12,930,750	6,983,875	25,944,130	-	25,944,130	25,944,130	25,944,130
2051	-			-	-	19,913,125		-	-	-	-	12,930,375	6,982,750	19,913,125	-	19,913,125	19,913,125	19,913,125
2052	-			-	-	6,985,375		-	-	-	-	-	6,985,375	6,985,375	-	6,985,375	6,985,375	6,985,375
	97,931,867	7,768,927	46,804,900	58,895,894	97,931,867	801,880,833	32,233,201	5,937,639	38,170,840	65,703,748	146,932,350	330,403,500	178,481,375	721,520,974	42,189,020	801,880,833	899,812,700	899,812,700

Payments from City of Houston to Coastal Water Authority for debt servicing are made under separate and individual contractual arrangements, which are split into their separate components in the presentation above. Please see explanatory notes on other pages. Rates and other assumptions may vary significantly in the future.

**Coastal Water Authority
Luce Bayou - Pro Forma Debt Plan - Construction
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Participation Financing - TWDB - 2015									
	A		B		C	A+B+C			
	Principal	Rate	Calculated Interest	Deferred Interest	Current Interest Paid	Deferred Interest Paid	Participation Payment	Calendar Year Total	COH Fiscal Year Total
Date									
12/15/2015	-								
6/15/2016	-		1,412,773	1,412,773	-	-	-		
12/15/2016	-		1,412,773	1,412,773	-	-	-	-	
6/15/2017	-		1,412,773	1,412,773	-	-	-	-	
12/15/2017	-		1,412,773	1,412,773	-	-	-		
6/15/2018	-		1,412,773	1,130,218	282,555	-	282,555	282,555	
12/15/2018	-		1,412,773	1,130,218	282,555	-	282,555		565,109
6/15/2019	-		1,412,773	1,130,218	282,555	-	282,555	565,109	
12/15/2019	-		1,412,773	1,130,218	282,555	-	282,555		565,109
6/15/2020	-		1,412,773	988,941	423,832	-	423,832	706,386	
12/15/2020	-		1,412,773	988,941	423,832	-	423,832		847,664
6/15/2021	-		1,412,773	847,664	565,109	-	565,109	988,941	
12/15/2021	-		1,412,773	847,664	565,109	-	565,109		1,130,218
6/15/2022	-		1,412,773	635,748	777,025	-	777,025	1,342,134	
12/15/2022	-		1,412,773	635,748	777,025	-	777,025		1,554,050
6/15/2023	-		1,412,773	423,832	988,941	-	988,941	1,765,966	
12/15/2023	-		1,412,773	423,832	988,941	-	988,941		1,977,882
6/15/2024	-		1,412,773	211,916	1,200,857	-	1,200,857	2,189,798	
12/15/2024	-		1,412,773	211,916	1,200,857	-	1,200,857		2,401,714
6/15/2025	-		1,412,773	-	1,412,773	-	1,412,773	2,613,630	
12/15/2025	-		1,412,773	-	1,412,773	-	1,412,773		2,825,546
6/15/2026	-		1,412,773	-	1,412,773	-	1,412,773	2,825,546	
12/15/2026	-		1,412,773	-	1,412,773	-	1,412,773		2,825,546
6/15/2027	-		1,412,773	-	1,412,773	-	1,412,773	2,825,546	
12/15/2027	-		1,412,773	-	1,412,773	-	1,412,773		2,825,546
6/15/2028	-		1,412,773	-	1,412,773	-	1,412,773	2,825,546	
12/15/2028	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356		3,996,129
6/15/2029	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356	5,166,712	
12/15/2029	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356		5,166,712
6/15/2030	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356	5,166,712	
12/15/2030	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356		5,166,712
6/15/2031	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356	5,166,712	
12/15/2031	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356		5,166,712
6/15/2032	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356	5,166,712	
12/15/2032	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356		5,166,712
6/15/2033	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356	5,166,712	
12/15/2033	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356		5,166,712
6/15/2034	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356	5,166,712	
12/15/2034	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356		5,166,712
6/15/2035	-		1,412,773	(1,170,583)	1,412,773	1,170,583	2,583,356	5,166,712	
12/15/2035	-		1,412,773	-	1,412,773	-	1,412,773		3,996,129

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Participation Financing - TWDB - 2015										
	A		B			C		A+B+C		
			Calculated	Deferred	Current Interest	Deferred Interest	Participation	Calendar Year	COH Fiscal Year	
Date	Principal	Rate	Interest	Interest	Paid	Paid	Payment	Total	Total	
6/15/2036	3,265,000	3.960%	1,412,773	-	1,412,773	-	4,677,773	6,090,546		
12/15/2036	-		1,348,126	-	1,348,126	-	1,348,126		6,025,899	
6/15/2037	3,400,000	3.970%	1,348,126	-	1,348,126	-	4,748,126	6,096,252		
12/15/2037	-		1,280,636	-	1,280,636	-	1,280,636		6,028,762	
6/15/2038	3,535,000	3.970%	1,280,636	-	1,280,636	-	4,815,636	6,096,272		
12/15/2038	-		1,210,466	-	1,210,466	-	1,210,466		6,026,102	
6/15/2039	3,680,000	3.970%	1,210,466	-	1,210,466	-	4,890,466	6,100,932		
12/15/2039	-		1,137,418	-	1,137,418	-	1,137,418		6,027,884	
6/15/2040	3,830,000	3.970%	1,137,418	-	1,137,418	-	4,967,418	6,104,836		
12/15/2040	-		1,061,393	-	1,061,393	-	1,061,393		6,028,811	
6/15/2041	3,990,000	4.270%	1,061,393	-	1,061,393	-	5,051,393	6,112,785		
12/15/2041	-		976,206	-	976,206	-	976,206		6,027,599	
6/15/2042	4,165,000	4.290%	976,206	-	976,206	-	5,141,206	6,117,412		
12/15/2042	-		886,867	-	886,867	-	886,867		6,028,073	
6/15/2043	4,350,000	4.300%	886,867	-	886,867	-	5,236,867	6,123,734		
12/15/2043	-		793,342	-	793,342	-	793,342		6,030,209	
6/15/2044	4,540,000	4.320%	793,342	-	793,342	-	5,333,342	6,126,684		
12/15/2044	-		695,278	-	695,278	-	695,278		6,028,620	
6/15/2045	4,740,000	4.330%	695,278	-	695,278	-	5,435,278	6,130,556		
12/15/2045	-		592,657	-	592,657	-	592,657		6,027,935	
6/15/2046	4,950,000	4.360%	592,657	-	592,657	-	5,542,657	6,135,314		
12/15/2046	-		484,747	-	484,747	-	484,747		6,027,404	
6/15/2047	5,170,000	4.370%	484,747	-	484,747	-	5,654,747	6,139,494		
12/15/2047	-		371,782	-	371,782	-	371,782		6,026,529	
6/15/2048	5,405,000	4.380%	371,782	-	371,782	-	5,776,782	6,148,565		
12/15/2048	-		253,413	-	253,413	-	253,413		6,030,195	
6/15/2049	5,645,000	4.390%	253,413	-	253,413	-	5,898,413	6,151,826		
12/15/2049	-		129,505	-	129,505	-	129,505		6,027,918	
6/15/2050	5,900,000	4.390%	129,505	-	129,505	-	6,029,505	6,159,010	6,029,505	
Total	66,565,000		80,367,350	-	63,979,186	16,388,164	146,932,350	146,932,350	146,932,350	

Note: These projections are based on assumed rates for financings occurring in 2015 through 2018. While the assumptions are meant to be conservative (high), actual rates will differ in those future years, and may be considerably different. The market for debt at that time could require higher rates than assumed in these projected numbers. The repayment amortization of the participation could differ, and require refinancing earlier than these schedules indicate.

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Participation Financing - TWDB - 2016									
	A	5.000%			B	C	A+B+C		
			Calculated	Deferred	Current Interest	Deferred Interest	Participation	Calendar Year	COH Fiscal Year
Date	Principal	Rate	Interest	Interest	Paid	Paid	Payment	Total	Total
12/15/2016	-								
6/15/2017	-		3,411,500	3,411,500	-	-	-		
12/15/2017	-		3,411,500	3,411,500	-	-	-	-	-
6/15/2018	-		3,411,500	3,411,500	-	-	-	-	-
12/15/2018	-		3,411,500	3,411,500	-	-	-	-	-
6/15/2019	-		3,411,500	2,729,200	682,300	-	682,300	682,300	-
12/15/2019	-		3,411,500	2,729,200	682,300	-	682,300	682,300	1,364,600
6/15/2020	-		3,411,500	2,729,200	682,300	-	682,300	1,364,600	-
12/15/2020	-		3,411,500	2,729,200	682,300	-	682,300	682,300	1,364,600
6/15/2021	-		3,411,500	2,388,050	1,023,450	-	1,023,450	1,705,750	-
12/15/2021	-		3,411,500	2,388,050	1,023,450	-	1,023,450	1,023,450	2,046,900
6/15/2022	-		3,411,500	2,046,900	1,364,600	-	1,364,600	2,388,050	-
12/15/2022	-		3,411,500	2,046,900	1,364,600	-	1,364,600	1,364,600	2,729,200
6/15/2023	-		3,411,500	1,535,175	1,876,325	-	1,876,325	3,240,925	-
12/15/2023	-		3,411,500	1,535,175	1,876,325	-	1,876,325	1,876,325	3,752,650
6/15/2024	-		3,411,500	1,023,450	2,388,050	-	2,388,050	4,264,375	-
12/15/2024	-		3,411,500	1,023,450	2,388,050	-	2,388,050	2,388,050	4,776,100
6/15/2025	-		3,411,500	511,725	2,899,775	-	2,899,775	5,287,825	-
12/15/2025	-		3,411,500	511,725	2,899,775	-	2,899,775	2,899,775	5,799,550
6/15/2026	-		3,411,500	-	3,411,500	-	3,411,500	6,311,275	-
12/15/2026	-		3,411,500	-	3,411,500	-	3,411,500	3,411,500	6,823,000
6/15/2027	-		3,411,500	-	3,411,500	-	3,411,500	6,823,000	-
12/15/2027	-		3,411,500	-	3,411,500	-	3,411,500	3,411,500	6,823,000
6/15/2028	-		3,411,500	-	3,411,500	-	3,411,500	6,823,000	-
12/15/2028	-		3,411,500	-	3,411,500	-	3,411,500	3,411,500	6,823,000
6/15/2029	-		3,411,500	-	3,411,500	-	3,411,500	6,823,000	-
12/15/2029	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	6,238,171	9,649,671
6/15/2030	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	12,476,343	-
12/15/2030	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	6,238,171	12,476,343
6/15/2031	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	12,476,343	-
12/15/2031	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	6,238,171	12,476,343
6/15/2032	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	12,476,343	-
12/15/2032	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	6,238,171	12,476,343
6/15/2033	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	12,476,343	-
12/15/2033	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	6,238,171	12,476,343
6/15/2034	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	12,476,343	-
12/15/2034	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	6,238,171	12,476,343
6/15/2035	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	12,476,343	-
12/15/2035	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	6,238,171	12,476,343
6/15/2036	-		3,411,500	(2,826,671)	3,411,500	2,826,671	6,238,171	12,476,343	-
12/15/2036	-		3,411,500	-	3,411,500	-	3,411,500	3,411,500	9,649,671

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Participation Financing - TWDB - 2016									
	A		B		C		A+B+C		
	5.000%						Total		
Date	Principal	Rate	Calculated Interest	Deferred Interest	Current Interest Paid	Deferred Interest Paid	Participation Payment	Calendar Year Total	COH Fiscal Year Total
6/15/2037	6,265,000	5.000%	3,411,500	-	3,411,500	-	9,676,500	13,088,000	
12/15/2037	-		3,254,875	-	3,254,875	-	3,254,875		12,931,375
6/15/2038	6,585,000	5.000%	3,254,875	-	3,254,875	-	9,839,875	13,094,750	
12/15/2038	-		3,090,250	-	3,090,250	-	3,090,250		12,930,125
6/15/2039	6,920,000	5.000%	3,090,250	-	3,090,250	-	10,010,250	13,100,500	
12/15/2039	-		2,917,250	-	2,917,250	-	2,917,250		12,927,500
6/15/2040	7,275,000	5.000%	2,917,250	-	2,917,250	-	10,192,250	13,109,500	
12/15/2040	-		2,735,375	-	2,735,375	-	2,735,375		12,927,625
6/15/2041	7,650,000	5.000%	2,735,375	-	2,735,375	-	10,385,375	13,120,750	
12/15/2041	-		2,544,125	-	2,544,125	-	2,544,125		12,929,500
6/15/2042	8,040,000	5.000%	2,544,125	-	2,544,125	-	10,584,125	13,128,250	
12/15/2042	-		2,343,125	-	2,343,125	-	2,343,125		12,927,250
6/15/2043	8,455,000	5.000%	2,343,125	-	2,343,125	-	10,798,125	13,141,250	
12/15/2043	-		2,131,750	-	2,131,750	-	2,131,750		12,929,875
6/15/2044	8,890,000	5.000%	2,131,750	-	2,131,750	-	11,021,750	13,153,500	
12/15/2044	-		1,909,500	-	1,909,500	-	1,909,500		12,931,250
6/15/2045	9,345,000	5.000%	1,909,500	-	1,909,500	-	11,254,500	13,164,000	
12/15/2045	-		1,675,875	-	1,675,875	-	1,675,875		12,930,375
6/15/2046	9,825,000	5.000%	1,675,875	-	1,675,875	-	11,500,875	13,176,750	
12/15/2046	-		1,430,250	-	1,430,250	-	1,430,250		12,931,125
6/15/2047	10,325,000	5.000%	1,430,250	-	1,430,250	-	11,755,250	13,185,500	
12/15/2047	-		1,172,125	-	1,172,125	-	1,172,125		12,927,375
6/15/2048	10,855,000	5.000%	1,172,125	-	1,172,125	-	12,027,125	13,199,250	
12/15/2048	-		900,750	-	900,750	-	900,750		12,927,875
6/15/2049	11,415,000	5.000%	900,750	-	900,750	-	12,315,750	13,216,500	
12/15/2049	-		615,375	-	615,375	-	615,375		12,931,125
6/15/2050	12,000,000	5.000%	615,375	-	615,375	-	12,615,375	13,230,750	
12/15/2050	-		315,375	-	315,375	-	315,375		12,930,750
6/15/2051	12,615,000	5.000%	315,375	-	315,375	-	12,930,375	13,245,750	12,930,375
Total	136,460,000		193,943,500	-	154,370,100	39,573,400	330,403,500	330,403,500	330,403,500

Note: These projections are based on assumed rates for financings occurring in 2015 through 2018. While the assumptions are meant to be conservative (high), actual rates will differ in those future years, and may be considerably different. The market for debt at that time could require higher rates than assumed in these projected numbers. The repayment amortization of the participation could differ, and require refinancing earlier than these schedules indicate.

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Participation Financing - TWDB - 2017 December									
	A	5.000%			B	C	A+B+C		
			Calculated	Deferred	Current Interest	Deferred Interest	Participation	Calendar Year	COH Fiscal Year
Date	Principal	Rate	Interest	Interest	Paid	Paid	Payment	Total	Total
12/15/2017	-								
6/15/2018	-		1,842,875	1,842,875	-	-	-		
12/15/2018	-		1,842,875	1,842,875	-	-	-	-	-
6/15/2019	-		1,842,875	1,842,875	-	-	-	-	-
12/15/2019	-		1,842,875	1,842,875	-	-	-	-	-
6/15/2020	-		1,842,875	1,474,300	368,575	-	368,575	368,575	
12/15/2020	-		1,842,875	1,474,300	368,575	-	368,575		737,150
6/15/2021	-		1,842,875	1,474,300	368,575	-	368,575	737,150	
12/15/2021	-		1,842,875	1,474,300	368,575	-	368,575		737,150
6/15/2022	-		1,842,875	1,290,013	552,863	-	552,863	921,438	
12/15/2022	-		1,842,875	1,290,013	552,863	-	552,863		1,105,725
6/15/2023	-		1,842,875	1,105,725	737,150	-	737,150	1,290,013	
12/15/2023	-		1,842,875	1,105,725	737,150	-	737,150		1,474,300
6/15/2024	-		1,842,875	829,294	1,013,581	-	1,013,581	1,750,731	
12/15/2024	-		1,842,875	829,294	1,013,581	-	1,013,581		2,027,163
6/15/2025	-		1,842,875	552,863	1,290,013	-	1,290,013	2,303,594	
12/15/2025	-		1,842,875	552,863	1,290,013	-	1,290,013		2,580,025
6/15/2026	-		1,842,875	276,431	1,566,444	-	1,566,444	2,856,456	
12/15/2026	-		1,842,875	276,431	1,566,444	-	1,566,444		3,132,888
6/15/2027	-		1,842,875	-	1,842,875	-	1,842,875	3,409,319	
12/15/2027	-		1,842,875	-	1,842,875	-	1,842,875		3,685,750
6/15/2028	-		1,842,875	-	1,842,875	-	1,842,875	3,685,750	
12/15/2028	-		1,842,875	-	1,842,875	-	1,842,875		3,685,750
6/15/2029	-		1,842,875	-	1,842,875	-	1,842,875	3,685,750	
12/15/2029	-		1,842,875	-	1,842,875	-	1,842,875		3,685,750
6/15/2030	-		1,842,875	-	1,842,875	-	1,842,875	3,685,750	
12/15/2030	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829		5,212,704
6/15/2031	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829	6,739,657	
12/15/2031	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829		6,739,657
6/15/2032	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829	6,739,657	
12/15/2032	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829		6,739,657
6/15/2033	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829	6,739,657	
12/15/2033	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829		6,739,657
6/15/2034	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829	6,739,657	
12/15/2034	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829		6,739,657
6/15/2035	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829	6,739,657	
12/15/2035	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829		6,739,657
6/15/2036	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829	6,739,657	
12/15/2036	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829		6,739,657
6/15/2037	-		1,842,875	(1,526,954)	1,842,875	1,526,954	3,369,829	6,739,657	
12/15/2037	-		1,842,875	-	1,842,875	-	1,842,875		5,212,704

**Coastal Water Authority
Luce Bayou - Pro Forma Debt Plan - Construction
Draft Prepared as of July 9, 2015**

Participation Financing - TWDB - 2017 December									
	A	5.000%			B	C	A+B+C		
	Principal	Rate	Calculated Interest	Deferred Interest	Current Interest Paid	Deferred Interest Paid	Participation Payment	Calendar Year Total	COH Fiscal Year Total
6/15/2038	3,385,000	5.000%	1,842,875	-	1,842,875	-	5,227,875	7,070,750	
12/15/2038	-		1,758,250	-	1,758,250	-	1,758,250		6,986,125
6/15/2039	3,555,000	5.000%	1,758,250	-	1,758,250	-	5,313,250	7,071,500	
12/15/2039	-		1,669,375	-	1,669,375	-	1,669,375		6,982,625
6/15/2040	3,740,000	5.000%	1,669,375	-	1,669,375	-	5,409,375	7,078,750	
12/15/2040	-		1,575,875	-	1,575,875	-	1,575,875		6,985,250
6/15/2041	3,930,000	5.000%	1,575,875	-	1,575,875	-	5,505,875	7,081,750	
12/15/2041	-		1,477,625	-	1,477,625	-	1,477,625		6,983,500
6/15/2042	4,135,000	5.000%	1,477,625	-	1,477,625	-	5,612,625	7,090,250	
12/15/2042	-		1,374,250	-	1,374,250	-	1,374,250		6,986,875
6/15/2043	4,345,000	5.000%	1,374,250	-	1,374,250	-	5,719,250	7,093,500	
12/15/2043	-		1,265,625	-	1,265,625	-	1,265,625		6,984,875
6/15/2044	4,565,000	5.000%	1,265,625	-	1,265,625	-	5,830,625	7,096,250	
12/15/2044	-		1,151,500	-	1,151,500	-	1,151,500		6,982,125
6/15/2045	4,800,000	5.000%	1,151,500	-	1,151,500	-	5,951,500	7,103,000	
12/15/2045	-		1,031,500	-	1,031,500	-	1,031,500		6,983,000
6/15/2046	5,050,000	5.000%	1,031,500	-	1,031,500	-	6,081,500	7,113,000	
12/15/2046	-		905,250	-	905,250	-	905,250		6,986,750
6/15/2047	5,305,000	5.000%	905,250	-	905,250	-	6,210,250	7,115,500	
12/15/2047	-		772,625	-	772,625	-	772,625		6,982,875
6/15/2048	5,580,000	5.000%	772,625	-	772,625	-	6,352,625	7,125,250	
12/15/2048	-		633,125	-	633,125	-	633,125		6,985,750
6/15/2049	5,865,000	5.000%	633,125	-	633,125	-	6,498,125	7,131,250	
12/15/2049	-		486,500	-	486,500	-	486,500		6,984,625
6/15/2050	6,165,000	5.000%	486,500	-	486,500	-	6,651,500	7,138,000	
12/15/2050	-		332,375	-	332,375	-	332,375		6,983,875
6/15/2051	6,480,000	5.000%	332,375	-	332,375	-	6,812,375	7,144,750	
12/15/2051	-		170,375	-	170,375	-	170,375		6,982,750
6/15/2052	6,815,000	5.000%	170,375	-	170,375	-	6,985,375	7,155,750	6,985,375
Total	73,715,000		104,766,375	-	83,389,025	21,377,350	178,481,375	178,481,375	178,481,375

Note: These projections are based on assumed rates for financings occurring in 2015 through 2018. While the assumptions are meant to be conservative (high), actual rates will differ in those future years, and may be considerably different. The market for debt at that time could require higher rates than assumed in these projected numbers. The repayment amortization of the participation could differ, and require refinancing earlier than these schedules indicate.

**Coastal Water Authority - Luce Bayou Financing Plan
Luce Bayou - Pro Forma Debt Plan - Construction
Draft Prepared as of July 9, 2015**

Financing - Bonds - 2017

Date	Principal	Rate	Interest Paid	Total Debt Service Payment	6/30 FYE
12/15/2017	-				-
6/15/2018	-		511,720.00	511,720	
12/15/2018	-		511,720.00	511,720	1,023,440
6/15/2019	405,000	4.400%	511,720.00	916,720	
12/15/2019	-		502,810.00	502,810	1,419,530
6/15/2020	425,000	4.400%	502,810.00	927,810	
12/15/2020	-		493,460.00	493,460	1,421,270
6/15/2021	445,000	4.400%	493,460.00	938,460	
12/15/2021	-		483,670.00	483,670	1,422,130
6/15/2022	460,000	4.400%	483,670.00	943,670	
12/15/2022	-		473,550.00	473,550	1,417,220
6/15/2023	485,000	4.400%	473,550.00	958,550	
12/15/2023	-		462,880.00	462,880	1,421,430
6/15/2024	505,000	4.400%	462,880.00	967,880	
12/15/2024	-		451,770.00	451,770	1,419,650
6/15/2025	530,000	4.400%	451,770.00	981,770	
12/15/2025	-		440,110.00	440,110	1,421,880
6/15/2026	550,000	4.400%	440,110.00	990,110	
12/15/2026	-		428,010.00	428,010	1,418,120
6/15/2027	575,000	4.400%	428,010.00	1,003,010	
12/15/2027	-		415,360.00	415,360	1,418,370
6/15/2028	600,000	4.400%	415,360.00	1,015,360	
12/15/2028	-		402,160.00	402,160	1,417,520
6/15/2029	630,000	4.400%	402,160.00	1,032,160	
12/15/2029	-		388,300.00	388,300	1,420,460
6/15/2030	660,000	4.400%	388,300.00	1,048,300	
12/15/2030	-		373,780.00	373,780	1,422,080
6/15/2031	685,000	4.400%	373,780.00	1,058,780	
12/15/2031	-		358,710.00	358,710	1,417,490
6/15/2032	720,000	4.400%	358,710.00	1,078,710	
12/15/2032	-		342,870.00	342,870	1,421,580
6/15/2033	750,000	4.400%	342,870.00	1,092,870	
12/15/2033	-		326,370.00	326,370	1,419,240
6/15/2034	785,000	4.400%	326,370.00	1,111,370	
12/15/2034	-		309,100.00	309,100	1,420,470
6/15/2035	820,000	4.400%	309,100.00	1,129,100	
12/15/2035	-		291,060.00	291,060	1,420,160
6/15/2036	855,000	4.400%	291,060.00	1,146,060	
12/15/2036	-		272,250.00	272,250	1,418,310
6/15/2037	895,000	4.400%	272,250.00	1,167,250	

*** PRELIMINARY - FOR DISCUSSION PURPOSES ONLY ***

**Coastal Water Authority - Luce Bayou Financing Plan
Luce Bayou - Pro Forma Debt Plan - Construction
Draft Prepared as of July 9, 2015**

Financing - Bonds - 2017

Date	Principal	Rate	Interest Paid	Total Debt Service	
				Payment	6/30 FYE
12/15/2037	-		252,560.00	252,560	1,419,810
6/15/2038	935,000	4.400%	252,560.00	1,187,560	
12/15/2038	-		231,990.00	231,990	1,419,550
6/15/2039	975,000	4.400%	231,990.00	1,206,990	
12/15/2039	-		210,540.00	210,540	1,417,530
6/15/2040	1,020,000	4.400%	210,540.00	1,230,540	
12/15/2040	-		188,100.00	188,100	1,418,640
6/15/2041	1,065,000	4.400%	188,100.00	1,253,100	
12/15/2041	-		164,670.00	164,670	1,417,770
6/15/2042	1,115,000	4.400%	164,670.00	1,279,670	
12/15/2042	-		140,140.00	140,140	1,419,810
6/15/2043	1,165,000	4.400%	140,140.00	1,305,140	
12/15/2043	-		114,510.00	114,510	1,419,650
6/15/2044	1,215,000	4.400%	114,510.00	1,329,510	
12/15/2044	-		87,780.00	87,780	1,417,290
6/15/2045	1,270,000	4.400%	87,780.00	1,357,780	
12/15/2045	-		59,840.00	59,840	1,417,620
6/15/2046	1,330,000	4.400%	59,840.00	1,389,840	
12/15/2046	-		30,580.00	30,580	1,420,420
6/15/2047	1,390,000	4.400%	30,580.00	1,420,580	
12/15/2047	-		-	-	1,420,580
Total	23,260,000		18,929,020	42,189,020	42,189,020

CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM FUND REVENUES AND EXPENSES
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)

Total Annual Revenues Last Ten Fiscal Years	2005	2006	2007	2008	2009
Operating Revenues					
Water sales	\$ 301,227	\$ 324,878	\$ 308,046	\$ 328,435	\$ 351,608
Waste water system user charges	288,459	307,364	295,423	305,748	323,301
Penalties	4,605	5,085	6,736	7,760	6,651
Other services and charges	4,583	4,935	5,260	6,324	5,678
Total Operating Revenues	598,874	642,662	615,465	648,267	687,238
Nonoperating Revenues					
Interest	12,972	18,650	36,014	35,436	33,436
Other income	24,707	26,557	54,572	84,228	51,262
Total Nonoperating Revenues	37,679	45,207	90,586	119,664	84,698
Total Revenues	\$ 636,553	\$ 687,869	\$ 706,051	\$ 767,931	\$ 771,936
Total Annual Expenses Last Ten Fiscal Years					
Operating Expenses					
Maintenance and operating	\$ 332,800	\$ 302,955	\$ 315,348	\$ 346,652	\$ 371,770
Depreciation and Amortization	224,074	228,665	257,722	220,202	204,919
Total Operating Expenses	556,874	531,620	573,070	566,854	576,689
Nonoperating Expenses					
Interest on long-term debt	201,142	214,880	242,282	267,505	260,396
Other expenses	4,193	5,622	3,478	19,515	5,432
Total Nonoperating Expenses	205,335	220,502	245,760	287,020	265,828
Total Expenses	\$ 762,209	\$ 752,122	\$ 818,830	\$ 853,874	\$ 842,517

	2010		2011		2012		2013		2014
S	356,046	\$	459,261	\$	480,676	\$	485,485	\$	499,913
	320,722		410,941		421,370		426,888		441,300
	8,391		9,871		10,004		9,456		9,456
	5,979		3,949		5,188		2,861		2,739
	<u>691,138</u>		<u>884,022</u>		<u>917,238</u>		<u>924,690</u>		<u>953,408</u>
	15,160		10,090		5,696		(507)		10,688
	65,077		20,453		45,448		41,521		69,370
	<u>80,237</u>		<u>30,543</u>		<u>51,144</u>		41,014		<u>80,058</u>
	<u>771,375</u>	\$	<u>914,565</u>	\$	<u>968,382</u>	\$	<u>965,704</u>	\$	<u>1,033,466</u>

	2010		2011		2012		2013		2014
\$	372,365	\$	363,260	\$	410,781	\$	395,439	\$	399,647
	203,695		214,956		211,170		217,622		223,381
	<u>576,060</u>		<u>578,216</u>		<u>621,951</u>		<u>613,061</u>		<u>623,028</u>
	273,609		12,273		290,882		282,465		295,254
					670		286		5,397
	<u>273,609</u>		<u>12,273</u>		<u>291,552</u>		<u>282,751</u>		<u>300,651</u>
\$	<u>849,669</u>		<u>590,489</u>	\$	<u>913,503</u>	\$	<u>895,812</u>		<u>923,679</u>

Coastal Water Authority
Five Year Comparative Statement (2010 - 2014)

	2014	2013	2012	2011	2010
Operating Revenues:					
Funds provided by City of Houston	\$22,187,916	\$22,514,805	\$21,412,865	\$21,271,238	\$21,271,238
Funds provided by San Jacinto River Authority	\$104,438	\$82,689	\$76,628	\$74,351	\$74,351
Service revenues	\$4,291,237	\$4,448,265	\$4,123,066	\$4,620,691	\$4,620,691
Total operating revenues	\$26,583,591	\$27,045,759	\$25,612,559	\$25,966,280	\$25,966,280
Operating Expenses:					
Utilities	\$8,364,135	\$7,805,264	\$8,763,757	\$10,309,249	\$10,309,249
Field salaries	\$4,973,473	\$4,882,096	\$4,669,750	\$4,690,650	\$4,690,650
Administrative	\$2,387,320	\$2,694,860	\$2,473,815	\$2,478,845	\$2,478,845
General operating	\$2,647,446	\$2,910,109	\$2,771,759	\$2,833,043	\$2,833,043
Materials and supplies	\$2,625,310	\$2,898,105	\$2,993,992	\$2,794,931	\$2,794,931
Engineering, legal, and other professional	\$832,018	\$630,242	\$1,136,836	\$922,956	\$922,956
Contract labor and equipment	\$3,752,541	\$4,119,191	\$3,871,079	\$1,185,915	\$1,185,915
Depreciation	\$7,196,921	\$7,348,561	\$7,457,519	\$7,774,110	\$7,774,110
Total operating expenses	\$32,779,164	\$33,288,428	\$34,138,507	\$32,989,699	\$32,989,699
Operating loss	(\$6,195,573)	(\$6,242,669)	(\$8,525,948)	(\$7,023,419)	(\$7,023,419)
Non-Operating Revenues/(Expenses):					
Investment income	\$50,755	\$88,747	\$89,696	\$187,285	\$187,285
Interest income	\$988,628	\$936,303	\$673,137	\$482,388	\$482,388
Bond interest expense	(\$3,727,629)	(\$3,702,225)	(\$3,359,946)	(\$3,432,508)	(\$3,432,508)
Loan interest expense	(\$57,645)	(\$80,721)	(\$102,545)	(\$128,000)	(\$128,000)
Other income	\$506,743	\$368,742	\$946,258	\$3,927,389	\$3,927,389
Net non-operating revenues/(expenses)	(\$2,239,148)	(\$2,389,154)	(\$1,753,400)	\$1,036,554	\$1,036,554
Loss before contributions	(\$8,434,721)	(\$8,631,823)	(\$10,279,348)	(\$5,986,865)	(\$5,986,865)
Contributions Provided by City of Houston	\$5,333,608	\$7,277,607	\$7,785,291	\$3,158,948	\$3,158,948
Change in net position	(\$3,101,113)	(\$1,354,216)	(\$2,494,057)	(\$2,827,917)	(\$2,827,917)
Net Position - beginning of year	\$220,242,610	\$221,596,826	\$224,965,122	\$227,793,039	\$227,793,039
Net Position - end of year	\$217,141,497	\$220,242,610	\$222,471,065	\$224,965,122	\$224,965,122

Sale of Existing Assets and/or Leases (SEAL)

In 1993, the Coastal Water Authority (with the approval of the City of Houston) issued "Certificate of Participation, Series 1993 A-J" (COP). The proceeds of this issue were used to purchase the Debt Service Contract Payments that existed on all of CWA's outstanding debt that was issued under its then existing Projects Contract with the City of Houston.

The "sale" of an existing "asset" (the Debt Service Contract Payments) generated a certain amount of funds flowing to CWA that have been and are still being used by CWA for certain eligible activities. The sale also legally removed all of the applicable outstanding debt as of June 1993 for CWA Financials. The "sale" did not alter the amount or the obligation of the City of Houston to continue paying those certain debt service payments.

A copy of pages from the "Official Statement" of the COP Series 1993 A-J are attached for your information. Included also is a summary page of the "sold" debt service payments schedule the City of Houston is committed to make. In this summary you will be able to see the approximately \$13.6 million difference you referred to in your email about what is reflected on CWA's 2014 Financial Audit and the City of Houston 2014 Audit Report.

EXHIBIT A

CONTRACT ASSIGNMENT AGREEMENT
 AGGREGATE DEBT SERVICE CONTRACT PAYMENTS INCLUDING
 TOTAL PRINCIPAL COMPONENT AMOUNT AND INTEREST
 COMPONENT AMOUNT FOR CURRENT INTEREST AND CAPITAL APPRECIATION PAYMENTS

ALL SUPPLEMENTS

Distribution Date	Principal Component	Interest Component	Semi-Annual Debt Service	Annual Debt Service
Jun 15, 93				
Dec 15, 93	5,060,000.00	8,133,260.00	13,193,260.00	13,193,260.00
Jun 15, 94		8,001,010.00	8,001,010.00	
Dec 15, 94	5,660,000.00	8,001,010.00	13,661,010.00	21,662,020.00
Jun 15, 95		7,841,760.00	7,841,760.00	
Dec 15, 95	6,160,000.00	7,841,760.00	14,001,760.00	21,843,520.00
Jun 15, 96		7,668,260.00	7,668,260.00	
Dec 15, 96	6,160,000.00	7,668,260.00	13,828,260.00	21,496,520.00
Jun 15, 97		7,493,760.00	7,493,760.00	
Dec 15, 97	7,660,000.00	7,493,760.00	15,153,760.00	22,647,520.00
Jun 15, 98		7,286,247.50	7,286,247.50	
Dec 15, 98	7,660,000.00	7,286,247.50	14,946,247.50	22,232,495.00
Jun 15, 99		7,077,260.00	7,077,260.00	
Dec 15, 99	8,760,000.00	7,077,260.00	15,837,260.00	22,914,520.00
Jun 15, 00		6,826,722.50	6,826,722.50	
Dec 15, 00	12,760,000.00	6,826,722.50	19,586,722.50	26,413,445.00
Jun 15, 01		6,508,535.00	6,508,535.00	
Dec 15, 01	13,735,000.00	6,508,535.00	20,243,535.00	26,752,070.00
Jun 15, 02		6,154,847.50	6,154,847.50	
Dec 15, 02	14,215,000.00	6,154,847.50	20,369,847.50	26,524,695.00
Jun 15, 03		5,784,910.00	5,784,910.00	
Dec 15, 03	15,090,000.00	5,784,910.00	20,874,910.00	26,659,820.00
Jun 15, 04		5,379,972.50	5,379,972.50	
Dec 15, 04	14,970,000.00	5,379,972.50	20,349,972.50	25,729,945.00
Jun 15, 05		4,899,391.25	4,899,391.25	
Dec 15, 05	16,000,000.00	4,899,391.25	20,899,391.25	25,798,782.50
Jun 15, 06		4,383,953.75	4,383,953.75	
Dec 15, 06	17,125,000.00	4,383,953.75	21,508,953.75	25,892,907.50
Jun 15, 07		3,830,063.13	3,830,063.13	
Dec 15, 07	18,160,000.00	3,830,063.13	21,990,063.13	25,820,126.25
Jun 15, 08		3,243,225.63	3,243,225.63	
Dec 15, 08	16,795,000.00	3,243,225.63	20,038,225.63	23,281,451.25
Jun 15, 09		2,753,378.75	2,753,378.75	
Dec 15, 09	13,410,000.00	2,753,378.75	16,163,378.75	18,916,757.50
Jun 15, 10		2,341,885.00	2,341,885.00	
Dec 15, 10	11,780,000.00	2,341,885.00	14,121,885.00	16,463,770.00
Jun 15, 11		1,938,565.00	1,938,565.00	
Dec 15, 11	11,810,000.00	1,938,565.00	13,748,565.00	15,687,130.00
Jun 15, 12		1,533,875.00	1,533,875.00	
Dec 15, 12	11,840,000.00	1,533,875.00	13,373,875.00	14,907,750.00
Jun 15, 13		1,157,625.00	1,157,625.00	
Dec 15, 13	11,805,000.00	1,157,625.00	12,962,625.00	14,120,250.00
Jun 15, 14		781,843.75	781,843.75	
Dec 15, 14	11,765,000.00	781,843.75	12,546,843.75	13,328,687.50
Jun 15, 15		406,687.50	406,687.50	
Dec 15, 15	11,810,000.00	406,687.50	12,216,687.50	12,623,375.00
Jun 15, 16		28,875.00	28,875.00	
Dec 15, 16	770,000.00	28,875.00	798,875.00	827,750.00

270,960,000.00 214,778,567.50 485,738,567.50 485,738,567.50

OFFICIAL STATEMENT DATED JUNE 11, 1993

New Issue — Book-Entry-Only

Rating — See "RATINGS" herein

In the opinion of Co-Special Counsel, except as provided below, those portions of the Debt Service Contract Payments that are Interest Components and are received by the holders of the Certificates (i) are excludable from gross income for federal income tax purposes under existing law and (ii) are not items of tax preference for purposes of the alternative minimum tax on individuals and, except as described herein regarding the "adjusted current earnings" adjustment, corporations. See "TAX MATTERS" for a discussion of the opinion of Co-Special Counsel and certain other federal income tax consequences resulting from the ownership or disposition of Certificates and the receipt of distributions of portions of the Debt Service Contract Payments.

\$270,960,000

**CITY OF HOUSTON, TEXAS WATER CONVEYANCE SYSTEM CONTRACT
CERTIFICATES OF PARTICIPATION, SERIES 1993 A-J**

Dated: June 15, 1993

Due: December 15, as set forth
on the inside cover pages

Each series of the Certificates evidences and represents ownership interests in certain debt service contract payments (the "Debt Service Contract Payments"), comprised of principal components (the "Principal Components") and interest components (the "Interest Components"), pursuant to one particular supplement to a contract (the "Contract") between the City of Houston, Texas (the "City") and the Coastal Water Authority (the "Authority"). Amounts received from the sale of the Certificates will be used by Ameritrust Texas, National Association, Houston, Texas, as trustee (the "Trustee"), to purchase the Debt Service Contract Payments simultaneously with the Trustee's preparation, execution and delivery of the Certificates.

The Certificates (other than the Series 1993J Capital Appreciation Certificates) are delivered as Current Interest Certificates in fully registered form. Current Interest Certificates are in the denomination of \$5,000 amounts of Principal Components or any integral multiple thereof, and the Series 1993J Capital Appreciation Certificates are in the denomination of \$5,000 amounts of Principal Component maturity amounts or integral multiples thereof. The Certificates will be registered in the name of Cede & Co., as nominee for The Depository Trust Company, New York, New York ("DTC"), which will act as securities depository for the Certificates. Purchases of the Certificates may be made only in book-entry form in authorized denominations by credit to participating broker-dealers and other institutions on the books of DTC as described herein. Purchasers will not receive certificates evidencing the Certificates. See "THE CERTIFICATES — Book-Entry-Only System."

Distributions of Interest Components with respect to the Certificates (other than the Series 1993J Capital Appreciation Certificates) include accrual of the respective Interest Components from June 15, 1993, and are distributable on December 15 and June 15 of each year (with the first Interest Component Distribution Date being December 15, 1993) at the rates per year shown on the inside cover pages hereof. Interest related to the Principal Components distributable to the holders of the Series 1993J Capital Appreciation Certificates compounds semiannually on December 15 and June 15 of each year, commencing December 15, 1993, and is distributable as part of such Principal Components only at maturity. The Principal Component of the Certificates is distributable at the principal corporate trust office of the Trustee. Initially, distributions with respect to the Certificates will be made by the Trustee to DTC, which in turn is to remit such distributions to its participants for subsequent disbursements to the beneficial owners as described herein.

The Certificates represent ownership rights of the Debt Service Contract Payments paid by the City and received by the Trustee. Under the Contract, the City is obligated to pay the Debt Service Contract Payments as an operating expense solely from gross revenues of the water system component of the City's combined water and sewer system. The Certificates are not obligations of the Trustee, the Authority or the State of Texas. Holders of the Certificates shall never have the right to demand distributions with respect to the Certificates out of any funds raised or to be raised by taxation or to have any claim against any property or revenues of the Authority or any property or revenues of the City other than the revenues from which the Debt Service Contract Payments are payable. See "SOURCE OF PAYMENT AND SECURITY FOR THE CERTIFICATES."

The Principal Components represented by the Certificates are not subject to redemption prior to their respective Principal Component Distribution Dates.



Payment to the Trustee of the Debt Service Contract Payments when due will be insured by a municipal bond guaranty insurance policy to be issued by AMBAC Indemnity Corporation simultaneously with the delivery of the Certificates. See "INSURANCE."

**SEE INSIDE COVER PAGES FOR PRINCIPAL COMPONENT AMOUNTS,
INTEREST RATES AND REOFFERING YIELDS**

The Certificates are offered when, as and if delivered to and accepted by the Underwriters named below, subject to the joint opinion of Vinson & Elkins L.L.P. and Nelson & Locke, P.C., both of Houston, Texas, Co-Special Counsel. Certain legal matters will be passed upon for the Underwriters by their counsel, Mayor, Day, Caldwell & Keeton, L.L.P. and Medina & Associates, both of Houston, Texas. Certain legal matters will be passed upon for the Trustee by its counsel, Law Office — Sherman E. Stimley, Houston, Texas. It is expected that the Certificates will be available for delivery to DTC on or about June 29, 1993.

**PaineWebber Incorporated
Bear Stearns & Co. Inc.
Guzman & Company**

**Apex Securities, Inc.
The First Boston Corporation
Legg Mason Wood Walker, Inc.
Rauscher Pierce Refsnes, Inc.**

**Merrill Lynch & Co.
Grigsby Brandford & Co., Inc.
Lehman Brothers**

**\$9,000,000 Certificates of Participation, Series 1993A
(1969 Supplement*)**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield (a)</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield (a)</u>
1999	\$1,000,000	5.90%	4.75%	2004	\$1,000,000	5.90%	5.40%
2000	1,000,000	5.90	5.00	2005	1,000,000	5.90	5.50
2001	1,000,000	5.90	5.10	2006	1,000,000	5.90	5.60
2002	1,000,000	5.90	5.20	2007	1,000,000	5.90	5.65
2003	1,000,000	5.90	5.30				

**\$16,000,000 Certificates of Participation, Series 1993B
(1970 Supplement*)**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield (a)</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield (a)</u>
1997	\$1,000,000	7.00%	4.40%	2003	\$2,000,000	7.00%	5.40%
1998	1,000,000	7.00	4.60	2004	2,000,000	7.00	5.50
1999	1,000,000	7.00	4.85	2005	2,000,000	7.00	5.60
2000	1,000,000	7.00	5.10	2006	2,000,000	7.00	5.65
2001	1,000,000	7.00	5.20	2007	2,000,000	7.00	5.70
2002	1,000,000	7.00	5.30				

**\$17,000,000 Certificates of Participation, Series 1993C
(1970-A Supplement*)**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield (a)</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield (a)</u>
1999	\$1,000,000	7.00%	4.85%	2004	\$2,000,000	7.00%	5.50%
2000	2,000,000	7.00	5.10	2005	2,000,000	7.00	5.55
2001	2,000,000	7.00	5.20	2006	2,000,000	7.00	5.65
2002	2,000,000	7.00	5.30	2007	2,000,000	7.00	5.70
2003	2,000,000	7.00	5.40				

**\$25,000,000 Certificates of Participation, Series 1993D
(1971 Supplement*)**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield (a)</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield (a)</u>
1997	\$ 500,000	6.375%	4.40%	2003	\$2,500,000	6.375%	5.40%
1998	500,000	6.375	4.60	2004	2,500,000	6.375	5.50
1999	500,000	6.375	4.85	2005	3,000,000	6.375	5.55
2000	2,500,000	6.375	5.10	2006	3,500,000	6.375	5.65
2001	2,500,000	6.375	5.20	2007	4,500,000	6.375	5.70
2002	2,500,000	6.375	5.30				

**\$25,000,000 Certificates of Participation, Series 1993E
(1973 Supplement*)**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>
1993	\$1,000,000	5.50%	2.55%	2001	\$1,000,000	5.00%	5.00%
1994	1,000,000	5.50	3.10	2002	1,500,000	5.00	5.10
1995	1,000,000	5.50	3.65	2003	1,500,000	5.00	5.20
1996	1,000,000	5.50	4.05	2004	1,500,000	5.00	5.30
1997	1,000,000	5.50	4.30	2005	1,500,000	5.00	5.40
1998	1,000,000	5.50	4.50	2006	1,500,000	5.00	5.50
—	—	—	—	2007	1,500,000	5.00	5.55
2000	1,000,000	5.00	4.90	2008	8,000,000	5.00	5.60

* Represents a separate Supplement to the Contract, each Supplement setting forth the City's obligation to pay the Principal Component and Interest Component under such Supplement that corresponds to the Authority's Bonds issued in connection with such Supplement.

**\$31,000,000 Certificates of Participation, Series 1993F
(1974 Supplement*)**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>
1993	\$1,000,000	6.95%	2.55%	2001	\$2,000,000	7.20%	5.20%
1994	1,000,000	6.80	3.10	2002	2,000,000	7.20	5.30
1995	1,500,000	6.80	3.75	2003	2,000,000	7.20	5.40
1996	1,500,000	7.20	4.15	2004	2,000,000	7.20	5.50
1997	1,500,000	7.20	4.40	2005	2,500,000	7.20	5.60
1998	1,500,000	7.20	4.60	2006	3,000,000	7.20	5.65
1999	1,500,000	7.20	4.85	2007	3,000,000	7.20	5.70
2000	1,500,000	7.20	5.10	2008	3,500,000	7.20	5.75

**\$13,500,000 Certificates of Participation, Series 1993G
(1977 Supplement*)**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>
1993	\$ 500,000	6.00%	2.55%	2002	\$1,000,000	5.50%	5.20%
1994	500,000	5.10	3.10	2003	1,000,000	5.50	5.30
1995	500,000	5.20	3.65	2004	1,000,000	5.50	5.40
1996	500,000	5.30	4.05	2005	1,000,000	5.50	5.50
1997	500,000	5.40	4.30	2006	1,000,000	5.50	5.60
1998	500,000	5.50	4.50	2007	1,000,000	5.50	5.65
1999	500,000	5.50	4.75	2008	1,000,000	5.50	5.70
2000	500,000	5.50	5.00	2009	1,500,000	5.50	5.75
2001	1,000,000	5.50	5.10				

\$13,970,000 Certificates of Participation, Series 1993H
(1986 Supplement*)**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>
1993	\$100,000	10.00%	2.55%	2005	\$ 500,000	7.50%	5.60%
1994	200,000	10.00	3.10	2006	600,000	7.50	5.70
1995	200,000	7.00	3.75	2007	600,000	7.50	5.75
1996	200,000	7.00	4.15	2008	700,000	7.50	5.80
1997	200,000	7.20	4.40	2009	800,000	7.50	5.85
1998	200,000	7.30	4.60	2010	800,000	7.50	5.85
1999	300,000	7.40	4.85	2011	900,000	7.50	5.875
2000	300,000	7.50	5.10	2012	1,000,000	7.50	5.875
2001	400,000	7.50	5.20	2013	1,100,000	7.50	5.90
2002	500,000	7.50	5.30	2014	1,200,000	7.50	5.90
2003	500,000	7.50	5.40	2015	1,400,000	7.50	5.95
2004	500,000	7.50	5.50	2016	770,000	7.50	5.95

* Represents a separate Supplement to the Contract, each Supplement setting forth the City's obligation to pay the Principal Component and Interest Component under such Supplement that corresponds to the Authority's Bonds issued in connection with such Supplement.

** For a description of the initial yields and accreted values on certain of these maturities, see APPENDIX A.

**\$10,000,000 Certificates of Participation, Series 1993I
(1987 Supplement*)**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>
1993	\$1,000,000	10.00%	2.55%	1997	\$1,500,000	7.25%	4.40%
1994	1,500,000	10.00	3.10	1998	1,500,000	7.40	4.60
1995	1,500,000	10.00	3.75	1999	1,500,000	7.50	4.85
1996	1,500,000	9.70	4.15				

**\$110,490,000 Certificates of Participation, Series 1993J
(1991 Supplement*)**

\$21,320,000 Capital Appreciation Certificates of Participation**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Reoffering Yield</u>	<u>Price Per \$5,000 Principal Component Amount***</u>
1993	\$1,460,000.00	2.75%	\$4,937.35
1994	1,460,000.00	3.30	4,766.50
1995	1,460,000.00	3.90	4,546.55
1996	1,460,000.00	4.25	4,322.70
1997	1,460,000.00	4.60	4,081.85
1998	1,460,000.00	4.80	3,858.95
1999	1,460,000.00	5.00	3,634.05
2000	2,960,000.00	5.25	3,396.60
2001	2,835,000.00	5.35	3,198.60
2002	2,715,000.00	5.45	3,006.25
2003	2,590,000.00	5.55	2,820.05

\$89,170,000 Current Interest Certificates of Participation**

<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>	<u>Principal Component Distribution Date (December 15)</u>	<u>Principal Component Amount</u>	<u>Interest Rate</u>	<u>Reoffering Yield</u>
2004	\$ 2,470,000	6.125%	5.45%	2010	\$10,980,000	6.800%	5.80%
2005	2,500,000	6.125	5.55	2011	10,910,000	6.800	5.85
2006	2,525,000	6.125	5.65	2012	10,840,000	6.250	5.85
2007	2,560,000	6.125	5.70	2013	10,705,000	6.250	5.85
2008	3,595,000	6.125	5.75	2014	10,565,000	6.250	5.875
2009	11,110,000	6.125	5.80	2015	10,410,000	6.250	5.875

* Represents a separate Supplement to the Contract, each Supplement setting forth the City's obligation to pay the Principal Component and Interest Component under such Supplement that corresponds to the Authority's Bonds issued in connection with such Supplement.

** For a description of the initial offering yields and accreted values on these maturities, see APPENDIX A.

*** Reflects price as of June 29, 1993, the expected date of delivery of the Certificates.

This Official Statement is delivered in connection with the sale of securities referred to herein and may not be reproduced or used, in whole or in part, for any other purpose.

The information contained in this Official Statement (which term shall be deemed to include the Appendices to this Official Statement and all documents incorporated herein by reference) has been obtained from the City and the Authority and other sources deemed reliable. No representation is made, however, as to the accuracy or completeness of such information, and nothing contained in this Official Statement is, or shall be relied upon as, a promise or representation by the Underwriters. The information concerning DTC and its book-entry system has been obtained from DTC and is not guaranteed as to accuracy or completeness by, and is not to be construed as a representation by, the Underwriters, the City or the Authority. The information concerning AMBAC Indemnity Corporation has been obtained from AMBAC Indemnity Corporation, and is not guaranteed as to accuracy or completeness by, and is not to be construed as a representation by, the Underwriters, the City or the Authority. This Official Statement is delivered in connection with the sale of the securities described in it and may not be produced or used, in whole or in part, for any other purposes. The information contained in this Official Statement is subject to change without notice and neither the delivery of this Official Statement nor any sale made by means of it shall, under any circumstances, create any implication that there have not been changes in the affairs of the City, the Authority, DTC or AMBAC Indemnity Corporation since the date of this Official Statement.

No broker, dealer, sales representative or any other person has been authorized by the City, the Authority or the Underwriters to give any information or to make any representation other than as contained in this Official Statement in connection with the offering described in it and, if given or made, such other information or representation must not be relied upon as having been authorized by any of the foregoing. This Official Statement does not constitute an offer to sell or the solicitation of any offer to buy any securities other than those described on the cover page, nor shall there be any offer to sell, solicitation of any offer to buy or sale of such securities by any persons in any jurisdiction in which it is unlawful for such person to make such offer, solicitation or sale.

This Official Statement should be considered in its entirety. No one factor should be considered less important than any other by reason of its position in this Official Statement. Where statutes, resolutions, reports or other documents are referred to in this Official Statement, reference should be made to such documents for more complete information regarding those matters.

The Certificates will not be registered under the Securities Act of 1933, as amended. The Certificates will not be listed on any stock or other securities exchange. Neither the Securities and Exchange Commission nor any other federal, state, municipal or other governmental entity, other than the City and the Authority, shall have passed upon the accuracy or adequacy of this Official Statement.

IN CONNECTION WITH THIS OFFERING, THE UNDERWRITERS MAY OVER-ALLOT OR EFFECT TRANSACTIONS WHICH STABILIZE OR MAINTAIN THE MARKET PRICE OF THE CERTIFICATES AT A LEVEL ABOVE THAT WHICH MIGHT OTHERWISE PREVAIL IN THE OPEN MARKET. SUCH STABILIZING, IF COMMENCED, MAY BE DISCONTINUED AT ANY TIME WITHOUT NOTICE.

OFFICIAL STATEMENT SUMMARY

The following material is qualified in its entirety by the detailed information and financial statements appearing elsewhere in this Official Statement.

- The Certificates** \$270,960,000 City of Houston, Texas Water Conveyance System Contract Certificates of Participation, Series 1993 A-J, delivered pursuant to the provisions of a Certificate Trust Agreement, dated as of June 15, 1993 (the "Certificate Agreement") between a special purpose corporation (the "Grantor") and the Trustee pursuant to which the Trustee holds for the benefit of the owners of the Certificates rights to receive certain Debt Service Contract Payments and to enforce payment and collection of the Debt Service Contract Payments pursuant to the Contract. See "SOURCE OF PAYMENT AND SECURITY FOR THE CERTIFICATES."
- Use of Proceeds** Amounts received from the sale of the Certificates will be used (i) to purchase the Debt Service Contract Payments from the Authority, (ii) to pay costs associated with the delivery of the Certificates and (iii) to purchase insurance with respect to payment to the Trustee of the Debt Service Contract Payments when due.
- Insurance** Payment to the Trustee of the Debt Service Contract Payments when due will be insured by a municipal bond guaranty insurance policy to be issued by AMBAC Indemnity Corporation. See "INSURANCE."
- Source of Payment** Each series of Certificates evidences and represents undivided proportionate ownership interests in Debt Service Contract Payments, comprised of Principal Components and Interest Components, attributable to a particular supplement to a contract (the "Contract") between the City of Houston, Texas (the "City") and the Coastal Water Authority (the "Authority"). See "THE CONTRACT AND THE PROJECT." Under the Contract, the City is obligated to pay the Debt Service Contract Payments solely from gross revenues of the City's water system as an operating expense. The Certificates are not obligations of the Trustee, the Authority or the State of Texas. Holders of the Certificates shall never have the right to demand distributions with respect to the Certificates out of any funds raised or to be paid by taxation or to have any claim against any property or revenues of the City other than the revenues from which the Debt Service Contract Payments are payable. See "SOURCE OF PAYMENT AND SECURITY FOR THE CERTIFICATES."
- No Prior Redemption of the Certificates** The Principal Components represented by Certificates are not subject to redemption prior to their respective Principal Component Distribution Dates. See "THE CERTIFICATES—Redemption."

SELECTED FINANCIAL INFORMATION

The following sets forth the Net Revenues (exclusive of certain non-cash transactions, primarily depreciation and amortization) of the City's Water System and Sewer System (the "Combined System") for Fiscal Years ended June 30, 1992, 1991, 1990 and 1989. The amounts shown below were taken from the financial statements of the Water and Sewer Revenue Fund included in the City Controller's Comprehensive Annual Financial Report for such Fiscal Years. See "APPENDIX B."

	Fiscal Year Ended <u>June 30, 1992</u> (in thousands)	Fiscal Year Ended <u>June 30, 1991</u> (in thousands)	Fiscal Year Ended <u>June 30, 1990</u> (in thousands)	Fiscal Year Ended <u>June 30, 1989</u> (in thousands)
OPERATING REVENUES:				
Sales of water, net				
Metered water	\$186,818	\$187,469	\$185,586	\$174,324
Surface water	39,790	37,675	35,870	34,287
Canal water	<u>2,814</u>	<u>2,770</u>	<u>2,612</u>	<u>2,465</u>
Total Sales of Water	229,422	227,914	224,068	211,076
Sewer system user charges, net	234,121	227,294	213,744	196,258
Penalties	3,106	3,659	3,658	4,716
Other services and charges	<u>3,251</u>	<u>2,358</u>	<u>2,173</u>	<u>2,024</u>
Total Operating Revenues	469,900	461,225	443,643	414,074
NON-OPERATING REVENUES:				
Interest on investments, unrestricted gain from restructuring escrow fund	25,969	27,251	24,116	17,779
Other	<u>949</u>	<u>1,088</u>	<u>866</u>	<u>1,307</u>
Total Non-Operating Revenues	26,918	28,339	24,982	19,086
Total Revenues	<u>496,818</u>	<u>489,564</u>	<u>468,625</u>	<u>433,160</u>
OPERATING EXPENSES:				
Maintenance and operation	204,751	209,253	195,343	179,632
Bad debts	<u>221</u>	<u>4,099</u>	<u>4,565</u>	<u>7,728</u>
Total Operating Expenses	204,972	213,352	199,908	187,360
NON-OPERATING EXPENSES:				
Trinity River Authority debt service	6,576	5,206	5,232	5,091
Coastal Water Authority debt service (a)	<u>21,095</u>	<u>19,988</u>	<u>18,515</u>	<u>15,775</u>
Total Non-Operating Expenses	27,671	25,194	23,747	20,866
Total Expenses	<u>232,643</u>	<u>238,546</u>	<u>223,655</u>	<u>208,226</u>
NET REVENUES BEFORE DEBT SERVICE ON CITY OF HOUSTON WATER AND SEWER SYSTEM BONDS				
	<u>\$264,175</u>	<u>\$251,018</u>	<u>\$244,970</u>	<u>\$224,934</u>

(a) Includes Debt Service Contract Payments (as defined herein).

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OFFICIAL STATEMENT

\$270,960,000

CITY OF HOUSTON, TEXAS WATER CONVEYANCE SYSTEM CONTRACT Certificates of Participation, Series 1993 A-J

INTRODUCTION

This Official Statement, including the Appendices hereto, sets forth information in connection with the offering of the captioned certificates of participation (the "Certificates"), as prepared, executed and delivered by Ameritrust Texas, National Association, Houston, Texas (the "Trustee"). The Certificates, which evidence and represent undivided proportionate ownership interests in Debt Service Contract Payments (as defined below) owed by the City of Houston, Texas (the "City"), are authorized to be prepared, executed and delivered pursuant to a Certificate Trust Agreement, dated as of June 15, 1993 (the "Certificate Agreement"), between the Trustee and a special purpose corporation (the "Grantor").

In 1968, Coastal Water Authority (the "Authority"), a governmental agency of the State of Texas located within Harris, Chambers and Liberty Counties, entered into a contract (as amended and supplemented, the "Contract") with the City pursuant to which the Authority agreed to construct, operate and maintain certain facilities (the "Project") to transport the City's untreated water from the Trinity River to the Houston metropolitan area, and the City agreed to make several types of payments to the Authority. To provide funds to construct or acquire the Project, the Authority issued multiple series of its bonds (the "Authority Bonds"). See "THE CONTRACT AND THE PROJECT - The Contract." The City has determined that the Project has been completed to its satisfaction and that the Authority has no further obligation to issue Authority Bonds pursuant to the Contract.

One type of payment for which the City is obligated under the Contract is the sum necessary to pay all principal of and interest on the Authority Bonds. The Contract provides that the investment earnings on the reserve fund and contingency fund for the Authority Bonds are credited against such obligation of the City. Such obligation as so credited constitutes the Debt Service Contract Payments. The Debt Service Contract Payments are comprised of principal components (the "Principal Components") and interest components (the "Interest Components"). Under the Contract, the City's obligation to make the Debt Service Contract Payments is absolute and unconditional. While it has the right to defease the Debt Service Contract Payments prior to their Principal Component Distribution Dates (as defined below), the City has no right to prepay such payments prior to such scheduled dates.

The Authority has entered into a Contract Assignment Agreement with the Grantor, dated as of June 15, 1993 (the "Assignment Agreement"), pursuant to which the Authority has agreed to sell and assign to the Grantor its rights to receive the Debt Service Contract Payments and to enforce payment and collection of such payments pursuant to the Contract. The Grantor has assigned those rights to the Trustee under the terms of the Certificate Agreement, and the Trustee has agreed to prepare, execute and deliver the Certificates in connection therewith. See "SOURCE OF PAYMENT AND SECURITY FOR THE CERTIFICATES." Funds received from the sale of the Certificates, after the deduction of delivery and insurance costs, are to be paid to the Authority as consideration for its sale and assignment of the right to receive Debt Service Contract Payments.

No action taken in connection with the preparation, execution and delivery of the Certificates limits the rights of the Authority to (i) redeem or call for redemption prior to their maturities all or any portion of the Authority Bonds that are optionally redeemable by their terms and (ii) repurchase any of the outstanding Authority Bonds subject to mandatory redemption in the open market and tender such Authority Bonds to the trustee therefor in lieu of a mandatory redemption as provided by the resolutions authorizing the issuance of the Authority Bonds if the funds escrowed for their defeasance (the "Escrow Funds") are sold or restructured or funds are otherwise available to provide for such purchase, sale or redemption. In the

Assignment Agreement, the Authority has covenanted and agreed that any such redemption, sale or restructuring will not be accomplished unless the following shall have been provided: (i) a written opinion from a nationally recognized firm of independent certified public accountants that such transaction will not adversely affect the sufficiency of the Escrow Funds to pay the principal and redemption price of and the interest on the remaining Authority Bonds; (ii) a written counsel's opinion to the effect that such transaction will not affect the amount or timing of the Debt Service Contract Payments; (iii) a written counsel's opinion to the effect that such transaction will not affect the exclusion from gross income for federal income tax purposes of the Interest Components distributable to holders of Current Interest Certificates and original issue discount with respect to Principal Components distributable to holders of the Certificates; and (iv) written notice from the Authority of such actions at least 30 days prior to such redemption, sale or restructuring. See "THE ASSIGNMENT AGREEMENT—Covenants of the Authority—No Adverse Action; Redemption of Bonds."

Brief descriptions and summaries of the Certificates, the Contract, the Assignment Agreement and the Certificate Agreement are included in this Official Statement. Such descriptions and summaries do not purport to be comprehensive or definitive. All references herein to the Contract, the Assignment Agreement and the Certificate Agreement are qualified by reference to such documents in their entirety, and all references to the Certificates are qualified by reference to the form of the Certificates and the information with respect to the Certificates included in the Certificate Agreement. Statements made in this Official Statement involving estimates or projections, whether or not expressly identified as such, must not be construed as statements of fact or representations that such estimates or projections will be attained or will approximate actual results. Certain capitalized terms used in this Official Statement have the meaning given to them in the Certificate Agreement or as defined herein, except as otherwise indicated herein.

THE CERTIFICATES

General

The Certificates are dated June 15, 1993 and, other than the Series 1993J Capital Appreciation Certificates, are delivered as Current Interest Certificates in fully registered form. Current Interest Certificates are in the denomination of \$5,000 amounts of Principal Components or any integral multiple thereof, and the Series 1993J Capital Appreciation Certificates are in the denomination of \$5,000 amounts of Principal Component maturity amounts or integral multiples thereof.

Distributions of Interest Components with respect to the Certificates (other than the Series 1993J Capital Appreciation Certificates) include accrual of the respective Interest Components from June 15, 1993, and are distributable on December 15 and June 15 of each year (with the first Interest Component Distribution Date being December 15, 1993) at the rates per year shown on the inside cover pages hereof. Interest related to the Principal Components distributable to the holders of the Series 1993J Capital Appreciation Certificates compounds semiannually on December 15 and June 15 of each year, commencing December 15, 1993, and is distributable as part of such Principal Components only at maturity. The Principal Component of the Certificates is distributable at the principal corporate trust office of the Trustee in Houston, Texas.

Redemption

The Principal Components represented by Certificates are not subject to redemption prior to their respective Principal Component Distribution Dates.

Book-Entry-Only System

The Certificates will be registered in the name of Cede & Co., as nominee for The Depository Trust Company, New York, New York ("DTC"). When the Certificates are delivered, ownership interests will be available to purchasers by or through DTC participants (the "DTC Participants") through a book-entry system maintained by DTC (the "Book-Entry-Only System"). The following discussion will not apply to Certificates if delivered in physical form due to the discontinuance of the Book-Entry-Only System. See "*Discontinuance of Book-Entry-Only System.*"

DTC and Its Participants. DTC is a limited-purpose trust company organized under the laws of the State of New York, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code and a "clearing agency" registered pursuant to the provisions of Section 17A of the Securities Exchange Act of 1934, as amended. DTC was created to hold securities of the DTC Participants and to facilitate the clearance and settlement of securities transactions among the DTC Participants in such securities through electronic book-entry changes in accounts of the DTC Participants, thereby eliminating the need for physical movement of securities certificates. DTC Participants include securities brokers and dealers, banks, trust companies, clearing corporations and certain other organizations, some of which (and/or their representatives) own DTC. Access to the DTC system is also available to others such as banks, brokers, dealers and trust companies that clear through or maintain a custodial relationship with a DTC Participant, either directly or indirectly (the "indirect Participants"). DTC Participants and indirect Participants are referred to herein as "Participants."

Purchase of Ownership Interests. The DTC Participants will receive a credit balance in the records of DTC. The ownership interest of each actual purchaser of a Certificate (the "beneficial owner") will be recorded through the records of the DTC Participants. Beneficial owners are expected to receive a written confirmation of their purchase providing details of the Certificate acquired. Transfers of ownership interests in the Certificates will be accomplished by book entries made by DTC and, in turn, by DTC Participants who act on behalf of the beneficial owners. Beneficial owners will not receive certificates representing their ownership interests in the Certificates, except as specifically provided in the Certificate Agreement.

Each person for whom a Participant, as nominee, has an interest in the Certificates may desire to make arrangements with such Participant to receive a credit balance in the records of such Participant, to have all communications with respect to the Certificates that may affect such person forwarded in writing by such Participant and to be notified of all Interest Component payments. **NONE OF THE AUTHORITY, THE CITY OR THE TRUSTEE SHALL HAVE ANY RESPONSIBILITY OR OBLIGATION TO SUCH PARTICIPANTS OR THE PERSONS FOR WHOM THEY ACT AS NOMINEES WITH RESPECT TO THE PAYMENT TO, OR THE PROVIDING OF NOTICE FOR, SUCH PARTICIPANTS OR THE PERSON FOR WHOM THEY ACT AS NOMINEES.**

Distribution of Principal Components and Interest Components. So long as all Certificates are registered in the name of DTC or its nominee, all distributions of Principal Components and Interest Components will be made to DTC or its nominee, Cede & Co., as registered owner of such Certificates. Upon receipt of moneys, DTC's current practice is to credit immediately the accounts of the DTC Participants in accordance with their respective holdings shown on the records of DTC. Distributions by DTC Participants and indirect Participants to beneficial owners will be governed by standing instructions and customary practices, as is now the case with municipal securities held for the accounts of customers in bearer form or registered in "street name," and will be the responsibility of such DTC Participant or indirect Participant and not of DTC, the Authority, the City or the Trustee, subject to any statutory and regulatory requirements as may be in effect from time to time. Each beneficial owner should ensure that it has made satisfactory arrangements with the appropriate DTC Participant regarding payment to such beneficial owner, including without limitation payment by federal funds wire transfer if such form of payment is desired by such beneficial owner.

Notices. Any references in this Official Statement to notices that are to be given to registered owners will be given only to DTC. Conveyance of notices and other communications by DTC to DTC Participants, by DTC Participants to indirect Participants and by DTC Participants and indirect Participants to beneficial owners will be governed by arrangements among them, subject to any statutory and regulatory requirements as may be in effect from time to time. Neither the Authority, the City nor the Trustee will have any responsibility or obligation to assure that any such notice is forwarded by DTC to the Participants or by any Participants to the beneficial owners.

Transfers and Exchanges of Ownership Interests. Transfers of ownership interests in the Certificates will be accomplished by book entries made by DTC and the Participants who act on behalf of the beneficial owners. For every transfer and exchange of beneficial ownership interest in a Certificate, the Participant may charge the beneficial owner a sum sufficient to cover any tax, fee or other governmental charge that may be imposed with respect thereto.

Transfers of Certificates. Registered ownership of the Certificates, or any portions thereof, may not be transferred on the books of the Trustee except:

- (i) to any successor of DTC or its nominee;
- (ii) to any substitute depository selected by the Trustee, upon (a) the resignation of DTC or its successor (or any substitute depository or its successor) from its functions as depository or (b) a determination by the Trustee that DTC or its successor (or any substitute depository or its successor) is no longer able to carry out its functions as depository; or
- (iii) to any person, upon discontinuance of the Book-Entry-Only System as described below.

The Trustee may treat the registered owner of a Certificate (initially, Cede & Co.) as the absolute owner thereof for all purposes of the Certificate Agreement and any applicable laws, notwithstanding any notice to the contrary received by any of them; and the Trustee shall have no responsibility for transmitting payments to, communicating with, notifying or otherwise dealing with any beneficial owners of the Certificates. The Trustee will not have any responsibility or obligation, legal or otherwise, to the beneficial owners or to any other party including DTC or its successor (or any substitute depository or successor), except to the registered owners of any Certificate on the registration books of the Trustee. So long as all Certificates are registered in the name of Cede & Co., the Authority, the City and the Trustee shall cooperate with DTC or its nominee in effecting distribution of the Principal Components and Interest Components represented by the Certificates by arranging for distribution in such manner that funds for such distributions are properly identified and are made to DTC when due. Neither the City nor the Authority has any obligation or authority regarding transfers.

Discontinuance of Book-Entry-Only System. Certificates representing replacement Certificates may be delivered directly to beneficial owners of such Certificates, but only in the event that (i) DTC or its successor (or any substitute depository or its successor) is incapable of continuing, or unwilling to continue, to serve as securities depository for the Certificates and no qualified successor is available to so serve; or (ii) the Trustee determines continuation of the Book-Entry-Only System is adverse to the interests of the Certificateholders. Upon occurrence of either of these events (if there is no successor depository), the Trustee shall cause to be executed and delivered replacement Certificates, in certificate form, to the beneficial owners of the Certificates as shown on the records of the DTC Participants.

Should DTC discontinue its services or be discharged as described above, the affected Certificates may be delivered to owners in physical form. For this reason, information relating to Certificates in physical form is described in this Official Statement, but it is not expected that Certificates will be in physical form.

The following two paragraphs apply only to Certificates not in the Book-Entry-Only System:

- (i) The Certificates will be deliverable as fully registered certificates in denominations of \$5,000 amounts of Principal Components or any integral multiple thereof. Exchanges and transfers will be made without charge to the holders, provided that in each case the Trustee may require the payment by the holder requesting exchange or transfer of any tax or governmental charge required to be paid with respect thereto.
- (ii) Principal Components represented by the Certificates will be distributable at the principal corporate trust office of the Trustee. Interest Components represented by the Certificates will be distributable by check or draft mailed on each Interest Component Distribution Date to the persons in whose names they are registered at the close of business on the first day of the calendar month during which such Interest Component Distribution Date occurs (the "Record Date") (except with respect to defaulted Interest Components) or, at the option of any Certificateholder representing not less than \$100,000 amount of Principal Components, by wire transfer on the applicable Interest Component Distribution Date to such owner as of the close of business on the applicable Record Date if such owner provides the Trustee with written notice of such wire transfer address at least 5 business days prior to such Record Date.

Use of Certain Terms in Other Sections of This Official Statement. So long as the Certificates are in the Book-Entry-Only System, references in other sections of this Official Statement to registered owners include the person for whom the Participant acquires an interest in the Certificates, but (i) all rights of ownership must be exercised through DTC and the Book-Entry-Only System and (ii) except as described above, notices that are to be given to registered owners will be given only to DTC.

Information concerning DTC and the Book-Entry-Only System has been obtained from DTC and is not guaranteed as to accuracy or completeness by, and is not to be construed as a representation by, the Underwriters, the Authority, the Trustee or the City. Neither the Underwriters, the Authority, the Trustee nor the City give any assurances that DTC Participants or indirect Participants will distribute to the beneficial owners or other nominees of the Certificates (i) distributions of Principal Components and Interest Components represented by the Certificates or (ii) redemption or other notices sent to DTC or Cede & Co., its nominee, as the registered owner of the Certificates, or that they will do so on a timely basis or that DTC, DTC Participants or indirect Participants will serve and act in the manner described in this Official Statement. The current "Rules" applicable to DTC are on file with the Securities and Exchange Commission and the current "Procedures" of DTC to be followed in dealing with DTC Participants are on file with DTC.

SOURCE OF PAYMENT AND SECURITY FOR THE CERTIFICATES

Each series of the Certificates evidences and represents undivided proportionate ownership interests in the Principal Components and Interest Components of Debt Service Contract Payments to be paid by the City under the Contract. Each Certificate with a particular Principal Component Distribution Date represents such interest in the Principal Component of the Debt Service Contract Payments distributable on such date pursuant to one particular supplement to the Contract and Interest Components, if any, of the Debt Service Contract Payments that correspond to the Principal Component stated therein. The Certificates represent the ownership of individual proportionate and undivided interests in the Debt Service Contract Payments payable by the City pursuant to the Contract but do not otherwise constitute obligations of the City. See "THE CONTRACT AND THE PROJECT."

The Contract provides for the City to pay the Debt Service Contract Payments, comprised of the Principal Components and Interest Components, and certain other amounts. See "THE CONTRACT AND THE PROJECT — The Contract." The City's obligation to make Debt Service Contract Payments is not cancelable by the City for any reason. The obligation of the City to pay Debt Service Contract Payments under the Contract is absolute

and unconditional. See "THE CONTRACT AND THE PROJECT." See "DISTRIBUTION SCHEDULE OF DEBT SERVICE CONTRACT PAYMENTS" for a table setting forth the amounts of the Debt Service Contract Payments due on each Principal Component Distribution Date and Interest Component Distribution Date (collectively, the "Component Distribution Dates").

Pursuant to the Assignment Agreement, the Authority will assign to the Grantor (i) all rights of the Authority to receive and collect the Debt Service Contract Payments and (ii) all rights of the Authority to enforce payment and collection of the Debt Service Contract Payments, including any remedies available to the Authority under the Contract. Pursuant to the Certificate Agreement, the Grantor will assign all rights described in the preceding sentence to the Trustee for the benefit of the holders of the Certificates. Pursuant to instructions delivered by the Authority to the City, the Debt Service Contract Payments will be paid directly to Ameritrust Texas, National Association, for deposit into the Certificate Fund to be held for the benefit of the holders of the Certificates by the Trustee in its capacity as Trustee pursuant to the Certificate Agreement. Such monies will be held by the Trustee, subject to the pledge of the Certificate Agreement, until the Contract Distribution Dates on which dates such monies will be paid to the holders of the Certificates as provided in the Certificate Agreement.

Distribution with respect to the Certificates will be made solely from the Debt Service Contract Payments paid by the City and received by the Trustee. Under the Contract, the City is obligated to pay the Debt Service Contract Payments as an operating expense solely from gross revenues of the water system component (the "Water System") of the City's combined water and sewer system. The City is further obligated to pay the operating expenses of the Water System and the principal of and interest on certain bonds issued by the Trinity River Authority from the gross revenues of the Water System from which the Certificates are payable and such obligations are on a parity with the Debt Service Contract Payments. The City may enter into other agreements with the Authority or other entities payable from gross revenues of its Water System and on a parity with Debt Service Contract Payments. See "THE COMBINED WATER AND SEWER SYSTEM."

Payment to the Trustee of the Debt Service Contract Payments when due will be insured by a municipal bond guaranty insurance policy to be issued by AMBAC Indemnity Corporation ("AMBAC Indemnity") simultaneously with the delivery of the Certificates. See "INSURANCE."

The Certificates are not obligations of the Trustee, the Authority or the State of Texas. Holders of the Certificates shall never have the right to demand payment of Certificates out of any funds raised or to be raised by taxation or to have any claim against any property or revenues of the City other than the revenues from which the Debt Service Contract Payments are payable.

DISTRIBUTION SCHEDULE OF DEBT SERVICE CONTRACT PAYMENTS

The following sets forth the distribution schedule of Debt Service Contract Payments required to be made by the City pursuant to the Contract. The schedule combines all the Debt Service Contract Payments payable by the City pursuant to all supplements to the Contract and does not describe such payments on an individual supplement basis.

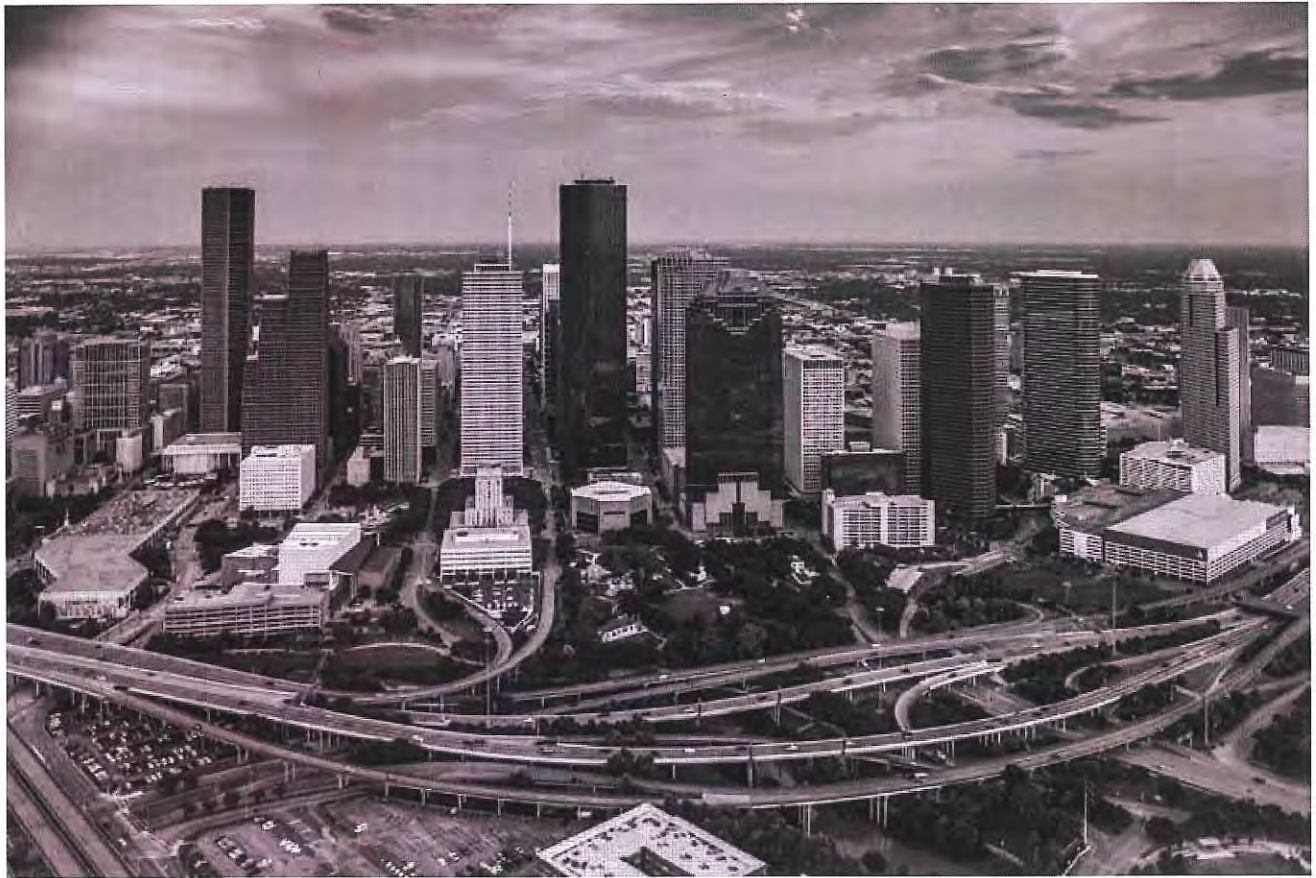
Component Distribution Dates	Debt Service Contract Payments		
	Principal Component	Interest Component ^a	Total Payments
June 15, 1993			
December 15, 1993	\$ 5,060,000.00	\$ 8,133,260.00	\$ 13,193,260.00
June 15, 1994		8,001,010.00	8,001,010.00
December 15, 1994	5,660,000.00	8,001,010.00	13,661,010.00
June 15, 1995		7,841,760.00	7,841,760.00
December 15, 1995	6,160,000.00	7,841,760.00	14,001,760.00
June 15, 1996		7,668,260.00	7,668,260.00
December 15, 1996	6,160,000.00	7,668,260.00	13,828,260.00
June 15, 1997		7,493,760.00	7,493,760.00
December 15, 1997	7,660,000.00	7,493,760.00	15,153,760.00
June 15, 1998		7,286,247.50	7,286,247.50
December 15, 1998	7,660,000.00	7,286,247.50	14,946,247.50
June 15, 1999		7,077,260.00	7,077,260.00
December 15, 1999	8,760,000.00	7,077,260.00	15,837,260.00
June 15, 2000		6,826,722.50	6,826,722.50
December 15, 2000	12,760,000.00	6,826,722.50	19,586,722.50
June 15, 2001		6,508,535.00	6,508,535.00
December 15, 2001	13,735,000.00	6,508,535.00	20,243,535.00
June 15, 2002		6,154,847.50	6,154,847.50
December 15, 2002	14,215,000.00	6,154,847.50	20,369,847.50
June 15, 2003		5,784,910.00	5,784,910.00
December 15, 2003	15,090,000.00	5,784,910.00	20,874,910.00
June 15, 2004		5,379,972.50	5,379,972.50
December 15, 2004	14,970,000.00	5,379,972.50	20,349,972.50
June 15, 2005		4,899,391.25	4,899,391.25
December 15, 2005	16,000,000.00	4,899,391.25	20,899,391.25
June 15, 2006		4,383,953.75	4,383,953.75
December 15, 2006	17,125,000.00	4,383,953.75	21,508,953.75
June 15, 2007		3,830,063.13	3,830,063.13
December 15, 2007	18,160,000.00	3,830,063.13	21,990,063.13
June 15, 2008		3,243,225.63	3,243,225.63
December 15, 2008	16,795,000.00	3,243,225.63	20,038,225.63
June 15, 2009		2,753,378.75	2,753,378.75
December 15, 2009	13,410,000.00	2,753,378.75	16,163,378.75
June 15, 2010		2,341,885.00	2,341,885.00
December 15, 2010	11,780,000.00	2,341,885.00	14,121,885.00
June 15, 2011		1,938,565.00	1,938,565.00
December 15, 2011	11,810,000.00	1,938,565.00	13,748,565.00
June 15, 2012		1,533,875.00	1,533,875.00
December 15, 2012	11,840,000.00	1,533,875.00	13,373,875.00
June 15, 2013		1,157,625.00	1,157,625.00
December 15, 2013	11,805,000.00	1,157,625.00	12,962,625.00
June 15, 2014		781,843.75	781,843.75
December 15, 2014	11,765,000.00	781,843.75	12,546,843.75
June 15, 2015		406,687.50	406,687.50
December 15, 2015	11,810,000.00	406,687.50	12,216,687.50
June 15, 2016		28,875.00	28,875.00
December 15, 2016	<u>770,000.00</u>	<u>28,875.00</u>	<u>798,875.00</u>
TOTAL	\$ 270,960,000.00	\$ 214,778,567.50	\$ 485,738,567.50

^aDoes not include interest related to the Principal Components distributable to the holders of the Series 1993J Capital Appreciation Certificates, which is distributable as part of such Principal Components only at maturity.

APPENDIX A

**CITY OF HOUSTON COMPREHENSIVE ANNUAL FINANCIAL REPORT FOR
THE FISCAL YEAR ENDED JUNE 30, 2014, INCLUDING
SUPPLEMENTARY SCHEDULES FOR THE CITY'S COMBINED UTILITY SYSTEM FUND**

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City of Houston, Texas

Comprehensive Annual Financial Report
For The Fiscal Year Ended June 30, 2014

Ronald C. Green, City Controller



**CITY OF HOUSTON, TEXAS
 COMPREHENSIVE ANNUAL FINANCIAL REPORT
 For the Year Ended June 30, 2014**

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CITY OF HOUSTON, TEXAS
COMPREHENSIVE ANNUAL FINANCIAL REPORT
For the Year Ended June 30, 2014

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For the Year Ended June 30, 2014

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CITY OF HOUSTON, TEXAS





2014 CITY OF HOUSTON
Comprehensive Annual Financial Report

Office of the City Controller

Houston City Controller Ronald C. Green is the second highest elected official in Houston City Government (the "City") and its Chief Financial Officer. The Office of the Houston City Controller superintends the fiscal affairs of the City. This includes conducting audits, managing investments and debt, preparing financial statements and providing leadership on policy issues pertaining to the City's financial health. Controller Green thus serves as an independently elected "financial watchdog" over City government's fiscal affairs.

The Treasury Division is responsible for managing the City's \$3.2 billion investment portfolio in accordance with state law and the City's investment policy. Fitch has awarded the City's general investment its highest portfolio rating, AAA. The Treasury Division is also responsible for overseeing a debt program of approximately \$13 billion. The City has 16 commercial paper programs totaling \$1.750 billion, seven auction-rate security issues, six series of variable rate demand obligation bonds, three SIFMA indexed notes, and two interest rate swaps with a total notional amount of \$902 million and credit agreements totaling \$ 2.65 billion. The City's general obligation debt is rated Aa2 by Moody's; AA+ by Standard and Poor's; and AA by Fitch Ratings. In its most recent general obligation ratings report, Moody's cited the City's large tax base, demographic trends and above average economic outlook as strengths. Standard and Poor's affirmed the City's AA rating on its general obligation debt based on the City's "sizable, deep, and diverse economic base."

The Audit Division adheres to recognized professional auditing standards (Government Auditing Standards and International Standards as issued by the Institute of Internal Auditors). During Fiscal Year 2014, the Audit Division engaged in 18 Audits and Special Projects that produced seven Audit Reports as posted on the Controller's website. The audits and projects performed focused on risk assessment, contract compliance, performance and efficiency, process reviews, ongoing monitoring, consideration of fraud, waste or abuse, and quality assurance. The Audit Division continued its role in performing all detail testing required by the OMB Circular A-133 for Federal and State grants which is a key component of the Single Audit. Together, these efforts resulted in over \$5 million dollars in direct cost-savings realized or identified and approximately \$500,000 in hard dollar recoveries. The Association of Local Government Auditors (ALGA) completed an audit of the Office of the City Controller's Audit Division for the period July 1, 2010, through June 30, 2013, and concluded the Audit Division is in full compliance with Governmental Auditing Standards. ALGA also noted the Audit Division has an internal quality control system suitably designed and operating effectively to provide reasonable assurance of compliance during the review period.

The Operations and Technical Services Division is responsible for funding certification for contracts; accounts payable (AP), vendor payments and cash disbursement; bank accounts and travel advances, monthly reconciliation, review and approval of City-wide personnel action requests (PAR); payroll payments processing; City-wide contract, financial and accounting records retention and imaging retrieval; vendor liaison function; the Controller's Office information technology (IT) operations and related administrations. In the coming year, the division's goals are to develop AP streamline processing via an on-line vendor invoice interfacing feature in SAP-AP module with the related City-wide teams to reduce manual effort; continue to coordinate the City's move to a paperless approval system for invoices and encouraging direct deposit payment by City vendors and employees; replace current out of date document retrieval system with an efficient and sufficient system and a high speed engine for server operation.

The Financial Reporting Division is ultimately responsible for the preparation of both the Monthly Financial and Operations Report (MFOR) and the Comprehensive Annual Financial Report (CAFR), although every division of the City Controller's Office contributes to the CAFR effort. The CAFR is available on the City Controller's website: www.houstoncontroller.org and on a USB drive upon request. The division also produces the annual Trends Report.



2014 CITY OF HOUSTON Comprehensive Annual Financial Report



Ronald C. Green
Houston City Controller

Ronald C. Green was elected Houston's City Controller on December 12, 2009, after serving three terms on Houston City Council, At-Large, Position Four. On City Council he chaired the Budget and Fiscal Affairs Committee, overseeing the City's annual budget of nearly \$4 billion. He was unopposed for his second term as City Controller which began January 2012 and was re-elected for his third and final term in November 2013. As Controller, Mr. Green has the following responsibilities:

- Accurately and timely reporting on the City's financial condition;
- Assessing the City's future financial condition with accurate forecasts of projected revenues and expenses;
- Certifying to City Council that funds are available for all appropriations and commitments of funds and keeping accurate books of account to reflect these commitments;
- Certifying that vendors with City contracts are not delinquent on City taxes;
- Auditing the financial activities of City departments;
- Ensuring that every City dollar is fully and wisely invested at all times; and
- Serving as the financial voice for City government and informing the citizens.

As City Controller, Mr. Green oversees a \$13 billion debt portfolio and over \$3 billion of investments. With rates at historic lows during the past three years, the Controller's Office has sought out several refinancing opportunities that have generated over \$450 million in savings without extending the life of the debt. In addition to management of the City's treasury functions, every payment issued by the City of Houston is processed by the Controller's Office. The Office also prepares several reports to provide financial data and operational statistics regarding the City, including the Monthly Financial and Operations Report, The Comprehensive Annual Financial Report, and an annual Trends Report.

The Controller's Office also includes the Audit Division, which has primarily concentrated on identifying inefficiencies and evaluating the City's outside contracts. Through Audit's efforts during Mr. Green's tenure as Controller, the City has realized \$7 million in savings.

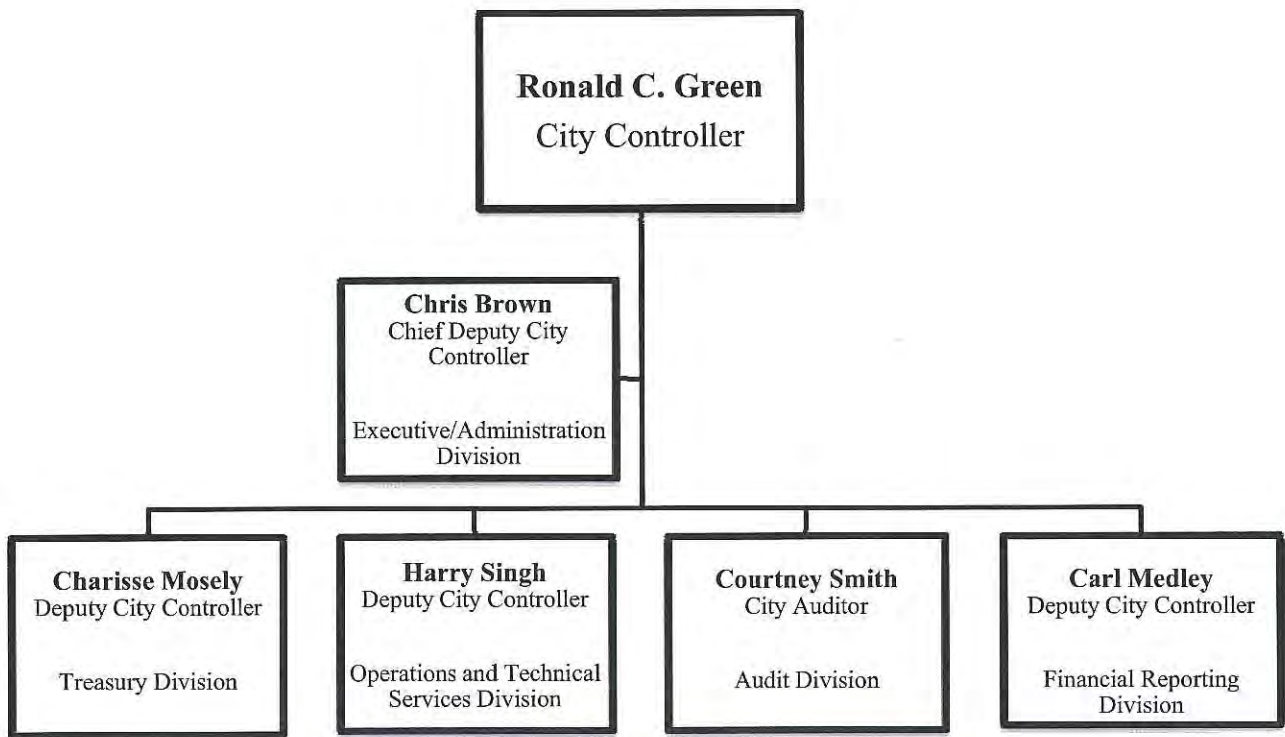
Mr. Green is a native Houstonian. He earned both a Bachelor of Science and a Master of Business Administration from the University of Houston, as well as a law degree from Texas Southern University's Thurgood Marshall School of Law. He is also a licensed real estate broker.

Mr. Green is a founding partner of his own law firm and is a member of the Government Finance Officers Association, National Association of Bond Lawyers, the Houston Lawyers Association, Alpha Phi Alpha Fraternity, Inc., and 100 Black Men of America, Inc. He was elected to the National League of Cities Board of Directors in November 2013 and was appointed to the Governmental Accounting Standards Advisory Council (GASAC) in January 2013. He is married to Judge Hilary Harmon Green, Justice of the Peace, Harris County Precinct Seven, Place 1. They have a son and are active in their community and Windsor Village United Methodist Church.



City of Houston

The Office of the City Controller





2014 CITY OF HOUSTON
Comprehensive Annual Financial Report

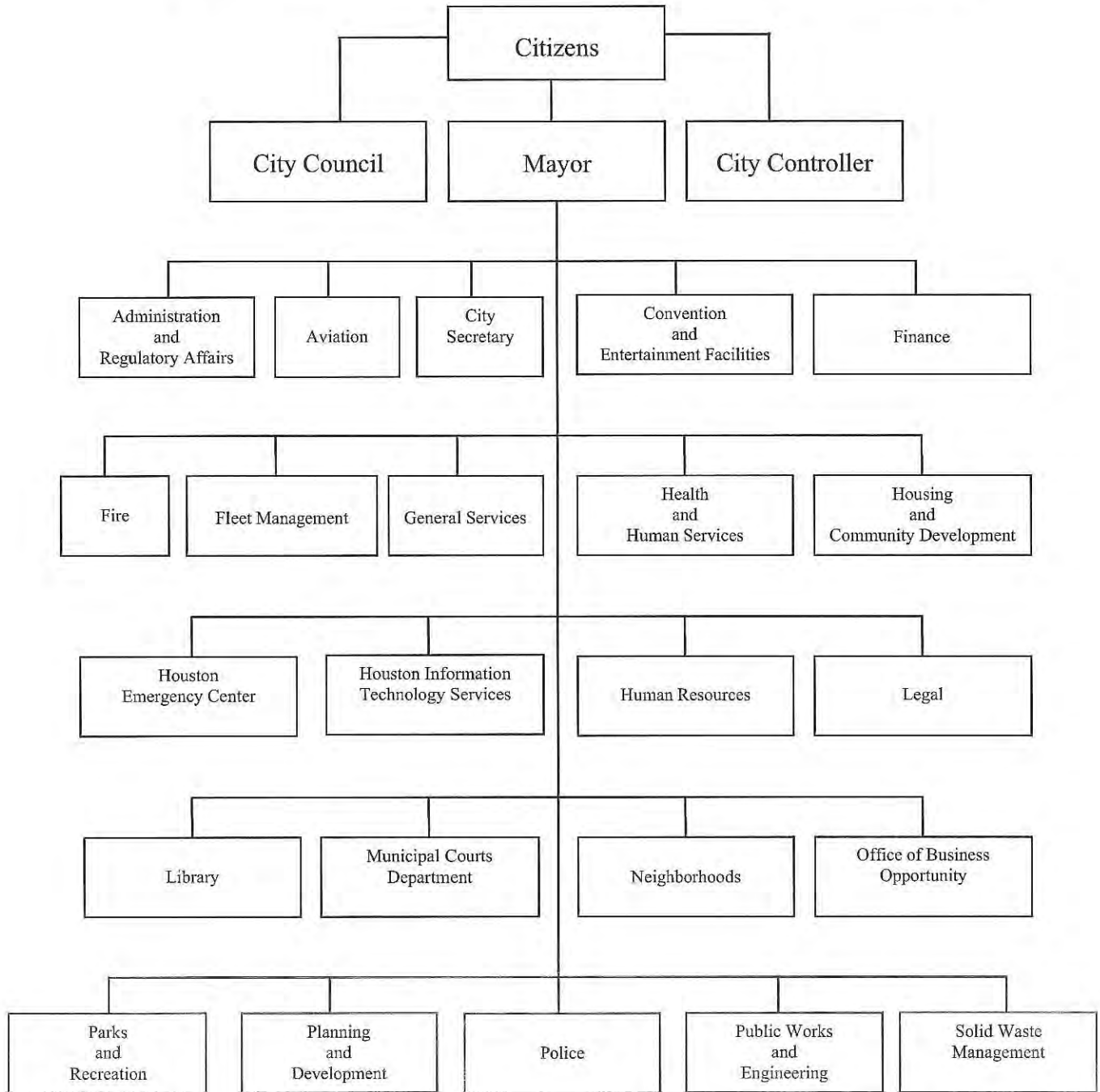
Elected Officials City of Houston, Texas



2014 Houston City Council, Front row, left to right: Mike Laster, District J; David Robinson, At-Large Position 2; Ellen Cohen, District C; Richard Nguyen, District F; Ed Gonzalez, District H; Annise Parker, Mayor; Ronald Green, City Controller; Oliver Pennington, District G; Brenda Stardig, District A; Dave Martin, District E; Michael Kubosh, At-Large Position 3; back row, left to right: Larry Green, District K; Stephen Costello, At-Large, Position 1; Dwight Boykins, District D; Jerry Davis, District B; C.O. Bradford, At-Large, Position 4; Robert Gallegos, District I; Jack Christie, At-Large, Position 5.



Organization Chart City Government



CITY OF HOUSTON, TEXAS



Office of the City Controller
City of Houston, Texas



Ronald C. Green

November 21, 2014

Citizens of Houston, Honorable Mayor and City Council Members:

I am pleased to provide you with the Comprehensive Annual Financial Report (CAFR) of the City of Houston (Texas) (the City) for the year ended June 30, 2014, including the independent auditor's report prepared by McConnell & Jones/Banks, Finley, White & Co. The CAFR was prepared by the City Controller's Office and satisfies my responsibilities under the City Charter and State law. Responsibility for both the accuracy of the presented data and the completeness and fairness of the presentation, including all disclosures, rests with the City. We believe the data, as presented, is accurate in all material respects and is organized in a manner which fairly sets forth the financial position and results of operations of the City as measured by the financial activity of its various funds.

The City's management is responsible for establishing and maintaining a system of internal controls designed to provide reasonable, but not absolute, assurance that the assets of the City are protected from loss, theft or misuse, and for the reliability of financial records for preparing financial statements and maintaining accountability of assets. The concept of reasonable assurance recognizes that the cost of a control should not exceed the benefits likely to be derived and that the evaluation of costs and benefits requires estimates and judgments by management.

The CAFR is presented in three sections. The Introductory Section includes this transmittal letter, a list of elected City officials, and organizational charts for the Office of City Controller and for City government. The Financial Section includes Management's Discussion and Analysis (MD&A), basic financial statements, combining and individual fund statements and schedules, as well as the independent auditor's report on the basic financial statements. The Statistical Section includes selected financial and demographic information generally presented in a multi-year basis.

The Basic Financial Statements of the City include all government activities, organizations and functions, including those legally separate organizations for which the City is financially accountable as defined by the Governmental Accounting Standards Board (GASB).

These financial statements have been prepared in accordance with generally accepted accounting principles for local governments as prescribed by the GASB.

The Reporting Entity and Its Services

The Mayor serves as the Chief Executive Officer of the City. The City Controller is the second-highest elected official within City Government and serves as the City's Chief Financial Officer. The legislative body of the City is the City Council, which consists of the mayor, eleven district members and five at-large members. The Mayor, City Controller and Council Members are limited to three two-year elected terms.

The City provides a full range of municipal government services including police and fire protection, emergency medical services, pretrial detention services, traffic and municipal courts, water production and distribution, solid waste collection, sanitary code enforcement, wastewater treatment, health and human services, building and maintenance, parks and recreation, library, convention and cultural activities, and operation of three municipal airports, George Bush Intercontinental Airport, William P. Hobby Airport and Ellington Airport.

The City does not operate hospitals, schools, transportation systems or higher education systems. Special districts and governmental entities with independent taxing authority are responsible for administering these services.

History and Population

Houston was founded on August 30, 1836, by New York real estate brokers John Kirby Allen and Augustus Chapman Allen. The Allen brothers paid \$9,428 for 6,642 acres of land at the headwaters of Buffalo Bayou. About a year later, General Sam Houston, the first president of the Republic of Texas, authorized Houston to incorporate. For the next four years Houston was the capital of the Republic. In the early years, cotton and the railroad were the key drivers of Houston's economy. That changed in 1901 with the discovery of oil at Spindletop in Beaumont, Texas. Energy is still king but the area's economy is now also supported by other major drivers, including the Port of Houston, the Texas Medical Center and NASA's Johnson Space Center. Houston also has a number of fine colleges and universities.

At the time of the first census in Texas in 1850, Houston had a population of 2,397 and Galveston, a bustling port 45 miles south of Houston, was the state's largest city. Today, Houston is the largest city in Texas and the fourth largest city in the U.S. In this second decade of the new century, a quarter million people from other U.S. cities and towns have relocated to Houston. Houston, with more than 2.1 million people, is a melting pot of ethnicities where no single group comprises a majority. The City is the seat of a burgeoning metropolitan area encompassing six counties with a total population approaching 6 million.

Budgetary Information

In accordance with State law and the City Charter, Houston City Council shall, in collaboration with the mayor and City departments, adopt balanced budgets each year for the General Fund, Debt Service Fund, Special Revenue Funds, Internal Service Funds and Proprietary Funds. Exceptions are the Grant Revenue, Disaster Recovery, Health Special and Housing Special Revenue Funds, for which City Council adopts separate operating or program budgets throughout the year. The City also does not budget capital projects and other capital expenditures related to the General Fund. Instead, City Council authorizes these expenditures through individual appropriation ordinances.

Proprietary Fund budgets, also called Enterprise Funds, exclude depreciation and amortization expenses. These Proprietary Fund budgets include debt service and capital equipment costs, but exclude buildings and improvements, with the exception of Aviation, which budgets its current year expenses for these projects. As with the General Fund capital projects, approval of each Proprietary Fund capital project is accomplished through individual appropriation ordinances. No City expenditures may be made without an appropriation. City Council can legally appropriate only those amounts of money that the City Controller has previously certified are, or will be, in the City treasury.

Although the legal level of budgetary control is at the departmental level within a fund, the City maintains internal budgetary control at the expenditure category (i.e., Personnel Services, Supplies, Other Services and Capital Outlay). Budget control is primarily managed using an automated encumbrance and accounts payable system.

The City is required to undergo an annual Single Audit in conformity with the provisions of the Single Audit Act, the U.S. Office of Management and Budget Circular A-133, "Audits of State and Local Governments and Non-profit Organizations," and the State of Texas Uniform Grant Management Standards. These audits are conducted simultaneously with the City's annual financial statement audit. Information related to these Single Audits, including the schedules of federal and state financial assistance, findings and recommendations, and auditors' reports on the internal control structure and compliance with applicable laws and regulations is included in separate Single Audit reports.

The Local Economy

For Houston, the economic recession of 2009-2011 seems almost a distant memory. Job growth influences all other aspects of the economy. For every job lost in the Houston metro area during the recession, 2.4 jobs have been added. The Houston metro area added 93,000 jobs for the year ending May 15, 2014, and had a total non-farm payroll of 2,883,000 jobs, the highest in the history of the area. Importantly, the average wages for all work groups—professional, skilled and non-skilled—have shown significant increases over the last three years. Most economists expect approximately 70,000 new jobs annually in the next few years. The accepted economic forecast for Houston is that the gross regional product will double by the year 2040.

Houston's population increase during 2013 (137,692) was more than any other metro area in the country, followed by New York, Dallas and Los Angeles. I do want to give some perspective: in regards to the statistics that we cite, it is important to note that the Houston Metropolitan Statistical Area (MSA) includes Harris county and eight surrounding counties; various entities, including the U.S. Department of Labor and the Texas Workforce Commission, use statistics that apply to the MSA. Approximately 60 percent of the area's population resides in Harris County, approximately 4.2 million individuals; half of the county's population resides within the city limits of Houston, approximately 2.1 million people. The computerized Multiple Listing Service of the Houston Association of Realtors includes residential properties and new homes listed by 27,000 realtors throughout Harris, Fort Bend and Montgomery counties, as well as parts of Brazoria, Galveston, Waller and Wharton counties.

Houston's housing market is beginning to reflect the sort of prices you see in other cities, but nowhere near the astronomical prices of New York, San Francisco and parts of Miami, Los Angeles and Chicago. At the end of the City's fiscal year, June 30, 2014, the supply of housing (how long it will take to sell the single-family homes on the market) was 2.6 months; the expected supply of homes in Houston has typically been six months. So, with this shortage, it is definitely a seller's market—hence the rising costs of both homes and apartments.

For the City of Houston, the most significant economic indicators are the property and sales tax revenues. Together, sales and property taxes account for 77 percent of the City's General Fund revenue. Clearly, the positive trends in the real estate market and employment are beneficial for the City.

The table below illustrates the City's two major sources of revenue, property and sales taxes, pre-recession and post-recession (low points are bolded):

	2009	2010	2011	2012	2013	2014	proj. 2015
Property Tax (\$ millions)	890.3	895.7	853.2	866.1	906.7	974.3	1,067.3
Sales Tax (\$ millions)	507.1	468.9	492.8	546.5	600.2	629.6	666.9

The projected 2015 revenue increases from property and sales taxes are 25 percent and 42 percent respectively, compared to the low points in the recession. That's a remarkable turnaround, especially when compared to other American cities where sales and property taxes increased in the single digits.

Recent rankings:

MOST COMPETITIVE METROS IN AMERICA

Forbes – July 2, 2014

BEST CITIES FOR MANUFACTURING

Forbes – June 19, 2014

TOP DESTINATION CITY – FIFTH CONSECUTIVE YEAR

U-Haul International – April 10, 2014

BEST CITIES FOR YOUNG ENTREPRENEURS

CreditDonkey – February 19, 2014

BEST CITIES FOR YOUNG COUPLES

CreditDonkey - January 22, 2014

TOP U.S. MANUFACTURING CITIES

Manufacturers' News – January 2014

TOP BLUE-COLLAR HOT SPOTS

Forbes – January 30, 2014

BEST CITIES FOR JOBS THIS FALL

Forbes – September 10, 2013

TOP GLOBAL UNIVERSITY BUSINESS INCUBATOR – RICE UNIVERSITY

University Business Incubator – June 10, 2013

TOP CITIES FOR GLOBAL TRADE

Global Trade – August 2013

BEST DOMESTIC AIRPORT – IAH

Executive Travel – July/August 2013

OUTSTANDING PORT AWARD FOR CUSTOMER SATISFACTION – PORT OF HOUSTON AUTHORITY

Railway Industrial Clearance Association

– July 15, 2013

LARGEST EXPORT MARKET IN U.S.

U.S. Department of Commerce, International Trade Administration – June 2013

HIGHEST DEMAND FOR ENGINEERING JOBS IN 2013

Monster.com – May 21, 2013

BEST CITY IN AMERICA

Business Insider – May 30, 2013

MOST WALKABLE CITY AMONG LARGE TEXAS CITIES

Walk Score – April 2013

TOP METROS OF 2012

Site Selection Magazine – March 4, 2013

TOP METRO FOR WOMEN-OWNED FIRMS - BY REVENUE

The State of Women-Owned Businesses Report (commissioned by American Express OPEN) – March 2013

FASTEST REAL GDP GROWTH AMONG LARGE MSAS

Bureau of Economic Analysis – February 22, 2013

MOST MULTI-FAMILY CONSTRUCTION - HOUSTON MSA

AXIOMetrics Inc. - January 30, 2013

Financial Policies and Planning

The City has had formal financial and budgetary procedures in place since 1987. They require, among other things, a balanced budget, annual review of all fees and charges, funding of employee pensions and other benefits in a manner that systematically funds liabilities and maintenance of an Unassigned Fund

Balance in its General Fund of a minimum of 5 percent of total expenses less debt service. Any funds in excess of 7.5 percent of total expenses less debt service are available for non-recurring expenses.

A 1983 resolution adopted by City Council requires the Mayor to develop and submit annually to the City Council for approval a continuous five-year Capital Improvement Plan (CIP). Each year, the Mayor must review the CIP, revise it as necessary, and obtain approval and adoption by City Council. The 2014-2018 CIP calls for the appropriation of \$5.54 billion over the five-year period for both enterprise and property tax supported projects. About \$3.07 billion of this total will be paid for with income generated by the self-supporting enterprise funds. The rest will be funded with tax-supported public improvement bonds approved by Houston voters.

The City's financial policies further require that capital projects or equipment purchases funded through the issuance of bonds or other obligations will be financed for a period not to exceed the expected life of the project or equipment. Annual contributions for debt service from the General Fund are limited to 20 percent of total General Fund revenues, excluding state and federal grants. In addition, Texas law mandates that the City's total tax supported indebtedness shall not exceed 10 percent of the total assessed valuation of property in the City. As of September 30, 2014, the City's outstanding debt payable from taxes and other revenue sources totaled \$13.0 billion. This is in compliance with all applicable financial policies and considered manageable.

The City has investments totaling approximately \$3.3 billion. The City adheres to an investment policy that emphasizes, in order of priority, safety, liquidity and return on investment. The success of this deliberate approach is evident in the 'AAA' credit quality rating and "V1" volatility rating assigned to the City's General Investment Portfolio by Fitch Rating Services.

Long-term Financial Forecast and Major Initiatives

The most recent five-year planning scenario available from the City's Finance Department indicates known cost increases continue to put stress on the City budget. The main factors driving increased expenditures are increased costs for employee health insurance benefits, pension responsibilities and operating costs for new facilities. Various strategies are being used to ensure balanced budgets including cost cutting and productivity improvements, a strong commitment to an affordable CIP and strict management of employee health care benefits.

Employee Pension Funds

There continues to be considerable discussion about municipal pensions, here in Houston and in most large cities. I believe a lot of this public discussion has been triggered by other municipalities' insolvencies and the dire circumstances in other cities' pension plans. There is no question that the City of Houston has a significant challenge; in the Controller's Office Monthly Financial and Operating Report, we use the term "unfunded accrued liability" to designate the funded status of each of the pension funds—the word "unfunded" tells the story.

The City has three pension programs that cover all full-time City employees: The Houston Municipal Employees Pension System (HMEPS) for municipal employees, the Houston Police Officers' Pension System (HPOPS) for classified police officers and the Houston Firefighters' Relief and Retirement Fund (HFRRF) for classified firefighters. As you can see in Note 10 in the Notes to Financial Statements in this report, the total unfunded liability for the three plans as of June 30, 2014 was \$3.218 billion, with \$532.7 million attributable to HFRRF, \$939 million attributable to HPOPS and \$1.75 billion attributable to HMEPS.

Another way of illustrating the challenge of meeting our pension obligations is simply to compare a previous year to the current. As you can see in the ratios below, the number of retirees has significantly increased in eight years

	Date	
	7/1/2005	7/1/2013
Houston Municipal Employees (HMEPS)		
Actives	14,364	11,781
Retirees	4,441	9,427
Ratio (active to retiree)	3.2:1	1.2:1
Houston Police Officers (HPOPS)		
Actives	4,921	5,364
Retirees	2,335	3,349
Ratio	2.1:1	1.6:1
Houston Fire Fighters (HFRRF)		
Actives	3,084	3,745
Retirees	1,491	2,906
Ratio	2.1:1	1.3:1

In Fiscal Year 2014, the City's contributions to the pension plans totaled \$296.3 million, an increase of \$36.7 million over the FY2013 contributions of \$259.6. Further escalation of future pension contributions are projected to continue. The projected levels of pension contributions should be worrisome to anyone concerned about the City's financial health in another decade and the City's bond ratings which are so crucial for our ability to borrow in order to proceed with much needed infrastructure improvements.

There is a need to restructure the pension plans. However, the plans are intractable—the City is legally bound to honor these contracts. Any re-negotiated plans would almost certainly apply to only newly hired employees and have little impact on the current and near term City contribution levels. Further, pension negotiations would, out of necessity, require consent with the pension boards through meet and confer agreement and/or approval of the Texas Legislature.

Prior negotiated changes in pension benefits, increased employee contributions and the use of pension obligation bonds have helped somewhat to mitigate the increase in this unfunded liability in recent years. Clearly, the options—service and employee reductions, increasing property tax, restructuring the pension plans—are not easy choices for elected officials. Just as clearly, at some point (hopefully, sooner rather than later) the City's administration and City Council, pension boards and Texas Legislature will need to work together to ensure fair pensions for City employees who have invested years of dedicated service, at a price that is not an unfair burden upon taxpayers.

Retiree benefits

The City also provides certain health care benefits for its retired employees, their spouses and survivors. Beginning with the Fiscal Year 2008 CAFR, the City is required by the Government Accounting Standards Board Statement No. 45 (GASB 45) to report an actuarially determined cost of other post-employment benefits (OPEBs), other than pensions, such as health and life insurance for current and future retirees. The most recent actuarial report indicates \$2.1 billion accrued liability for retiree health benefits. It is the City's

practice to fund the cost of OPEBs on an annual pay-as-you-go basis (FY 2013: \$35.7 million) and account for OPEB costs as a current operating expense in the fiscal year in which the OPEB cost is paid.

Award

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the City of Houston for its comprehensive annual financial report for the fiscal year ended June 30, 2013. This was the 17th consecutive year that the City has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement program's requirements and we are submitting it to the GFOA to determine its eligibility for another certificate.

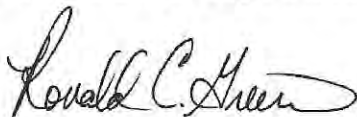
Acknowledgements

The preparation of this report on a timely basis could not have been accomplished without the dedicated services and hard work of a highly qualified staff. The City of Houston has such a staff in the City Controller's Office. Although much time and effort in preparation of this report lies in the Financial Reporting Division, there was support from the other divisions of the Office: Administration, Executive, Operations and Technical Services and Treasury. I would like to express my appreciation to the entire staff of the City Controller's Office, and to the staffs of the Finance and Administration, Aviation, Convention and Entertainment Facilities, and Public Works and Engineering departments who assisted and contributed to the preparation of this report.

The City Controller's Office also received invaluable assistance and support from many others outside its immediate organization. Within the City of Houston, the accounting staffs of the operating departments and the technical staff of the Information Services Division all played key roles in producing this report. McConnell & Jones/Banks, Finley, White & Co was not only our independent auditor, but also served as an invaluable source of information and ideas for improving the way City finances are reported.

Request for Information

This financial report is designed to provide a general overview of the City of Houston's finances for all those with an interest in the government's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Office of the City Controller, Division of Financial Reporting, 901 Bagby Street, 8th Floor, Houston, Texas 77002. The CAFR is accessible on the City's web site and is also available in USB drive format.



Ronald C. Green
City Controller

Sources:
COH FY 2014 Operating Budget
COH 2014-2018 Capital Improvement Plan

Greater Houston Partnership
Houston Association of Realtors
UH Institute for Regional Planning

Center for State and Local Government
Excellence



Government Finance Officers Association

**Certificate of
Achievement
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Presented to

**City of Houston
Texas**

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

June 30, 2013

Executive Director/CEO

To The Honorable Mayor, Members of City Council, and
City Controller of the City of Houston, Texas:

Independent Auditors' Report

Report on the Financial Statements

We have audited the accompanying financial statements of the governmental activities, the business-type activities, each major fund, and the aggregate discretely presented component units and remaining fund information of the City of Houston Texas (the "City"), as of and for the year ended June 30, 2014, and the related notes to the financial statements, which collectively comprise the City's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statement that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We did not audit the financial statements of the Firefighter's Relief and Retirement Pension Trust Fund, the Municipal Employees' Pension Trust Fund, and the Police Officer's Pension Trust Fund, blended component units of the City, which, in the aggregate, represent 100% of the assets and net position of the pension trust funds, within the fiduciary funds. Except for Houston Area Library Automated Network and Lamar Terrace Public Improvement District, we did not audit the financial statements of any governmental discretely presented component units which represent 8.0%, 11.0% and 8.5%, respectively, of the assets, net position, and revenues of the governmental activities or any business-type discretely presented component units which represents 2.5%, 17.3% and 12.2%, respectively, of the assets, net position, and revenues of the business-type activities. Those financials were audited by other auditors whose reports have been furnished to us, and our opinion, insofar as it relates to the amounts included for such pension trust funds, governmental discretely presented component units, and business-type discretely presented component units, is based solely on the reports of other auditors.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, based on our audit and the reports of other auditors, the financial statements referred to above present fairly, in material respects, the respective financial position of the governmental activities, the business-type activities, each major fund, and aggregate discretely presented component units and the aggregate remaining fund information of the City of Houston, Texas, as of June 30, 2014 and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis (pages 3 through 13), Schedule of Budgeted and Actual Revenues and Expenditures of the General Operating Fund (pages 113 through 118), Pension System Supplementary Information (page 119), and Other Post-Employment Benefits Supplementary Information (page 120) be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We and other auditors have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the City of Houston's basic financial statements. The Individual Fund Statements and Schedules, and the Introductory Section and the Statistical Section are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The Individual Fund Statements and Schedules are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statement or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, based on our audit and the procedures performed as described above, the Individual Fund Statements and Schedules are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The Introductory Section and the Statistical Section have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

The image shows two handwritten signatures in black ink. The first signature, on the left, reads "McConnell & Sons LLP". The second signature, on the right, reads "Bunker, Finley, White & Co". Both signatures are written in a cursive, flowing style.

November 21, 2014

City of Houston, Texas
Management's Discussion and Analysis
June 30, 2014
(Unaudited)

As management of the City of Houston, we offer readers of the City of Houston's financial statements this narrative overview and analysis of the financial activities of the City of Houston for the fiscal year ended June 30, 2014. Please read this information in conjunction with the basic financial statements that follow this section. The discussion and analysis includes comparative data for 2013. All amounts, unless otherwise indicated, are expressed in millions of dollars.

Financial Highlights

Some of the City's financial highlights for the fiscal year ending June 30, 2014 include:

- The assets of the City of Houston exceeded its liabilities at the close of the most recent fiscal year by \$3.172 billion.
- The City's total net position increased during the year by \$153 million.
- Unrestricted net position is a deficit of \$2.370 billion.
- The City of Houston's total expenses were \$4.362 billion.
- Program revenues of \$2.301 billion reduced the net cost of the City's functions to be financed from the City's general revenues to \$2.062 billion.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the City of Houston's basic financial statements. The City of Houston's basic financial statements are comprised of three components: (1) government-wide financial statements, (2) fund financial statements, and (3) notes to the financial statements.

Government-wide financial statements. The government-wide financial statements are designed to provide readers with a broad overview of the City of Houston's finances, in a manner similar to a private-sector business.

The statement of net position presents information on all of the City of Houston's assets and liabilities, with the difference between the assets and liabilities reported as net position. Over time, increases and decreases in net position may serve as a useful indicator of whether the financial position of the City of Houston is improving or deteriorating.

The statement of activities presents information showing how the government's net position changed during the most recent fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of related cash flows. Thus, revenues and expenses are reported in this statement for some items that will not result in cash flows until future fiscal periods (e.g., uncollected taxes and earned but unused vacation leave).

Both of the government-wide financial statements distinguish between functions of the City of Houston that are principally supported by taxes and intergovernmental revenues (governmental activities) from other functions that are intended to recover all or a significant portion of their costs through user fees and charges (business-type activities). The governmental activities of the City of Houston include general government, public safety, public works, health, housing and community development, parks and recreation, and library. The business-type activities of the City of Houston include the airport system, combined utility system and convention & entertainment facilities.

The government-wide financial statements include not only the City of Houston itself (known as the primary government), but also legally separate component units for which the City of Houston is financially accountable. With the exception of the three pension systems, financial information for the component units is reported separately from the financial information presented for the primary government itself. The pension systems, although also legally separate, function for all practical purposes as departments of the City of Houston, and therefore have been included as an integral part of the primary government.

Fund financial statements. A fund is a group of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. The City of Houston, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. All of the funds of the City of Houston can be divided into three categories: governmental funds, proprietary funds, and fiduciary funds.

Governmental funds. *Governmental funds* are used to account for essentially the same functions reported as governmental activities in the government-wide financial statements. However, unlike the government-wide statements, fund financial statements focus on near-term inflows and outflows of spendable resources, as well as on balances of spendable resources available at the end of the fiscal year. Such information may be useful in evaluating a government's near-term financing requirements.

Because the focus of governmental funds is narrower than that of the government-wide financial statements, it is useful to compare the information presented for governmental funds with similar information presented for governmental activities in the government-wide financial statements. By doing so, readers may better understand the long-term impact of the government's near-term financing decisions. The governmental fund balance sheet displays a reconciliation to facilitate this comparison between governmental funds. The reconciliation between the governmental fund statement of revenues, expenditures, and changes in fund balances and governmental activities is provided on a separate schedule.

The City of Houston maintains nine individual governmental funds for financial reporting purposes. Information is presented separately in the governmental fund balance sheet and in the governmental fund statement of revenues, expenditures, and changes in fund balances for the general fund, the debt service fund, the capital projects fund and the grants fund, all of which are considered to be major funds. Data from the other funds is combined in the column labeled "Nonmajor Governmental Funds" on both of these statements (see the separate tab labeled "Governmental Funds" for more information on these funds).

Proprietary funds. The City of Houston maintains two different types of proprietary funds: Enterprise funds (see separate tab of same name) and internal service funds (see separate tab of same name). Enterprise funds are used to report the same functions presented as business-type activities in the government-wide financial statements. The City of Houston uses enterprise funds to account for its aviation system, combined utility system and the convention and entertainment facilities. The City of Houston uses internal service funds to account for health and benefits and long-term disability activities. Because both of these services predominantly benefit governmental rather than business-type functions, they have been included within governmental activities in the government-wide financial statements.

Proprietary funds provide the same type of information as the government-wide financial statements, only in more detail. The proprietary fund financial statements provide separate information for the aviation system, combined utility system and convention and entertainment facilities, all of which are considered to be major funds for the City of Houston. Conversely, both internal service funds are combined into a single, aggregated presentation in the proprietary fund financial statements.

Fiduciary funds. Fiduciary funds (see separate tab of same name) are used to account for resources held for the benefit of parties outside the government. Fiduciary funds are not reflected in the government-wide financial statements because the resources of those funds are not available to support the City of Houston's own programs. The accounting used for fiduciary funds is much like that used for proprietary funds.

Notes to the financial statements. The notes (see separate tab of same name) provide additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements.

Other information. In addition to the basic financial statements and accompanying notes, this report also presents certain required supplementary information concerning: General fund – budget vs. actual; the City of Houston's progress in funding its obligation to provide pension benefits to its employees; and other post employment benefits.

Net Position
June 30, 2014
(With comparative totals for 2013)
(in millions)

	Governmental Activities		Business-type Activities		Total	
	2014	2013	2014	2013	2014	2013
Current and other assets	\$ 1,374	\$ 1,211	\$ 2,747	\$ 2,654	\$ 4,121	\$ 3,865
Capital assets	6,881	6,769	9,202	9,134	16,083	15,903
Total assets	8,255	7,980	11,949	11,788	20,204	19,768
Deferred outflows of resources	48	-	331	51	379	51
Long-term liabilities	5,678	5,512	9,900	9,749	15,578	15,261
Other liabilities	833	860	830	574	1,663	1,434
Total liabilities	6,511	6,372	10,730	10,323	17,241	16,695
Deferred inflows of resources	166	-	4	-	170	-
Net position						
Net investment in capital assets	4,103	3,959	241	574	4,344	4,533
Restricted	174	107	1,024	949	1,198	1,056
Unrestricted (deficit)	(2,651)	(2,458)	281	(7)	(2,370)	(2,465)
Total net position	\$ 1,626	\$ 1,608	\$ 1,546	\$ 1,516	\$ 3,172	\$ 3,124

Government-wide Financial Analysis

As noted earlier, net position may serve over time as a useful indicator of a government's financial position. In the case of the City of Houston, on a government-wide basis, assets and deferred outflows exceeded liabilities and deferred inflows by \$3.172 billion at the close of the most recent fiscal year.

By far the largest portion of the City of Houston's net position (136.9%) reflects its investment in capital assets (e.g., land, building, machinery, equipment and infrastructure); less any related debt used to acquire those assets that is still outstanding. The City of Houston uses these capital assets to provide services to citizens; consequently, these assets are not available for future spending. Although the City of Houston's investment in its capital assets is reported net of related debt, it should be noted that the resources needed to repay this debt must be provided from other sources, since the capital assets themselves cannot be used to liquidate these liabilities. An additional portion of the City of Houston's net position (37.8%) represents resources that are subject to external restrictions on how they may be used.

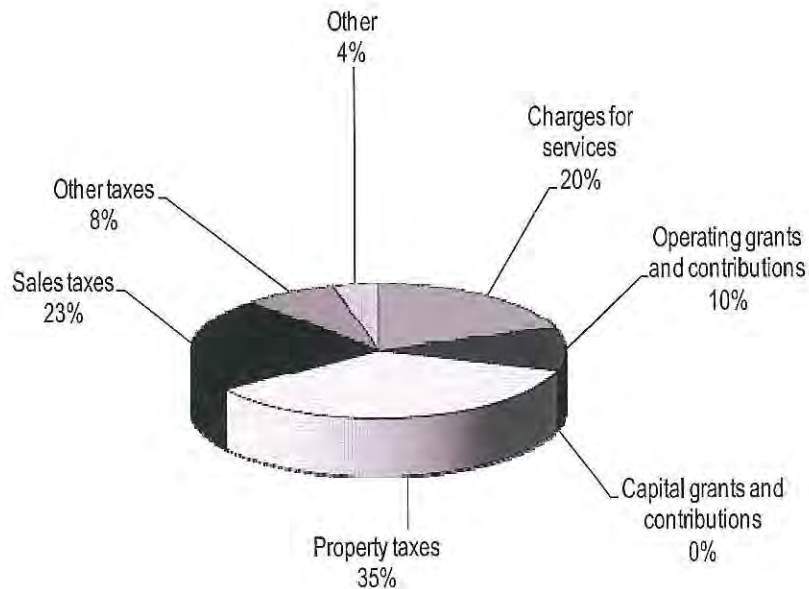
Change in Net Position
For the Fiscal Year Ended June 30, 2014
With comparative totals for 2013
(in millions)

	Governmental Activities		Business-type Activities		Total	
	2014	2013	2014	2013	2014	2013
Program Revenues:						
Charges for services	\$ 545	\$ 441	\$ 1,417	\$ 1,368	\$ 1,962	\$ 1,809
Operating grants and contributions	278	313	11	11	289	324
Capital grants and contributions	-	-	50	19	50	19
General revenues:						
Property taxes	974	907	-	-	974	907
Sales taxes	629	600	-	-	629	600
Other taxes	221	236	90	76	311	312
Other	108	70	175	117	283	187
Total revenues	<u>2,755</u>	<u>2,567</u>	<u>1,743</u>	<u>1,591</u>	<u>4,498</u>	<u>4,158</u>
Expenses:						
General government	247	238	-	-	247	238
Public safety	1,599	1,513	-	-	1,599	1,513
Public works	319	298	-	-	319	298
Health	133	122	-	-	133	122
Housing and community development	51	89	-	-	51	89
Parks and recreation	94	91	-	-	94	91
Library	49	45	-	-	49	45
Interest on Long-term Debt	143	152	-	-	143	152
Depreciation and amortization	133	131	-	-	133	131
Airport System	-	-	561	530	561	530
Convention & Entertainment Facilities	-	-	113	42	113	42
Combined Utility System	-	-	920	899	920	899
Total expenses	<u>2,768</u>	<u>2,679</u>	<u>1,594</u>	<u>1,471</u>	<u>4,362</u>	<u>4,150</u>
Change in net position before contributions, special items and transfers	(13)	(112)	149	120	136	8
Contributions	17	25	-	-	17	25
Special items	-	17	-	(61)	-	(44)
Transfers	42	56	(42)	(56)	-	-
Change in net position	46	(14)	107	3	153	(11)
Net assets, July 1 as previously reported	1,608	1,708	1,516	1,610	3,124	3,318
Cumulative effect of change in accounting principle	(28)	-	(77)	-	-	-
Beginning net position July 1	<u>1,580</u>	<u>1,622</u>	<u>1,439</u>	<u>1,513</u>	<u>3,019</u>	<u>3,135</u>
Net position June 30	<u>\$ 1,626</u>	<u>\$ 1,608</u>	<u>\$ 1,546</u>	<u>\$ 1,516</u>	<u>\$ 3,172</u>	<u>\$ 3,124</u>

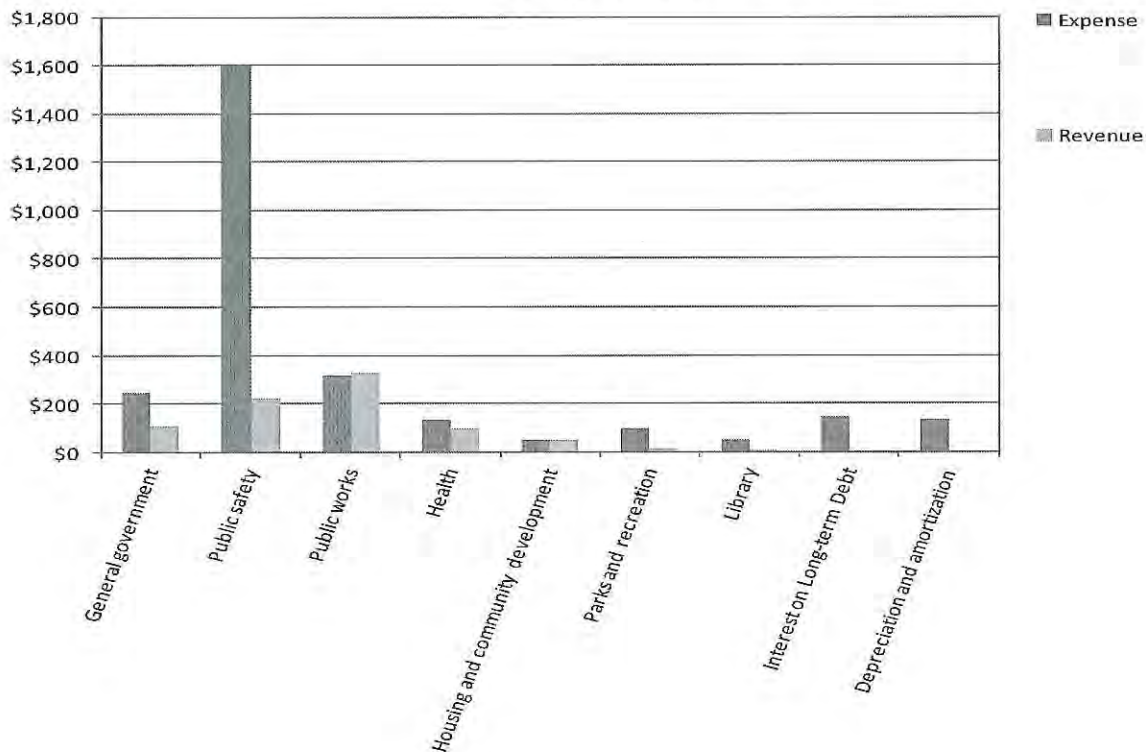
Governmental activities. Governmental activities increased the City of Houston's net position by \$46 million. Key elements of this change are as follows:

- Sales tax revenue has remained strong during fiscal year 2014, providing a 5% increase for the year, from \$600 million to \$629 million.
- The City's property tax rate remained at \$0.63875 per \$100 assessed value. Property tax revenue increased by \$67 million because of the City's rising property values combined with continued effort in the collection of delinquent taxes.
- The largest decrease in expenses was in the area of Housing - \$38 million.
- The largest increase in expenses was in the area of Public Safety - \$86 million.

Revenue by Source - Governmental Activities



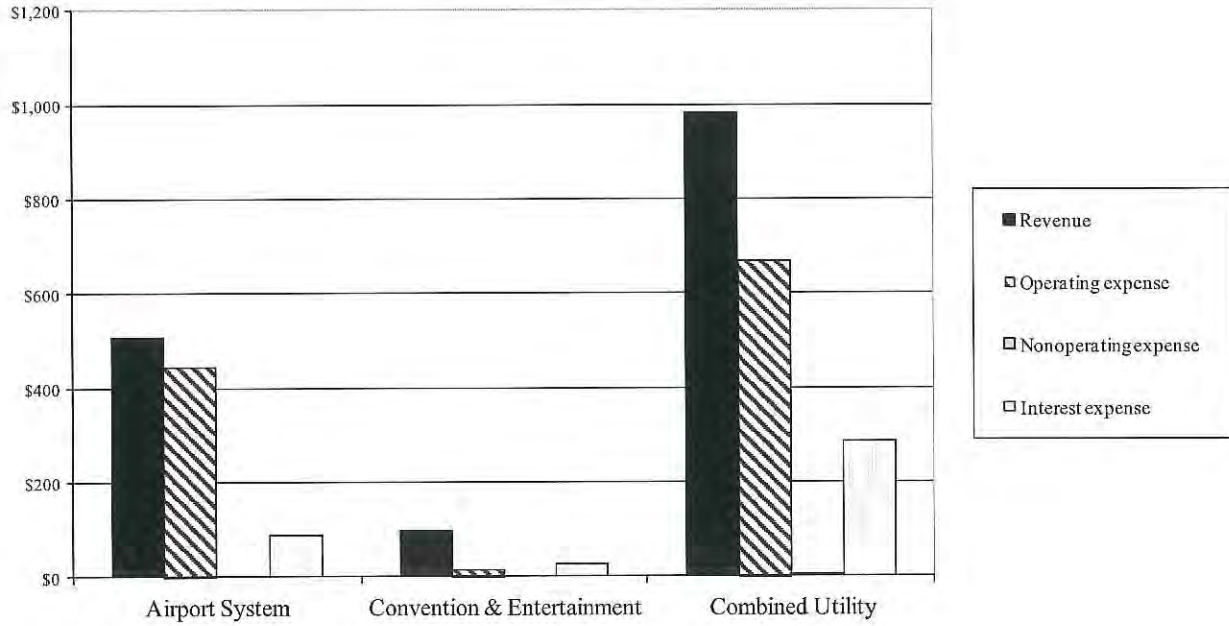
Program Revenue and Expense Governmental



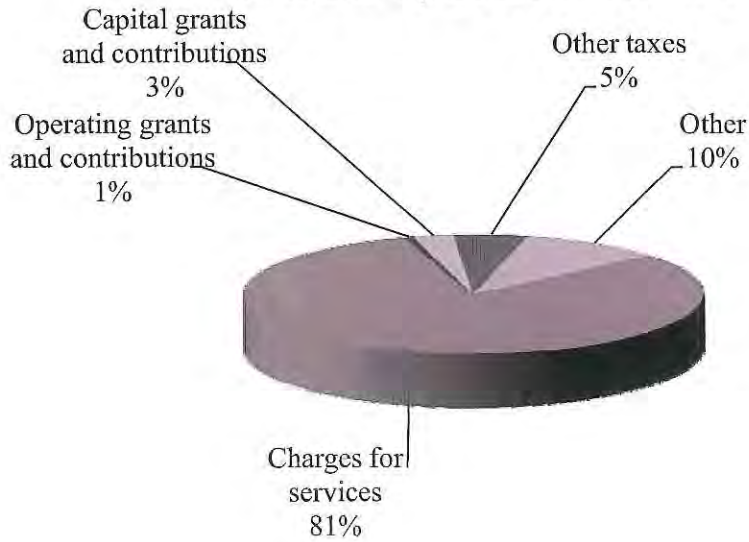
Business-type activities. Business-type activities increased the City of Houston's net position by \$107 million. Key elements of this change are as follows:

- Airport systems operating expenses were up by 3.3%, from \$443 million to \$457 million, for higher personnel costs. Operating revenues for these facilities were up by 4.4%, from \$433 million to \$452 million.
- Convention & Entertainment operating expenses were up 12.7% from \$77.6 million to \$87.4 million. Operating revenues were up by 7.3%, from \$10.4 million to \$11.1 million. Hotel occupancy taxes increased by 18.1%, from \$76.3 million to \$90.1 million, from higher hotel occupancy rates.
- The Combined Utility System operating expenses increased by 1.6% from \$613 million to \$623 million. Operating revenues increased by 3.1% from \$925 million to \$953 million.

Program Revenue & Expense Business-type



Revenue by Source - Business-type



Financial Analysis of the Government's Funds

As noted earlier, the City of Houston uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements.

Governmental funds (see separate tab of same name). The focus of the City of Houston's governmental funds is to provide information on near-term inflows, outflows, and balances of spendable resources. Such information is useful in assessing the City of Houston's financing requirements. In particular, unassigned fund balance may serve as a useful measure of a government's net resources available for spending at the end of the fiscal year.

As of the end of the current fiscal year, the City of Houston's governmental funds reported combined ending fund balances of \$774 million. Approximately 25.9% of this total amount (\$201 million) constitutes unassigned fund balance, which is available for spending at the government's discretion. The remainder of fund balance is set aside to indicate that it is not available for new spending because it has already been assigned for capital expenditures (\$107 million), restricted to pay debt service (\$135 million), or (3) a variety of other restricted purposes (\$331 million).

The general fund is the chief operating fund of the City of Houston. At the end of the current fiscal year, unassigned fund balance of the general fund was \$201 million, while the total fund balance reached \$262 million. As a measure of the general fund's liquidity, it may be useful to compare both unassigned fund balance and total fund balance to total fund expenditures. Unassigned fund balance represents 10.6% of total general fund expenditures, while total fund balance represents 13.8% of that same amount.

Key differences between last year's general fund activity and this year's include:

- \$116.9 million increase in total revenues – rebound in local economy increasing Property Tax and Sales Tax revenues
- \$154.4 million increase in expenditures – additional Capital Outlay and Public Safety costs
- \$12.6 million decrease in proceeds for issuance of debt – hold on projects reduced need for debt
- \$20.3 million increase in transfers to other funds – rebound in economy increased funds

Interest expenditures for the debt service fund decreased by \$4 million. The net decrease in fund balance was \$21.9 million.

The capital projects fund, which is used for the acquisition and/or construction of capital facilities by the City (except those financed by Enterprise Funds), has a fund balance of \$142 million. The net increase in fund balance during the current fiscal year was 112%.

Proprietary funds (see tabs labeled "Enterprise Funds" and "Internal Services Funds"). The City of Houston proprietary funds provide the same type of information found in the government-wide financial statements, but in more detail.

At the end of the year, unrestricted net position was \$0 for the Airport System, \$2 million net position for Convention and Entertainment, and \$279 million for the Combined Utility System. The total increase in net position for the Airport System was \$12 million. The Convention and Entertainment fund experienced a decrease of \$4 million and Combined Utility System fund experienced an increase of \$90 million in net position. Other factors concerning the finances of these funds have already been addressed in the discussion of the City of Houston's business-type activities.

General Fund Budgetary Highlights

Total revenues were above budget by \$62 million. The details of the more significant variances are detailed below:

- \$30.8 million above budget in property taxes
- \$4 million above budget in mixed beverage taxes
- \$1.5 million above budget in industrial assessments

Total expenditures for the General Fund were \$20 million below the final expenditure budget. This was achieved with numerous cost savings. The details of the more significant variances are detailed below:

- \$6.7 million below budget in total general government expenditures
- \$1.7 million below budget in retiree benefits

Capital Asset and Debt Administration

Capital assets (see Note 6). The City of Houston's investment in capital assets for its governmental and business-type activities as of June 30, 2014, amounts to \$16.1 billion (net of accumulated depreciation). This investment in capital assets includes land, buildings and improvements, machinery, equipment, storm drainage, streets and bridges. The City of Houston's net investment in capital assets was relatively stable.

Capital Assets

June 30, 2014

(With comparative totals for 2013)

(net of accumulated depreciation in millions)

	Governmental Activities		Business-type Activities		Total	
	2014	2013	2014	2013	2014	2013
Land and right of way	\$ 2,119	\$ 2,104	\$ 449	\$ 437	\$ 2,568	\$ 2,541
Buildings, improvements and equipment	2,208	2,036	5,661	5,540	7,869	7,576
Construction in progress	387	386	458	352	845	738
Water rights	-	-	462	462	462	462
Runway rights	-	-	3	11	3	11
Garage rights	-	-	13	13	13	13
Infrastructure Assets	6,115	6,011	9,706	9,547	15,821	15,558
Less accumulated depreciation	(3,948)	(3,769)	(7,550)	(7,227)	(11,498)	(10,996)
Total	\$ 6,881	\$ 6,768	\$ 9,202	\$ 9,135	\$ 16,082	\$ 15,903

Major capital asset events during the current fiscal year included the following:

- Business-type activities construction in process balance reflects a \$158 million increase.
- Business-type activities buildings, improvements & equipment reflects a \$195 million increase
- Business-type activities infrastructure assets reflects a \$378 million increase
- Governmental-type activities infrastructure assets reflects a \$272 million increase

More detailed information about the City's capital assets is presented in Note 6 to the financial statements.

Long-term debt (Note 8). At the end of the current fiscal year, the City of Houston had total bonded debt outstanding of \$12.2 billion. The two largest portions of this total are made up of \$3.1 billion comprising debt backed by the full faith and credit of the government and \$9.1 billion comprising various enterprise fund revenue bonds which are payable from future revenues of the various operations of those enterprise funds. The remainder of the City of Houston's debt represents various long-term contracts.

Outstanding Debt
June 30, 2014
 (With comparative totals for 2013)
 (in millions)

	Governmental Activities		Business-type Activities		Total	
	2014	2013	2014	2013	2014	2013
General obligation bonds and commercial paper	\$ 2,884	\$ 2,902	\$ 223	\$ 42	\$ 3,107	\$ 2,944
Pension notes	535	541	66	66	601	607
Inferior lien contract	-	-	23	28	23	28
Revenue bonds	-	-	9,085	8,835	9,085	8,835
Other borrowings	18	18	-	-	18	18
Total	\$ 3,437	\$ 3,461	\$ 9,448	\$ 8,971	\$ 12,885	\$ 12,432

The City's total debt increased by \$453 million or 3.6% during the current fiscal year.

During the current fiscal year, the City issued the following debt:

- \$119 million of general obligation debt to fund capital projects and equipment purchases.
- \$1.5 billion of combined utility system debt to fund system projects.
- \$42 million of convention & entertainment debt to fund capital projects.

Standard & Poor's, Moody's and Fitch's underlying ratings of the City's obligations as of June 30, 2014 are as follows:

	<u>Std & Poor's</u>	<u>Moody's</u>	<u>Fitch's</u>
General Obligation	AA+	Aa2	AA
Water & Sewer System Junior Lien	AA+	Aa1	AA+
Combined Utility System First Lien	AA	Aa2	AA
Houston Airport System-Senior Lien	AA-	Aa3	n/r
Houston Airport System-Subordinate Lien	AA-	A2	A+
Convention & Entertainment - Senior Lien	A-	A2	n/r

State statutes limit the amount of general obligation debt a governmental entity may issue to 10% of its total assessed valuation. The current debt limitation for the City of Houston is \$21.9 billion, which is significantly in excess of the City of Houston's outstanding general obligation debt.

Next Year's Budget and Rates

Highlights of the fiscal year 2015 budget are as follows:

- The property tax rate was reduced to 63.108 cents per \$100 of valuation.
- The public safety budget included funding to primarily provide resources for three police cadet classes, six fire cadet classes, and three paramedic classes.

Request for Information

This financial report is designed to provide a general overview of the City of Houston's finances for all those with an interest in the government's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Office of the City Controller, 901 Bagby, 8th Floor, Houston, Texas 77002.

CITY OF HOUSTON, TEXAS
STATEMENT OF NET POSITION

June 30, 2014
(amounts expressed in thousands)

	Governmental Activities	Business-type Activities	Total	Component Units	
				Governmental	Business-type
Assets					
Equity in pooled cash and investments	\$ 968,703	\$ 1,100,674	\$ 2,069,377	\$ 356,332	\$ 211,856
Receivables, net of allowances					
Accounts receivable	140,575	115,546	256,121	34,049	12,751
Contracts receivable	-	-	-	120	-
Hotel occupancy tax receivable	-	25,078	25,078	-	-
Property taxes receivable	30,110	-	30,110	-	-
Sales taxes receivable	107,872	-	107,872	-	-
Mixed beverage taxes receivable	3,818	-	3,818	-	-
Franchise taxes receivable	18,263	-	18,263	-	-
Special assessments receivable	14,054	93	14,147	-	-
Accrued interest and other	-	-	-	182	52
Due from component units	1,928	5,556	7,484	-	-
Internal balances	(7,545)	7,545	-	-	-
Due from other governments	76,608	14,197	90,805	280	1,479
Inventory	13,989	13,747	27,736	38,250	146
Prepaid items	5,320	25,106	30,426	1,696	2,152
Investments	-	78	78	29,808	12,290
Other receivables	-	-	-	3,650	2,365
Noncurrent investments	-	1,166,343	1,166,343	21,692	-
Due from component units	-	258,091	258,091	-	-
Accrued interest receivable	-	-	-	-	213
Receivables and deposits	-	-	-	-	24,601
Due from other governments	-	4,321	4,321	-	-
Due from affiliates	-	-	-	-	32,820
Amounts held by other government	-	10,861	10,861	-	-
Other assets	-	-	-	-	10,505
Other long-term receivables	-	-	-	-	-
Capital Assets					
Land and right-of-way	2,119,257	440,818	2,560,075	135,072	14,818
Buildings	1,120,672	3,326,713	4,447,385	47,583	400,180
Improvements and equipment	1,088,100	2,334,496	3,422,596	6,894	-
Construction in progress	387,025	457,774	844,799	3,607	-
Runway rights	-	10,782	10,782	-	-
Water rights	-	462,065	462,065	-	-
Garage rights	-	13,144	13,144	-	-
Infrastructure assets	6,114,502	9,705,666	15,820,168	-	-
Less accumulated depreciation and amortization	(3,948,291)	(7,549,638)	(11,497,929)	(11,952)	(117,887)
Total assets	\$ 8,254,960	\$ 11,949,056	\$ 20,204,016	\$ 667,263	\$ 608,341
Deferred outflows of resources					
Unamortized costs on SWAP liability/refunded debt	48,251	330,715	378,966	-	1,581
Total deferred outflows of resources	\$ 48,251	\$ 330,715	\$ 378,966	\$ -	\$ 1,581

(Continued)

* The notes to the basic financial statements are an integral part of this statement *

**CITY OF HOUSTON, TEXAS
STATEMENT OF NET POSITION**

June 30, 2014
(amounts expressed in thousands)

	Governmental Activities	Business-type Activities	Total	Component Units	
				Governmental	Business-type
Liabilities					
Accounts payable and accrued expenditures	\$ 152,078	\$ 124,335	\$ 276,413	\$ 22,144	\$ 25,179
Accrued payroll liabilities	37,031	5,548	42,579	68	1,243
Accrued interest payable	37,446	89,033	126,479	7,248	2,646
Contracts and retainages payable	-	-	-	2,258	2,139
Notes payable	-	-	-	6,174	-
Inferior lien contracts	-	5,315	5,315	-	-
Due to component units	-	38,443	38,443	-	-
Due to other governments	11,913	863	12,776	2,120	-
Advances and deposits	9,920	53,997	63,917	923	-
Other liabilities	2	-	2	3,699	-
Unearned revenue	-	2,287	2,287	438	806
Noncurrent liabilities					
Due within one year					
Contracts payable	-	50,764	50,764	-	4,958
Notes payable	-	-	-	-	7,840
Bonds payable	180,355	218,780	399,135	18,775	-
Claims and judgments	37,881	1,827	39,708	-	-
Compensated absences	138,452	15,353	153,805	3	-
Pension bonds payable	-	1,950	1,950	-	-
Commercial paper	227,350	222,000	449,350	-	-
Other liabilities	659	-	659	-	-
Due in more than one year					
Notes payable	16,783	-	16,783	77,723	277,956
Bonds payable	2,447,082	8,785,958	11,233,040	343,647	-
Claims and judgments	79,239	2,611	81,850	-	-
Compensated absences	314,447	17,035	331,482	-	-
Contracts payable	-	150,280	150,280	1,721	-
Commercial paper	30,000	1,200	31,200	-	-
Arbitrage rebate liability	18	483	501	-	-
Inferior lien contracts	-	17,760	17,760	-	-
Municipal net pension obligation	339,946	137,066	477,012	-	-
Police officers' net pension obligation	668,714	-	668,714	-	-
Firefighter's net pension obligation	51,176	-	51,176	-	-
SWAP liability	-	215,742	215,742	-	-
Unearned revenue	-	335,778	335,778	240	10,976
Other post-employment benefits obligation	1,195,407	170,434	1,365,841	-	-
Pension obligation bonds payable	535,203	65,037	600,240	-	-
Other long-term liabilities	-	-	-	135	9,454
Total liabilities	\$ 6,511,102	\$ 10,729,879	\$ 17,240,981	\$ 487,316	\$ 343,197
Deferred inflows of resources					
Deferred inflows of resources	166,241	3,577	169,818	-	-
Total deferred inflows of resources	\$ 166,241	\$ 3,577	\$ 169,818	\$ -	\$ -
Net position					
Net investment in capital assets	4,102,861	240,888	4,343,749	127,130	4,331
Restricted net position					
Restricted for debt service	97,655	284,135	381,790	53,824	14,997
Restricted for renewal and replacement	-	11,044	11,044	-	-
Restricted for maintenance and operations	-	146,028	146,028	32,815	-
Restricted for capital improvement	66,865	583,341	650,206	99,331	-
Other restricted	9,638	-	9,638	80,015	31,755
Unrestricted (deficit)	(2,651,151)	280,879	(2,370,272)	(213,168)	215,642
Total net position (deficit)	\$ 1,625,868	\$ 1,546,315	\$ 3,172,183	\$ 179,947	\$ 266,725

* The notes to the basic financial statements are an integral part of this statement *

**CITY OF HOUSTON, TEXAS
STATEMENT OF ACTIVITIES**

For the Fiscal Year Ended June 30, 2014
(amounts expressed in thousands)

Functions/Programs	Expenses	Program Revenue		
		Charges for Services	Operating Grants and Contributions	Capital Grants and Contributions
Primary Government				
Governmental activities				
General government	\$ 247,481	\$ 63,338	\$ 42,464	\$ -
Public safety	1,598,854	188,521	35,841	-
Public works	318,888	266,422	63,674	-
Health	133,159	17,710	79,386	-
Housing and community development	51,626	-	49,707	-
Parks and recreation	93,637	7,475	5,680	-
Library	48,724	1,681	948	-
Interest on long-term debt	143,231	-	-	-
Unallocated Depreciation	132,817	-	-	-
Total governmental activities	<u>2,768,417</u>	<u>545,147</u>	<u>277,700</u>	<u>-</u>
Business-type activities				
Airport System	561,443	452,107	-	44,614
Convention & Entertainment facilities	113,316	11,124	-	-
Combined Utility System	919,547	953,408	10,692	5,768
Total business-type activities	<u>1,594,306</u>	<u>1,416,639</u>	<u>10,692</u>	<u>50,382</u>
Total primary government	<u>\$ 4,362,723</u>	<u>\$ 1,961,786</u>	<u>\$ 288,392</u>	<u>\$ 50,382</u>
Component Units				
Governmental	189,307	24,306	69,957	-
Business-type	158,124	210,110	20,742	-
Total component units activities	<u>\$ 347,431</u>	<u>\$ 234,416</u>	<u>\$ 90,699</u>	<u>\$ -</u>

General Revenues:

Taxes
Property taxes levied for general purposes/tax increments
Property taxes levied for debt service
Industrial assessments tax
Sales tax
Franchise tax
Mixed beverage tax
Bingo tax
Hotel occupancy tax
Investment earnings
Other
Contributions
Transfers
Total general revenues and transfers
Change in net position
Net position beginning, as previously reported
Cumulative effect of change in accounting principle (see Note 1K)
Beginning net position, July 1
Net position ending

(Continued)

* The notes to the basic financial statements are an integral part of this statement *

Net (Expense) Revenue and Changes in Net Position					
Primary Government			Component Units		
Governmental Activities	Business-type Activities	Total	Governmental	Business-type	
\$ (141,679)	\$ -	\$ (141,679)	\$ -	\$ -	
(1,374,492)	-	(1,374,492)	-	-	
11,208	-	11,208	-	-	
(36,063)	-	(36,063)	-	-	
(1,919)	-	(1,919)	-	-	
(80,482)	-	(80,482)	-	-	
(46,095)	-	(46,095)	-	-	
(143,231)	-	(143,231)	-	-	
(132,817)	-	(132,817)	-	-	
(1,945,570)	-	(1,945,570)	-	-	
-	(64,722)	(64,722)	-	-	
-	(102,192)	(102,192)	-	-	
-	50,321	50,321	-	-	
-	(116,593)	(116,593)	-	-	
(1,945,570)	(116,593)	(2,062,163)	-	-	
-	-	-	(95,044)	-	
-	-	-	-	72,728	
-	-	-	(95,044)	72,728	
726,820	-	726,820	132,994	750	
247,082	-	247,082	-	-	
16,534	-	16,534	-	-	
629,441	-	629,441	-	-	
190,368	-	190,368	-	-	
13,869	-	13,869	-	-	
187	-	187	-	-	
-	90,119	90,119	-	-	
9,737	31,491	41,228	5,724	4,261	
98,479	143,775	242,254	2,742	(23,791)	
17,364	-	17,364	-	-	
41,968	(41,968)	-	-	-	
1,991,849	223,417	2,215,266	141,460	(18,780)	
46,279	106,824	153,103	46,416	53,948	
1,607,509	1,516,074	3,123,583	152,669	212,740	
(27,920)	(76,583)	(104,503)	(19,138)	37	
1,579,589	1,439,491	3,019,080	133,531	212,777	
\$ 1,625,868	\$ 1,546,315	\$ 3,172,183	\$ 179,947	\$ 266,725	

* The notes to the basic financial statements are an integral part of this statement *

CITY OF HOUSTON, TEXAS
BALANCE SHEET — GOVERNMENTAL FUNDS
June 30, 2014
amounts expressed in thousands

	<u>General</u>	<u>Debt Service</u>	<u>Capital Projects</u>
Assets			
Equity in pooled cash and investments	\$ 248,330	\$ 104,578	\$ 271,206
Receivables, net of allowances			
Accounts receivable	83,862	-	2
Property taxes receivable	30,110	-	-
Sales taxes receivable	107,872	-	-
Mixed beverage taxes receivable	3,818	-	-
Franchise taxes receivable	18,263	-	-
Special assessments receivable	14,054	-	-
Due from component units	-	-	-
Due from other funds	16,772	31,368	16,460
Due from other governments	596	3,549	156
Inventory	11,895	-	-
Prepaid items	2,121	-	3,062
Total assets	<u>\$ 537,693</u>	<u>\$ 139,495</u>	<u>\$ 290,886</u>
Liabilities and fund balance			
Liabilities			
Accounts payable	82,148	1,245	37,889
Accrued payroll liabilities	32,797	-	-
Due to other funds	36,871	-	3,255
Due to other governments	286	-	-
Advances and deposits	6,994	-	31
Claims and judgments	1,800	-	-
Compensated absences	3,680	-	-
Other liabilities	-	-	-
Total liabilities	<u>164,576</u>	<u>1,245</u>	<u>41,175</u>
Deferred inflows of resources			
Deferred inflow of resources	110,843	3,549	107,272
Total deferred inflows of resources	<u>110,843</u>	<u>3,549</u>	<u>107,272</u>
Fund balance			
Non-Spendable			
Imprest cash and prepaids	2,121	-	3,062
Inventory	11,895	-	-
Restricted	44,120	134,701	32,770
Committed	3,407	-	-
Assigned	-	-	106,607
Unassigned	200,731	-	-
Total fund balance	<u>262,274</u>	<u>134,701</u>	<u>142,439</u>
Total liabilities and fund balance	<u>\$ 537,693</u>	<u>\$ 139,495</u>	<u>\$ 290,886</u>

Capital assets used in governmental activities are not financial resources and, therefore, are not reported in the funds.

Assets not available to pay for current-period expenditures are deferred in the funds.

Internal service funds are used by management to charge the cost of health, benefits and workers' compensation to individual funds. The assets and liabilities of the internal service funds are included in the governmental activities in the statement of net position.

Liabilities, including bonds payable, not due and payable in the current period are not reported in the funds.

Net position of governmental activities

(Continued)

* The notes to the basic financial statements are an integral part of this statement *

	Grants	Nonmajor Governmental Funds	Total
\$	23,321	\$ 246,445	\$ 893,880
	28,848	26,464	139,176
	-	-	30,110
	-	-	107,872
	-	-	3,818
	-	-	18,263
	-	-	14,054
	1,928	-	1,928
	1,253	1,610	67,463
	58,805	13,443	76,549
	321	1,773	13,989
	134	-	5,317
\$	114,610	\$ 289,735	\$ 1,372,419

	17,850	11,324	150,456
	1,159	2,982	36,938
	16,909	17,971	75,006
	10,524	1,103	11,913
	180	2,715	9,920
	-	-	1,800
	-	244	3,924
	-	2	2
	<u>46,622</u>	<u>36,341</u>	<u>289,959</u>

	58,216	28,864	308,744
	<u>58,216</u>	<u>28,864</u>	<u>308,744</u>

	134	-	5,317
	321	1,773	13,989
	9,317	150,788	371,696
	-	71,969	75,376
	-	-	106,607
	-	-	200,731
	<u>9,772</u>	<u>224,530</u>	<u>773,716</u>
\$	114,610	\$ 289,735	

6,881,085
145,223

31,631

(6,205,787)

1,625,868

* The notes to the basic financial statements are an integral part of this statement *

CITY OF HOUSTON, TEXAS
STATEMENT OF REVENUES, EXPENDITURES and CHANGES in FUND BALANCES
GOVERNMENTAL FUNDS
For the Fiscal Year Ended June 30, 2014
amounts expressed in thousands

	General	Debt Service	Capital Projects
Revenues			
Taxes and assessments	\$ 1,826,260	\$ -	\$ -
Licenses and permits	36,633	-	-
Charges for services	121,621	-	-
Intergovernmental - grants	21,595	-	56,210
Fines and forfeits	35,177	-	-
Investment income	3,687	1,269	2,195
Other	44,325	5,679	7,796
Total revenues	<u>2,089,298</u>	<u>6,948</u>	<u>66,201</u>
Expenditures			
Current Expenditures			
General government	207,182	-	-
Public safety	1,248,286	-	-
Public works	202,556	-	-
Health	53,005	-	-
Housing and community development	1,015	-	-
Parks and recreation	64,810	-	-
Library	37,861	-	-
Retiree benefits	10,920	-	-
Capital outlay	69,583	-	187,415
Debt Service			
Debt service principal	-	176,205	-
Debt service interest	3,040	151,238	-
Debt service fiscal agent & fees	-	3,766	-
Total expenditures	<u>1,898,258</u>	<u>331,209</u>	<u>187,415</u>
Other financing sources (uses)			
Issuance of debt	55,000	71	63,929
Sale of capital assets	2,364	-	-
Transfers in	72,663	302,856	132,542
Transfers out	(335,123)	-	-
Payment to escrow agent for refunded bonds	-	(519)	-
Total other financing sources (uses)	<u>(205,096)</u>	<u>302,408</u>	<u>196,471</u>
Changes in fund balance	(14,056)	(21,853)	75,257
Fund balances, July 1	276,330	156,554	67,182
Fund balances, June 30	<u>\$ 262,274</u>	<u>\$ 134,701</u>	<u>\$ 142,439</u>

(Continued)

* The notes to the basic financial statements are an integral part of this statement *

Grants	Nonmajor Governmental Funds	Total
\$ -	\$ 379	\$ 1,826,639
-	74,944	111,577
-	146,014	267,635
170,844	85,183	333,832
-	11,470	46,647
31	2,555	9,737
-	40,389	98,189
<u>170,875</u>	<u>360,934</u>	<u>2,694,256</u>
2,842	23,192	233,216
53,154	53,929	1,355,369
10,840	90,950	304,346
56,195	13,246	122,446
48,265	1,972	51,252
5,852	6,895	77,557
560	-	38,421
-	-	10,920
-	32,028	289,026
-	-	176,205
-	49	154,327
-	762	4,528
<u>177,708</u>	<u>223,023</u>	<u>2,817,613</u>
-	-	119,000
-	100	2,464
-	41,123	549,184
(70)	(172,024)	(507,217)
-	-	(519)
<u>(70)</u>	<u>(130,801)</u>	<u>162,912</u>
(6,903)	7,110	39,555
16,675	217,420	734,161
<u>\$ 9,772</u>	<u>\$ 224,530</u>	<u>\$ 773,716</u>

* The notes to the basic financial statements are an integral part of this statement *

CITY OF HOUSTON, TEXAS

**Reconciliation of the Statement of Revenues, Expenditures, and Changes in Fund Balance of Governmental Funds to the Statement of Activities
For the Fiscal Year Ended June 30, 2014
(amounts expressed in thousands)**

Net change in fund balances - total governmental funds	\$	39,555
<p>Amounts reported for governmental activities in the statement of activities are different because:</p>		
<p>Governmental funds report capital outlays as expenditures. However, in the statement of activities the cost of those assets is allocated over their estimated useful lives and reported as depreciation expense. This is the amount by which the depreciation (\$218,580) was less than the increase in capital assets (\$331,090) in the current period.</p>		112,510
<p>Revenue in the statement of activities that do not provide current financial resources are deferred as revenues in the funds.</p>		145,223
<p>Generally, governmental funds report revenue when cash is actually received, or is expected 60 days after the close of the fiscal year. Cash received during the period relates to prior periods.</p>		(84,436)
<p>The issuance of long-term debt provides current financial resources to governmental funds, while the repayment of the principal of long-term debt consumes the current financial resources of governmental funds. Neither transaction, however, has any effect on net position. Also, governmental funds report, as expenditures, the effect of issuance costs, premiums, discounts, and similar items when debt is first issued, whereas these amounts are deferred and amortized in the statement of activities. This amount is the net effect of these differences in the treatment of long-term debt and related items.</p>		71,798
<p>Some expenses reported in the statement of activities do not require the use of current financial resources and therefore are not reported as expenditures in governmental funds. Governmental funds report payments as expenditures in the period of disbursement. The liquidation of long-term liabilities previously accrued should not be reported in the statement of activities.</p>		(260,352)
<p>Internal service funds are used by management to charge the costs of certain activities, such as the cost of health benefits, to individual funds. The net revenue (expense) of the internal service fund is reported with governmental activities.</p>		21,981
Change in net position of governmental activities	\$	46,279

* The notes to the basic financial statements are an integral part of this statement *

CITY OF HOUSTON, TEXAS

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CITY OF HOUSTON, TEXAS
PROPRIETARY FUNDS
Statement of Net Position
June 30, 2014
amounts expressed in thousands

	<u>Business-type Activities - Enterprise Funds</u>		
	<u>Airport System</u>	<u>Convention & Entertainment</u>	<u>Combined Utility</u>
Assets			
Current Assets			
Equity in pooled cash and investments	\$ 304,175	\$ 76,439	\$ 720,060
Receivables, net of allowances			
Accounts receivable	6,937	76	104,728
Hotel occupancy tax receivable	-	25,078	-
Special assessments receivable	-	-	93
Due from component units	-	5,556	-
Due from other funds	1,544	113	12,195
Due from other governments	11,678	1,035	1,484
Inventory	1,489	-	12,258
Prepaid items	3,306	859	3,563
Restricted assets			
Investments	78	-	-
Total current assets	<u>329,207</u>	<u>109,156</u>	<u>854,381</u>
Noncurrent Assets			
Equity in pooled cash	790,722	51,042	317,990
Investments	6,589	-	-
Due from component units	-	258,091	-
Prepaid items	1,705	-	15,673
Due from other governments	-	-	4,321
Amounts held by other governments	-	-	10,861
Total noncurrent restricted assets	<u>799,016</u>	<u>309,133</u>	<u>348,845</u>
Capital assets			
Land	209,967	96,311	134,540
Buildings	2,570,624	557,952	198,137
Improvements and equipment	2,167,938	12,471	154,087
Infrastructure	-	334	9,705,332
Construction in progress	120,187	788	336,799
Runway rights	10,782	-	-
Water rights	-	-	462,065
Garage rights	-	13,144	-
Less accumulated depreciation and amortization	<u>(2,302,394)</u>	<u>(245,654)</u>	<u>(5,001,590)</u>
Net capital assets	<u>2,777,104</u>	<u>435,346</u>	<u>5,989,370</u>
Total noncurrent assets	<u>3,576,120</u>	<u>744,479</u>	<u>6,338,215</u>
Total assets	<u>3,905,327</u>	<u>853,635</u>	<u>7,192,596</u>
Deferred outflows of resources			
Deferred outflows	35,972	-	294,743
Total deferred outflows of resources	<u>\$ 35,972</u>	<u>\$ -</u>	<u>\$ 294,743</u>

* The notes to the basic financial statements are an integral part of this statement *

<u>Business-type Activities-Enterprise</u>	<u>Governmental Activities Internal Service Funds</u>
<u>Total</u>	
\$ 1,100,674	\$ 74,823
111,741	1,457
25,078	-
93	-
5,556	-
13,852	1
14,197	-
13,747	-
7,728	3
78	-
<u>1,292,744</u>	<u>76,284</u>
1,159,754	-
6,589	-
258,091	-
17,378	-
4,321	-
10,861	-
<u>1,456,994</u>	<u>-</u>
440,818	-
3,326,713	514
2,334,496	-
9,705,666	-
457,774	8
10,782	-
462,065	-
13,144	-
<u>(7,549,638)</u>	<u>(342)</u>
<u>9,201,820</u>	<u>180</u>
<u>10,658,814</u>	<u>180</u>
<u>11,951,558</u>	<u>76,464</u>
330,715	-
<u>\$ 330,715</u>	<u>\$ -</u>

* The notes to the basic financial statements are an integral part of this statement *

CITY OF HOUSTON, TEXAS
PROPRIETARY FUNDS
Statement of Net Position
June 30, 2014
amounts expressed in thousands

	Business-type Activities - Enterprise Funds		
	Airport System	Convention & Entertainment	Combined Utility
Liabilities			
Current Liabilities			
Accounts payable	\$ 10,262	\$ 217	\$ 113,856
Accrued payroll liabilities	2,159	43	3,346
Accrued interest payable	47,179	4,323	37,531
Commercial paper	-	42,000	180,000
Contracts payable	36,370	-	14,394
Due to other funds	314	176	5,817
Due to component units	-	38,443	-
Due to other governments	-	-	863
Advances and deposits	1,876	4	52,117
Inferior lien contracts	5,315	-	-
Claims and judgments	1,096	-	731
Compensated absences	5,511	49	9,793
Pension obligation bonds payable	-	65	1,885
Revenue bonds payable	54,965	22,415	141,400
Unearned revenue	2,287	-	-
Total current liabilities	167,334	107,735	561,733
Noncurrent liabilities			
Revenue bonds payable	2,229,504	553,875	6,002,579
Claims and judgments	1,588	-	1,023
Compensated absences	6,535	185	10,315
Contracts payable	32,803	-	117,477
Inferior lien contracts	17,760	-	-
Commercial paper	1,200	-	-
Arbitrage rebate liability	-	180	303
Municipal pension trust liability	51,988	4,938	80,140
Other post employment benefits	60,445	3,866	106,123
SWAP liability	-	-	215,742
Unearned revenue	415	9,253	326,110
Pension obligation bonds payable	2,006	3,759	59,272
Total noncurrent liabilities	2,404,244	576,056	6,919,084
Total liabilities	2,571,578	683,791	7,480,817
Deferred inflows of resources			
Deferred inflows	-	3,577	-
Total deferred inflows of resources	-	3,577	-
Net position (deficit)			
Net investment in capital assets	490,712	96,145	(345,969)
Restricted net position			
Restricted for debt service	237,416	46,719	-
Restricted for renewal and replacement	10,000	1,044	-
Restricted for maintenance and operations	49,736	20,711	71,776
Restricted for capital improvements	581,857	-	1,484
Unrestricted	-	1,648	279,231
Total net position (deficit)	\$ 1,369,721	\$ 166,267	\$ 6,522

Cumulative liability resulting from internal service funds' undercharging proprietary funds
Net position of business-type activities

(Continued)

* The notes to the basic financial statements are an integral part of this statement *

<u>Business-type Activities-Enterprise</u>	<u>Governmental Activities Internal Service Funds</u>
<u>Total</u>	
\$ 124,335	\$ 226
5,548	93
89,033	-
222,000	-
50,764	-
6,307	2
38,443	-
863	-
53,997	-
5,315	-
1,827	22,053
15,353	224
1,950	-
218,780	-
<u>2,287</u>	<u>2,720</u>
<u>836,802</u>	<u>25,318</u>
8,785,958	-
2,611	19,294
17,035	221
150,280	-
17,760	-
1,200	-
483	-
137,066	-
170,434	-
215,742	-
335,778	-
65,037	-
<u>9,899,384</u>	<u>19,515</u>
<u>10,736,186</u>	<u>44,833</u>
3,577	-
<u>3,577</u>	<u>-</u>
240,888	180
284,135	-
11,044	-
142,223	-
583,341	-
280,879	31,451
<u>1,542,510</u>	<u>\$ 31,631</u>
3,805	
<u>\$ 1,546,315</u>	

* The notes to the basic financial statements are an integral part of this statement *

CITY OF HOUSTON, TEXAS
PROPRIETARY FUNDS
Statement of Revenues, Expenses and Changes in Fund Net Position
For the Fiscal Year Ended June 30, 2014
amounts expressed in thousands

	Business-type Activities - Enterprise Funds		
	Airport System	Convention & Entertainment	Combined Utility
Operating Revenues			
Landing area fees	\$ 88,342	\$ -	\$ -
Terminal space rentals	186,505	-	-
Parking	90,173	9,744	-
Concession	82,528	-	-
Other	4,559	-	-
Rental	-	1,380	-
Water/Sewer Billing	-	-	953,408
Health benefit premiums	-	-	-
Total operating revenue	<u>452,107</u>	<u>11,124</u>	<u>953,408</u>
Operating Expenses			
Administrative costs	-	-	-
Claims Costs	-	-	-
Maintenance and operating	285,212	73,190	399,647
Depreciation and amortization	172,218	14,219	223,381
Total operating expenses	<u>457,430</u>	<u>87,409</u>	<u>623,028</u>
Operating income (loss)	<u>(5,323)</u>	<u>(76,285)</u>	<u>330,380</u>
Nonoperating revenue (expenses)			
Investment income	11,166	9,637	10,688
Hotel occupancy tax	-	90,119	-
Other revenue	3,225	292	69,370
Gain (Loss) on disposal of assets	(17,267)	-	(5,397)
Interest on long-term debt	(86,746)	(25,907)	(291,122)
Passenger facility charges	62,602	-	-
Contributions	-	-	10,692
Total nonoperating revenues (expenses)	<u>(27,020)</u>	<u>74,141</u>	<u>(205,769)</u>
Income (loss) before capital contributions and transfers	<u>(32,343)</u>	<u>(2,144)</u>	<u>124,611</u>
Capital contributions	<u>44,614</u>	<u>-</u>	<u>5,768</u>
Transfers in	-	-	70
Transfers out	-	(1,380)	(40,658)
Total transfers	<u>-</u>	<u>(1,380)</u>	<u>(40,588)</u>
Change in net position	12,271	(3,524)	89,791
Liability resulting from internal service fund's undercharging proprietary funds			
Net change			
Total net position (deficit), July 1,	<u>1,357,450</u>	<u>169,791</u>	<u>(83,269)</u>
Total net position (deficit), June 30	<u>\$ 1,369,721</u>	<u>\$ 166,267</u>	<u>\$ 6,522</u>

Cumulative liability resulting from internal service funds' undercharging proprietary funds
Total net position business-type activities

(Continued)

* The notes to the basic financial statement are an integral part of this statement *

<u>Business-type Activities</u> <u>Enterprise Funds</u>		<u>Governmental</u> <u>Activities</u> <u>Internal</u> <u>Service</u> <u>Funds</u>
<u>Total</u>		
\$	88,342	\$ -
	186,505	-
	99,917	-
	82,528	-
	4,559	4,282
	1,380	-
	953,408	-
	-	336,361
	<u>1,416,639</u>	<u>340,643</u>
	-	6,352
	-	312,946
	758,049	-
	409,818	72
	<u>1,167,867</u>	<u>319,370</u>
	<u>248,772</u>	<u>21,273</u>
	31,491	708
	90,119	-
	72,887	-
	(22,664)	-
	(403,775)	-
	62,602	-
	10,692	-
	<u>(158,648)</u>	<u>708</u>
	<u>90,124</u>	<u>21,981</u>
	<u>50,382</u>	<u>-</u>
	70	-
	(42,038)	-
	<u>(41,968)</u>	<u>-</u>
	98,538	21,981
	4,310	-
	102,848	-
	<u>1,443,972</u>	<u>9,650</u>
\$	<u>1,546,820</u>	\$ <u>31,631</u>
	(505)	
\$	<u>1,546,315</u>	

* The notes to the basic financial statement are an integral part of this statement *

CITY OF HOUSTON, TEXAS
PROPRIETARY FUNDS
Statement of Cash Flows
For the Fiscal Year Ended June 30, 2014
amounts expressed in thousands

	Business-type Activities - Enterprise Funds		
	Airport System	Convention & Entertainment	Combined Utility
Cash flows from operating activities			
Receipts from customers	\$ 451,165	\$ 11,129	\$ 966,372
Payments to employees	(97,177)	(489)	(154,079)
Payments to suppliers	(105,221)	(673)	(163,423)
Internal activity-payments (to) from other funds	(49,539)	279	(23,214)
Claims paid	(1,096)	(1)	(1,342)
Due to(from) other governments	-	(74)	-
Other revenues	3,224	-	69,369
Other expenses	-	(73,371)	-
Receipts from component units	-	1,380	-
Net cash provided by operating activities	<u>201,356</u>	<u>(61,820)</u>	<u>693,683</u>
Cash flows from investing activities			
Interest income on investments	11,167	9,637	10,688
Purchase of investments	(7,999)	-	-
Proceeds from sale of investments	8,033	-	-
Net cash used in investing activities	<u>11,201</u>	<u>9,637</u>	<u>10,688</u>
Cash flows from capital and related financing activities			
Retirement of revenue bonds	(55,045)	(26,215)	(148,425)
Refunding of revenue bonds	-	(60)	(1,594)
Retirement of commercial paper	-	-	180,000
Proceeds (uses of cash) from issuance of revenue bonds	-	-	113,455
Proceeds from issuance of commercial paper	1,200	-	-
Passenger facilities charges	62,602	-	-
Deferred bond issuance cost	-	-	(48,598)
Interest expense on debt	(97,530)	(13,805)	(292,396)
Retirement of inferior lien contract	(5,040)	-	-
Proceeds from disposition of assets	-	-	2,123
Contributed capital	41,550	-	2,197
Acquisition of property, plant and equipment	(112,632)	-	(351,509)
Due from other governments	-	-	(40)
Net cash used in capital and related financing activities	<u>(164,895)</u>	<u>(40,080)</u>	<u>(544,787)</u>

(Continued)

* The notes to the basic financial statements are an integral part of this statement *

Business-type Activities Enterprise Funds		Governmental Activities Internal Service Funds	
Total			
\$	1,428,666	\$	334,967
	(251,745)		(4,037)
	(269,317)		(3,476)
	(72,474)		(13,525)
	(2,439)		(303,072)
	(74)		108
	72,593		4,282
	(73,371)		-
	1,380		-
	<u>833,219</u>		<u>15,247</u>
	31,492		708
	(7,999)		-
	8,033		-
	<u>31,526</u>		<u>708</u>
	(229,685)		-
	(1,654)		-
	180,000		-
	113,455		-
	1,200		-
	62,602		-
	(48,598)		-
	(403,731)		-
	(5,040)		-
	2,123		-
	43,747		-
	(464,141)		17
	(40)		-
	<u>(749,762)</u>		<u>17</u>

(Continued)

* The notes to the basic financial statements are an integral part of this statement *

CITY OF HOUSTON, TEXAS
PROPRIETARY FUNDS
Statement of Cash Flows
For the Fiscal Year Ended June 30, 2014
amounts expressed in thousands

	Business-type Activities - Enterprise Funds		
	Airport System	Convention & Entertainment	Combined Utility
Cash flows from noncapital financing activities			
Interest expense on pension obligation bonds	(107)	(10)	(4,705)
Pension bond payable	-	-	(975)
Payments from component unit	-	12,275	-
Hotel occupancy tax revenue	-	86,839	-
Transfers to debt service fund	-	-	(13,094)
Transfers to other funds	-	-	(27,420)
Net cash provided by (used in) noncapital financing activities	<u>(107)</u>	<u>99,104</u>	<u>(46,194)</u>
Net increase (decrease) in cash and cash equivalents	47,555	6,843	113,390
Cash and cash equivalents, July 1	1,047,342	120,638	924,660
Cash and cash equivalents, June 30	<u>\$ 1,094,897</u>	<u>\$ 127,481</u>	<u>\$ 1,038,050</u>
Non cash transactions			
Unrealized gain on investments	-	492	-
Contributions of capital assets	-	-	(5,768)
Capitalize interest expense	5,858	-	13,132
CAB accretion interest	-	-	8,371
Gain (loss) on disposal of assets	(17,267)	-	5,397
Total non cash transactions	<u>\$ (11,409)</u>	<u>\$ 492</u>	<u>\$ 21,132</u>
Reconciliation of operating income (loss) to net cash provided by operating activities			
Operating income (loss)	\$ (5,323)	\$ (76,285)	\$ 330,380
Adjustments to reconcile operating income (loss) to net cash provided by operating activities			
Depreciation and amortization	172,218	14,219	223,381
Impairment of capital asset	7,710	-	-
Other post employment benefits	3,179	210	12,078
Other revenues	3,224	292	69,371
Capital improvement plan expense	8,864	-	-
Changes in assets and liabilities			
Net due from component unit	-	-	-
Accounts receivable	4,025	3	8,447
Arbitrage rebate	-	44	-
Due from other funds	237	103	(1,973)
Due from other governments	-	-	104
Inventory and prepaid insurance	5,075	-	1,268
Accounts payable	175	(122)	34,733
Accrued payroll liabilities	351	(8)	378
Due to other funds	(58)	176	4,084
Due to other governments	-	(74)	-
Advances and deposits	(4,967)	-	4,520
Claims and judgments-workers' compensation	(161)	-	689
Compensated absences	556	(168)	354
Other post employment benefits	-	-	-
Pension obligation payable	6,251	80	5,869
Deferred revenue	-	(290)	-
Net cash provided by operating activities	<u>\$ 201,356</u>	<u>\$ (61,820)</u>	<u>\$ 693,683</u>

(Continued)

* The notes to the basic financial statements are an integral part of this statement *

<u>Business-type Activities Enterprise Funds</u>	<u>Governmental Activities Internal Service Funds</u>
<u>Total</u>	
(4,822)	-
(975)	-
12,275	-
86,839	-
(13,094)	-
(27,420)	-
<u>\$ 52,803</u>	<u>-</u>
167,786	15,972
2,092,640	58,851
<u>\$ 2,260,426</u>	<u>\$ 74,823</u>
492	-
(5,768)	-
18,990	-
8,371	-
(11,870)	-
<u>\$ 10,215</u>	<u>\$ -</u>
\$ 248,772	\$ 21,273
409,818	72
7,710	-
15,467	-
72,887	-
8,864	-
-	-
12,475	(1,394)
44	-
(1,633)	716
104	108
6,343	-
34,786	(1,286)
721	25
4,202	(14,116)
(74)	-
(447)	-
528	9,908
742	57
-	-
12,200	-
(290)	(116)
<u>\$ 833,219</u>	<u>\$ 15,247</u>

* The notes to the basic financial statements are an integral part of this statement *

CITY OF HOUSTON, TEXAS
STATEMENT OF FIDUCIARY NET POSITION
FIDUCIARY FUNDS
June 30, 2014
amounts expressed in thousands

	Pension Trust Funds	Agency Funds
Assets		
Equity in pooled cash and investments	\$ 4,850	\$ 31,804
Investments		
U.S. government and agency securities	83,700	-
Corporate bonds	223,849	-
Other fixed income securities	1,604,236	-
Commingled equity funds	382,672	-
Common and preferred stock	3,421,672	-
Real estate, partnerships and alternatives	3,958,352	-
Short-term investment funds	1,003,585	-
Invested securities lending collateral	319,456	-
Receivables, net of allowances		
Accounts receivable	62,085	190
Contributions	29,684	-
Accrued interest and other	18,638	-
Other	39,958	-
Other Assets	1,025	-
Land	483	-
Building	5,208	-
Total assets	11,159,453	31,994
Liabilities		
Accounts payable	101,252	31,863
Advances and deposits	-	131
Security lending collateral	319,456	-
Foreign funds contracts payable	7,585	-
Other liabilities	6,019	-
Total liabilities	434,312	\$ 31,994
Net position		
Held in trust for pension benefits and other purposes	\$ 10,725,141	

* The notes to the basic financial statements are an integral part of this statement *

CITY OF HOUSTON, TEXAS
STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FIDUCIARY FUNDS
PENSION TRUST FUNDS
For the Year Ended June 30, 2014
amounts expressed in thousands

	2014
Additions	
Contributions:	
City of Houston	\$ 295,984
Plan members	77,586
Total Contributions	373,570
Investment earnings	
Interest and dividends	190,291
Net increase in the fair value of investments	1,441,623
Total investment income	1,631,914
Less investment expense	(40,721)
Net investment income	1,591,193
Total additions	1,964,763
 Deductions	
Benefits	619,948
Refund of contributions	2,904
Administrative expense	18,197
Total deductions	641,049
Change in net position	1,323,714
 Total net position, July 1	9,401,427
Total net position, June 30	\$ 10,725,141

* The notes to the basic financial statements are an integral part of this statement *



CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

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CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014



CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The City of Houston, Texas (City) was incorporated under the laws of the Republic of Texas in 1837 and again under the laws of the State of Texas in 1905. The City operates under a Home Rule Charter with a Mayor-Council form of government and provides the following services as authorized or required by its charter: public safety (police and fire), highways and streets, sanitation, water, airports, health services, culture-recreation, storm drainage, solid waste disposal, planning and inspection, civil defense, public improvements, and general administrative services, including pension and other benefits for its employees.

The financial statements presented in this report conform to the reporting requirements of the Governmental Accounting Standards Board (GASB), which establishes combined statements at the required reporting level for governmental entities that present financial statements in accordance with generally accepted accounting principles.

The significant accounting policies of the City are as follows:

A. Principles Used in Determining the Reporting Entity for Financial Reporting Purposes

The accompanying financial statements include financial statements for related organizations in accordance with generally accepted accounting principles. Organizations are included if they are financially accountable to the City, or the nature and significance of their relationship with the City are such that exclusion would cause the financial statements to be misleading or incomplete. Inclusion is determined on the basis of the City's ability to exercise significant influence. Significant influence or accountability is based primarily on its operational or financial relationship with the City (as distinct from legal relationship).

The City is financially accountable if it appoints a voting majority of an organization's governing body and is able to impose its will on that organization, or there is a potential for the organization to provide specific financial benefits to or impose specific financial burdens on the City. Blended component units (although legally separate entities) are, in substance, part of the City's operations. Blended component units provide services exclusively or almost exclusively for the City. Both governmental and business-type discretely presented component units are reported in separate columns in the government-wide financial statements to emphasize their legal separateness from the City.

B. Basis of Presentation - Financial Reporting Entity

1. Component Units

Most component units of the City issue separately audited financial statements. Component units are reported in the City's Comprehensive Annual Financial Report (CAFR) as shown in the following tables. Additional information is available from the addresses shown.

There are three specific tests for determining whether a particular legally separate entity is a component unit of a primary government's financial reporting entity. Those tests involve 1) appointment of the unit's governing board (accompanied by either the potential imposition of will or ongoing financial benefit/burden), 2) fiscal dependence on the primary government, and 3) the potential that exclusion would result in misleading financial reporting. For this last test, special attention must be paid 1) to certain special financing authorities and 2) to the nature and significance of a legally separate, tax-exempt entity's relationship with the primary government and its component units.

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

Following are the City's blended component units:

Blended Component Units Reported with the Primary Government	Brief Description of Activities, Relationship to the City and Key Inclusion Criteria
<p><i>Houston Firefighters' Relief & Retirement Fund</i> 4225 Interwood North Parkway Houston, TX 77032</p>	<p>Responsible for administration, management, and operation of the pension system solely for active and retired City of Houston firefighters. One member of the Board is either the Mayor or an appointed representative, five members are elected by active firefighters, one member is elected by retired firefighters, two members are citizen representatives, and one member is the City Treasurer. There is a fiscal dependency on the City, and there is the potential that exclusion would result in misleading financial reporting.</p> <p>Reporting Fund: Houston Firefighters' Relief and Retirement Pension Trust Fund.</p>
<p><i>Houston Municipal Employees Pension System</i> 1201 Louisiana, Suite 900 Houston, TX 77002</p>	<p>Responsible for administration, management, and operation of the pension system solely for active and retired municipal (non-classified) employees of the City. One member of the Board is appointed by the Mayor, one member of the Board is appointed by the City Controller, four are elected by active employees, two are elected by retirees, one is appointed by the elected trustees and two are appointed by the governing body of the City. There is a fiscal dependency on the City, and there is the potential that exclusion would result in misleading financial reporting.</p> <p>Reporting Fund: Houston Municipal Employee's Pension Trust Fund.</p>
<p><i>Houston Police Officers' Pension System</i> 602 Sawyer, Suite 300 Houston, TX 77007</p>	<p>Responsible for administration, management, and operation of the pension system solely for active and retired police officers of the City. One member of the Board is appointed by the Mayor, three are elected by employees, two are elected by retirees, and one is the City Treasurer. There is a fiscal dependency on the City, and there is the potential that exclusion would result in misleading financial reporting.</p> <p>Reporting Fund: Houston Police Officer's Pension Trust Fund.</p>

Following are the City's discretely presented business-type component units:

Discretely Reported Component Units	Brief Description of Activities, Relationship to City, and Key Inclusion Criteria
<p><i>Houston First Corporation</i> 1001 Avenida De Las Americas Houston, TX 77010</p>	<p>On June 1, 2011, City of Houston City Council approved the consolidation of the City's Convention & Entertainment Facilities Department ("Department") operations into the Hotel Corporation ("Consolidation"), effective July 1, 2011, in order to bring various entities responsible for generating and spending City hotel occupancy tax (HOT) revenues under one governing body. In connection with the Consolidation, the Hotel Corporation reconstituted and renamed itself as "Houston First Corporation," and Houston First Corporation (HFC) assumed the primary roles and responsibilities of the Department. To accomplish this, the Hotel Corporation amended its bylaws and articles of incorporation to broaden its authority to accomplish its expanded duties and responsibilities. There is a fiscal dependency on the City, as well as a financial burden on the City, and there is the potential that exclusion would result in misleading financial reporting. HFC has a December 31 year end.</p>
<p><i>Houston Housing Finance Corporation</i> 9545 Katy Freeway, Suite 105 Houston, TX 77024</p>	<p>Non-profit corporation incorporated by the City in accordance with the Texas Housing Finance Corporation Act to finance residential mortgage loans to low or moderate-income persons through the sale of revenue bonds collateralized by the mortgage loans. The Board is nominated by the Mayor and confirmed by City Council. The City has financial accountability because it appoints a voting majority of the Board and a financial benefit/burden relationship exists, allowing the City to impose its will.</p>

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

Discretely Reported Component Units	Brief Description of Activities, Relationship to City, and Key Inclusion Criteria
<p><i>Houston Zoo, Inc.</i> <i>1513 Cambridge</i> <i>Houston, TX 77030</i></p>	<p>Houston Zoo, Inc. (HZI) is a 501(c)(3) nonprofit corporation and has a contract with Houston Zoo Development Corp to operate the Zoo. The Mayor may appoint up to 20% of the Board of Directors of HZI. Houston Zoo Development Corporation (HZDC) is a local government corporation that leases the zoo from the City. The lease provides for the City to make payments in support of capital and operating expenses over the lease term, which it makes available to HZI. There is a fiscal dependency on the City, as well as a financial burden on the City, and there is the potential that exclusion would result in misleading financial reporting.</p>

Following are the City's discretely presented governmental fund component units.

Discretely Reported Component Units	Brief Description of Activities, Relationship to City, and Key Inclusion Criteria
<p><i>City Park Redevelopment Authority</i> <i>c/o City of Houston – Mayor's Office</i> <i>of Economic Development</i> <i>901 Bagby, 4th Floor</i> <i>Houston, TX 77002</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the City Park Tax Increment Reinvestment Zone Board in the redevelopment of a neighborhood northwest of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by the City Council and a financial benefit/burden relationship exists, allowing the City to impose its will. In addition, there is a fiscal dependence on the City.</p>
<p><i>East Downtown Redevelopment Authority</i> <i>c/o Bracewell & Giuliani, LLP</i> <i>711 Louisiana Street, Suite 2300</i> <i>Houston, TX 77002</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the East Downtown Tax Increment Zone Board in the redevelopment of a blighted neighborhood east of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and a financial benefit/burden relationship exists, allowing the City to impose its will. In addition, there is a fiscal dependence on the City.</p>
<p><i>Fifth Ward Redevelopment Authority</i> <i>c/o Fifth Ward Community</i> <i>Redevelopment Corporation</i> <i>Zone Administrator</i> <i>P. O. Box 21502</i> <i>Houston, TX 77226-1502</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Fifth Ward Tax Increment Reinvestment Zone Board in the redevelopment of a blighted neighborhood adjacent to Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and a financial benefit/burden relationship exists, allowing the City to impose its will. The City has investment authority for the Zone's assets.</p>
<p><i>Fourth Ward Redevelopment Authority</i> <i>410 Pierce Street, Suite 355</i> <i>Houston, TX 77002</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Fourth Ward Tax Increment Reinvestment Zone Board in the redevelopment of a blighted neighborhood adjacent to Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and a financial benefit/burden relationship exists, allowing the City to impose its will. The City has investment authority for the Zone's assets.</p>
<p><i>Greater Greenspoint Redevelopment Authority</i> <i>16800 Greenspoint Park Drive, 160S</i> <i>Houston, TX 77060</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Greater Greenspoint Tax Increment Reinvestment Zone Board in the redevelopment of the Greenspoint Mall and a blighted adjacent neighborhood in North Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and a financial benefit/burden relationship exists, allowing the City to impose its will.</p>
<p><i>Greater Houston Convention and Visitors Bureau</i> <i>1331 Lamar Street, Suite 700</i> <i>Houston, TX 77010</i></p>	<p>A non-profit organization established in 1963 and funded by both private sector memberships and a portion of the hotel occupancy tax. Their mission is to improve the economy of Greater Houston by attracting conventions, tourists, film projects and international government officials to the area through sales and marketing efforts. The City has financial accountability because it must approve the members of the board of directors and a financial benefit/burden relationship exists, allowing the City to impose its will. In addition, there is a fiscal dependence on the City.</p>

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

Discretely Reported Component Units	Brief Description of Activities, Relationship to City, and Key Inclusion Criteria
<p><i>Gulfgate Redevelopment Authority</i> <i>c/o Bracewell & Giuliani, LLP</i> <i>711 Louisiana Street, Suite 2300</i> <i>Houston, TX 77002</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Gulfgate Tax Increment Reinvestment Zone Board in the redevelopment of the Gulfgate Mall and a blighted adjacent neighborhood southeast of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and a financial benefit/burden relationship exists allowing the City to impose its will.</p>
<p><i>Hardy/Near Northside Redevelopment Authority</i> <i>c/o Bracewell & Giuliani, LLP</i> <i>711 Louisiana Street, Suite 2300</i> <i>Houston, TX 77002</i></p>	<p>A non-profit corporation established by the City of Houston in 2009 in accordance with Chapter 311 of the Texas Tax Code. The City has financial accountability because the voting majority of the board members are nominated by City Council and a financial benefit/burden relationship exists allowing the City to impose its will.</p>
<p><i>Houston Area Library Automated Network</i> <i>Houston Central Library</i> <i>500 McKinney</i> <i>Houston, TX 77002</i></p>	<p>Provides review and guidance to the operation, funding and development of the Houston Area Library Automated Network, which provides library services to Houston and surrounding communities. Three members are appointed by City Council, two by the County, and one elected by the smaller libraries. The City does not appoint a voting majority, but is financially accountable for this organization because HALAN is fiscally dependent on the City for revenues, allowing the City the ability to impose its will.</p>
<p><i>Houston Arts Alliance</i> <i>3201 Allen Parkway, Suite 250</i> <i>Houston, TX 77019</i></p>	<p>A non-profit organization that is the officially designated arts agency of the City. The City does not appoint a voting majority, but is financially accountable because the Alliance is fiscally dependent on the revenues provided from a portion of hotel occupancy tax, which is levied by the City. This fiscal dependency allows the City to impose its will.</p>
<p><i>Houston Downtown Park Corporation</i> <i>1500 McKinney</i> <i>Houston, TX 77010</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to aid and act on behalf of the City to accomplish the City's governmental purpose of providing for the acquisition, development, operation, and maintenance of a new public park, open space and related amenities and facilities to provide recreational, educational and tourism opportunities within, and beautification of the Central Business District of the City. Additionally, the corporation maintains an enterprise fund to account for the activities of the Discovery Green Parking Garage. Board members are appointed by the City and a financial benefit/burden relationship exists, allowing the City to impose its will. There is the potential that exclusion would result in misleading financial reporting.</p>
<p><i>Houston Forensic Science Center, Inc</i> <i>1200 Travis Street, 20th Floor</i> <i>Houston, TX 77002</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to provide forensic science services previously provided by the Houston Police Department. Board members are appointed by the City and a financial benefit/burden relationship exists, allowing the City to impose its will. There is the potential that exclusion would result in misleading financial reporting.</p>
<p><i>Houston MediaSource</i> <i>410 Roberts Street</i> <i>Houston, TX 77003</i></p>	<p>A Non-Profit organization organized to coordinate and develop all public and educational cable access activities within the City of Houston. Funding is provided by Public and Educational and Government Access (PEG) payments made to the city by cable operators under the City's cable franchises with respect to the annual support of the PEG Channels for the support of public, educational, and governmental access programming. Board members are appointed by the City and a financial benefit/burden relationship exists, allowing the City to impose its will. There is the potential that exclusion would result in misleading financial reporting.</p>

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Discretely Reported Component Units	Brief Description of Activities, Relationship to City, and Key Inclusion Criteria
<p><i>The Houston Parks Board, Inc.</i> 300 N. Post Oak Lane Houston, TX 77024</p>	<p>Solicits and manages funds raised privately for park acquisitions and improvements, on behalf of Houston Parks Board LGC., Inc. (see below), which provide a direct benefit to the City. Board members are nominated by the Mayor and confirmed by City Council, allowing the City to impose its will. Upon dissolution, all assets revert to the City. There is a potential that exclusion would result in misleading financial reporting.</p>
<p><i>Houston Parks Board LGC, Inc.</i> 300 N. Post Oak Lane Houston, TX 77024</p>	<p>Solicits and manages funds raised privately for park acquisitions and advises the Mayor and City Council on park acquisitions and improvements, which provide a direct benefit to the City. Board members are nominated by the Mayor and confirmed by City Council, allowing the City to impose its will. Upon dissolution, all assets revert to the City. There is a potential that exclusion would result in misleading financial reporting.</p>
<p><i>Houston Public Library Foundation</i> Houston Central Library P.O. Box 2109 Houston, TX 77252-2109</p>	<p>Solicits and manages funds raised privately for library improvements and advises the Mayor and City Council on additions and improvements to the library system that provide a direct benefit to the City. Board members are nominated by the Mayor and confirmed by City Council, allowing the City to impose its will. There is a potential that exclusion would result in misleading financial reporting.</p>
<p><i>Houston Recovery Center, LGC</i> 150 North Chenevert Street, Suite 100 Houston, TX 77002</p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to provide management of the Houston Center for Sobriety. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial burden to the City, allowing the City to impose its will.</p>
<p><i>Lake Houston Redevelopment Authority</i> c/o City of Houston – Mayor’s Office of Economic Development 901 Bagby, 4th Floor Houston, TX 77002</p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist Tax Increment Reinvestment Zone 10 Board in the redevelopment of the Lake Houston area. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City.</p>
<p><i>Lamar Terrace Public Improvement District</i> City of Houston Box 1562 Houston, TX 77251</p>	<p>Special tax district organized under state statute to redevelop a blighted neighborhood in Southwest Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City, allowing the City to impose its will.</p>
<p><i>Land Assemblage Redevelopment Authority</i> City of Houston P.O. Box 1562 Houston, TX 77251-1562</p>	<p>The Land Assemblage Redevelopment Authority (LARA) is a 13-member board appointed by the Mayor, City Council, Harris County and the Houston Independent School District. The LARA is organized for the purpose of aiding, assisting and acting on behalf of the City in the performance of its governmental functions to promote the common good and general welfare of the City and in undertaking and completing one or more projects, as may be defined or determined by the City Council. The City has financial accountability because the voting majority of the board members are nominated by City Council, allowing the City to impose its will, and the operations provide financial benefits to the City.</p>
<p><i>Leland Woods Redevelopment Authority</i> c/o Bracewell & Giuliani, LLP 711 Louisiana Street, Suite 2300 Houston, TX 77002-2770</p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act and Chapter 394 of the Texas Local Government Code to assist the City and Tax Increment Reinvestment Zone Number 27 in the redevelopment of a blighted neighborhood. The City has financial accountability because the voting majority of the board members are nominated by City Council and a financial benefit/burden relationship exists, allowing the City to impose its will.</p>

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Brief Description of Activities, Relationship to City, and Key Inclusion Criteria

Leland Woods Redevelopment Authority II
c/o Bracewell & Giuliani, LLP
711 Louisiana, Suite 2300
Houston, TX 77002-2770

Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act and Chapter 394 of the Texas Local government Code to assist the City, Leland Woods Redevelopment Authority and Tax Increment Reinvestment Zone Number 22 in the redevelopment of a blighted neighborhood. The City has financial accountability because the voting majority of the board members are nominated by City Council and a financial benefit/burden relationship exists, allowing the City to impose its will.

Main Street Market Square Redevelopment Authority
909 Fannin, Suite 1650
Houston, TX 77010

Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Main St./Market Square Tax Increment Reinvestment Zone Board in the redevelopment of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City.

Memorial City Redevelopment Authority
8955 Katy Freeway, Suite 215
Houston, TX 77024

Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Memorial City Tax Increment Reinvestment Zone Board in the redevelopment of the Memorial City Mall and the Town & Country Mall areas west of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City.

Memorial-Heights Redevelopment Authority
c/o John Kuhl, Attorney
SK Law
1980 Post Oak Boulevard, Suite 1380
Houston, TX 77056

Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Memorial Heights Tax Increment Reinvestment Zone Board in the redevelopment of a blighted neighborhood adjacent to Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City.

Midtown Redevelopment Authority
410 Pierce Street, Suite 355
Houston, TX 77002

Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Midtown Tax Increment Reinvestment Zone Board in the redevelopment of a blighted neighborhood south of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City.

Miller Theatre Advisory Board, Inc.
6000 Hermann Park Drive
Houston, TX 77030-1719

Miller Theatre Advisory Board, Inc. (the Board) is a Texas nonprofit corporation with the primary objective to advance the educational and cultural interests of the people of Houston through a continuing program of artistic, educational, and cultural events at the Miller Outdoor Theatre which is owned by the City. This is accomplished by various artistic and performing groups providing programs at the Theatre supported by grants awarded by the Board. The City has financial accountability because the directors are appointed by the Mayor and approved by City Council, and its primary source of funding is from Hotel Occupancy taxes which the Board receives from the City through the Houston Arts Alliance.

Old Sixth Ward Redevelopment Authority
c/o City of Houston
611 Walker, 10th Floor
Houston, TX 77002

Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Old Sixth Ward Tax Increment Reinvestment Zone Board in the redevelopment of a neighborhood adjacent to Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council, the operations provide financial benefits to the City, and the City has investment authority for the Authority's assets.

OST/Alameda Corridors Redevelopment Authority
5445 Alameda Road, Suite 545
Houston, TX 77004

Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the OST/Alameda Corridors Tax Increment Reinvestment Zone Board in the redevelopment of a blighted neighborhood south of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City.

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<p><i>Saint George Place Redevelopment Authority</i> <i>c/o Hawes Hill Calderon LLP</i> <i>P.O. Box 22167</i> <i>Houston, TX 77227-2167</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the St. George Place Tax Increment Reinvestment Zone Board in the redevelopment of a blighted neighborhood in southwest Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council. The operations provide financial benefits to the City and the City has investment authority for the Authority's assets.</p>
<p><i>South Post Oak Redevelopment Authority</i> <i>c/o City of Houston – Mayor's Office of Economic Development</i> <i>901 Bagby, 4th Floor</i> <i>Houston, TX 77002</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the South Post Oak Tax Increment Reinvestment Zone Board in the development of an affordable housing project in Southwest Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council, and the operations provide financial benefits to the City.</p>
<p><i>Southwest Houston Redevelopment Authority</i> <i>c/o Hawes Hill Calderon LLP</i> <i>P.O. Box 22167</i> <i>Houston, TX 77227-2167</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Southwest Houston Tax Increment Reinvestment Zone Board in the redevelopment of the Sharpstown Mall and adjacent neighborhoods southwest of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City.</p>
<p><i>Upper Kirby Redevelopment Authority</i> <i>3015 Richmond Avenue, Suite 250</i> <i>Houston, TX 77098-3114</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Upper Kirby Tax Increment Reinvestment Zone Board in the redevelopment of a neighborhood west of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City.</p>
<p><i>Uptown Development Authority</i> <i>1980 Post Oak Blvd., Suite 1580</i> <i>Houston, TX 77056</i></p>	<p>Local government corporation created by the City in accordance with Chapter 431 of the Texas Transportation Corporation Act to assist the Uptown Tax Increment Reinvestment Zone Board in the redevelopment of the Galleria Mall area, west of Downtown Houston. The City has financial accountability because the voting majority of the board members are nominated by City Council and the operations provide financial benefits to the City.</p>

2. Related Organizations

The following entities are related organizations to which the City appoints board members but for which the City has no significant financial accountability. Some of these organizations are Access Houston Cable Corporation, Coastal Water Authority, Employees Deferred Compensation Plan, Harris County–Houston Sports Authority, Metropolitan Transit Authority of Harris County, Houston Clean City Commission, and the Miller Theater Advisory Council. All transactions with these related organizations are conducted in the ordinary course of business. Further financial information is available from the respective organizations.

C. Basis of Presentation – Government-wide and Fund Financial Statements

The government-wide financial statements (i.e., the statement of net position and the statement of activities) report information on all of the nonfiduciary activities of the primary government and its component units. The effect of interfund activity has been removed from these statements. *Governmental activities*, which normally are supported by taxes and intergovernmental revenues, are reported separately from *business-type activities*, which rely to a significant extent on fees and charges for support. Likewise, the *primary government* is reported separately from certain legally separate *component units* for which the primary government is financially accountable and is a financial burden/benefit.

The statement of activities demonstrates the degree to which the direct expense of a given function or segment are offset by program revenues. *Direct expenses* are those that are clearly identifiable with a specific function or segment. *Program revenues* include 1) charges to customers or applicants who purchase, use, or directly benefit from goods, services, or privileges provided by a given function or segment and 2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular function or segment. Taxes and other items not included among program revenues are reported instead as *general revenues*.

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Separate financial statements are provided for governmental funds, proprietary funds, and fiduciary funds, even though the latter are excluded from the government-wide financial statements. Major individual governmental funds and major individual enterprise funds are reported as separate columns in the fund financial statements.

The accounts of the City are organized on the basis of funds, each of which is accounted for with a separate set of self-balancing accounts that comprise its assets, deferred outflows, liabilities, deferred inflows, fund balance/net position, revenues, and expenditures/expenses. Government resources are allocated to and accounted for in individual funds for the purpose of carrying on specific activities in accordance with special regulations, restrictions, or limitations. The type and purpose of funds is described below.

Fund Accounting

1. The City reports the following major governmental funds:

- (a) **General Fund** - is the principal operating fund of the City and is used to account for all financial resources except those required to be accounted for in another fund.
- (b) **Debt Service Fund** - is used to account for the accumulation of resources for, and the payment of principal, interest, and related costs of tax supported debt.
- (c) **Capital Projects Fund** - is used to account for financial resources to be used for the acquisition or construction of major capital facilities (other than those financed by proprietary funds and trust funds). Such resources are derived principally from proceeds of public improvement bonds and from special assessments.
- (d) **Grants Fund** - is used to account for grant resources received from various local, state and federal sources. The use of these resources is restricted to a particular function of the City by each grantor.

2. The City reports the following major enterprise funds:

- (a) **Airport System Fund** - is used to account for the operations of the City's Airport System. The system is comprised of George Bush Intercontinental Airport, William P. Hobby Airport, and Ellington Airport.
- (b) **Convention and Entertainment Facilities Fund** - is used to account for the operations of the City's major entertainment facilities, outdoor venues, and parking garages and surface lots. These assets include, but are not limited to, the following: George R. Brown Convention Center, Gus S. Wortham Center, Jesse H. Jones Hall, Houston Center for the Arts, Talento Bilingue de Houston, Jones Plaza, and Theater District parking garages.
- (c) **Combined Utility System Fund** - is used to account for the production and transmission of water and the treatment of wastewater for City residents and businesses as well as for other governmental entities located in the Houston area.

3. The City reports the following additional funds:

- (a) **Nonmajor Special Revenue Funds** - are used to account for the proceeds of specific revenue sources (other than identified major fund) that are legally restricted to expenditures for specific purposes.
- (b) **Internal Service Funds** - are used to account for the financing of goods or services provided by one department to other departments of the City on a cost-reimbursement basis.
- (c) **Fiduciary Fund Types** - are used to account for assets held by the City in a trustee capacity or as an agent for individuals, private organizations, other governmental units and other funds. These include the following:
 - (1) **Pension Trust Funds** - are used to account for the assets held in trust for the members and beneficiaries of the City's three defined benefit pension plans.
 - (2) **Agency Funds** - are custodial in nature and do not involve measurement of results of operations.

D. Measurement Focus and Basis of Accounting

The government-wide financial statements display information about the City as a whole. Government-wide statements exclude both fiduciary funds and fiduciary component units. The statement of net position and the statement of activities are prepared using the economic resources measurement focus and the accrual basis of accounting. Revenues, expenses, gains, losses, assets, and liabilities resulting from exchange and exchange-like transactions are recognized when the exchange takes place, regardless of the timing of related cash flows. Revenues, expenses, gains, losses, assets and liabilities resulting from non-exchange transactions are recognized in accordance with Statement of Government Accounting Standards No. 33, "Accounting and Financial Reporting for Non-exchange

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Transactions". Program revenues include (1) amounts received from those who purchase, use, or directly benefit from a program, (2) amounts received from parties outside the City of Houston's citizenry that are restricted to one or more specific programs and (3) earnings on investments that are legally restricted for a specific program. Program revenue is divided into three categories: (1) charges for services, (2) operating grants and contributions and (3) capital grants and contributions.

Basis of accounting refers to when revenues and expenditures or expenses are recognized in the accounts and reported in the financial statements, regardless of the measurement focus applied. All governmental funds use the modified accrual basis of accounting. Under the modified accrual basis of accounting, revenues are recorded when susceptible to accrual; i.e., both measurable and available. Available means collectible within the current period or soon enough thereafter to pay current liabilities. The City considers receivables collected within sixty days after year-end to be available and recognizes them as revenues of the current period. Expenditures are recognized under the modified accrual basis of accounting in the accounting period in which the fund liability is incurred, if measurable. Claims, judgments and compensated absences are recognized when matured.

The following types of revenues are susceptible to accrual under the modified accrual basis of accounting: property taxes, including delinquent property taxes (including penalty and interest); services billed to other funds; sales tax; mixed beverage tax; franchise fees; fines and forfeits; ambulance receipts; and investment earnings. Intergovernmental revenue from reimbursable grants and capital projects is recognized when the related expenditure is incurred.

All governmental funds and certain component units, are accounted for using the current financial resources measurement focus. This means that only current assets and current liabilities are generally included on their balance sheets. Their reported fund balances (net current assets) are considered a measure of "available spendable resources." Governmental fund operating statements present increases (revenues and other financing sources) and decreases (expenditures and other financing uses) in net current assets. Accordingly, they are said to present a summary of sources and uses of "available spendable resources" during a period.

Non-current portions of certain long-term receivables, primarily property taxes and special assessments, are reported on the balance sheets of governmental funds in spite of their spending measurement focus. Special reporting treatments are used to indicate that they should not be considered "available spendable resources," since they do not represent net current assets. Recognition of governmental fund revenues represented by noncurrent receivables is deferred until they become current receivables and reported as deferred inflow.

Because of their spending measurement focus, expenditure recognition for governmental fund types is limited to exclude amounts represented by non-current liabilities. Since they do not affect net current assets, such long-term amounts are not recognized as governmental fund type expenditures or fund liabilities.

Proprietary funds and pension trust funds of the primary government and certain component units are accounted for on a cost of services or "economic resources" measurement focus. This means that all assets and all liabilities (whether current or noncurrent) associated with their activity are included on their statements of net position.

All proprietary funds define operating revenues and expenses consistent with the precepts of Statement of Government Accounting Standards No. 9 paragraphs 16 – 19 and 31: cash receipts from customers, cash receipts from interfund services provided and used with other funds and other operating cash receipts. All other revenues or expenses recognized are non-operating.

All proprietary and pension trust funds use the full accrual basis of accounting. Their revenues are recognized when they are earned, and their expenses and related liabilities, including claims, judgments, and compensated absences, are recognized when they are incurred.

When restricted and unrestricted resources are available to cover expenses, unrestricted resources are first applied. Administrative overhead charges are included in direct program expenses.

E. Assets and Liabilities

1. Deposits and Investments

Substantially all cash, except for imprest accounts, is deposited with financial institutions in non-interest bearing accounts. The City's deposit account is considered as a non-interest bearing account. Instead of receiving interest on the accounts, the City receives the "Earnings Credit Rate". The majority of the City's cash and investments are administered using a pooled concept, which combines the monies of various funds for investment purposes. Interest earnings of the pool are apportioned to each fund, unless otherwise required by bond covenants, based on the fund's relative share of the investment pool. All cash and investments are displayed on the statement of net position as "Equity in pooled cash and investments" and in accordance with GASB Statement No. 31 "Accounting and Financial Reporting for Certain Investments and for External Investment Pools", are carried at fair value. The blended and discretely presented component units separately invest their funds and report investments pursuant to their respective investment policies described in their separately audited financial statements at their fair values.

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“Equity in pooled cash and investments” is further split into current and non-current in accordance with GASB Statement 62, “Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements”.

Investments authorized by the City’s investment policy, which is guided by state laws and city ordinances, generally include: obligations of the United States of America or its agencies and instrumentalities; fully-collateralized Certificates of Deposit from City Council-approved public depositories; direct obligations of the State of Texas or its agencies and instrumentalities; other obligations, the principal and interest of which are unconditionally guaranteed or insured by, or backed by the full faith and credit of, the State of Texas or the United States or their respective agencies and instrumentalities; obligations of states, agencies, counties, cities, and other political subdivisions; no-load money market mutual funds registered and regulated by the Securities and Exchange Commission; corporate commercial paper; fully collateralized repurchase agreements; and reverse repurchase agreements within specific terms. Investments are carried at fair value based on quoted market prices.

2. Inventories of Materials and Supplies

With the exception of fuel, inventories are carried at the average cost in government-wide, proprietary and governmental funds. Inventories are presented under the consumption method. These inventories include: automobile parts, chemical and medical supplies, uniforms and their accessories, vaccines and office supplies. Fuel is carried at market/replacement cost.

3. Capital Assets

a. Governmental Funds and Governmental Activities - Property, Plant, Equipment, and Infrastructure

Capital Asset valuation is based on historical costs, if purchased or constructed, or estimated historical costs, if original costs are not available.

Capital acquisition and construction are reflected as expenditures in governmental funds and are capitalized in the Governmental Activities column in the government-wide financial statements.

Capital Assets, which include land; building and improvements; improvements other than buildings, machinery and equipment; construction in progress; and infrastructure (e.g. storm drainage, streets and bridges), are reported in the applicable governmental and business-type activities columns in the government-wide financial statements. These capital assets include the estimated historical cost of infrastructure acquired prior to fiscal year 1981. Capital assets are defined by the government as assets with an initial cost of more than \$5,000 (amount not rounded) and an estimated useful life in excess of one year.

Donated capital assets are recorded at estimated fair market value at the date of donation. The cost of normal maintenance and repairs that do not add to the value of the asset or materially extend assets lives are not capitalized.

Major outlays for capital assets and improvements are capitalized as work-in-progress projects as constructed.

Capital Assets are depreciated using the straight-line method over the following estimated useful lives:

Assets	Useful Life
Buildings and improvements	Range from 20 to 45 years
Improvements other than buildings	Range from 15 to 30 years
Machinery	Range from 5 to 30 years
Equipment	Range from 3 to 15 years
Storm drainage	50 years
Streets	Range from 6 to 50 years
Bridges	Range from 20 to 50 years

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b. Enterprise Funds – Property, Plant and Equipment

Property, plant, and equipment owned by the Enterprise Funds are stated at cost or estimated historical cost if original cost is not available. Construction costs (excluding land and equipment) are added to work-in-progress until the assets are substantially complete. At that point, the project is moved to the appropriate asset category and depreciation begins. Land and equipment costs are added to the capital asset base in the year of acquisition. Interest costs on funds borrowed to finance the construction of property, plant and equipment of the enterprise funds are capitalized when the interest costs materially exceed interest earnings on related revenue bond proceeds. For fiscal year 2014, the capitalized interest cost for the Airport System Facilities was \$5.9 million and Combined Utility System Fund was \$13.1 million. Depreciation on equipment begins in the year of acquisition.

Depreciation is computed using the straight-line method on the composite asset base over the estimated useful lives as follows:

Assets	Years
Airport System Facilities	4-45
Convention & Entertainment Facilities	5-45
Combined Utility System Facilities	5-50

Water rights and conveyance system rights of the Combined Utility System Fund are not amortized. Garage rights of the Convention and Entertainment fund are amortized over the life of the related contracts. These rights are reported as capital assets. Land use and avigation easements of the Houston Airport System are not amortized.

4. Bond Premiums, Discounts and Issuance Costs

Bond premiums, discounts and prepaid bond insurance costs in Enterprise Funds are amortized over the term of the bonds using the effective interest or straight-line amortization method. Gains or losses on Enterprise Fund refundings are reported as deferred inflows or outflows and are amortized over the term of the lesser of the new bonds or the refunded bonds using the straight-line or effective interest method. Debt issuance costs are recognized as expenditures/expenses when incurred.

5. Reclassifications

In the fund financials, revenues that have met the eligibility criteria for future years except for the time availability have been reclassified from liabilities to deferred inflows of resources. In the government wide financials, the unamortized loss on refunding has been re-classed from long-term debt to deferred outflows.

F. Fund Balances and Budget Stabilization Arrangements

1. Fund Balance Descriptions

- a. **Non-spendable** - indicates that portion of a fund balance that cannot be spent because they are either:
 - 1) not in spendable form (such as inventories and prepaid amounts) or
 - 2) legally or contractually required to be maintained intact.
- b. **Restricted** - indicates that portion of a fund balance for which external constraints are placed on the use of resources that are either:
 - 1) Externally imposed by creditors (such as through debt covenants), grantors, contributors, or laws or regulations of other governments; or
 - 2) imposed by law through constitutional provisions or enabling legislation.
- c. **Committed** - refers to that portion of a fund balance that can only be used for specific purposes pursuant to constraints imposed by ordinance of the City Council. The same formal action is required to remove the limitation.
- d. **Assigned** - indicates that portion of a fund balance that are intended to be used for specific purposes but do not meet the criteria to be classified as restricted or committed. City Council may assign fund balance through approval of budget appropriations.
- e. **Unassigned** - residual net resources

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2. Fund Balance Summary

A Summary of the nature and purpose of fund balances at June 30, 2014 is as follows (in thousands):

	Governmental Fund Balances										
	General	Debt Service	Capital Projects	Grant	Non-Major Special Revenue Funds					Total Nonmajor	Total
					Public Safety	Public Works	Health & Housing	Parks	Other		
Fund balances:											
Non-spendable:											
Inventory	11,895	-	-	321	-	1,773	-	-	-	1,773	13,989
Prepaid items	2,121	-	3,062	134	-	-	-	-	-	-	5,317
Total non-spendable	14,016	-	3,062	455	-	1,773	-	-	-	1,773	19,306
Restricted for:											
Grants and other purposes	-	-	-	-	-	-	-	-	4,510	4,510	4,510
Police special purpose	709	-	-	-	6,904	-	-	-	-	6,904	7,613
Public transit operations	-	-	-	-	-	-	-	-	2,506	2,506	2,506
Capital construction	-	-	-	-	-	67,766	-	-	-	67,766	67,766
Affordable housing programs	-	-	-	-	-	-	9,079	-	-	9,079	9,079
Health services	607	-	-	9,317	-	-	-	-	50,309	50,309	60,233
Community development	-	-	-	-	-	-	-	344	192	536	536
Capital construction	42,804	-	32,770	-	-	-	-	-	9,178	9,178	84,752
Debt service	-	134,701	-	-	-	-	-	-	-	-	134,701
Total restricted	44,120	134,701	32,770	9,317	6,904	67,766	9,079	344	66,695	150,788	371,696
Committed to:											
Community development	1,277	-	-	-	6	-	-	-	731	737	2,014
Economic development	-	-	-	-	-	-	-	-	2,050	2,050	2,050
Court operations	-	-	-	-	1,770	-	-	-	209	1,979	1,979
Police special purpose	-	-	-	-	10,769	-	-	-	-	10,769	10,769
Emergency services	-	-	-	-	3,809	-	-	-	-	3,809	3,809
Capital construction	2,130	-	-	-	-	-	-	-	-	-	2,130
Public parks and preserves	-	-	-	-	-	1,023	-	-	-	1,023	1,023
Recycling programs	-	-	-	-	-	2,509	-	-	-	2,509	2,509
Development services	-	-	-	-	-	27,237	-	-	-	27,237	27,237
Health services	-	-	-	-	-	-	10,540	-	-	10,540	10,540
Affordable housing programs	-	-	-	-	-	-	-	-	879	879	879
Public parks and preserves	-	-	-	-	-	-	-	8,224	-	8,224	8,224
Public transportation operations	-	-	-	-	-	-	-	-	2,213	2,213	2,213
Total committed	3,407	-	-	-	16,354	30,769	10,540	8,224	6,082	71,969	75,376
Assigned:											
Capital construction	-	-	106,607	-	-	-	-	-	-	-	106,607
Unassigned:	200,731	-	-	-	-	-	-	-	-	-	200,731
Total	262,274	134,701	142,439	9,772	23,258	100,308	19,619	8,568	72,777	224,530	773,716

3. Budget Stabilization Arrangements

In accordance with City Ordinance 2003-474, the City created a Rainy Day Fund in an amount not less than \$20 million with funds available to respond in the event of an emergency; and to provide for unanticipated or unforeseen extraordinary needs. Any use of the Rainy Day fund shall be approved by a vote of two-thirds of the City Council present and voting. The City shall allocate sufficient funds during the subsequent two fiscal years to replenish any use of the Rainy Day funds in the previous year.

In accordance with City Ordinance 1997-776, the excess fund balance in the General Fund shall be maintained at a level sufficient to provide for temporary financing of unforeseen needs of an emergency nature and to permit orderly adjustment to changes resulting from the termination of revenue sources. The level of the unassigned fund balance in the General Fund will be a minimum of 5% of total expenditures less debt service, beginning not later than Fiscal Year 1989. To the extent that funds in the General Fund exceed 7.5% of total expenses less debt service, the excess funds are available upon appropriation for non-recurring expense. These amounts are included in the General Fund's Unassigned Fund balance.

G. Transfers, Revenues, Expenditures and Reserves:

1. Interfund Transactions

A description of the four basic types of interfund transactions and the related accounting policies are as follows:

CITY OF HOUSTON, TEXAS
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- a. Loans are reported as receivables and payables as appropriate.
- b. Charges for services are reported as revenues for the performing fund and expenditures of the requesting fund.
- c. Transactions to reimburse a fund for expenditures made by it for the benefit of another fund are recorded as expenditures or expenses in the reimbursing fund and as a reduction of expenditures or expenses in the fund that is reimbursed.
- d. All other interfund transfers, such as legally authorized transfers from a fund receiving revenue to the fund through which the resources are to be expended, are transfers. Transfers are classified as other financing sources or uses (or transfers for proprietary funds) in the Statement of Revenues, Expenditures (or expenses) and Changes in Fund Balances (or net position). For reporting at the government-wide statements level, the City eliminates direct interfund charges for services and the balances created within the same fund categories (i.e. governmental vs. business-type). This process ensures neither business-type nor governmental funds report direct internal revenue/expenditures. Interfund activity and balances resulting from transactions with the fiduciary funds are not eliminated. Instead the fiduciary interfund activity and balances are treated as transactions with an external party. Interfund activity with discretely presented component units are handled in the same manner as fiduciary interfund activity balances. However, the discretely presented balances are reported on a separate line of the Statement of Net Position. The Internal Service Fund is essentially a clearing account for income, expenses, assets and liabilities of the City's health benefits and long-term disability programs.

2. Compensated Absences

Full-time civilian employees of the City are eligible for 10 days of vacation leave per year. After four years, employees receive 15 days. The amount of vacation time gradually increases after that, reaching a maximum of 25 days per year after 18 years of service. Employees may accumulate up to 105 days of vacation leave (60 days for employees with a computation date after December 31, 1999). However, upon termination or retirement, full-time civilian employees are paid a maximum of 90 days of unused vacation leave (45 days for employees with a computation date after December 31, 1999) which is based on the average rate of pay during the employee's highest 60 days of employment. Part-time and temporary employees are not eligible for vacation or sick leave benefits. Firefighters accrue 15 to 22 days of vacation annually, based upon years of service. Police officers participate in a paid time off program that combines sick and vacation leave. Officers enter the program upon completion of their probationary period and then accrue 15 to 40 days annually, based upon years of service.

The majority of full-time civilian employees and firefighters are covered under the compensatory sick leave plan and receive a leave time allowance of 2.5 hours per payroll period (bi-weekly) up to a maximum of 65 hours per year. Employees who use fewer than 65 hours during the benefit year will receive a match of additional hours equal to the number of hours accrued minus the number of hours used. Once an employee's balance has reached 1,040 hours, no additional match for unused hours is given. Upon termination, all unused sick leave time allowances in excess of 1,040 hours are payable to the employee at the employee's rate of pay at the time of termination. An employee who uses less than 16 hours of sick leave in any benefit year receives up to three days of personal leave in the next year. Personal leave may be used in place of vacation leave, but will not accumulate and will not be paid out at termination. The balance of full time civilian employees and firefighters are covered by a sick plan that was closed to employees in 1985. That plan accumulates a cash value for every sick day not used, which is payable upon resignation or retirement. As noted above, classified police officers are covered by a paid time off plan.

The City also has adopted policies of compensatory time to comply with the Fair Labor Standards Act as amended in 1985. These policies provide limits to the accumulation of compensatory time and also provide that time not used will be paid in cash. Only classified employees and civilian employees in certain pay grades routinely earn compensatory time.

To the extent that the City's obligation is attributable to employees' services already rendered and it is probable that the City will compensate the employees for the benefits through paid time off or some other means, vacation and compensatory time benefits are accrued as liabilities (on a government-wide basis) as employees earn the benefits. On a fund financial statement basis for the governmental funds, only matured liabilities and liabilities expected to be liquidated with current assets are accrued. Sick leave benefits are accrued as a liability as employees earn the benefits, but only to the extent that it is probable that the City will compensate the employees through cash payments conditioned on the employees' termination or retirement. A compensated absence is liquidated in the fund where the employee's salary was paid at termination, with all compensated absences liquidated in the general fund that are associated with employees' salaries paid from governmental funds.

H. Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

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I. Internal Service Funds

The Internal Service Funds' purpose is to measure the full cost of providing health benefits and long-term disability to City employees and dependants for the purpose of fully recovering that cost through fees or charges – employee payroll deductions and expenditures in departmental personnel budgets. Any profit (loss) during a period is credited (charged) back to participating programs. All assets and liabilities are reported in the governmental activities column of the Statement of Net Position.

J. New Accounting Pronouncements

In March 2012, the GASB issued Statement No. 65, "Items Previously Reported as Assets and Liabilities". This statement will improve financial reporting by reclassifying certain items that were previously reported as assets and liabilities as deferred outflows of resources or deferred inflows of resources, or as outflows or inflows of resources. The requirements of this statement are effective for financial statements for periods beginning after December 15, 2012. The City has implemented GASB No. 65 in this annual report.

In March 2012, the GASB issued Statement No. 66, "Technical Corrections-2012". This statement will improve financial reporting by resolving conflicting guidance that resulted from the issuance of two pronouncements, Statements No.54 "Fund Balance Reporting and Governmental Fund Type Definitions", and No. 62, "Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements". The requirements of this statement are effective for financial statements for periods beginning after December 15, 2012. The City has implemented GASB No. 66 in this annual report.

In June 2012, the GASB issued Statement No. 67, "Financial Reporting for Pension Plans". This statement will improve financial reporting of public employee pensions by state and local governments. The requirements of this statement are effective for financial statements for periods beginning after June 15, 2013. The respective pension plans have implemented GASB No. 67 as part of their separate reporting.

In June 2012, the GASB issued Statement No. 68, "Accounting and Financial Reporting for Pensions". This statement will improve financial reporting of public employee pensions by state and local governments. The requirements of this statement are effective for financial statements for periods beginning after June 15, 2014. The City is evaluating the impact, if any, upon its financial position, results of operations or cash flows upon adoption.

In January 2013, the GASB issued Statement No. 69, "Government Combinations and Disposals of Government Operations". This statement establishes accounting and financial reporting standards related to government combinations and disposals of government operations. The requirements of this statement are effective for financial statements for periods beginning after December 15, 2013. The City is evaluating the impact, if any, upon its financial position, results of operations or cash flows upon adoption.

In April 2013, the GASB issued Statement No. 70, "Accounting and Financial Reporting for Nonexchange Financial Guarantees". This statement will improve accounting and financial reporting by state and local governments that extend and receive nonexchange financial guarantees. The requirements of this statement are effective for financial statements for periods beginning after June 15, 2013. The City has implemented GASB No. 70 in this annual report, however, it does not have any current impact on the City.

In November 2013, the GASB issued Statement No. 71, "Pension Transition for Contributions Made Subsequent to the Measurement Date". This statement will eliminate the source of a potential significant understatement of restated beginning net position and expense in the first year of implementation of Statement 68 in the accrual-basis financial statements of employers and nonemployer contributing entities. The requirements of this statement are effective for financial statements for periods beginning after June 15, 2014. The City is evaluating the impact, if any, upon its financial position, results of operations or cash flows upon adoption.

K. Prior Period Restatement

As a result of implementing GASB 65, net position/(deficit) was restated at July 1, 2013. With the adoption of GASB 65, the City is reporting the deferred loss on bond refunding as a deferred outflow. Bond issuance costs (excluding the portion related to bond insurance) are expensed and no longer amortized annually as other assets.

	<u>Governmental Activities</u>	<u>Aviation</u>	<u>Business Type Activities</u> Convention & Entertainment	<u>Combined Utility System</u>
July 1, 2013, as previously reported	\$1,607,509	\$1,371,433	\$171,247	3(26,101)
Adjustment for GASB 65	<u>(27,920)</u>	<u>(13,983)</u>	<u>(1,456)</u>	<u>(57,168)</u>
July 1, 2013, as restated	<u>\$1,579,589</u>	<u>\$1,357,450</u>	<u>\$169,791</u>	<u>3(83,269)</u>

CITY OF HOUSTON, TEXAS
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June 30, 2014

NOTE 2: RECONCILIATION OF GOVERNMENT-WIDE AND FUND FINANCIAL STATEMENTS

A. Explanation of Certain Differences between the Governmental Fund Balance Sheet and the Statement of Net Position

Long-term liabilities applicable to the City's governmental activities are not due and payable in the current period and accordingly are not reported as fund liabilities in the governmental fund statements. Interest on long-term debt is not accrued in governmental funds, but rather is recognized as an expenditure when due. All liabilities - both current and long-term - are reported in the government-wide statement of net position. Also, during the year the City refunded some of its existing debt. The amount borrowed is received in the governmental funds and increases fund balance. The amount that was sent to the paying agent to be escrowed for payment of the old debt as it comes due is paid out of governmental funds and reduces fund balance. The difference between those amounts will be amortized as an adjustment to interest expense in the government-wide statement of activities over the remaining life of the refunded bonds.

Balances at June 30, 2014 were (in thousands):

Other deferred revenue	\$ 145,223
	<u>\$ 145,223</u>
Internal Service Fund total assets	\$ 76,464
Internal Service Fund liabilities	(44,833)
	<u>\$ 31,631</u>
Bonds and notes payable	\$ (3,389,181)
Arbitrage rebate payable	(18)
Accrued interest	(37,446)
Compensated absences not reported at the fund level	(448,530)
Claims and judgments not reported at the fund level	(75,369)
Net pension obligation	(1,059,836)
Other post employment benefits obligation	(1,195,407)
	<u>\$ (6,205,787)</u>

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B. Explanation of Certain Differences between the Governmental Fund Statement of Revenues, Expenditures, and Changes in Fund Balances and the Government-wide Statement of Activities

Bond proceeds are reported as financing sources in governmental funds and thus contribute to the change in fund balance. In the government-wide statement of net position, however, issuing debt increases long-term liabilities and does not affect the government-wide statement of activities. Similarly, repayment of principal is an expenditure in the governmental funds, but reduces the liability in the government-wide statement of net position.

Balances at June 30, 2014 were (in thousands):

Debt issued:	
Certificates of Obligations	\$ 9,000
Notes Payable	494
Commercial paper	110,000
	<u>\$ 119,494</u>
Repayments:	
Refunded commercial paper	\$ (29,550)
Principal payments	(147,300)
	<u>\$ (176,850)</u>
Amortization of:	
Discount	\$ 16
Premium	(14,458)
Net adjustment	<u>\$ (14,442)</u>
Total	<u>\$ (71,798)</u>

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Under the modified accrual basis of accounting used in the governmental funds, expenditures are not recognized for transactions that are not normally paid with expendable available financial resources. In the government-wide statement of activities, however, which is presented on the accrual basis, expenses and liabilities are reported regardless of when financial resources are available. In addition, interest on long-term debt is not recognized under the modified accrual basis of accounting until due, rather than as it accrues. The adjustment is a combination of the following items (in thousands):

Property taxes earned but not available	\$ 21,682
Ambulance fees earned but not available	61,374
Fines and forfeits earned but not available	3,845
Other (primarily assessments) earned but not available	<u>58,322</u>
Total revenue not reported at fund level	<u>\$ 145,223</u>
Property taxes for prior periods	\$ (24,019)
Ambulance fees for prior periods	(10,982)
Fines and forfeits for prior periods	(3,178)
Other (primarily assessments) for prior periods	<u>(46,257)</u>
Total revenue for prior period transactions	<u>\$ (84,436)</u>
Interest on long-term debt	\$ 1,221
Municipal Employees pension	(21,351)
Police Officers' pension	(55,180)
Firefighters' pension	(25,192)
Claims and judgments	(5,643)
Compensated absences	(15,781)
Other liabilities	(503)
Other post employment benefits	(138,177)
Decrease in other receivables	<u>254</u>
Total differences in accrued expenses	<u>\$ (260,352)</u>

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

NOTE 3: DEPOSITS AND INVESTMENTS

A. Deposits

The City's investment policy requires all deposits to be fully collateralized with depository insurance; obligations of the United States of America or its agencies and instrumentalities (excluding those mortgage backed securities prohibited by the Public Funds Investment Act); or in any other manner and amount provided by law for the deposits of the City. At all times, such securities should have a fair value of not less than 102% of the amount of the deposits collateralized thereby, adjusted by the amount of applicable depository insurance. There were no deposits with custodial risk at year end.

B. Investments and Risk Disclosures

The following describes the investment positions of the City's operating funds as of June 30, 2014. The City held \$3.2 billion in high grade, fixed income investments in three separate investment pools, each serving a specific purpose as described below. All investments are governed by state law and the City's Investment Policy, which dictates the following objectives, in order of priority:

1. Safety
2. Liquidity
3. Return on Investment
4. Legal Requirements

These funds are managed internally by City personnel. The investments listed below do not include the City's three pension funds, which are described separately in this report.

1. General Investment Pool

The General Investment Pool consists of all working capital, construction, and debt service funds not subject to yield restriction under IRS arbitrage regulations. The funds of the City's enterprise systems, as well as the general fund, are commingled in this pool to gain operational efficiency. Approximately 99% of the City's total investable funds are held in this portfolio.

City of Houston Investments As of June 30, 2014	Credit Quality Ratings (1)(2)	Fair Value	WAM* (years)
U.S. Treasury Notes	N/A	\$ 728,410,952	1.964
Housing and Urban Development Notes	N/A	10,066,389	0.589
Agency Notes (3)	AAA	1,689,517,421	1.339
Agency Notes (3) (4)	Not Rated	119,179,254	2.389
Agency Notes (State of Israel Bond)	A	5,001,579	1.088
Mortgaged Backed Securities (3) (4)	Not Rated	52,433,238	2.449
Money Market Funds	AAA Short Term	24,080,428	0.003
Certificates of Deposit	FDIC Insured	1,002,100	0.238
Commercial Paper Notes	A-1+/P-1 Short Term	279,732,108	0.252
Municipal Bonds	AAA Long Term	78,283,817	1.863
Municipal Bonds	AA Long Term	220,701,586	1.837
Municipal Bonds	A Long Term	7,062,289	0.126
Total Investments		\$ 3,215,471,161	1.474

* Weighted Average Maturity (WAM) is computed using average life of mortgage backed securities and effective maturity of callable securities.

(1) Fitch Ratings Inc. has assigned an AAA credit quality rating and V1 volatility rating to the City's General Investment Pool. The AAA signifies the highest level of credit protection, and the V1 rating signifies volatility consistent with a portfolio of government securities maturing from one to three years.

(2) All credit ratings shown are either actual Fitch ratings, or if a Fitch credit rating is not available, the equivalent Fitch credit rating is shown to represent the actual Moody's or Standard & Poor's credit rating.

(3) These are securities issued by government sponsored enterprises, including the Federal Home Loan Bank, Federal Home Loan Mortgage Corporation (Freddie Mac), Federal National Mortgage Corporation (Fannie Mae), and Federal Farm Credit Bank.

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(4) These securities were issued by the Federal Home Loan Bank, Freddie Mac, Fannie Mae, and Farmer Mac. While these individual issues were not rated, senior lien debt of these entities is rated AAA.

Risk Disclosures:

Interest Rate Risk. In order to ensure the ability of the City to meet obligations and to minimize potential fair value losses arising from rising interest rate environments, the City's investment policy limits this investment portfolio's dollar weighted average maturity to 2.5 years maximum. As of June 30, 2014, this investment portfolio's dollar-weighted average maturity was 1.474 years. Modified duration was 1.44 years. Modified duration can be used as a multiplier to determine the percent change in price of a bond portfolio for every 100 basis point (1%) change in yield. For example, a portfolio with a modified duration of 1.44 years would experience approximately a 1.44% change in market price for every 100 basis point change in yield.

Credit Risk – Investments. The US Treasury Notes and Housing and Urban Development Notes are direct obligations of the United States government and therefore do not have credit ratings. The Agency Notes, Collateralized Mortgage Obligations, and Mortgage Backed Securities were issued by government sponsored enterprises but are not direct obligations of the U.S. Government. The money market mutual funds were rated AAA. Long term municipal securities were rated at least A. Municipal securities considered short-term securities had the highest short-term rating of A-1+.

Credit Risk – Securities Lending. Under the securities lending program, the City receives 102% of market value for its U.S. Treasury securities at the time the repurchase agreements are signed, and agreements are limited to 90 days by policy and have been less than 35 days by practice. At June 30, 2014 there were no securities lending agreements outstanding.

Custodial Credit Risk. The custodial credit risk for investments is the risk that in the event of the failure of counterparty, the City will not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are not registered in the name of the City, and are held by either the counterparty or the counterparty's trust department or agent but not in the City's name. As of June 30, 2014, none of the City's investments in the General Investment Pool were subject to custodial credit risk.

Foreign Currency Risk. Foreign currency risk is the risk that investments will change value due to changes in exchanges rates between time of purchase and reporting or sale. The City's General Investment Pool is limited by policy to US dollar denominated investments and not subject to this risk.

2. Tax Exempt Pool

The Tax Exempt Pool consists of those funds which are subject to yield restrictions and arbitrage regulation under the 1986 Tax Reform Act. All these investments were held in a tax-exempt municipal bonds and tax-exempt money market fund.

City of Houston Investments As of June 30, 2014	Credit Quality Ratings	Market Value	WAM
Fidelity Tax-Exempt Money Market Mutual Fund	SEC 2a-7 Fund	2,377,503	37 days
Municipal Bonds	A-1+Short Term	-	-
Municipal Bonds	AAA Long Term	5,237,848	92 days
Total Investments		\$ 7,615,351	

Risk Disclosures:

Interest Rate Risk. In order to ensure the ability of the City to meet obligations and to minimize potential fair value losses arising from rising interest rate environments, the City's investment policy limits this pool's dollar-weighted average maturity to 1.5 years. As of June 30, 2014, the pool's dollar-weighted average maturity was 75 days. Modified duration was 0.206 years.

Credit Risk. The City's investment policy limits investments in the Tax-Exempt Pool to high quality securities with a maturity of less than three years and a minimum rating of AA if the yield is reasonably higher than that of a tax-exempt money market mutual fund. Otherwise, funds are invested in one or more tax-exempt money market mutual funds that are SEC registered and regulated under Rule 2a-7. Rule 2a-7 requires that the fund have a weighted average maturity of less than 60 days to maturity, that individual securities cannot be more than 397 days to maturity, and that securities have rating by a nationally recognized rating agencies in one of the two highest short-term rating categories.

Custodial Credit Risk. As of June 30, 2014, none of the City's investments in this pool were subject to custodial credit risk.

Foreign Currency Risk. The City's investments in this pool are all US dollar denominated and not subject to foreign currency risk.

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3. Housing Department Section 108 Pool

The Housing Department Pool was created to comply with rules of the US Department of Housing and Urban Development (“HUD”), which requires that funds provided by HUD must be held in a separate custodial account for HUD’s benefit. The primary goal of this fund is to meet the cash flow and investment needs of the City’s Housing and Community Development HUD program.

City of Houston Investments As of June 30, 2014	Credit Quality Ratings	Market Value	WAM (years)
U.S. Treasury Bills	N/A	\$ 9,999,340	62 days

Risk Disclosures:

Interest Rate Risk. In order to ensure the ability of the City to meet obligations and to minimize potential fair value losses arising from rising interest rate environments, the City’s investment policy limits this investment portfolio’s dollar-weighted average stated maturity to six months maximum. As of June 30, 2014, this investment portfolio’s dollar-weighted average stated maturity is 62 days. Modified duration is 0.172 years.

Credit Risk. The HUD pool consists only of U.S. Treasury Bills with maturities less than 6 months. HUD requires that investment of these funds must be in direct obligations of the United States Government.

Custodial Credit Risk. As of June 30, 2014 none of the City’s investments in this pool were subject to custodial credit risk.

Foreign Currency Risk. The City’s investments in this pool are all US dollar denominated and not subject to foreign currency risk.

4. Miscellaneous Money Market Accounts

City of Houston Investments As of June 30, 2014	Credit Quality Ratings	Market Value	WAM
JP Morgan US Government Money Market Fund: Airport System Special Facilities Revenue Bonds Series 1997A Reserve Fund	AAA	6,588,756	47 days
JP Morgan US Treasury Securities Money Market Fund: Balances held for auction bonds debt service	AAA	92,717	54 days
First American US Treasury Money Market Fund: Balances held for commercial paper debt service	AAA	47,692	40 days
Total Miscellaneous Money Market Funds		\$ 6,729,165	

The City maintains several separate money market accounts outside the pools as described below:

Risk Disclosures:

Interest Rate Risk. These money market funds maintain an average maturity of less than 60 days and seek to maintain a stable net asset value of \$1.00. These funds are redeemable on a same day notice.

Credit Risk. These funds hold only US dollar denominated securities that present minimal credit risk. They have the highest credit ratings.

Custodial Credit Risk. As of June 30, 2014, none of the City’s investments in this pool were subject to custodial credit risk.

Foreign Currency Risk. The City’s investments in this pool are all US dollar denominated and not subject to foreign currency risk.

CITY OF HOUSTON, TEXAS
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5. Houston Foundation

City of Houston Investments As of June 30, 2014	Credit Quality Ratings	Market Value	WAM (years)
Cash and Equivalents	Not rated	116,769	n/a
Fixed Income	Not rated	303,727	7.37
Equities	N/A	2,197,351	n/a
Hedge Funds	N/A	465,744	n/a
Real Estate	N/A	261,491	n/a
Tangible Assets	N/A	275,768	n/a
Total Assets		\$ 3,620,849	

The Houston Foundation consists of the Hill Trust. It is reported as an Nonmajor Other Special Revenue Fund; its investments are laid out below. The Hill Trust was established by will in the early 1900's as a general purpose charity trust. The trust is administered by an outside trustee. The City's Administration and Regulatory Affairs Department provides administrative support to the foundation and its board.

Risk Disclosures:

Interest Rate Risk. The cash and equivalents portions of this portfolio are invested in money market mutual funds. The fixed income portfolio is invested in bond mutual funds with average maturities less than eight years. The weighted average maturity for the fixed income portfolio is 7.37 years, and the weighted average duration is 4.76 years.

Credit Risk. The allocation of assets among various asset classes are set by the Foundation board. The fixed income portfolio consists of unrated mutual funds. The equities portion of this portfolio is invested in common stocks and money market mutual funds, accordingly, there is no credit risk.

Custodial Credit Risk. The custodial credit risk for investments is the risk that, in the event of the failure of the counterparty, the City of Houston will not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are not registered in the name of the City, and are held by either the counterparty or the counterparty's trust department or agent but not in the City's name. As of June 30, 2014 all of the Foundation's holdings in the above noted mutual funds, corporate bonds, and common stocks were subject to custodial credit risk.

Foreign Currency Risk. Foreign currency risk is the risk that investments will change value due to changes in exchange rates between times of purchase, reporting or sale. The equity investments of the Houston Foundation are subject to this risk to the extent that the corporations held have not fully hedged their foreign currency dealings.

6. Investments – Houston Municipal Employees Pension System (the System)

The System's Board, in accordance with the power and authority conferred under the Texas Statutes, employed State Street Bank and Trust Company (Custodian) as custodian of the investment assets of the System, and in said capacity, the Custodian is a fiduciary of the System's investments assets with respect to its discretionary duties including safekeeping the System's investment assets.

The Custodian has established and maintains a custodial account to hold, or direct its agents to hold, for the account of the System all investment assets that the Board shall from time to time deposit with the Custodian. All rights, title and interest in and to the System's assets shall at all times be vested in the System's Board.

In holding all System investment assets, the Custodian shall act with the same care, skill, prudence and diligence under the prevailing circumstances that a prudent person acting in like capacity and familiar with matters of this type would use in the conduct of an enterprise with a like character and with like aims. Further, the Custodian shall hold, manage and administer the System's assets for the exclusive purpose of providing the benefits to the members and the qualified survivors of the System.

The Board shall manage the investment program of the System in compliance with all applicable Federal and state statutes and regulations concerning the investment of pension assets. The Board has adopted an Investment Policy Statement (IPS) to set forth the factors involved in the management of investment assets for the System and which is made part of every investment management agreement.

Portions of the System's investments are classified as security investments. A security is a transferable financial instrument that evidences ownership or creditorship. Investments in commingled funds, limited partnerships, estate trusts, and loans and mortgages are investments that are evidenced by contracts rather than securities.

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The fair values of the System's investments at June 30, 2014, are presented by type, as follows:

Short-term investment funds	\$	48,569,270
Government securities		83,699,960
Corporate bonds		223,848,665
Capital stocks		866,082,050
Commingled funds		382,671,667
Real assets		207,977,789
Alternative investments		651,778,839
		\$ 2,464,628,240

Custodial Credit Risk. For an investment, custodial risk is the risk that, in the event of the failure of the counterparty, the System will not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial risk if the securities are uninsured, are not registered in the name of the System, and are held by either the counterparty or the counterparty's trust department or agent but not in the System's name. At June 30, 2014 and 2013, the System's investments that were not subject to custodial credit risk were the investments in U.S. government securities and corporate bonds as they are registered in the name of the System and held in possession of the Custodian.

Concentration Risk. The allocation of assets among various asset classes is set by the Board. For major asset classes (e.g., global equity, fixed income, real estate, private equity, inflation-linked, and absolute return), the System will further diversify by employing managers with demonstrated skills in complementary areas of expertise.

The managers retained will utilize varied investment approaches, but, when combined will exhibit characteristics that are similar, but not identical, to the asset class proxy utilized in the strategic asset allocation plan. The Investment Policy of the System provides that no public market investment manager shall have more than 20% (at market value) of the System's assets.

Representative guidelines by type of investment are as follows:

U.S. Equity Managers

1. A manager's portfolio shall contain a minimum of twenty-five issues.
2. No more than 5% of the manager's portfolio at market shall be invested in American Depository Receipts (ADRs).
3. No individual holding in a manager's portfolio may constitute more than 5% of the outstanding shares of an issuer.
4. No individual holding may constitute more than 5% of a manager's portfolio at cost or 10% at market.
5. Short sales, purchases on margin, non-negotiable or otherwise restricted securities are prohibited, other than where expressly permitted.
6. While there are no restrictions on cash, a manager must notify the System if the cash position exceeds 10%.

International Equity Managers

1. Not more than 5% at cost and 10% at market value of a manager's portfolio shall be invested in the securities of any one issuer.
2. Not more than 30% of the assets of a manager's portfolio (at market value) shall be invested in any one country with the exception of Japan.
3. While there are no restrictions on cash, a manager must notify the System if the cash position exceeds 10%.
4. Forward foreign currency exchange contracts will be limited as follows:
 - a. Forward and future exchange contracts of any currency may be used to hedge up to 100% of the currency exposure of the portfolio in aggregate or of the currency exposure to any single country,
 - b. Foreign exchange contracts with a maturity exceeding 12 months may not be made, and
 - c. Currency options may be entered into in lieu of or in conjunction with forward sales of currencies. The same effective limitations specified in (a) and (b) above will apply to currency options.

Fixed Income Managers

1. No more than 10% of a manager's portfolio at market shall be invested in the securities of any single issuer, with the exception of the U.S. government and its agencies.

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2. No individual holding in a manager's portfolio shall constitute more than 10% of the market value of an issue.

Global Opportunistic Fixed Income/High Yield Managers

1. No more than 5% at cost and 10% at market value of a manager's portfolio shall be invested in the securities of any single issuer, with the exception of the U.S. government and its agencies.

As of June 30, 2014, across all asset classes, the System held one security with a market value over 5% of the System's fiduciary net position. The security, BlackRock MSCI ACWI Minimum Volatility Index, had a fair value of \$219,124,566, representing 9% of the System's portfolio as of June 30, 2014. There were no securities held by the System from a single issuer that exceeded 5% in FY 2013.

Interest Rate Risk. The System invests in fixed income securities including, but not limited to, investments representing instruments with an obligated fixed rate of interest including public and private debentures, mortgages, investments in life insurance general accounts and guaranteed investment contracts, with maturities greater than one year, and options/futures. Instruments may have an investment grade or non-investment grade rating. Purchases and sales, investment selection and implementation of investment strategies are delegated to the discretion of the investment manager, subject to compliance with its management agreement and the Investment Policy.

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of the investment. Duration is a measure of a debt investment's exposure to fair value changes arising from changes in interest rates. It uses the present value of cash flows, weighted for those cash flows as a percentage of the investment's full price. The greater the duration of a bond, or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates and vice-versa. Duration is the measure of a bond price's sensitivity to a 100-basis point change in interest rates. The duration of the System's debt securities is managed by the active managers.

At June 30, 2014, the following table shows the System's investments by type, amount and the effective duration rate.

	<u>Effective Duration</u>	<u>Domestic</u>	<u>International</u>	<u>Fair Value</u>
Collateralized mortgage obligations	2.71	\$ 11,478,113	\$ -	\$ 11,478,113
Convertible bonds	3.46	8,575,931	270,681	8,846,612
Corporate bonds	5.74	149,018,769	4,986,053	154,004,822
GNMA/FNMA/FHLMC	3.40	27,545,254	-	27,545,254
Municipal	8.35	1,123,974	-	1,123,974
Government issues	4.68	51,593,009	3,437,722	55,030,731
Misc. receivable (auto/credit card)	3.28	4,399,278	-	4,399,278
Other asset backed securities	4.32	270,290	-	270,290
Bank Loan ¹	N/A	44,849,551	-	44,849,551
		<u>\$298,854,169</u>	<u>\$ 8,694,456</u>	<u>\$ 307,548,625</u>

¹The bank loan market, or "leveraged loan" market as it is sometimes known, comprises debt with below investment grade credit ratings. Bank loans generally rank senior to the company's other debt, and offer higher credit ratings, and less risk than high yield bonds. Bank loans typically use floating rather than fixed interest rates. Companies often tap this market to fund leveraged buyouts.

Credit Risk. The quality ratings of investments in fixed income securities are set forth in the Investment Policy as follows:

- All issues purchased by investment grade fixed income managers must be of investment grade quality Baa (Moody's) or BBB (S&P) unless expressly authorized by the Board, in which case a minimum B rating shall apply, with a maximum limit of non-investment grade credits of 20% at market.
- For global opportunistic fixed income/high yield securities, more than 50% of a manager's portfolio at market shall be invested in non-investment grade fixed income securities, i.e. those with ratings of BAA1 (Moody's), BB+ (Standard & Poor's), or lower, or unrated bonds, including but not limited to corporate bonds, convertible bonds, and preferred stocks.

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The quality ratings of investments in fixed income securities as described by nationally recognized statistical rating organizations at June 30, 2014 are as follows:

Quality Rating	CMO	Convertible Bonds	Corporate Bonds	Sponsored Agencies	Governmental			Other Asset Backed	Grand Total Fair Value	Percentage of Holdings
					Municipals	Issues (Int)	Other			
AM	\$ 6,560,487	-	-	-	373,998	-	1,712,068	270,290	\$ 8,916,843	0.36%
AA	1,092,383	-	289,966	-	-	-	120,056	-	1,502,405	0.06%
NIL+	-	-	206,962	-	164,774	-	506,821	-	878,557	0.04%
NI,	522,784	-	200,700	-	-	-	2,030,513	-	2,753,997	0.11%
A	-	-	4,990,064	-	399,794	3,437,722	-	-	8,827,580	0.36%
A+	292,661	-	911,266	-	185,408	-	-	-	1,389,335	0.06%
A-	364,515	-	6,794,624	-	-	-	-	-	7,159,139	0.29%
BBB	-	406,364	7,922,699	-	-	-	-	-	8,329,063	0.34%
E100+	-	-	8,676,582	-	-	-	-	-	8,676,582	0.35%
BOB-	-	1,449,578	7,486,956	-	-	-	-	-	8,936,534	0.36%
BB	-	398,086	9,092,440	-	-	-	-	-	9,490,526	0.39%
BB+	-	2,163,837	4,161,935	-	-	-	-	-	6,325,772	0.26%
BB-	-	1,237,070	14,464,409	-	-	-	-	-	15,701,479	0.64%
B	-	1,409,156	11,155,930	-	-	-	-	-	12,565,086	0.51%
B+	-	1,101,461	12,071,208	-	-	-	-	-	13,172,669	0.53%
B-	-	592,200	13,734,265	-	-	-	-	-	14,326,465	0.58%
Below C	-	-	46,467,801	-	-	-	-	-	46,467,801	1.89%
NA	2,645,283	88,860	5,377,015	27,545,254	-	-	44,879,372	-	80,535,784	3.27%
Subtotal	<u>\$11,478,113</u>	<u>\$ 8,846,612</u>	<u>\$ 154,004,822</u>	<u>\$27,545,254</u>	<u>\$1,123,974</u>	<u>\$ 3,437,722</u>	<u>\$49,248,830</u>	<u>\$ 270,290</u>	<u>\$ 255,955,617</u>	<u>10.39%</u>
Total credit risk debt securities									255,955,617	10.39%
U.S. government fixed income securities									51,593,009	2.09%
Total fixed income securities									307,548,626	12.48%
Other investments									2,157,079,614	87.52%
Total investments									<u>\$ 2,464,628,240</u>	<u>100.00%</u>

Foreign Currency Risk. International securities investment managers are expected to maintain diversified portfolios by sector and by issuer using the System's Investment Policy.

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. Each investment manager, through the purchase of units in a commingled investment trust fund or international equity mutual fund, establishes investments in international equities.

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The System has an indirect exposure to foreign currency fluctuation as of June 30, 2014 as follows:

	<u>Fair Value</u>	<u>Percentage</u>
Australian Dollar	6,530,823	2.49%
Brazilian Real	4,079,402	1.56%
Canadian Dollar	9,943,001	3.80%
Danish Krone	3,057,432	1.17%
Euro Currency	75,980,144	29.02%
Hong Kong Dollar	16,525,949	6.31%
Indonesian Rupiah	2,218,419	0.85%
Japanese Yen	28,551,480	10.91%
Malaysian Ringgit	1,449,651	0.55%
Mexican Peso	4,814,958	1.84%
New Taiwan Dollar	1,101,554	0.42%
Norwegian Krone	9,111,966	3.48%
Pound Sterling	54,963,868	20.99%
Singapore Dollar	2,357,802	0.90%
South African Rand	1,774,264	0.68%
South Korean Won	6,026,879	2.30%
Swedish Krona	6,752,853	2.58%
Swiss Franc	21,310,188	8.14%
Thailand Baht	1,941,093	0.74%
Turkish Lira	3,310,304	1.26%
	<u>261,802,030</u>	<u>100%</u>

7. Investments – Houston Firefighters’ Relief and Retirement Fund (the Fund)

Statutes of the State of Texas authorize the Fund to invest surplus funds in the manner provided by the Government Code, Title 8, Subtitle A, Subchapter C. This subchapter provides for the investment of surplus assets in any investment or investments that are deemed “prudent” by the Board. The investment policy of the Board does not restrict the types of investments authorized to be made on behalf of the Fund; however, the Board seeks to produce a return on investments that is based on prudent and reasonable investment risk and the cash flow requirements of the Fund given prevailing economic and capital market conditions. While the Board recognizes the importance of the preservation of capital, it also adheres to the theory of capital market pricing which maintains that varying degrees of investment risk should be rewarded with incremental returns. Consequently, prudent risk-taking is justifiable.

The Board has employed BNY Mellon (Custodian) as Custodian of the assets of the Fund, and in said capacity, the Custodian is a fiduciary of the Fund’s assets with respect to its discretionary duties including safekeeping the Fund’s assets. The Custodian has established and maintains a custodial account to hold, or direct its agents to hold, for the account of the Fund, all assets that the Board deposits with the Custodian from time to time. All rights, title and interest in and to the Fund’s assets at all times vests with the Fund’s Board.

In holding all Fund assets, the Custodian acts with the same care, skill, prudence and diligence under the prevailing circumstances that a prudent person acting in like capacity and familiar with matters of this type would use in the conduct of an enterprise with a like objective and with like aims. Further, the Custodian holds, manages and administers the Fund’s assets for the exclusive purpose of providing the benefits to the members and the qualified survivors of the Fund.

The Board manages the investment program of the Fund in compliance with all applicable Federal and State statutes and regulations concerning the investment of pension assets. The Board has adopted an Investment Policy Statement (Investment Policy) to set forth the factors involved in the management of investment assets for the Fund. The Board has established an Investment Committee to act on all matters related to investments.

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The fair values of the Fund's investments as of June 30, 2014 by type are as follows:

Short-Term Investment Funds	\$ 123,988,309
Fixed Income-Government Securities	308,026,064
Fixed Income-Corporate Bonds	857,960,645
Fixed Income-Convertibles	54,903,126
Common Equity	1,548,126,663
Preferred Equity	9,731,014
Hedge Funds:	
Global Macro Hedge Fund	223,260,243
Multi-Strategy FOHFs	221,929,251
Private Equity:	
Buy Out Partnerships/Funds	88,993,623
Distressed Debt Partnerships/Funds	69,098,570
Direct Investments	1,075,000
Secondary Partnerships/Funds	101,490,343
Special Situations Investments	27,508,515
Venture Capital Partnerships/Funds	79,000,492
Real Estate	195,472,077
Total investments	\$ 3,910,563,935

Portions of the Fund's investments are classified as security investments. A security is a transferable financial instrument that evidences ownership or creditorship. Investments in partnerships and real estate are investments that are evidenced by contracts rather than securities. The fair value shown here may differ from reported net position due to payables, receivables, and trades pending settlement.

Custodial credit risk. For an investment, custodial credit is the risk that, in the event of the failure of the counterparty, the Fund will not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the Fund, and are held by either the counterparty or the counterparty's trust department or agent but not in the Fund's name. At June 30, 2014 and 2013, the Fund's security investments that were not subject to custodial credit risk were the investments not registered on an exchange.

Concentration of credit risk. The allocation of assets among various asset classes is set by the Board with the objective of optimizing the investment return of the Fund within framework of acceptable risk and diversification. For major asset classes (e.g., domestic equities, international equities, fixed income, alternative investments, private equity and real estate), the Fund further diversifies by employing investment managers who implement the strategies selected by the Investment Committee.

Significant risk management asset allocation guidelines are as follows:

Public market and alternative investments

1. Specific guidelines along with contractual requirements for each manager will be developed cooperatively by the Fund's investment staff, legal counsel, and the investment manager and shall be incorporated into an Investment Management Agreement or other binding agreement as is appropriate for the investment.
2. In case of conflict between the specific manager guidelines and the general guidelines, the specific guidelines, as approved by the Investment Committee, shall supersede. The general guidelines are as follows:
 - a. Manager investment philosophy, style, strategy, and structure shall remain consistent and shall not change without the Investment Committee's approval. The manager shall have discretion to manage the portfolio consistent with the style presented to the Investment Committee at the time of selection and further subject to the restrictions established by the policy herein.
 - b. The following transactions are prohibited: short sales, selling on margin, put and call options, and the use of derivatives for speculation unless authorized by the Investment Committee.
 - c. Transactions that involve a broker acting as a principal, where such broker is also affiliated with the manager who is making the transaction are prohibited, unless specifically approved by the Investment Committee.
 - d. Transactions shall be executed at competitive costs, or best execution.

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- e. Managers shall maintain cash levels consistent with their style as presented to the Investment Committee at the time of selection. Any deviation shall be allowed only after notifying the Chief Investment Officer and should be related to unusual market conditions. The maximum cash level to be held by each manager will be addressed in the Investment Management Agreement or other binding agreement as is appropriate for the investment.

As of June 30, 2014 and 2013, the Fund investment portfolio had no single holdings in excess of 5% of Fund net assets.

Interest rate risk. The Fund invests in fixed income securities including, but not limited to, investments representing instruments with an obligated fixed rate of interest including public and private debentures, mortgages, investments in life insurance general accounts and guaranteed investment contracts, with maturities greater than one year, and options/futures. Instruments may have an investment grade or non-investment grade rating. Purchases and sales, investment selection and implementation of investment strategies are delegated to the discretion of the investment manager, subject to compliance with its management agreement and the Fund's Investment Policy.

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of the investment. Interest rate risk is the greatest risk faced by an investor in the fixed income market. The price of a fixed income security typically moves in the opposite direction of the change in interest rates. The weighted average maturity expresses investment time horizons (when the investment comes due and payable) in years, weighted to reflect the dollar size of individual investments within the investment type. The Fund does not have a formal investment policy that limits investment maturities as a means of managing its exposure to potential fair value losses arising from future changes in interest rates, but rather mandates such limits within the Investment Management Services Contract.

At June 30, 2014, the following table shows the Fund's investments by type, with weighted average maturity and fair value:

	Weighted Average	
	Maturity	Fair Value
Asset Backed Securities	9.1	\$ 29,321,986
CMBS	29.23	841,134
CMO Corporate	8.88	864,225
Consumer Discretionary	6.25	4,510,197
Consumer Staples	1.92	1,619,800
Corporate Debt	16.78	625,982,236
Energy	14.9	5,139,289
Financials	6.64	10,012,044
General Obligations Bonds	24.79	16,037,320
Healthcare	20.93	3,202,890
Industrials	22.62	1,996,959
Information Technology	15.81	16,571,404
Materials	1.61	2,555,621
Non-U.S. Corporate	5.34	66,588,844
Non-U.S. Government Issues	1.31	25,477,037
Revenue Bonds	28.88	65,266,558
Telecommunication Services	0.71	5,181,750
TIPS (Treasury Inflation Protected)	8.55	5,275,768
U. S. Preferred Stock	1.31	897,680
U.S. Government Issues	8.58	211,142,922
U.S. Private Placements	12.21	90,344,911
U.S. Taxable Muni Bonds	54.63	30,738,636
Utilities	15.30	3,320,624
Total fixed income securities		<u>\$ 1,220,889,835</u>

Credit risk. Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The Fund does not have a formal policy limiting investment credit risk, but rather mandates such limits within the Investment Management Services Contract.

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The Fund's exposure to investment credit risk in fixed income securities (which includes government securities, corporate securities, corporate bonds, convertibles) as of June 30, 2014 is as follows:

<u>Quality Rating</u>	<u>Fair Value</u>	<u>Percentage of Holdings</u>
A1	\$ 47,651,209	1.22%
A2	102,945,895	2.63%
A3	141,043,222	3.60%
AA1	12,289,382	0.31%
AA2	38,090,445	0.97%
AA3	57,218,601	1.46%
AAA	86,382,566	2.21%
B1	29,206,527	0.75%
B2	28,477,044	0.73%
B3	38,756,219	0.99%
BA1	41,325,527	1.06%
BA2	53,569,093	1.37%
BA3	38,605,451	0.99%
BAA1	72,855,074	1.86%
BAA2	103,500,104	2.64%
BAA3	63,734,122	1.63%
CA	1,456,000	0.04%
CAA1	14,066,730	0.36%
CAA2	23,282,923	0.59%
D	499,200	0.01%
Not rated	9,515,813	0.24%
Total credit risk debt securities*	<u>\$ 1,004,471,147</u>	<u>25.66%</u>

*Obligations of the U.S. government or obligations explicitly guaranteed by the U.S. government are not considered to have credit risk and therefore, have not been included in this disclosure.

Foreign currency risk. Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. Realized and unrealized gains and losses on investments which result from changes in foreign currency exchange rates have been included in the net appreciation (depreciation) in fair value of investments. The Fund's policy allows external investment managers to decide what action to take regarding their respective portfolio's foreign currency exposures subject to compliance with its respective Investment Management Services Contract and the Fund's Investment Policy Statement.

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The Fund's exposure to foreign currency fluctuation as of June 30, 2014 is as follows:

	<u>Fair Value</u>	<u>Percentage of Holdings</u>
Euro Currency Unit	\$ 176,244,955	4.50%
Japanese Yen	79,638,856	2.03%
Pound Sterling	70,217,760	1.79%
Swiss Franc	54,939,133	1.40%
Canadian Dollar	49,264,258	1.26%
Hong Kong Dollar	23,844,159	0.61%
Mexican New Peso	19,328,596	0.49%
South Korean Won	18,886,807	0.48%
Norwegian Krone	17,496,280	0.45%
New Zealand Dollar	16,859,414	0.43%
Australian Dollar	16,540,329	0.42%
Thailand Baht	12,629,616	0.32%
Swedish Krona	10,106,141	0.26%
Danish Krone	8,461,734	0.22%
Singapore Dollar	4,416,393	0.11%
Brazil Real	4,160,895	0.11%
New Turkish Lira	2,476,119	0.06%
Indonesian Rupiah	2,095,103	0.05%
Israeli Shekel	2,019,753	0.05%
Czech Koruna	952,150	0.02%
Total securities subject to foreign currency risk	<u>\$ 590,578,451</u>	<u>15.06%</u>

8. Investments – Houston Police Officers' Pension (the System)

Summary of Significant Accounting Policies

Investment Valuation. Statutes of the State of Texas authorize the System to invest surplus funds in a manner provided by the Government Code, Title 8, Subtitle A, Subchapter C. These statutes stipulate that the governing body of the System is responsible for the management and administration of the funds of the System and shall determine the procedure it finds most efficient and beneficial for the management of the reserve fund of the System. The governing body may directly manage the investments of the System or may choose and contract for professional investment management services. Investments are reported at fair value in accordance with GASB 31, Accounting and Financial Reporting for Certain Investments and for External Investment Pools.

Administrative Costs. All administrative costs of the System are paid from the System's assets.

Federal Income Tax. A favorable determination that the System is qualified and exempt from Federal income taxes was received June 20, 2013. The System's Board of Trustees believes that the System is designed and continues to operate in compliance with the applicable requirements of the Internal Revenue Code.

Use of Estimates. The preparation of the System's financial statements, in conformity with accounting principles generally accepted in the United States of America, requires management to make significant estimates and assumptions that affect the reported amounts and net plan assets at the date of the financial statements and the actuarial information included in the footnotes to the financial statements as of the benefit information date, the changes in the System's net assets during the reporting period and, when applicable, disclosures of the contingent assets and liabilities at the date of the financial statements. Actual results could differ from those estimates.

Custodial Credit Risk. Custodial credit risk for deposits is the risk that in the event of a bank failure, the System's deposits may not be returned to them. The System considers only demand deposits as cash. The System does not have a deposit policy regarding custodial credit risk. As of June 30, 2014 and June 30, 2013, the System had a balance of \$701 thousand and \$234 thousand, respectively, on deposit at a financial

CITY OF HOUSTON, TEXAS
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institution. The Federal Depository Insurance Corporation (FDIC) covered cash on deposit up to \$250 thousand at this financial institution. Therefore, as of June 30, 2014, \$451 thousand of the System's bank balance of \$701 thousand was exposed to custodial credit risk. At June 30, 2014, the System did not have any other deposits with other financial institutions subject to custodial credit risk.

Credit Risk. Credit risk is the risk that the counterparty will not fulfill its obligations. As of June 30, 2014, the System's fixed income assets that are not U. S. government guaranteed represented 100.0% of the System's fixed income plus short term investments portfolio. The tables below summarize the System's fixed income portfolio exposure levels and credit qualities.

**Average Credit Quality and Exposure Levels of Non-U.S. Government
Guaranteed Securities**

<u>Fixed Income Security Type</u>	<u>Market Value (\$000's)</u>	<u>Percent of Total</u>	<u>Weighted Average Credit Quality</u>
Corporate Bonds	\$ 84,612	7.0 %	BB
Corporate Convertible Bonds	177	-	Not Rated
Mutual Bond Funds	298,557	24.6	Not Rated
Short Term Investment Funds	831,028	68.4	Not Rated
Total	\$ 1,214,374	100.0 %	

**Ratings Dispersion Detail
(\$000's)**

<u>Credit Rating Level</u>	<u>Corporate Bonds</u>	<u>Corporate Convertible Bonds</u>	<u>Mutual Bond Funds</u>	<u>Short Term Investment Funds</u>
BBB	\$ 1,064	\$ -	\$ -	\$ -
BB	40,035	-	-	-
B	26,029	-	-	-
CCC	-	-	-	-
D	-	-	-	-
NR	17,484	177	298,557	831,028
Total	\$ 84,612	\$ 177	\$ 298,557	\$ 831,028

The System's investment policy allows investment managers full discretion in adopting investment strategies to deal with these risks. Unless otherwise provided in the individual investment manager agreement, the average quality rating of each individual fixed income portfolio on a weighted value basis shall be A-rated or higher, and no issue should have a rating below investment grade (Baa or higher). Certain managers, such as high yield managers, may be exempted from these requirements as provided for in their contracts.

Credit risk for derivative instruments held by the System results from counterparty risk, which is essentially that the counterparty will be unable to fulfill its obligations, which are then assumed by the System. Information regarding the System's credit risk related to derivatives is found under the derivatives disclosures.

Policies regarding credit risk pertaining to credit risk associated with the System's securities lending program are found under the securities lending disclosures.

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Concentration of Credit Risk. Concentration of credit risk is the risk of loss attributable to the magnitude of the System's investment in a single issue. The System's investment policy for each specific portfolio limits investments in any one single domestic equity issue to 15% of each portfolio at market value and for any one single international equity issue to 5% of the System's investments. For fixed income investments, the System's policy limits, by each specific portfolio, investment in any one single fixed income security to 10% of each portfolio at market value. As of June 30, 2014, the System did not have any single investment in any one organization which represented greater than 5% of plan net assets.

Interest Rate Risk. Interest rate risk is the risk that changes in interest rates will adversely affect the fair values of the System's financial instruments. This risk is managed within the portfolio using the modified duration methodology. It is widely used in the management of fixed income portfolios and estimates the sensitivity of a bond's price to interest rate changes. The System does not have an investment policy specifically regarding interest rate risk. Investment managers have full discretion in adopting investment strategies to deal with these risks, and all of the System's fixed income portfolios are managed in accordance with guidelines that are specific as to the degree of interest rate risk taken. The reporting of modified duration found in the tables below quantifies the interest rate risk of the System's fixed income investments. Interest rate risks associated with derivative instruments are found in the derivatives disclosures of these notes.

Modified Duration by Security Type

Security Type	Market Value (\$000's)	Percent of Total	Weighted Average Modified Duration (years)
Corporate Bonds	\$ 84,612	7.0%	5.3
Corporate Convertible Bonds	177	0.0	2.4
Mutual Bond Funds	298,557	24.6	4.8
Short Term Investment Funds	831,028	68.4	0.1
Total	\$ 1,214,374	100.0%	0.4

Modified Duration Analysis by Security Type

	Market Value (\$000's)	Average Modified Duration	Contribution to Modified Duration
Corporate Bonds			
Less than 1 year	\$ 100	0.5	0.0
1 to 10 years maturities	82,724	5.0	4.9
10 to 20 years maturities	1,788	19.0	0.4
Total	\$ 84,612		5.3
Corporate Convertible Bonds			
1 to 10 years maturities	\$ 177	2.4	2.4
Mutual Bond Funds			
Less than 1 year	\$ 8,909	4.8	0.1
1 to 10 years maturities	\$ 280,328	4.8	4.5
10 to 20 years maturities	\$ 9,320	4.8	0.2
Total	\$ 298,557		4.8
Short Term Investment Funds			
Less than 1 year	\$ 746,679	0.1	0.1
1 to 10 years maturities	84,349	0.1	0.0
Total	\$ 831,028		0.1

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Foreign Currency Risk. Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. The books and records of the System are maintained in US dollars. Foreign currencies and non-US dollar denominated investments are translated into US dollars at the bid prices of such currencies against US dollars at each balance sheet date. Realized and unrealized gains and losses on investments which result from changes in foreign currency exchange rates have been included in the net appreciation in fair value of investments. Net realized foreign currency gains and losses resulting from changes in exchange rates include foreign currency gains and losses between trade date and settlement date of investment securities transactions, foreign currency transactions and the difference between the amounts of interest and dividends recorded on the books of the System and the amount actually received. International and global managers have the permission to use currency forward and futures contracts to hedge currency against the U.S. dollar. Currency forwards and futures used for the purpose of hedging currency shall be subject to the following guidelines: 1) net forward and futures sales of any currency may not exceed total market value of the assets denominated in that currency. This limitation does not apply to global fixed income managers and currency overlay managers if provided for in their contracts, 2) foreign currency exchange contracts with a maturity exceeding 12 months are not permitted, 3) currency options may be entered into in lieu of or in conjunction with forwards sales of currencies with the same limitations as currency forwards and futures. Cross hedging, the selling of one foreign currency for another foreign currency, which may or may not be the base currency of the portfolio, is permitted.

The System's exposure to foreign currency risk in U.S. dollars as of June 30, 2014, is shown in the table below.

Foreign Currency Exposure by Asset Class (\$000's)

Currency	Short Term Investments	Fixed Income	Equities	Alternative Investments	Total
Euro	\$ 82,021	\$ -	\$ 224,388	\$ 29,872	\$ 336,281
British pound sterling	(48,828)	-	133,341	-	84,513
Japanese yen	(45,942)	-	127,673	-	81,731
Australian dollar	-	-	48,469	4,163	52,632
Hong Kong dollar	-	-	44,976	-	44,976
Canadian dollar	1,484	-	30,019	-	31,503
Brazilian real	-	9,655	21,695	-	31,350
South Korean won	-	-	31,316	-	31,316
New Taiwan dollar	-	-	26,358	-	26,358
Swiss franc	-	-	25,758	-	25,758
Mexican peso	-	11,148	11,502	-	22,650
South African rand	-	5,698	15,200	-	20,898
Indian rupee	-	4,678	15,081	-	19,759
Swedish krona	-	-	18,815	-	18,815
Russian ruble	-	7,170	8,063	-	15,233
Malaysian ringgit	-	5,800	7,946	-	13,746
Thai baht	-	5,479	4,769	-	10,248
Danish krone	-	-	9,529	-	9,529
Turkish lira	-	5,479	3,821	-	9,300
Polish zloty	-	5,683	3,485	-	9,168
Singapore dollar	-	-	9,027	-	9,027
Chinese yuan renminbi	-	-	8,202	-	8,202
Norwegian krone	-	-	5,326	-	5,326
Indonesian rupiah	-	-	5,049	-	5,049
Other (less than \$5 million)	-	49,224	13,170	-	62,394
Total	\$ (11,265)	\$ 110,014	\$ 852,978	\$ 34,035	\$ 985,762

Contributions Receivable. The June 30, 2011 Agreement with the City provided that for fiscal year 2013 the amount to be contributed would be an \$93,000 thousand fixed payment, with any shortfall in the fixed payment not to exceed \$8,500 thousand, and for fiscal year 2012, an \$83,000 thousand fixed payment, with any shortfall in the fixed payment not to exceed \$17,000 thousand. Therefore, the total contribution receivable is \$25,500 thousand, which is secured by an undivided interest (Property interest) in real property owned by the City known as the Houston Police Department Headquarters located at 1200 Travis Street, Houston, Texas, and a parking garage located at 801 Polk Street, Houston, Texas (Real Property) and is further discussed in footnote 2.

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Securities Lending Program. The System's Board of Trustees' policies permit the System to lend securities (domestic and international equities and fixed income) to securities firms on a temporary basis through its custodian bank. The System receives fees for all loans and retains the right to all interest and dividend payments while the securities are on loan. Cash, letters of credit or various government securities having market values equal to or exceeding 102% and 105% of the value of the loaned securities for domestic and international securities, respectively, collateralize all security loan agreements. Whenever the market value of the securities on loan changes, the borrower must adjust the collateral accordingly. The System's bank pools all collateral received from securities lending transactions and invests any cash collateral. The System holds an undivided share of the collateral provided by the borrowers of the securities. At June 30, 2014 the weighted-average maturity of the collateral pool was 50 days. The relationship between the maturities of the collateral pool and the System's loans has not been determined. Cash collateral invested in the custodian bank collateral pool at June 30, 2014 and 2013, was \$41,986 thousand and \$190,616 thousand, respectively. The System also had non-cash collateral at June 30, 2014 and 2013, of \$123 thousand and \$302 thousand respectively, consisting of treasury securities and letters of credit. The System cannot sell or pledge the collateral unless the borrower fails to return the securities borrowed.

The market value of securities on loan at June 30, 2014 and 2013 was \$41,230 thousand and \$186,818 thousand, respectively. At June 30, 2014, the System had no credit risk exposure to borrowers because the amounts the System owes the borrowers, \$42,109 thousand, exceeds the amounts the borrowers owe the System, \$41,230 thousand.

Derivatives – The System's investment managers may invest in derivatives if permitted by the guidelines established by the System's Board of Trustees. The System's staff monitors guidelines and compliance. From time to time the System's investment managers will invest in equity, fixed income and short term futures contracts along with foreign currency forward contracts. No derivatives are purchased with borrowed funds.

The fair value balance and notional amounts of derivative instruments outstanding at June 30, 2014, classified by type, and the changes in fair value of such derivative instruments for the year then ended is shown in the table below. The Change in Fair Value figures are reported as a component of net appreciation (depreciation) in the Statement of Changes in Fiduciary Net Position.

Fair Value (\$000's) at June 30, 2014

(\$000's)	Year ending June 30, 2014 Changes in Fair		As of June 30, 2014		Notional Value
	Value	Posted Margin	Collateral held at Custodian Bank		
Equity Futures	\$ 69,367	\$ 56,951	\$ 727,626	\$ 1,035,979	
Currency Futures	(7,756)	2,760	3,357	247,572	
Fixed Income Future	(241)	-	-	-	
Options	\$ 5,621	-	16,428	143,731	

Futures are used to obtain market exposure and to take advantage of mis-pricing opportunities. When a position is taken in a futures contract, a margin is posted and the contract is subject to daily mark-to-market adjustments. For options, no margin is posted. Instead, options are purchased at a premium, which is either for feited or recouped, depending on the gain or loss on the contract. Foreign currency contracts are used to hedge against the currency risk in the System's investments in foreign equity and fixed income securities. To liquidate the contract prior to expiration an offsetting position in the same contract must be taken. These derivatives are used to enhance yields and provide incremental income.

These derivative instruments are subject to the following risks:

- *Custodial Credit Risk* – Custodial credit risk for derivative instruments is the risk that, in the event of the failure of the counterparty to a transaction, the System will not be able to recover the value of the derivative instruments or collateral securities that are in the possession of an outside party. Consistent with the System's investment policy, the System's derivative instruments were held by the counterparty that was acting as the System's agent.
- *Credit Risk* – Credit risk is the risk that the counterparty will not fulfill its obligations. The System does not have an investment policy specifically regarding credit risk for derivative instruments. The System's investment policy allows investment managers full discretion in adopting investment strategies to deal with this risk. The System's investment managers seek to control this risk through counterparty credit evaluations and approvals, counterparty credit limits, and exposure monitoring procedures.
- *Interest Rate Risk* – Interest rate risk is the risk that changes in interest rates will adversely affect the fair values of the System's derivative instruments.

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• *Foreign Currency Risk* – Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of derivative instruments. The System’s exposure to foreign currency risk derives from its positions in foreign currency denominated international equity and fixed income investments as outlined in the following schedule. The System has a currency hedging program in place that hedges fifty percent of the exposure to the Euro, Pound, and Yen exposure in these investment programs. This hedging program is disclosed elsewhere in this footnote. The System’s derivative instruments exposure to foreign currency risk in U.S. dollars as of June 30, 2014, is shown in the table below.

(\$000's)			
Currency	Equity Derivatives	Currency Derivatives	Total
British pound sterling	\$ 75,641	\$ (48,828)	\$ 26,813
Japanese yen	73,206	(45,942)	27,264
Euro	139,222	79,277	218,499
Australian dollar	27,676	-	27,676
Hong Kong dollar	11,528	-	11,528
Swedish krona	10,624	-	10,624
Danish krone	5,504	-	5,504
singapore dollar	5,258	-	5,258
Other (less than \$5 million)	11,864	1,123	12,987
Total	\$ 360,523	\$ (14,370)	\$ 346,153

Alternative Investments – As of June 30, 2014, the System was invested in various partnerships, separate accounts and commingled funds across various types of alternative investments as detailed in the table below.

Investment Type	Fair Value (\$000's)
<i>Private Equity</i>	
Leveraged Buyouts	\$ 155,087
Secondary Funds	4,864
Special Situations	95,388
Venture Capital	60,051
<i>Other Alternatives</i>	
Hedge Funds	485,198
Real Estate Funds	148,359
Commodities	833,634
Risk Parity	232,843
Opportunistic Credit	75,343
Opportunistic Funds	-
Total	\$ 2,090,767

NOTE 4: ALLOWANCE FOR DOUBTFUL ACCOUNTS

The following were the allowances for doubtful accounts receivable by fund as of June 30, 2014 (\$000's):

Fund	Amount
General	
Uncollectible general property taxes	\$ 43,613
Ambulance charges	157,071
Fines and forfeits	34,454
Demolition liens	113,123
Others	6,528
Grant revenue	29,605
Airport System	4,614
Convention and Entertainment Facilities	521
Combined Utility System	123,081
	\$ 512,610

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NOTE 5: PROPERTY TAX

The City's annual ad valorem property tax is required to be levied by October 1, or as soon thereafter as practicable, on the assessed value listed as of the prior January 1 for all real and certain personal property. Taxes are due on January 31 of the year following the year of the levy. A tax lien attaches to all property on January 1 of each year to secure the payment of all taxes, penalties and interest that is ultimately imposed on the property. The tax rate established by the City Council for the 2013 tax year was \$0.63875 per \$100 of assessed value with \$0.477085 for operations and \$0.161665 for debt service.

The City Charter limits the property tax rate to \$0.50 per \$100 of assessed valuation excluding taxes levied for "debt service," as that term is defined in Section 1 of Article III of the City Charter. The Texas Property Tax Code ("Code"), with certain exceptions, exempts intangible personal property, household goods, and family-owned automobiles from taxation. In addition, the Code provides for countywide appraisal districts.

NOTE 6: CAPITAL ASSETS

A. Governmental activities of the Primary Government

A summary of changes in capital assets for the year ended June 30, 2014 follows (in thousands):

	Balance July 1, 2013	Additions	Retirement	Transfers	Balance June 30, 2014
Governmental Activities					
Capital assets not being depreciated:					
Land	\$ 367,429	\$ 9,480	\$ -	\$ 2,462	\$ 379,371
Right of way	1,737,059	1,062	(43)	1,808	1,739,886
Construction Work in Progress	386,414	256,024	-	(255,421)	387,017
Total capital assets not being depreciated	<u>2,490,902</u>	<u>266,566</u>	<u>(43)</u>	<u>(251,151)</u>	<u>2,506,274</u>
Other capital assets:					
Buildings	1,109,890	-	(106)	10,888	1,120,672
Improvements and Equipment	925,835	40,825	(36,853)	157,779	1,087,586
Infrastructure	6,010,801	26,020	(4,279)	81,960	6,114,502
Total other capital assets	<u>8,046,526</u>	<u>66,845</u>	<u>(41,238)</u>	<u>250,627</u>	<u>8,322,760</u>
Less accumulated depreciation for:					
Buildings	(323,676)	(29,876)	106	1,342	(352,104)
Improvements and Equipment	(639,110)	(55,887)	34,901	(990)	(661,086)
Infrastructure	(2,806,067)	(132,817)	4,135	172	(2,934,577)
Total accumulated depreciation	<u>(3,768,853)</u>	<u>(218,580)</u>	<u>39,142</u>	<u>524</u>	<u>(3,947,767)</u>
Other capital assets, net	<u>4,277,673</u>	<u>(151,735)</u>	<u>(2,096)</u>	<u>251,151</u>	<u>4,374,993</u>
Governmental Activities capital assets, net	<u>\$6,768,575</u>	<u>\$ 114,831</u>	<u>\$ (2,139)</u>	<u>\$ -</u>	<u>\$6,881,267</u>

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B. Business-type Activities

	Balance July 1, 2013	Additions	Retirements	Transfers	Balance June 30, 2014
Airport System					
Capital assets not being depreciated:					
Land	\$ 209,967	\$ -	\$ -	\$ -	\$ 209,967
Rights & Intangibles- Non Depreciable	8,070	-	-	301	8,371
Construction Work in Progress	114,439	135,866	-	(130,118)	120,187
Total capital assets not being depreciated	<u>332,476</u>	<u>135,866</u>	<u>-</u>	<u>(129,817)</u>	<u>338,525</u>
Other capital assets:					
Buildings and building improvements	2,524,091	60	(2,320)	48,793	2,570,624
Improvements and equipment	2,112,082	3,289	(28,987)	81,554	2,167,938
Rights & Intangibles- Amortizable	2,492	(75)	-	(6)	2,411
Total other capital assets	<u>4,638,665</u>	<u>3,274</u>	<u>(31,307)</u>	<u>130,341</u>	<u>4,740,973</u>
Less accumulated depreciation for:					
Buildings and building improvements	(905,675)	(91,744)	1,138	(8)	(996,289)
Improvements and equipment	(1,229,573)	(80,110)	5,193	(522)	(1,305,012)
Rights & Intangibles	(735)	(364)	-	6	(1,093)
Total accumulated depreciation	<u>(2,135,983)</u>	<u>(172,218)</u>	<u>6,331</u>	<u>(524)</u>	<u>(2,302,394)</u>
Other capital assets, net	<u>2,502,682</u>	<u>(168,944)</u>	<u>(24,976)</u>	<u>129,817</u>	<u>2,438,579</u>
Airport System capital assets, net	<u>\$ 2,835,158</u>	<u>\$ (33,078)</u>	<u>\$ (24,976)</u>	<u>\$ -</u>	<u>\$2,777,104</u>
Convention and Entertainment Facilities					
Capital assets not being depreciated:					
Land	\$ 96,311	\$ -	\$ -	\$ -	\$ 96,311
Construction Work in Progress	788	-	-	-	788
Total capital assets not being depreciated	<u>97,099</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>97,099</u>
Other capital assets:					
Buildings	557,953	-	-	-	557,953
Garage Rights	13,144	-	-	-	13,144
Improvements and equipment	12,603	-	(132)	-	12,471
Infrastructure	334	-	-	-	334
Total other capital assets	<u>584,034</u>	<u>-</u>	<u>(132)</u>	<u>-</u>	<u>583,902</u>
Less accumulated depreciation/amortization for:					
Buildings	(219,704)	(13,343)	-	-	(233,047)
Garage Rights	(3,343)	(353)	-	-	(3,696)
Improvements and equipment	(8,451)	(508)	132	-	(8,827)
Infrastructure	(68)	(15)	-	-	(83)
Total accumulated depreciation/amortization	<u>(231,566)</u>	<u>(14,219)</u>	<u>132</u>	<u>-</u>	<u>(245,653)</u>
Other capital assets, net	<u>352,468</u>	<u>(14,219)</u>	<u>-</u>	<u>-</u>	<u>338,249</u>
Convention and Entertainment Facilities capital assets, net	<u>\$ 449,567</u>	<u>\$ (14,219)</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 435,348</u>

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	Balance July 1, 2013	Additions	Retirements	Transfers	Balance June 30, 2014
Combined Utility System					
Capital assets not being depreciated:					
Land	\$ 129,065	\$ 1,617	\$ (797)	\$ 3,213	\$ 133,098
Right of way	1,422	-	-	21	1,443
Rights & Intangibles - Non-depreciable	462,065	-	-	-	462,065
Construction Work in Progress	236,672	347,243	-	(247,116)	336,799
Total capital assets not being depreciated	<u>829,224</u>	<u>348,860</u>	<u>(797)</u>	<u>(243,882)</u>	<u>933,405</u>
Other capital assets:					
Buildings	194,816	42	(154)	3,434	198,138
Improvements and equipment	138,490	12,675	(7,907)	10,829	154,087
Infrastructure	9,547,114	8,833	(80,233)	229,618	9,705,332
Total other capital assets	<u>9,880,420</u>	<u>21,550</u>	<u>(88,294)</u>	<u>243,881</u>	<u>10,057,557</u>
Less accumulated depreciation/amortization for:					
Buildings	(66,623)	(5,607)	141	108	(71,981)
Improvements and equipment	(95,212)	(9,393)	7,857	(64)	(96,812)
Infrastructure	(4,697,946)	(208,381)	73,573	(43)	(4,832,797)
Total accumulated depreciation/amortization	<u>(4,859,781)</u>	<u>(223,381)</u>	<u>81,571</u>	<u>1</u>	<u>(5,001,590)</u>
Other capital assets, net	<u>5,020,639</u>	<u>(201,831)</u>	<u>(6,723)</u>	<u>243,882</u>	<u>5,055,967</u>
Combined Utility System capital assets, net	<u>5,849,863</u>	<u>147,029</u>	<u>(7,520)</u>	<u>-</u>	<u>5,989,372</u>
Business-type activities capital assets, net	<u>\$ 9,134,588</u>	<u>\$ 99,732</u>	<u>\$ (32,496)</u>	<u>\$ -</u>	<u>\$ 9,201,824</u>

C. Depreciation Expense

Depreciation expense was charged to functions programs of the primary government as follows (in thousands):

Governmental activities	
General government	\$ 10,925
Public safety	31,172
Public works	18,282
Health	5,201
Housing	1,752
Parks and recreation	12,405
Library	6,026
Infrastructure	132,817
Total depreciation expense - governmental activities	<u>\$ 218,580</u>
Business-type activities	
Airport System	\$ 172,218
Convention & Entertainment Facilities	14,219
Combined Utility System	223,381
Total depreciation expense - business-type activities	<u>\$ 409,818</u>

D. Pension Trust Funds

In February 1998, the Firefighters' Relief and Retirement Fund purchased land in the amount of \$483,325 for use in the construction of a new office building for its operations and its members. In April of 2001, the construction of the new building was completed. The building's capitalized cost of \$9,304,100 is being depreciated over 30 years. The accumulated depreciation for the building as of June 30, 2014 amounted to \$3,776,727.

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
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NOTE 7: SHORT-TERM DEBT – TAX AND REVENUE ANTICIPATION NOTES

Short-term debt activity for the year ended June 30, 2014, was as follows (in thousands):

	<u>Balance July 1, 2013</u>	<u>Issued</u>	<u>Redeemed</u>	<u>Balance June 30, 2014</u>
Tax and revenue Anticipation notes		\$ 180,000	\$ 180,000	\$ -

On July 2, 2013, the City closed on the sale of \$180,000,000 Tax and Revenue Anticipation Notes (TRANS), Series 2013. The proceeds of the TRANS were used to pay finance City's general operating expenditures until tax revenues were received. The average yield true interest cost was 0.16%. The principal and the interest of the notes matured on June 30, 2014.

NOTE 8: LONG-TERM LIABILITIES

A. General Long-Term Liabilities

Changes in General Long-Term Liabilities for the year ended June 30, 2014 are summarized as follows (in thousands):

	<u>Balance July 1, 2013</u>	<u>Additions</u>	<u>Retirements/ Transfers</u>	<u>Balance June 30, 2014</u>	<u>Amounts Due within One Year</u>
Governmental Activities					
Bonds and notes payable					
General tax obligation debt	\$ 3,291,013	\$ 119,000	\$ (176,205)	\$ 3,233,808	\$ 407,705
Note Payable CWA	11,135	494	-	11,629	-
HUD Section 108 Loans	6,458	-	(645)	5,813	659
Plus premium (discount) on bonds	200,624	-	(14,442)	186,182	-
Total bonds and notes payable	<u>3,509,230</u>	<u>119,494</u>	<u>(191,292)</u>	<u>3,437,432</u>	<u>408,364</u>
Other liabilities:					
Claims and judgments	102,934	271,298	(255,716)	118,516	37,881
Compensated absences	437,491	74,357	(58,949)	452,899	138,452
Arbitrage rebate	20	-	(2)	18	-
Other Post Employment Benefit obligation	1,057,230	168,933	(30,756)	1,195,407	-
Net Pension obligation	958,113	362,693	(260,970)	1,059,836	-
Total other liabilities	<u>2,555,788</u>	<u>877,281</u>	<u>(606,393)</u>	<u>2,826,676</u>	<u>176,333</u>
Governmental Activities Long-Term Liabilities	<u>\$ 6,065,018</u>	<u>\$ 996,775</u>	<u>\$ (797,685)</u>	<u>\$ 6,264,108</u>	<u>\$ 584,697</u>
Discretely Presented Component Units:					
Notes payable	\$ 311,722	\$ 10,422	\$ (25,202)	\$ 296,943	\$ 16,044
Revenue bonds	274,949	135,055	(48,771)	361,233	9,000
Discretely Presented Component Units Long-Term Liabilities	<u>\$ 586,671</u>	<u>\$ 145,477</u>	<u>\$ (73,973)</u>	<u>\$ 658,176</u>	<u>\$ 25,044</u>

(Continued)

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	<u>Balance</u> <u>July 1, 2013</u>	<u>Additions</u>	<u>Retirements/ Transfers</u>	<u>Balance</u> <u>June 30, 2014</u>	<u>Amounts</u> <u>Due within</u> <u>One Year</u>
Business-type activities					
Bonds and notes payable					
Airport System debt	\$ 2,290,936	\$ 1,200	\$ (60,085)	\$ 2,232,051	\$ 60,280
Convention and Entertainment debt	509,249	42,000	(68,275)	482,974	67,900
Combined Utility System debt	6,023,556	1,543,085	(1,525,250)	6,041,391	321,660
Long-term contracts - Combined Utility	135,585	-	(13,537)	122,048	13,531
Premiums, discounts amount	481,929	128,976	(41,292)	569,613	-
Total bonds and notes payable	<u>9,441,255</u>	<u>1,715,261</u>	<u>(1,708,439)</u>	<u>9,448,077</u>	<u>463,371</u>
Other liabilities:					
Claims and judgments	3,911	2,353	(1,826)	4,438	1,826
Compensated absences	31,647	16,311	(15,569)	32,389	15,794
Arbitrage rebate liability	614	44	(175)	483	-
Other Post Employment Benefit obligation	151,895	23,179	(4,990)	170,084	-
Net Pension obligation	128,913	44,129	(35,976)	137,066	-
Total other liabilities	<u>316,980</u>	<u>86,016</u>	<u>(58,536)</u>	<u>344,460</u>	<u>17,620</u>
Business-type activities					
Long-Term Liabilities	<u>\$ 9,758,235</u>	<u>\$ 1,801,277</u>	<u>\$ (1,766,975)</u>	<u>\$ 9,792,537</u>	<u>\$ 480,991</u>
Total Reporting Entity					
Long-Term Liabilities	<u>\$ 16,409,924</u>	<u>\$ 2,943,529</u>	<u>\$ (2,638,633)</u>	<u>\$ 16,714,821</u>	<u>\$ 1,090,732</u>

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B. Schedule of Changes in Bonds and Long-Term contracts (amounts expressed in thousands):

	Stated Interest Rate Range, %	Face Value Outstanding 6/30/2013	FY14 Issued/ Increased
General Tax Obligation Debt			
Public improvement bonds	0.25 to 6.24	\$ 2,561,515	\$ -
Pension obligations	5.31 to 6.29	540,728	-
Commercial paper	0.12 to 10.00	176,900	110,000
Tax and revenue certificates of obligation	4.00 to 5.00	11,870	9,000
Total General Tax Obligation Debt		<u>\$ 3,291,013</u>	<u>119,000</u>
HUD Section 108 Loans		<u>\$ 6,458</u>	
Note Payable CWA		<u>\$ 11,135</u>	<u>\$ 494</u>
Revenue Bonded Debt			
Airport System Bonds			
Senior Lien Revenue Bonds	5.00 to 5.50	\$ 449,660	\$ -
Subordinate lien revenue and refunding bonds	0.14 to 5.45	1,811,155	-
Inferior lien contractual obligation	5.38 to 5.50	28,115	-
Pension obligations	5.31	2,006	-
Commercial paper	.13	-	1,200
		<u>\$ 2,290,936</u>	<u>1,200</u>
Convention and Entertainment Facilities			
Senior lien hotel occupancy tax/parking facilities	1.12 to 5.75	\$ 463,365	\$ -
Hotel and parking revenue commercial paper	0.08 to 10.00	42,000	42,000
Pension obligations	5.31 to 6.29	3,884	-
		<u>\$ 509,249</u>	<u>42,000</u>
Combined Utility System			
Combined Utility System first lien bonds	0.02 to 6.00	\$ 5,751,435	\$ 1,363,085
Water and Sewer System junior lien revenue bond	1.25 to 6.90	210,964	-
Combined Utility System commercial paper	0.12 to 10.00	-	180,000
Pension obligations	5.31 to 6.29	61,157	-
		<u>\$ 6,023,556</u>	<u>1,543,085</u>
Long-Term Contracts-Water and Sewer System			
Coastal Water Authority	2.00 to 7.50	\$ 112,320	\$ -
Other long term contracts	3.22 to 5.85	23,265	-
		<u>\$ 135,585</u>	<u>-</u>
Total Revenue Bonded Debt and Long-Term Contracts, Primary Government		<u>\$ 8,959,326</u>	<u>\$ 1,586,285</u>
Total Bonds and Long-Term Contracts Payable, Primary Government		<u>\$ 12,267,932</u>	<u>\$ 1,705,779</u>

(1) Adjustments consist of unamortized bond premiums, discounts, and capital appreciation bond accretions.

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FY14 Redeemed/ Refunded	Face Value Outstanding 6/30/2014	Adjustments⁽¹⁾	Net Outstanding 6/30/2014
\$ 139,070	\$ 2,422,445	\$ 184,680	\$ 2,607,125
5,375	535,353	-	535,353
29,550	257,350	-	257,350
2,210	18,660	1,502	20,162
<u>\$ 176,205</u>	<u>3,233,808</u>	<u>186,182</u>	<u>\$ 3,419,990</u>
<u>\$ 645</u>	<u>\$ 5,813</u>		<u>\$ 5,813</u>
	<u>\$ 11,629</u>		<u>\$ 11,629</u>
\$ -	\$ 449,660	\$ (878)	\$ 448,782
55,045	1,756,110	79,577	1,835,687
5,040	23,075	-	23,075
-	2,006	-	2,006
-	1,200	-	1,200
<u>60,085</u>	<u>2,232,051</u>	<u>78,699</u>	<u>\$ 2,310,750</u>
\$ 26,215	\$ 437,150	\$ 139,141	\$ 576,291
42,000	42,000	-	42,000
60	3,824	-	3,824
<u>68,275</u>	<u>482,974</u>	<u>139,141</u>	<u>\$ 622,115</u>
\$ 1,513,610	\$ 5,600,910	\$ 263,303	\$ 5,864,213
10,730	200,234	79,532	279,766
-	180,000	-	180,000
910	60,247	-	60,247
<u>1,525,250</u>	<u>6,041,391</u>	<u>342,835</u>	<u>\$ 6,384,226</u>
\$ 13,420	\$ 98,900	\$ 3,474	\$ 102,374
117	23,148	5,464	28,612
<u>13,537</u>	<u>122,048</u>	<u>8,938</u>	<u>\$ 130,986</u>
<u>\$ 1,667,147</u>	<u>\$ 8,878,464</u>	<u>\$ 569,613</u>	<u>\$ 9,448,077</u>
<u>\$ 1,843,997</u>	<u>\$ 12,129,714</u>	<u>\$ 755,795</u>	<u>\$ 12,885,509</u>

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C. Terms of Long-Term Debt

1. Public Improvement Bonds

The City has issued Public Improvement Bonds on numerous occasions. The bonds are payable from ad valorem tax revenues. The proceeds are used for street and bridge improvements, traffic signals, municipal buildings, parks, and other capital improvements. Interest is payable semi-annually; principal is payable in various amounts annually through March 1, 2043.

2. Pension Obligation Bonds

The City has issued several series of General Obligation Taxable Pension Bonds. The proceeds were used to reduce the unfunded actuarial accrued liability of the Houston Municipal Employees Pension System and the Houston Police Officers Pension System. Interest is payable semi-annually, and principal is payable in varying amounts through 2041. Although these obligations have an ad valorem tax pledge, a portion of the liabilities is recorded in the enterprise funds because the liabilities are directly related and expected to be paid from those funds based on percentages of payroll.

3. General Obligation Commercial Paper

The City currently may issue Commercial Paper Notes ("Notes") under its \$825 million General Obligation Commercial Paper, \$200 million Series E Program, \$200 million Series G Program, \$100 million Series H-2 Program, \$125 million Series J, \$100 million Series K-1 and \$100 million Series K-2 Program. The Notes may be issued for a period not to exceed 270 days and will bear interest based upon the specified term of the Notes, but not to exceed 10%. Principal on the Notes is payable from ad valorem tax revenue, the issuance of new commercial paper, bond proceeds and other funds provided under credit lines. Interest is payable from ad valorem tax revenue collected by the City. Proceeds from the Notes are used to finance various capital projects and public improvements for authorized City purposes. Upon maturity, the Notes will be remarketed by the commercial paper dealers or extinguished with long-term debt.

During fiscal year 2014 the average interest rate for the outstanding General Obligation Notes, including dealer and credit fees, was 0.73%. The average year-end rate for the outstanding notes, including fees, was 0.64%. This does include Series K-1 and K-2 which was established mainly for appropriation purpose; therefore there were no draws during the Fiscal Year 2014. The average fees only related to Series K-1 is 0.23% and K-2 is 0.19% without any notes outstanding during Fiscal Year 2014. The Credit Agreements expire on the following dates: Series E-1 on June 15, 2015, Series E-2 on April 28, 2016, Series G-1 on November 28, 2014, Series G-2 on November 28, 2014, Series H-2 on August 15, 2014, Series J on May 20, 2017, Series K-1 on December 26, 2014 and Series K-2 on December 27, 2014.

4. Certificates of Obligation

Since 1988, the City has issued Certificates of Obligation each year to provide for the purchase of equipment utilized in general City operations including, without limitation, police vehicles, maintenance vehicles and equipment, computer equipment, and costs associated with demolishing dangerous structures. Each year the City is obligated to levy, assess, and collect ad valorem taxes sufficient to pay principal and interest on the certificates payable semi-annually until maturity. Generally, these certificates are not subject to redemption prior to final maturity, except for the Certificates of Obligation Series 2005D which are subject to optional redemption on or after March 1, 2015.

5. HUD Section 108 Loan

The City has borrowed money from the United States Department of Housing and Urban Development ("HUD") and loaned it to the Houston Business Development Initiative ("HBDI") and three hotels in the downtown business district. HBDI in turn makes small business loans to under-served areas of the community. The City has pledged only certain grant revenues and its receipts from the loans to repay HUD.

6. Airport System Revenue Bonds

The Houston Airport System has \$449,660,000 of senior lien bonds outstanding that mature in varying amounts from 2015 to 2039. Bonds issued on the senior lien require net revenues total 125% of the debt service requirements for such fiscal year. The Houston Airport System has also issued Subordinate Lien Bonds which are paid solely from a lien on the airport system's net revenues, which must total 110% of the debt service requirements for Subordinate Lien Bonds for such fiscal year. The bonds have a final maturity in the year 2032. Airport System Subordinate Lien Revenue Bonds, Series 2000P1 and 2000P2, 2002C, 2002D-1, and 2002D-2, have been issued as auction rate securities with current 7-day resets. In December 2010, the Airport System issued approximately \$95.7 million of Variable Rate Demand Obligations (VRDO's), Series, 2010, with a 7 day reset to refund its 2005 VRDO's which were subject to alternative minimum tax. These bonds may all be converted to other modes including fixed rate bonds. The City has liquidity facility with Barclay in place for the Series 2010 bonds with a termination date of December 22, 2014. The maximum interest rate permitted under the ordinance is 10%.

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The City has purchased municipal debt service reserve fund policies that unconditionally guarantee the payment of principal and interest on 9 of the 14 current outstanding airport system subordinate lien issues. The reserve policies terminate upon final maturities on various dates in the future. Each of the draws made against the reserve policy shall bear interest at the Prime Rate plus two percent, not to exceed a maximum interest rate of 12%. The repayment provisions require one-twelfth of the policy costs for each draw to be repaid monthly, beginning the first month following the date of each draw. The City cash funded a reserve fund for its Houston Airport System 2009 Senior Lien Revenue Bonds.

7. Airport System Inferior Lien Contract

On July 1, 2004 the City and United Airlines (formerly Continental Airlines, Inc.) entered into a Sublease Agreement associated with the Special Facilities Lease for the Automated People Mover System and the City's Airport System Special Facilities Revenue Bonds (Automated People Mover Project) Series 1997A (1997A Special Facilities Bonds). The City assumed United Airlines' interest in the project upon completion of the expansion of the Automated People Mover System on January 25, 2005. As part of the Sublease, the City agreed to make sublease payments that include amounts equal to the debt service on the 1997A Special Facilities Bonds. The payments are payable from Airport System net revenues on the same priority as inferior lien bonds. Accordingly, the principal amount remaining on the 1997A Special Facilities Bonds, totaling \$23,075,000 is recorded as an Inferior Lien Contract.

8. Airport System Commercial Paper

Between July 1, 2013 and December 20, 2013, Airport System Senior Lien Commercial Paper Notes Series A and B (the Notes) were collateralized by a direct pay letter of credit issued by Bank of America N. A. On December 18, 2013 the Series A and B Notes were authorized with a revolving credit agreement convertible to direct pay letters of credit issued by Royal Bank of Canada, and a lien on the net revenues of the Airport System. The Letter of Credit will terminate on December 16, 2016 for Series A and B. The authorization is for \$150 million to establish, improve, enlarge, extend and repair the City's Airport System, acquire land, and pay interest and cost of issuance of the Notes. The outstanding notes as of June 30, 2014 are \$1.2 million.

9. Convention and Entertainment Facilities Bonds

These bonds are special limited obligations of the City that are paid from a lien on the pledged receipts of the Hotel Occupancy Tax (HOT), revenues collected from seven City-owned parking facilities, and rebates of certain taxes derived from operation of the Convention Center Hotel and Parking Garage. The pledged HOT receipts are equal to 5.65% of the cost of substantially all hotel room rentals in the City, plus related penalties and interest for delinquent payments. As long as any of the Senior Lien Bonds remain outstanding, the City is required to levy a Hotel Occupancy Tax at a rate not less than 7%. The City currently levies a Hotel Occupancy Tax at the rate of 7%. Final maturity of the bonds is September 1, 2033.

The City has obtained a debt service reserve insurance policy for the Senior Lien Hotel Occupancy Tax Revenue Bonds. The surety policy provides insurance sufficient to pay maximum annual debt service of the Bonds. The surety policy expires upon final maturity of all outstanding Bonds, September 1, 2033. The City of Houston Convention Center Revenue Bonds, Series 2001C-1 and 2002C-2, have been issued as 7-day auction rate securities and are subject to conversion at the option of the City and subject to certain restrictions, to bonds that bear interest at rates other than auction rates. The maximum interest rate permitted under the ordinance is 10%.

10. Convention and Entertainment Hotel and Parking Revenue Commercial Paper

Hotel Occupancy Tax and Parking Revenue Flexible Rate Notes, Series A have been authorized for \$75 million to finance the costs of site acquisition, construction, and improvements for convention center facilities. The notes are issued as subordinate lien debt. The maturity of the Notes may not exceed 270 days and the maximum interest rate may not exceed 10%. Upon maturity, the Notes will be remarketed by the commercial paper dealer or extinguished with long-term debt. The Notes are collateralized by a Letter of Credit with Regions Capital Advantage that expires on December 16, 2016.

11. Combined Utility System First Lien Revenue Bonds

City Council authorized creation of the Combined Utility System ("the System") on September 3, 2003. The Combined Utility System currently consists of the City's Water and Sewer System. In the future the City may elect to include other utility systems. Its bonds are special obligations of the City payable from Net Revenues of the System after payments for maintenance and operations and debt service on Water and Sewer Junior Lien bonds. Net Revenues must equal 110% of the First Lien Revenue Bonds debt service.

The Combined Utility System Revenue Refunding Bonds, Series 2004B and 2004C, were initially issued as Auction Rate Securities. All of the 2004B auction rate securities were converted to variable rate demand bonds in April 2008. The Combined Utility System Revenue Refunding bonds Series, 2012A, 2012B and 2012C were issued as SIFMA index floating rate. Series 2012A bonds refunded \$125M and Series 2012B bonds refunded \$100M of Series 2004B-1 bonds. The Series 2012C were used to refund \$249M bonds of Series 2010B.

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12. Combined Utility System Commercial Paper

The Combined Utility System established a Commercial Paper Notes Program Series B which has been authorized for \$700 million to finance costs of eligible projects for the City's combined utility system, including acquisition or construction of improvements and additions or extension for the system, and costs of issuance. The notes are issued as third lien obligations. The maturity of the Notes may not exceed 270 days and the maximum interest rate may not exceed 10%. Principal on the Notes is payable from the issuance of new commercial paper, bond proceeds and other funds provided under separate letters of credit with J.P. Morgan Bank; Wells Fargo; Bank of Tokyo; State Street; Royal Bank of Canada and U.S. Bank totaling \$700 million. The letters of credit with JP Morgan expire on December 16, 2015, Wells Fargo on December 15, 2014, and Bank of Tokyo expires on January 16, 2015. The agreements with State Street and U.S. Bank expire on July 15, 2016. The agreement with RBC expires November 30, 2018. Interest on the Notes is payable from net revenues of the System and loans under the credit agreement.

13. Combined Utility System Synthetic Fixed Rate Swap Agreements

Combined Utility System synthetic fixed rate swaps. On June 10, 2004 the City entered into three identical pay-fixed, receive-variable rate swap agreements. The City pre-qualified six firms to submit competitive bids on the swap. The bidding took place on June 7, 2004. The three firms selected all matched the lowest fixed rate bid of 3.7784%.

Objective. The objective of the swaps is to hedge against the potential of rising interest rates in conjunction with the City's Combined Utility System 2004B variable rate interest bonds ("2004B Bonds").

Terms. The notional amount totals \$653,325,000, the principal amount of the associated 2004B Bonds. The City's swap agreements contain scheduled reductions to outstanding notional amounts that follow anticipated payments of principal of the 2004B Bonds in varying amounts during the years 2028 to 2034.

Under the terms of the swaps, the City will pay a fixed rate of 3.7784% and receive a floating rate equal to 57.6% of One-Month US Dollar LIBOR plus 37 basis points. All agreements were effective June 10, 2004, the date of issuance of the 2004B Bonds. The termination date is May 15, 2034.

At June 30, 2014, the effective rate on the 2004B Bonds associated with the swap was computed as follows:

	<u>Terms</u>	<u>RATE (%)</u>
Variable rate payment from counterparties	LIBOR x 57.6%	0.0954
	+ Constant	<u>0.3700</u>
Swap receipt		0.4654
Fixed rate paid to counterparties	Fixed	<u>(3.7784)</u>
Net rate (paid)/received for swap		(3.3130)
Average variable rate on 2004B bonds, year end		(0.0537)
Plus dealer and credit fees on 2004B bonds		<u>(0.5746)</u>
Effective rate of 2004B bonds		<u>(3.9413)</u>

In contrast, the fixed rate the City paid on its Combined Utility System Series 2004A fixed rate bonds, which have a comparable maturity, was 5.08%.

Fair value. Because long-term interest rates have changed since inception of the swaps, the swaps had a negative fair value of \$147,966,976 on June 30, 2014. After adjustment for the refunded portion, the value reported in the financial statements is \$154,180,139 (see note 8E). This value was calculated using the zero-coupon method. This method calculates the future net settlement payments required by the swap, assuming that the current forward rates implied by the yield curve correctly anticipate future spot interest rates. The fair value is recorded on the balance sheet of the Combined Utility System in the SWAP liability. These net payments are then discounted using the spot rates implied by the current yield curve for hypothetical zero-coupon bonds due on the date of each future net settlement on the swaps.

Credit risk. As of June 30, 2014, the City was not exposed to credit risk because the swaps had a negative fair value. However, should interest rates increase and the fair value of the swap become positive, the City would be exposed to credit risk on the swap in the amount of its fair value. The City's swap policy generally requires that swap counterparties be rated double-A or better by at least one nationally recognized rating agency at inception. Under the agreements, if a counterparty's credit rating falls below AA, collateral may be required in varying amounts depending on the credit rating and fair market value to the City of the swaps. No collateral has been required to date.

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<u>Counterparty</u>	<u>Notional Amount</u>	<u>Fair Value</u>	<u>Counterparty Credit Rating (Moody's /S&P /Fitch)</u>
Goldman Sachs Capital Markets	\$353,325,000	(\$80,022,090)	Baa1/A/A
JP Morgan Chase	150,000,000	(33,972,443)	Aa3/A+/A+
UBS AG	<u>150,000,000</u>	<u>(33,972,443)</u>	A2 /A /A
Total	<u>\$653,325,000</u>	<u>(147,966,976)</u>	
Adjustment for refunded portion (see Note 8E)		<u>(6,213,163)</u>	
Total reported value		<u>\$154,180,139</u>	

Basis risk. The City is exposed to basis risk on the swaps because the variable payment received is based on an index other than SIFMA. Should the relationship between LIBOR and SIFMA move to convergence (because of reductions in tax rates, for example), the expected cost savings may not be realized. The City has issued variable rate demand bonds with an average rate of 0.18% (not including dealer and credit fees) as of June 30, 2014, whereas the associated LIBOR-based rate of the swap was 0.50%.

Termination risk. The City may terminate for any reason. A counterparty may terminate a swap if the City fails to perform under the terms of the contract. The City's on-going payment obligations under the swap (and, to a limited extent, its termination payment obligations) are insured, and counterparties cannot terminate so long as the insurer does not fail to perform. If a swap should be terminated, the associated variable-rate bonds would no longer carry synthetic fixed interest rates. Also, if at the time of the termination the swap has a negative fair value, the City would be liable to the counterparty for a payment equal to the swap's fair value.

Remarketing risk. The City faces a risk that the remarketing agent will not be able to sell the variable rate bonds at a competitive rate. At times rates vary as investors shift portfolios in and out of the tax-exempt variable rate sector.

Swap payments and associated debt. As of June 30, 2014, debt service requirements for the swap agreements are reported in Note 8D, assuming current interest rates remain the same. As rates vary, variable rate bond interest payments and net swap payments will vary. Expected debt service payments on the associated Combined Utility System 2004B bonds are included with other Combined Utility System Bonds on Note 8D.

14. Combined Utility System Forward Interest Rate Swap

Combined Utility System Forward Starting Swap. On November 1, 2005 the City entered into a forward interest rate swap transaction with Royal Bank of Canada ("RBC"). The transaction was conducted through a competitive bid process.

Objective. The City entered the swap agreement to hedge against the potential of rising interest rates associated with underlying variable rate bonds of \$249,075,000.

Terms. Under the terms of the contract, the City will pay a fixed rate of 3.761% on a par value of \$249,075,000, and it will receive variable payments based on 70% of one-month LIBOR. The City's scheduled net swap payments are insured by Ambac Assurance Corporation.

At June 30, 2014, the effective rate on the 2012C Bonds associated with the swap was computed as follows:

	<u>Terms</u>	<u>RATE (%) Received (Paid)</u>
Variable rate payment from counterparties (Swap Receipt)	LIBOR x 70%	0.1240
Fixed rate paid to counterparty	Fixed	<u>(3.7610)</u>
Net rate (paid)/received for swap		(3.6370)
Year-end variable rate on 2012C bonds		(0.0594)
Plus credit fees on 2012C bonds		<u>(.6000)</u>
Effective rate of 2012C bonds		<u>(4.2964)</u>

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Fair value. The swap had a fair value of negative \$55,697,309 on June 30, 2014. After adjustment for the refunded portion, the value reported in the financial statements is \$61,562,193 (see note 8E). The fair value is recorded on the balance sheet of the Combined Utility System in the SWAP liability. This value was calculated using the zero-coupon method. This method calculates the future net settlement payments required by the swap, assuming that the current forward rates implied by the yield curve correctly anticipate future spot interest rates. These net payments are then discounted using the spot rates implied by the current yield curve for hypothetical zero-coupon bonds due on the date of each future net settlement on the swaps.

Credit risk. As of June 30, 2014, the City was not exposed to credit risk because the fair market value of the swap was negative to the City. As of June 30, 2014, RBC was rated Aa3, AA- and AA by Moody's, Standard and Poor's, and Fitch respectively. Under the agreement, if RBC's credit rating falls below double-A, collateral must be posted in varying amounts depending on the credit rating if the fair value of the swap is positive to the City. No collateral has been required to date.

Basis risk. The City is exposed to basis risk on the swap because the variable payment received is based on an index that is not tax-exempt. Should the relationship between LIBOR and SIFMA move to convergence (because of reductions in tax rates, for example), the expected cost savings may not be realized. At June 30, 2014 the interest rate in effect for the underlying variable rate bonds was 0.13% while the rate in effect for the swap receipts was 0.15%.

Termination risk. The City may terminate for any reason. RBC may terminate a swap if the City fails to perform under the terms of the contract. The City's on-going payment obligations under the swap (and, to a limited extent, its termination payment obligations) are insured, and RBC cannot terminate so long as the insurer does not fail to perform. If a swap should be terminated, the associated variable-rate bonds would no longer carry synthetic fixed interest rates. Also, if at the time of the termination the swap has a negative fair value, the City would be liable to the counterparty for a payment equal to the swap's fair value.

Swap payments and associated debt. As of June 30, 2014, debt service requirements for the swap agreements are reported in Note 8D as if the swap was in effect, assuming current interest rates remain the same. As rates vary, variable rate bond interest payments and net swap payments will vary. Expected debt service payments on the associated Combined Utility System 2012C bonds are included with other Combined Utility System Bonds on Note 8D.

15. Water and Sewer System Junior Lien Revenue Bonds

These bonds are paid solely from a lien on the net water and sewer system revenues, which must total 110% of the current debt service requirements on the junior lien bonds. As part of the restructuring to the new Combined Utility System, the City refunded a substantial portion of the outstanding junior lien bonds on June 10, 2004 and reissued bonds as Combined Utility System bonds. Debt service payments on remaining Water and Sewer Junior Lien Revenue Bonds ("Junior Lien Bonds") will be made after payment of operating expenses and prior to any debt service payments on the Combined Utility System bonds. The final maturity date for the remaining junior lien bonds is December 1, 2028. No additional Junior Lien Bonds may be issued.

16. Coastal Water Authority ("CWA")

The contract payable relating to CWA represents the outstanding principal balance of \$24,345,000 at June 30, 2014 of City of Houston Water Conveyance System Contract Certificates of Participation, Series 1993G, 1993H and 1993J, representing contract payments owed by the City to pay debt service on bonds issued by CWA, plus \$74,555,000 of CWA Revenue Refunding Bonds, Series 1999A, Series 2004, and Series 2010 (refunding) issued by CWA, a governmental agency of the State of Texas, to finance the construction of a water conveyance system. Pursuant to a series of exchange agreements with CWA, the City issued the Certificates and endorsed the bonds and is unconditionally obligated to pay from the gross revenues of the City's Combined Utility System all debt service payments on these Certificates and Bonds, as well as amounts necessary to restore deficiencies in funds required to be accumulated under the CWA bond resolutions. The bonds mature on December 15, 2034.

17. Other Contracts

Payments on the following contracts will be made only after the Combined Utility System has funded all maintenance and operation costs and debt service payments for the Combined Utility System, including required reserves.

On June 20, 1967 the City, TRA, and Chambers-Liberty Counties Navigation District contracted with the United States of America to have the U.S. Army Corps of Engineers build a salinity control barrier and recreation facilities at Wallisville Lake. Because of legal actions, construction was blocked for a long period, and the project was not completed until April 2003. The City's share of the project cost was \$10,580,707, which will be paid to the U.S. government over 50 years at 3.222% interest with final payment due January 1, 2053.

In April 2009 the City, Brazos River Authority ("BRA"), and the Texas Water Development Board ("TWDB") entered into an agreement to develop the Allen's Creek water supply reservoir in Fort Bend County as a regional water supply. TWDB paid \$14,000,000, or 50% of funding, to provide for construction of the project, and the City agreed to purchase TWDB's share. Interest payments on the lease-purchase began in 2005 at an average rate of 5.85%. Interest costs over the first eight years will be partially deferred to later years. Principal payments will begin in 2022, and the final principal payment will be made in 2036.

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D. Schedule for Debt Service Requirements to Maturity:

The following debt service schedules have been adjusted to include refundings that occurred subsequent to June 30, 2014.

1. General Long-Term Tax Obligation Debt (adjusted for Capital Appreciation and Deferred Interest Bonds reclassification of principal & interest) (in thousands):

Year Ending June 30	Public Improvement Bonds		Pension Obligation Bonds	
	Principal	Interest	Principal	Interest
2015	\$ 172,305	\$ 118,218	\$ 5,750	\$ 31,797
2016	177,645	117,988	6,160	31,435
2017	211,265	110,401	6,585	31,048
2018	222,945	101,833	7,050	30,633
2019	207,885	91,646	7,540	30,190
2020-2024	859,460	318,980	83,195	139,826
2025-2029	530,145	142,471	131,851	107,741
2030-2034	167,560	38,583	12,900	25,799
2035-2039	55,455	10,983	101,116	14,412
2040-2044	14,980	1,740	20,250	1,761
Total	\$ 2,619,645	\$ 1,052,843	\$ 382,397	\$ 444,641

Year Ending June 30	General Obligation Commercial Paper		Tax and Revenue Certificates of Obligation	
	Principal	Interest	Principal	Interest
2015	\$ 227,350	\$ 847	\$ 2,300	\$ 871
2016	30,000	156	-	756
2017	-	-	-	756
2018	-	-	1,080	756
2019	-	-	1,135	702
2020-2024	-	-	14,145	2,404
2025-2029	-	-	-	-
2030-2034	-	-	-	-
2035-2039	-	-	-	-
2040-2044	-	-	-	-
Total	\$ 257,350	\$ 1,003	\$ 18,660	\$ 6,245

Year Ending June 30	Total Future Requirements		
	Principal	Interest	Total Future Requirements
2015	\$ 407,705	\$ 151,733	\$ 559,438
2016	213,805	150,335	364,140
2017	217,850	142,205	360,055
2018	231,075	133,222	364,297
2019	216,560	122,538	339,098
2020-2024	956,800	461,210	1,418,010
2025-2029	661,955	250,212	912,167
2030-2034	180,460	64,382	244,842
2035-2039	156,571	25,395	181,966
2040-2044	35,230	3,501	38,731
Total	\$ 3,278,052	\$ 1,504,733	\$ 4,782,785

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

2. HUD Section 108 Loans (in thousands):

Year Ending June 30	HUD Section 108 Loans (in thousands)		
	Principal	Interest	Total Future Requirements
2015	\$ 659	\$ 306	\$ 965
2016	659	271	930
2017	659	235	894
2018	672	198	870
2019	672	160	832
2020-2024	2,492	296	2,788
2025-2029	-	-	-
Total	<u>\$ 5,813</u>	<u>\$ 1,466</u>	<u>\$ 7,279</u>

3. Note Payable CWA

Year Ending June 30	Note Payable CWA (in thousands)		
	Principal	Interest	Total Future Requirements
2015	\$ -	\$ 386	\$ 386
2016	-	386	386
2017	11,629	386	12,015
2018	-	-	-
2019	-	-	-
2020-2024	-	-	-
2025-2029	-	-	-
Total	<u>\$ 11,629</u>	<u>\$ 1,158</u>	<u>\$ 12,787</u>

4. Enterprise Funds (adjusted for capital appreciation and deferred reclassification of principal and interest) (in thousands):

Year Ending June 30	Airport System Senior Lien Revenue Bonds		Airport System Senior Lien Commercial Paper		Airport System Subordinate Lien Revenue Bonds	
	Principal	Interest	Principal	Interest	Principal	Interest
2015	\$ -	\$ 23,819	\$ -	\$ 2	\$ 54,965	\$ 69,993
2016	9,275	23,587	-	1	56,455	67,689
2017	9,740	23,112	1,200	1	64,925	65,141
2018	10,225	22,613	-	-	67,630	62,398
2019	10,735	22,089	-	-	67,785	59,510
2020-2024	62,295	101,618	-	-	411,045	248,784
2025-2029	79,530	83,933	-	-	531,265	153,803
2030-2034	102,535	60,138	-	-	502,040	45,482
2035-2039	133,955	27,834	-	-	-	-
2040-2044	31,370	862	-	-	-	-
Total	<u>\$ 449,660</u>	<u>\$ 389,605</u>	<u>\$ 1,200</u>	<u>\$ 4</u>	<u>\$ 1,756,110</u>	<u>\$ 772,800</u>

Year Ending June 30	Airport System Inferior Lien Contract		Airport System Pension Obligations	
	Principal	Interest	Principal	Interest
2015	\$ 5,315	\$ 1,123	\$ -	\$ 106
2016	5,605	823	-	107
2017	5,915	506	-	106
2018	6,240	171	-	107
2019	-	-	-	106
2020-2024	-	-	-	533
2025-2029	-	-	793	533
2030-2034	-	-	1,334	282
2035-2039	-	-	573	20
2040-2044	-	-	-	-
Total	<u>\$ 23,075</u>	<u>\$ 2,623</u>	<u>\$ 2,006</u>	<u>\$ 1,900</u>

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

Year Ending June 30	Airport System Total Future Requirements		
	Principal	Interest	Total
2015	\$ 60,280	\$ 95,043	\$ 155,323
2016	71,335	92,207	163,542
2017	81,780	88,866	170,646
2018	84,095	85,289	169,384
2019	78,520	81,705	160,225
2020-2024	473,340	350,935	824,275
2025-2029	611,088	238,269	849,357
2030-2034	605,909	105,902	711,811
2035-2039	134,334	27,854	162,188
2040-2044	31,370	862	32,232
Total	<u>\$ 2,232,051</u>	<u>\$ 1,166,932</u>	<u>\$ 3,398,983</u>

Year Ending June 30	Convention and Entertainment Facilities Revenue Bonds		Convention and Entertainment Facilities Commercial Paper		Convention and Entertainment Pension Obligations	
	Principal	Interest	Principal	Interest	Principal	Interest
2015	\$ 25,835	\$ 11,900	\$ 42,000	\$ 331	\$ 65	\$ 239
2016	23,474	14,158	-	-	65	235
2017	18,871	19,893	-	-	70	230
2018	19,750	19,634	-	-	75	226
2019	20,659	19,255	-	-	80	221
2020-2024	104,260	106,817	-	-	900	986
2025-2029	109,661	124,641	-	-	1,373	640
2030-2034	114,639	131,528	-	-	1,161	159
2035-2039	-	-	-	-	36	2
2040-2044	-	-	-	-	-	-
Total	-	-	-	-	-	-
Total	<u>\$ 437,149</u>	<u>\$ 447,826</u>	<u>\$ 42,000</u>	<u>\$ 331</u>	<u>\$ 3,825</u>	<u>\$ 2,938</u>

Year Ending June 30	Convention and Entertainment Total Future Requirements		
	Principal	Interest	Total Future Requirements
2015	\$ 67,900	\$ 12,470	\$ 80,370
2016	23,539	14,393	37,932
2017	18,941	20,123	39,064
2018	19,825	19,860	39,685
2019	20,739	19,476	40,215
2020-2024	105,160	107,803	212,963
2025-2029	111,034	125,281	236,315
2030-2034	115,800	131,687	247,487
2035-2039	36	2	38
2040-2044	-	-	-
Total	<u>\$ 482,972</u>	<u>\$ 451,095</u>	<u>\$ 934,069</u>

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
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Year Ending June 30	Combined Utility System Revenue Bonds		Combined Utility System Swap Agreement		Combined Utility System Commercial Paper	
	Principal	Interest	Net Swap Payment		Principal	Interest
2015	129,615	248,450	32,284		180,000	
2016	156,525	241,598	32,221			
2017	179,675	234,851	32,230			
2018	190,310	226,361	30,735			
2019	201,610	217,409	30,735			
2020-2024	1,030,565	974,234	153,659			
2025-2029	1,275,355	725,272	153,376			
2030-2034	1,804,275	445,348	81,887			
2035-2039	928,110	159,763	-			
2040-2044	238,335	25,977	-			
2045-2049	14,515	363	-			
Total	<u>\$ 6,148,890</u>	<u>\$ 3,499,625</u>	<u>\$ 547,126</u>		<u>\$ 180,000</u>	<u>\$ -</u>

Year Ending June 30	Water and Sewer Jr. Lien Revenue Bonds		Combined Utility System Pension Obligations	
	Principal	Interest	Principal	Interest
2015	11,070	4,273	975	3,756
2016	11,410	3,975	1,040	3,695
2017	11,775	3,656	1,115	3,630
2018	12,150	3,314	1,190	3,560
2019	12,530	2,948	1,275	3,485
2020-2024	96,618	78,463	14,080	15,541
2025-2029	44,681	112,552	21,538	10,110
2030-2034			18,395	2,549
2035-2039			639	34
2040-2044				
2045-2049				
Total	<u>\$ 200,234</u>	<u>\$ 209,181</u>	<u>\$ 60,247</u>	<u>\$ 46,360</u>

Year Ending June 30	Combined Utility System Total Future Requirements			
	Principal	Interest	Net Swap Payment	Total Future Requirements
2015	321,660	256,480	32,284	610,424
2016	168,975	249,268	32,221	450,464
2017	192,565	242,137	32,230	466,931
2018	203,650	233,234	30,735	467,619
2019	215,415	223,842	30,735	469,992
2020-2024	1,141,263	1,068,238	153,659	2,363,159
2025-2029	1,341,574	847,933	153,376	2,342,883
2030-2034	1,822,670	447,897	81,887	2,352,454
2035-2039	928,749	159,797	-	1,088,546
2040-2044	238,335	25,977	-	264,312
2045-2049	14,515	363	-	14,878
Total	<u>\$ 6,589,371</u>	<u>\$ 3,755,165</u>	<u>\$ 547,126</u>	<u>\$ 10,891,663</u>

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

5. Long-Term Contracts-Water and Sewer System (in thousands):

Year Ending June 30	Coastal Water Authority Maintenance & Operation Lien		
	Principal	Interest	Total Future Requirements
2015	\$ 13,410	\$ 4,654	\$ 18,064
2016	14,025	3,826	17,851
2017	4,060	3,312	7,372
2018	3,420	3,152	6,572
2019	3,550	3,005	6,555
2020-2024	20,375	12,336	32,711
2025-2029	21,580	6,531	28,111
2030-2034	15,030	2,669	17,699
2035-2039	3,450	82	3,532
2040-2044			-
Total	\$ 98,900	\$ 39,567	\$ 138,467

Year Ending June 30	Other Water & Sewer System Contracts				Other Contracts Total Future Requirements	
	US Army Corps of Engineers		Texas Water Development Board		Principal	Interest
2015	\$ 121	\$ 295	\$ -	\$ 818	\$ 121	\$ 1,113
2016	124	291	-	1,497	124	1,788
2017	128	287	-	1,497	128	1,784
2018	133	283	-	1,497	133	1,780
2019	136	278	-	1,497	136	1,775
2020-2024	754	1,323	1,255	6,092	2,009	7,415
2025-2029	883	1,194	3,830	3,309	4,713	4,503
2030-2034	1,035	1,041	5,090	2,054	6,125	3,095
2035-2039	1,213	864	3,825	458	5,038	1,322
2040-2044	1,421	656			1,421	656
2045-2049	1,665	412			1,665	412
2050-2054	1,536	126			1,536	126
Total	\$ 9,149	\$ 7,050	\$ 14,000	\$ 18,719	\$ 23,149	\$ 25,769

E. Debt Issuances and Refundings

Throughout its history, the City has issued refunding bonds from time to time when there has been an operational or economic gain for the City. These refundings have been structured as legal defeasances of the old debt as ruled by the Texas Attorney General, and such debt, including the debt balances refunded during fiscal 2014 described below, has been removed from the City's books.

Public Improvement Refunding Bonds

On October 17, 2013, the City issued 9,000,000 in Tax and Revenue Certificate of Obligation Series 2013Q with coupon of 4.31%. The obligation will mature in September 1, 2023, the proceeds of the obligation will be used to acquire, construct, equip, retrofit, repair, renovate, rehabilitate and / or install equipment, machinery and improvements to enhance and improve energy efficiency of certain systems of building including particularly lighting fixtures and water conservation fixtures in the City's libraries and government buildings.

CITY OF HOUSTON, TEXAS
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Combined Utility System Revenue and Refunding Bonds

On February 12, 2014, the City issued \$65,000,000 in Combined Utility System, Texas Water Development Board Bonds, Series 2014A at coupons ranging from .19% to 2.68%. The bonds mature in varying amounts from 2015 to 2044. Proceeds will be used to fund future projects, and pay costs of issuance.

On March 27, 2014, the City issued \$605,195,000 in Combined Utility System, First Lien Revenue and Refunding Bonds, Series 2014B at coupons ranging from 0.25% to 3.83%. The bonds mature in varying amounts from 2015 to 2028. Proceeds of the Series 2014B will be used, together with other available funds for refunding a portion of the City's outstanding Combined Utility System, First Lien Revenue Refunding Bonds, Series 2004A and to pay costs of issuance. Net present value saving related to the refunded bonds totaled \$77,633,329 or 12.99% of the refunded bonds and reduced total debt service by \$96,936,061.

On April 15, 2014, the City issued \$692,890,000 in Combined Utility System, First Lien Revenue and Refunding Bonds, Series 2014C at coupons ranging from 2.00% to 5.00%. The bonds mature in varying amounts from 2015 to 2028. Proceeds of the Series 2014C will be used, together with other available funds for refunding a portion of the City's outstanding Combined Utility System, First Lien Revenue Refunding Bonds, Series 2004A and to pay costs of issuance. Net present value savings related to the refunded bonds totaled \$129,818,355 or 16.38% of the refunded bonds and reduced total debt service by \$166,648,485.

F. Bond Compliance Requirements

The revenue bond ordinances require that during the period in which the bonds are outstanding the City must create and maintain certain accounts or funds to receive the proceeds from the sale of the revenue bonds and to account for the revenues (as defined), which are pledged for payment of the bonds. The assets can be used only in accordance with the terms of the bond ordinance and for the specific purpose(s) designated therein.

The City is generally required to make a monthly transfer to debt service funds equal to one-sixth of the next interest payment and one-twelfth of the next principal payment. Certain bond ordinances have additional requirements for the establishment of rates and the accumulation of principal and interest repayment amounts from surplus operating funds. Generally, the bonds may be redeemed prior to their maturities in accordance with the bond ordinances and at various premiums equal to or less than 2%. During fiscal year 2014 the City has complied with the requirements of all revenue bond ordinances and related bond restrictions.

G. Voter Authorized Obligations

On November 4, 2001, voters of the City authorized the issuance of \$776,000,000 of Public Improvement Bonds. Since June 2002 City Council has authorized issuance of the entire amount as General Obligation Commercial Paper Series G, H-1 and H-2.

On November 7, 2006, voters of the City authorized the issuance of \$625,000,000 of Public Improvement Bonds. City Council has authorized issuance of \$520,583,000 as General Obligation Commercial Paper Series G, H-1, H-2 and J.

On November 2012, voters authorized an additional \$410,000,000 of Public Improvement Bonds. City of Council has authorized issuance of \$73,021,000 as General Obligation Commercial Paper Series G1, G2, H-2 and J.

In addition, the City is authorized by the City Charter to issue \$100,000 annually in general improvement bonds without voter approval.

H. Legal Debt Margin

At June 30, 2014, the City's legal debt limit was 10% of assessed property valuation totaling \$219,622,778,000. The City's legal debt margin less applicable outstanding debt was \$18,728,470,000.

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

NOTE 9: LEASES

Operating Leases

A. City as Lessee

The City has obtained office space, data processing and other equipment through long-term operating leases. The total cost for such leases was \$12,298,499 for the year ended June 30, 2014. The cost is \$9,390,595 for the General Fund, \$1,248,498 for the Grant Funds, \$656,740 for the Non-Major Governmental Funds, \$573,747 for the Combined Utility System Funds, \$273,744 for the Airport System Funds, \$71,422 for the Convention and Entertainment Facilities Funds and \$83,753 for the Internal Service Funds.

The future minimum payments under these agreements are as follows (in thousands):

<u>Year ended</u> <u>June 30</u>	<u>Operating</u> <u>Lease Payments</u>
2015	\$ 6,350
2016	5,432
2017	4,674
2018	4,212
2019	4,077
2020-2024	5,522
Total	<u>\$ 30,267</u>

B. City as Lessor

The Convention and Entertainment Facilities Department is the lessor of all of their capital assets to Houston First Corporation, a component unit. The agreement is a cancellable operating lease, and the capital assets have a cost of \$681,001,373, accumulated depreciation of \$245,654,777, and a carrying value of \$435,346,596. All the capital assets are used for performance and entertainment purposes.

The Airport System is the lessor of approximately ten percent of its land and substantially all of its buildings and improvements. These lease agreements are non-cancelable operating leases with fixed minimum rentals and non-cancelable operating use and lease agreements with annually adjusted rates. Rental income is earned from leasing various parcels of land with asset costs of \$20,996,739 to airlines, fixed base operators and various corporations for hangars, aircraft maintenance facilities, flight kitchens and cargo buildings; to auto rental companies for their service facilities and storage lots; and to a variety of other entities for buildings and other permanent improvements. Airlines and airport concessionaires lease various sections of City owned airport buildings and improvements for ticket counters, passenger hold rooms, baggage carousels, restaurants, retail stores and other facilities. Leased buildings, improvements and equipment have asset costs of \$4,738,562,153 and carrying costs of \$2,437,261,092. Accumulated depreciation on all these assets is \$2,301,301,061.

CITY OF HOUSTON, TEXAS
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Minimum guaranteed income on all City non-cancelable operating leases is as follows (in thousands):

Year ended June 30	Operating Leases Minimum Rental Income
2015	\$ 55,174
2016	52,579
2017	52,122
2018	51,752
2019	51,663
2020-2024	209,466
2025-2029	139,032
2030-2034	59,648
2035-2039	52,865
2040-2044	48,919
2045-2049	38,625
2050-2054	31,627
Total	<u>\$ 843,472</u>

Contingent income associated with the Airport System non-cancelable operating leases was approximately \$12,886,170 for the year ended June 30, 2014. Contingent income is earned when a concessionaire's payment, based on a percentage of sales, is higher than the minimum amount guaranteed to the Airport System under the terms of the lease. In addition, income is earned from certain non-cancelable operating use and lease agreements for landing fees and terminal building rentals. Such income is adjusted annually based on a compensatory formula to recover certain operating and capital costs of the related facilities. Compensatory income for the year ended June 30, 2014 was \$250,260,216.

NOTE 10: PENSION PLANS

A. Plan Descriptions

The City has two single employer defined benefit pension plans (Firefighters' Relief and Retirement Fund, and the Police Officers' Pension System), and one multi-employer plan (Municipal Employees' Pension System) which cover substantially all of its employees. These pension plans were established under the authority of Texas statutes (Vernon's Texas Civil Statutes, Articles 6243.e2 (1), 6243g, 6243g-4, respectively), which establish the various benefit provisions. All plans provide for service-connected disability and death benefits to survivors, with no age or service eligibility requirements. Employer and employee obligations to contribute, as well as employee contribution rates, are included in the statutes, and for the Municipal Employees' Pension System and the Houston Police Officers' Pension System, some requirements are delineated in new (September '04) meet and confer agreements. Additionally, these laws provide that employer funding be based on periodic actuarial valuations, statutorily approved amounts or, in the cases of the Municipal Employees' Pension System and the Police Officers' Pension System, amounts agreed to in meet and confer agreements. All pension plans provide service, disability, death, and vesting benefits. In addition, each pension plan recognizes participant and employer contributions as revenues in the period in which they are due pursuant to formal commitments and recognizes benefits and refunds when they are due and payable in accordance with the terms of the pension statutes. The specific summary plan description for each Plan is available at the plan offices.

Each of the plans have stand-alone financial reports. See page 40 for the addresses where the reports can be obtained.

On November 10, 2004 the City issued a \$300,000,000 collateralized note (The Collateralized Note) to HMEPS as part of the meet and confer agreement with HMEPS to fund part of the unfunded accrued actuarial liability of its pension plan. This note was paid in January 2009 with proceeds from City of Houston, Texas Taxable Pension Obligation Refunding Bonds, Series 2008. (See "Long-Term Liabilities" Note 8-C for further Pension Obligation Bond information.).

B. Actuarially Determined Contribution Requirements and Contributions Made

Historically, the City's funding policies have provided for actuarially determined periodic contributions at rates such that, over time, they will remain level as a percent of payroll, except for the police officers pension system, which has had a statutorily limited level of employer contributions. The contribution rate for normal cost is determined using the entry age normal actuarial cost method. The firefighters' and municipal pension plans use the level percentage of payroll method to amortize the unfunded actuarially accrued liability (or surplus) over 30 years from July 1, 2004 and the police pension uses the level percentage of payroll method to amortize the unfunded actuarially accrued liability over 30 years (constant).

CITY OF HOUSTON, TEXAS
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The reported contributions to the pension funds for the year ended June 30, 2014, were different from the actuarially determined requirements based on July 1, 2013 actuarial valuation for Municipal, Fire, and Police. Contributions are as follows:

<u>Percentage of Payroll</u>	<u>Firefighters</u>	<u>Municipal</u>	<u>Police</u>
City of Houston normal cost	19.4%	5.9%	20.8%
Amortization of unfunded actuarial accrued liability (surplus)	13.8%	21.6%	15.2%
Required employer contribution rate	33.2%	27.5%	36.0%
Employer contribution made	23.9%	21.5%	25.5%
Employee contribution made	9.0%	5.0%	9.0%
<u>Contribution Amounts (in thousands)</u>			
Net contribution required	\$ 112,566	\$ 169,771	\$ 182,195
Total City contribution	63,758	130,188	103,000
Total employee contribution	23,994	16,580	37,012
Total contribution	\$ 87,752	\$ 146,768	\$ 140,012

C. Annual Pension Cost and Net Pension (Obligation) Asset

The annual pension cost associated with the City's three pension funds for the current year is as follows (in thousands):

	<u>Houston Firefighters' Pension</u>	<u>Houston Municipal Employees' Pension</u>	<u>Houston Police Officers' Pension</u>
Annual required contribution	\$ 88,572	\$ 153,191	\$ 145,183
Interest on net pension obligation	2,209	38,038	52,150
Adjustment to annual required contribution	(1,831)	(31,537)	(39,153)
Annual pension cost	88,950	159,692	158,180
Contribution made	63,758	130,188	103,000
Change in net pension obligation	(25,192)	(29,504)	(55,180)
Net pension asset (obligation), beginning of year	(25,984)	(447,508)	(613,534)
Net pension asset (obligation), end of year	\$ (51,176)	\$ (477,012)	\$ (668,714)

D. Schedule of Funding Progress (in millions)

	<u>Houston Firefighters' Pension</u>	<u>Houston Municipal Employees' Pension</u>	<u>Houston Police Officers' Pension</u>
Actuarial Valuation Date	July 1, 2013	July 1, 2013	July 1, 2013
Actuarial Value of Plan Assets (a)	\$ 3,430.4	\$ 2,382.6	\$ 4,071.0
Actuarial Accrued Liability (AAL) Entry Age (b)	\$ 3,963.1	\$ 4,129.6	\$ 5,010.0
Unfunded AAL (b - a)	\$ 532.7	\$ 1,747.0	\$ 939.0
Funded Ratio (a/b)	87%	58%	81%
Projected Annual Covered Payroll (c)	\$ 271.8	\$ 550.0	\$ 392.0
UAAL as Percentage of Covered Payroll ((b - a)/c)	196%	318%	240%

CITY OF HOUSTON, TEXAS
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E. Houston Firefighters' Pension System

Schedule of Employer Contributions (in millions)

Year Ended June 30	Annual Pension Cost	Percentage Contributed	Net Pension (Asset) Obligation	Annual Required Contribution as a % of Base Pay
2012	\$61.4	123.3%	\$0.3	23.9%
2013	\$80.7	77.0%	\$26.0	31.1%
2014	\$89.0	71.7%	\$51.2	33.2%

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as to the actuarial valuation used for purposes of the financial statements is as follows:

Valuation date	July 1, 2013
Actuarial cost method	Entry age Normal Cost
Amortization method	Level percent of payroll over an open period of 30 years
Remaining amortization period	Rolling 30 year
Asset valuation method	5 year smoothed market
Actuarial assumptions:	
Investment rate of return	8.5%, net of expenses
Inflation rate	3.0%
Payroll growth rate	3.0%
Annual increase attributable to seniority/merit	3.0% to 7%
Cost of living adjustment	3% annually

F. Houston Municipal Pension System Information

Schedule of Employer Contributions (in millions)

Year Ended June 30	Annual Pension Cost	Percentage Contributed	Net Pension Obligation	Annual Required Contribution as a % of Base Pay
2012	\$127.4	61.4%	\$417.1	23.5%
2013	\$144.1	78.9%	\$447.5	26.1%
2014	\$159.7	81.5%	\$477.0	27.5%

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
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The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as to the actuarial valuation used for purposes of the financial statements is as follows:

Valuation date	July 1, 2013
Actuarial cost method	Entry Age Normal cost
Amortization method	Level percentage of payroll over an open period of 30 years
Remaining amortization period	30 years
Asset valuation method	20% adjustment method
Actuarial assumptions:	
investment rate of return	8.5%, net of expenses
Payroll growth factor	3.0%
Projected individual salary increases	Graded rates based on years of service
General inflation rate	3.0%

G. Houston Police Officer's Pension System Information

Schedule of Employer Contributions (in millions)

<u>Year Ended June 30</u>	<u>Annual Pension Cost</u>	<u>Percentage Contributed</u>	<u>Net Pension Obligation</u>	<u>Annual Required Contribution as a % of Base Pay</u>
2012	\$137.1	48.1%	\$551.8	32.7%
2013	\$146.3	57.8%	\$613.5	34.5%
2014	\$158.2	65.1%	\$668.7	36.0%

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as to the actuarial valuation used for purposes of the financial statements is as follows:

Valuation date	July 1, 2013
Actuarial cost method	Projected Unit Credit
Amortization method	Level percent of payroll Amortized over a constant open period of 30 years
Remaining amortization period	30 years
Asset valuation method	20% adjustment method
Actuarial assumptions:	
Investment rate of return	8.5%, net of expenses
Payroll growth rate, attributable entirely to inflation	3.5 %
Annual increase attributable to seniority/merit	0.0% to 9.5%
Annual cost of living adjustment	2.8%
Projected salary increases	Graded rates based on years of service

CITY OF HOUSTON, TEXAS
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NOTE 11: OTHER EMPLOYEE BENEFITS

A. Post-Retirement Health Insurance Benefits

The City of Houston OPEB plan is a single-employer plan, and calculations are based on the OPEB benefits provided under the terms of the plan in effect at the time of each valuation and on the pattern of sharing of costs between the employer and plan members to that point.

Pursuant to a City Ordinance, the City provides certain health care benefits for retired employees. Substantially all of the City's employees become eligible for these benefits if they reach normal retirement age while working for the City. Contributions are recognized in the year paid. The cost of retiree health care premiums and claim liability incurred by the City (employer and subscriber) amounted to \$60,816,919 for the year ended June 30, 2014. Retiree health care is accounted for in the Health Benefits Fund, an Internal Service Fund. At June 30, 2014, there were 10,066 retirees including active survivors eligible to receive benefits. Effective August 1, 2011 all Medicare Eligible Retirees must enroll in an insured Medicare Advantage Program Plan.

No stand-alone financial report is issued on the plan.

Actuarial valuations for OPEB plans involve estimates of the value of reported amounts and assumptions about the probability of events far into the future. Actuarially determined amounts are subject to continual revision as results are compared to past expectations and new estimates are made into the future.

The schedule of funding progress for the postemployment defined benefit plan immediately following the notes to the financial statements presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing relative to the actuarial accrued liability for benefits over time.

Annual Other Post Employment Benefits (OPEB) Cost and Net OPEB Obligation

The annual OPEB cost associated with the City's retiree health care costs for the current year is as follows (in thousands):

	OPEB
Annual required contribution	\$ 211,931
Interest on net OPEB obligation	54,411
Adjustment to annual required contribution	(74,230)
Annual OPEB cost	192,112
Contribution made	(35,746)
Change in net OPEB obligation	156,366
Net OPEB obligation, beginning of year	1,209,125
Net OPEB obligation, end of year	\$ 1,365,491

Fiscal Year Ended June 30	Annual OPEB Cost	Percentage of Annual OPEB Cost Contributed	Net OPEB Obligation
2012	\$183,204	16.8%	\$1,030,015
2013	\$214,037	16.3%	\$1,209,125
2014	\$192,112	18.6%	\$1,365,491

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
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Schedule of Funding Progress (in millions)

Year Ended June 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b-a)	Funded Ratio	Covered Payroll (C)	UAAL as a % of Covered Payroll ((b-a)/c)
2012	\$0	\$1,984	\$1,984	0%	\$1,164.5	170.4%
2013	\$0	\$2,090	\$2,090	0%	\$1,178.1	177.4%
2014	\$0	\$2,090	\$2,090	0%	\$1,227.2	170.3%

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as to the actuarial valuation used for purposes of the financial statements is as follows:

Valuation date	June 30, 2012
Actuarial cost method	Entry age Normal Cost
Amortization method	Level percent of payroll over an open period of 30 years
Discount Rate	4.5%
Inflation rate	3.0%
Annual increase attributable to seniority/merit	3.0% to 10.0%
Medical trend rates	5.0% to 8.5%

B. Health Benefits Internal Service Fund

Effective May 1, 2011, the City elected to be substantially self-insured and on May 1, 2014 once again awarded CIGNA a three year contract with two (2) one-year renewal options for 4 new health plans. All have a heavy emphasis on a wellness component, and include; 1) a limited network HMO-type plan, 2) an open access PPO -type plan with out-of-network coverage, 3) a consumer driven high deductible health plan, partnered with a health reimbursement account, and 4) a specific plan for retirees, mostly those under age 65, who live outside the limited network service area but who live in Texas. Effective May 1, 2013, the City no longer purchases individual and aggregate stop-loss coverage. The City has assumed the financial risk of catastrophic and overall claim liability.

In addition to the IBNR, to mitigate claim volatility, the city has funded a catastrophic claim liability of \$13 million and designated fund balance of \$30 million for claim volatility.

Premiums paid (employer and subscriber) for current employees to third party administrators including claim liability totaled \$230,920,743 for the year ended June 30, 2014.

CIGNA		
Schedule of Changes in Liability		
(in thousands)		
	June 30, 2014	June 30, 2013
Beginning actuarial estimate of claims liability, July 1	\$ 22,483	\$ 23,273
Incurred claims for fiscal year	271,941	244,353
Catastrophic claims reserve	13,000	-
Payments on claims	(275,637)	(245,143)
Ending estimate of claims liability, June 30	<u>\$ 31,787</u>	<u>\$ 22,483</u>

The City also provides one times the salary of basic life insurance, with a minimum of \$15,000, at no cost to the employee. The employee, at no cost to the City, may then obtain additional life insurance up to four times their annual salary. The current costs for active employees for both basic and voluntary life insurance totaled \$5,447,999 for the year ended June 30, 2014.

CITY OF HOUSTON, TEXAS
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C. Long-Term Disability Plan (LTD)

The long-term disability plan, accounted for as an internal service fund, is a part of the Income Protection Plan implemented effective September 1, 1985 (renamed the Compensable Sick Leave Plan (CSL) in October, 1996) and is provided at no cost to City employees who are members of CSL. Coverage is effective the later of September 1, 1985 or upon completion of one year of continuous service. When an employee cannot work because of injury or illness, the plan provides income equal to 50% of base pay plus longevity or 70% of base plus longevity when combined with income benefits available from other sources. Plan benefits may be payable after all CSL scheduled sick leave benefits, including frozen sick leave days, have been used, however, not before six months absence from work. The plan is administered by Hewitt Associates LLC, which is reimbursed from the fund for claims as they are paid along with a fee for administrative services. Effective September 1, 2001 the Meet and Confer Agreement establishes Paid Time Off (PTO) for police classified officers. This replaces their participation in the LTD plan.

	Schedule of Changes in Liability	
	(in thousands)	
	June 30, 2014	June 30, 2013
Beginning actuarial estimate of claims liability, July 1	\$ 8,882	\$ 8,054
Incurred claims for fiscal year	1,093	1,092
Payments on claims	(986)	(952)
Actuarial adjustment	(920)	688
Ending actuarial estimate of claims liability, June 30	\$ 8,069	\$ 8,882

D. Deferred Compensation Plan

The City offers its employees a deferred compensation plan (Plan), created in accordance with Internal Revenue Code Section 457 as a separately administered trust. The Plan, available to all City employees, permits employees to defer a portion of their salary until future years. The deferred compensation funds are not available until termination, retirement, death or unforeseeable emergency. However, the Plan now offers loans to participant employees. The maximum amount is the lesser of \$50,000 or 50% of the total account balance, less any outstanding loans. The minimum loan amount is \$1,000. Pursuant to tax law changes, the Plan's assets are no longer subject to the City's general creditors and are not included in these financial statements.

E. Workers' Compensation Self-Insurance Plan

The City has established a Workers' Compensation Self-Insurance Plan, accounted for within the various operating funds. The plan is administered by Cambridge Integrated Services Group, Inc. Funds are wire transferred to Cambridge as needed to pay claims.

At June 30, 2014 the City has an accumulated liability in the amount of \$62 million covering estimates for approved but unpaid claims and incurred but not reported claims (calculated on an actuarial basis) recorded in the government-wide Statement of Net Position and Enterprise Funds. The amount of liability is based on an actuarial study.

	Schedule of Changes in Liability	
	(in thousands)	
	June 30, 2014	June 30, 2013
Beginning actuarial estimate of claims liability, July 1	\$ 63,055	\$ 57,022
Incurred claims for fiscal year	9,433	16,534
Payments on claims	(19,279)	(14,963)
Actuarial adjustment	3,601	4,462
Ending actuarial estimate of claims liability, June 30	\$ 61,810	\$ 63,055

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

NOTE 12: INTERFUND TRANSACTIONS

A. Transfers

Transfers during the year ended June 30, 2014 were as follows (in thousands):

Transferred from:	Transferred to:						Total Transfers Out
	General Fund	Nonmajor Governmental Funds	Debt Service	Capital Projects	Combined Utility System	Convention & Entertainment Facilities	
General Fund	\$ -	\$ 40,323	\$ 288,800	\$ 6,000	\$ -	\$ -	\$ 335,123
Grants Fund	-	-	-	-	70	-	70
Nonmajor Funds	43,719	800	963	126,542	-	-	172,024
Convention and Entertainment	1,380	-	-	-	-	-	1,380
Combined Utility System	27,564	-	13,093	-	-	-	40,657
Total transfers in	\$ 72,663	\$ 41,123	\$ 302,856	\$ 132,542	\$ 70	\$ -	\$ 549,254

Transfers are used to (1) move receipts restricted to debt service from the funds collecting the receipts to the debt service fund and (2) use unrestricted revenues collected in the general fund to finance various programs accounted for in other funds in accordance with budgetary authorizations, (3) use unrestricted revenues in the Combined Utility System and non-major revenue fund to finance general fund programs.

B. Transfers to Component Units

Transfers to Houston First from the Convention and Entertainment Facilities during the year ended June 30, 2014 totaled \$73,370,787. Transfers from Houston First to the General Fund during the year ended June 30, 2014 totaled \$13,853,555. The amounts are reported as expenses and revenues within the Convention and Entertainment Facilities Fund.

C. Interfund Charges

The General Fund charges the Airport System, Convention and Entertainment Facilities, Combined Utility System, Capital Project, Sign Administration, Auto Dealer's and Cable Television Funds for services provided by the General Fund on behalf of these funds. Such charges totaled \$61,860,000 for the year ended June 30, 2014, and are recorded as revenue in the General Fund and as expense, expenditure or capital assets in the funds assessed.

Included in the Fiscal Year 2014 total are charges to the funds for direct and indirect expenses as shown below (in thousands):

	Airport System	Convention & Entertainment Facilities	Combined Utility System	Other Funds	Total
General Services	\$ 2,652	\$ -	\$ 6,173	\$ 9,733	\$ 18,558
Fire Services	16,582	-	-	-	16,582
Police Services	22,026	-	-	-	22,026
Legal	-	-	1,212	-	1,212
Other	324	-	1,424	1,734	3,482
Total	\$ 41,584	\$ -	\$ 8,809	\$ 11,467	\$ 61,860

CITY OF HOUSTON, TEXAS
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D. Schedule of Amounts Due To and Due From Other Funds

The interfund balances are primarily due to charges for services between funds during the fiscal year and settled shortly after year-end. The composition of interfund balances as of June 30, 2014 is as follows (in thousands):

<u>Receivable Fund</u>	<u>Payable Fund</u>	<u>Amount</u>
General Fund	Grants revenue	\$ 6,674
	Combined Utility System	5,117
	Nonmajor Governmental Funds	2,437
	Capital Projects Fund	2,463
	Airport System	79
	Internal Service Fund	2
		<u>\$ 16,772</u>
Grants Revenue	General Fund	\$ 99
	Combined Utility System	692
	Airport System	235
	Capital Projects Fund	63
	Nonmajor Governmental Funds	164
		<u>\$ 1,253</u>
Capital Projects Fund	General Fund	\$ 251
	Grants revenue	992
	Nonmajor Governmental Funds	15,217
		<u>\$ 16,460</u>
Airport System	General Fund	\$ 1,030
	Grants revenue	514
		<u>\$ 1,544</u>
Convention and Entertainment Facilities	Grants revenue	\$ 113
		<u>\$ 113</u>
Combined Utility System	Grants revenue	\$ 8,574
	Nonmajor Governmental Funds	154
	General Fund	3,467
		<u>\$ 12,195</u>
Nonmajor Governmental Funds	General Fund	\$ 831
	Combined Utility System	7
	Grants revenue	42
	Capital Projects Fund	730
		<u>\$ 1,610</u>
Internal Service Fund	General Fund	\$ 1
		<u>\$ 1</u>
Debt Service Fund	General Fund	\$ 31,192
	Convention and Entertainment Facilities	176
		<u>\$ 31,368</u>

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
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NOTE 13: COMMITMENTS AND CONTINGENCIES

A. Litigation and Claims

The City is a defendant in various lawsuits and is aware of pending claims arising in the ordinary course of its municipal and enterprise activities, certain of which seek substantial damages. That litigation includes lawsuits and claims alleging that the City caused personal injuries and wrongful deaths; class actions and other lawsuits and claims alleging discriminatory hiring and promotional practices and certain civil rights violations arising under the Federal Voting Rights Act; various claims from contractors for additional amounts under construction contracts; and claims involving property tax assessments and various other liability claims. Alleged damages in the lawsuits are approximately \$29.3 million. The status of such litigation ranges from an early discovery stage to various levels of appeal of judgments both for and against the City. The amount of damages is limited in certain cases under the Texas Tort Claims Act and is subject to appeal. The City intends to defend itself vigorously against the suits. There is other threatened litigation for which an amount cannot be determined. The City typically utilizes the General Fund to liquidate claims and judgments. In the Statement of Net Position, the City has recognized a liability of \$19.4 million for potential litigation losses arising from various lawsuits.

In 2004, Houston voters approved two ballot propositions limiting City revenue growth. Proposition 1 generally limits annual growth in property tax revenues to the lesser of the actual revenues in the preceding fiscal year, plus 4.5 percent, or the revenues received in the previous fiscal year, plus the cumulative combined rates of inflation and the City's population growth. With the exception of grant monies, revenue received from other governmental entities and interfund transfers, Proposition 2 caps growth in all City revenues, including the General Fund, Special Revenue Funds and Enterprise Funds (combined revenues). Proposition 2 would require a 60 percent vote at a regular election before the City could increase combined revenues over the combined revenues for the preceding fiscal year as adjusted for rates of change in the consumer price index and population growth. Any combined revenues collected by the City in excess of the Proposition 2 restriction would be placed in a taxpayer relief fund. Although both propositions received a majority of votes in the 2004 election, the City declared that Proposition 2 was not effective because Proposition 1 received the higher number of favorable votes.

Supporters of Proposition 2 filed a lawsuit to declare Proposition 2 effective. The Texas Supreme Court vacated a judgment of the trial court in favor of the Proposition 2 supporters, and without reference to the merits dismissed the case for want of jurisdiction. The supporters refiled their lawsuit in the State District Court in April 2014.

In 2007, Houston voters approved several ballot propositions including Proposition G, which eliminated some of the most serious concerns created by the potential application of Proposition 2 by revising how the City's revenues limited by the Charter would be calculated (including the removal of the revenues of the City's Enterprise Funds from the revenues limited by the City Charter), and Proposition H, which allowed the City to raise revenues for police, fire, and emergency services in excess of the revenues allowed under any revenue limitations contained in the City Charter. A supporter of Proposition 2 filed a suit in State District court seeking to invalidate Propositions G and H. The court dismissed the lawsuit, but the Court of Appeals reversed and remanded to the State District Court, in order to give the plaintiff an opportunity to amend his pleadings to establish standing. The Texas Supreme Court denied the City's petition for review of the Court of Appeals ruling, and the case was remanded to the State District Court where a judgment of nonsuit was entered against the Plaintiff in May 2014. Therefore, there is no active litigation related to Proposition G or H.

The City is currently in an agreed order (the "Agreed Order") with the Texas Commission on Environmental Quality (TCEQ), which started in fiscal year 2005 and will end in 2016. The City committed within the Agreed Order to rehabilitate or replace 600,000 linear feet ("LF") of sanitary sewer lines and clean another 2 million LF of sewer lines annually in order to reduce sanitary sewer overflows ("SSO"). The estimated cost of the required actions was approximately \$755.4 million over 10 years. The repairs and replacements are included in the CUS Capital Improvement Program. As of the date of this report, the City is in compliance with the Agreed Order and has made significant improvements in reducing SSO. If the City were to fail to comply with the Agreed Order, both the TCEQ and the EPA could impose fines and penalties, which could be significant. EPA also referred this matter to the U. S. Department of Justice (DOJ) for enforcement. DOJ sent a draft consent decree to the City in September 2013, and the parties are continuing to negotiate its terms. The outcome of these negotiations cannot reasonably be predicted at this time.

B. Environmental Liabilities

The City is aware of various sites contaminated by asbestos or other hazardous materials. The City has recorded accrued liabilities of \$10.7 million, to be used for: assessment and remediation of asbestos, lead and mold; Phase I and II environmental site assessments and remediation; and remediation of radioactive material.

C. Commitments for Capital Facilities

At June 30, 2014, the City had appropriated but not yet spent from Capital Projects and Enterprise Funds approximately \$1,309,435,000 for capital projects.

CITY OF HOUSTON, TEXAS
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The City leased a tract of land to the Houston Music Hall Foundation for 30 years with a 30-year renewal option. On this site, the Houston Music Hall Foundation constructed the facility named the Hobby Center for the Performing Arts, which was donated to the City.

Upon commencement of the lease, the City is obligated to pay from parking revenues \$1.1 million per year for 30 years. The City's annual obligation is secured by a pledge of the parking revenues from the Theater District and Tranquility Park Parking Garages equal to \$1.2 million per year for 30 years.

This lease and the corresponding obligation has been assigned to Houston First Corporation.

D. Risk Management

The City purchases fidelity coverage to comply with City ordinance, boiler and machinery insurance with a per occurrence loss limit of \$100 million and commercial property insurance with a per occurrence loss limit of \$175 million. The commercial property insurance sublimit for flood is \$75 million, of which \$50 million may apply to locations within the City in the 100-year flood plain (Flood Zone A). Property insurance provides deductibles as follows: \$2.5 million per occurrence for all perils except; 3% of the damaged insured value for windstorm or hail from a named storm, subject to a \$2.5 million minimum and a \$20 million maximum deductible; and 5% of the damaged insured value for flood, subject to a \$5 million minimum and a \$20 million maximum deductible. Should a named storm event occur that involves both perils of windstorm and flood, the maximum deductible is \$20 million.

Self-insured claims are reported as liabilities in the accompanying financial statements when it is probable that a loss has occurred and the amount of that loss can be reasonably estimated. This determination is based on reported pending claims, estimates of claims incurred but not yet reported, actuarial reports and historical analysis. All claims are accounted for in the Government-wide Statement of Net Position.

Claims that are expected to be paid with expendable, available financial resources are accounted for in the General Fund and the appropriate Enterprise Funds.

The City, effective May 1, 2013, elected to discontinue stop-loss insurance and to self-insure for adverse loss experience.

For unemployment claims, the City pays claims as they are settled. Unemployment claim activity is as follows:

	<u>Unemployment Claim Activity</u>	
	<u>June 30, 2014</u>	<u>June 30, 2013</u>
Unpaid claims, beginning of fiscal year	\$138,598	\$294,052
Incurred claims (including IBNRs)	700,360	868,458
Claim payments	(662,608)	(1,023,912)
Unpaid claims, end of fiscal year	<u>\$176,350</u>	<u>\$138,598</u>

E. Purchase Commitments for Electricity

At June 30, 2014 the City had entered into agreements to lock rates for part of the natural gas component of its expected electricity use from July 1, 2014 through June 30, 2015. The total committed price is approximately \$105 million for expected usage. The City may pay a different amount if actual electricity usage varies. This amount will be appropriated in future annual budgets.

F. Purchase Commitment - Luce Bayou Inter-Basin Transfer Project

On January 29, 2009 City Council approved a contract establishing the terms for cooperation between Coastal Water Authority (CWA) and Houston for planning, design, permitting, property acquisition, construction and financing of the Luce Bayou Inter-Basin Transfer project. The project will include a pump station, pipeline and canal system that will transport up to 450 MGD of untreated water from the Trinity River to Lake Houston. To date CWA has attained two Texas Water Development Board (TWDB) Water Infrastructure Loans totaling \$33,115,000 for permitting and planning and one TWDB state participation loan of \$28,754,000 for pump station design. The Houston Combined Utility System pledged payments from the Combined Utility System's general purpose fund. After loans are repaid and contract obligations are fulfilled, upon request of the City, CWA will assign to the City all the CWA's rights, titles and interest in the project property.

G. Federal and State

Amounts received or receivable from grantor agencies are subject to audit and adjustment by grantor agencies, principally the federal and state governments. Any disallowed claims, including amounts already collected, could be a liability of the City.

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NOTE 14: RELATED ORGANIZATION TRANSACTIONS

A. Metropolitan Transit Authority (Metro)

The City and Metro have an inter-local agreement covering shared costs of street maintenance/construction and traffic control during the fiscal year ended June 30, 2014. The City received \$120.210 million from Metro under this contract in the fiscal year ended June 30, 2014. The breakout was \$64.003 million to Capital Projects and \$56.207 million to Special Revenues. None of these payments were for the prior contract year.

B. Trinity River Authority (TRA)

As described in Note 8C, the City and TRA have long-term contract under which the City is obligated to pay debt service for certain bonds as well as certain maintenance and operating expenses for Lake Livingston dam and reservoir. During the fiscal year 2008 all debt service was paid off. During fiscal year ending June 30, 2014 the City paid \$3.7 million for maintenance and operating expenses under the terms of the contract.

C. Coastal Water Authority (CWA)

The City has a long-term contract for untreated water conveyance and operation of Lake Houston. During the fiscal year ending on June 30, 2014, the City paid CWA \$18.9 million for debt service and \$22.5 million for maintenance and operating expenses.

D. Houston First Corporation

Upon formation of the Houston Convention Center Hotel Corporation (HCCHC), the City entered into various agreements with HCCHC. As part of the agreements, the City agreed to loan HCCHC \$310 million of the Convention & Entertainment Facility Department Bonds, primarily for construction of the Hilton Americas Hotel. Repayment terms of the loan (including interest rates) coincide with the City's scheduled debt service payments.

In accordance with the Interlocal Agreement and the hotel management agreement, after meeting certain other funding and reserve requirements, the City can require the distribution of a preferred return from available cash flow (as defined) equal to the preferred return amount (approximately \$1 million for 2003, \$20 million for 2004, and \$25 million per year thereafter) minus the debt service for the applicable year.

On July 1, 2011, the HCCHC changed their name to Houston First Corporation and in accordance with a new Interlocal Agreement, leased all the facilities of the City's Convention and Entertainment Facilities Department. As a part of that agreement, the preferred return payment is now maintained by the Corporation and used for the operation and maintenance of the facilities.

E. Component Units

As described in note 16, the City has a number of component units, most of which have fiscal years ended June 30, 2014. Five discretely presented component units: Greater Houston Convention and Visitors Bureau (GHCVB), Houston First Corporation [(HFC), formerly Houston Convention Center Hotel Corporation], Houston Housing Finance Corporation (HHFC), Houston Zoo, Inc (HZI) and Miller Theatre Advisory Board, Inc (MTAB) have fiscal years ended December 31, 2013. Subsequent to December 31, 2013, the City received interest payments of \$3,957 thousand from HFC, none from GHCVB, none from HHFC, none from HZI, none from MTAB. During the fiscal year ended June 30, 2014, one new component unit was added: Lake Houston Redevelopment Authority.

NOTE 15: CONDUIT DEBT OBLIGATIONS

The City has authorized various issues of Special Facilities Bonds to enable United Airlines, Inc. (successor to Continental Airlines, Inc.) a private company, to construct facilities at George Bush Intercontinental Airport that were deemed to be in the public interest (Special Facilities). These bonds are limited special obligations of the City, payable solely from and secured by a pledge of revenues generated from lease agreements with United Airlines. Collected pledged revenues are remitted directly to a trustee by United Airlines. Under the terms of the related lease agreements, United Airlines operates, maintains, and insures the terminal, and manages and retains revenues from all concessions operated in the Terminal B and E Special Facilities. The City operates, maintains, insures, and manages and retains revenues from all concessions operated in all other terminal facilities.

The City has also authorized the issuance of taxable Special Facilities Bonds for the purpose of constructing a Consolidated Car Rental Facility at Intercontinental, with the facility to be operated and maintained by IAH RACS, LLC, a limited liability company formed by various car rental companies. These bonds are limited special obligations of the City, payable solely from and secured by a pledge of customer service charges to be collected by the car rental companies and delivered directly to a trustee. None of the Special Facilities Bonds constitute a debt or pledge of the faith or credit of the City or the Airport System Fund.

The City holds legal title to the completed facilities, as they are constructed on airport property, but the constructed facilities are operated and controlled by private companies through long-term leases, and the Airport System Fund will enjoy no direct financial benefit from

CITY OF HOUSTON, TEXAS
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these facilities for the term of the lease agreements. Accordingly, the Airport System Fund accounts for the Special Facilities Bonds as conduit debt, and neither the debt nor the related assets have been recorded in the accompanying financial statements.

Conduit debt outstanding at June 30, 2014 (in thousands):

	June 30, 2014
Airport System Special Facilities Revenue Bonds (Continental Airlines, Inc. Terminal Improvement Projects), Series 1997B, \$71,200,000 original principal, matures in 2027	\$ 49,400
Airport System Special Facilities Revenue Bonds (Continental Airlines, Inc. Airport Improvement Projects), Series 1997C, \$44,600,000 original principal, matures in 2027	44,600
Airport System Special Facilities Revenue Bonds (Continental Airlines, Inc. Terminal Improvement Projects), Series 1998B, \$20,630,000 original principal, matures in 2029	20,630
Airport System Special Facilities Revenue Bonds (Continental Airlines, Inc. Airport Improvement Projects), Series 1998C, \$25,675,000 original principal, matures in 2029	24,875
Airport System Special Facilities Taxable Revenue Bonds, (Consolidated Rental Car Facility Project), Series 2001, \$130,250,000 original principal, matures in 2028	105,430
Airport System Special Facilities Revenue Bonds (Continental Airlines, Inc. Terminal Improvement Projects), Series 2011 (AMT), \$113,305,000 original principal, matures in 2038	113,305
Airport System Special Facilities Revenue Refunding Bonds (United Airlines, Inc. Terminal E Project), Series 2014 (AMT), \$308,660,000 original principal, matures in 2029	308,660
Total Conduit Debt Outstanding	\$ 666,900

The Airport System Special Facilities Revenue Bonds, Series 1997B and 1998B financed various leasehold improvements for United Airlines in Terminals B, C and D. Series 1997C and 1998C financed the construction of an aircraft hangar, maintenance and parts storage facility, mail sort facility, flight simulator, and inflight training facility.

The Airport System Special Facilities Revenue Bonds, (Consolidated Rental Car Facility Project), Series 2001 financed the design and construction of a common car customer service building, a parking structure, maintenance, storage and administrative facilities for each car rental company lessee, a common bus fleet and maintenance facility, and related infrastructure. This facility replaced multiple facilities operated individually by each car rental company. The bonds are payable from customer facility charges charged and collected by the car rental companies to their customers and remitted to a trustee for payment of debt service and other uses allowable by a trust indenture. The collection and disbursement of the customer facility charges in the trustee account are not included in the accompanying financial statements. As of June 30, 2014, the daily usage charge per customer is set at \$4.00. The trust indenture determines when and how the City is responsible for changing the rate. The bonds are payable solely from pledged customer facility charges. There is no pledge of the car rental companies' revenues, or against any general revenue of the City or the Airport System Fund. See Subsequent Event Note 17.

The Airport System Special Facilities Revenue Bonds, (Continental Airlines, Inc. Terminal E Project), Series 2001, financed the construction of international Terminal E and related airport facilities for the exclusive use of United Airlines (Terminal E Special Facilities). On May 8, 2014, the City issued \$308,660,000 in Airport System Special Facilities Revenue Refunding Bonds (United Airlines, Inc. Terminal E Project) Series 2014 on behalf of United Airlines, at coupon rates ranging from 4.50% to 5.00%. The bonds mature in varying amounts from 2020 to 2029. Proceeds of the bonds were used to refund a portion of the City's outstanding Airport System Special Facilities Revenue Bonds (Continental Airlines, Inc. Terminal E project) Series 2001 and to pay costs of issuance. Net present value savings for United Airlines related to the refunded bonds totaled \$40,519,909 or 13.31% of the refunded bonds and reduced total debt service by \$58,675,823.

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

The Airport System Special Facilities Revenue Bonds (Continental Airlines, Inc. Terminal Improvement Projects), Series 2011 (AMT) financed the replacement of two flight stations at Terminal B with a new South Concourse building to serve United Airlines' regional jet operations (Terminal B Special Facilities). The Terminal B Special Facilities went into service March, 2014.

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

NOTE 16: MAJOR DISCRETELY PRESENTED COMPONENT UNITS

The following discretely presented component units represent major component units. For reporting purposes, the City considers a component unit to be major if assets, liabilities, revenues or expenses exceed 10% of that component unit's class and exceed 5% of all component units combined.

Net Position			
Major Component Units - Discretely Presented Governmental			
June 30, 2014			
(in thousands)			
	Greater Houston Convention & Visitor's Bureau	Houston Downtown Park Corporation	Houston Parks Board
Cash, receivable and other current assets	\$ 11,600	\$ -	\$ 38,758
Noncurrent assets	505	-	-
Capital assets, net of accumulated depreciation	741	76,305	11,869
Total assets	12,846	76,305	50,627
Current liabilities	1,850	3,839	545
Long-term liabilities	135	16,226	-
Total liabilities	1,985	20,065	545
Net position			
Net investment in capital assets	-	56,240	-
Restricted	-	-	38,155
Unrestricted (deficit)	10,861	-	11,927
Total net position (deficit)	\$ 10,861	\$ 56,240	\$ 50,082

Change in Net Position				
Major Component Units - Discretely Presented Governmental				
For the Year Ended June 30, 2014				
(in thousands)				
	Expenses	Charges for Services	Operating Grants and Contributions	Greater Houston Convention & Visitors Bureau
Component Units				
Greater Houston Convention & Visitors Bureau	18,748	590	17,563	(595)
Houston Downtown Park Corporation	1,295	1,252	54	-
Houston Parks Board	10,359	530	23,339	-
Midtown Redevelopment Authority	19,280	-	-	-
Southwest Houston Redevelopment Authority	4,037	-	-	-
Uptown Redevelopment Authority	29,512	-	1,773	-
Nonmajor Component Units	106,075	21,934	27,228	-
Total component units	\$ 189,306	\$ 24,306	\$ 69,957	\$ (595)
General Revenues:				
Taxes				
Property taxes levied for general purposes				\$ -
Hotel occupancy tax				-
Contributions				-
Unrestricted investment earnings				1,125
Other				-
Transfers				60
Total general revenues and transfers				1,185
Change in net position				590
Net position beginning				10,271
Change in accounting principle				-
Net position ending				\$ 10,861

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

Midtown Redevelopment Authority	Southwest Houston Redevelopment Authority	Uptown Development Authority	Nonmajor Component Units	Total Component Units
\$ 82,269	\$ 33,779	\$ 87,048	\$ 209,522	\$ 462,976
-	-	318	22,260	23,083
20,292	-	12,337	59,660	181,204
<u>102,561</u>	<u>33,779</u>	<u>99,703</u>	<u>291,442</u>	<u>667,263</u>
7,742	3,724	19,482	26,668	63,850
79,641	46,950	111,099	169,415	423,466
<u>87,383</u>	<u>50,674</u>	<u>130,581</u>	<u>196,083</u>	<u>487,316</u>
8,251	-	12,338	50,301	127,130
61,187	26,590	72,455	67,598	265,985
(54,260)	(43,485)	(115,671)	(22,540)	(213,168)
<u>\$ 15,178</u>	<u>\$ (16,895)</u>	<u>\$ (30,878)</u>	<u>\$ 95,359</u>	<u>\$ 179,947</u>

Net (Expense) Revenue and Change In Net Position

Houston Downtown Park Corporation	Houston Parks Board	Midtown Redevelopment Authority	Southwest Houston Redevelopment Authority	Uptown Redevelopment Authority	Non-Major Component Units	Total Component Units
-	-	-	-	-	-	(595)
11	-	-	-	-	-	11
-	13,510	-	-	-	-	13,510
-	-	(19,280)	-	-	-	(19,280)
-	-	-	(4,037)	-	-	(4,037)
-	-	-	-	(27,739)	-	(27,739)
-	-	-	-	-	(56,913)	(56,913)
<u>\$ 11</u>	<u>\$ 13,510</u>	<u>\$ (19,280)</u>	<u>\$ (4,037)</u>	<u>\$ (27,739)</u>	<u>\$ (56,913)</u>	<u>\$ (95,043)</u>
\$ -	-	\$ 18,812	\$ 5,331	\$ 32,287	76,563	\$ 132,993
-	-	-	-	-	-	-
-	-	-	31	21	3,735	5,727
-	-	580	-	-	2,162	2,742
-	-	-	-	-	(60)	-
-	812	19,392	5,362	32,308	82,400	141,459
11	14,322	112	1,325	4,569	25,487	46,416
56,229	35,760	(4,444)	(18,220)	(35,447)	87,627	152,669
-	-	(1,383)	-	-	(17,755)	(19,138)
<u>\$ 56,240</u>	<u>\$ 50,082</u>	<u>\$ 15,178</u>	<u>\$ (16,895)</u>	<u>\$ (30,878)</u>	<u>\$ 95,359</u>	<u>\$ 179,947</u>

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

Net Position
Major Component Units - Discretely Presented Business-type
June 30, 2014
(in thousands)

	Houston First Corporation	Houston Zoo Inc.	Nonmajor Component Units	Total
Cash, receivable and other current assets	\$ 163,135	\$ 35,888	\$ 31,778	\$ 230,801
Noncurrent assets	51,666	12,290	16,473	80,429
Capital assets, net of accumulated depreciation	219,882	75,477	1,752	297,111
Total assets	<u>434,683</u>	<u>123,655</u>	<u>50,003</u>	<u>608,341</u>
Deferred outflow of Resources	1,581	-	-	1,581
Current liabilities	40,016	4,748	47	44,811
Long-term liabilities	298,374	-	12	298,386
Total liabilities	<u>338,390</u>	<u>4,748</u>	<u>59</u>	<u>343,197</u>
Net position				
Net investment in capital assets	2,590	-	1,741	4,331
Restricted	14,997	31,755	-	46,752
Unrestricted	80,287	87,152	48,203	215,642
Total net position	<u>\$ 97,874</u>	<u>\$ 118,907</u>	<u>\$ 49,944</u>	<u>\$ 266,725</u>

**CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014**

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CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

Change in Net Position
Major Component Units - Discretely Presented Business-type
For the Year Ended June 30, 2014
(in thousands)

<u>Component Units</u>	<u>Expenses</u>	<u>Charges for Services</u>	<u>Operating Grants and Contributions</u>
Houston First Corporation	\$ 122,170	\$ 181,098	\$ -
Houston Zoo Inc.	34,705	28,647	20,737
Nonmajor Component Units	1,249	365	4
Totals	<u>\$ 158,124</u>	<u>\$ 210,110</u>	<u>\$ 20,741</u>

General Revenues:

Taxes

Property Taxes levied for general purposes

Unrestricted investment earnings

Other

Total general revenues and transfers

Change in net position

Net position beginning

New Component Unit & Restatement

Net position ending

Continued

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

Net (Expense) Revenue and Change in Net Position

Houston First Corporation	Houston Zoo Inc.	Non-Major Component Units	Total
\$ 58,928	\$ -	\$ 1	\$ 58,929
-	14,679	-	14,679
-	-	(880)	(880)
<u>\$ 58,928</u>	<u>\$ 14,679</u>	<u>\$ (879)</u>	<u>\$ 72,728</u>
\$ -	\$ -	\$ 750	\$ 750
608	1,247	2,406	4,261
(23,791)	-	-	(23,791)
<u>(23,183)</u>	<u>1,247</u>	<u>3,156</u>	<u>(18,780)</u>
35,745	15,926	2,277	53,948
62,129	102,981	47,630	212,740
-	-	37	37
<u>\$ 97,874</u>	<u>\$ 118,907</u>	<u>\$ 49,944</u>	<u>\$ 266,725</u>

CITY OF HOUSTON, TEXAS
NOTES TO THE BASIC FINANCIAL STATEMENTS
June 30, 2014

NOTE 17: SUBSEQUENT EVENTS

A. Tax and Revenue Anticipation Notes

On July 2, 2014, the City closed the sale of \$200,000,000 Tax and Revenue Anticipation Notes (TRANS), Series 2014. The proceeds of the TRANS will be used to finance City's general operating expenditures until tax revenues are received in early 2015. The average - true interest cost was .10%. The principal and the interest of the notes will mature on June 30, 2015.

B. Combined Utility System First Lien Revenue Refunding Bonds, Series 2014D

On July 9, 2014 the City issued 547,980,000 in Combined Utility System First Lien Revenue and Refunding Bonds, Series 2014D (CUS2014D) at coupons ranging from 3.00% to 5.00%. The true interest cost was 3.591%. The bonds mature in varying amounts from 2015 to 2044. The proceeds of the Series, CUS 2014D will use, together with other available funds for paying the costs of the extension, construction, improvement or repair of the System, and refunding of all of the City's outstanding Combine Utility System Commercial Paper Notes, Series B. The series 2014D bonds also includes refunding of a portion of the City's outstanding Water and Sewer System Junior Lien Revenue Refunding Bonds, Series 2004A-1, 2004A-2 and Combine Utility System First Lien Revenue and Refunding Bonds, Series 2005, 2007A, 2007B. The proceeds includes making cash deposit into the First Lien Reserve Fund, and to pay costs of issuance. Net present value saving related to the refunded bonds totaled \$24,372,132 or 7.24% of the refunded bonds and reduced total debt service by \$34,802,240.

C. General Obligation Public Improvement Refunding Bonds, Series 2014A

On Aug 19, 2014 the City issued \$257,365,000 in Public Improvement Refunding Bonds Series 2014A (PIB2014) at coupon ranging from 3.00%-5.00%. The Bonds will mature in varying amount from 2019-2034. The true interest cost for the Public Improvement 2014A Bonds was 2.946%. The proceeds of the PIB2014 Bonds will be used to refund Public Improvement Bonds Series 2006B, 2006D, 2006F, 2007A and \$232,450,000 of General Obligation Commercial Paper Series E-1, E-2, G-2 and Series J. Net present value saving related to the refunded bonds totaled \$5,938,204 or 9.87% of the refunded bonds and reduced total debt service by \$8,215,137.

D. Convention & Entertainment Hotel Occupancy Tax & Special Revenue Bonds, Series 2014

On Aug 20, 2014, the City issued \$73,725,000 in Convention & Entertainment Hotel Occupancy Tax and Special Revenue Bonds Series, 2014 (C&E2014) at coupons ranging from 2.00% to 5.00%. The true interest cost was 3.95%. The bonds mature in varying amounts from 2015 to 2039. The proceeds of the bonds will be used to refund a portion of the City's outstanding Convention & Entertainment Hotel Occupancy Tax and Special Revenue Bonds, Series 2012, finance certain eligible project costs and to pay costs of issuance. Net present value saving related to the refunded bonds totaled \$4,583,916 or 11.04% of the refunded bonds and reduced total debt service by \$6,781,642. The series, C&E 2014 also consist of a component for new money in the amount for \$39,200,000. The new money will be utilized to redesign Avenida De Las Americas and the front entrance of the George R. Brown Convention Center.

E. Houston Airport System Special Facilities Taxable Revenue Refunding Bonds, Series 2014

On Sep 4, 2014, the City issued \$38,225,000 in Airport System Special Facilities Taxable Revenue Refunding Bonds (Consolidated Rental Car Facility Project) Series 2014 at coupons ranging from 6.49% to 7.13%. The true interest cost was 2.529%. The bonds mature in varying amounts from 2015 to 2021. Proceeds of The bonds will be used to refund a portion of the City's outstanding Airport System Special Facilities Taxable Revenue Bonds (Consolidated Rental Car Facility Project) Series 2001 and to pay costs of issuance. Net present value saving related to the refunded bonds totaled \$5,078,199 or 13.63% of the refunded bonds and reduced total debt service by \$6,110,108.

F. Fitch Ratings Change

On September 17, 2014, Fitch downgraded its "A+" rating to "A" on the Airport System's Subordinate Lien Revenue Bonds.

G. Letter of Credit

On October 14, 2014, the City extended the letter of credit from Barclay's Bank, related to the City's Airport System Subordinate Lien Revenue Refunding Bonds, Series 2010 through December 22, 2017.

Required Supplementary Information - (unaudited)

**CITY OF HOUSTON, TEXAS
GENERAL OPERATING FUND
Schedule of Budgeted and Actual Revenues and Expenditures
For the Year Ended June 30, 2014
amounts expressed in thousands
(unaudited)**

	Budgeted Amounts		Actual Budget Basis	Variance with Final Budget- Pos (Neg)
	Original	Final		
Revenues				
Taxes and assessments				
Property Taxes	\$ 945,408	\$ 945,408	\$ 976,240	\$ 30,832
Industrial Assessments	15,000	15,000	16,534	1,534
Sales Tax	629,602	629,602	629,441	(161)
Franchise Tax	188,453	188,453	189,989	1,536
Mixed Beverage Tax	9,800	9,800	13,869	4,069
Bingo Tax	195	195	187	(8)
Total taxes and assessments	1,788,458	1,788,458	1,826,260	37,802
Licenses and permits				
General	25,912	25,912	28,583	2,671
Health Permits	6,907	6,907	7,174	267
Total licenses and permits	32,819	32,819	35,757	2,938
Charges for services				
Ambulance service	32,335	32,335	38,744	6,409
Library fees	10	10	9	(1)
Parking	206	206	253	47
Services performed for other funds				
Direct	46,455	46,103	43,257	(2,846)
Indirect	20,558	20,558	18,558	(2,000)
Rents and royalties	1,808	1,808	1,626	(182)
Others	13,400	13,400	15,426	2,026
Total charges for services	114,772	114,420	117,873	3,453
Intergovernmental - grants	21,063	21,063	20,897	(166)
Fines and forfeits				
Municipal Courts	33,799	33,799	30,493	(3,306)
Others	4,648	4,648	4,683	35
Total fines and forfeits	38,447	38,447	35,176	(3,271)
Interest	3,000	3,000	2,972	(28)
Other				
Sale of Property	362	362	471	109
Other	7,696	7,696	29,284	21,588
Total Other	8,058	8,058	29,755	21,697
Total revenues	2,006,617	2,006,265	2,068,690	62,425
Other financing sources (uses)				
Transfers in	27,770	27,770	12,316	(15,454)
Sale of capital assets	2,500	2,500	1,017	(1,483)
Other financing sources (uses)	-	-	-	-
Total other financing sources (uses)	30,270	30,270	13,333	(16,937)
Total revenues and other financing source	\$ 2,036,887	\$ 2,036,535	\$ 2,082,023	\$ 45,488

* See note to Required Supplementary Information*

CITY OF HOUSTON, TEXAS
GENERAL OPERATING FUND
Schedule of Budgeted and Actual Revenues and Expenditures
For the Year Ended June 30, 2014
amounts expressed in thousands
(unaudited)

	Budgeted Amounts		Actual Budget Basis	Variance with Final Budget- Pos (Neg)
	Original	Final		
General government				
Legislative and executive				
Legislative - Council				
Personnel services	6,065	6,150	5,826	324
Other current expenditures	548	506	377	129
Equipment acquisition	-	26	5	21
Total legislative - council	6,613	6,682	6,208	474
Legislative - Mayor's Office				
Personnel services	6,268	6,265	6,237	28
Other current expenditures	804	894	836	58
Total executive - mayor's office	7,072	7,159	7,073	86
Total legislative and executive	13,685	13,841	13,281	560
Office of Business Opportunity				
Personnel services	2,219	2,161	2,118	43
Other current expenditures	355	477	432	45
Equipment acquisition	-	-	-	-
Total office of business opportunity	2,574	2,638	2,550	88
Municipal Courts Administration				
Municipal Courts				
Personnel services	21,009	20,852	20,707	145
Other current expenditures	4,219	4,197	3,752	445
Equipment acquisition	8	31	27	4
Total municipal courts	25,236	25,080	24,486	594
Elections	2,000	2,000	2,268	(268)
Finance administration				
Controller				
Personnel services	7,004	7,021	7,031	(10)
Other current expenditures	1,394	1,377	1,103	274
Equipment acquisition	-	-	-	-
Total controller	8,398	8,398	8,134	264
Finance				
Personnel services	11,823	12,140	10,893	1,247
Other current expenditures	5,849	7,038	5,495	1,543
Equipment acquisition	-	12	-	12
Total finance	17,672	19,190	16,388	2,802
Administrative and Regulatory Affairs				
Personnel services	15,279	15,033	14,438	595
Other current expenditures	3,556	3,671	3,721	(50)
Equipment acquisition	1	31	24	7
Total administrative and regulatory affairs	18,836	18,735	18,183	552
Information Technology				
Personnel services	16,301	16,688	16,409	279
Other current expenditures	4,962	7,947	7,276	671
Equipment acquisition	-	15	11	4
Total information technology	21,263	24,650	23,696	954
Bond and Legal	1,085	1,085	1,117	(32)
Total finance administration	67,254	72,058	67,518	4,540

See note to required Supplementary Information

CITY OF HOUSTON, TEXAS
GENERAL OPERATING FUND
Schedule of Budgeted and Actual Revenues and Expenditures
For the Year Ended June 30, 2014
amounts expressed in thousands
(unaudited)

	Budgeted Amounts		Actual Budget Basis	Variance with Final Budget- Pos (Neg)
	Original	Final		
Legal				
Personnel services	14,013	14,198	13,883	315
Other current expenditures	1,220	1,250	1,028	222
Equipment acquisition		20	20	-
Total legal	15,233	15,468	14,931	537
City Secretary				
Personnel services	713	713	662	51
Other current expenditures	149	149	93	56
Total city secretary	862	862	755	107
Planning and Development				
Personnel services	7,232	6,855	6,723	132
Other current expenditures	763	889	783	106
Equipment acquisition				-
Total planning and development	7,995	7,744	7,506	238
Human Resources				
Personnel services	2,849	2,877	2,790	87
Other current expenditures	640	658	492	166
Equipment acquisition	5	24	18	6
Total human resources	3,494	3,559	3,300	259
Total general government	138,333	143,250	136,595	6,655
Public safety				
Police				
Personnel services	675,913	678,764	673,125	5,639
Other current expenditures	46,529	48,324	56,592	(8,268)
Equipment acquisition	140	623	531	92
Total police	722,582	727,711	730,248	(2,537)
Fire				
Personnel services	409,835	418,890	414,557	4,333
Other current expenditures	37,544	38,650	37,417	1,233
Equipment acquisition		344	342	2
Total fire	447,379	457,884	452,316	5,568
Total public safety	1,169,961	1,185,595	1,182,564	3,031
Public Works				
Administration				
Personnel services	1,337	1,332	1,191	141
Other current expenditures	31,913	31,554	30,845	709
Equipment acquisition				-
Total administration	33,250	32,886	32,036	850
General Services				
Personnel services	14,135	13,920	13,882	38
Other current expenditures	31,096	32,745	31,993	752
Equipment acquisition	14	608	365	243
Total general services	45,245	47,273	46,240	1,033

See note to required Supplementary Information

CITY OF HOUSTON, TEXAS
GENERAL OPERATING FUND
Schedule of Budgeted and Actual Revenues and Expenditures
For the Year Ended June 30, 2014
amounts expressed in thousands
(unaudited)

	Budgeted Amounts		Actual Budget Basis	Variance with Final Budget- Pos (Neg)
	Original	Final		
Solid Waste				
Personnel services	29,117	29,519	29,471	48
Other current expenditures	39,461	39,147	40,001	(854)
Equipment acquisition		1,506	1,427	79
Total solid waste	68,578	70,172	70,899	(727)
Total public works	147,073	150,331	149,175	1,156
Department of Neighborhoods				
Personnel services	8,040	7,935	7,688	247
Other current expenditures	3,287	3,468	3,440	28
Equipment acquisition		30	26	4
Total department of neighborhoods	11,327	11,433	11,154	279
Health				
Personnel services	38,039	35,991	35,968	23
Other current expenditures	17,793	17,110	16,840	270
Equipment acquisition		316	177	139
Total health	55,832	53,417	52,985	432
Housing				
Personnel services	277	277	235	42
Other current expenditures	1,071	1,071	1,050	21
Total housing	1,348	1,348	1,285	63
Parks and Recreation				
Personnel services	38,445	37,985	38,042	(57)
Other current expenditures	26,427	27,480	26,768	712
Equipment acquisition				-
Total parks and recreation	64,872	65,465	64,810	655
Library				
Personnel services	27,958	27,857	27,708	149
Other current expenditures	5,013	4,971	4,660	311
Equipment acquisition	5,374	5,531	5,538	(7)
Total library	38,345	38,359	37,906	453
Retiree Benefits				
Hospital and life insurance	15,112	12,612	10,920	1,692
Total retiree benefits	15,112	12,612	10,920	1,692
Other current expenditures				
Tax appraisal fees	7,650	7,650	7,788	(138)
Limited-purpose Annexation Districts	44,117	47,117	47,191	(74)
Contingency	9,100	2,755	-	2,755
Claims and judgments	10,277	14,777	16,525	(1,748)
Membership dues	1,685	1,685	1,367	318
Advertising and promotion	500	500	323	177
Management Initiative Savings				-
Consultants	1,581	1,531	1,579	(48)
Miscellaneous support services	39,199	30,380	27,721	2,659
Total other current expenditures	114,109	106,395	102,494	3,901
Debt service				
Debt service interest	4,428	4,428	3,040	1,388
Total debt service	4,428	4,428	3,040	1,388
Total expenditures	1,760,740	1,772,633	1,752,928	19,705
Other financing sources (uses)				
Transfers out	310,455	319,503	312,487	7,016
Total other financing sources (uses)	310,455	319,503	312,487	7,016
Total expenditures and other financing uses	\$ 2,071,195	\$ 2,092,136	\$ 2,065,415	\$ 26,721

See note to required Supplementary Information

CITY OF HOUSTON, TEXAS
REQUIRED RECONCILIATION FOR GENERAL FUND
BUDGET vs. GAAP PRESENTATION
For the Year Ended June 30, 2014
amounts expressed in thousands
(unaudited)

Revenues

Actual amounts (budgetary basis) "revenues" from the budgetary comparison schedules	\$ 2,068,690
Revenues of non-budgeted funds	
Equipment Acquisition	13,576
Building Security	829
Grant Matching Fund	296
Storm Water	2
Bureau of Animal Regulation and Care	1,711
Fleet Maintenance	45
Forensic Transition	3,434
Total revenues of non-budgeted funds	<u>19,893</u>
Interest on pooled investments from non-budgeted revenues	715
Total revenues as reported on the statement of revenues, expenditures, and changes in fund balances	<u>\$ 2,089,298</u>

Expenditures

Actual amounts (budgetary basis) "expenditures" from the budgetary comparison schedules	\$ 1,752,928
Expenditures of non-budgeted funds	
Equipment Acquisition	78,868
Building Security	773
Grant Matching Fund	452
Special Non-Recurring	
Fleet Maintenance	50
Storm Water	40,849
Bureau of Animal Regulation and Care	8,430
Forensic Transition	15,908
Total expenditures of non-budgeted funds	<u>145,330</u>
Total expenditures as reported on the statement of revenues, expenditures, and changes in fund balances	<u>\$ 1,898,258</u>

Other financing sources (uses)

Actual amounts (budgetary basis) "other financing sources and uses" from the budgetary comparison schedules	\$ (299,154)
Proceeds from Issuance of Debt	55,000
Sale of Assets	1,347
Transfers of Non Budgeted Funds	37,711
Total other financing sources and uses as reported on the statement of revenues, expenditures, and changes in fund balances--governmental funds	<u>\$ (205,096)</u>

See note to Required Supplementary Information

CITY OF HOUSTON, TEXAS
REQUIRED NOTES TO THE SUPPLEMENTARY INFORMATION
June 30, 2014
(Unaudited)

1. General Budget Policies

During January of each year, the Mayor, with City Council input, establishes budget guidelines. All departments of the City submit requests for appropriations to the Mayor and the City's Department of Finance so that a budget may be prepared. Typically during June, the City Controller certifies that funds are available for a continuing appropriation and the budget is proposed to City Council. City Council holds public hearings and a final budget is normally adopted by June 30th. A final appropriation ordinance is adopted later in the fiscal year and may include budget revisions or amendments.

The legal level of budgetary control is the departmental level within each fund, even though the budget is prepared by fund, department, and expenditure category. The Mayor is authorized to transfer unlimited budgeted amounts within departments and amounts between departments, provided such transfers do not exceed 5% of an expenditure category. Expenditure categories are personnel services, other current expenditures and capital outlay. Appropriations related to funds with annual budgets lapse at year-end except for Capital Outlay appropriations, which cover multiple years.

On April 29, 2014, City Council approved the Fiscal Year 2014 general appropriation ordinance in the amount of \$2.092 billion for the General Fund.

Annual operating budgets are adopted for the General Operating Fund, the Debt Service Fund, the Special Revenue Funds (except for the Grants Revenue Fund, Disaster Recovery, Health Special Fund and the Housing Special Fund) and the Proprietary Funds. The budgets are adopted on a basis consistent with generally accepted accounting principles for all governmental funds. Budgets for proprietary funds are prepared on the accrual basis, but focus on expenses relating to maintenance and operations, and equipment purchases and, accordingly, exclude depreciation and other allocations related to income determination.

The following provides actual fiscal year 2014 results for both budgeted and non-budgeted Special Revenue Funds (in thousands):

	<u>Revenues</u>	<u>Expenditures</u>	<u>Other Sources (Uses)</u>
Budgeted Special Revenue Funds	\$ 325,109	\$ 197,226	\$ (132,512)
Non-budgeted Disaster Recovery Fund	32	-	-
Non-budgeted Grants Revenue Fund	170,875	177,708	(70)
Non-budgeted Health and Housing	20,848	15,405	800
Non-budgeted Other Funds	9,855	1,201	1,641
Total Special Revenue Funds - Actual	<u>\$ 526,719</u>	<u>\$ 391,540</u>	<u>\$ (130,141)</u>

2. General Fund Budgetary Highlights

Revenues were \$62 million above budget. This increase was mainly evident in taxes and assessments of \$37.8 million. In addition, increases in licenses and permits (\$3 million), charges for services (\$3.4 million) and other income (\$21 million), were offset by decreases in fines and forfeits (\$3.2 million).

Significant differences between budgeted and actual taxes and assessments include:

- \$30.8 million increase in property tax
- \$1.5 million increase in industrial assessments
- \$1.5 million increase in franchise tax
- \$4 million increase in mix beverage tax

Total expenditures were \$20 million below budget, with a \$7 million decrease in general government, and a \$4 million decrease in Other current expenditures.

**CITY OF HOUSTON, TEXAS
REQUIRED PENSION SYSTEM
SUPPLEMENTARY INFORMATION
June 30, 2014
(unaudited)**

**Houston Firefighters' Pension System Supplementary Information (unaudited)
Schedule of Funding Progress (in millions)**

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (Surplus UAAL) (b-a)	Funded Ratio (a/b)	Projected Annual Covered Payroll (c)	UAAL as Percentage of Covered Payroll ((b-a)/c)
July 1, 2008	\$2,945.1	\$3,080.5	\$135.4	96%	\$239.2	57%
July 1, 2009	\$3,062.2	\$3,209.7	\$147.5	95%	\$258.9	57%
July 1, 2010	\$3,116.8	\$3,337.5	\$220.7	93%	\$265.8	83%
July 1, 2011	\$3,222.3	\$3,558.2	\$335.9	91%	\$272.5	123%
July 1, 2012	\$3,263.3	\$3,752.9	\$489.6	87%	\$270.9	181%
July 1, 2013	\$3,430.4	\$3,963.1	\$532.7	87%	\$271.8	196%

**Houston Municipal Pension System Supplementary Information (unaudited)
Schedule of Funding Progress (in millions)**

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (Surplus UAAL) (b-a)	Funded Ratio (a/b)	Projected Annual Covered Payroll (c)	UAAL as Percentage of Covered Payroll ((b-a)/c)
July 1, 2008	\$2,310.4	\$3,296.4	\$986.0	70%	\$483.8	204%
July 1, 2009	\$2,284.4	\$3,451.4	\$1,167.0	66%	\$539.0	217%
July 1, 2010	\$2,273.1	\$3,632.5	\$1,359.4	63%	\$550.7	247%
July 1, 2011	\$2,328.8	\$3,790.3	\$1,461.5	61%	\$544.7	268%
July 1, 2012	\$2,344.1	\$3,966.9	\$1,622.8	59%	\$534.4	304%
July 1, 2013	\$2,382.6	\$4,129.6	\$1,747.0	58%	\$550.0	318%

**Houston Police Officers' Pension System Supplementary Information (unaudited)
Schedule of Funding Progress (in millions)**

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (Surplus UAAL) (b-a)	Funded Ratio (a/b)	Projected Annual Covered Payroll (c)	UAAL as Percentage of Covered Payroll ((b-a)/c)
July 1, 2008	\$3,337.6	\$4,079.0	\$741.4	82%	\$351.5	211%
July 1, 2009	\$3,430.9	\$4,368.5	\$937.6	79%	\$366.9	256%
July 1, 2010	\$3,526.7	\$4,232.7	\$706.0	83%	\$377.8	187%
July 1, 2011	\$3,718.1	\$4,488.1	\$770.0	83%	\$388.4	198%
July 1, 2012	\$3,888.5	\$4,747.2	\$858.7	82%	\$389.9	220%
July 1, 2013	\$4,071.0	\$5,010.0	\$939.0	81%	\$392.0	240%

CITY OF HOUSTON, TEXAS
REQUIRED OTHER POST EMPLOYMENT BENEFITS
SUPPLEMENTARY INFORMATION
June 30, 2014
(unaudited)

Houston Other Post Employment Benefits Supplementary Information (unaudited)
Schedule of Funding Progress *(in millions)*

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (Surplus UAAL) (b-a)	Funded Ratio (a/b)	Projected Annual Covered Payroll (c)	UAAL as Percentage of Covered Payroll ((b-a)/c)
June 30, 2008	\$0	\$3,096	\$3,096	0%	\$1,136.5	272.4%
June 30, 2009	\$0	\$3,031	\$3,031	0%	\$1,193.5	254.1%
June 30, 2010	\$0	\$1,984	\$1,984	0%	\$1,208.9	164.1%
June 30, 2010	\$0	\$1,984	\$1,984	0%	\$1,164.5	170.4%
June 30, 2012	\$0	\$2,090	\$2,090	0%	\$1,178.1	177.4%
June 30, 2012	\$0	\$2,090	\$2,090	0%	\$1,227.2	170.3%

Governmental Funds

General Fund - The General Fund is used to account for sources and uses of financial resources applicable to the general government operation of the City. All general operating revenues and expenditures that are not restricted and, therefore, accounted for in another fund, are recorded in the General Fund.

Debt Service Fund - The Debt Service Fund is used to account for the payment of interest and principal on all general long-term debt other than debt issued for and serviced by Enterprise Funds.

Capital Projects Fund - The Capital Projects Fund accounts for all resources used for the acquisition and/or construction of capital facilities by the City, except those financed by Enterprise Funds.

Grants Fund - The Grants Fund is used to account for grant resources received from various local, state and national agencies and organizations. The use of these resources is restricted to a particular function of the city by the grantor.

Nonmajor Funds - Nonmajor Funds did not meet the established criteria for major fund status. They are used to account for the proceeds of specific revenue sources (other than capital projects) that are restricted to expenditures for special purposes. All Nonmajor Funds have been presented; however only certain sub-funds have legally adopted budgets. Nonmajor funds are:

- Public Safety Special Fund
 - Budgeted: Asset Forfeiture, Auto Dealers, Digital Automated Red Light, Juvenile Case Manager, Police Special Services, Houston Emergency Center, Municipal Courts Technology Fee, and Child Safety
 - Not budgeted: Helmets for Bicycle Safety, Nuisance Abatement, FTA Special
- Public Works Special Fund
 - Budgeted: Building Inspection, Dedicated Drainage & Street Renewal, Historic Preservation, and Recycling Expansion Program
 - Not budgeted: Mobility Response Team, Street Maintenance and Traffic Control
- Health and Housing Special Fund
 - Budgeted: Essential Public Health, Health Special, Laboratory Services, Special Waste, and Swimming Pool Safety
 - Not budgeted: Housing Special, Homeless Families Program and Housing Replacement Insurance, Housing Non-Grant Venture and HJTPC Self Insurance
- Parks & Recreation Special Fund
 - Budgeted: Parks Golf Special, Parks Special
 - Not budgeted: MacGregor Parks Endowment, Planting Tree
- Other Special Revenue Fund
 - Budgeted: Cable Television, Contractor Responsibility, Digital Houston, Houston Transtar, Parking Management, and Supplemental Environmental Protection
 - Not budgeted: Disaster Recovery, Compaq Center, MNC Memorial City Way, W.A.T.E.R., Special City Deposit, John Battaglia Trust, Inc. Fund, AAA Contingency, Houston Foundation and March of Dimes

CITY OF HOUSTON, TEXAS
GENERAL FUND
Balance Sheet
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	2014	2013
Assets		
Equity in pooled cash and investments	\$ 248,330	\$ 226,782
Receivables, net of allowances		
Accounts receivable	83,862	62,952
Property taxes receivable, net	30,110	31,223
Sales taxes receivable	107,872	106,418
Mixed beverage taxes receivable	3,818	2,717
Franchise taxes receivable	18,263	17,938
Special assessments receivable	14,054	14,721
Due from other funds	16,772	26,107
Due from other governments	596	598
Inventory	11,895	12,701
Prepaid items	2,121	2,011
Total assets	\$ 537,693	\$ 504,168
Liabilities and fund balance		
Liabilities		
Accounts payable	82,148	49,076
Accrued payroll liabilities	32,797	28,120
Due to other funds	36,871	43,156
Due to other governments	286	278
Advances and deposits	6,994	7,623
Claims and judgments	1,800	1,769
Compensated absences	3,680	4,278
Total liabilities	164,576	134,300
Deferred inflows of resources		
Deferred inflow of resources	110,843	93,538
Total deferred inflows of resources	110,843	93,538
Fund balance		
Non-Spendable		
Imprest cash and prepaids	2,121	2,091
Inventory	11,895	12,701
Restricted	44,120	63,696
Committed	3,407	6,892
Unassigned	200,731	190,950
Total fund balance	262,274	276,330
Total liabilities and fund balance	\$ 537,693	\$ 504,168

CITY OF HOUSTON, TEXAS
GENERAL FUND
Statement of Revenues, Expenditures and Changes in Fund Balance
For the Year Ended June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>2013</u>
Revenues		
Taxes and assessments		
Property Taxes	\$ 976,240	\$ 910,034
Industrial Assessments	16,534	29,845
Sales Tax	629,441	600,256
Franchise Tax	189,989	195,305
Mixed Beverage Tax	13,869	9,887
Bingo Tax	187	196
Licenses and permits	36,633	35,051
Charges for services	121,621	102,965
Intergovernmental - grants	21,595	19,146
Fines and forfeits	35,177	36,480
Investment income	3,687	1,598
Other	44,325	31,639
Total revenues	<u>2,089,298</u>	<u>1,972,402</u>
Expenditures		
Current		
General government	207,182	194,775
Public safety	1,248,286	1,162,652
Public works	202,556	189,874
Health	53,005	43,977
Housing and community development	1,015	2,483
Parks and recreation	64,810	63,033
Library	37,861	33,315
Retiree benefits	10,920	11,907
Capital outlay	69,583	38,934
Debt service interest	3,040	2,952
Total expenditures	<u>1,898,258</u>	<u>1,743,902</u>
Other financing sources (uses)		
Proceeds from issuance of debt	55,000	67,666
Sale of capital assets	2,364	5,102
Transfers in	72,663	76,641
Transfers out	(335,123)	(314,806)
Total other financing sources (uses)	<u>(205,096)</u>	<u>(165,397)</u>
Change in fund balance	(14,056)	63,103
Fund balances beginning, as previously reported	<u>276,330</u>	<u>213,227</u>
Fund balances, July 1	<u>276,330</u>	<u>213,227</u>
Fund balances, June 30	<u>\$ 262,274</u>	<u>\$ 276,330</u>

CITY OF HOUSTON, TEXAS
DEBT SERVICE FUND
Balance Sheet
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	2014	2013
Assets		
Equity in pooled cash and investments	\$ 104,578	\$ 124,954
Due from other funds	31,368	32,983
Due from other governments	3,549	3,549
Total assets	\$ 139,495	\$ 161,486
Liabilities and fund balance		
Liabilities		
Accounts payable	\$ 1,245	\$ 1,383
Total liabilities	1,245	1,383
Deferred inflows of resources		
Deferred inflow of resources	3,549	3,549
Total deferred inflows of resources	3,549	3,549
Fund balance		
Restricted	134,701	156,554
Total fund balance	134,701	156,554
Total liabilities and fund balance	\$ 139,495	\$ 161,486

**CITY OF HOUSTON, TEXAS
DEBT SERVICE FUND**

**Schedule of Revenues, Expenditures and Changes in Fund Balance: Budget vs. Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands**

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts Original	Final			
Revenues					
Investment income	\$ -	\$ -	\$ 1,269	\$ 1,269	\$ (57)
Other	-	-	5,679	5,679	5,873
Total revenues	-	-	6,948	6,948	5,816
Expenditures					
Current					
Debt service principal	150,325	150,325	176,205	(25,880)	138,875
Debt service interest	149,280	149,280	151,238	(1,958)	155,255
Debt service fiscal agent & fees	4,662	4,662	3,766	896	5,447
Total expenditures	304,267	304,267	331,209	(26,942)	299,577
Other financing sources (uses)					
Net proceeds from issuance of debt	-	-	71	71	343,610
Premium on long-term debt	-	-	-	-	51,617
Transfers in	296,266	296,266	302,856	6,590	302,141
Payment to(from) escrow agent for refunded bonds	-	-	(519)	(519)	(395,227)
Total other financing sources (uses)	296,266	296,266	302,408	6,142	302,141
Change in fund balance	(8,001)	(8,001)	(21,853)	(13,852)	8,380
Fund balances, July 1	148,128	148,128	156,554	8,426	148,174
Fund balances, June 30	\$ 140,127	\$ 140,127	\$ 134,701	\$ (5,426)	\$ 156,554

CITY OF HOUSTON, TEXAS
CAPITAL PROJECTS FUND
Balance Sheet
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	2014	2013
Assets		
Equity in pooled cash and investments	\$ 271,206	\$ 192,832
Receivables, net of allowances		
Accounts receivable	2	-
Due from other funds	16,460	337
Due from other governments	156	741
Prepaid items - Construction materials	3,062	143
Total assets	\$ 290,886	\$ 194,053
Liabilities and fund balance		
Liabilities		
Accounts payable	37,889	26,100
Accrued payroll liabilities	-	1
Due to other funds	3,255	1,689
Advances and deposits	31	31
Total liabilities	41,175	27,821
Deferred inflows of resources		
Deferred inflow of resources	107,272	99,050
Total deferred inflows of resources	107,272	99,050
Fund balance		
Imprest cash and prepaids	3,062	143
Restricted	32,770	21,031
Assigned	106,607	46,008
Total fund balance	142,439	67,182
Total liabilities and fund balance	\$ 290,886	\$ 194,053

CITY OF HOUSTON, TEXAS
CAPITAL PROJECTS FUND
Statement of Revenues, Expenditures and Changes in Fund Balance
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>2013</u>
Revenues		
Intergovernmental - grants	\$ 56,210	\$ 53,943
Investment income	2,195	(609)
Other	<u>7,796</u>	<u>7,654</u>
Total revenues	<u>66,201</u>	<u>60,988</u>
Expenditures		
Current		
Capital outlay	<u>187,415</u>	<u>181,147</u>
Total expenditures	<u>187,415</u>	<u>181,147</u>
Other financing sources (uses)		
Proceeds from issuance of debt	63,929	27,000
Transfers in	132,542	96,260
Transfers out	<u>-</u>	<u>(2,349)</u>
Total other financing sources (uses)	<u>196,471</u>	<u>120,911</u>
Change in fund balance	75,257	752
Fund balances, July 1	<u>67,182</u>	<u>66,430</u>
Fund balances, June 30	<u>\$ 142,439</u>	<u>\$ 67,182</u>

CITY OF HOUSTON, TEXAS
GRANTS FUND
Balance Sheet
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	2014	2013
Assets		
Cash		
Equity in pooled cash and investments	\$ 23,321	\$ 1,355
Receivables, net of allowances		
Accounts receivable	28,848	8,547
Due from other funds	1,253	1,745
Due from component units	1,928	1,965
Due from other governments	58,805	85,313
Inventory	321	290
Prepaid items	134	-
Total assets	\$ 114,610	\$ 99,215
 Liabilities and fund balance		
Liabilities		
Accounts payable	17,850	17,064
Accrued payroll liabilities	1,159	997
Due to other funds	16,909	15,091
Due to other governments	10,524	3,611
Advances and deposits	180	221
Total liabilities	46,622	36,984
 Deferred inflows of resources		
Deferred inflow of resources	58,216	45,556
Total deferred inflows of resources	58,216	45,556
 Fund balance		
Non-Spendable		
Imprest cash and prepaids	134	-
Inventory	321	290
Restricted	9,317	16,385
Total fund balance	9,772	16,675
 Total liabilities and fund balance	\$ 114,610	\$ 99,215

CITY OF HOUSTON, TEXAS
GRANTS FUND
Statement of Revenues, Expenditures and Changes in Fund Balance
For the Year Ended June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>2013</u>
Revenues		
Intergovernmental - grants	\$ 170,844	\$ 225,974
Investment income	31	291
Total revenues	<u>170,875</u>	<u>226,265</u>
Expenditures		
Current		
General government	2,842	2,957
Public safety	53,154	57,258
Public works	10,840	8,215
Health	56,195	62,596
Housing and community development	48,265	85,026
Parks and recreation	5,852	5,848
Library	560	2,118
Total expenditures	<u>177,708</u>	<u>224,018</u>
Other financing sources (uses)		
Transfers out	(70)	(229)
Total other financing sources (uses)	<u>(70)</u>	<u>(229)</u>
Change in fund balance	(6,903)	2,018
Fund balances, July 1	<u>16,675</u>	<u>14,657</u>
Fund balances, June 30	<u>\$ 9,772</u>	<u>\$ 16,675</u>

CITY OF HOUSTON, TEXAS
NONMAJOR GOVERNMENTAL FUNDS
Combining Balance Sheet
June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	<i>Nonmajor Funds</i>		
	Public Safety Special Fund	Public Works Special Fund	Health & Housing Special Fund
Assets			
Equity in pooled cash and investments	\$ 24,605	\$ 113,501	\$ 20,463
Receivables, net of allowances			
Accounts receivable	506	24,382	57
Due from other funds	49	1,457	27
Due from other governments	2,632	10,811	-
Inventory	-	1,773	-
Total assets	<u>\$ 27,792</u>	<u>\$ 151,924</u>	<u>\$ 20,547</u>
Liabilities and fund balance			
Liabilities			
Accounts payable	\$ 2,313	\$ 4,345	\$ 655
Accrued payroll liabilities	858	1,684	191
Due to other funds	607	15,416	28
Due to other governments	2	-	-
Advances and deposits	597	1,751	-
Compensated absences	78	107	1
Other liabilities	-	-	-
Total liabilities	<u>4,455</u>	<u>23,303</u>	<u>875</u>
Deferred inflows of resources			
Deferred inflow of resources	79	28,313	53
Total deferred inflows of resources	<u>79</u>	<u>28,313</u>	<u>53</u>
Fund balance			
Non-Spendable			
Inventory	-	1,773	-
Committed	16,354	30,769	10,540
Restricted	6,904	67,766	9,079
Total fund balance	<u>23,258</u>	<u>100,308</u>	<u>19,619</u>
Total liabilities and fund balance	<u>\$ 27,792</u>	<u>\$ 151,924</u>	<u>\$ 20,547</u>

(Continued)

Nonmajor Funds

Parks & Recreation Special Fund		Other Special Revenue Fund			
				2014	2013
\$	9,278	\$	78,598	\$	246,445
	(132)		1,651		26,464
	1		76		1,610
	-		-		13,443
	-		-		1,773
\$	9,147	\$	80,325	\$	289,735
\$	365	\$	3,646	\$	11,324
	91		158		2,982
	2		1,918		17,971
	13		1,088		1,103
	82		285		2,715
	-		58		244
	-		2		2
	533		7,155		36,341
	26		393		28,864
	26		393		28,864
	-		-		1,773
	8,224		6,082		71,969
	344		66,695		150,788
	8,568		72,777		224,530
\$	9,147	\$	80,325	\$	289,735

CITY OF HOUSTON, TEXAS
NONMAJOR GOVERNMENTAL FUNDS
Combining Statement of Revenues, Expenditures and Changes in Fund Balances
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	<i>Nonmajor Funds</i>		
	Public Safety Special Fund	Public Works Special Fund	Health & Housing Special Fund
Revenues			
Franchise Tax	\$ -	\$ 379	\$ -
Licenses and permits	3,182	66,939	4,169
Charges for services	4,392	123,579	1,332
Intergovernmental - grants	12,397	56,103	12,015
Fines and forfeits	1,430	9	-
Investment income	264	1,227	185
Other	18,745	2,866	3,147
Total revenues	<u>40,410</u>	<u>251,102</u>	<u>20,848</u>
Expenditures			
Current			
General government	-	-	-
Public safety	53,929	-	-
Public works	-	90,950	-
Health	-	-	13,246
Housing and community development	-	-	1,972
Parks and recreation	-	-	-
Capital outlay	2,094	25,967	187
Debt service interest	-	49	-
Debt service fiscal agent & fees	-	762	-
Total expenditures	<u>56,023</u>	<u>117,728</u>	<u>15,405</u>
Other financing sources (uses)			
Sale of capital assets	-	100	-
Transfers in	17,533	22,790	800
Transfers out	(1,883)	(158,115)	-
Total other financing sources (uses)	<u>15,650</u>	<u>(135,225)</u>	<u>800</u>
Change in fund balance	37	(1,851)	6,243
Fund balances, July 1	23,221	102,159	13,376
Fund balances, June 30	<u>\$ 23,258</u>	<u>\$ 100,308</u>	<u>\$ 19,619</u>

(Continued)

<i>Nonmajor Funds</i>			
Parks & Recreation Special Fund	Other Special Revenue Fund	2014	2013
\$ -	\$ -	\$ 379	\$ 359
293	361	74,944	62,049
7,192	9,519	146,014	145,132
-	4,668	85,183	67,910
-	10,031	11,470	11,475
87	792	2,555	(137)
625	15,006	40,389	41,351
<u>8,197</u>	<u>40,377</u>	<u>360,934</u>	<u>328,139</u>
-	23,192	23,192	19,644
-	-	53,929	47,613
-	-	90,950	86,774
-	-	13,246	5,413
-	-	1,972	713
6,895	-	6,895	6,549
53	3,727	32,028	25,329
-	-	49	115
-	-	762	765
<u>6,948</u>	<u>26,919</u>	<u>223,023</u>	<u>192,915</u>
-	-	100	716
-	-	41,123	30,471
-	(12,026)	(172,024)	(131,838)
-	(12,026)	(130,801)	(100,651)
1,249	1,432	7,110	34,573
<u>7,319</u>	<u>71,345</u>	<u>217,420</u>	<u>182,847</u>
<u>\$ 8,568</u>	<u>\$ 72,777</u>	<u>\$ 224,530</u>	<u>\$ 217,420</u>

CITY OF HOUSTON, TEXAS
PUBLIC SAFETY SPECIAL FUND - ASSET FORFEITURE
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Confiscations	\$ 6,578	\$ 6,578	\$ 8,829	\$ 2,251	\$ 9,142
Investment income	51	51	74	23	4
Total revenues	<u>6,629</u>	<u>6,629</u>	<u>8,903</u>	<u>2,274</u>	<u>9,146</u>
Expenditures					
Current					
Public safety	12,600	12,266	8,416	3,850	6,385
Capital outlay	-	334	275	59	384
Total expenditures	<u>12,600</u>	<u>12,600</u>	<u>8,691</u>	<u>3,909</u>	<u>6,769</u>
Change in fund balance	(5,971)	(5,971)	212	6,183	2,377
Fund balances, July 1	<u>6,493</u>	<u>6,493</u>	<u>6,493</u>	<u>-</u>	<u>4,116</u>
Fund balances, June 30	<u>\$ 522</u>	<u>\$ 522</u>	<u>\$ 6,705</u>	<u>\$ 6,183</u>	<u>\$ 6,493</u>

CITY OF HOUSTON, TEXAS
PUBLIC SAFETY SPECIAL FUND - AUTO DEALERS
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts				
	Original	Final			
Revenues					
Licenses and permits	\$ 3,264	\$ 3,264	\$ 2,911	\$ (353)	\$ 3,151
Charges for services	462	462	481	19	436
Investment income	42	42	51	9	3
Other	3,027	3,027	3,635	608	3,593
Total revenues	<u>6,795</u>	<u>6,795</u>	<u>7,078</u>	<u>283</u>	<u>7,183</u>
Expenditures					
Current					
Public safety	5,114	5,295	4,897	398	4,639
Capital outlay	400	219	28	191	607
Total expenditures	<u>5,514</u>	<u>5,514</u>	<u>4,925</u>	<u>589</u>	<u>5,246</u>
Other financing sources (uses)					
Transfers out	<u>(1,262)</u>	<u>(1,262)</u>	<u>(1,533)</u>	<u>(271)</u>	<u>(1,095)</u>
Total other financing sources (uses)	<u>(1,262)</u>	<u>(1,262)</u>	<u>(1,533)</u>	<u>(271)</u>	<u>(1,095)</u>
Change in fund balance	19	19	620	601	842
Fund balances, July 1	<u>3,755</u>	<u>3,755</u>	<u>3,755</u>	<u>-</u>	<u>2,913</u>
Fund balances, June 30	<u>\$ 3,774</u>	<u>\$ 3,774</u>	<u>\$ 4,375</u>	<u>\$ 601</u>	<u>\$ 3,755</u>

CITY OF HOUSTON, TEXAS
PUBLIC WORKS SPECIAL FUND - BUILDING INSPECTION
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts				
	Original	Final			
Revenues					
Taxes and assessments					
Franchise Tax	\$ 385	\$ 385	\$ 379	\$ (6)	\$ 359
Licenses and permits	49,854	49,854	65,158	15,304	53,100
Charges for services	10,812	10,812	9,563	(1,249)	10,070
Investment income	171	171	284	113	10
Other	731	731	451	(280)	290
Total revenues	<u>61,953</u>	<u>61,953</u>	<u>75,835</u>	<u>13,882</u>	<u>63,829</u>
Expenditures					
Current					
Public works	58,948	58,369	54,699	3,670	48,223
Capital outlay	6,603	2,592	2,208	384	608
Total expenditures	<u>65,551</u>	<u>60,961</u>	<u>56,907</u>	<u>4,054</u>	<u>48,831</u>
Other financing sources (uses)					
Transfers out	(962)	(6,824)	(6,824)	-	(10,962)
Total other financing sources (uses)	<u>(962)</u>	<u>(6,824)</u>	<u>(6,824)</u>	<u>-</u>	<u>(10,962)</u>
Change in fund balance	(4,560)	(5,832)	12,104	17,936	4,036
Fund balances, July 1	<u>15,131</u>	<u>15,131</u>	<u>15,131</u>	<u>-</u>	<u>11,095</u>
Fund balances, June 30	<u>\$ 10,571</u>	<u>\$ 9,299</u>	<u>\$ 27,235</u>	<u>\$ 17,936</u>	<u>\$ 15,131</u>

CITY OF HOUSTON, TEXAS
OTHER SPECIAL REVENUE FUND - CABLE TELEVISION
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Investment income	\$ 32	\$ 32	\$ 19	\$ (13)	\$ 2
Other	4,182	4,182	4,276	94	4,106
Total revenues	<u>4,214</u>	<u>4,214</u>	<u>4,295</u>	<u>81</u>	<u>4,108</u>
Expenditures					
Current					
General government	6,298	6,640	3,827	2,813	3,442
Capital outlay	342	-	2,513	(2,513)	367
Total expenditures	<u>6,640</u>	<u>6,640</u>	<u>6,340</u>	<u>300</u>	<u>3,809</u>
Other financing sources (uses)					
Transfers out	(358)	(303)	(303)	-	-
Total other financing sources (uses)	<u>(358)</u>	<u>(303)</u>	<u>(303)</u>	<u>-</u>	<u>-</u>
Change in fund balance	(2,784)	(2,729)	(2,348)	381	299
Fund balances, July 1	<u>2,886</u>	<u>2,886</u>	<u>2,886</u>	<u>-</u>	<u>2,587</u>
Fund balances, June 30	<u>\$ 102</u>	<u>\$ 157</u>	<u>\$ 538</u>	<u>\$ 381</u>	<u>\$ 2,886</u>

CITY OF HOUSTON, TEXAS
PUBLIC SAFETY SPECIAL FUND - CHILD SAFETY
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Original	Final			
Revenues					
Fines and forfeits	\$ 770	\$ 770	\$ 834	\$ 64	\$ 862
Interest	20	20	12	(8)	1
Other	2,300	2,300	2,454	154	2,424
Total revenues	<u>3,090</u>	<u>3,090</u>	<u>3,300</u>	<u>210</u>	<u>3,287</u>
Expenditures					
Current					
Public safety	3,090	3,444	3,444	-	3,314
Total expenditures	<u>3,090</u>	<u>3,444</u>	<u>3,444</u>	<u>-</u>	<u>3,314</u>
Change in fund balance	-	(354)	(144)	210	(27)
Fund balances, July 1	<u>206</u>	<u>206</u>	<u>206</u>	<u>-</u>	<u>233</u>
Fund balances, June 30	<u>\$ 206</u>	<u>\$ (148)</u>	<u>\$ 62</u>	<u>\$ 210</u>	<u>\$ 206</u>

CITY OF HOUSTON, TEXAS
OTHER SPECIAL REVENUE FUND - CONTRACTORS RESPONSIBILITY
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Original	Final			
Revenues					
Investment income	\$ 13	\$ 13	\$ 30	\$ 17	\$ (3)
Other	459	459	371	(88)	710
Total revenues	<u>472</u>	<u>472</u>	<u>401</u>	<u>(71)</u>	<u>707</u>
Expenditures					
Current					
General government	711	711	620	91	498
Capital outlay	-	-	-	-	-
Total expenditures	<u>711</u>	<u>711</u>	<u>620</u>	<u>91</u>	<u>498</u>
Other financing sources (uses)					
Transfers out	(400)	(800)	(800)	-	-
Total other financing sources (uses)	<u>(400)</u>	<u>(800)</u>	<u>(800)</u>	<u>-</u>	<u>-</u>
Change in fund balance	(639)	(1,039)	(1,019)	20	209
Fund balances, July 1	3,044	3,044	3,044	-	2,835
Fund balances, June 30	<u>\$ 2,405</u>	<u>\$ 2,005</u>	<u>\$ 2,025</u>	<u>\$ 20</u>	<u>\$ 3,044</u>

CITY OF HOUSTON, TEXAS
PUBLIC WORKS SPECIAL FUND - DEDICATED DRAINAGE & STREET RENEWAL
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts				
	Original	Final			
Revenues					
Taxes and assessments					
Charges for services	\$ 108,124	\$ 108,124	\$ 113,675	\$ 5,551	\$ 112,409
Licenses & Permits	918	918	1,780	862	1,104
Metro Intergovernmental Revenue	56,103	56,103	56,103	-	51,200
Miscellaneous/Other	162	162	1,365	1,203	1,725
Total revenues	<u>165,307</u>	<u>165,307</u>	<u>172,923</u>	<u>7,616</u>	<u>166,438</u>
Expenditures					
Current					
Public works	61,328	61,377	35,926	25,451	37,585
Capital outlay	3,429	3,880	23,805	(19,925)	22,929
Debt service fiscal agent & fees	800	800	762	38	765
Total expenditures	<u>65,557</u>	<u>66,057</u>	<u>60,493</u>	<u>5,564</u>	<u>61,279</u>
Other financing sources (uses)					
Interest Income	500	500	911	411	(52)
Transfers in	11,100	11,100	22,110	11,010	12,097
Transfers out	(120,000)	(125,000)	(150,439)	25,439	(105,867)
Total other financing sources (uses)	<u>(108,400)</u>	<u>(113,400)</u>	<u>(127,418)</u>	<u>36,860</u>	<u>(93,822)</u>
Change in fund balance	(8,650)	(14,150)	(14,988)	(838)	11,337
Fund balances, July 1	<u>84,407</u>	<u>84,407</u>	<u>84,407</u>	<u>-</u>	<u>73,070</u>
Fund balances, June 30	<u>\$ 75,757</u>	<u>\$ 70,257</u>	<u>\$ 69,419</u>	<u>\$ (838)</u>	<u>\$ 84,407</u>

CITY OF HOUSTON, TEXAS
PUBLIC SAFETY SPECIAL FUND - DIGITAL AUTOMATED RED LIGHT ENFORCEMENT PROGRAM
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts				
	Original	Final			
Revenues					
Investment income	\$ 20	\$ 20	\$ 2	\$ (18)	\$ -
Other	3,032	3,032	596	(2,436)	159
Total revenues	<u>3,052</u>	<u>3,052</u>	<u>598</u>	<u>(2,454)</u>	<u>159</u>
Expenditures					
Current					
Public safety	2,513	2,513	598	1,915	281
Total expenditures	<u>2,513</u>	<u>2,513</u>	<u>598</u>	<u>1,915</u>	<u>281</u>
Change in fund balance	539	539	-	(539)	(122)
Fund balances, July 1	<u>(349)</u>	<u>(349)</u>	<u>(349)</u>	<u>-</u>	<u>(227)</u>
Fund balances, June 30	<u>\$ 190</u>	<u>\$ 190</u>	<u>\$ (349)</u>	<u>\$ (539)</u>	<u>\$ (349)</u>

CITY OF HOUSTON, TEXAS
OTHER SPECIAL REVENUE FUND - DIGITAL HOUSTON WIFI
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Investment income	\$ 12	\$ 12	\$ 10	\$ (2)	\$ (3)
WIFI Revenues	-	-	-	-	0
Total revenues	<u>12</u>	<u>12</u>	<u>10</u>	<u>(2)</u>	<u>(3)</u>
Expenditures					
Current					
General government	598	598	503	95	419
Capital outlay	-	-	-	-	-
Total expenditures	<u>598</u>	<u>598</u>	<u>503</u>	<u>95</u>	<u>419</u>
Change in fund balance	(586)	(586)	(493)	93	(422)
Fund balances, July 1	<u>1,108</u>	<u>1,108</u>	<u>1,108</u>	<u>-</u>	<u>1,530</u>
Fund balances, June 30	<u>\$ 522</u>	<u>\$ 522</u>	<u>\$ 615</u>	<u>\$ 93</u>	<u>\$ 1,108</u>

CITY OF HOUSTON, TEXAS
HEALTH & HOUSING SPECIAL FUND - ESSENTIAL PUBLIC HEALTH SERVICES
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	<u>2014</u>			Variance with Final Budget- Pos (Neg)	2013 Actual
	<u>Budget Amounts</u>		<u>Actual</u>		
	<u>Original</u>	<u>Final</u>			
Revenues					
Intergovernmental - grants	\$ 14,279	\$ 14,279	\$ 12,015	\$ (2,264)	\$ 2,564
Investment income	-	-	62	62	(4)
Total revenues	<u>14,279</u>	<u>14,279</u>	<u>12,077</u>	<u>(2,202)</u>	<u>2,560</u>
Expenditures					
Current					
Health	15,932	14,399	6,967	7,432	1
Capital outlay	-	205	87	118	-
Total expenditures	<u>15,932</u>	<u>14,604</u>	<u>7,054</u>	<u>7,550</u>	<u>1</u>
Change in fund balance	(1,653)	(325)	5,023	5,348	2,559
Fund balances, July 1	<u>2,560</u>	<u>2,560</u>	<u>2,560</u>	<u>-</u>	<u>1</u>
Fund balances, June 30	<u>\$ 907</u>	<u>\$ 2,235</u>	<u>\$ 7,583</u>	<u>\$ 5,348</u>	<u>\$ 2,560</u>

CITY OF HOUSTON, TEXAS
HEALTH & HOUSING SPECIAL FUND - HEALTH SPECIAL
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Licenses and permits	\$ 540	\$ 540	\$ 305	\$ (235)	\$ 342
Charges for services	902	902	920	18	1,006
Investment income	42	42	54	12	(4)
Other	1,004	1,004	1,531	527	878
Total revenues	<u>2,488</u>	<u>2,488</u>	<u>2,810</u>	<u>322</u>	<u>2,222</u>
Expenditures					
Current					
Health	3,141	3,314	2,448	866	2,030
Capital outlay	365	192	42	150	-
Total expenditures	<u>3,506</u>	<u>3,506</u>	<u>2,490</u>	<u>1,016</u>	<u>2,030</u>
Other financing sources (uses)					
Transfers in	400	400	800	400	-
Total other financing sources (uses)	<u>400</u>	<u>400</u>	<u>800</u>	<u>400</u>	<u>-</u>
Change in fund balance	(618)	(618)	1,120	1,738	192
Fund balances, July 1	4,432	4,432	4,432	-	4,240
Fund balances, June 30	<u>\$ 3,814</u>	<u>\$ 3,814</u>	<u>\$ 5,552</u>	<u>\$ 1,738</u>	<u>\$ 4,432</u>

CITY OF HOUSTON, TEXAS
PUBLIC WORKS SPECIAL FUND - HISTORIC PRESERVATION
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Investment income	\$ 200	\$ 200	\$ 10	\$ (190)	\$ (1)
Other	13	13	341	328	240
Total revenues	<u>213</u>	<u>213</u>	<u>351</u>	<u>138</u>	<u>239</u>
Expenditures					
Current					
Public Works	652	652	262	390	158
Capital outlay	-	-	-	-	-
Total expenditures	<u>652</u>	<u>652</u>	<u>262</u>	<u>390</u>	<u>158</u>
Other financing sources (uses)					
Transfers in	-	-	-	-	5
Total other financing sources (uses)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>5</u>
Change in fund balance	(439)	(439)	89	528	86
Fund balances, July 1	<u>934</u>	<u>934</u>	<u>934</u>	<u>-</u>	<u>848</u>
Fund balances, June 30	<u>\$ 495</u>	<u>\$ 495</u>	<u>\$ 1,023</u>	<u>\$ 528</u>	<u>\$ 934</u>

CITY OF HOUSTON, TEXAS
PUBLIC SAFETY SPECIAL FUND - HOUSTON EMERGENCY CENTER
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Charges for services	\$ 393	\$ 393	\$ 3	\$ (390)	\$ 416
Intergovernmental - grants	12,625	12,625	12,004	(621)	10,954
Investment income	-	-	37	37	25
Total revenues	<u>13,018</u>	<u>13,018</u>	<u>12,044</u>	<u>(974)</u>	<u>11,395</u>
Expenditures					
Current					
Public safety	25,190	25,402	23,794	1,608	22,384
Capital outlay	-	13	6	7	-
Total expenditures	<u>25,190</u>	<u>25,415</u>	<u>23,800</u>	<u>1,615</u>	<u>22,384</u>
Other financing sources (uses)					
Transfers in	12,171	12,171	12,171	-	11,855
Total other financing sources (uses)	<u>12,171</u>	<u>12,171</u>	<u>12,171</u>	<u>-</u>	<u>11,855</u>
Change in fund balance	(1)	(226)	415	641	866
Fund balances, July 1	<u>3,394</u>	<u>3,394</u>	<u>3,394</u>	<u>-</u>	<u>2,528</u>
Fund balances, June 30	<u>\$ 3,393</u>	<u>\$ 3,168</u>	<u>\$ 3,809</u>	<u>\$ 641</u>	<u>\$ 3,394</u>

CITY OF HOUSTON, TEXAS
OTHER SPECIAL REVENUE FUND - HOUSTON TRANSTAR
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Charges for services	\$ 629	\$ 629	\$ 629	\$ -	\$ 603
Intergovernmental - grants	1,861	1,861	1,789	(72)	1,626
Investment income	23	23	28	5	(3)
Other	-	-	1	1	-
Total revenues	<u>2,513</u>	<u>2,513</u>	<u>2,447</u>	<u>(66)</u>	<u>2,226</u>
Expenditures					
Current					
General government	2,725	2,703	2,252	451	2,010
Capital outlay	136	157	57	100	-
Total expenditures	<u>2,861</u>	<u>2,860</u>	<u>2,309</u>	<u>551</u>	<u>2,010</u>
Change in fund balance	(348)	(347)	138	485	216
Fund balances, July 1	<u>2,283</u>	<u>2,283</u>	<u>2,283</u>	<u>-</u>	<u>2,067</u>
Fund balances, June 30	<u>\$ 1,935</u>	<u>\$ 1,936</u>	<u>\$ 2,421</u>	<u>\$ 485</u>	<u>\$ 2,283</u>

CITY OF HOUSTON, TEXAS
PUBLIC SAFETY SPECIAL FUND - JUVENILE CASE MANAGER FEE
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Original	Final			
Revenues					
Interest	\$ 18	\$ 18	\$ 19	\$ 1	\$ (3)
Other	1,227	1,227	1,328	101	1,226
Total revenues	<u>1,245</u>	<u>1,245</u>	<u>1,347</u>	<u>102</u>	<u>1,223</u>
Expenditures					
Current					
Public safety	1,406	1,406	1,325	81	1,117
Total expenditures	<u>1,406</u>	<u>1,406</u>	<u>1,325</u>	<u>81</u>	<u>1,117</u>
Change in fund balance	(161)	(161)	22	183	106
Fund balances, July 1	<u>1,728</u>	<u>1,728</u>	<u>1,728</u>	<u>-</u>	<u>1,622</u>
Fund balances, June 30	<u>\$ 1,567</u>	<u>\$ 1,567</u>	<u>\$ 1,750</u>	<u>\$ 183</u>	<u>\$ 1,728</u>

CITY OF HOUSTON, TEXAS
HEALTH & HOUSING SPECIAL FUND - LABORATORY SERVICES
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Charges for services	\$ 395	\$ 395	\$ 409	\$ 14	\$ 379
Investment income	4	4	3	(1)	1
Other	-	-	50	50	103
Total revenues	<u>399</u>	<u>399</u>	<u>462</u>	<u>63</u>	<u>483</u>
Expenditures					
Current					
Health	593	593	477	116	477
Total expenditures	<u>593</u>	<u>593</u>	<u>477</u>	<u>116</u>	<u>477</u>
Change in fund balance	(194)	(194)	(15)	179	6
Fund balances, July 1	<u>325</u>	<u>325</u>	<u>325</u>	<u>-</u>	<u>319</u>
Fund balances, June 30	<u>\$ 131</u>	<u>\$ 131</u>	<u>\$ 310</u>	<u>\$ 179</u>	<u>\$ 325</u>

CITY OF HOUSTON, TEXAS
PUBLIC WORKS SPECIAL FUND - MOBILITY RESPONSE TEAM
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Investment income	\$ -	\$ -	\$ -	\$ -	\$ (4)
Total revenues	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>(4)</u>
Expenditures					
Current					
Public works	-	-	-	-	-
Total expenditures	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Other financing sources (uses)					
Transfers out	-	-	-	-	(2,098)
Total other financing sources (uses)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>(2,098)</u>
Change in fund balance	-	-	-	-	(2,102)
Fund balances, July 1	<u>(162)</u>	<u>(162)</u>	<u>(162)</u>	<u>-</u>	<u>1,940</u>
Fund balances, June 30	<u>\$ (162)</u>	<u>\$ (162)</u>	<u>\$ (162)</u>	<u>\$ -</u>	<u>\$ (162)</u>

CITY OF HOUSTON, TEXAS
PUBLIC SAFETY SPECIAL FUND - MUNICIPAL COURTS TECHNOLOGY FEE
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts Original	Final			
Revenues					
Interest	\$ 5	\$ 5	\$ 5	\$ -	\$ -
Other	1,205	1,205	1,368	163	1,164
Total revenues	<u>1,210</u>	<u>1,210</u>	<u>1,373</u>	<u>163</u>	<u>1,164</u>
Expenditures					
Current					
Public safety	1,010	972	952	20	1,045
Capital outlay	-	38	38	-	-
Total expenditures	<u>1,010</u>	<u>1,010</u>	<u>990</u>	<u>20</u>	<u>1,045</u>
Other financing sources (uses)					
Operating transfers out	(350)	(350)	(350)	-	(350)
Total other financing sources (uses)	<u>(350)</u>	<u>(350)</u>	<u>(350)</u>	<u>-</u>	<u>(350)</u>
Change in fund balance	(150)	(150)	33	183	(231)
Fund balances, July 1	<u>1,609</u>	<u>1,609</u>	<u>1,609</u>	<u>-</u>	<u>1,840</u>
Fund balances, June 30	<u>\$ 1,459</u>	<u>\$ 1,459</u>	<u>\$ 1,642</u>	<u>\$ 183</u>	<u>\$ 1,609</u>

CITY OF HOUSTON, TEXAS
OTHER SPECIAL REVENUE FUND - PARKING MANAGEMENT
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Taxes and assessments					
Parking Violations	\$ 10,022	\$ 10,022	\$ 10,031	\$ 9	\$ 10,443
Parking Fees	8,390	8,390	8,731	341	8,396
Permit Fees	312	312	361	49	308
Investment income	50	50	56	6	8
Other	10	10	41	31	18
Total revenues	<u>18,784</u>	<u>18,784</u>	<u>19,220</u>	<u>436</u>	<u>19,173</u>
Expenditures					
Current					
General government	11,762	11,723	8,897	2,826	7,803
Capital outlay	94	133	272	(139)	13
Debt service principal	1,519	1,519	1,519	-	1,513
Total expenditures	<u>13,375</u>	<u>13,375</u>	<u>10,688</u>	<u>2,687</u>	<u>9,329</u>
Other financing sources (uses)					
Transfers out	(7,500)	(7,500)	(9,403)	1,903	(9,494)
Total other financing sources (uses)	<u>(7,500)</u>	<u>(7,500)</u>	<u>(9,403)</u>	<u>1,903</u>	<u>(9,494)</u>
Change in fund balance	(2,091)	(2,091)	(871)	1,220	350
Fund balances, July 1	<u>1,556</u>	<u>1,556</u>	<u>1,556</u>	<u>-</u>	<u>1,206</u>
Fund balances, June 30	<u>\$ (535)</u>	<u>\$ (535)</u>	<u>\$ 685</u>	<u>\$ 1,220</u>	<u>\$ 1,556</u>

CITY OF HOUSTON, TEXAS
PARKS & RECREATION SPECIAL FUND - PARKS GOLF
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Charges for services	\$ 6,086	\$ 6,086	\$ 5,781	\$ (305)	\$ 5,979
Investment income	5	5	12	7	-
Other	43	43	19	(24)	26
Total revenues	<u>6,134</u>	<u>6,134</u>	<u>5,812</u>	<u>(322)</u>	<u>6,005</u>
Expenditures					
Current					
Parks and recreation	6,174	6,174	5,529	645	5,296
Total expenditures	<u>6,174</u>	<u>6,174</u>	<u>5,529</u>	<u>645</u>	<u>5,296</u>
Change in fund balance	(40)	(40)	283	323	709
Fund balances, July 1	<u>1,083</u>	<u>1,083</u>	<u>1,083</u>	<u>-</u>	<u>374</u>
Fund balances, June 30	<u>\$ 1,043</u>	<u>\$ 1,043</u>	<u>\$ 1,366</u>	<u>\$ 323</u>	<u>\$ 1,083</u>

CITY OF HOUSTON, TEXAS
PARKS & RECREATION SPECIAL FUND - PARKS SPECIAL
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014		Actual	Variance with Final Budget- Pos (Neg)	2013 Actual
	Original	Final			
Revenues					
Licenses and permits	\$ 202	\$ 202	\$ 293	\$ 91	\$ 463
Charges for services	1,719	1,719	1,411	(308)	1,673
Investment income	70	70	71	1	(8)
Other	36	36	606	570	114
Total revenues	<u>2,027</u>	<u>2,027</u>	<u>2,381</u>	<u>354</u>	<u>2,242</u>
Expenditures					
Current					
Parks and recreation	2,252	2,243	1,420	823	1,260
Capital outlay	-	9	-	9	-
Total expenditures	<u>2,252</u>	<u>2,252</u>	<u>1,420</u>	<u>832</u>	<u>1,260</u>
Change in fund balance	(225)	(225)	961	1,186	982
Fund balances, July 1	<u>6,304</u>	<u>6,304</u>	<u>6,304</u>	<u>-</u>	<u>5,322</u>
Fund balances, June 30	<u>\$ 6,079</u>	<u>\$ 6,079</u>	<u>\$ 7,265</u>	<u>\$ 1,186</u>	<u>\$ 6,304</u>

CITY OF HOUSTON, TEXAS
PUBLIC SAFETY SPECIAL FUND - POLICE SPECIAL SERVICES
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Charges for services	\$ 2,697	\$ 2,697	\$ 3,213	\$ 516	\$ 2,476
Investment income	200	200	58	(142)	(13)
Other	915	915	2,459	1,544	910
Total revenues	<u>3,812</u>	<u>3,812</u>	<u>5,730</u>	<u>1,918</u>	<u>3,373</u>
Expenditures					
Current					
Public safety	12,023	10,204	10,242	(38)	8,447
Capital outlay	-	1,819	1,786	33	78
Total expenditures	<u>12,023</u>	<u>12,023</u>	<u>12,028</u>	<u>(5)</u>	<u>8,525</u>
Other financing sources (uses)					
Transfers in	4,925	4,925	5,362	437	6,513
Total other financing sources (uses)	<u>4,925</u>	<u>4,925</u>	<u>5,362</u>	<u>437</u>	<u>6,513</u>
Change in fund balance	(3,286)	(3,286)	(936)	2,350	1,361
Fund balances, July 1	<u>6,861</u>	<u>6,861</u>	<u>6,861</u>	<u>-</u>	<u>5,500</u>
Fund balances, June 30	<u>\$ 3,575</u>	<u>\$ 3,575</u>	<u>\$ 5,925</u>	<u>\$ 2,350</u>	<u>\$ 6,861</u>

CITY OF HOUSTON, TEXAS
PUBLIC WORKS SPECIAL FUND - RECYCLING REVENUE
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Investment income	\$ 38	\$ 38	\$ 21	\$ (17)	\$ (3)
Other	2,042	2,042	1,158	(884)	986
Total revenues	<u>2,080</u>	<u>2,080</u>	<u>1,179</u>	<u>(901)</u>	<u>983</u>
Expenditures					
Current					
Parks and recreation	810	810	186	624	854
Capital outlay	-	-	-	-	-
Total expenditures	<u>810</u>	<u>810</u>	<u>186</u>	<u>624</u>	<u>854</u>
Other financing sources (uses)					
Transfers in	-	-	680	680	-
Transfers out	(1,882)	(1,882)	(852)	(1,030)	(460)
Total other financing sources (uses)	<u>(1,882)</u>	<u>(1,882)</u>	<u>(172)</u>	<u>(1,710)</u>	<u>(460)</u>
Change in fund balance	(612)	(612)	821	1,433	(331)
Fund balances, July 1	<u>1,687</u>	<u>1,687</u>	<u>1,687</u>	<u>-</u>	<u>2,018</u>
Fund balances, June 30	<u>\$ 1,075</u>	<u>\$ 1,075</u>	<u>\$ 2,508</u>	<u>\$ 1,433</u>	<u>\$ 1,687</u>

CITY OF HOUSTON, TEXAS
HEALTH & HOUSING SPECIAL FUND - SPECIAL WASTE
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Licenses and permits	\$ 2,557	\$ 2,557	\$ 2,743	\$ 186	\$ 2,434
Investment income	31	31	38	7	(4)
Total revenues	<u>2,588</u>	<u>2,588</u>	<u>2,781</u>	<u>193</u>	<u>2,430</u>
Expenditures					
Current					
Health	3,303	4,403	2,479	1,924	2,071
Capital outlay	<u>1,577</u>	<u>477</u>	<u>59</u>	<u>418</u>	<u>-</u>
Total expenditures	<u>4,880</u>	<u>4,880</u>	<u>2,538</u>	<u>2,342</u>	<u>2,071</u>
Change in fund balance	(2,292)	(2,292)	243	2,535	359
Fund balances, July 1	<u>3,326</u>	<u>3,326</u>	<u>3,326</u>	<u>-</u>	<u>2,967</u>
Fund balances, June 30	<u>\$ 1,034</u>	<u>\$ 1,034</u>	<u>\$ 3,569</u>	<u>\$ 2,535</u>	<u>\$ 3,326</u>

CITY OF HOUSTON, TEXAS
OTHER SPECIAL REVENUE FUND - SUPPLEMENTAL ENVIRONMENTAL PROJECT
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Investment income	\$ 2	\$ 2	\$ 2	\$ -	\$ -
Other	102	102	115	13	85
Total revenues	<u>104</u>	<u>104</u>	<u>117</u>	<u>13</u>	<u>85</u>
Expenditures					
Current					
General government	90	133	39	94	75
Capital outlay	110	67	-	67	-
Total expenditures	<u>200</u>	<u>200</u>	<u>39</u>	<u>161</u>	<u>75</u>
Change in fund balance	(96)	(96)	78	174	10
Fund balances, July 1	<u>133</u>	<u>133</u>	<u>133</u>	<u>-</u>	<u>123</u>
Fund balances, June 30	<u>\$ 37</u>	<u>\$ 37</u>	<u>\$ 211</u>	<u>\$ 174</u>	<u>\$ 133</u>

CITY OF HOUSTON, TEXAS
HEALTH & HOUSING SPECIAL FUND - SWIMMING POOL SAFETY
Schedule of Revenues, Expenditures and Changes in Fund Balances - Budget and Actual
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	2014			Variance with Final Budget- Pos (Neg)	2013 Actual
	Budget Amounts		Actual		
	Original	Final			
Revenues					
Licenses and permits	\$ 974	\$ 974	\$ 1,121	\$ 147	\$ 854
Charges for services	-	-	-	-	128
Investment income	1	1	7	6	-
Total revenues	<u>975</u>	<u>975</u>	<u>1,128</u>	<u>153</u>	<u>982</u>
Expenditures					
Current					
Health	916	916	789	127	711
Capital outlay	12	12	-	12	-
Total expenditures	<u>928</u>	<u>928</u>	<u>789</u>	<u>139</u>	<u>711</u>
Change in fund balance	47	47	339	292	271
Fund balances, July 1	<u>460</u>	<u>460</u>	<u>460</u>	<u>-</u>	<u>189</u>
Fund balances, June 30	<u>\$ 507</u>	<u>\$ 507</u>	<u>\$ 799</u>	<u>\$ 292</u>	<u>\$ 460</u>

CITY OF HOUSTON, TEXAS

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Enterprise Funds

Enterprise funds are established to account for City operations that are financed and operated in a manner similar to private business enterprises where the cost of providing goods or services to the general public is financed primarily through user charges.

Airport System — This fund is used to account for the operations of the City's Airport System. The system is comprised of George Bush Intercontinental Airport, William P. Hobby Airport and Ellington Airport.

Convention and Entertainment Facilities — This fund is used to account for the operations of the City's major convention and entertainment centers, as well as parking facilities and selected downtown parks. These centers include George R. Brown Convention Center, Jones Hall, Wortham Theater Center, Houston Center for the Arts, Talento Bilingue de Houston, and Miller Outdoor Theater. The parking facilities include the Theater District Parking Garage, the Convention District Garage and various surface lots. Downtown parks include Sesquicentennial Park, Jones Plaza, Root Memorial Square, and Sabine Promenade.

Combined Utility System — This fund is used to account for the production and transmission of water and the treatment of wastewater for City residents and businesses as well as for other governmental entities located in the Houston area.

CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM
Statement of Net Position
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	2014	RESTATED 2013
Assets		
Current Assets		
Equity in pooled cash and investments	\$ 304,175	\$ 293,890
Receivables, net of allowances		
Accounts receivable	6,937	10,963
Due from other funds	1,544	1,781
Due from other governments	11,678	8,614
Inventory	1,489	1,758
Prepaid items	3,306	8,112
Restricted assets		
Investments	78	112
Total current assets	329,207	325,230
Noncurrent Assets		
Equity in pooled cash and investments	790,722	753,452
Investments	6,589	6,589
Prepaid items	1,705	1,860
Total noncurrent restricted assets	799,016	761,901
Capital assets		
Land	209,967	209,967
Buildings	2,570,624	2,524,091
Improvements and equipment	2,167,938	2,112,082
Construction in progress	120,187	114,439
Runway rights	10,782	10,562
Less accumulated depreciation	(2,302,394)	(2,135,983)
Net capital assets	2,777,104	2,835,158
Total noncurrent assets	3,576,120	3,597,059
Total assets	\$ 3,905,327	\$ 3,922,289
Deferred Outflows of Resources		
Unamortized costs on refunded debt	35,972	38,961
Total Deferred Outflows of Resources	35,972	38,961

CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM
Statement of Net Position
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>RESTATED 2013</u>
Liabilities		
Current Liabilities		
Accounts payable	\$ 10,262	\$ 10,097
Accrued payroll liabilities	2,159	1,808
Accrued interest payable	47,179	48,362
Contracts and retainages payable	36,370	39,244
Due to other funds	314	372
Advances and deposits	1,876	1,584
Inferior lien contract	5,315	5,040
Claims and judgments	1,096	959
Compensated absences	5,511	5,559
Revenue bonds payable	54,965	55,045
Unearned revenue	2,287	7,546
Total current liabilities	<u>167,334</u>	<u>175,616</u>
Noncurrent liabilities		
Revenue bonds payable, net	2,229,504	2,291,452
Claims and judgments	1,588	1,886
Compensated absences	6,535	5,931
Contracts payable	32,803	-
Inferior lien contracts	17,760	23,075
Commercial paper	1,200	-
Municipal pension trust liability	51,988	48,809
Other post employment benefits	60,445	54,194
Unearned revenue	415	831
Pension obligation bonds payable	2,006	2,006
Total noncurrent liabilities	<u>2,404,244</u>	<u>2,428,184</u>
Total liabilities	<u>2,571,578</u>	<u>2,603,800</u>
Net position		
Net investment in capital assets	490,712	540,279
Restricted net position		
Restricted for debt service	237,416	208,100
Restricted for renewal and replacement	10,000	10,000
Restricted for maintenance and operations	49,736	46,309
Restricted for capital improvements	581,857	552,762
Total net position	<u>\$ 1,369,721</u>	<u>\$ 1,357,450</u>

CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM
Statement of Revenues, Expenses and Changes in Net Position
For the Year Ended June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>2013</u>
Operating Revenues		
Landing area fees	\$ 88,342	\$ 91,059
Rentals, building and ground areas	186,505	181,701
Parking	90,173	77,596
Concession	82,528	77,765
Other	4,559	4,873
Total operating revenue	<u>452,107</u>	<u>432,994</u>
Operating Expenses		
Maintenance and operating	285,212	272,091
Depreciation and amortization	<u>172,218</u>	<u>170,846</u>
Total operating expenses	<u>457,430</u>	<u>442,937</u>
Operating loss	<u>(5,323)</u>	<u>(9,943)</u>
Nonoperating revenues (expenses)		
Investment income(loss)	11,166	(1,935)
Other revenue	3,225	1,978
Gain (Loss) on disposal of assets	(17,267)	225
Passenger facility charges	62,602	61,195
Interest expense on long-term debt	<u>(86,746)</u>	<u>(86,295)</u>
Total Nonoperating revenues (expenses)	<u>(27,020)</u>	<u>(24,832)</u>
Loss before contributions and transfers	<u>(32,343)</u>	<u>(34,775)</u>
Capital contributions	<u>44,614</u>	<u>12,761</u>
Change in net position	12,271	(22,014)
Beginning Net Position as previously reported	<u>1,357,450</u>	<u>1,394,510</u>
Cumulative effect of a change in accounting principle	-	(15,046)
Total net position, July 1	<u>1,357,450</u>	<u>1,379,464</u>
Total net position, June 30	<u>\$ 1,369,721</u>	<u>\$ 1,357,450</u>

CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM
Statement of Cash Flows
For the Year Ended June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>2013</u>
Cash flows from operating activities		
Receipts from customers	\$ 451,165	\$ 448,169
Payments to employees	(97,177)	(92,792)
Payments to suppliers	(105,221)	(93,390)
Internal activity-payments to other funds	(49,539)	(49,695)
Claims paid	(1,096)	(960)
Other receipts	3,224	1,978
Net cash provided by (used in) operating activities	<u>201,356</u>	<u>213,310</u>
Cash flows from investing activities		
Interest income on investments	11,167	(1,935)
Purchase of investments	(7,999)	(8,294)
Proceeds from sale of investments	8,033	8,340
Net cash provided by (used for) investing activities	<u>11,201</u>	<u>(1,889)</u>
Cash flows from noncapital financing activities		
Interest expense pension obligation bonds	(107)	(107)
Net cash provided by (used in) noncapital financing activities	<u>(107)</u>	<u>(107)</u>
Cash flows from capital and related financing activities		
Retirement of revenue bonds	(55,045)	(52,805)
Proceeds (uses of cash) from issuance of revenue bonds	-	(651)
Proceeds from issuance of commercial paper	1,200	-
Interest expense on debt	(97,530)	(93,629)
Retirement of inferior lien contract	(5,040)	(4,780)
Passenger facilities charges	62,602	61,195
Contributed capital	41,550	8,860
Acquisition of property, plant and equipment	(112,632)	(82,176)
Net cash provided by (used in) capital and related financing activities	<u>(164,895)</u>	<u>(163,986)</u>
Net increase in cash and cash equivalents	47,555	47,328
Cash and cash equivalents, July 1	<u>1,047,342</u>	<u>1,000,014</u>
Cash and cash equivalents, June 30	<u>\$ 1,094,897</u>	<u>\$ 1,047,342</u>
Non cash transactions		
Capitalized interest expense	5,858	9,189
Gain (loss) on disposal of assets	(17,267)	225
Total non cash transactions	<u>\$ (11,409)</u>	<u>\$ 9,414</u>
Reconciliation of operating loss to net cash provided by operating activities		
Operating loss	\$ (5,323)	\$ (9,943)
Adjustments to reconcile operating loss to net cash provided by operating activities		
Depreciation and amortization	172,218	170,846
Impairment of capital asset	7,710	6,513
Capital improvement plan expense	8,864	12,939
Other post employment benefits	3,179	3,332
Other revenues	3,224	1,978
Changes in assets and liabilities		
Accounts receivable	4,025	14,705
Due from other funds	237	(499)
Inventory and prepaid insurance	5,075	4,242
Accounts payable	175	3,137
Accrued payroll liabilities	351	187
Due to other funds	(58)	(1,480)
Advances and deposits	(4,967)	469
Claims and judgments - workers' compensation	(161)	55
Compensated absences	355	(476)
Pension Obligation payable	6,251	7,305
Net cash provided by operating activities	<u>\$ 201,356</u>	<u>\$ 213,310</u>

CITY OF HOUSTON, TEXAS
CONVENTION & ENTERTAINMENT
Statement of Net Position
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	2014	RESTATED 2013
	<u> </u>	<u> </u>
Assets		
Current Assets		
Equity in pooled cash and investments	\$ 76,439	\$ 74,740
Receivables, net of allowances		
Accounts receivable	76	80
Hotel occupancy tax receivable	25,078	21,799
Due from component units	5,556	16,695
Due from other funds	113	216
Due from other governments	1,035	1,035
Prepaid items	859	859
Total current assets	<u>109,156</u>	<u>115,424</u>
Noncurrent Assets		
Equity in pooled cash and investments	51,042	45,898
Due from component units	258,091	261,406
Total noncurrent restricted assets	<u>309,133</u>	<u>307,304</u>
Capital assets		
Land	96,311	96,311
Buildings	557,952	557,952
Improvements and equipment	12,471	12,603
Infrastructure	334	334
Construction in progress	788	788
Garage rights	13,144	13,144
Less accumulated depreciation and amortization	<u>(245,654)</u>	<u>(231,567)</u>
Net capital assets	<u>435,346</u>	<u>449,565</u>
Total noncurrent assets	<u>744,479</u>	<u>756,869</u>
Total assets	<u>\$ 853,635</u>	<u>\$ 872,293</u>

(Continued)

CITY OF HOUSTON, TEXAS
CONVENTION & ENTERTAINMENT
Statement of Net Position
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	2014	RESTATED 2013
Liabilities		
Current Liabilities		
Accounts payable	\$ 217	\$ 339
Accrued payroll liabilities	43	52
Accrued interest payable	4,323	4,577
Commercial paper	42,000	42,000
Due to other funds	176	-
Due to component units	38,443	40,622
Due to other governments	-	74
Advances and deposits	4	4
Compensated absences	49	106
Pension obligation bonds payable	65	60
Revenue bonds payable	22,415	26,215
Total current liabilities	107,735	114,049
Noncurrent liabilities		
Revenue bonds payable	553,875	563,761
Compensated absences	185	297
Arbitrage rebate	180	135
Municipal pension trust liability	4,938	4,858
Other post employment benefits	3,866	3,656
Unearned revenue	9,253	8,164
Pension obligation bonds payable	3,759	3,824
Total noncurrent liabilities	576,056	584,695
Total liabilities	683,791	698,744
Deferred Inflows of Resources		
Deferred Inflows	3,577	3,758
Total Deferred Inflows of Resources	3,577	3,758
Net Position		
Net investment in capital assets	96,145	108,215
Restricted net position		
Restricted for debt service	46,719	39,865
Restricted for renewal and replacement	1,302	1,033
Restricted for maintenance and operations	20,711	18,967
Unrestricted	1,818	1,711
Total net position	\$ 166,267	\$ 169,791

CITY OF HOUSTON, TEXAS
CONVENTION & ENTERTAINMENT
Statement of Revenues, Expenses and Changes in Net Position
For the Year Ended June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>RESTATED 2013</u>
Operating Revenues		
Parking	\$ 9,744	\$ 8,992
Rental	1,380	1,380
Total operating revenue	<u>11,124</u>	<u>10,372</u>
Operating Expenses		
Maintenance and operating	73,190	63,062
Depreciation and amortization	14,219	14,488
Total operating expenses	<u>87,409</u>	<u>77,550</u>
Operating loss	<u>(76,285)</u>	<u>(67,178)</u>
Nonoperating revenue (expenses)		
Investment income	9,637	9,080
Hotel occupancy tax	90,119	76,325
Other revenue	292	413
Interest on long-term debt	(25,907)	(26,150)
Total Nonoperating revenues (expenses)	<u>74,141</u>	<u>59,668</u>
Income before contributions and transfers	<u>(2,144)</u>	<u>(7,510)</u>
Transfers out	<u>(1,380)</u>	<u>(1,380)</u>
Total transfers	<u>(1,380)</u>	<u>(1,380)</u>
Change in net position	(3,524)	(8,890)
Beginning Net Position as previously reported	<u>169,791</u>	<u>180,137</u>
Cumulative effect of a change in accounting principle	-	(1,456)
Total net position, July 1	<u>169,791</u>	<u>178,681</u>
Total net position, June 30	<u>\$ 166,267</u>	<u>\$ 169,791</u>

CITY OF HOUSTON, TEXAS
CONVENTION & ENTERTAINMENT
Statement of Cash Flows
For the Year Ended June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>2013</u>
Cash flows from operating activities		
Receipts from customers	\$ 11,129	\$ 10,372
Payments to employees	(489)	(367)
Payments to suppliers	(673)	(933)
Internal activity-payments to other funds	279	(31)
Claims paid	(1)	2
Due to (from) other governments	(74)	(15)
Other revenues	-	412
Other expenses	(73,371)	(62,662)
Receipts from component units	1,380	(294)
Net cash provided by for operating activities	<u>(61,820)</u>	<u>(53,516)</u>
Cash flows from investing activities		
Interest income on investments	<u>9,637</u>	<u>9,080</u>
Net cash provided by (used in) investing activities	<u>9,637</u>	<u>9,080</u>
Cash flows from capital and related financing activities		
Retirement of revenue bonds	(26,215)	(27,530)
Retirement of pension bonds	(60)	-
Refunding of revenue bonds	-	(41,245)
Proceeds from issuance of revenue bonds	-	41,525
Retirement of commercial paper	-	(1,000)
Interest expense on debt	(13,805)	(13,727)
Acquisition of property, plant and equipment, net	-	(1,880)
Net cash used in for capital and related financing activities	<u>(40,080)</u>	<u>(43,857)</u>
Cash flows from noncapital financing activities		
Payments from component unit	12,275	5,934
Hotel occupancy tax revenue	86,839	74,606
Interest expense on pension obligation bonds	(10)	(10)
Net cash provided by (used in) noncapital financing activities	<u>99,104</u>	<u>80,530</u>
Net decrease in cash and cash equivalents	6,843	(7,763)
Cash and cash equivalents, July 1	<u>120,638</u>	<u>128,401</u>
Cash and cash equivalents, June 30	<u>\$ 127,481</u>	<u>\$ 120,638</u>

(Continued)

CITY OF HOUSTON, TEXAS
CONVENTION & ENTERTAINMENT
Statement of Cash Flows
For the Year Ended June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>2013</u>
Non cash transactions		
Unrealized gain on investments	\$ 492	\$ 1,374
Total non cash transactions	<u>\$ 492</u>	<u>\$ 1,374</u>
Reconciliation of operating loss to net cash provided by operating activities		
Operating loss	\$ (76,285)	\$ (67,178)
Depreciation and amortization	14,219	14,488
Other post employment benefits	210	324
Other revenues	292	413
Changes in assets and liabilities		
Accounts receivable and prepaids	3	(1)
Arbitrage Rebate	44	-
Due from other funds	103	53
Accounts payable	(122)	283
Accrued payroll liabilities	(8)	(24)
Due to other funds	176	(69)
Due to other governments	(74)	(15)
Compensated absences	(168)	(251)
Deferred revenue	(290)	(1,674)
Pension Obligation payable	80	135
Net cash provided by operating activities	<u>\$ (61,820)</u>	<u>\$ (53,516)</u>

CITY OF HOUSTON, TEXAS

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**CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM
Statement of Net Position
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands**

	2014	RESTATED 2013
Assets		
Current assets		
Equity in pooled cash and investments	\$ 720,060	\$ 650,828
Receivables, net of allowances		
Accounts receivable	104,728	113,175
Special assessments receivable	93	93
Due from other funds	12,195	10,222
Due from other governments	1,484	1,442
Inventory	12,258	12,784
Prepaid items	3,563	4,305
Total current assets	854,381	792,849
Noncurrent Assets		
Equity in pooled cash and investments	317,990	273,832
Prepays	15,673	16,440
Due from other governments	4,321	4,321
Amounts held by other governments	10,861	10,867
Total noncurrent restricted assets	348,845	305,460
Capital assets		
Land	134,540	130,486
Buildings	198,137	194,816
Improvements and equipment	154,087	138,490
Plants, lines and rights	9,705,332	9,547,114
Construction in progress	336,799	236,672
Water rights	462,065	462,065
Less accumulated depreciation and amortization	(5,001,590)	(4,859,781)
Net capital assets	5,989,370	5,849,862
Total noncurrent assets	6,338,215	6,155,322
Total assets	7,192,596	6,948,171
Deferred outflows of resources		
SWAP liability/Unamortized cost on refunded debt	294,743	316,450
Total deferred outflows of resources	\$ 294,743	\$ 316,450

CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM
Statement of Net Position
June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>RESTATED 2013</u>
Liabilities		
Current Liabilities		
Accounts payable	\$ 113,856	\$ 79,119
Accrued payroll liabilities	3,346	2,968
Accrued interest payable	37,531	36,761
Contracts payable	14,394	14,401
Due to other funds	5,817	1,732
Due to other governments	863	765
Advances and deposits	52,117	47,598
Pension obligation bonds payable ST	1,885	910
Claims and judgments	731	395
Compensated absences	9,793	9,019
Commercial paper payable	180,000	-
Arbitrage rebate	-	152
Revenue bonds payable	141,400	134,030
Total current liabilities	<u>561,733</u>	<u>327,850</u>
Noncurrent liabilities		
Revenue bonds payable	6,002,579	6,088,774
Claims and judgments	1,023	670
Compensated absences	10,315	10,735
Contracts payable	117,477	132,159
Arbitrage rebate	303	327
Municipal pension trust liability	80,140	75,246
Other post employment benefits	106,123	94,045
SWAP liability	215,742	212,700
Unearned revenue	326,110	345,137
Pension obligation bonds payable	59,272	60,247
Total noncurrent liabilities	<u>6,919,084</u>	<u>7,020,040</u>
Total liabilities	<u>7,480,817</u>	<u>7,347,890</u>
Deferred inflows of resources		
Deferred inflow on SWAP liability	-	-
Total deferred inflows of resources	<u>-</u>	<u>-</u>
Net Position		
Net investment in capital assets	(345,969)	(146,185)
Restricted net position		
Restricted for maintenance and operations	71,776	70,020
Restricted for capital improvements	1,484	1,442
Unrestricted	279,231	(8,346)
Total net position (deficit)	<u>\$ 6,522</u>	<u>\$ (83,269)</u>

**CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM**
Statement of Revenues, Expenses and Changes in Net Position
For the Year Ended June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>RESTATED 2013</u>
Operating Revenues		
Water/Sewer Billing	\$ 953,408	\$ 924,690
Total operating revenue	<u>953,408</u>	<u>924,690</u>
Operating Expenses		
Maintenance and operating	399,647	395,439
Depreciation and amortization	223,381	217,622
Total operating expenses	<u>623,028</u>	<u>613,061</u>
Operating income	<u>330,380</u>	<u>311,629</u>
Nonoperating revenue (expenses)		
Investment income	10,688	(507)
Other revenue	69,370	41,521
Loss on disposal of assets	(5,397)	(286)
Interest on long-term debt	(291,122)	(282,466)
Contributions in	10,692	10,834
Total Nonoperating revenues (expenses)	<u>(205,769)</u>	<u>(230,904)</u>
Income before contributions and transfers	<u>124,611</u>	<u>80,725</u>
Capital contributions	<u>5,768</u>	<u>7,039</u>
Transfers in	70	70
Transfers out	(40,658)	(54,581)
Total transfers	<u>(40,588)</u>	<u>(54,511)</u>
Change in net position	89,791	33,253
Total net position, July 1, as previously reported	<u>(83,269)</u>	<u>(56,442)</u>
Cumulative effect of a change in an accounting principal	-	(60,080)
Beginning net assets, July 1	<u>(83,269)</u>	<u>(116,522)</u>
Total net position, June 30	<u>\$ 6,522</u>	<u>\$ (83,269)</u>

CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM
Statement of Cash Flows
For the Year Ended June 30, 2014
(With comparative amounts for 2013)
amounts expressed in thousands

	<u>2014</u>	<u>2013</u>
Cash flows from operating activities		
Receipts from customers	\$ 966,372	\$ 922,338
Payments to employees	(154,079)	(149,804)
Payments to suppliers	(163,423)	(204,994)
Internal activity-payments to other funds	(23,214)	(29,715)
Claims paid	(1,342)	(1,329)
Other revenues	69,369	41,521
Receipts from other governments	-	(1,765)
Net cash provided by operating activities	<u>693,683</u>	<u>576,252</u>
Cash flows from investing activities		
Interest income on investments	10,688	(507)
Net cash provided by (used in) investing activities	<u>10,688</u>	<u>(507)</u>
Cash flows from capital and related financing activities		
Retirement of revenue bonds	(148,425)	(136,157)
Retirement of commercial paper	180,000	(110,400)
Refunding of revenue bonds	(1,594)	(350,246)
Proceeds from issuance of revenue bonds - net	113,455	790,222
Interest expense on debt	(292,396)	(274,979)
Proceeds from disposition of assets	2,123	596
Deferred bond issuance cost	(48,598)	(1,911)
Contributed capital	2,197	14,210
Due from other governments	(40)	(114)
Acquisition of property, plant and equipment	(351,509)	(302,443)
Net cash used for capital and related financing activities	<u>(544,787)</u>	<u>(371,222)</u>
Cash flows from noncapital financing activities		
Interest expense on pension obligation bonds	(4,705)	(3,814)
Pension bond payable	(975)	(910)
Transfers to debt service fund	(13,094)	(15,807)
Transfers to other funds	(27,420)	(38,704)
Net cash used in noncapital financing activities	<u>(46,194)</u>	<u>(59,235)</u>
Net increase(decrease) in cash and cash equivalents	113,390	145,288
Cash and cash equivalents, July 1	<u>924,660</u>	<u>779,372</u>
Cash and cash equivalents, June 30	<u>\$ 1,038,050</u>	<u>\$ 924,660</u>
Non cash transactions		
Contributed Capital	(5,768)	(7,039)
Capitalized interest expense	13,132	11,039
CAB accretion interest	8,371	8,371
Gain on disposal of assets	5,397	286
Total non cash transactions	<u>\$ 21,132</u>	<u>\$ 12,657</u>
Reconciliation of operating income to net cash provided by operating activities		
Operating income	\$ 330,380	\$ 311,629
Depreciation and amortization	223,381	217,622
Other post employment benefits	12,078	13,809
Other revenues	69,371	41,521
Accounts receivable	8,447	(5,608)
Due from other funds	(1,973)	(1,384)
Due from other governments	104	(1,694)
Inventory & prepaid insurance	1,268	(2,739)
Accounts payable	34,733	(3,956)
Accrued payroll liabilities	378	336
Due to other funds	4,084	(1,538)
Advances and deposits	4,520	3,258
Claims and judgments-workers' compensation	689	(310)
Compensated absences	354	(858)
Pension obligation payable	5,869	6,164
Net cash provided by operating activities	<u>\$ 693,683</u>	<u>\$ 576,252</u>



Internal Service Funds

Internal service funds are used to account for the financing of goods or services provided by one city department to other city departments on a cost reimbursement basis.

Health Benefits — This fund is used to account for the costs incurred to provide City employees' health care and life insurance benefits.

Long-Term Disability — This fund is used to account for the costs incurred to provide City employees' long-term disability coverage.

CITY OF HOUSTON, TEXAS
INTERNAL SERVICE FUNDS
Combining Statement of Net Position
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	Health Benefits	Long-term Disability	2014	2013
Assets				
Current assets				
Cash and cash equivalents				
Equity in pooled cash and investments	\$ 65,242	\$ 9,581	\$ 74,823	\$ 58,851
Receivables, net of allowances				
Accounts receivable	1,398	-	1,398	3
Due from other funds	1	-	1	718
Due from other	59	-	59	167
Prepaid items	3	-	3	3
Total current assets	<u>66,703</u>	<u>9,581</u>	<u>76,284</u>	<u>59,742</u>
Capital assets				
Buildings, improvements and equipment	514	-	514	514
Construction in progress	8	-	8	25
Total capital assets	<u>522</u>	<u>-</u>	<u>522</u>	<u>539</u>
Less accumulated depreciation	(342)	-	(342)	(270)
Accumulated depreciation	<u>(342)</u>	<u>-</u>	<u>(342)</u>	<u>(270)</u>
Net capital assets	<u>180</u>	<u>-</u>	<u>180</u>	<u>269</u>
Total noncurrent assets	<u>180</u>	<u>-</u>	<u>180</u>	<u>269</u>
Total Assets	<u>66,883</u>	<u>9,581</u>	<u>76,464</u>	<u>60,011</u>
Liabilities				
Current Liabilities				
Accounts Payable	191	35	226	1,512
Accrued payroll liabilities	93	-	93	68
Due to other funds	2	-	2	14,117
Claims and judgments	20,278	1,775	22,053	25,037
Compensated absences	224	-	224	202
Unearned revenue	2,720	-	2,720	2,836
Total current liabilities	<u>23,508</u>	<u>1,810</u>	<u>25,318</u>	<u>43,772</u>
Noncurrent liabilities				
Claims and judgments	13,000	6,294	19,294	6,402
Compensated absences	221	-	221	187
Total noncurrent liabilities	<u>13,221</u>	<u>6,294</u>	<u>19,515</u>	<u>6,589</u>
Total liabilities	<u>36,729</u>	<u>8,104</u>	<u>44,833</u>	<u>50,361</u>
Net Position				
Net investment in capital assets	180	-	180	269
Unrestricted	29,974	1,477	31,451	9,381
Total net position	<u>\$ 30,154</u>	<u>\$ 1,477</u>	<u>\$ 31,631</u>	<u>\$ 9,650</u>

CITY OF HOUSTON, TEXAS
INTERNAL SERVICE FUNDS
Combining Statement of Revenues, Expenses, and Changes in Net Position
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	<u>Health Benefits</u>	<u>Long-term Disability</u>	<u>2014</u>	<u>2013</u>
Operating Revenues				
Other	\$ 4,282	\$ -	\$ 4,282	\$ 4,753
Health benefit premiums	335,104	1,257	336,361	332,556
Total operating revenues	<u>339,386</u>	<u>1,257</u>	<u>340,643</u>	<u>337,309</u>
Operating Expenses				
Administrative costs	6,330	22	6,352	5,121
Claims Costs	312,661	285	312,946	309,744
Depreciation and amortization	72	-	72	61
Total operating expenses	<u>319,063</u>	<u>307</u>	<u>319,370</u>	<u>314,926</u>
Operating income (loss)	<u>20,323</u>	<u>950</u>	<u>21,273</u>	<u>22,383</u>
Nonoperating revenues (expenses)				
Investment income	607	101	708	(5)
Total Nonoperating revenues (expenses)	<u>607</u>	<u>101</u>	<u>708</u>	<u>(5)</u>
Income (loss) before contributions and transfers	<u>20,930</u>	<u>1,051</u>	<u>21,981</u>	<u>22,378</u>
Change in net position	20,930	1,051	21,981	22,378
Total net position (deficit), July 1	<u>9,224</u>	<u>426</u>	<u>9,650</u>	<u>(12,728)</u>
Total net position (deficit), June 30	<u>\$ 30,154</u>	<u>\$ 1,477</u>	<u>\$ 31,631</u>	<u>\$ 9,650</u>

INTERNAL SERVICE FUNDS
Combining Statement of Cash Flows
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	Health Benefits	Long-term Disability	2014	2013
Cash flows from operating activities				
Receipts from customers	\$ 333,710	\$ 1,257	\$ 334,967	\$ 332,553
Payments to employees	(4,037)	-	(4,037)	(3,643)
Payments to suppliers	(3,471)	(5)	(3,476)	(4,210)
Internal activity-payments to other funds	(13,525)	-	(13,525)	13,310
Claims paid	(301,953)	(1,119)	(303,072)	(309,721)
Due from other governments	108	-	108	4,459
Other revenues	4,282	-	4,282	4,753
Net cash provided by (used in) operating activities	15,114	133	15,247	37,501
Cash flows from investing activities				
Interest income on investments	607	101	708	(5)
Net cash provided by investing activities	607	101	708	(5)
Cash flows from capital and related financing activities				
Acquisition of property, plant and equipment	17	-	17	(185)
Net cash provided by (used for) capital and related financing activities	17	-	17	(185)
Net increase (decrease) in cash and cash equivalents	15,738	234	15,972	37,311
Cash and cash equivalents, July 1	49,504	9,347	58,851	21,540
Cash and cash equivalents, June 30	\$ 65,242	\$ 9,581	\$ 74,823	\$ 58,851
Reconciliation of operating income to net cash provided (used) by operating activities				
Operating income (loss)	\$ 20,323	\$ 950	\$ 21,273	\$ 22,383
Adjustments to reconcile operating income to net cash provided by operating activities				
Depreciation	72	-	72	61
Changes in assets and liabilities				
Accounts receivable	(1,394)	-	(1,394)	(2)
Due from other funds	716	-	716	(713)
Due from other governments	108	-	108	4,459
Accounts payable	(1,281)	(5)	(1,286)	(2,950)
Accrued payroll liabilities	25	-	25	6
Due to other funds	(14,116)	-	(14,116)	14,078
Claims for workers' compensation	10,720	(812)	9,908	51
Compensated absences	57	-	57	6
Deferred revenue	(116)	-	(116)	122
Net cash provided by operating activities	\$ 15,114	\$ 133	\$ 15,247	\$ 37,501

Fiduciary Funds (Trust and Agency Funds)

Trust and Agency Funds are used to account for assets held by a government unit as trustee, or agent, for individuals, private organizations, other governmental units, and/or other funds.

Pension trust funds are used to account for the operation of the employee pension retirement programs. The funds include: Houston Firefighters' Relief and Retirement, Houston Municipal Employees', and Police Officers' funds.

Agency funds are custodial in nature, and assets equal liabilities with no measure of the results of operations or financial position. Agency funds include: Payroll Revolving, City Deposits, and Tax Clearing Funds.

CITY OF HOUSTON, TEXAS
PENSION TRUST FUNDS
Combining Statement of Plan Net Position
June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

		Firefighters' Relief and Retirement Pension Trust Fund
	\$	
Assets		
Cash	\$	3,748
Investments		
U.S. government and agency securities		-
Corporate bonds		-
Other fixed income securities		1,220,890
Commingled equity funds		-
Common and preferred stock		1,557,858
Real estate, partnerships and alternatives		1,007,828
Short-term investment funds		123,988
Invested securities lending collateral		137,966
Receivables, net of allowances		
Due from broker		12
Contributions		3,145
Accrued interest and dividends		16,457
Other		21,456
Other assets		581
Land		483
Building		5,208
Total assets		4,099,620
 Liabilities and plan net position		
Liabilities		
Accounts payable		41,572
Securities lending collateral		137,966
Foreign funds contracts payable		7,207
Other liabilities		50
Total liabilities		186,795
 Plan net position held in trust for pension benefits	\$	3,912,825

(Continued)

Municipal Employees' Pension Trust Fund	Police Officers' Pension Trust Fund	2014	2013
\$ 401	\$ 701	\$ 4,850	\$ 14,551
83,700	-	83,700	64,523
223,849	-	223,849	233,868
-	383,346	1,604,236	1,849,495
382,672	-	382,672	279,271
866,082	997,732	3,421,672	2,838,950
859,757	2,090,767	3,958,352	3,378,419
48,569	831,028	1,003,585	707,176
139,504	41,986	319,456	500,142
378	61,695	62,085	5,410
-	26,539	29,684	28,593
-	2,181	18,638	22,398
18,495	7	39,958	25,778
444	-	1,025	1,309
-	-	483	483
-	-	5,208	5,446
<u>2,623,851</u>	<u>4,435,982</u>	<u>11,159,453</u>	<u>9,955,812</u>
14,147	45,533	101,252	47,211
139,504	41,986	319,456	500,142
378	-	7,585	1,301
5,383	586	6,019	5,732
<u>159,412</u>	<u>88,105</u>	<u>434,312</u>	<u>554,386</u>
<u>\$ 2,464,439</u>	<u>\$ 4,347,877</u>	<u>\$ 10,725,141</u>	<u>\$ 9,401,426</u>

CITY OF HOUSTON, TEXAS
PENSION TRUST FUNDS
Combining Statement of Changes in Plan Net Position
For the Year Ended June 30, 2014
(With comparative totals for 2013)
amounts expressed in thousands

	Firefighters' Relief and Retirement Pension Trust Fund
Additions:	
Contributions	
City of Houston	\$ 64,338
Members	23,994
Total Contributions	88,332
Investment income	
Interest	59,396
Net appreciation(depreciation) in fair value of investments	504,461
Dividends	29,494
Income on securities lending	120
Earnings from real estate, limited partnerships real estate investments, and other investments	4,888
Other income	486
Total investment and other income (loss)	598,845
Less - investment expense	(9,701)
Less - cost of securities lending	374
Total additions (reductions)	677,850
Deductions:	
Benefits paid to members	186,333
Refunds to members	785
Other	8,343
Total deductions	195,461
Net increase (decrease)	482,389
Plan net position held in trust for pension benefits, beginning of year	3,430,437
Plan net position held in trust for pension benefits, end of year	\$ 3,912,826

(Continued)

Municipal Employees' Pension Trust Fund		Police Officers' Pension Trust Fund		2014	2013
\$	128,274	\$	103,372	\$ 295,984	\$ 267,379
	16,580		37,012	77,586	76,009
	<u>144,854</u>		<u>140,384</u>	<u>373,570</u>	<u>343,388</u>
	24,080		25,288	108,764	110,891
	311,189		625,973	1,441,623	735,047
	19,523		18,119	67,136	66,175
	829		175	1,124	1,674
	4,996		-	9,884	13,546
	730		2,167	3,383	4,699
	<u>361,347</u>		<u>671,722</u>	<u>1,631,914</u>	<u>932,032</u>
	(8,585)		(22,525)	(40,811)	(31,217)
	(240)		(44)	90	(122)
	<u>497,376</u>		<u>789,537</u>	<u>1,964,763</u>	<u>1,244,081</u>
	221,925		211,690	619,948	587,662
	1,213		906	2,904	2,438
	6,415		3,439	18,197	18,889
	<u>229,553</u>		<u>216,035</u>	<u>641,049</u>	<u>608,989</u>
	267,823		573,502	1,323,714	635,092
	<u>2,196,615</u>		<u>3,774,375</u>	<u>9,401,427</u>	<u>8,766,334</u>
\$	<u>2,464,438</u>	\$	<u>4,347,877</u>	<u>\$ 10,725,141</u>	<u>\$ 9,401,426</u>

CITY OF HOUSTON, TEXAS
AGENCY FUNDS
Combining Statement of Changes in Assets and Liabilities
For the Year Ended June 30, 2014
amounts expressed in thousands

	<u>July 1, 2013</u>	<u>Additions</u>	<u>Deletions</u>	<u>June 30, 2014</u>
Payroll Revolving Fund				
Assets				
Equity in pooled cash and investments	\$ 6,723	\$ 7,238,864	\$ 7,238,935	\$ 6,652
Accounts receivable	128	192	130	190
Due from other funds	(7)	-	(7)	-
Total assets	<u>\$ 6,844</u>	<u>\$ 7,239,056</u>	<u>\$ 7,239,058</u>	<u>\$ 6,842</u>
Liabilities				
Accounts payable	\$ 6,844	\$ 2,674,220	\$ 2,674,222	\$ 6,842
Total liabilities	<u>\$ 6,844</u>	<u>\$ 2,674,220</u>	<u>\$ 2,674,222</u>	<u>\$ 6,842</u>
City Deposit Fund				
Assets				
Equity in pooled cash and investments	\$ 131	\$ -	\$ -	\$ 131
Total assets	<u>\$ 131</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 131</u>
Liabilities				
Advances and deposits	\$ 131	\$ -	\$ -	\$ 131
Total liabilities	<u>\$ 131</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 131</u>
Tax Clearing Fund				
Assets				
Equity in pooled cash and investments	\$ 12,858	\$ 192,950	\$ 180,787	\$ 25,021
Total assets	<u>\$ 12,858</u>	<u>\$ 192,950</u>	<u>\$ 180,787</u>	<u>\$ 25,021</u>
Liabilities				
Accounts payable	\$ 12,858	\$ 338,061	\$ 325,898	\$ 25,021
Total liabilities	<u>\$ 12,858</u>	<u>\$ 338,061</u>	<u>\$ 325,898</u>	<u>\$ 25,021</u>
Totals - All Agency Funds				
Assets				
Equity in pooled cash and investments	\$ 19,712	\$ 7,431,814	\$ 7,419,722	\$ 31,804
Accounts receivable	128	192	130	190
Due from other funds	(7)	-	(7)	-
Total assets	<u>\$ 19,833</u>	<u>\$ 7,432,006</u>	<u>\$ 7,419,845</u>	<u>\$ 31,994</u>
Liabilities				
Accounts payable	\$ 19,702	\$ 3,012,281	\$ 3,000,120	\$ 31,863
Advances and deposits	131	-	-	131
Total liabilities	<u>\$ 19,833</u>	<u>\$ 3,012,281</u>	<u>\$ 3,000,120</u>	<u>\$ 31,994</u>

Discretely Presented Component Units (Governmental and Business-type)

Discretely Presented Component Units are legally separate organizations that the City of Houston must include as a part of its financial reporting entity for fair presentation.

Governmental – This category is primarily comprised of advisory boards and redevelopment authorities:

- City Park Redevelopment Authority
- East Downtown Redevelopment Authority
- Fifth Ward Redevelopment Authority
- Fourth Ward Redevelopment Authority
- Greater Greenspoint Redevelopment Authority
- Greater Houston Convention and Visitors Bureau
- Gulfgate Redevelopment Authority
- Hardy Near Northside Redevelopment Authority
- Houston Area Library Automated Network (HALAN)
- Houston Arts Alliance
- Houston Downtown Park Corporation
- Houston Forensic Science LGC, Inc.
- Houston Media Source
- Houston Parks Board, Inc.
- Houston Parks Board LGC, Inc.
- Houston Public Library Foundation
- Houston Recovery Center LGC
- Lake Houston Redevelopment Authority
- Lamar Terrace Public Improvement District
- Land Assemblage Redevelopment Authority
- Leland Woods Redevelopment Authority I
- Leland Woods Redevelopment Authority II
- Main Street Market Square Redevelopment Authority
- Memorial City Redevelopment Authority
- Memorial-Heights Redevelopment Authority
- Midtown Redevelopment Authority
- Miller Theatre Advisory Board
- Old Sixth Ward Redevelopment Authority
- OST/Almeda Corridors Redevelopment Authority
- Saint George Place Redevelopment Authority
- South Post Oak Redevelopment Authority
- Southwest Houston Redevelopment Authority
- Upper Kirby Redevelopment Authority
- Uptown Development Authority

Business-type – This category is comprised of

- Houston First Corporation
- Houston Housing Finance Corporation
- Houston Zoo Inc.

CITY OF HOUSTON, TEXAS
DISCRETELY PRESENTED COMPONENT UNITS - GOVERNMENTAL
Combining Statement of Net Position
June 30, 2014
amounts expressed in thousands

	City Park Redevelopment Authority	East Downtown Redevelopment Authority	Fifth Ward Redevelopment Authority	Fourth Ward Redevelopment Authority	Greater Greenspoint Redevelopment Authority	Greater Houston Convention & Visitors Bureau
Assets						
Current Assets						
Cash	\$ 555	\$ 4,288	\$ 396	\$ 2,229	\$ 20,426	\$ 7,147
Equity in pooled cash and investments	-	795	-	8,576	12,942	-
Receivables, net of allowances	-	-	-	-	-	-
Accounts receivable	-	126	51	-	-	4,206
Accrued interest and other	-	-	-	-	-	-
Due from primary government	-	-	-	-	-	-
Inventory	-	-	-	-	-	5
Prepaid items	-	-	-	1	-	242
Restricted assets	-	-	-	-	-	-
Investments	-	-	-	-	-	-
Other receivables	4	-	-	-	-	-
Total current assets	559	5,209	447	10,806	33,368	11,600
Noncurrent Assets						
Investments	-	-	-	-	-	505
Deferred charges for issuance cost	-	-	-	-	-	-
Total noncurrent assets	-	-	-	-	-	505
Land	-	315	177	200	4,613	-
Buildings, improvements and equipment	1,199	-	-	-	60	1,519
Plants, lines and rights	-	-	-	-	6,493	-
Construction in progress	-	57	-	-	-	-
Total capital assets	1,199	372	177	200	11,166	1,519
Less accumulated depreciation						
Buildings, improvements and equipment	(480)	-	-	-	(60)	(778)
Accumulated depreciation	(480)	-	-	-	(60)	(778)
Net capital assets	719	372	177	200	11,106	741
Total noncurrent assets	719	372	177	200	11,106	1,246
Total assets	1,278	5,581	624	11,006	44,474	12,846
Liabilities						
Current Liabilities						
Accounts payable	-	225	15	27	396	1,132
Accrued payroll liabilities	-	-	-	-	-	-
Accrued interest payable	-	-	-	-	399	574
Contracts and retainages payable	-	-	-	-	890	-
Notes payable	-	-	-	-	-	-
Due to other governments	-	-	-	-	-	-
Compensated absences	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-
Deferred Revenue	-	-	-	-	-	144
Current liabilities payable from restricted assets						
Revenue bonds payable	-	-	-	-	1,460	-
Advances and deposits	-	-	-	-	-	-
Total current liabilities	-	225	15	27	3,145	1,850
Noncurrent liabilities						
Notes payable	3,943	-	-	-	-	-
Revenue bonds payable	-	-	-	-	28,631	-
Contracts payable	-	-	-	-	-	-
Other long-term liabilities	-	-	-	-	-	135
Deferred revenue	-	-	-	-	-	-
Total Noncurrent liabilities	3,943	-	-	-	28,631	135
Total liabilities	3,943	225	15	27	31,776	1,985
Net position						
Net investment in capital assets	-	372	177	-	5,872	-
Restricted net position						
Restricted for debt service	-	-	-	-	5,524	-
Restricted for maintenance and operations	-	-	-	-	-	-
Restricted for capital improvements	-	-	-	10,868	-	-
Other restricted	-	2,356	-	-	-	-
Unrestricted (deficit)	(2,665)	2,628	432	111	1,302	10,861
Total net position (deficit)	\$ (2,665)	\$ 5,356	\$ 609	\$ 10,979	\$ 12,698	\$ 10,861

(Continued)

Gulfgate Redevelopment Authority	Hardy Near Northside Redevelopment Authority	Houston Area Library Automated Network Bd	Houston Arts Alliance	Houston Business Development Corporation	Houston Downtown Park Corporation	Houston Forensic Science, LGC	Houston Media Source
\$ 1,104	\$ 289	\$ -	\$ 291	\$ -	\$ -	\$ 3,103	\$ 1,257
-	602	1,778	1,839	-	-	-	-
-	-	-	1,993	-	-	-	1,103
-	-	-	-	-	-	-	-
-	-	-	18	-	-	-	36
-	-	-	-	-	-	-	1,950
-	-	-	588	-	-	-	-
1,104	891	1,778	4,729	-	-	3,103	4,346
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
5,417	-	-	-	-	56,986	-	-
-	-	-	755	-	23,173	1,750	1,470
-	123	-	-	-	-	-	-
5,417	123	-	755	-	80,159	1,750	1,470
-	-	-	(530)	-	(3,854)	(53)	(481)
-	-	-	(530)	-	(3,854)	(53)	(481)
5,417	123	-	225	-	76,305	1,697	989
5,417	123	-	225	-	76,305	1,697	989
6,521	1,014	1,778	4,954	-	76,305	4,800	5,335
8	13	17	342	-	-	-	33
-	-	23	-	-	-	31	-
401	-	-	-	-	-	-	-
87	-	-	-	-	-	-	-
425	-	-	-	-	3,839	-	-
-	-	-	-	-	-	-	-
-	-	1	-	-	-	-	-
-	-	-	1,343	-	-	2,236	-
-	-	-	-	-	-	36	-
-	-	-	-	-	-	-	-
921	13	41	1,687	-	3,839	2,303	33
3,401	-	-	-	-	16,226	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
3,401	-	-	-	-	16,226	-	-
4,322	13	41	1,687	-	20,065	2,303	33
3,427	123	-	-	-	56,240	1,697	990
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
(1,228)	878	1,737	2,915	-	-	36	2,200
-	-	-	352	-	-	764	2,112
\$ 2,199	\$ 1,001	\$ 1,737	\$ 3,267	\$ -	\$ 56,240	\$ 2,497	\$ 5,302

See Note 14e

See Note 14e

See Note 14e

{(Cont'd from p. 187)}

CITY OF HOUSTON, TEXAS
DISCRETELY PRESENTED COMPONENT UNITS - GOVERNMENTAL
Combining Statement of Net Position
June 30, 2014
amounts expressed in thousands

	<u>Houston Parks Board, Inc.</u>	<u>Houston Parks Board LGC, Inc</u>	<u>Houston Public Library Foundation</u>	<u>Houston Recovery Center, LGC</u>	<u>Lake Houston Redevelopment Authority</u>	<u>Lamar Terrace Public Improvement District</u>	<u>Land Assemblage Redevelopment Authority</u>
Assets							
Current Assets							
Cash	\$ 7,187	\$ 512	\$ 697	\$ 690	\$ 3,689	\$ -	\$ 3,282
Equity in pooled cash and investments	-	-	-	-	-	53	-
Receivables, net of allowances	-	-	-	-	-	-	-
Accounts receivable	11,208	526	143	-	15	26	2
Accrued interest and other	155	-	-	-	-	-	-
Due from primary government	-	-	-	280	-	-	-
Inventory	-	-	-	6	-	-	-
Prepaid items	-	-	-	-	-	1	1
Restricted assets	-	-	-	-	-	-	-
Investments	20,208	-	-	-	-	-	7,650
Other receivables	-	-	-	-	-	-	-
Total current assets	<u>38,758</u>	<u>1,038</u>	<u>840</u>	<u>976</u>	<u>3,704</u>	<u>80</u>	<u>10,935</u>
Noncurrent Assets							
Restricted assets	-	-	-	-	-	-	-
Investments	-	-	21,187	-	-	-	-
Deferred charges for issuance cost	-	-	-	-	-	-	-
Total noncurrent restricted assets	<u>-</u>	<u>-</u>	<u>21,187</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Land	11,869	5,470	-	-	-	-	-
Buildings, improvements and equipment	-	4,887	-	-	-	-	-
Plants, lines and rights	-	-	278	-	-	-	-
Construction in progress	-	-	-	-	-	-	-
Total capital assets	<u>11,869</u>	<u>10,357</u>	<u>278</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Less accumulated depreciation	-	-	-	-	-	-	-
Buildings, improvements and equipment	-	-	-	-	-	-	-
Accumulated depreciation	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Net capital assets	<u>11,869</u>	<u>10,357</u>	<u>278</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total noncurrent assets	<u>11,869</u>	<u>10,357</u>	<u>21,465</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total assets	<u>50,627</u>	<u>11,395</u>	<u>22,305</u>	<u>976</u>	<u>3,704</u>	<u>80</u>	<u>10,935</u>
Liabilities							
Current Liabilities							
Accounts payable	224	902	81	107	61	-	46
Accrued payroll liabilities	-	-	-	-	-	11	-
Accrued interest payable	-	-	-	-	53	-	-
Contracts and retainages payable	203	-	-	-	-	-	-
Notes payable	-	-	-	-	-	-	-
Due to other governments	-	-	-	-	-	-	-
Compensated absences	-	-	-	-	-	-	-
Other liabilities	118	-	-	-	-	-	-
Deferred revenue	-	-	-	-	-	26	-
Current liabilities payable from restricted assets	-	-	-	-	-	-	-
Revenue bonds payable	-	-	-	-	-	-	-
Advances and deposits	-	-	-	-	-	-	-
Total current liabilities	<u>545</u>	<u>902</u>	<u>81</u>	<u>107</u>	<u>114</u>	<u>37</u>	<u>46</u>
Noncurrent liabilities							
Notes payable	-	-	-	-	18,053	-	-
Revenue bonds payable	-	-	-	-	-	-	-
Contracts payable	-	-	-	-	-	-	-
Other long-term liabilities	-	-	-	-	-	-	-
Deferred revenue	-	133	107	-	-	-	-
Total Noncurrent liabilities	<u>-</u>	<u>133</u>	<u>107</u>	<u>-</u>	<u>18,053</u>	<u>-</u>	<u>-</u>
Total liabilities	<u>545</u>	<u>1,035</u>	<u>188</u>	<u>107</u>	<u>18,167</u>	<u>37</u>	<u>46</u>
Net position							
Net investment in capital assets	-	10,357	-	-	-	-	-
Restricted net position	-	-	-	-	-	-	-
Restricted for debt service	-	-	-	-	-	-	-
Restricted for maintenance and operations	32,815	-	-	-	-	-	-
Restricted for capital improvements	-	-	-	-	-	-	-
Other restricted	5,340	-	16,991	-	-	-	9,534
Unrestricted (deficit)	11,927	3	5,126	869	(14,150)	43	1,355
Total net position (deficit)	<u>\$ 50,082</u>	<u>\$ 10,360</u>	<u>\$ 22,117</u>	<u>\$ 869</u>	<u>\$ (14,150)</u>	<u>\$ 43</u>	<u>\$ 10,889</u>
				See Note 14e	See Note 14e		

(Continued)

Leland Woods Redevelopment Authority I	Leland Woods Redevelopment Authority II	Main Street Market Square Redevelopment Authority	Memorial City Redevelopment Authority	Memorial- Heights Redevelopment Authority	Midtown Redevelopment Authority	Miller Theatre Advisory Board, Inc.	Old Sixth Ward Redevelopment Authority	OST/Atmeda Corridors Redevelopment Authority
\$ 81	\$ 2	\$ 765	\$ 30,545	5,121	\$ 18,706	\$ 913	\$ 814	\$ 80
-	-	8,922	4,734	-	23,916	-	-	37,485
-	-	12,696	-	-	1,408	582	35	-
-	-	27	-	-	-	-	-	-
-	-	-	-	-	38,239	-	-	-
-	4	-	-	1	-	-	1	-
-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	38	-	3,000
101	6	22,410	35,279	5,122	82,269	1,533	850	40,565
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	1,073
-	-	-	-	-	-	-	-	1,073
-	1,016	-	9,071	-	12,946	-	-	4,402
-	-	-	-	-	7,159	-	-	34
-	-	-	-	-	-	-	-	-
-	-	-	-	-	3,550	-	-	-
-	1,016	-	9,071	-	23,655	-	-	4,436
-	-	-	-	-	(3,363)	-	-	(32)
-	-	-	-	-	(3,363)	-	-	(32)
-	1,016	-	9,071	-	20,292	-	-	4,404
-	1,016	-	9,071	-	20,292	-	-	5,477
101	1,022	22,410	44,350	5,122	102,561	1,533	850	46,042
-	-	-	-	-	-	-	-	-
13	-	7	824	471	1,682	7	20	1,826
-	3	-	-	-	-	-	-	-
-	-	185	586	-	1,931	-	44	389
-	-	-	344	-	229	164	-	-
-	-	475	-	-	95	-	115	-
-	-	-	-	-	-	-	-	-
-	-	-	2	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	1,850	2,660	-	3,805	-	-	1,335
-	-	-	-	-	-	-	-	-
13	3	2,517	4,416	471	7,742	171	179	3,550
-	865	1,025	-	-	6,075	-	2,302	-
-	-	17,175	42,090	-	73,566	-	-	22,891
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	865	18,200	42,090	-	79,641	-	2,302	22,891
13	868	20,717	46,506	471	87,383	171	2,481	26,441
-	152	-	9,072	-	8,251	149	-	4,404
-	-	2,301	3,782	-	15,737	-	-	4,961
-	-	-	-	-	-	-	-	-
-	-	-	-	-	5,647	-	-	3,000
-	-	-	-	-	39,803	862	-	7,236
88	2	(605)	(15,010)	4,651	(54,260)	351	(1,631)	7,236
\$ 88	\$ 151	\$ 1,693	\$ (2,156)	\$ 4,651	\$ 13,178	\$ 1,362	\$ (1,631)	\$ (9,601)

(Continued)

CITY OF HOUSTON, TEXAS
DISCRETELY PRESENTED COMPONENT UNITS - GOVERNMENTAL
Combining Statement of Net Position
June 30, 2014
amounts expressed in thousands

	Saint George Place Redevelopment Authority	South Post Oak Redevelopment Authority	Southwest Houston Redevelopment Authority	Upper Kirby Redevelopment Authority	Uptown Development Authority	Total
Assets						
Current Assets						
Cash	\$ 1,048	\$ 998	\$ 5,377	\$ 179	\$ 87,048	\$ 208,819
Equity in pooled cash and investments	1,526	-	28,360	15,985	-	147,513
Receivables, net of allowances						
Accounts receivable	7	-	42	-	-	34,169
Accrued interest and other	-	-	-	-	-	182
Due from primary government	-	-	-	-	-	280
Inventory	-	-	-	-	-	38,250
Prepaid items	-	-	-	-	-	305
Restricted assets						
Investments	-	-	-	-	-	29,808
Other receivables	-	-	-	-	-	3,650
Total current assets	<u>2,581</u>	<u>998</u>	<u>33,779</u>	<u>16,164</u>	<u>87,048</u>	<u>462,976</u>
Noncurrent Assets						
Restricted assets						
Investments	-	-	-	-	-	21,692
Deferred charges for issuance cost	-	-	-	-	318	1,391
Total noncurrent restricted assets	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>318</u>	<u>23,083</u>
Land	-	-	-	13,509	9,081	135,072
Buildings, improvements and equipment	-	-	-	-	5,577	47,583
Plants, lines and rights	-	-	-	-	-	6,894
Construction in progress	-	-	-	-	-	3,607
Total property, plant & equipment	<u>-</u>	<u>-</u>	<u>-</u>	<u>13,509</u>	<u>14,658</u>	<u>193,156</u>
Less accumulated depreciation and						
Buildings, improvements and equipment	-	-	-	-	(2,321)	(11,952)
Accumulated depreciation	-	-	-	-	(2,321)	(11,952)
Net capital assets	<u>-</u>	<u>-</u>	<u>-</u>	<u>13,509</u>	<u>12,337</u>	<u>181,204</u>
Total noncurrent assets	<u>-</u>	<u>-</u>	<u>-</u>	<u>13,509</u>	<u>12,655</u>	<u>204,287</u>
Total assets	<u>2,581</u>	<u>998</u>	<u>33,779</u>	<u>29,673</u>	<u>99,703</u>	<u>667,263</u>
Liabilities						
Current Liabilities						
Accounts payable	1,157	3	590	1,268	10,647	22,144
Accrued payroll liabilities	-	-	-	-	-	68
Accrued interest payable	25	2	504	330	1,825	7,248
Contracts and retainages payable	-	-	-	341	-	2,258
Notes payable	-	-	-	1,225	-	6,174
Due to other governments	-	-	-	-	2,120	2,120
Compensated absences	-	-	-	-	-	3
Other liabilities - current	-	-	-	-	-	3,699
Deferred revenue	232	-	-	-	-	438
Current liabilities payable from restricted assets						
Revenue bonds payable	145	-	2,630	-	4,890	18,775
Advances and deposits	-	923	-	-	-	923
Total current liabilities	<u>1,559</u>	<u>923</u>	<u>3,724</u>	<u>3,164</u>	<u>19,482</u>	<u>63,850</u>
Noncurrent liabilities						
Notes payable	4,803	-	-	21,030	-	77,723
Revenue bonds payable	1,245	-	46,950	-	111,099	343,647
Contracts payable	-	1,721	-	-	-	1,721
Other long-term liabilities	-	-	-	-	-	135
Deferred revenue	-	-	-	-	-	240
Total Noncurrent liabilities	<u>6,048</u>	<u>1,721</u>	<u>46,950</u>	<u>21,030</u>	<u>111,099</u>	<u>423,466</u>
Total liabilities	<u>7,607</u>	<u>2,649</u>	<u>50,674</u>	<u>24,194</u>	<u>130,581</u>	<u>487,316</u>
Net Position						
Investment in capital assets	-	-	-	13,509	12,338	127,130
Restricted net assets						
Restricted for debt service	501	-	1,630	263	19,125	53,824
Restricted for maintenance and operations	-	-	-	-	-	32,815
Restricted for capital improvements	-	-	24,960	1,526	53,330	99,331
Other restricted	(22)	-	-	-	-	80,015
Unrestricted	(5,505)	(1,651)	(43,485)	(9,819)	(115,671)	(213,168)
Total net position (deficit)	<u>\$ (5,026)</u>	<u>\$ (1,651)</u>	<u>\$ (16,895)</u>	<u>\$ 5,479</u>	<u>\$ (30,878)</u>	<u>\$ 179,947</u>

CITY OF HOUSTON, TEXAS

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CITY OF HOUSTON, TEXAS
DISCRETELY PRESENTED COMPONENT UNITS - GOVERNMENTAL
Combining Statement of Activities
For the Year Ended June 30, 2014
amounts expressed in thousands

Net (Expense) Revenue and Change in Net Position

Functions/Programs	Expenses	Charges for Services	Operating Grants and Contributions	Capital Grants and Contributions	City Park Redevelopment Authority	East Downtown Redevelopment Authority	Fifth Ward Redevelopment Authority	Fourth Ward Redevelopment Authority
Component Units								
City Park Redevelopment Authority	\$ 203	\$ -	\$ -	\$ -	\$ (203)	\$ -	\$ -	\$ -
East Downtown Redevelopment Authority	1,959	-	-	-	-	(1,959)	-	-
Fifth Ward Redevelopment Authority	315	-	-	-	-	-	(315)	-
Fourth Ward Redevelopment Authority	1,297	-	-	-	-	-	-	(1,297)
Greater Greenspoint Redevelopment Authority	14,007	-	-	-	-	-	-	-
Greater Houston Convention and Visitors Bureau	18,748	590	17,563	-	-	-	-	-
Gulfgate Redevelopment Authority	719	-	-	-	-	-	-	-
Hardy Near Northside Redevelopment Authority	69	-	-	-	-	-	-	-
Houston Area Library Automated Network	2,092	-	1,631	-	-	-	-	-
Houston Arts Alliance	7,822	-	7,910	-	-	-	-	-
Houston Downtown Park Corporation	1,295	1,252	54	-	-	-	-	-
Houston Forensic Science LGC, Inc.	17,673	19,721	-	-	-	-	-	-
Houston Media Source, Inc.	1,330	2,213	-	-	-	-	-	-
Houston Parks Board, Inc.	10,359	530	23,339	-	-	-	-	-
Houston Parks Board, LGC, Inc.	363	-	4,735	-	-	-	-	-
Houston Public Library Foundation	2,988	-	702	-	-	-	-	-
Houston Recovery Center LGC, Inc.	1,851	-	2,462	-	-	-	-	-
Lake Houston Redevelopment Authority	11,618	-	-	-	-	-	-	-
Lamar Terrace Public Improvement District	-	-	-	-	-	-	-	-
Land Assenblage Redevelopment Authority	941	-	547	-	-	-	-	-
Leland Woods Redevelopment Authority I	472	-	-	-	-	-	-	-
Leland Woods Redevelopment Authority II	45	-	-	-	-	-	-	-
Main Street Market Square Redevelopment Authority	4,135	-	-	-	-	-	-	-
Memorial City Redevelopment Authority	11,762	-	-	-	-	-	-	-
Memorial-Heights Redevelopment Authority	2,792	-	-	-	-	-	-	-
Midtown Redevelopment Authority	19,280	-	-	-	-	-	-	-
Miller Theatre Advisory Board, Inc.	2,556	-	2,840	-	-	-	-	-
Old Sixth Ward Redevelopment Authority	438	-	-	-	-	-	-	-
OST/Alameda Corridors Redevelopment Authority	8,864	-	6,401	-	-	-	-	-
Saint George Place Redevelopment Authority	753	-	-	-	-	-	-	-
South Post Oak Redevelopment Authority	150	-	-	-	-	-	-	-
Southwest Houston Redevelopment Authority	4,037	-	-	-	-	-	-	-
Upper Kirby Redevelopment Authority	8,861	-	-	-	-	-	-	-
Uptown Development Authority	29,512	-	1,773	-	-	-	-	-
Total component units	189,306	24,306	69,957	\$ -	(203)	(1,959)	(315)	(1,297)
General Revenues:								
Taxes								
Property Taxes - general purposes / tax increments					526	2,436	364	2,085
Property Taxes levied for debt service					-	-	-	-
Industrial assessments tax					-	-	-	-
Sales tax					-	-	-	-
Franchise tax					-	-	-	-
Mixed beverage tax					-	-	-	-
Bingo tax					-	-	-	-
Hotel occupancy tax					-	-	-	-
Intergovernmental - grant					-	-	-	-
Contributions								
Unrestricted investment earnings (loss)					-	4	4	5
Other					1	-	-	-
Special Items - Loss on sale of assets					-	-	-	-
Transfers								
Total general revenues and transfers					527	2,440	368	2,090
Change in net position					324	481	53	793
Net Position (deficit) beginning					(2,989)	4,875	556	10,186
Change in Accounting Principle					-	-	-	-
Change in Reporting Entity					-	-	-	-
Net Position (deficit) ending					\$ (2,665)	\$ 5,356	\$ 609	\$ 10,979

(Continued)

CITY OF HOUSTON, TEXAS
DISCRETELY PRESENTED COMPONENT UNITS - GOVERNMENTAL
Combining Statement of Activities
For the Year Ended June 30, 2014
amounts expressed in thousands

Net (Expense) Revenue and Change in Net Position

Functions/Programs	Houston Media Source	Houston Parks Board, Inc	Houston Parks Board LGC	Houston Public Library Foundation	Houston Recovery Center LGC	Lake Houston Redevelopment Authority	Lamar Terrace Public Improvement District
Component Units							
City Park Redevelopment Authority	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
East Downtown Redevelopment Authority	-	-	-	-	-	-	-
Fifth Ward Redevelopment Authority	-	-	-	-	-	-	-
Fourth Ward Redevelopment Authority	-	-	-	-	-	-	-
Greater Greenspoint Redevelopment Authority	-	-	-	-	-	-	-
Greater Houston Convention and Visitors Bureau	-	-	-	-	-	-	-
Gulfgate Redevelopment Authority	-	-	-	-	-	-	-
Hardy Near Northside Redevelopment Authority	-	-	-	-	-	-	-
Houston Area Library Automated Network	-	-	-	-	-	-	-
Houston Arts Alliance	-	-	-	-	-	-	-
Houston Downtown Park Corporation	-	-	-	-	-	-	-
Houston Forensic Science LGC, Inc.	-	-	-	-	-	-	-
Houston Media Source, Inc.	883	-	-	-	-	-	-
Houston Parks Board, Inc.	-	13,510	-	-	-	-	-
Houston Parks Board, LGC, Inc.	-	-	4,372	-	-	-	-
Houston Public Library Foundation	-	-	-	(2,286)	-	-	-
Houston Recovery Center LGC, Inc.	-	-	-	-	611	-	-
Lake Houston Redevelopment Authority	-	-	-	-	-	(11,618)	-
Lamar Terrace Public Improvement District	-	-	-	-	-	-	-
Land Assemblage Redevelopment Authority	-	-	-	-	-	-	-
Leland Woods Redevelopment Authority I	-	-	-	-	-	-	-
Leland Woods Redevelopment Authority II	-	-	-	-	-	-	-
Main Street Market Square Redevelopment Authority	-	-	-	-	-	-	-
Memorial City Redevelopment Authority	-	-	-	-	-	-	-
Memorial-Heights Redevelopment Authority	-	-	-	-	-	-	-
Midtown Redevelopment Authority	-	-	-	-	-	-	-
Miller Theatre Advisory Board, Inc.	-	-	-	-	-	-	-
Old Sixth Ward Redevelopment Authority	-	-	-	-	-	-	-
OST/Almeda Corridors Redevelopment Authority	-	-	-	-	-	-	-
Saint George Place Redevelopment Authority	-	-	-	-	-	-	-
South Post Oak Redevelopment Authority	-	-	-	-	-	-	-
Southwest Houston Redevelopment Authority	-	-	-	-	-	-	-
Upper Kirby Redevelopment Authority	-	-	-	-	-	-	-
Uptown Development Authority	-	-	-	-	-	-	-
Total component units	883	13,510	4,372	(2,286)	611	(11,618)	-
General Revenues:							
Taxes							
Property Taxes - general purposes / tax increments	-	-	-	-	-	13,669	-
Property Taxes levied for debt service	-	-	-	-	-	-	-
Industrial assessments tax	-	-	-	-	-	-	-
Sales tax	-	-	-	-	-	-	-
Franchise tax	-	-	-	-	-	-	-
Mixed beverage tax	-	-	-	-	-	-	-
Bingo tax	-	-	-	-	-	-	-
Hotel occupancy tax	-	-	-	-	-	-	-
Intergovernmental - grant	-	-	-	-	-	-	-
Contributions	-	-	-	-	-	-	-
Unrestricted investment earnings (loss)	-	812	-	3,407	-	15	1
Other	-	-	-	-	-	827	-
Special Items - Loss on sale of assets	-	-	-	-	-	-	-
Transfers	-	-	-	-	-	-	-
Total general revenues, special items, and transfers	-	812	-	3,407	-	14,511	1
Change in net Position	883	14,322	4,372	1,121	611	2,893	1
Net Position (deficit) beginning	4,419	35,760	5,988	20,996	258	-	42
Change in Accounting Principle	-	-	-	-	-	-	-
Change in Reporting Entity	-	-	-	-	-	(17,356)	-
Net Position (deficit) ending	\$ 5,302	\$ 50,082	\$ 10,360	\$ 22,117	\$ 869	\$ (14,463)	\$ 43

See Note 14e

See Note 14e

See Note 14e

(Continued)

CITY OF HOUSTON, TEXAS
DISCRETELY PRESENTED COMPONENT UNITS - GOVERNMENTAL
Combining Statement of Activities
For the Year Ended June 30, 2014
amounts expressed in thousands

Net (Expense) Revenue and Change in Net Position

Functions/Programs	OST/Alameda Corridors Redevelopment Authority	Saint George Place Redevelopment Authority	South Post Oak Redevelopment Authority	Southwest Houston Redevelopment Authority	Upper Kirby Redevelopment Authority	Uptown Development Authority	Total
Component Units							
City Park Redevelopment Authority	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (203)
East Downtown Redevelopment Authority	-	-	-	-	-	-	(1,959)
Fifth Ward Redevelopment Authority	-	-	-	-	-	-	(315)
Fourth Ward Redevelopment Authority	-	-	-	-	-	-	(1,297)
Greater Greenspoint Redevelopment Authority	-	-	-	-	-	-	(14,007)
Greater Houston Convention and Visitors Bureau	-	-	-	-	-	-	(595)
Gulfgate Redevelopment Authority	-	-	-	-	-	-	(719)
Hardy Near Northside Redevelopment Authority	-	-	-	-	-	-	(69)
Houston Area Library Automated Network	-	-	-	-	-	-	(461)
Houston Arts Alliance	-	-	-	-	-	-	88
Houston Downtown Park Corporation	-	-	-	-	-	-	11
Houston Forensic Science LGC, Inc.	-	-	-	-	-	-	2,048
Houston Media Source, Inc.	-	-	-	-	-	-	883
Houston Parks Board, Inc.	-	-	-	-	-	-	13,510
Houston Parks Board, LGC, Inc.	-	-	-	-	-	-	4,372
Houston Public Library Foundation	-	-	-	-	-	-	(2,286)
Houston Recovery Center LGC, Inc.	-	-	-	-	-	-	611
Lake Houston Redevelopment Authority	-	-	-	-	-	-	(11,618)
Lamar Terrace Public Improvement District	-	-	-	-	-	-	-
Land Assemblage Redevelopment Authority	-	-	-	-	-	-	(394)
Leland Woods Redevelopment Authority I	-	-	-	-	-	-	(472)
Leland Woods Redevelopment Authority II	-	-	-	-	-	-	(45)
Main Street Market Square Redevelopment Authority	-	-	-	-	-	-	(4,135)
Memorial City Redevelopment Authority	-	-	-	-	-	-	(11,762)
Memorial-Heights Redevelopment Authority	-	-	-	-	-	-	(2,792)
Midtown Redevelopment Authority	-	-	-	-	-	-	(19,280)
Miller Theatre Advisory Board, Inc.	-	-	-	-	-	-	284
Old Sixth Ward Redevelopment Authority	-	-	-	-	-	-	(438)
OST/Alameda Corridors Redevelopment Authority	(2,463)	-	-	-	-	-	(2,463)
Saint George Place Redevelopment Authority	-	(753)	-	-	-	-	(753)
South Post Oak Redevelopment Authority	-	-	(150)	-	-	-	(150)
Southwest Houston Redevelopment Authority	-	-	-	(4,037)	-	-	(4,037)
Upper Kirby Redevelopment Authority	-	-	-	-	(8,861)	-	(8,861)
Uptown Development Authority	-	-	-	-	-	(27,739)	(27,739)
Total component units	(2,463)	(753)	(150)	(4,037)	(8,861)	(27,739)	(95,043)
General Revenues:							
Taxes							
Property Taxes - general purposes / tax increments	8,361	1,517	1,032	5,331	7,990	32,287	132,993
Property Taxes levied for debt service	-	-	-	-	-	-	-
Industrial assessments tax	-	-	-	-	-	-	-
Sales tax	-	-	-	-	-	-	-
Franchise tax	-	-	-	-	-	-	-
Mixed beverage tax	-	-	-	-	-	-	-
Bingo tax	-	-	-	-	-	-	-
Hotel occupancy tax	-	-	-	-	-	-	-
Intergovernmental - grant	-	-	-	-	-	-	-
Contributions							
Unrestricted investment earnings (loss)	17	5	1	31	9	21	5,724
Other	25	2	-	-	1	-	2,742
Special Items - Loss on sale of assets	-	-	-	-	-	-	-
Transfers							
Total general revenues, special items, and transfers	8,403	1,524	1,033	5,362	8,000	32,308	141,459
Change in net Position	5,940	771	883	1,325	(861)	4,569	46,416
Net Position (deficit) beginning	13,661	(5,797)	(2,534)	(18,220)	6,340	(35,447)	152,669
Change in Accounting Principle	-	-	-	-	-	-	(1,782)
Change in Reporting Entity	-	-	-	-	-	-	(17,356)
Net Position (deficit) ending	\$ 19,601	\$ (5,026)	\$ (1,651)	\$ (16,895)	\$ 5,479	\$ (30,878)	\$ 179,947

CITY OF HOUSTON, TEXAS
DISCRETELY PRESENTED COMPONENT UNITS - BUSINESS TYPE
Combining Statement of Net Position
June 30, 2014
amounts expressed in thousands

	Houston First Corporation See Note 14	Houston Housing Finance Corp	Houston Zoo Inc.	Total
Assets				
Current assets				
Cash	\$ 60,880	\$ 23,673	\$ 17,942	\$ 102,495
Investments	93,757	-	15,604	109,361
Receivables, net of allowances				
Accounts receivable	3,573	7,673	1,505	12,751
Accrued interest and other	-	52	-	52
Due from other governments	1,479	-	-	1,479
Inventory	-	-	146	146
Prepaid items	1,461	-	691	2,152
Restricted assets				
Investments	-	-	-	-
Other receivables	1,985	380	-	2,365
Total current assets	<u>163,135</u>	<u>31,778</u>	<u>35,888</u>	<u>230,801</u>
Noncurrent Assets				
Cash and cash equivalents	-	-	-	-
Investments	-	-	12,290	12,290
Assessments receivable	-	-	-	-
Accrued interest receivable	-	213	-	213
Due from affiliates	32,820	-	-	32,820
Amounts held by other governments	-	-	-	-
Receivable and deposits	10,827	13,774	-	24,601
Deferred charges for issuance cost	-	-	-	-
Other long-term receivables	8,019	2,486	-	10,505
Total noncurrent assets	<u>51,666</u>	<u>16,473</u>	<u>12,290</u>	<u>80,429</u>
Capital assets				
Land	14,818	-	-	14,818
Buildings, improvements and equipment	296,370	5,971	97,839	400,180
Total capital assets	<u>311,188</u>	<u>5,971</u>	<u>97,839</u>	<u>414,998</u>
Less accumulated depreciation				
Buildings, improvements and equipment	(91,306)	(4,219)	(22,362)	(117,887)
Accumulated depreciation	<u>(91,306)</u>	<u>(4,219)</u>	<u>(22,362)</u>	<u>(117,887)</u>
Net capital assets	<u>219,882</u>	<u>1,752</u>	<u>75,477</u>	<u>297,111</u>
Total noncurrent assets	<u>271,548</u>	<u>18,225</u>	<u>87,767</u>	<u>377,540</u>
Total assets	<u>434,683</u>	<u>50,003</u>	<u>123,655</u>	<u>608,341</u>
Deferred Outflow of Resources	1,581	-	-	\$ 1,581
Liabilities				
Current Liabilities				
Accounts payable and accrued expenses	23,835	47	1,297	25,179
Accrued payroll liabilities	-	-	1,243	1,243
Due to City of Houston	4,958	-	-	4,958
Contracts and retainages payable	-	-	2,139	2,139
Notes payable	7,840	-	-	7,840
Deferred revenue	737	-	69	806
Current liabilities payable from restricted assets				
Accrued interest payable	2,646	-	-	2,646
Total current liabilities	<u>40,016</u>	<u>47</u>	<u>4,748</u>	<u>44,811</u>
Noncurrent liabilities				
Notes payable	277,956	-	-	277,956
Other long-term liabilities	9,442	12	-	9,454
Deferred revenue	10,976	-	-	10,976
Total noncurrent liabilities	<u>298,374</u>	<u>12</u>	<u>-</u>	<u>298,386</u>
Total liabilities	<u>338,390</u>	<u>59</u>	<u>1,748</u>	<u>343,197</u>
Net position				
Net investment in capital assets	2,590	(1,741)	-	4,331
Restricted net position				
Restricted for debt service	14,997	-	-	14,997
Other restricted	-	-	31,755	31,755
Unrestricted (deficit)	80,287	48,203	87,132	215,642
Total net position (deficit)	<u>\$ 97,874</u>	<u>\$ 49,944</u>	<u>\$ 118,907</u>	<u>\$ 266,725</u>

CITY OF HOUSTON, TEXAS
DISCRETELY PRESENTED COMPONENT UNITS - BUSINESS-TYPE
Combining Statement of Activities
For the Year Ended June 30, 2014
amounts expressed in thousands

<u>Functions/Programs</u>	<u>Expenses</u>	<u>Charges for Services</u>	<u>Operating Grants and Contributions</u>
Component Units			
Houston First Corporation	122,170	181,098	-
Houston Housing Finance Corp.	1,249	365	4
Houston Zoo Inc.	34,705	28,647	20,737
Totals	<u>\$ 158,124</u>	<u>\$ 210,110</u>	<u>\$ 20,741</u>

General Revenues:

Taxes
 Property Taxes levied for general purposes/tax increments
 Unrestricted investment earnings
 Other
 Total general revenues and transfers
 Change in net position
 Net Position (deficit) beginning
 Change in Accounting Principle
 Net Position (deficit) ending

(Continued)

Net (Expense) Revenue and Change in Net Position

Houston First Corporation See Note 14	Houston Housing Finance Corp.	Houston Zoo, Inc.	Total
58,928	-	-	58,929
-	(880)	-	(880)
-	-	14,679	14,679
<u>58,928</u>	<u>(880)</u>	<u>14,679</u>	<u>72,728</u>
-	750	-	750
608	2,406	1,247	4,261
(23,791)	-	-	(23,791)
<u>(23,183)</u>	<u>3,156</u>	<u>1,247</u>	<u>(18,780)</u>
35,745	2,277	15,926	53,948
62,129	47,630	102,981	212,740
-	37	-	37
<u>\$ 97,874</u>	<u>\$ 49,944</u>	<u>\$ 118,907</u>	<u>\$ 266,725</u>

CITY OF HOUSTON, TEXAS
DISCRETELY PRESENTED COMPONENT UNITS - BUSINESS TYPE
Statement of Cash Flows
For the Year Ended June 30, 2014
amounts expressed in thousands

	Houston First Corporation <i>See Note 14</i>	Houston Housing Finance Corp.	Houston Zoo Inc.	Total Component Units
Cash flows from operating activities				
Receipts from customers	\$ 117,192	\$ 1,973	\$ 33,735	\$ 152,900
Payments to employees	(38,328)	-	(15,797)	(54,125)
Payments to suppliers	(62,036)	-	(18,645)	(80,681)
Other revenues	-	-	-	-
Receipts from City of Houston	60,246	-	8,859	69,105
Other revenues (expenses)	(37,334)	(1,003)	322	(38,015)
Net cash provided by operating activities	<u>39,740</u>	<u>970</u>	<u>8,474</u>	<u>49,184</u>
Cash flows from investing activities				
Advances on long-term receivables	(31,897)	(16,390)	-	(48,287)
Interest income on investments	(193)	8,137	-	7,944
Purchase of investments	(66,999)	-	(8,047)	(75,046)
Proceeds from sale of investments	49,970	-	5,153	55,123
Change in cash restricted for capital acquisition	-	-	-	-
Net cash provided by (used in) investing activities	<u>(49,119)</u>	<u>(8,253)</u>	<u>(2,894)</u>	<u>(60,266)</u>
Cash flows from capital and related financing activities				
Contributed capital	(1,420)	-	10,636	9,216
Acquisition of property, plant and equipment	(7,979)	-	(12,150)	(20,129)
Interest expense	(9,085)	-	-	(9,085)
Receipt of tax rebates	9,682	-	-	9,682
Payments to the City of Houston	(9,875)	-	-	(9,875)
Proceeds from sale of fixed assets	-	-	-	-
Proceeds from refunding	6,278	-	-	6,278
Net cash provided by (used for) capital and related financing activities	<u>(12,399)</u>	<u>-</u>	<u>(1,514)</u>	<u>(13,913)</u>
Cash flows from noncapital financing activities				
Promotional contract paid from hotel occupancy tax revenues to component units	-	-	-	-
Contributions to others	-	-	-	-
Transfers	-	-	-	-
Other revenues	-	1,846	-	1,846
Payments to Hotel Corporation	-	-	-	-
Hotel occupancy tax revenue	-	-	-	-
Contributions to others	-	-	-	-
Excess funds from Bond Series	31,897	-	-	31,897
Payments on notes payable	(1,232)	-	-	(1,232)
Net cash provided by noncapital financing activities	<u>30,665</u>	<u>1,846</u>	<u>-</u>	<u>32,511</u>
Net increase in cash and cash equivalents	8,887	(5,437)	4,066	7,516
Cash and cash equivalents, July 1	51,993	29,110	13,876	94,979
Cash and cash equivalents, June 30	<u>\$ 60,880</u>	<u>\$ 23,673</u>	<u>\$ 17,942</u>	<u>\$ 102,495</u>
Non cash transactions				
Amortization expense	-	-	-	-
Transfer of property - Urban Homesteading Program	-	-	-	-
Contributions	-	-	-	-
Capitalized interest expense	-	-	-	-
Gain (Loss) on disposal of assets	-	-	-	-
Total non cash transactions	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Reconciliation of operating income to net cash provided (used) by operating activities				
Operating income (Loss)	\$ 4,848	\$ 1,137	\$ 15,925	21,910
Adjustments to reconcile operating income to net cash provided by operating activities				
Depreciation and amortization	9,136	11	4,390	13,537
Bad debt expense	-	-	-	-
Other revenues	29,893	-	(634)	29,259
Other expenses	-	-	(10,826)	(10,826)
Net due from component unit	-	1	-	1
Changes in assets and liabilities:				
Contracts receivable				
Accounts receivable	1,682	45	304	2,031
Contracts receivable	(7,339)	-	(147)	(7,486)
Inventory	-	-	41	41
Other assets	(525)	-	(125)	(650)
Accounts payable and accrued expenses	1,809	-	(433)	1,376
Accrued payroll liabilities	874	-	(21)	853
Advances and deposits	-	-	-	-
Accrued interest on contracts payable	-	(224)	-	(224)
Other revenues				
Construction and retainages payable	(637)	-	-	(637)
Other long-term liabilities	-	-	-	-
Net cash provided by operating activities	<u>\$ 39,741</u>	<u>\$ 970</u>	<u>\$ 8,474</u>	<u>\$ 49,185</u>

Statistical Section (Unaudited)

This part of the City's Statistical comprehensive annual financial report presents detailed information as a context for understanding what the information in the financial statements, note disclosures, and required supplementary information says about the City's overall financial health.

<u>Content</u>	<u>Page</u>
Financial Trends	204
These schedules contain trend information to help the reader understand how the City's financial performance and well-being have changed over time.	
Revenue Capacity	216
These schedules contain information to help the reader assess the City's most significant local revenue source, the property tax.	
Debt Capacity	221
These schedules present information to help the reader assess the affordability of the City's current levels of outstanding debt and the City's ability to issue additional debt in the future.	
Demographic and Economic Information	231
These schedules offer demographic and economic indicators to help the reader understand the environment within which the City's financial activities take place.	
Operating Information	238
These schedules contain service and infrastructure data to help the reader understand how the information in the City's financial report relates to the services the City provides and the activities it performs.	

CITY OF HOUSTON, TEXAS
NET POSITION BY COMPONENT
Last Ten Fiscal Years
(accrual basis of accounting)
(amounts expressed in thousands)
(unaudited)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Governmental Activities										
Net investment in capital assets	\$ 3,531,764	\$ 3,340,355	\$ 3,480,924	\$ 3,515,596	\$ 3,670,130	\$ 3,677,425	\$ 3,696,510	\$ 3,783,152	\$ 3,959,260	\$ 4,102,861
Restricted	168,803	159,092	170,297	213,567	161,147	199,459	179,691	182,831	117,949	174,158
Unrestricted	(861,603)	(727,282)	(969,830)	(1,310,289)	(1,629,514)	(1,928,202)	(2,168,298)	(2,343,970)	(2,469,700)	(2,651,151)
Total governmental activities net position	\$ 2,838,964	\$ 2,772,165	\$ 2,681,391	\$ 2,418,874	\$ 2,201,763	\$ 1,948,682	\$ 1,707,903	\$ 1,622,013	\$ 1,607,509	\$ 1,625,868
Business-type activities										
Net investment in capital assets	\$ 1,138,154	\$ 976,834	\$ 745,459	\$ 551,820	\$ 668,465	\$ 893,832	\$ 733,936	\$ 666,936	\$ 573,460	\$ 240,888
Restricted	461,738	545,792	641,613	784,895	824,219	842,298	850,895	871,409	949,449	1,024,548
Unrestricted	87,494	99,666	104,542	135,860	(17,815)	(102,094)	25,183	(25,444)	(6,835)	280,879
Total business-type activities net position	\$ 1,687,386	\$ 1,622,292	\$ 1,491,614	\$ 1,472,575	\$ 1,474,869	\$ 1,634,036	\$ 1,610,014	\$ 1,512,901	\$ 1,516,074	\$ 1,546,315
Primary government										
Net investment in capital assets	\$ 4,669,918	\$ 4,317,189	\$ 4,226,383	\$ 4,067,416	\$ 4,338,595	\$ 4,571,257	\$ 4,430,446	\$ 4,450,088	\$ 4,532,720	\$ 4,343,749
Restricted	630,541	704,884	811,910	998,462	985,366	1,041,757	1,030,586	1,054,240	1,067,398	1,198,706
Unrestricted	(774,109)	(627,616)	(865,288)	(1,174,429)	(1,647,329)	(2,030,296)	(2,143,115)	(2,369,414)	(2,476,535)	(2,370,272)
Total primary government net position	\$ 4,526,350	\$ 4,394,457	\$ 4,173,005	\$ 3,891,449	\$ 3,676,632	\$ 3,582,718	\$ 3,317,917	\$ 3,134,914	\$ 3,123,583	\$ 3,172,183

CITY OF HOUSTON, TEXAS

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CITY OF HOUSTON, TEXAS
CHANGES IN NET POSITION
 Last Ten Fiscal Years
 (accrual basis of accounting)
 (amounts expressed in thousands)
 (unaudited)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Expenses										
Governmental activities:										
General government	\$ 143,477	\$ 130,807	\$ 130,026	\$ 193,928	\$ 219,584	\$ 232,466	\$ 230,868	\$ 270,279	\$ 239,586	\$ 247,481
Public safety	1,127,663	1,102,253	1,230,266	1,400,837	1,460,992	1,485,999	1,393,450	1,431,987	1,514,034	1,598,854
Public works	282,767	266,723	275,165	317,749	417,953	305,768	308,506	289,395	298,462	318,888
Health	124,267	102,716	101,865	129,197	136,766	139,693	128,320	111,891	121,988	133,159
Housing and community development	78,867	318,450	80,171	59,182	62,793	96,349	95,730	71,417	88,143	51,626
Parks and recreation	83,945	72,309	85,274	102,758	97,398	93,676	91,492	89,379	90,261	93,637
Library	49,084	37,242	39,180	49,687	48,015	48,721	44,887	42,455	44,913	48,724
Retiree benefits	28,997	-	-	-	-	-	-	-	-	-
Interest in long-term debt	116,180	136,563	135,134	126,349	129,324	151,807	150,640	157,407	151,893	143,231
Depreciation and amortization	96,355	125,517	111,918	110,174	115,050	119,719	130,111	126,303	130,620	132,817
Total governmental activities expenses	2,131,602	2,292,580	2,188,999	2,489,861	2,687,875	2,674,198	2,574,004	2,590,515	2,679,900	2,768,417
Business-type activities:										
Airport System	406,908	431,392	442,757	459,521	472,253	504,472	537,253	542,387	530,070	561,443
Convention & Entertainment Facilities	133,622	99,271	105,846	110,576	114,110	105,703	107,523	42,387	42,418	113,316
Combined Utility System	762,209	752,122	818,831	846,368	842,518	849,674	866,336	913,503	898,725	919,547
Houston Area Water Corporation	169	17,428	20,568	17,485	14,867	9,949	-	-	-	-
Parking Management	-	-	-	-	4,919	6,969	-	-	-	-
Total business-type activities expenses	1,302,908	1,300,213	1,388,002	1,433,950	1,448,667	1,476,767	1,511,112	1,498,277	1,471,213	1,594,306
Total primary government expenses	\$ 3,434,510	\$ 3,592,793	\$ 3,577,001	\$ 3,923,811	\$ 4,136,542	\$ 4,150,965	\$ 4,085,116	\$ 4,088,792	\$ 4,151,113	\$ 4,362,723
Program Revenues										
Governmental activities:										
Charges for services:										
General government	25,074	52,083	34,839	11,104	22,601	20,544	31,831	69,017	34,379	63,338
Public safety	139,814	103,719	110,222	131,221	136,450	143,274	132,220	141,965	139,087	188,521
Public works	43,652	49,797	53,856	53,375	46,404	45,011	45,211	171,177	238,836	266,422
Health	13,624	12,574	13,563	17,093	16,836	15,110	16,968	18,081	18,563	17,710
Housing	-	-	-	-	-	900	-	-	-	-
Parks and recreation	6,009	6,687	6,930	4,683	7,578	6,977	7,796	7,576	8,361	7,475
Library	1,187	1,010	675	1,035	1,056	1,261	919	979	1,356	1,681
Operating grants and contributions	162,310	467,956	246,737	232,203	393,157	346,945	293,350	303,085	312,959	277,700
Capital grants and contributions	37,591	69,438	101,099	76,497	45,354	109,190	68,801	-	-	-
Total governmental activities program revenues	429,261	763,264	567,921	527,211	669,436	689,212	597,096	711,880	753,541	822,847
Business-type activities:										
Charges for services:										
Airport System	353,641	393,861	416,138	447,176	386,777	406,579	410,402	417,550	432,994	452,107
Convention & Entertainment Facilities	19,175	19,599	20,554	22,306	20,902	31,833	25,456	8,934	10,372	11,124
Combined Utility System	598,874	642,662	615,465	648,269	687,238	691,162	879,176	917,238	924,690	953,408
Houston Area Water Corporation	-	-	-	13,045	13,250	-	-	-	-	-
Parking Management	-	-	-	-	-	13,676	-	-	-	-
Operating grants and contributions	4,297	4,020	2,740	4,749	4,574	10,710	22,858	12,014	10,834	10,692
Capital grants and contributions	106,484	109,728	61,717	132,728	192,815	58,672	46,616	22,984	19,800	50,382
Total business-type activities program revenues	1,082,471	1,169,870	1,116,614	1,268,273	1,305,556	1,212,632	1,384,508	1,378,720	1,398,690	1,477,713
Total primary government program revenues	\$ 1,511,732	\$ 1,933,134	\$ 1,684,535	\$ 1,795,484	\$ 1,974,992	\$ 1,901,844	\$ 1,981,604	\$ 2,090,600	\$ 2,152,231	\$ 2,300,560
Net (expense)/revenue										
Governmental activities	\$ (1,702,341)	\$ (1,529,316)	\$ (1,621,078)	\$ (1,962,650)	\$ (2,018,439)	\$ (1,984,986)	\$ (1,976,908)	\$ (1,878,635)	\$ (1,926,359)	\$ (1,945,570)
Business-type activities	(220,437)	(130,343)	(271,388)	(165,677)	(143,111)	(264,135)	(126,604)	(119,557)	(72,523)	(116,593)
Total primary government net expense	\$ (1,922,778)	\$ (1,659,659)	\$ (1,892,466)	\$ (2,128,327)	\$ (2,161,550)	\$ (2,249,121)	\$ (2,103,512)	\$ (1,998,192)	\$ (1,998,882)	\$ (2,062,163)

(Continued)

CITY OF HOUSTON, TEXAS
CHANGES IN NET POSITION
Last Ten Fiscal Years
(accrual basis of accounting)
(amounts expressed in thousands)
(unaudited)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
General Revenues and Other Changes in Net Position										
Governmental Activities:										
Taxes										
Property taxes	\$ 664,831	\$ 700,788	\$ 738,578	\$ 829,837	\$ 890,308	\$ 895,779	\$ 853,277	\$ 866,143	\$ 906,761	\$ 973,902
Industrial assessments tax	14,635	14,314	15,823	17,787	19,133	15,817	14,458	37	29,845	16,534
Sales taxes	370,583	422,598	461,417	495,173	507,103	468,965	492,824	546,543	600,256	629,441
Franchise taxes	162,263	186,508	189,551	190,518	190,800	191,292	190,911	193,153	195,664	190,368
Mixed beverage taxes	8,343	9,000	9,713	10,479	10,587	10,382	10,283	9,525	9,887	13,869
Bingo taxes	270	279	279	256	226	195	167	193	196	187
Investment earnings	13,179	19,889	32,017	36,516	30,087	16,673	6,666	8,944	1,086	9,737
Other	27,652	33,674	23,261	58,743	66,459	53,101	79,633	67,313	68,586	98,479
Contributions	11,216	-	-	-	17,947	7,666	4,674	12,167	26,767	17,364
Special Items - gain (loss) on sale of assets	2,071	4,816	2,071	-	-	-	-	-	-	-
Transfers	58,383	70,651	57,594	60,824	69,578	72,035	76,976	75,878	72,807	41,968
Total governmental activities	1,333,426	1,462,517	1,530,304	1,700,133	1,801,328	1,731,905	1,729,869	1,779,896	1,911,855	1,991,849
Business-type activities:										
Hotel occupancy taxes	42,266	54,765	58,709	66,232	62,383	54,917	61,603	68,623	76,325	90,119
Investment earnings	43,866	54,212	88,658	96,492	88,737	57,736	30,303	21,340	6,638	31,491
Other	30,138	26,923	45,552	44,738	63,863	105,462	92,172	98,017	109,906	143,775
Contributions	-	-	-	-	-	-	-	-	-	-
Special Items - gain (loss) on sale of assets	-	-	5,385	-	-	-	-	(89,658)	(61,282)	-
Transfers	(58,383)	(70,651)	(57,594)	(60,824)	(69,578)	(72,035)	(81,496)	(75,878)	(55,891)	(41,968)
Total business-type activities	57,887	65,249	140,710	146,638	145,405	146,080	102,582	22,444	75,696	223,417
Total primary government	\$ 1,391,313	\$ 1,527,766	\$ 1,671,014	\$ 1,846,771	\$ 1,946,733	\$ 1,877,985	\$ 1,832,451	\$ 1,802,340	\$ 1,987,551	\$ 2,215,266
Change in Net Position										
Governmental activities	\$ (368,915)	\$ (66,799)	\$ (90,774)	\$ (262,517)	\$ (217,111)	\$ (253,081)	\$ (247,039)	\$ (85,890)	\$ (14,504)	\$ 46,279
Business-type activities	(162,550)	(65,094)	(130,678)	(19,039)	2,294	(118,055)	(24,022)	(97,113)	3,173	106,824
Total primary government	\$ (531,465)	\$ (131,893)	\$ (221,452)	\$ (281,556)	\$ (214,817)	\$ (371,136)	\$ (271,061)	\$ (183,003)	\$ (11,331)	\$ 153,103

CITY OF HOUSTON, TEXAS
FUND BALANCES, GOVERNMENTAL FUNDS
Last Ten Fiscal Years
(modified accrual basis of accounting)
(amounts expressed in thousands)
(unaudited)

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
General fund					
Reserved	\$ 27,449	\$ 51,671	\$ 21,489	\$ 22,040	\$ 22,836
Unreserved	142,695	198,759	256,610	309,466	281,111
Non-spendable	-	-	-	-	-
Restricted	-	-	-	-	-
Committed	-	-	-	-	-
Assigned	-	-	-	-	-
Unassigned	-	-	-	-	-
Total general fund	<u>\$ 170,144</u>	<u>\$ 250,430</u>	<u>\$ 278,099</u>	<u>\$ 331,506</u>	<u>\$ 303,947</u>
All other governmental funds					
Reserved	\$ 200,374	\$ 179,267	\$ 193,924	\$ 235,074	\$ 201,334
Unreserved, reported in:					
Special revenue funds	67,691	66,407	94,056	119,482	111,454
Capital projects funds	-	-	-	-	-
Grant funds	-	9,963	8,258	7,553	(9,762)
Non-spendable	-	-	-	-	-
Restricted	-	-	-	-	-
Committed	-	-	-	-	-
Assigned	-	-	-	-	-
Total all other governmental funds	<u>\$ 268,065</u>	<u>\$ 255,637</u>	<u>\$ 296,238</u>	<u>\$ 362,109</u>	<u>\$ 303,026</u>

In 2011 the City implemented GASB Statement No. 54, which changed the fund balance classifications.

<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
\$ 23,003	\$ -	\$ -	\$ -	\$ -
201,019	-	-	-	-
-	19,052	15,687	14,792	14,016
-	1,665	35,868	63,696	44,120
-	20,698	8,547	6,892	3,407
-	30	-	-	-
-	127,143	153,125	190,950	200,731
<u>\$ 224,022</u>	<u>\$ 168,588</u>	<u>\$ 213,227</u>	<u>\$ 276,330</u>	<u>\$ 262,274</u>

\$ 237,112	\$ -	\$ -	\$ -	\$ -
82,713	-	-	-	-
-	-	-	-	-
19,196	-	-	-	-
-	418	887	1,303	5,290
-	176,457	338,997	350,827	327,576
-	73,636	52,351	59,693	71,969
-	32,172	19,873	46,008	106,607
<u>\$ 339,021</u>	<u>\$ 282,683</u>	<u>\$ 412,108</u>	<u>\$ 457,831</u>	<u>\$ 511,442</u>

CITY OF HOUSTON
GENERAL FUND BUDGET FOR FISCAL YEAR 2015
(amounts expressed in thousands)
(unaudited)

Budgeted Resources	Amount (in thousands)
Revenues:	
Ad Valorem Taxes (current and delinquent)	\$ 1,067,338
Sales and Use Tax	666,968
Franchise Fees	185,098
Municipal Courts Fines and Forfeits	31,308
Miscellaneous	227,560
Total Current Revenues	2,178,272
Beginning Fund Balance as of July 1, 2014 (a)	199,782
Sale of Capital Assets	2,500
Transfers from Other Funds	30,139
Total Budgeted Resources	\$ 2,410,693
Budgeted Expenditures	
Administrative Services and Public Finance	\$ 125,179
Public Safety	1,305,609
Development and Maintenance Services	157,377
Human and Cultural Services	180,085
General Government	218,120
Transfers to Debt Service Fund	273,000
Total Budgeted Expenditures	2,259,370
Budgeted Ending Fund Balance as of June 30, 2015	151,323
Total Budgeted Expenditures and Reserves	\$ 2,410,693

(a) This amount represents an estimate of the beginning fund balance which was used in preparing the Fiscal Year 2015 Budget.

CITY OF HOUSTON, TEXAS
June 30, 2014
CONTINUING DEBT DISCLOSURE INFORMATION
(amounts expressed in thousands)
(unaudited)

Capital Improvement Plan

The 2014-2018 CIP consists of the projects and facilities described in the following chart. (The 2014-2018 CIP also includes proposed improvements for the Combined Utility System, Airport System and Convention and Entertainment Facilities, which are financed primarily with revenues of those enterprise systems and, therefore, are not included in the table below).

	Amount (in thousands)
Streets, Bridges and Traffic Control	\$ 743,928
Storm Sewers and Drainage	411,734
Parks and Recreation	217,393
Police Department	74,885
Fire Department	48,676
General Government	16,482
Public Library	59,157
Public Health	77,706
Solid Waste Management	34,925
Homeless and Housing	99,216
Technology	67,536
Fleet	155,466
Equipment and Other	27,318
Total	\$ 2,034,422 (*)

(*) The tax-supported component of the 2014-2018 CIP addresses a full range of capital facility and infrastructure improvements. The voter authorized improvements are expected to be initially financed with Commercial Paper Notes. The remaining amount is expected to be funded by grants, funds from agencies participating in joint capital improvement projects with the City and various other sources.

General Fund Indirect Charges to Other City Funds

A charge is made by the General Fund to the Water and Sewer System, Airport System, and Convention and Entertainment Facilities Funds, and to certain grant and special revenue funds for indirect charges incurred by the General Fund on behalf of such funds.

Fiscal Year	Total Indirect Charges (in thousands)
2014	18,558
2013	16,908
2012	18,255
2011	16,323
2010	16,012
2009	13,190
2008	10,930

**CITY OF HOUSTON
CONTINUING DEBT DISCLOSURE INFORMATION**

**Long Term Disability and Compensated Absence Liability
(unaudited)**

Long-Term Disability Fund	Fiscal Year 2014 (in thousands)
Assets Available for Future Long-Term Disability Obligations	\$ 9,581
Claims Payable on Long-Term Disability Obligations	(8,104)
Unrestricted Net Assets	<u>\$ 1,477</u>

Compensated Absence Liability	Fiscal Year 2014 (in thousands)
General Fund Short-Term Liability	\$ 47,945
Other Governmental Short-Term Liability	90,507
Enterprise Funds Liability	32,389
Internal Service Funds Liability	445
Governmental Funds Long-Term Liability	314,447
Total	<u>\$ 485,733</u>

**General Fund Specific Charges to Other City Funds
(unaudited)**

An additional charge made by the General Fund to the Combined Utility System, Airport, Convention and Entertainment Facilities Funds, the Capital Projects Fund and certain other funds of the City for specific services provided to such funds by the General Fund.

Fiscal Year	Total Direct Charges for Specific Services (in thousands)
2014	43,257
2013	43,519
2012	41,469
2011	46,034
2010	46,906
2009	47,390
2008	41,395

CITY OF HOUSTON, TEXAS

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CITY OF HOUSTON, TEXAS
CHANGES IN FUND BALANCES IN GOVERNMENTAL FUNDS
Last Ten Fiscal Years
(modified accrual basis of accounting)
(amounts expressed in thousands)
(unaudited)

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Revenues					
Taxes	\$ 1,227,388	\$ 1,338,651	\$ 1,425,575	\$ 1,545,102	\$ 1,617,937
Licenses and permits	40,240	42,524	55,912	62,132	58,126
Intergovernmental	187,372	512,279	319,864	300,717	435,715
Charges for services	156,290	133,161	119,250	112,554	121,418
Fines	53,464	51,441	57,305	57,001	57,037
Investment earnings	13,179	19,889	32,017	36,516	30,087
Contributions	1,780	-	-	-	737
Other	30,445	34,971	23,555	55,535	62,714
Total revenues	<u>1,710,158</u>	<u>2,132,916</u>	<u>2,033,478</u>	<u>2,169,557</u>	<u>2,383,771</u>
Expenditures					
General Government	163,738	241,772	236,638	144,337	178,064
Public safety	907,201	1,012,747	1,088,922	1,107,522	1,221,713
Public Works	316,428	335,598	330,296	281,433	398,506
Health	104,389	97,237	96,063	108,830	123,421
Housing and Community Development	57,076	323,199	89,320	77,702	79,215
Parks and recreation	70,720	79,602	82,648	77,354	80,438
Library	39,273	39,570	48,842	36,555	39,248
Retiree benefits	28,997	42,203	18,801	18,506	18,463
Other Current Expenditures	-	-	-	-	-
Capital Outlay	39,396	61,606	57,337	332,655	372,472
Debt Service					
Principal	139,607	220,510	172,166	197,790	487,690
Interest	94,188	113,556	122,680	129,992	133,288
Fiscal agent and fees	3,316	6,302	4,661	3,700	8,949
Advanced refunding escrow	-	-	-	-	-
Total expenditures	<u>1,964,329</u>	<u>2,573,902</u>	<u>2,348,374</u>	<u>2,516,376</u>	<u>3,141,467</u>
Excess of revenues over (under) expenditures	(254,171)	(440,986)	(314,896)	(346,819)	(757,696)
Other financing sources (uses)					
Transfers in	278,743	337,127	339,549	396,660	462,793
Transfers out	(223,863)	(272,726)	(281,936)	(328,873)	(391,143)
Proceeds from issuance of debt	274,721	433,514	313,771	387,051	626,205
Proceeds from refunded debt	173,062	169,230	229,168	219,238	324,030
Payment to escrow agent	(183,566)	(181,652)	(241,612)	(225,740)	(355,885)
Sale of land	-	6,439	8,356	8,757	5,381
Bond premium (discount)	10,546	16,912	15,870	9,004	(327)
Transfer to component unit	-	-	-	-	-
Proceeds from capital lease	-	-	-	-	-
Total other financing sources (uses)	<u>329,643</u>	<u>508,844</u>	<u>383,166</u>	<u>466,097</u>	<u>671,054</u>
Net change in fund balances	<u>\$ 75,472</u>	<u>\$ 67,858</u>	<u>\$ 68,270</u>	<u>\$ 119,278</u>	<u>\$ (86,642)</u>
Debt service as a percentage of noncapital expenditures	12.1%	13.3%	12.9%	15.0%	22.4%

<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
\$ 1,579,516	\$ 1,568,056	\$ 1,615,592	\$ 1,745,882	\$ 1,826,639
55,275	61,083	84,786	97,100	111,577
403,519	379,065	351,472	366,973	333,832
124,790	132,764	248,083	248,097	267,635
60,036	55,414	52,250	47,955	46,647
16,673	6,666	8,944	1,086	9,737
20	-	20	-	-
55,599	72,126	72,180	70,001	98,189
<u>2,295,428</u>	<u>2,275,174</u>	<u>2,433,327</u>	<u>2,577,094</u>	<u>2,694,256</u>
197,803	198,782	209,318	217,376	233,216
1,244,163	1,230,623	1,212,975	1,267,523	1,355,369
285,517	288,383	275,260	284,863	304,346
126,968	119,192	102,304	111,986	122,446
100,712	96,792	75,204	88,222	51,252
78,717	75,560	73,233	75,430	77,557
38,711	36,715	34,115	35,433	38,421
18,897	15,996	10,360	11,907	10,920
-	-	-	-	-
396,877	309,315	272,161	245,410	289,026
186,251	192,000	346,600	138,875	176,205
146,986	154,083	161,086	158,322	154,327
6,599	7,792	10,161	6,212	4,528
-	-	-	-	-
<u>2,828,201</u>	<u>2,725,233</u>	<u>2,782,777</u>	<u>2,641,559</u>	<u>2,817,613</u>
(532,773)	(450,059)	(349,450)	(64,465)	(123,357)
436,908	406,201	422,470	505,513	549,184
(364,873)	(329,225)	(346,592)	(449,222)	(507,217)
926,780	740,696	806,685	438,276	119,000
-	-	-	-	-
(553,230)	(535,960)	(458,052)	(395,227)	(519)
9,092	21,054	4,844	5,818	2,464
34,166	35,521	81,310	51,617	-
-	-	12,849	16,516	-
-	-	-	-	-
<u>488,843</u>	<u>358,287</u>	<u>523,514</u>	<u>173,291</u>	<u>162,912</u>
<u>\$ (43,930)</u>	<u>\$ (111,772)</u>	<u>\$ 174,064</u>	<u>\$ 108,826</u>	<u>\$ 39,555</u>
13.7%	14.3%	20.2%	12.4%	13.1%

CITY OF HOUSTON, TEXAS
TAX REVENUE BY SOURCE - GOVERNMENTAL FUNDS
Last Ten Fiscal Years
(accrual basis of accounting)
(amounts expressed in thousands)
(unaudited)

Fiscal Year	Property Tax	Sales Tax	Franchise Tax	Industrial Assessments	Mixed Beverage Tax	Bingo Tax	Total Tax Collections
2005	\$ 664,831	\$ 370,583	\$ 162,263	\$ 14,635	\$ 8,343	\$ 270	\$ 1,220,925
2006	\$ 700,788	\$ 422,598	\$ 186,508	\$ 14,314	\$ 9,000	\$ 279	\$ 1,333,487
2007	\$ 738,578	\$ 461,417	\$ 189,551	\$ 15,823	\$ 9,713	\$ 279	\$ 1,415,361
2008	\$ 829,837	\$ 495,173	\$ 190,518	\$ 17,787	\$ 10,479	\$ 256	\$ 1,544,050
2009	\$ 890,308	\$ 507,103	\$ 190,800	\$ 19,133	\$ 10,587	\$ 226	\$ 1,618,157
2010	\$ 895,779	\$ 468,965	\$ 191,292	\$ 15,817	\$ 10,382	\$ 195	\$ 1,582,430
2011	\$ 853,277	\$ 492,824	\$ 190,911	\$ 14,458	\$ 10,283	\$ 167	\$ 1,561,920
2012	\$ 866,143	\$ 546,543	\$ 193,153	\$ 37	\$ 9,525	\$ 193	\$ 1,615,594
2013	\$ 906,761	\$ 600,256	\$ 195,664	\$ 29,845	\$ 9,887	\$ 196	\$ 1,742,609
2014	\$ 973,902	\$ 629,441	\$ 190,368	\$ 16,534	\$ 13,869	\$ 187	\$ 1,824,301

CITY OF HOUSTON
ASSESSED VALUE AND ESTIMATED VALUE OF TAXABLE PROPERTY
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)

<u>Fiscal Year</u>	<u>Residential Property</u>	<u>Commercial Property</u>	<u>Industrial Property</u>	<u>Personal Property</u>	<u>Less: Tax Exempt Property</u>	<u>Total Taxable Assessed Value</u>	<u>Total Direct Tax Rate</u>
2005	\$ 67,298,102	\$ 44,051,724	\$ 7,923,377	\$ 2,532,851	\$ 15,924,828	\$ 105,881,226	6.5000
2006	\$ 71,997,166	\$ 60,214,783	\$ 8,149,890	\$ 2,023,823	\$ 31,298,860	\$ 111,086,802	6.4750
2007	\$ 76,997,953	\$ 65,711,310	\$ 9,198,065	\$ 2,568,995	\$ 33,880,872	\$ 120,595,451	6.4500
2008	\$ 84,322,788	\$ 75,245,892	\$ 11,740,472	\$ 2,515,631	\$ 38,060,662	\$ 135,764,121	6.4375
2009	\$ 90,065,098	\$ 88,374,034	\$ 12,148,055	\$ 2,380,333	\$ 44,198,187	\$ 148,769,333	6.3875
2010	\$ 91,451,713	\$ 89,110,300	\$ 12,911,034	\$ 2,344,315	\$ 46,805,799	\$ 149,011,563	6.3875
2011	\$ 89,957,336	\$ 84,250,876	\$ 11,500,552	\$ 2,276,946	\$ 46,201,271	\$ 141,784,439	6.3875
2012	\$ 90,484,912	\$ 86,617,837	\$ 11,826,503	\$ 2,159,964	\$ 47,104,376	\$ 143,984,840	6.3875
2013	\$ 91,402,063	\$ 93,629,148	\$ 14,232,884	\$ 2,143,660	\$ 50,417,778	\$ 150,989,977	6.3875
2014	\$ 96,665,925	\$ 103,323,330	\$ 17,601,808	\$ 2,341,556	\$ 52,006,243	\$ 167,926,376	6.3108

The tax rates are based on a 100% assessment ratio. Tax rates are stated per \$1,000 assessed value.

CITY OF HOUSTON, TEXAS
DIRECT AND OVERLAPPING PROPERTY TAX RATES
Last Ten Fiscal Years
(unaudited)

Purpose	2014	2013	2012	2011	2010
City					
General Purposes	4.74635	4.6221	4.8071	4.6336	4.5728
Debt Service	<u>1.56445</u>	<u>1.7654</u>	<u>1.5804</u>	<u>1.7539</u>	<u>1.8147</u>
City of Houston (1)	6.31080	6.3875	6.3875	6.3875	6.3875
County					
Fort Bend County	4.9976	4.9976	4.9976	4.9976	5.0660
Harris County (2)	4.4300	4.2830	4.1926	4.1728	4.2146
Montgomery County	4.8380	4.8380	4.8380	4.8380	4.8380
School District					
Aldine I.S.D.	13.0580	13.2839	13.2839	13.0054	13.0054
Alief I.S.D.	12.9000	13.2000	13.3000	13.4000	13.4000
Clear Creek I.S.D.	14.0000	13.6000	13.6000	13.6000	13.6000
Conroe I.S.D.	12.9000	12.9500	12.9500	12.9500	12.8500
Crosby I.S.D.	16.7000	14.4000	14.4000	14.4000	14.4000
Cypress-Fairbanks I.S.D.	14.5000	14.5000	14.3000	14.3000	14.1000
Deer Park I.S.D.	15.5670	15.2670	13.9670	13.9670	13.6670
Fort Bend I. S. D.	13.4000	13.4000	13.4000	12.7000	12.7000
Galena Park I.S.D.	15.1340	15.1340	15.1340	15.1340	14.7840
Goose Creek I.S.D.	13.3213	13.3213	13.3213	13.0213	12.8213
Houston I.S.D.	11.5670	11.5670	11.5670	11.5670	11.5670
Huffman I.S.D.	14.2000	14.4500	14.7000	14.7000	14.7000
Humble I.S.D.	15.2000	15.2000	15.2000	15.2000	15.2000
Katy I.S.D.	15.2660	15.2660	15.2660	15.2660	15.2660
Klein I.S.D.	14.3000	14.4000	14.3000	14.1000	13.6000
New Caney I.S.D.	15.4000	15.4000	15.4000	15.4000	14.8000
North Forest I.S.D. (3)			14.6929	13.7000	13.5000
Pasadena I.S.D.	13.5000	13.5000	13.5000	13.5000	13.5000
Sheldon I.S.D.	14.3000	14.3000	14.3000	14.3000	14.3000
Spring I.S.D.	15.7000	15.7000	15.7000	14.6000	14.6000
Spring Branch I.S.D.	13.9450	13.9450	13.9450	13.9450	13.9450
Municipal Utility District					
Harris County MUD # 355	2.0000	2.3500	2.3500	2.5500	2.9500
Harris County MUD # 359	3.0000	3.0500	3.0500	3.0500	2.9500
Harris County MUD # 366	2.5000	2.5000	2.5000	2.5000	2.5000
Harris County MUD # 372	1.9000	1.9000	1.9000	1.9000	1.9000
Harris County MUD # 390	7.0000	7.0000	7.0000	7.0000	7.0000
Harris County MUD # 450	7.6125	7.6125	7.7125	7.6125	7.6125
Northwood MUD #1	12.5000	12.5000	12.5000	12.5000	12.5000
Other Jurisdictions					
Clear Lake City Water Authority	2.8000	2.8000	2.8000	2.8000	2.8000
Fort Bend Parkway Road	(4)	0.5443	0.5443	0.5443	0.5443
Harris County Dept. of Education	0.0636	0.0658	0.0658	0.0658	0.0605
Houston Community College	0.2012	0.1750	0.1382	0.9222	0.9222
Lee College District	2.6070	2.4100	2.5200	2.5200	2.2120
Lone Star College System	1.1600	1.2100	1.2100	1.1760	1.1010
Harris County Port of Houston Authority	0.1716	0.1952	0.1856	0.2054	0.1636
San Jacinto Jr. College	1.8560	1.8560	1.8560	1.7628	1.7080

(1) The tax rates are based on a 100% assessment ratio. Tax rates are stated per \$1,000 assessed value.

(2) Harris County includes the Harris County Flood Control District and the Harris County Toll Road.

The Toll Road rate is zero.

(3) North Forest I.S.D. was closed and merged with Houston I.S.D.

(4) Debt has been paid off.

2009	2008	2007	2006	2005
4.5460	4.6198	4.5927	4.6359	4.6573
1.8415	1.8178	1.8573	1.8391	1.8427
6.3875	6.4375	6.4500	6.4750	6.5000
4.9976	5.1674	5.1674	5.1674	5.2374
3.8923	3.9239	4.3480	4.3308	7.6340
4.8380	4.8880	4.9130	4.9630	4.9630
12.9200	12.7700	16.0400	17.0900	16.8900
13.4000	15.9000	15.9000	17.2000	16.9000
13.6000	13.2000	16.3000	16.3000	17.4500
12.7000	12.4000	15.9000	17.6000	17.3250
13.4000	10.4000	18.0800	18.7000	18.8000
13.5000	13.2400	16.5400	18.0000	17.9000
13.3670	13.1765	16.6230	18.0550	18.0550
12.7000	12.5000	15.4000	17.0750	17.0750
14.5590	14.3090	14.3090	18.1500	17.9500
12.8213	13.0196	15.9562	17.2750	16.8371
15.9900	15.9900	15.9900	15.9900	15.9900
14.7000	13.8000	16.0000	17.5500	18.5000
15.2000	13.1000	16.4000	17.7000	17.4000
15.2660	15.2700	18.1500	20.0000	20.0000
13.1000	12.6000	15.8000	17.0000	17.0000
14.4000	14.4000	14.1500	17.9000	17.7000
13.1434	12.3670	17.1250	17.1250	17.4440
14.3000	13.5000	16.9000	17.7500	17.7500
14.3000	14.3000	16.3400	17.5000	17.4600
14.6000	14.4000	17.1000	17.1000	18.7000
13.8250	12.8500	16.3150	18.1000	18.1000
3.0000	3.1000	3.7000	3.8000	4.0000
2.8500	2.7000	3.0000	3.2500	3.7000
2.5000	3.2000	3.5000	4.4000	5.0000
No data	No data	No data	No data	No data
7.0000	7.0000	7.0000	7.0000	7.0000
No data	No data	No data	No data	No data
12.5000	12.5000	12.5000	12.5000	12.5000
2.8000	2.8000	2.9000	2.9000	2.9000
0.5443	0.4153	0.4153	0.4153	1.1448
0.0585	0.0585	0.0629	0.0629	0.0629
0.1493	0.1493	0.8133	0.8133	0.8133
2.0677	2.0677	2.0228	2.0677	2.0813
1.1440	1.1440	1.1670	1.2070	1.1450
0.1437	0.1437	0.1302	0.1474	0.1673
1.4536	1.4536	1.4536	1.3913	1.3913

CITY OF HOUSTON, TEXAS
PRINCIPAL PROPERTY TAXPAYERS
June 30, 2014
Current Year and Nine Years Ago
(amounts expressed in thousands)
(unaudited)

Taxpayer	2014			2005		
	Taxable Assessed Value	Rank	Percentage of Total Taxable Assessed Value	Taxable Assessed Value	Rank	Percentage of Total Taxable Assessed Value
Centerpoint Energy, Inc. (Reliant H L & P)	\$ 1,654,700	1	0.99%	\$ 1,527,791	1	1.44%
Chevron Chemical Company	1,013,970	2	0.60%	307,238	7	0.29%
Crescent HC Investors LP	776,216	3	0.46%	868,962	2	0.82%
Shell Oil Company	770,380	4	0.46%			
United Airlines, Inc.	714,957	5	0.43%			
Busycon Properties LLC	536,990	6	0.32%			
1000 Louisiana LP	504,064	7	0.30%			
Texas Tower Ltd	499,469	8	0.30%			
Amoco Chemical Company	497,306	9	0.30%			
HG Galleria I II III, LP	475,504	10	0.28%	266,443	10	0.25%
Hines Interests Ltd Partnership				851,876	3	0.80%
Southwestern Bell				689,507	4	0.65%
Anheuser Busch, Inc.				473,881	5	0.45%
Trizecahn Allen Center LP				415,503	6	0.39%
Lyondell-Citgo Refining L.P.				305,048	8	0.29%
Continental Airlines, Inc.				302,384	9	0.29%
Total	\$ 7,443,556		4.44%	\$ 6,008,633		5.67%

CITY OF HOUSTON
TAX SUPPORTED DEBT SERVICE FUNDS
(amounts expressed in thousands)
(unaudited)

Tax Bond Debt Service Fund for Fiscal Year 2015^(a)

	<u>Amount</u> <u>(in thousands)</u>
Budgeted Resources	
Beginning Fund Balance Estimate as of July 1, 2014	\$ 154,506
Interest Earnings on Debt Reserves and Bond Funds	-
Transfers in from:	
General Fund	273,000
Combined Utility System Operating Fund	26,190
Other sources	25,047
Third Party Reimbursements	3,600
Total Budgeted Resources	<u>\$ 482,343</u>
Budgeted Expenditures	
Debt Service Requirements	
Tax Bonds	\$ 337,756
Commercial Paper Paid from Third Party Reimbursements	
Miscellaneous	-
Total Budgeted Expenditures	<u>337,756</u>
Budgeted Ending Fund Balance as of June 30, 2014	<u>144,587</u>
Total Budgeted Expenditures and Reserves	<u>\$ 482,343</u>

(a) This fund includes the debt service for the City's Tax Bonds, Pension Obligations, and Commercial Paper Notes.

CITY OF HOUSTON
RATIOS OF OUTSTANDING DEBT BY TYPE
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)

Fiscal Year	Governmental Activities				Business-type Activities				Total Primary Government	Percentage of Personal Income	Per Capita (a)
	General Obligation Bonds	Capital Leases	Notes and Loans	Other Borrowings	Combined Utility System Revenue Bonds	Houston Airport System Revenue Bonds	Convention & Entertainment Revenue Bonds	Long-Term Contracts			
2005	\$ 2,415,988	\$ 51,253	\$ -	\$ 23,395	\$ 4,451,525	\$ 2,279,443	\$ 671,094	\$ 266,799	\$ 10,159,497	23.22%	\$ 5,038
2006	\$ 2,694,363	\$ -	\$ -	\$ 21,880	\$ 4,695,148	\$ 2,260,462	\$ 665,402	\$ 248,368	\$ 10,585,623	22.14%	\$ 5,099
2007	\$ 2,851,948	\$ -	\$ -	\$ 20,200	\$ 5,022,310	\$ 2,266,018	\$ 672,091	\$ 231,710	\$ 11,064,277	21.02%	\$ 5,329
2008	\$ 3,057,921	\$ -	\$ -	\$ 15,060	\$ 5,227,465	\$ 2,263,676	\$ 671,848	\$ 211,016	\$ 11,446,986	21.08%	\$ 5,513
2009	\$ 3,179,667	\$ -	\$ -	\$ 13,315	\$ 5,545,291	\$ 2,193,246	\$ 663,154	\$ 221,260	\$ 11,815,933	20.44%	\$ 5,691
2010	\$ 3,395,560	\$ -	\$ -	\$ 10,010	\$ 5,715,279	\$ 2,506,253	\$ 652,052	\$ 178,844	\$ 12,457,998	24.01%	\$ 6,000
2011	\$ 3,430,179	\$ -	\$ -	\$ 7,830	\$ 5,932,169	\$ 2,449,485	\$ 638,733	\$ 170,937	\$ 12,629,333	Not available	\$ 6,083
2012	\$ 3,506,196	\$ -	\$ -	\$ 7,103	\$ 5,411,031	\$ 2,316,620	\$ 490,615	\$ 149,121	\$ 11,880,686	Not available	\$ 5,722
2013	\$ 3,433,140	\$ -	\$ 11,135	\$ 6,458	\$ 5,751,435	\$ 2,267,715	\$ 463,364	\$ 135,121	\$ 12,068,368	Not available	\$ 5,585
2014	\$ 3,419,990	\$ -	\$ 11,629	\$ 5,813	\$ 6,041,391	\$ 2,230,851	\$ 483,034	\$ 122,048	\$ 12,128,574	Not available	\$ 5,777

Note: Details regarding the City's outstanding debt can be found in the notes to the financial statements.

(a) See the Schedule of Demographic and Economic Statistics on page 231 for personal income and population data.

CITY OF HOUSTON, TEXAS
RATIOS OF GENERAL BONDED DEBT OUTSTANDING
Last Ten Fiscal Years
(amounts expressed in thousands, except per capita amount)
(unaudited)

<u>Fiscal Year</u>	<u>General Obligation Bonds</u>	<u>Less: Amounts Available in Debt Service Fund</u>	<u>Total</u>	<u>Percentage of Estimated Actual Taxable Value (1) of Property</u>	<u>Per Capita (2)</u>
2005	\$ 2,415,988	\$ 106,864	\$ 2,309,124	2.18%	\$ 1,145
2006	\$ 2,694,363	\$ 110,824	\$ 2,583,539	2.33%	\$ 1,244
2007	\$ 2,851,948	\$ 109,661	\$ 2,742,287	2.27%	\$ 1,279
2008	\$ 3,057,921	\$ 131,477	\$ 2,926,444	2.16%	\$ 1,325
2009	\$ 3,179,667	\$ 161,414	\$ 3,018,253	2.03%	\$ 1,346
2010	\$ 3,395,560	\$ 181,958	\$ 3,213,602	2.16%	\$ 1,433
2011	\$ 3,430,179	\$ 143,287	\$ 3,286,892	2.32%	\$ 1,455
2012	\$ 3,506,196	\$ 148,174	\$ 3,358,022	2.33%	\$ 1,565
2013	\$ 3,444,275	\$ 156,554	\$ 3,287,721	2.18%	\$ 1,522
2014	\$ 3,431,619	\$ 134,525	\$ 3,297,094	1.96%	\$ 1,566

Note: Details regarding the City's outstanding debt can be found in the notes to the financial statements.

1. See the schedule of Assessed Value and Estimated Actual Value of Taxable Property on page 217 for property value data.
2. Population data can be found in the Schedule of Demographic and Economic Statistics on page 231.

CITY OF HOUSTON, TEXAS
COMPUTATION OF DIRECT AND OVERLAPPING DEBT
June 30, 2014
(amounts expressed in thousands)
(unaudited)

	Net Direct Debt		% of Debt Applicable to Houston	City of Houston Share of Debt
	Amount	As of		
City				
City of Houston - direct	\$ 3,297,094	06/30/14	100.00%	\$ 3,297,094
County				
Fort Bend County	319,938	06/30/14	1.92%	6,143
Harris County (including Toll Road Bonds)	1,935,528	06/30/14	53.18%	1,029,314
Harris County Flood Control	628,042	06/30/14	53.18%	333,993
Montgomery County	413,260	06/30/14	1.19%	4,918
School District				
Aldine I.S.D.	367,435	06/30/14	48.54%	178,353
Alief I.S.D.	184,529	08/31/13	77.19%	142,438
Clear Creek I.S.D.	743,959	06/30/14	47.32%	352,041
Conroe I.S.D.	932,571	08/31/13	0.00%	0
Crosby I.S.D.	113,991	06/30/14	0.23%	262
Cypress-Fairbanks I.S.D.	1,793,340	06/30/14	11.25%	201,751
Deer Park I.S.D.	371,763	06/30/14	0.12%	446
Fort Bend I.S.D.	903,483	06/30/14	1.89%	17,076
Galena Park I.S.D.	199,677	08/31/13	13.49%	26,936
Houston I.S.D.	2,356,214	06/30/14	90.95%	2,142,977
Huffman I.S.D.	45,113	06/30/14	26.02%	11,738
Humble I.S.D.	573,755	06/30/14	43.25%	248,149
Katy I.S.D.	1,199,581	08/31/13	19.16%	229,840
Klein I.S.D.	760,103	07/14/14	1.26%	9,577
New Caney I.S.D.	269,764	06/30/14	18.28%	49,313
Pasadena I.S.D.	543,845	06/30/14	41.35%	224,880
Sheldon I.S.D.	124,171	06/30/14	0.44%	546
Spring I.S.D.	562,549	06/30/14	1.67%	9,395
Spring Branch I.S.D.	719,859	06/30/14	70.46%	507,213
Municipal Utility District				
Harris County MUD 355	9,012	06/30/14	99.08%	8,929
Harris County MUD 359	7,611	06/30/14	100.00%	7,611
Harris County MUD 366	0	06/30/14	89.27%	0
Harris County MUD 372	9,917	08/31/13	100.00%	9,917
Harris County MUD 390	16,442	06/30/14	100.00%	16,442
Harris County MUD 450	7,596	06/09/14	100.00%	7,596
Northwood MUD # 1	2,255	09/29/14	100.00%	2,255
Other Jurisdictions				
Clear Lake City Water Authority	76,178	05/31/14	68.69%	52,327
Harris County Dept. of Education	0	06/30/14	53.18%	0
Houston Community College	661,385	08/31/14	90.86%	600,934
Lee College District	50,235	07/23/14	0.00%	0
Lone Star College System	440,860	06/30/14	11.64%	51,316
Port of Houston Authority	682,830	06/30/14	53.18%	363,129
San Jacinto Jr. College	288,045	06/30/14	15.44%	44,474
Total overlapping debt	18,314,836			6,892,229
Total direct and overlapping debt	\$ 21,611,930			\$ 10,189,323

The net direct debt amounts above, except for that which relates to the City of Houston, were provided by the individual government entities or the Municipal Advisory Council of Texas (MACTx). The percentage of debt applicable to the City was provided by MACTx. Net Direct Debt is equal to the outstanding principal amount less sinking fund balances.

The percentage of overlapping debt applicable is estimated using (market or taxable) assessed property values. Applicable percentages were estimated by determining the portion of the overlapping government's (market or taxable) assessed value that is within the overlapping jurisdiction's boundaries and dividing it by the overlapping jurisdiction's total (market or taxable) assessed value.

City of Houston, Texas
AD VALOREM TAX LEVIES AND COLLECTIONS
(amounts expressed in thousands)
(unaudited)

Fiscal Year	Tax Rate ^(a)			Net	Current	Prior Years'	Total	Total
	General	Debt		Current Year	Collections	Delinquent	Collection ^{(c) (d) (e)}	Collections
	Purposes	Service	Total	Tax Levy ^{(b) (d)}	Prior to End of	Collections ^(e)	(in thousands)	Percentage
				(in thousands)	Fiscal Year ^{(c) (d) (e)}	(in thousands)	(in thousands)	of Net Lev ^(d)
2006	0.46359	0.18391	0.64750	719,287	688,486	31,718	720,204	100.1
2007	0.45927	0.18573	0.64500	777,841	751,882	36,007	787,889	101.3
2008	0.46198	0.18178	0.64375	874,230	845,817	34,772	880,589	100.7
2009	0.45460	0.18415	0.63875	961,059	926,956	32,395	959,351	99.8
2010	0.45728	0.18147	0.63875	960,083	932,952	23,672	956,624	99.6
2011	0.46336	0.17539	0.63875	912,808	891,910	27,684	919,594	100.7
2012	0.48071	0.15804	0.63875	927,886	907,472	24,177	931,649	100.4
2013	0.46221	0.17654	0.63875	970,157	949,784	30,555	980,339	101.0
2014	0.47709	0.16166	0.63875	1,071,503	1,053,287	25,100	1,078,387	100.6
2015	0.47464	0.15644	0.63108	1,172,951	1,145,974	25,078	1,171,052	99.8

- (a) The Texas Constitution limits the maximum ad valorem tax rate to \$2.50 per \$100 of assessed valuation for home-rule cities such as the City; however, for a discussion of the more restrictive City Charter Limitations, see "PROPERTY TAXES – City Charter Tax and Revenue Limitations."
- (b) The figures represent net adjusted levies, including the late certification and correction rolls from the Appraisal District, through June 30 of each Fiscal Year, except for Fiscal Year 2015, which is as of August 15, 2014.
- (c) These amounts do not include revenues from various types of Industrial District Contracts entered into by the City with industrial property owners outside of the City's corporate limits totaled \$0.00 million in Fiscal Year 2014. Such Industrial District Contracts have a term of fifteen years (currently scheduled to terminate in Tax Year 2027) and allow property owners to make payments to the City in lieu of paying ad valorem taxes.
- (d) Includes all ad valorem tax receipts received by the City, including tax increment revenues that are deposited into special funds designated for various tax increment reinvestment zones. By virtue of contracts among the City, the Zones and the local government corporations that manage the zones, the tax increments are transferred to the respective local government corporation and are available to fund authorized projects in the Zone and to be pledged to obligations issued by the local government corporation on behalf of the Zone. Bonds and other obligations issued by the local government are not debt of the City. In Fiscal Year 2015, the City has budgeted approximately \$100 million of tax increments to be transferred to special funds for such zones, as required by State law, of which approximately \$8 million will be transferred back to the City for affordable housing projects and an administrative fee attributable to development in such Zones. Much of the tax increments transferred to the zones are used to promote economic developments through the acquisition and construction of public improvements to spur development in certain areas of the City. Additionally, the zones provide affordable housing and funds for certain City capital improvement projects.
- (e) The City's Fiscal Year 2015 Budget includes a proposed tax rate of \$0.63108 (per \$100 assessed valuation) for Tax Year 2014 (Fiscal Year 2015). The City Charter provides that, in preparing the City's budget, provision shall first be made for the payment of debt service on the City's outstanding bond indebtedness, with the remaining revenues to be apportioned among the City's respective departments.

City of Houston, Texas
AD VALOREM TAX OBLIGATION PERCENTAGES
(amounts expressed in thousands)
(unaudited)

<u>Tax Year</u>	<u>Fiscal Year</u>	<u>Tax-Supported Debt at December 31 (in thousands)^(a)</u>	<u>Tax Roll^(a) (in thousands)</u>	<u>Tax-Supported Debt as a Percentage of Tax Roll</u>	<u>Tax-Supported Per Capita Debt^(b)</u>	<u>Debt Service Requirement Payable from Taxes^{(c)(d)} (in thousands)</u>	<u>Tax Levy for Debt Service (in thousands)^(e)</u>
2004	2005	2,432,724	105,881,225	2.30%	1,181	233,354	188,000
2005	2006	2,644,366	111,225,839	2.38%	1,274	248,105	195,000
2006	2007	2,833,037	120,595,451	2.35%	1,306	262,523	209,000
2007	2008	3,016,248	135,764,121	2.22%	1,365	279,277	229,600
2008	2009	3,174,023	149,627,515	2.12%	1,418	254,513	251,700
2009	2010	3,324,065	150,270,904	2.21%	1,472	308,113	254,600
2010	2011	3,440,075	142,964,244	2.41%	1,639	342,966	232,545
2011	2012	3,471,590	145,042,978	2.39%	1,617	297,923	229,700
2012	2013	3,469,360	152,801,703	2.27%	1,613	300,124	241,100
2013	2014	3,392,510	167,460,662	2.03%	1,545	304,267	243,813

(a) With the exception of Tax Year 2011, the tax roll represents the total appraised value of property, after subtracting all exemptions, and reflects all adjustments made by the Appraisal Districts as of June 30 of each Fiscal Year. The Tax Year 2013 amount represents the Appraisal Districts' estimate of certified taxable valuations based on tax rolls available as of July 11, 2014. As of July 11, 2014, the total assessed value for Tax Year 2013 (including exempt property values) was approximately \$22.1 billion, which is the appraised value used to determine the statutory limitation of approximately \$22 billion relating to total bond indebtedness.

(b) Per capita figures are based on population estimates according to the U.S. Census Bureau.

(c) These amounts have not been reduced by the combined ending fund balances in the General Debt Service Fund.

(d) These amounts include principal and interest payments for Tax Obligations, except it only includes interest for Commercial Paper Notes at an assumed rate appropriate for each Fiscal Year.

(e) Sources of funds for the general obligation debt service requirement include the tax levy and transfers from Enterprise and Special Revenue Funds.

(f) Information as reported in the City's Monthly Operations and Financial Report dated as of December 31 of each Fiscal Year.

CITY OF HOUSTON, TEXAS

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CITY OF HOUSTON, TEXAS
COMPUTATION OF LEGAL DEBT MARGIN
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)

LEGAL DEBT MARGIN CALCULATION AT JUNE 30, 2014

Assessed Value (1)	\$ 219,622,778
Debt Limit (10% of assessed value)	\$ 21,962,278
Debt applicable to limit:	
Public Improvement Bonds	2,422,445
Pension Obligations	535,353
Commercial Paper - General Obligation	257,350
Tax and Revenue Certificates of Obligation	18,660
Total net debt applicable to limit	<u>\$ 3,233,808</u>
Legal debt margin	\$ 18,728,470

HISTORICAL LEGAL DEBT LIMITATION

	2005	2006	2007
Legal debt limitation, 10% of assessed value(2)	\$ 12,180,606	\$ 14,238,567	\$ 15,447,632
Total net debt applicable to margin	<u>2,462,578</u>	<u>2,732,439</u>	<u>2,877,360</u>
Legal debt margin	<u>\$ 9,718,028</u>	<u>\$ 11,506,128</u>	<u>\$ 12,570,272</u>
Total net debt applicable to the limit as a percentage of debt limit	20%	19%	19%

(1) Assessed Value for the 2013 tax year (fiscal year 2014) is based on the appraised value of property prior to any deductions for exemptions. The Assessed Value is derived from the certified valuations provided by the Harris County Appraisal District as of July 2014.

(2) See Vernon's Annotated Civil Statutes, Article 835p, Section 1 and 2.

2008	2009	2010	2011	2012	2013	2014
\$ 17,382,478	\$ 19,296,752	\$ 19,581,736	\$ 18,798,571	\$ 19,108,922	\$ 20,140,168	\$ 21,962,278
3,078,103	3,109,000	3,300,878	3,322,128	3,367,313	3,291,013	3,233,808
<u>\$ 14,304,375</u>	<u>\$ 16,187,752</u>	<u>\$ 16,280,858</u>	<u>\$ 15,476,443</u>	<u>\$ 15,741,609</u>	<u>\$ 16,849,155</u>	<u>\$ 18,728,470</u>
18%	16%	17%	18%	18%	16%	15%

CITY OF HOUSTON, TEXAS
PLEDGED - REVENUE COVERAGE
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)

Fiscal Year	Airport System Bonds ⁽¹⁾						Coverage
	Operating & Non-Operating Revenues ⁽²⁾	Less: Operating Expenses	Net Pledged Revenue	Debt Service		Less Grants Available for Debt Service ⁽³⁾	
				Principal	Interest		
2005	367,940	191,093	176,847	28,182	84,066	25,506	2.04
2006	411,545	205,565	205,980	31,737	108,601	46,621	2.20
2007	443,295	217,720	225,575	33,377	111,118	20,679	1.82
2008	477,330	221,309	256,021	45,996	111,250	28,022	1.98
2009	409,721	242,449	167,272	49,692	100,746	54,682	1.75
2010	425,071	245,147	179,924	51,832	93,298	56,171	2.02
2011	423,632	262,668	160,964	61,136	97,546	56,827	1.58
2012	429,665	255,507	174,158	59,575	91,736	43,979	1.62
2013	441,245	252,745	188,500	56,800	97,138	34,390	1.58
2014	460,768	268,745	192,023	60,419	96,005	58,556	1.96

1. Including Sr. Lien Commercial Paper, Subordinate Lien Bonds, and Inferior Lien Obligations.
2. Income and revenues derived from the operation of the Airport System with limited exclusions.
3. Debt service is net of amounts paid by grant funds and capitalized interest.

Fiscal Year	Combined Utility System Bonds ⁽⁴⁾						Coverage
	Operating & Non-Operating Revenues ⁽⁵⁾	Less: Total Expenses	Net Pledged Revenue	Debt Service			
				Principal	Interest		
2005	668,391	309,343	359,048	14,031	175,789	1.89	
2006	721,243	349,135	372,108	31,570	196,461	1.63	
2007	701,813	357,403	344,410	26,618	232,048	1.33	
2008	722,918	378,919	343,999	27,088	248,900	1.25	
2009	867,329	379,458	487,871	37,683	258,129	1.65	
2010	814,979	371,913	443,066	68,187	281,468	1.27	
2011	921,218	363,649	557,569	72,389	284,800	1.56	
2012	969,028	417,616	551,412	68,285	299,436	1.50	
2013	979,550	399,855	579,695	80,278	308,204	1.49	
2014	1,035,372	406,274	629,098	134,030	273,484	1.54	

4. Including Water and Sewer System Bonds, Combined Utility System Bonds, and Commercial Paper.
5. Income and revenues derived from the operation of the Combined Utility System with limited exclusions.

Fiscal Year	Convention and Entertainment Center Bonds ⁽⁶⁾				Coverage
	Pledged Hotel Occupancy Tax & Other Revenue ⁽⁷⁾	Debt Service			
		Principal	Interest		
2005	47,325	6,590	22,715	1.61	
2006	58,171	13,680	23,326	1.57	
2007	61,420	14,775	24,004	1.58	
2008	69,743	17,540	23,926	1.68	
2009	65,334	18,620	19,451	1.72	
2010	59,804	21,230	15,747	1.62	
2011	65,186	24,060	14,218	1.70	
2012	71,957	21,835	6,194	2.57	
2013	78,892	27,530	14,123	1.89	
2014	89,145	26,415	10,743	2.81	

6. Including Revenue Bonds and Commercial Paper.
7. Includes the 5.65%/7% of collected hotel occupancy tax, certain parking revenues, and certain tax rebates.

CITY OF HOUSTON, TEXAS
DEMOGRAPHIC AND ECONOMIC STATISTICS
Last Ten Fiscal Years
(unaudited)

<u>Fiscal Year</u>	<u>Population</u>	(1)	<u>Personal Income (amount in thousands)</u>	(2)	<u>Per Capita Personal Income</u>	(2)	<u>Median Age</u>	(2)	<u>Education Level in Years of Formal Schooling</u>	(2)	<u>School Enrollment</u>	(2)	<u>Average Unemployment Rate (percentage)</u>	(3)
2005	2,016,582		\$ 43,748,970		\$ 22,534		31.9		12.7		392,846		6.3	
2006	2,076,189		\$ 47,805,874		\$ 23,041		32.3		12.6		409,937		5.5	(4)
2007	2,144,491		\$ 52,642,282		\$ 25,719		32.2		12.8		425,015		4.6	(4)
2008	2,208,180		\$ 54,306,140		\$ 26,836		32.8		Not available		811,154	(5)	4.2	(2)
2009	2,242,193		\$ 57,795,120		\$ 25,563		32.9		13.2		520,118	(6)	5.9	(2)
2010	2,257,926	(2)	\$ 51,886,111		\$ 24,623		32.8		12.4		525,506	(6)	7.0	(2)
2011	2,107,208	(2)	Not available		\$ 26,109		32.2		12.7		560,316	(6)	8.2	(7)
2012	2,145,933	(8)	Not available		\$ 26,179	(8)	33.2	(9)	13.0	(9)	576,020	(8)	7.5	(10)
2013	2,160,821	(8)	Not available		\$ 26,849	(8)	32.1	(8)	13.0	(6), (8)	548,061	(6)	6.5	(7)
2014	2,099,451	(8)	Not available		\$ 27,029	(8)	32.3	(8)	13.0	(8)	557,780	(8)	9.0	(8)

(1) Source: Population Estimate program, U. S. Census Bureau, as of the beginning of the fiscal year. (Fiscal year 2002 is as of July 1, 2001.)

(2) Source: American Community Survey, U. S. Census Bureau. (Fiscal year 2002 data is for calendar year 2001.)

(3) Source: University of Houston, Center for Public Policy. (Data for fiscal year 2002 is calendar year 2001.)

(4) Source: Texas Workforce Commission

(5) School enrollment for the City of Houston is not available. The number reflects the Houston metropolitan area.

(6) School enrollment includes nursery school through graduate school.

(7) Source: Local Area Unemployment Statistics, Bureau of Labor Statistics Texas Workforce Commission

(8) Source: U. S. Census Bureau Fact Finder

(9) This is the average for the MSA (Metropolitan Service Area).

(10) Source: Bureau of Labor Statistics

**CITY OF HOUSTON, TEXAS
PRINCIPAL EMPLOYERS
June 30, 2014
Current Year and Nine Years Ago
(unaudited)**

Employer	2014			2005		
	Employees	Rank	Percentage of Total City Employment	Employees	Rank	Percentage of Total City Employment
Memorial Hermann Health System	19,500	1	1.92%	16,300	1	1.72%
Univ of Tx M. D. Anderson Cancer Center	19,290	2	1.90%	16,000	3	1.68%
United Airways	17,000	3	1.67%	16,000	2	1.68%
ExxonMobil Corporation	13,191	4	1.30%			
Shell Oil Company	13,000	5	1.28%			
The Houston Methodist Hospital System	13,000	6	1.28%	8,598	10	0.91%
Kroger Company	12,000	7	1.18%	12,000	6	1.26%
National Oilwell Varco	10,000	8	0.98%			
Schlumberger Limited	10,000	9	0.98%			
B. P. America, Inc.	9,537	10	0.94%			
Halliburton K. B. R.				14,000	4	1.47%
Univ of Tx Medical Branch in Galveston				12,318	5	1.30%
ARAMARK Corp.				10,000	7	1.05%
H. C. A. Health				9,000	8	0.95%
Hewlett-Packard Corporation				9,000	9	0.95%
Total :	<u>136,518</u>		<u>13.43%</u>	<u>123,216</u>		<u>12.97%</u>

Employers excludes school districts and city, county, state and federal governments.
Employee numbers are for the ten-county region, not the city only.
Employee may live outside the City

Total Houston Residents employed regardless of where they work:

Source:	2014	1,015,817
Bureau of Labor Statistics	2005	949,998

CITY OF HOUSTON, TEXAS

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**CITY OF HOUSTON, TEXAS
EMPLOYMENT STATISTICS
June 30, 2014
(unaudited)**

Employment

The following table indicates the Houston PMSA estimated annual average labor force for the years 2004 through 2013 according to the Texas Employment Commission:

**Houston PMSA Labor Force Estimates
(Employees in thousands)**

	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>
Civilian Labor Force ^(A)	2,577	2,614	2,674	2,723
Employed	2,417	2,468	2,540	2,606
Unemployed	160	146	134	117
Percent unemployed	6.21%	5.59%	5.01%	4.30%
Nonfarm Payroll Employment ^(B)	2,290	2,349	2,446	2,545
Manufacturing	208	212	223	233
Mining	68	71	78	84
Contract construction	165	169	182	197
Transp/Trade/Pub Utils/Communications ^(C)	640	653	673	699
Finance/Insurance/Real Estate	89	91	91	92
Services & Miscellaneous	923	962	1,014	1,063
Government	335	339	345	352

(A) Includes resident wage and salary workers, self-employed, unpaid family workers and domestics in private households, agricultural workers, and workers involved in labor-management disputes.

(B) Includes the non-agricultural wage and salary jobs estimated to exist in Houston PMSA without reference to place of residence of workers.

(C) Trade has been included with Transportation, Public Utilities and Communications.

2008	2009	2010	2011	2012	2013
2,781	2,873	2,933	3,075	3,110	2,180
2,647	2,638	2,692	2,843	2,901	3,009
134	235	241	232	210	171
4.82%	8.18%	8.20%	7.50%	6.70%	5.40%
2,603	2,530	2,594	2,693	2,793	2,895
241	218	228	237	252	261
90	88	89	97	106	115
205	172	175	180	188	197
715	564	556	579	602	616
91	138	134	140	143	146
1,087	973	1,035	1,097	1,135	1,800
361	377	377	364	367	379

CITY OF HOUSTON, TEXAS
Last Ten Years
CITY OF HOUSTON EMPLOYMENT INFORMATION
(unaudited)

Full-time Equivalent Employees as of June 30, 2014

Fund/Department	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
			Restated	Restated						
GENERAL FUND										
Public Safety										
Fire/Civilian	320.3	288.7	287.0	270.2	270.5	247.9	222.6	118.9	117.4	117.1
Fire/Classified	3,716.0	4,123.5	4,070.3	3,997.5	4,058.3	4,131.7	4,085.1	3,978.6	4,011.7	3,981.2
Fire/Cadets	181.5	38.5	103.0	113.5	95.7	53.0	53.1	14.2	26.7	123.0
Municipal Courts - (Administration) Department	347.1	343.7	290.9	262.2	284.8	269.8	301.7	271.2	268.8	291.6
Municipal Courts - (Justice) Department	41.6	45.3	47.6	49.4	50.6	50.9	-	-	-	-
Police/Civilian	1,115.6	1,173.1	1,237.8	1,289.5	1,572.3	1,528.4	1,393.1	1,119.9	1,194.9	1,157.8
Police/Classified	5,118.3	5,125.3	5,287.3	5,382.7	5,703.2	5,629.9	5,535.3	5,474.9	5,456.9	5,290.4
Police/Cadets	26.7	81.8	130.9	176.8	221.6	135.0	70.4	76.6	118.1	88.1
Total Public Safety	10,867.1	11,219.9	11,454.8	11,541.8	12,257.0	12,046.6	11,661.3	11,054.3	11,194.5	11,049.2
Development & Maintenance Services										
General Services (Formerly Building Services)	181.2	211.3	228.2	237.8	242.1	233.2	210.6	193.9	193.6	201.1
Planning & Development	104.3	99.6	96.6	97.1	105.1	107.0	97.5	75.7	75.2	76.1
Public Works & Engineering	841.3	539.9	548.4	556.7	568.3	529.0	505.6	9.1	15.0	13.6
Solid Waste Management	576.9	576.4	546.6	655.0	667.2	633.5	623.9	460.5	471.0	458.9
Total Development & Maintenance	1,703.7	1,427.2	1,419.8	1,546.6	1,582.7	1,502.7	1,437.6	739.2	754.8	749.7
Human & Cultural Services										
Convention & Entertainment Facilities	-	63.0	54.8	0.4	3.5	-	-	-	-	-
Health & Human Services	767.1	797.9	725.8	684.5	741.3	661.3	574.8	458.4	470.7	565.0
Housing & Community Development	-	-	-	1.3	2.3	2.5	2.9	2.1	2.0	2.0
Library	443.0	473.1	484.5	497.3	530.5	517.4	456.4	401.7	405.2	474.1
Neighborhoods	-	-	-	-	-	-	-	96.3	104.4	103.5
Parks & Recreation	741.0	772.8	814.1	815.8	869.4	838.8	774.2	627.6	644.4	670.3
Total Human & Cultural Services	1,951.1	2,106.8	2,079.2	1,999.3	2,147.0	2,020.0	1,808.3	1,586.1	1,626.7	1,814.9
Administrative Services										
Administration & Regulatory Affairs	-	-	-	264.1	292.0	375.9	362.9	268.1	240.3	201.5
City Secretary	12.1	12.1	11.6	11.1	11.5	11.4	11.9	10.9	10.7	10.7
Controller's Office	74.9	70.7	73.7	74.7	76.3	76.8	74.0	66.2	64.9	65.3
Council Office	61.5	71.3	68.1	71.4	73.3	72.4	72.8	74.6	77.7	74.6
Finance & Administration	313.5	303.8	310.0	-	-	-	-	-	-	-
Finance Department	-	-	-	54.9	68.9	76.9	70.7	72.6	60.4	107.8
Human Resources	38.6	38.2	37.9	39.1	39.3	41.8	40.0	35.9	34.4	31.1
Information Technology	143.5	127.2	129.0	140.3	154.9	169.6	158.8	150.8	144.3	156.3
Legal	146.4	144.0	152.8	158.7	168.1	161.0	155.3	119.1	116.4	119.7
Mayor's Office	20.2	48.8	43.5	39.6	37.1	35.2	35.1	23.3	56.3	58.5
Office of Business Opportunity (Formerly Affirm. Action)	27.2	25.7	25.8	32.4	34.1	35.8	31.6	23.3	25.1	26.4
Total Administrative Services	837.9	841.8	852.4	886.3	955.5	1,056.8	1,013.1	844.8	830.5	851.9
Total General Fund	15,359.8	15,595.7	15,806.2	15,974.0	16,942.2	16,626.1	15,920.3	14,224.4	14,406.5	14,465.7
ENTERPRISE FUNDS										
Aviation	1,516.8	1,569.6	1,622.7	1,587.2	1,604.8	1,544.7	1,528.5	1,415.0	1,339.5	1,368.7
Convention & Entertainment Facilities	104.7	109.3	116.5	124.3	124.1	118.8	117.6	69.0	23.0	22.7
PW&E - Combined Utility System	2,220.3	2,158.6	2,243.8	2,288.9	2,350.7	2,338.0	2,213.0	2,280.5	2,237.5	2,220.8
GSD - Parking Management (Formerly PW&E)	-	-	-	54.0	53.9	-	-	-	-	-
Total Enterprise Funds	3,841.8	3,837.5	3,983.0	4,054.4	4,133.5	4,001.5	3,859.1	3,764.5	3,600.0	3,612.2

Administration & Regulatory Affairs and the Finance Department were Finance and Administration.
Municipal Courts - Administration and Municipal Courts - Justice consolidated as the Department.
Parks Management was established as a new department in FY 2014. It is no longer part of Public Works & Engineering.

Full-time Equivalent Employees as of June 30, 2014

Fund/Department	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
SPECIAL REVENUE FUNDS										
Administration & Regulatory Affairs	-	-	-	-	-	-	104.4	176.8	159.5	159.9
Cable Television	10.5	9.3	-	-	-	-	-	-	-	-
Finance	-	-	-	-	-	-	-	-	-	15.5
Fleet Management (Formerly PW&E - Fleet Management)	74.1	170.7	-	-	-	-	-	262.5	267.7	325.9
General Services (Formerly Building Services)	-	-	-	-	-	-	-	-	-	61.3
Health & Human Services	-	-	435.7	490.9	530.9	530.9	544.3	510.0	515.5	592.1
Housing & Community Development	-	-	126.5	136.9	140.1	148.2	129.5	129.3	159.0	161.8
Houston Emergency Center	219.3	239.6	248.0	264.6	275.6	256.8	248.0	234.3	242.5	243.8
Legal	-	-	-	-	-	-	-	11.0	7.6	35.2
Library	-	-	3.4	9.9	28.4	29.7	29.5	28.0	26.0	23.4
Mayor's Office	-	-	24.7	24.2	22.7	24.5	23.7	23.4	28.5	26.9
Municipal Courts - (Administration) Department	19.4	21.5	22.8	24.4	28.7	28.8	39.5	34.3	35.0	18.1
Municipal Courts Department - Justice	-	-	-	-	3.3	10.4	-	-	-	-
Neighborhoods	-	-	-	-	-	-	-	1.0	51.0	48.8
Office of Business Opportunity (Formerly Affirm. Action)	-	-	-	-	-	-	-	1.0	2.0	2.0
Parks Special Revenue	98.0	106.0	105.7	107.0	112.9	109.1	101.4	97.6	92.0	93.2
Planning & Development	-	-	-	3.4	6.5	9.0	8.4	10.2	11.9	11.6
Police - Asset Forfeiture	15.9	21.3	-	-	-	-	-	-	-	-
Police - Auto Dealers/Civilian	8.2	6.3	73.7	113.8	88.6	-	-	7.0	8.0	8.0
Police - Auto Dealers/Classified	18.0	22.0	21.1	37.0	25.6	42.2	32.1	21.0	19.0	32.0
Police - Special Services/Civilian	117.7	6.3	-	-	-	148.3	128.4	124.0	26.5	35.7
Police - Special Services/Classified	-	40.8	-	-	-	-	-	40.2	49.4	139.3
PW&E - Building Inspection	308.5	380.0	1,313.8	1,362.2	1,373.6	940.4	907.3	814.0	647.6	571.5
PW&E - Sign Administration	27.5	31.6	-	-	-	-	-	-	-	-
PW&E - Stormwater Utility	403.5	413.6	-	-	-	404.7	385.5	384.2	354.7	377.7
PW&E - Houston TransStar	5.9	5.5	-	-	-	13.2	6.9	7.0	6.6	8.0
PW&E - Drainage and Street Renewal	-	-	-	-	-	-	-	532.4	490.4	505.2
PW&E - TxDOT Signal Maintenance	0.5	-	-	-	-	-	-	-	-	-
Solid Waste Management	-	-	-	-	-	0.5	1.0	4.0	2.9	2.1
Total Special Revenue Funds	1,327.0	1,474.5	2,375.4	2,574.3	2,636.9	2,696.7	2,689.9	3,453.2	3,203.3	3,499.0
Total General, Enterprise and Special Funds	20,528.6	20,907.7	22,164.6	22,602.7	23,712.6	23,324.3	22,469.3	21,442.1	21,209.8	21,576.9
INTERNAL SERVICE/REVOLVING FUND										
Human Resources - Health Benefits	37.1	36.2	74.2	69.9	70.7	42.7	47.5	42.3	45.8	46.7
General Services - Central Svc Revolving	1.5	4.0	24.8	-	-	53.9	41.8	29.0	27.9	31.8
Human Resources - Central Svc Revolving	4.8	4.5	-	-	-	6.0	52.5	120.8	125.6	138.7
Admin. & Regulatory Affairs - Central Svc Revolving	5.5	5.9	6.0	-	-	-	-	-	-	-
Information Technology - Central Svc Revolving	1.6	2.0	-	3.3	2.9	15.6	28.3	44.2	45.6	53.7
General Services - In House Reconstruction	29.1	28.8	57.4	66.6	70.0	70.7	27.8	28.7	29.0	28.5
PW&E - CIP Salary Recovery	-	-	-	-	-	-	-	-	302.4	308.9
General Services - CIP Salary Recovery	-	19.6	-	-	-	-	-	-	-	-
Admin. and Regulatory Affairs - Property and Casualty	4.0	5.1	-	4.9	5.8	6.8	4.9	5.1	5.0	5.0
Legal - Property and Casualty	28.4	27.2	41.0	43.4	40.6	41.9	38.3	47.6	47.9	52.2
Human Resources - Workers Compensation	30.3	28.9	-	-	-	44.1	30.5	28.7	30.1	29.5
Legal - Workers Compensation	5.2	4.4	-	-	-	5.0	4.9	3.1	2.7	2.0
Total Internal Service/Revolving Funds	147.5	166.6	203.4	188.1	190.0	286.7	276.5	349.5	662.0	697.0
Total Full-time Equivalent Employees	20,676.1	21,074.3	22,368.0	22,790.8	23,902.6	23,611.0	22,745.8	21,791.6	21,871.8	22,273.9

Administration & Regulatory Affairs and the Finance Department were Finance and Administration.
Municipal Courts - Administration and Municipal Courts - Justice consolidated as the Department.
Fleet Management was established as a new department in FY 2012. It is no longer part of Public Works & Engineering.

CITY OF HOUSTON, TEXAS
OPERATING INDICATORS BY FUNCTION
June 30, 2014
(unaudited)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Function										
Police										
Physical arrests	103,917	100,795	121,834	110,058	132,121	141,525	130,376	109,368	96,058	138,007
Parking violations	241,324	203,591	255,690	210,607	217,795	208,970	196,702	201,341	197,253	195,822
Traffic violations filed	841,494	851,573	939,932	867,535	920,341	875,134	686,714	729,490	587,835	557,609
Fire										
Number of calls dispatched	267,171	284,231	278,713	281,574	281,103	270,312	273,444	285,287	294,278	308,264
Inspections	40,540	38,937	32,694	31,800	84,378 (1)	86,561	87,511	84,826	82,515	85,945
Highways and streets										
Streets resurfaced (miles)	374	334	325	307	235	195	140	140	129	104
Tons of asphalt for pothole repair and skin patches	18,272	16,104	16,178	16,647	17,323	17,103	19,002	16,497	16,279	15,292
Parks and recreation										
Athletic field permits issued	1,850	1,995	2,073	2,494	2,331	2,490	2,490	1,985	2,375	2,344
Community center admissions	2,859,414	3,332,920	3,618,818	4,146,502	3,924,751	4,413,580	4,775,581	5,259,890	5,421,607	5,702,568
Sanitation										
Refuse collected (tons)	835,054	825,915	837,008	796,926	803,428	764,900	673,966	703,449	712,857	686,334
Recyclables collected (tons)	20,607	15,352	15,703	21,312	53,151 (2)	74,616	110,079 (4)	113,332	111,602	115,143
Water										
New connections	7,806	5,235	6,871	5,660	3,400	3,008	2,881	3,433	3,864	6,796 (5)
Water main breaks	3,381	4,939	5,623	2,797	9,822 (3)	12,556	11,688	17,999 (3)	11,343	11,935
Average daily pumpage (millions of gallons)	363.1	399.9	374.5	372.0	378.7	401.0	446.0	483.0	446.4	455.0
Wastewater										
Wastewater line repairs	2,577	2,413	2,315	2,160	2,059	2,267	2,164	2,487	2,660	2,210
Average daily sewage treatment (millions of gallons)	252.0	227.0	244.0	268.0	230.0	239.5	220.0	217.0	209.0	225.0

- (1) The Fire Department now has a better system to record inspections. For example, a ten-building apartment complex is now counted as ten inspections, not one.
(2) The Solid Waste Department started the free recycling program in January 2009, which greatly increased the tons of recyclables collected.
(3) A dry year caused a higher than usual number of breaks.
(4) Compostable bag program began in May 2010.
(5) New connections increase is related to an increase in population growth and construction in the City.

CITY OF HOUSTON, TEXAS
CAPITAL ASSET STATISTICS BY FUNCTION
June 30, 2014
(unaudited)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Function										
Public safety										
Police										
Stations	14	15	15	17	17	17	17	17	17	17
Patrol units	730	919	829	851	932 (1)	960	915	838	856	903
Fire										
Stations	88	90	90	91	91	92	94	94	92	92
Highways and streets										
Streets (lane miles)	15,645	15,645	15,645	15,645	15,763	15,763	15,397	15,397	15,397	15,397
Streetlights	175,000	176,000	172,300	173,000	173,520	174,008	174,795	175,249	175,516	174,373
Traffic signals	2,355	2,400	2,430	2,450	2,399 (2)	2,391	2,395	2,439	2,449	2,467
Parks and recreation										
Parks acreage	18,620	24,493	38,934	38,934	38,970	38,992	37,846	37,846	37,851	37,851
Parks	523	533	539	540	546	545	527	527	527	528
Swimming pools	43	40	58	62	62	61	61	59	57	57
Tennis Centers	3	3	3	3	3	3	3	3	3	3
Community centers	57	56	56	58	58	58	58	59	60	60
Sanitation										
Collection trucks	347	338	326	337	322	329	326	321	323	323
Water										
Water mains (miles)	7,354	7,354	7,501	6,500	6,500	7,466	7,500	7,146 (5)	7,143	7,198
Fire hydrants	52,879	54,829	54,522	56,950	57,432	57,500	57,013	57,000	58,162	58,984
Maximum daily capacity (millions of gallons)	750.0	750.0	750.0	750.0	740.0	773.0	842.0 (3)	905.0	853.0	885.0
Sewer										
Sanitary sewers (miles)	6,250	6,250	6,250	6,250	6,250	6,250	6,403 (4)	6,700	6,950	6,950
Storm sewers (miles)	3,300	3,420	3,487	3,513	3,513	3,618	3,698	3,700	3,789	3,838
Maximum daily treatment permitted (millions of gallons)	564.0	564.0	564.0	564.0	564.0	564.0	563.0	563.0	563.0	565.0

- (1) The number of patrol units greatly increased due to Hurricane Ike.
- (2) The number of traffic signals decreased because FY2008 included assuming responsibility from TXDOT for additional signals. This did not happen.
- (3) The maximum daily capacity for FY 2002 to FY 2010 were adjusted to reflect updated information received from the division, FY 2005 to FY 2008 are estimated.
- (4) The sanitary sewers (miles) for FY2005 to FY2010 were adjusted to reflect updated information received from the division.
- (5) The water mains (miles) for FY2012 was adjusted to reflect updated information received from the division.

CITY OF HOUSTON, TEXAS
June 30, 2014
INCREASES/DECREASES TO NET POSITION OF PENSION PLANS
(amounts expressed in thousands)
(unaudited)

	<u>Police</u>	<u>Fire</u>	<u>Municipal</u>	<u>Total</u>
Additions	789.5	677.9	497.4	1,964.8
Deductions	<u>216.0</u>	<u>195.5</u>	<u>229.6</u>	<u>641.1</u>
Net Increase	<u>573.5</u>	<u>482.4</u>	<u>267.8</u>	<u>1,323.7</u>
City's Total Contribution	<u><u>103.4</u></u>	<u><u>64.3</u></u>	<u><u>128.3</u></u>	<u><u>296.0</u></u>

The City's funding policies provide for actuarially determined periodic contributions at rates such that overtime will remain level as a percentage of payroll. The contribution rate for normal cost is determined by using the entry age normal cost method. The pension plans use the level percentage of payroll method to amortize the unfunded actuarially accrued liability (or surplus) over 40 years from January 1, 1993.

CITY OF HOUSTON, TEXAS
PRINCIPAL AND INTEREST PAYABLE FROM AD VALOREM TAXES
(EXCLUDING COMMERCIAL PAPER NOTES)
(unaudited)

The following schedule presents the City's debt service requirements for Fiscal Years 2015 through 2044 for the outstanding Tax Bonds, Pension Obligations, and Tax Certificates. Debt service on commercial paper notes is not reflected in the schedule below.

Fiscal Year Ended June 30	Tax Bonds ^{(b)(e)}	Pension Obligations ^(c)	Tax Certificates ^(d)	Total Debt Service ^(f)
2015	\$ 286,964,377	\$ 42,688,252	\$ 3,954,651	\$ 333,607,280
2016	286,329,161	42,736,161	1,539,651	330,604,973
2017	312,362,286	42,784,193	1,539,651	356,686,130
2018	315,473,690	42,840,460	2,619,651	360,933,801
2019	274,981,568	42,897,446	2,620,651	320,499,665
2020	267,826,371	42,962,951	2,623,901	313,413,223
2021	224,899,880	52,989,143	2,624,151	280,513,174
2022	205,900,515	53,017,022	2,621,401	261,538,938
2023	210,620,857	53,033,446	2,620,651	266,274,954
2024	153,547,317	53,059,012	977,701	207,584,030
2025	152,322,635	53,087,743		205,410,378
2026	114,843,698	53,118,665		167,962,363
2027	131,184,075	53,150,488		184,334,563
2028	124,771,888	53,176,606		177,948,494
2029	87,503,009	61,545,416		149,048,425
2030	49,420,858	61,591,516		111,012,374
2031	27,350,299	73,050,274		100,400,573
2032	28,576,643	73,088,498		101,665,141
2033	19,895,653	30,715,357		50,611,010
2034	17,167,380	6,505,750		23,673,130
2035	18,491,899	50,850,750		69,342,649
2036	17,110,820	39,478,572		56,589,392
2037	13,679,887	24,547,367		38,227,254
2038	10,078,990	880,470		10,959,460
2039	7,076,574	880,470		7,957,044
2040	4,521,200	880,470		5,401,670
2041	4,522,800	21,130,470		25,653,270
2042	4,520,900			4,520,900
2043	3,155,250			3,155,250
2044				
Total	<u>\$ 3,375,100,480</u>	<u>\$ 1,126,686,968</u>	<u>\$ 23,742,060</u>	<u>\$ 4,525,529,508</u>

- (a) Each Fiscal Year the City budgets for Commercial Paper Notes debt service and related reserve funds based on a calculation that assumes a certain amount of Commercial Paper Notes is expected to be issued during that Fiscal Year at an assumed rate of interest.
- (b) Total debt service does not include payments related to various leases for office space and equipment, which are not considered debt under Texas law. The terms and conditions of such leases and agreements vary.
- (c) A portion of the debt service for the Pension Obligations is paid by the City's Combined Utility System and Airport System.
- (d) The City's \$9,000,000 Certificate of Obligation (Demolition Program), Series 2014Q, is reflected at an assumed rate of 4.310%.
- (e) Excludes estimated federal Build America Bond subsidy payment of 35% of interest paid in connection with the City's Public Improvement Refunding Bonds, Taxable Series 2009B and 2010B (Direct Subsidy-Build America Bonds).
- (f) Totals may reflect a variance due to rounding.

CITY OF HOUSTON, TEXAS
June 30, 2014
VOTER-AUTHORIZED OBLIGATIONS
(amounts expressed in thousands)
(Unaudited)

The following schedule sets forth the categories of bond authorization approved by the voters in elections held in November of 2001 (the "2001 Election"), November of 2006 (the "2006 Election") and November of 2012 (the "2012 Election"), the amount of each such authorization approved by City Council for issuance as Commercial Paper Notes, the amount of commercial paper issued as of year-end, and the amount of commercial paper approved but unissued. The City has issued all bonds authorized at the election held in November of 1997.

November 2001 Election

<u>Purposes</u>	Voter <u>Authorized</u>	Approved by City	Commercial	Commercial Paper	All Voter
		Council for Issuance as Commercial Paper Notes	Paper Issued ^(a)	Notes Approved by City Council but Unissued	Authorized but Unissued
Streets, Bridges, Traffic Control and Storm Sewers and Drainage	\$ 474,000	\$ 474,000	\$ 473,000	\$ 1,000	\$ 1,000
Parks and Recreation	80,000	80,000	80,000	-	-
Police and Fire Departments	82,000	82,000	82,000	-	-
Permanent and General Improvements ^(b)	80,000	80,000	80,000	-	-
Public Libraries	40,000	40,000	40,000	-	-
Low Income Housing	20,000	20,000	13,185	6,815	6,815
Total	\$ 776,000	\$ 776,000	\$ 768,185	\$ 7,815	\$ 7,815

November 2006 Election

<u>Purposes</u>	Voter <u>Authorized</u>	Approved by City	Commercial	Commercial Paper	All Voter
		Council for Issuance as Commercial Paper Notes	Paper Issued ^(a)	Notes Approved by City Council but Unissued	Authorized but Unissued
Streets, Bridges, Traffic Control and Storm Sewers and Drainage	\$ 320,000	\$ 219,950	\$ 76,560	\$ 143,390	\$ 243,440
Parks and Recreation	55,000	55,000	50,000	5,000	5,000
Public Safety	135,000	135,000	98,055	36,945	36,945
Permanent and General Improvements ^(b)	60,000	60,000	53,450	6,550	6,550
Public Libraries	37,000	37,000	37,000	-	-
Low Income Housing	18,000	13,633	1,000	12,633	17,000
Total	\$ 625,000	\$ 520,583	\$ 316,065	\$ 204,518	\$ 308,935

November 2012 Election

<u>Purposes</u>	Voter <u>Authorized</u>	Approved by City	Commercial	Commercial Paper	All Voter
		Council for Issuance as Commercial Paper Notes	Paper Issued ^(a)	Notes Approved by City Council but Unissued	Authorized but Unissued
Streets, Bridges, Traffic Control and Storm Sewers and Drainage	\$ -	\$ -	\$ -	\$ -	\$ -
Parks and Recreation	166,000	24,190	-	24,190	166,000
Public Safety	144,000	21,793	-	21,793	144,000
Permanent and General Improvements ^(b)	57,000	18,843	550	18,293	56,450
Public Libraries	28,000	8,195	1,350	6,845	26,650
Low Income Housing	15,000	-	-	-	15,000
Total	\$ 410,000	\$ 73,021	\$ 1,900	\$ 71,121	\$ 408,100
Combined Total (2001, 2006 and 2012 Elections)	\$ 1,811,000	\$ 1,369,604	\$ 1,086,150	\$ 283,454	\$ 724,850

(a) As of June 30, 2014

(b) Includes Public Health and Solid Waste Management.

CITY OF HOUSTON, TEXAS
June 30, 2014
(unaudited)

SALES AND USE TAX AND FRANCHISE CHARGES AND FEES

<u>Fiscal Year</u>	<u>Sales and Use Tax</u> (in thousands)	<u>Charges and Fees</u> (in thousands)
2006	\$ 422,598	\$ 186,508
2007	\$ 461,467	\$ 189,551
2008	\$ 495,173	\$ 190,193
2009	\$ 507,103	\$ 190,322
2010	\$ 468,965	\$ 190,868
2011	\$ 492,824	\$ 190,563
2012	\$ 546,543	\$ 192,760
2013	\$ 600,256	\$ 195,304
2014	\$ 629,441	\$ 189,989
2015 (budgeted)	\$ 666,968	\$ 185,099

CITY OF HOUSTON, TEXAS
CONVENTION AND ENTERTAINMENT FACILITIES FUND REVENUES AND EXPENSES
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)

Total Annual Revenues Last Ten Fiscal Years	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Operating Revenues					
Fees charged to users, net	\$ 19,175	\$ 19,599	\$ 20,554	\$ 22,306	\$ 20,902
Total Operating Revenues	<u>19,175</u>	<u>19,599</u>	<u>20,554</u>	<u>22,306</u>	<u>20,902</u>
Nonoperating Revenues					
Interest	15,926	16,729	18,704	19,186	17,688
Hotel occupancy tax (including penalty & interest)	42,266	54,765	58,709	66,232	62,383
Other income	7,279	4,190	13,215	5,669	113,265
Total Nonoperating Revenues	<u>65,471</u>	<u>75,684</u>	<u>90,628</u>	<u>91,087</u>	<u>193,336</u>
Total Revenues	<u>\$ 84,646</u>	<u>\$ 95,283</u>	<u>\$ 111,182</u>	<u>\$ 113,393</u>	<u>\$ 214,238</u>
Total Annual Expenses Last Ten Fiscal Years	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Operating Expenses					
Maintenance and operating	\$ 32,797	\$ 33,437	\$ 35,342	\$ 37,276	\$ 39,142
Depreciation	10,372	10,984	11,925	12,084	14,888
Total Operating Expenses	<u>43,169</u>	<u>44,421</u>	<u>47,267</u>	<u>49,360</u>	<u>54,030</u>
Nonoperating Expenses					
Interest on long-term debt	29,468	30,970	32,859	33,150	29,740
Promotional contracts & other expenses	61,694	23,880	21,119	28,659	30,840
Total Nonoperating Expenses	<u>91,162</u>	<u>54,850</u>	<u>53,978</u>	<u>61,809</u>	<u>60,580</u>
Total Expenses	<u>\$ 134,331</u>	<u>\$ 99,271</u>	<u>\$ 101,245</u>	<u>\$ 111,169</u>	<u>\$ 114,610</u>

<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
\$ 20,298	\$ 22,877	\$ 8,934	\$ 10,372	\$ 11,124
<u>20,298</u>	<u>22,877</u>	<u>8,934</u>	<u>10,372</u>	<u>11,124</u>
11,971	9,562	10,010	9,080	9,637
54,917	61,603	68,623	76,325	90,119
<u>18,997</u>	<u>18,266</u>	<u>525</u>	<u>413</u>	<u>292</u>
<u>85,885</u>	<u>89,431</u>	<u>79,158</u>	<u>85,818</u>	<u>100,048</u>
<u>\$ 106,183</u>	<u>\$ 112,308</u>	<u>\$ 88,092</u>	<u>\$ 96,190</u>	<u>\$ 111,172</u>

<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
\$ 39,817	\$ 40,229	\$ 1,885	\$ 1,780	\$ 1,199
<u>14,958</u>	<u>15,227</u>	<u>14,703</u>	<u>14,488</u>	<u>14,219</u>
<u>54,775</u>	<u>55,456</u>	<u>16,588</u>	<u>16,268</u>	<u>15,418</u>
26,032	25,194	25,799	26,150	25,791
<u>32,988</u>	<u>27,513</u>	<u>100,046</u>	<u>62,662</u>	<u>73,371</u>
<u>59,020</u>	<u>52,707</u>	<u>125,845</u>	<u>88,812</u>	<u>99,162</u>
<u>\$ 113,795</u>	<u>\$ 108,163</u>	<u>\$ 142,433</u>	<u>\$ 105,080</u>	<u>\$ 114,580</u>

CITY OF HOUSTON, TEXAS
CONVENTION AND ENTERTAINMENT FACILITIES STATISTICS
Last Ten Fiscal Years
(unaudited)

HISTORICAL PLEDGED REVENUES
(amounts expressed in thousands)

Fiscal Year	Pledged HOT (a)	% Change	Pledged Parking Revenues (b)	% Change	Tax Rebates	% Change	Total (c)
2005	34,115	-10.5%	6,682	-6.2%	6,528	[N/A] ^(e)	47,325
2006	44,204	29.6%	6,734	0.8%	7,233	10.8%	58,171
2007	47,387	7.2%	6,810	1.1%	7,223	-0.1%	61,420
2008	53,459	12.8%	7,333	7.7%	8,951	23.9%	69,743
2009	49,694	-7.0%	6,727	-8.3%	8,913	-0.4%	65,334
2010	44,483	-10.5%	7,477	11.1%	7,844	-12.0%	59,804
2011	49,723	12.0%	7,286	-3.0%	8,177	4.0%	65,186
2012	55,388	11.4%	6,632	-9.0%	9,937	21.5%	71,957
2013	61,605	11.2%	7,892	19.0%	9,395	-5.0%	78,892
2014	72,739	18.1%	8,644	9.5%	7,762	-17.4%	89,145

- (a) The Pledged Hotel Occupancy Tax (HOT) revenues are revenues (including penalties, interest and delinquencies, if any) collected due to an occupancy tax of 5.65% applied to the cost of substantially all hotel room rentals in the City other than the Hilton Americas Hotel during the first ten years of its operation. The total HOT imposed by the City is 7%.
- (b) The City's pledge of parking revenues for debt service is subordinate to the City's pledge of the first \$1,200,000 of such gross revenues, charges and tolls to the payment of its annual obligation under the Music Hall Lease, unless such obligation is paid, defeased, matures or is otherwise restructured. These annual payments totaled \$1,000,000 for fiscal years 2001-2005, \$1,050,000 for fiscal year 2006, and \$1,100,000 for fiscal years 2007-2011.
- (c) The Tax Rebates consist of rebates of hotel occupancy taxes, sales taxes, and mixed beverage taxes derived from the Hilton Americas Hotel and parking garage during the first ten years of operation.
- (d) Amounts shown do not include investment earnings on pledged revenues, which are also pledged.
- (e) From Fiscal Year 2004 to Fiscal Year 2005, the Pledged Tax rebates increased by 251.5% due to a partial year of collections in Fiscal Year 2004 (December 2003 - June 2004).

(amounts expressed in thousands)

Fiscal Year	HOT Tax 15%	Sales Tax 8.25% ⁽¹⁾	Mixed Beverage Tax 3%	Total Tax Rebate
2005	4,579	1,807	142	6,528
2006	5,403	1,659	171	7,233
2007	5,351	1,769	103	7,223
2008	6,436	2,268	247	8,951
2009	6,225	2,471	217	8,913
2010	5,287	2,374	183	7,844
2011	5,488	2,537	152	8,177
2012	7,185	2,566	186	9,937
2013	6,692	2,620	53	9,395
2014	6,043	1,664	55	7,762

(1) Includes taxes on food, telephone and other sales.

CITY OF HOUSTON, TEXAS
CONVENTION AND ENTERTAINMENT FACILITIES STATISTICS
Last Ten Fiscal Years
(unaudited)

Schedule of Hotel Occupancy Tax and Occupancy Rates

<u>Fiscal Year</u>	<u>Occupancy % Rate (1)</u>	<u>Average Daily Rate (1)</u>	<u>Tax % Rate</u>	<u>Gross Hotel Occupancy Tax Revenues (in thousands)</u>
2005	66.7%	77.27	7%	43,902
2006	65.6%	85.26	7%	56,735
2007	65.8%	92.23	7%	60,777
2008	67.2%	100.78	7%	68,413
2009	55.6%	92.38	7%	64,486
2010	55.4%	88.66	7%	56,753
2011	63.0%	95.37	7%	63,629
2012	65.4%	95.35	7%	70,731
2013	68.0%	101.0	7%	79,736
2014	70.5%	108.8	7%	90,345

(1) Source: Greater Houston Partnership.

CITY OF HOUSTON, TEXAS
CONVENTION AND ENTERTAINMENT FACILITIES STATISTICS
June 30, 2014
(unaudited)

Schedule of Hotel Occupancy Tax Collections

<u>The Twelve Largest Taxpayers</u>	<u>Gross Hotel Occupancy Tax Collections</u>
Hilton Americas-Houston	\$ 3,947,338
Hyatt Regency Hotel	2,708,395
Four Seasons Hotel Houston Center	1,988,919
JW Marriott Galleria	1,884,283
Westin Galleria	1,725,578
Hilton Houston Post Oak	1,475,488
Houston Marriott Briarpark	1,466,835
Westin Oaks	1,346,750
Marriott Hotel	1,341,117
Marriott Medical	1,299,383
Houstonian Hotel	1,298,717
Hotel Zara	1,298,394
Total	<u>\$ 21,781,197</u>

CITY OF HOUSTON, TEXAS
CONVENTION AND ENTERTAINMENT FACILITIES STATISTICS
June 30, 2014
(unaudited)

Parking Facilities Rates

Facility	City Employee Monthly Contract (1)	Other Monthly Contract (2)	Daily Transient (2)	Event Rate (2)
Theater District Garage	\$81.00	\$145.00	\$3.00 per hour	\$10.00
		\$93.00 (3)	\$15.00 Maximum	
		\$120.00 (4)		
Reserved parking		\$225.00		
City Hall Annex Parking Garage	\$51.76	\$93.00	n/a	\$5.00
Lots C and H	\$44.33	\$48.00	n/a	\$3.00

(1) Does not include sales and use tax of 8.25%

(2) Includes sales and use tax of 8.25%

(3) Rates paid by Convention & Entertainment Facilities departmental contractors

(4) Bulk contract parking agreement

Source: www.houstonfirsttheaters.com/parking, COH, Convention & Entertainment Facilities Department

CITY OF HOUSTON, TEXAS
CONVENTION AND ENTERTAINMENT FACILITIES STATISTICS
Debt Service Schedule
(unaudited)

The following table sets forth the Debt Service Requirements on all Convention & Entertainment Revenue Bonds Outstanding assuming scheduled mandatory redemption of any term bonds.

Fiscal Year Ending June 30	Series 2001 Bonds	Series 2001C-1 Bonds	Series 2001C-2 Bonds	Series 2011A Bonds	Series 2011B Bonds	Series 2012A Bonds	Total Debt Service
2015		1,575,000	1,575,000	21,795,238	13,481,381	2,076,250	40,502,869
2016	6,555,000	1,579,315	1,579,315	15,532,988	13,084,506	2,076,250	40,407,374
2017	18,050,000	1,575,000	1,575,000	5,099,738	13,155,881	2,076,250	41,531,869
2018	17,760,000	1,575,000	1,575,000	6,050,488	13,135,825	2,076,250	42,172,563
2019	17,285,000	3,949,494	3,949,494	6,994,988	8,371,894	2,076,250	42,627,120
2020	17,160,000	3,973,783	3,973,783	7,991,544	8,368,269	2,076,250	43,543,629
2021	16,695,000	3,985,337	3,985,337	8,344,475	8,012,644	2,076,250	43,099,043
2022	22,720,000	4,019,863	4,019,863	3,366,625	8,278,019	2,076,250	44,480,620
2023	23,320,000	3,362,668	3,362,668	3,375,625	9,464,394	2,076,250	44,961,605
2024	24,220,000	3,245,227	3,245,227	3,356,225	9,583,672	2,076,250	45,726,601
2025	24,930,000	3,148,138	3,148,138	3,339,788	9,817,506	2,076,250	46,459,820
2026	25,850,000	3,053,638	3,053,638	3,334,575	9,981,538	2,076,250	47,349,639
2027	26,610,000	2,959,138	2,959,138	3,659,550	6,035,894	6,263,875	48,487,595
2028	27,355,000	2,866,192	2,866,192	3,624,081	6,462,819	6,000,375	49,174,659
2029	28,305,000	2,770,138	2,770,138	3,711,794	5,359,863	6,300,000	49,216,933
2030	29,065,000	2,675,638	2,675,638	3,590,738	5,471,488	6,046,875	49,525,377
2031	29,950,000	2,581,138	2,581,138	3,071,875	5,206,113	6,194,250	49,584,514
2032	30,530,000	2,487,156	2,487,156	2,877,750	5,201,363	6,087,875	49,671,300
2033	30,560,000	2,392,138	2,392,138	2,838,000	5,401,831	6,159,000	49,743,107
2034	30,550,000	2,297,638	2,297,638	2,706,000	4,451,213	7,538,875	49,841,364
Total	\$ 447,470,000	\$ 56,071,639	\$ 56,071,639	\$ 114,662,085	\$ 168,326,113	\$ 75,506,125	\$ 918,107,601

(1) Assumes an interest rate of 4.2% for the Series 2001C-1 Auction Rate Certificates and the 2001 C-2 Auction Rate Certificates.

CITY OF HOUSTON, TEXAS
CONVENTION AND ENTERTAINMENT FACILITIES STATISTICS
(amounts expressed in thousands)
(unaudited)

Convention & Entertainment Budget for Fiscal Year 2015

Budgeted Resources

Operating Revenues

Facility Rentals	\$ 1,380
Parking	8,904
Food and Beverage Concessions	-
Contract Cleaning	-
Total Operating Revenues	<u>10,284</u>

Operating Expenses

Personnel	204
Supplies	-
Services	163
Total Operating Expenses	<u>367</u>
Operating Income (Loss)	<u>9,917</u>

Nonoperating Revenues (Expenses)

Hotel Occupancy Tax	
Current	89,750
Delinquent	1,300
Advertising Services	-
Promotion Contracts	-
Contracts/Sponsorships	-
Net Hotel Occupancy Tax	<u>91,050</u>
Investment Income (Loss)	240
Capital Outlay	-
Non-Capital Outlay	-
Other Interest	(1,060)
Other	292
Total nonoperating Rev (Exp)	<u>90,522</u>
Income (Loss) Before Operating Transfers	<u>100,439</u>

Transfers

Transfers to Interest	5,775
Transfers to Principal	16,031
Interfund Transfers	-
Miller Outdoor Theater Transfer	-
Transfers to Component Unit	76,925
Transfers to General Fund	1,380
Total Transfers	<u>100,111</u>

Net Income (Loss) Operating Fund

\$ 328

CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM FUND REVENUES AND EXPENSES
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)

Total Annual Revenues Last Ten Fiscal Years	2005	2006	2007	2008	2009
Operating Revenues					
Water sales	\$ 301,227	\$ 324,878	\$ 308,046	\$ 328,435	\$ 351,608
Waste water system user charges	288,459	307,764	295,423	305,748	323,301
Penalties	4,605	5,085	6,736	7,760	6,651
Other services and charges	4,583	4,935	5,260	6,324	5,678
Total Operating Revenues	598,874	642,662	615,465	648,267	687,238
Nonoperating Revenues					
Interest	12,972	18,650	36,014	35,436	33,436
Other income	24,707	26,557	54,572	84,228	51,262
Total Nonoperating Revenues	37,679	45,207	90,586	119,664	84,698
Total Revenues	\$ 636,553	\$ 687,869	\$ 706,051	\$ 767,931	\$ 771,936
Total Annual Expenses Last Ten Fiscal Years					
Operating Expenses					
Maintenance and operating	\$ 332,800	\$ 302,955	\$ 315,348	\$ 346,652	\$ 371,770
Depreciation and Amortization	224,074	228,665	257,722	220,202	204,919
Total Operating Expenses	556,874	531,620	573,070	566,854	576,689
Nonoperating Expenses					
Interest on long-term debt	201,142	214,880	242,282	267,505	260,396
Other expenses	4,193	5,622	3,478	19,515	5,432
Total Nonoperating Expenses	205,335	220,502	245,760	287,020	265,828
Total Expenses	\$ 762,209	\$ 752,122	\$ 818,830	\$ 853,874	\$ 842,517

<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
\$ 356,046	\$ 459,261	\$ 480,676	\$ 485,485	\$ 499,913
320,722	410,941	421,370	426,888	441,300
8,391	9,871	10,004	9,456	9,456
5,979	3,949	5,188	2,861	2,739
<u>691,138</u>	<u>884,022</u>	<u>917,238</u>	<u>924,690</u>	<u>953,408</u>
15,160	10,090	5,696	(507)	10,688
65,077	20,453	45,448	41,521	69,370
<u>80,237</u>	<u>30,543</u>	<u>51,144</u>	<u>41,014</u>	<u>80,058</u>
<u>\$ 771,375</u>	<u>\$ 914,565</u>	<u>\$ 968,382</u>	<u>\$ 965,704</u>	<u>\$ 1,033,466</u>

<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
\$ 372,365	\$ 363,260	\$ 410,781	\$ 395,439	\$ 399,647
203,695	214,956	211,170	217,622	223,381
<u>576,060</u>	<u>578,216</u>	<u>621,951</u>	<u>613,061</u>	<u>623,028</u>
273,609	-	290,882	282,465	295,254
-	12,273	670	286	5,397
<u>273,609</u>	<u>12,273</u>	<u>291,552</u>	<u>282,751</u>	<u>300,651</u>
<u>\$ 849,669</u>	<u>\$ 590,489</u>	<u>\$ 913,503</u>	<u>\$ 895,812</u>	<u>\$ 923,679</u>

CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM REVENUE BOND COVERAGE
(amounts expressed in thousands)
(unaudited)

	Fiscal Year 2014	Fiscal Year 2013
OPERATING REVENUES		
Sales of water, net	\$ 499,913	\$ 485,485
Sewer system user charges, net	441,300	426,888
Penalties, other services and charges	12,195	12,317
Total Operating Revenues:	953,408	924,690
NON-OPERATING REVENUES		
Investment Earnings under Previous Ordinance	5,385	6,809
Investment Earnings under Master Ordinance	1,401	1,392
Non-Operating Revenues: Contributions from Water Authorities	-	4,458
Transfer from General Purpose Fund	-	-
Other Non-Operating revenues	33,682	20,315
Total non-operating revenues	40,468	32,974
TOTAL GROSS REVENUES:	993,876	957,664
EXPENSES		
Contract Revenue Bonds Payments ⁽¹⁾		
Houston Area Water Corporation Debt Service	-	-
Coastal Water Authority Debt Service	18,875	19,663
Trinity River Authority Debt Service	-	-
Total Contract Revenue Bonds Payments	18,875	19,663
Maintenance and Operating Expenses	387,398	380,192
Total Expenses	406,273	399,855
RESTRICTED RECEIPTS UNDER MASTER ORDINANCE	35,687	21,206
NET REVENUES UNDER MASTER ORDINANCE	\$ 623,290	\$ 579,015
BOND DEBT SERVICE:		
Previously Issued Bonds	15,293	70,220
First Lien Bonds	387,750	319,805
Total Debt Service	\$ 403,043	\$ 390,025
BOND DEBT SERVICE COVERAGE:		
Junior Lien Bond Coverage under Previous Ordinance ⁽²⁾	38.33 x	7.92 x
First Lien Bond Coverage under Master Ordinance ⁽³⁾	1.57 x	1.59 x
TOTAL COVERAGE ⁽⁴⁾	1.55 x	1.48 x

(1) These are "Required Payments Under Previous Ordinance."

(2) Coverage of debt service on Previous Ordinance Bonds by Net Revenues as calculated under Previous Ordinance, which does not include as revenues Investment Earnings under Master Ordinance and Restricted Revenues.

(3) Coverage of Debt Service on First Lien Bonds by Net Revenues, less debt service on Junior Lien Bonds under Previous Ordinance.

(4) Coverage of total Debt Service on Junior Lien Bonds under Previous Ordinance and First Lien Bonds under Master Ordinance by Net Revenues.

CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM STATISTICS
System Budget for Fiscal Year 2015
(amounts expressed in thousands)
(unaudited)

The following is the summary of the Fiscal Year 2015 Budget for the System as adopted by City Council:

Revenues	
Beginning Fund Balance (July 1, 2014)	\$ 589,976
Current Revenues	<u>1,027,796</u>
Total Revenues	<u><u>\$ 1,617,772</u></u>
Expenditures	
Maintenance and Operations	\$ 431,447
CWA Debt Service	18,064
Debt Service (including Prior Lien Bonds, Junior Lien Bonds and Commercial Paper)	444,981
Interfund Transfers	<u>-</u>
Total Expenditures	894,492
Other	
General Purpose Fund (including Discretionary Debt Service)	132,014
Planned Fund Balance (June 30, 2015)	<u>591,266</u>
Total Expenditures and Reserves	<u><u>\$ 1,617,772</u></u>

**CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM STATISTICS
(unaudited)**

The following calculation shows coverage by Net Revenues of Maximum Annual Debt Service on the Previous Ordinance and First Lien Bonds.

	FY 2014
Maximum Annual Debt Service Requirements on Previous Ordinance Bonds (2029) ⁽¹⁾	\$ 44,095,000
Maximum Annual Debt Service Requirements on First Lien Bonds (2030) ⁽¹⁾⁽²⁾	\$ 471,069,261
Combined Maximum Annual Principal and Interest Requirements on Previous Ordinance Bonds and First Lien Bonds (2025)	\$ 472,122,720
Net Revenues under Previous Ordinance for Fiscal Year ended June 30, 2012 ⁽³⁾	\$ 592,010,000
Net Revenues under Master Ordinance for Fiscal Year ended June 30, 2013 ⁽⁴⁾	\$ 629,098,000
Funds Available from General Purpose Fund at June 30, 2013	\$ 456,128,599
Total Funds available for Debt Service Coverage	\$ 1,085,226,599
Coverage of Maximum Annual Debt Service Requirements on Previous Ordinance Bonds	13.43
Coverage of Maximum Annual Debt Service Requirements on First Lien Bonds	2.30
Coverage of Maximum Annual Debt Service Requirements on Previous Ordinance Bonds and First Lien Bond	2.30

(1) Does not include debt service on CWA Bonds, which are payable from Gross Revenues as a Maintenance and Operating Expense of the System.

(2) Series 2008D-1 variable rate bond debt service is calculated using current market fixed rates. Debt service is calculated based on an assumed taxable rate with a maturity on the expected tax-exempt conversion date, December 1, 2012. After the applicable tax-exempt conversion date, debt service is calculated at the rate of 5.061% through March 2013 and thereafter at the fixed rate payor swap rate of 3.761%. Series 2004B debt service is adjusted to take into account expected payments under the Series 2004B Qualified Hedge Agreements.

(3) Excludes Investment Earnings under Master Ordinance and Restricted Receipts under Master Ordinance.

(4) Net Revenues as calculated under the Master Ordinance, which includes as revenues restricted receipts and earnings under the Master Ordinance.

(5) Coverage under Master Ordinance for combined debt service on Previous Ordinance Bonds and First Lien Bonds.

THE SYSTEM - Sewer Facilities General

The City of Houston Wastewater Operations System receives and processes wastewater generated by residential, commercial, and industrial customers throughout the service area. The service area covers approximately 590 square miles within the City of Houston and serves a population of about 2.2 million people. The Wastewater System consists of over 6,924 miles of sanitary sewer lines, 40 wastewater treatment plants, over 400 lift/pumping stations and a centralized laboratory. The general condition of the collection lines varies depending on age, location and type of construction. The average daily wastewater flow through the Wastewater Treatment Facilities for Fiscal Year 2014 was 225 million gallons per day (mgd). The permitted treatment capacity of the wastewater treatment facilities, as reflected by State permits, is 565 mgd.

THE SYSTEM - Annexation Provisions in City Districts

The City has created reinvestment zones and public improvement districts in which infrastructure improvements, including water and wastewater facilities, will be financed by the respective district or zone through bonds supported by assessments within the districts and by a tax increment fund into which will be deposited the amount of ad valorem taxes collected in the reinvestment zones in excess of the amount calculated on the basis of the property tax appraisals in effect at the time of creation of the particular reinvestment zone. Under State law, the City can create a public improvement district both within the corporate limits of the City and within its extraterritorial jurisdiction.

**CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM STATISTICS
(unaudited)**

Funding of Proposed System Improvements

It is anticipated that the system improvements contemplated in the Department's Fiscal Year 2015 - 2019 CIP will be financed approximately as follows:

Proposed Source of Funding	Amount (in millions)
System Revenue Bonds (Net Proceeds and Interest Earnings) ⁽¹⁾	\$ 2,083.7
	<u>\$ 2,083.7</u>

- (1) The department's fiscal year 2015-2019 CIP anticipates the periodic issuance of additional First Lien Bonds and Subordinate Lien Commercial Paper. City Council must approve each issuance of bonds, but not each issuance of Commercial Paper Notes.

Obligations Payable from System Revenues

The following sets forth the total outstanding principal amount of the system obligations payable from revenues of the system as of June 30, 2014:

Contract Revenue Bonds Payable from System Gross Revenues	Amount
CWA Bonds (2)	\$ 98,900,000
Total - Contract Revenue Bonds	<u>\$ 98,900,000</u>
System Revenue Bonds Payable from System Net Revenues	
Previous Ordinance Bonds	200,233,694
First Lien Bonds	5,600,910,000
Third Lien Obligations	-
Total - System Revenue Bonds	<u>\$ 5,801,143,694</u>
Total - All Bonds Payable from System Revenues	<u>\$ 5,900,043,694</u>

- (2) Under a 1968 agreement, as amended and superseded in part, and a 1995 agreement, CWA agreed to construct the CWA conveyance system and certain other projects and the City agreed to pay, as a maintenance and operation expense of the System, amounts calculated to be sufficient to cover maintenance and operation expenses of the CWA Conveyance System plus debt service of the CWA Bonds. CWA has reserved the right to issue an unlimited amount of additional bonds on parity with those currently outstanding, however, such issuances are subject to the approval of the City.

**CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM STATISTICS
(unaudited)**

Discretionary Debt Service Paid by the System

The total amount of Discretionary Debt Service paid from Net Revenues of the System for the past nine fiscal years and the amount budgeted for fiscal year 2015 is set forth below:

Fiscal Year	Discretionary Debt Service (in millions)
2015 (budgeted)	\$ 12.0
2014	13.1
2013	15.8
2012	21.1
2011	21.7
2010	26.9
2009	28.4
2008	25.8
2007	24.7
2006	26.3

Combined Utility System General Purpose Fund Transfers for Drainage

Since Fiscal Year 2006 the Combined Utility System has made transfers from its General Purpose Fund to the Storm Water Fund as shown below.

Fiscal Year	General Purpose Fund Transfers (in millions)
2015 (budgeted)	\$ 42.0
2014	45.5
2013	43.8
2012	44.4
2011	54.8
2010	40.6
2009	39.4
2008	36.5
2007	34.1
2006	31.3

Indirect Charges Paid by the System

Fiscal Year	Indirect Charges (in thousands)
2015 (budgeted)	\$ 8,441
2014	6,173
2013	3,479
2012	3,869
2011	3,034
2010	3,148
2009	590
2008	923
2007	2,309
2006	2,157

CITY OF HOUSTON, TEXAS

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**CITY OF HOUSTON, TEXAS
 COMBINED UTILITY SYSTEM STATISTICS
 TREATED WATER/RAW WATER & SEWER ONLY
 (NOT INCLUDING WHOLESALE NOR RAW WATER)
 Last Ten Fiscal Years
 (unaudited)**

Fiscal Years	2005	2006	2007	2008	2009
Consumption (in Thousand Gallons)					
RESIDENTIAL	28,089,881	29,372,166	26,094,949	26,312,961	26,970,248
MULTI-FAMILY	25,197,120	25,917,787	24,961,804	25,156,968	25,012,299
COMMERCIAL	21,879,224	23,106,449	21,941,537	22,748,096	21,972,495
GOVERNMENT	4,510,130	5,151,211	4,614,053	4,710,923	4,713,905
SEWER ONLY	1,180,975	1,242,852	1,324,905	1,381,145	1,361,135
OTHER ACCTS	4,503,243	5,808,363	4,394,176	4,573,030	5,678,987
TOTAL	85,360,573	90,598,828	83,331,424	84,883,123	85,709,069
Revenue Amount	\$ 536,457,992	\$ 582,872,263	\$ 558,078,148	\$ 581,130,048	\$ 597,498,813
Average Rate / Water & Sewer	\$6.28	\$6.43	\$6.70	\$6.85	\$6.97

2010	2011	2012	2013	2014
28,111,338	28,553,893	29,400,266	26,239,053	25,263,997
25,586,924	25,069,764	24,811,699	25,173,568	25,131,767
22,382,315	21,997,822	22,079,299	21,508,026	21,728,794
5,197,448	4,807,824	4,835,549	4,686,403	4,688,639
1,357,879	1,228,458	1,215,254	1,331,651	1,343,031
6,351,286	6,461,476	7,473,765	6,981,799	6,339,166
<u>88,987,190</u>	<u>88,119,237</u>	<u>89,815,832</u>	<u>85,920,500</u>	<u>84,495,394</u>
<u>\$ 640,586,498</u>	<u>\$ 763,685,117</u>	<u>\$ 809,001,774</u>	<u>\$ 805,440,324</u>	<u>\$ 828,136,771</u>
\$7.20	\$8.67	\$9.01	\$9.37	\$9.80

CITY OF HOUSTON, TEXAS

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CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM STATISTICS
June 30, 2014
(unaudited)

Largest Sewer Customers

The following schedule presents information concerning the ten largest customers of the Sewer Facilities for the twelve month period ended June 30, 2014. The total charges to such customers represent approximately 2.61% of the System Gross Revenues and 5.91% of Sewer Facilities gross charges during such period.

<u>Customer</u>	<u>Gross Charges</u>
1. Anheuser - Busch, Inc.	\$ 4,164,213
2. Harris County	4,032,244
3. City of Houston	3,695,925
4. Houston Independent School District	2,936,357
5. University of Houston	2,790,050
6. Oak Farms Dairies	2,154,286
7. Maximus Coffee Group	1,947,153
8. Methodist Hospital	1,661,057
9. Hermann Hospital	1,644,795
10. Dr. Pepper Bottling	1,072,051
	<u>\$ 26,098,131</u>

Water and Sewer Rate Adjustments

In recent years, the water and sewer rates have been adjusted on the average as follows:

<u>Date of Change</u>	<u>Average Percent Rate Increase (Decrease)</u>	
	<u>Water</u>	<u>Sewer</u>
April 2005	3.5%	3.5%
April 2006	3.6%	3.6%
April 2007	2.8%	2.8%
April 2008	1.8%	1.8%
April 2009	5.1%	5.1%
April 2010	0.3%	0.3%
June 2010	19.1%	22.9%
April 2011	1.9%	1.9%
April 2012	3.3%	3.3%
April 2013	3.6%	3.6%
April 2014	1.2%	1.2%

CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM STATISTICS
June 30, 2014
Water Supply
(unaudited)

Capacity, Production, and Sales

The following schedule sets forth information concerning Water Facilities capacity, production and sales for Fiscal Year 2014 (million gallons per day):

	<u>Available</u>	<u>Capacity</u>	<u>Daily</u>	<u>Peak</u>	<u>Sales</u>
Ground	93	230	58		N/A
Surface	1,172	1,193	397		N/A
Total	<u>1,265</u>	<u>1,423</u>	<u>455</u>	<u>0</u>	<u>591</u>
Treated					378
Untreated					213
					<u>591</u>

Sources of System Revenues - General

As of June 30, 2014, the Water Facilities and the Sewer Facilities served approximately 457,536 and 439,495 active service connections, respectively. During Fiscal Year 2014 approximately 49.29% of System Gross Revenues were derived from the sale of water (90.4% from treated water and 9.6% from untreated water), approximately 43.52% from providing wastewater treatment services, 0.5% from interest income and the remaining 6.69% from various other sources. Of the treated water sales, 91.69% of revenues were from retail customers and 8.31% from bulk sales to other governmental entities.

CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM STATISTICS
June 30, 2014
Water Supply
(unaudited)

Largest Treated Water Customers

The following schedule presents information concerning the ten largest treated water customers of the System for the twelve month period ended June 30, 2014. The total charges to such customers during such period represent approximately 5.46% of the System Gross Revenues and 10.92% of total water sales revenues for such period.

<u>Customers</u>	<u>Charges</u>
1. North Harris Co. Regional Water Authority	\$ 14,664,078
2. North Fort Bend County Water Authority	8,631,052
3. West Harris Co. Regional Water Authority.	7,746,876
4. North Channel Water Authority	6,315,829
5. City of Pasadena	4,612,713
6. Anheuser Busch, Inc	3,353,549
7. Gulf Coast Water Authority (Galveston)	3,119,213
8. Clear Lake City	2,362,127
9. City of Pearland	2,061,151
10. Memorial Villages Water Authority	1,722,227
	<u>\$ 54,588,815</u>

Largest Untreated Water Customers

The following schedule presents information concerning the ten largest untreated water customers of the System for a twelve month period ended June 30, 2014. The total of the contract payments by these ten customers during such period represents approximately 3.3% of the System Gross Revenues and 6.61% of total water sales revenues for such period.

<u>Customers</u>	<u>Gross Charges</u>
1. Equistar Chemicals LP	\$ 7,075,794
2. Shell Oil	4,722,631
3. Air Liquide America Corp.	3,782,934
4. Battleground Water Company	3,600,881
5. Baytown Area	3,092,767
6. Houston Refining, LP (Lyondell-Citgo)	2,960,033
7. Chevron Phillips Chemical Company	2,748,417
8. Hoechst Celanese	2,026,709
9. Occidental Chemical Corporation	1,709,612
10. E. I. DuPont De Nemours & Company	1,308,716
	<u>\$ 33,028,494</u>

**CITY OF HOUSTON, TEXAS
COMBINED UTILITY SYSTEM STATISTICS
Debt Service Schedule
(unaudited)**

The following schedule sets forth the principal and interest requirements on all outstanding bonds payable from revenues of the System for each of the City's fiscal years ending June 30 as shown below, based on footnoted assumptions. The following schedule also does not include Discretionary Debt Service Payments or interest on Commercial Paper notes issued as Third Lien Obligations under the Master Ordinance.

Fiscal Year Ending June 30	Total Payable From System Gross Revenues(1)	Payable From System Net Revenues			Total Debt Service (1) (2)
		Previous Ordinance Bonds	First Lien Bonds(2)	Total Payable From System Net Revenues	
2015	18,063,946	15,343,435	410,349,068	425,692,503	443,756,449
2016	17,851,148	15,385,120	430,343,581	445,728,701	463,579,849
2017	7,372,240	15,430,576	446,755,761	462,186,337	469,558,577
2018	6,571,513	15,463,558	447,405,933	462,869,491	469,441,004
2019	6,554,975	15,478,113	449,754,222	465,232,335	471,787,310
2020	6,552,700	39,011,315	424,789,830	463,801,145	470,353,845
2021	6,567,025	37,892,053	429,207,537	467,099,590	473,666,615
2022	6,547,850	30,954,474	436,073,807	467,028,281	473,576,131
2023	6,525,300	32,797,360	434,828,575	467,625,935	474,151,235
2024	6,518,050	34,425,914	433,557,491	467,983,405	474,501,455
2025	6,510,050	33,357,575	434,820,428	468,178,003	474,688,053
2026	10,951,675	18,155,000	440,193,309	458,348,309	469,299,984
2027	3,551,050	30,815,000	426,255,940	457,070,940	460,621,990
2028	3,550,050	30,810,000	424,705,068	455,515,068	459,065,118
2029	3,547,925	44,095,000	428,027,720	472,122,720	475,670,645
2030	3,547,844		471,069,261	471,069,261	474,617,105
2031	3,544,844		469,871,166	469,871,166	473,416,010
2032	3,540,550		464,457,729	464,457,729	467,998,279
2033	3,534,725		463,011,206	463,011,206	466,545,931
2034	3,532,013		463,100,359	463,100,359	466,632,372
2035	3,531,938		275,871,900	275,871,900	279,403,838
2036			276,135,545	276,135,545	276,135,545
2037			237,778,871	237,778,871	237,778,871
2038			151,897,991	151,897,991	151,897,991
2039			146,188,630	146,188,630	146,188,630
2040			76,930,808	76,930,808	76,930,808
2041			76,211,158	76,211,158	76,211,158
2042			41,404,154	41,404,154	41,404,154
2043			41,404,709	41,404,709	41,404,709
2044			28,361,463	28,361,463	28,361,463
2045			14,877,875	14,877,875	14,877,875
Total	\$ 138,467,411	\$ 409,414,493	\$ 10,195,641,095	\$ 10,605,055,588	\$ 10,743,522,999

1) Includes CWA Bonds.

(2) Series 2008D-1 variable rate bond debt service is calculated using current market fixed rates. Debt service is calculated based on an assumed taxable rate with a maturity on the expected tax-exempt conversion date, December 1, 2012. After the applicable tax-exempt conversion date, debt service is calculated using a long term tax-exempt rate to maturity. \$249,075,000 of the Series 2010B variable rate bond debt service is calculated at the rate of 5.061% through March 2013 and thereafter at the fixed rate payor swap rate of 3.761%. Series 2004B debt service is adjusted to take into account expected payments under the Series 2004B Qualified Hedge Agreements.

**CITY OF HOUSTON
COMBINED UTILITY SYSTEM STATISTICS
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)**

Revenues and Expenses of the Water and Sewer System

The following schedule sets forth the revenues and expenses (exclusive of certain non-cash transactions, primarily depreciation and amortization of the "Water and Sewer System," as defined in the Coastal Water Authority Official Statements, for fiscal years ending June 30, 2005 through June 30, 2014.

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
OPERATING REVENUES										
Sales of Water, net	\$ 301,227	\$ 324,878	\$ 308,046	\$ 332,032	\$ 351,608	\$ 356,046	\$ 455,333	\$ 480,676	\$ 485,485	\$ 499,913
Sewer system user charges, net	288,459	307,764	295,423	305,748	323,301	320,722	410,941	421,370	426,888	441,300
Penalties	4,605	5,085	6,736	7,759	6,651	8,391	9,871	10,004	9,456	9,456
Other services and charges	4,583	4,935	5,260	6,325	5,678	5,979	3,030	5,188	2,861	2,739
Total Operating Revenues	598,874	642,662	615,465	651,864	687,238	691,138	879,175	917,238	924,690	953,408
NON-OPERATING REVENUES	19,771	26,557	54,572	37,779	36,405	44,407	40,662	51,144	41,014	80,058
TOTAL GROSS REVENUES (A)	618,645	669,219	670,037	689,643	723,643	735,545	919,837	968,382	965,704	1,033,466
OPERATING EXPENSES										
Maintenance and Operating Expenses	270,299	301,646	322,083	318,349	383,056	377,858	373,028	393,413	380,192	387,398
Contractual Maintenance and Operating Expenses										
CWA Debt Service	29,192	29,871	30,653	30,545	28,103	23,117	21,285	20,389	19,663	18,875
TRA Debt Service	2,354	2,212	2,221	2,096	-	-	-	-	-	-
HAWC Debt Service	6,710	6,242	8,999	-	-	-	-	-	-	-
Total Contractual	38,256	38,325	41,873	32,641	28,103	23,117	21,285	20,389	19,663	18,875
TOTAL OPERATING EXPENSES (B)	308,555	339,971	363,956	350,990	411,159	400,975	394,313	413,802	399,855	406,273
NET REVENUES	\$ 310,090	\$ 329,248	\$ 306,081	\$ 338,653	\$ 312,484	\$ 334,570	\$ 525,524	\$ 554,580	\$ 565,849	\$ 627,193
GROSS REVENUES (A) DIVIDED BY TOTAL EXPENSES (B)	2.005	1.968	1.841	1.965	1.760	1.834	2.333	2.340	2.415	2.544

CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM FUND REVENUES AND EXPENSES
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)

Total Annual Revenues Last Ten Fiscal Years	2005	2006	2007	2008	2009
Operating Revenues					
Landing area fees	\$ 102,072	\$ 101,758	\$ 92,140	\$ 99,017	\$ 82,823
Building and ground area fees	151,417	179,951	199,720	211,786	174,433
Parking, concession and other revenues	100,152	112,152	124,278	136,373	128,501
Total Operating Revenues	353,641	393,861	416,138	447,176	385,757
Nonoperating Revenues					
Interest income	14,968	18,507	33,722	41,694	37,332
Passenger facility charges	-	-	6,530	11,608	32,398
Other nonoperating revenues	4,295	56	541	514	1,093
Total Nonoperating Revenues	19,263	18,563	40,793	53,816	70,823
Total Revenues	\$ 372,904	\$ 412,424	\$ 456,931	\$ 500,992	\$ 456,580
Total Annual Expenses Last Ten Fiscal Years	2005	2006	2007	2008	2009
Operating Expenses					
Maintenance and operating	\$ 223,972	\$ 202,496	\$ 214,611	\$ 229,551	\$ 241,303
Depreciation	105,891	134,150	126,953	125,951	136,554
Total Operating Expenses	329,863	336,646	341,564	355,502	377,857
Nonoperating Expenses					
Interest expense and others	75,908	94,586	101,193	104,019	93,376
Total Nonoperating Expenses	75,908	94,586	101,193	104,019	93,376
Total Expenses	\$ 405,771	\$ 431,232	\$ 442,757	\$ 459,521	\$ 471,233

<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
\$ 94,165	\$ 90,384	\$ 86,935	\$ 91,059	\$ 88,342
182,105	181,182	182,320	181,701	186,505
130,309	138,836	148,295	160,234	177,260
<u>406,579</u>	<u>410,402</u>	<u>417,550</u>	<u>432,994</u>	<u>452,107</u>
30,487	9,700	5,634	(1,935)	11,166
66,383	63,138	63,550	61,195	62,602
7,525	3,409	4,644	1,978	3,225
<u>104,395</u>	<u>76,247</u>	<u>73,828</u>	<u>61,238</u>	<u>76,993</u>
<u>\$ 510,974</u>	<u>\$ 486,649</u>	<u>\$ 491,378</u>	<u>\$ 494,232</u>	<u>\$ 529,100</u>

<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
\$ 245,051	\$ 284,307	\$ 264,060	\$ 272,091	\$ 285,212
164,186	163,054	190,664	170,846	172,218
<u>409,237</u>	<u>447,361</u>	<u>454,724</u>	<u>442,937</u>	<u>457,430</u>
95,235	89,892	87,663	86,070	104,013
<u>95,235</u>	<u>89,892</u>	<u>87,663</u>	<u>86,070</u>	<u>104,013</u>
<u>\$ 504,472</u>	<u>\$ 537,253</u>	<u>\$ 542,387</u>	<u>\$ 529,007</u>	<u>\$ 561,443</u>

CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM STATISTICS
Passenger Statistics
(unaudited)

Fiscal Year	Domestic Passengers					
	Intercontinental		Hobby		Ellington Airport	
	Enplanements & Deplanements (in thousands)	Percentage Change	Enplanements & Deplanements (in thousands)	Percentage Change	Enplanements & Deplanements (in thousands)	Percentage Change
2005	31,609	7.2%	8,247	2.0%	14	-82.5%
2006	34,105	7.9%	8,423	2.1%	-	-100.0%
2007	35,260	3.4%	8,642	2.6%	-	-
2008	35,200	-0.2%	9,097	5.3%	-	-
2009	31,995	-9.1%	8,286	-8.9%	-	-
2010	32,093	0.3%	8,755	5.7%	-	-
2011	31,666	-1.3%	9,434	7.8%	-	-
2012	31,778	0.4%	10,192	8.0%	-	-
2013	30,830	-3.0%	10,690	4.9%	-	-
2014	30,836	0.0%	11,609	8.6%	0.003	100.0%

Domestic Passengers		International Passengers		Total Passengers	
Total		Intercontinental			
Enplanements & Deplanements (in thousands)	Percentage Change	Enplanements & Deplanements (in thousands)	Percentage Change	Enplanements & Deplanements (in thousands)	Percentage Change
39,870	5.9%	6,818	14.5%	46,688	7.1%
42,528	6.7%	7,126	4.5%	49,654	6.4%
43,902	3.2%	7,555	6.0%	51,457	3.6%
44,297	0.9%	7,976	5.6%	52,273	1.6%
40,281	-9.1%	7,642	-4.2%	47,923	-8.3%
40,848	1.4%	8,138	6.5%	48,986	2.2%
41,100	0.6%	8,732	7.3%	49,832	1.7%
41,970	2.1%	8,686	-0.5%	50,656	1.7%
41,520	-1.1%	8,795	1.3%	50,315	-0.7%
42,445	2.2%	9,470	7.7%	51,915	3.2%

CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM STATISTICS
Airline Market Shares
(unaudited)

Airlines	Intercontinental				Hobby			
	Fiscal Year 2013		Fiscal Year 2014		Fiscal Year 2013		Fiscal Year 2014	
	Total Passengers (in thousands)	Market Share	Total Passengers (in thousands)	Market Share	Total Passengers (in thousands)	Market Share	Total Passengers (in thousands)	Market Share
Domestic								
Alaska Airlines	115,472	0.3%	111,310	0.3%	-	0.0%	-	0.0%
Air Tran	-	0.0%	-	0.0%	429,447	4.0%	348,419	3.0%
American Airlines, Inc.	965,121	2.4%	1,072,177	2.7%	-	0.0%	-	0.0%
Envoy (American Eagle) - AA	241,516	0.6%	234,385	0.6%	234,064	2.2%	268,743	2.3%
Atlantic Southeast - DL	221,321	0.6%	205,529	0.5%	65,209	0.6%	5,002	0.0%
Charter Airlines	6,785	0.0%	17,785	0.0%	5,422	0.1%	6,770	0.1%
Chautauqua Airlines - DL	44	0.0%	7,916	0.0%	-	0.0%	-	0.0%
Colgan - Air Inc. - CO	5,915	0.0%	-	0.0%	-	0.0%	-	0.0%
Comair - DL	10,814	0.0%	-	0.0%	-	0.0%	-	0.0%
Compass Airlines - DL	180,240	0.5%	229,226	0.6%	-	0.0%	-	0.0%
Continental	10,859,087	27.4%	10,055,411	24.9%	-	0.0%	-	0.0%
Delta	585,425	1.5%	661,586	1.6%	224,574	2.1%	403,841	3.5%
ExpressJet Airlines, Inc. - CO	6,248,541	15.8%	6,445,204	16.0%	-	0.0%	-	0.0%
Frontier	149,634	0.4%	236,060	0.6%	2,866	0.0%	-	0.0%
GO JET - DL	815	0.0%	-	0.0%	-	0.0%	-	0.0%
GO JET - UA	-	0.0%	39	0.0%	-	0.0%	-	0.0%
JetBlue	-	0.0%	-	0.0%	134,806	1.3%	203,237	1.8%
Mesa Airlines, Inc. - UA	62	0.0%	3,955	0.0%	-	0.0%	-	0.0%
Mesa Airlines, Inc. - US	339	0.0%	1,987	0.0%	-	0.0%	-	0.0%
Endeavor (Pinnacle Airlines, Inc.) - DL	73,497	0.2%	86,562	0.2%	112,845	1.1%	532	0.0%
Republic Airlines - US	6,961	0.0%	4,795	0.0%	-	0.0%	-	0.0%
Shuttle America Corporation - CO	58,184	0.1%	651,749	1.6%	-	0.0%	-	0.0%
Shuttle America Corporation - DL	43,764	0.1%	48,503	0.1%	-	0.0%	-	0.0%
Shuttle America Corporation - UA	15,555	0.0%	-	0.0%	-	0.0%	-	0.0%
SkyWest Airlines - CO	2,014,213	5.1%	1,551,854	3.9%	-	0.0%	-	0.0%
SkyWest Airlines - DL	181,609	0.5%	123,425	0.3%	-	0.0%	-	0.0%
Southwest Airlines Company	-	0.0%	-	0.0%	9,480,769	88.6%	10,372,453	89.3%
Spirit Airlines	292,159	0.7%	665,785	1.7%	-	0.0%	-	0.0%
Sun Air (EAS)	4,573	0.0%	5,456	0.0%	-	0.0%	-	0.0%
Trans States - UA	330,783	0.8%	322,356	0.8%	-	0.0%	-	0.0%
United Air Lines Inc.	6,881,599	17.4%	6,773,473	16.8%	-	0.0%	-	0.0%
US Airways	1,336,283	3.4%	1,319,262	3.3%	-	0.0%	-	0.0%
Total Domestic	30,830,311	77.8%	30,835,790	76.5%	10,690,002	100.0%	11,608,997	100.0%
International								
	Fiscal Year 2013		Fiscal Year 2014		Fiscal Year 2013		Fiscal Year 2014	
	Total Passengers	Market Share	Total Passengers	Market Share	Total Passengers	Market Share	Total Passengers	Market Share
AeroMexico	167,922	0.4%	219,483	0.5%	-	-	-	-
Jazz Air - AC (Air Canada Jazz)	238,810	0.6%	251,713	0.6%	-	-	-	-
Air China	-	0.0%	122,593	0.3%	-	-	-	-
Air France	147,784	0.4%	151,932	0.4%	-	-	-	-
American	44	0.0%	599	0.0%	-	-	-	-
Atlas Air	32,729	0.1%	35,122	0.1%	-	-	-	-
British Airways	270,814	0.7%	281,057	0.7%	-	-	-	-
Charter Airlines	822	0.0%	1,002	0.0%	-	-	-	-
Continental	4,878,827	12.3%	4,479,939	11.1%	-	-	-	-
Emirates	186,130	0.5%	199,903	0.5%	-	-	-	-
ExpressJet Airlines, Inc.	1,171,274	3.0%	1,038,120	2.6%	-	-	-	-
KLM	173,936	0.4%	177,853	0.4%	-	-	-	-
Korean Air lines Co. Ltd.	-	0.0%	18,286	0.0%	-	-	-	-
Lufthansa	305,906	0.8%	300,824	0.8%	-	-	-	-
Qatar Airways	164,737	0.4%	163,910	0.5%	-	-	-	-
Shuttle America Corporation - CO	18,831	0.0%	43,094	0.1%	-	-	-	-
Shuttle America Corporation - UA	14,632	0.0%	-	0.0%	-	-	-	-
Singapore Airlines	112,831	0.3%	105,204	0.3%	-	-	-	-
SkyWest Airlines - CO	79,557	0.2%	208,976	0.5%	-	-	-	-
TACA	57,393	0.1%	56,385	0.1%	-	-	-	-
Turkish Airlines	29,323	0.1%	177,674	0.4%	-	-	-	-
United Air Lines Inc.	698,436	1.8%	738,731	3.5%	-	-	-	-
Viva Aerobus	44,309	0.1%	46,595	0.1%	-	-	-	-
Total International	8,795,047	22.2%	9,469,996	23.5%				
Total Airlines	39,625,358	100.0%	40,305,786	100.0%	10,690,002	100.0%	11,608,997	100.0%

Ellington Airport				Houston Airport System			
Fiscal Year 2013		Fiscal Year 2014		Fiscal Year 2013		Fiscal Year 2014	
Total Passengers (in thousands)	Market Share	Total Passengers (in thousands)	Market Share	Total Passengers (in thousands)	Market Share	Total Passengers (in thousands)	Market Share
0.0%		0.0%		115,472	0.2%	111,310	0.2%
0.0%		0.0%		429,447	0.9%	348,419	0.7%
0.0%		0.0%		965,121	1.9%	1,072,177	2.1%
0.0%		0.0%		475,580	1.0%	503,128	1.0%
0.0%		0.0%		286,530	0.6%	210,531	0.4%
0.0%		0.0%		12,207	0.0%	24,555	0.1%
0.0%		0.0%		44	0.0%	7,916	0.0%
0.0%		0.0%		5,915	0.0%	-	0.0%
0.0%		0.0%		10,814	0.0%	-	0.0%
0.0%		0.0%		180,240	0.4%	229,226	0.4%
0.0%		0.0%		10,859,087	21.5%	10,055,411	19.3%
0.0%		0.0%		809,999	1.6%	1,065,427	2.1%
0.0%		0.0%		6,248,541	12.4%	6,445,204	12.4%
0.0%		0.0%		152,500	0.3%	236,060	0.5%
0.0%		0.0%		815	0.0%	-	0.0%
0.0%		0.0%		-	0.0%	39	0.0%
0.0%		0.0%		134,806	0.3%	203,237	0.4%
0.0%		0.0%		62	0.0%	3,955	0.0%
0.0%		0.0%		339	0.0%	1,987	0.0%
0.0%		0.0%		186,342	0.4%	87,094	0.2%
0.0%		0.0%		6,961	0.0%	4,795	0.0%
0.0%		0.0%		58,184	0.1%	651,749	1.3%
0.0%		0.0%		43,764	0.1%	48,503	0.1%
0.0%		0.0%		15,555	0.0%	-	0.0%
0.0%		0.0%		2,014,213	4.0%	1,551,854	3.0%
0.0%		0.0%		181,609	0.4%	123,425	0.2%
0.0%		0.0%		9,480,769	18.7%	10,372,453	19.9%
0.0%		0.0%		292,159	0.6%	665,785	1.3%
0.0%		0.0%		4,573	0.0%	5,456	0.0%
0.0%		0.0%		330,783	0.7%	322,356	0.6%
0.0%		0.0%		6,881,599	13.7%	6,773,473	13.1%
0.0%		0.0%		1,336,283	2.7%	1,319,262	2.5%
0	0.0%	0	0.0%	41,520,313	82.5%	42,444,787	81.8%

Fiscal Year 2013		Fiscal Year 2014		Fiscal Year 2013		Fiscal Year 2014	
Total Passengers	Market Share	Total Passengers	Market Share	Total Passengers	Market Share	Total Passengers	Market Share
167,922	0.3%	219,483	0.4%				
238,810	0.5%	251,713	0.5%				
-	0.0%	122,593	0.2%				
147,784	0.3%	151,932	0.3%				
44	0.0%	599	0.0%				
32,729	0.1%	35,122	0.1%				
270,814	0.5%	281,057	0.5%				
822	0.0%	1,002	0.0%				
4,878,827	9.7%	4,479,939	8.6%				
186,130	0.4%	199,903	0.4%				
1,171,274	2.3%	1,038,120	2.0%				
173,936	0.4%	177,853	0.4%				
-	0.0%	18,286	0.0%				
305,906	0.6%	300,824	0.6%				
164,737	0.3%	163,910	0.3%				
18,831	0.0%	43,094	0.1%				
14,632	0.0%	-	0.0%				
112,831	0.2%	105,204	0.2%				
79,557	0.2%	208,976	0.4%				
57,393	0.1%	56,386	0.1%				
29,323	0.1%	177,674	0.3%				
698,436	1.4%	1,389,731	2.7%				
41,509	0.1%	46,595	0.1%				
3,795,047	17.5%	9,469,996	18.2%				

0	0.0%	0	0.0%	50,515,360	100.0%	51,914,783	100.0%
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CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM STATISTICS
Selected Financial Information
Operating Fund Only
Last Ten Fiscal Years
(amounts expressed in thousands)
(unaudited)

	2005	2006	2007	2008	2009
Operating Revenues					
Landing Area Fees:					
Landing Fees	\$ 99,197	\$ 98,385	\$ 88,933	\$ 95,730	\$ 81,596
Carrier Incentive Program	-	-	-	-	(1,176)
Aviation Fuel	1,400	1,559	1,540	1,522	1,313
Aircraft Parking	1,475	1,814	1,667	1,765	1,090
Subtotal	<u>102,072</u>	<u>101,758</u>	<u>92,140</u>	<u>99,017</u>	<u>82,823</u>
Building and Ground Area Revenues:					
Building Space	-	3,741	5,037	5,054	5,017
Terminal Space	136,074	162,491	182,113	193,375	155,396
Cargo Building	893	1,553	2,011	2,469	2,374
Other Rental	3,354	60	-	-	-
Hangar Rental	2,077	2,349	3,394	3,473	4,051
Ground Rental	9,018	9,757	7,165	7,415	7,595
Concourse Security	1	-	-	-	-
Subtotal	<u>151,417</u>	<u>179,951</u>	<u>199,720</u>	<u>211,786</u>	<u>174,433</u>
Parking, Concession and other Revenues:					
Terminal Concessions	19,823	21,030	26,953	29,435	27,003
Auto Parking	55,444	62,377	65,453	72,958	66,565
Auto Rental	18,065	21,438	22,950	24,529	24,389
Ground Transportation	3,954	3,999	4,617	4,806	4,724
Special Events	-	20	21	19	20
Vending Machine	-	20	-	-	-
Other Operating Income	2,866	3,268	4,284	4,626	5,800
Subtotal	<u>100,152</u>	<u>112,152</u>	<u>124,278</u>	<u>136,373</u>	<u>128,501</u>
Total Operating Revenues	<u>\$ 353,641</u>	<u>\$ 393,861</u>	<u>\$ 416,138</u>	<u>\$ 447,176</u>	<u>\$ 385,757</u>
Nonoperating Revenues					
Interest on Investments	10,499	17,742	26,847	30,064	23,664
Other	3,800	(58)	310	90	300
Subtotal	<u>14,299</u>	<u>17,684</u>	<u>27,157</u>	<u>30,154</u>	<u>23,964</u>
Total Gross Revenues	<u>\$ 367,940</u>	<u>\$ 411,545</u>	<u>\$ 443,295</u>	<u>\$ 477,330</u>	<u>\$ 409,721</u>
Operation and Maintenance Expenses					
Personnel and Other Current Expenses	\$ 191,093	\$ 205,565	\$ 217,720	\$ 221,309	\$ 242,449
Bad Debt Expense	-	-	-	-	-
Total Operating and Maintenance Expenses	<u>\$ 191,093</u>	<u>\$ 205,565</u>	<u>\$ 217,720</u>	<u>\$ 221,309</u>	<u>\$ 242,449</u>
Net Revenue	<u>\$ 176,847</u>	<u>\$ 205,980</u>	<u>\$ 225,575</u>	<u>\$ 256,021</u>	<u>\$ 167,272</u>
Total Debt Service	\$ 112,248	\$ 140,338	\$ 144,495	\$ 157,246	\$ 150,438
Less: grant revenue available for debt service	<u>(25,506)</u>	<u>(46,621)</u>	<u>(20,679)</u>	<u>(28,022)</u>	<u>(54,682)</u>
Debt Service Requirement (per Bond Ordinance)	<u>\$ 86,742</u>	<u>\$ 93,717</u>	<u>\$ 123,816</u>	<u>\$ 129,224</u>	<u>\$ 95,756</u>
Coverage of debt service	<u>2.03 x</u>	<u>2.20 x</u>	<u>1.82 x</u>	<u>1.98 x</u>	<u>1.75 x</u>

	2010	2011	2012	2013	2014
\$	91,443	\$ 87,413	\$ 83,895	\$ 87,660	\$ 88,392
	(411)	(250)	(836)	(749)	(4,294)
	1,329	1,378	1,382	1,444	1,529
	1,804	1,843	2,494	2,704	2,715
	<u>94,165</u>	<u>90,384</u>	<u>86,935</u>	<u>91,059</u>	<u>88,342</u>
	5,158	5,067	5,394	5,848	6,174
	161,960	160,563	160,247	158,237	163,297
	2,490	2,511	2,473	2,397	2,432
	-	-	-	-	-
	4,920	5,446	6,165	6,675	6,605
	7,577	7,595	8,041	8,544	7,997
	-	-	-	-	-
	<u>182,105</u>	<u>181,182</u>	<u>182,320</u>	<u>181,701</u>	<u>186,505</u>
	27,974	34,404	38,406	41,604	41,434
	70,127	70,681	72,833	77,596	90,173
	22,889	23,932	26,771	29,522	32,783
	4,987	5,946	6,186	6,639	8,301
	22	22	23	-	10
	-	-	-	-	-
	4,310	3,851	4,076	4,873	4,559
	<u>130,309</u>	<u>138,836</u>	<u>148,295</u>	<u>160,234</u>	<u>177,260</u>
\$	<u>406,579</u>	<u>410,402</u>	<u>417,550</u>	<u>432,994</u>	<u>452,107</u>
	15,988	12,889	9,826	7,029	5,499
	2,504	341	2,289	1,222	3,162
	<u>18,492</u>	<u>13,230</u>	<u>12,115</u>	<u>8,251</u>	<u>8,661</u>
\$	<u>425,071</u>	<u>423,632</u>	<u>429,665</u>	<u>441,245</u>	<u>460,768</u>
\$	245,147	\$ 262,668	\$ 255,507	\$ 252,745	\$ 268,745
	-	-	-	-	-
\$	<u>245,147</u>	<u>262,668</u>	<u>255,507</u>	<u>252,745</u>	<u>268,745</u>
\$	<u>179,924</u>	<u>160,964</u>	<u>174,158</u>	<u>188,500</u>	<u>192,023</u>
\$	145,130	\$ 158,682	\$ 151,311	\$ 153,938	\$ 156,424
	(56,171)	(56,827)	(43,979)	(34,390)	(58,556)
\$	<u>88,959</u>	<u>101,855</u>	<u>107,332</u>	<u>119,548</u>	<u>97,868</u>
x	<u>2.02</u>	x <u>1.58</u>	x <u>1.62</u>	x <u>1.58</u>	x <u>1.96</u>

CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM STATISTICS
Total Aircraft Operations and Aircraft Landing Weight
(unaudited)

Fiscal Year	Aircraft Operations (in thousands)			Aircraft Landed Weight (in million pounds)		
	Total	Increase (Decrease)	Percentage Change	Total	Increase (Decrease)	Percentage Change
2005	887	31	3.62%	32,543	1,099	3.50%
2006	933	46	5.19%	32,808	265	0.81%
2007	983	50	5.36%	33,930	1,122	3.42%
2008	974	(9)	-0.88%	34,096	166	0.49%
2009	892	(82)	-8.42%	31,907	(2,189)	-6.42%
2010	858	(34)	-3.86%	31,707	(200)	-0.63%
2011	861	3	0.34%	32,564	857	2.70%
2012	838	(23)	-2.65%	32,844	280	0.86%
2013	799	(39)	-4.62%	33,041	197	0.60%
2014	810	11	1.34%	33,878	837	2.53%

CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM STATISTICS
System Debt Service Schedule
(unaudited)

The following table sets forth the Debt Service Requirements on all Airport Revenue Bonds Outstanding, assuming scheduled mandatory redemption of any term bonds and using rates in effect at year-end for auction rate securities and variable rate demand obligations. The amounts do not include the Airport System's Senior Lien Commercial Paper Notes.

Fiscal Year (ending June 30)	Senior Lien Bonds Debt Service	Subordinate Lien Bonds Debt Service	Total Bonds Debt Service	Inferior Lien Obligations	Bonds plus Inferior Lien Obligations
2015	23,818,994	144,036,877	167,855,871	6,437,963	174,293,834
2016	32,862,119	142,774,395	175,636,514	6,427,663	182,064,177
2017	32,851,744	146,457,032	179,308,776	6,420,863	185,729,639
2018	32,837,619	145,511,676	178,349,295	6,411,600	184,760,895
2019	32,823,619	145,940,638	178,764,257		178,764,257
2020	32,813,369	146,124,777	178,938,146		178,938,146
2021	32,795,619	145,094,726	177,890,345		177,890,345
2022	32,783,994	146,435,763	179,219,757		179,219,757
2023	32,766,994	145,561,445	178,328,439		178,328,439
2024	32,753,119	145,560,746	178,313,865		178,313,865
2025	32,735,744	144,678,212	177,413,956		177,413,956
2026	32,718,244	144,357,908	177,076,152		177,076,152
2027	32,698,869	146,215,784	178,914,653		178,914,653
2028	32,665,459	143,375,482	176,040,941		176,040,941
2029	32,644,981	143,117,193	175,762,174		175,762,174
2030	32,608,156	144,395,956	177,004,112		177,004,112
2031	32,562,213	144,442,459	177,004,672		177,004,672
2032	32,532,300	141,650,329	174,182,629		174,182,629
2033	32,502,163	145,139,228	177,641,391		177,641,391
2034	32,468,500		32,468,500		32,468,500
2035	32,432,875		32,432,875		32,432,875
2036	32,396,575		32,396,575		32,396,575
2037	32,360,613		32,360,613		32,360,613
2038	32,320,863		32,320,863		32,320,863
2039	32,278,063		32,278,063		32,278,063
2040	32,232,675		32,232,675		32,232,675
Total	\$ 839,265,483	\$ 2,750,870,626	\$ 3,590,136,109	\$ 25,698,089	\$ 3,615,834,198

AIRPORT SYSTEM STATISTICS
Summary of Certain Fees and Charges
(unaudited)

	<u>Bush Intercontinental</u>		<u>Hobby</u>	
	Fiscal Year	Fiscal Year	Fiscal Year	Fiscal Year
	<u>2013</u>	<u>2014</u>	<u>2013</u>	<u>2014</u>
Landing Rates (1)	\$2.870	\$2.985	\$1.987	\$2.037
Terminal Space Rentals (2)	\$23.71 - \$82.23	\$22.50 - \$74.82	\$88.28 - \$90.78	\$90.02 - \$92.52
Apron Rentals (2)	\$1.976 - \$2.802	\$2.202 - \$2.784	\$1.936	\$2.058
Parking Rates (3)				
Economy (Ecopark)				
Covered	\$7.00	\$8.00		
Uncovered	\$5.00	\$6.00		
Ecopark 1 (4)			\$10.00	\$12.00
Ecopark 2			\$6.00	\$10.00
Structured	\$17.00	\$19.00	\$17.00	\$19.00
Sure Park	\$20.00	\$23.00	n/a	n/a
VALET Premier	\$23.00	\$25.00	\$23.00	\$25.00

(1) Per 1,000 pounds for landing weight

(2) Range per square foot

(3) Maximum per day

(4) Facility closed March 2014

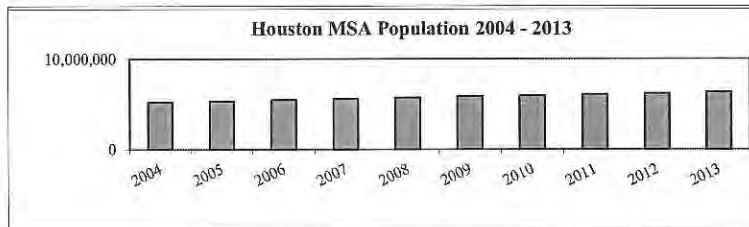
**CITY OF HOUSTON, TEXAS
AIRPORT SYSTEM STATISTICS
Service Area
(unaudited)**

The airport service region for the Houston Airport System consists of (1) the nine county Houston-The Woodlands-Sugar Land Metropolitan Statistical Area (Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery and Waller counties) -- referred to as the Houston MSA, and (2) a large secondary area surrounding the Houston MSA. The limits of this secondary area are generally defined by the range and quality of airline service at other air carrier airports, including Beaumont Jefferson County Airport to the east, Dallas/Fort Worth International Airport and Dallas Love Field to the north, Corpus Christi International Airport to the southwest and Austin-Bergstrom International Airport and San Antonio International Airport to the west.

Houston, the nation's fourth most populous city, is the largest in the South and Southwest. The Houston MSA ranks fifth in population among the nation's metropolitan areas.

Service Area Population

<u>Year</u>	<u>Houston MSA Population</u>
2004	5,190,444
2005	5,299,567
2006	5,484,883
2007	5,597,674
2008	5,726,705
2009	5,867,489
2010	5,946,800
2011	6,086,538
2012	6,177,035
2013	6,313,158



Source: Greater Houston Partnership and U.S. Census Bureau, Population Division

CITY OF HOUSTON, TEXAS
SURETY BOND AND INSURANCE COVERAGE
June 30, 2014
(amounts expressed in thousands)
(unaudited)

Policy Number	Insurer	Term of Policy
70846103	Western Surety Company	01-02-2014 to 01-02-2016
70846110	Western Surety Company	01-02-2014 to 01-02-2016
61BSBDV0123	Hartford Casualty Insurance Company	12-15-2013 to 12-15-2014
61BSBFQ0813	Hartford Casualty Insurance Company	01-02-2014 to 01-02-2016
61BSBFW9293	Hartford Casualty Insurance Company	11-30-2013 to 11-30-2014
61BSBGM4960	Hartford Casualty Insurance Company	04-11-2014 to 04-11-2015
61BSBDT7808	Hartford Casualty Insurance Company	12-09-2013 to 12-09-2014
6610	Texas Municipal League	05-15-2014 to 05-15-2015
D37362797006	Westchester Fire Insurance Co. (Primary)	04-01-2014 to 04-01-2015
PU000606d	Underwriters at Lloyds & Ironshore Europe Ltd.	04-01-2014 to 04-01-2015
42PRP00021901	National Fire & Marine	04-01-2014 to 04-01-2015
PU000601d	Underwriters at Lloyds (First Excess Layer)	04-01-2014 to 04-01-2015
EA70044614	Axis Surplus	04-01-2014 to 04-01-2015
ESP004900202	Arch Specialty Insurance Company	04-01-2014 to 04-01-2015
NHD386405	RSUI Indemnity Insurance Company	04-01-2014 to 04-01-2015
PU000608d	Great Lakes Re (UK) Place	04-01-2014 to 04-01-2015
MQL9L437312034	Liberty Mutual Fire	04-01-2014 to 04-01-2015
PU000612d	Underwriters at Lloyds	04-01-2014 to 04-01-2015
PU000603d	Underwriters at Lloyds (Second Excess Layer)	04-01-2014 to 04-01-2015
MKLX13XP000434	Essex Insurance Company	04-01-2014 to 04-01-2015
ESP004900102	Arch Specialty Insurance Company	04-01-2014 to 04-01-2015
TBD	Underwriters at Lloyds	04-01-2014 to 04-01-2015
TBD	RSUI Indemnity Insurance Company	04-01-2014 to 04-01-2015
31377054	Westport Insurance Corp.	04-01-2014 to 04-01-2015
100008188402	Liberty Surplus Insurance Corp.	04-01-2014 to 04-01-2015
PU000604d	Underwriters at Lloyds & Ironshore Europe Ltd. (Third Excess Layer)	04-01-2014 to 04-01-2015
31377054	Westport Insurance Corp.	04-01-2014 to 04-01-2015
NHD386406	RSUI Indemnity Insurance Company	04-01-2014 to 04-01-2015
TBD	Liberty Surplus Insurance Corp.	04-01-2014 to 04-01-2015
PU000605d	Underwriters at Lloyds - HCC 4141 (Fourth Excess Layer)	04-01-2014 to 04-01-2015
PU000609d	Underwriters at Lloyds- HDU 382	04-01-2014 to 04-01-2015
PU000613d	Underwriters at Lloyds - AXIS 1686	04-01-2014 to 04-01-2015
XPP915556300	Steadfast Insurance Company	04-01-2014 to 04-01-2015
PD1022200	Underwriters at Lloyds - Brit	04-01-2014 to 04-01-2015
LCP648088300	Tokio Fire and Marine	04-01-2014 to 04-01-2015
URS252863714	Underwriters at Lloyds - Hiscox	04-01-2014 to 04-01-2015
PU000610d and PU000611d	Underwriters at Lloyds (Primary and Excess)	04-01-2014 to 04-01-2015
YB2-L9L-458619-014	Liberty Mutual Fire Insurance Company	02-18-2014 to 02-18-2015
6610	Texas Municipal League	07-01-2013 to 07-01-2014
1333421100357	AXA Insurance Company	06-26-2014 to 06-26-2015
CA 1556804	Admirable Insurance Company	02-26-2014 to 02-26-2015
86878C142AL1	Torus National Insurance Company	02-26-2014 to 02-26-2015
1333421100619	AXA Insurance Company	11-03-2013 to 11-03-2014
105324683	Travelers Casualty & Surety	12-30-2013 to 12-30-2014
01 915 51 04	Chartis	05-29-2014 to 05-29-2015
61BPEAM5075	Hartford Casualty Insurance Company	10-29-2013 to 10-29-2014
61BPEAI9468	Hartford Casualty Insurance Company	02-11-2014 to 02-11-2015
61BPEC12302	Hartford Insurance	07-01-2013 to 07-01-2014
Various (approximately 3,000)	Western Surety Company	Four Year Term per Bond
	National Casualty Company	06-24-2014 to 07-08-2014
	Underwriters at Lloyds London	06-13-2014 to 07-05-2014
CPS1896960	Scottsdale Insurance Company	11-17-2013 to 11-29-2013
6610	Texas Municipal League	11-06-2013 to 07-01-2015

Property at Risk	Type of Coverage	Coverage (in thousands)
Mayor	Public Official Bond	\$ 50
City Controller	Public Official Bond	\$ 50
City Treasurer	Public Official Bond	\$ 25
Deputy Controller	Public Official Bond	\$ 25
Municipal Courts	Public Official Bond	\$ 25
Tax Collector	Public Official Bond	\$ 25
HMEPS (Pension) Treasurer	Public Official Bond	\$ 250
City of Houston	Automobile Catastrophe	\$ 1,418
City of Houston	Property Insurance *	\$ 10,000
City of Houston	Property Insurance *	\$ 8,250
City of Houston	Property Insurance *	\$ 6,750
City of Houston	Property Insurance *	\$ 6,000
City of Houston	Property Insurance *	\$ 5,000
City of Houston	Property Insurance *	\$ 2,500
City of Houston	Property Insurance *	\$ 1,250
City of Houston	Property Insurance *	\$ 5,000
City of Houston	Property Insurance *	\$ 2,500
City of Houston	Property Insurance *	\$ 2,750
City of Houston	Property Insurance *	\$ 19,165
City of Houston	Property Insurance *	\$ 2,500
City of Houston	Property Insurance *	\$ 5,000
City of Houston	Property Insurance *	\$ 5,500
City of Houston	Property Insurance *	\$ 2,500
City of Houston	Property Insurance *	\$ 12,835
City of Houston	Property Insurance *	\$ 2,500
City of Houston	Property Insurance *	\$ 26,000
City of Houston	Property Insurance *	\$ 16,500
City of Houston	Property Insurance *	\$ 5,000
City of Houston	Property Insurance *	\$ 2,500
City of Houston	Property Insurance *	\$ 1,875
City of Houston	Property Insurance *	\$ 750
City of Houston	Property Insurance *	\$ 7,500
City of Houston	Property Insurance *	\$ 5,000
City of Houston	Property Insurance *	\$ 2,500
City of Houston	Property Insurance *	\$ 2,500
City of Houston	Property Insurance *	\$ 4,875
City of Houston	Terrorism Insurance	\$ 100,000
City of Houston	Boiler & Machinery	\$ 100,000
City of Houston	Information Technology Radio Equipment and Towers	\$ 76,427
City of Houston Library	Business Electronic Eq., Valuable Papers, Fine Arts	\$ 11,023
Holcombe Health Lab	Commercial General Liability	\$ 1,000
Holcombe Health Lab	Excess Liability	\$ 5,000
Houston First Corp.	Fine Arts	\$ 14,353
City of Houston	Pole Attachment Bond, Centerpoint	\$ 250
City of Houston	Public Employee Dishonesty/Crime	\$ 2,000
Parks Board	Public Employee Dishonesty	\$ 10
Library Board	Public Employee Dishonesty	\$ 10
Houston Center for Literacy	Employee Dishonesty	\$ 375
Various City of Houston Notaries	Notary Public Bonds	\$ 3
City of Houston	Special Event Commercial General Liability	\$ 1,000
City of Houston	Adverse Weather Event Cancellation	\$ 946
City of Houston	Special Event Commercial General Liability	\$ 1,000
City of Houston	Property Insurance - Floats	\$ 1,000

* The property insurance is provided by insurance carriers that underwrite varying pro-rata shares of coverage that total to the policy loss limit.

CITY OF HOUSTON, TEXAS
SALARIES OF ELECTED OFFICIALS
June 30, 2014
(unaudited)

<u>Name and Title of Official</u>	<u>Authorized Annual Base Salary</u>
Annise D. Parker, Mayor	\$ 234,032
Ronald C. Green, City Controller	156,021
Brenda K. Stardig, Council Member - District A	62,409
Jerry V. Davis, Council Member - District B	62,409
Ellen N. Cohen, Council Member - District C	62,409
Dwight A. Boykins, Council Member - District D	24,000 (1)
David P. Martin, Council Member - District E	62,409
Richard A. Nguyen, Council Member - District F	62,409
Olin "Oliver" Pennington, Council Member - District G	62,409
Edward Gonzalez, Council Member - District H	62,409
Robert Gallegos, Council Member - District I	62,409
Michael H. Laster, Council Member - District J	62,409
Larry V. Green, Council Member - District K	62,409
Stephen C. Costello, Council Member - At Large Position 1	62,409
David W. Robinson, Council Member - At Large Position 2	62,409
Felix M. Kubosh, Council Member - At Large Position 3	62,409
Clarence O. "Brad" Bradford, Council Member - At Large Position 4	62,409
John R. Christie, Council Member - At Large Position 5	55,770 (1)

(1) Council Members Dwight Boykins and John Christie voluntarily took smaller salaries.

CITY OF HOUSTON, TEXAS
Schedule of Credits
(unaudited)

Comprehensive Annual Financial Report:

Controller's Office

Executive/Administrative Divisions

Ronald C. Green, City Controller
Chris Brown, Chief Deputy City Controller
Roger Widmeyer, Director of Communications

Design Oversight and Writing

Financial Reporting Division

Carl Medley, Deputy City Controller
Michael Abbott, Assistant City Controller
Alicia Cai, Assistant City Controller
Rosa Henderson, Assistant City Controller
Larry Liu, Assistant City Controller
Chris Okeagu, Assistant City Controller
Maria G. Perez, Administrative Assistant
Irma Rodriguez, Assistant City Controller
Courtney Satterwhite, Assistant City Controller
Andrew Vasquez, Deputy Director
Suong "Su" Vu, Assistant City Controller
Dinah Walter, Assistant City Controller
Bonita Wright, Assistant City Controller

Preparation and Coordination

Operations and Technical Services Division

Harry Singh, Deputy City Controller
Monika De Los Santos, Assistant City Controller
Brenda Jackson, System Support Analyst
Brenda Johnson, Administrative Coordinator
Martina Lee, Assistant City Controller
Annie Nguyen, Administrative Supervisor
Nam Nguyen, Micro Computer Analyst
Daniel Schein, System Support Analyst
Lillie Stewart, Administration Manager
Anthony Tran, LAN Specialist

Consulting and General Support

Treasury Division

Charisse Page Mosely, Deputy City Controller
Han Au, Treasury Manager
Vivien Nguyen, Senior Treasury Analyst
Lillie Nobles, Management Analyst
Asha Patnaik, Debt Manager
Catherine Smith, Senior Treasury Analyst
Martin Troupe, Assistant City Controller
Kedrick Winfield, Assistant City Controller

Debt and Investment Management Disclosures

CITY OF HOUSTON, TEXAS
Schedule of Credits - Continued
(unaudited)

Finance Department

Kelly Dowe, Director

Adela Bautista, Division Manager

Silvia Diaz, Financial Analyst

Joe Dumas, Deputy Assistant Director

LaToya Jasper, Deputy Assistant Director

Isis Mathoslah, Financial Analyst

Gloria Moreno, Deputy Assistant Director

Nikky Nguyen, Division Manager

Arif Rasheed, Deputy Director

Preparation, Coordination, Analysis and Documentation

Administration & Regulatory Affairs Department

Tina Paez, Director

Raymond Bradford, Senior Staff Analyst

Annabelle Chen, Assistant Director

Hannah Hoang, Senior Accountant

Bethany Li, Administration Manager

Denejra Milborn, Senior Accountant

Juan Olguin, Assistant Director

Rosalinda Salazar, Senior Staff Analyst

Sreng Ung, Division Manager

Bill Wickliffe, Division Manager

Analysis and Supporting Documentation

Houston Information Technology Services Department

Charles Thompson, Director

Ron Headley, Division Manager

Sindhu Menon, Assistant Director

SAP/ ERP Consulting, Support & Development

Professional Consultants

Houston Independent School District Printing Services

Debbie Roberts, Outside Sales Representative

Project Management and Design

McConnell & Jones LLP/Banks, Finley, White & Co.

Independent Auditors

This schedule by no means gives credit to all of the individuals who have some part in the development and production of this Comprehensive Annual Financial Report. However, we have included the major participants who made the issuance of this document possible.

Maps by the City of Houston Planning and Development Department

Cover Photo by The Positive Image

Printing by HISD Graphic Services

Design by Susanne Bynum

Concept, Controller's Communications Office





C47. Management Letter

To Management of the City of Houston, Texas:

In planning and performing our audit of the financial statements of the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information of the City of Houston, Texas (the "City") for the year ended June 30, 2014, (on which we have issued our report dated November 21, 2014, which contains a reference to other auditors) in accordance with auditing standards generally accepted in the United States of America, we considered the City's internal control over financial reporting (internal control) as a basis for designing our auditing procedures for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control over financial reporting. Accordingly, we do not express an opinion on the effectiveness of the City's internal control.

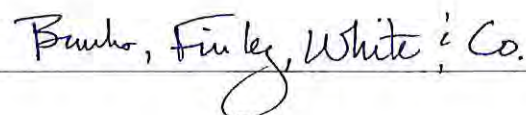
Our consideration of internal control was for the limited purpose described in the preceding paragraph and would not necessarily identify all deficiencies in internal control that might be significant deficiencies or material weaknesses. However, in connection with our audit, we identified, and included in the following pages of this report, deficiencies related to the City's internal control over financial reporting as of June 30, 2014, that we wish to bring to your attention.

We have also issued a separate report to City Council and management, also dated November 21, 2014, which includes certain matters involving the City's internal control over financial reporting that we consider to be a material weakness under standards established by the American Institute of Certified Public Accountants.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis. A material weakness is a deficiency or combination of deficiencies in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

This report is intended solely for the information and use of the City's elected officials, management and others within the City and is not to be and should not be used by anyone other than these specified parties. We will be pleased to discuss these comments with you and, if desired, to assist you in implementing any of the suggestions.





November 21, 2014.

OTHER COMMENTS AND OBSERVATIONS

Analysis of General Ledger Accounts

In connection with our analysis of numerous balance sheet accounts, primarily in the areas of cash and accounts receivables, we noted numerous accounts where there was either no change or minimal change from the prior year's balances. Further inquiry regarding these accounts as part of our audit in these areas revealed that many of these accounts were carryover balances that had been in place prior to conversion to the current financial accounting system (SAP). Furthermore, it is our understanding that for some of these accounts that relate to old outstanding receivables remains in the City's accounting records because the State of Texas does not allow local governments to write-off receivable accounts.

The City maintains several "Not Reported" funds which are used to monitor activity on a memo basis for reconciling to applicable funds used in the financial reporting process. One such fund is the "Pool Cash Fund" which is used account for the City's concentration of cash balances across all participating funds. The fund, however, is overstated by \$18 million due to several old accounts balances that are not reconcilable to cash accounts held by a bank in the City's name and to cash balances reported in the financial statements.

Recommendation

We recommend that the City make efforts to appropriately offset and eliminate old outstanding accounts against active SAP accounts where possible. For old receivable balances, while the State does not allow these balances to be written off, the City should re-evaluate the methodology of the allowance computation and adjust the allowance accounts to fully reflect the inability to collect of old outstanding accounts.

As for the Pool Cash Fund, we recommend that the City make the appropriate entries to bring the Pool Cash Fund in agreement with existing bank and cash account balances.

Monitoring of Component Unit Activity

Within the City's Comprehensive Annual Financial Report (CAFR), under generally accepted accounting principles, the City includes as part of its financial reporting entity the Houston Housing Finance Corporation (HHFC) as a discretely presented component unit. The overall nature of the activity of the HHFC appears to be inconsistent with the financial statements received from HHFC by the City and included in the CAFR. The statements used by the City only include reporting of the Cash Accounts of the HHFC and not that of the entire operation.

Recommendation

We would encourage the City to have discussions with the HHFC regarding obtaining financial statements that report on the entire activity of the organization.

Monitoring Service Provided by Outside Service Organization

The City uses outside service organizations to perform various functions such as third party administration of various benefit plans. Using third parties to perform such services is customary within local government; however, the City remains responsible for ensuring that such entities have in place effective internal controls over account balances or transactions they are servicing for the City. To provide evidence of the existence of effective controls, these “service organizations” should provide customers an annual “service organization auditor’s report” (currently referred to as a SOC-1 Report). The report provides evidence by the service organization’s independent auditor of the testing of the effectiveness of appropriate controls. The report also stipulates that the effectiveness of the organization’s controls is dependent on the implementation of certain “user controls”. These controls represent the City’s responsibility in the use of service organizations.

During the course of our current year audit, we did not see evidence that the City is obtaining and reviewing the service organization reports on a timely basis. Additionally, we did not see evidence that the City has procedures in place to ensure “user controls” have been implemented on a timely basis. We were able to obtain and review the service organization reports as part of the audit process and determine that sufficient controls were in place at the service organization level and, at our request; the City was able to document proper implementation of user controls.

Recommendation

The City should develop procedures within affected departments that establish requirements for the receipt and documented review of service organization reports. These requirements should address the timing of the receipt of reports and the sufficiency of the audit scope for the City’s purposes. Additionally, the procedures should also set forth requirements for ensuring applicable user controls established by the service organizations are in place and implemented by the City.

Review of Information Technology Services Area

In connection with the audit and our review of internal control related to financial reporting, we noted the following items in the Houston Information Technology Services Department (HITS) of the City:

- HITS has a backup and data retention policy/schedule that specifies how and when backups are to be performed. Best practices stipulate that data and file recovery procedures be tested at least annually. Data from the backups is run on tapes and maintained in the same data center. We recommend that backup tapes be stored and retained offsite on a regular schedule. Additionally we did not see evidence that the backup tapes are being tested to ensure their completeness and usability. We recommend that procedures be developed and implemented to test backup tapes on a regular schedule.
- HITS does not have an enterprise level user access policy for users by role and position. We understand that HITS is developing an electronic interface between the Active Directory, which contains all user access information, and SAP role-based security. By interfacing these systems, the City would have an enterprise level user access policy. We recommend that the City continue to move forward with this approach.

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OFFICE OF THE CITY CONTROLLER
CITY OF HOUSTON
TEXAS

RONALD C. GREEN

To: Mayor Annise D. Parker
City Council Members

From: Ronald C. Green
City Controller

Date: April 24, 2015

Subject: **March 2015
Financial Report**

Attached is the Monthly Financial Report for the period ending March 31, 2015.

GENERAL FUND

The Controller's Office is projecting an ending fund balance of \$190.2 million for FY2015. This is \$19.7 million lower than the projection of the Finance Department. The difference is due to a \$19.7 million higher revenue projection from the Finance Department. Based on our current projections, the fund balance will be \$40.9 million above the City's target of holding 7.5% of total expenditures, excluding debt service, in reserve.

We have increased our revenue projection \$8.4 million from last month's projection. Our projection for Property Tax increased \$592,000 for higher taxable values and lower delinquent collections. Other Taxes increased \$1.3 million from a higher 3rd quarter receipt for Mixed Beverages. Licenses & Permits was increased \$373,000 for higher burglar alarm permits and administrative fees. Intergovernmental was increased \$339,000 for higher Tax Increment Reinvestment Zones (TIRZ) administrative fees. Charges for Services was increased \$4.3 mainly for Ambulance fees. Direct Interfund was increased \$672,000 for higher airport police services charges. Indirect Interfund was decreased \$305,000 for lower costs recovered from other funds. Municipal Courts Fines and Forfeits was decreased \$544,000 for lower trending of receipts. Finally, Miscellaneous/Other was increased \$1.1 million. This was due to an increase of \$2 million for payment in lieu of taxes, net of a decrease of \$1 million for an estimated recoupment of revenue from Medicare.

The major differences are in six categories:

- (1) Property Taxes are \$4.2 million lower as Controller's Office is using a lower ending Taxable Values and Delinquent Collections projection than Finance.
- (2) Industrial Assessments are \$1 million lower as Controller's Office is using a lower valuation and collection rate than Finance.
- (3) Sales Tax is \$3.9 million lower, as Controller's Office is using Dr. Gilmer's April 2014 growth estimate of 3.3%, and adjusting to actual as monthly receipts are determined. The most recent receipt (February) was up only 2.86% over the prior year.
- (4) Licenses and Permits are \$1.3 million lower, primarily from lower trending projections by Controller's Office in numerous revenue sources.
- (5) Municipal Courts Fines and Forfeits are \$2.1 million lower, primarily from lower trending of moving violation receipts by Controller's Office.
- (6) Miscellaneous/Other is \$4.8 million lower, as Controller's Office is projecting lower one-time revenue receipts.

**Mayor Annise D. Parker
City Council Members
March Monthly Financial Report**

Expenditure projections were decreased \$854,000 from last month's projection. Various departments were adjusted for increases in Interfund Vehicle Services for \$3 million and Application Services for \$700,000. This was offset by decreases of \$3 million for savings in Fuel, and \$1.6 million in Fire for savings on the Work Demands Analysis.

ENTERPRISE FUNDS

In the Aviation Operating Fund, our projection for Operating Expenses decreased \$3 million, mainly for lower property insurance premiums, electricity and natural gas, and interfund vehicle services. Non-operating Revenues increased \$378,000 from a reclass in sales of land from a grant fund to the operating fund. These changes caused the projection for Operating Transfers to increase \$3.3 million.

We are currently projecting no material changes in the Combined Utility System, Convention & Entertainment, Dedicated Drainage & Street Renewal, and Stormwater Fund this month.

COMMERCIAL PAPER AND BONDS

The City's practice has been to maintain no more than 20% of the total outstanding debt for each type of debt in a variable rate structure. As of March 31, 2015, the ratio of unhedged variable rate debt for each type of outstanding debt was:

General Obligation	3.53%
Combined Utility System	0.00%
Aviation	14.03%
Convention and Entertainment	11.70%

Respectfully submitted,



Ronald C. Green
City Controller

City of Houston, Texas
Quarterly Swap Agreements Disclosure
March 31, 2015

I. Combined Utility System Swaps

A. Combined Utility System Synthetic Fixed Rate Swap

On September 10, 2004 the City entered into three pay-fixed, receive-variable rate swap agreements (“the 2004B Swaps”) related to the Combined Utility System 2004B auction rate variable interest bonds (“the 2004B Bonds”). The City pre-qualified six firms to submit competitive bids on the swaps. The three firms selected all matched the lowest fixed rate bid of 3.78%. As of August 15, 2012 the City had converted all of the 2004B bonds from auction rate to variable rate demand bonds (“the 2004B bonds”) and SIFMA-Index notes (“the 2012A and 2012B Refunding Bonds”), collectively referred to herein as the “Bonds.”

Objective. The objective of the swaps is to hedge against the potential of rising interest rates associated with the Bonds and to achieve a lower fixed rate than the market rate for traditional fixed rate debt at time of issuance. The City’s goal is that its variable receipts under these swaps equal the variable payments made on the bonds, leaving the fixed payment on the swap, plus dealer and liquidity fees and the fixed spread to SIFMA, as its net interest cost.

Terms. The notional amounts of the swap agreements total \$653.3 million, the principal amount of the associated Bonds. The City’s swap agreements contain scheduled reductions to outstanding notional amounts that follow anticipated payments of principal of the Bonds in varying amounts during the years 2028 to 2034.

Under the terms of the swaps, the City will pay a fixed rate of 3.78% and receive a floating rate equal to 57.6% of One-Month US Dollar LIBOR plus 37 basis points. All agreements were effective September 10, 2004, the original date of issuance of the Bonds. The termination date is May 15, 2034.

Receipts and Payments. For the nine months ended March 31, 2015, the City earned \$2,282,955 in swap revenue for these swaps and paid \$155,625 of interest on the underlying securities. The contractual rate for the City’s swap payment is 3.78%. The average effective rate for the 2004B bonds, including interest for the Series 2004B bonds, the City’s swap payments, and its dealer and liquidity fees, reduced by swap receipts, was 3.13%. In contrast, the comparable fixed rate the City paid on its Combined Utility System Series 2004A bonds was 5.08%.

Fair value. Because interest rates have changed, the swaps had an estimated negative fair value of \$199.8 million on March 31, 2015. This value was calculated using the zero-coupon method.

Credit risk. As of this date, the City was not exposed to credit risk because the swaps had a negative fair value. However, should interest rates change and the fair value of the swap become positive, the City would be exposed to credit risk on the swap in the amount of its fair value. If a counterparty’s credit rating falls below rating thresholds established by the agreements, collateral must be posted in varying amounts depending on the credit rating and swap fair value. No collateral has been required to date.

Counterparty	Notional Amount	Fair Value	Counterparty Credit Rating (Moody’s/S&P/Fitch)
Goldman Sachs Capital Markets Inc.	\$ 353,325,000	\$ (108,029,012)	Baa1 /A /A
JP Morgan Chase	150,000,000	(45,862,455)	Aa3/ A+/A+
UBS AG	150,000,000	(45,862,455)	A2 /A /A
	<u>\$ 653,325,000</u>	<u>\$ (199,753,922)</u>	

Basis risk. The City is exposed to basis risk on the swaps because the variable payment received is based on a different taxable index from the tax-exempt rate paid by the City on the bonds. Should the relationship between taxable LIBOR and tax-exempt rates move to convergence (because of reductions in tax rates, for example), the expected cost savings may not be realized. For the nine months ended March 31, 2015 the swap generated positive cash flow with the average variable rate paid on the underlying tax-exempt bonds at 0.03%, or 0.43% lower than the average 0.46% LIBOR-based rate received for the swap.

Remarketing risk. The City faces a risk that the remarketing agent will not be able to sell the variable rate demand bonds at a competitive rate each week. There is no remarketing risk associated with the SIFMA index notes until the end of the respective maturities in 2015 and 2017. Rates may vary considerably as investors shift in and out of the tax-exempt variable rate sector.

Termination risk. The City may terminate for any reason. A counterparty may terminate a swap if the City fails to perform under the terms of the contract. The City's on-going payment obligations under the swap (and to a limited extent, its termination payment obligations) are insured, and counterparties cannot terminate so long as the insurer does not fail to perform. If a swap is terminated, the associated variable-rate bonds would no longer carry synthetic fixed interest rates. Also, if the swap has a negative fair value at termination, the City would be liable to the counterparty for a payment equal to the swap's fair value.

B. Combined Utility System Forward Rate Lock/Synthetic Fixed Rate Swap

On November 1, 2005 the City priced a floating to fixed interest rate exchange agreement swap with Royal Bank of Canada ("RBC") on a forward basis. The City pre-qualified eight firms to submit competitive bids, and RBC submitted the lowest bid of 3.761%.

Objective. The City entered the swap agreement to hedge against the potential of rising interest rates and to achieve a lower fixed rate than the market rate for traditional fixed rate debt. This swap was previously assigned to the 2008A variable rate demand bonds and the 2010B SIFMA Indexed Notes. The swap is currently associated with the 2012C SIFMA Indexed Notes, which refunded the 2010 SIFMA Indexed Notes. The addition of the SIFMA-Indexed Notes diversifies the System's variable rate debt portfolio. Rates on the notes are calculated at SIFMA +60 bps, and the notes expire in 2016.

Terms. The notional amount of the swap is \$249.1 million with the underlying bonds being the Series 2012C Notes. The swap agreement contains scheduled reductions to the outstanding notional amount during the years 2028 to 2034.

Under terms of the swap, the City pays a fixed rate of 3.761% and receives a floating rate equal to 70% of One-Month US Dollar LIBOR. The agreement became effective December 3, 2007 with a termination date of May 15, 2034.

Receipts and Payments. For the nine months ended March 31, 2015, the City earned \$208,415 swap revenue for its 2012C swap and paid \$67,421 on the underlying notes. The contractual rate for the City's swap payment is 3.761%. The average effective rate for the bonds, including the City's swap payments and a fixed component, reduced by swap receipts was 3.6%.

Fair value. Because interest rates have changed, the swap had an estimated negative fair value of \$79.4 million on March 31, 2015. This value was calculated using the zero-coupon method.

Credit risk. The City's swap policy generally requires that swap counterparties be rated double-A or better by at least one nationally recognized rating agency. As of this date, RBC met this requirement with ratings of Aa3/AA-/AA. Also, under the agreement, if RBC's credit rating falls below double-A, collateral may be requested in varying amounts depending on the credit rating and swap fair value. No collateral has been required to date.

Basis risk. The City will be exposed to basis risk on the swap because the variable payment received is based on a taxable index other than the tax-exempt SIFMA based rate paid by the City on the bonds. In the future, if tax-exempt rates move to convergence with the taxable LIBOR index (because of reductions in tax rates, for example), the expected cost savings may not be realized, resulting in a higher synthetic rate. For the nine months ended March 31, 2015, the average variable rate paid on the underlying tax-exempt bonds, excluding the fixed credit spread component, was 0.04%, 0.07% lower than the average 0.11% LIBOR-based rate received for the swap.

Termination risk. The City may terminate for any reason. RBC may terminate a swap if the City fails to perform under the terms of the contract. The City's on-going payment obligations under the swap (and to a limited extent, its termination payment obligations) are insured, and RBC cannot terminate so long as the insurer does not fail to perform. If a swap is terminated, the associated variable-rate bonds would no longer carry synthetic fixed interest rates. Also, if the swap has a negative fair value at termination, the City would be liable to the counterparty for a payment equal to the swap's fair value.



CITY OF HOUSTON

Finance Department

Annise D. Parker

Mayor

Finance Department
P.O. Box 1562
Houston, Texas 77251-1562

T. 832-393-9051
F. 832-393-9116
www.houstontx.gov

To: Mayor Annise D. Parker
City Council Members

Date: April 24, 2015

Subject: 9+3 Financial Report

Attached is the 9+3 Financial Report for the period ending March 31, 2015. Fiscal Year 2015 projections are based on nine months of actual results and three months of projections.

General Fund

We are currently projecting ending fund balance of \$209.9 million, which is \$6.9 million higher than last month and 10.6% of expenditures less debt service.

The projection for Revenues and Other Sources increased by \$6 million from last month due to the following forecast changes:

- Property Taxes increased by \$1.4 million due to higher taxable value,
- Other Taxes increased by \$901,000 due to higher receipts for Mixed Beverage Tax,
- Licenses and Permits increased by \$868,000 mainly due to Plan Review Fees, Miscellaneous Health Permits and Limousine Permits being higher than anticipated,
- Intergovernmental increased by \$339,000 in Tax Incremental Reinvestment Zones (TIRZ) administrative fees due to higher TIRZ taxable values,
- Charges for Services increased by \$225,000 mainly due to Fire Fighting Services, Police Public Safety Reports Fees, and Passport Service Fees being higher than anticipated,
- Direct Interfund Services increased by \$672,000 mainly due to higher than anticipated Interfund Airport Police Services,
- Indirect Interfund Services decreased by \$305,000 due to lower cost recovery from other funds,

- Municipal Courts Fines and Forfeits decreased by \$1.7 million mainly due to lower ticket issuance,
- Miscellaneous/Other revenue increased by \$3.6 million mainly due to higher than anticipated Payment in Lieu of Taxes from Houston Refining.

The projection for Expenditures and Other Uses decreased by \$854,000 from last month mainly due to the following:

- \$1.6 million decrease in Fire Department due to lower than anticipated cost for the Work Demands Analysis,
- Adjustment in various departments for increases in Interfund Vehicle Services (\$3 million) and Application Services (\$700,000) which are offset by savings in Fuel of \$3 million.

Enterprise, Special Revenue and Other Funds

We are projecting no change in Enterprise Funds, Special Revenue Funds and all other funds from the 8+4 Report, with the exception of the following:

Aviation

Operating Expenses decreased by \$3 million mainly due to lower property insurance fees, electricity and natural gas consumption, and interfund vehicle services. Non-Operating Revenues increased by \$378,000 due to reclassification in the sale of land from grant fund to operating fund. As a result, Operating Transfers increased by \$3.3 million.

Health Benefits

Revenues increased by \$412,000 mainly due to refunds for performance guarantees.

Workers' Compensation

Operating Revenues and Expenditures decreased by \$3.7 million mainly due to lower claims than anticipated.

Asset Forfeiture Fund

Revenues decreased by \$709,000 due to lower confiscation. Expenditures decreased by \$2.8 million mainly due to delays in equipment purchases.

Houston Civic Events Special Revenue Fund

Expenditures increased by \$261,000 due to personnel cost for the Protocol office.

Houston Emergency Center

Expenditures increased by \$250,000 due to the cost of renovation at the Houston Emergency Center.

Parks Special Revenue Fund

Expenditures decreased by \$538,000 due to delays in Phase II construction project of Houston Wilderness Park.

If you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kelly Dowe', with a stylized flourish extending to the right.

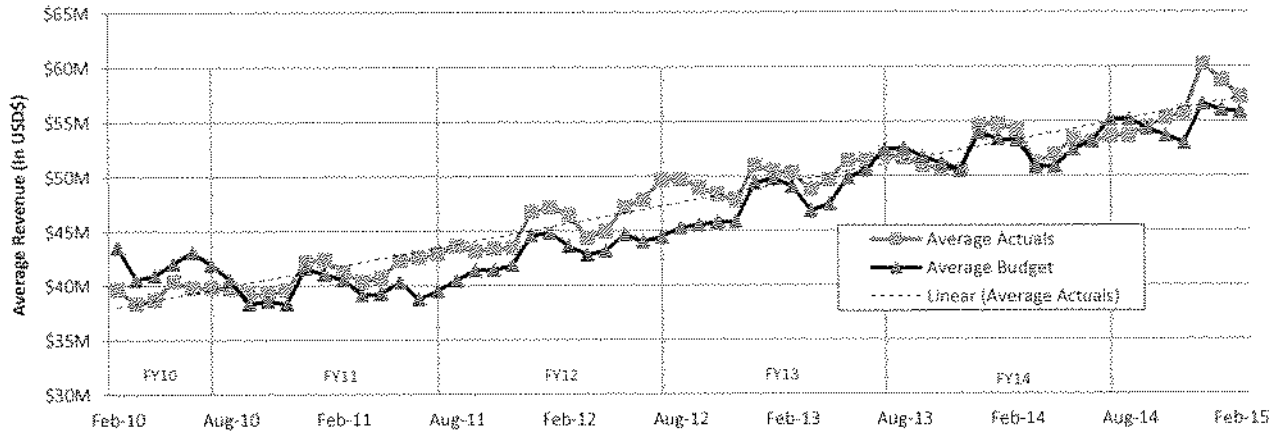
Kelly Dowe
Director



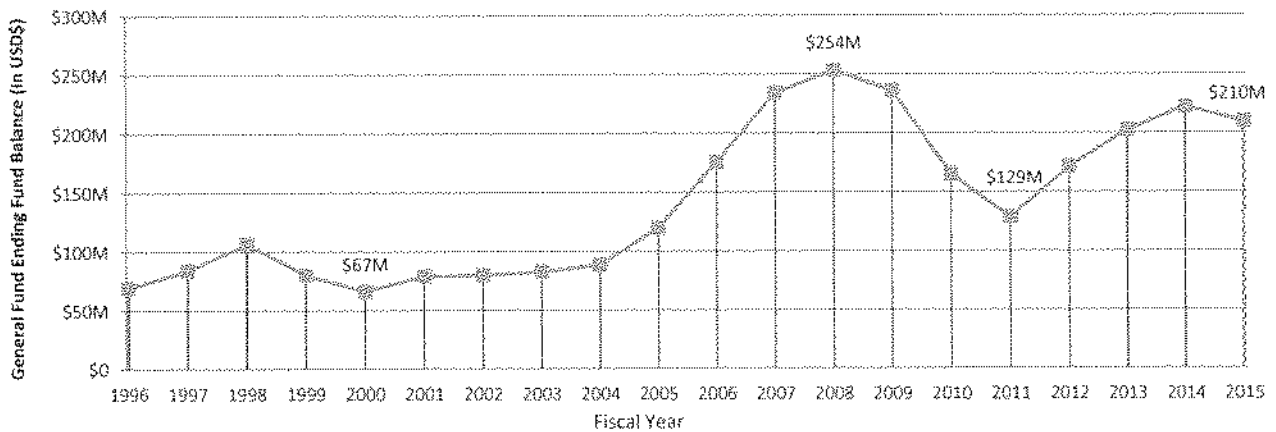
General Fund (Fund 1000)

Sales Tax Growth and Comparative Fund Balance

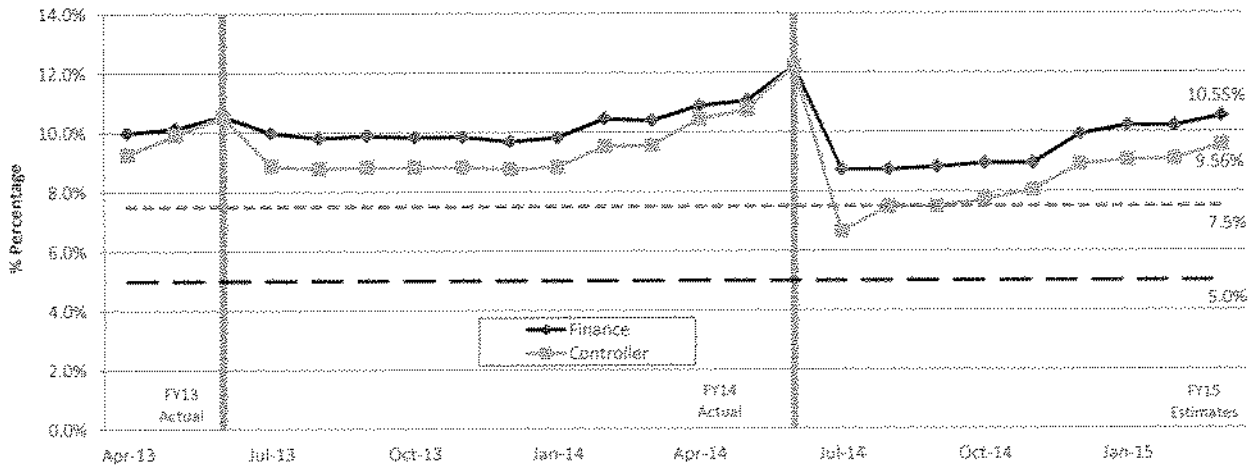
Sales Tax - Three-month Rolling Average



Historical Unassigned Ending Fund Balance



General Fund Comparative Fund Balance
Annual Projected Ending Fund Balance as % of Expenditures Less Debt*



*The City desires to maintain an ending fund balance equal to 7.5% of expenditures before debt service. Ordinance 2003-474 requires a 5% fund balance of expenditures before debt service.



General Fund (Fund 1000)

For the period ended March 31, 2015
(amounts expressed in thousands)

Actual YTD
Current Budget

	FY2015					Controller - Finance Variance	FINANCE	CONTROLLER
	FY2014 Actual	Current Budget	Controller's Projection	Finance Projection	Actual YTD			
Revenues								
General Property Taxes	976,240	1,067,338	1,069,372	1,073,551	1,155,839	(4,179)		
Industrial Assessments	16,534	15,000	15,000	16,000	132	(1,000)		
Sales Tax	629,441	666,968	666,585	670,468	505,068	(3,883)		
Other Taxes	14,056	14,168	15,500	15,815	7,637	(315)		
Electric Franchise	101,054	100,670	100,670	100,572	75,087	98		
Telephone Franchise	43,913	42,225	42,295	42,586	32,306	(291)		
Gas Franchise	16,493	14,538	14,538	14,538	10,904	-		
Other Franchise	28,529	27,665	29,510	30,317	22,175	(607)		
Licenses and Permits	35,757	34,504	35,836	37,138	27,631	(1,302)		
Intergovernmental	20,897	21,619	24,924	24,924	13,467	-		
Charges for Services	56,059	53,070	58,019	58,772	47,391	(753)		
Direct Interfund Services	43,257	48,453	49,004	49,004	35,591	-		
Indirect Interfund Services	18,558	23,725	23,420	23,420	17,883	-		
Municipal Courts Fines and Forfeits	30,493	31,308	25,014	27,143	18,648	(2,129)		
Other Fines and Forfeits	4,683	4,673	4,448	4,461	3,423	(13)		
interest	2,407	2,401	2,600	3,000	1,979	(400)		
Miscellaneous/Other	15,432	9,170	10,063	14,836	7,351	(4,773)		
Total Revenues	2,053,603	2,177,495	2,186,798	2,206,545	1,982,512	(19,747)		
Expenditures								
Administration & Regulatory Affairs	25,069	29,593	30,104	30,104	23,597	-		
City Council	6,208	11,958	11,958	11,958	5,220	-		
City Secretary	755	905	893	893	602	-		
Controller	8,134	8,634	8,590	8,590	5,954	-		
Finance	16,388	19,799	19,633	19,633	13,555	-		
Fire	452,316	506,798	505,187	505,187	373,762	-		
General Services	49,874	41,130	41,610	41,610	26,635	-		
Health and Human Services	52,985	57,012	60,132	60,132	47,217	-		
Housing and Community Development	1,285	667	663	663	449	-		
Houston Emergency Center	12,171	12,386	12,518	12,518	9,290	-		
Human Resources	3,300	3,600	3,530	3,530	2,432	-		
Information Technology	23,696	24,040	23,565	23,565	16,143	-		
Legal	14,931	16,492	15,566	15,566	11,229	-		
Library	37,906	39,978	39,384	39,384	27,660	-		
Mayor's Office	7,073	8,042	8,069	8,069	6,149	-		
Municipal Courts	24,617	28,076	27,929	27,929	19,960	-		
Neighborhoods	11,154	12,210	12,151	12,151	8,304	-		
Office of Business Opportunity	2,550	2,913	2,895	2,895	2,056	-		
Parks and Recreation	65,876	70,176	69,906	69,906	48,771	-		
Planning and Development	7,505	8,406	8,062	8,062	5,439	-		
Police	723,066	758,826	748,020	748,020	553,391	-		
Public Works and Engineering	33,891	34,265	34,247	34,247	24,743	-		
Solid Waste Management	73,556	73,691	74,792	74,792	51,822	-		
Total Departmental Expenditures	1,654,306	1,769,597	1,759,404	1,759,404	1,284,380	-		
General Government	167,281	224,497	230,529	230,529	117,847	-		
Total Expenditures Other Than Debt	1,821,587	1,994,094	1,989,933	1,989,933	1,402,227	-		
Debt Service Transfer	243,813	264,500	264,500	264,500	264,500	-		
Total Expenditures and Other Uses	2,065,400	2,258,594	2,254,433	2,254,433	1,666,727	-		
Net Current Activity	(11,597)	(81,099)	(67,635)	(47,888)	315,785	(19,747)		
Other Financing Sources (Uses)								
Proceeds from Notes	-	-	-	-	-	-		
Transfers from Other Funds	26,639	30,136	30,286	30,286	21,592	-		
Sale of Capital Assets	1,017	2,500	4,919	4,919	4,702	(0)		
Total Other Financing Sources (Uses)	27,656	32,639	35,205	35,205	26,294	(0)		
Fund Balances								
Fund Balance - Beginning of Year	202,899	222,621	222,621	222,621	222,621	-		
Changes to Designated Fund Balance*	2,720	-	-	-	-	-		
Budgeted Increase/(Decrease) in Fund Balance	16,059	(48,460)	(48,460)	(48,460)	342,079	-		
Change in Inventory/Prepaid Items/Imprest Cash	1,003	-	-	-	-	-		
(Budgeted Gap)/Increase in Fund Balance**	-	-	15,030	35,776	-	(19,747)		
Fund Balance, End of Year***	222,621	174,161	190,191	209,938	564,700	(19,747)		

*The total designation for the Rainy Day Fund is currently \$20M.

**A negative number in the Controller or Finance projections represents a gap between sources and uses of funds that was not included in the adopted budget. If this gap was not addressed by decreasing uses or increasing the sources of funds, it would require a drawdown of fund balance in order to balance the budget. A positive number represents a projected increase in fund balance.

***The City desires to maintain an ending fund balance equal to 7.5% of expenditures less Debt Service which is \$140,245 based on current projections. Ordinance 2003-47A requires a 5% fund balance of expenditures less Debt Service. The City will be \$40,947 above 7.5% based on the Controller's Projections for FY2015.

- Indicates projection exceeds 5% or 50M of budget expenditures or projected revenues are 5% or 50M less than current budget.

Aviation Operating Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Operating Revenues						
Landing Area	\$ 88,342	\$ 96,698	\$ 96,698	\$ 72,488	\$ 92,042	\$ 92,042
Bldg and Ground Area	186,505	203,106	203,106	149,850	194,874	194,874
Parking and Concession	172,701	169,612	169,612	133,900	180,164	180,164
Other	4,559	4,019	4,019	3,664	4,596	4,596
Total Operating Revenues	<u>452,107</u>	<u>473,435</u>	<u>473,435</u>	<u>359,902</u>	<u>471,676</u>	<u>471,676</u>
Operating Expenses						
Personnel	108,520	114,927	114,927	76,354	102,367	102,367
Supplies	8,822	9,457	9,484	5,566	8,860	8,860
Services	149,957	171,892	177,686	112,395	164,133	164,133
Non-Capital Outlay	1,338	2,087	2,429	832	2,079	2,079
Total Operating Expenses	<u>268,637</u>	<u>298,364</u>	<u>304,526</u>	<u>195,147</u>	<u>277,440</u>	<u>277,440</u>
Operating Income (Loss)	<u>183,470</u>	<u>175,071</u>	<u>168,909</u>	<u>164,755</u>	<u>194,236</u>	<u>194,236</u>
Non-Operating Revenues (Expenses)						
Interest Income	5,498	5,269	5,269	4,462	5,969	5,969
Other	3,219	3,990	3,990	4,887	6,989	6,989
Total Non-Operating Rev (Exp)	<u>8,717</u>	<u>9,259</u>	<u>9,259</u>	<u>9,349</u>	<u>12,958</u>	<u>12,958</u>
Income (Loss) Before Operating Transfers	<u>192,187</u>	<u>184,330</u>	<u>178,168</u>	<u>174,104</u>	<u>207,194</u>	<u>207,194</u>
Operating Transfers						
Interfund Transfer - Oper Reserve	3,236	2,000	2,000	1,027	3,027	3,027
Debt Service Principal	46,516	54,219	54,219	40,664	54,219	54,219
Debt Service Interest	51,567	55,819	55,819	37,124	56,665	56,665
Renewal and Replacement	0	0	0	2,550	2,550	2,550
Capital Improvement	92,747	72,292	66,130	8,049	90,732	90,732
Total Operating Transfers	<u>194,066</u>	<u>184,330</u>	<u>178,168</u>	<u>89,414</u>	<u>207,193</u>	<u>207,193</u>
Net Income (Loss)						
Operating Fund Only	<u>\$ (1,879)</u>	<u>\$ 0</u>	<u>\$ (0)</u>	<u>\$ 84,690</u>	<u>\$ 0</u>	<u>\$ 0</u>

About the Fund:

The Aviation Operating Fund is an enterprise fund which accounts for operation of the City's airport system. The airport system is comprised of the George Bush Intercontinental Airport/Houston, William P. Hobby Airport and Ellington Airport. Activities of the department include: operations, maintenance, planning and construction, public service and administration. The Department coordinates its activities with the Federal Aviation Administration (FAA), other federal and state agencies and the airlines and tenants of the airport facilities.

Convention and Entertainment Facilities Operating Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controllers Projection	Finance Projection
Operating Revenues						
Facility Rentals	\$ 1,380	\$ 1,380	\$ 1,380	\$ 1,380	\$ 1,380	\$ 1,380
Parking	9,744	8,904	8,904	7,412	9,452	9,452
Contract Cleaning	0	0	0	0	0	0
Total Operating Revenues	<u>11,124</u>	<u>10,284</u>	<u>10,284</u>	<u>8,792</u>	<u>10,832</u>	<u>10,832</u>
Operating Expenses						
Personnel	603	204	204	137	211	211
Supplies	0	0	0	0	0	0
Services	596	153	163	54	125	125
Total Operating Expenses	<u>1,199</u>	<u>367</u>	<u>367</u>	<u>191</u>	<u>336</u>	<u>336</u>
Operating income (Loss)	<u>9,925</u>	<u>9,917</u>	<u>9,917</u>	<u>8,601</u>	<u>10,496</u>	<u>10,496</u>
Non-Operating Revenues (Expenses)						
Hotel Occupancy Tax						
Current	88,416	89,750	89,750	68,009	90,509	90,509
Delinquent	1,703	1,300	1,300	968	1,000	1,000
Net Hotel Occupancy Tax	<u>90,119</u>	<u>91,050</u>	<u>91,050</u>	<u>68,977</u>	<u>91,509</u>	<u>91,509</u>
Interest Income	8,398	240	240	222	290	290
Capital Outlay	0	0	0	0	0	0
Other Interest	(333)	(1,060)	(1,060)	(651)	(944)	(944)
Other	292	292	292	1,628	1,530	1,530
Total Non-Operating Rev (Exp)	<u>98,476</u>	<u>90,522</u>	<u>90,522</u>	<u>70,176</u>	<u>92,385</u>	<u>92,385</u>
Income (Loss) Before Operating Transfers	<u>108,401</u>	<u>100,439</u>	<u>100,439</u>	<u>78,777</u>	<u>102,881</u>	<u>102,881</u>
Operating Transfers						
Transfers for Interest	4,386	5,775	5,775	2,891	6,878	6,878
Transfers for Principal	17,719	16,031	16,031	12,122	16,031	16,031
Transfer to Component Unit	71,991	76,925	76,925	61,927	77,115	77,115
Transfers to General Fund	1,380	1,380	1,380	1,380	1,380	1,380
Transfers to Debt Service	0	0	0	0	0	0
Total Operating Transfers	<u>95,476</u>	<u>100,111</u>	<u>100,111</u>	<u>78,320</u>	<u>101,404</u>	<u>101,404</u>
Net income (Loss)						
Operating Fund Only	<u>\$ 12,925</u>	<u>\$ 328</u>	<u>\$ 328</u>	<u>\$ 457</u>	<u>\$ 1,477</u>	<u>\$ 1,477</u>

About the Fund:

The Convention and Entertainment Facilities operating fund is an enterprise fund that accounts for the operation of the City's six major entertainment centers and City-owned parking garages: Jesse H. Jones Hall, Bayou Place, Houston Center for The Arts, Gus S. Wortham Center, George R. Brown Convention Center, Tranquility Park garage and Civic Center garage.

Combined Utility System Fund
For the period ending March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Operating Revenues						
Water Sales	\$ 499,912	\$ 510,712	\$ 510,712	\$ 389,211	\$ 501,260	\$ 501,260
Sewer Sales	441,300	449,414	449,414	324,628	438,562	438,562
Penalties	9,456	16,000	16,000	6,333	10,000	10,000
Other	10,650	10,310	10,310	7,864	10,310	10,310
Total Operating Revenues	<u>961,318</u>	<u>986,436</u>	<u>986,436</u>	<u>708,036</u>	<u>960,132</u>	<u>960,132</u>
Operating Expenses						
Personnel	157,463	176,418	174,605	122,220	166,138	166,138
Supplies	40,200	45,653	45,638	30,826	42,112	42,112
Electricity and Gas	47,224	51,123	51,123	37,157	50,857	50,857
Contracts & Other Payments	137,687	153,301	155,274	90,019	150,118	150,118
Non-Capital Equipment	2,562	4,371	4,376	1,657	3,674	3,674
Total Operating Expenses	<u>385,136</u>	<u>430,866</u>	<u>431,016</u>	<u>281,879</u>	<u>412,899</u>	<u>412,899</u>
Operating Income (Loss)	<u>576,182</u>	<u>555,570</u>	<u>555,420</u>	<u>426,157</u>	<u>547,233</u>	<u>547,233</u>
Non-Operating Revenues (Expenses)						
Interest Income	4,956	5,519	5,519	3,887	5,519	5,519
Sale of Property, Mains and Scrap	2,713	400	400	1,944	1,937	1,937
Other	6,449	14,441	14,441	10,662	14,316	14,316
Impact Fees	27,238	21,000	21,000	15,279	33,908	33,908
CWA & TRA Contracts (P & I)	(18,875)	(18,064)	(18,064)	(17,002)	(18,064)	(18,064)
Total Non-Operating Rev (Exp)	<u>22,481</u>	<u>23,296</u>	<u>23,296</u>	<u>14,770</u>	<u>37,616</u>	<u>37,616</u>
Income (Loss) Before Operating Transfers	<u>598,663</u>	<u>578,866</u>	<u>578,716</u>	<u>440,927</u>	<u>584,849</u>	<u>584,849</u>
Operating Transfers						
Debt Service Transfer	395,911	428,210	428,210	235,749	423,710	423,710
Interfund Transfer	784	0	0	0	0	0
Transfer to PIB - Water & Sewer	13,094	12,039	12,039	12,039	12,039	12,039
Transfer to Capital Project Fund	110,000	65,000	65,000	65,000	65,000	65,000
Pension Liability Interest	4,705	4,732	4,732	3,479	4,732	4,732
Equipment Acquisition	17,046	25,593	25,443	8,352	19,269	19,269
Transfer to Stormwater	27,564	42,002	42,002	24,929	42,002	42,002
Total Operating Transfers	<u>569,104</u>	<u>577,576</u>	<u>577,426</u>	<u>349,548</u>	<u>566,752</u>	<u>566,752</u>
Net Current Activity						
Operating Fund Only	<u>\$ 29,559</u>	<u>\$ 1,290</u>	<u>\$ 1,290</u>	<u>\$ 91,379</u>	<u>\$ 18,097</u>	<u>\$ 18,097</u>

About the Fund:

The Combined Utility System Fund, which includes Fund 8300, Fund 8301, and Fund 8305, is an enterprise fund which accounts for operation of the City's water and wastewater facilities. The fund provides for the operation of the City's treated and untreated water, as well as, receives and process wastewater generated in a service area that includes the City, certain municipalities and unincorporated communities in the Houston metropolitan area. Some of the City's largest customers are other cities and water authorities which supply water to their own customers.

Dedicated Drainage & Street Renewal Fund - 2310
For the period ending March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Drainage Charge Revenue ⁽¹⁾	\$ 106,663	\$ 105,927	\$ 105,927	\$ 85,178	\$ 104,928	\$ 104,928
Interfund Drainage Fee	6,875	6,878	6,878	5,144	6,878	6,878
Charges for Services	603	1,307	1,307	238	896	896
Licenses & Permits	1,780	1,143	1,143	1,771	2,211	2,211
Street Milling and Sales Earnings	800	950	950	539	850	850
Metro Intergovernmental Revenue	56,103	57,082	57,082	30,859	57,082	57,082
Operating Recoveries & Refunds	38	250	250	0	125	125
Miscellaneous/Other	61	93	93	(737)	93	93
Total Revenues	<u>172,923</u>	<u>173,630</u>	<u>173,630</u>	<u>122,992</u>	<u>173,063</u>	<u>173,063</u>
Expenditures						
Personnel	30,539	35,274	35,170	24,115	33,090	33,090
Supplies	10,250	14,283	13,956	7,727	12,475	12,475
Other Services	15,597	21,313	21,385	11,665	34,604	34,604
Capital Outlay	3,226	5,201	5,560	1,126	3,956	3,956
Total Expenditures	<u>59,612</u>	<u>76,071</u>	<u>76,071</u>	<u>44,633</u>	<u>84,125</u>	<u>84,125</u>
Net Current Activity	113,311	97,559	97,559	78,359	88,938	88,938
Other Financing Sources (Uses)						
Interest Income	589	500	500	375	500	500
Transfer In - General Fund ⁽²⁾	22,110	32,500	32,500	0	40,931	40,931
Transfer Out - Commercial Paper Agent Fees	(762)	(800)	(800)	(510)	(800)	(800)
Transfer Out - Capital Projects	(126,542)	(131,000)	(162,347)	(86,268)	(152,468)	(152,468)
Transfer Out - Special Revenue	(23,897)	(14,012)	(14,012)	(14,012)	(14,012)	(14,012)
Total Other Financing Sources (Uses)	<u>(128,502)</u>	<u>(112,812)</u>	<u>(144,159)</u>	<u>(100,415)</u>	<u>(125,849)</u>	<u>(125,849)</u>
Excess (Deficiency) of Revenues and Other Financing Sources Over Expenditures and Other Financing (Uses)	(15,191)	(15,253)	(46,600)	(22,056)	(36,911)	(36,911)
Fund Balance, Beginning of Year	84,569	69,378	69,378	69,378	69,378	69,378
Fund Balance, End of Year	<u>\$ 69,378</u>	<u>\$ 54,125</u>	<u>\$ 22,778</u>	<u>\$ 47,322</u>	<u>\$ 32,467</u>	<u>\$ 32,467</u>

Note:

- The Drainage Charge Revenue YTD includes all amounts billed. There is typically a 21 day lag between the billed and collected amounts.
- This amount is based on the Captured Ad Valorem Tax Revenue as calculated below:

	FY2015		
	Adopted Budget	Projection	Year to Date Actual
Property Tax Revenue - General Fund (\$0.118 of City's Ad Valorem Tax Levy)	\$ 192,158	\$ 199,501	\$ 0
Less Street & Drainage Debt Service (General Fund)	(159,658)	(158,570)	0
Captured Revenues ⁽²⁾ (to be transferred to Dedicated Drainage & Street Renewal Fund)	<u>32,500</u>	<u>40,931</u>	<u>0</u>

Note:

Ordinance 2010-879 requires funding in the amount equivalent to proceeds from \$0.118 of the City's ad valorem tax levy minus an amount equal to debt service for drainage and streets to the Dedicated Drainage & Street Renewal Fund. Total outstanding debt payable from ad valorem taxes (as of March 31, 2015) is \$3.170 billion. The portion of the debt associated with drainage and street improvements is estimated at \$1.36 billion.

The Dedicated Drainage and Street Renewal Fund is not technically an enterprise fund, but is grouped with the Combined Utility System for clarity.

Storm Water Fund
For the period ending March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Other Interfund Services	\$ 0	\$ 88	\$ 88	\$ 0	\$ 78	\$ 78
Miscellaneous	113	30	30	40	50	50
Total Revenues	<u>113</u>	<u>118</u>	<u>118</u>	<u>40</u>	<u>128</u>	<u>128</u>
Expenditures						
Personnel	20,141	21,786	21,420	14,368	19,660	19,660
Supplies	2,180	2,506	2,506	1,364	2,519	2,519
Other Services	15,815	12,799	13,165	7,368	16,025	16,025
Capital Outlay	2,711	3,606	3,606	1,130	2,493	2,493
Total Expenditures	<u>40,847</u>	<u>40,697</u>	<u>40,697</u>	<u>24,230</u>	<u>40,697</u>	<u>40,697</u>
Net Current Activity	(40,734)	(40,579)	(40,579)	(24,190)	(40,569)	(40,569)
Other Financing Sources (Uses)						
Interest Income	69	60	60	31	50	50
Transfers In - CUS	27,564	42,002	42,002	24,929	42,002	42,002
Transfers In - DD&SRF	23,897	14,012	14,012	14,012	14,012	14,012
Transfer Out - Pension Liability Interest	(685)	(688)	(688)	(688)	(688)	(688)
Discretionary Debt - Drainage	(13,109)	(14,807)	(14,807)	(14,092)	(14,807)	(14,807)
Total Other Financing Sources (Uses)	<u>37,736</u>	<u>40,579</u>	<u>40,579</u>	<u>24,192</u>	<u>40,569</u>	<u>40,569</u>
Excess (Deficiency) of Revenues and Other Financing Sources Over Expenditures and Other Financing (Uses)	(2,998)	0	0	2	0	0
Fund Balance, Beginning of Year	<u>5,124</u> *	<u>2,126</u>	<u>2,126</u>	<u>2,126</u>	<u>2,126</u>	<u>2,126</u>
Fund Balance, End of Year	<u>\$ 2,126</u>	<u>\$ 2,126</u>	<u>\$ 2,126</u>	<u>\$ 2,128</u>	<u>\$ 2,126</u>	<u>\$ 2,126</u>

* Fund Balance includes \$124 in Prepaids.

Note: The Storm Water Fund is not technically an enterprise fund, but is grouped with the Combined Utility System for clarity.

Health Benefits Fund
For the period ended March 31, 2014
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Operating Revenues						
City Medical Plans	\$ 314,151	\$ 321,757	\$ 321,757	\$ 243,472	\$ 315,175	\$ 315,175
City Dental Plans	9,874	10,278	10,278	7,618	10,251	10,251
City Life Insurance Plans	5,488	5,808	5,808	4,242	5,693	5,693
Vision	2,346	2,363	2,363	1,968	2,394	2,394
Health Flexible Spending Account	2,914	2,950	2,950	2,456	3,275	3,275
Dependent Care Reimbursement	301	265	265	238	315	315
Operating Revenues	<u>335,074</u>	<u>343,421</u>	<u>343,421</u>	<u>259,994</u>	<u>337,103</u>	<u>337,103</u>
Operating Expenses						
Medicare Advantage	20,757	24,366	24,058	17,484	23,258	23,258
City Medical Plan Claims - Cigna	270,981	290,608	290,608	208,406	283,147	283,147
City Dental Plan Claims	9,874	10,278	10,278	7,618	10,251	10,251
Vision	2,346	2,363	2,363	1,968	2,394	2,394
City Life Insurance Plans	5,488	5,808	5,808	4,242	5,692	5,692
Administrative Costs	6,330	7,163	7,469	4,483	7,098	7,098
Health Flexible Spending Account	2,914	2,950	2,950	2,456	3,275	3,275
Dependent Care	301	265	265	238	315	315
Operating Expenses	<u>318,991</u>	<u>343,799</u>	<u>343,799</u>	<u>246,895</u>	<u>335,430</u>	<u>335,430</u>
Operating Income (Loss)	16,083	(378)	(378)	13,099	1,673	1,673
Non-Operating Revenues (Expenses)						
Interest Income	378	405	405	371	405	405
Prior Year Expense Recovery	147	0	0	22	22	22
Miscellaneous Revenue	4,135	0	0	395	395	395
Medicare Part D - Subsidy	30	0	0	0	0	0
Non-Operating Revenues (Expenses)	<u>4,690</u>	<u>405</u>	<u>405</u>	<u>788</u>	<u>822</u>	<u>822</u>
Net Income (Loss)	20,773	27	27	13,887	2,495	2,495
Net Assets, Beginning of Year	<u>9,316</u>	<u>30,089</u>	<u>30,089</u>	<u>30,089</u>	<u>30,089</u>	<u>30,089</u>
Net Assets, End of Year	<u>\$ 30,089</u>	<u>\$ 30,116</u>	<u>\$ 30,116</u>	<u>\$ 43,976</u>	<u>\$ 32,584</u>	<u>\$ 32,584</u>

About the Fund:

The Health Benefits Fund, an Internal Service Fund administered by the Human Resources Department, was established in 1984 to centralize the financial transactions for the City's benefit plans.

Effective May 1, 2011, the City elected to be substantially self-insured and awarded CIGNA a three year contract with two (2) one-year renewal options for 4 new health plans. The new health benefits model is composed of four (4) plans, all of which have heavy emphasis on a wellness component, and includes: 1) a limited network HMO-type plan, 2) an open access PPO-type plan with no out-of-network coverage, 3) a consumer driven high deductible Health Plan (CDHP), partnered with a health reimbursement account, and 4) a specific plan for retirees, mostly those under age 65, who live outside the limited network service area but who live in Texas. Effective 05/01/11 all 65+ Medicare eligible retirees must enroll in the 6 MA plans or opt out. These plans are supported by contributions from the city and participants.

The Fund also includes a vision plan, two dental plans, a dental/health maintenance organization (DHMO) and a dental indemnity plan. All three plans are supported exclusively by participants.

Long-Term Disability Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Operating Revenues						
Contributions	\$ 1,257	\$ 1,270	\$ 1,270	\$ 957	\$ 1,276	\$ 1,276
GASB 10 Operating Transfer	0	0	0	0	0	0
Operating Revenues	<u>1,257</u>	<u>1,270</u>	<u>1,270</u>	<u>957</u>	<u>1,276</u>	<u>1,276</u>
Operating Expenses						
Management Consulting Services	22	70	70	0	22	22
Claims Payment Services	110	165	165	88	165	165
Employee Medical Claims	174	1,316	1,316	988	1,316	1,316
Operating Expenses	<u>306</u>	<u>1,551</u>	<u>1,551</u>	<u>1,076</u>	<u>1,503</u>	<u>1,503</u>
Operating Income (Loss)	951	(281)	(281)	(119)	(227)	(227)
Non-Operating Revenues (Expenses)						
Interest Income	63	62	62	49	65	65
Non-Operating Revenues (Expenses)	<u>63</u>	<u>62</u>	<u>62</u>	<u>49</u>	<u>65</u>	<u>65</u>
Net Income (Loss)	1,014	(219)	(219)	(70)	(162)	(162)
Net Assets, Beginning of Year	444	1,458	1,458	1,458	1,458	1,458
Net Assets, End of Year	<u>\$ 1,458</u>	<u>\$ 1,239</u>	<u>\$ 1,239</u>	<u>\$ 1,388</u>	<u>\$ 1,296</u>	<u>\$ 1,296</u>

About the Fund:

The Long Term Disability (LTD) Plan is a self-insured program accounted for as an internal service fund. Established in 1985 and revised in 1996 as part of the Income Protection Plan (IPP) (renamed the Compensable Sick Leave Plan (CSL) in October 1996), the plan provides paid long-term sick leave for City employees.

Property and Casualty Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				Finance Projection
		Adopted Budget	Current Budget	YTD	Controller's Projection	
Operating Revenues						
Interfund Legal Services	\$ 25,499	\$ 37,551	\$ 37,551	\$ 12,904	\$ 33,977	\$ 33,977
Operating Revenues	<u>25,499</u>	<u>37,551</u>	<u>37,551</u>	<u>12,904</u>	<u>33,977</u>	<u>33,977</u>
Operating Expenses						
Personnel	7,358	8,206	8,206	6,115	8,186	8,186
Supplies	122	156	156	47	153	153
Services:						
Insurance Fees/Adm.	11,865	14,284	14,284	448	10,730	10,730
Claims and Judgments	2,896	12,724	11,124	7,598	12,254	12,254
Other Services	3,237	2,181	3,781	1,909	2,654	2,654
Capital Outlay	27	0	0	0	0	0
Operating Expenses	<u>25,505</u>	<u>37,551</u>	<u>37,551</u>	<u>16,116</u>	<u>33,977</u>	<u>33,977</u>
Operating Income (Loss)	(6)	(0)	(0)	(3,213)	0	0
Nonoperating Revenues (Expenses)						
Interest Income	0	0	0	1	1	1
Nonoperating Revenues (Expenses)	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>1</u>
Net Income (Loss)	(6)	(0)	(0)	(3,212)	1	1
Net Assets, Beginning of Year	77	72	72	72	72	72
Net Assets, End of Year	<u>\$ 72</u>	<u>\$ 72</u>	<u>\$ 72</u>	<u>\$ (3,140)</u>	<u>\$ 73</u>	<u>\$ 73</u>

About the Fund:

The Property and Casualty Fund was established to monitor the financial requirements of the Property and Risk Management Programs. This activity is primarily self-funded. The revenue is generated from assessed premiums to the other funds. These premiums are based upon projected expenditures. All risk to the City's assets (except Workers Compensation, Life, Health Benefits, and Long Term Disability) fall within the scope of this fund.

Workers' Compensation Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				Finance Projection
		Adopted Budget	Current Budget	YTD	Controller's Projection	
Operating Revenues						
Contributions	\$ 23,805	\$ 26,170	\$ 26,170	\$ 15,971	\$ 22,420	\$ 22,420
Operating Revenues	<u>23,805</u>	<u>26,170</u>	<u>26,170</u>	<u>15,971</u>	<u>22,420</u>	<u>22,420</u>
Operating Expenses						
Personnel	2,543	3,343	3,329	2,284	2,987	2,987
Supplies	47	74	77	22	76	76
Current Year Claims	20,769	22,255	22,215	12,409	18,844	18,844
Services	488	495	546	279	516	516
Non-Capital Outlay	2	10	10	4	6	6
Operating Expenses	<u>23,849</u>	<u>25,177</u>	<u>26,177</u>	<u>14,998</u>	<u>22,429</u>	<u>22,429</u>
Operating Income (Loss)	(44)	(7)	(7)	973	(9)	(9)
Non-Operating Revenues (Expenses)						
Interest Income	22	7	7	9	9	9
Other	22	0	0	0	0	0
Non-Operating Revenues (Expenses)	<u>44</u>	<u>7</u>	<u>7</u>	<u>9</u>	<u>9</u>	<u>9</u>
Net Income (Loss)	0	0	0	982	0	0
Net Assets, Beginning of Year	0	0	0	0	0	0
Net Assets, End of Year	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 982</u>	<u>\$ 0</u>	<u>\$ 0</u>

About the Fund:

The Workers' Compensation Fund is a revolving fund administered by the Human Resources Department. The Fund was established to centralize the financial transactions in the areas of Accident Prevention, Loss Control and Workers' Compensation.

Asset Forfeiture Special Revenue Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Confiscations	\$ 8,829	\$ 7,750	\$ 7,750	\$ 5,517	\$ 7,042	\$ 7,042
Interest Income	46	49	49	41	48	48
Other		0	0	(40)	(40)	(40)
Total Revenues	<u>8,875</u>	<u>7,799</u>	<u>7,799</u>	<u>5,518</u>	<u>7,050</u>	<u>7,050</u>
Expenditures						
Personnel	2,871	3,200	3,200	1,314	3,300	3,300
Supplies	3,956	1,473	3,144	1,785	2,620	2,620
Other Services	1,462	1,847	2,376	833	1,899	1,899
Capital Purchases	275	0	368	316	330	330
Non-Capital Purchases	127	5,080	2,511	410	615	615
Total Expenditures	<u>8,691</u>	<u>11,600</u>	<u>11,600</u>	<u>4,658</u>	<u>8,764</u>	<u>8,764</u>
Net Current Activity	184	(3,801)	(3,802)	860	(1,713)	(1,713)
Fund Balance, Beginning of Year	6,500	6,684	6,684	6,684	6,684	6,684
Fund Balance, End of Year	<u>\$ 6,684</u>	<u>\$ 2,883</u>	<u>\$ 2,882</u>	<u>\$ 7,544</u>	<u>\$ 4,971</u>	<u>\$ 4,971</u>

Auto Dealers
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Auto Dealers Licenses	\$ 2,911	\$ 2,565	\$ 2,565	1,681	\$ 2,565	\$ 2,565
Vehicle Storage Notification	251	245	245	216	245	245
Vehicle Auction Fees	230	220	220	149	220	220
Interest Income	31	32	32	25	32	32
Other	3,635	4,001	4,001	3,050	4,001	4,001
Total Revenues	<u>7,058</u>	<u>7,063</u>	<u>7,063</u>	<u>5,122</u>	<u>7,063</u>	<u>7,063</u>
Expenditures						
Personnel	3,416	3,638	3,638	2,797	3,638	3,638
Supplies	190	496	629	341	629	629
Other Services	1,276	1,974	1,702	1,070	1,702	1,702
Capital Purchases	42	1,230	1,370	99	1,370	1,370
Total Expenditures	<u>4,924</u>	<u>7,338</u>	<u>7,338</u>	<u>4,309</u>	<u>7,338</u>	<u>7,338</u>
Other Financing Sources (Uses)						
Transfers Out	(1,533)	(1,500)	(1,500)	(1,056)	(1,500)	(1,500)
Total Other Financing Sources (Uses)	<u>(1,533)</u>	<u>(1,500)</u>	<u>(1,500)</u>	<u>(1,056)</u>	<u>(1,500)</u>	<u>(1,500)</u>
Net Current Activity	601	(1,775)	(1,775)	(243)	(1,775)	(1,775)
Fund Balance, Beginning of Year	3,760	4,361	4,361	4,361	4,361	4,361
Fund Balance, End of Year	<u>\$ 4,361</u>	<u>\$ 2,586</u>	<u>\$ 2,586</u>	<u>\$ 4,118</u>	<u>\$ 2,586</u>	<u>\$ 2,586</u>

BARC Special Revenue Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Licenses & Fees	\$ 1,225	\$ 1,181	\$ 1,181	\$ 1,064	\$ 1,310	\$ 1,310
Interest	34	42	42	46	46	46
Animal Adoption	213	205	205	168	205	205
Contributions	272	90	90	153	160	160
Other Revenue	2	0	0	2	2	2
Total Revenues	<u>1,746</u>	<u>1,518</u>	<u>1,518</u>	<u>1,432</u>	<u>1,723</u>	<u>1,723</u>
Expenditures						
Personnel	5,663	7,773	7,573	4,799	7,310	7,310
Supplies	1,217	1,488	1,537	1,029	1,743	1,743
Other Services	1,478	2,605	2,748	1,453	2,804	2,804
Capital Outlay	70	300	278	7	278	278
Non-Capital Outlay	2	47	77	65	77	77
Total Expenditures	<u>8,430</u>	<u>12,213</u>	<u>12,213</u>	<u>7,354</u>	<u>12,212</u>	<u>12,212</u>
Net Current Activity	<u>(6,684)</u>	<u>(10,696)</u>	<u>(10,696)</u>	<u>(5,921)</u>	<u>(10,489)</u>	<u>(10,489)</u>
Other Financing Sources (Uses)						
Operating Transfers - In	<u>7,176</u>	<u>10,090</u>	<u>10,090</u>	<u>10,090</u>	<u>10,090</u>	<u>10,090</u>
Total Other Financing Sources (Uses)	<u>7,176</u>	<u>10,090</u>	<u>10,090</u>	<u>10,090</u>	<u>10,090</u>	<u>10,090</u>
Net Current Activity	492	(605)	(605)	4,169	(399)	(399)
Fund Balance, Beginning of Year	<u>783</u>	<u>1,275</u>	<u>1,275</u>	<u>1,275</u>	<u>1,275</u>	<u>1,275</u>
Fund Balance, End of Year	<u>\$ 1,275</u>	<u>\$ 670</u>	<u>\$ 670</u>	<u>\$ 5,444</u>	<u>\$ 876</u>	<u>\$ 876</u>

Bayou Greenway 2020 Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Charges for Services	0	0	777	582	799	799
Other Revenue	0	0	0	0	0	0
Interest	0	0	0	2	2	2
Total Revenues	<u>0</u>	<u>0</u>	<u>777</u>	<u>584</u>	<u>801</u>	<u>801</u>
Expenditures						
Personnel	0	0	656	298	656	656
Supplies	0	0	48	8	61	61
Other Services	0	0	75	15	84	84
Capital Outlay	0	0	0	0	0	0
Non-Capital Outlay	0	0	0	0	0	0
Total Expenditures	<u>0</u>	<u>0</u>	<u>777</u>	<u>321</u>	<u>801</u>	<u>801</u>
Net Current Activity	<u>0</u>	<u>0</u>	<u>0</u>	<u>263</u>	<u>0</u>	<u>0</u>
Fund Balance, Beginning of Year	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Fund Balance, End of Year	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 263</u>	<u>\$ 0</u>	<u>\$ 0</u>

Building Inspection Special Revenue Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				Finance Projection
		Adopted Budget	Current Budget	YTD	Controller's Projection	
Revenues						
Permits and Licenses	\$ 58,089	\$ 54,190	\$ 54,190	\$ 49,023	\$ 62,776	\$ 62,776
Charges for Services	15,643	14,707	14,707	11,356	14,700	14,700
Other	1,820	2,206	2,206	2,000	2,707	2,707
Interest Income	185	171	171	208	274	274
Total Revenues	<u>75,737</u>	<u>71,274</u>	<u>71,274</u>	<u>62,587</u>	<u>80,457</u>	<u>80,457</u>
Expenditures						
Personnel	42,079	52,095	51,320	35,703	48,377	48,377
Supplies	922	1,303	1,303	591	898	898
Other Services	10,944	16,112	17,887	8,223	14,028	14,028
Capital Outlay	2,156	5,461	5,060	1,005	5,424	5,424
Non-Capital Outlay	806	1,078	479	128	982	962
Total Expenditures	<u>56,907</u>	<u>76,049</u>	<u>76,049</u>	<u>45,650</u>	<u>69,709</u>	<u>69,709</u>
Other Financing Sources (Uses)						
Operating Transfers Out	(6,524)	(962)	(962)	(962)	(6,530)	(6,530)
Total Other Financing Sources (Uses)	<u>(6,524)</u>	<u>(962)</u>	<u>(962)</u>	<u>(962)</u>	<u>(6,530)</u>	<u>(6,530)</u>
Net Current Activity	12,008	(5,737)	(5,737)	15,975	4,218	4,218
Fund Balance, Beginning of Year	15,165	27,171	27,171	27,171	27,171	27,171
Fund Balance, End of Year	<u>\$ 27,171</u>	<u>\$ 21,434</u>	<u>\$ 21,434</u>	<u>\$ 43,146</u>	<u>\$ 31,389</u>	<u>\$ 31,389</u>

Building (Court) Security Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				Finance Projection
		Adopted Budget	Current Budget	YTD	Controller's Projection	
Revenues						
Current Revenues	\$ 829	\$ 866	\$ 866	\$ 474	\$ 700	\$ 700
Total Revenues	<u>829</u>	<u>866</u>	<u>866</u>	<u>474</u>	<u>700</u>	<u>700</u>
Expenditures						
Personnel	0	0	0	0	0	0
Supplies	0	100	100	0	0	0
Other Services	773	769	769	498	760	760
Equipment	0	0	0	0	0	0
Total Expenditures	<u>773</u>	<u>869</u>	<u>869</u>	<u>498</u>	<u>760</u>	<u>760</u>
Net Current Activity	56	(3)	(3)	(24)	(60)	(60)
Fund Balance, Beginning of Year	22	78	78	78	78	78
Fund Balance, End of Year	<u>\$ 78</u>	<u>\$ 75</u>	<u>\$ 75</u>	<u>\$ 54</u>	<u>\$ 18</u>	<u>\$ 18</u>

Cable TV
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Current Revenues	\$ 4,289	\$ 4,254	\$ 4,254	\$ 2,290	\$ 4,675	\$ 4,675
Total Revenues	<u>4,289</u>	<u>4,254</u>	<u>4,254</u>	<u>2,290</u>	<u>4,675</u>	<u>4,675</u>
Expenditures						
Maintenance and Operations	6,340	3,975	4,049	2,549	4,273	4,273
Equipment	303	150	75	21	75	75
Debt Services	0	358	358	0	358	358
Total Expenditures	<u>6,643</u>	<u>4,483</u>	<u>4,483</u>	<u>2,570</u>	<u>4,707</u>	<u>4,707</u>
Net Current Activity	(2,354)	(229)	(229)	(280)	(32)	(32)
Fund Balance, Beginning of Year	<u>2,891</u>	<u>537</u>	<u>537</u>	<u>537</u>	<u>537</u>	<u>537</u>
Fund Balance, End of Year	<u>\$ 537</u>	<u>\$ 308</u>	<u>\$ 308</u>	<u>\$ 257</u>	<u>\$ 505</u>	<u>\$ 505</u>

Child Safety Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Interest on Investments	\$ 7	\$ 20	\$ 20	6	\$ 10	\$ 10
Municipal Courts Collections	2,454	2,400	2,400	1,893	2,485	2,485
Harris County Collections	833	815	815	549	785	785
Total Revenues	<u>3,294</u>	<u>3,235</u>	<u>3,235</u>	<u>2,448</u>	<u>3,280</u>	<u>3,280</u>
Expenditures						
School Crossing Guard Program	3,441	3,232	3,232	1,580	3,337	3,337
Miscellaneous Parts and Supplies	3	3	3	0	3	3
Total Expenditures	<u>3,444</u>	<u>3,235</u>	<u>3,235</u>	<u>1,580</u>	<u>3,340</u>	<u>3,340</u>
Net Current Activity	(150)	0	0	867	(60)	(60)
Fund Balance, Beginning of Year	<u>209</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>60</u>
Fund Balance, End of Year	<u>\$ 60</u>	<u>\$ 60</u>	<u>\$ 60</u>	<u>\$ 927</u>	<u>\$ 0</u>	<u>\$ 0</u>

Contractor Responsibility Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Current Revenues	\$ 390	\$ 422	\$ 422	\$ 562	\$ 555	\$ 555
Total Revenues	<u>390</u>	<u>422</u>	<u>422</u>	<u>562</u>	<u>555</u>	<u>555</u>
Expenditures						
Personnel	117	123	123	93	123	123
Supplies	0	0	0	0	0	0
Other Services	503	788	788	197	830	830
Non-Capital Purchases	0	0	0	0	0	0
Capital Purchases	0	0	0	0	0	0
Debt Services and Other Uses	800	400	400	0	400	400
Total Expenditures	<u>1,420</u>	<u>1,311</u>	<u>1,311</u>	<u>290</u>	<u>1,353</u>	<u>1,353</u>
Net Current Activity	(1,030)	(889)	(889)	272	(798)	(798)
Fund Balance, Beginning of Year	<u>3,075</u>	<u>2,045</u>	<u>2,045</u>	<u>2,045</u>	<u>2,045</u>	<u>2,045</u>
Fund Balance, End of Year	<u>\$ 2,045</u>	<u>\$ 1,156</u>	<u>\$ 1,156</u>	<u>\$ 2,317</u>	<u>\$ 1,247</u>	<u>\$ 1,247</u>

Digital Automated Red Light Enforcement Program Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Red Light Enforcement Revenue	\$ 596	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Interest Income	2	0	0	0	0	0
Total Revenues	<u>598</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Expenditures						
Personnel	0	0	0	0	0	0
Supplies	0	0	0	0	0	0
Other Services	598	0	0	0	0	0
Non-Capital Purchases	0	0	0	0	0	0
Debt Service	0	0	0	0	0	0
State of Texas' Share	0	0	0	0	0	0
Total Expenditures	<u>598</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Other Financing Sources (Uses)						
Transfer Out	0	0	0	0	0	0
Transfer In	0	0	0	0	0	0
Total Other Financing Sources (Uses)	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net Current Activity	0	0	0	0	0	0
Fund Balance, Beginning of Year	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Fund Balance, End of Year	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>

Digital Houston Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Interest Income	\$ 7	\$ 4	\$ 4	\$ 3	\$ 4	\$ 4
Total Revenues	<u>7</u>	<u>4</u>	<u>4</u>	<u>3</u>	<u>4</u>	<u>4</u>
Expenditures						
Personnel	357	466	466	227	303	303
Supplies	3	9	9	0	6	6
Other Services	83	103	103	21	43	43
Capital Equipment	-	0	0	0	0	0
Non-Capital Equipment	60	30	30	(0)	14	14
Total Expenditures	<u>503</u>	<u>607</u>	<u>607</u>	<u>248</u>	<u>365</u>	<u>365</u>
Net Current Activity	(496)	(603)	(603)	(245)	(361)	(361)
Fund Balance, Beginning of Year	<u>1,192</u>	<u>\$ 696</u>	<u>\$ 696</u>	<u>\$ 696</u>	<u>\$ 696</u>	<u>\$ 696</u>
Fund Balance, End of Year	<u>\$ 696</u>	<u>\$ 93</u>	<u>\$ 93</u>	<u>\$ 451</u>	<u>\$ 335</u>	<u>\$ 335</u>

Essential Public Health Services Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Current Revenues	\$ 12,056	\$ 14,299	\$ 14,299	\$ 17,588	\$ 17,602	\$ 17,602
Total Revenues	<u>12,056</u>	<u>14,299</u>	<u>14,299</u>	<u>17,588</u>	<u>17,602</u>	<u>17,602</u>
Expenditures						
Personnel	3,813	10,390	10,063	5,166	7,501	7,501
Supplies	356	639	680	333	468	468
Other Services	2,499	5,749	5,789	3,550	5,325	5,325
Non-Capital Purchases	299	591	659	103	578	578
Capital Purchases	87	0	267	208	389	389
Total Expenditures	<u>7,054</u>	<u>17,369</u>	<u>17,458</u>	<u>9,360</u>	<u>14,261</u>	<u>14,261</u>
Net Current Activity	5,002	(3,070)	(3,159)	8,228	3,341	3,341
Fund Balance, Beginning of Year	<u>2,565</u>	<u>7,567</u>	<u>7,567</u>	<u>7,567</u>	<u>7,567</u>	<u>7,567</u>
Fund Balance, End of Year	<u>\$ 7,567</u>	<u>\$ 4,497</u>	<u>\$ 4,408</u>	<u>\$ 15,795</u>	<u>\$ 10,908</u>	<u>\$ 10,908</u>

Forensic Transition Special Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Police Services	\$ 15,896	\$ 14,090	\$ 14,090	\$ 7,432	\$ 10,271	\$ 10,271
Unclaimed Fines & Forfeitures	0	0	0	0	0	0
Recoveries & Refunds	37	0	0	0	0	0
Total Revenues	<u>15,933</u>	<u>14,090</u>	<u>14,090</u>	<u>7,432</u>	<u>10,271</u>	<u>10,271</u>
Expenditures						
Personnel	12,108	13,741	13,741	8,322	10,017	10,017
Supplies	538	150	150	(5)	109	109
Other Services	3,145	199	199	23	145	145
Capital Purchases	26	0	0	0	0	0
Non-Capital Purchases	91	0	0	0	0	0
Total Expenditures	<u>15,908</u>	<u>14,090</u>	<u>14,090</u>	<u>8,341</u>	<u>10,271</u>	<u>10,271</u>
Net Current Activity	25	0	0	(909)	0	0
Fund Balance, Beginning of Year	0	25	25	25	25	25
Fund Balance, End of Year	<u>\$ 25</u>	<u>\$ 25</u>	<u>\$ 25</u>	<u>\$ (884)</u>	<u>\$ 25</u>	<u>\$ 25</u>

Health Special Revenue Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Current Revenues	\$ 2,789	\$ 2,517	\$ 2,517	\$ 1,854	\$ 2,548	\$ 2,548
Total Revenues	<u>2,789</u>	<u>2,517</u>	<u>2,517</u>	<u>1,854</u>	<u>2,548</u>	<u>2,548</u>
Expenditures						
Personnel	1,075	1,039	1,039	721	961	961
Supplies	384	534	496	256	515	515
Other Services	927	1,647	1,693	919	1,790	1,790
Non-Capital Purchases	62	84	124	43	79	79
Capital Purchases	42	365	444	126	127	127
Total Expenditures	<u>2,490</u>	<u>3,669</u>	<u>3,796</u>	<u>2,065</u>	<u>3,472</u>	<u>3,472</u>
Operating Transfers						
Operating Transfers In (Out)	800	400	400	0	400	400
Total Operating Transfers	<u>800</u>	<u>400</u>	<u>400</u>	<u>0</u>	<u>400</u>	<u>400</u>
Net Current Activity	1,099	(752)	(879)	(211)	(524)	(524)
Fund Balance, Beginning of Year	4,440	5,539	5,539	5,539	5,539	5,539
Fund Balance, End of Year	<u>\$ 5,539</u>	<u>\$ 4,787</u>	<u>\$ 4,660</u>	<u>\$ 5,328</u>	<u>\$ 5,015</u>	<u>\$ 5,015</u>

Historic Preservation Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	Adopted Budget	Current Budget	FY2015		
				YTD	Controller's Projection	Finance Projection
Revenues						
Interest Income	\$ 7	\$ 3	\$ 3	\$ 6	\$ 7	\$ 7
Charges for Services	341	225	225	288	325	325
Other Interfund Services	0	0	0	0	0	0
Total Revenues	<u>348</u>	<u>228</u>	<u>228</u>	<u>294</u>	<u>332</u>	<u>332</u>
Expenditures						
Supplies & Other Services	263	509	509	242	456	456
Total Expenditures	<u>263</u>	<u>509</u>	<u>509</u>	<u>242</u>	<u>456</u>	<u>456</u>
Net Current Activity	85	(281)	(281)	52	(124)	(124)
Fund Balance, Beginning of Year	<u>935</u>	<u>1,020</u>	<u>1,020</u>	<u>1,020</u>	<u>1,020</u>	<u>1,020</u>
Fund Balance, End of Year	<u>\$ 1,020</u>	<u>\$ 739</u>	<u>\$ 739</u>	<u>\$ 1,072</u>	<u>\$ 896</u>	<u>\$ 896</u>

Houston Civic Events Special Revenue Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	Adopted Budget	Current Budget	FY2015		
				YTD	Controller's Projection	Finance Projection
Revenues						
Current Revenues	\$ 0	\$ 0	\$ 0	\$ 24	\$ 33	\$ 33
Interest Income	0	0	0	5	12	12
Total Revenues	<u>0</u>	<u>0</u>	<u>0</u>	<u>29</u>	<u>45</u>	<u>45</u>
Expenditures						
Personnel	0	1,677	1,677	1,157	1,938	1,938
Supplies	0	72	84	81	72	72
Other Services	0	276	264	201	276	276
Non-Capital Purchases	0	0	0	0	0	0
Capital Purchases	0	0	0	0	0	0
Total Expenditures	<u>0</u>	<u>2,025</u>	<u>2,025</u>	<u>1,440</u>	<u>2,286</u>	<u>2,286</u>
Operating Transfers						
Operating Transfers In (Out)	0	(0)	(0)	1,641	2,241	2,241
Total Operating Transfers	<u>0</u>	<u>(0)</u>	<u>(0)</u>	<u>1,641</u>	<u>2,241</u>	<u>2,241</u>
Net Current Activity	0	0	0	230	0	0
Fund Balance, Beginning of Year	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Fund Balance, End of Year	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 230</u>	<u>\$ 0</u>	<u>\$ 0</u>

Houston Emergency Center
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	Adopted Budget	Current Budget	FY2015		
				YTD	Controller's Projection	Finance Projection
Revenues						
Current Revenues	\$ 24,206	\$ 26,017	\$ 26,017	\$ 17,510	\$ 26,149	\$ 26,149
Total Revenues	<u>24,206</u>	<u>26,017</u>	<u>26,017</u>	<u>17,510</u>	<u>26,149</u>	<u>26,149</u>
Expenditures						
Maintenance and Operations	23,800	26,017	26,017	18,298	26,399	26,399
Total Expenditures	<u>23,800</u>	<u>26,017</u>	<u>26,017</u>	<u>18,298</u>	<u>26,399</u>	<u>26,399</u>
Net Current Activity	406	0	0	(788)	(250)	(250)
Fund Balance, Beginning of Year	<u>3,401</u>	<u>3,807</u>	<u>3,807</u>	<u>3,807</u>	<u>3,807</u>	<u>3,807</u>
Fund Balance, End of Year	<u>\$ 3,807</u>	<u>\$ 3,807</u>	<u>\$ 3,807</u>	<u>\$ 3,019</u>	<u>\$ 3,557</u>	<u>\$ 3,557</u>

Houston Transtar Center
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	Adopted Budget	Current Budget	FY2015		
				YTD	Controller's Projection	Finance Projection
Revenues						
Other Grant Awards	\$ 1,789	\$ 1,605	\$ 1,605	\$ 1,217	\$ 1,645	\$ 1,645
Other Service Charges	629	645	645	480	645	645
Misc. Revenue	1	0	0	1	0	0
Interest Income	18	18	18	13	18	18
Total Revenues	<u>2,437</u>	<u>2,268</u>	<u>2,268</u>	<u>1,711</u>	<u>2,308</u>	<u>2,308</u>
Expenditures						
Maintenance and Operations	2,309	2,915	2,915	1,864	2,791	2,791
Total Expenditures	<u>2,309</u>	<u>2,915</u>	<u>2,915</u>	<u>1,864</u>	<u>2,791</u>	<u>2,791</u>
Net Current Activity	128	(647)	(647)	(153)	(483)	(483)
Fund Balance, Beginning of Year	<u>2,286</u>	<u>2,414</u>	<u>2,414</u>	<u>2,414</u>	<u>2,414</u>	<u>2,414</u>
Fund Balance, End of Year	<u>\$ 2,414</u>	<u>\$ 1,767</u>	<u>\$ 1,767</u>	<u>\$ 2,261</u>	<u>\$ 1,931</u>	<u>\$ 1,931</u>

Juvenile Case Manager
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				Finance Projection
		Adopted Budget	Current Budget	YTD	Controller's Projection	
Revenues						
Current Revenues	\$ 1,340	\$ 1,356	\$ 1,356	\$ 909	\$ 1,356	\$ 1,356
Total Revenues	<u>1,340</u>	<u>1,356</u>	<u>1,356</u>	<u>909</u>	<u>1,356</u>	<u>1,356</u>
Expenditures						
Personnel	1,161	1,628	1,628	1,027	1,433	1,433
Supplies	4	5	5	4	5	5
Other Services and Charges	160	246	242	68	163	163
Non Capital Purchases	0	0	4	4	4	4
Total Expenditures	<u>1,325</u>	<u>1,879</u>	<u>1,879</u>	<u>1,103</u>	<u>1,605</u>	<u>1,605</u>
Net Current Activity	15	(523)	(523)	(194)	(249)	(249)
Fund Balance, Beginning of Year	<u>1,751</u>	<u>1,766</u>	<u>1,766</u>	<u>1,766</u>	<u>1,766</u>	<u>1,766</u>
Fund Balance, End of Year	<u>\$ 1,766</u>	<u>\$ 1,243</u>	<u>\$ 1,243</u>	<u>\$ 1,572</u>	<u>\$ 1,517</u>	<u>\$ 1,517</u>

Laboratory Operations and Maintenance Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				Finance Projection
		Adopted Budget	Current Budget	YTD	Controller's Projection	
Revenues						
Current Revenues	\$ 461	\$ 399	\$ 399	\$ 345	\$ 485	\$ 485
Total Revenues	<u>461</u>	<u>399</u>	<u>399</u>	<u>345</u>	<u>485</u>	<u>485</u>
Expenditures						
Personnel	0	0	0	0	0	0
Supplies	137	0	102	72	93	93
Other Services	340	579	461	335	454	454
Non-Capital Purchases	0	0	9	0	9	9
Capital Purchases	0	0	7	7	23	23
Total Expenditures	<u>477</u>	<u>579</u>	<u>579</u>	<u>414</u>	<u>579</u>	<u>579</u>
Net Current Activity	(16)	(180)	(180)	(69)	(94)	(94)
Fund Balance, Beginning of Year	<u>326</u>	<u>310</u>	<u>310</u>	<u>310</u>	<u>310</u>	<u>310</u>
Fund Balance, End of Year	<u>\$ 310</u>	<u>\$ 130</u>	<u>\$ 130</u>	<u>\$ 241</u>	<u>\$ 216</u>	<u>\$ 216</u>

Maintenance Renewal and Replacement Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Interest Income	\$ 0	0	0	10	18	18
Total Revenues	<u>0</u>	<u>0</u>	<u>0</u>	<u>10</u>	<u>18</u>	<u>18</u>
Expenses						
Personnel	0	5,934	5,934	3,949	5,574	5,574
Supplies	0	1,062	1,063	941	1,251	1,251
Other Services	0	7,285	7,142	4,281	7,331	7,331
Capital Purchases	0	0	128	20	128	128
Non-Capital Purchases	0	0	4	4	4	4
Total Expenses	<u>0</u>	<u>14,271</u>	<u>14,271</u>	<u>9,196</u>	<u>14,289</u>	<u>14,289</u>
Operating Transfers						
Operating Transfers In	0	14,271	14,271	14,271	14,271	14,271
Operating Transfers Out	0	0	0	0	0	0
Total Operating Transfers	<u>0</u>	<u>14,271</u>	<u>14,271</u>	<u>14,271</u>	<u>14,271</u>	<u>14,271</u>
Net Current Activity	0	0	0	5,085	0	0
Fund Balance, Beginning of Year	0	0	0	0	0	0
Fund Balance, End of Year	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 5,085</u>	<u>\$ 0</u>	<u>\$ 0</u>

Parking Management Special Revenue Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Parking Violations	\$ 10,031	\$ 9,780	\$ 9,780	\$ 7,525	\$ 9,805	\$ 9,805
Parking Fees	8,731	8,215	8,215	6,550	8,902	8,902
Permit Fees	346	283	283	254	289	289
Other Revenue	56	2	2	42	18	18
Interest Income	37	34	34	28	34	34
Total Revenues	<u>19,201</u>	<u>18,314</u>	<u>18,314</u>	<u>14,399</u>	<u>19,048</u>	<u>19,048</u>
Expenses						
Personnel	4,253	4,786	4,786	3,361	4,607	4,607
Supplies	465	717	714	373	717	717
Other Services	4,159	5,418	5,728	3,257	4,896	4,896
Capital Outlay	272	142	160	61	159	159
Non-Capital Outlay	26	267	272	12	219	219
Total Expenses	<u>9,169</u>	<u>11,330</u>	<u>11,660</u>	<u>7,063</u>	<u>10,598</u>	<u>10,598</u>
Net Current Activity	<u>10,032</u>	<u>6,984</u>	<u>6,654</u>	<u>7,336</u>	<u>8,450</u>	<u>8,450</u>
Other Financing Sources (Uses)						
Operating Transfers - In (Out)	(9,403)	(7,000)	(6,650)	(5,250)	(7,000)	(7,000)
Transfers for Interest	(1,519)	(1,674)	(1,674)	0	(1,674)	(1,674)
Total Other Financing Sources (Uses)	<u>(10,922)</u>	<u>(8,674)</u>	<u>(8,324)</u>	<u>(5,250)</u>	<u>(8,674)</u>	<u>(8,674)</u>
Net Current Activity	(890)	(1,689)	(1,689)	2,086	(224)	(224)
Fund Balance, Beginning of Year	2,929	2,039	2,039	2,039	2,039	2,039
Fund Balance, End of Year	<u>\$ 2,039</u>	<u>\$ 350</u>	<u>\$ 350</u>	<u>\$ 4,125</u>	<u>\$ 1,815</u>	<u>\$ 1,815</u>

Parks Golf Special Revenue Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2015					
	FY2014 Actual	Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Concessions	\$ 1,656	\$ 1,672	\$ 1,672	\$ 1,150	\$ 1,660	\$ 1,660
Rental of Property	921	1,147	1,147	632	978	978
Interest Income	7	6	6	8	9	9
Golf	3,175	3,623	3,623	2,198	3,336	3,336
Other	48	41	41	25	34	34
Total Revenues	<u>5,807</u>	<u>6,489</u>	<u>6,489</u>	<u>4,013</u>	<u>6,017</u>	<u>6,017</u>
Expenses						
Personnel	3,769	4,306	4,306	2,922	4,055	4,055
Supplies	863	857	857	515	858	858
Other Services	896	1,052	1,052	692	1,097	1,097
Capital Outlay	0	245	245	26	245	245
Total Expenses	<u>5,528</u>	<u>6,460</u>	<u>6,460</u>	<u>4,155</u>	<u>6,255</u>	<u>6,255</u>
Net Current Activity	279	29	29	(142)	(238)	(238)
Fund Balance, Beginning of Year	<u>1,085</u>	<u>1,364</u>	<u>1,364</u>	<u>1,364</u>	<u>1,364</u>	<u>1,364</u>
Fund Balance, End of Year	<u>\$ 1,364</u>	<u>\$ 1,393</u>	<u>\$ 1,393</u>	<u>\$ 1,222</u>	<u>\$ 1,126</u>	<u>\$ 1,126</u>

Parks Special Revenue Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2015					
	FY2014 Actual	Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Concessions	\$ 346	\$ 364	\$ 364	\$ 265	\$ 338	\$ 338
Facility Admissions/User Fees	72	63	63	62	76	76
Program Fees	315	434	434	286	429	429
Rental of Property	465	526	526	391	566	566
Licenses and Permits	293	213	213	149	190	190
Interest Income	44	50	50	39	45	45
Tennis	181	190	190	125	181	181
Other	638	105	105	144	190	190
Total Revenues	<u>2,354</u>	<u>1,945</u>	<u>1,945</u>	<u>1,461</u>	<u>2,015</u>	<u>2,015</u>
Expenses						
Personnel	463	521	521	322	521	521
Supplies	340	577	473	194	473	473
Other Services	614	1,245	2,166	1,063	1,626	1,626
Capital Purchases	0	0	0	2	2	2
Non-Capital Purchases	3	0	0	0	0	0
Total Expenses	<u>1,420</u>	<u>2,343</u>	<u>3,160</u>	<u>1,581</u>	<u>2,622</u>	<u>2,622</u>
Net Current Activity	934	(398)	(1,215)	(120)	(607)	(607)
Fund Balance, Beginning of Year	<u>5,908</u>	<u>6,842</u>	<u>6,842</u>	<u>6,842</u>	<u>6,842</u>	<u>6,842</u>
Fund Balance, End of Year	<u>\$ 6,842</u>	<u>\$ 6,444</u>	<u>\$ 5,627</u>	<u>\$ 6,722</u>	<u>\$ 6,235</u>	<u>\$ 6,235</u>

Police Special Services Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				Finance Projection
		Adopted Budget	Current Budget	YTD	Controller's Projection	
Revenues						
Police Fees	\$ 3,213	\$ 3,687	\$ 3,687	\$ 1,364	\$ 2,800	2,800
Interest Income	34	200	200	30	200	200
Other	2,459	2,530	2,530	1,775	2,530	2,530
Interfund Transfers	5,362	4,925	4,925	2,463	4,925	4,925
Total Revenues	<u>11,068</u>	<u>11,342</u>	<u>11,342</u>	<u>5,632</u>	<u>10,456</u>	<u>10,456</u>
Expenditures						
Personnel	7,669	9,225	9,137	4,932	7,711	7,711
Supplies	894	592	576	96	227	227
Other Services	1,670	2,760	2,808	701	1,589	1,589
Capital Purchases	1,786	140	195	89	159	159
Non-Capital Purchases	9	10	10		0	0
Total Expenditures	<u>12,028</u>	<u>12,726</u>	<u>12,726</u>	<u>5,818</u>	<u>9,687</u>	<u>9,687</u>
Net Current Activity	(960)	(1,384)	(1,384)	(186)	769	769
Fund Balance, Beginning of Year	<u>6,872</u>	<u>5,912</u>	<u>5,912</u>	<u>5,912</u>	<u>5,912</u>	<u>5,912</u>
Fund Balance, End of Year	<u>\$ 5,912</u>	<u>\$ 4,528</u>	<u>\$ 4,528</u>	<u>\$ 5,726</u>	<u>\$ 6,681</u>	<u>\$ 6,681</u>

Recycling Expansion Program Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				Finance Projection
		Adopted Budget	Current Budget	YTD	Controller's Projection	
Revenues						
Current Revenues	\$ 1,126	\$ 1,967	\$ 1,967	\$ 640	\$ 1,498	\$ 1,498
Interest Income	14	26	26	14	18	18
Miscellaneous	32	44	44	24	35	35
Interfund Transfers	0	0	0	0	0	0
Total Revenues	<u>1,172</u>	<u>2,037</u>	<u>2,037</u>	<u>678</u>	<u>1,551</u>	<u>1,551</u>
Expenditures						
Personnel	172	162	162	96	162	162
Supplies	4	134	134	0	134	134
Other Services	9	420	420	6	420	420
Capital/Non-Capital Purchases	0	0	0	4	0	0
Total Expenditures	<u>185</u>	<u>716</u>	<u>716</u>	<u>106</u>	<u>716</u>	<u>716</u>
Operating Transfers						
Operating Transfers In	680	0	0	0	0	0
Operating Transfers (Out)	(852)	(1,882)	(1,882)	0	(2,461)	(2,461)
Total Operating Transfers	<u>(172)</u>	<u>(1,882)</u>	<u>(1,882)</u>	<u>0</u>	<u>(2,461)</u>	<u>(2,461)</u>
Net Current Activity	815	(561)	(561)	572	(1,526)	(1,626)
Fund Balance, Beginning of Year	<u>1,690</u>	<u>2,505</u>	<u>2,505</u>	<u>2,505</u>	<u>2,505</u>	<u>2,505</u>
Fund Balance, End of Year	<u>\$ 2,505</u>	<u>\$ 1,944</u>	<u>\$ 1,944</u>	<u>\$ 3,077</u>	<u>\$ 879</u>	<u>\$ 879</u>

Special Waste Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Current Revenues	\$ 2,767	\$ 2,758	\$ 2,758	\$ 2,167	\$ 2,758	\$ 2,758
Total Revenues	<u>2,767</u>	<u>2,758</u>	<u>2,758</u>	<u>2,167</u>	<u>2,758</u>	<u>2,758</u>
Expenditures						
Personnel	2,198	3,003	3,003	2,082	3,003	3,003
Supplies	36	37	53	33	46	46
Other Services	123	229	1,647	113	666	666
Non-Capital Purchases	122	54	54	52	52	52
Capital Purchases	59	72	382	343	343	343
Total Expenditures	<u>2,538</u>	<u>3,395</u>	<u>5,139</u>	<u>2,622</u>	<u>4,110</u>	<u>4,110</u>
Net Current Activity	229	(637)	(2,381)	(455)	(1,352)	(1,352)
Fund Balance, Beginning of Year	<u>3,332</u>	<u>3,561</u>	<u>3,561</u>	<u>3,561</u>	<u>3,561</u>	<u>3,561</u>
Fund Balance, End of Year	<u>\$ 3,561</u>	<u>\$ 2,924</u>	<u>\$ 1,180</u>	<u>\$ 3,106</u>	<u>\$ 2,209</u>	<u>\$ 2,209</u>

Supplemental Environmental Protection
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Current Revenues	\$ 115	\$ 110	\$ 110	\$ 21	\$ 28	\$ 28
Interest Income	1	2	2	1	1	1
Total Revenues	<u>116</u>	<u>112</u>	<u>112</u>	<u>22</u>	<u>29</u>	<u>29</u>
Expenditures						
Personnel Services	10	52	52	29	46	46
Supplies	26	0	0	61	61	61
Other Services	3	47	47	6	26	26
Capital Purchases	0	35	35	56	56	56
Non-Capital Purchases	0	29	29	0	0	0
Total Expenditures	<u>39</u>	<u>163</u>	<u>163</u>	<u>152</u>	<u>188</u>	<u>188</u>
Net Current Activity	77	(52)	(52)	(130)	(159)	(159)
Fund Balance, Beginning of Year	<u>131</u>	<u>208</u>	<u>208</u>	<u>208</u>	<u>208</u>	<u>208</u>
Fund Balance, End of Year	<u>\$ 208</u>	<u>\$ 155</u>	<u>\$ 156</u>	<u>\$ 78</u>	<u>\$ 49</u>	<u>\$ 49</u>

Swimming Pool Safety Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Current Revenues	\$ 1,125	\$ 1,053	\$ 1,053	\$ 748	\$ 1,161	\$ 1,161
Total Revenues	<u>1,125</u>	<u>1,053</u>	<u>1,053</u>	<u>748</u>	<u>1,161</u>	<u>1,161</u>
Expenditures						
Personnel	752	1,029	1,029	701	1,029	1,029
Supplies	12	15	14	3	14	14
Other Services	24	52	53	22	54	54
Non-Capital Purchases	1	15	35	1	21	21
Capital Purchases	0	48	28	0	0	0
Total Expenditures	<u>789</u>	<u>1,159</u>	<u>1,159</u>	<u>727</u>	<u>1,118</u>	<u>1,118</u>
Net Current Activity	336	(106)	(106)	21	43	43
Fund Balance, Beginning of Year	<u>461</u>	<u>797</u>	<u>797</u>	<u>797</u>	<u>797</u>	<u>797</u>
Fund Balance, End of Year	<u>\$ 797</u>	<u>\$ 691</u>	<u>\$ 691</u>	<u>\$ 818</u>	<u>\$ 840</u>	<u>\$ 840</u>

Technology Fee Fund
For the period ended March 31, 2015
(amounts expressed in thousands)

	FY2014 Actual	FY2015				
		Adopted Budget	Current Budget	YTD	Controller's Projection	Finance Projection
Revenues						
Municipal Court Fines	\$ 1,368	\$ 1,372	\$ 1,372	\$ 822	\$ 1,175	\$ 1,175
Interest Income	3	3	3	1	2	2
Total Revenues	<u>1,371</u>	<u>1,375</u>	<u>1,375</u>	<u>823</u>	<u>1,177</u>	<u>1,177</u>
Expenditures						
Other Services	952	964	964	494	950	950
Debt Service	350	-	-	0	0	0
Capital Purchases	0	225	225	104	175	175
Total Expenditures	<u>1,340</u>	<u>1,189</u>	<u>1,189</u>	<u>598</u>	<u>1,125</u>	<u>1,125</u>
Net Current Activity	31	186	186	225	52	52
Fund Balance, Beginning of Year	<u>109</u>	<u>140</u>	<u>140</u>	<u>140</u>	<u>140</u>	<u>140</u>
Fund Balance, End of Year	<u>\$ 140</u>	<u>\$ 326</u>	<u>\$ 326</u>	<u>\$ 365</u>	<u>\$ 192</u>	<u>\$ 192</u>

City of Houston, Texas
Commercial Paper Issued and Available
For the period ended March 31, 2015
(amounts expressed in millions)

COMMERCIAL PAPER	Draws FY15	Draws Month	Refunded FY15	Amount Available to be Drawn	Amount Outstanding
General Obligation					
<i><u> Voter Authorized 2001 & 2006 Election </u></i>					
Series G-1	0.00	0.00	0.00	75.00	0.00
Series G-2	15.00	0.00	90.00	94.90	30.10
Series H-2	0.00	0.00	0.00	90.20	9.80
Series J	10.00	0.00	35.00	115.00	10.00
<i><u> Non-Voter Authorized </u></i>					
Series E1-Equipment & Capital	42.00	0.00	77.45	58.00	42.00
Series E2- Equipment & Capital	20.00	0.00	30.00	50.00	20.00
Series E2- Metro Street Projects	0.00	0.00	0.00	30.00	0.00
Series K-1	0.00	0.00	0.00	150.00	0.00
Series K-2	0.00	0.00	0.00	100.00	0.00
Total General Obligation	87.00	0.00	232.45	763.10	111.90
Combined Utility System					
Series B-1	0.00	0.00	0.00	100.00	0.00
Series B-2	0.00	0.00	0.00	75.00	0.00
Series B-3	0.00	0.00	0.00	75.00	0.00
Series B-4	0.00	0.00	0.00	100.00	0.00
Series B-5	0.00	0.00	0.00	250.00	0.00
Series B-6	0.00	0.00	0.00	100.00	0.00
Total Combined Utility System	0.00	0.00	0.00	700.00	0.00
Airport System					
Series A&B	48.30	15.00	0.00	100.50	49.50
Total Airport System	48.30	15.00	0.00	100.50	49.50
Totals	\$135.30	\$15.00	\$232.45	\$1,563.60	\$161.40

City of Houston, Texas
Total Outstanding Debt
For the period ended March 31, 2015
(amounts expressed in thousands)

	March 31, 2015	March 31, 2014
Payable from Ad Valorem Taxes		
Public Improvement Bonds ^(a)	2,447,340	2,422,445
Commercial Paper Notes ^(b)	111,900	212,350
Pension Obligations	594,640	601,430
Certificates of Obligations	16,360	18,660
Subtotal	3,170,240	3,254,885
Payable from Sources Other Than Ad Valorem Taxes		
Combined Utility System		
Combined Utility System Revenue Bonds	5,956,560	5,755,330
Combined Utility System Commercial Paper Notes ^(c)	0	115,000
Water and Sewer System Revenue Bonds ^(d)	142,616	278,015
Contract Revenue Obligations - CWA	85,925	98,900
Airport System		
Airport System Sr. Lien Bonds ^(e)	449,660	449,660
Airport System Subordinate Lien	1,711,170	1,766,285
Airport System Sr. Lien Commercial Paper Notes ^(f)	49,500	1,000
Airport System Inferior Lien Contracts ^(g)	17,760	23,075
Airport Special Facilities Revenue Bonds ^(h)	828,845	662,730
Hotel Occupancy Tax and Civic Parking		
Facilities Revenue Bonds ⁽ⁱ⁾	641,047	560,238
Hotel Occupancy Tax And Parking Revenue Commercial Paper ^(j)	0	42,000
Subtotal	9,883,083	9,752,232
Total Debt Payable by the City	\$13,053,323	\$13,007,117

- (a) In Nov 2001 voters authorized \$776 million in tax bonds. In Nov 2006 voters authorized \$625million in tax bonds. In Nov 2012 voters authorized an additional \$410 million in tax bonds.
- (b) The City has authorized maximum issuance of General Obligation Commercial Paper Programs Series E-1: \$100 million, E-2: \$100 million, G-1: \$75 million, G-2: \$125 million, H-2: \$100 million, J: \$125 million, K1: \$150 million and K2: \$100 million.
- (c) The City has authorized \$700 million in Combined Utility System Commercial Paper Notes.
- (d) Includes \$ 85.3 million accreted value of capital appreciation bonds at this date and \$77.8million last year.
- (e) The Houston Airport System issued Senior Lien Revenue bonds on August 20, 2009.
- (f) City Council has authorized \$150 million of Airport Senior Lien Commercial Paper Notes Series A and B.
- (g) Under a sublease agreement, the Houston Airport System has agreed to make sublease payments that include the debt service payments on the Series 1997A Special Facilities Bonds that financed the Automated People Mover ("APM") at George Bush Airport. These sublease payments constitute Inferior Lien Obligations under the Airport bond ordinances.
- (h) All Special Facility Revenue Bonds are secured solely from Special Facility Lease Revenues. Does not include \$17.8 million for Series 1997A Special Facilities Bonds. See footnote (g).
- (i) Includes \$135.7 million accreted value of capital appreciation bonds at this date and \$123.1 million last year.
- (j) The City has authorized \$75 million of Subordinate Lien Hotel Occupancy Tax and Parking Revenue Commercial Paper.

City of Houston, Texas
Voter-Authorized Obligations
For the period ended March 31, 2015
(amounts expressed in thousands)

<u>Purposes</u>	<u>Voter Authorized</u>	<u>Approved by City Council for Issuance as Commercial Paper Notes</u>	<u>Commercial Paper Issued ^(a)</u>	<u>Commercial Paper Notes Approved by City Council but Unissued</u>	<u>All Voter Authorized but Unissued</u>
November 2001 Election					
Streets, Bridges, Traffic Control	\$ 474,000	\$ 474,000	\$ 473,000	\$ 1,000	\$ 1,000
Parks and Recreation	80,000	80,000	80,000	0	0
Police and Fire Departments	82,000	82,000	82,000	0	0
Permanent and General Improvements ^(b)	80,000	80,000	80,000	0	0
Public Libraries	40,000	40,000	40,000	0	0
Low Income Housing	20,000	20,000	9,985	10,015	10,015
Total	\$ 776,000	\$ 776,000	\$ 764,985	\$ 11,015	\$ 11,015
November 2006 Election					
Streets, Bridges, Traffic Control	\$ 320,000	\$ 219,950	\$ 76,260	\$ 143,690	\$ 243,740
Parks and Recreation	55,000	55,000	55,000	0	0
Public Safety	135,000	135,000	108,555	26,445	26,445
Permanent and General Improvements ^(b)	60,000	60,000	55,750	4,250	4,250
Public Libraries	37,000	37,000	37,000	0	0
Low Income Housing	18,000	18,008	3,000	15,008	15,000
Total	\$ 625,000	\$ 524,958	\$ 335,565	\$ 189,393	\$ 289,435
November 2012 Election					
Streets, Bridges, Traffic Control	\$ -	\$ -	\$ -	\$ -	\$ -
Parks and Recreation	166,000	50,890	2,000	48,890	164,000
Public Safety	144,000	74,143	0	74,143	144,000
Permanent and General Improvements ^(b)	57,000	29,393	5,750	23,643	51,250
Public Libraries	28,000	13,545	2,850	10,695	25,150
Low Income Housing	15,000	2,000	0	2,000	15,000
Total	\$ 410,000	\$ 169,971	\$ 10,600	\$ 159,371	\$ 399,400
Combined Total (2001, 2006, 2012 Elections)	\$ 1,811,000	\$ 1,470,929	\$ 1,111,150	\$ 359,779	\$ 699,850

(a) As of March 31, 2015

(b) Includes Public Health and Solid Waste Management

Note: This schedule sets forth the categories of bond authorization approved by the voters in elections held in November of 2001 (the "2001 Election") and November of 2006 (the "2006 Election"), and November of 2012 (the "2012 Election"), the amount of each such authorization approved by City Council for issuance as Commercial Paper Notes, the amount of commercial paper issued as of year-end, and the amount of commercial paper approved but unissued. The City has issued all bonds authorized at the election held in November of 1997.

CITY OF HOUSTON

RETIREE MEDICAL UNFUNDED ACCRUED LIABILITIES

3/31/2015
(amount expressed in millions)

	<u>Date of Most Recent Valuation or Estimate</u>	<u>Present Value of Benefits ⁽²⁾</u>	<u>Unfunded Accrued Liabilities</u>	<u>Annual OPEB Cost ⁽⁴⁾</u>
Entry Age Normal ⁽¹⁾	6/30/2013	\$3,001.2	\$2,089.8 ⁽³⁾	\$214.0

Note (1) Entry Age Normal is a cost method used to identify the value of benefits for the fiscal year 2012. Present Value of Benefits is a measure of total liability at the date of valuation. Both medical and life benefits are included.

Note (2) Total present value of all expected future benefits based on actuarial assumptions and reflects new plan provisions effective 05/01/2013.

Note (3) Based on Aon Consulting's updated estimate to reflect new plan provisions effective 05/01/2013.

Note (4) The Annual OPEB (Other Post Employment Benefits) Cost is the actuarial calculated annual amount the City should contribute to fund the unfunded accrued liabilities over 30 years remaining average expected working life. The City currently funds on a "pay as you go" basis. The City has paid \$30.0 million current fiscal year to date. For FY2014 the City paid \$38.6 million for the retiree health insurance costs.

CITY OF HOUSTON

PENSION FUND PAYMENTS AND UNFUNDED LIABILITY SUMMARY

3/31/2015

PAYMENTS

(amount expressed in thousands)

	FY2014	FY 2015			
		City Payment Rate	Employee Payment Rate	Adopted Budget	Year to Date Actual
Firefighters Plan					
General Fd. & Other Fds.	\$ 63,758	23.9%	9.00%	\$ 91,232	\$ 68,077
Total Firefighters Plan	<u>63,758</u>			<u>91,232</u>	<u>68,077</u>
Police Plan					
General Fd. & Other Fds.	103,000	Note 1	9.00% / 10.25%	113,000	
Pension Bonds	<u>0</u>			<u>0</u>	<u>82,577</u>
Total Police Plan	<u>103,000</u>			<u>113,000</u>	<u>82,577</u>
Municipal Plan					
General Fund	51,354	Note 2	5% / None	58,828	40,571
Other Funds	78,097	Note 2	5% / None	95,125	66,194
Total Municipal Plan	<u>129,451</u>			<u>153,953</u>	<u>106,765</u>
Total All Three Plans	<u>\$296,209</u>			<u>\$358,185</u>	<u>\$257,419</u>

UNFUNDED ACCRUED LIABILITY AND FUNDED STATUS

	Date of Most Recent Valuation or Estimate	Unfunded Accrued Liability (\$ millions)	Assets as % of Liabilities
Firefighters Plan	7/1/2013	532.6	86.6%
Police Plan	7/1/2014	1,021.0	81.0%
Municipal Plan	7/1/2014	1,798.0	58.1%

Note 1: City contribution based on Meet and Confer Agreement with Houston Police Officers Pension System

(Agreement Between Houston Police Officers' Pension System and City of Houston,

Article II - Change in Member Contributions, September 18, 2004).

Note 2: City contribution based on Meet and Confer Agreement with Houston Municipal Employees Pension System

(Fourth Amendment, June 27, 2007, Change in Member Contributions: effective January 1, 2008, new hires do not contribute).

FY2015 FULL TIME EQUIVALENT (FTE) REPORT
(1 FTE Equals 2,088 Hours per year)

	FY2014 Actual	FY2015 Budget	FY2015 March	FY2015 (1) YTD AVG.	Overtime FY2014 Actual	Overtime FY2015 Budget	Overtime (1) FY2015 YTD
ENTERPRISE FUNDS							
Aviation	1,272.5	1,404.5	1,197.5	1,226.7	90.7	61.2	72.0
PW & E - Combined Utility System	2,046.9	2,259.3	2,023.1	2,020.4	165.6	128.6	146.5
TOTAL ENTERPRISE FUNDS	3,319.4	3,663.8	3,220.6	3,247.1	256.3	189.8	218.5
GENERAL FUND							
GENERAL FUND MUNICIPAL							
Administration and Regulatory Affairs	200.7	204.6	200.2	201.2	0.8	0.7	1.1
City Secretary	10.7	12.0	9.8	10.2	0.0	0.0	0.5
Controller's Office	65.3	64.5	61.3	62.1	0.0	0.0	0.0
Council Office	74.6	87.5	75.5	76.6	0.0	0.0	0.0
Finance Department	106.5	118.7	110.0	111.4	0.0	0.0	0.0
Fire Department	116.6	115.6	107.9	106.3	0.5	0.5	0.7
General Services	193.5	137.6	136.2	137.5	7.6	3.1	3.4
Health & Human Services	557.4	470.8	552.2	558.0	7.6	2.6	9.4
Housing & Community Development	2.0	2.0	1.0	1.4	0.0	0.0	0.0
Human Resources	31.1	35.0	32.7	32.0	0.0	0.0	0.0
Information Technology	153.6	173.2	155.0	159.7	2.7	2.4	2.5
Legal	119.7	127.5	123.0	121.5	0.0	0.0	0.0
Library	474.1	485.9	467.2	469.0	0.0	0.0	0.0
Mayor's Office	57.6	48.9	52.7	48.1	0.9	0.0	0.0
Municipal Courts Department	291.5	300.6	294.4	300.1	0.1	0.0	0.0
Neighborhoods	102.8	115.0	106.2	105.6	0.7	1.8	1.2
Office of Business Opportunity	26.4	30.0	26.9	28.4	0.0	0.0	0.0
Parks & Recreation	658.2	711.3	611.5	648.9	12.1	2.5	11.8
Planning & Development	76.1	78.8	72.5	71.3	0.0	0.0	0.0
Police Department	1,125.0	1,158.9	1,089.4	1,106.6	32.8	28.8	29.9
Public Works and Engineering	13.5	15.0	14.8	14.9	0.2	0.1	0.2
Solid Waste Management	433.1	438.6	438.4	438.1	25.8	31.6	29.1
SUBTOTAL MUNICIPAL	4,890.0	4,932.0	4,738.8	4,808.9	91.8	74.1	89.8
GENERAL FUND CADETS							
Fire Department	123.0	177.8	136.4	142.3	0.0	0.0	0.0
Police Department	88.1	112.5	109.2	91.2	0.0	0.0	0.0
SUBTOTAL CADETS	211.1	290.3	245.6	233.5	0.0	0.0	0.0

FY2015 FULL TIME EQUIVALENT (FTE) REPORT
(1 FTE Equals 2,088 Hours per year)

	FY2014 Actual	FY2015 Budget	FY2016 March	FY2015 (1) YTD AVG.	Overtime FY2014 Actual	Overtime FY2015 Budget	Overtime (1) FY2015 YTD
GENERAL FUND CLASSIFIED							
Fire Department	3,704.2	3,876.2	3,841.5 (4)	3,814.5 (4)	277.0	286.0	296.3
Police Department	5,143.8	5,194.0	5,089.9	5,106.0	146.6 (2)	101.0 (2)	236.4
SUBTOTAL CLASSIFIED	8,848.0	9,070.2	8,931.4	8,920.5	423.6	387.0	532.7
TOTAL GENERAL FUND	13,949.1	14,292.5	13,915.8	13,962.9	515.4	461.1	622.5
GRANTS & OTHER FUNDS (3)							
Administration and Regulatory Affairs	158.8	190.1	174.9	166.2	1.1	0.8	1.2
Finance Department	10.7	52.5	45.1	42.1	0.0	0.0	0.0
Fleet Management	311.4	375.0	351.8	354.4	14.5	7.7	14.4
General Services	61.3	142.8	133.6	135.4	0.0	4.0	1.9
Health & Human Services	590.6	207.8	660.4	651.5	1.5	0.8	2.0
Housing & Community Development	161.6	0.0	161.5	164.9	0.2	0.0	0.2
Houston Emergency Center	234.0	239.0	228.4	230.4	9.8	9.6	12.4
Human Resources	213.9	239.5	221.3	223.3	1.0	0.0	0.5
Information Technology	53.7	55.7	49.2	52.7	0.0	0.0	0.0
Legal	53.2	56.5	53.9	55.1	0.0	0.0	0.0
Library	23.4	5.0	15.0	17.7	0.0	0.0	0.0
Mayor's Office	26.8	32.7	43.0	41.5	0.2	0.7	0.7
Municipal Courts Department	18.1	24.0	20.9	19.8	0.0	0.0	0.0
Neighborhoods	47.9	0.0	44.9	45.6	0.9	0.0	0.2
Office of Business Opportunity	2.0	2.0	2.0	2.0	0.0	0.0	0.0
Parks & Recreation	88.1	109.5	96.9	99.1	5.1	4.5	2.5
Planning	11.6	11.5	9.3	7.7	0.0	0.0	0.0
Police Department - Cadet	26.8	0.0	15.0	22.4	0.0	0.0	0.0
Police Department - Classified	162.0	76.0	97.9	125.8	6.6	116.6	5.8
Police Department - Municipal	127.5	105.0	84.9	96.0	2.5 (2)	2.1	1.5
Public Works and Engineering	1,655.8	1,810.5	1,595.4	1,591.2	106.3	82.0	112.4
Solid Waste Management	2.1	2.0	2.0	2.7	0.0	0.0	0.0
TOTAL GRANTS & SPECIAL FUNDS	4,041.3	3,737.1	4,107.3	4,147.5	149.7	228.8	155.7
CITY-WIDE TOTAL	21,309.8	21,693.4	21,243.7	21,357.5	921.4	879.7	986.7

(1) YTD numbers measure the periods 07/01/2014 through 3/31/2015.

(2) Includes overtime hours from grants and special funds except Auto Dealers

(3) FY2015 Budget does not include Grant FTEs.

(4) Fire department FTEs do not include classified employees on phasedown.

Fund Descriptions

General Fund (1000)

General Revenues (i.e. property taxes, sales taxes, franchise fees, Municipal Courts fines, etc.) are budgeted and received in the General Fund for the support of most basic city services. Operations and services for public safety, financial services, libraries, solid waste management, health, most parks and recreation services, street traffic control, esplanade mowing and citywide administration are included in the General Fund.

Enterprise Funds

Aviation Operating Fund (8001)

The Aviation Operating Fund is an enterprise fund which accounts for operation of the City's airport system. The airport system is comprised of the George Bush Intercontinental Airport/Houston, William P. Hobby Airport, and Ellington Field. Activities of the department include: operations, maintenance, planning and construction, public service and administration. The Department coordinates its activities with the Federal Aviation Administration (FAA), other federal and state agencies, the airlines, and tenants of the airport facilities.

Convention and Entertainment Facilities Operating Fund (8601)

The Convention and Entertainment Facilities operating fund is an enterprise fund that accounts for the operation of the City's six major entertainment centers and City-owned parking garages: Jesse H. Jones Hall, Bayou Place, Houston Center for The Arts, Gus S. Wortham Center, George R. Brown Convention Center, Tranquility Park garage and Civic Center garage.

Combined Utility System Fund (8300, 8301, 8305)

The Combined Utility System is composed of three separate funds: the Water and Sewer System Operating Fund; the Combined Utility System Operating Fund and the Combined Utility System General Purpose Fund. The fund provides for the operation of the City's treated and untreated water, as well as, receives and process wastewater generated in a service area that includes the City, certain municipalities and unincorporated communities in the Houston metropolitan area. Some of the City's largest customers are other cities and water authorities which supply water to their own customers. This fund is administered by the Public Works & Engineering Department.

Risk Management Funds

Health Benefits Fund (9000)

The Health Benefits Fund, an Internal Service Fund administered by the Human Resources Department, was established in 1984 to centralize the financial transactions for the City's benefit plans. Health Benefits Effective May 1, 2011, the City elected to be substantially self-insured and awarded CIGNA a three year contract with two (2) one-year renewal options for 4 new health plans. The new health benefits model is composed of four (4) plans, all of which have heavy emphasis on a wellness component, and includes: 1) a limited network HMO-type plan, 2) an open access PPO-type plan with no out-of-network coverage, 3) a consumer driven high deductible Health Plan (CDHP), partnered with a health reimbursement account, and 4) a specific plan for retirees, mostly those under age 65, who live outside the limited network service area but who live in Texas. Effective 08/01/11, all 65+ Medicare eligible retirees must enroll in the 6 MA plans or opt out. These plans are supported by contributions from the city and participants. The Fund also includes two dental plans, a dental/health maintenance organization (DHMO) and a dental indemnity plan. Both plans are supported exclusively by participants.

Long Term Disability Fund (9001)

The Long Term Disability (LTD) Plan is a self-insured program accounted for as an internal service fund. Established in 1985 and revised in 1996 as part of the Income Protection Plan (IPP) (renamed the Compensable Sick Leave Plan (CSL) in October 1996), the plan provides paid long-term sick leave for City employees.

Property and Casualty Fund (1004)

The Property and Casualty Fund was established to monitor the financial requirements of the Property and Risk Management Programs. This activity is primarily self-funded. The revenue is generated from assessed premiums to the other funds. These premiums are based upon projected expenditures. All risk to the City's assets (except Workers Compensation, Life, Health Benefits, and Long Term Disability) fall within the scope of this fund.

Workers' Compensation Fund (1011)

The Workers' Compensation Fund is a revolving fund administered by the Human Resources Department. The Fund was established to centralize the financial transactions in the areas of Accident Prevention, Loss Control and Workers' Compensation.

Special Revenue Funds

Asset Forfeiture Fund (2202, 2203, 2204)

This fund is administered by the Houston Police Department (HPD). The City receives forfeited funds resulting from HPD's role in drug-related seizures. This fund provides resources beyond HPD's General Fund budget for crime enforcement. Specifically, this fund is used to address the drug problem in a manner consistent with the department's Comprehensive Narcotics Plan.

Auto Dealers Fund (2200)

This fund is budgeted to pay the license fees paid by tow truck drivers and various automotive sales, repair, storage and salvage dealers to finance a portion of the Police Department's enforcement efforts regarding privately owned storage lots. This fund is also administered by the Police Department.

BARC Special Revenue Fund (2427)

BARC (Bureau of Animal Regulation and Care) is authorized to receive funds from any source for the purpose of supporting the maintenance and operation of the City's animal shelter facilities and programs. This fund is administered by the Administration and Regulatory Affairs Department.

Bayou Greenway 2020 Fund (2106)

The Bayou Greenway 2020 Fund is administered by the Houston Parks Department. This fund was created to manage the maintenance of the Bayou Greenways 2020 project based upon the Bayou Greenways 2020 initiative entered between the City of Houston and the Houston Parks Board, Inc. in December 2013.

Building Inspection Fund (2301)

This fund includes all construction and building permit revenues and expenditures for inspections and permitting activities. Outdoor sign license fees are received in this fund for enforcement of the City's sign ordinance. This fund is administered by the Public Works and Engineering (PWE) Department.

Building (Court) Security Fund (2206)

This Fund was established in FY1997 and is administered by the Municipal Courts Department. This fund includes all security related contractual expenditures and additional security enhancements for the courts. Revenue is generated by the collection of a court fee for each paid conviction as allowed by State law. The mission of the Municipal Court Building Security Fund is to protect the health and welfare of civilians and employees by ensuring that adequate equipment, procedures, and personnel are present at all court facilities.

Cable TV Fund (2401, 2428)

This fund, under certain cable television franchise agreements with the City, receives contributions on a subscriber basis. This fund is used for public access cable television programming and related costs in the Cable Television Special Fund. The Mayor's Office is responsible for administering this fund.

Child Safety Fund (2209)

This fund is used to account for monies received for public, parochial and private school crossing guard programs. Revenues to the fund comes from an assessment of Municipal Court fee's on non-criminal municipal violations and a portion of each vehicle registration authorized by Harris County. The Police Department administers this fund.

Contractors Responsibility (2424)

The Contractors Responsibility Fund was created for the Pay or Play Program (POP), which is administered by the Office of Business Opportunity. The Pay or Play program is designated to foster the health care options for the citizens of Houston and Harris County area, create a level playing field for contractors bidding on City of Houston projects and defray the cost of the local uninsured workforce.

Dedicated Drainage & Street Renewal Fund (2310)

Ordinance 2010-879 requires funding in the amount equivalent to proceeds from \$0.118 of the City's ad valorem tax levy minus an amount equal to debt service for drainage and streets to the Dedicated Drainage & Street Renewal Fund. Total outstanding debt payable from ad valorem taxes (as of December 31, 2012) is \$3.47 billion. The portion of the debt associated with drainage and street improvements is estimated at \$1.69 billion. The Dedicated Drainage and Street Renewal Fund is not technically an enterprise fund, but is grouped with the Combined Utility System for clarity.

Digital Automated Red Light Enforcement Program Fund (2212)

This fund tracks the financial and accounting balances from all penalties and fees collected and all costs associated with the operation and enforcement of the photographic traffic monitoring system. While no new tickets will be issued, this fund remains open while the City collects outstanding penalties and fees and pays the fund's expenses. This fund is administered by the Finance Department. In FY2015, the Digital Automated Red Light Enforcement Program (DARLEP) function will be reported in the General Fund (Fund 1000) therefore, closing out Fund 2212.

Digital Houston Fund (2422)

This fund is used by the City of Houston to build a citywide wireless broadband Wi-Fi mesh network that will provide affordable high-speed internet access for residents and visitors to Houston; thus creating a digital future for Houstonians through a digital literacy effort in support of achieving Houston's educational workforce and educational goals. This fund is administered by the Library Department.

Essential Public Health Services (2010)

The Essential Public Health Services Fund was created for the purpose of offsetting costs associated with the administration of Medicaid Transformation Waiver projects and to perform other essential public health services. This fund will capture the costs and reimbursement of the expenses for the projects. The expected reimbursements are for costs that are incurred for the expansion of health and human services.

Forensic Transition Special Fund (2213)

The Forensic Transition Special Fund was created for the transition of forensic operations from the Houston Police Department to the independent Houston Forensics Science Local Government Corporation (LGC). The funds budget covers City of Houston employees that provide services to the Houston Forensic Science LGC.

Health Special Revenue Fund (2002)

Health Special Revenue Fund contains several revenue generating activities that are supported by ordinances, including the following: Consumer Foods Technology Fee, Ambulance Permit Fee, Vital Statics, Geriatric Dental Program, and donated fund for community activities or special events coordinated by Children and Family Services Division and Community Health Services Division.

Historic Preservation Fund (2306)

This fund is administered by the Planning and Development Department and the Houston Public Library. This fund was established in FY2010 to utilize funds set aside from the sale of historic fire stations by the City in FY2009. This fund is used to promote historic preservation programs. It utilizes City funds as seed money to encourage private investment, attract grant funds, and support educational programs that will further preservation efforts in Houston. This fund also provides future funding for the maintenance needs of the historic Julia Ideson Building.

Houston Civic Events Fund (2429)

The fund is administered by the Mayor's Office. This fund was created to promote consistent quality, family-oriented entertainment to Houston citizens and visitors. It is used to enhance the image of the City and highlight Houston's diverse culture. In addition to event production, the Mayor's Office of Special Events processes requests for special events, parade and street function permits, evaluates event co-sponsorship on city property, and provides production assistance for sponsored, co-sponsored, or fee-paid events.

Houston Emergency Center Fund (2205)

This fund consolidates the City's four separate emergency services into one state of the art facility. This fund is administered by the Houston Emergency Center.

Houston TranStar Center Fund (2402)

Houston TranStar Center, formerly known as the Greater Houston Transportation & Emergency Management Center, was built through a cooperative effort among the City of Houston, Harris County, Metropolitan Transit Authority (METRO) and the Texas Department of Transportation (TxDOT). The center houses personnel responsible for and/or involved with transportation and emergency management planning and operations in the Houston/Harris County area. Funding for the center is received from each member agency and is prorated based on occupancy and use of center facilities.

Juvenile Case Manager Fund (2211)

This Fund was established in FY2009 and is administered by the Municipal Courts Department. This fund includes expenditures for the salary, benefits, and operational costs related to the Juvenile Case Manager staff. Revenue is generated by the collection of a court fee for each paid conviction as allowed by State law. The mission of the Juvenile Case Manager Fee Fund is to partner with school districts within the City of Houston in an effort to increase school attendance and reduce truancy through early identification, assessment and prevention services, to enhance the accountability of students and families, and to limit a juvenile's exposure to the criminal justice system.

Laboratory Operation and Maintenance Fund (2008)

The Laboratory Operations and Maintenance Fund is designated for the retention of all revenues from laboratory fees. All laboratory fees charged and revenues collected are to defray the costs associated with the purchase, maintenance, operation, and utilization of City Laboratories, including but not limited to, infrastructure, equipment, supplies, software, and hardware systems, and with performing public health surveillance tests.

Maintenance Renewal and Replacement Fund (2105)

This fund is to provide funds needed to maintain and replace systems in buildings and assets as well as to protect the City of Houston's investments. This fund recognizes the shared responsibility of the City and its departments to maintain, upgrade, or replace building systems as they approach the end of their life cycle. This fund also addresses development and maintenance of the physical infrastructure of these facilities. This fund is administered, in partnership, by General Services and Houston Parks and Recreation departments.

Parking Management Fund (8700)

This fund is responsible for managing and providing on-street parking alternatives to the citizens in the Greater Houston area. This fund is administered by the Administration and Regulatory Affairs Department.

Parks Golf Special Fund (2104)

This fund was created to receive all City revenues derived from all City-owned golf facilities, whether operated by the City or private entities, including all related concessions fees, to be used exclusively for the maintenance, operating and improvements of any or all such golf courses.

Parks Special Revenue Fund (2100)

This fund is used to account for revenues and certain expenditures related to operations of the City's municipal golf courses and youth programs. This fund is administered by the Parks and Recreation Department.

Police Special Services Fund (2201)

This fund is used to account for activities that are not covered under the General Fund Budget. The activities include joint police operations, security and traffic control, undercover support services and use of HPD facilities. The Police Department administers this fund.

Recycling Expansion Program Fund (2305)

This fund was created to allocate dedicated funds to be used for the expansion and implementation of the City's Recycling Programs. Efforts include citywide tree waste recycling, additional neighborhood depository sites, curbside recycling and increased education and outreach. These efforts allow the City to improve its current landfill diversion rate. This fund is administered by the Solid Waste Management Department.

Special Waste Fund (2423)

The Health and Human Services Special Waste Fund pertains to fees issuance of permits or registration certificate. The Fats, Oil, and Grease (FOG) section is responsible for the permitting of all special waste generators, transporters and biological pretreaters in the City of Houston. The goal of the FOG program is to prevent the infiltration of fats, oils, and grease into the sanitary sewer, and to assure that the City's infrastructure and the health of the citizens are protected.

Storm Water Fund (2302)

This fund receives revenue from the Combined Utility System Fund and Dedicated Drainage and Street Renewal Fund. Funds are transferred to this fund to support storm water drainage operation and maintenance activities. The core purpose is to provide the best level of maintenance to the storm water infrastructure with the resources provided and to maintain flow of storm water free of debris and foreign objects that cause flooding.

Supplemental Environmental Protection Fund (2404)

This fund is for the advancement of the goals of clean air and water and to enhance the community environment impacted by criminal environmental violators. This fund is administered by the Police Department.

Swimming Pool Safety Fund (2009)

This fund receives proceeds from enforcing municipal, state and federal pool and spa safety standards. State and federal pool and safety standards apply to all pools and spas serving more than two dwellings; in accordance with the requirements, operators of pool and spas at apartment or condominium projects are required to obtain permits and to comply with the standards. The fees collected in pursuant of swimming pool and spa safety are used for the purposes of activities related to permitting, inspecting, monitoring, abating, controlling, educating and enforcement of municipal, state and federal standards. This fund is administered by the Health and Human Services Department.

Technology Fee Fund (2207)

This Fund was established in FY2001 and is administered by the Municipal Courts Department. Revenue is generated by the collection of a court fee for each paid conviction as allowed by State law. The purpose of the fund is to finance technological enhancements for the Municipal Courts and maintain systems to operate in an efficient manner.

COASTAL WATER AUTHORITY

Management's Discussion and Analysis,
Independent Auditors' Report,
Financial Statements and Supplemental Schedules

December 31, 2014

COASTAL WATER AUTHORITY

DECEMBER 31, 2014

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INDEPENDENT AUDITORS' REPORT

The Board of Directors of
Coastal Water Authority

We have audited the accompanying basic financial statements of the Coastal Water Authority ("CWA"), as of and for the year ended December 31, 2014, as listed in the table of contents, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatements of the financial statement, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to CWA's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of CWA's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of CWA, as of December 31, 2014, and the changes in financial position and cash flows for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other-Matters

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and the schedule of funding progress for other postemployment benefits, as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Our audit was conducted for the purpose of forming an opinion on the basic financial statements as a whole. The information included in Supplemental Schedules I, II and III, as listed in the table of contents, is presented for purposes of additional analysis and is not a required part of the financial statements. The information in Supplemental Schedules I and II is the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the financial statements. The information in Supplemental Schedules I and II has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information in Supplemental Schedules I and II is fairly stated in all material respects in relation to the financial statements as a whole. The information included in Supplemental Schedule III has not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on it.

Houston, Texas

April 3, 2015

COASTAL WATER AUTHORITY

Management's Discussion and Analysis (Unaudited)

Year Ended December 31, 2014

As management of the Coastal Water Authority (“CWA”), we offer readers of CWA’s financial statements this narrative overview and analysis of the financial activities of CWA for the year ended December 31, 2014. Please read this discussion and analysis in conjunction with CWA's basic financial statements, which follow this section.

FINANCIAL HIGHLIGHTS

- During 2008 CWA negotiated a contract with the City of Houston to authorize CWA to proceed with the Luce Bayou Interbasin Transfer Project (the “Project”). The contract authorizes CWA to take the necessary actions to complete the permitting and final design of the Project along with the land acquisition to secure the route of this new conveyance system. The Project Contract was approved on January 28, 2009.
- As stipulated in the 2009 Luce Bayou Project contract, the Land and Mitigation Fund was established to finance the costs related to the acquisition of land and costs associated with environmental mitigation necessary for the Project. In 2012, CWA received an additional \$5 million to supplement the Fund that will finalize the acquisition of all land required for the Project. This land acquisition was completed in 2014. CWA is currently negotiating with the U.S. Department of Fish & Wildlife to exchange certain property for the required environmental mitigation credits for the Project.
- In conjunction with the Luce Bayou Interbasin Transfer Project, CWA applied for a \$28 million loan from the State’s Texas Water Development Board’s Water Infrastructure Fund. The loan was closed in February 2009. The loan is being utilized for the preliminary engineering, permitting requirements and design of the Project.
- In support of the on-going Luce Bayou Interbasin Transfer Project, CWA applied for a second loan in the amount of \$5.1 million from the Texas Water Development Board’s Water Infrastructure Fund. This second loan was closed in July 2010. This loan supplements the funding for the permitting and design of the Project.
- The preliminary engineering phase of the Project is designed to determine the route and timing of transferring surface water from the Trinity River to Lake Houston for the projected needs of the Houston region. The preliminary engineering report was completed in 2010.
- CWA submitted an application for a loan from the Texas Water Development Board’s State Participation Plan. The loan in the amount of \$28,754,000 closed on March 1, 2013. This loan will assist CWA to fund design costs and the preliminary construction needs of the Luce Bayou Interbasin Project.
- CWA entered into a contract on June 27, 2012 with the City of Houston to acquire an interest in a City of Houston owned property (the “Gillette Street Project”) and to mitigate certain environmental matters with the intent to market the property upon completion of the mitigation project. The Gillette Street Project is anticipated to be concluded in 2015.
- A long term contract with NRG Energy Services, LLC was in effect for electricity reliability at CWA’s two primary pumping stations. This contract will provide for back-up electrical power in the event of a power failure serving those two facilities.
- A water main replacement project was completed in 2012 in the Bayport Water System. This project was part of CWA’s ongoing efforts to upgrade and replace critical infrastructure in the Bayport System that serves industrial customers. A second water main project was under design in 2013 and 2014 with the beginning of construction scheduled for 2015.

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Management's Discussion and Analysis (Unaudited)

Year Ended December 31, 2014

- CWA achieved debt service savings with a current refunding of the 2004 CWA Contract Revenue Bond with the competitive pricing with the issuance of \$38,415,000 in 2014 Contract Revenue Refunding Bonds that closed in December 2014.

OVERVIEW OF THE FINANCIAL STATEMENTS

The financial section of this annual report consists of two parts: Management's Discussion and Analysis and the basic financial statements.

The financial statements provide both long-term and short-term information about CWA's financial status. The financial statements also include notes that explain some of the information in the financial statements and provide more detailed data.

CWA's financial statements are prepared in conformity with accounting principles generally accepted in the United States of America (GAAP) as applied to governmental units on an accrual basis. Under this basis, revenues are recognized in the period in which they are earned, and expenses are recognized in the period in which they are incurred.

The Statement of Net Position includes all assets and liabilities associated with the operations of CWA. The Statement of Revenues, Expenses, and Changes in Net Position (Equity) reports CWA's net position and how it has changed. Net position is the difference between the sum of CWA's assets and any deferred outflows of resources and the sum of liabilities and any deferred inflows of resources.

FINANCIAL ANALYSIS OF CWA

TABLE A-1

Coastal Water Authority's Summarized Financial Information

	<u>2014</u>	<u>2013</u>
Current Assets	\$ 78,489,305	\$ 80,374,263
Capital Assets, net	265,638,375	266,733,743
Other Noncurrent Assets	<u>32,325,464</u>	<u>28,585,551</u>
Total Assets	<u>376,453,144</u>	<u>375,693,557</u>
Current Liabilities	14,348,357	12,489,962
Long-Term Liabilities	<u>144,963,291</u>	<u>142,960,985</u>
Total Liabilities	<u>159,311,648</u>	<u>155,450,947</u>
Net Position:		
Net investment in capital assets	123,945,535	127,117,445
Restricted	47,386,235	51,914,421
Unrestricted	<u>45,809,726</u>	<u>41,210,744</u>
Total Net Position	<u>\$ 217,141,496</u>	<u>\$ 220,242,610</u>

COASTAL WATER AUTHORITY

Management's Discussion and Analysis (Unaudited)

Year Ended December 31, 2014

During 2014, the decrease in current assets is primarily due to increasing expenditure related to the ongoing Luce Bayou Project. The increase in other noncurrent assets is due to CWA's investment in Gillette Street Project, and increase in long-term loan receivable from the City of Houston for the Luce Bayou Interbasin Transfer Project. The increase in current liabilities is primarily due to an increase in activities related to the Luce Bayou Project and an increase in current bonds payable in 2015.

Net position may, over time, serve as a useful indicator of a government's financial position. In the case of CWA, assets plus any deferred outflows of resources exceeded the liabilities and any deferred inflows of resources by \$217.1 million at the close of 2014. By far the largest portion of CWA's net position (61%) reflects its investment in capital assets (e.g., land, water systems, vehicles, equipment, and construction in progress). CWA utilizes these assets to deliver surface water (river water) to its end users, the City of Houston (the "City") and its contracted water customers.

The ratio of current assets to cover current liabilities is a strong indicator of an ability to manage day-to-day expenses. As of December 31, 2014, that ratio was approximately 5.5:1. The ratio of total assets to total liabilities, in the absence of any deferred outflows and deferred inflows of resources, was approximately 2.4:1. These strong ratios reflect CWA's stable financial condition both in the short-term as well as in the long-term outlook.

TABLE A-2

Changes in Coastal Water Authority's Net Position

	2014	2013
Operating Revenues	\$ 26,583,591	\$ 27,045,759
Non - Operating Revenues	1,546,126	1,393,792
Total Revenues	28,129,717	27,321,650
Operating Expenses - Field and Administration	(25,582,243)	(25,939,867)
Operating Expenses - Depreciation	(7,196,921)	(7,348,561)
Total Operating Expenses	(32,779,164)	(33,288,428)
Non - Operating Expenses	(3,785,274)	(3,782,946)
Total Expenses	(36,564,438)	(37,071,374)
Loss	(8,434,721)	(8,631,823)
Capital Contributions	5,333,608	7,277,607
Change in Net Position	(3,101,113)	(1,354,216)
Net Position - Beginning of Year	220,242,610	221,596,826
Net Position - End of Year	\$ 217,141,497	\$ 220,242,610

During 2014, the decrease in operating revenues was primarily due to reduced water demand from the Red Bluff Water Treatment Plant Project. The increase in non-operating revenues is due to an increase in

COASTAL WATER AUTHORITY

Management's Discussion and Analysis (Unaudited)

Year Ended December 31, 2014

pipeline crossing fees received in 2014. The decrease in capital contribution was primarily due to a reduction in land acquisition activities for the Luce Bayou Project and its reimbursement from the City of Houston.

CAPITAL ASSET AND DEBT ADMINISTRATION

Capital Assets - CWA's net capital assets as of December 31, 2014, amounted to \$265.6 million, (net of accumulated depreciation). This investment in capital assets included land, water systems, vehicles, equipment, and construction in progress. Major capital asset events during the year included the following:

- Incremental construction in progress activities, including engineering, permitting and land purchases, for the Luce Bayou Interbasin Transfer Project.
- Replacement of several vehicles and pieces of equipment for field operations.

Long-Term Debt: At the end of 2014, CWA had total long-term debt outstanding of \$ 139.3 million. The majority (\$77.4 million) of this amount is backed by the Projects Contract with the City. The bonds are secured by a first lien on, and a pledge of gross revenues of, the City's water and wastewater systems. The remaining \$ 61.9 million is backed by the Luce Bayou Projects Contract with the City. These bonds are secured by a pledge on the City's Combined Utility System General Purpose Fund.

Basic Financial Statements

COASTAL WATER AUTHORITY

Statement of Net Position

December 31, 2014

ASSETS

Current Assets – Unrestricted:

Cash	\$ 3,599,522
Investments	24,487,536
Receivables:	
Accounts receivable from City of Houston	4,686,864
Accounts receivable from other customers	409,032
Compensable absences – current portion	87,709
Other	5,075
Total receivables	<u>5,188,679</u>
Total current assets – unrestricted	<u>33,275,738</u>

Current Assets – Restricted:

Cash – restricted for capital projects	102,726
Investments – restricted for contingencies	4,994,965
Investments – restricted for capital projects	40,115,876
Total current assets – restricted	<u>45,213,567</u>

Capital Assets, Net

265,638,375

Other Assets:

Interest receivable from City of Houston	282,150
Long-term investments	14,402,571
Compensable absences receivable – non-current portion	2,422,157
Long-term loan receivable from City of Houston	15,218,586
Total other assets	<u>32,325,464</u>
Total assets	<u>\$ 376,453,145</u>

Continued

The accompanying notes are an integral part of the financial statements.

COASTAL WATER AUTHORITY

Statement of Net Position (Continued)

December 31, 2014

LIABILITIES

Current Liabilities - Unrestricted:

Accounts payable	\$ 1,503,508
Operating reserve payable	5,887,682
Compensable absences payable – current portion	87,709
Unearned revenue	1,334,163
	<hr/>
Total current liabilities – unrestricted	8,813,062
	<hr/>

Current Liabilities - Restricted:

Accounts payable	1,115,560
Bonds payable – current portion	2,260,000
Bond interest payable	159,735
Contingent reserve payable	2,000,000
	<hr/>
Total current liabilities – restricted	5,535,295
	<hr/>

Long-Term Liabilities:

Bonds payable – non-current portion	110,519,106
Long-term debt	28,754,000
Compensable absences payable – non-current portion	2,422,157
Other postemployment benefits payable	3,268,028
	<hr/>
Total long-term liabilities	144,963,291
	<hr/>

Total liabilities	159,311,648
	<hr/>

NET POSITION

Net investment in capital assets	123,945,535
Restricted for:	
Capital projects, net of restricted liabilities	44,386,235
Contingencies, net of restricted liabilities	3,000,000
Unrestricted	45,809,727
	<hr/>
Total net position	\$ 217,141,497
	<hr/>

The accompanying notes are an integral part of the financial statements.

COASTAL WATER AUTHORITY

Statement of Revenues, Expenses, and Changes in Fund Net Position

Year Ended December 31, 2014

Operating Revenues:

Funds provided by City of Houston	\$ 22,187,916
Funds provided by San Jacinto River Authority	104,438
Service revenues	4,291,237
	<hr/>
Total operating revenues	26,583,591
	<hr/>

Operating Expenses:

Utilities	8,364,135
Field salaries	4,973,473
Administrative	2,387,320
General operating	2,647,446
Materials and supplies	2,625,310
Engineering, legal, and other professional	832,018
Contract labor and equipment	3,752,541
Depreciation	7,196,921
	<hr/>
Total operating expenses	32,779,164
	<hr/>

Operating loss (6,195,573)

Non-Operating Revenues/(Expenses):

Investment income	50,755
Interest income	988,628
Bond interest expense	(3,727,629)
Loan interest expense	(57,645)
Other income	506,743
	<hr/>

Net non-operating revenues/(expenses) (2,239,148)

Loss before contributions (8,434,721)

Contributions Provided by City of Houston

5,333,608

Change in net position (3,101,113)

Net Position - beginning of year 220,242,610

Net Position - end of year \$ 217,141,497

The accompanying notes are an integral part of the financial statements.

COASTAL WATER AUTHORITY

Statement of Cash Flows

Year Ended December 31, 2014

Cash Flows from Operating Activities:

Cash received from municipalities for services rendered	\$ 19,984,991
Cash received from non-governmental customers	4,407,983
Cash payments to employees and suppliers for goods and services	<u>(24,665,130)</u>
Net cash used in operating activities	<u>(272,156)</u>

Cash Flows from Capital and Related Financing Activities:

Purchases of capital assets	(5,196,052)
Proceeds from sale of capital assets	55,535
Cash restricted for capital projects and contingencies	(197,471)
Principal payments on bonds payable	(1,645,000)
Payments of interest on bonds payable	(2,654,640)
Interest on an inter-fund loan	342,122
Capital contributions payments received in cost reimbursements	<u>4,485,212</u>
Net cash used in capital and related financing activities	<u>(4,810,294)</u>

Cash Flows from Investing Activities:

Purchases of investments	(190,097,640)
Proceeds from maturities or sales of investments	196,117,519
Payments received on note receivable	(399,767)
Investment income received	553,288
Other income received	<u>458,994</u>
Net cash provided by investing activities	<u>6,632,394</u>

Net increase in cash	<u>1,549,943</u>
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Cash, beginning of year	<u>2,049,578</u>
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Cash, end of year	<u><u>\$ 3,599,522</u></u>
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Reconciliation of operating loss to net cash provided by operating activities:

Operating loss	<u>\$ (6,195,573)</u>
Adjustments to reconcile operating loss to net cash used in operating activities:	
Depreciation	7,196,921
Changes in assets and liabilities:	
Due from the City of Houston	(2,190,619)
Accounts payable	593,231
Other postemployment benefits payable	<u>323,884</u>
Net cash used in operating activities	<u><u>\$ (272,156)</u></u>

The accompanying notes are an integral part of the financial statements.

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

NOTE 1 – REPORTING ENTITY AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Organization and Reporting Entity

In 1967, an act of the State of Texas Legislature (the “Act”) created Coastal Water Authority (“CWA”) as a conservation and reclamation district and political subdivision of the State of Texas covering a part of southwest Liberty County, southwest Chambers County, and most of Harris County. Under the Act, the primary purpose of creating CWA is to provide an agency to finance and construct a water conveyance and distribution system to transport surface water from Lake Livingston and the Trinity River into the above mentioned counties. CWA is also charged with conveying water to a point where it will be available for Galveston County. CWA is authorized to issue revenue bonds, improvement bonds, and special project bonds for the purpose of constructing or acquiring additional facilities that would enable CWA to distribute water to other customers.

In 2005, the Act was amended. Under the amended legislation, CWA may become involved in desalinization and reclamation projects, create a nonprofit corporation to aid and act on behalf of CWA in implementing a CWA project, and develop and generate electric energy with wind turbines or hydroelectric facilities to be used by CWA or the City of Houston, Texas. CWA may also incur indebtedness, such as bond anticipation notes, or other bonds, for the purpose of improving rivers, creeks, and streams to aid in and prevent overflows.

In 2011 the Act was further amended, clarifying CWA’s authority to participate in wetland mitigation under Chapter 221, Natural Resources Code.

Related Organizations

The City of Houston, Texas (the “City”) is incorporated under the laws of the State of Texas and provides governmental services as authorized or required by its charter. The City appoints a voting majority of CWA's board members, but is not financially accountable for the actions of CWA. As a result, the City does not have a financial benefit in CWA and a burden relationship does not exist. All transactions with the City are evidenced by operating and construction project contracts for which the City compensates CWA for their services received pursuant to the contracts.

Basis of Accounting

The financial statements of CWA have been prepared in conformity with accounting principles generally accepted in the United States of America as applied to governmental units. The Governmental Accounting Standards Board (GASB) is the accepted primary standards-setting body for establishing accounting and financial reporting principles for state and local governments.

Under GASB Statement No. 34, *Basic Financial Statements – and Management’s Discussion and Analysis – For State and Local Governments*, CWA qualifies as a special-purpose government engaged only in business-type activities, and accordingly, only the financial statements required for an enterprise fund are presented as basic financial statements.

CWA uses the accrual method of accounting whereby expenses are recognized when the liability is incurred, and revenues are recognized when earned under the flow of economic resources measurement focus. With this measurement focus, all assets and all liabilities associated with the

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

operation are included on the statement of net assets.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. Significant estimates included in the financial statements are depreciation expense which is based on the estimated useful lives of the underlying depreciable assets, annual Other Post Employment Benefits (OPEB) costs and related net OPEB obligations, and the assets and liabilities for compensable absences.

Cash and Cash Equivalents

For purposes of the statement of cash flows, CWA considers all highly liquid investments with a maturity when purchased of three months or less to be cash equivalents. Cash restricted by purpose is excluded from cash and cash equivalents.

Accounts Receivable

Accounts receivable at December 31, 2014 consisted of billings to customers for user charges and reimbursable expenses from the City. No allowance for doubtful accounts has been recorded because management deemed all receivables to be collectible.

Capital Assets

Capital expenditures for the acquisition, construction, or improvement of capital assets are recorded at cost. Management estimates water systems to have a 30% salvage value. Depreciation is provided on a straight-line basis over the estimated useful lives. The estimated useful lives of CWA's capital assets are as follows:

<u>Description</u>	<u>Useful Lives</u>
Water systems	15-50 years
Trucks, equipment, and other	5-10 years

The cost of normal maintenance and repairs that do not add value to the asset or materially extend its life are not capitalized. When assets are retired or otherwise disposed of, the costs and related accumulated depreciation are removed from the accounts, and any resulting gain or loss is recognized in operations for the period. CWA continuously reviews the carrying value of its property and equipment for possible impairment. When applicable, the book amounts are reduced to fair values.

The balance of construction in progress represents costs incurred on the construction of assets which have not been completed or placed in service as of the end of the year (see Note 7.)

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

Unamortized Bond Premium

Bond premium represents interest paid in advance to the issuer by the bondholders who receive a return of the premium in the form of larger periodic interest payments. The bond premium is amortized over the life of the bond with amortized amount decreasing interest expense over each period. In 2010, CWA issued the \$38,900,000 Coastal Water Authority Contract Revenue Refunding Bond Series 2010. The issuance resulted in bond premium in the amount of \$3,921,765. Similarly, in 2014, CWA issued the \$38,415,000 Coastal Water Authority Contract Revenue Refunding Bond Series 2014, resulting in bond premium amounting to \$3,454,550. The bond premiums arising from these transactions have been capitalized and amortized on a straight-line basis over the life of the bonds in accordance GAAP requirements. Balance outstanding as of December 31, 2014 on the premiums in the amount of \$6,319,106 have been recorded in the accompanying financial statements as an addition to the face value of the bonds to arrive at its carrying value.

Investments

CWA is authorized to invest in direct obligations of, or obligations guaranteed by, the United States of America, obligations of certain Federal agencies, states, counties, cities, and other investment instruments as authorized by CWA's investment policy, certain obligations of public housing authorities and related institutions, fully collateralized repurchase agreements, and interest bearing time deposits. Any cash balances and time deposits are required to be collateralized and secured by pledges of direct obligations of, or obligations guaranteed by, the United States of America, obligations of such Federal agencies, and certain obligations of public housing authorities and related institutions. Repurchase agreements are required to be fully collateralized by such securities held in a safekeeping account subject to the control and custody of CWA. Investments are valued at amortized cost, which approximates fair value, typically mature in one year or less, and are held to maturity. CWA's Board of Directors reviewed and confirmed the investment policy on December 10, 2014.

Compensable Absences

During fiscal year 2012, CWA amended its vacation policy and created two vacation leave plans ("A" and "B"). Under vacation leave plan A, applicable to employees hired on or before September 1, 2012, employees receive 10 days of vacation and 15 days of sick leave each year. After five years of service, employees receive one additional vacation day for each additional year of service up to a maximum of fifteen additional days. Employees may accumulate vacation leave from year to year and upon termination or resignation receive a lump sum vacation accrual payment up to a maximum of 720 hours. Upon termination or resignation, employees with two or more years of service may receive a lump-sum sick leave payment up to a maximum of 700 hours. Paid absences for employee vacation and sick leave are recorded as expenses when used. CWA's obligation for unused employee vacation and sick leave is reported as a long-term liability, net of current portion, and the sick leave is calculated using the vesting method which is 2 years for any new employees. Since these expenses are billable to customers when payable to the employees, CWA records an equal amount of receivable for these compensable absences.

Under vacation leave plan B, applicable to employees hired after September 1, 2012, employees receive 10 working days of vacation and 8 days of sick leave each year. Employees who have completed five years of continuous employment receive additional day of vacation for each additional year of service subject to a maximum of fifteen additional days. Employees are required to utilize

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

their vacation time during the benefit year. Any accrued vacation days not utilized within the benefit year will not be allowed to be carried over to the next benefit year. However, employees may carry over to the next year accrued, unused sick leave hours. Upon termination of employment, employees under this plan will not be paid for any accrued, unused vacation or sick leave.

Revenues and Expenses

Operating revenues are those revenues generated from the primary operations of CWA. All other revenues are reported as non-operating revenues. Operating expenses are those expenses that are essential to the primary operations of CWA. All other expenses are reported as non-operating expenses. The principal operating revenues of CWA are revenues generated from transportation of surface water to its customers.

Contributions, which finance either capital or current operations, are reported based on GASB Statement No. 33, *Accounting and Financial Reporting for Nonexchange Transactions*. In applying GASB Statement No. 33 to contributions, the provider recognizes liabilities and expenses and the recipient recognizes receivables and revenues when the applicable eligibility requirements, including time requirements, are met. Resources that qualify to be recorded by CWA as receivables and revenues, which are transmitted by the provider before the eligibility requirements are met, are reported as deferred revenue. At December 31, 2014, CWA had deferred revenues of \$1,334,163.

Restricted Assets

Proceeds of CWA's contract revenue bonds, as well as certain resources set aside for their repayment, are classified as restricted assets on the statement of net position because their use is limited per applicable bond covenants. The investments held for the construction account is used to report those proceeds of revenue bond issuances that are restricted for use in construction projects.

Funds received for CWA's operation and maintenance is set aside to create a reserve for major maintenance, repairs, replacement, and obligatory replacement fund per the Trinity River Water Conveyance System contract and the Lake Houston Pump Station contract between CWA and the City of Houston. These funds are shown as restricted investments in the financial statements.

Income Taxes

CWA is an organization described in Internal Revenue Code Section 115. Generally, no tax provision is necessary in regard to its excess revenue. Accordingly, none has been recorded in the accompanying financial statements.

Unearned Revenues

Contributions received and related to periods after December 31, 2014, have been deferred to the subsequent fiscal year.

Recent Accounting Pronouncements

In June 2012, GASB issued Statement No. 68, *Accounting and Financial Reporting for Pensions – an Amendment of GASB Statement No. 27*. The objective of this Statement is to improve accounting and financial reporting by state and local governments for pensions. It also improves information

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

provided by state and local government employers about financial support for pensions that is provided by other entities. This Statement replaces the requirements of Statement no. 27, *Accounting for Pensions by State and Local Governmental Employers*, as well as the requirements of Statement No. 50, *Pension Disclosures*, as they relate to pensions that are provided through pension plans administered as trusts or equivalent arrangements that meet certain criteria. The requirements of this Statement will improve the decision-usefulness of information in employer and governmental employer and governmental non-employer contributing entity financial reports and will enhance its value for assessing accountability and interperiod equity by requiring recognition of the entire net pension liability and a more comprehensive measure of pension expense. This Statement is effective for fiscal years beginning after June 15, 2014 with earlier application encouraged. Management of CWA has determined that the provisions of this Statement do not have significant impact on its pension plan financial statements.

In January 2013, GASB issued Statement No. 69, *Government Combinations and Disposals of Government Operation*. This Statement establishes accounting and financial reporting standards to government combinations and disposals of government operations. This Statement requires disclosures to be made about government combinations and disposals of government operations to enable financial statement users to evaluate the nature and financial effects of those transactions. The requirements of this Statement are effective for government combinations and disposals of government operations occurring in financial reporting periods beginning after December 15, 2013, and should applied on a prospective basis with early application encouraged. Management of CWA has determined that the provisions of this Statement do not have any impact on its financial statements.

In April 2013, GASB issued Statement No. 70 *Accounting and Financial Reporting for Nonexchange Financial Guarantees*. This Statement requires a government that extends nonexchange financial guarantee to recognize a liability when qualitative factors and historical data, if any, indicate that it is more likely than not to that the government will be required to make a payment on the guarantee. The amount of the liability to be recognized should be discounted present value of the best estimate of the future outflows related to the guarantee expected to be incurred. When there is no best estimate but a range of the estimated outflows can be established, the amount of liability to be recognized should be discounted present value of the minimum amount within the range. The provisions of this Statement are effective for reporting period beginning after June 15, 2013 with early application encouraged. Management of CWA has determined that the provisions of this Statement do not have any significant impact on its financial statements.

In November 2013, GASB issued Statement No. 71, *Pension Transition for Contributions Made Subsequent to the Measurement Date – an Amendment of GASB Statement No. 68*. The objective of this Statement is to address an issue regarding the application of the transition provisions of Statement No. 68, *Accounting and Financial Reporting for Pensions*. The issue relates to amounts associated with contributions, if any, made by a state or local government employer or nonemployer contributing entity to a defined benefit pension plan after the measurement date of the government's beginning net pension liability. This Statement amends paragraph 137 of Statement 68 to require that, at transition, a government recognize a beginning deferred outflow of resources for its pension contributions, if any made subsequent to the measurement date of the beginning net pension liability. The provisions of this Statement are required to be applied simultaneously with the provisions of Statement No. 68. Management of CWA has determined that the provisions of this Statement do not have any

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

significant impact on its pension plan financial statements.

NOTE 2 – TRINITY RIVER WATER CONVEYANCE SYSTEM CONTRACTS

City of Houston

CWA entered into a contract (the “Initial Contract”) with the City in May 1968. The contract expires on the earlier date of June 15, 2035 or the date on which the debt service requirements have been paid in full. In consideration of CWA's agreement to construct the main water conveyance and distribution systems, the City agreed to pay, solely out of revenues received from the operation of the City's water and wastewater systems, all maintenance and operating costs and all debt service requirements for the Trinity River Water Conveyance System. Upon termination of the contract and upon payment of all bonds and other obligations issued by CWA for the Trinity River Water Conveyance System, CWA must assign and convey to the City, upon request, all of its rights, titles, and interest in the Trinity River Water Conveyance System.

In June 1995, CWA entered into an operating contract (the “Operating Contract”) and a project financing and construction contract (the “Projects Contract”) with the City. The Operating Contract expires on the earlier occurrence of the year 2035 or when both the Initial Contract and the Projects Contract terminate. The Projects Contract expires on the earlier occurrence of the year 2035 or when all bonds and other obligations issued by CWA pursuant to the Projects Contract to finance the cost of projects or refinance the cost of such projects are paid.

The Operating Contract amends, restates, and supersedes the Initial Contract relating to CWA's operation for the Trinity River Water Conveyance System. In the Operating Contract, CWA is required to operate and maintain the Trinity River Water Conveyance System and the facilities constructed and/or acquired (“Trinity River facilities”) pursuant to the Projects Contract and acquire and/or construct improvements to such facilities or other City facilities. In return, the City pays CWA for maintenance, operation, construction, improvement, and repair of the City projects, including reasonable overhead and administrative costs, as set forth in the annual operating budget. The City is entitled to credits against its obligations under the Operating Contract to the extent that excess revenues, including proceeds from third-party insurers and grants from any Federal or state agency, received by CWA from the operation of the Trinity River facilities are available and are used to pay maintenance, operation, construction, improvement, and repair expenses of the facilities pursuant to the terms of the Operating Contract.

Under the Projects Contract, CWA is required to construct and/or acquire, improve, and repair certain water conveyance and distribution facilities. In return, the City pays, solely from the gross revenues received from the operation of the City's water and wastewater systems, all amounts necessary to pay debt service requirements and reserve fund requirements for such facilities. Upon termination of the Projects Contract and upon payment of all bonds and other obligations issued by CWA, CWA must assign and convey to the City, upon request, all of its rights, titles, and interest in and to such facilities.

In 2009, CWA entered into another project financing and construction contract with the City to plan, design, acquire property, construct and finance a project known as the Luce Bayou Interbasin Transfer Project (the “Luce Bayou Project”), which includes infrastructure sized to transfer approximately 450,000 acre feet per year of the City's permitted surface water from the Trinity River

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to Lake Houston. The Preliminary Project Costs of the Luce Bayou Project was financed and paid through the issuance of CWA contract revenue bonds which were purchased by the Texas Water Development Board (the "TWDB") through its Water Infrastructure Fund ("WIF") loan program, under which the TWDB loaned funds (the "WIF Bonds") to CWA. The WIF Bonds are secured by the City's pledge under the Projects Contract to pay Debt Service on the WIF Bonds from the City's Net Revenues held in the General Purpose Fund.

Under the Luce Bayou Project, CWA is required to advance funds, in the amount of \$9,705,000, to pay for the City's share of Land and Mitigation Costs. The funds would be obtained from CWA's revenues derived from the sale of certain Certificates of Participation, Series 1993A-J with respect to the City of Houston Water Conveyance System Contract. The City shall repay the advance to CWA along with interest, at a rate equal to the prime rate published by the Wall Street Journal on the respective January 1st or July 1st for the period June 15, 2009 through December 15, 2016 and the 10 year Bond Buyer Revenue Bond Index from December 15, 2016 for the period December 15, 2016 through December 15, 2038. The City's payment schedule will start on June 15, 2019 and its repayment term is 20 years with one principal payment and two interest payments each year.

On February 3, 1999, CWA accomplished an escrow restructuring of certain securities in connection with the \$270,960,000 City of Houston Water Conveyance System Contract Certificate of Participation, Series 1993 A-J Bonds, which were legally defeased and removed from the general long-term debt account group in 1993. CWA sold existing securities held in escrow accounts for the subject certificates in the amount of \$252,460,758 and purchased \$242,768,280 of U.S. Treasury Securities - State and Local Securities, which were deposited to replace the existing securities in the Escrow Fund held by the Escrow Agent. This restructuring activity resulted in approximately \$9,695,000 (proceeds plus cash balance) of cash proceeds to CWA. Transaction costs amounted to \$437,000, netting approximately \$9,258,000 in cash to CWA.

In 1995, CWA issued \$45,000,000 Coastal Water Authority Contract Revenue Bonds, Series 1995 ("Series 1995") to construct a 96-inch water line from near the San Jacinto Monument to the City's Southeast Water Purification Plant and reimburse CWA for certain costs incurred to repair flood damage to a pipeline under the Houston Ship Channel near the Lynchburg Pump Station.

On February 15, 1999, CWA issued \$48,240,000 Coastal Water Authority Contract Revenue Refunding Bonds, Series 1999 to refund the Series 1995 bonds and to pay related costs of issuance. Of the proceeds, \$47,216,086 was deposited in an escrow fund established pursuant to an escrow agreement; \$299,228 was deposited in the Trinity River Bond Fund to be applied to accrued interest; and \$225,740 was deposited into the Trinity River Construction Multiple Series Fund to pay issuance costs (see Note 8). Debt service of the bonds is payable by CWA from revenues received from the City pursuant to the Projects Contract. On December 15, 2010, proceeds from the issue of \$38,900,000 Contract Revenue Refunding Bonds, Series 2010 were used to refund a portion of the Series 1999 bonds. During 2011, the outstanding principal in the amount of \$1,255,000 was paid. No Series 1999 bonds remain outstanding.

On October 20, 2004, CWA issued \$40,385,000 Coastal Water Authority Contract Revenue Bonds, Series 2004 at a discount of \$140,993 to fund the design, construction management, and construction costs of the expansion of the Trinity River Pump Station and Lynchburg Pump Station. Of the proceeds, \$255,254 was paid for insurance and \$39,988,753 was deposited in the Trinity River Construction Fund, Series 2004 to pay for the construction costs (see Note 8). Additional closing

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costs of \$265,360 were paid from the Trinity River Construction Fund; Series 2004 subsequent to collection of bond proceeds, resulting in total closing costs of \$520,614 (see Note 8 Unamortized bond issue costs). Debt service of the bonds is payable by CWA from revenues received from the City pursuant to the Projects Contract. On December 15, 2014, proceeds from the issue of \$38,415,000 Contract Revenue Bonds, Series 2014 were used to refund a portion of the Series 2004 bonds, and no Series 2004 bonds remain outstanding after December 15, 2014.

On February 26, 2009 CWA issued \$28,000,000 Coastal Water Authority Contract Revenue Bonds, Series 2009 Bonds to finance the cost of conveyance system and treatment facilities of the Luce Bayou Project. Of the proceeds, \$300,000 was paid for issuance costs and \$15,391,019 was deposited in the Luce Bayou Project Fund, Series 2009 to pay for the construction costs (see Note 8). Additionally, \$12,308,981 was deposited in Project Escrow Account for the final design phase. Debt service of the bonds is payable by CWA from revenues received from the City pursuant to the Projects Contract.

In accordance with the terms of the various bond resolutions and City contracts, CWA is required to maintain, in the Trinity River Water Conveyance System operations account, an amount equal to three months' average operating costs, as applicable to the City, estimated from its annual operating budget. At the beginning of each year, CWA makes an adjustment to the operating reserves to meet the requirements. This adjustment is either paid by or credited to the City. This amount is being shown in the statement of net assets as part of line item 'operating reserves payable' (see Note 8).

On July 12, 2010 CWA issued \$5,115,000 Coastal Water Authority Contract Revenue Bonds Series 2010 (Luce Bayou Project) to finance the implementation of a water supply project identified in the 2007 State Water Plan and regional water plan. Of the proceeds, \$123,000 was paid as issuance costs, \$1,792,000 was deposited in an Escrow Fund and the balance of \$3,200,000 was deposited in the Construction Fund.

On December 15, 2010, CWA issued \$38,900,000 Coastal Water Authority Contract Revenue Refunding Bonds, Series 2010 (City of Houston Projects). The proceeds of the Bonds were used to refund a portion of the Series 1999 Bonds, fund a portion of the Bond Reserve Fund requirement and pay the costs of issuing the Bonds and refunding the Series 1999 Bonds. The Bonds were issued at a premium. Balance on the premium at December 31, 2014 in the amount of \$2,864,556 has been recorded in the accompanying financial statements as an addition to the face (par) value of the bonds to arrive at its carrying value.

On December 15, 2014, CWA issued \$38,415,000 Coastal Water Authority Contract Revenue Refunding Bonds, Series 2014 (City of Houston Projects). The proceeds of the Bonds were used to refund a portion of the Series 2004 Bonds, fund a portion of the Bond Reserve Fund requirement and pay the costs of issuing the Bonds. The Bonds were issued at a premium. Balance on the premium at December 31, 2014 in the amount of \$3,454,550 has been recorded in the accompanying financial statements as an addition to the face (par) value of the bonds to arrive at its carrying value.

On March 13, 2012, CWA Board authorized an additional sum amounting to \$5 million to be used for acquisition of right-of-way for the Luce Bayou thereby increasing the total estimated costs of the Land and Mitigation project to \$20 million. In accordance with the provisions of the contract agreement, CWA received \$1,765,000 from the City and CWA transferred the amount of \$3,235,000 from its Special Project Equity Fund (SEALS) to cover the City's portion of the acquisition costs.

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Accordingly this amount has been recorded as a receivable from the City in the financial statements.

Pursuant to a Master Agreement (the "Agreement") dated February 21, 2013, between CWA and TWDB, TWDB, during the year, made available to CWA funding in the amount \$28,754,000. The funding is to enable TWDB to purchase an initial 35% undivided interest in the Luce Bayou Project. In accordance with the provisions of the agreement, TWDB may purchase up to 80% of an undivided interest in the Luce Bayou Project. The proceeds of the fund are held in a construction fund created for such purpose and held by CWA. Funds in the construction fund including interest and investment earnings are to be used only for the Luce Bayou Project costs or for CWA's purchase of TWDB's interest in the Project. In conjunction with the Agreement, CWA and the City entered into a first supplement to the Luce Bayou project contract to incorporate the City's pledge for payment of debt service of the loan.

San Jacinto River Authority

Effective February 10, 1998, CWA entered into a water conveyance contract with San Jacinto River Authority ("SJRA") whereas SJRA reserved 50 million gallons per day (MGD) of capacity in the CWA main canal system. In 1998, SJRA paid CWA a capital recovery fee of \$3,663,860 for this capacity reservation. SJRA paid \$796,087 for the costs of engineering, design, and construction of a diversion point to accommodate this conveyance of water from CWA's main canal to SJRA's canal. Upon completion of the construction project in February 2000, CWA began operating and maintaining this diversion point structure. In return, SJRA began paying a monthly operating charge to CWA for the conveyance of this water. Termination of the contract will occur on the earlier date of January 1, 2035 or the date the City acquires the CWA main canal system.

In accordance with the terms of the contract with SJRA, CWA is required to maintain, in the Trinity River Water Conveyance System operations account, an amount equal to three months' average operating costs, as applicable to SJRA, estimated from its annual operating budget. At the beginning of each year, CWA makes an adjustment to the operating reserves to meet the requirements. This adjustment is either paid by or credited to SJRA. This amount is being shown in the statement of net position as part of the line item 'operating reserve payable' (see Note 8).

NOTE 3 – LAKE HOUSTON FACILITIES

Effective January 1, 1996, CWA entered into an operating contract with the City to assume the responsibility of operating, maintaining, and keeping the Lake Houston Pump Station, West Canal, and related facilities (the "Facilities") in good repair and to assume the responsibility of transporting water through the Facilities. The City pays, solely out of revenues received from the operation of the City's water and wastewater system, all maintenance and operating costs of the Facilities. The City is entitled to credits against obligations for interest received on Lake Houston Facilities fund investments. The contract has been renewed until 2015.

In accordance with the terms of this contract, CWA is required to maintain, in the Lake Houston operations account, an amount equal to three months' average operating costs as estimated from its annual operating budget. At the beginning of each year, CWA makes an adjustment to the operating reserves to meet the requirements. This adjustment is either paid by or credited to the City. This amount is being shown in the statement of net position as part of the line item 'operating reserve payable' (see Note 8).

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Effective January 1, 2004, the Operating Contract with the City was amended to extend responsibility for operating, maintaining, performing inspections, and implementing security of Lake Houston and the Lake Houston Dam to CWA. Further, the work under the Operating Contract may be paid by the City either as a capital project or from revenues received from the operation of the City's water and wastewater systems.

NOTE 4 – BAYPORT WATER SYSTEM

In 1979, CWA issued \$10,000,000 of special project bonds to acquire an existing water distribution system, the Bayport Water System, from the Friendswood Development Company and to extend the system to service additional customers. The Bayport Water System is attached to CWA's distribution system and its customers consist primarily of large national company chemical plants.

In 1985, CWA issued \$1,700,000 of Special Project First Mortgage Revenue Bonds to improve the Bayport Water System by construction of crossover connections to interconnect the three CWA systems and bypass the Bayport reservoir and pump station. This change resulted in a more efficient and reliable system. In 2000, CWA redeemed all outstanding debt service requirements. The Bayport Water System has been debt free since this redemption date.

A Capital Improvement Fund was established by CWA in the Bayport Water System to provide funds for future renovations, improvements, and repairs to the system. Maintenance and operating costs are paid from revenues received from the operations of the Bayport Water System.

NOTE 5 – WATER TREATMENT PLANT

In 1979, CWA acquired an existing water treatment plant from Crown Central Petroleum Company. Maintenance and operating costs of the plant and all debt service requirements are paid by CWA from revenues received from the operation of the plant. Currently, there is no outstanding debt related to this plant.

In November 2002, Air Products and Chemicals, Inc., (“Air Products”) entered into an agreement with CWA to receive and treat untreated surface water. In return, Air Products will take delivery of the treated surface water and make monthly payments to CWA for water treatment services. To compensate for Air Products' water requirements, the Water Treatment Plant had to be expanded. Total costs for the expansion were \$598,968. Air Products is reimbursing these costs in monthly installments of \$6,650, including interest at 6%, and maturing in July 2013. During the year the remaining balance was fully paid.

In accordance with the Air Products contract, CWA will establish and maintain in the Water Treatment Plant operations account an amount equal to two months' average operating costs, as applicable to Air Products, estimated from its annual operating budget. At the beginning of each year, CWA will make an adjustment to the operating reserves to meet the requirements. This adjustment will either be paid by or credited to Air Products (see Note 8).

In January 2005, Pasadena Refining Systems, Inc. (“PRSI”) entered into an agreement with CWA to receive and treat 1.15 to 6.0 million gallons of untreated surface water per day for PRSI's production requirements. In return, PRSI will take delivery of the treated surface water and make monthly payments to CWA for water treatment services. The termination date for the agreement is December

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2017. The agreement may be renewed for two additional five-year periods.

In accordance with the PRSI contract, CWA will establish and maintain in the Water Treatment Plant operations account an amount equal to two months' average operating costs, as applicable to PRSI, estimated from its annual operating budget. At the beginning of each year, CWA will make an adjustment to the operating reserves to meet the requirements. This adjustment will either be paid by or credited to PRSI (see Note 8).

In 2010, a supplemental internal loan of \$524,135 was added to the original \$2.3 million loan approved in 2009 to finance the design and construction of a major repair to the Water Treatment Plant facility. The primary objective of the construction project is to replace the filtering equipment and install improved control mechanisms in the plant. Construction work on the project was completed and accepted by CWA's Board in March 2013.

NOTE 6 – DEPOSITS AND INVESTMENTS

As of December 31, 2014, CWA had the following deposits and investments:

Deposits	Fair Value	Average Maturity in Days
Cash and cash equivalent	\$ 3,599,522	-
Cash restricted	102,726	-
Total Value	<u>\$ 3,702,248</u>	

Investment Type	Fair Value	Average Maturity in Days
U.S. government and agency securities	\$ 69,598,377	73
Commercial papers issued by municipality	-	-
Investment pool		-
Long-term Investment	14,402,571	-
Total Value	<u>\$ 84,000,948</u>	

Custodial Credit Risk - Deposits: Custodial credit risk is the risk that in the event of a bank failure, CWA's deposits may not be returned to it. As of December 31, 2014 CWA's bank balances were fully collateralized in accordance with CWA's investment policy.

Interest Rate Risk: CWA's formal investment policy limits investment maturities as a means of managing its exposure to fair value losses arising from increasing interest rates. Financial assets are invested only in authorized investments whose maturities do not exceed one year at the time of purchase.

Texas Short Term Asset Reserve Program Cash Reserve Fund ("TexStar") is a local government

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investment pool organized under the authority of the Interlocal Cooperation Act, Chapter 791 of the Texas Government Code (“Code”), and the Public Funds Investment Act (PFIA), Chapter 2256 of the Code. TexStar was created in April 2002 through a contract among its participating governmental units, and is governed by a board of directors (“board”), to provide for the joint investment of participant’s public funds and funds under their control. It is the policy of TexStar to invest pooled assets in a manner that will provide for preservation and safety of principal and competitive investment returns while meeting the daily liquidity needs of its participants. Portfolio of TexStar is a government-repo fund, utilizing primarily U.S. treasury securities, U.S. agency securities both fixed and floating, and repurchase agreements collateralized by such obligations. In order to meet the liquidity needs of the pool’s shareholder base and limit its exposure to significant market price fluctuations occurring during the periods of volatile interest rate movement, the weighted average maturity of the pool’s assets is limited to 60 days or less. TexStar is rated AAAM by Standard and Poor’s. J.P. Morgan Fleming Asset Management and First Southwest Asset Management serve as co-administrators for TexStar under an agreement with the TexStar board.

TexStar is not registered with the SEC as an investment company but has a conservative investment policy which is consistent with the SEC’s Rule 2a7 of the Investment Company Act 1940. GASB 31, *Accounting and Financial Reporting for Certain Investments and for External Investment Pools*, allows 2a7-like pools to use amortized cost (which excludes unrealized gains and losses) rather than market value to report net assets to compute share price.

Long-term investments represent CWA’s interest in property (the “Gillette Street Project”). In 2012, CWA entered into a contract agreement with the City for the purchase of 11/16th of the City’s interest in the Gillette Street Project. The City holds the balance of interest on the property. CWA paid the sum of \$11,000,000 (the “CWA Cash Contribution”) to acquire an interest in the project. Total purchase price of the property is expected not to exceed \$16,000,000. In accordance with the contract agreement CWA is expected to incur additional costs not to exceed \$5,000,000 (the “CWA In-Kind Contribution”) for remediation and mitigation of certain environmental matters on the property. Total contribution of CWA (“CWA Contribution”) towards the property is the amount equal to the CWA Cash Contribution and CWA In-Kind Contribution. The City is expected to pay to CWA an amount equal to interest accrued on the CWA Contribution from the closing date and payable on each semi-annual payment date until (i) CWA’s ownership share is sold to the City or a third party in accordance with the provisions of the contract agreement. The interest rate shall be a variable rate to be reset on each semi-annual payment date based on the six-month London Interbank Offered Rate (Libor) as published by a commercially available source providing Libor as selected by CWA from time-to-time. Interest on the CWA Contribution shall be calculated on the basis of the actual number of days elapsed. The closing on the sale of the property is expected to occur in the second quarter of fiscal year 2015.

NOTE 7 – CAPITAL ASSETS

Capital assets consisted of the following at December 31, 2014:

Cost	Balance December 31, 2013	Additions	Retirements	Balance December 31, 2014
Land	\$ 16,702,042	\$ -	\$ -	\$ 16,702,042
Water systems	381,212,077	-	-	381,212,077

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Trucks, equipment, and other	8,999,491	409,047	(411,515)	8,997,023
Construction in progress	40,131,166	5,722,317	-	45,853,483
	<u>447,044,776</u>	<u>6,131,364</u>	<u>(411,515)</u>	<u>452,764,625</u>
Accumulated depreciation:				
Water systems	(173,265,881)	(6,505,133)	-	(179,771,014)
Trucks, equipment, and other	(7,045,152)	(691,789)	381,705	(7,355,236)
	<u>(180,311,033)</u>	<u>(7,196,922)</u>	<u>381,705</u>	<u>(187,126,250)</u>
Total capital assets, net	<u>\$ 266,733,743</u>	<u>\$ (1,065,558)</u>	<u>\$ (29,810)</u>	<u>\$ 265,638,375</u>

Depreciation expense for the year ended December 31, 2014 was \$7,196,921.

NOTE 8 – LONG-TERM LIABILITIES

The following is a summary of long-term liabilities for the year ended December 31, 2014:

	Balance as of December 31, 2013	Additions	Reductions	Balance as of December 31, 2014	Due within One Year
Bonds:					
Series 2004 Contract Revenue Bonds	\$ 38,280,000	\$ -	\$ (38,280,000)	\$ -	\$ -
Series 2009 Contract Revenue Bonds	28,000,000	-	-	28,000,000	-
Series 2010 Contract Revenue Bonds	5,115,000	-	-	5,115,000	-
Series 2010 Contract Revenue Refunding Bonds	36,275,000	-	(1,345,000)	34,930,000	1,405,000
Series 2014 Contract Revenue Refunding Bonds	-	38,415,000	-	38,415,000	855,000
Texas Water Development Board Long-Term Loan	28,754,000	-	-	28,754,000	-
Sub-total	<u>136,424,000</u>	<u>38,415,000</u>	<u>(39,625,000)</u>	<u>135,214,000</u>	<u>2,260,000</u>
Less: Unamortized discount	(97,989)	-	97,989		-
Add: Unamortized premium	3,125,816	3,454,550	(261,260)	6,319,106	-
	<u>139,451,827</u>	<u>41,869,550</u>	<u>(39,788,271)</u>	<u>141,533,106</u>	<u>2,260,000</u>
Other liabilities:					
Compensated absences	2,356,500	153,366		2,509,866	87,709
Other postemployment benefits payable	2,944,144	323,884	-	3,268,028	-
Total long-term liabilities	<u>\$ 144,752,471</u>	<u>\$ 42,346,800</u>	<u>\$ (39,788,271)</u>	<u>\$ 147,311,000</u>	<u>\$ 2,347,709</u>

The annual debt service requirements for bonds payable as of December 31, 2014 are as follows:

Year Ending December 31,	Principal	Interest
2015	\$ 2,260,000	\$ 3,486,131
2016	3,330,000	3,404,281

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2017	3,455,000	3,413,357
2018	3,590,000	3,408,633
2019-2023	35,460,000	20,611,058
2024-2028	39,210,000	18,389,653
2029-2033	18,650,000	12,252,890
2034-2038	11,535,000	5,454,508
2039-2043	10,305,000	3,234,224
2044-2048	7,419,000	706,644
Total	<u>\$ 135,214,000</u>	<u>\$ 74,361,380</u>

The Series 2004 bonds carry a fixed interest rate of 2% - 5%, Series 2009 bonds carry a fixed interest rate of 2%-3%, Series 2010 Contract Revenue Bonds carry a fixed interest rate of 1.64%-2.82%, Series 2010 Contract Revenue Refunding Bonds carry a fixed interest rate of 2%-5% , Series 2014 Contract Revenue Refunding Bonds carry fixed rates of interest of from 3% to 5% and are payable on June 15 and December 15 of each year. Bond issuance costs on Series 2004, 2009, 2010 and 2014 were incurred and consisted of underwriters' discount, insurance premiums legal fees and cost of issuance.

Optional Redemption:

CWA reserves the option to redeem the Series 2009 Bonds (Luce Bayou Project) maturing on and after December 15, 2019, in whole or in part in inverse order of maturity, before their respective scheduled maturity dates on June 15, 2019 or on any date thereafter, such redemption date or dates to be fixed by CWA, at a price equal to the principal amount of the Bonds so called for redemption plus accrued interest to the date fixed for redemption.

The Series 2010 Bonds (Luce Bayou Project) maturing on June 15, 2020 and thereafter shall be subject to redemption in whole or in part at the option of CWA in inverse order of maturity, before their respective scheduled maturity dates, on December 15, 2019, or on any date thereafter, such redemption date or dates to be fixed by CWA, at a price equal to the principal amount of the Bonds so called for redemption plus accrued interest to the date fixed for redemption.

The Series 2010 Refunding Bonds (City of Houston Projects) maturing on or after December 15, 2021 are subject to redemption at the option of CWA prior to maturity, in whole or in part, on any date on or after December 15, 2020 at a price of par, plus accrued interest to the date of the redemption.

The Series 2014 Refunding Bonds (City of Houston Projects) maturing on or after December 15, 2025 are subject to redemption at the option of CWA prior to maturity, in whole or in part, on any date on or after December 15, 2024 at a price of par, plus accrued interest to the date of the redemption.

Mandatory Redemption

The Series 2009, 2010, 2010 Refunding Bonds, and 2014 Refunding Bonds (the "Bonds") are special limited obligations of CWA which are payable as to principal and interest solely from certain

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payments to be made by the City of Houston (the "City") to CWA under certain project contracts.

Bond Reserve Fund Surety Policy

The Bond Reserve Fund Requirement immediately prior to the issuance of the 2014 Refunding Bonds was \$7,178,470, and immediately after such issuance was adjusted to \$7,767,600. Upon the issuance of the Bonds, the Bond Reserve Fund Requirement was established at \$7,178,470. CWA did apply bond proceeds to fund the Bond Reserve Fund Requirement. In the Fourth Supplemental Bond Resolution adopted on October 13, 2010, CWA reserves the right to review and recalculate the Bond Reserve Fund Requirement at a later date in a manner consistent with the definition of Bond Reserve Fund Requirement.

Under the terms of the various bond resolutions, contracts, and board designations, CWA is required to maintain the following reserves:

System	Required Reserve
Trinity River Water Conveyance System	
Operating Reserve (\$5,287,391 at December 31, 2014)	25% of the annual budgeted operating expenses applicable to each municipality (the City and SJRA).
Repair, Replacement, and Renewal Reserve (\$3,000,000 at December 31, 2014)	A minimum of \$3,000,000.
Lake Houston Facilities	
Operating Reserve (\$600,291 at December 31, 2014)	25% of the annual budgeted operating expenses.
Repair, Replacement, and Renewal Reserve (\$2,000,000 at December 31, 2014)	A minimum of \$2,000,000.

During 2014, CWA complied with the aforementioned required reserves of the Trinity River Water Conveyance System and Lake Houston Facilities. These required reserves were reclassified as Operating reserve payable during the year and as of December 31, 2014.

The Bond Indentures contain certain covenants requiring CWA to maintain: (1) separate funds as specified in bond documents, and (2) the Project Contract in effect and use reasonable diligence to ensure duties and obligations imposed upon the City by the Project Contract are performed and discharged, and timely payments from the City are obtained.

Prior Defeasance of Debt

CWA has at various times entered into transactions to refund certain issues of its bonded debt. Generally, these transactions involve putting funds in trust to be used to purchase securities to meet all the debt service requirements of the refunded debt, until that debt either matures or is redeemed. The liability for such refunded bonds and the related securities and escrow accounts were not included in the accompanying financial statements, as CWA defeased its obligations for payment of

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the refunded debt upon completion of the refunding transactions.

At December 31, 2014, refunded bond issues and the related principal payable from escrow accounts were as follows:

	Principal Balance Outstanding
Series 1986	\$ 730,000
Series 1991	\$ 10,410,000

NOTE 9 – EMPLOYEE BENEFIT PLANS

CWA has a single-employer defined contribution plan (the “Plan”) under which all full-time employees are eligible to participate upon completion of 90 days of service. All employees are required to contribute 4% of their annual compensation and may make additional voluntary contributions up to a maximum of 10% of that compensation received during all years of plan participation when added to their prior employee contributions.

CWA contributes 11.8% of each employee's gross compensation, which is 18% less a fixed rate of 6.2%, until eligible compensation is no longer subject to the Federal Insurance Contribution Act (FICA). When CWA is not required to contribute to FICA, with respect to each employee, CWA contributes the additional 6.2% to the employee's account. Maximum annual employee contributions are limited to 100% of the employee's compensation. Participants are 100% vested in their contributions and earnings thereon. For the employer contributions, participants are vested at the rate of 20% per year, beginning subsequent to the completion of one year of service, allowing 100% vesting after five years. Participants also become 100% vested upon death, disability, or reaching 65 years of age. In the event of termination of the plan, the vested interest of each participant shall be 100% and no part of the plan's assets will revert to CWA.

Total payroll expense for the year ended December 31, 2014 (100% covered by the plan) was \$5,869,691. Accordingly, the 2014 required contributions for employees were \$234,821 and CWA's requirement, net of forfeitures, was \$692,723. Actual contributions from employees and CWA during 2014 were \$357,575 and \$718,922, respectively. Below is the Statement of Net Assets Available for Benefits and the Statement of Changes in Net Assets Available for Benefits derived from the Plan's financial statements for the year ended September 30, 2014.

Statement of Net Assets Available for Benefits

	Year Ended September 30, 2014
Assets	
Investments, at fair value	\$ 11,015,108
Employer's contribution receivable	15,540
Net Assets Available for Benefits	\$ 11,030,648

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YEAR ENDED DECEMBER 31, 2014

Statement of Changes in Net Assets Available for Benefits

	Year Ended September 30, 2014
Additions to Net Assets	
Investment Income	
Net Appreciation in fair value of investments	\$ 114,013
Contributions	
Employer	\$ 708,128
Participants	354,627
Total Contributions	1,062,755
Total additions to net assets	1,176,768
Deductions from Net Assets	
Benefits paid	(156,491)
Total deductions from net assets	(156,491)
Change in net assets	1,020,277
Net Assets Available for Benefits	
Beginning of year	10,010,371
End of year	\$ 11,030,648

Plan's investments at September 30, 2014 were as follows:

September 30, 2014	Face Value	Fair Value	Amortized Cost
Federal Home Loan Banks dated 4/16/2014 0.090% due 1/16/2015*	\$ 1,000,000	\$ 999,870	\$ 1,000,328
Federal Home Loan Banks dated 1/17/2014 0.120% due 10/17/2014*	1,250,000	1,250,000	1,250,317
Federal Home Loan Mortgage Corp dated 3/26/2013 1.00% due 3/26/2018 Callable on 3/26/2014 @ 100*	1,500,000	1,477,365	1,500,267
Federal Home Loan Mortgage Corp dated 6/20/2012 1.00% due 6/26/2017 Callable Quarterly Starting 6/20/2014 @ 100*	3,000,000	2,994,390	3,008,428
Federal National Mortgage Assoc dated 5/30/2013 1.125% due 5/25/2018 Callable	1,500,000	1,474,620	1,505,964

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

Quarterly Starting 11/25/2013 @ 100*			
Federal National Mortgage Assoc dated 11/14/2012 0.90% due 11/14/2017 Callable Quarterly Starting 5/14/2013 @100*	1,000,000	987,390	1,003,406
Federal National Mortgage Assoc dated 4/14/2014 0.100% due 04/09/2015*	1,501,000	1,500,685	1,500,208
Cash Equivalents; SEI Daily Income TR Treasury II*	330,788	330,788	330,788
	<u>\$ 11,081,788</u>	<u>\$ 11,015,108</u>	<u>\$ 11,099,706</u>

Employees of CWA may also participate in a deferred compensation plan, created in accordance with Internal Revenue Code Section 457, which permits the deferral of a portion of their salaries until future years. The deferred compensation is not available to employees until retirement, termination, death, or an unforeseeable emergency. All assets and income of the plan shall be held for the exclusive benefit of the plan's participants and their beneficiaries. The plan is administered by an independent contractor using the investment programs selected by the participants.

NOTE 10 – POSTEMPLOYMENT BENEFITS

Plan Description: CWA administers a single-employer defined benefit healthcare plan (“the Retiree Health Plan”). The Retiree Health Plan provides healthcare insurance for eligible retirees and their spouses through CWA’s group health insurance plan, which covers both active and retired members. Substantially all of CWA’s employees become eligible for these benefits if they reach normal retirement age while working for CWA. CWA issues a publicly available financial report that includes financial statements and required supplementary information for the Retiree Health Plan. The report may be obtained by writing to CWA, 1801 Main Street, Suite 800, Houston, Texas 77002.

Funding Policy: The contribution requirements of plan members are established and may be amended by the CWA’s Board of Directors. These costs are funded on a pay-as-you-go basis. Contributions are recognized in the year paid. The cost of retiree health care premiums incurred by CWA amounted to \$86,465 for the year ended December 31, 2014.

Annual OPEB Cost and Net OPEB Obligation: CWA's annual other postemployment benefit (OPEB) cost (expense) is calculated based on the annual required contribution (ARC) of the employer. CWA has elected to calculate the ARC and related information using the alternative measurement method permitted by GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*, for employers in plans with fewer than one hundred total plan members. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and to amortize any unfunded actuarial liabilities (or funding excess) over a period not to exceed thirty years. CWA had its OPEB actuarial valuation performed as of December 31, 2013 as required by GASB Statement No. 45. CWA’s annual cost for the current year is as follows:

Annual required contribution	\$ 546,882
Interest on OPEB obligation	73,604
Adjustment to ARC	(130,330)
Annual OPEB cost (expense)	<u>490,155</u>

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

Age Adjusted Contributions Made	(166,272)
Increase in net OPEB obligation	323,883
Net OPEB obligation – beginning of year	2,944,144
Net OPEB obligation – end of year	\$ 3,268,028

CWA’s annual OPEB cost, the percentage of annual OPEB cost contributed to the plan, and the net OPEB obligation for the fiscal year 2013 and the preceding years were as follows:

Fiscal Year Ended	Annual OPEB Cost	Percentage of Annual OPEB Cost Contributed	Net OPEB Obligation
2012	\$ 575,470	20%	\$ 2,437,867
2013	\$ 615,186	18%	\$ 2,944,144
2014	\$ 490,155	34%	\$ 3,268,028

Funded Status and Funding Progress: As of December 31, 2014, the actuarial accrued liability for benefits was \$5,388,236, all of which was unfunded. The covered payroll (annual payroll of active employees covered by the plan) was \$5,869,691, and the ratio of the unfunded actuarial accrued liability to the covered payroll was 91.80 percent.

Methods and Assumptions: The entry age actuarial cost method is used to calculate the ARC for the CWA's retiree health care plan. Under this method, the actuary calculates the present value of expected benefits for each employee. These calculations include estimated future salary increases and estimated future service. The total cost arrived at is amortized over the employee’s anticipated career using the “level percentage of payroll” method. If experience is in accordance with the assumptions used, the cost will be paid as a constant percentage of payroll over the employee’s whole career, and ARC as a percentage of payroll will remain basically level on a year to year basis.

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and plan members to that point. The methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial value of assets, consistent with the long-term perspective of the calculations. Significant actuarial methods and assumptions were as follows:

Actuarial Methods and Assumptions:

Average retirement age for active employees	65 years
Marital assumption	Marital status of members at the calculation date was assumed to continue throughout retirement.
Investment rate of return	2.5%
Salary increases	2%
Mortality	RP 2000 Mortality Table for Males and Females projected 10 years
Healthcare cost trend rate	5%

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

Health insurance premiums	2014 health insurance premiums for retirees were used as the basis for calculation of the present value of total benefits to be paid.
Inflation rate	3%
Turnover	Non-group-specific age-based turnover data from GASB Statement No. 45 was used as the basis for assigning active members a probability of remaining employed until the assumed retirement age and for developing an expected future working lifetime assumption for purposes of allocating to periods the present value of total benefits to be paid.
Actuarial cost method	Entry age
Amortization method	Level percentage of payroll
Amortization period	30 years

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events in the future. Amounts determined regarding the funded status and the annual required contributions of CWA's retiree health care plan are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future. The required schedule of funding progress presented as required supplementary information provides multiyear trend information that shows whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liability for benefits.

NOTE 11 – COMMITMENTS AND CONTINGENCIES

Lease Commitments

CWA leases its office space and equipment under non-cancelable operating leases. On June 15, 2011 CWA signed a new ten (10) year office space lease agreement commencing March 1, 2012 and ending June 30, 2022. The future minimum lease rental payments under non-cancelable operating leases are as follows:

For the Year Ending December 31,	Amount
2015	\$ 207,420
2016	207,420
2017	211,496
2018	215,572
2019	215,572
2020 and thereafter	559,310
Total	\$ 1,616,790

Total lease expense for the year ended December 31, 2014, including any related taxes and other fees, and was approximately \$182,254.

NOTE 12 – CONCENTRATIONS

The Trinity River Water Conveyance System and Lake Houston Facilities have one major customer, the City of Houston (the "City"). Revenues from the City represent approximately 100% of total

COASTAL WATER AUTHORITY

NOTES TO THE FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2014

revenues in the Trinity River Water Conveyance System and Lake Houston Facilities combined. The Water Treatment Plant currently has only two customers. In addition, the Bayport Water System has two major customers. Revenues from these customers represent approximately 78% of total revenues in the Bayport Water System. CWA believes that the possibility of losing any one of these customers is remote.

NOTE 13 – SUBSEQUENT EVENTS

Management has evaluated subsequent events through April 3, 2015; the date financial statements were available to be issued. No changes were made, or are necessary to be made, to the financial statements, as a result of this evaluation.

Supplemental Schedules

SCHEDULE I

COASTAL WATER AUTHORITY
 Schedule of Net Position by System
 December 31, 2014

	Luce Bayou Interbasin Transfer Project	Trinity River Water Conveyance System Project	Lake Houston Facilities Project	Bayport Water System Project	Red Bluff Water Treatment Plant Project	Totals
ASSETS						
Current Assets – Unrestricted						
Cash	\$ -	\$ 1,468,135	\$ 302,357	\$ 1,216,791	\$ 612,239	\$ 3,599,522
Investments	-	20,775,237		3,522,368	189,931	24,487,536
Receivables:						
Accounts receivable from City of Houston	-	4,348,830	338,034	-	-	4,686,864
Accounts receivable from other customers	-	-	-	256,477	152,555	409,032
Compensable absence –current portion	-	65,782	12,279	7,016	2,632	87,709
Other	2,969	1,867	29	186	24	5,075
Total Current Assets – Unrestricted:	2,969	26,659,851	652,699	5,002,838	957,381	33,275,738
Current Assets – Restricted						
Cash – restricted for capital projects	18,972	78,719	5,035	-	-	102,726
Investments – restricted for contingencies	-	3,000,000	1,994,965	-	-	4,994,965
Investments – restricted for capital projects	40,115,876	-	-	-	-	40,115,876
Total Current Assets – Restricted	40,134,848	3,078,719	2,000,000	-	-	45,213,567
Capital Assets, Net	42,788,866	206,720,428	1,574,749	10,574,218	3,980,114	265,638,375
Other Assets:						
Interest receivable from City of Houston	-	282,150	-	-	-	282,150
Long-term investments	-	14,402,571	-	-	-	14,402,571
Obligation for comp. absences	-	1,804,369	321,824	147,408	148,556	2,422,157
Long-term loan receivable from City of Houston	-	15,218,586	-	-	-	15,218,586
Total Other Assets	-	31,707,676	321,824	147,408	148,556	32,325,464
Total Assets	\$ 82,926,683	\$ 268,166,674	\$ 4,549,272	\$ 15,724,464	\$ 5,086,051	\$ 376,453,144

Continued

SCHEDULE I (continued)

COASTAL WATER AUTHORITY
 Schedule of Net Position by System
 December 31, 2014

LIABILITIES:	Luce Bayou Interbasin Transfer Project	Trinity River Water Conveyance System Project	Lake Houston Facilities Project	Bayport Water System Project	Red Bluff Water Treatment Plant Project	Totals
Current Liabilities - Unrestricted:						
Accounts payable	\$	\$ (1,380,960)	\$ (50,744)	\$ (33,779)	\$ (38,025)	\$ (1,503,508)
Operating reserve payable	-	(5,287,391)	(600,291)	-	-	(5,887,682)
Compensable absence – current portion	-	(65,782)	(12,279)	(7,016)	(2,632)	(87,709)
Deferred revenue	(1,334,163)	-	-	-	-	(1,334,163)
Total Current Liabilities - Unrestricted	(1,334,163)	(6,734,133)	(663,314)	(40,795)	(40,657)	(8,813,062)
Current Liabilities - Restricted:						
Accounts payable	(1,115,560)	-	-	-	-	(1,115,560)
Current portion of bonds payable	-	(2,260,000)	-	-	-	(2,260,000)
Bond interest payable	(12,467)	(147,268)	-	-	-	(159,735)
Contingent reserve payable	-	-	(2,000,000)	-	-	(2,000,000)
Total Current Liabilities – Restricted	(1,128,027)	(2,407,268)	(2,000,000)	-	-	(5,535,295)
Long-Term Liabilities:						
Bonds payable	(33,115,000)	(71,085,000)	-	-	-	(104,200,000)
Long-term loan	(28,754,000)	-	-	-	-	(28,754,000)
Unamortized bond premium	-	(6,319,106)	-	-	-	(6,319,106)
Comp. absences payable	-	(1,804,369)	(321,824)	(147,408)	(148,556)	(2,422,157)
Other postemployment benefits	-	(1,993,496)	(424,844)	(424,844)	(424,844)	(3,268,028)
Total Long-Term Liabilities	(61,869,000)	(81,201,971)	(746,668)	(572,252)	(573,400)	(144,963,291)
Total Liabilities	(64,331,190)	(90,343,372)	(3,409,982)	(613,047)	(614,057)	(159,311,648)
Net Position	\$ 18,595,493	\$ 177,823,318	\$ 1,139,290	\$ 15,111,418	\$ 4,471,985	\$ 217,141,496

SCHEDULE II

COASTAL WATER AUTHORITY

Schedule of Revenues, Expenses, and Changes in Net Position by System
For the Year Ended December 31, 2014

	Luce Bayou Interbasin Transfer Project	Trinity River Water Conveyance System Project	Lake Houston Facilities Project	Bayport Water System Project	Red Bluff Water Treatment Plant Project	Totals
Operating Revenues:						
Funds provided by City	\$ -	\$ 19,994,010	\$ 2,193,906	\$ -	\$ -	\$ 22,187,916
Funds by San Jacinto	-	104,438	-	-	-	104,438
Service revenues	-	-	-	2,276,089	2,015,148	4,291,237
Total Operating Revenues	-	20,098,448	2,193,906	2,276,089	2,015,148	26,583,591
Operating Expenses:						
Utilities	-	7,946,817	143,175	79,930	194,213	8,364,135
Field salaries	-	3,209,803	835,483	442,059	478,613	4,965,958
Administrative	-	1,401,361	368,950	330,045	286,964	2,387,320
General operating	-	1,769,690	315,237	302,456	260,063	2,647,446
Material and supplies	-	1,913,829	223,418	167,219	320,844	2,625,310
Engineering, legal, and Professional.	-	662,254	58,669	77,203	33,892	832,018
Contract labor and equipment	7,084	3,215,280	301,451	196,804	31,922	3,752,541
SJRA Expenditures	-	7,515	-	-	-	7,515
Depreciation	-	6,593,859	89,527	384,131	129,404	7,196,921
Total Operating Expenses	7,084	26,720,408	2,335,910	1,979,847	1,735,915	32,779,164
Operating (loss) Income	(7,084)	(6,621,960)	(142,004)	296,242	279,233	(6,195,573)
Non-Operating Revenues (Expenses):						
Investment income	28,738	17,450	1,652	2,525	390	50,755
Interest income	-	988,628	-	-	-	988,628
Bond interest expense, net of amortization of bond issue costs	(12,467)	(3,715,162)	-	-	-	(3,727,629)
Gain on sale of capital assets	-	37,168	1,065	13,105	1,882	53,220
Loan interest expense	-	-	-	-	(57,645)	(57,645)
Other income	236	418,418	-	34,869	-	453,523
Total Non-Operating Revenues (expenses)	16,507	(2,253,498)	2,717	50,499	(55,373)	(2,239,148)
(Loss) income Before Contributions:	9,423	(8,875,458)	(139,287)	346,741	223,860	(8,434,721)
Contributions	191,043	5,142,565	-	-	-	5,333,608
Changes in Net Position	\$ 200,466	\$ (3,732,893)	\$ (139,287)	\$ 346,741	\$ 223,850	\$ (3,101,113)

COASTAL WATER AUTHORITY
Schedule of Revenues, Expenses,
And Changes in Net Position –
Budgetary and Actual (Cash Basis) – All Systems (Unaudited)
For the Year Ended December 31, 2014

Trinity River Water Conveyance System Project			
	Budget	Actual	Variance Favorable (Unfavorable)
Operating Revenues:			
Funds provided by City of Houston	\$ 28,000,663	\$ 22,839,197	\$ (5,161,466)
Funds provided by San Jacinto River Authority	100,000	104,438	4,438
Interest on investments	1,000	5,556	4,556
Service revenues	-	-	-
Other	50,000	418,418	368,418
	28,151,663	23,367,609	(4,784,054)
Operating Expenses:			
Utilities	7,958,558	7,462,373	496,185
Field salaries	3,125,170	3,192,803	(67,633)
Administrative	1,502,503	1,396,361	106,142
General operating	1,724,746	1,572,121	152,625
Materials and supplies	2,118,956	1,864,654	254,302
Engineering, legal, and professional	476,470	628,552	(152,082)
Contract labor and equipment	4,135,810	3,470,548	665,262
	21,042,213	19,587,412	1,454,801
Non-Operating Revenues / (Expenses):			
SJRA expenditures	-	(7,516)	(7,516)
Bond interest expense	(3,497,565)	(3,497,565)	-
Bond principal retirement	(1,645,000)	(1,645,000)	-
Paying agent fees	-	(3,580)	(3,580)
Construction program	(2,364,525)	(857,416)	1,507,109
	(7,507,090)	(6,011,077)	1,496,013
Change in Net Position	\$ (397,640)	\$ (2,230,880)	\$ (1,833,240)

SCHEDULE III (Continued)

COASTAL WATER AUTHORITY
 Schedule of Revenues, Expenses,
 And Changes in Net Position –
 Budgetary and Actual (Cash Basis) – All Systems (Unaudited)
 For the Year Ended December 31, 2014

	Lake Houston Facilities Project		
	Budget	Actual	Variance Favorable (Unfavorable)
Operating Revenues:			
Funds provided by City of Houston	\$ 2,374,575	\$ 2,183,920	\$ (190,655)
Interest on investments	1,135	3,046	1,911
Other	-	-	-
	2,375,710	2,186,966	(188,744)
Operating Expenses:			
Utilities	106,062	142,976	(36,914)
Field salaries	899,295	831,483	67,812
Administrative	362,502	367,950	(5,448)
General operating	270,133	273,132	(2,999)
Materials and supplies	182,700	220,854	(38,154)
Engineering, legal, and professional	86,780	58,669	28,111
Contract labor and equipment	493,693	301,889	191,804
	2,401,165	2,196,953	204,212
Non-Operating Revenues / (Expenses):	-	-	-
Change in Net Position	\$ (25,455)	\$ (9,987)	\$ 15,468

SCHEDULE III (Continued)

COASTAL WATER AUTHORITY
 Schedule of Revenues, Expenses,
 And Changes in Net Position –
 Budgetary and Actual (Cash Basis) – All Systems (Unaudited)
 For the Year Ended December 31, 2014

	Bayport Water System Project		
	Budget	Actual	Variance Favorable (Unfavorable)
Operating Revenues:			
Service revenues	\$ 2,040,828	\$ 2,268,738	\$ 227,910
Interest on investments	750	3,185	2,435
Other	-	34,869	34,869
	2,041,578	2,306,792	265,214
Operating Expenses:			
Utilities	88,559	79,400	9,159
Field salaries	831,363	443,059	388,304
Administrative	349,289	331,045	18,244
General operating	283,980	260,351	23,629
Materials and supplies	125,075	165,362	(40,287)
Engineering, legal, and professional	91,580	772,021	(680,441)
Contract labor and equipment	171,595	346,538	(174,943)
	1,941,441	2,397,776	(456,335)
Non-Operating Revenues / (Expenses):			
Construction Program	(2,502,000)	(336,956)	2,165,044
	(2,502,000)	(336,956)	2,165,044
Change in Net Position	\$ (2,401,863)	\$ (427,940)	\$ 1,973,923

SCHEDULE III (Continued)

COASTAL WATER AUTHORITY
 Schedule of Revenues, Expenses,
 And Changes in Net Position –
 Budgetary and Actual (Cash Basis) – All Systems (Unaudited)
 For the Year Ended December 31, 2014

	Red Bluff Water Treatment Plant Project		
	Budget	Actual	Variable Favorable (Unfavorable)
Operating Revenues:			
Service revenues	\$ 2,205,001	\$ 2,058,168	\$ (146,833)
Interest on investments	244	374	130
Other	-	-	-
	2,205,245	2,058,542	(146,703)
Operating Expenses:			
Utilities	181,420	193,004	(11,584)
Field salaries	538,624	477,613	61,011
Administrative	277,922	285,964	(8,042)
General operating	286,276	217,958	68,318
Materials and supplies	365,800	319,034	46,766
Engineering, legal, and professional	74,720	33,898	40,822
Contract labor and equipment	38,400	52,720	(14,320)
	1,763,162	1,580,191	182,971
Non-Operating Revenues/(Expenses):			
Loan interest expense	(57,645)	(57,645)	-
Loan retirement principal	(399,767)	(399,767)	-
	(457,412)	(457,412)	-
Change in Net Position	\$ (15,329)	\$ 20,939	\$ 36,268

COASTAL WATER AUTHORITY
Schedule of Funding Progress for Other Postemployment Benefits
(Unaudited)
December 31, 2014

Actuarial Valuation date	Actuarial Value of Assets {a}	Actuarial Accrued Liability (AAL)* {b}	Unfunded (Funded) AAL (UAAL) {b-a}	Funded Ratio {a/b}	Covered Payroll {c}	UAAL as a percentage of Covered Payroll {(b-a)/c}
Dec 31, 2012	-	\$ 6,537,909	\$ 6,537,909	0%	\$ 5,563,024	117.52%
Dec 31, 2013	-	\$ 6,537,909	\$ 6,537,909	0%	\$ 5,899,794	110.82%
Dec 31, 2014	-	\$ 5,388,236	\$ 5,388,236	0%	\$ 5,869,691	91.80%

*The aggregate actuarial cost method is used for funding purposes. However, because this method does not identify or separately amortize unfunded actuarial liabilities, the entry age actuarial cost method has been used to provide required information about funded status and funding progress. The information presented in this schedule is intended to approximate the funding progress of the plan based on the use of the aggregate actuarial cost method.

C49. Debt Profile

Coastal Water Authority

Existing Obligations as of June 1, 2015

	Series 2010			Series 2014			Subtotal
	Contract Revenue Bonds			Contract Revenue Bonds			
	City of Houston Projects			City of Houston Projects			
	Principal	Interest	Debt Service	Principal	Interest	Debt Service	Debt Service
12/15/2015	1,405,000	1,632,050	3,037,050	855,000	1,587,131	2,442,131	5,479,181
12/15/2016	2,450,000	1,575,850	4,025,850	880,000	1,561,481	2,441,481	6,467,331
12/15/2017	2,550,000	1,477,850	4,027,850	905,000	1,535,081	2,440,081	6,467,931
12/15/2018	2,645,000	1,375,850	4,020,850	945,000	1,498,881	2,443,881	6,464,731
12/15/2019	2,770,000	1,253,600	4,023,600	985,000	1,461,081	2,446,081	6,469,681
12/15/2020	2,900,000	1,125,100	4,025,100	1,060,000	1,411,831	2,471,831	6,496,931
12/15/2021	3,040,000	980,100	4,020,100	1,085,000	1,358,831	2,443,831	6,463,931
12/15/2022	3,160,000	858,500	4,018,500	1,140,000	1,304,581	2,444,581	6,463,081
12/15/2023	3,315,000	700,500	4,015,500	1,200,000	1,247,581	2,447,581	6,463,081
12/15/2024	3,480,000	534,750	4,014,750	1,255,000	1,187,581	2,442,581	6,457,331
12/15/2025	7,215,000	360,750	7,575,750	2,320,000	1,124,831	3,444,831	11,020,581
12/15/2026	-	-	-	2,430,000	1,008,831	3,438,831	3,438,831
12/15/2027	-	-	-	2,555,000	887,331	3,442,331	3,442,331
12/15/2028	-	-	-	2,685,000	759,581	3,444,581	3,444,581
12/15/2029	-	-	-	2,765,000	679,031	3,444,031	3,444,031
12/15/2030	-	-	-	2,850,000	592,625	3,442,625	3,442,625
12/15/2031	-	-	-	2,945,000	500,000	3,445,000	3,445,000
12/15/2032	-	-	-	3,060,000	382,200	3,442,200	3,442,200
12/15/2033	-	-	-	3,180,000	259,800	3,439,800	3,439,800
12/15/2034	-	-	-	3,315,000	132,600	3,447,600	3,447,600
12/15/2035							
12/15/2036							
12/15/2037							
12/15/2038							
12/15/2039							
12/15/2040							
12/15/2041							
12/15/2042							
12/15/2043							
12/15/2044							
12/15/2045							
12/15/2046							
	34,930,000	11,874,900	46,804,900	38,415,000	20,480,894	58,895,894	105,700,794

	Series 2009			Series 2010			2013			Subtotal
	WIF Loan			WIF Loan			State Participation			
	Luce Bayou Projects			Luce Bayou Projects			TWDB			TWDB
	Principal	Interest	Debt Service	Principal	Interest	Debt Service	Principal	Interest	Debt Service	Debt Service
			-				-	266,951	266,951	266,951
			-				-	266,951	266,951	266,951
			-				-	400,426	400,426	400,426
			-				-	533,901	533,901	533,901
	2,500,000	592,031	3,092,031		56,423	56,423	-	734,114	734,114	3,882,568
	2,555,000	684,153	3,239,153	415,000	120,448	535,448	-	934,327	934,327	4,708,928
	2,615,000	623,676	3,238,676	420,000	112,952	532,952	-	1,134,540	1,134,540	4,906,168
	2,680,000	558,589	3,238,589	430,000	104,281	534,281	-	1,334,753	1,334,753	5,107,623
	2,750,000	489,632	3,239,632	440,000	94,684	534,684	-	1,334,753	1,334,753	5,109,069
	2,820,000	416,785	3,236,785	450,000	84,378	534,378	-	1,334,753	1,334,753	5,105,916
	2,900,000	340,363	3,240,363	460,000	73,265	533,265	-	2,400,436	2,400,436	6,174,064
	2,975,000	260,352	3,235,352	475,000	61,591	536,591	-	2,400,436	2,400,436	6,172,379
	3,060,000	177,141	3,237,141	485,000	49,180	534,180	-	2,400,436	2,400,436	6,171,757
	3,145,000	90,482	3,235,482	500,000	35,965	535,965	-	2,400,436	2,400,436	6,171,883
			-	515,000	22,064	537,064	-	2,400,436	2,400,436	2,937,500
			-	525,000	7,408	532,408	-	2,400,436	2,400,436	2,932,844
			-		-	-	-	2,400,436	2,400,436	2,400,436
			-		-	-	1,375,000	1,334,753	2,709,753	2,709,753
			-		-	-	1,435,000	1,273,703	2,708,703	2,708,703
			-		-	-	1,500,000	1,208,554	2,708,554	2,708,554
			-		-	-	1,570,000	1,139,704	2,709,704	2,709,704
			-		-	-	1,640,000	1,067,641	2,707,641	2,707,641
			-		-	-	1,715,000	992,365	2,707,365	2,707,365
			-		-	-	1,795,000	913,646	2,708,646	2,708,646
			-		-	-	1,875,000	831,256	2,706,256	2,706,256
			-		-	-	1,965,000	743,318	2,708,318	2,708,318
			-		-	-	2,055,000	651,160	2,706,160	2,706,160
			-		-	-	2,155,000	554,780	2,709,780	2,709,780
			-		-	-	2,255,000	453,711	2,708,711	2,708,711
			-		-	-	2,360,000	347,951	2,707,951	2,707,951
			-		-	-	2,470,000	237,267	2,707,267	2,707,267
			-		-	-	2,589,000	121,424	2,710,424	2,710,424
	28,000,000	4,233,204	32,233,204	5,115,000	822,639	5,937,639	28,754,000	36,949,751	65,703,751	103,874,594

Coastal Water Authority, Texas

Revenue Bonds New Issue Report

Ratings

New Issue

Contract Revenue Refunding Bonds,
Series 2014 (City of Houston
Projects) AA+

Outstanding Debt

Contract Revenue Bonds (City of
Houston Projects) AA+

Rating Outlook

Stable

New Issue Details

Sale Information: \$45,000,000 Contract Revenue Refunding Bonds, Series 2014, expected to sell via competitive bids due Dec. 3.

Security: Special obligation of the authority payable from contract revenues pursuant to a projects contract between the authority and the city of Houston. Pursuant to the contract, the pledged revenues include the debt service payments, bond reserve fund payments, and any interest income earned on monies or investment securities held in the bond fund or bond reserve fund.

The city is obligated to make payments under the projects contract as an operations and maintenance (O&M) expense from the gross revenues of the city's water and wastewater system (the system) and payment by the city of its obligations under the projects contract is on parity with payment of all other O&M expenses of the system).

Purpose: To refund certain outstanding bonds for interest savings and to pay costs of issuance.

Final Maturity: Dec. 15, 2030.

Key Rating Drivers

Obligor Drives Rating: The pledge securing the authority's contract revenue bonds is an O&M expense of the city's system and is superior to the pledged security on any of the system's revenue bonds. Consequently, the rating on the authority's bonds is directly tied to that of the system. The credit profile of the system is strong. Fitch Ratings last affirmed the system's senior lien revenue bonds rating at 'AA+' with Stable Rating Outlook on Feb. 28, 2014.

Strong Legal Protections: Legal protections are strong, with an unconditional obligation of the city to pay debt service requirements from gross system revenues. Payments are deposited directly to the paying agent.

Essentiality of Service: The authority operates and maintains the Trinity River Water Conveyance System (TRWCS), an essential function to the operation of the city's system.

Experienced Management: Both the authority and the system have a long and successful operating history.

Rating Sensitivities

Changes to Obligor Rating: Either positive or negative changes to the credit quality of the system likely would translate into a corresponding change to the authority's ratings.

Related Research

[Fitch Rates Coastal Water Authority, TX's \\$45MM Contract Rev Bonds 'AA+'; Outlook Stable \(November 2014\)](#)

[Fitch Upgrades Coastal Water Authority, TX Contract Rev Bonds to 'AA+'; Outlook Stable \(October 2014\)](#)

[Fitch Affirms Coastal Water Authority, Texas' Contract Revenue Bonds at 'AA'; Outlook Stable \(October 2012\)](#)

[Coastal Water Authority, Texas \(City of Houston Projects\) \(October 2010\)](#)

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Rating History

Rating	Action	Outlook/ Watch	Date
AA+	Affirmed	Stable	11/20/14
AA+	Upgraded	Stable	10/9/14
AA	Affirmed	Stable	10/11/12
AA	Assigned	Stable	10/26/10

Credit Profile

The authority was created by the Texas Legislature in 1967 to serve as a conservation and reclamation district and political subdivision covering a part of southwest Liberty County, southwest Chambers County, and most of Harris County. Under the act, the primary purpose of creating the authority was to provide an agency to finance and construct a water conveyance and distribution system to transport surface water from Lake Livingston and the Trinity River into the above mentioned counties. The authority is also charged with conveying water to a point where it will be available for Galveston County and its authorizing legislation was amended in 2005 with additional rights and responsibilities to enable the authority to carry out its purposes.

The authority is governed by a seven-member board of directors who serve staggered two-year terms. Three board members (one from each county) are appointed by the governor, with the consent of the state senate, and four are appointed by the mayor of the city, with the consent and approval of the city council.

Essential Houston Project

The authority's primary project with the city is the TRWCS that collectively includes a number of essential projects that effectively transport the city's water allocations from the Trinity River and Lake Livingston to the Lynchburg Reservoir. This water accounts for approximately 75% of the city's total water production each year. Presently, the project has sufficient capacity to transport all of the water rights belonging to the city, thus any additional capital projects related to the TRWCS are anticipated to be minimal.

The city and authority entered into two contracts, one for the projects and one for operations. Under the projects contract, the city is obligated to repay debt service related to the authority's contract revenue bonds issued in conjunction with the TRWCS projects. The operations contract stipulates the authority's responsibility to operate and maintain the TRWCS. The city's payment obligation under this contract is on parity with its obligation to pay for debt service under the project's contract.

Strong Legal Covenants

Pursuant to the projects contract, the city has an unconditional obligation to pay debt service requirements from gross system revenues. The pledged revenues are directly deposited as follows: (1) by the city into the bond fund at the securities depository and disbursed for payment of debt service; (2) into the reserve fund (if necessary); and (3) any unused revenue remains deposited in the bond fund. The authority is required to maintain a bond reserve fund with a minimum balance of average annual aggregate debt service funded with \$4.3 million cash and \$2.9 million surety. Additional parity obligations may be issued subject to amendment to the projects contract to provide an adjustment to pledged revenue.

Adequate Financial Margins of the Authority

The authority maintains a healthy financial position overall and in the pledged TRWCS enterprise fund. As a single-purpose enterprise fund, the operations of the TRWCS are strategically intended to be on a break-even basis with maintenance of certain reserves for operations and debt service. As such, coverage is essentially sum sufficient and is projected to remain so through debt maturity. As of Dec. 31, 2013, the authority's liquidity position in the TRWCS enterprise fund was solid at 470 days cash on hand and 399 days of working capital,

Related Criteria

[Revenue-Supported Rating Criteria \(June 2014\)](#)

[U.S. Water and Sewer Revenue Bond Rating Criteria \(July 2013\)](#)

including the operating reserve. All required reserves are fully funded including an additional \$3 million reserve that is restricted for repairs.

Strong Houston System Rating Attributes

The city system rating reflects its strong financial position resulting from a series of rate increases that were implemented to support the system's growing capital needs. The rate increases produced solid operating margins and above-average working capital and liquidity. At the close of fiscal 2013, the system had over 600 days cash on hand and just over 14 months in working capital.

Debt service coverage on the system's senior lien is very high at 8.5x in fiscal 2013, reflective of its closed lien position. All-in debt service coverage levels ranging from 1.5x to 1.6x between fiscal years 2011 to 2013 are slightly weaker than similarly rated credits, but an ample balance in the general purpose fund (GPF) and closed loop in the flow of funds largely offsets this weaker metric. The use of the GPF is restricted for system improvements and a limited portion for drainage purposes. The GPF had a balance of \$508 million at the close of fiscal 2013, more than double the \$250 million balance in fiscal 2011.

The system's updated projections through fiscal 2018 reflect that all-in annual debt service coverage will hover between 1.3x and 1.4x, which is marginally lower than the forecast from December 2013 due to lower than previously projected rate hikes tied to the regional inflation factor. It will be important for the system to meet or exceed these projections given the expected operating and capital pressures associated with the system's sizable CIP.

Broad and Diverse Service Area

The city system serves the Houston-Sugar Land-Baytown metropolitan statistical area (MSA), the fifth largest MSA in the U.S. and second largest in Texas, with an estimated population currently at 6.3 million. Service is provided either directly or indirectly through wholesale contracts with municipalities, water districts, and water authorities.

The area economy fared better than many other large U.S. cities during the recession, as relatively high energy prices and favorable business climate provided some cushion against other recessionary forces. The MSA unemployment rate decreased to 4.9% in September 2014, compared with 6.1% a year prior. The MSA's rate remains marginally better than the state's 5.0% and well below the national average of 5.7%.

Legal Covenants

Legal protections are strong featuring an unconditional obligation of the city to pay debt service requirements from gross system revenues and payments are deposited directly to the paying agent.

Security

The bonds constitute special obligations of the authority. Pledged revenues include the debt service payments under the contract with the city of Houston, bond reserve fund payments under the contract, and any interest income earned on monies or investment securities held in the bond fund or bond reserve fund.

The city of Houston is obligated to make payments under the projects contract as an operations and maintenance expense from the gross revenues of the city's water and

wastewater system, and payment by the city of its obligations under the projects contract is on parity with payment of all other maintenance and operations expenses of the system.

Rate Covenant

There is no rate covenant per se. The city of Houston is obligated to make payments under the projects contract as an operations and maintenance expense from the gross revenues of the city's water and wastewater system. Under the contract, the city is also obligated to pay the operating expenses of the Trinity River Water Conveyance System and all related facilities.

The authority has covenanted that, as long as any parity obligations are outstanding, it will maintain the projects contract in full force and effect and will use reasonable diligence to require the city to comply with its contractual obligations. If the city fails to make payments, as required, and if it should appear that enforcement of the projects contract has become ineffective or will be ineffective to the extent that a default in the payment of principal or interest on the parity obligations occurs or is threatened, the authority will take all necessary action to preserve and protect the rights of the owners of the parity obligations and to ensure payment of the principal and interest thereon.

The authority has further covenanted that the pledged revenues will be free and clear of any pledge, lien, charge, or encumbrance thereon or with respect thereto, except the pledge granted by the bond resolution.

Operating Reserves

In accordance with the terms of the various bond resolutions and city contracts, the authority is required to maintain, in the Trinity River Water Conveyance System operations account, an amount equal to three months' average operating costs, as applicable to the city, estimated from its annual operating budget. At the beginning of each year, the authority makes an adjustment to the operating reserves to meet the requirements. This adjustment is either paid by or credited to the city.

Additional Parity Obligations

The authority reserves the right to issue additional parity obligations to complete, repair, improve, enlarge, or replace city projects, provided that certain conditions in the resolution are satisfied. These conditions include the following:

- The projects contract is amended or supplemented to provide that the city will increase or adjust the debt service payments under the contract; the bond reserve fund payments under the contract and the parity obligation expense payments so that such payments will be sufficient to: pay the principal and interest on the additional parity obligations and make all sinking fund installments as required by the supplemental resolution authorizing such additional obligations; increase and/or maintain the bond reserve fund to the amount required by the supplemental resolution; and pay all parity obligation expenses.
- The city provides a certificate executed by the mayor, city secretary, and the city controller to the effect that the city is not in default as to any covenant, condition, or obligation prescribed by any ordinance authorizing the city's water and sewer system revenue bonds.

Bond Reserve Fund

The authority is required to establish a bond reserve fund with a balance of no less than the average annual aggregate debt service. The bond reserve requirement is currently \$7.2 million. If any money is ever withdrawn from the bond reserve fund for the purpose of paying debt service, the fund must be restored in a period not to exceed 60 months. In lieu of cash or investment securities, the requirement may be satisfied in whole or in part with one or more surety policies.

Flow of Funds

The resolution provides that pledged revenues shall be used to make or provide for all payments, deposits, and transfers required therein as follows:

- On or before an interest payment date of any bonds, there shall be deposited into the bond fund from the pledged revenues funds sufficient for principal and interest due on the next payment date for any outstanding parity obligations and any amounts required to pay parity obligation expenses.
- Replenishment of the bond reserve fund, if necessary.
- Unused pledged revenues shall be paid into the bond fund.

The ratings above were solicited by, or on behalf of, the issuer, and therefore, Fitch has been compensated for the provision of the ratings.

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Master Ordinance is referred to as the “Rate Covenant.” The Master Ordinance provides that the calculation required by this section will be made annually at the time the City’s annual budget for the System is adopted and will be included in the annual budget for the System.

Automatic Annual Rate Adjustments

In 2005, the City implemented an automatic annual rate adjustment based upon the change in the Designated Index, specified in Proposition 1 (2004), which was the Consumer Price Index for all Urban Consumers (“CPI-U”), effective on April 1st of each year. See “THE CITY AND THE SYSTEM – City Charter Tax and Revenue Limitations” for a discussion of Proposition 1 (2004), including the City’s authority to raise rates required by bond covenants and by contract, other propositions, and the status of related litigation.

On April 21, 2010, the City Council approved a one-time increase of 20.1% in water and sewer rates. The new retail rates and some wholesale customers’ new rates became effective on June 1, 2010 and contract treated water customers’ new rates became effective in January 2011. At the same time, the City also approved automatic annual adjustments to the City’s water and sewer rates in place of those adopted in 2005. The ordinance approving the one-time rate increase and the revised automatic annual rate adjustments, adopted on April 21, 2010, is referred to herein as the “Rate Ordinance.” See “RATES.” See also “THE CITY AND THE SYSTEM – City Charter Tax and Revenue Limitations” for a discussion of Proposition 1 (2004), including the City’s authority to raise rates as required by bond covenants and by contract, other propositions and the status of related litigation.

The Rate Ordinance, which remains in place currently, provides for automatic annual rate adjustments based upon the annual percentage increase in the Producer Price Index (“PPI”), but subject to the Proposition 1 (2004) limit (which is the sum of the Designated Index plus the annual Houston population percentage increase). Alternatively, if the City demonstrates that a customer segment’s cost of service exceeds the PPI, the City may increase that segment’s rate using the greater of (i) the annual percentage increase in the PPI or (ii) the sum of the percentage increase to the Designated Index and the annual Houston population increase.

RESERVE FUND

First Lien Bonds

The Master Ordinance provides that the First Lien Bond Reserve Fund is a shared bond reserve fund used to pay all First Lien Bonds that are Reserve Fund Participants. To date, all outstanding First Lien Bonds are Reserve Fund Participants. However, pursuant to the Master Ordinance, the City can elect not to include any future series of First Lien Bonds as a Reserve Fund Participant.

In order to satisfy its Reserve Fund Requirement for certain previously issued First Lien Bonds, the City previously acquired a Reserve Fund Surety Policy (the “Series 2004 Policy”) from MBIA Insurance Corporation (“MBIA”), two Reserve Fund Surety Policies (the “Series 2005 Policy” and the “Series 2007A Policy”) from Financial Security Assurance (“FSA”), and an additional First Lien Bond Reserve Fund Surety Policy (the “2008C Policy”) from Assured Guaranty Corp. (“Assured Guaranty”; MBIA, FSA and Assured Guaranty are jointly referred to herein as the “Reserve Fund Surety Providers”). See APPENDIX H – Description of Reserve Fund Surety Policies for additional information on the surety bond providers.

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Schedule 8 — Ten Largest Sewer Customers

The following schedule presents information concerning the ten largest customers of the Sewer Facilities for the twelve-month period ended June 30, 2014. The total charges to such customers represent approximately 2.61% of the System Gross Revenues and 5.91% of Sewer Facilities' gross charges during such period.

	<u>Customers</u>	<u>Gross Charges</u>
1.	Anheuser - Busch, Inc.	\$ 4,164,213
2.	Harris County	4,032,244
3.	City of Houston	3,695,925
4.	Houston Independent School District	2,936,357
5.	University of Houston	2,790,050
6.	Oak Farms Dairies	2,154,286
7.	Maximus Coffee Group	1,947,153
8.	Methodist Hospital	1,661,057
9.	Hermann Hospital	1,644,795
10.	Dr. Pepper Bottling	<u>1,072,051</u>
	TOTAL	<u>\$26,098,131</u>

RATES

Ratemaking

City Council has the authority to establish and increase rates for services provided by the System, subject to certain contractual limitations and subject to the limited regulatory jurisdiction discussed below. In setting water and sewer rates, the City is bound by the legal requirements that such rates must be reasonable, equal and uniform and that no free service may be allowed, except at the discretion of City Council for certain public buildings and facilities. In the event that any such free service would violate the terms of a governmental grant, then the City may not permit any free service. By law, the City must charge and collect rates sufficient to pay all operating, maintenance, depreciation, replacement, betterment and interest charges of the System and to maintain a debt service interest and sinking fund sufficient to pay any bonds or notes issued to purchase, construct or improve the System or any outstanding indebtedness of the System. See "SECURITY FOR THE BONDS—Rate Covenant." In setting rates, City Council considers, among other things, the current federal guidelines regarding user charges and certain charges imposed on federal construction grant recipients under the Clean Water Act.

The Master Ordinance provides for automatic annual rate adjustments for the Combined Utility System. See "SECURITY FOR THE BONDS — Automatic Annual Rate Adjustments." See "THE CITY AND THE SYSTEM—City Charter Tax and Revenue Limitations" for a discussion of the limitations on increases in water and sewer rates as well as the City's authority to raise rates required by certain bond covenants and by contract, included in the Proposition 1 amendment to the City Charter approved by voters in November 2004.

In addition to the Master Ordinance and the Previous Ordinance authorizing the issuance of the Previous Ordinance Bonds, which requires an annual review of System rates and annual adjustment of rates to assure that revenues are sufficient to provide for debt service on such bonds, City Council has adopted a resolution requiring a similar annual review and adjustment of rates in connection with the payment of Maintenance and Operation expenses of the System, payment of debt service on the System, annexed utility district bonds and payment of certain contract tax obligations related to the construction of water supply and distribution and wastewater collection and treatment facilities. The resolution is a declaration of City policy, but specifically states that it may be amended by City Council at any time and will not be deemed to be an enforceable obligation of the City. See "SYSTEM DEBT AND CHARGES — Discretionary Debt Service."

The magnitude and frequency of rate increases will depend upon factors such as the rate at which operating expenses increase in the future, the interest rate on System Obligations and other revenue bonds sold to meet the System's future capital requirements, the extent to which System Obligations are used to meet those capital

requirements, and the volume of water sold and future changes in environmental requirements. See “SECURITY FOR THE BONDS—Automatic Annual Rate Adjustments.” See also “THE CITY AND THE SYSTEM—City Charter Tax and Revenue Limitations” and “SOURCES OF SYSTEM REVENUES.” See also the section captioned “QUALIFIED HEDGE AGREEMENTS” for a discussion of the possible impact on rates in connection with the risks associated with Qualified Hedge Agreements.

Water and Sewer Rate Study

Approximately every five years, the City commissions water and sewer rate studies to assess the adequacy and equitability of its rates. In 2014, the City engaged Arcadis Consulting, the City’s utility rate consultant, to review the System’s rates for each customer class for water and wastewater. The Study was completed in April, 2015 and the report will be made available on the City’s website once it has been finalized.

The City’s prior rate study was completed in April, 2010 and is available on the City’s website at <http://www.houstontx.gov/council/1/bfacommittee/4.19.10/waterwastewaterexecsummary.pdf>. On April 21, 2010, the City Council adopted new increased rates for water and wastewater services. See “RATES – Current Rates” for a discussion of the current rates for water and wastewater services.

Current Rates

On April 1, 2015, rates for all customer classes had an automatic rate increase of 4.4%. Effective April 1, 2015, the bill of a typical single family residential customer who uses, on average, 6,000 gallons of water per month is \$31.97 for water and \$39.31 for sewer, for a total monthly bill of \$71.28. Effective April 1, 2015, the City’s combined monthly water and sewer bill for users of 1,000 gallons is \$15.92, for users of 3,000 gallons is \$23.53, for users of 5,000 gallons is \$58.97 and for users of 14,000 gallons is \$198.82. These rates are structured to encourage water conservation. See “SECURITY FOR THE BONDS – Automatic Annual Rate Adjustments.” Also see “THE CITY AND THE SYSTEM – City Charter Tax and Revenue Limitations” for a discussion of certain initiatives that could impact System rates, including the City’s authority to raise rates required by bond covenants and by contract.

[The remainder of this page is left blank intentionally.]

Schedule 9 — Rate Adjustments

In recent years, the water and sewer rates have been adjusted on the average as follows:

Date of Change	Average Percent Rate Increase	
	Water	Sewer
June 2004	9.7%	9.7%
April 2005 ⁽¹⁾	3.5	3.5
April 2006 ⁽¹⁾	3.6	3.6
April 2007 ⁽¹⁾	2.8	2.8
April 2008 ⁽¹⁾	1.8	1.8
April 2009 ⁽²⁾	5.1	5.1
April 2010 ⁽¹⁾	0.3	0.3
June 2010 ⁽³⁾	19.1	22.9
April 2011 ⁽⁴⁾	1.9	1.9
April 2012 ⁽⁴⁾	3.3	3.3
April 2013 ⁽⁴⁾	3.6	3.6
April 2014 ⁽⁵⁾	1.2	1.2
April 2015 ⁽¹⁾	4.4	4.4

⁽¹⁾ The April 2005-2008, 2010 and 2015 rate increases resulted from the automatic annual rate adjustment provisions of the Master Ordinance.

⁽²⁾ The April 2009 rate increase resulted from the automatic rate increase and includes a 1.79% increase to reflect the growth in the City's population for the then most recently available twelve-month period. See "THE CITY AND THE SYSTEM – City Charter Tax and Revenue Limitations."

⁽³⁾ See "SECURITY FOR THE BONDS – Automatic Annual Rate Adjustments" for a discussion of the one-time increase that occurred in June 2010.

⁽⁴⁾ Single family residential rates include annual rate adjustments, plus cost of service ratio adjustments of 6.0% on April 1, 2011, 5.6% on April 1, 2012 and 5.3% on April 1, 2013, for a total increase of 9.6%, 8.9% and 8.9%, respectively. The final additional cost of service rate adjustment occurred on April 1, 2013.

⁽⁵⁾ The April, 2014 rate increase was based on the Producer Price Index.

See "RATES - Water and Sewer Rate Study" for a discussion of a study of the water and sewer rates. See "SECURITY FOR THE BONDS - Automatic Annual Rate Adjustments" for a description of the automatic rate adjustment. Together with the automatic annual rate adjustments, additional rate increases may be required in order to implement the System's Capital Improvement Plan as currently contemplated.

Billing and Collection

The Department performs billing and collection services for the System. Customers are billed monthly based on metered water consumption, except for certain sewer customers who are billed based on their metered discharge. A bill is due twenty (20) days after the date on which the statement of account was mailed, and late payments incur a ten percent penalty if paid after the next billing. If a customer fails to make payment on or before the 23rd day from the date the bill was mailed, the City sends a second written notice to the customer restating the amount owed and setting forth the procedure by which the customer can discuss any dispute over the propriety of the charge with a customer service representative. No earlier than three weeks after the second written notice is mailed, a City field representative is dispatched to the customer's address to cut off water service if the amount owed has not been paid.

While the Department's collection rate has exceeded 98% historically, the City engaged two collection companies in 2013 to pursue collection on accounts that are significantly delinquent. The City also has instituted a number of programs to improve collections. One program is the passage of a lien ordinance, which authorizes the City to file liens against certain properties with delinquent bills totaling \$3,000 or more. In addition, any customer with a delinquent final bill over ninety (90) days past due will be reported to the local credit bureaus.

**PROJECTS CONTRACT
BETWEEN
CITY OF HOUSTON, TEXAS
AND
COASTAL WATER AUTHORITY**

C73168
2009-0053

THE STATE OF TEXAS §
 §
COUNTY OF HARRIS §

This Projects Contract is entered into as of the date of countersignature herein, by and between the CITY OF HOUSTON, TEXAS, a municipal corporation and Home-Rule City situated principally in Harris County, Texas (hereinafter called the "City"), and COASTAL WATER AUTHORITY, a political subdivision and conservation district of the State of Texas created by Chapter 601, Acts of the 60th Legislature of Texas, Regular Session, 1967 (Article 8280-355, Vernon's Texas Civil Statutes) (hereinafter called the "CWA") (together, the "Parties").

WITNESSETH:

RECITALS

A. The Parties desire to cooperate on the planning, design, property acquisition, construction and financing of the project known as the "Luce Bayou Interbasin Transfer Project," which as currently contemplated will include infrastructure sized to transfer approximately 450,000 acre feet per year of the City's permitted surface water from the Trinity River to Lake Houston (as further described in Section 2.01 herein, the "Luce Bayou Project").

B. This Projects Contract will among other things set forth the terms and conditions: (i) by which the Parties will collaborate on the construction of the Luce Bayou Project, which includes all costs associated with the Preliminary Project Costs, the Land and Mitigation Costs, and the Construction Costs (all as further defined

herein); and (ii) of the financing of the Luce Bayou Project through the WIF Bonds for Preliminary Project Costs, use of CWA Available Revenues for the City's portion of Land and Mitigation Costs, and the use of future available financing for the Construction Costs.

C. The Luce Bayou Project shall consist of certain elements described within and among the following categories: Preliminary Project Costs, Land and Mitigation Costs, and Construction Costs. The Preliminary Project Costs shall be for design, permitting, and other preliminary matters related to the Luce Bayou Project; Land and Mitigation Costs shall be for costs related to the acquisition of land and costs of environmental mitigation necessary for the Luce Bayou Project; and Construction Costs shall be for the costs related to the construction of the Luce Bayou Project.

D. Preliminary Project Costs will be financed and paid through the issuance of CWA contract revenue bonds which are to be purchased by the Texas Water Development Board (the "TWDB") through its Water Infrastructure Fund ("WIF") loan program, under which the TWDB will loan funds to CWA (the "WIF Bonds"). The WIF Bonds will be secured by the City's pledge under this Projects Contract to pay Debt Service on the WIF Bonds from Pledged Revenues (as defined herein).

E. The Projects Contract further contemplates that CWA shall advance funds to pay for the City's share of Land and Mitigation Costs from Available CWA Revenues (as defined herein), and the City shall repay CWA pursuant to the Amortization Payment (as defined herein), and Construction Costs will be financed by the most economical means available at the time of construction of the Luce Bayou Project, which is currently contemplated to be through financing from one or a combination of potential sources,

including 1) TWDB state assistance programs; 2) state or federal grants; 3) City Pledged Revenues; or 4) other CWA funds.

F. The Parties further intend to enter into one or more additional contracts for the operation and maintenance of the Luce Bayou Project.

AGREEMENT

For and in consideration of the respective promises and the mutual covenants and benefits hereinafter set forth, the City and CWA agree as follows:

ARTICLE I

DEFINITIONS

Section 1.01. Definitions. The terms defined in the recitals have the meanings set forth in such recitals, and the following terms have the following meanings:

“Act” shall mean Article 8280-355, Tex. Rev. Civ. Stat. Ann. (Chap.601, Acts of the 60th Legislature of Texas, Regular Session, 1967, as amended by Chap.767, Acts of the 61st Legislature of Texas, Regular Session, 1969, Chap. 706, Acts of the 68th Legislature of Texas, Regular Session, 1983, and Chap.674, Acts of the 69th Legislature of Texas, Regular Session, 1985, and any future amendments or codifications).

“Amortization Payment” shall mean the amount payable by the City to CWA necessary to reimburse CWA for the expenditure of its Available CWA Revenues on the Preliminary Project Costs and Land and Mitigation Costs (excluding the Pro Rata Share of Land and Mitigation Costs paid by the City to CWA from deposits made by the Authorities under Section 3.09 and the Pro Rata Share of Preliminary Project Costs paid from the City to CWA from deposits made by the Authorities under Section 3.10) as further set forth in Exhibit “A” hereto.

“Authorities” shall mean Central Harris County Regional Water Authority, North Harris County Regional Water Authority, West Harris County Regional Water Authority, and North Fort Bend Water Authority, and any successor-in-interest to any such entities.

“Available CWA Revenues” shall mean the certain revenues derived by CWA from the sale of certain Certificates of Participation, Series 1993A-J with respect to the City of Houston, Texas, Water Conveyance System Contract.

“Board of Directors” shall mean the Board of Directors of CWA which is the governing body of CWA.

“Bonds” means the bonds, notes and other obligations (other than WIF Bonds) issued or to be issued by CWA for the Luce Bayou Project and secured by contract revenues from the City, as the terms of such bonds, notes and other obligations may be agreed to in a Supplemental Agreement.

“City” is defined in the preamble of this Projects Contract and includes its successors and assigns.

“City Council” shall mean the City Council of the City which is the governing body thereof.

“Construction Costs” shall mean all costs and related costs of CWA reasonably incurred for labor and to Consultants, contractors, builders and materialmen in connection with the construction of the Luce Bayou Project, including but not limited to the cost of, (a) labor and equipment necessary for obtaining any electrical power; (b) contract bonds and insurance of all kinds that may be required or necessary during the course of construction that is not paid by the contractor or contractors or otherwise provided for; and (c) supervising construction, as well as for the performance of all other duties required by or consequent upon the proper construction of a project, including

engineering costs during the construction phase of the Luce Bayou Project. Additionally, to the extent any other Costs are not paid or reimbursed through the WIF Bonds or otherwise, such Costs are deemed to be Construction Costs.

"Consultants" shall mean the engineering firm or firms or other professional service firms at the time engaged by CWA to carry out any duties relating to the planning, design, acquisition, or construction of the Luce Bayou Project.

"Costs" shall mean Preliminary Project Costs, Land and Mitigation Costs, and Construction Costs.

"Costs of Issuance" shall mean cost of financing, legal, printing and other costs attributable to the issuance of the WIF Bonds and the Bonds within the meaning of Section 147(g) of the Internal Revenue Code.

"CWA" is defined in the preamble of this Projects Contract and includes its successors and assigns.

"Debt Service" shall mean, with respect to any particular fiscal year or other twelve (12) month period, for the WIF Bonds or any series of Bonds, an amount equal to the sum of (a) all interest payable on such WIF Bonds or Bonds during such period, except to the extent that such interest is to be paid from amounts (including any investment earnings thereon) deposited in the applicable debt service fund, debt service reserve fund, construction fund, or elsewhere for the purpose of providing capitalized interest, plus (b) that portion of the principal amount of such WIF Bonds or Bonds which are due and payable during such period, plus or minus (c) net amounts payable or receivable under any credit agreements or hedge agreements during such period, plus (d) Obligation Expenses for the WIF Bonds or Bonds during such period.

“Executive Director” shall mean the executive director of CWA or anyone designated in writing by the executive director to perform a specified task.

“Financial Officer” shall mean the chief financial officer of CWA or anyone designated in writing by the chief financial officer to perform a specified task.

“Generally Accepted Accounting Principles” shall mean, such accepted accounting practice as, in the opinion of CWA’s accountant, conforms at the time to a body of generally accepted accounting principles.

“General Purpose Fund” shall mean the System fund so designated in the Master Ordinance and established and maintained by the City thereunder.

“Land and Mitigation Costs” shall mean all costs and related costs incurred by CWA in connection with the acquisition of Project Property, including but not limited to (a) acquiring Project Property whether by purchase or by condemnation; (b) any costs of purchasing environmental mitigation credits or other expense relating to mitigating the environmental impact of the Luce Bayou Project; (c) due diligence; (d) all other costs, including damages awarded by a court, which CWA shall be required to pay for the acquisition of Project Property and/or arising out of the acquisition of Project Property.

“Master Ordinance” shall mean City of Houston Ordinance No. 2004-299, and any amendments and supplements thereto, which provides for the establishment and maintenance of the General Purpose Fund.

“Net Revenues” shall have the meaning as defined in the Master Ordinance.

“Obligation Expenses” shall mean the ongoing fees and expenses of CWA (other than Costs of Issuance) relating to the WIF Bonds or any obligation issued to finance Construction Costs pursuant to Section 3.03, including its fees and expenses relating to:

(1) paying agents, registrars, authenticating agents, securities dealer, securities depositories, or other fiduciaries; (2) tax rebate, financial and legal consultants; (3) insurers; (4) remarketing, indexing, or similar agreements; (5) credit agreements, hedge agreements, investment liquidity facility agreements, consented to by the City, or bond reserve fund surety policies.

"Pledged Revenues" shall mean the Net Revenues held in the General Purpose Fund.

"Preliminary Project Costs" shall mean all costs and related costs reasonably incurred by CWA in connection with the planning, design and engineering of the Luce Bayou Project, including but not limited to (a) all costs that are eligible to be financed through the WIF Bonds, including (I) geotechnical investigations, surveys, estimates, plans and specifications and preliminary investigations therefor, as well as for the performance of all other duties required by or consequent upon the proper design of a project; (II) analysis of the environmental impact of the Luce Bayou Project and the mitigation of any environmental impact of the Luce Bayou Project; (III) applying for and obtaining any permits necessary for the design, acquisition or construction of the Luce Bayou Project or for the acquisition of Project Property (IV) Costs of Issuance for the WIF Bonds or other financing of the Preliminary Project Costs; (V) all other costs, including damages awarded by a court, which CWA shall be required to pay, under the terms of any contract or contracts, for the design of the Luce Bayou Project; and (b) any sums required to reimburse CWA for advances made by CWA or the City for any of the above items, or for any other costs incurred and for work done by it (including overhead charges), which are properly chargeable to the Luce Bayou Project.

“Pro Rata Share of Land and Mitigation Costs” means, with respect to the Authorities, 35.3% of the total costs of the Land and Mitigation Costs, and with respect to the City, 64.7 % of the Land and Mitigation Costs.

“Pro Rata Share of Preliminary Project Costs Interest Expense” means, with respect to the Authorities, 35.3% of the total costs of interest on the Preliminary Project Costs identified as Component A in Exhibit A, and with respect to the City, 64.7% of the total costs of interest on the Preliminary Project Costs identified as Component A in Exhibit A.

“Project Property” shall mean all necessary land or rights in land for the Luce Bayou Project, including any land necessary to comply with any legal requirements to mitigate the environmental impact of the Luce Bayou Project, and any items or costs incidental thereto.

“Projects Contract” shall mean this agreement between CWA and the City.

“Public Works Director” shall mean the Director of the Department of Public Works and Engineering of the City (or the successor equivalent position), or such person as he or she shall designate.

“Substantial Completion” shall mean the time at which the Luce Bayou Project is available for use for its intended purposes as certified by an engineer engaged by CWA.

“Supplemental Agreement” shall mean one or more agreements between the City and CWA necessary to carry out the terms of this Projects Contract.

“System” has the meaning stated in the Master Ordinance.

ARTICLE II

PROJECT DESIGN, ACQUISITION, AND CONSTRUCTION

Section 2.01. Luce Bayou Project. As currently reflected in the State of Texas 2007 Water Plan, and as described in the application for the WIF Bonds, it is contemplated that the Luce Bayou Project would include the construction of infrastructure sized to transfer approximately 450,000 acre feet per year of the City's permitted surface water from the Trinity River to Lake Houston. Such infrastructure is envisioned to include the construction of a new pump station on the banks of the Trinity River, and necessary pipelines and canals. The Parties acknowledge that components and details of the Luce Bayou Project may change as design, permitting, and other requirements may dictate.

Section 2.02. Cooperation Among Parties and Authorities. CWA will be solely responsible for all decisions and actions relating to the design, development, procurement and construction of all aspects of the Luce Bayou Project. CWA shall regularly communicate with the Authorities with respect to the design, development, procurement and construction of the Luce Bayou Project, by i) inviting the Authorities to participate in certain development and planning meetings between CWA and its consultants in order to facilitate communication and input from the Authorities; and ii) providing that CWA will provide the Authorities with written monthly (or other than monthly if mutually agreed to by CWA and the Authorities) updates regarding the progress, status of contracts and other relevant aspects of the Luce Bayou Project. While CWA will consider the Authorities' input regarding the Luce Bayou Project, the City and the Authorities recognize that such input, communication and status reports provided for in this paragraph do not alter CWA's role as the sole project manager of the

Luce Bayou Project. In addition, CWA will invite the Authorities and the City to all meetings between CWA and its consultants, and between CWA and its construction contractors, where substantive issues that have a financial or project development impact on the Authorities or the City are being discussed.

Section 2.03. Design, Permitting, Property Acquisition, and Construction.

(a) **Phase I Preliminary Design.** Preliminary engineering reports for the Luce Bayou Project shall be prepared by the Consultants which shall be submitted to and approved by both the Executive Director and the Public Works Director before proceeding with Phase II--Final Design of the Luce Bayou Project.

(b) **Phase II Final Design.** CWA intends to commence with Phase II Final Design of the Luce Bayou Project by January 1, 2011. Final plans for the Luce Bayou Project shall be prepared by the consulting engineers and shall be approved by the Public Works Director and the Executive Director prior to advertising for construction contracts.

(c) **Permits.** Before awarding a construction contract, CWA shall cause to be secured all necessary permits for the Luce Bayou Project.

(d) **Land Costs and Mitigation.** CWA shall acquire all Project Property. CWA intends to use its Available CWA Funds, and the Authorities' funds paid to CWA by the City under Section 3.09 to acquire all or a portion of the Project Property to be used for right of way and for certain environmental mitigation purposes and to pay the Land and Mitigation Costs. If CWA expends such Available CWA Funds for Project Property and to pay the Land and Mitigation Costs, the City shall reimburse CWA for such expenditures in accordance with Section 3.09 herein. After all Debt Service

payments on the WIF Bond and Bonds have been paid and all other obligations under this Projects Contract are paid, CWA shall at any time thereafter, upon the request of the City, assign to the City all of CWA's rights, title and interest in the Project Property and shall execute all documents necessary to effectuate said conveyance.

CWA will keep an accurate record of all costs of land acquisition and mitigation, including appraisals, surveying, negotiations, abstracts, legal opinions and condemnation costs which shall be included in the Land and Mitigation Costs as Costs of the Luce Bayou Project and shall make this information available to the City. Once CWA has completed land acquisition and mitigation, but no later than June 30, 2014, CWA will notify the City of the completion (or of any land acquisition and mitigation remaining to be completed). CWA agrees to an accounting of the total Land and Mitigation Costs. CWA will provide to the City and Authorities a 65-day review and comment prior to finalizing the accounting. The payments made by the Authorities and the City for Land and Mitigation Costs such that if the City has underpaid the City Pro Rata Share of Land and Mitigation Costs or the Authorities' Pro Rata Share of Land and Mitigation Costs, taking into account interest accrued, the City will pay such shortfall within 60 days of receiving the final accounting, and CWA agrees to refund to the City any overpayment, taking into account interest accrued, within 65 days of the final accounting if the City has overpaid.

(e) **Construction Documents.** Construction contract documents for the Luce Bayou Project shall be prepared by CWA and shall be approved by the Public Works Director and the Executive Director prior to advertising for construction contracts, in the case of a competitive bid, or, in the case of alternative delivery methods used by

CWA, construction contract documents shall be approved by the Public Works Director at such time as provided by applicable law for completion of such documents.

(f) **Construction Bids; Construction Contracts.** After plans, specifications, contract documents, and preliminary plans for financing the Luce Bayou Project have been approved by CWA and the City, and CWA has secured financing to pay the Construction Costs, CWA shall either take competitive bids on the construction of the Luce Bayou Project, or, if CWA and the City determine that it would be more advantageous and result in the best and most economical completion of the Luce Bayou Project, CWA may utilize alternative delivery methods that may be allowed by applicable law.

(g) **Construction.** Upon approval by the Public Works Director of the award, CWA shall promptly award construction contracts and proceed promptly with construction of the Luce Bayou Project. CWA intends that the Luce Bayou Project will reach Substantial Completion no later than July 1, 2019.

(h) **Inspection by City.** The City's representatives shall have access at all times to all work in progress and may make such inspections thereof as it deems necessary or desirable and direct attention to the resident engineer in charge of supervision of construction on behalf of the Consultant to any deviations from the plans and specifications. The City shall also have full access to all contracts, books, records, accounts, and physical properties of, or relating to, the Luce Bayou Project during and after construction and, upon request of the City, CWA shall furnish the City copies of annual audit reports and other periodic reports relating to the construction of the Luce

Bayou Project. CWA will respond immediately to any issues raised by the City with respect to Luce Bayou Project construction.

ARTICLE III

PROJECT FINANCE; PAYMENTS BY THE CITY

Section 3.01. Preliminary Project Costs--Debt Service on the WIF Bonds.

To finance the Preliminary Project Costs, the City agrees to remit Pledged Revenues to CWA or to such other paying agent the amounts necessary to pay Debt Service on the WIF Bonds and any refunding thereof, provided that the City consents to such refunding.

Section 3.02. Payments to CWA by City. The City is authorized under Section 5.9 of the Master Ordinance to pledge payments from funds in the General Purpose Fund for various costs, including the Costs of the Luce Bayou Project. The City is further obligated, pursuant to Section 7.2 of the Master Ordinance to exercise all necessary power and authority to establish, fix, increase, impose and collect rates and charges for the use and services of the City's water and sewer system in the amounts required to comply with covenants made pursuant to the Master Ordinance ("Rate Order Authority"), together with other available funds (including payments from the Authorities). In consideration of the design, construction and acquisition by CWA of the Luce Bayou Project, the City agrees to cause the financing of the Luce Bayou Project through its unconditional obligation of the City to pay Debt Service solely from the Pledged Revenues as set forth in this Article III, without demand, notice, or counterclaim. The City hereby acknowledges that through its Rate Order Authority the City has the authority to and is obligated by entering into this Agreement to maintain rates and charges for its water and sewer system, together with other available funds

(including payments from the Authorities) sufficient to pay the Debt Service from the Pledged Revenues.

Section 3.03. Construction Costs--Plan of Construction Financing. The Parties anticipate that Construction Costs will be financed from Pledged Revenues under the "State Participation Program." The City and CWA shall agree upon, in one or more Supplemental Agreements, the terms and conditions for financing the cost of constructing the Luce Bayou Project. The City agrees that it will secure Pledged Revenues that may be pledged to CWA in a Supplemental Agreement that provides for such Pledged Revenues to be used to pay Debt Service on any Bonds issued by CWA for the construction of the Luce Bayou Project. CWA agrees that, with respect to financing of the construction of the Luce Bayou Project, it shall use its best efforts to issue Bonds secured by Pledged Revenues from the City from a Supplemental Agreement, however, in addition to or instead of such a financing, CWA reserves the right to utilize other financing sources (subject to City consent) that would result in the most economical financing or an overall savings for the total Costs of the Luce Bayou Project. Such financing sources may include other state funding programs, grant funds, or other City or CWA revenues.

Section 3.04. Debt Service on CWA's Bonds. With respect to the WIF Bonds, and, if the City and CWA enter into an agreement pursuant to Section 3.03, with respect to Bonds, the City agrees, so long as the WIF Bonds or Bonds (including refunding bonds) issued by CWA remain outstanding, the City shall remit, with the approval of the City to provide funds for any aspect of the Luce Bayou Project, to the paying agent at which such WIF Bonds or Bonds are payable, or upon the request of CWA, to the securities depository for the WIF Bonds or Bonds, the respective sums necessary to

pay the portion of Debt Service on the WIF Bonds or Bonds, comprising principal and interest thereon at the respective times and in the respective amounts as fixed and prescribed in the bond resolution under authority of which said WIF Bonds or Bonds are issued by CWA. CWA agrees to obtain consent from the City prior to issuing any refunding Bonds, or before entering into any credit agreement or other obligation authorized under Texas Government Code, Chapter 1371 with respect to the WIF Bonds or any other Bonds. Promptly after the WIF Bonds or each series of original or refunding Bonds is issued, CWA shall furnish the City a schedule of payments to be made on the WIF Bonds or such series of Bonds.

Section 3.05. Bond Reserve Funds Payments. It is the intent of the Parties that any reserve funds required in connection with the issuance of future Bonds will be funded with Bond proceeds. The City shall also pay as Debt Service to CWA such sums not financed with Bond proceeds as are necessary to restore an amount equal to any bond reserve fund requirement in any bond reserve fund created in the bond resolution authorizing the issuance of such Bonds if there is an unanticipated draw on any bond reserve fund required to pay Debt Service on any future Bonds. Such payments shall be made at such times and in such amounts as provided in the bond resolution authorizing the Bonds. CWA will consider using Available CWA Revenues for reserves if appropriate.

At no time will the amount held in any reserve fund exceed the amount authorized for a "bona fide debt service fund" for tax-exempt obligations, and, to the extent not required to pay rebate amounts to the United States, surplus or other remaining amounts in the reserve funds will be applied upon the final maturities of

principal of and interest on the bonds to pay principal of and interest then due, so that on final maturity of the Bonds no balances will remain in any reserve fund.

Section 3.06. Obligation Expenses. The City shall also pay Obligation Expenses as part of Debt Service as directed by CWA. CWA shall either create a separate fund or establish a subaccount in another CWA fund into which the payments shall be deposited. Moneys in the fund or subaccount shall be used only to pay Obligation Expenses.

Section 3.07. Arbitrage Required to Be Rebated. It is the intent of the parties hereto that funds and accounts will be managed to minimize rebate payments, and so that payments are matched to earnings. To the extent practicable, Bonds will be issued so that construction funds are expected to be held for periods which qualify for rebate exceptions. Earnings on construction funds will be held until the end of the construction period, and following a rebate calculation with respect to each series of Bonds at the end of such period, will be applied *first*, (if required) to pay rebate amounts, *second*, to pay additional Luce Bayou Project Costs, and *third*, to pay Debt Service. To the extent of any earnings on any debt service or debt service reserve fund which represent surplus in such funds, such surplus will be applied at least annually *first*, (if required) to pay rebate amounts, and *second*, to pay Debt Service.

If CWA does not have funds available for such purposes, the City shall also pay to CWA as part of Debt Service for deposit into any rebate fund created in a bond resolution (or, at the option of the City, pay directly to the United States Treasury Department on behalf of CWA if the City receives CWA's counsel's opinion concurring with the amount to be paid) an amount equal to the rebate amount on gross proceeds of the WIF Bonds or any Bonds which are issued by CWA with the approval of the City to

provide funds to design, construct or acquire the Luce Bayou Project required to be rebated by CWA to the United States Treasury Department, if any, in order to maintain the exemption of interest on the WIF Bonds or Bonds from federal income taxes. CWA agrees to the extent reasonably practicable and cost effective to draw amounts for construction in a manner that minimizes the likelihood of rebate payments. CWA shall maintain an accounting of such arbitrage required to be rebated, and shall furnish to the City (a) a calculation of payments to be made by the City (prepared in a manner and by a firm acceptable to CWA and the City) as soon as possible, in no event less than 15 days, prior to the date such payments are required to be made by CWA to the United States Treasury Department and (b) such other reports as the City may reasonably from time to time (but not more often than annually) request regarding CWA's accounting, as of the close of CWA's most recent fiscal year, for amounts required to be rebated to the United States. The City's obligation to make such payments shall not be reduced except to the extent that funds are on hand and lawfully available to CWA to make such payments when due.

Section 3.08. Covenants of Payment. CWA covenants that any interest earnings from any funds created by any bond resolutions relating to the Bonds shall be applied to Debt Service, additional Costs, or payments of rebate amounts as provided in Section 3.07.

Section 3.09. Land and Mitigation Cost-Amortization Payment. It is the intent of the City that the Authorities will pay the estimate of their Pro Rata Share of Land and Mitigation Costs to the City and that the City will pay such amounts to CWA. The Land and Mitigation Costs are estimated to be \$15,000,000. The City shall pay to CWA the Authorities' Pro Rata Share of Land and Mitigation Costs in two lump sum

payments as follows: \$3,530,000 to be paid no later than five business days after June 15, 2009, and \$1,765,000 to be paid no later than five business days after June 15, 2010. CWA agrees to maintain such payments in an interest bearing account.

If CWA incurs Land and Mitigation Costs prior to receiving payment from the City of the Authorities' Pro Rata Share of Land and Mitigation Costs, if the City fails to make its payments derived from the Authorities on a timely basis, or if any Authorities' Pro Rata Share of Land and Mitigation Costs exceed the estimated Land and Mitigation Costs, then to the extent of availability of Available CWA Funds, CWA may fund such payments and charge interest to the City until reimbursed at the prime rate then in effect accordance with the Component B Amortization Payments described in Exhibit A.

The City's Pro Rata Share of Land and Mitlgtion Costs, which CWA intends to advance on behalf of the City from Available CWA Revenues, are estimated to be advanced by CWA in two lump sum advances as follows: \$6,470,000 to be advanced no later than June 15, 2009, and \$3,235,000 to be advanced no later than June 15, 2010. As further detailed in the attached Exhibit A, during the period starting June 15, 2009 through December 15, 2016 the interest rate to be applied to the City's Pro Rata Share of Land and Mitigation Costs will be the prime rate published by the Wall Street Journal on the respective January 1 or July 1st or the next business day following the respective advance. As further described in Exhibit A, starting December 15, 2016 the interest rate will be fixed through the ultimate repayment period using the 10 year Bond Buyer Revenue Bond index on December 15, 2016. The repayment schedule will begin June 15, 2019 using the 10 year Bond Buyer Revenue Bond index from December 15, 2016. The repayment term is 20 years with once annual principal payments and twice annual interest payments. Notwithstanding anything in this Agreement to the contrary,

the City may repay the City's Pro Rata Share of the Land and Mitigation Costs owed at any time by paying the full amount of such costs plus any outstanding interest after 15 days written notice to CWA (or written waiver of such notice by CWA).

The City agrees to remit to CWA, from the Pledged Revenues, the Amortization Payment on the dates, in the manner, and in the amounts necessary to fully reimburse CWA for Land and Mitigation Costs not funded by the City from the Authorities' or City's Pro Rata Share of Land and Mitigation Costs in accordance with this Agreement, to the extent of the portion of such Project Property utilized for the Luce Bayou Project ("Component B"), all as further described in Exhibit "A" attached hereto and incorporated herein for all purposes as such Exhibit may be modified to reflect actual expenditures and payments from the City as provided in this Section.

Section 3.10. Interest Expenses-Amortization Payment.

CWA has expended or will expend prior to receiving funding from the WIF Loan Available CWA Funds for Preliminary Project Costs, which expenditures have a cost of interest due to CWA as a result of CWA advancing such funds (as further detailed in Exhibit A, "Component A"). It is the intent of the City that the Authorities will pay the estimate of their Pro Rata Share of Preliminary Project Costs Interest Expense to the City and that the City will pay such amounts to CWA. The total of such interest expense prior to the effective date of this Agreement is \$360,836. It is the intent of the City that the Authorities will pay to the City the Authorities' Pro Rata Share of Preliminary Project Costs Interest Expense, equal to \$127,375 no later than January 31, 2009, and that the City will pay such amounts to CWA within five business days thereafter.

The remaining interest expense equal to \$233,461 is the City's Pro Rata Share of the Preliminary Project Costs Interest Expense, and the City intends for CWA to continue to finance such costs using Available CWA Revenues. If CWA incurs

additional Preliminary Project Costs prior to receiving funds therefore from the WIF Loan or prior to receiving payment from the City of the Authorities' Pro Rata Share of Preliminary Project Costs Interest Expense, if the City fails to make its payments derived from the Authorities on a timely basis, or if the Authorities' Pro Rata Share of Preliminary Project Costs Interest Expense exceed the actual interest costs on the Preliminary Project Costs, then to the extent of availability of Available CWA Funds, CWA may fund such payments and charge interest to the City until reimbursed at the prime rate then in effect accordance with the Amortization Payments described in Exhibit A.

As further described in Exhibit A, during the period starting February 1, 2009 through December 15, 2016 the interest rate will be the prime rate published by the Wall Street Journal and will change semi annually on January 1 or July 1st. As further described in Exhibit A, starting December 15, 2016 the interest rate charged will be fixed through the ultimate repayment period using the 10 year Bond Buyer Revenue Bond index beginning December 15, 2016. The repayment term is 20 years with once annual principal payments and twice annual interest payments. The payment dates are December 15th and June 15th. Notwithstanding anything in this Agreement to the contrary, the City may repay the City's Pro Rata Share of the Preliminary Project Costs Interest Expense owed at any time by paying the full amount of such costs plus any outstanding interest after 15 days written notice to CWA (or written waiver of such notice by CWA).

The City agrees to remit to CWA, from the Pledged Revenues, the Amortization Payment on the dates, in the manner, and in the amounts necessary to fully reimburse CWA for the Component A interest costs not funded by the City from the Authorities'

Pro Rata Share of Preliminary Project Costs Interest Expense in accordance with this Agreement, on expenditures for Preliminary Project Costs, all as further described in Exhibit "A" attached hereto and incorporated herein for all purposes as such Exhibit may be modified to reflect actual expenditures and payments from the City as provided in this Section.

ARTICLE IV

AUDITS, ACCOUNTS, RECORDS AND REPORTS

Section 4.01. Accounts, Records, and Accounting Reports. CWA covenants and agrees that it will maintain books, records and accounts relating to the design, acquisition, and construction of the Luce Bayou Project in keeping with Generally Accepted Accounting Principles, and same shall be available for inspection by the City at reasonable hours and under reasonable circumstances.

Section 4.02. Audits, Progress of Construction. At the request of the City, CWA will have its books, records, and accounts relating to the construction of the Luce Bayou Project audited by a Certified Public Accountant. CWA shall cause its engineers to furnish to the City copies of all estimates and progress reports on construction as such estimates and reports are prepared and become available.

ARTICLE V

TERM, CONVEYANCE OF PROJECT, BONDS, PARITY NOTES, AND OTHER OBLIGATIONS AND INITIAL CONTRACT TERMINATION

Section 5.01. Term and Termination. This Projects Contract shall remain in effect until the WIF Bonds and Bonds issued by CWA to finance the Costs of the Luce Bayou Project, refunding Bonds issued in lieu of such Bonds, and the City's Amortization Payment obligations under Section 3.09, are paid. This Projects Contract may be amended, supplemented, and extended by mutual agreement of the parties, but

not in such manner as to impair the rights of the TWDB or the owners of Bonds issued by CWA and secured by a pledge of the payments to be made by the City hereunder.

Section 5.02. Completion Bonds. Subject to approval of the City Council, the City and CWA agree (i) that CWA will be able to issue additional Bonds as may be necessary to pay for completion of the Luce Bayou Project incurred in connection with the Costs of the Luce Bayou Project, to the extent of unforeseen circumstances resulting in shortfalls in available amounts for Luce Bayou Project completion, and (ii) agree to enter into such Supplemental Agreements to this Projects Contract as shall from time to time be needed to provide for the payment of principal, interest and redemption price on such completion Bonds.

ARTICLE VI

CITY COMMITMENT TO MOVE DIVERSION POINT

Section 6.01. City Commitment. The Parties acknowledge that it is a condition precedent to CWA proceeding with the construction of the Luce Bayou Project, that the City resolve any water rights or permitting issues relating to moving the diversion point on the Trinity River to a point necessary for the Luce Bayou Project to be completed and operational.

ARTICLE VII

MISCELLANEOUS

Section 7.01. Force Majeure. Except for the City's unconditional obligation to make the payments to CWA as provided in this Projects Contract, neither party shall be liable in damages or otherwise suffer any default for any delays, failures or omissions whatsoever hereunder if caused by force majeure. As used herein, the term "force majeure" includes acts of God, drought, insufficiency of water in the Trinity River, fire,

storm, flood, landslide, subsidences of land, lightning, earthquake, washout, explosion, epidemic, war, acts of enemies or belligerents, sabotage, interference by, orders of, or compliance with requests or recommendations of civil or military courts or other authorities, federal, state or local, including any agency or person appointed by any such authority or by any official thereof (whether de jure or de facto and whether acting legally or not), inability to obtain materials, strikes or other differences with labor (whether or not within the power of the party to settle the same), breakage or accident to machinery, canals, reservoirs or lines of pipe, or to any other cause (whether or not of the same class or kind as those set forth above) not due to the willful fault or gross negligence of such party, while or so long as performance is prevented by such cause and due diligence is being used to resume performance at the earliest practicable time. In any such event, prompt notice shall be given by the affected party to the other of the existence of such cause and of readiness to resume performance.

Section 7.02. Third Parties. This Projects Contract shall be for the sole and exclusive benefit of the City, CWA, the TWDB, and the owners of the WIF Bonds or the Bonds issued by CWA to finance the Costs of the Luce Bayou Project.

Section 7.03. Severability. In the event any term, covenant or condition herein contained shall be held to be invalid by any court of competent jurisdiction, such invalidity shall not affect any other term, covenant or condition herein contained, provided that such invalidity does not materially prejudice either CWA or the City in their respective rights and obligations contained in the valid terms, covenants or conditions hereof.

Section 7.04. Entire Agreement. This Projects Contract merges the prior negotiations and understandings of the parties hereto and embodies the entire

agreement of the parties, and there are not other agreements, assurances, conditions, covenants (expressed or implied) or other terms with respect to the Luce Bayou Project, whether written or verbal, antecedent or contemporaneous, with the execution hereof.

Section 7.05. Written Amendment. Unless otherwise provided herein, this Projects Contract may be amended only by written instrument duly executed on behalf of the City (by authority of an ordinance duly adopted by the City Council) and CWA.

Section 7.06. Notices. All notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third (3rd) day following deposit in a United States Postal Service post office or receptacle with proper postage affixed (certified mail, return receipt requested) addressed to the respective other party at the following address or at such other address as the receiving party may prescribe by written notice to the sending party:

To CWA:

Gary Oradat
Coastal Water Authority
One Allen Center
500 Dallas Street
Suite 2800
Houston, Texas 77002

with copies to:

Barron F. Wallace
Vinson & Elkins L.L.P.
1001 Fannin, Suite 2500
Houston, Texas 77002

To the City:

The City of Houston
611 Walker
Houston, Texas 77002
Attn: Director of Public Works and Engineering

with copies to:

Legal Department
900 Bagby, 4th Floor
Houston, Texas 77002

Section 7.07. Independent Contractor. CWA is engaged as an independent contractor, and all of the services provided for herein shall be accomplished by CWA in such capacity. Except as expressly provided herein, the City will have no control or supervisory powers as to the manner or method of CWA's performance of the subject matter of this Projects Contract. All personnel supplied or used by CWA shall be deemed employees or subcontractors of CWA and will not be considered employees, agents or subcontractors of the City for any purpose whatsoever. CWA shall be solely responsible for the compensation of all such personnel, for the withholding of income, social security and other payroll taxes and for the coverage of all workers' compensation benefits.

Section 7.08. Non-Waiver. Failure of either party hereto to insist on the strict performance of any of the agreements herein or to exercise any rights or remedies accruing hereunder upon default or failure of performance shall not be considered a waiver of the right to insist on, and to enforce by any appropriate remedy, strict compliance with any other obligation hereunder or to exercise any right or remedy occurring as a result of any future default or failure of performance.

Section 7.09. Remedies Cumulative. Except as otherwise provided herein, the rights and remedies contained in this Projects Contract shall not be exclusive, but shall be cumulative of all rights and remedies now or hereafter existing whether by statute, at law, or in equity; provided, however, that neither party may terminate its duties under this Projects Contract except in accordance with the provisions hereof.

EXECUTED in multiple counterparts at Houston, Texas, as of the date first above written.

CITY OF HOUSTON, TEXAS

By: Bill White
Mayor *Amarda Webster*

ATTEST:

Barbara J...
ACTING ASSISTANT CITY SECRETARY

COUNTERSIGNED:

Annise D. Parker
City Controller *Gene Polk*

APPROVED AS TO FORM:

Erin Beep
Senior Assistant City Attorney

APPROVED:

DA Orlando Ontiveros
Director
Department of Public Works
and Engineering

COASTAL WATER AUTHORITY

By: [Signature]
President
Board of Directors

ATTEST:

[Signature]
Secretary/Treasurer
Board of Directors

EXHIBIT A
AMORTIZATION PAYMENT SCHEDULE

Calculation of Payments

The City will make the Amortization Payments as follows:

The Amortization Payments will consist of the sum of two components, Component A and Component B. Component A consists of the cost of interest on the expenditure of Available CWA Funds expended by CWA for Preliminary Project Costs. Component B consists of Land and Mitigation Costs, to the extent of the portion of such Project Property utilized for the Luce Bayou Project, including carrying costs due to deferral of payments associated with Land and Mitigation Costs.

Component A

Preliminary Project Costs were or will be advanced by CWA from Available CWA Revenues prior to funding of the WIF Bonds, and will be reimbursed by proceeds from the WIF Bonds. The table below indicates the amounts and the dates for such Preliminary Project Costs.

FOR ILLUSTRATION PURPOSES ONLY

Coastal Water Authority

Component A - SEAL's Funding of Development Costs
 Calculation of Carrying Costs to 12/15/2008
 Estimated as of Jan. 7, 2009

Timing, rates, and other factors may, and probably will, impact the values reflected in these schedules. The schedules should be adjusted over time as the actual timing and rates become known and can replace related assumptions.

Date	Amount	Source	Beg. Bal.	Applicable Rate*	Accrual	Compounding	End Bal.
6/13/2006	200,000.00	Per CWA records	-				200,000.00
6/15/2006			200,000.00	8.000%	88.89	88.89	200,088.89
7/11/2006	92,410.59	Per CWA records	200,088.89	8.000%	1,156.07		292,499.48
8/18/2006	111,340.01	Per CWA records	292,499.48	8.000%	2,405.00		403,839.49
9/13/2006	138,436.07	Per CWA records	403,839.49	8.000%	2,243.55		540,275.56
10/10/2006	203,644.83	Per CWA records	540,275.56	8.000%	3,241.65		743,920.09
11/14/2006	202,722.96	Per CWA records	743,920.09	8.000%	5,620.73		946,643.05
12/13/2006	161,356.85	Per CWA records	946,643.05	8.000%	6,100.59		1,107,969.90
12/15/2006			1,107,969.90	8.000%	492.44	21,260.03	1,129,259.93
1/10/2007	175,703.05	Per CWA records	1,129,259.93	8.000%	6,273.67		1,304,962.88
2/14/2007	133,077.80	Per CWA records	1,304,962.88	8.000%	9,859.72		1,438,040.78
3/14/2007	98,452.14	Per CWA records	1,438,040.78	8.000%	9,586.94		1,536,492.92
4/11/2007	123,096.89	Per CWA records	1,536,492.92	8.000%	9,218.86		1,659,589.81
5/9/2007	154,863.30	Per CWA records	1,659,589.81	8.000%	10,326.34		1,814,453.11
6/13/2007	87,516.77	Per CWA records	1,814,453.11	8.000%	13,709.20		1,901,969.88
6/18/2007			1,901,969.88	8.000%	845.32	59,820.14	1,961,790.02
7/11/2007	61,221.10	Per CWA records	1,961,790.02	8.250%	11,689.00		2,023,011.12
8/16/2007	51,398.93	Per CWA records	2,023,011.12	8.250%	15,762.63		2,074,410.05
9/12/2007	48,556.10	Per CWA records	2,074,410.05	8.250%	12,835.41		2,122,966.15
10/10/2007	38,969.78	Per CWA records	2,122,966.15	8.250%	13,622.37		2,161,955.93
11/21/2007	38,037.70	Per CWA records	2,161,955.93	8.250%	20,313.38		2,199,969.63
12/15/2007			2,199,969.63	8.250%	12,099.96	86,322.75	2,286,316.38
12/22/2007	29,020.36	Per CWA records	2,286,316.38	8.250%	3,667.63		2,315,336.74
1/9/2008	45,021.32	Per CWA records	2,315,336.74	8.250%	9,020.17		2,360,358.06
2/13/2008	34,378.68	Per CWA records	2,360,358.06	8.250%	18,391.12		2,394,736.74
3/12/2008	29,775.83	Per CWA records	2,394,736.74	8.250%	15,915.02		2,424,512.57
4/9/2008	35,959.62	Per CWA records	2,424,512.57	8.250%	15,001.67		2,460,472.19
5/14/2008	51,764.20	Per CWA records	2,460,472.19	8.250%	19,735.04		2,512,236.39
6/18/2008			2,512,236.39	8.250%	17,847.35	99,578.00	2,611,814.39
6/18/2008	42,828.09	Per CWA records	2,611,814.39	5.000%	1,086.26		2,654,642.48
7/23/2008	64,357.34	Per CWA records	2,654,642.48	5.000%	12,904.51		2,718,999.82
8/27/2008	70,394.03	Per CWA records	2,718,999.82	5.000%	12,839.72		2,789,393.85
9/15/2008	117,727.48	Per CWA records	2,789,393.85	5.000%	6,973.48		2,907,121.33
10/15/2008	206,881.45	Per CWA records	2,907,121.33	5.000%	12,113.01		3,114,002.78
11/15/2008	134,714.00	Per CWA records	3,114,002.78	5.000%	12,975.01		3,248,716.78
12/15/2008	18,353.03	Assumed	3,248,716.78	5.000%	13,536.32	72,430.31	3,339,500.12
1/15/2009	-		3,339,500.12	5.000%	13,914.58		3,339,500.12
1/31/2009			3,339,500.12	5.000%	7,421.11	21,335.70	3,360,835.82
TOTAL	3,060,000.00				360,635.62	360,835.92	3,360,835.82

* Prime Rates (per Bloomberg)	1/31/2009 Repayment of Expenditures by WIF Loan Proceeds (\$3 million)	(3,000,000.00)
6/13/2006 8.00%		
6/15/2006 8.00%	1/31/2009 Balance in Carrying Costs - Component A	360,835.82
12/15/2006 8.25%		
6/15/2007 8.25%		
12/17/2007 7.25%	Authorities' Ratio	35.30%
6/16/2008 5.00%	Authorities' Share	127,375.04
	City's Share at 1/31/2009	233,460.78

To the extent there are further distributions by CWA for such Component A costs prior to funding of the WIF Bonds these expenditures will be recorded by CWA in a similar table, which will be provided to the City at the time the WIF Bonds is closed.

Carrying costs associated with Component A costs incurred prior to funding and reimbursement by the WIF Bonds will not be reimbursed by the WIF Bonds proceeds. These carrying costs will continue to accrue at the rates as provided in the following table, as such rates are determined in accordance with the footnotes appended to such table, until repaid by the City through this Component A of the Amortization Payments:

FOR ILLUSTRATION PURPOSES ONLY

Coastal Water Authority
Houston Comb. Utility
Contract Payments
Draft Calculation
Estimated as of Jan. 7, 2009

Timing, rates, and other factors may, and probably will, impact the values reflected in these schedules. The schedules should be adjusted over time as the actual timing and rates become known and can replace related assumptions.

Component A - Carrying Costs on Development Cost Advances (City Share Only, 64.70%)

Payment #	Date	Beginning Balance	Rate	Carry Cost Repayment [1], [5]	Accrued Interest	Interest Payment	Total Payment [2]	Ending Balance
	1/31/2009							233,481 [A]
	6/15/2009	233,481	7.000%	[3], [5]	6,128			239,599
	12/15/2009	239,599	7.000%		8,385			247,975
	6/15/2010	247,975	7.000%		8,679			256,654
	12/15/2010	256,654	7.000%		8,983			265,637
	6/15/2011	265,637	7.000%		9,297			274,934
	12/15/2011	274,934	7.000%		9,623			284,557
	6/15/2012	284,557	7.000%		9,959			294,516
	12/15/2012	294,516	7.000%		10,308			304,824
	6/15/2013	304,824	7.000%		10,669			315,493
	12/15/2013	315,493	7.000%		11,042			326,536
	6/15/2014	326,536	7.000%		11,429			337,964
	12/15/2014	337,964	7.000%		11,829			349,793
	6/15/2015	349,793	7.000%		12,243			362,036
	12/15/2015	362,036	7.000%		12,671			374,707
	6/15/2016	374,707	7.000%		13,115			387,822
	12/15/2016	387,822	7.000%		13,574			401,395
	6/15/2017	401,395	5.500%	[4], [5]	11,038			412,434
	12/15/2017	412,434	5.500%		11,342			423,776
	6/15/2018	423,776	5.500%		11,654			435,430
	12/15/2018	435,430	5.500%		11,974			447,404
1	6/15/2019	447,404	5.500%	[6]	6,278	12,304	18,581	441,125
2	12/15/2019	441,126	5.500%		6,450	12,131	18,581	434,676
3	6/15/2020	434,676	5.500%		6,628	11,954	18,581	428,048
4	12/15/2020	428,048	5.500%		6,810	11,771	18,581	421,238
5	6/15/2021	421,238	5.500%		6,997	11,584	18,581	414,241
6	12/15/2021	414,241	5.500%		7,190	11,392	18,581	407,051
7	6/15/2022	407,051	5.500%		7,387	11,194	18,581	399,663
8	12/15/2022	399,663	5.500%		7,591	10,991	18,581	392,073
9	6/15/2023	392,073	5.500%		7,799	10,782	18,581	384,273
10	12/15/2023	384,273	5.500%		8,014	10,568	18,581	376,260
11	6/15/2024	376,260	5.500%		8,234	10,347	18,581	368,025
12	12/15/2024	368,025	5.500%		8,461	10,121	18,581	359,565
13	6/15/2025	359,565	5.500%		8,693	9,888	18,581	350,871
14	12/15/2025	350,871	5.500%		8,932	9,649	18,581	341,939
15	6/15/2026	341,939	5.500%		9,178	9,403	18,581	332,761
16	12/15/2026	332,761	5.500%		9,430	9,151	18,581	323,330
17	6/15/2027	323,330	5.500%		9,690	8,892	18,581	313,641
18	12/15/2027	313,641	5.500%		9,958	8,625	18,581	303,684
19	6/15/2028	303,684	5.500%		10,230	8,351	18,581	293,454
20	12/15/2028	293,454	5.500%		10,511	8,070	18,581	282,943
21	6/15/2029	282,943	5.500%		10,800	7,781	18,581	272,143
22	12/15/2029	272,143	5.500%		11,097	7,484	18,581	261,045
23	6/15/2030	261,045	5.500%		11,403	7,179	18,581	249,643
24	12/15/2030	249,643	5.500%		11,716	6,865	18,581	237,926
25	6/15/2031	237,926	5.500%		12,038	6,543	18,581	225,888
26	12/15/2031	225,888	5.500%		12,369	6,212	18,581	213,519
27	6/15/2032	213,519	5.500%		12,710	5,872	18,581	200,809
28	12/15/2032	200,809	5.500%		13,059	5,522	18,581	187,750
29	6/15/2033	187,750	5.500%		13,418	5,163	18,581	174,332
30	12/15/2033	174,332	5.500%		13,787	4,794	18,581	160,544
31	6/15/2034	160,544	5.500%		14,166	4,415	18,581	146,378
32	12/15/2034	146,378	5.500%		14,556	4,025	18,581	131,822
33	6/15/2035	131,822	5.500%		14,956	3,625	18,581	116,866
34	12/15/2035	116,866	5.500%		15,368	3,214	18,581	101,498
35	6/15/2036	101,498	5.500%		15,790	2,791	18,581	85,708
36	12/15/2036	85,708	5.500%		16,224	2,357	18,581	69,404
37	6/15/2037	69,404	5.500%		16,671	1,911	18,581	52,813
38	12/15/2037	52,813	5.500%		17,129	1,452	18,581	35,684
39	6/15/2038	35,684	5.500%		17,600	981	18,581	18,084
40	12/15/2038	18,084	5.500%		18,084	497	18,581	-
		447,404			509,794	295,851	743,254	

- [A] See separate page for calculation of 12/15/2008 balance.
- [1] Principal amortization schedule based on level estimated P + i semi-annual payments based on assumed 7.000% and 5.500% rates (see above) and 40 equal semi-annual payments.
- [2] Actual payments will float with changes in the actual interest rate.
- [3] 10-year average for Prime is 6.6% and 20-year average is 7.5%, as of Aug. 2008
- [4] 10-year average for Bond Buyer Rev Bond Index is 5.236% and 20-year average is 5.822% as of Aug 2008
- [5] Rate is reset based on published "Prime" lending rate or Bond Buyer Revenue Bond Index, as appropriate, once per year on June 15 (or next business date).
- [6] Rate and amortization are "frozen" at start of repayment period (12/15/2018), based on index at that point in time.
- [7] The rates reflected in this table are assumptions for modeling purposes only.

Component B

CWA expects to expend funds from Available CWA Revenues for Land and Mitigation Costs. The following table lists anticipated timing of such expenditures, and CWA will provide notice to the City of Land and Mitigation Costs from time to time as such expenditures occur, and CWA shall update the table below to reflect such changes. Land and Mitigation Cost expenditures may not be funded from proceeds of the WIF Bonds. Similar to Component A, CWA will incur carrying costs associated with the Land and Mitigation Costs for which the City will not compensate CWA for a number of years, until the Amortization Payments commence. The Land and Amortization Costs as listed and the carrying costs therefore will accrue at the rates as provided in the following table, as such rates are determined in accordance with the footnotes appended to such table, until repaid by the City through this Component B of the Amortization Payments:

FOR ILLUSTRATION PURPOSES ONLY

Coastal Water Authority
Houston Comb. Utility
Contract Payments
Draft Calculation
Estimated as of Jan. 7, 2009

Timing, rates, and other factors may, and probably will, impact the values reflected in these schedules. The schedules should be adjusted over time as the actual timing and rates become known and can replace related assumptions.

Component B - Land/ROW/Mitigation Purchases (City Share Only, 64.76%)

Payment #	Date	Beginning Balance	Rate	Principal Distribution	Principal and Carry Cost Repayment [1], [6]	Accrued Interest	Interest Payment	Total Payment [2]	Ending Balance
	1/31/2009								
	6/15/2009		7.000%	[3], [5]	6,470,000				6,470,000
	12/15/2009	6,470,000	7.000%			226,450			6,696,450
	6/15/2010	6,696,450	7.000%		3,235,000	234,376			10,165,826
	12/15/2010	10,165,826	7.000%			355,804			10,521,630
	6/15/2011	10,521,630	7.000%			368,257			10,889,887
	12/15/2011	10,889,887	7.000%			381,146			11,271,033
	6/15/2012	11,271,033	7.000%			394,486			11,665,519
	12/15/2012	11,665,519	7.000%			408,293			12,073,812
	6/15/2013	12,073,812	7.000%			422,583			12,496,395
	12/15/2013	12,496,395	7.000%			437,374			12,933,769
	6/15/2014	12,933,769	7.000%			452,662			13,386,431
	12/15/2014	13,386,431	7.000%			468,528			13,854,977
	6/15/2015	13,854,977	7.000%			484,924			14,339,901
	12/15/2015	14,339,901	7.000%			501,867			14,841,768
	6/15/2016	14,841,768	7.000%			519,463			15,361,231
	12/15/2016	15,361,231	7.500%			537,644			15,898,875
	6/15/2017	15,898,875	5.500%	[4], [5]		437,220			16,336,125
	12/15/2017	16,336,125	5.500%			449,243			16,785,368
	6/15/2018	16,785,368	5.500%			461,998			17,246,966
	12/15/2018	17,246,966	5.500%			474,292			17,721,257
1	6/15/2019	17,721,257	5.500%	[6]		248,856	487,335	735,991	17,472,601
2	12/15/2019	17,472,601	5.500%			255,494	480,497	735,991	17,217,107
3	6/15/2020	17,217,107	5.500%			262,520	473,470	735,991	16,954,587
4	12/15/2020	16,954,587	5.500%			269,740	466,251	735,991	16,684,847
5	6/15/2021	16,684,847	5.500%			277,157	458,833	735,991	16,407,690
6	12/15/2021	16,407,690	5.500%			284,779	451,211	735,991	16,122,911
7	6/15/2022	16,122,911	5.500%			292,611	443,380	735,991	15,839,300
8	12/15/2022	15,839,300	5.500%			300,657	435,333	735,991	15,556,643
9	6/15/2023	15,556,643	5.500%			308,925	427,065	735,991	15,274,717
10	12/15/2023	15,274,717	5.500%			317,421	418,570	735,991	14,993,296
11	6/15/2024	14,993,296	5.500%			326,150	409,841	735,991	14,712,145
12	12/15/2024	14,712,145	5.500%			335,119	400,872	735,991	14,431,027
13	6/15/2025	14,431,027	5.500%			344,335	391,666	735,991	14,150,022
14	12/15/2025	14,150,022	5.500%			353,804	382,187	735,991	13,869,027
15	6/15/2026	13,869,027	5.500%			363,534	372,457	735,991	13,588,022
16	12/15/2026	13,588,022	5.500%			373,531	362,460	735,991	13,307,027
17	6/15/2027	13,307,027	5.500%			383,803	352,188	735,991	13,026,022
18	12/15/2027	13,026,022	5.500%			394,358	341,633	735,991	12,745,027
19	6/15/2028	12,745,027	5.500%			405,202	330,788	735,991	12,464,022
20	12/15/2028	12,464,022	5.500%			416,345	319,645	735,991	12,183,027
21	6/15/2029	12,183,027	5.500%			427,785	308,196	735,991	11,902,022
22	12/15/2029	11,902,022	5.500%			439,569	296,451	735,991	11,621,027
23	6/15/2030	11,621,027	5.500%			451,647	284,343	735,991	11,340,022
24	12/15/2030	11,340,022	5.500%			464,068	271,923	735,991	11,059,027
25	6/15/2031	11,059,027	5.500%			476,829	259,181	735,991	10,778,022
26	12/15/2031	10,778,022	5.500%			489,942	246,048	735,991	10,497,027
27	6/15/2032	10,497,027	5.500%			503,416	232,575	735,991	10,216,022
28	12/15/2032	10,216,022	5.500%			517,260	218,731	735,991	9,935,027
29	6/15/2033	9,935,027	5.500%			531,484	204,506	735,991	9,654,022
30	12/15/2033	9,654,022	5.500%			546,100	189,891	735,991	9,373,027
31	6/15/2034	9,373,027	5.500%			561,118	174,873	735,991	9,092,022
32	12/15/2034	9,092,022	5.500%			576,546	159,442	735,991	8,811,027
33	6/15/2035	8,811,027	5.500%			592,404	143,587	735,991	8,530,022
34	12/15/2035	8,530,022	5.500%			608,695	127,298	735,991	8,249,027
35	6/15/2036	8,249,027	5.500%			625,434	110,557	735,991	7,968,022
36	12/15/2036	7,968,022	5.500%			642,633	93,357	735,991	7,687,027
37	6/15/2037	7,687,027	5.500%			660,308	75,685	735,991	7,406,022
38	12/15/2037	7,406,022	5.500%			678,464	57,527	735,991	7,125,027
39	6/15/2038	7,125,027	5.500%			697,122	38,869	735,991	6,844,022
40	12/15/2038	6,844,022	5.500%			716,293	19,698	735,991	6,563,027
					9,705,000	17,721,257	19,734,626	11,716,369	28,436,826

- [1] Principal amortization schedule based on level estimated P + I semi-annual payments based on assumed 7.000% and 5.000% rates (see above) and 40 equal semi-annual payments.
- [2] Actual payments will float with changes in the actual interest rate.
- [3] 10-year average for Prime is 6.3% and 20-year average is 7.5%, as of Aug. 2006
- [4] 10-year average for Bond Buyer Rev Bond Index is 5.236% and 20-year average is 5.882% as of Aug 2006
- [5] Rate is reset based on published "Prime" lending rate or Bond Buyer Revenue Bond Index, as appropriate, once per year on June 15 (or next business date).
- [6] Rate and amortization are "frozen" at start of repayment period (12/15/2018), based on index at that point in time.
- [7] The rates reflected in this table are assumptions for modeling purposes only.

City of Houston, Texas Ordinance No. 2009-52

AN ORDINANCE APPROVING AND AUTHORIZING THE FIRST SUPPLEMENT TO EACH OF THE WATER SUPPLY CONTRACTS BETWEEN THE CITY OF HOUSTON AND THE NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY, THE CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY, THE NORTH FORT BEND WATER AUTHORITY AND THE WEST HARRIS COUNTY REGIONAL WATER AUTHORITY; MAKING VARIOUS FINDINGS AND PROVISIONS RELATING TO THE SUBJECT; AND DECLARING AN EMERGENCY.

* * * *

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF HOUSTON, TEXAS:

Section 1. The City Council hereby approves and authorizes the contracts, agreements or other undertaking described in the title of this Ordinance, in substantially the form as shown in the document which is attached hereto and incorporated herein by this reference. The Mayor, or, in the absence of the Mayor, the Mayor Pro Tem is hereby authorized to execute such documents and all related documents on behalf of the City of Houston. The City Secretary, or in the absence of the City Secretary, any Assistant City Secretary is hereby authorized to attest to all such signatures and to affix the seal of the City to all such documents.

Section 2. The Mayor is hereby authorized to take all actions necessary to effectuate the City's intent and objectives in approving such agreement, agreements or other undertaking described in the title of this ordinance, in the event of changed circumstances.

Section 3. The City Attorney is hereby authorized to take all action necessary to enforce all legal obligations under said contract without further authorization from Council.

Section 4. There exists a public emergency requiring that this Ordinance be passed finally on the date of its introduction as requested in writing by the Mayor; therefore, this Ordinance shall be passed finally on such date and shall take effect immediately upon its passage and approval by the Mayor; however, in the event that the Mayor fails to sign this Ordinance within five days after its passage and adoption, it shall take effect in accordance with Article VI, Section 6, Houston City Charter.

PASSED AND ADOPTED this 28th day of January, 2009.

APPROVED this _____ day of _____, 20____.

Mayor of the City of Houston, Texas

Pursuant to Article VI, Section 6, Houston City Charter, the effective date of the foregoing Ordinance is FEB 03 2008.

Barbara Jones
ACTING ASSISTANT CITY SECRETARY

(Prepared by Legal Dept. *W. Beaucy*)
 (EWB:bt 01/12/09) Senior Assistant City Attorney
 (Requested by Michael S. Marcotte, P.E., Director Department of Public Works & Engineering)
 (L.D. File Nos. 0800200009002, 0800600063003, 0800700146002, 0800700133002)

AYE	NO	
✓		MAYOR WHITE
••••	••••	COUNCIL MEMBERS
✓		LAWRENCE
✓		JOHNSON
✓		CLUTTERBUCK
✓		ADAMS
✓		SULLIVAN
✓		KHAN
	ABSENT	HOLM
		<i>Vacant</i>
✓		RODRIGUEZ
✓		BROWN
✓		LOVELL
✓		NORIEGA
✓		GREEN
✓		JONES
CAPTION	ADOPTED	

CAPTION PUBLISHED IN DAILY COURT
 REVIEW
 DATE: FEB 03 2008

Controller's Office

To the Honorable Mayor and City Council of the City of Houston, Texas:

I hereby certify, with respect to the money required for the contract, agreement, obligation or expenditure contemplated by the ordinance set out below that:

- () Funds have been encumbered out of funds previously appropriated for such purpose.
- () Funds have been certified and designated to be appropriated by separate ordinance to be approved prior to the approval of the ordinance set out below.
- () Funds will be available out of current or general revenue prior to the maturity of any such obligation.
- () No pecuniary obligation is to be incurred as a result of approving the ordinance set out below.
- () The money required for the expenditure or expenditures specified below is in the treasury, in the fund or funds specified below, and is not appropriated for any other purposes.
- () A certificate with respect to the money required for the expenditure or expenditures specified below is attached hereto and incorporated herein by this reference.
- () Other - Grant Funds Available

Annise D. Parker
Janet Call

City Controller of the City of Houston, Texas

Date: 1-27, 2009

FUND REF: 8319200.520111

AMOUNT: \$ 3,657,375.00 FmBB 300005776
ENCUMB. NO.:

City of Houston, Texas Ordinance No. 2009-53

AN ORDINANCE APPROPRIATING THE SUM OF \$3,657,375.00 OUT OF THE WATER AND SEWER CONTRIBUTED CAPITAL FUND; AUTHORIZING A PLEDGE FOR ADDITIONAL FUNDS OUT OF THE WATER AND SEWER SYSTEM GENERAL PURPOSE FUND ESTABLISHED UNDER ORDINANCE NO. 2004-299; APPROVING AND AUTHORIZING THE PROJECTS CONTRACT BETWEEN THE CITY OF HOUSTON AND THE COASTAL WATER AUTHORITY FOR THE CONSTRUCTION OF THE LUCE BAYOU INTERBASIN TRANSFER PROJECT; MAKING VARIOUS FINDINGS AND PROVISIONS RELATING TO THE SUBJECT; AND DECLARING AN EMERGENCY.

* * * *

WHEREAS, the City of Houston owns water rights in the Trinity River Basin; and

WHEREAS, currently Trinity River water is transported to the Houston metropolitan area through the Coastal Water Authority's Main Canal; and

WHEREAS, the City Council has determined that it is expedient to construct a second conveyance system which will pump Trinity River water into Lake Houston; and

WHEREAS, the City Council has determined that the Coastal Water Authority has the competence and experience to deliver the Luce Bayou Interbasin Transfer Project for the City of Houston;

NOW, THEREFORE,

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF HOUSTON, TEXAS:

Section 1. That the City Council hereby ratifies and adopts the findings and recitals contained in the Preamble of this Ordinance.

Section 2. The City Council hereby appropriates the sum or sums of money set out in the title of this Ordinance, out of the respective fund or funds set out in such title for the purpose or purposes set out in such title.

* Section 3. The City Council authorizes the pledge of payments to the Coastal Water Authority for the design and construction of the Luce Bayou Interbasin Transfer Project, which payments shall come solely from Houston's General Purpose Fund established under City of Houston Ordinance No. 2004-299, including any amendments thereto.

Section 4. The City Council hereby approves and authorizes the contract, agreement or other undertaking described in the title of this Ordinance, in substantially the form as shown in the document which is attached hereto and incorporated herein by this reference. The Mayor is hereby authorized to execute such document and all related documents on behalf of the City of Houston. The City Secretary is hereby authorized to attest to all such signatures and to affix the seal of the City to all such documents.

Section 5. The Mayor is hereby authorized to take all actions necessary to effectuate the City's intent and objectives in approving such agreement, agreements or other undertaking described in the title of this ordinance, in the event of changed circumstances.

Section 6. The City Attorney is hereby authorized to take all action necessary to enforce all legal obligations under said contract without further authorization from Council.

Section 7. There exists a public emergency requiring that this Ordinance be passed finally on the date of its introduction as requested in writing by the Mayor; therefore, this Ordinance shall be passed finally on such date and shall take effect immediately upon its passage and approval by the Mayor; however, in the event that the Mayor fails to sign this Ordinance within five days after its passage and adoption, it shall take effect in accordance with Article VI, Section 6, Houston City Charter.

PASSED AND ADOPTED this 28th day of January, 2009.

APPROVED this _____ day of _____, 20____.

Mayor of the City of Houston, Texas

Pursuant to Article VI, Section 6, Houston City Charter, the effective date of the foregoing Ordinance is FEB 03 2008.

Barbara J...
ACTING ASSISTANT CITY SECRETARY

[Signature]
(Prepared by Legal Dept. _____
EWB:bt:01/23/2009) Senior Assistant City Attorney
(Requested by Michael S. Marcotte, P.E., D.WRE, BCEE, Director)
(L.D. File No. 070080000301)

AYE	NO	
✓		MAYOR WHITE
....	COUNCIL MEMBERS
✓		LAWRENCE
✓		JOHNSON
✓		CLUTTERBUCK
✓		ADAMS
✓		SULLIVAN
✓		KHAN
	ABSENT	HOLM
		<i>Vacant</i>
✓		RODRIGUEZ
✓		BROWN
✓		LOVELL
✓		NORIEGA
✓		GREEN
✓		JONES
CAPTION	ADOPTED	

CAPTION PUBLISHED IN DAILY COURT
REVIEW
DATE: FEB 03 2008

073168
2013-0030

**FIRST SUPPLEMENT TO PROJECT CONTRACT
BETWEEN
CITY OF HOUSTON, TEXAS,
AND THE COASTAL WATER AUTHORITY**

This First Supplement to Project Contract (the "*First Supplement*") amending that certain Project Contract (the "*Original Project Contract*"; as amended hereby, the "*Project Contract*") between the City of Houston, Texas (the "*City*"), a home-rule city, and Coastal Water Authority ("*CWA*"; collectively the City and CWA are herein the "*Parties*"), a political subdivision and conservation district of the State of Texas, dated January 28, 2009, is entered into as of the date of the final countersignature hereto.

RECITALS

1. The Parties entered into the Original Project Contract to provide for the planning, design, property acquisition, and construction and financing of the Luce Bayou Interbasin Transfer Project (the "*Luce Bayou Project*").

2. The Parties desire to amend the Original Project Contract to provide for the completion of the design phase of the Luce Bayou Project, including the bidding of construction contracts, and the initial phases of construction.

3. The Parties recognize that the Phase I Preliminary Design is complete, and that the Land and Mitigation Costs are ongoing. CWA and the City desire to finance the completion of the Phase II Final Design, and to commence construction of the Luce Bayou Project. The most financially advantageous way of financing the Project Costs is through the Master Agreement authorized by CWA on January 9, 2013 (as hereafter amended or supplemented, the "*Master Agreement*"), between CWA and the Texas Water Development Board ("*TWDB*").

4. City Council adopted City Ordinance No. 2004-299 on April 21, 2004 (the "*Master Ordinance*") to establish and finance the City's Combined Utility System and set forth a number of covenants between the City and subsequent holders of Combined Utility System bonds. Section 5.9 of the Master Ordinance pledges payments from funds in the General Purpose Fund to pay for various costs, including the costs of the Luce Bayou Project. The City is further obligated, pursuant to Section 7.2 of the Master Ordinance to exercise all necessary power and authority to establish, fix, increase, impose and collect rates and charges for the use and services of the City's water and sewer system in the amounts required to comply with covenants made pursuant to the Master Ordinance ("*Rate Order Authority*"), together with other available funds (including payments from the Authorities).

5. CWA will enter into a Master Agreement for the acquisition, sale, transfer, and lease of interests in water supply projects using the State Participation Account of the Texas Water Development Fund II, to fund a portion of the Project Costs.

6. The Parties further intend to enter into one or more additional Supplements to the Project Contract for funding Project Costs and for one or more contracts for the operation and maintenance of the Luce Bayou Project.

7. CWA's unconditional obligation to purchase 100% of the TWDB's interest in the Luce Bayou Project is secured solely by payments from the City of Pledged Revenues.

SUPPLEMENTAL AGREEMENT

For and in consideration of the respective promises and the mutual covenants and benefits hereinafter set forth, the City and CWA agree as follows:

ARTICLE I

DEFINITIONS

SECTION 1.1. Original Project Contract Definitions.

Capitalized terms used herein and not otherwise defined herein have the meanings assigned to such terms in the Recitals or in Section 1.01 of the Original Project Contract. Capitalized terms defined in the Recitals hereto have the meanings assigned to such terms in the Recitals.

SECTION 1.2. Supplemental Definitions.

The following capitalized terms used herein have the meanings assigned to such terms in the following definitions.

"Call Date" means the date prior to which CWA cannot purchase the TWDB's portion of the Luce Bayou Project, as set forth in the Payment Schedules to the Master Agreement.

"City Attorney" means the City of Houston City Attorney or his or her designee.

"Construction Fund" means the separate account created under the Master Agreement and maintained at the depository bank of CWA for the purpose of paying and accounting for Project Costs, to be used only for Project Costs or for the CWA's purchase of the TWDB's interest in the Luce Bayou Project.

"Combined Utility System Fund" means all or any of the funds or accounts created under the Master Ordinance as directed in writing by the Director.

"Construction Stage" means that stage of the Luce Bayou Project that involves the physical construction of the Luce Bayou Project, including raw water intake pump station, electrical service, transmission mains, sedimentation basins, open channel canal, maintenance facility, siphons, drainage works, access roads and canal crossings, related appurtenances, and related engineering and inspection fees.

"Cost of Acquisition" means the amount of funds deposited into the Construction Fund and/or the Escrow Account by the TWDB for the acquisition of an undivided interest in the Luce Bayou Project.

“Date of Acquisition” means each date that TWDB delivers funds to the Construction Fund and/or the Escrow Account for the acquisition of an undivided interest in the Luce Bayou Project.

“Director” means the Director of the City of Houston Public Works & Engineering Department or his or her designee.

“Escrow” means the TWDB’s transfer of funds to a third-party custodian until such funds are authorized for release to CWA by the Executive Administrator.

“Escrow Account” means the account created under the Master Agreement for the TWDB’s delivery of funds to be held in Escrow upon closing for the TWDB’s acquisition of an undivided interest in the Luce Bayou Project, to be used only for Project Costs or for CWA’s purchase of the TWDB’s interest in the Luce Bayou Project.

“Executive Administrator” means the Executive Administrator of the TWDB.

“First Lien Bonds” has the meaning assigned to such term in Section 2.1 of that Certain City of Houston Ordinance No. 2004-299.

“Payment Schedules” means the payment schedule(s) attached to the Master Agreement from time to time, which show the payments that CWA is obligated to make in order to purchase the TWDB’s interest in the Luce Bayou Project. Each Payment Schedule is associated with the funds delivered by TWDB upon each advance pursuant to the Master Agreement as provided for in Section 2.1 of this First Supplement. Such Payment Schedules shall, at a minimum, detail the interest rate to be paid by CWA, the TWDB’s source of funds, and the Call Date associated with CWA’s purchase obligation.

“Project Costs” for purposes of funding under the Master Agreement, means costs of the Luce Bayou Project associated with its construction, bond issuance costs, and all other costs and expenditures which under standard principles of accounting would constitute a capital cost of the Luce Bayou Project, including specifically but not limited to: the cost of engineering design (other than Preliminary Project Costs paid or to be paid with proceeds of the WIF Bonds), supervision and inspection; the cost of testing laboratories and other professional services associated with construction of the Luce Bayou Project; abstractors’ costs; the cost of constructing the Project infrastructure; the cost of acquiring all lands and interests in land for the Luce Bayou Project (other than Land and Mitigation Costs paid or to be paid from Available CWA Revenues), including all costs associated with the planning, design, and construction of the Project. The term “Project Costs” does not include any capitalized interest, reserve funds, or operational expenses. All Project Costs hereunder shall be “Construction Costs” as defined in the Original Project Contract.

“State” means the State of Texas.

“State Participation Debt Service” has the meaning stated in Section 2.4A.

ARTICLE II

CONSTRUCTION; FACILITY PURCHASE

SECTION 2.1. *Construction; Construction Finance.*

The TWDB may purchase up to 80% of an undivided interest in the Luce Bayou Project, and will purchase an initial 35% of an undivided interest in the Luce Bayou Project. The TWDB's initial 35% interest will be financed with \$28,754,000 of Project Costs advanced under the Master Agreement to the Construction Fund or the Escrow Fund. Thereafter the TWDB may finance its additional undivided interest in the Luce Bayou Project with one or more additional advances in an amount not to exceed \$281,000,000 in the aggregate.

The Parties further recognize that the TWDB Project Cost advances are not sufficient to finance the entire Luce Bayou Project, and one or more Supplements to the Project Contract may be required to finance additional Project Costs for the Luce Bayou Project. The terms of this First Supplement may apply to future Project Cost advances by the TWDB made under an amendment to the Master Agreement if (1) the Director, in consultation with the City Attorney, provides CWA with prior written consent; and (2) the amendment to the Master Agreement does not substantially change the terms of the Master Agreement other than TWDB's ownership interest in the Luce Bayou Project in accordance with Section 2.5 of the Master Agreement and the scheduled payments for the purchase of the TWDB's ownership interest in the Luce Bayou Project as reflected in a revised Payment Schedule.

SECTION 2.2. *Approval and Administration of Master Agreement.*

- A. The City has reviewed and approves the terms of the Master Agreement.
- B. CWA will enter into the Master Agreement with the TWDB, and agrees with the City to carry out its duties thereunder. CWA agrees that it will not amend or supplement the Master Agreement without the prior written approval of the amendment or supplement by the Director. CWA agrees to copy the Director on all official correspondence, reports, documents, and other information, and correspondence concerning changes in the Payment Schedule, provided to or received from TWDB in connection with the Master Agreement and the financing and construction of the Luce Bayou Project thereunder.
- C. CWA shall apply amounts received under the Master Agreement solely for reasonable and necessary Project Costs, in carrying out the construction of the Luce Bayou Project in accordance with Section 2.03 of the Original Project Agreement.
- D. On any liability insurance policy required by the Master Agreement, CWA shall name the City as an additional insured and require its consultants and contractors to name the City as an additional insured. CWA will provide and require its third party contractors to provide Alternate Employer endorsements in favor of the City on workers' compensation policies. Unless the Director provides a written waiver, the City shall be a dual obligee on any payment, performance, maintenance, or restoration bond for the Luce Bayou Project in which CWA is an obligee.

SECTION 2.3. Purchase & Pledge By CWA.

A. In accordance with a Payment Schedule approved by the Director, CWA will purchase TWDB's ownership interest in the Luce Bayou Project at the earliest possible date, which date shall be not later than the date(s) established by the Payment Schedule(s), so that the State may fully recover its investment therein.

B. CWA shall use Pledged Revenues received from the City to pay State Participation Debt Service in accordance with an approved Payment Schedule only for such purpose. However, if a shortfall in aggregate payments to TWDB for either WIF Bonds or State Participation Debt Service ("Either Debt") occurs, CWA may apply the City's payments from the General Purpose Fund to Either Debt on a pro rata basis. To protect against the misappropriation of General Purpose Funds, CWA shall pay to the Combined Utility System Fund any amount equal to the Pledged Revenues CWA received for purposes of payments under the Payment Schedule and did not pay to TWDB in accordance with the Payment Schedule or, in the case of a shortfall in aggregate payments, did not pay to satisfy Either Debt.

SECTION 2.4. Pledge by City.

A. In order to secure CWA's obligation to purchase the TWDB's ownership interest in the Luce Bayou Project and CWA's other financial obligations to the TWDB under the Master Agreement, the City agrees to pay from and pledges and grants to CWA as security for the payments hereunder, a lien on Pledged Revenues in such amounts as may be necessary, when and as required by the Master Agreement, and the Payment Schedules incorporated therein to make all payments to the TWDB from CWA required under the Master Agreement. The lien created hereunder is on a parity with the lien created on the Pledged Revenues for payment of the WIF Bonds under the Original Project Contract. The City agrees to remit Pledged Revenues to CWA or directly to TWDB on behalf of CWA, in the amounts necessary to purchase the TWDB's ownership interest in the Luce Bayou Project, to pay lease payments under Section 3.6B of the Master Agreement, to pay, to the extent authorized by law, indemnity payments under Section 5.2A and 5.2B of the Master Agreement, and to pay other costs arising under the Master Agreement to be paid by CWA to the TWDB (collectively, the "*State Participation Debt Service*").

B. The City hereby warrants that it shall exercise its Rate Order Authority under Sections 7.2 of the Master Ordinance and Texas Government Code Section 1502.057 to maintain rates and charges for its water and sewer system, which, together with other available funds (including payments from the Authorities), are sufficient to pay from the Pledged Revenues the State Participation Debt Service on a parity basis with the Debt Service on the WIF Bonds.

C. The City is and shall be unconditionally obligated to pay CWA Pledged Revenues in accordance with Subsection A, regardless of whether or not CWA actually acquires or completes the Luce Bayou Project, or whether or not CWA actually approves, purchases, receives, accepts, or uses the Luce Bayou, and such payments by the City are not subject to any abatement, set-off, recoupment, or counterclaim. CWA and the TWDB are entitled to rely on this First Supplement, notwithstanding any provision of the Project Contract or any other

contract or agreement to the contrary, and regardless of the validity of, or the performance of, the remainder of the Project Contract or any other contract or agreement.

D. All provisions of this Agreement relating to the City's Pledged Revenues are subject to the provisions of the Master Ordinance.

SECTION 2.5. *Price of Sale to CWA; Schedule of CWA Payments.*

The purchase price to be paid for the TWDB's interest in the Luce Bayou Project, and the schedule for the purchase of the TWDB's interest in the Luce Bayou Project, is the purchase price and Payment Schedules established in the Master Agreement, which may be hereafter amended or supplemented for additional advances as provided in the Master Agreement and Section 2.1 of this First Supplement.

SECTION 2.6. *Operations and Maintenance of the Luce Bayou Project.*

No less than 12 months prior to completion of the Luce Bayou Project, the City and CWA will contract on mutually agreed terms for the CWA's operation and maintenance of the Luce Bayou Project, including necessary repairs and future capital improvements, and the budgeting and payment of costs therefore.

ARTICLE III.

MISCELLANEOUS

SECTION 3.1. *Effective Date.*

This First Supplement shall become effective when and if the Master Agreement becomes effective.

SECTION 3.2. *Term.*

This First Supplement shall continue in full force and effect until the City and CWA have satisfied all of their obligations hereunder and all of the TWDB's undivided ownership interest in the Project has been purchased by CWA.

SECTION 3.3. *Force Majeure.*

Except for the City's unconditional obligation to make the payments to CWA as provided in this First Supplement, neither party is liable in damages or will otherwise suffer any default for any delays, failures, or omissions whatsoever hereunder if caused by force majeure. As used herein, the term "force majeure" includes acts of God, drought, insufficiency of water in the Trinity River, fire, storm, flood, landslide, subsidences of land, lightning, earthquake, washout, explosion, epidemic, war, acts of enemies or belligerents, sabotage, interference by, orders of, or compliance with requests or recommendations of civil or military courts or other authorities, federal, state or local, including any agency or person appointed by any such authority or by any official thereof (whether de jure or de facto and whether acting legally or not), inability to obtain materials, strikes or other differences with labor (whether or not within the power of the party to

settle the same), breakage or accident to machinery, canals, reservoirs or lines of pipe, or to any other cause (whether or not of the same class or kind as those set forth above) not due to the willful fault or gross negligence of such party, while or so long as performance is prevented by such cause and due diligence is being used to resume performance at the earliest practicable time.

In any such event of force majeure, prompt notice shall be given by the affected party to the other of the existence of such cause and of readiness to resume performance.

SECTION 3.4. *Third Parties.*

This First Supplement is for the sole and exclusive benefit of the City, CWA, and the TWDB, and no third parties have any rights hereunder.

SECTION 3.5. *Severability.*

In the event any term, covenant or condition herein contained are held to be invalid by any court of competent jurisdiction, such invalidity shall not affect any other term, covenant, or condition herein contained, provided that such invalidity does not materially prejudice either CWA or the City in their respective rights and obligations contained in the valid terms, covenants or conditions hereof.

EXECUTED in multiple counterparts at Houston, Texas, as of this ____ day of _____, 20__.

CITY OF HOUSTON, TEXAS

By: Annise D. Parker
Mayor Madeline D. Appel

ATTEST:

[Signature]
City Secretary

COUNTERSIGNED:

Ronald C. [Signature]
City Controller [Signature]

APPROVED AS TO FORM:

[Signature]
Assistant City Attorney
LD # 0801200177005

APPROVED:

[Signature]
Director
Department of Public Works
and Engineering

COASTAL WATER AUTHORITY

By: [Signature]
President
Board of Directors

ATTEST:

[Signature]
Secretary/Treasurer
Board of Directors



CITY OF HOUSTON

City Secretary

073168

Interoffice

Correspondence

To: Mr. Ronald C. Green
City Controller

From: Anna Russell
City Secretary

Dept: 2000 (PWE)
Fund: N/A

Date: January 22, 2013

Subject: Contract Supplement

Dear Mr. Green: Effect when Master Agmt is executed.

The following are sent to you for handling to completion:

2 First Supplements to Project Contract

Between City and THE COASTAL WATER AUTHORITY

Parties entered into the Original Project Contract to provide for the planning, design, property acquisition and construction and financing of the Luce Bayou Interbasin Transfer Project.

Authorized by Ordinance 2013-0030

Passed on January 16, 2013

Executed by Mayor January 18, 2013

RF2011-13

Yours Truly,

Anna Russell
City Secretary

CS 1/24/13

AR/bg

cc: Mr. Krueger

COPIES PICKED UP
BY Anthony Gails
DEPT REPRESENTATIVE
DATE 1/25/13

The following is the Master Agreement between Texas Water Development Board and Coastal Water Authority that is referenced in Recital 3 and Recital 5 of the First Supplement.

DRAFT MASTER AGREEMENT (January 8, 2013)

**MASTER AGREEMENT
BETWEEN
TEXAS WATER DEVELOPMENT BOARD
AND
COASTAL WATER AUTHORITY**

**REGARDING STATE PARTICIPATION
IN THE LUCE BAYOU INTERBASIN TRANSFER PROJECT
PROJECT NO. 21606**

(Version Approved by the Coastal Water Authority's Board on January 9, 2013;
SUBJECT TO REVIEW BY THE OFFICE OF THE TEXAS ATTORNEY GENERAL AND
FINAL APPROVAL BY THE TEXAS WATER DEVELOPMENT BOARD)

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DRAFT MASTER AGREEMENT (January 8, 2013)

**MASTER AGREEMENT
BETWEEN
TEXAS WATER DEVELOPMENT BOARD
AND
COASTAL WATER AUTHORITY**

WHEREAS, the Texas Water Development Board, (the "TWDB"), a Texas agency created pursuant to Article 3, Section 49-c of the Texas Constitution, is authorized under the authority of Texas Water Code §§ 16.131, 16.1311, 16.181, and 17.957, to acquire, sell, transfer, and lease an interest in water supply projects using the State Participation Account of the Texas Water Development Fund II in order to encourage the optimum regional development of reservoirs and facilities for the transmission of water; and

WHEREAS, Coastal Water Authority (the "Authority"), a conservation and reclamation District duly created pursuant to Article XVI, Section 59 of the Texas Constitution and lawfully operating under the Authority Act, is proposing to develop a new water transmission project known as the Luce Bayou Interbasin Transfer Project, Project No. 21606; and

WHEREAS, the Project will consist of the planning, design, acquisition and construction of a raw water conveyance system to transfer water from the Trinity River in Liberty County to tributaries of Lake Houston in the San Jacinto River Basin in northeastern Harris County; and

WHEREAS, the TWDB has determined that the amount of surface water to be transferred from the Trinity River Basin to the San Jacinto River Basin contemplated by the Project will not be needed to supply the reasonably foreseeable future water requirements for the Trinity River Basin during the next 50 years; and

WHEREAS, the Project is a recommended water management strategy in the 2012 State Water Plan and in the 2012 Region "H" Regional Water Plan; and

WHEREAS, in accordance with Texas Water Code § 16.133, the water to be transported by the Project will be water available to the City of Houston, Texas (the "City") under TCEQ Certificate of Adjudication 08-4261, as amended;

WHEREAS, at its meeting on January 31, 2013, the TWDB, through adoption of TWDB Resolution No. <<TWDB RESOLUTION NO.>> (the "TWDB Resolution"), approved the Authority's application for the TWDB's participation in the Project in an amount up to \$28,754,000 from the State Participation Account of the Texas Water Development Fund II; and

WHEREAS, under 31 Texas Administrative Code § 363.1003, the Authority will finance at least 20% of the Project and the TWDB may finance up to 80% of the Project; and

WHEREAS, the Authority will purchase the TWDB's interest with the proceeds of a future bond issue, with other revenue, or with other lawful sources of funds in accordance with a Master Agreement to be executed by and between the Authority and the TWDB; and

WHEREAS, in the TWDB Resolution, the TWDB authorized the Executive Administrator to

DRAFT MASTER AGREEMENT (January 8, 2013)

negotiate and execute a Master Agreement setting forth the duties, responsibilities and liabilities of the TWDB and the Authority; and

WHEREAS, this Master Agreement has been negotiated pursuant to the authority delegated to the Executive Administrator in the TWDB Resolution and is approved in substantially this form by the TWDB under the TWDB Resolution, subject to final terms approved by the Executive Administrator and is hereby entered into and executed between the TWDB and the Authority to authorize the TWDB's acquisition of an ownership interest in the Project and the subsequent purchase of the TWDB's ownership interest in such Project by the Authority.

NOW, THEREFORE, in consideration of the mutual covenants and agreements set forth in this Agreement, and in contemplation of and in accordance with the applicable laws of the State of Texas, the Authority, acting by and through its undersigned representatives as duly authorized by a resolution of its Board of Directors, and the TWDB, acting herein by and through its undersigned representative, as duly authorized by the TWDB Resolution, enter into this Agreement and mutually agree as follows:

ARTICLE 1. DEFINITIONS AND CONSTRUCTION

§1.1 **DEFINITIONS.** Words and phrases as used in this Agreement shall have the following meanings:

- (1) "*Additional Obligations*" means additional debt or other obligations for which the Authority pledges a parity lien on the same Contract Revenues as pledged herein.
- (2) "*Agreement*" means this Master Agreement.
- (3) "*Application*" means the Authority's application to the TWDB for State Participation funds for TWDB Project No. 21606, together with all attachments and any amendments thereto.
- (4) "*Authority*" means the Coastal Water Authority or its successors or assigns which succeed it as to any rights, powers or duties under this Agreement.
- (5) "*Authority Act*" means Article 16, Section 59 of the Texas Constitution; and Chapter 601, Acts of the 60th Legislature of Texas, Regular Session, 1967, as amended.
- (6) "*Call Date*" means the date prior to which the Authority cannot purchase the TWDB's portion of the Project, as set forth in the Schedules.
- (7) "*City*" means the City of Houston, Texas.
- (8) "*Code*" means the Internal Revenue Code of 1986, as amended.
- (9) "*Construction Fund*" means a separate account created under § 2.2 of this Agreement and maintained at the depository bank of the Authority for the purpose of paying and accounting for Project Costs, and into which any funds may be transferred either directly from the TWDB or from the Escrow Account pursuant to approval by the Executive Administrator. Funds in the Construction Fund may be used only for Project Costs or for the Authority's purchase of the TWDB's interest in the Project.

DRAFT MASTER AGREEMENT (January 8, 2013)

- (10) “*Construction Stage*” means that stage of the Project that involves the physical construction of the Project, including raw water intake pump station, electrical service, transmission mains, sedimentation basins, open channel canal, maintenance facility, siphons, drainage works, access roads and canal crossings, related appurtenances, and related engineering and inspection fees.
- (11) “*Contract Revenue Bonds*” means all bonds, notes, or other obligations of the Authority whether now outstanding or hereafter issued, payable from and secured by a lien on and pledge of the Authority’s Contract Revenues that are pledged to the payment of the Authority’s Contract Revenue Bonds (Luce Bayou Project), Series 2009 and Contract Revenue Bonds (Luce Bayou Project), Series 2010, issued to the TWDB under its Water Infrastructure Fund (“WIF”) loan program.
- (12) “*Contract Revenues*” means those “Pledged Revenues” as defined in the Projects Contract, which are pledged on a parity basis to the payment of the Authority’s outstanding Contract Revenue Bonds, and which are pledged to the payment of the Authority’s obligation to purchase the TWDB’s interest in the Project, as provided in Section 3.2 herein. The definition of “Pledged Revenues” in the Projects Contract means “Net Revenues held in the General Purpose Fund.” “Net Revenues” is defined in the City’s Ordinance No. 2004-299 (the “Master Ordinance”), which is “(i) all Gross Revenues remaining after deducting Maintenance and Operation Expenses, plus (ii) any Restricted Receipts deposited to the Revenue Fund that may be used to pay Debt Service Requirements on Obligations.” The General Purpose Fund is established and maintained under the Master Ordinance.
- (13) “*Cost of Acquisition*” means the amount of funds deposited into the Construction Fund and/or the Escrow Account by the TWDB for the acquisition of an undivided interest in the Project.
- (14) “*Date of Acquisition*” means each date that TWDB delivers funds to the Construction Fund and/or the Escrow Account for the acquisition of an undivided interest in the Project.
- (15) “*Design Stage*” means that stage of the Project that involves the design of the Project.
- (16) “*Escrow*” means the TWDB’s transfer of funds to a third-party custodian until such funds are authorized for release to the Authority by the Executive Administrator.
- (17) “*Escrow Account*” means the account created under this Agreement for the TWDB’s delivery of funds to be held in Escrow upon closing for the TWDB’s acquisition of an undivided interest in the Project. Funds in the Escrow Account may be used only for Project Costs or for the Authority’s purchase of the TWDB’s interest in the Project.
- (18) “*Escrow Agent*” means the third party appointed to hold the escrow funds which have not been authorized for release to the Authority.
- (19) “*Event of Default*” means the non-performance or violation by the Authority of any obligation or provision in this Agreement if such non-performance or violation is not cured within 30 days after written notice by the TWDB to the Authority of the non-performance or violation.

DRAFT MASTER AGREEMENT (January 8, 2013)

- (20) “*Executive Administrator*” means the Executive Administrator of the TWDB.
- (21) “*Parity Lien on the Contract Revenues*” means a lien on the Contract Revenues on parity with the revenues pledged by the Authority to the payment of the Contract Revenue Bonds, such lien being the security interest pledged by the Authority to secure its obligations hereunder, including its obligation to purchase the TWDB’s interest in the Project under the terms of this Agreement.
- (22) “*Project*” means the planning, design and construction of a raw water conveyance system to transfer water from the Trinity River in Liberty County to tributaries of Lake Houston in the San Jacinto River Basin in northeastern Harris County, as described in the Application. “*Project*” does not include any of the water rights owned by the City.
- (23) “*Project Costs*” means costs of the Project associated with its construction, bond issuance costs, and all other costs and expenditures which under standard principles of accounting would constitute a capital cost of the Project, including specifically but not limited to: the cost of engineering design, supervision and inspection; the cost of testing laboratories and other professional services associated with construction of the Project; abstractors’ costs; the cost of constructing the Project infrastructure; the cost of acquiring all lands and interests in land for the Project, including all costs associated with the planning, design, and construction of the Project. The term “*Project Costs*” does not include any capitalized interest, reserve funds or operational expenses.
- (24) “*Projects Contract*” means that certain “*Projects Contract Between the City of Houston, Texas and Coastal Water Authority,*” as amended by the “*First Supplement to Project Contract Between City of Houston, Texas, and the Coastal Water Authority,*” in form and substance acceptable to the TWDB.
- (25) “*Schedule(s)*” means the payment schedule(s) attached hereto from time to time, which show the payments that the Authority is obligated to make in order to purchase the TWDB’s interest in the Project. Each Schedule is associated with the funds delivered by TWDB upon each Date of Acquisition. Such Schedules shall, at a minimum, detail the interest rate to be paid by the Authority, the TWDB’s source of funds, and the Call Date associated with the Authority’s purchase obligation.
- (26) “*State*” means the State of Texas.
- (27) “*TAC*” means Texas Administrative Code.
- (28) “*TCEQ*” means the Texas Commission on Environmental Quality or any other board, commission or agency which succeeds it as to any rights, powers or duties under this Agreement.
- (29) “*TWDB*” means Texas Water Development Board or any other board, commission or agency which succeeds it as to any rights, powers or duties under this Agreement.

DRAFT MASTER AGREEMENT (January 8, 2013)

- (30) “*TWDB Cost of Acquisition*” means the total of the payments made by TWDB to the Authority for purchase of an undivided interest in the Project pursuant to this Agreement, less any purchases of TWDB's interest by the Authority.
- (31) “*TWDB Resolution*” means TWDB Resolution No. <<TWDB RESOLUTION NO.>>, adopted at the TWDB’s meeting of January 31, 2013.
- (32) “*TWDB Rules*” means the applicable rules and regulations of the TWDB set forth in 31 TAC Part 10.
- (33) “*Water Permit*” means the Water Use Permit No. 5826, and Certificate of Adjudication 08-4621, as amended, issued to the City of Houston by the TCEQ.

§1.2 TITLES AND HEADINGS. The titles and headings of the articles and sections of this Agreement have been inserted for convenience of reference only and are not to be considered a part hereof and shall not in any way modify or restrict any of the terms or provisions contained in this Agreement.

ARTICLE 2. STATE PARTICIPATION

§2.1 TWDB ACQUISITION OF OWNERSHIP. The TWDB will participate in this Project by acquiring an undivided interest in the Project as a whole, including all work performed and all properties and facilities acquired or constructed as part of the Project, for the Cost of Acquisition, pursuant to the TWDB Resolution and this Agreement. The TWDB's undivided ownership interest in the Project will cost no more than \$28,754,000, to be allocated for the costs of the Design Stage and the Construction Stage in any manner determined to be acceptable by the Executive Administrator, in accordance with the provisions of this Agreement. The TWDB may consider providing additional funds if requested by the Authority in writing, and if additional funds are provided by the TWDB under the State Participation Program, then the TWDB and the Authority will amend this Master Agreement to evidence the increased Cost of Acquisition, the change in percentage of ownership, and to provide additional Schedules to reflect the Authority’s obligation to purchase the TWDB increased ownership interest.

§2.2 ESCROW ACCOUNT AND CONSTRUCTION FUND. Prior to the delivery of TWDB funds, the Authority will create (1) a Construction Fund, to be held by the Authority, and (2) an Escrow Account under an escrow agreement approved by the Executive Administrator, to be held by the Escrow Agent. Funds in the Escrow Account and Construction Fund, including interest and investment earnings, are to be used only for Project Costs or for the Authority’s purchase of the TWDB’s interest in the Project. Funds in the Escrow Account may be released by the Escrow Agent only upon direction by the Executive Administrator or his or her designee.

The funds to be placed in the Construction Fund and the Escrow Account are public funds and, as such, these funds shall be held at a designated state depository institution or other properly chartered and authorized institution and managed in accordance with the Public Funds Investment Act, Chapter 2256, Government Code (the “PFIA”), and the Public Funds Collateral Act, Chapter 2257, Government Code (the “PFCFA”).

§2.3 DELIVERY OF TWDB FUNDS. Subject to the availability of funds and satisfactory

DRAFT MASTER AGREEMENT (January 8, 2013)

documentation that the Authority has met all prerequisites for the delivery of TWDB funds under this Agreement, Texas Water Code, Chapter 16, Subchapters E and F, the TWDB's rules, and the TWDB Resolution authorizing TWDB participation in the Project, the TWDB shall provide funds in an amount not to exceed \$28,754,000. The Executive Administrator shall determine the amounts to be delivered to the Construction Fund and/or the Escrow Account as appropriate. The Executive Administrator, or his or her designee, shall authorize release of funds from the Escrow Account to the Construction Fund for the Design Stage and Construction Stage, as provided below, after the Authority has provided information, satisfactory to the Executive Administrator, that the funds are needed for eligible Project Costs. Upon each Date of Acquisition, Schedules shall be dated and signed by the Executive Administrator and by a duly authorized representative of the Authority to indicate agreement, and such agreed Schedules shall be appended to and incorporated into this Agreement.

- A. **DESIGN STAGE:** After completion of all prerequisites for the release of funds for work to be performed for the Design Stage satisfactory to the Executive Administrator, including, but not limited to those in 31 TAC Chapter 363, the Executive Administrator shall either deliver to the Construction Fund or authorize the release of funds from the Escrow Account to the Construction Fund for the costs associated with the Design Stage. Prior to the initial delivery of funds to the Construction Fund for the Design Stage, the Executive Administrator must make a favorable environmental determination relating to the Project.
- B. **CONSTRUCTION STAGE:** After the Design Stage releases have been completed, and after completion of all prerequisites to the release of funds for construction activities, including, but not limited to those in 31 TAC Chapter 363, the Executive Administrator shall either deliver to the Construction Fund or authorize the release from the Escrow Account to the Construction Fund of an amount up to the remainder of funds available under this Agreement for the costs associated with the Construction Stage. Prior to the initial delivery of funds to the Construction Fund for the Construction Stage, the Executive Administrator must make a favorable environmental determination relating to the Project.

§2.4 VESTING AND NATURE OF TWDB OWNERSHIP. Upon delivery of funds in any amount by the TWDB into the Construction Fund and/or the Escrow Account, there will be vested in the TWDB an undivided ownership interest in the Project along with the right to its use, as well as an undivided ownership right in all applicable operating permits with respect to the Project. The percentage of the TWDB's undivided ownership interest in the Project is initially set at 35% and shall remain at 35% until additional funding is provided under § 2.1 and this Master Agreement is amended or supplemented; or until all Stages of the Project are complete and a final accounting is performed under § 2.5 of this Agreement; or upon a determination by the TWDB that the Project will not be completed, and a final accounting is performed under § 2.5 of this Agreement.

It is expressly understood that the TWDB is purchasing an undivided interest, to the extent permitted by law, in the entire Project, including real estate purchased for site acquisition, facilities constructed for the Project infrastructure, and all related appurtenances and any structures of the Project. TWDB's ownership interest in the Project does not provide the TWDB with any ownership right in the City's Water Permit. The TWDB's undivided interest in the Project shall include, but not be limited to, the right to operate the Project to the extent of the TWDB's undivided interest, subject to the Authority's

DRAFT MASTER AGREEMENT (January 8, 2013)

preferential right to purchase the TWDB's interest under § 3.8 of this Agreement. The Authority, upon request of the TWDB, will execute and record any conveyances and assignments which may be necessary to place title of the Project in the TWDB, with the exception that the Authority shall hold title to any land and facilities that are part of the Project in trust for the TWDB to the extent of the TWDB's interest in the Project. Upon written request of the TWDB, the Authority shall execute and record documents necessary to convey or assign title to the Project land and facilities to the extent of the TWDB's ownership interest in the Project. The Authority acknowledges that the TWDB's interest shall constitute an ownership interest regardless of whether the TWDB ever requires execution of any conveyance documents to evidence such interest.

§2.5 CALCULATION OF TWDB OWNERSHIP INTEREST. The Authority shall provide TWDB a final accounting of all Project Costs within six (6) months of completion of all Stages of the Project and the issuance of a certificate of approval under 31 TAC § 363.55, or upon a determination by the TWDB that the Project will not be completed. Upon the TWDB's approval of the final accounting, the TWDB's total undivided ownership interest in the Project shall be calculated by dividing the TWDB Cost of Acquisition by the Project Costs incurred on the Project to that point in time. If, at the time that the TWDB approves the final accounting, the calculation of the TWDB's ownership interest exceeds 80%, the Authority shall, within 30 days after the TWDB's approval of the final accounting, take all actions necessary to remit to the TWDB the amount necessary to reduce the TWDB's ownership interest to 80%. The TWDB shall have the right to determine the schedule and method by which the funds are remitted to the TWDB. Upon remittance, any Schedule and any lease payment schedule calculated pursuant to the terms of this Agreement shall be amended to reflect the remitted amount.

Upon the TWDB's approval of the final accounting and any actions taken to adjust the parties' ownership interest, the TWDB shall then own that percentage interest in the Project, not to exceed 80%, and the Authority shall own the remainder, not less than 20%. Such ownership interests shall be documented in writing in Attachment C as agreed by both parties and made part of this Agreement for all purposes. The parties agree that, once completed, the Project will have a weighted average capacity of 396,350 acre-feet per year (354 MGD), based on the capacity of each component of the Project. Each party's ownership interest in the Project shall be reflected in Attachment C in acre-feet per year based on a percentage of the weighted average capacity.

The use of each party's ownership in the Project shall be determined annually thereafter, based on the amount of water transported by the Project, in accordance with § 3.6 of this Agreement.

§2.6 TAX-EXEMPT ASSURANCES.

- A. The TWDB has identified the source of funds for its share of the cost of the Project as the proceeds of tax-exempt obligations issued by the TWDB. As required by the TWDB Resolution, the Authority has provided a bond counsel opinion that is satisfactory and acceptable to the Executive Administrator as to any adverse effect of the Project, or the use thereof and the Authority's payments under this Agreement (**Attachment A**) on the excludability of interest on obligations issued by the TWDB to fund their undivided interest in the Project from gross income of the owners of such obligations for federal income tax purposes. The Authority agrees to take such actions, including the execution and delivery of such certificates and agreements, as are necessary to assure, or to refrain from such actions as would materially adversely affect such excludability from gross income, including, but not limited to: (1) the filing of a Form 8038-G in connection with

DRAFT MASTER AGREEMENT (January 8, 2013)

the execution of this Agreement by the Authority in connection with the financing of the Authority's interest in the Project; and (2) the adoption of written procedures relating to arbitrage compliance, private business use and record retention.

- B. At each Date of Acquisition, the Authority must submit a bond counsel opinion that is satisfactory and acceptable to the Executive Administrator as to any adverse impact of the Project, or the use thereof, and the Authority's payments under this Agreement on the tax-exempt status of TWDB bonds.
- C. To the extent that the TWDB and the Authority use proceeds from tax-exempt obligations to finance all or a portion of their respective interests in the Project, the TWDB and the Authority hereby agree that the proceeds of their respective tax-exempt obligations will not be used in a manner that will cause the obligations to be "private activity bonds" or arbitrage bonds." In furtherance thereof, the Authority agrees to make timely payments of arbitrage rebate to the United States required to be made by section 148 of the Code.

ARTICLE 3. AUTHORITY'S PURCHASE OBLIGATION

§3.1 PURCHASE BY AUTHORITY. The Authority will purchase the TWDB's ownership interest in the Project at the earliest possible date, which date shall be not later than the date(s) established by the Schedule(s), so that the State may fully recover its investment therein.

§3.2 PLEDGE BY AUTHORITY.

- A. In order to secure its obligations hereunder, including the ultimate purchase by the Authority of 100% of the TWDB's ownership interest in the Project, under the authority of the Authority Act, Texas Water Code § 49.108, and other applicable law, the Authority pledges and grants to the TWDB as security for the payments hereunder, a Parity Lien on the Contract Revenues in such amounts as may be necessary, when and as required by this Agreement, and the Schedules incorporated herein, to purchase the TWDB's ownership interest in the Project.
- B. The Authority agrees that it shall be unconditionally obligated to purchase 100% of the TWDB's interest in the Project with the Contract Revenues regardless of whether the Authority actually acquires or completes the Project, or whether the Authority actually approves, purchases, receives, accepts, or uses the Project; and such purchase shall not be subject to any abatement, set-off, recoupment, or counterclaim. The TWDB shall be entitled to rely on this Agreement and representation, notwithstanding any provision of this Agreement or any other contract or agreement to the contrary, and regardless of the validity of, or the performance of, the remainder of this Agreement or any other contract or agreement.
- C. The obligations of the Authority under this Agreement shall be a special limited obligation of the Authority, payable from the sources described herein, and shall be enforceable as provided under this Agreement.
- D. The Authority may not pledge to the payment of Additional Obligations a lien on the

DRAFT MASTER AGREEMENT (January 8, 2013)

Contract Revenues superior to the lien on and pledge of the Contract Revenues securing the obligations of the Authority under this Agreement. The Contract Revenues from the Authority shall not be pledged to the payment of any Additional Obligations of the Authority on parity with the pledge under this Agreement unless:

- (1) the Authority demonstrates to the Executive Administrator's satisfaction that the Contract Revenues will be sufficient for the payment of the Authority's obligation to purchase the TWDB's interest in the Project and the Additional Obligations, and
- (2) the Authority delivers to the Executive Administrator an executed certificate that Contract Revenues will be sufficient for the purpose described in clause (1) of this Section.

The governing body of the Authority may not take action to authorize or approve the issuance of Additional Obligations unless it has received the certificate described in clause (2) of this Section.

- E. The Authority shall submit annual audits of contracting parties for the Executive Administrator's review.
- F. The Projects Contract is approved, executed, and in effect. The Authority must maintain and enforce the Projects Contract so that revenues paid to the Authority by the City are sufficient to meet the revenue requirements of the Authority's obligation to purchase the TWDB's interest in the Project that are being supported by the pledged Contract Revenues and, prior to beginning operations and maintenance of the Project, must enter into additional contractual obligations with the City, in form and substance acceptable to the TWDB, so that payments from the City are sufficient to pay all of the Authority's revenue obligations arising from the operation and maintenance of the Project. The TWDB reserves the right to compel compliance of this obligation by mandamus or any other appropriate means including those under Texas Water Code § 6.114.

§3.3 PRICE OF SALE TO AUTHORITY. The TWDB agrees to sell its ownership interest to the Authority at the following price, as established by Texas Water Code § 16.186(b), to-wit: the sum of the TWDB Cost of Acquisition plus an amount of interest calculated by multiplying the lending rate in effect at the Date of Acquisition (and identified on the Schedules) by the amount of the TWDB money disbursed for the acquisition times the number of years and fraction of a year from the date or dates of purchase or acquisition to the date or dates of the sale or transfer of any portion of the TWDB's ownership interest in the Project to the Authority, plus the TWDB's cost, if any, of operating and maintaining the Project from the Date of Acquisition to the date of such purchase by the Authority, less any payments received by the TWDB from the lease of the Project or sale of capacity therefrom.

Pursuant to Texas Water Code § 16.186(c), the Authority shall assume, to the extent disclosed by the TWDB at or prior to the sale, any and all direct, conditional, or contingent liabilities of the TWDB attributed to the Project in direct relation to the percentage of the Project acquired.

For purposes of this section, the dates of sale to the Authority shall be the dates on which the Authority

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provides payment to the TWDB to acquire part or all of the TWDB's ownership interest in the Project. After all principal and accrued interest under the Schedules have been paid, the Authority's scheduled payments of principal under the Schedules or the Authority's partial purchases of the TWDB's ownership interest made pursuant to § 3.4 or § 3.5 of this Agreement shall constitute the purchase of a proportion of the TWDB's ownership interest, such proportion to be calculated by dividing such principal payment by the TWDB Cost of Acquisition, provided the Authority also pays the same proportion of the TWDB's cost of operating and maintaining the Project to the date of each purchase.

The lending rate in effect at each Date of Acquisition shall be based upon the TWDB's methodology, established by rule, for computing such rates. Interest will accrue on outstanding principal based upon simple interest rate calculation on a basis of a 360-day year consisting of twelve (12) 30-day months.

§3.4 SCHEDULE OF AUTHORITY PAYMENTS. The Authority agrees to purchase the TWDB's ownership interest in the Project beginning with the first scheduled principal payment and in accordance with all subsequent scheduled principal payments on the Schedules attached to this Agreement as **Attachment B** and any revisions made thereto pursuant to this Agreement. The Authority shall wire all payments to the TWDB in accordance with the Schedules, without the need for an invoice and at no cost to the TWDB, to the following:

TEXAS COMPT - AUSTIN
ABA# 114900164
BNF = ACCT#463-6005-80
ATTN: TWDB - JOHNNY GREENWOOD (512) 463-6251

The Authority also agrees to make scheduled interest payments prior to the first scheduled principal payments as provided on the Schedules, and any revisions thereto pursuant this Agreement.

In exchange for having a preferential right to purchase the TWDB's ownership interest in the Project, the Authority agrees to pay all deferred interest and accrued interest attributed to the Project prior to the Authority's purchase of any ownership interest.

§3.5 EARLY PURCHASE BY AUTHORITY. The Authority shall have the right, the Schedules notwithstanding, to make an early purchase of all or a portion of the TWDB's ownership interest reflected in the Schedules on or after the Call Date specified in each Schedule by making principal payments in excess of the scheduled principal payments in the Schedules. Such early purchases may be made no more than once a year, unless otherwise allowed by the Executive Administrator. Early purchases under this section by the Authority must be made in minimum increments of \$1,000 principal amounts under any Schedule. Any partial early purchase will be applied in inverse order to the Schedules.

§3.6 LEASE OR PURCHASE UPON AUTHORITY'S USE OF TWDB OWNERSHIP.

- A. **DETERMINATION OF AUTHORITY'S USE OF TWDB OWNERSHIP.** The Authority shall report to the TWDB by March 1 of each year the Authority's actual use of the Project's capacity for each calendar year, beginning upon the TWDB's approval of the final accounting under § 2.5 herein, in the format included herein as **Attachment C**. This report shall be submitted to:

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Texas Water Development Board
Attn: Financial Monitoring
P.O. Box 13231
Austin, Texas 78711-3231

The Authority shall be considered to be using a portion of the TWDB's ownership interest in the Project when the Authority's transportation of water by the Project exceeds the TWDB's interest shown on Attachment C in acre-feet per year, as required under § 2.5 of this Agreement.

The Authority's transportation of water shall be metered by the Authority at locations acceptable to the Executive Administrator as may be necessary to accurately determine water transported by the Project. The water meters and water meter readings shall be accessible to the TWDB at all times, without notice. A minimum number of water meter readings will be made by the Authority as mutually agreed to by TWDB and the Authority. It shall be the responsibility of the Authority to ensure that such meters are installed prior to transportation of water by the Project and to monitor the accuracy of the meters at a minimum on an annual basis. If at any time the accuracy of the metering equipment is more than two percent (2%) in error, the Authority will, as soon as possible, correct the inaccuracy. Adjustments in the quantity of water measured during the period when the meters were not accurately measuring the quantity of water transported shall be the shorter of six months or the actual period of inaccuracy, if such period can be determined, or reasonably estimated by the authorized representatives of the Authority and the TWDB.

- B. METHOD OF AUTHORITY'S LEASE OR PURCHASE OF TWDB INTEREST.** In the event the Authority begins using any portion of the TWDB's ownership interest in the Project, either prior to or after any Call Date, the Authority will, at the TWDB's option, either: (1) lease from the TWDB that portion of the TWDB's ownership interest that the Authority is using; (2) upon written approval of the TWDB, issue revenue bonds to the TWDB as consideration to purchase that portion of the TWDB's ownership interest that the Authority is using; or (3) purchase the TWDB's ownership interest with money. The sales price of any of the TWDB's ownership interest under this Section shall be determined in accordance with § 3.3 of this Agreement.
- C. PROVISIONS RELATING TO PURCHASE USING REVENUE BONDS AS CONSIDERATION.** If the Authority issues revenue bonds to the TWDB as consideration to purchase all or a part of the TWDB's ownership interest in the Project, the principal amount of the revenue bonds shall be equal to the price for purchasing all or a portion of such ownership interest. The revenue bonds must be non-callable prior to the Call Dates of the Schedules. The interest rates on revenue bonds used by the Authority as consideration for an early purchase of the TWDB's ownership interest will be identical to the lending rates associated with rates on purchase of bonds for water supply projects, as prescribed by Texas Water Code § 17.176. Terms and maturities of such revenue bonds will be subject to TWDB approval at the time of purchase. The revenue bonds may, at the TWDB's option, either be on parity with, or subordinate to, the outstanding Contract

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Revenue Bonds.

- D. **LEASE PAYMENTS.** If the Authority leases all or a portion of the TWDB's ownership interest in the Project, the lease payments will be the proportionate share that the percentage of the Authority's use of the TWDB's ownership interest bears to a lease payment schedule to be determined in accordance with the applicable provisions of Texas Water Code § 16.189 and Article 3 of this Agreement, or the payment amount in the Schedules, whichever is greater. As required by Texas Water Code § 16.189, such lease payment under this Agreement must be calculated to ensure that any such lease payments shall not be less than the proportionate share that the percentage of use bears to the annual principal and interest requirements attributable to the debt incurred by the State of Texas in acquiring its share of the Project, as determined by the TWDB. Lease payments shall be due and payable on each May 15 immediately following the Authority's calculation in which the Authority has used a portion of the TWDB's ownership interest. It is anticipated and agreed that any lease payments would be made with Contract Revenues.

§3.7 PROJECT SITE REVENUES. In exchange for the Authority's agreement to assume operation and maintenance costs of the Project, revenues derived from leases or other agreements related to the Project lands may be applied to pay costs of operation and maintenance for the Project and/or insuring the TWDB's interest pursuant to § 5.3 of this Agreement, to the extent permitted by law. Any revenues not annually used for such purposes will be deposited into an account of the Authority and applied to pay the costs of operation and maintenance for the Project, insurance costs for the Project, including insuring the TWDB's interest, or utilized as contingency funds for operation and maintenance of the Project. Such revenues will be accounted for in the Authority's annual comprehensive audits and budgets and provided to the TWDB when such comprehensive audits and budgets are provided pursuant to this Agreement.

§3.8 PREFERENTIAL RIGHT TO LEASE AND PURCHASE. Pursuant to this Agreement, the Authority has a preferential right to lease the TWDB's undivided ownership interest in the Project, and, subject to the requirements of Texas Water Code § 16.196, the TWDB may not lease its interest in the Project without the Authority's consent. Upon an Event of Default, however, the Authority shall lose its preferential right to lease the TWDB's interest in the Project, and the TWDB may lease its interest in the Project without the Authority's consent.

The TWDB may not sell or transfer its interest in the Project to any other party besides the Authority without the Authority's consent. Upon an Event of Default by the Authority, however, the TWDB may sell or transfer its interest in the Project without the Authority's consent, subject to the requirements of Texas Water Code § 16.196.

§3.9 PURCHASE AND LEASE SCHEDULES.

- A. **PURCHASES - SCHEDULES.** The Authority obligates itself and agrees to purchase the TWDB's ownership interest in the Project as outlined in the attached Schedules, which are incorporated herein for all purposes. Prior to each Date of Acquisition, the Authority shall deliver a Schedule for the Authority's purchase of the TWDB's ownership interest in the Project that will be acquired by the TWDB at such Date of

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Acquisition. This new Schedule will be appropriately labeled and appended to this Agreement. All Schedules submitted by the Authority for the purchase of the TWDB's ownership interest in the Project are subject to the written approval of the TWDB. In addition, at each purchase of the TWDB's ownership interest by the Authority pursuant to § 3.5 or § 3.6 of this Agreement, the schedule of payments in the Schedules shall be amended to reflect the reduction in the TWDB's ownership interest in the Project.

- B. **LEASES.** The schedule for the Authority's lease payments for the use of the TWDB's ownership interest in the Project will be calculated in accordance with Texas Water Code § 16.189 and the terms of this Agreement. The TWDB and the Authority agree that upon each lease of the TWDB's ownership interest by the Authority pursuant to § 3.6 of this Agreement, and prior to each payment date in the Schedules, the schedule of payments established in the Schedules will be amended to credit each lease payment by the Authority as follows: first to deferred interest, then to current interest and then to principal.
- C. **REVISIONS TO SCHEDULES.** Revisions to Schedules and lease payment schedules, calculated in accordance with Texas Water Code § 16.189 and this Agreement, shall be dated and signed by the Executive Administrator and by a duly authorized representative of the Authority to indicate agreement to the revisions prior to being appended to and incorporated into this Agreement.

ARTICLE 4. PROCEDURES DURING PROJECT CONSTRUCTION

§4.1 PROJECT SCHEDULE. The Authority shall proceed with all studies and planning in an expeditious manner, and provide for acquisition, design, construction and operation of the Project on a reasonable schedule.

§4.2 AUTHORITY RESPONSIBILITIES. The Authority shall perform the duties and functions required of it and governing its operations, including such provisions of law as may relate to bidding, awarding of contracts, acquisition of land and improvements and shall provide such personnel as may be necessary to secure and protect the property and facilities as acquired and constructed in connection with the Project.

§4.3 SUPERVISION OF CONSTRUCTION. During the construction of the Project, the Authority shall provide for adequate supervision of the Project to assure that all work covered by this Agreement is performed in a satisfactory manner in accordance with final plans and specifications and approved change orders and in accordance with sound engineering principles and practices.

§4.4 TWDB INSPECTION. The TWDB or its authorized agent shall have the right to inspect construction of the Project at any time to assure compliance with the final plans and specifications. The inspections shall not subject the TWDB or the State to any claims or actions for damages.

§4.5 REPORTS TO BE PROVIDED. Upon the delivery of any funds by the TWDB, the Authority shall prepare and file with the TWDB quarterly reports on the status of the Project, including the Design and Construction Stages. Reports shall be provided to:

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Texas Water Development Board
Attn: Construction Assistance
P.O. Box 13231
Austin Texas 78711-3231

ARTICLE 5. OPERATION AND MAINTENANCE

§5.1 OPERATION AND MAINTENANCE. It is understood and agreed by the parties to this Agreement that the Authority will be responsible for the operation and maintenance of the Project and no requirement shall be made of the TWDB to share in this responsibility or in the cost. The Authority shall take whatever measures are reasonable and prudent to insure that the Project is operated safely, efficiently and in accordance with the laws creating and governing it and the general laws of the State. The Authority binds itself to take such action as may be necessary to insure that the Project is adequately maintained and protected, and shall keep in good and operable state of repair the physical properties comprising the Project.

§5.2 INDEMNIFICATION.

- A. GENERAL INDEMNIFICATION.** To the extent permitted by law, the Authority shall indemnify and hold the TWDB and the State harmless, from any and all losses, damages, liability, or claims therefore, on account of personal injury, death, or property damage of any nature whatsoever caused by the Authority, arising out of the activities and work conducted pursuant to this Agreement. The Authority is solely responsible for liability arising out of its acts or omissions during the performance of this Agreement. In the event insurance coverage may be inadequate to completely indemnify and hold the TWDB harmless and free of all costs or liability for any and all claims for injuries to persons or property, or otherwise resulting from ownership or operation of the Project, then the Authority shall utilize any and all other funds and resources lawfully available as may be required to indemnify and hold the TWDB and the State harmless and free of all costs or liability for any and all such claims.
- B. ENVIRONMENTAL INDEMNIFICATION.** Proceeds of the TWDB's funds delivered for the TWDB's Cost of Acquisition shall not be used by the Authority to sample, test, remove or dispose of contaminated soils and/or media that may be present at or around the Project site or any sites upon which related facilities are located; nor shall such proceeds be used, either directly or indirectly, to acquire property or to remediate property(s) that contains known, hazardous wastes and hazardous substances. To the extent permitted by law, the Authority agrees to indemnify, hold harmless and protect the TWDB from any and all claims, causes of action or damages, however and whenever arising, to the person or property of third parties caused either directly or indirectly by the sampling, analysis, transport, storage, treatment, recycling and disposal of any contaminated soil, surface water, groundwater and contaminated media that may be generated or encountered by the Authority, its contractors, consultants, agents, officials and employees as a result of design and construction activities undertaken by the Authority or its contractors, consultants, agents, officials and employees to complete this Project.

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§5.3 INSURANCE. For so long as the TWDB maintains an ownership interest in the Project, the Authority agrees to maintain insurance in the type and amount that, in the judgment of the Authority and consistent with the standard practices of the Authority and in the industry, is necessary to protect the Authority, the TWDB, and employees and officials of the TWDB from liability arising out of this Agreement and the Project, including but not limited to worker's compensation, property damage, general liability and automobile liability, naming the TWDB as an additional insured, to the extent required to fulfill the requirements of this provision. Typically the Authority maintains single limit coverage limits of \$1,000,000 with excess liability coverage of \$4,000,000. These coverage limits are reviewed by the Authority from time to time and may be adjusted as necessary. The Authority will require all consultants and contractors involved with the project to maintain liability, automobile and workers compensation coverage in amounts necessary to protect the Authority and the TWDB and naming the Authority and TWDB as additional insured. The Authority must provide copies of all insurance policies relating to the TWDB and the State to the TWDB, and such insurance shall be effective at the time the TWDB acquires an ownership interest in the Project. Although the Authority does not currently intend to satisfy these insurance requirements through self-insurance, it may seek to self-insure in the future provided that (a) prior notification is forwarded to the Executive Administrator for approval along with copies of all pertinent insurance-related documentation, and (b) the Executive Administrator issues written approval allowing the Authority to self-insure.

§5.4 BUDGETS, AUDITS AND REPORTS. The Authority shall keep and maintain complete records, accounts and financial statements pertaining to the operation of the Project in accordance with generally accepted accounting principles as adopted by the American Institute of Certified Public Accountants. The Authority shall provide the TWDB with the reports required in this Section and any other report as the TWDB shall from time to time reasonably require. The Authority shall provide the TWDB with a copy of its annual budgets. The annual budget shall reflect Project revenues, maintenance and operation expenses and capital outlays anticipated for the next ensuing year. The Authority agrees to deliver copies of all minutes, monthly operating statements, contracts, leases, deeds, and other documents concerning the Project upon request of the TWDB. The Authority will submit comprehensive annual audits for each fiscal year to the TWDB within 30 days of the completion of such audits. The audits for each fiscal year must be prepared according to the generally accepted auditing standards adopted by the American Institute of Certified Public Accountants within one hundred and eighty (180) days from the end of the Authority's fiscal year. These reports shall be provided to:

Texas Water Development Board
Attn: Financial Monitoring
P.O. Box 13231
Austin, Texas 78711-3231

§5.5 RECORDS RETENTION. Unless otherwise directed by the TWDB, the Authority shall retain all records relating to the provision of services herein for a period of six (6) years following the termination of this Agreement. At the direction of the TWDB, the Authority shall allow representatives or designees of the State Auditor, Attorney General or TWDB to review and/or audit said records at all reasonable times. At the direction of the TWDB, after the expiration of the records retention period, the Authority shall return all files and records to the Agency. The Authority may destroy all records in whatever media that are not returned at the expiration of the record retention period.

§5.6 TWDB OPERATION AND MAINTENANCE. If the Authority fails at any time to operate

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and maintain the Project as provided in this Article, or in any manner fail to comply with any provisions of this Agreement, the TWDB, in addition to any other legal remedies it may seek, may take over, operate, and maintain the Project, or cause such to be done for the benefit of the TWDB. The TWDB shall give at least sixty (60) days written notice to the Authority of its intent to take over and operate and maintain the Project so as to provide the Authority with the opportunity to remedy the problem(s) identified by the TWDB. The Authority shall remain liable for any expenditures made by the TWDB with respect to notice, remedies, operation and maintenance of the Project.

ARTICLE 6. SALE AND LEASE OF PROPERTY BY AUTHORITY

§6.1 DISPOSAL AND ENCUMBRANCE OF PROJECT. During the time that the TWDB owns an undivided interest in the Project, the Authority will not sell, lease, or otherwise dispose of or encumber any part of the Project, except as provided herein.

§6.2 LEASE OF AUTHORITY PROPERTY. Subject to the provisions of § 6.3 of this Agreement, the Authority may lease any of the property that is part of the Project for any purpose, if such lease or the use of such property will not be detrimental to the operation and maintenance of the Project, as determined by the Authority. No lease shall be made which will result in any damage to or substantial diminution of the value of any of the property that is part of Project, or which will in any manner interfere with the Project or divert, endanger or contaminate water that is to be produced or transported by operation of the Project.

§6.3 TWDB APPROVAL OF SALES AND LEASES. Except for short term leases of less than two (2) years, any lease or sale by the Authority of real property in which the TWDB has an interest under this Agreement shall require prior written approval of the TWDB. Nothing contained in this Agreement shall be regarded or construed as creating a lien or encumbrance against the title to lands now or hereafter vested in the Authority insofar as the rights of third parties may be concerned. The Authority, however, hereby covenants not to sell or otherwise relinquish full right to the use of any lands and facilities acquired and necessary for the construction and operation of the Project for as long as the TWDB has an ownership interest in the Project.

§6.4 SALE OF CERTAIN ITEMS. The Authority may from time to time sell any machinery, fixtures, apparatus, tools, instruments, or other movable property and any materials used in connection with the Project if the Authority determines that such articles are no longer needed or are no longer useful in connection with the operation and maintenance of the Project. If the costs of such items were included as Project Costs, then the value received from the sale shall be deducted from total Project Costs. It is the Authority's responsibility to ensure that any disposition of Project-related assets and articles complies with the Code and applicable IRS regulations.

ARTICLE 7. EFFECTIVE DATE AND TERM OF AGREEMENT

§7.1 EFFECTIVE DATE. This Agreement shall become effective upon execution by all of the Parties and approval by the State Attorney General as to legality.

§7.2 TERM. This Agreement shall continue in full force and effect until the Authority has satisfied all of its obligations hereunder and all of the TWDB's undivided ownership interest in the Project has been purchased by the Authority.

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ARTICLE 8. FURTHER COVENANTS

§8.1 NOTICES. For purposes of providing notifications to the TWDB in accordance with the notification and reporting requirements set forth in this Agreement, the following points of contact are hereby established:

Executive Director
Coastal Water Authority
Suite 800, 1801 Main Street
Houston, Texas 77002
Phone: 713-658-1915
FAX: 713-658-9429
Email: dripley@coastalwaterauthority.org

Executive Administrator
Texas Water Development Board
1700 North Congress Avenue
Austin, Texas 78701

It is the Authority's burden and responsibility to provide written notification to the Executive Administrator of any material change to the Authority's point of contact.

§8.2 PROJECT EXPANSION. The Authority will submit to TWDB for approval any plan for future expansion of the Project that will commence before the Authority has purchased all of the TWDB's interest in the Project. The TWDB will not unreasonably withhold approval of said plan submitted by the Authority.

§8.3 TITLE COVENANTS. Unless purchased through eminent domain proceedings, the Authority covenants that it will obtain title insurance to the land to be purchased for the Project. The Authority warrants, by executing this Agreement, that any and all title objections referenced by any title insurance commitment policy entered into that may impair the Project will be cured to the reasonable satisfaction of the Executive Administrator. Additionally, if required by the TWDB, the Authority agrees to provide a mortgagee's policy of title insurance for the benefit of the TWDB in the event that the TWDB requires the execution of documents evidencing the TWDB's ownership interest in the Project.

§8.4 PLEDGE COVENANTS. The Authority hereby covenants that it has the lawful power to pledge its Contract Revenues to the TWDB, on a parity lien basis, to the payment of its obligations pursuant to this Agreement in the manner herein contemplated and has lawfully exercised such power under the Authority Act, Texas Water Code § 49.108, and other applicable laws.

ARTICLE 9. LAWS GOVERNING THE AGREEMENT; REMEDIES

§9.1 RULES AND APPLICATIONS INCORPORATED IN AGREEMENT. The Authority sought the participation of the TWDB in the Project, as reflected in the Application. The TWDB and the Authority agree that the Application for State Participation funds filed by the Authority, as finally approved by the TWDB, are incorporated herein as a part of this Agreement and the Authority agrees to be bound by the TWDB's rules, the TWDB Resolution, and the representations made in its Application. The Authority represents that there are no material changes in the information contained in its Application and supplemental information submitted to the TWDB.

§9.2 APPLICABLE LAW. It is expressly understood by and between the parties hereto that the provisions of this Agreement are subject to the applicable provisions of the Constitution and laws of the

DRAFT MASTER AGREEMENT (January 8, 2013)

State, and federal laws and regulations. The parties hereto reserve all rights at law and in equity to enforce the performance of this Agreement, and each respectively covenants to exercise all such rights to the extent necessary to perform or cure any default on the part of the respective party.

§9.3 REMEDIES. The TWDB, after providing notice and reasonable opportunity to cure, retains the discretion to pursue any remedy available to it through this Agreement or other law. The Authority agrees that the TWDB shall have available to it the remedies of mandamus and specific performance, even if failure of performance of the Authority could be adequately accomplished or compensated through some other method. The Authority's opportunity to cure shall be no less than 30 days from the date the Authority receives notice from the TWDB, and shall continue as long as the Authority uses good faith and diligence to cure any defect accurately identified by the TWDB. Specific remedies available to the TWDB include, but are not limited to, the TWDB's right to:

- A. by mandamus, or other suit, action or proceeding at law or in equity, enforce all rights of the TWDB under the Agreement and all rights of the TWDB, at law or in equity, whether or not any non-performance or violation has become an Event of Default, relating to the purchase, ownership, and lease or sale of the Project or the TWDB's interest in the Project, including to the Authority's obligation to purchase the TWDB's interest in the Project under the Agreement. These rights include, but are not limited to, the right to require the Authority to charge and collect moneys adequate to carry out the terms of the Agreement;
- B. by action or suit in equity require the Authority to account as if it were the trustee of an express trust for the TWDB;
- C. by action or suit in equity enjoin any acts which may be unlawful or in violation of the rights of the TWDB.

§9.4 VENUE. All amounts due and owing under this Agreement including, but not necessarily limited to, payments or damages for breach of this Agreement, shall be due and payable in Travis County, Texas, the county in which the principal offices of the TWDB are located. Jurisdiction and venue for any action on or related to the terms of this Agreement shall be exclusively in Travis County, Texas.

§9.5 AMENDMENT. This Agreement may be amended by agreement of the TWDB and the Authority in written form. Any such amendment shall be executed in the same manner as this Agreement was originally executed and shall be subject to approval of the State Attorney General regarding the legality of said amendment and the resolution of the TWDB authorizing the amendment.

§9.6 SEVERABILITY. The TWDB and the Authority specifically agree that in case any one or more of the sections, subsections, provisions, clauses or words in this Agreement or the application of such sections, subsections, provisions, clauses or words to any situation or circumstance should be, or should be held to be, for any reason whatsoever invalid or unconstitutional, or in contravention of any federal, state or local laws, rules and regulations, such invalidity, unconstitutionality, or contravention shall not affect any other sections, subsections, provisions, clauses or words in this Agreement or their application thereto. The parties intend that this Agreement be severable and it shall be construed and applied as if any such invalid or unconstitutional section, subsection, provision, clause or word had not

DRAFT MASTER AGREEMENT (January 8, 2013)

been included herein, and the rights and obligations of the parties hereto shall be construed and remain in force accordingly.

§9.7 ENTIRE AGREEMENT. This Agreement, including the Application(s) for State Participation Funds incorporated by reference herein, constitutes the entire agreement between the parties with respect to the matters described herein.

§9.8 ARBITRATION. It is expressly understood that neither the Authority nor the TWDB shall, without its consent, be obligated to participate in, nor shall it be made a party to, any arbitration proceedings relating in any way to the Project or to any provisions of this Agreement.

§9.9 FORCE MAJEURE. If, by reason of Force Majeure, any Party hereto shall be rendered unable, wholly or in part, to carry out its obligations under this Agreement, then such Party shall give notice and the full particulars of such Force Majeure event in writing to the other Party within a reasonable time after the occurrence of the Force Majeure event. The obligations of the Party giving notice of such Force Majeure event may be suspended during the continuance of the event but for no longer period and any such Party shall endeavor to remove or overcome such inability with all reasonable dispatch. The term "*Force Majeure*" as employed herein shall mean Acts of God, natural phenomenon, or act of a third party, including but not limited to war, strikes, fires, explosions, governmental prohibition, judicial order or injunction, acts of upstream appropriators, sabotage, terrorism, explosions, and unforeseeable breakage, damage, or blockage to machinery, equipment, pipelines, or canals and other causes that are beyond the reasonable control of the Party claiming the inability to perform.

§9.10 SECURITY INTEREST IN CONTRACT REVENUES. Chapter 1208, Government Code, provides that no filing, registering, recording or publication of this Agreement is required to establish a pledge of the Contract Revenues or to perfect, protect or maintain the lien created hereby on the Contract Revenues. In the event Chapter 1208, Government Code, is amended at any time while any obligations remain outstanding under this Agreement, such that the lien on the Contract Revenues is to be subject to the filing requirements of Chapter 9, Business & Commerce Code, the Authority agrees to take such action to comply with the applicable provisions of Chapter 9, Business & Commerce Code, to maintain perfection of the lien on and pledge of the Contract Revenues under this Agreement.

SIGNATURE PAGES TO FOLLOW

DRAFT MASTER AGREEMENT (January 8, 2013)

EXECUTED as of this _____ day of _____, 20__.

TEXAS WATER DEVELOPMENT BOARD

Melanie Callahan, Executive Administrator

ATTEST:

EXECUTED as of this _____ day of _____, 20__.

COASTAL WATER AUTHORITY

ATTEST:

APPROVED as to Legality:
Greg Abbott, Attorney General
State of Texas

By: _____
Assistant Attorney General

DRAFT MASTER AGREEMENT (January 8, 2013)

ATTACHMENT A

BOND COUNSEL OPINION REGARDING
IMPACT OF THE PROJECT ON THE
TAX-EXEMPT STATUS OF TWDB BONDS

DRAFT MASTER AGREEMENT (January 8, 2013)

ATTACHMENT B

SCHEDULES

DRAFT MASTER AGREEMENT (January 8, 2013)

ATTACHMENT C

FORMAT FOR DETERMINATION OF AUTHORITY USE OF TWDB OWNERSHIP

Controller's Office

To the Honorable Mayor and City Council of the City of Houston, Texas:

I hereby certify, with respect to the money required for the contract, agreement, obligation or expenditure contemplated by the ordinance set out below that:

- () Funds have been encumbered out of funds previously appropriated for such purpose.
- () Funds have been certified and designated to be appropriated by separate ordinance to be approved prior to the approval of the ordinance set out below.
- () Funds will be available out of current or general revenue prior to the maturity of any such obligation.
- () No pecuniary obligation is to be incurred as a result of approving the ordinance set out below.
- () The money required for the expenditure or expenditures specified below is in the treasury, in the fund or funds specified below, and is not appropriated for any other purposes.
- () A certificate with respect to the money required for the expenditure or expenditures specified below is attached hereto and incorporated herein by this reference.
- () Other - Encumbers funding in the future through a pledge of revenue from the Combined Utility System General Purpose Fund

Date: 1-15, 2013

CRB
Ronald C. Shivers
City Controller of the City of Houston, Texas

JBS
YBS

FUND REF: N/A AMOUNT: N/A ENCUMB. NO.: RF2011-13
at 093128

City of Houston, Texas Ordinance No. 2013-30

AN ORDINANCE APPROVING AND AUTHORIZING A FIRST SUPPLEMENT TO A PROJECTS CONTRACT BETWEEN THE CITY OF HOUSTON AND THE COASTAL WATER AUTHORITY APPROVED BY ORDINANCE NO. 2009-053; AUTHORIZING A PLEDGE FOR ADDITIONAL FUNDS OUT OF THE WATER AND SEWER GENERAL PURPOSE FUND ESTABLISHED UNDER ORDINANCE NO. 2004-299, CONSISTENT WITH THE FIRST SUPPLEMENT; MAKING VARIOUS FINDINGS AND PROVISIONS RELATED THERETO; AND DECLARING AN EMERGENCY.

* * * *

WHEREAS, Houston City Council approved Ordinance No. 2004-299 (the "Master Bond Ordinance"), on April 21, 2004, which in Section 5.9 created a general purpose fund (the "General Purpose Fund") to pay for, among other things, betterments and improvements to the City's Combined Utility System;

WHEREAS, Houston City Council approved Ordinance No. 2009-053 ("Original Ordinance"), on January 28, 2009, authorized a Project Contract ("Original Contract") between the City of Houston and the Coastal Water Authority ("CWA") for the construction, financing, operation, and maintenance of the Luce Bayou Interbasin Transfer Project (the "Project");

WHEREAS, the Original Ordinance also authorized the pledge of payments from the General Purpose Fund to CWA for the design and construction of the Project, which will serve the City's Combined Utility System;

WHEREAS, Section 3.03 of the Original Contract contemplated that the City and CWA would fund construction of the Project with State Participation Funds secured by the City's pledged revenues and would enter into one or more additional Supplemental Agreements to finance the Project's construction;

WHEREAS, CWA has approved and CWA and the Texas Water Development Board (the "TWDB") intend to execute a "Master Agreement", which will provide CWA with \$28,754,000 in State Participation Funding ("2013 Funding") for construction of the Project and the completion of permitting for the Project;

WHEREAS, the Master Agreement stipulates that TWDB receives a 35% undivided ownership interest in the Project in exchange for providing 2013 Funding;

WHEREAS, the Master Agreement allows the TWDB to provide CWA with additional State Participation Funding through supplemental agreements to further finance construction of the Project in exchange for a proportionally larger ownership interest, in an amount not to exceed \$281,000,000;

WHEREAS, the City desires to secure 2013 Funding and future State Participation Funding with the pledge of additional revenue from the General Purpose fund and a Supplemental Agreement for the repurchase of the TWDB's undivided ownership interest;

NOW THEREFORE

* * * *

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF HOUSTON, TEXAS:

Section 1. The City Council hereby adopts the findings set out in the preamble hereof as true and correct.

Section 2. The City Council hereby approves and authorizes the contract, agreement or other undertaking described in the title of this Ordinance, in substantially the form as shown in the document which is attached hereto and incorporated herein by this reference. The Mayor is hereby

authorized to execute such document and all related documents on behalf of the City of Houston. The City Secretary is hereby authorized to attest to all such signatures and to affix the seal of the City to all such documents.

Section 3. The City Council hereby authorizes the pledge of payments, not to exceed \$281,000,000, from the General Purpose Fund, established under the Master Bond Ordinance, as it may be amended, to CWA in amounts necessary to repay State Participation Funding provided under the Master Agreement, as it may be amended, in accordance with the terms of the First Supplement described in the title of this Ordinance.

Section 4. There exists a public emergency requiring that this Ordinance be passed finally on the date of its introduction as requested in writing by the Mayor; therefore, this Ordinance shall be passed finally on such date and shall take effect immediately upon its passage and approval by the Mayor; however, in the event that the Mayor fails to sign this Ordinance within five days after its passage and adoption, it shall take effect in accordance with Article VI, Section 6, Houston City Charter.

PASSED AND ADOPTED this 16th day of January, 2013.
APPROVED this _____ day of _____, 20____.

Mayor of the City of Houston, Texas

Pursuant to Article VI, Section 6, Houston City Charter, the effective date of the foregoing Ordinance is JAN 17 2013.



City Secretary

(Prepared by Legal Dept. 
(ALC 01/09/13) Assistant City Attorney
(Requested by Michael S. Marcotte, P.E. Director, Department of Public Works & Engineering)
(LD File No. 180/200127005)

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AYE	NO	
✓		MAYOR PARKER
••••	••••	COUNCIL MEMBERS
✓		BROWN
✓		DAVIS
✓		COHEN
	ABSENT	ADAMS
✓		MARTIN
	ABSENT-CITY BUSINESS	HOANG
✓		PENNINGTON
✓		GONZALEZ
✓		RODRIGUEZ
✓		LASTER
✓		GREEN
✓		COSTELLO
✓		BURKS
✓		NORIEGA
✓		BRADFORD
✓		CHRISTIE
CAPTION	ADOPTED	

**FIRST SUPPLEMENT TO PROJECT CONTRACT
BETWEEN
CITY OF HOUSTON, TEXAS,
AND THE COASTAL WATER AUTHORITY**

This First Supplement to Project Contract (the "*First Supplement*") amending that certain Project Contract (the "*Original Project Contract*"; as amended hereby, the "*Project Contract*") between the City of Houston, Texas (the "*City*"), a home-rule city, and Coastal Water Authority ("*CWA*"; collectively the City and CWA are herein the "*Parties*"), a political subdivision and conservation district of the State of Texas, dated January 28, 2009, is entered into as of the date of the final countersignature hereto.

RECITALS

1. The Parties entered into the Original Project Contract to provide for the planning, design, property acquisition, and construction and financing of the Luce Bayou Interbasin Transfer Project (the "*Luce Bayou Project*").
2. The Parties desire to amend the Original Project Contract to provide for the completion of the design phase of the Luce Bayou Project, including the bidding of construction contracts, and the initial phases of construction.
3. The Parties recognize that the Phase I Preliminary Design is complete, and that the Land and Mitigation Costs are ongoing. CWA and the City desire to finance the completion of the Phase II Final Design, and to commence construction of the Luce Bayou Project. The most financially advantageous way of financing the Project Costs is through the Master Agreement authorized by CWA on January 9, 2013 (as hereafter amended or supplemented, the "*Master Agreement*"), between CWA and the Texas Water Development Board ("*TWDB*").
4. City Council adopted City Ordinance No. 2004-299 on April 21, 2004 (the "*Master Ordinance*") to establish and finance the City's Combined Utility System and set forth a number of covenants between the City and subsequent holders of Combined Utility System bonds. Section 5.9 of the Master Ordinance pledges payments from funds in the General Purpose Fund to pay for various costs, including the costs of the Luce Bayou Project. The City is further obligated, pursuant to Section 7.2 of the Master Ordinance to exercise all necessary power and authority to establish, fix, increase, impose and collect rates and charges for the use and services of the City's water and sewer system in the amounts required to comply with covenants made pursuant to the Master Ordinance ("*Rate Order Authority*"), together with other available funds (including payments from the Authorities).
5. CWA will enter into a Master Agreement for the acquisition, sale, transfer, and lease of interests in water supply projects using the State Participation Account of the Texas Water Development Fund II, to fund a portion of the Project Costs.
6. The Parties further intend to enter into one or more additional Supplements to the Project Contract for funding Project Costs and for one or more contracts for the operation and maintenance of the Luce Bayou Project.

7. CWA's unconditional obligation to purchase 100% of the TWDB's interest in the Luce Bayou Project is secured solely by payments from the City of Pledged Revenues.

SUPPLEMENTAL AGREEMENT

For and in consideration of the respective promises and the mutual covenants and benefits hereinafter set forth, the City and CWA agree as follows:

ARTICLE I

DEFINITIONS

SECTION 1.1. Original Project Contract Definitions.

Capitalized terms used herein and not otherwise defined herein have the meanings assigned to such terms in the Recitals or in Section 1.01 of the Original Project Contract. Capitalized terms defined in the Recitals hereto have the meanings assigned to such terms in the Recitals.

SECTION 1.2. Supplemental Definitions.

The following capitalized terms used herein have the meanings assigned to such terms in the following definitions.

"Call Date" means the date prior to which CWA cannot purchase the TWDB's portion of the Luce Bayou Project, as set forth in the Payment Schedules to the Master Agreement.

"City Attorney" means the City of Houston City Attorney or his or her designee.

"Construction Fund" means the separate account created under the Master Agreement and maintained at the depository bank of CWA for the purpose of paying and accounting for Project Costs, to be used only for Project Costs or for the CWA's purchase of the TWDB's interest in the Luce Bayou Project.

"Combined Utility System Fund" means all or any of the funds or accounts created under the Master Ordinance as directed in writing by the Director.

"Construction Stage" means that stage of the Luce Bayou Project that involves the physical construction of the Luce Bayou Project, including raw water intake pump station, electrical service, transmission mains, sedimentation basins, open channel canal, maintenance facility, siphons, drainage works, access roads and canal crossings, related appurtenances, and related engineering and inspection fees.

"Cost of Acquisition" means the amount of funds deposited into the Construction Fund and/or the Escrow Account by the TWDB for the acquisition of an undivided interest in the Luce Bayou Project.

“Date of Acquisition” means each date that TWDB delivers funds to the Construction Fund and/or the Escrow Account for the acquisition of an undivided interest in the Luce Bayou Project.

“Director” means the Director of the City of Houston Public Works & Engineering Department or his or her designee.

“Escrow” means the TWDB’s transfer of funds to a third-party custodian until such funds are authorized for release to CWA by the Executive Administrator.

“Escrow Account” means the account created under the Master Agreement for the TWDB’s delivery of funds to be held in Escrow upon closing for the TWDB’s acquisition of an undivided interest in the Luce Bayou Project, to be used only for Project Costs or for CWA’s purchase of the TWDB’s interest in the Luce Bayou Project.

“Executive Administrator” means the Executive Administrator of the TWDB.

“First Lien Bonds” has the meaning assigned to such term in Section 2.1 of that Certain City of Houston Ordinance No. 2004-299.

“Payment Schedules” means the payment schedule(s) attached to the Master Agreement from time to time, which show the payments that CWA is obligated to make in order to purchase the TWDB’s interest in the Luce Bayou Project. Each Payment Schedule is associated with the funds delivered by TWDB upon each advance pursuant to the Master Agreement as provided for in Section 2.1 of this First Supplement. Such Payment Schedules shall, at a minimum, detail the interest rate to be paid by CWA, the TWDB’s source of funds, and the Call Date associated with CWA’s purchase obligation.

“Project Costs” for purposes of funding under the Master Agreement, means costs of the Luce Bayou Project associated with its construction, bond issuance costs, and all other costs and expenditures which under standard principles of accounting would constitute a capital cost of the Luce Bayou Project, including specifically but not limited to: the cost of engineering design (other than Preliminary Project Costs paid or to be paid with proceeds of the WIF Bonds), supervision and inspection; the cost of testing laboratories and other professional services associated with construction of the Luce Bayou Project; abstractors’ costs; the cost of constructing the Project infrastructure; the cost of acquiring all lands and interests in land for the Luce Bayou Project (other than Land and Mitigation Costs paid or to be paid from Available CWA Revenues), including all costs associated with the planning, design, and construction of the Project. The term “Project Costs” does not include any capitalized interest, reserve funds, or operational expenses. All Project Costs hereunder shall be “Construction Costs” as defined in the Original Project Contract.

“State” means the State of Texas.

“State Participation Debt Service” has the meaning stated in Section 2.4A.

ARTICLE II

CONSTRUCTION; FACILITY PURCHASE

SECTION 2.1. *Construction; Construction Finance.*

The TWDB may purchase up to 80% of an undivided interest in the Luce Bayou Project, and will purchase an initial 35% of an undivided interest in the Luce Bayou Project. The TWDB's initial 35% interest will be financed with \$28,754,000 of Project Costs advanced under the Master Agreement to the Construction Fund or the Escrow Fund. Thereafter the TWDB may finance its additional undivided interest in the Luce Bayou Project with one or more additional advances in an amount not to exceed \$281,000,000 in the aggregate.

The Parties further recognize that the TWDB Project Cost advances are not sufficient to finance the entire Luce Bayou Project, and one or more Supplements to the Project Contract may be required to finance additional Project Costs for the Luce Bayou Project. The terms of this First Supplement may apply to future Project Cost advances by the TWDB made under an amendment to the Master Agreement if (1) the Director, in consultation with the City Attorney, provides CWA with prior written consent; and (2) the amendment to the Master Agreement does not substantially change the terms of the Master Agreement other than TWDB's ownership interest in the Luce Bayou Project in accordance with Section 2.5 of the Master Agreement and the scheduled payments for the purchase of the TWDB's ownership interest in the Luce Bayou Project as reflected in a revised Payment Schedule.

SECTION 2.2. *Approval and Administration of Master Agreement.*

- A. The City has reviewed and approves the terms of the Master Agreement.
- B. CWA will enter into the Master Agreement with the TWDB, and agrees with the City to carry out its duties thereunder. CWA agrees that it will not amend or supplement the Master Agreement without the prior written approval of the amendment or supplement by the Director. CWA agrees to copy the Director on all official correspondence, reports, documents, and other information, and correspondence concerning changes in the Payment Schedule, provided to or received from TWDB in connection with the Master Agreement and the financing and construction of the Luce Bayou Project thereunder.
- C. CWA shall apply amounts received under the Master Agreement solely for reasonable and necessary Project Costs, in carrying out the construction of the Luce Bayou Project in accordance with Section 2.03 of the Original Project Agreement.
- D. On any liability insurance policy required by the Master Agreement, CWA shall name the City as an additional insured and require its consultants and contractors to name the City as an additional insured. CWA will provide and require its third party contractors to provide Alternate Employer endorsements in favor of the City on workers' compensation policies. Unless the Director provides a written waiver, the City shall be a dual obligee on any payment, performance, maintenance, or restoration bond for the Luce Bayou Project in which CWA is an obligee.

SECTION 2.3. Purchase & Pledge By CWA.

A. In accordance with a Payment Schedule approved by the Director, CWA will purchase TWDB's ownership interest in the Luce Bayou Project at the earliest possible date, which date shall be not later than the date(s) established by the Payment Schedule(s), so that the State may fully recover its investment therein.

B. CWA shall use Pledged Revenues received from the City to pay State Participation Debt Service in accordance with an approved Payment Schedule only for such purpose. However, if a shortfall in aggregate payments to TWDB for either WIF Bonds or State Participation Debt Service ("Either Debt") occurs, CWA may apply the City's payments from the General Purpose Fund to Either Debt on a pro rata basis. To protect against the misappropriation of General Purpose Funds, CWA shall pay to the Combined Utility System Fund any amount equal to the Pledged Revenues CWA received for purposes of payments under the Payment Schedule and did not pay to TWDB in accordance with the Payment Schedule or, in the case of a shortfall in aggregate payments, did not pay to satisfy Either Debt.

SECTION 2.4. Pledge by City.

A. In order to secure CWA's obligation to purchase the TWDB's ownership interest in the Luce Bayou Project and CWA's other financial obligations to the TWDB under the Master Agreement, the City agrees to pay from and pledges and grants to CWA as security for the payments hereunder, a lien on Pledged Revenues in such amounts as may be necessary, when and as required by the Master Agreement, and the Payment Schedules incorporated therein to make all payments to the TWDB from CWA required under the Master Agreement. The lien created hereunder is on a parity with the lien created on the Pledged Revenues for payment of the WIF Bonds under the Original Project Contract. The City agrees to remit Pledged Revenues to CWA or directly to TWDB on behalf of CWA, in the amounts necessary to purchase the TWDB's ownership interest in the Luce Bayou Project, to pay lease payments under Section 3.6B of the Master Agreement, to pay, to the extent authorized by law, indemnity payments under Section 5.2A and 5.2B of the Master Agreement, and to pay other costs arising under the Master Agreement to be paid by CWA to the TWDB (collectively, the "*State Participation Debt Service*").

B. The City hereby warrants that it shall exercise its Rate Order Authority under Sections 7.2 of the Master Ordinance and Texas Government Code Section 1502.057 to maintain rates and charges for its water and sewer system, which, together with other available funds (including payments from the Authorities), are sufficient to pay from the Pledged Revenues the State Participation Debt Service on a parity basis with the Debt Service on the WIF Bonds.

C. The City is and shall be unconditionally obligated to pay CWA Pledged Revenues in accordance with Subsection A, regardless of whether or not CWA actually acquires or completes the Luce Bayou Project, or whether or not CWA actually approves, purchases, receives, accepts, or uses the Luce Bayou, and such payments by the City are not subject to any abatement, set-off, recoupment, or counterclaim. CWA and the TWDB are entitled to rely on this First Supplement, notwithstanding any provision of the Project Contract or any other

contract or agreement to the contrary, and regardless of the validity of, or the performance of, the remainder of the Project Contract or any other contract or agreement.

D. All provisions of this Agreement relating to the City's Pledged Revenues are subject to the provisions of the Master Ordinance.

SECTION 2.5. Price of Sale to CWA; Schedule of CWA Payments.

The purchase price to be paid for the TWDB's interest in the Luce Bayou Project, and the schedule for the purchase of the TWDB's interest in the Luce Bayou Project, is the purchase price and Payment Schedules established in the Master Agreement, which may be hereafter amended or supplemented for additional advances as provided in the Master Agreement and Section 2.1 of this First Supplement.

SECTION 2.6. Operations and Maintenance of the Luce Bayou Project.

No less than 12 months prior to completion of the Luce Bayou Project, the City and CWA will contract on mutually agreed terms for the CWA's operation and maintenance of the Luce Bayou Project, including necessary repairs and future capital improvements, and the budgeting and payment of costs therefore.

ARTICLE III.

MISCELLANEOUS

SECTION 3.1. Effective Date.

This First Supplement shall become effective when and if the Master Agreement becomes effective.

SECTION 3.2. Term.

This First Supplement shall continue in full force and effect until the City and CWA have satisfied all of their obligations hereunder and all of the TWDB's undivided ownership interest in the Project has been purchased by CWA.

SECTION 3.3. Force Majeure.

Except for the City's unconditional obligation to make the payments to CWA as provided in this First Supplement, neither party is liable in damages or will otherwise suffer any default for any delays, failures, or omissions whatsoever hereunder if caused by force majeure. As used herein, the term "force majeure" includes acts of God, drought, insufficiency of water in the Trinity River, fire, storm, flood, landslide, subsidences of land, lightning, earthquake, washout, explosion, epidemic, war, acts of enemies or belligerents, sabotage, interference by, orders of, or compliance with requests or recommendations of civil or military courts or other authorities, federal, state or local, including any agency or person appointed by any such authority or by any official thereof (whether de jure or de facto and whether acting legally or not), inability to obtain materials, strikes or other differences with labor (whether or not within the power of the party to

settle the same), breakage or accident to machinery, canals, reservoirs or lines of pipe, or to any other cause (whether or not of the same class or kind as those set forth above) not due to the willful fault or gross negligence of such party, while or so long as performance is prevented by such cause and due diligence is being used to resume performance at the earliest practicable time.

In any such event of force majeure, prompt notice shall be given by the affected party to the other of the existence of such cause and of readiness to resume performance.

SECTION 3.4. *Third Parties.*

This First Supplement is for the sole and exclusive benefit of the City, CWA, and the TWDB, and no third parties have any rights hereunder.

SECTION 3.5. *Severability.*

In the event any term, covenant or condition herein contained are held to be invalid by any court of competent jurisdiction, such invalidity shall not affect any other term, covenant, or condition herein contained, provided that such invalidity does not materially prejudice either CWA or the City in their respective rights and obligations contained in the valid terms, covenants or conditions hereof.

EXECUTED in multiple counterparts at Houston, Texas, as of this ____ day of _____, 20__.

CITY OF HOUSTON, TEXAS

By: _____
Mayor

ATTEST:

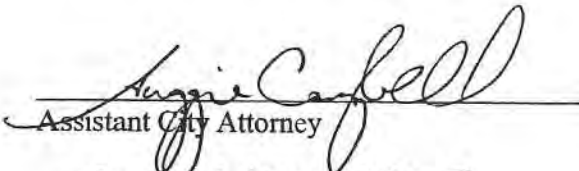
COUNTERSIGNED:

City Secretary

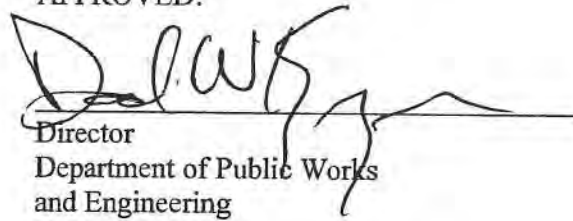
City Controller

APPROVED AS TO FORM:

APPROVED:



Assistant City Attorney
LD# 0801200127005



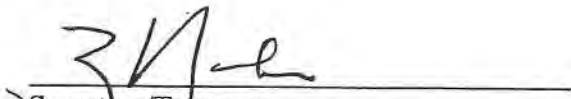
Director
Department of Public Works
and Engineering

COASTAL WATER AUTHORITY

By: 

President
Board of Directors

ATTEST:



Secretary/Treasurer
Board of Directors

**FIRST SUPPLEMENT TO PROJECT CONTRACT
BETWEEN
CITY OF HOUSTON, TEXAS,
AND THE COASTAL WATER AUTHORITY**

This First Supplement to Project Contract (the "*First Supplement*") amending that certain Project Contract (the "*Original Project Contract*"; as amended hereby, the "*Project Contract*") between the City of Houston, Texas (the "*City*"), a home-rule city, and Coastal Water Authority ("*CWA*"; collectively the City and CWA are herein the "*Parties*"), a political subdivision and conservation district of the State of Texas, dated January 28, 2009, is entered into as of the date of the final countersignature hereto.

RECITALS

1. The Parties entered into the Original Project Contract to provide for the planning, design, property acquisition, and construction and financing of the Luce Bayou Interbasin Transfer Project (the "*Luce Bayou Project*").
2. The Parties desire to amend the Original Project Contract to provide for the completion of the design phase of the Luce Bayou Project, including the bidding of construction contracts, and the initial phases of construction.
3. The Parties recognize that the Phase I Preliminary Design is complete, and that the Land and Mitigation Costs are ongoing. CWA and the City desire to finance the completion of the Phase II Final Design, and to commence construction of the Luce Bayou Project. The most financially advantageous way of financing the Project Costs is through the Master Agreement authorized by CWA on January 9, 2013 (as hereafter amended or supplemented, the "*Master Agreement*"), between CWA and the Texas Water Development Board ("*TWDB*").
4. City Council adopted City Ordinance No. 2004-299 on April 21, 2004 (the "*Master Ordinance*") to establish and finance the City's Combined Utility System and set forth a number of covenants between the City and subsequent holders of Combined Utility System bonds. Section 5.9 of the Master Ordinance pledges payments from funds in the General Purpose Fund to pay for various costs, including the costs of the Luce Bayou Project. The City is further obligated, pursuant to Section 7.2 of the Master Ordinance to exercise all necessary power and authority to establish, fix, increase, impose and collect rates and charges for the use and services of the City's water and sewer system in the amounts required to comply with covenants made pursuant to the Master Ordinance ("*Rate Order Authority*"), together with other available funds (including payments from the Authorities).
5. CWA will enter into a Master Agreement for the acquisition, sale, transfer, and lease of interests in water supply projects using the State Participation Account of the Texas Water Development Fund II, to fund a portion of the Project Costs.
6. The Parties further intend to enter into one or more additional Supplements to the Project Contract for funding Project Costs and for one or more contracts for the operation and maintenance of the Luce Bayou Project.

7. CWA's unconditional obligation to purchase 100% of the TWDB's interest in the Luce Bayou Project is secured solely by payments from the City of Pledged Revenues.

SUPPLEMENTAL AGREEMENT

For and in consideration of the respective promises and the mutual covenants and benefits hereinafter set forth, the City and CWA agree as follows:

ARTICLE I

DEFINITIONS

SECTION 1.1. Original Project Contract Definitions.

Capitalized terms used herein and not otherwise defined herein have the meanings assigned to such terms in the Recitals or in Section 1.01 of the Original Project Contract. Capitalized terms defined in the Recitals hereto have the meanings assigned to such terms in the Recitals.

SECTION 1.2. Supplemental Definitions.

The following capitalized terms used herein have the meanings assigned to such terms in the following definitions.

"Call Date" means the date prior to which CWA cannot purchase the TWDB's portion of the Luce Bayou Project, as set forth in the Payment Schedules to the Master Agreement.

"City Attorney" means the City of Houston City Attorney or his or her designee.

"Construction Fund" means the separate account created under the Master Agreement and maintained at the depository bank of CWA for the purpose of paying and accounting for Project Costs, to be used only for Project Costs or for the CWA's purchase of the TWDB's interest in the Luce Bayou Project.

"Combined Utility System Fund" means all or any of the funds or accounts created under the Master Ordinance as directed in writing by the Director.

"Construction Stage" means that stage of the Luce Bayou Project that involves the physical construction of the Luce Bayou Project, including raw water intake pump station, electrical service, transmission mains, sedimentation basins, open channel canal, maintenance facility, siphons, drainage works, access roads and canal crossings, related appurtenances, and related engineering and inspection fees.

"Cost of Acquisition" means the amount of funds deposited into the Construction Fund and/or the Escrow Account by the TWDB for the acquisition of an undivided interest in the Luce Bayou Project.

“Date of Acquisition” means each date that TWDB delivers funds to the Construction Fund and/or the Escrow Account for the acquisition of an undivided interest in the Luce Bayou Project.

“Director” means the Director of the City of Houston Public Works & Engineering Department or his or her designee.

“Escrow” means the TWDB’s transfer of funds to a third-party custodian until such funds are authorized for release to CWA by the Executive Administrator.

“Escrow Account” means the account created under the Master Agreement for the TWDB’s delivery of funds to be held in Escrow upon closing for the TWDB’s acquisition of an undivided interest in the Luce Bayou Project, to be used only for Project Costs or for CWA’s purchase of the TWDB’s interest in the Luce Bayou Project.

“Executive Administrator” means the Executive Administrator of the TWDB.

“First Lien Bonds” has the meaning assigned to such term in Section 2.1 of that Certain City of Houston Ordinance No. 2004-299.

“Payment Schedules” means the payment schedule(s) attached to the Master Agreement from time to time, which show the payments that CWA is obligated to make in order to purchase the TWDB’s interest in the Luce Bayou Project. Each Payment Schedule is associated with the funds delivered by TWDB upon each advance pursuant to the Master Agreement as provided for in Section 2.1 of this First Supplement. Such Payment Schedules shall, at a minimum, detail the interest rate to be paid by CWA, the TWDB’s source of funds, and the Call Date associated with CWA’s purchase obligation.

“Project Costs” for purposes of funding under the Master Agreement, means costs of the Luce Bayou Project associated with its construction, bond issuance costs, and all other costs and expenditures which under standard principles of accounting would constitute a capital cost of the Luce Bayou Project, including specifically but not limited to: the cost of engineering design (other than Preliminary Project Costs paid or to be paid with proceeds of the WIF Bonds), supervision and inspection; the cost of testing laboratories and other professional services associated with construction of the Luce Bayou Project; abstractors’ costs; the cost of constructing the Project infrastructure; the cost of acquiring all lands and interests in land for the Luce Bayou Project (other than Land and Mitigation Costs paid or to be paid from Available CWA Revenues), including all costs associated with the planning, design, and construction of the Project. The term “Project Costs” does not include any capitalized interest, reserve funds, or operational expenses. All Project Costs hereunder shall be “Construction Costs” as defined in the Original Project Contract.

“State” means the State of Texas.

“State Participation Debt Service” has the meaning stated in Section 2.4A.

ARTICLE II

CONSTRUCTION; FACILITY PURCHASE

SECTION 2.1. *Construction; Construction Finance.*

The TWDB may purchase up to 80% of an undivided interest in the Luce Bayou Project, and will purchase an initial 35% of an undivided interest in the Luce Bayou Project. The TWDB's initial 35% interest will be financed with \$28,754,000 of Project Costs advanced under the Master Agreement to the Construction Fund or the Escrow Fund. Thereafter the TWDB may finance its additional undivided interest in the Luce Bayou Project with one or more additional advances in an amount not to exceed \$281,000,000 in the aggregate.

The Parties further recognize that the TWDB Project Cost advances are not sufficient to finance the entire Luce Bayou Project, and one or more Supplements to the Project Contract may be required to finance additional Project Costs for the Luce Bayou Project. The terms of this First Supplement may apply to future Project Cost advances by the TWDB made under an amendment to the Master Agreement if (1) the Director, in consultation with the City Attorney, provides CWA with prior written consent; and (2) the amendment to the Master Agreement does not substantially change the terms of the Master Agreement other than TWDB's ownership interest in the Luce Bayou Project in accordance with Section 2.5 of the Master Agreement and the scheduled payments for the purchase of the TWDB's ownership interest in the Luce Bayou Project as reflected in a revised Payment Schedule.

SECTION 2.2. *Approval and Administration of Master Agreement.*

- A. The City has reviewed and approves the terms of the Master Agreement.
- B. CWA will enter into the Master Agreement with the TWDB, and agrees with the City to carry out its duties thereunder. CWA agrees that it will not amend or supplement the Master Agreement without the prior written approval of the amendment or supplement by the Director. CWA agrees to copy the Director on all official correspondence, reports, documents, and other information, and correspondence concerning changes in the Payment Schedule, provided to or received from TWDB in connection with the Master Agreement and the financing and construction of the Luce Bayou Project thereunder.
- C. CWA shall apply amounts received under the Master Agreement solely for reasonable and necessary Project Costs, in carrying out the construction of the Luce Bayou Project in accordance with Section 2.03 of the Original Project Agreement.
- D. On any liability insurance policy required by the Master Agreement, CWA shall name the City as an additional insured and require its consultants and contractors to name the City as an additional insured. CWA will provide and require its third party contractors to provide Alternate Employer endorsements in favor of the City on workers' compensation policies. Unless the Director provides a written waiver, the City shall be a dual obligee on any payment, performance, maintenance, or restoration bond for the Luce Bayou Project in which CWA is an obligee.

SECTION 2.3. Purchase & Pledge By CWA.

A. In accordance with a Payment Schedule approved by the Director, CWA will purchase TWDB's ownership interest in the Luce Bayou Project at the earliest possible date, which date shall be not later than the date(s) established by the Payment Schedule(s), so that the State may fully recover its investment therein.

B. CWA shall use Pledged Revenues received from the City to pay State Participation Debt Service in accordance with an approved Payment Schedule only for such purpose. However, if a shortfall in aggregate payments to TWDB for either WIF Bonds or State Participation Debt Service ("Either Debt") occurs, CWA may apply the City's payments from the General Purpose Fund to Either Debt on a pro rata basis. To protect against the misappropriation of General Purpose Funds, CWA shall pay to the Combined Utility System Fund any amount equal to the Pledged Revenues CWA received for purposes of payments under the Payment Schedule and did not pay to TWDB in accordance with the Payment Schedule or, in the case of a shortfall in aggregate payments, did not pay to satisfy Either Debt.

SECTION 2.4. Pledge by City.

A. In order to secure CWA's obligation to purchase the TWDB's ownership interest in the Luce Bayou Project and CWA's other financial obligations to the TWDB under the Master Agreement, the City agrees to pay from and pledges and grants to CWA as security for the payments hereunder, a lien on Pledged Revenues in such amounts as may be necessary, when and as required by the Master Agreement, and the Payment Schedules incorporated therein to make all payments to the TWDB from CWA required under the Master Agreement. The lien created hereunder is on a parity with the lien created on the Pledged Revenues for payment of the WIF Bonds under the Original Project Contract. The City agrees to remit Pledged Revenues to CWA or directly to TWDB on behalf of CWA, in the amounts necessary to purchase the TWDB's ownership interest in the Luce Bayou Project, to pay lease payments under Section 3.6B of the Master Agreement, to pay, to the extent authorized by law, indemnity payments under Section 5.2A and 5.2B of the Master Agreement, and to pay other costs arising under the Master Agreement to be paid by CWA to the TWDB (collectively, the "*State Participation Debt Service*").

B. The City hereby warrants that it shall exercise its Rate Order Authority under Sections 7.2 of the Master Ordinance and Texas Government Code Section 1502.057 to maintain rates and charges for its water and sewer system, which, together with other available funds (including payments from the Authorities), are sufficient to pay from the Pledged Revenues the State Participation Debt Service on a parity basis with the Debt Service on the WIF Bonds.

C. The City is and shall be unconditionally obligated to pay CWA Pledged Revenues in accordance with Subsection A, regardless of whether or not CWA actually acquires or completes the Luce Bayou Project, or whether or not CWA actually approves, purchases, receives, accepts, or uses the Luce Bayou, and such payments by the City are not subject to any abatement, set-off, recoupment, or counterclaim. CWA and the TWDB are entitled to rely on this First Supplement, notwithstanding any provision of the Project Contract or any other

contract or agreement to the contrary, and regardless of the validity of, or the performance of, the remainder of the Project Contract or any other contract or agreement.

D. All provisions of this Agreement relating to the City's Pledged Revenues are subject to the provisions of the Master Ordinance.

SECTION 2.5. Price of Sale to CWA; Schedule of CWA Payments.

The purchase price to be paid for the TWDB's interest in the Luce Bayou Project, and the schedule for the purchase of the TWDB's interest in the Luce Bayou Project, is the purchase price and Payment Schedules established in the Master Agreement, which may be hereafter amended or supplemented for additional advances as provided in the Master Agreement and Section 2.1 of this First Supplement.

SECTION 2.6. Operations and Maintenance of the Luce Bayou Project.

No less than 12 months prior to completion of the Luce Bayou Project, the City and CWA will contract on mutually agreed terms for the CWA's operation and maintenance of the Luce Bayou Project, including necessary repairs and future capital improvements, and the budgeting and payment of costs therefore.

ARTICLE III.

MISCELLANEOUS

SECTION 3.1. Effective Date.

This First Supplement shall become effective when and if the Master Agreement becomes effective.

SECTION 3.2. Term.

This First Supplement shall continue in full force and effect until the City and CWA have satisfied all of their obligations hereunder and all of the TWDB's undivided ownership interest in the Project has been purchased by CWA.

SECTION 3.3. Force Majeure.

Except for the City's unconditional obligation to make the payments to CWA as provided in this First Supplement, neither party is liable in damages or will otherwise suffer any default for any delays, failures, or omissions whatsoever hereunder if caused by force majeure. As used herein, the term "force majeure" includes acts of God, drought, insufficiency of water in the Trinity River, fire, storm, flood, landslide, subsidences of land, lightning, earthquake, washout, explosion, epidemic, war, acts of enemies or belligerents, sabotage, interference by, orders of, or compliance with requests or recommendations of civil or military courts or other authorities, federal, state or local, including any agency or person appointed by any such authority or by any official thereof (whether de jure or de facto and whether acting legally or not), inability to obtain materials, strikes or other differences with labor (whether or not within the power of the party to

settle the same), breakage or accident to machinery, canals, reservoirs or lines of pipe, or to any other cause (whether or not of the same class or kind as those set forth above) not due to the willful fault or gross negligence of such party, while or so long as performance is prevented by such cause and due diligence is being used to resume performance at the earliest practicable time.

In any such event of force majeure, prompt notice shall be given by the affected party to the other of the existence of such cause and of readiness to resume performance.

SECTION 3.4. *Third Parties.*

This First Supplement is for the sole and exclusive benefit of the City, CWA, and the TWDB, and no third parties have any rights hereunder.

SECTION 3.5. *Severability.*

In the event any term, covenant or condition herein contained are held to be invalid by any court of competent jurisdiction, such invalidity shall not affect any other term, covenant, or condition herein contained, provided that such invalidity does not materially prejudice either CWA or the City in their respective rights and obligations contained in the valid terms, covenants or conditions hereof.

EXECUTED in multiple counterparts at Houston, Texas, as of this ____ day of _____, 20__.

CITY OF HOUSTON, TEXAS

By: _____
Mayor

ATTEST:

COUNTERSIGNED:

City Secretary

City Controller

APPROVED AS TO FORM:

APPROVED:


Assistant City Attorney

Director
Department of Public Works
and Engineering

COASTAL WATER AUTHORITY

By:  _____
President
Board of Directors

ATTEST:

 _____
Secretary/Treasurer
Board of Directors

21. ORDINANCE appropriating \$1,000,000.00 out of Street & Traffic Control & Storm Drainage DDSRF for the Developer Participation Contracts (*Approved by Ordinance No. 2008-307*)
22. ORDINANCE approving and authorizing Advance Funding Agreement between the City of Houston and the **TEXAS DEPARTMENT OF TRANSPORTATION** for the rehabilitation or replacement of Yale Street Bridge at White Oak Bayou - **DISTRICT C - COHEN**
23. ORDINANCE approving and authorizing first supplement to a projects contract between the City of Houston and the **COASTAL WATER AUTHORITY** approved by Ordinance No. 2009-053; authorizing a pledge for additional funds out of the Water & Sewer General Purpose Fund established under Ordinance No. 2004-299, consistent with the first supplement; making various findings and provisions related thereto
24. ORDINANCE approving and authorizing first amendment to the first supplement to the Water Supply Contract between the **NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY** and the City of Houston for the Luce Bayou Inter-Basin Transfer Project
25. ORDINANCE approving and authorizing first amendment to the first supplement to the Water Supply Contract between the **CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY** and the City of Houston for the Luce Bayou Inter-Basin Transfer Project
26. ORDINANCE approving and authorizing first amendment to the first supplement to the Water Supply Contract between the **WEST HARRIS COUNTY REGIONAL WATER AUTHORITY** and the City of Houston for the Luce Bayou Inter-Basin Transfer Project
27. ORDINANCE approving and authorizing first amendment to the first supplement to the Water Supply Contract between the **NORTH FORT BEND COUNTY REGIONAL WATER AUTHORITY** and the City of Houston for the Luce Bayou Inter-Basin Transfer Project
28. ORDINANCE appropriating \$47,772.00 out of Woodlands Regional Participation Fund as an additional appropriation to Professional Landscape Architectural Services Contract between the City of Houston and **CLARK CONDON ASSOCIATES, INC** for the Design of Museum District/Main Street Corridor Improvement Project (*Approved by Ordinance No. 2009-0973, as amended*); approving and authorizing second amendment to the contract - **DISTRICTS C - COHEN and D - ADAMS**
29. ORDINANCE appropriating \$1,812,700.00 out Houston Airport Improvement Fund and awarding construction contract to **R & B GROUP, INC** for Sanitary Sewer Lift Stations Upgrade at George Bush Intercontinental Airport/Houston (*Project 638B*); setting a deadline for the bidder's execution of the contract and delivery of all bonds, insurance and other required contract documents to the City; holding the bidder in default if it fails to meet the deadlines; providing funding for the engineering testing services and for contingencies relating to construction of facilities financed by such funds - **DISTRICT B - DAVIS**
30. ORDINANCE appropriating \$460,000.00 out of Street & Traffic Control and Storm Drainage DDSRF and approving and authorizing Professional Engineering Services Contract between the City of Houston and **R. G. MILLER ENGINEERS, INC** for Local Drainage Project Negotiated Design Work Orders; providing funding for CIP Cost Recovery relating to construction of facilities financed by the Street & Traffic Control and Storm Drainage DDSRF
31. ORDINANCE appropriating \$460,000.00 out of Street & Traffic Control and Storm Drainage DDSRF and approving and authorizing Professional Engineering Services Contract between the City of Houston and **SES HORIZON CONSULTING ENGINEERS, INC** for Local Drainage Project Negotiated Design Work Orders; providing funding for CIP Cost Recovery relating to construction

January
16, 2013



Preliminary Engineering Report

Luce Bayou Interbasin Transfer Project

Prepared for
Coastal Water Authority

Volume I

AECOM Project No. 60097600
TBPE Reg. No. F-3580

January 2011



Preliminary Engineering Report

for

Luce Bayou Interbasin Transfer Project

Prepared by
AECOM Technical Services, Inc.
TBPE Reg. No. F-3580



January 2011
AECOM Project No. 60097600

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Abbreviations and Acronyms

Ac-ft/yr	Acre feet per year
ADF	Average daily flow
AEP	Annual Exceedance Probability
ANSI	American National Standards Institute
CFS	Cubic feet per second
CHCRWA	Central Harris County Regional Water Authority
COH	City of Houston
CR	County Road
CWA	Coastal Water Authority
DEM	Digital Elevation Model
EWPP	East Water Purification Plant
FM	Farm-to-Market
GPM	Gallons per minute
HGSD	Harris Galveston Subsidence District
HI	Hydraulic Institute
HP	Horsepower
LBITP	Luce Bayou Interbasin Transfer Project
LiDAR	Light detection and ranging
MGD	Million gallons per day
MSL	Mean sea level
MUD	Municipal Utility District
NEWPP	Northeast Water Purification Plant
NFBWA	North Fort Bend Water Authority
NHC	North Harris County
NHCRWA	North Harris County Regional Water Authority
NPSHR	Net positive suction head required
PER	Preliminary engineering report
ROW	Right-Of-Way
RWA	Regional water authority
RWP	Regional water plan
SCADA	Supervisory Control and Detection Acquisition
SEWPP	Southeast Water Purification Plant
SH	State Highway
SJRA	San Jacinto River Authority
TCEQ	Texas Commission on Environmental Quality
TDH	Total dynamic head
TRA	Trinity River Authority
TRNWR	Trinity River National Wildlife Refuge



UC	Usage Coefficient
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
WAM	Water Availability Model
WHCRWA	West Harris County Regional Water Authority
WRAP	Water Rights Analysis Package
WSE	Water surface elevation



Executive Summary

Project Introduction and Overview

This Preliminary Engineering Report (PER) establishes all of the basic design aspects of the major components of the Luce Bayou Interbasin Transfer Project (LBITP). This PER is written in support of and provides information for the Clean Water Act Section 404 Permit Application needed for construction.

The purpose of the LBITP is to provide additional surface water supplies to end users that utilize water from Lake Houston. Additional surface water supplies will be transferred to Lake Houston from the Trinity River via the LBITP due to the increased surface water demand in the Harris-Galveston Subsidence District Area 3. Increased demand in the area is being driven by the conversion from groundwater supplies to surface water supplies.

The recommended concept for this interbasin transfer project includes a raw water intake structure and pump station, nearly 3 miles of pipeline, a sedimentation basin, and approximately 23.6 miles of canal. The pump station will be located on the Trinity River at Capers Ridge. The pipeline will extend west-southwest approximately 3 miles along a geological ridge (Capers Ridge) to the watershed divide between the Trinity River and the Lake Houston Watersheds. The pipeline will then outfall into the sedimentation basin at the start of the canal. The canal will outfall into the lower reaches of Luce Bayou, which flows into the northeastern corner of Lake Houston.

Trinity River Conditions

Several studies were conducted to comprehend the characteristics of the Trinity River at Capers Ridge prior to beginning the preliminary engineering. A hydraulic and sediment transport model was developed to assess water surface elevation and sediment transport in the Trinity River. Water surface elevations were determined and are expected to range in elevation between 16.9 feet and 44.7 feet in the Trinity River near Capers Ridge. A bathymetric survey of the Trinity River at Capers Ridge was performed for the purposes of the hydraulic model and preliminary engineering of the pump station intake. The results of the bathymetric model can be found in *Appendix C*.

The sediment transport analysis predicted great variation in suspended sediment concentrations in relation to flow rate within the Trinity River. Significant vertical and horizontal stratification in sediment concentration is also predicted to occur during high flow events. Peak concentrations of up to 10,000 mg/l are found in the bed load near the center of the river channel. Suspended sediment concentrations entering the pump station are anticipated to range from 20 mg/l to 1,800 mg/l. To determine the size distribution of particles suspended for different flows in the Trinity River, an analysis of suspended sediment size distributions was prepared and provided in the report.

Under low flow conditions, Lake Livingston Dam operators monitor raw water withdrawals and release only as much water from the dam as needed to meet all downstream water rights. When the Capers Ridge Pump Station comes online, the Trinity River Authority may have to release additional water during otherwise low natural flows in order to meet the increased raw water demand associated with the LBITP.



Project Capacity and Preliminary Operations Plan

AECOM received untreated water delivery requirements from the City of Houston (COH), which are based on Water Supply Contracts between the COH and the other co-participants (collectively known as the Water Authorities), as well as existing raw water supplies and estimates of future COH demands from Lake Houston. The Water Supply Contracts specify estimated raw water demand allocations for the Water Authorities for the years 2025, 2030, 2035, and 2040. The City is authorized to divert a maximum of 775 cubic feet per second (500 million gallons per day [MGD]) from the Capers Ridge diversion point.

The LBITP capacity is planned to be phased. Construction of the initial supply is mandated to be completed no later than June 30, 2019 by the project's contract between the Coastal Water Authority (CWA) and the COH, and the pump station may be expanded to full capacity in subsequent years as dictated by future demand. Accordingly, untreated water delivery requirements to Lake Houston received from the COH are identified for two phases, 2020 and 2040. Losses along the canal system, estimated to be 15 percent of the total pumped volume, were added to the untreated water delivery requirements. Based on untreated water delivery requirements and estimated canal losses, the required LBITP capacity is projected to be 230 MGD in 2020 and 425 MGD in 2040.

Several portions of the project will be constructed to convey the maximum allowable water right, including the intake structure, electrical service, pipeline, settling basin, and canal structure. Typical operations at the Capers Ridge Pump Station will follow certain guidelines in order to achieve various goals. For example, at least one pump will operate at the Capers Ridge Pump Station during non-flood conditions to preserve flow in the canal, maintain a relatively stable water surface elevation, and reduce sloughing in the channel. Pumping will not occur during extreme flood events. It is anticipated that LBITP will normally be taken out of operation during times when Lake Houston is overflowing the spillway due to a rate of inflow that exceeds demand.

Pump Station Facilities

The major raw water pump station facilities will include a side-channel river intake, trash rack, trash rack cleaning mechanism, sediment settling basin, pump bay, vertical pumps, and a discharge header outfitted with various check, isolation, and air release valves.

Three duty pumps and no redundant pumps were selected as the preferred configuration to provide the required LBITP Phase 1 capacity and to satisfy raw water demand up to the year 2025. In Phase 1, under typical Trinity River conditions, each pump will pump between 53,200 gpm and 56,500 gpm, depending on the number of pumps in operation and final pumps selected. Up to five additional pumps can be added as necessary to meet future demands. An additional three duty pumps can be added to provide a total pumping capacity capable of meeting the projected 2040 LBITP capacity requirement of 425 MGD. Two further pumps can then be added to equal a total of eight installed pumps. A firm pumping capacity of 500 MGD and a total pumping capacity of 557 MGD can be achieved with eight pumps if the impellers of all eight pumps are changed to larger diameter.

The *American National Standards Institute (ANSI) / HI American National Standard for Pump Intake Design, Version 9.8, Copyright 1998* (HI Version 9.8), was used to establish the preliminary layout and design of the proposed Capers Ridge Pump Station. These dimensions are shown in *Exhibits B- 9* and



B-10 of the PER Volume II. Calculations, a summary table, and additional information are provided in *Appendix A-Section III*.

The intake structure will be designed to meet velocity constraints through the trash rack and intake, exclude as much sediment as is practical, and withdraw the required flow under anticipated minimum water surface elevations. The intake will have a total width of 118.5 feet, an interior of 112.5 feet, and an intake elevation of 12 feet, which is 4.9 feet below the minimum anticipated water surface elevation.

The trash rack will be designed to prevent debris from entering the pump station, potentially damaging the pumps and mechanical equipment. AECOM recommends a trash rack bar spacing of 2 inches. The trash rack cleaning mechanism will remove trash and debris from the trash rack on a routine basis to maintain the pump station's capacity. Hydraulically operated articulating boom mechanisms were identified by the AECOM design team as the most effective solution available.

To minimize damage to the impeller, bearings, and wear rings, selective extraction of coarse sediment ahead of the pumps is recommended. A 40' pre-pump settling basin will be provided to remove all coarse sands and to minimize concentrations of medium to fine sands to the maximum extent practical. Multiple options for removing, handling, and storing settled sediment are provided and will be further developed in a later phase of the design and based on owner preferences.

Conveyance System

The Conveyance System for the LBITP project consists of three major sections: a pipeline section, a sedimentation basin section, and a canal section. The capacity of the conveyance system will be 500 MGD. The pipeline section consists of approximately 3 miles of dual 108" pipelines that begin within the Capers Ridge Pump Station. The conveyed water within the pipelines will then empty into the sedimentation basin where sediment and other buildup settle out of the flow along the bottom of the basin. After the conveyed water passes through the sedimentation basin, it enters the canal section. The canal is approximately 23.6 miles long and empties into an outfall structure located in Lake Houston.



Section 1 – Project Introduction and Overview

1.1 Introduction

This document represents the Preliminary Engineering Report (PER) for the Luce Bayou Interbasin Transfer Project (LBITP). This PER establishes all basic design aspects of the LBITP, anticipated to be required for the Section 404 Permit. Key components of the project include the raw water pump station, transfer pipeline, settling basin, canal, and outfall. General facility layouts, sections, and equipment selections have been developed for the pump station facilities and settling basin, and general plan and profile sections have been developed for the pipeline and canal. Additional information required for the Section 404 Permit is also provided herein, in support of that permitting effort.

1.2 Overall Purpose of Project

The purpose of the LBITP is to transfer water from the Trinity River to Lake Houston, which is the San Jacinto River Basin. Additional surface water supplies are needed due to the increased surface water demand in the Harris-Galveston and Fort Bend Subsidence Districts that is being driven by the conversion from groundwater supplies to surface water supplies. The additional surface water supplies will be transferred to Lake Houston from the Trinity River via the LBITP.

1.3 Background Information

Harris-Galveston Subsidence District (HGSD) Area Three is being progressively converted from groundwater to surface water. Eighty percent of their total water usage must be from surface water by January 1, 2030. Existing infrastructure allows for the transfer of Trinity River water to the City of Houston (COH) East Water Purification Plant (EWPP) and the Southeast Water Purification Plant (SEWPP). However, there is currently no way of providing raw Trinity River water to the Northeast Water Purification Plant (NEWPP), which treats water from Lake Houston. Due to its location, the NEWPP is vital in providing treated surface water to HGSD Area Three. Previous studies have shown that Lake Houston and NEWPP cannot meet future demands with their current capacity. Sufficient raw water in Lake Houston and treatment capacity in the NEWPP is not currently available to allow for the mandatory conversion from groundwater to surface water. The LBITP will provide the additional raw water resources necessary to satisfy these demands. The LBITP is a regional water supply project to transfer raw water from the Trinity River Basin (including raw water originating from Lake Livingston) to customers that receive water from Lake Houston.

The COH holds permits to divert raw water at a maximum rate of 775 cubic feet per second (CFS) (approximately 500 million gallons per day [MGD]) from the Capers Ridge site to Lake Houston. The Certificates of Adjudication are numbered 08-4261 and 08-4261B.

The LBITP planning, permitting, and preliminary engineering are being financed by a \$28 million Texas Water Development Board Water Infrastructure Fund (WIF) Loan.

1.4 Project Participants

The LBITP is being implemented by the Coastal Water Authority (CWA) as authorized by the COH. CWA is a Conservation and Reclamation District created by the Special Act of the Texas Legislature in 1967. CWA has been given authority to transport and deliver water inside and outside of the three-



county area of Chambers, Liberty, and Harris Counties. Participating third parties in the LBITP include COH, North Harris County Regional Water Authority (NHCRWA), West Harris County Regional Water Authority (WHCRWA), Central Harris County Regional Water Authority (CHCRWA), and North Fort Bend Water Authority (NFBWA), herein referred to as the Co-Participants. Other entities may benefit from the LBITP in the future.

1.5 Project Description

The recommended concept for this interbasin transfer project includes a raw water pump station (the Capers Ridge Pump Station), approximately 3 miles of pipeline, a sedimentation basin, and approximately 24 miles of open canal, as shown in *Exhibit A-1* and *Exhibit A-2* of PER Volume II. The pump station will be located on the Trinity River, in an area primarily above the 100-year floodplain, known as Capers Ridge, which is approximately 18 miles south of Romayor and was previously owned by the COH. CWA purchased the property from COH in 2010. The pipeline extends west-southwest approximately 3 miles along the geological ridge (Capers Ridge) between the Trinity River and the Lake Houston Watersheds where it outfalls into the sediment basin at the start of the canal. The canal then continues west-southwest through Liberty County and into the northeast portion of Harris County east of Lake Houston. To the maximum extent possible, the route was selected to minimize environmental impacts and ROW acquisition costs while providing sufficient conditions for operation of the canal. The canal will outfall into the lower reaches of Luce Bayou, which flows into the northeastern corner of Lake Houston.

The LBITP capacity will be based on untreated water delivery requirements provided by the City of Houston (COH) and estimated canal losses. Untreated water delivery requirements provided by the COH are based on Water Supply Contracts between the COH and the other co-participants (collectively known as the Water Authorities), existing water supplies, and estimates of future COH demands from Lake Houston. The Water Supply Contracts specify estimated raw water demand allocations for the Water Authorities for the years 2025, 2030, 2035, and 2040. The pump station will be constructed in two or more phases. The Phase 1 pumping capacity will be approximately 230 MGD. This pumping capacity will be sufficient to supplement the Lake Houston water supplies so that raw water demands will be satisfied up to the year 2025. Subsequent phases may include the expansion of the pumping station to the ultimate firm capacity permitted, 500 MGD. Certain aspects of the project will be designed in Phase 1 to accommodate the ultimate capacity permitted. These project aspects include the raw water intake, pump station structure, electrical power supply, pipeline, sedimentation basin, and canal.

Prior to the initial delivery of LBITP water, the NEWPP will require expansion to treat additional raw water.

1.6 Previous Work Completed

AECOM received notice to proceed on the definition, preliminary engineering, and permitting of the LBITP on April 19, 2006. In January 2007, AECOM completed the *Purpose and Need Assessment* and the *Alternative Analysis*. These reports establish the preliminary need for the project and the most cost effective and environmentally acceptable project alternative. In 2008, AECOM began preparation of permit applications for the various agencies with jurisdiction over this project. As part of the permit preparation, significant field work was conducted in approximately 70 separate parcels of land. This field work included environmental evaluation, archeological study, wetland mitigation, and survey of endangered species. Also in 2008, AECOM initiated detailed topographical and boundary survey, geotechnical assessment, hydraulic modeling, construction feasibility evaluation and aspects of the preliminary engineering report necessary to support the permitting process. In March 2010, AECOM completed and submitted the Clean Water Act Section 404 Permit Application



for the Luce Bayou Interbasin Transfer Project. A substantially complete PER was required for submittal of the permit application.

1.7 Project Schedule

The ultimate project schedule is dictated by the January 1, 2020 HGSD conversion deadline of 70 percent surface water in HGSD Area 3 and as specified in the contract between CWA and COH. To meet this date, the project must be constructed and operational no later than June 30, 2019. A Preliminary Project Schedule is provided in *Appendix D-1*.



Section 2 – Trinity River Conditions

It is necessary to understand the characteristics of the Trinity River at Capers Ridge prior to beginning the preliminary engineering. In order to determine the depth, width, and extent of the intake, an understanding of the hydraulic nature and extreme conditions that may occur within the river is necessary. Similarly, in order to properly prepare to manage and control the volume of debris and sediment that may enter and impact the pump station, the concentration and characteristics of these factors within the river must be known. This section presents an analysis of the following existing Trinity River conditions that will affect the project design and operation:

- Historical Trinity River flows
- Anticipated water surface elevations (WSEs) at the proposed Capers Ridge Pump Station for various flow rates
- Suspended sediment concentrations for various flow rates

2.1 Statistical Minimum Flow Analysis

A United States Geological Survey gaging station is located on the Trinity River near the town of Romayor, approximately 18 miles north of the Capers Ridge Pump Station Site. AECOM performed a statistical analysis of historical flow data obtained from this gage for the Trinity River at Romayor, Texas. The purpose of the statistical analysis is to understand the low flow characteristics of the Trinity River as they hydraulically relate to the proposed intake of the pump station. Certain low percentile flows were identified from the historical record for various periods and provided in Table 2-1.

Table 2-1 Statistical Low Flow Analysis

Time Period	Comments	Trinity River Flow at Romayor		
		1% (cfs ¹)	5% (cfs ¹)	10% (cfs ¹)
1925-2009	Full Record*	220	405	625
1925-1968	Pre-Dam	182	312	448
1970-2009	Post-Dam	366	731	933
1989-2009	Last 20 years	757	918	1,040
1999-2009	Last 10 years	777	935	1,030

*Full record is based on all complete years on record. Data began to be recorded in May of 1924. This year was excluded from the analysis due to it being incomplete.

¹CFS= cubic feet per second

This analysis revealed significant increases in low flow over the period of record. This increase can be attributed to the construction of the Livingston dam, dam releases during low flow conditions (discussed in *Section 2.3*), and a general increase in rainfall in the region which occurred over the past 20 years.



2.2 WSE Modeling

W.F. Baird & Associates (Baird) completed a hydraulic and sediment transport study of the Trinity River near Capers Ridge to assess WSE and sediment transport in the Trinity River. This effort was conducted to assess potential effects of the project on flow rate, WSE, and sediment erosion and deposition within the river and better understand river characteristics as they pertain to the design of the intake. The hydraulic models were calibrated versus a detailed set of recorded WESs obtained during a low flow period in May 2009. *Table 2-2* lists WSEs determined by the hydraulic model for the proposed Capers Ridge Pump Station site for a variety of flow events. A report detailing the hydraulic and sediment transport modeling efforts is provided in a separate report developed by Baird titled *Luce Bayou Interbasin Transfer Project Hydrodynamic and Sedimentation Modeling, January 2010, Report No. 11208.101*. A bathymetric survey of the Trinity River at Capers Ridge was conducted for the purpose of the hydraulic model and preliminary engineering of the pump station intake. The results of the bathymetric model are presented in *Appendix C*.

Table 2-2 Hydraulic Model Results at Proposed Pump Station Intake

Flow (cfs)	Description	WSE (ft)
1,000	Low Flow Scenario 1	16.9
1,500	Low Flow Scenario 2	17.8
3,000	Approximate Median Flow	19.8
6,000	Flow Scenario 3	22.3
48,600	2-year Design Flow	35.6
73,100	5-year Design Flow	41.5
88,300	10-year Design Flow	42.1
130,000	100-year Design Flow	44.0
159,500	500-year Design Flow	44.7

2.3 Effects of Lake Livingston Dam Operation

During median flow conditions in the Trinity River, sufficient flow is present to meet all downstream water rights. Under low flow conditions, Lake Livingston Dam operators carefully track raw water withdrawals and release only as much water from the dam as needed to meet all downstream water rights. Over the past 20 years, flows have generally been maintained above 757 CFS (the 1 percentile flow as calculated in *Table 2-1*) through releases from the Lake Livingston Dam. When the Capers Ridge Pump Station comes online, the Trinity River Authority will continue to release additional water during natural low flows in order to meet the raw water demand associated with the LBITP. Total Trinity River withdrawals by the COH will not exceed existing permitted values.

2.4 Future Anticipated Minimum Water Surface Elevations

Future minimum flow rates were determined by AECOM through a Water Rights Analysis Package (WRAP) modeling exercise. The WRAP model uses naturalized flow and precipitation data in conjunction with information about man-made infrastructure and surface water rights to calculate streamflows for a flow network. For each condition modeled, WRAP executes a 57-year simulation at a monthly timestep.



As part of the exercise, future natural flow conditions were predicted and based on the available historic flow record, dating from 1925 through the present. The future natural flow conditions were then compared to the projected future raw water demand in the Trinity River. The future minimum flow rate was determined to be the greater of the two values, since Lake Livingston will artificially increase flow rate in the river on days when natural flow would otherwise have been less than the raw water demand from the Trinity River. *Table 2-3* presents two low flow scenarios at various pump station withdrawal rates. Two low flow scenarios are presented since, at low flow, the Trinity River flow rate is dependent on the amount of water being withdrawn from it on a given day, as discussed in *Section 2.1*.

Table 2-3 Low Flow Scenarios and WSEs at Capers Ridge Pump Station

Flow Scenario	Flow Rate (cfs)	Approximate WSE (feet)
Minimum Anticipated Flow Rate When Pumping 56,500 gpm (81.4 MGD), 1 Pump	958	16.9
Minimum Anticipated Flow Rate When Pumping 500 MGD	1,490	17.8

2.5 Sediment Transport Analysis

The Trinity River is a dynamic, low-gradient coastal plain river, which actively transports large quantities of sand and sediment during flood events. The river is characterized by significant bank erosion, point bar creation, and channel migration. Understanding sediment transport in this sand-bed river is critical for the design of the proposed Capers Ridge Pump Station as high levels of sediment can significantly increase wear on pump components and thus increase maintenance costs. Baird was subcontracted to develop a hydraulic and sediment transport model of the Trinity River to predict sediment transport, sediment size, and expected sediment concentrations for a wide variety of flows.

A detailed description of the sediment transport modeling performed is included in separate report developed by Baird, and only a summary of key findings is included in this report. The sediment transport model for the Trinity River was calibrated using a combination of new field samples of suspended sediment, bed sediment, and bank sediment near Capers Ridge and historic samples of suspended sediment concentration and sediment distribution at the USGS gaging station near Romayor, TX.

It was found that only a minimal amount of sediment from the river bed (bed load) is suspended during flows less than 48,600 CFS, the 2-year Design Flow in the Trinity River. At low flow, minimal sand is entrained and only clays and silts are suspended in the water column. This suspended concentration of clays and silts is referred to as wash load because it is typically washed in from the surrounding water shed. For these circumstances, Baird recommended that historical suspended sediment concentrations obtained from prior field samples be used to predict suspended sediment concentrations. Figure 2-1 shows the correlation of suspended sediment concentration for low flow conditions with discharge. Based on a statistical analysis of historical suspended sediment concentration data, Baird developed a best fit curve for uniformly distributed suspended sediment carried in low flows, which is shown in Figure 2-1. The concentrations provided in Table 2-4 were determined using the best fit line provided in Figure 2-1. For this exercise, low flows are considered



to be those less than 48,600 cfs and high flows are considered to be equal to or greater than 48,600 CFS.

Figure 2-1 Correlation of Suspended Sediment Concentration with Discharge at Romayor

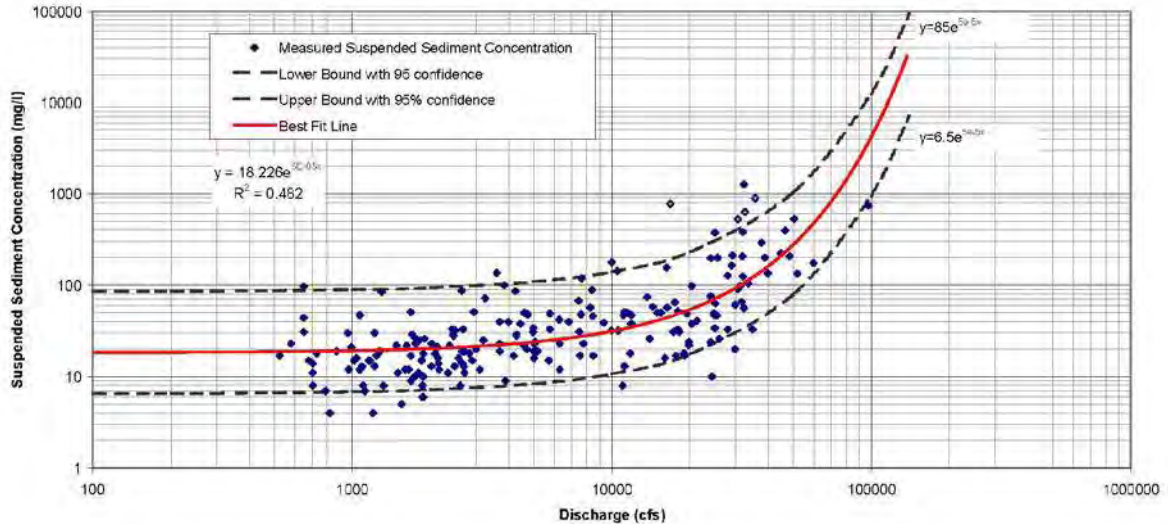


Table 2-4 Low Flow Suspended Sediment Concentration

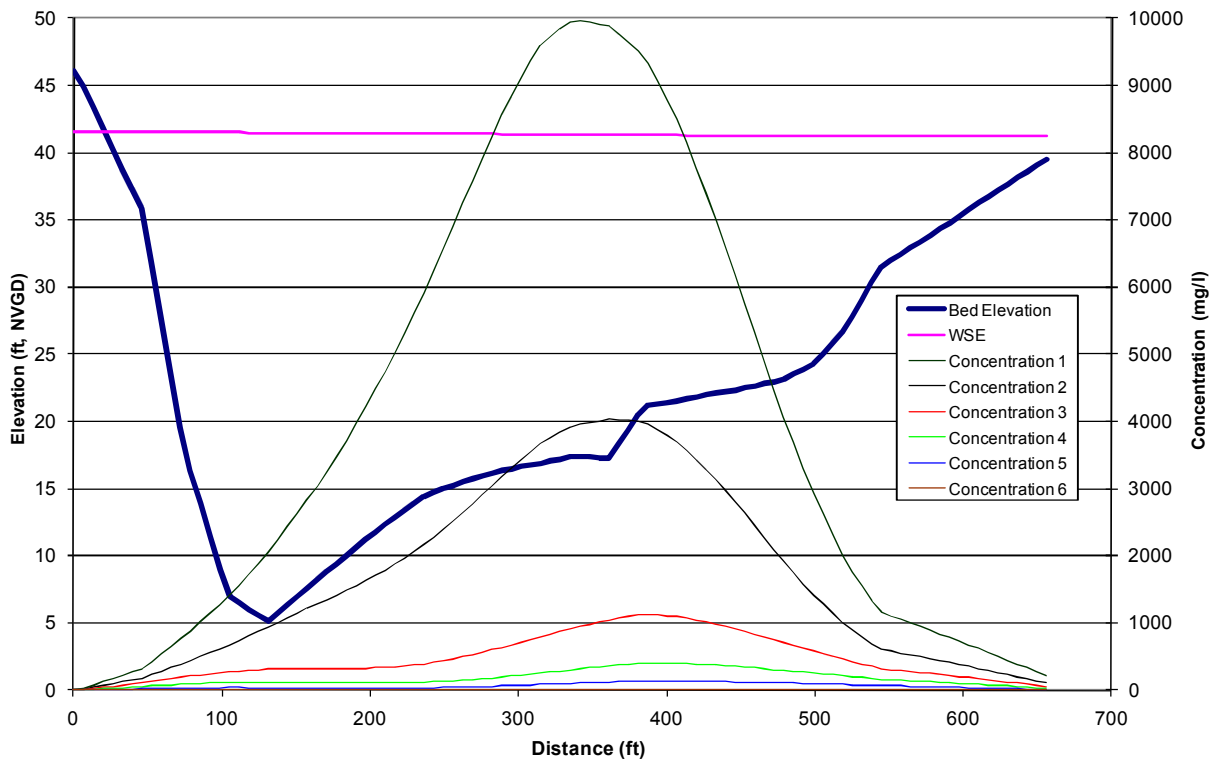
Flow (cfs)	Description	Concentration (mg/l)
1,000	Low Flow Scenario 1	19
1,500	Low Flow Scenario 2	20
3,000	Approximate Median Flow	21
6,000	Flow Scenario 3	25
8,600	Mid-level Flow Scenario 1	28
20,000	Mid-level Flow Scenario 2	50

For high flows, a single suspended sediment concentration cannot be provided due to the significant vertical and horizontal stratification in sediment concentration that occurs near Capers Ridge. Peak concentrations of up to 10,000 mg/l are found in the bed load near the center of the river channel, over the existing point bar. Concentrations at the bank, where the proposed Capers Ridge Pump Station is located, are approximately 10 percent of the concentrations found in the channel center for the 2-, 5-, and 10-year design floods. Significant vertical stratification is also found. Concentrations near the surface are approximately 20 percent of the bed load concentration for the 2-year design flood and approximately 5 percent of the bed load or less for the lower-frequency flood events. Significant drops in concentration, between 30 percent and 75 percent, are found when comparing bed load concentration to the concentration at an elevation 5 to 7 feet above the channel invert. This will become an important factor when determining the raw water intake elevation. An example of the significant vertical and horizontal stratification for a high flow event (5-year flood) is shown in Figure



2-2. Additional figures for other flow scenarios are provided in Appendix I-7 of the separate report developed by Baird. In these figures, WSE and river bed elevation are provided and measured on the left y-axis. Suspended sediment concentration is shown for six different WSEs within the cross-section and measured on the right y-axis. Concentration 1 correlates to the concentration at the river bed. Concentration 2 correlates to the suspended sediment concentration at a depth within the cross-section that equals to 20 percent of the total water depth. For example, if the total water depth is 10 feet, Concentration 2 would provide the suspended sediment concentration at a depth 2 feet above the bed elevation. Concentration 3 through Concentration 6 correlate to the suspended sediment concentration at a depth equal to 40 percent, 60 percent, 80 percent, and 100 percent of the water column, as measured from the riverbed, moving upward.

Figure 2-2 Cross-Section Profile of Trinity River Bed Elevation and Sediment Concentration for 5-Year Design Flow at the Capers Ridge Pump Station (Looking Upstream)



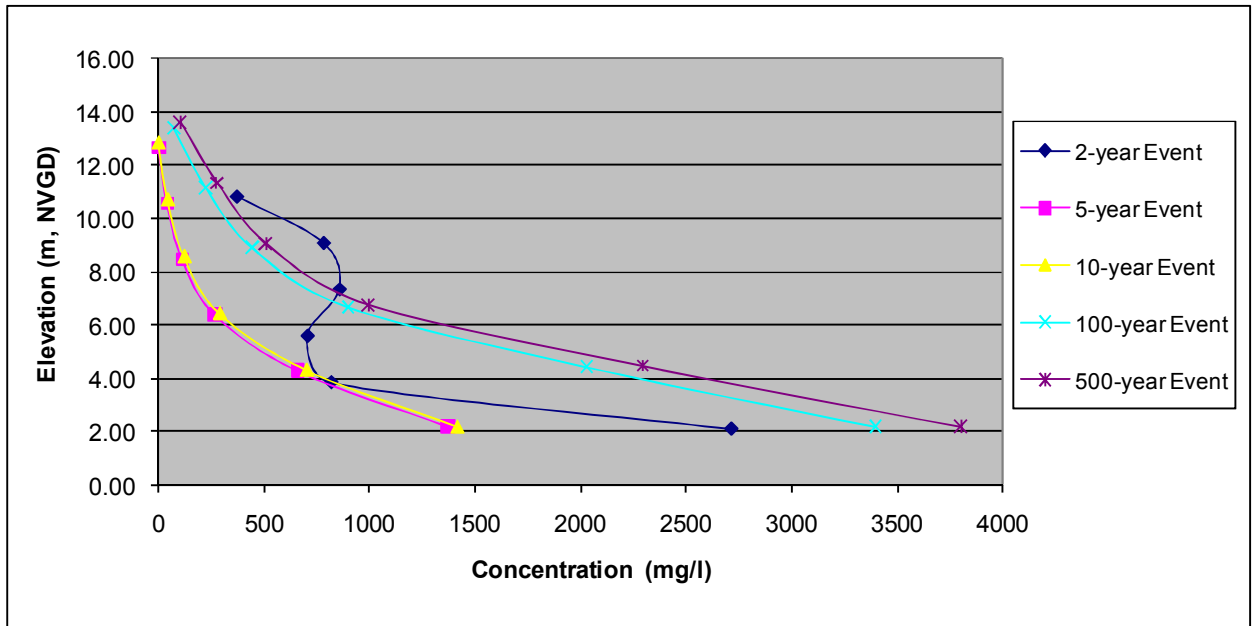
For high flows, suspended sediment concentrations entering the pump station were predicted from the sediment transport models developed by Baird. Concentrations determined by the model at an elevation of 17 feet (mid-point of sluice gate controlling flow into the intake) and a distance of approximately 80 feet from the western top of bank were used to predict the quality of water entering the pump station. This data is shown in Table 2-5 and was taken from Figure 2-3. Figure 2-2 shows concentrations for multiple storm events at a point horizontally even with the start of the intake approximately 80 feet from the western top of bank. A full report summarizing concentrations throughout the entire river cross section is included the separate report developed by Baird.



Table 2-5 High Flow Suspended Sediment Concentration

Flow (CFS)	Description	Concentration (mg/l)
48,600	2-year Design Flow	700
73,100	5-year Design Flow	450
88,300	10-year Design Flow	500
130,000	100-year Design Flow	1,500
159,500	500-year Design Flow	1,800

Figure 2-3 Suspended Sediment Concentration Profiles for Different Flood Events



Concentrations in the 2-year event are higher than those in the 5- and 10-year events because the 2-year event is contained inside the regular channel banks. For larger storms, the wide floodplain fills with floodwater and reduces velocity and suspended sediment carrying capacity.

To determine the size distribution of particles suspended for different flows in the Trinity River, Baird prepared an analysis of suspended sediment size distributions for a series of samples taken over a range of flows). The sediment distribution for several key flow rates are shown in *Table 2-6*.



Table 2-6 Suspended Sediment Size Distribution

Flow (cfs)	% Clay and Silt (33 microns)	% Very Fine Sand (94 microns)	% Fine Sand (188 microns)	% Medium Sand (375 microns)	% Coarse Sand (750 microns)
1,000	100	0	0	0	0
5,000	82	18	0	0	0
20,000	55	13	27	5	0
40,000	42	15	32	7	4
60,000	34	15	35	8	8
80,000	27	15	39	9	10
100,000	20	18	41	9	12
150,000	15	15	45	10	15



Section 3 – Project Capacity

3.1 Introduction and Overview

This section will present assumptions used for developing the projected Phase 1 and Ultimate Luce Bayou Interbasin Transfer Project (LBITP) capacity requirements. Co-participants within Harris County are subject to surface water conversion requirements of Harris Galveston Subsidence District (HGSD) Area Three, which mandates that groundwater pumpage be reduced by 30 percent, 70 percent, and 80 percent in the years 2010, 2020, and 2030, respectively. The North Fort Bend Water Authority (NFBWA) is subject to groundwater reductions of 30 percent by 2013 and 60 percent in 2025 as mandated by the Fort Bend Subsidence District.

AECOM received untreated water delivery requirements from the City of Houston (COH), which are based on Water Supply Contracts between the COH and other co-participants (collectively known as the Water Authorities), existing water supplies, and estimates of future COH demands from Lake Houston. The Water Supply Contracts specify estimated raw water demand allocations for the Water Authorities for the years 2025, 2030, 2035, and 2040. The COH is authorized to divert water from multiple points on the Trinity River at a combined maximum rate of 2,197 MGD as designated by the Certificate of Adjudication No. 08-4261 and as amended by Certificate No. 08-4261B. The City is authorized to divert a maximum of 775 CFS (500 MGD) of this combined rate specifically at the Capers Ridge diversion point.

3.2 Demand Summary

Water Supply Contracts between the COH and the Water Authorities will be accommodated through COH infrastructure, which includes the Northeast Water Purification Plant (NEWPP) and the East Water Purification Plant (EWPP). The NEWPP will satisfy the entire surface water demand for the NHCRWA and CHCRWA. The West Harris County Regional Water Authority (WHCRWA) and NFBWA will receive surface water from both the NEWPP and the EWPP. In addition to surface water demands for the Water Authorities, the COH will require surface water supply for other COH customers at the NEWPP and EWPP. The EWPP receives surface water from Lake Houston via the West Canal in addition to CWA's Main Canal, which conveys surface water from the Trinity River.

The LBITP capacity is planned to be phased. Construction of LBITP Phase 1 is contractually mandated to be completed no later than June 30, 2019. The Capers Ridge Pump Station may be expanded to full capacity in subsequent years as dictated by future demand. Accordingly, untreated water delivery requirements received from the COH are identified for two phases, 2020 and 2040. Losses along the canal system, estimated to be 15 percent of the total pumped volume, were added to the untreated water delivery requirements. Based on untreated water delivery requirements and estimated canal losses, the required LBITP capacity is projected to be 230 MGD in 2020 and 425 MGD in 2040. Untreated water delivery requirements are based on Water Supply Contracts between the COH and the Water Authorities, existing water supplies, and estimates of future COH demands from Lake Houston. *Table 3-1* shows Lake Houston supply requirements. *Table 3-2* shows the estimated LBITP capacity in 2020 and 2040. *Figure 3-1* graphically displays the project capacity requirements. The 2020 project capacity is anticipated to satisfy demands through the year 2025 based on the Water Supply Contracts between the COH and the Water Authorities.



Table 3-1 Lake Houston Supply Requirements (MGD)

Authority	A	B	C	D	2020 Lake Houston Supply Requirements (A + C - D)	2040 Lake Houston Supply Requirements (B - D)
	Original Contracted Reservation ¹	Revised Contracted Reservation ²	2025 Contract Demand Estimate ³	EWPP Supply		
NHCRWA	31	159	90.9	0	121.9	159
WHCRWA	28.25	110.3	55.9	28.25	55.9	82.05
CHCRWA	2.12	6.3	3.26	0	5.38	6.3
NFBWA	19.5	75.3	34.1	19.5	34.1	55.8
COH - NEWPP	N/A	N/A	N/A	N/A	80	140
COH - EWPP	N/A	N/A	N/A	N/A	60	80
Total					357	523

Table 3-2 Projected LBITP Capacity (MGD) Requirements

Year	2020	2040
Total Lake Houston Supply Requirements	357	523
Existing Lake Houston Water Right	-162	-162
Subtotal - Additional Untreated Water Supply Needed	195	361
15% Canal Loss	35	64
Total LBITP Capacity	230	425

1. From initial water supply contracts between Water Authorities and City of Houston

Water Supply Contract Between the City of Houston, Texas And The North Harris County Regional Water Authority, 2003

Water Supply Contract Between the City of Houston, Texas And The West Harris County Regional Water Authority, 2003

Water Supply Contract Between the City of Houston, Texas And The Central Harris County Regional Water Authority, 2003

Water Supply Contract Between the City of Houston, Texas And The North Fort Bend Water Authority, 2008

2. Total Untreated Demand Reservation which also equals 2040 untreated demand estimate; taken from:

First Supplement to Water Supply Contract Between the City of Houston, Texas And The North Harris County Regional Water Authority, 2009

First Supplement to Water Supply Contract Between the City of Houston, Texas And The West Harris County Regional Water Authority, 2008

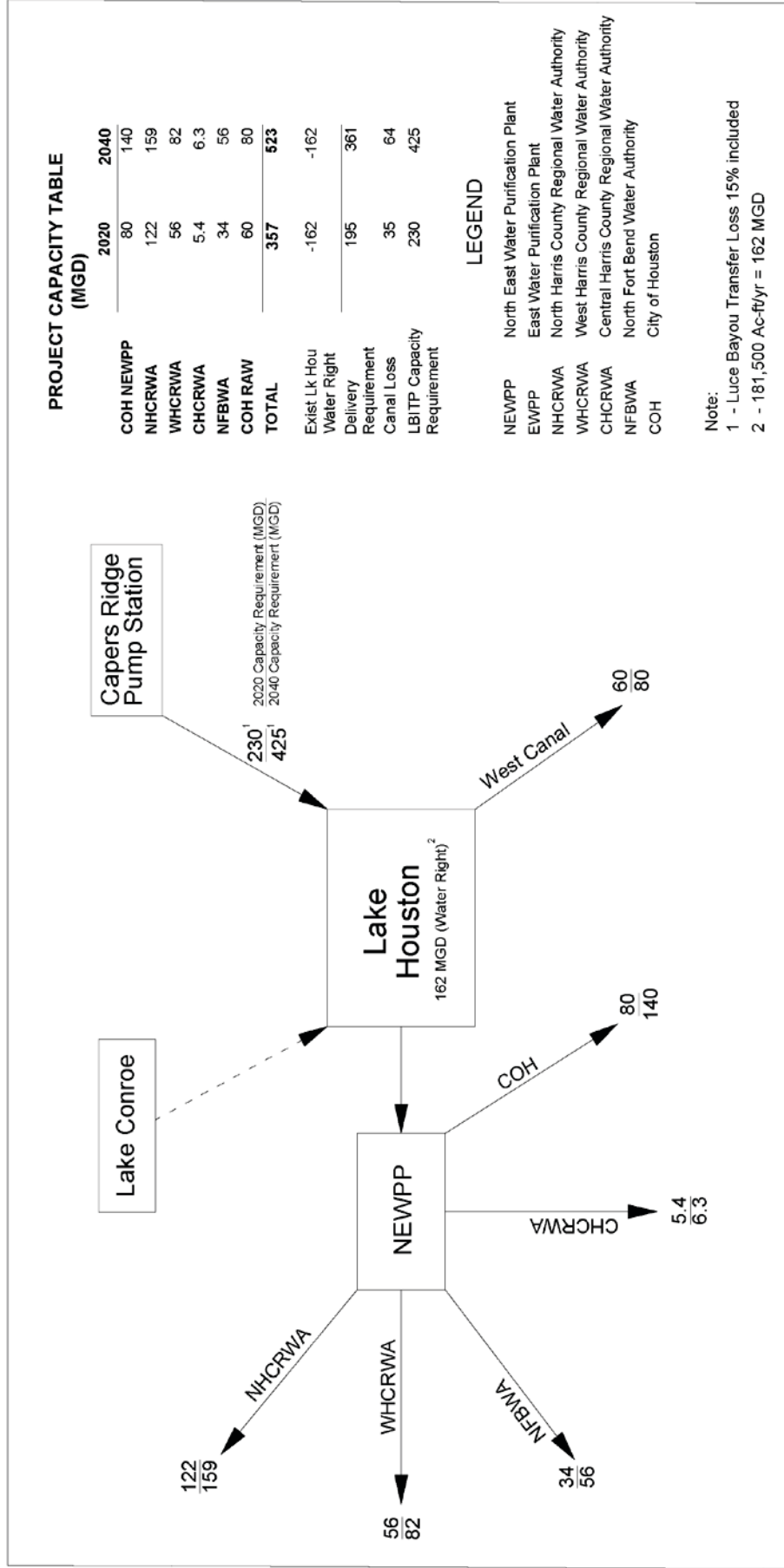
First Supplement to Water Supply Contract Between the City of Houston, Texas And The Central Harris County Regional Water Authority, 2008

First Supplement to Water Supply Contract Between the City of Houston, Texas And The North Fort Bend Water Authority, 2008

3. Values from First Supplements to Water Supply Contracts referenced in Note 2



Figure 3-1 Water Demand Distribution



Section 4 – Pump Station Facilities

4.1 Introduction

This section discusses the pump station facilities that are planned for the LBITP. Included herein is a description of the regulations, design factors, calculations, assumptions, and preferences that were used to develop the preliminary pump station design. A summary of the project capacity is included in *Section 3*. Calculations that support the design decisions are provided in *Appendix A*. Exhibits pertaining to the pump station are provided as *Exhibits B-1* through *B-17* in PER Volume II.

4.2 General Pump Station Facilities Description

The major raw water pump station facilities will include a side-channel river intake, trash rack, trash rack cleaning mechanism, sediment settling basin, pump bay, vertical pumps, and a discharge header outfitted with various control, isolation, and air release valves. Additional facilities will be provided onsite to facilitate the operation and maintenance of the pump station. These facilities include the electrical service with substation, electrical switchgear building, control building, maintenance building, sediment handling facilities, and raw water meters. A potable and process water system will also be provided, as well as sanitary facilities. General site improvements will also be constructed, including site paving, site drainage, and river bank stabilization.

4.3 Pump Station Location

The pump station will be located on the western bank of the Trinity River at a location known as Capers Ridge in Liberty County, approximately 18 miles south of Romayor. This site was selected as the pump station location in a previous scope of work documented in a report titled *Luce Bayou Interbasin Transfer Project, Alternative Analysis*, completed in January 2007 for the Coastal Water Authority by AECOM. Nine alternative delivery methods were evaluated and compared as part of the 2007 Alternatives Analysis. The selected alternative that included the use of the Capers Ridge serves as the basis of this preliminary engineering report and was selected through the use of a multi-variable environmental constraints matrix. The location of the pump station site is shown on *Exhibit A-1*.

4.4 Raw Water Pumps

The purpose of this section is to discuss the preliminary pump design and pumping strategy for the proposed Capers Ridge Pump Station. This section will discuss the methodology for selecting the pump type, size, and operational parameters for the initial phase of pump station operation with consideration of the ultimate permit capacity. Pump bay dimensions were also determined and are presented in *Appendix A – Section III*. A more detailed description of the project demand and operation is provided in *Section 3*.

4.4.1 Pump Capacity

As discussed in detail in *Section 3*, the capacity and pumping strategy of the proposed Capers Ridge Pump Station is based on untreated water delivery requirements provided by the City of Houston (COH) and anticipated canal losses. Untreated water delivery requirements are based on Water Supply Contracts between the COH and the Water Authorities, existing water supplies, and estimates of future COH demands from Lake Houston. Project capacity requirements for the years 2020 and



2040 are shown in the Table 4-1 and further discussed in *Section 3*. A pump station capacity of approximately 230 MGD is expected to meet projected water demands up to the year 2025 based on the Water Supply Contracts between the COH and the Water Authorities. However, accelerated growth in demand may require expansion of pumping capacity before 2025.

Table 4-1 Project Capacity Requirements

Year	Capacity (MGD)
2020	230
2040	425

Pump Station construction is anticipated to be completed in two or more phases. In Phase 1, portions of the pump station will be constructed to meet the ultimate potential project capacity. These portions include the pump station structure, intake, and electrical service, and will be constructed to convey up to 500 MGD, as is allowed by the COH's water rights. Mechanical equipment provided in Phase 1, including pumps, will be constructed to meet project capacity requirements for the year 2020, which is 230 MGD. Future expansions of the pump station will be completed as necessary to provide a firm capacity of up to 500 MGD. Up to five additional pumps can be added to the Phase I pump station to allow future expansion of its capacity. An additional three duty pumps can be added to provide a total pumping capacity capable of meeting the projected 2040 project capacity requirement of 425 MGD. Two additional pumps can then be added for a total of eight installed pumps. A firm pumping capacity of 500 MGD and a total pumping capacity of 557 MGD can be achieved with eight pumps if the impellers of all eight pumps are exchanged for larger diameters.

4.4.2 Pump Selection Criteria

A total of eight pump bays will be provided at the Capers Ridge Pump Station. As is described in the preceding section, the pumps will be phased in over time to meet increasing demand. It is planned that similar sized, constant speeds pumps will be utilized, each having a pump capacity that varies between 69,500 gpm and 49,200, depending on pumping conditions. The number and size of pumps were determined based on a review of available pumps and pump curves. Emphasis was placed on meeting selected design points described in Section 4.4.4 while maintaining high pumping efficiencies. In addition, cost optimization, maintenance requirements, and operational constraints were also considered in the preliminary pump selection.

Cost optimization is based on consideration of both capital cost and operational cost. Special consideration is given to operational costs, especially in terms of the relationship between pumping rates, velocities, and pumping costs. Maintenance costs are based on the number of pumps, types, and motors to be serviced. Operational constraints include pumping strategies, minimum required flow rates, and pump redundancy requirements. The following is a more detailed description of the design aspects that were considered when determining recommended pump strategies.

4.4.2.1 Pump Efficiency Optimization

Pump curves for a wide variety of pumps were analyzed to determine which pump strategies resulted in the highest pumping efficiencies. A goal was to select pumps with high efficiencies (greater than 86 percent) during typical Phase 1 pumping conditions and ideally under all pumping scenarios.



Considerations were also given to how the pumping capacity would be expanded in the future. Ideally, pumps would not have to be replaced and high pumping efficiencies would be maintained as the project capacity is expanded in the future; however pump impellers and bearings will have to be replaced in the future due to wear.

4.4.2.2 Cost Optimization

Decreasing the size of pumps and increasing the quantity would improve the ability of the pump station to better match the pumping rate with demand. Doing so will reduce velocities through the system and lower pumping costs. Inversely, increasing the size of pumps and decreasing the number of pumps will limit the ability of the operators to match the pumping rate with demand and will result in elevated velocities through the system, which will increase pumping costs.

AECOM conducted an evaluation in which pumping costs were determined for various pumping strategies. A more detailed description and a table summarizing the results of this evaluation are provided in *Appendix A- Section II*.

4.4.2.3 Maintenance Requirements

Maintenance cost is roughly proportional to the number of pumps that need to be serviced regularly. Increasing the number of pumps would increase the maintenance burden, while decreasing the number of pumps should reduce the maintenance burden and cost.

Use of similarly sized pumps was selected in lieu of the use of pumps of varying size. Doing so will allow the operator to standardize spare parts, reduce the number of spare parts maintained onsite, distribute pump operating time more evenly, and generally make maintenance easier.

4.4.2.4 Operational constraints

Coastal Water Authority (CWA) has specified that it is ideal to have at least one pump in operation at all times (under typical, non-flood conditions) to ensure constant flow through the canal. Doing so will reduce the amount of sloughing in the canal and the associated maintenance burden. To prevent unnecessary water from being pumped during initial low demand periods, it will be ideal to size the single pump flow rate to be less than the minimum expected demand. Having constant flow above 2 ft/s will reduce the deposition of sediment within the pipeline. Providing a single pump capacity that maintains a velocity of approximately 2 ft/s within the 108" diameter pipeline will help combat sedimentation and likely be lower than the minimum project water demand capacity in the year 2020 (thereby allowing the single pump to operate continuously). At times, pump station operators will operate the pumping system at velocities greater than 5 ft/s to flush sediment out of the pipes. This will be done as needed, but not under typical situations.

Due to the storage volume present in Lake Houston, it is not necessary to match the instantaneous pumping rate with demand in Lake Houston. Volume of pumped water and Lake Houston demands will need to match on a weekly or monthly basis, but are not required to match on an hourly or daily basis. This flexibility allows for the use of constant speed pumps and negates the need for more expensive and less efficient variable frequency drives. Although they are not mandatory for pump station operation, one or more variable frequency drives will be considered during final design, and may be included if requested by the Operator.

4.4.2.5 Pump Redundancy

No redundant pumps will be provided in the initial phase of the project at the request of the Co-participants. It is anticipated that the storage capacity of Lake Houston will be sufficient to meet water



demands in emergency situations such as power outages or equipment failures, when project water demands cannot be met by the LBITP. Furthermore, in the event that outages occur as the result of catastrophic storm events, it is likely that Lake Houston will be at full capacity as a result of the storm. Pump bays will be provided and pumps selected to allow for the ultimate expansion to a firm capacity of 500 MGD, meaning the pump station would be capable of providing a flow rate of 500 MGD with one redundant pump out of service.

4.4.3 Pump Strategy Conclusion

Based on the considerations listed above in Section 4.4.2, the pump station will be constructed to include eight pump bays. Three pumps were selected as the preferred configuration to meet Phase 1 project capacity requirements. Expansion to 425 MGD can be achieved through the installation of three additional similar pumps. Expansion in a later phase to a firm capacity of 500 MGD can be achieved through the installation of two additional, similar pumps and the replacement of the impellers on the six existing pumps. In Phase 1, under typical Trinity River conditions, each pump will pump approximately 53,200 gpm when all three duty pumps are in operation at once for a total capacity of 230 MGD. If one pump is operating by itself during typical river conditions, that pump will pump at a slightly higher rate of 56,500 gpm based on the sample pump curves evaluated by AECOM. During isolated flood events on the Trinity River (and when Lake Houston is below flood stage), the pumps may deliver as much as 69,500 gpm each, depending upon the pump selected.

The selected pump strategy will allow for a wide variety of pumping rates, but will not excessively burden maintenance staff and require an unsustainable quantity of repair and rehabilitation. Based on the pumps evaluated during preliminary engineering, high efficiencies will be obtained over all pumping conditions, both in Phase 1 and future phases without the Phase 1 pumps being replaced. This configuration also results in reasonable velocities for the range of flows expected (2 ft/sec minimum velocity assuming one pump operating at 56,500 gpm and one 108" pipeline is in operation; 6ft/s under a maximum flow of 500 MGD and two 108" pipelines are in operation).

4.4.4 Detailed Pump Criteria

The following preliminary pump selection criteria are based on the pumping strategy and phasing plan discussed above and the available pump options reviewed by the design team in cooperation with pump manufacturers. The criteria were developed according to the capacity demands projected for Phase 1 and checked against the ultimate capacity criteria for eight pumps to ensure acceptable pump efficiencies under all conditions. A more detailed determination of the design point, sample pump curves, system curves, and additional information can be found in *Appendix A-Section I*.

Design Point 1* –	53,200 gpm (76.7 MGD) at 97' TDH (3 duty pumps producing 230 MGD)
Design Point 2* –	≥ 49,200 gpm (70.8 MGD) at 108.5' TDH (6 duty pumps producing greater than 425 MGD)
Future Condition –	≥ 49,600 gpm (71.4 MGD) at 114' TDH (7 duty pumps producing 500 MGD. Pumps must be capable of meeting Future Condition with only an impeller change.)
Minimum Shutoff –	130' TDH
Maximum Run-out –	50' TDH
Speed –	Max speed of 700 rpm. Preferred range of 300 to 500 rpm



Pump Efficiency –	Minimum of 86 percent between Design Points 1 and 2. Design Point 1 must be on the right-hand side of the best efficiency point on the pump's efficiency curve.
Horse Power –	Maximum HP on entire curve is 1,900 hp
NPSHR –	Maximum of 40' at Design Point 2
Solids Passage –	Minimum allowable solid size of 2.25"

*Note: The individual pump capacity will be greater than the design point flow rate specified when only a single pump is in service.

4.4.5 Pump Bay Layout

Standards for pump bay design in the United States are set forth by the Hydraulic Institute (HI) in the *American National Standard for Pump Intake Design*. While not mandatory, these guidelines are the industry-accepted standard utilized in the design of intakes and pump stations. The design standards have been developed to minimize submerged vortices, free-surface vortices, excessive pre-swirl of flow entering the pump, non-uniform spatial distribution of velocity at the impeller eye, excessive variations in velocity and swirl with time, and the entrainment of air or gas bubbles. The negative impacts of these adverse hydraulic conditions include reduced flow rate, increased head, increased power consumption, and increased vibration, noise, and wear.

The *American National Standards Institute (ANSI) / HI American National Standard for Pump Intake Design, Version 9.8, Copyright 1998* (HI Version 9.8), was used to establish the preliminary layout and design of the proposed Capers Ridge Pump Station. Based on the guidelines for rectangular wet pit intake structures, the preliminary pump bay layout is shown in *Exhibits B-9 and B-10* of PER Volume II. Additional pump bay features were designed according to recommendations presented in the *Pump Station Design, Garr M. Jones, 3rd Edition, 2008*. These pump bay features primarily consist of guide vanes and corner fillets used to stabilize and guide flow into the pumps.

A pump inlet design diameter was determined according to recommended inlet velocities presented in HI Version 9.8. The remaining pump bay dimensions were based on proportions of the pump inlet design diameter. Minimum submergence requirements were determined according to HI Version 9.8 criteria. These dimensions are shown in *Exhibits B- 9 and B-10*. Calculations, a summary table, and additional information are provided in *Appendix A-Section III*.

AECOM recommends the development of a physical model during final design to further establish that a sufficient hydraulic design is being provided. HI Version 9.8 also recommends development of a physical model for all pump stations greater than 100,000 gpm in size. It would be most appropriate to conduct the physical model analysis at a professional laboratory during the early portion of the final design phase.

4.5 Raw Water Intake

4.5.1 Intake Capacity

The proposed raw water intake will be designed to operate at flows up to 500 MGD or 775 CFS. This capacity is based on the maximum instantaneous raw water removal rate allowed by the COH's water right.



4.5.2 Intake Design Factors

A longitudinal side channel intake was selected to extract flow from the Trinity River due to the diversion rate required for the LBITP, suspended sediment concerns, low flow river characteristics, and potential impacts to river traffic. Several key constraints were analyzed to determine the optimal bottom elevation of the side channel intake structure. The intake structure will be designed to meet velocity constraints through the trash rack and intake, exclude as much sediment as is practical, and successfully withdraw the required flow under anticipated minimum WSEs. These constraints are discussed in more detail below.

4.5.2.1 Trash Rack Constraints

There are no mandatory design guidelines in Texas for velocities through raw water intake structures or trash racks. A commonly recommended approach velocity for trash racks is 0.5 ft per second. This recommended approach velocity was utilized in determining the depth of the intake and is further discussed in *Section 4.6.2*.

4.5.2.2 Sediment Exclusion

To minimize wear on the pumps, it is essential to minimize the intake of high concentrations of solids, especially large solids such as coarse sand and gravel. The highest concentration of large solids is carried in the bed load slurry that roll along the bottom of the river channel. The bed load slurry most often resides in a zone within several feet of the channel invert. Selection of an intake elevation above the channel invert can exclude the bed load and minimize the intake of coarse solids. For example, and as shown in *Figure 2-3*, during a 5-year storm event the bed load concentration on the western bank of the river is expected to be 1,400 mg/l; however, the concentration at an elevation of 12 feet is expected to be 800 mg/l. On the other hand, raising the intake to higher elevations has a diminishing benefit. For example, at an elevation of 16 feet, the suspended sediment concentration is expected to be roughly 400 mg/l during a 5-year storm event. The relationship of height and suspended sediment concentration is illustrated further in the results of the W. F. Baird and Associates (Baird) modeling effort, which is provided in the separate report developed by Baird.

4.5.2.3 Minimum Water Surface Elevations

A primary goal of the intake design is to locate it such that the maximum pumping rate can be withdrawn from the river under all circumstances. As described in *Section 2.4*, exercises were conducted to determine the future anticipated minimum WSE. The intake elevation will be located sufficiently below the minimum anticipated WSE (16.9 feet) to guarantee that the maximum flow rate can be withdrawn in low flow conditions.

4.5.3 Intake Design Resolution

The intake will have a total width of 118.5 feet and an interior width of 112.5 feet. An intake elevation of 12 feet has been selected based on the constraints listed above. Providing an intake according to this width and elevation will result in an approach velocity of 0.4 ft/s during typical pumping operations. Approach velocity calculations are provided in *Appendix A-Section IV* and further discussed in *Section 4.6.2*.

Additionally, an elevation of 12 feet is approximately 5 feet below the future anticipated minimum WSE of 16.9 and 7 feet above the channel invert at the pump station site. This elevation allows the bed load to pass downstream without entering the intake while allowing the maximum water right to be withdrawn under all flow conditions. Sediment exclusion could be improved by raising the



elevation of the intake, but doing so would increase approach velocities through the bar screen and increase the risk of having insufficient head to withdraw water during low flow conditions.

4.6 Trash Rack and Cleaning Mechanism

The purpose of this section is to discuss the preliminary engineering design of the trash rack and trash rack cleaning mechanism. This section will describe the design issue to be resolved, discuss assumptions that will be implemented to shape the design, identify equipment options, and provide a detailed discussion of the preliminary engineering resolution.

Trash racks will be utilized to prevent floating debris, trash, and aquatic wildlife from entering the intake and damaging the pumps. Trash racks will become clogged with debris if not regularly cleaned, thus reducing their ability to pass a sufficient amount of flow. A clogged trash rack could result in a decreased pump station capacity and irregular pumping conditions (as discussed in *Hydraulic Institute Standard 9.8*). A dedicated trash rack cleaning mechanism is recommended to help prevent pump station shut-downs and capacity reductions.

4.6.1 Existing Conditions

CWA personnel report that large trees and debris are regularly stopped by the trash racks at the existing Trinity River Pump Station near Liberty, Texas, and that a significant amount of manpower is needed to remove such debris. It is anticipated that the amount of debris encountered at the proposed Capers Ridge Pump Station will be greater than that of the existing Trinity River Pump Station near Liberty due to several differences inherent to river characteristics at these two locations. Due to its location on the outside bend of the river, the proposed Capers Ridge Pump Station is expected to have more debris transported into the intake due to the direction of hydraulic forces in the river bend. In addition, the erosive forces of the river are also more dramatic in the area of Capers Ridge as compared to those in the vicinity of the Trinity River Pump Station according to studies by Slattery and Phillips (*Quantifying Sediment Transportation and Delivery on the Lower Trinity River, Texas, Slattery, 2005; Sediment Retention in Stream Corridors of the Lower Trinity River Basin, Texas, Phillips, 2003*). The higher erosive forces are expected to result in increased bank erosion and intrusion of trees and debris from shorelines. Finally, in periods of extremely low flow, the depth of water at the screen will be relatively shallow (less than 5 feet), thus making it more susceptible to being clogged by debris.

The existing Trinity River Pump Station was originally equipped with a trash rack cleaning device. The device was a cable hung, grappling device, similar to others on the market today. The device was reported as being unable to remove the heavy trees and debris that would get caught by the trash rack. Furthermore, the device had no reach beyond the face of the screen and could not remove debris that was deposited immediately in front of the screen. The device was removed by CWA due to its ineffectiveness.

4.6.2 Trash Rack Design

The trash rack will be designed to prevent debris from entering the pump station and potentially damaging the pumps and mechanical equipment. Vertical bar spacing will be selected to be narrow enough to prevent potentially harmful debris from entering the pump station, but wide enough to reduce clogging, fouling, and headloss. According to the various pump manufacturers, the pumps that may be used for this project have a maximum solids passage capability of 2.3 to 4.6 inches. AECOM recommends a trash rack bar spacing of 2 inches, which should block the passage of the majority of solids that could damage the pump, but not result in high headloss. A small amount of medium-sized debris is expected to by-pass the trash rack; however, this debris will settle out in the



sedimentation zone or be stopped by either the curtain wall or by the pump's 1.5-inch intake screen. A small amount of back-flushing will occur each time the pump stops, which will help keep the pump's intake screen clean.

The trash rack width will be based on several factors, including pump bay dimensions, approach velocities, environmental concerns (threats to fish and wildlife), bar screen velocities, and headloss. Texas does not have established design requirements for raw water intakes. A commonly recommended approach velocity of 0.5 ft/s or less was used to minimize fish and wildlife getting impinged on or entrained within the screen. Approach velocities are defined as the velocity leading up to, but not necessarily through, the trash rack.

The pump station intake is expected to be approximately 118.5 feet wide with an interior width of 112.5 feet based on pump bay dimensions (see Section 4.4.5) and sediment settling considerations. The intake is expected to be at an elevation of 12 feet above MSL and submerged approximately 7.8 feet and 5.8 feet during median flow and low flow conditions (1,500 CFS) in the Trinity River, respectively. During typical pumping operations (defined as 230 MGD pumping rate and median Trinity River WSE), the resulting approach velocities are 0.4 ft/s. During extreme pumping events (defined as maximum pumping capacity of 500 MGD and low flow Trinity River conditions), the resulting approach velocity is 1.18 ft/s. These calculations are further documented in the *Appendix A-Section IV*.

AECOM recommends maintaining the pump station effective width of 112.5 feet at the trash rack. Doing so will provide approach velocities of 0.5 ft/s or less during typical conditions, and reasonable velocities during extreme conditions. The headloss through the trash rack is inconsequential based on the trash rack dimensions, bar spacing, and flow rates, which is further documented in the *Appendix A-Section IV*.

4.6.3 Trash Rack Cleaning Mechanism Design

Trash and debris will have to be removed from the trash rack on a routine basis to effectively maintain the pump station's capacity and operation. An onsite, permanent cleaning mechanism is recommended due to the anticipated frequency of cleaning operations. A highly adaptable cleaning mechanism is recommended due to the variety of loads that the trash rack will encounter, including large woody debris, mats of smaller debris, and deposits of sediment. A robust cleaning mechanism is recommended due to the size of large debris that will be encountered. It is also recommended that the cleaning mechanism has the ability to reach beyond the face of the screen because debris, especially sunken trees, are often hung slightly off the face of the screen, out of reach of some types of cleaning mechanisms.

AECOM evaluated several types of trash rack cleaning mechanisms, including Bosker type mechanisms, rotating chain-and-blade type mechanisms, and hydraulically operated articulating boom mechanisms. Hydraulically operated articulating boom mechanisms (often called hydronic cleaners in the industry) consist of a single carriage that is equipped with a hydraulic boom and hydraulic gripper. The carriage travels on rails along the entire length of the screen and cleans only one section of the screen at a time. To clean a section of the screen, the hydraulic boom extends to the bottom of the screen and then either rakes along the front of the screen (to clean mats of small debris) or grabs onto larger debris with the hydraulic gripper.

Hydronic cleaners were identified by the AECOM design team as the most effective solution available because of their ability to meet all of the criteria specified. Hydronic cleaners are robust and can be designed to lift over 10 tons. Hydronic cleaners provide the greatest degree of adaptability and are capable of grabbing and lifting large trees, raking and removing small mats of debris, and dredging sediment. Hydronic cleaners can be outfitted with a number of hydraulic gripper heads, giving



engineers greater selection in their design. Due to the articulated boom, hydronic cleaners can be designed to reach far beyond and to the bottom of the face of the screen.

Another reason AECOM recommends the hydronic cleaners is because the technology is familiar to CWA. The hydronic cleaner is similar in construction, function, and operation to a typical track hoe. CWA maintains a fleet of track hoes, which they use regularly for canal maintenance. It is expected that CWA operators will be comfortable with maintaining and operating the hydronic cleaners. Additionally, all mechanical parts are located above water at the top of the pump station. This feature should also make maintenance easier.

4.7 Pre-Pump Sediment Extraction

High levels of suspended sediment are a serious concern for some pump stations, depending on the type of pump implemented. Due to the high head present for this project, either a turbine or a mixed flow impeller with relatively tight tolerances is necessary to meet the pumping requirements. This type of impeller is more susceptible than axial flow impellers to wear and degradation due to passage of coarse sediment. Extraction of coarse sediment ahead of the pumps is recommended to minimize damage to the impeller, bearings, and wear rings. In addition, selection of hardened pump materials and/or special coatings is also recommended to minimize wear and extend the lifespan of pump components.

While there are no particular guidelines as to a maximum allowable particle size or a maximum allowable suspended sediment concentration, general consensus in the engineering community is to remove all coarse sands and to minimize concentrations of medium and fine sands to the maximum extent practical.

Additionally, to minimize the maintenance burden of having to dredge or clean deposited solids from the canal, it is recommended to remove all settleable solids in a sedimentation basin in front of the canal. The post-pump, pre-canal settling basin is discussed in greater detail in *Section 5.2*.

4.7.1 Pre-Pump Settling Bay Efficiency

Sediment extraction in front of the pumps is accomplished through settling inside the intake structure and pump bays. As described in *Appendix A-Section III*, a minimum distance of 40 feet is required by HI standards to transition from the pump bay invert to the intake weir elevation. This space is ideal for settling, collecting, and removing solids from the intake structure. Required settling lengths were calculated for each grain size classification assuming an approximate flow of 69,500 gpm or 100 MGD per bay (which will occur during high flow periods carrying the most sediment) and a bay width of approximately 13 feet, as shown in *Exhibit B-9*. A detailed description of these calculations is provided in *Appendix A-Section V*, and *Table 4-2* provides a summary of the results.



Table 4-2 Required Settling Length

Particle Size	Description	Settling Velocity (ft/s)	Required Settling Length (ft)
33 microns	Silt	0.0031	3,842
94 microns	Very Fine Sand	0.0223	534
188 microns	Fine Sand	0.0755	158
375 microns	Medium Sand	0.2034	59
750 microns	Coarse Sand	0.4396	27

The percentage of sediment removed for each category is calculated by dividing the length of the settling basin by the settling length required (*Table 4-2*). It is assumed that sediment is equally distributed in the water column once it enters the bar screen. Assuming a 40-foot settling chamber and an additional 10 feet of settling length immediately after the bar screen, percent removal rates for each grain size classification are estimated as shown in *Table 4-3*.

Table 4-3 Percent Sediment Removed by Settling

Particle Size	Description	Percent Removal
33.2 microns	Silt	1%
93.75 microns	Very Fine Sand	9%
187.5 microns	Fine Sand	32%
375 microns	Medium Sand	85%
750 microns	Coarse Sand	100%



4.7.2 Determination of Pre-Pump Settled Sediment Volume

A detailed analysis was performed to determine the approximate volume of sediment, which will be removed in the pre-pump intake settling chamber. Details of these calculations are included in *Appendix A-Section V*, and a brief summary of the methodology is included below.

Sediment concentration in the river was calculated from the suspended sediment rating curve discussed in Section 2.5. This curve was developed using historic sediment concentration data for low flows and model results from the Baird sediment transport model for high flows. Over 80 years of daily flow records obtained from a USGS gaging station located on the Trinity River at Romayor, TX were analyzed to determine the sediment loading rate at the pump station for an average year, a reasonably wet year, and a reasonably dry year. Total daily mass of sediment passing through the intake structure was calculated based on the flow diverted and the calculated concentration in the river. The total mass of sediment passing through the intake was divided into particle sizes (clay and silt, very fine sand, fine sand, medium sand, coarse sand), based on an analysis of suspended sediment grain size distributions determined for different flow conditions (see *Table 2-6*). Settling rates and required distance for complete settling inside the intake structure were calculated for particles in each grain size classification (see *Table 4-2*). The percentage of extracted sediment for each grain size classification was calculated by dividing the length of the settling chamber in the intake by the required settling distance (see *Table 4-3*). Total mass settled in the intake was then converted to volume using a bulk density conversion factor. Estimated extracted sediment volume was summed for each year of record, and average, minimum, and maximum yearly sediment extraction values were calculated and presented below in *Table 4-5*, *Table 4-6*, and *Table 4-7*.

These calculations also assume that the pump station will be shut down when flows within the river are over that of a 5-year storm (73,100 CFS) to minimize the intake of large volumes of sediment. Analysis of historic data shows that the maximum duration of flow above 73,100 CFS is 11 days. It is expected that CWA will not pump during flood conditions above 73,100 CFS and still have sufficient water in Lake Houston to meet demands. *Table 4-4* shows the future anticipated duration of various flood events as determined by the record of historic storm events. The future anticipated durations were developed as part of a theoretical exercise for planning purposes. Actual future durations may be longer or shorter.

Table 4-4 Duration of Storm Events

Scenario	Flow (CFS)	Duration of Flow (Days)			
		Full Record	Pre-Dam (1924-1968)	Post-Dam (1968-2009)	Last 20 Years (1988-2008)
2 Year	48,600	23	23	21	21
5 Year	73,100	11	10	11	11
10 Year	88,300	7	7	7	7
50 Year	118,000	0	0	0	0
100 Year	130,000	0	0	0	0
500 Year	159,500	0	0	0	0

The expected sediment extraction volume for a year of average Trinity River flow rates at pumping rates equal to 230 MGD and 425 MGD are shown in *Table 4-5*.



Table 4-5 Average Yearly Sediment Extraction Pre-Pump

Pumping Rate (MGD)	Volume of Pre-Pump Sediment Extraction (Ac-Ft)	Volume of Pre-Pump Sediment Extraction (ft ³)
230	1.47	64,000
425	2.72	118,500

To assess the worst case scenario, historic flow rates from a very wet year with multiple large flood events were used to determine maximum annual sediment extraction volumes. The expected sediment extraction volume for a year with relatively high Trinity River flow rates at pumping rates equal to 230 MGD and 425 MGD are shown in *Table 4-6*.

Table 4-6 Maximum Yearly Sediment Extraction Pre-Pump

Avg. Pumping Rate (MGD)	Volume of Pre-Pump Sediment Extraction (Ac-Ft)	Volume of Pre-Pump Sediment Extraction (ft ³)
230	5.19	226,100
425	9.6	418,200

During high flow events, a significant amount of sediment will be extracted daily. For example, when pumping at 230 MGD, approximately 1,024 cubic feet of sediment will settle inside the intake settling chamber each day when flow in the Trinity River is at 30,000 CFS. At 45,000 CFS, approximately 2,966 cubic feet of sediment will settle inside the intake settling chamber each day. At 120,000 CFS, approximately 9,570 cubic feet of sediment will be settled inside the intake settling chamber each day. This example further illustrates the importance of not pumping during flood events to the greatest degree practical.

To assess the best case scenario, historic flows from a very dry year with no major flood events were used to determine minimum annual sediment extraction volumes. The expected sediment extraction volume for a year with relatively low Trinity River flow rates at pumping rates equal to 230 MGD and 425 MGD are shown in *Table 4-7*.

Table 4-7 Minimum Yearly Sediment Extraction Pre-Pump

Pumping Rate (MGD)	Volume of Pre-Pump Sediment Extraction (Ac-Ft)	Volume of Pre-Pump Sediment Extraction (ft ³)
230	0.03	1,300
425	0.05	2,200

This example further illustrates that during some years there will be little need for sediment extraction and handling.



4.7.3 Pre-Pump Sediment Extraction

Throughout the year, sediment will settle within the pump station. This will be a gradual process during years with few flood events; however, the rate of sediment buildup will exponentially increase during years with long periods of wet weather or even a single flood event equal to or greater than a 2-year flood.

Allowing sediment to build-up within the pump station can lead to increased sediment passage through the pumps, causing increased wear on the pump components. Settled sediment will have to be extracted from the pump station on a periodic basis that may range from twice a week to once every six months, depending on the river conditions and pumping rates.

Design issues that must be resolved include how to efficiently remove, transport, dewater, and store sediment that has accumulated within the pump station.

4.7.3.1 Discussion of Resolution to Design Issue

Sediment can be removed and handled in a variety of ways. An optimal removal method would not require a significant amount of additional infrastructure due to the variability in the frequency of use and potential long periods of non-use. A system with minimum infrastructure would reduce the maintenance burden and capital cost of the pump station. A system that utilizes onsite infrastructure would be beneficial during the expected periods of frequent use that will occur during extremely wet years. For these two reasons, AECOM recommends a system that utilizes onsite infrastructure that would be provided and utilized whether or not it is related to sediment. For example, sump pumps and gates will be provided (regardless of sediment issues) for isolating and dewatering the pump bays. These facilities can also be utilized in the sediment removal process. See *Exhibits B-11* and *B-12* for the location and orientation of these items. Sump pumps alone will be capable of dewatering the isolated bays and, in the process, pump out a portion of the settled sediment; however, the pumps will be limited in their ability to pump out settled sediment from all areas of the pump station without additional mechanisms to move sediment within the vicinity of the pump's suction.

4.7.3.2 Sediment Re-suspension

Additional mechanisms will be provided within the pump bay that will re-suspend settled sediment and direct it towards the sump pump during the dewatering process. Re-suspending and mixing the sediment will greatly increase the sump pumps' ability to pump out sediment while the bay is being dewatered. Multiple options are available; one option is to have a system of small diameter piping within the bay to inject water, air, or a mixture of both in a pattern that fluidizes and directs sediment towards the sump pump. A second option is to have water or pressurized air connections within the bay that can be attached to handheld devices that operators use to manually flush sediment in the desired direction. At the request of the Operator, this option will only be provided in addition to the first option. A third option is to utilize mechanical mixers or other physical means to re-suspend sediment.

One advantage of re-suspending sediment and then capturing it with a sump pump is that sediment is more easily handled once introduced into the sump pump. Several options are available for disposal of the sediment once it is introduced into the sump pump. Some of these options are further described below. Depending on the efficiency of the dewatering system, the pump bay may have to be refilled by slowly opening the upstream gate and then flushed out again.



4.7.3.3 Sump Pump Design Options

Several options exist for sump pump systems, both in terms of the type of pump used and the manner in which the pump is applied. Two options are submersible pumps and self-priming pumps. Several advantages and disadvantages are inherent to each type of pumping system. The selection process for the type of pump will depend greatly on operator preference. A very basic layout for each option is provided in *Exhibits B-11* and *B-12*. In either case, the pump would be designed to handle the sediment load.

A system that utilizes submersible pumps will require typical submersible pump hardware in each bay, including slide rails, discharge shoes, discharge piping, electrical connections, and access hatches in each of the four sediment areas. One advantage of this system is that a single pump could be housed onsite and utilized in the selected bay, thus minimizing cost and maintenance. A disadvantage of this system is that the location of the pump suction is fixed and limited, thereby decreasing the efficiency of the system to remove sediment. Another disadvantage is the cost associated with the multiple electrical connections.

A system that utilizes a self-priming pump could include one or two pumps located outside of the pump bay. Suction piping would be routed from the pump to several locations within the pump bay. A valve system could be provided that would allow the operator to choose which bay and the location within the bay that is being dewatered. This results in an advantage over the submersible pump option. One disadvantage is that much of the suction piping would be buried and difficult to access if a clog were to occur. Another disadvantage is that the pump would likely have to be constructed within a dry-pit due to the substantial suction lift. A dry pit would result in increased construction cost and possibly operational concerns due to the confined space.

4.7.3.4 Sediment Disposal

Once the mixture of sediment and water (sediment slurry) is removed from the pump bay, it will have to be further dewatered and stored in some form and fashion. Four potential options for transporting and storing sediment are as follows:

- Option 1: Sediment slurry can be pumped to an onsite dewatering basin, dewatered, and then stored onsite.
- Option 2: Sediment slurry can be pumped into the 108" diameter pipeline, downstream of the pumps and then transported to the upstream settling basin where it can be removed and stored by the facilities provided in that location.
- Option 3: Sediment slurry can be pumped through a solid-liquid separator. Separated solids can then be transported offsite or stored onsite.
- Option 4: Sediment slurry can be pumped back into the river, downstream of the intake.

Each of these options has inherent advantages and disadvantages. Option 1 will require the largest foot print. Option 2 will pose concerns to pipeline operation and will likely result in greater sedimentation issues within the pipeline. Option 3 would require significantly greater capital, operation, and maintenance costs and would still require room onsite to store the separated sediment. Option 4 would be the least expensive; however, it is subject to approval by environmental permitting agencies and is possibly not an option for this reason. These options will be further discussed with CWA and a recommendation will be provided as part of the final design.



4.8 Discharge Header and Valves

The purpose of this section is to discuss preliminary engineering issues related to the discharge header design, including the associated isolation, check, and air release valves.

The proposed pump discharge and header design is shown in *Exhibits B4-B7*. Each pump is served by a 48" discharge line including an air release and vacuum assembly and 36" ball valve for flow control and backflow prevention, a 48" butterfly valve for isolation, and a flow switch assembly. Two header options are shown, one with the 84" header in a subsurface vault and the second with the 84" header at grade. Ultimate determination of the recommended header type will include consideration of operator preference. Preliminary discussions with the Operator indicated that the above ground header will be selected for final design. The header, which includes an 84" butterfly valve separating the two 108" pipelines, air release and vacuum assemblies on each side, discharges into dual 84" force mains. Each 84" pipeline includes a venturi flow meter, an 84" isolation valve on either side of the flow meter, and a 108" to 84" reducer, which transitions into the 108" pipeline. Venturi flow meters are recommended due to their simplicity, reliability, and cost.

Pipe sizes were chosen to maintain sufficient velocities through the system to minimize sedimentation while not exceeding the velocity limitations of each valve or creating excessive headloss. Approximate Phase 1 velocities expected through each 48" discharge line are between 9.4 ft/s at 53,200 gpm and 12.3 ft/s at 69,500 gpm. The recommended maximum velocity for ball valves and butterfly valves are 35 ft/s and 16 ft/s, respectively. Maximum velocities through the 36" ball valve will not exceed 22 ft/s. Approximate anticipated velocities through the 84" header are between 3.1 ft/s at 53,200 gpm (one pump through one pipeline or two pumps through two pipelines) and 4.6 ft/s at 79,850 gpm (115 MGD; half of the maximum Phase 1 capacity of 230 MGD through one pipeline or 230 MGD through two pipelines). Velocities could reach 9.3 ft/s in the header if the entire Phase 1 capacity was pumped through a single pipeline.

Multiple valves, including ball, cone, and tilting disk check valves, were evaluated for use. Ball and cone valves are typically used to control transients and/or to regulate flow. Such valves are not mandatory unless flow control is needed or problems associated with transients and surges are anticipated. Preliminary desktop surge analysis indicated an automated control valve is not necessary for surge protection and the control of transients; however, CWA Operators prefer the use of ball valves due to their higher reliability and durability as compared to tilting disk check valves. AECOM recommends that a detailed computer surge analysis be performed during final design to finalize anticipated surge/transient conditions and to confirm the correct choice and closure speed of valves. As additional surge modeling is performed, it is possible that surge relief valves and/or surge anticipators will be added to the header. Air release and vacuum breaking valve selections may also be refined as a result of further surge analysis.



Section 5 – Conveyance System

5.1 Pipeline

5.1.1 Pipeline Route and Alignment

The pipeline route begins at the proposed Capers Ridge Pump Station site, traveling approximately three (3) miles westward to the proposed sedimentation basin. In general, the pipeline follows the rise in the existing natural ground up to the high point on Capers Ridge. The horizontal alignment primarily follows the existing topographical ridge through the area with adjustments where necessary. The pipeline vertical alignment is based on a minimum of a six foot depth of cover below the existing natural ground. The vertical alignment maintains the minimum cover of the pipeline while following the existing topography along Capers Ridge. This results in a varying elevation for the vertical pipeline profile, rising and falling with the existing ground surface. Both the horizontal and vertical alignments of the pipeline are shown in the referenced exhibits.

5.1.2 Pipe Size, Number, and Spacing

The size of the pipeline is based on the best available information regarding the project demand and needs. The actual size was dictated by both pipeline cost and the desire to operate the system efficiently. The most efficient pumps and pump arrangement were selected in order to maximize operational efficiency. While it was anticipated that construction costs for larger diameter pipelines would exceed those of smaller diameter pipelines, operational costs were also anticipated to be cheaper for larger diameter pipelines compared to smaller diameter pipelines based on research conducted for the project.

Based on this analysis, the dual pipelines will be 108" in diameter unless available information during final design warrants consideration of a smaller diameter. In order to convey project flows, these two lines of equal size will be constructed parallel to each other from the proposed pump station to the sedimentation basin location. Furthermore, two pipelines will allow for one line to be taken offline for repairs or maintenance while still permitting water conveyance through the system.

The pipelines will be spaced a minimum of 20 feet apart from outside edge to outside edge and centered about the pipeline ROW, although the actual average spacing may be further apart. This spacing is based on the distance between the pipes required to allow one line to be exposed without disturbance to the other during construction, required maintenance, repairs, or replacement. A spacing distance of twice the diameter of the pipe between parallel lines is typical for larger diameter pipelines.

The sizes and number of pipelines are based on the best available information. As new information, such as revised demand information, surge concerns (as indicated as part of a transient analysis), and operational requirements, is developed, the size or number of pipelines may require modification.

5.1.3 Recommended Pipeline Material and Pressure Classification

Multiple types of pipe material and pressure classifications were evaluated for use on the project. The advantages and disadvantages of each material for use in a large diameter waterline project were analyzed. For purposes of cost estimation, a pressure rating of 150 psi was assumed for the various types of pipe materials considered. The following are the findings on each of these pipe



materials. A final recommendation of pipeline material and pressure classification will be determined during final design.

5.1.3.1 Concrete

The only type of concrete pressure pipe that is applicable for the required size pipelines is prestressed concrete cylinder pipe (PCCP). PCCP is manufactured for all of the diameters considered for this project and also has multiple options for coatings and liners, which could be used to improve the biological and chemical resistance. The following advantages and disadvantages for PCCP are:

Advantages

- Large selections of structural and pressure strengths
- Specialized work crew is not required for installation
- Capable of withstanding very high pressures
- Internal corrosion can be significantly reduced with the use of thermoplastic lining
- External corrosion may be reduced by including sacrificial wall or by using Type V sulfate-resistant Portland cement
- Concrete pipe manufacturers can establish an onsite production plant to counter the high transportation costs

Disadvantages

- Sensitivity to bedding conditions – shear failure and beam breakage may occur
- Handling and installation difficulty because of heavy weight
- Susceptible to external corrosion in acidic soil environments
- Requires cathodic protection and is highly vulnerable to hydrogen sulfide attacks and internal microbiologically induced corrosion
- Difficult to repair, particularly for joint leakage and failure in pressure pipe
- Tendency to leak because of high pipe wall porosity and shrinkage cracking
- Without additional internal lining, life span is significantly reduced
- Low abrasion resistance – internal scouring can occur if solid content and flow velocities are high
- Reinforcement within PCCP walls can corrode with little or no external evidence
- Due to the unit weight of the materials, one 8-foot section of pipe will be delivered per truck.

5.1.3.2 Steel

The type of steel pressure pipe investigated for this project was spiral welded steel. Spiral weld pipe is manufactured from steel coils formed helically into cylinders. Steel pipe is manufactured in all diameters considered for this project. Steel pipe also has multiple options for coatings and liners to improve the biological and chemical resistance. These options can be provided at an additional cost. The following advantages and disadvantages are for spiral welded steel pipe:

Advantages

- Resistant to high pressures
- Easy to install, connect, operate, and maintain
- Ideal for extension work in reservoirs and pumping stations
- Can withstand shocks and traffic vibrations
- Suitable for long distance pipelines of high pressure
- Minimum damage to pipes during transportation
- Smaller pipe thickness required, which equates to lower total weight



Disadvantages

- Additional construction cost due to welding
- Internal and external coatings are susceptible to welding damage during construction
- Susceptible to wear and corrosion in sub-surface lines, reducing their lifespan
- Low resistance to acidic and high levels of saline soils
- Requires grounding measure at additional costs
- Due to the weight of the materials, the pipe must be delivered one section per truck, the length of each section will vary depending on the diameter (10 foot is typical)

5.1.3.3 Fiberglass

Reinforced Fiberglass Pipe (RFP) is a newer material compared to PCCP and steel. Due to minimal use, this material does not have an extensive record of in-field use and is presently not an acceptable material for large diameter water lines with the City of Houston. Because RFP is not approved by the City of Houston, it was eliminated as a considered pipe material alternative. Should this approval status change prior to the project's final design phase, this material will need to be reevaluated as an option for the project.

Other pipeline materials, including bar-wrapped concrete cylinder pipe, ductile iron, high-density polyethylene, and polyvinyl chloride pipe, were investigated as part of the preliminary analysis but were not manufactured in sizes required for consideration on the project.

5.1.4 Corrosion and Cathodic Protection Overview

As outlined in section 5.1.3, the pipeline will require different cathodic protection systems depending on the type of pipeline material selected for use on the project. Once a pipeline material has been selected, the cathodic protection system will be designed to protect both pipelines during the project's final design. This system will be designed and tested to ensure that the LBITP pipelines remain cathodically isolated from all foreign utility crossings and electrical interference.

5.1.5 Pipe Flushing and Draining Method and Facilities

Flushing and draining valves will be located along the pipeline. Due to the size and location of these appurtenances, the design of these mechanisms may be devised specifically for this project (non-standard). The size, location, and design of the flushing and draining valves will be determined during the project's final design.

5.1.5.1 Pipe Cleaning and Sediment Control

Two potential problems have been identified that could impede the flow of water through the piping system of the LBITP. The first possible problem is sand. The Trinity River is a dynamic, low-gradient coastal plain river, which actively transports large quantities of sand and sediment during flood events. While some methods to remove sediment at the pump station will be utilized, it is anticipated that some quantity of sediment and sand will pass through the pumps and enter the piping system. Over time, the sand and sediment may settle in the pipe, adversely affecting the pipe friction and cross-sectional area. Secondly, it is anticipated that Asiatic clams (*Corbicula fluminea*) and zebra mussels (*Dreissena polymorpha*) could be a concern in the LBITP piping system. These organisms have been observed in other CWA pump stations and pipeline systems on the Trinity River and have caused maintenance and operational problems. Specifically, these organisms have been known to attach to the walls of the pipe system and clog these raw water transmission systems. This organic



buildup will have a similar effect on the pipe friction and cross-sectional area losses within the pipeline.

Due to the possibility of organism infiltration and sediment buildup, it is recommended that a pipeline pigging system is included as part of the final design of the project. A typical pigging system entails pushing a pig through the pipeline that is a hydraulically or pneumatically propelled flexible polyurethane foam bullet. The pig is typically sized to be slightly larger than the carrier pipe. See *Figure 5-1* for a typical pig of this type used on a larger diameter pipeline. This pig style consists of a steel barbell with two epoxy coated polyurethane foam discs on each end. Due to the epoxy coating, the pigging disks will not absorb water, which reduces its overall weight. On a pig of this size, water absorption is a concern because it can dramatically increase the overall weight of the pig and create a significant problem for removal of the pig following completion of pipe cleaning. The discs located on each end of the pig would be replaced according to directions from the manufacturer.

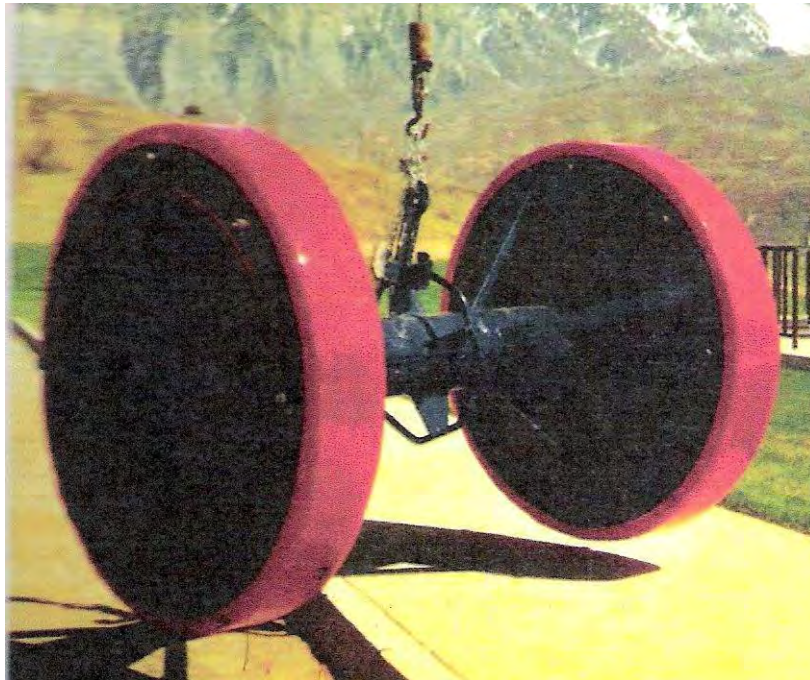


Figure 5-1 – Typical Large Diameter Pig with Foam End Disks

Incorporation of a pigging system will require the LBITP to be modified during final design to allow for pigging capabilities. This will entail integrating a launching station and a catching station into the project. To operate the system, a pig is first inserted into the launching station. The launcher is then closed and the pressure within the pipeline is used to push the pig through the pipe until it reaches the catching station. Following construction of the pipeline, an initial pigging of the pipeline will be performed. During the initial pigging, a benchmark determining optimal flow in the pipelines will be determined. The system can then be monitored to determine when future pigging will be necessary. It is anticipated that the pipeline will require cleaning every time the flow reaches an allowable loss or threshold as determined by the operator. Based on information provided by large diameter pig manufacturers, pigging cleanings are recommended at least once every three years, although more frequent intervals may be necessary.

Following the investigation into the pigging process, two preliminary launch structures were identified and are shown in *Exhibit A-4 Pipeline Pigging Exhibit*. The first launching station option consists of

an inline launch station with a removable launching barrel to load the pig. The second alternative consists of an offset launch station, which is offset from the pipeline either horizontally or vertically. This station is designed to bypass flow through the offset chamber in order to launch the pig. Following the investigation into the costs associated with fittings and valves on large diameter pipelines for this arrangement, this alternative appeared to be less economically viable when compared to option one. Catching stations or basins would also be required and would be similar to the launching station, but would include a flow bypass. Each launching and catching station will need to be equipped with a crane or have available access for a mobile crane to load and unload the pig within the pipeline. An on-site storage facility at the launching stations shall be provided to house the pig and any other equipment necessary for operation.

The dual pipelines of the LBITP will require pipeline launching and catching stations on both lines. Additionally, due to the design of the pig, any valves between the launching station and the catching station must completely clear the cross-sectional area of the pipe to allow for the pig to pass through the pipeline. This would prohibit the use of the butterfly style valves between the catching and launching stations, which limits the number and location of butterfly valves that can be used on the project.

5.1.6 Type, Number, and Location of Isolation Valves

Several types of isolation valves have been considered with respect to purpose, operations and maintenance concerns, cost, and functionality within the pipeline. A large diameter butterfly-style valve was determined to be an appropriate style valve for the project. For illustrative and estimation purposes, a butterfly style valve was assumed for the project and is shown on the pipeline drawings. An example of a typical large diameter butterfly valve is shown in *Figure 5-2*. As indicated in *Section 5.1.5.1*, butterfly valves cannot be placed between pig launching and catching stations. If isolation valves are needed between these launching and catching stations, a knife-gate style valve can be used in lieu of the butterfly valve. However, the final type, number, and location of the isolation valves and devices will be determined during final design.



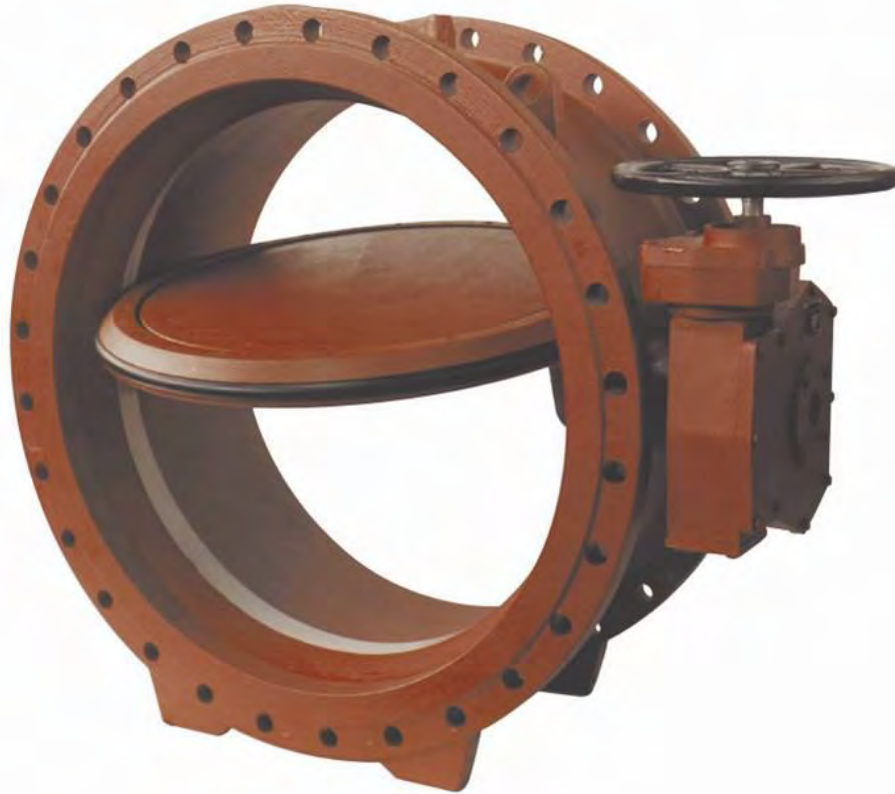


Figure 5-2 – Typical Large Diameter Butterfly Valve

5.1.7 Air Relief and Surge Valve Type And Locations

Air relief and surge valves will be located within the pipelines on the LBITP. In general, air relief valves (ARVs) are typically an inch to an inch and a half in size for each foot in diameter of the pipe. However, actual sizes for air relief valves for a given system must be determined using the specific conditions and parameters of the project. ARVs are typically located at the high points within a pipeline and are reflected as such on the project drawings. For illustrative purposes, a 12-inch combination vacuum/air relief valve is shown on the pipeline drawings. Since both waterline vertical alignments are identical, the combination valves were placed in the same location. Investigations into their function preliminarily indicated that a shared six inch vent pipe could be used for the valves on both lines at a given location. A complete surge and transient analysis will be required during final design to determine the actual size and location of all vacuum/air release valves for the project.

5.1.8 Drainage Along the Pipeline Corridor

A preliminary drainage area map for the pipeline portion of the project was developed and is shown in the project drawings. Existing drainage conditions and drainage conveyance will be evaluated during the project's final design and all drainage and storm water system mitigation will be designed to meet all applicable standards. Preliminary coordination with representatives from Liberty and Harris counties regarding the drainage conveyance was performed as part of the preliminary engineering for the project. This entailed meeting with the representative agencies, noting relevant drainage features that would be impacted, coordinating notification of the ROW acquisition process, and clarifying future requirements and considerations that would be necessary as part of the project's final design. The

methodology used, relevant assumptions, hydraulic model, and processes of development are explained in greater detail in Section 5.4 and Appendix E. However, no drainage analysis was performed during the preliminary engineering portion of the project and a full drainage analysis will be required as part of the final design.

5.1.9 Environmental Design Impacts

The disturbed area for the pipeline portion of the project was contained entirely within the parcel to be used for mitigation as part of the application for the project's environmental permit. As such, the area that will be impacted by the construction of the pipeline was identified and excluded from the mitigation area.

5.1.10 Recommended Depth of Cover

The recommended depth of cover for the pipeline is a minimum of six feet below natural ground. This depth is consistent with the City of Houston's Infrastructure Design Manual presently in effect for waterlines 24" and larger. Furthermore, discussions conducted with a variety of pipe suppliers during the pipe material investigation revealed that this would be an appropriate recommended minimum depth. As previously noted, this depth was maintained wherever possible during preliminary engineering of the pipeline vertical alignment. However, the final pipeline depth and vertical profile may require further modification during final design as more information becomes available.

5.1.11 Pipeline Constructability Issues

Several issues were considered during the preliminary engineering portion of the project related to the future construction and commissioning of the project. Due to the limited nature of this report, these issues could not be analyzed in great detail, but several of these issues are summarized in this section. However, additional constructability issues will need to be evaluated during final design.

The pipeline will be constructed via open cut construction methods. A trench box can be employed or the side slopes of the trench can be cut at a slope that will minimize risk of trench wall failure. A trench safety investigation will be included in the geotechnical analysis to be performed during final design.

Due to the size of the pipeline, advanced scheduling will be required to ensure timely delivery of the pipe to the project site. Depending on the pipe material selected, a mobile manufacturing plant could be constructed at the project site. However, it is not anticipated that pipe manufacturing will be a problem during construction with adequate advance notice based on the information known at the time of the writing of this report.

The commissioning and testing of the pump station and pipeline will require some degree of overlap to ensure proper function and operation of the system. It is anticipated that this process may take up to a year, depending on the decisions made during final design.

Access to all construction sites was considered when determining the project alignment. This includes analysis of the necessary routes and paths that will be used by construction equipment, including ingress and egress for all site vehicular traffic. Pipeline site access following completion of the project is summarized in *Section 5.1.12*.



5.1.12 Pipeline Site Access Locations

Site access points have been identified throughout the project alignment. Due to the limited nature and location of the pipeline, the primary access point to the pipeline will be by the pump station access road. Access to the beginning of the private pump station access road will be via Timberline Road (County Road 2317) off of FM 1008. Timberline Road is an existing asphalt county road that goes to the beginning of CWA's property. This road may require reconstruction or replacement to support the heavy equipment that will be necessary during the construction phase and once the pump station becomes operational.

Access along the pipeline will be continuous via the pump station access road, which will parallel the entire pipeline alignment. This access road is shown in the project drawings.

5.1.13 Preliminary Discussion of Communication, Control, and SCADA Needs and Criteria

Detailed communications, controls, and supervisory control and data acquisition (SCADA) needs will be determined during final design. However, the need for the ability to communicate, monitor, report, and control the project systems will be imperative. The SCADA system will be incorporated into the design of the pump station, pipeline, project maintenance facility, sedimentation basin, canal, and outfall to ensure full integration of the entire project.

5.1.14 Preliminary Drawings

Preliminary typical sections, sheet layouts, plan and profile, storm water pollution prevention plans, drainage area maps, and details have been prepared for the project. They are included as part of the project drawing set.

5.2 Sedimentation Basin

5.2.1 Preliminary Sedimentation Basin Design

The purpose of the sedimentation basin will be to remove sediment that is pumped from the Trinity River through the pipelines prior to entering the canal. The basin is sized to reduce flow velocity upon entering the basin such that the majority of the conveyed sediment will settle to the bottom of the basin and thus not enter the canal portion of the project. The sediment that is contained within the basin will be removed and stored on-site before eventually being transported off-site.

A general layout of the sedimentation basin is included within the preliminary project drawings. Due to the limited nature of this report, the sedimentation basin was not designed in detail and the layout shown in the drawings is conceptual. The complete basin will be designed during final design.

5.2.2 Location

The sedimentation basin will be located at the outfall of the dual pipelines. The proposed pipelines terminate approximately three miles from the Trinity River.

Several locations for the sedimentation basin were considered during the conceptual design phase of the project. These included sites near the property boundary of Parcels 4 and 4.5 were considered as possible locations. However, placing the sedimentation basin at these locations would have increased the overall length of pipeline section of the project and increased the head against which



the pump station would need to operate. Both of these factors increased the overall cost of the project. Additionally, a greater percentage of potential wetlands were encountered the further west the sedimentation basin was located from Capers Ridge. Several sites for the sedimentation basin location in the vicinity of the pipeline outfall location were also evaluated. While there was minimal difference between these sites, the possibility of additional wetland impacts and the proximity to the access road determined the final recommended location for the sedimentation basin.

The recommended location of the basin can be seen on the project drawings.

5.2.3 Configuration, Dimensions, and Energy Dissipation Needs

The basic configuration of the sedimentation basin will include entrance and exit weir structures, the basin lining, and the basin cross section. The final dimensions of the sedimentation basin were not determined during the preliminary engineering, but will be designed to maximize the efficiency of sediment removal from the conveyed water. Lastly, it is anticipated that energy dissipation and a transition section from the pipeline to the sedimentation basin will be necessary based on the flow and existing geotechnical considerations. These needs were not included as part of the preliminary engineering phase and will be determined during final design.

5.2.4 Sediment

Upon completion of the project, it is predicted that sediment will travel from the Trinity River, through the pump station and pipeline, before being deposited in the sedimentation basin. Determination of the amount and impact of the total sediment, as well as the needed sediment removal equipment was beyond the scope of the preliminary engineering report. Additional evaluation and investigation will be required during final design. However, the sedimentation basin area is adequate to allow for temporary sediment and equipment storage as determined during final design.

5.2.5 Preliminary Drawings

A preliminary layout of the sedimentation basin has been prepared and is included in the project drawings. The layout shown in the project drawings is conceptual in nature and will be determined during final design.

5.2.6 Flow Measurement Structural and Mechanical Plan

Flow measurement structures and related mechanical plans will be required for the sedimentation basin and will be incorporated into the project's SCADA system. However, investigation into these needs was beyond the scope of this report and will be determined during final design.

5.3 Canal

5.3.1 Canal Conveyance Route

The initial canal alignment was based on Alignment 3 from the LBITP Alternative Analysis report (June 2007). Starting with this approximate location, the proposed canal alignment was determined on the basis of following the identified project standard design criteria, the desire to minimize future maintenance issues, the reduction of environmental impacts, the allowance for feasible construction, the avoidance of the division of contiguous property shared by a single ownership interest where possible, the avoidance of impacts to existing water and drainage features, the avoidance of impacts



to existing utility facilities, and the minimization of overall project construction costs. In general, the canal begins at the high point on Capers Ridge and flows downhill to the project outfall.

Adjustments were performed and the canal preliminary alignment was modified based on the following information: field investigations, property examinations, the right-of-way acquisition process, and additional research into project constructability and cost. The ultimate project alignment has yet to be finalized, pending completion of the right-of-way acquisition process. However, the various changes and alignment rationale decisions to date are described below.

Beginning with the project's initial route, the alignment was refined to follow an approximate Liberty County watershed boundary, commonly termed "the ridge." Using LiDAR data for the project corridor, the watershed boundary between Luce Bayou and both the Trinity River (for the northeastern part of the alignment) and Cedar Bayou (for the southwestern part of the alignment) was approximated. The alignment was modified to follow the ridge as closely as possible to eliminate cross drainage where feasible and to minimize the impact of the canal on overland flow from extreme rainfall events.

Following this adjustment, the route was then modified to follow existing property boundaries more closely. The purpose of this adjustment was to avoid or minimize division of any single property with the canal while remaining as close to the ridge as possible. After closely analyzing the property boundaries using aerial photography and field visits where possible, the alignment was further refined to minimize impact on the irrigation canals and other smaller drainage features. Additionally, in conjunction with the environmental investigation, alignment change decisions were made with consideration to the possible environmental impacts affected by the options under consideration. This includes potential and jurisdictional wetlands, water bodies, vegetated landscapes, potential historical and archeological sites, and wildlife.

As property and site information became available, conflicts with existing facilities and utilities were also considered in determining the project alignment. An effort was made to contact each of the private utility owners in order to discuss the project, its potential impact on the utility's operations, and the required mitigation activities. In some instances, relocation of these existing utilities may be required. A list of the pipelines found to have a potential impact on the project is described in Section 5.3.13.

Several areas of the alignment of the considered alternatives required additional investigation of the following:

- A field visit identified a conflict near the intersection of the proposed alignment at SH 321 with an existing Crown Communications cellular phone tower located in Parcel 17. Several route alternatives north and south of this location were considered, including options that would have conveyed the water via underground box culverts. However, following discussions with the tower owner and after considering the engineering constraints, land acquisition, environmental impacts, and construction costs at this location, it was determined that the recommended alignment would entail relocation of the cell tower.
- Due to potential access limitations, three alternatives from Parcels 40 to 48 were analyzed. The first option considered traveled westward before intersecting and paralleling an existing pipeline easement. While this route was shorter than the other options considered, it resulted in impacts to the greatest number of acres of potential wetlands as well as the impact to an existing water treatment plant. The second option was located along the western edge of Parcel 42 and along a natural divide through Parcel 43. However, this resulted in a large impact to potential wetlands and the division of a historic homestead located on Parcel 47 and 47.5 and a potential area of archeological significance. The recommended route was selected because of the smallest anticipated impact to potential wetlands.



- Also due to potential site access limitations, several alternatives for Parcels 50 and 51 were investigated. Routes along the northern and southern boundaries as well as across the property were considered. Following investigation into the access impacts, site drainage, and the mitigation that would be necessary to offset these impacts, an alignment along the southern boundary was recommended.

5.3.2 Canal Design Criteria and Assumptions

The project design criteria are based on existing best practices and design standards for open channel canals and discussions with CWA operations personnel. The assumptions, methodologies, and reasoning were derived from various design criteria and scenarios that provided the optimal result for this project while remaining consistent with the project's objectives and goals.

A three hundred foot wide section was determined for the project ROW. This width would allow for the construction of the canal, access roads, storm water ditches, and maintenance access and activities.

The canal section is designed to convey an ultimate flow rate of 774 cubic feet per second (cfs), the equivalent of 500 million gallons per day (MGD). A minimum flow depth of five feet is to be provided, assuming a flow rate of 356 cfs. This flow rate is based on the assumed initial volume of water the canal will deliver prior to the required ultimate demand of 500 MGD. The typical canal cross-section was designed to be 10 feet in depth and 100 feet wide with four horizontal to one vertical (4:1) side slopes. In some instances, the canal may be widened or deepened to maintain an adequate factor of safety depending upon specific hydraulic and site conditions. The average slope within the canal is 0.015 percent and the canal bottom width is 20 feet.

The information for determining the canal freeboard was taken from a recommendation found in Natural Resources Conservation Service Conservation Practice Standard, Irrigation Canal or Lateral, Code 320. The code stipulates that the required freeboard above the maximum design water level shall be at least one-third of the design flow depth or 1.33 times the flow depth and shall not be less than 0.5 feet. This resulted in the canal having an average water depth of seven to eight feet within a 10-foot deep canal for the majority of the project, as described in *Section 5.4.4*. While the canal is not intended to be a drainage conveyance system, it is open to the elements and is required to convey any precipitation that falls directly upon it. Therefore, an overall analysis of the canal was performed for a 100-year rainfall event, verifying the minimum freeboard of 0.5 feet was provided for both a 6-hour and 24-hour storm. The 24 hour 100-year event resulted in 12.5 inches of rainfall occurring over the entire length of the canal. This analysis assumes the water supply pumps were deactivated a maximum of eight hours into the rainfall event or once two inches of rainfall have occurred over the canal.

One of the project objectives was to minimize vegetation growth within the canal, which significantly contributes to canal maintenance and operation costs. The velocity of the water and depth of canal were used to deter plant growth along the canal bottom. An average canal velocity of two feet/second (ft/s) was selected for the ultimate design flow rate to limit the ability of plants to take root along the channel. A maximum velocity of three ft/s was selected to limit potential erosion along the side slopes of the canal. In areas where the velocity of the water is expected to increase above five ft/s, erosion prevention methods, such as concrete lining or armoring, will be required. These areas will be near the entrance and exits of culverts, drop structures, canal bends, and other locations as identified during final design.

In addition to the flow velocity reducing vegetation growth, minimal vegetation growth below the design water surface elevation in the canal can also be expected due to the designed flow depth limiting available sunlight. Thus, in determining the frictional loss to the flow of water, a Manning's



roughness coefficient or n-value of 0.025 was assigned to the proposed canal. An n-value of 0.025 reflects the roughness factor for a bare earthen soil cross-section.

At each roadway crossing, the canal was transitioned to a box culvert section for conveyance underneath the roadway. At the location where the proposed water surface elevation is above the existing roadway, a siphon has been designed to convey water across the roadway with minimal disruption. The box culvert dimensions required at each location varied depending on the location canal flow line and depth under which the canal would need to pass. Specific sizes of each roadway crossing are shown in the project drawings. Additionally, conveyance via the canal box culvert were used to facilitate drainage across the canal right-of-way. The descriptions of these breaks are described in greater detail in Section 5.3.7, while their purpose for use as drainage devices is outlined in Section 5.4. A Manning's n-value of 0.015 was assumed for all concrete structures, including all box culverts. The entrance to all structures will have improved inlets to limit entrance head losses that will be detailed during final design.

5.3.3 Water Level Control Structures

Constant water surface elevation within the canal is beneficial to minimize maintenance that is typically required with frequently fluctuating water surface elevations. The water level control gates are proposed to limit the maximum drop in water level within the system to no more than four feet between gates. In order to maintain this desired water surface elevation, water level control gates will be strategically installed along the canal. In general, the gates will operate using the flow in the canal against the gate structure balanced with counterweights to maintain the desired constant water surface elevation. Upon initial installation, the gates will be positioned to keep the upstream water level constant. As the flow increases, the pressure from the water will cause the gate to open. This will balance the pressure from the flow of water with the counterweights on the gate in order to maintain the pre-determined water level. As the flow decreases, less water moves through the canal, resulting in less pressure exerted on the gates. The decrease in pressure causes the gate to reposition itself (using the counterweights) to maintain a constant water level in the canal.

The gates are currently designed to operate automatically with the intention of maintaining the water surface elevation. If necessary, features that will allow the gates to be manually or mechanically operated will be included in the final design. Additionally, a safety rack or structure may need to be placed in front of the gate structures to prevent blockage of flow and allow the gate to open or close properly.

There are seven gate locations proposed along the canal. There will be two parallel gates at each location to allow for maintenance without impeding the flow in the canal. Each gate location also corresponds to a drop in the canal flow line. The periodic drops allow a slope of 0.015 percent to be maintained for the length of the canal, which keeps the velocities in the range identified in the canal design criteria and project maintenance to a minimum. The gates will also include emergency overflow weirs, permitting the canal flow to bypass the gates in the event that the gates become inoperable. The current design of the gate structure is shown in the project drawings.

5.3.4 Geotechnical Findings and Impact on Canal Design

A preliminary geotechnical investigation was performed for the project. As part of this investigation, 15 borings were taken at the proposed pump station site and along the proposed alignment. Based on the preliminary findings and as outlined above, a 4:1 side slope was recommended for slope stability on the project. Additionally, the geotechnical consultant provided a typical cross section for canal lining to be used to prevent water seepage within the canal. This includes an anticipated over excavation depth to allow for the inclusion of the canal lining varying from 18 to 24 inches. A summary of the recommended clay lining cross section is shown below in *Figure 5-3*. Through use of



the canal lining, the geotechnical investigation concluded that water losses through seepage in the canal would be minimal based on the preliminary investigation.

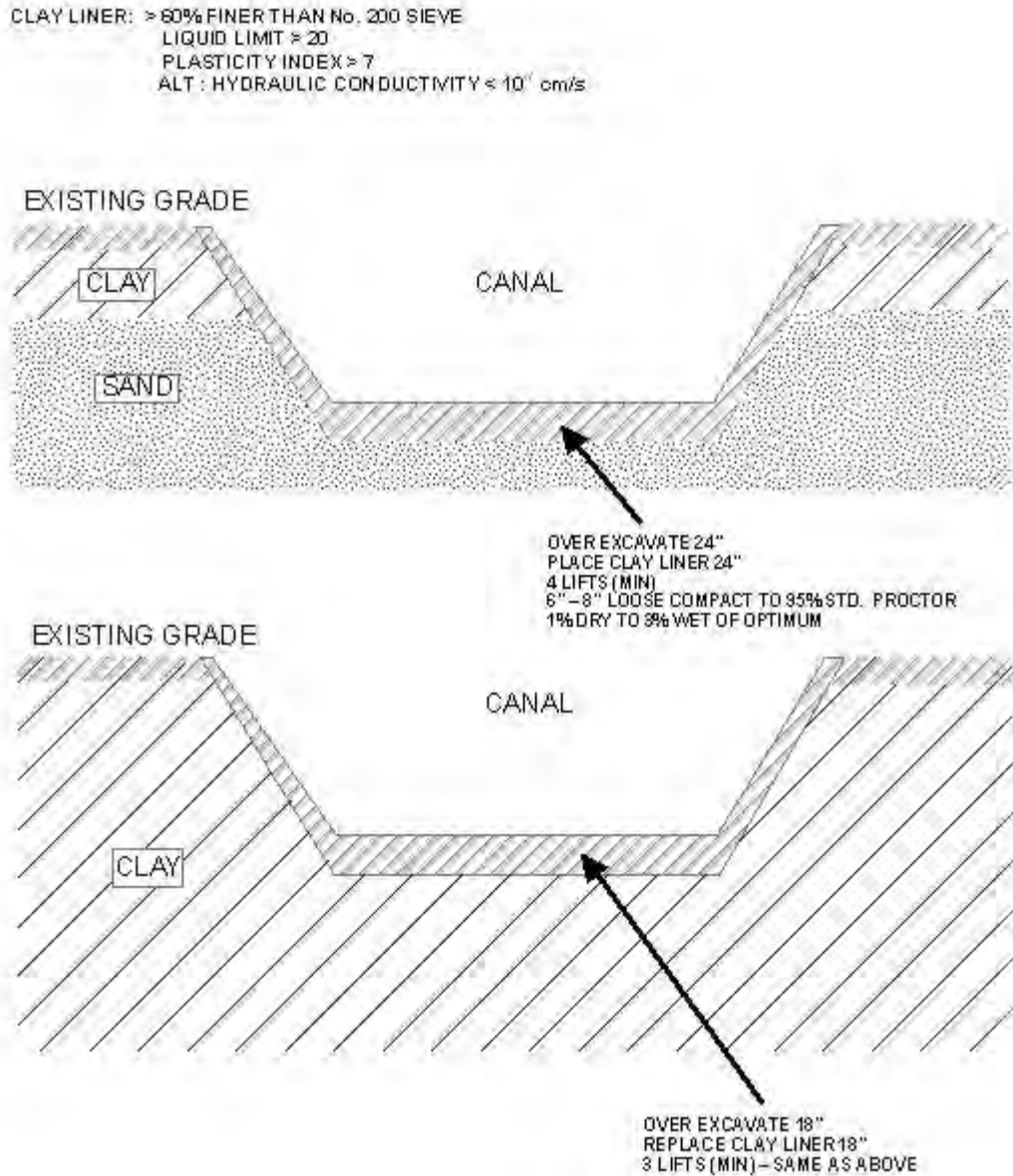


Figure 5-3 – Recommended Canal Lining for Differing Soil Conditions

Approximately 85 percent of the encountered material was composed of cohesive soils with the remaining 15 percent granular soils at depths of 10 feet. In conjunction with these borings and based on the anticipated project alignment, the geotechnical investigation indicates that enough cohesive (clay) material will be present to construct the channel lining with no need to import outside material. However, additional geotechnical investigation and borings along the canal route will be required to confirm this assumption during final design.

While enough clay material is likely present on site for construction of the channel lining, the material in specific locations will vary along the alignment. As such, it will be necessary for a geotechnical engineer to be present to supervise the testing and sorting of excavated material as suitable or unsuitable for lining material during construction. Furthermore, transportation of material for distances up to one mile within the canal right-of-way may be required, depending on the availability of clay in a particular location. Based on the preliminary findings, transportation of clay to different locations along the project is not anticipated in more than 25 percent of the canal. There will likely be excess excavated material during construction, but this excess material can be distributed within the project right-of-way without causing any adverse impacts.

The water table was generally encountered between 8 to 12 feet in depth below the existing surface. While locations potentially requiring dewatering were not observed, additional geotechnical testing and analysis during final design will be needed to confirm these conditions. However, there are locations where existing ditches, agricultural fields, and reservoirs are present and could possibly charge shallow granular soils, which could pose a problem during construction.

The cost estimate for the project was revised to incorporate recommendations based on these geotechnical findings, including the location and availability of clay, side slope stability, height of water table, over excavation depth, soil seepage rates, and other potential design considerations. The analysis of this information is ongoing and will continue to be incorporated into the project design. The preliminary geotechnical report is included in *Appendix B*.

5.3.5 Slope Stability and Erosion Protection Methods

The canal slope stability has been evaluated based on proposed soil conditions as well as the wet/dry cycles the canal slopes may experience as part of normal canal operations. Following this evaluation and in conjunction with recommendations provided by the preliminary geotechnical investigation, canal side slopes of 4:1 (V:H) are recommended. At this slope, concern for slope stabilization is minimized and without encumbering canal maintenance, such as mowing and dredging operations. Additionally, CWA expressed a specific desire to keep the canal side slopes at 4:1.

5.3.6 Canal Outfall

The preliminary project outfall was determined and is shown in the project drawings. Details related to the modeling and hydrology of the outfall structure is described in *Section 5.4.4*. The outfall is proposed to begin by transitioning the canal at a concrete drop structure and headwall. The flow is then conveyed via three 8-foot by 6-foot box culverts that will be diverted 36 degrees to the south of the project centerline near the bank of Luce Bayou/Lake Houston. The angle of diversion is to minimize the effects of erosion and scour at the existing outfall location as determined in the Baird Report and shown in the separate report developed by Baird. The box culverts will continue down towards the water before discharging below the average water surface elevation at that location. This will create an underwater outfall location. The area immediately adjacent to the outfall will be located within a concrete basin or apron beneath the existing channel bottom and surrounded by an underwater concrete weir. The purpose of this basin and weir will be to protect the lake bottom from scour and erosion.

Additionally, shoreline protection will be required to prevent and limit erosion during low water conditions in Lake Houston. Based on historical low water elevation information and existing conditions, shoreline protection is recommended to be 60 feet upstream of the outfall location and 120 feet downstream of the outfall location. Based on the preliminary findings of the outfall erosion investigation, it was not anticipated that the outfall would have an adverse affect on the opposite bank or any islands located within the existing outfall channel.



During typical canal flow conditions and water elevations within the outfall channel, the potential for scour is not significantly increased. However, during a combination of low water levels within the outfall channel and the maximum canal discharged rates, sheer stresses within the outfall could induce localized erosion and scour. The erosion and outfall investigation recommended that a permanent shoreline and bathymetric observation program is implemented to monitor the outfall for erosion and scour.

5.3.7 Drainage Along Canal Corridor

A preliminary drainage investigation and drainage area map of the canal portion of the project was developed and is shown in the project drawings. Existing drainage conditions and drainage conveyance will be evaluated during the project's final design and all drainage and storm water system mitigation will be designed to meet all applicable standards. Preliminary coordination over the drainage conveyance with representatives from Liberty and Harris counties was completed as part of the preliminary engineering for the project. This included meeting with the representative agencies and noting relevant drainage features that would be impacted, coordinating notification of the right-of-way acquisition process, and clarifying future requirements and considerations that would need to be included in the project's final design. The methodology, relevant assumptions, hydraulic model and processes of development are explained in greater detail in *Section 5.4 and Appendix E*. However, additional hydraulic and hydraulic analysis will be required as part of the final design.

5.3.7.1 Canal Siphons

One purpose of the project is to convey water via the pipeline and canal with minimal impact to the existing drainage patterns. To accomplish this, existing overland flow pattern impacts will be limited by creating breaks in the canal that will facilitate overland flow. At each break point, the flow of storm water runoff from the surrounding areas will be conveyed to a natural topographic low point. The canal siphon will convey the water in the canal below the existing grade, providing a direct path for runoff to flow across the project ROW.

The canal siphons consist of a transition from the open canal into a headwall structure and box culvert section, conveying the water beneath the existing ground surface. A safety rack may be included on the upstream side to prevent buildup or blocking of the siphon by debris. The headwall will proceed from an open transition section to a closed transition section before the box culvert section passes underneath each break location. Once the siphon emerges on the other side of the break, it would again transition into a headwall section and finally an open canal.

The drainage ditches on either side of the canal will convey runoff to each of these canal breaks. The breaks will then be sloped to facilitate drainage across the project right-of-way and away from the break location. Each siphon location results in a canal break of a minimum of 200 feet, although the overall length of each break varies. A berm would wrap around the headwall on either side of the siphon, allowing for access to either side of the canal and preventing the mixing of raw water and storm water runoff. Additionally, the drainage breaks would provide a location for wildlife to safely cross the project ROW.

At each location, the all weather maintenance road will continue across the break, permitting continuous access along the canal alignment within the project ROW. A flood gauge or other flow depth monitoring device may be put in place as a safety precaution. A bridge or low water crossing constructed of articulated concrete blocks, concrete paneling or other material capable that permits saturation of the roadway for extended periods will be constructed to facilitate this continuous access. The type of crossing that will be used will be determined during final design.



The canal siphons purpose for use as drainage devices are described in greater detail in *Section 5.4*. A typical detail and the locations of the canal siphons are shown in the project drawings.

5.3.8 Storm Water Pollution Prevention and Silt Control Measures

The canal portion of the project will have various storm water pollution prevention and silt control measures included as part of the final project design. In general, control measures include a reinforced silt filter fabric fence that will line the entire canal ROW, stabilize construction access points at all major roadways and construction access points, filter dams located as needed throughout the project, sodding and seeding to establish grass and minimize additional sediment erosion. A preliminary storm water pollution prevention plan is included in the project drawings. However, these control measures will be refined and modified as needed based on additional topographical survey and information obtained during final design.

5.3.9 Environmental Design Impacts

Environmental impacts were considered throughout the preliminary engineering phase. Minimization of impacts to existing and potential wetlands determined several aspects of the preliminary engineering. Environmental issues were used to determine the recommended project alignment as well as in the preliminary engineering of the canal siphons. The fencing used on the project also took into account the impact on the existing wildlife. Other environmental factors were also used to determine the preliminary project design.

5.3.10 Potentially Contaminated, Hazardous, and Toxic Area Concerns

In conjunction with the geotechnical and environmental investigations, research into the presence of potentially contaminated, hazardous, and toxic areas were considered. Although based on limited information, no contaminated, hazardous, or toxic soils were encountered along the project.

5.3.11 Site Access Locations

Site access points have been identified throughout the project alignment. Following extensive coordination and input from CWA, the majority of these site access points are located adjacent to areas where the project ROW is crossing an existing roadway. The roadway crossings and site access points are shown in *Exhibit A-5*.

At each roadway crossing, there will be a driveway off the existing roadway. Adjacent to this driveway inside the CWA property, there will be a loading and unloading area for use as an on-site maintenance and storage location. This stopping area will be wide enough to provide the on and off loading of heavy equipment and material storage as required by CWA. Two separate entrances from the main roadway were considered, but will require approval from the roadway owner and will be determined during the project's final design.

5.3.12 Preliminary Communication, Control, and SCADA Needs and Criteria Along Canal

Detailed communications, controls, and SCADA needs will be determined during final design. However, the need for the ability to communicate, monitor, report, and control the project systems will be imperative. The SCADA system will be incorporated into the design of the pump station, pipeline, project maintenance facility, sedimentation basin, canal, and outfall to ensure full integration of the entire project.



5.3.13 Pipeline and Private Utility Crossings

The current project alignment crosses 20 active gas and petroleum pipelines and two electrical facility easements. Coordination with these utility companies regarding verification of facilities and resolution of the potential future conflict was performed in conjunction with the preliminary engineering for the project. The following entities were contacted as part of this investigation. A summary of their existing facilities and the coordination is shown below. See *Exhibit A-5 Crossings Locations*, which shows the locations and summary table of these pipelines and utility crossing locations.

- Williams/Transco (Transcontinental Gas Pipe Line Corporation): The company owns and operates 2 - 30" steel pipelines conveying natural gas in the project area. They provided their crossing requirements handbook and maps showing exact horizontal alignment for the existing pipelines. No relocation costs have been provided.
- ConocoPhillips Pipeline Company: The company operates a 24" pipeline that transports petroleum products in the project area. Additional information about the existing utility has been requested, but has not yet been obtained. No relocation costs have been provided.
- Kinder Morgan: The current project alignment crosses three high pressure natural gas pipelines that are owned by this company. Crossing requirements, easement information, as well as maps showing horizontal alignment for all of the affected pipelines have been provided. No relocation costs have been provided.
- Sunoco Logistics: The company owns and operates a 10" high pressure pipeline crossing the existing alignment. The company provided a map showing the horizontal alignment, engineering and general restrictions manuals, as well as an approximate relocation cost.
- Chevron Pipeline Company: The company operates 2 - 10" liquefied petroleum gas pipelines that are crossing the proposed alignment. During the utility coordination process, the company provided horizontal alignment plans, approximate depth of the lines varying from 3'6" to 4'6" in depth, as well as an approximate cost estimate for relocating the affected pipelines.
- TEPPCO - Enterprise Products: Company owns and operates a 10" and a 12" steel pipeline, which are crossing the proposed alignment. The company has provided detailed alignment sheets for the affected lines, encroachment guidelines, approximate depth of their lines buried between 2.5 and 3.5 feet, as well as an approximate relocation cost.
- BP Pipelines (North America) Inc.: The company owns and operates 2 - 12" inactive pipelines in the project area. The company will be interested in maintaining one of the two pipelines for their future use. Information has been received on their pipeline's horizontal alignment information and construction guidelines. No relocation costs have been provided.
- Mustang Pipeline Company (Eastman Chemical Company): The company owns and operates one 6.625" propylene carbon steel pipeline and one 10.75" propane steel pipeline in the project corridor. Information has been received on their horizontal alignment, approximate vertical depth of 42" and an approximate relocation cost.
- Oneok NGL Pipeline, LP: This company owns and operates three liquefied petroleum gas steel pipelines of 8", 12" and 14" in diameter, which are crossing the proposed alignment. The horizontal alignment information on these pipelines has been provided along with an encroachment agreement. No relocation costs have been provided.



- Buckeye Gulf Coast Pipelines, LP: The company operates a 10" ethylene line for Westlake Ethylene Pipeline. Right-of-way use restrictions specifications, horizontal alignment maps, and approximate relocation cost have been provided.
- KOCH/Grande Pipelines: Pipelines were reported to have been abandoned/salvaged. No additional information has been received.
- Sam Houston Electric Cooperative: The company previously provided a general area utility location map for Liberty and Harris Counties. Letters requesting updated information for the current project alignment have been sent, but no information has been received to date.
- Entergy Gulf States: Two electrical easements and power lines owned by Entergy have been identified as crossing the project alignment. The company has provided detailed information about their existing utilities as well as approximate cost for relocation of these affected utilities. Based on the preliminary information, it appears that relocation of only one of the existing conflicts will be required.
- B&G Energy Corporation: Numerous attempts have been made to obtain information about existing utilities from this company within the project location. To date, no information has been received.
- Verizon Communications: The company provided a general area utility location map. A detailed description of the project was sent as part of a request for more information on a potential conflict location, but a response has not been provided.
- CenterPoint Energy: Numerous attempts have been made to obtain information on existing utilities from this company. No information has been received to date.

As part of the utility investigation, the following pipeline and utility companies were contacted and reported no existing facilities or conflict between their facilities and the proposed project alignment:

- Mobil Pipeline Co.
- Trunkline Gas Company
- Shell Pipeline Company, LP
- Energy Transfer - Houston Pipe Line Company, LP
- Comcast Communications

On Parcel 43, the proposed alignment crosses an existing Entergy easement. Following several coordination meetings, Entergy requested that the access roads meet their design specification for safe access to the electrical towers by their equipment and vehicles. Entergy provided the minimum design standards that would be required for access roads to their easement. These standards specified that the access road would need to be 20' wide and graded to drain at 2% slope. The surface of the access road needs to have a minimum of five inches of compacted crushed limestone. If the existing subgrade is poor, Entergy would require the removal of existing soil and replacement with more stable fill. All fill used for the access road would need to be placed in a maximum of six inch layers. All fill, base course, and ground covering are to be compacted to 95 percent of maximum density obtained by a Modified Proctor Test (ASTM D-1557).



On Parcel 23.6, the proposed injection point for the Enstor Houston Hub Storage Facility, a natural gas storage facility, was identified during the right-of-way acquisition process. While details are unknown at this time, the LBITP will be designed to avoid impacts to this future facility.

5.3.14 State Highway and County Roadway Crossings

The current project alignment crosses six roadways. Notification and coordination with the Texas Department of Transportation, Liberty County, and Harris County regarding these roadway crossings has been completed as part of the preliminary engineering. Meetings were held with each entity to indicate the project's alignment and to determine impacts with existing roadways, proposed future roadways, or roadway expansions.

In Liberty County, a master thoroughfare plan has been developed and provided by the county. This thoroughfare plan identified proposed freeways, major thoroughfares, and collector roads that were part of the county master plan. The project alignment was overlaid to determine what the potential future impacts were. Based on this analysis, it was determined that the project alignment affected 10 future major collector roads, four future major thoroughfares, and one proposed future freeway. However, Liberty County indicated they were in the very early planning stages of all of these roadways and projected expansion. The construction dates or right-of-way widths are unknown at present. *Exhibit A-6* shows the Liberty County Master Thoroughfare Plan as well as the project alignment in the affected portion of the county.

5.3.15 Preliminary Drawings

Preliminary typical sections, sheet layouts, plan and profile sheets, storm water pollution prevention plans, drainage area maps, traffic control plans, and details have been prepared for the project. They are included as part of the project drawing set, which is Volume II of the PER.

5.4 Project Drainage, Hydrology, and Hydraulics

5.4.1 Drainage Summary

A drainage area map, drainage lines, and catchment area boundaries were determined based on LiDAR and the limited topographical information available during the project's preliminary engineering. Throughout the project alignment, drainage breaks were inserted along the canal to permit drainage across the project right-of-way to maintain existing drainage patterns where possible and practical. The process for development of the project drainage, hydrology, and hydraulics is described in detail in the sections below.

5.4.2 Off-Site Drainage Crossings

Conceptual level modeling was performed to estimate the size and number of crossings required to convey off-site drainage across the proposed canal alignment. Detailed modeling to size collection ditches and confirm preliminary crossing sizes will be required in the design phase of the project.

Conceptual design consisted of drainage ditches paralleling the canal alignment along both ROWs. The ditches will drain toward the low point in the subbasin and will be interconnected by a culvert(s) crossing the canal alignment. The canal will be siphoned below the culvert crossing, allowing for extreme events to flow over the maintenance road. Less extreme events will be capable of passing through the culvert at each crossing.



The parallel ditches will act as spreader ditches, allowing flow to leave in a sheet flow pattern where applicable. A majority of the alignment does not have significant existing drainage facilities that collect existing runoff. The proposed ditches will have a depth sufficient for allowing the cross culvert to be below natural grade and provide sufficient cover. However, this design will result in some of the ditch flow lines to be below the natural grade at outfalls and resulting in the ditches remaining wet for extended periods of time.

5.4.3 Hydrology

Arc-Hydro, an extension of ArcMap, was utilized to calculate drainage lines for the area surrounding the proposed alignment using topographical information from a digital elevation model (DEM). Subbasin area boundaries were delineated from these drainage lines using a minimum basin size of 100 acres. For the purpose of determining drainage break locations, only subbasin areas that were intersected or affected by the proposed alignment were examined in the HEC-HMS model.

The methods utilized to develop the inputs into the HEC-HMS model are the Soil Conservation Service (SCS) Curve Number Method and SCS Unit Hydrograph Method. The SCS method for calculating peak discharge was selected for Liberty County hydrology, as no criteria could be found recommending a methodology to be used. The SCS method is appropriate for smaller watersheds and provided the rate and volume of the runoff. A list of provided runoff curve numbers (CN) based on a summary of those presented in TR-55 was used for the analysis. However, for the portion of the project within Harris County, Harris County hydrologic criteria were utilized.

The SCS Curve Number Method requires land use data, which was estimated visually from aerial photos. From the land use types, a weighted runoff coefficient was determined for each subbasin area. The project area contains soils in hydrologic soil group D. ArcGIS was used to calculate the total area for each subbasin. The percentage of the impervious area was modeled as 0 percent as the Curve Number was utilized to handle land use types.

The SCS Unit Hydrograph Method evaluates the lag time for each subbasin based on the time of concentration and travel time for sheet flow. The following values were selected for estimating the travel time for sheet flow: Manning's n-value of 0.3; 2-yr, 24-hr rainfall event of 5.25 in; flow length of 100 ft; and a slope of 0.0005 ft/ft. The longest flow path length was calculated and then the slope was estimated by taking the elevation at 15 percent and 85 percent of the flow path length.

The velocity for each subbasin was selected from the TxDOT Hydraulics Manual. The velocity selected was based on the weighted average of the Manning's n-value for each subbasin ranging from 0.1 to 0.15. The travel time for sheet flow and the quotient of drainage flow path and velocity were converted into minutes to calculate the time of concentration. The SCS calculation of lag time, $T_{lag} = 0.6 * T_c$, was utilized for each subbasin and input into HEC-HMS. The model performed simulations for the 1 percent and 50 percent Annual Exceedance Probability (AEP) storm events.

For the hydrology of the project roadways, the roadway drainage criteria from Liberty County's subdivision regulations were used for roadway drainage. The 2-year storm event was selected for these agricultural areas, as this is consistent with typical road side ditch design capacity. The event duration is the primary concern, compared to the depth of flooding for agricultural or undeveloped areas.



5.4.4 Hydraulics

Because the Luce Bayou canal is a raised canal, it will impede natural drainage paths of overland and channelized flow. To remedy this, a series of siphons in conjunction with collector ditches and culverts will be utilized along the alignment ROW. Ditches on the upstream and downstream side of the alignment will slope toward designated crossing points. These crossing points were determined based on natural drainage paths and existing low points along the alignment. Water will be collected in the upstream ditch and directed across the canal at the siphons via culvert and overland flow to the downstream ditch where it will fill uniformly and flow out, as described in *Section 5.3.7*. This will allow the water to resume sheet flow, thus replicating existing conditions.

The crossing points consist of a culvert-weir structure as shown in the project drawings. The culverts are sized to pass flows up to and including the 50 percent AEP storm event without overtopping the canal maintenance road. For larger events, a shallow flow depth is allowed to overtop the roadway to minimize increased ponding depths upstream of the canal. Flow from the culvert and weir will be collected in the downstream ditches and spread as previously described.

To model the proposed conditions, both one-dimensional and two-dimensional models are used in parallel.

A hydrograph representing rainfall is introduced in a two-dimensional overland flow model, which models the behavior of the shallow sheet flow. From this model, a stage hydrograph is obtained at the downstream right-of-way for each crossing.

In the one-dimensional model, each crossing is modeled as a separate reach. Under existing conditions, cross-sections along the reach represent the elevation data at the upstream and downstream right-of-way as well as the centerline of the canal. Under proposed conditions, the centerline cross-section is replaced with an inline structure containing a culvert and a weir representing the crossing structure. The watershed on the upstream side is modeled by a storage area with an elevation-volume curve obtained from the DEM and connected to the reach as the upstream boundary.

A runoff hydrograph is introduced to the upstream storage area and the stage hydrograph obtained from the two-dimensional model is applied as the downstream boundary condition. The resulting stage hydrograph measured in the storage area from the model was compared to the existing and proposed conditions to measure project impacts.

The typical measured impact on the upstream side of the alignment for the 100-year event is an increased depth of 3-4" for 5-16 hours. For the 2-year event, the adjacent ditches and culvert crossings are shown to have sufficient capacity to have no increase over the existing 2-year peak flooding depths.

5.4.5 Hydraulic Model Results

HEC-RAS Version 4.0 was used to model the proposed canal. The model was setup for unsteady state modeling of time varied flow rates.

The canal is designed to convey 774 cfs, maintaining a water level in the canal between seven and eight feet of flow depth. A total of seven water level control gates are proposed. These gates serve to limit the drop in water level to a maximum of four feet when the flow rate is reduced below 774 cfs as described in *Section 5.3.3*. The gates are located so that the maximum grade drop between gates



is four feet or less. At this spacing, a maximum drop in water level of approximately four feet can be maintained for a zero flow rate condition.

The canal has six roadway crossings. At these crossings, three 8-foot x 7-foot box culverts are proposed. The canal grades at these crossings have been set to minimize impact to the roadway profile over the canal. Concrete lining will be provided at a minimum of 20-feet upstream and downstream of the crossing to minimize erosion potential due to increased velocities in the canal as flow enters and exits the culverts.

The culvert entrances are to be designed to minimize entrance losses by providing flared wing walls and beveled top edges.

A total of 19 siphons are proposed along the canal. The siphons are required to allow off-site runoff the ability to cross the canal alignment approximating current drainage patterns without causing prolonged flooding or ponding of properties adjacent to the canal alignment. The siphon locations are preliminarily sited at locations where overland sheet flow is expected to concentrate and where existing drainage facilities cross the alignment. The siphons are assumed to be two barrels of 10-foot x 7-foot box culverts and two barrels of 5-foot x 7-foot box culverts. The siphon flow line will drop approximately 10 feet below the canal flow line. This provides approximately five to six feet of depth between natural ground and the top of the box culverts. This depth will be used to provide surface flow across drainage structures, which is discussed in greater detail in Section 5.3.7. Each siphon is assumed to be 400 feet in length and each barrel of the siphon has a velocity of 3.7 fps, which exceeds the typical minimum scour velocity of 3 fps. This velocity will keep sediment deposition to a minimum within the siphon.

Initial demands indicate an expected flow rate of 230 MGD or 356 cfs after the canal is constructed. This interim flow rate will result in lower velocities through the siphons. It is recommended that only one 10-foot x 7-foot and one 5-foot x 7-foot barrel will be used for the interim flow of 356 cfs. This flow rate provides a velocity within the siphon of approximately 3.4 fps.

Flow depth within the canal varies between seven and eight feet, depending on the location in relation to water level control gates, existing roadways, and siphon crossings. The normal water level depth in the canal is approximately 7.3 feet. By providing a typical canal depth of 10 feet, an average freeboard of 2.7 feet is provided. There are several reaches along the canal where the roadway and siphon crossing are spaced fairly close together, causing incremental head losses between the structures to raise the depth of flow in the canal to approximately eight feet. It is recommended that in these reaches the canal should be constructed to a depth of 11-feet, providing the recommended 1.33 x depth of flow freeboard.

The extreme event analysis shows that assuming the pumps are turned off for a maximum of eight hours into a 100-yr, 24-hour rainfall event, the canal has capacity to carry the event and maintain a minimum of 1.2 feet of freeboard. Should the pumps not be turned off during a 100-year event, the canal has capacity to convey the event with a minimum freeboard of 0.3 feet. This minimum freeboard is most likely to occur within the portion of the proposed canal where the 11-foot depth is recommended.

Unsteady state modeling of the canal shows that with the canal operating at its ultimate capacity of 774 cfs, it would take approximately eight hours for the water level control gates to completely shut down the flow to Lake Houston after the pumps have been turned off. Returning the canal to the 774 cfs flow rate is shown to take approximately 13 hours. Flow begins to arrive at the outfall approximately three hours after the pumps are turned on, assuming the water level control gates are holding water in the canal.



The outfall structure into Lake Houston is assumed to be three 8-foot x 6-foot box culverts. The approximately 640-foot long culverts have 28.8 feet of fall from the inlet elevation of 62.8 to the outlet elevation of 34.0. The outlet is submerged below the 43.5-foot normal pool elevation of Lake Houston. By submerging the outfall, a hydraulic jump is forced to occur within the culverts, reducing the velocity of the discharge into the lake. The velocity is further diminished by discharging the flow into a concrete stilling basin. The submerged basin has a top of wall elevation of approximately 39.5 or 1.5 feet above the Lake bed elevation at the outfall. The top of the wall functions as a submerged weir with an effective length of approximately 90 feet. The stilling basin will allow the discharge to swell up within it and uniformly distribute into the lake.

The culverts are at a very steep slope and critical depth is achieved within the culverts. This combined with the submerged outfall forces a hydraulic jump to occur within the culverts. The entire capacity of the culvert is not used where flow is flowing at a critical depth. The entrance will be designed so that open channel flow occurs within the culvert upstream of the hydraulic jump to prevent air from being trapped within the culvert.

When the canal is running at ultimate capacity, approximately 975 acre feet of water is contained within the canal portion of the project. With a zero flow condition, approximately 600 acre feet of water remains in the system stored behind the water level control gates.

While the model calculations are correct for the assumptions used in this report, changes from these original assumptions will occur as new information becomes available. Further hydraulic analysis will be required in final design to verify the effects of the actual roadway crossing designs, siphon lengths, water level control gates design and location, etc.

5.5 Project Access Roads, Security, and Safety

5.5.1 Access Roads and Roadside Ditches

The proposed access road will be constructed to provide access from FM 1008 to the sedimentation basin and the pump station. CWA intends to construct an improved roadway from FM 1008 to the proposed Capers Ridge Pump Station. A portion of the roadway is maintained by Liberty County as described in *Section 5.1.12*. The road is designed to be a 26-foot wide asphalt road with two way direction traffic and designed to withstand use by maintenance trucks and medium traffic. The access road is shown in the project drawings. Due to the limited nature of the preliminary engineering report and the information available, only the horizontal roadway alignment is shown.

The access road will be drained by road side ditches on each side of the road. These ditches shall be designed to meet Liberty County standards. The ditches will be v-shaped with a minimum depth of 0.5 feet below the edge of the road pavement or 0.5 feet below the natural ground elevation at the right-of-way, whichever is lower. The ditch side slopes shall not be steeper than three horizontal to one vertical (3:1) and the minimum grade shall be 0.1 foot per foot with the maximum design velocity of 3.0 feet per second during the design event. Due to the limited nature of the preliminary engineering report and the information available, only the horizontal ditch alignments are shown.

5.5.2 All-Weather Maintenance Road

The all-weather maintenance road will begin at the sedimentation basin and continue along the northern and western sides of the canal. This road will be designed to permit continued access under varying weather conditions. The width of this road is 14 feet and is shown on the project drawings. The cross section and composition of this roadway will be determined during final design.



5.5.3 Project Security and Safety

One of the outcomes of the U.S. Public Health Security and Bioterrorism Preparedness and Response of 2002 was the development of the "Guidelines for Physical Security of Water Utilities" in December of 2006 by the American Society of Civil Engineers and the American Water Works Association for the Environmental Protection Agency (EPA). The EPA in turn provided these guidelines to water utilities to assist them with the upgrading of the security at their facilities. Currently, the responsibility for providing security for the water resides with the utility. There are two bills in congress, H.R. 3258 Drinking Water System Security Act of 2009 and H.R. 2868 Chemical and Water Security Act of 2009, that, if enacted, will require water utilities to perform vulnerability assessments of their facilities, develop emergency response plans, develop plans for upgrading security, etc. It will also allow EPA and Department of Homeland Security (DHS) to inspect these facilities for compliance of these plans. Failure of such inspections could lead to EPA and/or DHS taking over responsibility for the security of these facilities. Until such legislation becomes law, it is prudent to use the guidelines to upgrade security of these facilities. As such, we have determined the general requirements needed to meet these possible requirements.

The pipeline is buried six feet below grade and, therefore, does not require any additional protection. Any above ground valves or controls will need to be locked with shrouded locks as described in the pump station section.

Along the general canal portion of the project, the preliminary engineering incorporates the use of a 4-strand barb wire fence along the entire project, except at major roadways and easement crossings. In these locations, a six foot high chain link fence is recommended to minimize access concerns along the project to the canal ROW in areas immediately visible to passersby at each roadway. Additional security may also be necessary at the water level control structures. Any programmable logic controller (PLC) cabinets, manual controls, and valves are recommended to be locked using shrouded locks. Beyond this, there are no additional security enhancements recommended to be made to the canal itself. The length of the canal and its general remoteness preclude the use of high security fencing, Closed Circuit Television (CCTV) cameras, etc., in a cost effective manner.

It is recommended that the canal maintenance facility have increased site security. This facility will likely need to be surrounded by a perimeter fence. This perimeter fence will be constructed to resist climbing or cutting and the fabric will be a heavy gauge chain link or welded wire fabric construction. It should be at least six feet tall with double outriggers on top with either three strands of barbed wire on both sets of outriggers or coiled razor wire. The entrance gate into this area will be an automated type sliding gate. The gate providing direct access to the canal will be secured with a shrouded lock. Access through the main gate will be controlled by the access control functions of the integrated security system at the site that will be developed during final design. All manholes, valves, vault hatches, equipment control cabinets, control devices, etc. will be secured with shrouded locks. All personnel doors into the facilities at this site are recommended to be equipped with tamper resistant security hinges and key-locked doors. The main entrances into each building are also recommended to be equipped with an access control card reader and associated hardware. Any roof hatches or exterior roof access ladders will need to be locked. Recommended electronic security for this facility consists of access control for the main gate and each of the main buildings, specifically the offices, vehicle maintenance bays, parts storage, general maintenance, and used oil storage. It can also include CCTV coverage of the entrances into each of these buildings/facilities and the main gate. The CCTV coverage of the building entrances would be from the inside of the buildings looking out in order to obtain a usable image for identifying who is entering the building. The camera at the entry gate will require lighting for continual use. Communication between these systems and the monitoring point at the CWA will be by the same media used to communicate with the pump station. Any PLC cabinets, control valves, etc. associated with the canal will need to be secured with shrouded locks.



Lastly, the project outfall may require some additional security. The project right-of-way and outfall location may require fencing to prohibit unauthorized access of the site from the Lake Houston/Luce Bayou waterway. Furthermore, the outfall concrete apron located under the water surface may require piers or buoys demarcating the outer edge of the safe swimming and waterborne vehicle distance. However, all project security measures for the entire project will be reevaluated to determine their necessity and applicability during final design.



Appendix A

Calculations



APPENDIX A - CALCULATIONS

I SYSTEM CURVE CALCUATIONS

A PURPOSE

The purpose of this section is to document the equations and assumptions used to generate the system curve for the project.

B STATIC HEAD

- a Maximum: 107.22 feet Maximum WSE at Settling Basin
- 17.80 feet Low water elevation in the Trinity River (see below)
89.42 feet
- b Average: 107.22 feet Maximum WSE at Settling Basin
- 19.80 feet Median water elevation in the Trinity River
87.42 feet
- c Minimum: 107.22 feet Maximum WSE at Settling Basin
- 44.00 feet High water elevation (100 Year Flood) in the Trinity River
63.22 feet
- d Minimum water surface elevation discussion:

Minimum future Trinity River water surface elevations are greatly dependent on the pumping rates of the Capers Ridge and existing Trinity River Pump Station. A large percentage of the total flow in the Trinity River is comprised of flow that will be diverted from the pump stations during periods of high pumping rates and otherwise low natural conditions. As discussed in more detail in Chapter 3, the Trinity River Authority will release water from Lake Livingston to ensure that water rights are met; therefore, during periods of extremely low flow, additional water will be released into the Trinity River. Based on modeling performed by AECOM, the minimum water surface elevation is expected to be 16.9 feet; however, during periods of high pumping operations and low natural flow, the minimum water surface elevation is expected to be no less than 17.8 feet. In this PER, different minimum water surface elevations are assumed and presented (either 16.9 or 17.8 feet) according to the situation being evaluated.

C PUMP STATION CAPACITY

The pump station will be provided with an initial pumping capacity necessary to meet contractual water demands for the year 2020, which should satisfy co-participant water demands up to the year 2040. Pumps will be selected to have their best efficiency points at flow rates close to average day conditions. Owner requested operational constraints also include a recommendation that the single-pump pumping rate to be less than the minimum anticipated 2020 project demand. Subsequent phases will expand the pump station to meet peak project demand for the year 2040 and then the maximum withdrawal rate allowed by the City of Houston's Water Right.

Pumps will be selected to ensure that the Phase 2 capacity can be achieved through the addition of three similar pumps and then the maximum project firm capacity (with one redundant pump) can be achieved through impeller changes or the addition of no more than two additional pumps. The maximum project capacity is defined by the maximum withdrawal rate allowed by the City of Houston's Water Right. The following is a list of some key pumping criteria:

- a Phase 1 (2020) required total capacity: 230 MGD
- b Phase 2 (2040) required total capacity: 425 MGD
- c Maximum project firm capacity: 500 MGD

D SYSTEM CURVE HEADLOSS EQUATIONS

- a Darcy-Weisbach Equation (fluid friction equation)

$$H_L = f \times \frac{L}{D} \times \frac{V^2}{2g} + \sum k \frac{V^2}{2g}$$

H_L	Head loss (feet)
F	Friction factor from Moody diagram
V	Fluid velocity (ft/s)
L	Pipe length (ft)
D	Pipe diameter (ft)
g	Gravity constant (ft/sec ²)
k	Minor loss coefficient



b Hazen-Williams Equation

$$H_L = 10.44 \times L \times \left(\frac{Q}{C}\right)^{1.85} \times \left(\frac{1}{D}\right)^{4.87} + \frac{\sum k}{2g} \times \left(\frac{0.4085 \times Q}{D^2}\right)^2$$

- H_L Head loss (feet)
- Q Fluid flow (gpm)
- L Pipe length (feet)
- D Pipe diameter (inches)
- C Hazen-Williams roughness coefficient
- Σk Minor loss factor

E HEAD LOSS FOR THE PUMP COLUMN, DISCHARGE PIPE, AND HEADER

a Summary of K-values:

Table A-I-1: COLUMN

Qty	Description	Dimension	k	Sum of k
1	Pump Entrance Loss	N/A	0.5	0.5

Table A-I-2: DISCHARGE PIPE

Qty	Description	Dimension	k	Sum of k
1 or 3	90 degree elbow	48"	0.3	0.9
1	Tee Branch	48"	0.6	0.6
1	Butterfly Valve	48"	0.3	0.3
1	Ball Valve	36"	0.04	0.04
1	Gradual Contraction	48"-36"	0.05	0.05
1	Gradual Expansion	36"-48"	0.06	0.06
	Sum of Minor Losses			1.95

Table A-I-3: HEADER

Qty	Description	Dimension	k	Sum of k
1	Tee Branch	84"	0.3	0.3
2	Tee Thru	84"	0.1	0.2
	Sum of Minor Losses			0.5



b Sample Calculation:

Q_{total}	:	230 MGD
No. of Pumps	:	3
Q_{pump}	:	53,240 gpm
C	:	110 (Steel Pipe)
Σk	:	Column : 0.5
	:	Discharge Pipe : 1.95
	:	Header Pipe : 0.5
Length of pipe	:	Column : 45 ft
	:	Discharge Pipe : 65 ft
	:	Header Pipe : 35.25 ft (Effective)

$$H_L (\text{Column}) = 10.44 \times 45 \text{ ft} \times \left(\frac{53,240 \text{ gpm}}{110} \right)^{1.85} \times \left(\frac{1}{42 \text{ in}} \right)^{4.87} + \frac{0.5}{64.4} \times \left(\frac{0.4085 \times 53,240 \text{ gpm}}{(42 \text{ in})^2} \right)^2$$

$$H_L (\text{Discharge}) = 10.44 \times 65 \text{ ft} \times \left(\frac{53,240 \text{ gpm}}{110} \right)^{1.85} \times \left(\frac{1}{48 \text{ in}} \right)^{4.87} + \frac{1.95}{64.4} \times \left(\frac{0.4085 \times 53,240 \text{ gpm}}{(48 \text{ in})^2} \right)^2$$

$$H_L (\text{Header}) = 10.44 \times 35.25 \text{ ft} \times \left(\frac{53,240 \text{ gpm}}{110} \right)^{1.85} \times \left(\frac{1}{84 \text{ in}} \right)^{4.87} + \frac{0.50}{64.4} \times \left(\frac{0.4085 \times 53,240 \text{ gpm}}{(84 \text{ in})^2} \right)^2$$

$$H_L (\text{Column}) = 1.72 \text{ ft}$$

$$H_L (\text{Discharge}) = 3.11 \text{ ft}$$

$$H_L (\text{Header}) = 0.09 \text{ ft}$$



F HEAD LOSS FOR PIPELINE

a Minor losses:

Table A-I-4: PIPELINE

Qty	Description	Dimension	k	Sum of k
1	Gradual Expansion	84"-108"	0.05	0.05
1	Butterfly Valve	84"	0.3	0.3
7	Butterfly Valve	108"	0.3	2.1
15	45 Degree Bend	108"	0.1	1.5
17	22.5 Degree Bend	108"	0.05	0.85
1	Exit Loss	N/A	1	1
	Sum of Minor Losses			5.8

b Pipeline operation discussion:

The design is made by taking into consideration 2 parallel pipes of 108 inches in diameter. In case of the low flow condition or when all the pumps are not running to the capacity, the numbers of pipelines in operation depend on the velocity of water through the pipe. When the flow exceeds the velocity of 4 ft/s in Pipe-1, then Pipe-1 and Pipe-2 should be used simultaneously. At times, pump station operators will operate the pumping system at velocities greater than 5 ft/s to flush sediment out of the pipes. This will be done as needed, but not under typical situations.

c Sample Calculation:

Q_{total} : 230 MGD
 No. of pipes : 2
 Q per pipeline : 79,861 gpm
 Pipeline length : 16,051 feet
 Nominal pipe diameter : 108 inches
 C : 110 (steel pipe)
 Σk : 5.8



$$H_L (\text{Pipeline}) = 10.44 \times 16,051 \text{ ft} \times \left(\frac{79,861 \text{ gpm}}{110} \right)^{1.85} \times \left(\frac{1}{108 \text{ in}} \right)^{4.87} + \frac{5.8}{64.4} \times \left(\frac{0.4085 \times 79,861 \text{ gpm}}{(108 \text{ in})^2} \right)^2$$

$$H_L (\text{Pipeline}) = 4.82 \text{ ft.}$$

G TOTAL DYNAMIC HEAD

a Total Dynamic Head (TDH) at 230 MGD

TDH = Static Head + Total Pipeline Friction Head

i At low water elevation in the Trinity River

$$\text{TDH} = 89.42 + 1.72 + 3.11 + 0.09 + 4.82 = 99.16 \text{ ft}$$

ii At median water elevation in the Trinity River

$$\text{TDH} = 87.42 + 1.72 + 3.11 + 0.09 + 4.82 = 97.16 \text{ ft}$$

iii At high water elevation (100 Year Flood) in the Trinity River

$$\text{TDH} = 63.22 + 1.72 + 3.11 + 0.09 + 4.82 = 72.96 \text{ ft}$$



H PUMP SELECTIONS

The pump station will be provided with an initial pumping capacity of 230 MGD. Three duty pumps and no redundant pumps will be provided. Each pump will meet two design points.:

- 1) 53,200 gpm (76.7 MGD) at 97' TDH
(3 duty pumps producing 230 MGD)
- 2) \geq 49,200 gpm (70.8 MGD) at 108.5' TDH
(6 duty pumps producing greater than 425 MGD)

In addition, the pump shall be selected to accommodate the following Future Condition:

- 1) \geq 49,600 gpm (71.4 MGD) at 114' TDH
(7 duty pumps producing 500 MGD. Pumps must be capable of meeting Future Condition with only an impeller change)

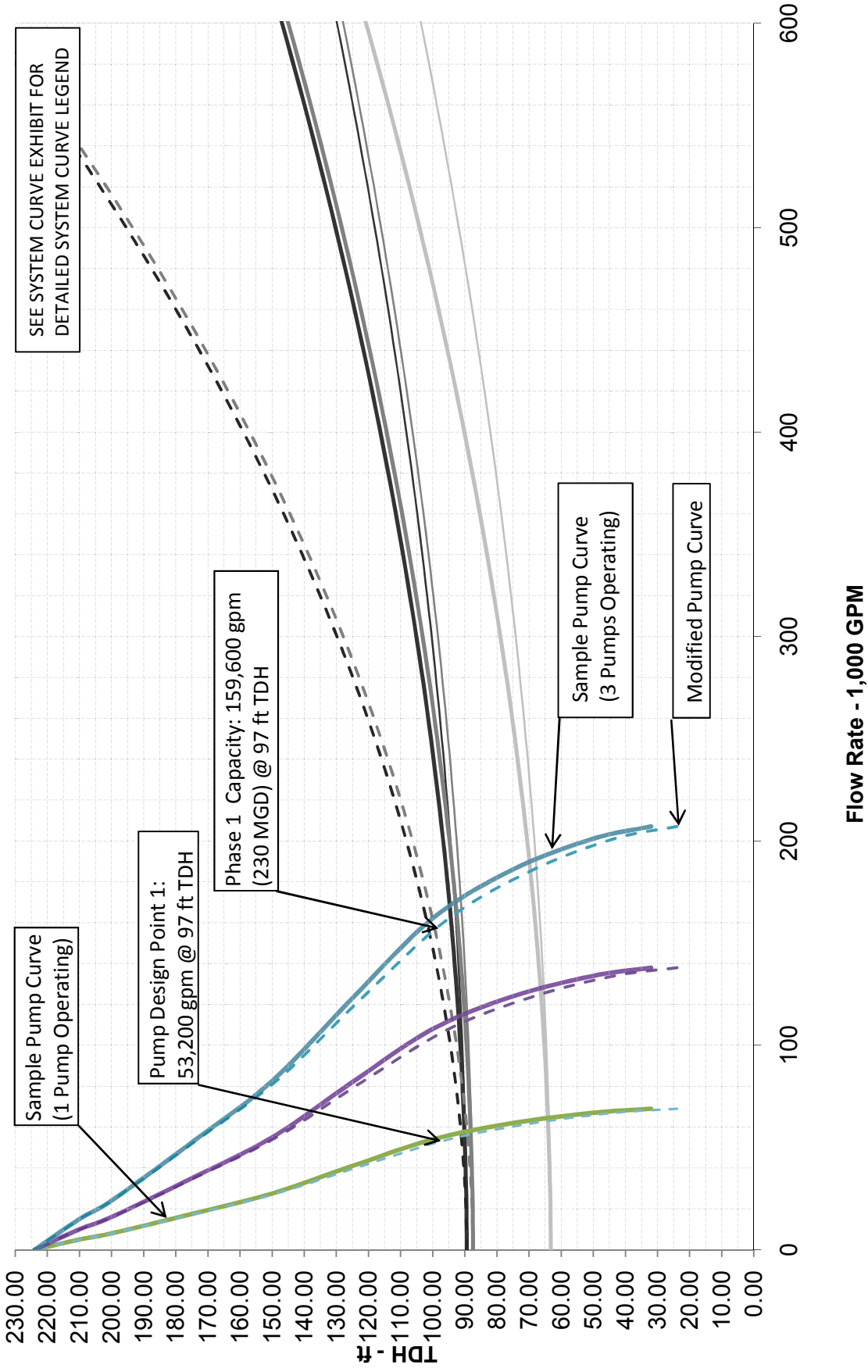
Pumps will be selected based on their best efficiency points at flow rates between 49,000 - 57,000 gpm, which will result in highly efficient pumps during projected average day flows throughout the first two phases of operation. This pump strategy will also accommodate owner requested operational constraints and will allow an easy expansion to ultimate flows, if necessary.

I SYSTEM CURVES

The following system curves were generated using the equations, parameters, and assumptions listed above. System curves are preserved for multiple C-factors, Trinity River conditions, and the number of pipelines in operation.



Phase 1 Pump Design Points and Sample Pump Curves with System Curves at Various Trinity River Conditions, and C Factors



SEE SYSTEM CURVE EXHIBIT FOR
DETAILED SYSTEM CURVE LEGEND

Phase 1 Capacity: 159,600 gpm
(230 MGD) @ 97 ft TDH

Pump Design Point 1:
53,200 gpm @ 97 ft TDH

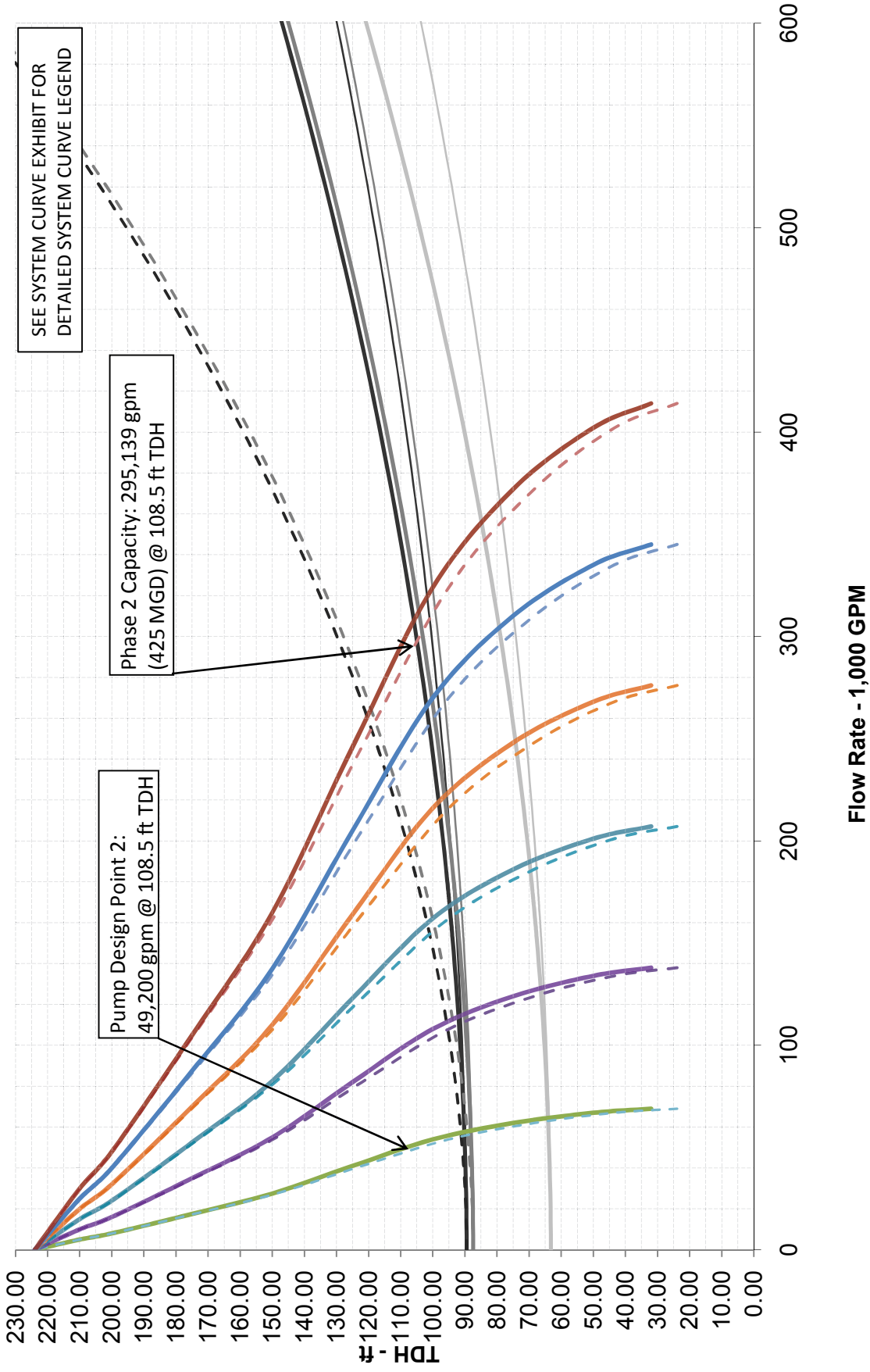
Sample Pump Curve
(3 Pumps Operating)

Modified Pump Curve

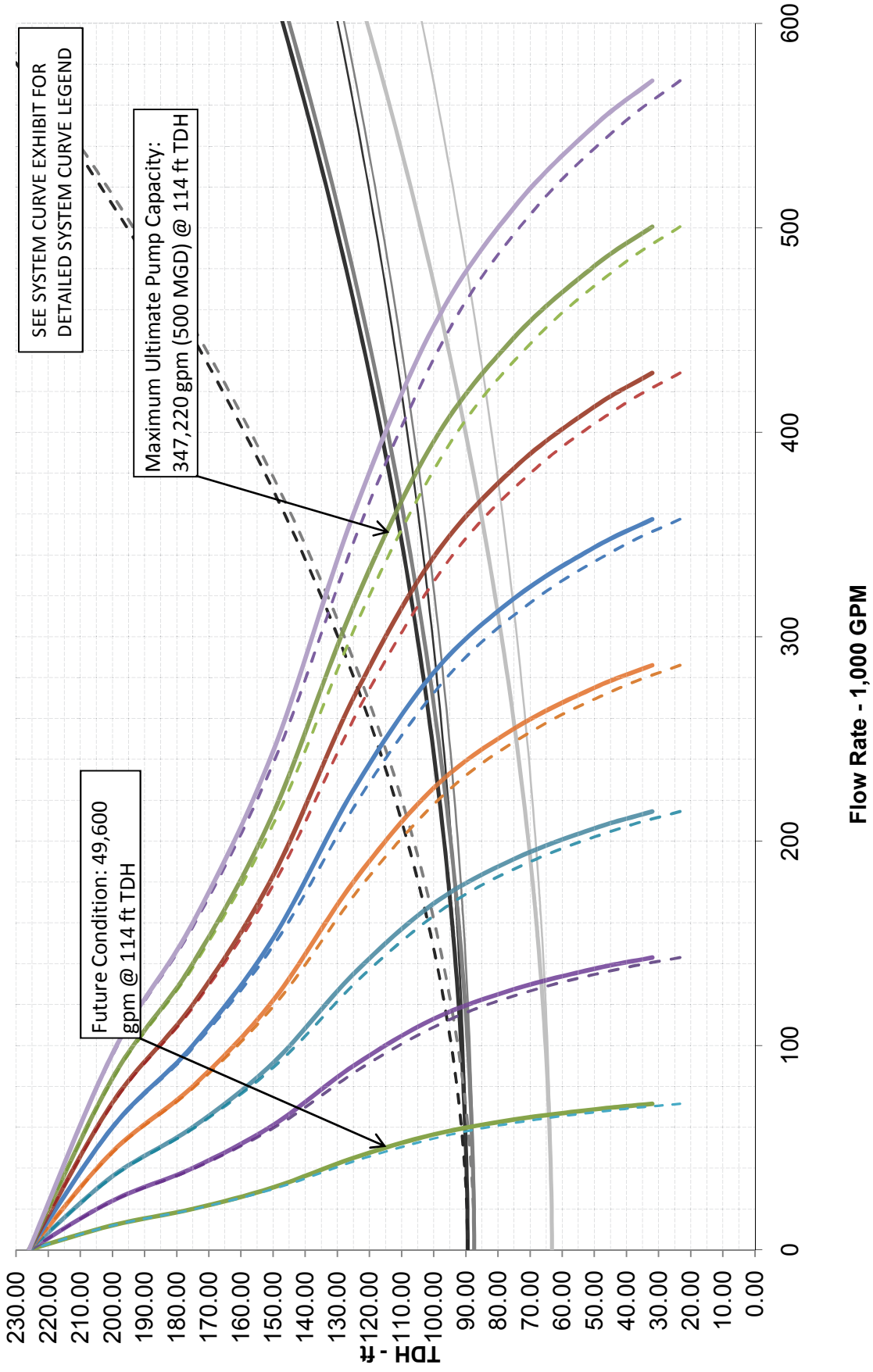
Sample Pump Curve
(1 Pump Operating)

Flow Rate - 1,000 GPM

Phase 2 Pump Design Points and Sample Pump Curves with System Curves at Various Trinity River Conditions, and C Factors



Ultimate Pump Design Points and Sample Pump Curves with System Curves at Various Trinity River Conditions, and C Factors



APPENDIX A- CALCULATIONS

II PUMPING COST CALCULATIONS

A PURPOSE

Lifetime pumping costs were evaluated for several different pump configurations. This exercise was conducted to evaluate how increasing or decreasing the number of pumps in the pump strategy effects operational costs. Included below is a description of the equations used, the assumptions made, a sample calculation, and a summary table that lists the results of the exercise. Lifetime pumping costs were estimated according to hypothetical water demands projected from the total project capacity.

B EQUATIONS

$$\text{Cost of Pumping} = \left(\frac{Q \times H \times SG}{3960 \times \text{Pump Eff.}} \right) \times \left(\frac{0.7457 \text{ KW/BHP}}{\text{Motor Eff.}} \right) \times \text{Pumping Time} \times \$/\text{KW}/\text{Hr}$$

- Q : Discharge in cfs
H : Head loss in ft
SG : Specific gravity of water
BHP : Brake Horse Power

C SAMPLE CALCULATIONS

Example 1: 3 Pumps Provided, Each with a 76.7 MGD Capacity.

a Working Hours:

Assumed Demand = 120 MGD

Considering 15% losses through the canal, the net demand is 141 MGD.

For this example, assume 3 pumps are installed, each with a capacity of of 76.7 MGD

To meet the demand, 2 of 3 pumps would be operated; providing a total flow rate of 153.4 MGD.

Actual hours of operation of the pump are as follows:

$$\text{WorkingHours} = \frac{141\text{MGD}}{153.4\text{MGD}} \times 24\text{hrs} / \text{day} = 22.06\text{hrs} / \text{day}$$



b Velocity through the pipe:

$$V = \frac{Q(cfs)}{A(ft^2)}$$

$$V = \frac{153.4 \times 10^6}{86400 \times 7.481 \times \left(\frac{\pi}{4}\right) \left(\frac{108}{12}\right)^2} = 3.73 \text{ ft/s}$$

Split between two pipes, the velocity in each pipe becomes:

$$V = \frac{3.73}{2} = 1.87 \text{ ft/s}$$

c Head Loss:

Hazen-Williams Equation (modified Darcy-Weisbach)

$$H_L = 10.44 \times L \times \left(\frac{Q}{C}\right)^{1.85} \times \left(\frac{1}{D}\right)^{4.87} + \frac{\Sigma k}{2g} \times \left(\frac{0.4085 \times Q}{D^2}\right)^2$$

H_L – Head loss (feet)

Pump Column:

Q	Fluid flow (gpm)	= 53,240 gpm
L	Pipe length (feet)	= 45 ft
D	Pipe diameter (inches)	= 42 in
C	Hazen-Williams roughness coefficient,	$C_{\max} = 140$ and $C_{\min} = 110$
Σ	Minor loss factor	= 0.5

Discharge Pipe:

Q	Fluid flow (gpm)	= 53,240 gpm
L	Pipe length (feet)	= 65 ft
D	Pipe diameter (inches)	= 48 in
C	Hazen-Williams roughness coefficient,	$C_{\max} = 140$ and $C_{\min} = 110$
Σ	Minor loss factor	= 1.95

Header Pipe:

Q	Fluid flow (gpm)	= 53,240 gpm
---	------------------	--------------



L	Pipe length (feet)	= 35.25 ft
D	Pipe diameter (inches)	= 84 in
C	Hazen-Williams roughness coefficient,	$C_{\max} = 140$ and $C_{\min} = 110$
Σ	Minor loss factor	= 0.5

Force Main:

Q	Fluid flow (gpm)	= 106,480 gpm
L	Pipe length (feet)	= 16,051 ft
D	Pipe diameter (inches)	= 108 in
C	Hazen-Williams roughness coefficient,	$C_{\max} = 140$ and $C_{\min} = 110$
Σ	Minor loss factor	= 5.80

$$H_L = 10.44 \times L \times \left(\frac{Q}{C_{\max} - \frac{(C_{\max} - C_{\min}) \times \text{No. of Years}}{40}} \right)^{1.85} \times \left(\frac{1}{D} \right)^{4.87} + \frac{\Sigma k}{2g} \times \left(\frac{0.4085 \times Q}{D^2} \right)^2 + \text{Static Head}$$



$$\begin{aligned}
 H_L = & 10.44 \times 45 \times \left(\frac{53,240}{140 - \frac{(140-110) \times 10}{40}} \right)^{1.85} \times \left(\frac{1}{42} \right)^{4.87} + \frac{0.5}{2 \times 32.2} \times \left(\frac{0.4085 \times 53,240}{42^2} \right)^2 + \\
 & 10.44 \times 65 \times \left(\frac{53,240}{140 - \frac{(140-110) \times 10}{40}} \right)^{1.85} \times \left(\frac{1}{48} \right)^{4.87} + \frac{1.95}{2 \times 32.2} \times \left(\frac{0.4085 \times 53,240}{48^2} \right)^2 + \\
 & 10.44 \times 35.25 \times \left(\frac{53,240}{140 - \frac{(140-110) \times 10}{40}} \right)^{1.85} \times \left(\frac{1}{84} \right)^{4.87} + \frac{0.5}{2 \times 32.2} \times \left(\frac{0.4085 \times 53,240}{84^2} \right)^2 + \\
 & 10.44 \times 16051 \times \left(\frac{106,480/2}{140 - \frac{(140-110) \times 10}{40}} \right)^{1.85} \times \left(\frac{1}{108} \right)^{4.87} + \frac{5.8}{2 \times 32.2} \times \left(\frac{0.4085 \times 106,480/2}{108^2} \right)^2 \\
 & + 87.42
 \end{aligned}$$

$$H_L = 93.74 \text{ ft}$$

d Brake Horse Power:

$$Bhp = \frac{Q(gpm) \times H_L(ft) \times Specific Gravity}{3960 \times Pump Efficiency}$$

$$Bhp = \frac{106,480 \times 93.74 \times 1.0}{3960 \times 0.86} = 2931$$

e Kilowatt input to motor:

$$\text{input to motor} = \frac{\text{pump bhp} \times 0.7457}{\text{motor efficiency}}$$



$$\text{input to motor} = \frac{2931 \times 0.7457}{0.90} = 2428.5 \text{ KW}$$

f Total KW-hr input to motor:

$$\begin{aligned} \text{Total KW - hr input to motor} &= \text{KW input} \times \text{Hours of operation} \\ &= 2428.5 \times 22.06 \\ &= 53,572 \text{ KW-hr} \end{aligned}$$

g Cost of pumping per month:

Rate per KW-hr = \$ 0.13

Considering a 3% annual inflation rate, the cost for the year 2020 = $0.13(1+0.03)^{10} =$
\$0.175

$$\begin{aligned} \text{Cost of pumping per month} &= \text{Inflated rate per KW} \times \text{Total KW input to motor} \times \\ &\quad \text{Number of days} \\ &= 0.175 \times 53,572 \times 30 = \$281,253 \end{aligned}$$

Example 2: 2 Pumps Provided, Each with a 115 MGD Capacity

a Working Hours:

Assumed Demand = 120 MGD

Considering 15% losses through the pipe network, the net demand is 141 MGD.

Assume 2 pumps working a 115 MGD

To meet the demand, both pumps would be running.

Actual hours of operation of the pump are as follows:

$$\text{WorkingHours} = \frac{141}{230} \times 24 \text{hrs / day} = 14.71 \text{hrs}$$



b Velocity through the pipe:

$$V = \frac{Q(cfs)}{A(ft^2)}$$

$$V = \frac{230 \times 10^6}{86400 \times 7.481 \times \left(\frac{\pi}{4}\right) \left(\frac{108}{12}\right)^2} = 5.6 \text{ ft/s}$$

Split between the two pipes, the velocity in each pipe becomes:

$$V = \frac{5.6}{2} = 2.8 \text{ ft/s}$$

c Head Loss:

Hazen-Williams Equation (modified Darcy-Weisbach)

$$H_L = 10.44 \times L \times \left(\frac{Q}{C}\right)^{1.85} \times \left(\frac{1}{D}\right)^{4.87} + \frac{\Sigma k}{2g} \times \left(\frac{0.4085 \times Q}{D^2}\right)^2$$

H_L – Head loss (feet)

Column:

Q Fluid flow (gpm)	= 79,900 gpm
L Pipe length (feet)	= 45 ft
D Pipe diameter (inches)	= 42 in
C Hazen-Williams roughness coefficient,	$C_{\max} = 140$ and $C_{\min} = 110$
Σ Minor loss factor	= 0.5 ft

Discharge Pipe:

Q Fluid flow (gpm)	= 79,900 gpm
L Pipe length (feet)	= 65 ft
D Pipe diameter (inches)	= 48 in
C Hazen-Williams roughness coefficient,	$C_{\max} = 140$ and $C_{\min} = 110$
Σ Minor loss factor	= 1.95 ft

Header Pipe:

Q Fluid flow (gpm)	= 159,800 gpm
L Pipe length (feet)	= 35.25 ft
D Pipe diameter (inches)	= 84 in
C Hazen-Williams roughness coefficient,	$C_{\max} = 140$ and $C_{\min} = 110$
Σ Minor loss factor	= 0.5 ft

Force Main:



Q Fluid flow (gpm)	= 79,900 gpm
L Pipe length (feet)	= 16051 ft
D Pipe diameter (inches)	= 108 in
C Hazen-Williams roughness coefficient,	$C_{\max} = 140$ and $C_{\min} = 110$
Σ Minor loss factor	= 5.8 ft

$$H_L = 10.44 \times L \times \left(\frac{Q}{C_{\max} - \frac{(C_{\max} - C_{\min}) \times \text{No. of Years}}{40}} \right)^{1.85} \times \left(\frac{1}{D} \right)^{4.87} + \frac{\Sigma k}{2g} \times \left(\frac{0.4085 \times Q}{D^2} \right)^2$$

$$H_L = 10.44 \times 45 \times \left(\frac{79,900}{140 - \frac{(140 - 110) \times 10}{40}} \right)^{1.85} \times \left(\frac{1}{42} \right)^{4.87} + \frac{0.5}{2 \times 32.2} \times \left(\frac{0.4085 \times 79,900}{42^2} \right)^2 +$$

$$10.44 \times 65 \times \left(\frac{79,900}{140 - \frac{(140 - 110) \times 10}{40}} \right)^{1.85} \times \left(\frac{1}{48} \right)^{4.87} + \frac{1.95}{2 \times 32.2} \times \left(\frac{0.4085 \times 79,900}{48^2} \right)^2 +$$

$$10.44 \times 35.25 \times \left(\frac{159,800}{140 - \frac{(140 - 110) \times 10}{40}} \right)^{1.85} \times \left(\frac{1}{84} \right)^{4.87} + \frac{0.5}{2 \times 32.2} \times \left(\frac{0.4085 \times 159,800}{84^2} \right)^2 +$$

$$10.44 \times 16051 \times \left(\frac{79,900}{140 - \frac{(140 - 110) \times 10}{40}} \right)^{1.85} \times \left(\frac{1}{108} \right)^{4.87} + \frac{5.8}{2 \times 32.2} \times \left(\frac{0.4085 \times 79,900}{108^2} \right)^2 +$$

87.42

$$H_L = 101.94 \text{ ft}$$



d Brake Horse Power:

$$Bhp = \frac{Q(gpm) \times H_1(ft) \times SpecificGravity}{3960 \times efficiency}$$

$$Bhp = \frac{159,800 \times 101.94 \times 1.0}{3960 \times 0.86} = 4,783$$

e Kilowatt input to motor:

$$\text{input to motor} = \frac{\text{pump bhp} \times 0.7457}{\text{motor efficiency}}$$

$$\text{input to motor} = \frac{4783 \times 0.7457}{0.9} = 3963 \text{KW}$$

f Total KW-hr input to motor:

$$\begin{aligned} \text{Total KW - hr input to motor} &= \text{KW input} \times \text{Hours of operation} \\ &= 3963 \times 14.71 \\ &= 58,295 \text{ KW-hr} \end{aligned}$$

g Cost of pumping per month:

$$\text{Rate per KW-hr} = \$ 0.13$$

$$\text{Considering a 3\% annual inflation rate, the cost for the year 2020} = 0.13(1+0.03)^{10} = \$0.175$$

$$\begin{aligned} \text{Cost of pumping per month} &= \text{Inflated rate per KW} \times \text{Total KW input to motor} \times \\ &\quad \text{Number of days} \\ &= 0.175 \times 58,295 \times 30 = \$306,048 \end{aligned}$$



h Cost difference for the two scenarios:

2 Pumps at 115 MGD costs: \$306,048 / month

3 Pumps at 76.7 MGD costs: \$281,253 / month

Difference in the cost: \$24,795 / month

D SUMMARY TABLE

The following is a summary table of the values generated using a spreadsheet that incorporated the equations and assumptions presented in the example above, and approximated monthly demand projections for the 2020 to 2040 period. This analysis shows the impact on operating costs when modifying pump size and number of pumps utilized.

Table A-II-1: Cost for different pump scenarios

Number of Pumps (Firm)	Individual Pump Capacity (MGD)	Total Pump Capacity (MGD)	20 Yr Operating Cost (2020-2040)	
			82 % Efficient Pump	86% Efficient Pump
6	38.3	230	\$96,200,000	\$91,700,000
5	46.0	230	\$96,600,000	\$92,100,000
4	57.5	230	\$97,400,000	\$92,900,000
3	76.7	230	\$101,000,000	\$96,000,000
2	115.0	230	\$106,800,000	\$102,000,000



APPENDIX A- CALCULATIONS

III PUMP BAY CALCULATIONS

A PURPOSE

The purpose of this section is to determine the dimensions of the pump bay and flow guide vanes. The Hydraulic Institute provides guidance for sizing pump bay dimensions. Various pump bay dimensions and the pump submergence are calculated with respect to the selected pump bell diameter.

B CALCULATIONS

If the pump has not been selected, as per the Hydraulic Institute, it is recommended that the inlet bell diameter is chosen based on achieving the bell inlet velocity that provides acceptable inflow conditions to the pump. As per the Hydraulic Institute, the bell inlet velocity should be in the range of 4.0 ft/s to 7.0 ft/s with a recommended velocity of 5.5 ft/s in average flow conditions.

a Design Pump Bell Diameter:

The design pump bell diameter can be determined based on recommended inlet velocities as specified by the Hydraulic Institute.

Maximum anticipated flow rate : 69,500 gpm : 154.8 cfs
Average anticipated flow rate : 53,200 gpm : 118.6 cfs
Minimum anticipated flow rate : 49,190 gpm : 109.6 cfs

Based on the analysis of the range of flow rates above, a design pump bell diameter of 5.5 ft was selected, which resulted in the following set of velocities.

At $Q = 154.8$ cfs, $V = 6.5$ ft/s
At $Q = 118.6$ cfs, $V = 5.0$ ft/s
At $Q = 109.6$ cfs, $V = 4.6$ ft/s

The calculated velocities are in general conformance with range specified in the Hydraulic Institute Standards.



b Pump Bell Submergence:

Another important aspect of the pump bay design is the submergence of the pump bell to reduce the probability of strong free-surface air core vortices occurring.

The Hydraulic Institute provides two equations to determine submergence. For calculation, a velocity of 5.00 ft/s at the pump bell inlet has been considered. For this project, the worst case condition related to submergence results during low flow conditions in the Trinity River. During low flow conditions, the inlet velocities at the pumps will not exceed 5.00 ft/s.

i Equation 1:

$$S = D(1 + 2.3F_D)$$

F_D : Froude number (dimensionless)

D : Outside diameter of bell or pipe inlet

S : Minimum Submergence

$$F_D = \frac{V}{\sqrt{gD}}$$

$$F_D = \frac{5.00}{\sqrt{32.2 \times 5.5}} = 0.376$$

$$\therefore S = 5.5(1 + 2.3 \times 0.376) = 10.26 \text{ ft}$$

OR

ii Equation 2:

$$S = D + \frac{0.574 \times Q}{D^{1.5}}$$



Note: S is in inches, $g = 32.2 \text{ ft/sec}^2$, Q in gpm and D in inches.

$$Q = V \times A$$

$$Q = 5.00 \times \frac{\pi \times 5.5^2}{4} = 118.79 \text{ cfs} = 53,322 \text{ gpm}$$

$$\therefore S = 66 + \frac{0.574 \times 53,322}{66^{1.5}} = 123.08 \text{ in} = 10.26 \text{ ft.}$$

Approximately 12 ft of submergence will be provided to ensure that submergence related problems do not arise.

c Pump Bay Dimensions:

Pump bay dimensions were determined according to Hydraulic Institute recommendations, which are primarily dictated by proportions of the pump bell diameter. Additional dimensions are recommended by Jones in *Pump Station Design* (Copyright 2008). Table A-IV-1 summarizes the recommended dimensions. Figures A-1 and A-2 provide illustrations depicting the various dimensions.

Table A-IV-1 – Summary of Recommended Dimensions

Dimension Variable	Description	Recommended Valve	Dimension (ft)
A	Distance from the pump inlet bell centerline to the intake structure entrance	A = 5D minimum, assuming no significant cross-flow at the entrance to the intake structure	27.5
B	Distance from the back wall to the pump inlet	B = 0.75D	4.12
C	Distance between the inlet bell and floor	C = 0.3D to 0.5D	1.65-2.75
D	Inlet bell design outside diameter		5.5
H	Minimum liquid depth	H = S + C	13.15



h	Minimum height of constricted bay section near the pump inlet bell submergence	$h = (\text{greater of } H \text{ or } 2.5D)$	13.75
S	Minimum pump inlet bell submergence	$S = D(1.0 + 2.3F_D)$	10.26
W	Pump inlet bay entrance width	$W = 2D$ minimum	11
w	Constricted bay width near the pump inlet bell	$w = 2D$	11
X	Pump inlet bay length	$X = 5D$ minimum, assuming no significant cross-flow at the entrance to the intake structure	27.5
Y	Distance from pump inlet bell centerline to the through-flow traveling screen	$Y = 4D$ minimum. Dual flow screens require a model study	22
Z_1	Distance from pump inlet bell to diverging walls	$Z_1 = 5D$ minimum, assuming no significant cross-flow at the entrance to the intake structure.	27.5
Z_2	Distance from inlet bell centerline to sloping floor	$Z_2 = 5D$ minimum	27.5
α	Angle of floor slope	$\alpha = -10$ to $+10$ degrees	10°
β	Angle of wall convergence	$\beta = 0$ to $+10$ degrees	N/A
Φ	Angle of convergence from constricted area to bay walls	$\Phi = 10$ degrees maximum	N/A

Reference: ANSI/HI 9.8-1998 American National Standard for Pump Intake Design



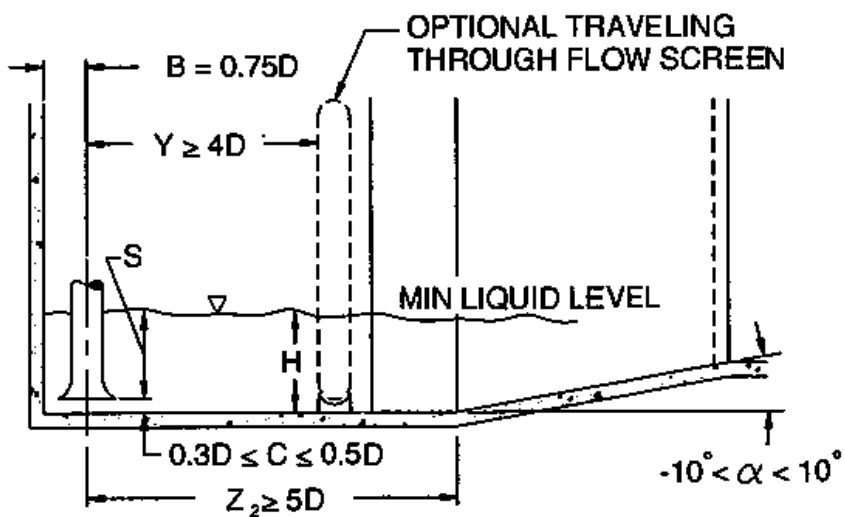
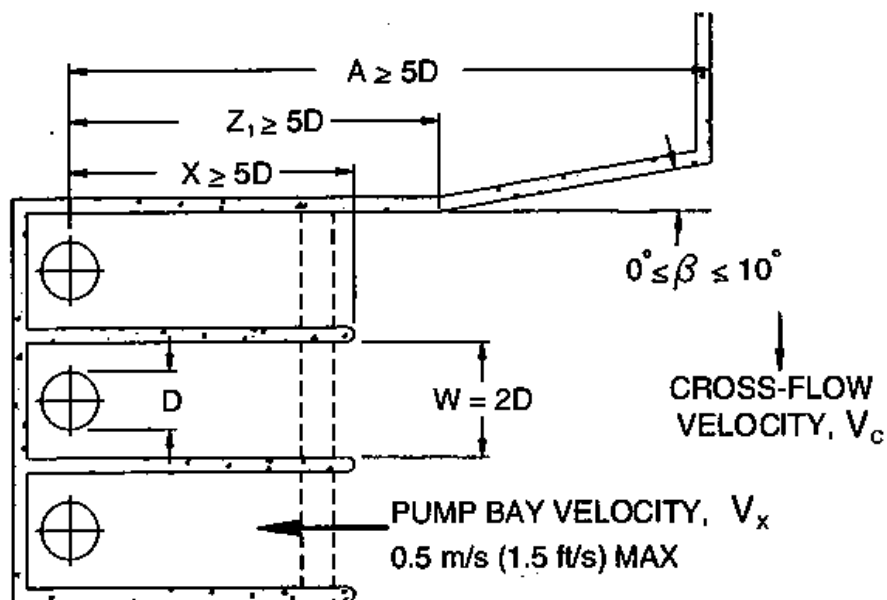


Figure A-1 - Recommended intake structure layout

Reference: ANSI/HI.9.8-1998 American National Standard for Pump Intake Design



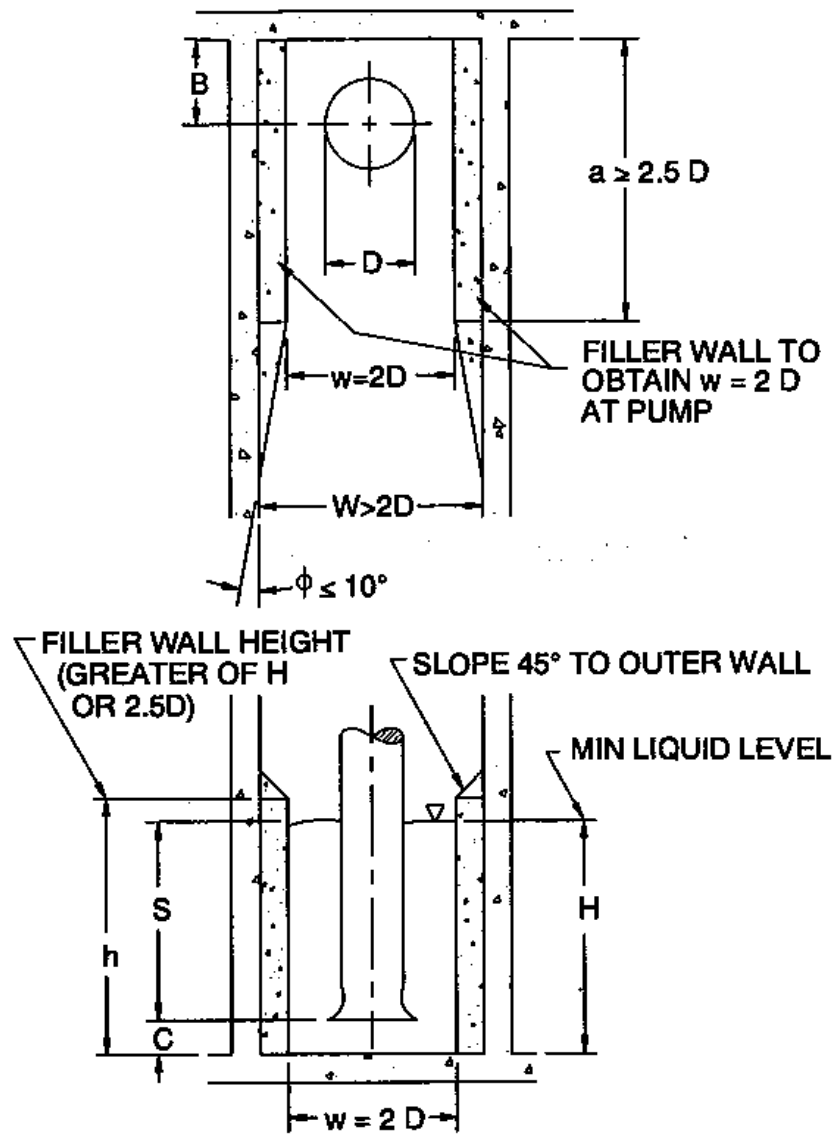


Figure A-2 - Filler wall details for proper bay width

Reference: ANSI/HI 9.8-1998 American National Standard for Pump Intake Design



APPENDIX A- CALCULATIONS

IV TRASH RACK CALCULATIONS

A INTRODUCTION

The trash rack width will be based on several factors, including predetermined pump station dimensions, approach velocities, environmental concerns (threats to fish and wildlife), bar screen velocities, and headloss. Texas does not have established design requirements for raw water intakes. An approach velocity of 0.5 ft/s or less is commonly recommended to ensure that fish and wildlife do not get impinged on the screen. Approach velocities are defined as the velocity leading up to, but not necessarily through the trash rack. AECOM will design the trash rack to achieve approach velocities of approximately 0.5 ft/s during typical operating conditions and less than 1.5 ft/s during extreme operating conditions. Screen velocities and headloss will be determined to confirm that excessive conditions do not result from the design. Headloss calculations assume a 60% blockage of the screens, a conservative estimate which would only occur in the event of a trash rack cleaning mechanism failure.

B CALCULATIONS

- a Flow rate through the trash rack:
 - i Design Flow = Average day flow = 230 MGD
 - ii Extreme Flow = Maximum instantaneous withdrawal rate = 500 MGD

$$\text{Design Flow} = 230 \text{ MGD} \times 1.5472 \frac{\text{cfs}}{\text{mgd}} = 355.85 \text{ cfs}$$

$$\text{Extreme Flow} = 500 \text{ MGD} \times 1.5472 \frac{\text{cfs}}{\text{mgd}} = 773.60 \text{ cfs}$$

- b Calculation of bar screen efficiency coefficient, K:

Net wet area through bars = (wet area of channel) x (efficiency coefficient of bars, K)



$$\text{Efficiency (K)} = \frac{A}{W + A}$$

Where A = minimum screen opening = 2"

W = maximum bars width facing flow = $\left(\frac{1}{2}\right)$ "

$$K = \frac{2''}{\frac{1}{2}'' + 2''} = 0.8$$

c Calculation of water depth:

Average day (median) flow water surface elevation	: 19.80 ft
Low flow (1500 cfs) water surface elevation	: 17.80 ft
Intake channel (bottom) elevation	: 12.00 ft
Effective intake channel width	: 112.5 ft

Water depth during average flow = 19.80 – 12.00 = 7.80 ft

Water depth during low flow = 17.80 – 12.00 = 5.80 ft

d Design flow condition:

i Approach Velocity:

$$\text{Approach Velocity} = \frac{\text{flowrate (cfs)}}{\text{Length of weir (ft)} \times \text{Depth of water (ft)}}$$

$$\text{Approach Velocity} = \frac{355.85 \text{ cfs}}{112.5 \text{ ft} \times 7.80 \text{ ft}} = 0.4 \text{ ft/s}$$

ii Screen Velocity:

$$\text{Screen Velocity} = \frac{\text{flowrate (cfs)}}{\text{Channel width (ft)} \times \text{Depth of water (ft)} \times K \times (1 - \text{Blockage})}$$



Average day flow	: 355.85 cfs
Effective intake channel width	: 112.50 ft
Depth of Water (Avg. Condition)	: 7.80 ft
Blockage	: 60 %
Efficiency (K)	: 80 %

$$\text{Screen Velocity} = \frac{355.85 \text{ cfs}}{112.5 \text{ ft} \times 7.8 \text{ ft} \times 0.8 \times (1 - 0.6)}$$

$$\text{Screen Velocity} = 1.27 \text{ ft/s}$$

iii Head loss through the screen:

$$h_{\text{headloss}} = \frac{V^2 - v^2}{2g} \times \frac{1}{0.7}$$

V = Velocity Through Bars

v = Approach Velocity

0.7 = Screen Coefficient

$$h_{\text{headloss}} = \frac{1.27^2 - 0.4^2}{2 \times 32.2} \times \frac{1}{0.7} = 0.032 \text{ ft}$$

e Extreme flow condition:

i Approach Velocity:

$$\text{Approach Velocity} = \frac{\text{flowrate (cfs)}}{\text{Length of weir (ft)} \times \text{Depth of water (ft)}}$$

$$\text{Approach Velocity} = \frac{773.60 \text{ cfs}}{112.5 \text{ ft} \times 5.80 \text{ ft}} = 1.18 \text{ ft/s}$$



ii Screen Velocity:

$$\text{Screen Velocity} = \frac{\text{flowrate (cfs)}}{\text{Channel width (ft)} \times \text{Depth of water (ft)} \times K \times (1 - \text{Blockage})}$$

Maximum flow rate	: 773.60 cfs
Effective intake channel width	: 112.5 ft
Depth of Water (1500 cfs)	: 5.80 ft
Blockage	: 60 %
Efficiency (K)	: 80 %

$$\text{Screen Velocity} = \frac{773.60 \text{ cfs}}{112.5 \text{ ft} \times 5.8 \text{ ft} \times 0.8 \times (1 - 0.6)}$$

$$\text{Screen Velocity} = 3.7 \text{ ft/s}$$

iii Head loss through the screen:

$$h_{\text{headloss}} = \frac{V^2 - v^2}{2g} \times \frac{1}{0.7}$$

V = Velocity Through Bars

v = Approach Velocity

$$0.7 = \text{Screen Coefficient } h_{\text{headloss}} = \frac{3.7^2 - 1.18^2}{2 \times 32.2} \times \frac{1}{0.7} = 0.273 \text{ ft}$$



APPENDIX A - CALCULATIONS

V SOLIDS SETTLING CALCULATIONS

A PURPOSE

The purpose of this section is to evaluate the ability of the pre-pump sediment settling zone to remove sediment from the raw river water. Sediment settling depends on the size and density of the particle, the type of fluid, and the velocity of the flow in the basin. Different sized particles have different settling time, hence, in this exercise we determine the distance required for different sized particles to settle.

B EQUATIONS

a Newton's Law:

Newton's Law yields the terminal particle velocity by equating the gravitational force of the particle to the frictional resistance or drag. The settling force is given as follows:

$$V_t = \sqrt{\frac{4g}{3C_d} \left(\frac{\rho_p - \rho_w}{\rho_w} \right)} d_p$$

- V_t : Particle settling velocity
- ρ_p : Density of particle
- ρ_w : Density of water
- g : Acceleration due to gravity
- C_d : Drag coefficient
- d_p : Particle diameter

The coefficient C_d takes on different values depending on whether the flow regime surrounding the particle is laminar or turbulent. There are three distinct regions depending on Reynolds number: laminar ($Re' < 0.2$), transitional ($Re' = 0.2$ to 2000), and turbulent ($Re' > 2000$).



b Reynolds Number:

Reynolds number (Re') is the ratio of inertial forces to viscous forces and is given by the formula below.

$$Re' = \frac{xU\rho}{\mu}$$

Re' : Reynolds number

x : Particle diameter

U : Velocity

ρ : Density of the fluid

μ : Viscosity of water

c Drag Coefficient:

The *drag coefficient* (C_d), for particles that are approximately spherical, is approximated by the following equation:

$$C_d = \frac{24}{Re'} + \frac{3}{\sqrt{Re'}} + 0.34$$

C_d : Drag coefficient

Re' : Reynolds number

d Stokes Law:

Stokes Law is a simplification of Newton's Law for settling in the laminar region (the first term of the drag coefficient predominates and the other terms can be left out). For small particles with a Reynolds Number less than 0.2, the settling velocity (or terminal velocity) is given by the following equation:



$$V_t = \frac{gd^2 (\rho_p - \rho_m)}{18 \mu}$$

- V_t : Particle settling velocity
 g : Acceleration due to gravity
 d : Diameter of the particle
 ρ_p : Density of the particle
 ρ_m : Density of water
 μ : Viscosity of water

e Settling in the Transition Region

For particles with a Reynolds Number greater than 0.2 and less than 2000, known as the transition region, the complete form of the drag equation must be used to determine the settling velocity. Because of the nature of the drag equation, finding the settling velocity is an iterative process. An approximate settling velocity is chosen and based on that velocity a Reynolds Number, drag coefficient, and new settling velocity is calculated in sequential steps. This new settling velocity is then used in the same process until the resultant settling velocity is equal to the input settling velocity.

C ASSUMPTIONS

- Flow : 69,500 gpm : 154.83 cfs
 Width of the Channel : 12.75 ft
 Depth of the Channel : 1 ft (Depth of channel is not consequential. Determined using a unit depth of 1 ft)
 Number of Pump per channel : 1 No.
 Acceleration due to gravity : 9.81 m/s²
 Particle Diameter : 0.000375 m (Medium Sand), See Table A-V
 Particle Density : 2650 kg/m³
 Density of Water : 1000 kg/m³
 Viscosity of Water : 0.00105 Pa-s at average water temp. of 68°F



D SAMPLE CALCULATIONS

a Channel Velocity:

$$V = \frac{Q}{A \times \text{No.ofChannel}}$$

$$V = \frac{154.83 \text{ cfs}}{12.75 \text{ ft} \times 1 \text{ ft} \times 1} = 11.91 \text{ ft/s}$$

b Stokes Settling Velocity:

$$V_t = \frac{gd^2 (\rho_p - \rho_m)}{18 \mu}$$

$$V_t = \frac{9.81 \text{ m/s}^2 \times 0.000375^2 (2650 \text{ kg/m}^3 - 1000 \text{ kg/m}^3)}{18 \times 0.00105 \text{ Pa} \cdot \text{s}}$$

$$V_t = 0.1204 \text{ m/s} = 0.3950 \text{ ft/s}$$

c Stokes Reynolds Number:

$$\text{Re}' = \frac{xU\rho}{\mu}$$

$$\text{Re}' = \frac{0.000375 \text{ m} \times 0.1204 \text{ m/s} \times 1000 \text{ kg/m}^3}{0.00105} = 43.01$$

d Newton's Law Calculation for Settling in the Transition Zone:

Since the Reynolds Number is greater than 0.2, the full drag equation must be used to calculate the settling velocity. After iteration, the resulting Reynolds Number, drag coefficient, and settling velocity is calculated:



$$Re' = \frac{xU\rho}{\mu} = \frac{0.000375m \times 0.062m/s \times 1000kg/m^3}{0.00105} = 22.14$$

$$C_d = \frac{24}{Re'} + \frac{3}{\sqrt{Re'}} + 0.34 = \frac{24}{22.14} + \frac{3}{\sqrt{22.14}} + 0.34 = 2.061$$

$$V_t = \sqrt{\frac{4g}{3C_d} \left(\frac{\rho_p - \rho_w}{\rho_w} \right) d_p^3} = \sqrt{\frac{4 \times 9.81}{3 \times 2.061} \left(\frac{2650 - 1000}{1000} \right) \times 0.000375^3} = 0.0062m/s$$

$$V_t = 0.203 \text{ ft/s}$$

e Settling Distance Required:

$$= \frac{\text{Water Depth} \times \text{Channel Velocity}}{\text{Settling Velocity}}$$

$$= \frac{1\text{ft} \times 11.91 \text{ ft}}{0.203 \text{ ft/s}} = 58.60 \text{ ft}$$

Table A-V-1: Settling Distance for Different Particles at Various Flow Rates

Particle Size	Description	Channel Flow Rate (GPM X 1000)/ Settling Distance (ft)				
		30	40	50	60	70
		Settling Distance (feet)				
33.2 microns	Silt	1693	2257	2821	3385	3949
93.75 microns	Very Fine Sand	235	313	392	470	548
187.5 microns	Fine Sand	69	93	116	139	162
375 microns	Medium Sand	26	34	43	52	60
750 microns	Coarse Sand	12	16	20	24	28



E SEDIMENT VOLUME REMOVED

The sediment removal will be done in both the pre-pump intake settling chamber and the post-pipeline sedimentation basin.

For this sample calculation, we assume the flow of a 2-year flow in the Trinity River at 48,600 cfs, a pumping rate of 230 mgd and a 50 ft settling chamber. The sediment transport model developed by Baird predicts a concentration of approximately 700 mg/l in the Trinity River at the intake location.

For Medium Sand:

a Concentration:

From the Baird data (see Appendix C-1 Figure 6), the approximate percentage of Medium Sand is 7%.

$$\text{Concentration of Medium Sand} = 700 \text{ mg/lit} \times 0.07 = 49 \text{ mg/lit}$$

b Mass of medium sand in pump station flow:

$$\text{Pumping Rate} = 230 \text{ mgd} = 870.64 \text{ mld}$$

$$\text{Mass of medium sand} = \frac{49 \text{ mg/lit} \times 870.64 \times 10^6 \text{ lit / day}}{10^6 \text{ mg / kg}} = 42,661.36 \text{ kg}$$

c Mass Removed:

$$\text{Percentage removed} = \frac{\text{Settling distance provided}}{\text{Settling distance required}} = \frac{50 \text{ ft}}{59 \text{ ft}} = 84.7\%$$

$$\text{Mass removed} = 42,661.36 \text{ kg} \times \frac{84.7}{100} = 36,134.17 \text{ kg}$$

d Volume of Solids:

$$\text{Bulk Density} = 1470 \text{ kg/m}^3$$

$$\text{Volume of Solids} = \frac{36,134.17 \text{ kg}}{1470 \text{ kg/m}^3} = 24.58 \text{ m}^3 \text{ per day}$$



F AVERAGE YEARLY SEDIMENT EXTRACTION PRE-PUMP

The table below expands on the calculation methodology described above to analyze 80 years of historic flow data to determine an average annual sediment extraction estimate based on a pumping rate of 230 MGD and 425 MGD.

Table A-V-2: Average Yearly Sediment Extraction Pre-Pump

Pumping Rate (MGD)	Volume of Pre-Pump Sediment Extraction (Ac-Ft)	Volume of Sed-Basin Sediment Extraction (Ac-Ft)	Total Sediment Volume (Ac-Ft)
230	2.75	1.47	4.4
425	5.16	2.76	8.24



APPENDIX A- CALCULATIONS

VI HYDRAULIC PROFILE CALCULATIONS

A PURPOSE

Water passes through the trash rack, isolation gates, and sedimentation area when entering from the river into the pump. The obstructions to the flow cause head loss that should be taken into account when determining appropriate pump elevations and amount of submergence.

B CALCULATIONS

a Minimum water surface elevation discussion:

Minimum future Trinity River water surface elevations are greatly dependent on the pumping rates of the Capers Ridge and existing Trinity River Pump Station. A large percentage of the total flow in the Trinity River is comprised of flow that will be diverted from the pump stations during periods of high pumping rates and otherwise low natural conditions. As discussed in more detail in Chapter 2, the Trinity River Authority will release water from Lake Livingston to ensure that water rights are met; therefore, during periods of extremely low flow, additional water will be released into the Trinity River. Based on modeling performed by AECOM, the future minimum water surface elevation is expected to be 16.9 feet during periods of low pumping operations and low natural flow; however, during periods of high pumping operations and low natural flow, the minimum water surface elevation is expected to be 17.8 feet. In this PER, different minimum water surface elevations are assumed and presented (either 16.9 or 17.8 feet) according to the situation being evaluated. Head loss calculations assume a 60% blockage of the screens, a conservative estimate which would only occur in the event of a trash rack cleaning mechanism failure.

b Case 1: 2 Pumps operating at 69,500 gpm

i. Head loss through the trash rack:

(a) Approach Velocity:

Maximum flow rate	: 154.83 X 2 = 309.66 cfs
Intake channel width	: 112.5 ft
Depth of Water (1000 cfs)	: 4.90 ft



$$\text{Approach Velocity} = \frac{\text{flowrate (cfs)} \times \text{No. of pumps}}{\text{Length of weir (ft)} \times \text{Depth of water (ft)}}$$

$$\text{Approach Velocity} = \frac{154.83 \text{ cfs} \times 2 \text{ nos.}}{112.5 \text{ ft} \times 4.9 \text{ ft}} = 0.56 \text{ ft/s}$$

(b) Screen Velocity:

Blockage : 60 %

Efficiency (K) : 80 %

$$\text{Screen Velocity} = \frac{\text{flowrate (cfs)} \times \text{No. of pumps}}{\text{Channel width (ft)} \times \text{Depth of water (ft)} \times K \times (1 - \text{Blockage})}$$

$$\text{Screen Velocity} = \frac{154.83 \text{ cfs} \times 2 \text{ nos.}}{112.5 \text{ ft} \times 4.9 \text{ ft} \times 0.8 \times (1 - 0.6)}$$

$$\text{Screen Velocity} = 1.76 \text{ ft/s}$$

(c) Head loss through the screen:

$$h_{\text{headloss}} = \frac{V^2 - v^2}{2g} \times \frac{1}{0.7}$$

V = Velocity Through Bars

v = Approach Velocity

0.7 = Screen Coefficient

$$h_{\text{headloss}} = \frac{1.76^2 - 0.56^2}{2 \times 32.2} \times \frac{1}{0.7} = 0.062 \text{ ft}$$



ii. Head loss through Gate 1:

$$Q \text{ cfs} = 3.3 \times L \text{ ft} \times h_a^{3/2} \left[1 - \left(\frac{h_d}{h_a} \right)^{3/2} \right]^{0.385}$$

$$154.83 \text{ cfs} = 3.3 \times 11 \text{ ft} \times 16.9^{3/2} \left[1 - \left(\frac{h_d}{16.9} \right)^{3/2} \right]^{0.385}$$

$$h_d = 16.892 \text{ ft}$$

$$h_a - h_d = 0.008 \text{ ft}$$

iii. Head loss through Gate 2:

$$H \text{ ft} = \left(\frac{Q \text{ cfs}}{0.61 \times A \text{ ft}^2} \right)^2 \times \frac{1}{2g}$$

$$H \text{ ft} = \left(\frac{154 \text{ cfs}}{0.61 \times 11 \text{ ft} \times 13 \text{ ft}} \right)^2 \times \frac{1}{2 \times 32.2 \text{ ft/s}^2}$$

$$H = 0.0489 \text{ ft}$$

Table A-VI-1: WSEs when 2 pumps operating at 69,500 gpm

WSE in the Trinity River	16.90 ft
WSE after the Trash Rack	$16.9 - 0.062 = 16.838 \text{ ft}$
WSE after the Sluice Gate 1	$16.838 - 0.008 = 16.830 \text{ ft}$
WSE after the Sluice Gate 2	$16.830 - 0.0489 = 16.781 \text{ ft}$

c **Case 2: All the pumps operating at 49,600 gpm for design capacity of 500 MGD**

i. Head loss through the trash rack:



(a) Approach Velocity:

Maximum flow rate	: 773.56 cfs
Intake channel width	: 112.5 ft
Depth of Water (1500 cfs)	: 5.80 ft

$$\text{Approach Velocity} = \frac{\text{flowrate (cfs)} \times \text{No. of pumps}}{\text{Length of weir (ft)} \times \text{Depth of water (ft)}}$$

$$\text{Approach Velocity} = \frac{773.56 \text{ cfs}}{112.5 \text{ ft} \times 5.80 \text{ ft}} = 1.18 \text{ ft/s}$$

(b) Screen Velocity:

Blockage	: 60 %
Efficiency (K)	: 80 %

$$\text{Screen Velocity} = \frac{\text{flowrate (cfs)} \times \text{No. of pumps}}{\text{Channel width (ft)} \times \text{Depth of water (ft)} \times K \times \text{Blockage}}$$

$$\text{Screen Velocity} = \frac{773.56 \text{ cfs}}{112.5 \text{ ft} \times 5.8 \text{ ft} \times 0.8 \times (1 - 0.6)}$$

$$\text{Screen Velocity} = 3.70 \text{ ft/s}$$

(c) Head loss through the screen:

$$h_{\text{headloss}} = \frac{V^2 - v^2}{2g} \times \frac{1}{0.7}$$

V = Velocity Through Bars

v = Approach Velocity

0.7 = Screen Coefficient



$$h_{\text{headloss}} = \frac{3.70^2 - 1.18^2}{2 \times 32.2} \times \frac{1}{0.7} = 0.273 \text{ ft}$$

i. Head loss through Gate 1:

$$Q \text{ cfs} = 3.3 \times L \text{ ft} \times h_a^{3/2} \left[1 - \left(\frac{h_d}{h_a} \right)^{3/2} \right]^{0.385}$$

$$110.52 \text{ cfs} = 3.3 \times 11 \text{ ft} \times 17.8^{3/2} \left[1 - \left(\frac{h_d}{17.8} \right)^{3/2} \right]^{0.385}$$

$$h_d = 17.797 \text{ ft}$$

$$h_a - h_d = 0.003 \text{ ft}$$

ii. Head loss through Gate 2:

$$H \text{ ft} = \left(\frac{Q \text{ cfs}}{0.61 \times A \text{ ft}^2} \right)^2 \times \frac{1}{2g}$$

$$H \text{ ft} = \left(\frac{110.52 \text{ cfs}}{0.61 \times 11 \text{ ft} \times 13 \text{ ft}} \right)^2 \times \frac{1}{2 \times 32.2}$$

$$H = 0.025 \text{ ft}$$

Table A-VI-2: WSEs when all the pumps operating at 43,400 gpm

WSE in the Trinity River	17.80 ft
WSE after the Trash Rack	17.80 - 0.273 = 17.527 ft
WSE after the Sluice Gate 1	17.527 - 0.003 = 17.5246 ft
WSE after the Sluice Gate 2	17.5246 - 0.025 = 17.499 ft



APPENDIX A- CALCULATIONS

VII SIMPLIFIED SURGE CALCULATIONS

A PURPOSE

The purpose of analyzing the potential for hydraulic transients in a pipeline system is important as they can cause unnecessary pressure during the pump station operation, such as (1) opening or closing of the valve, (2) change in the flow demand, (3) controlled pump shutdown, (4) pump failure, (5) air venting from pipelines, (6) failure of flow or pressure regulators and (7) pipe rupture. The equations utilized in this appendix are meant to provide an estimate of maximum theoretical pressure surges associated with hydraulic transients. Further hydraulic transient analysis is proposed for the final design phase for the purpose of obtaining a refined understanding of probable maximum pressures.

A figure is provided at the end of this appendix that shows a hydraulic profile, inverted hydraulic profile, and pipeline profile. The figure was developed as part of an exercise to determine possible locations along pipeline that may be subject to negative pressures and water column separation in the event that an extreme hydraulic transient is created by a sudden change in pipeline velocity. Locations along the pipeline that may have a higher likelihood of this occurring are identified as those areas at which the inverted hydraulic profile crosses the pipeline profile. It is recommended that these areas be further inspected through hydraulic transient modeling during the final design phase. Surge control equipment, such as air release and vacuum breaking valves may be required at these locations.

B ASSUMPTIONS

Number of pipes: 2 no.

Pipe Diameter: 108 in = 9 ft

Cross-section area of pipe: 64 ft²

Pipe Material: PCCP or steel

Pipe length: 16,051 ft

Maximum static head: 89 ft

C value: 110

Bulk modulus of elasticity, K (lb/ft²): 4.49E+07



Water Density, ρ (slugs/ft³): 1.93

Table A-VII-1: Pipe Specifications

	PCCP	Steel
Pipe Size (ft)	9	9
Pipe Length (ft)	16051	16051
Pipe Wall Thickness, e (ft)	0.667	0.0416
Modulus of Elasticity, E (lb/sq.ft.)	1.25E+09	4.32E+09
Poisson's Ratio, μ	0.25	0.30
$C_1 = 1.25 - \mu$	1	0.95
$C_2 = 1 - \mu^2$	0.9375	0.91
$C_3 = 1$	1	1

C CALCULATIONS

a Sample Calculation 1: For the flow of 230 MGD

i Wave Speed:

$$a = \sqrt{\frac{K / \rho}{1 + C \left(\frac{K}{E} \right) \left(\frac{D}{e} \right)}}$$

For PCC Pipe:

$C = 1$ (pipe anchored at the upstream end only)

$$a = \sqrt{\frac{4.49 \times 10^7 / 1.93}{1 + 1 \left(\frac{4.49 \times 10^7}{1.25 \times 10^9} \right) \left(\frac{9}{0.667} \right)}} = 3958 \text{ ft/sec}$$

For Steel Pipe:



$C = 1$ (pipe anchored at the upstream end only)

$$a = \sqrt{\frac{4.49 \times 10^7 / 1.93}{1 + 1 \left(\frac{4.49 \times 10^7}{4.32 \times 10^9} \right) \left(\frac{9}{0.0416} \right)}} = 2676 \text{ ft/sec}$$

ii Critical Time:

$$t_c = \frac{2L}{a}$$

For PCC Pipe:

$$t_c = \frac{2 \times 16051}{3958} = 8 \text{ sec}$$

For Steel Pipe:

$$t_c = \frac{2 \times 16051}{2676} = 12 \text{ sec}$$

iii Head:

$$h = \frac{a \times V}{g}$$

$$V = \frac{\text{Flow through 1 pipe (cfs)}}{\text{Area of pipe (ft}^2\text{)}}$$

$$V = \frac{356/2}{63.61} = 2.8 \text{ ft/sec}$$



For PCC Pipe:

$$h = \frac{3958 \times 2.8}{32.2} = 344 \text{ ft}$$

For Steel Pipe:

$$h = \frac{2676 \times 2.80}{32.2} = 234 \text{ ft}$$

iv Total Head:

$$H = h + \text{Static head}$$

For PCC Pipe:

$$H = 344 + 89 = 434 \text{ ft}$$

For Steel Pipe:

$$H = 232 + 89 = 322 \text{ ft}$$

v Total Pressure:

For PCC Pipe:

$$P = \frac{434}{2.31} = 188 \text{ psi}$$

For Steel Pipe:

$$P = \frac{322}{2.31} = 140 \text{ psi}$$

b Sample Calculation 2: For the flow of 500 MGD

i Wave Speed:



$$a = \sqrt{\frac{K/\rho}{1 + C\left(\frac{K}{E}\right)\left(\frac{D}{e}\right)}}$$

For PCC Pipe:

$C = 1$ (pipe anchored at the upstream end only)

$$a = \sqrt{\frac{4.49 \times 10^7 / 1.93}{1 + 1\left(\frac{4.49 \times 10^7}{1.25 \times 10^9}\right)\left(\frac{9}{0.667}\right)}} = 3958 \text{ ft/sec}$$

For Steel Pipe:

$C = 1$ (pipe anchored at the upstream end only)

$$a = \sqrt{\frac{4.49 \times 10^7 / 1.93}{1 + 1\left(\frac{4.49 \times 10^7}{4.32 \times 10^9}\right)\left(\frac{9}{0.0416}\right)}} = 2676 \text{ ft/sec}$$

ii Critical Time:

$$t_c = \frac{2L}{a}$$

For PCC Pipe:

$$t_c = \frac{2 \times 16051}{3958} = 8 \text{ sec}$$



For Steel Pipe:

$$t_c = \frac{2 \times 16051}{2676} = 12 \text{ sec}$$

iii Head:

$$h = \frac{a \times V}{g}$$

$$V = \frac{\text{Flow through 1 pipe (cfs)}}{\text{Area of pipe (ft}^2\text{)}}$$

$$V = \frac{774/2}{63.61} = 6 \text{ ft/sec}$$

For PCC Pipe:

$$h = \frac{3958 \times 6.08}{32.2} = 747 \text{ ft}$$

For Steel Pipe:

$$h = \frac{2676 \times 6.08}{32.2} = 505 \text{ ft}$$

iv Total Head:

$$H = h + \text{Static head}$$

For PCC Pipe:

$$H = 747 + 89 = 837 \text{ ft}$$



For Steel Pipe:

$$H = 505 + 89 = 594 \text{ ft}$$

v Total Pressure:

For PCC Pipe:

$$P = \frac{837}{2.31} = 363 \text{ psi}$$

For Steel Pipe:

$$P = \frac{594}{2.31} = 258 \text{ psi}$$

D CONCLUSIONS

This exercise is based on simplified equations that typically result in conservative values for maximum potential surge pressure. The purpose of this exercise is to determine the potential for elevated pipeline pressures resulting from hydraulic transients and to determine if additional evaluation is warranted. The equations used in this exercise yield relatively high potential pressures, higher than those typically designed for within this region. Based on the results of this exercise, AECOM strongly recommends further evaluation and computer modeling of hydraulic transients within the proposed pipeline.



Appendix B

Geotechnical Information

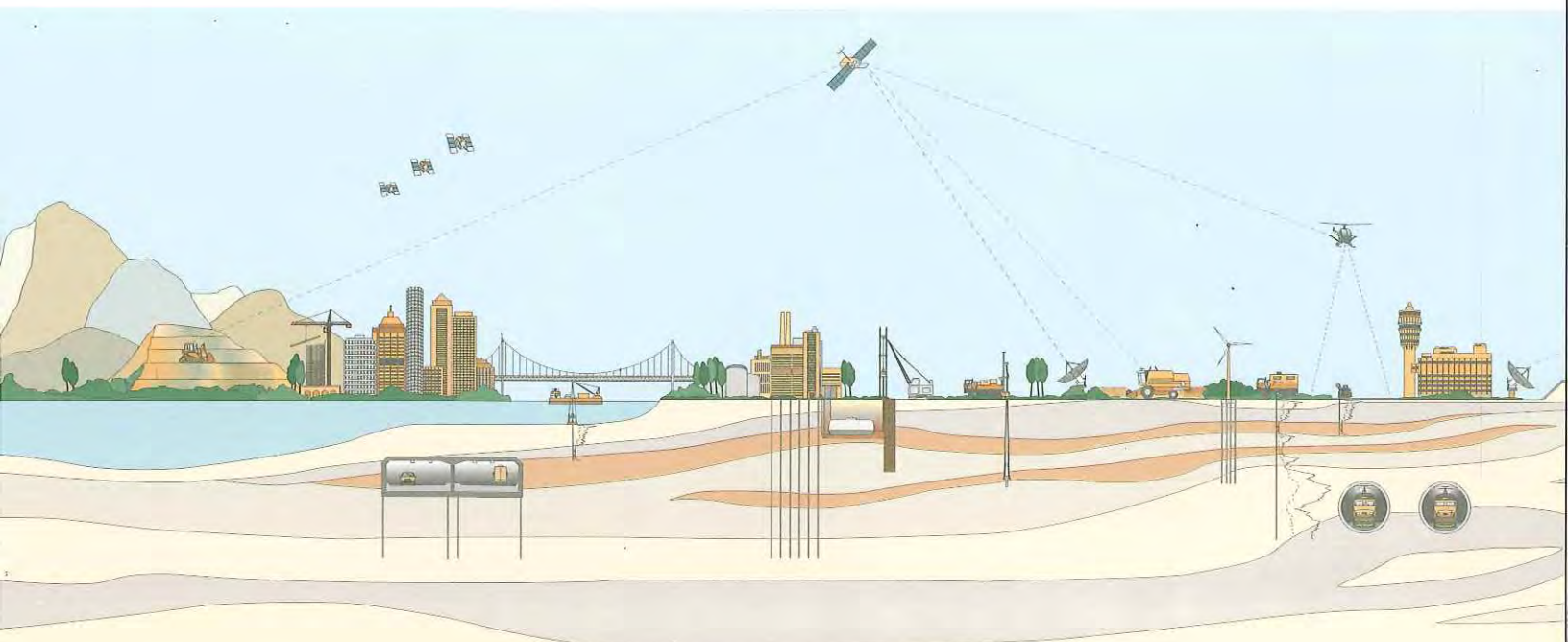


FUGRO CONSULTANTS, INC.



**PRELIMINARY GEOTECHNICAL STUDY
LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HARRIS AND LIBERTY COUNTIES, TEXAS**

AECOM
HOUSTON, TEXAS





Report No. 0412-09-0031-2
September 29, 2009

AECOM

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**Preliminary Geotechnical Study
Luce Bayou Interbasin Transfer Project
Coastal Water Authority
Harris and Liberty Counties, Texas**

Fugro Consultants, Inc. is pleased to present the results of our geotechnical study for the above-referenced project. Mr. Todd L. Papes, P.E. of AECOM authorized our services under Task No. 14301, Work Order Nos. 1, 2, and 3 described as follows.

- Work Order No. 1 – Review existing geotechnical data and develop scope for preliminary geotechnical study for current alignment as developed by AECOM.
- Work Order No. 2 – Perform services in general accordance with Fugro Cost Estimate No. 0409-9950-0072 dated March 17, 2009. Collect geotechnical information and develop preliminary recommendations for the proposed pump station, pipeline, and canal.
- Work Order No. 3 – Perform services in general accordance with Fugro Cost Estimate No. 0409-9950-0132 dated May 6, 2009. Collect geotechnical information to develop stratigraphic information and pertinent physical properties of the soil along the river at the pump station for Baird to perform erosion and bank stabilization analyses.

This report contains the results of our field and laboratory investigation as well as preliminary geotechnical recommendations for the design of the pump station, pipeline, canal, and associated ancillary structures. Information contained in previous studies by others for this project were incorporated into the development of our recommendations. Results of the laboratory test results for the sediment samples collected by Baird are presented in Fugro Report No. 0412-09-0031-1 dated July 22, 2009.





We appreciate the opportunity to be of continued service to AECOM and the Coastal Water Authority. Please call us if you have any questions concerning this report or when we may be of further assistance.

Sincerely,
FUGRO CONSULTANTS, INC.
TBPE Firm Registration No. F-299

A handwritten signature in black ink that reads "Scott A. Marr" with a date stamp "29 SEPT 2009" written below it.

Scott A. Marr, P.E., LEED AP
Project Manager

A handwritten signature in black ink that reads "Robert P. Ringholz".

Robert P. Ringholz, P.E.
Chief Engineer

Copies: Addressee (6)

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29 Sept 2009



EXECUTIVE SUMMARY

The Luce Bayou Project will convey surface water from the Trinity River in Liberty County to Lake Houston in Harris County. The project will include a pump station, approximately 16,062 ft of pipeline and 124,400 ft of open canal for a total of 26.6 miles of conveyance. There will be a number of road, stream, and pipeline crossings.

This water conveyance system was first considered in the 1970's and earlier 1980's, at which a substantial amount of geotechnical information was collected. The original plan was to convey water from the pump station, through a pipeline and a canal to Luce Bayou. Current plans are to keep the pump station and pipeline near their originally planned locations. However, a much longer canal is planned and the use of Luce Bayou has been essentially eliminated. The pipeline will consist of two 108-inch diameter pipes with about 5-foot of cover. The canal will be partially cut below grade 5 to 10 feet with levees on each side.

Borings FB-1 through FB-9, drilled along the canal alignment west of Cappers Ridge to Lake Houston generally encountered cohesive soils consisting of clay, sandy clay, and silty clay within the proposed depth of the canal (up to 10 ft below grade). Intermittent layers of granular soils consisting of sandy silt and silty sand were observed in several borings including near surface sandy silts within the proposed depth of the canal. On a footage basis, we encountered approximately 85 percent cohesive soils and 15 percent granular soils within a depth of 10 ft from the ground surface in the borings drilled for this study. However, the amount of cohesive soils and granular soils could vary along the alignment. Using the soils excavated along the proposed alignment, we recommend designing 4-horizontal to 1-vertical slope for constructing the proposed canal and levee slopes. We have provided additional recommendations for lining the canal, erosion control and weir structures in the report.

Borings FB-10 through FB-15, drilled along the high bank at the proposed pump station site generally encountered alternating strata of cohesive and granular soils. We recommend that spread footings for the buildings be placed at a depth of 5 feet below existing grade, and be founded on competent cohesive soils. We recommend designing the foundations for a net allowable bearing pressure of 5,000 psf for foundations bearing on stiff to very stiff natural cohesive soils. The bearing pressure can be increased to 6,600 psf for infrequent transient loading conditions. We recommend designing the foundations for a net allowable bearing pressure of 2,000 psf for foundations bearing on properly placed and compacted fill soils. The bearing pressure can be increased to 2,600 psf for infrequent transient loading conditions. Movement sensitive structures should be placed on a structural slab. Structures that are not movement sensitive can be designed for a conventional slab-on-grade placed on a properly prepared building pad of structural clay fill.

Water was generally encountered between 8 and 12 ft below grade in the borings along the project alignment. Nearby drainage ditches, rice fields, and water detention ponds will likely provide a source of water to charge the shallow granular soils along the pipeline and canal



alignment. The Trinity River and Lake Houston will influence the groundwater levels during construction of the structures at each site. Given that excavations to construct the intake structure will extend to about El. -2, groundwater control will be an essential aspect of construction of the intake structure at the pump station. We have provided preliminary recommendations for groundwater control, temporary and permanent retention systems.

We have provided recommendations for general pavement sections throughout the project alignment. We can provide additional recommendations for the Lake Houston Outfall structure when details are provided.



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1.0 INTRODUCTION

1.1 Project Description

The Luce Bayou Project will convey surface water from the Trinity River in Liberty County to Lake Houston in Harris County. The project will include a pump station, approximately 16,062 ft of pipeline and 124,400 ft of open canal for a total of 26.6 miles of conveyance. There will be a number of road, stream, and pipeline crossings.

This water conveyance system was first considered in the 1970's and earlier 1980's, at which a substantial amount of geotechnical information was collected. The original plan was to convey water from the pump station, through a pipeline and a canal to Luce Bayou. Current plans are to keep the pump station and pipeline near their originally planned locations. However, a much longer canal is planned and the use of Luce Bayou has been essentially eliminated. The pipeline will consist of two 108-inch diameter pipes with about 5-foot of cover. The canal will be partially cut below grade 5 to 10 feet with levees on each side.

1.2 Purposes and Scope

The purpose of this study was to develop preliminary design recommendations for the water conveyance project including the pump station, pipeline, canal, and associated ancillary structures based on existing and new geotechnical data. The specifics of our scope included:

- Reviewing existing information provided by the AECOM;
- Meeting with AECOM to develop a geotechnical program;
- Drilling 15 soil borings to explore subsurface conditions and obtain samples for geotechnical laboratory testing;
- Performing laboratory tests on selected soil samples to assess pertinent engineering properties;
- Analyzing the geotechnical data to develop preliminary engineering recommendations; and
- Summarizing our findings, recommendations, and conclusions in a geotechnical engineering report.

Environmental assessments, compliance with state and federal regulatory requirements, and/or environmental analyses were beyond the scope of our services. A geologic fault study was also beyond the scope of our services.

1.3 Applicability of Report

The geotechnical exploration and analyses for this report were selected and developed based on our understanding of the project as described herein. We prepared this report exclusively for



AECOM and CWA for design consideration and information purposes only. We conducted our services using the standard level of care and diligence normally practiced by recognized engineering firms now performing similar services under similar circumstances. We intend for this report, including all illustrations, to be used in its entirety. This report is not intended for final design and thus additional investigations will be required. It should not be construed to represent a warranty of subsurface conditions nor used as a construction specifications document. It is also important to note that the subsurface conditions encountered in our exploration and reported herein do not represent an absolute condition.

1.4 Previous Geotechnical Studies

AECOM provided the following documents for our review during the course of our study.

- *Preliminary Soils Investigation, Luce Bayou Diversion Project.* National Soil Services, Inc. Report No. 72-288 dated February 7, 1973.
- *Soils and Foundation Investigation – 96 inch Diameter Water Conveyance Pipeline, Luce Bayou Diversion Project.* National Soil Services, Inc. Report No. 72-288-2 dated November 11, 1975.
- *Soils and Foundation Investigation – Trinity River Pump Station, Luce Bayou Diversion Project.* National Soil Services, Inc. Report No. 72-288-3 dated November 14, 1975.
- *Soils and Foundation Investigation – Luce Bayou Rectification.* National Soil Services, Inc. Report No. 72-288-4 dated October 28, 1975.
- *Luce Bayou Diversion Project – Reidland Dam, Liberty County.* NFS/National Soil Services, Inc. Report No. H-72-288-4 dated January 28, 1981.
- *Geotechnical Engineering Study – Slope Stability and Pipe Anchors.* NFS Services, Inc. Report No. 72-288-7 dated July 12, 1982.



2.0 FIELD INVESTIGATION

2.1 Site Visits and Pre-Project Planning

Prior to performing our field investigation, representatives of Fugro and AECOM performed several site visits and held several meetings to discuss boring locations, site access, and overall goals of the geotechnical study. Borings were located at the proposed pump station along the Trinity River, at the transition from pipes to open canal, spaced along the canal alignment, and at the outfall structure at Lake Houston. Through the course of our study, we performed site visits to stake boring locations and identify the steps needed to access several boring locations. Site clearing needed to be performed to drill borings near the pump station. Borings along the canal alignment were on a different properties. AECOM surveyors and field representatives helped direct and provide access to each property.

2.2 Geotechnical Field Exploration

Table 2-1 presents a summary of the borings, purpose, and depth, and location.



Table 2-1. Boring Locations

<i>Boring</i>	<i>Northing</i>	<i>Easting</i>	<i>Approximate Elevation (ft)</i>	<i>Approximate Station</i>	<i>Purpose</i>
FB-1	N 30°02'58"	W 95°06'06"	46	10+20 R562	Lake Houston Outfall
FB-2	N 30°03'04"	W 95°05'15"	73	55+13 R13	Canal
FB-3	N 30°03'40"	W 95°02'55"	75	225+84 R56	
FB-4	N 30°06'15"	W 95°02'39"	81	399+18 L75	
FB-5	N 30°07'50"	W 95°01'38"	83	547+75 L91	
FB-6	N 30°08'05"	W 94°58'36"	85	709+37 L66	
FB-7	N 30°09'15"	W 94°55'45"	99	937+46 R260	
FB-8	N 30°10'33"	W 94°53'59"	102	1075+86 R55	
FB-9	N 30°12'40"	W 94°52'07"	104	1242+83 L76	
FB-10	N 94°49'22"	W 30°13'27"	42	2154+25 R228	Pump Station
FB-11	N 30°13'23"	W 94°49'16"	41	2162+42 R549	High Bank of Trinity River
FB-12	N 30°13'25"	W 94°49'16"	41	2161+72 R360	
FB-13	N 30°13'28"	W 94°49'14"	27	2162+33 R15	
FB-14	N 30°13'31"	W 94°49'13"	48	2162+11 L300	
FB-15	N 30°13'33"	W 94°49'13"	50	2161+41 L490	

The approximate boring locations are shown on the *Plan of Borings* on Plate 2a (Canal) and 2b (Pump Station). Detailed descriptions of soils encountered in each boring are presented on the boring logs on Plates A-1 through A-15 in Appendix A. A key identifying the terms and symbols on the borings is presented on Plates A-16a and A-16b in Appendix A. The coordinates presented on the boring logs and in Table 2-1 were determined using a handheld GPS device. Boring elevations were provided by AECOM.

2.3 Site Clearing

We performed limited site clearing to access the locations near the pump station for Borings FB-10 through FB-15. Due to restrictions from the property owner, we were limited to using chainsaws to clear paths through the dense vegetation. Debris from the site clearing operations was left onsite.



2.4 Drilling Methods

We performed our geotechnical field exploration services for Borings FB-2 through FB-8 using truck-mounted drilling equipment. Borings FB-1 and FB-9 through FB-15 were drilled using all terrain-mounted drilling equipment. The borings were drilled using dry-auger and wet-rotary drilling methods. Our Senior Specialist Technician directed the field operations.

2.5 Sampling Methods

The borings were generally sampled at 2-foot intervals to a depth of 16 ft below grade and at 5-ft intervals below 16 ft. Undisturbed samples of cohesive soils were generally obtained by hydraulically pushing a 3-inch-diameter, thin-walled tube to a distance of about 24 inches in general accordance with ASTM D1587 (*Standard Practice for Thin-Walled Tube Sampling of Soils*). The samples were extruded in the field and visually classified by our field technician. We obtained field estimates of the undrained shear strength of the recovered samples using a hand penetrometer. The field estimates were modified for stiff to hard, over-consolidated natural cohesive soils, as described on Plate A-16b. Granular soil samples were obtained using the Standard Penetration Test (SPT) as described on Plate A-16b. Our field procedure for granular soil sampling was conducted in general accordance with the ASTM D1586 (*Standard Method for Penetration Test and Split-Barrel Sampling of Soils*). Our field technician recorded the hammer blows for each sampling interval. The SPT N-values, as described on Plate A-16b, are recorded on the boring logs. In each case, portions of the recovered soil samples were packaged and transported to our laboratory for testing.

2.6 Depth-to-Water Observations

Most borings drilled for this study were initially drilled using dry-auger methods in an attempt to identify the depth to water in the open borehole. When free-water was encountered in the open borehole, drilling was temporarily halted and the depth-to-water in the open borehole was recorded. Drilling then continued to the boring completion depth of the borings using wet-rotary methods. Temporary piezometers were installed in Borings FB-2 and FB-8 and near FB-13. Further discussion on our depth-to-water observations and the onsite groundwater conditions is presented later in Section 4.2.

2.7 Borehole Completion

After completing the field activities, Borings FB-1 and FB-9 through FB-15 were backfilled with cement-bentonite grout. The boreholes were grouted from the bottom up, using a tremie pipe. When the grout level reached within approximately 4 to 6 inches of the surface, the tremie pipe was removed and the boreholes were topped-off by pouring grout from the surface. Borings FB-3 through FB-7 (shallow borings) were backfilled with soil cuttings and bentonite chips (*i.e.* holeplug). The holeplug/cuttings were placed into the open boreholes and tamped in place by our field technician. Temporary piezometers were installed in Borings FB-2 and FB-8.



3.0 LABORATORY TESTING

3.1 Testing Program

The laboratory testing program for this study was directed primarily toward evaluating the classification properties of the cohesive and granular soils. We also performed tests to evaluate the undrained shear strength and dispersion potential of the cohesive soils along the canal alignment and along the high bank along the Trinity River. We performed tests to evaluate the drained shear strength and corrosion potential of the soils near the proposed pump station as well. Our laboratory tests were performed in general accordance with the appropriate standards as tabulated at the end of this section. The laboratory test results are presented on the boring logs in Appendix A.

3.2 Classification Tests

The classification tests included tests for natural moisture content, liquid and plastic limits (collectively termed Atterberg limits) and grain size analyses, including sieve analysis and material finer than the No. 200 sieve (percent fines). These tests aid in classifying the soils and are used to correlate the results of other test performed on samples taken from different borings and/or different depths. The results of the classification tests are recorded on the boring logs in Appendix A. Grain size curves are presented in Appendix B on Plate B-1 through B-4.

3.3 Shear Strength Tests

We measured the undrained shear strength from selected undisturbed samples of cohesive soils by performing unconfined compression tests and unconsolidated-undrained triaxial compression tests. The natural water content and dry unit weights were determined as routine parts of the shear strength tests. The results of the laboratory shear strength tests, along with the field estimates of shear strength, are presented on the boring logs in Appendix A.

In addition, the drained shear strength parameters of selected undisturbed samples of cohesive soils were determined by conducting two multi-stage consolidated-undrained triaxial compression tests with pore pressure measurements and one direct shear test. The results of the consolidated-undrained triaxial compression tests, presented as Mohr's circles and as stress paths, are presented in Appendix B on Plates B-5 and B-6. The results of the direct shear test are presented on Plate B-7. Natural water content and dry unit weight were determined as routine portions of the drained strength tests. Summaries of the results of drained strength tests are presented Table 3-1.



Table 3-1. Drained Shear Strength Test Results

Boring No.	Depth (ft)	Description	Test Method	LL	PL	PI	Cohesion, c' (psf)	Friction Angle, ϕ' (degrees)
13	12	Clay	CU Triaxial	64	15	49	320	24
13	35	Clay	CU Triaxial	43	11	32	450	26
13	20	Sand	Direct Shear	NP	NP	NP	0	30

3.4 Corrosion Potential Tests

The corrosion potential of the subsurface soils within the vicinity of proposed pump station was evaluated using a series of analytical laboratory tests, which included pH, sulfate ion concentration, chloride ion concentration, and electrical resistivity tests.

Steel and concrete elements in contact with soil are subject to degradation due to corrosion or chemical attack. Therefore, buried steel and concrete elements should be designed to resist corrosion and degradation based on accepted practices.

Soil pH, resistivity, and chloride and sulfate ion concentration tests were performed on three samples collected at different depths in Boring B-13. These tests were performed to assess the corrosion potential of the on-site near-surface soils on buried steel and concrete. The potential for corrosion of buried steel and degradation of buried concrete based on a comparison of the laboratory test results with published guidelines is discussed. The guidelines used to evaluate corrosion and degradation potential are presented in Appendix C.

The results of the corrosion series testing are given in Table 3-2.

Table 3-2. Corrosion Series Test Results

Boring No.	Depth (ft)	Material Description	pH	Resistivity (ohm-cm)	Ion Concentration, ppm	
					Chloride	Sulfate
13	4.5	Clay	8.07	1,600	< 100	< 100
13	12.5	Clay	8.10	2,000	< 100	< 100
13	40	Clay	7.9	160	< 100	< 100

The results of sulfate tests on the selected soil samples from this study indicate *mild* potential for deterioration of concrete. The chloride tests indicate a *mild* to *moderate* potential for corrosion of steel. The pH tests indicate a *mild* potential for corrosion of steel. Electrical resistivity tests indicate a *high* to *very high* potential for corrosion of steel.



3.5 Dispersion Potential Tests

Table 3-3 presents the results of the crumb dispersion tests on selected soil samples. General guidelines for estimating the dispersive potential from crumb test results are presented in Appendix D. The implication of these test results as they relate to erosion is discussed in Section 5.3 of this report.

Table 3-3. Crumb Test Results

Boring No.	Depth, (ft)	Material Description	Crumb Test Grade		
			@ 5 min	@ 10 min	@ 60 min
1	5	Silty Clay	1	1	1
1	14	Sandy Silt	3	3	4
2	5	Sandy Clay	1	1	1
3	8	Clay	1	1	1
4	3	Clay	1	1	1
5	3	Clay	1	1	1
6	7	Clay	1	1	1
7	3	Clay	1	1	1
8	2	Sandy Clay	3	4	4
9	5.5	Clay	1	2	4
11	3	Clay	1	1	1
11	19	Clay	1	1	1
12	5	Clay	1	1	1
12	11	Clay	1	1	1
12	24	Clay	1	1	1
13	7	Clay	1	1	2
13	29	Clay	1	1	1
13	49	Clay	1	1	1
14	3	Clay	1	1	1
14	13	Sandy Clay	2	3	3
15	4	Clay	1	1	1



3.6 Summary

Table 3-4 presents the type and number of laboratory tests as well as the test method standard.

Table 3-4. Laboratory Test Summary

<i>Laboratory Test</i>	<i>Quantity</i>	<i>Testing Standard</i>
Moisture Content	68	ASTM D2216
Atterberg Limits	42	ASTM D4318
Sieve Analysis	16	ASTM D422
Percent Passing the No. 200 Sieve	59	ASTM D1140
Dry Unit Weight	38	ASTM D2166
Unconfined Compression	18	ASTM D2166
Unconsolidated-Undrained Triaxial Compression	20	ASTM D2850
Consolidated-Undrained Triaxial Compression	2	ASTM D4767
Direct Shear	1	ASTM D2852
Crumb	21	ASTM D6572
PH	3	ASTM G51
Sulfate	3	ASTM D516
Chloride	3	ASTM D512
Electrical Resistivity	3	ASTM G57

Note that sieve analyses were performed on 27 samples of soil sediment collected by Baird. The results of the analyses were presented in Fugro Report No. 0412-09-0031-1 dated July 22, 2009.



4.0 GENERAL SITE CONDITIONS

4.1 Site Description and Subsurface Conditions

4.1.1 Canal and Pipeline. The boring locations along the canal and pipeline alignment ranged from heavily wooded areas to pastures and farmland to roads. Generally, the sites were relatively flat with areas that slope to drainage ditches and at FB-1 the area sloped towards Lake Houston.

Borings FB-1 through FB-9, drilled along the canal alignment from Lake Houston to west of Cappers Ridge generally encountered cohesive soils consisting of clay, sandy clay, and silty clay within the proposed depth of the canal (up to 10 ft below grade). Undrained shear strengths of the cohesive soils ranged from firm to very stiff. Intermittent layers of granular soils consisting of sandy silt and silty sand were observed in several borings including near surface sandy silts within the proposed depth of the canal. On a footage basis, we encountered approximately 85 percent cohesive soils and 15 percent granular soils within a depth of 10 ft from the ground surface in the borings drilled for this study. However, the amount of cohesive soils and granular soils could vary along the alignment. Borings FB-1, FB-4, FB-6, FB-8, and FB-9 encountered granular soils below a depth of about 10 ft below grade. The granular soils consisted of sand, silty sand, and clayey sand. We have superimposed the borings drilled for this study along the proposed canal alignment as provided by AECOM and presented the subsurface profiles on Plates 3a through 3__. Detailed descriptions of soils encountered in each boring are presented on the boring logs on Plates A-1 through A-9 in Appendix A. A key identifying the terms and symbols on the borings is presented on Plates A-16a and A-16b in Appendix A.

During excavation and prior to placement of fill soils, we expect a bulking/swell/fluff of about 20 to 35 percent in clay soils, and about 10 to 15 percent in sandy soils.

4.1.2 Pump Station. The location of the proposed pump station along Cappers Ridge is heavily wooded. The site is generally flat along the high bank of the Trinity River with a relatively steep drop of about 20 ft to the water surface. Borings FB-10 through FB-15, drilled along the high bank at the proposed pump station site generally encountered alternating strata of cohesive and granular soils. At the ground surface, we encountered up to 2 ft of sandy silt and clayey silt. Below the surficial soils, we encountered stiff to hard, moderate to very high plasticity cohesive soils (Stratum I) to about El. 30. We encountered medium dense to very dense granular soils (Stratum II) consisting of sand and silty sand beneath the cohesive soils to El. 15. Beneath the granular soils, we encountered stiff to very stiff cohesive soils (Stratum III) to El. -5. The cohesive soils consisted of clay, sandy clay, and silty clay. Beneath the cohesive soils we encountered granular soils (Stratum IV) consisting of dense to very dense sand and silty sand to about El. -41. Beneath the granular soils, we encountered stiff to very stiff clay (Stratum V) to El. -80, the deepest we drilled for this study. We have superimposed the borings drilled for this study along



with borings drilled for previous studies at the site near the proposed pump station as provided by AECOM and presented the subsurface profile on Plate 3b.

Detailed descriptions of soils encountered in each boring are presented on the boring logs on Plates A-10 through A-15 in Appendix A. A key identifying the terms and symbols on the borings is presented on Plates A-16a and A-16b in Appendix A.

4.2 Depth-to-Water Conditions

Water was generally encountered between 8 and 12 ft below grade in the borings along the project alignment. Groundwater was not encountered in some borings along the alignment. Water level measurements in the temporary piezometer in Boring FB-2 indicate the water fluctuates between 8 and 10 ft below grade. Water has not been observed in the temporary piezometer in Boring FB-8. We have not taken water level measurements since drilling in the piezometer installed adjacent to Boring FB-13 due to restricted site access.

Short-term depth-to-water observations recorded in open boreholes should *not* be considered to represent a long-term condition. The time associated with short-term observations may not be sufficient for the conditions in the open borehole to reach equilibrium. More accurate determinations of the groundwater level are usually made using long-term standpipe piezometer readings. Groundwater levels will fluctuate with seasonal variations in rainfall and surface runoff, especially during extended periods of heavy rainfall or dry weather. Also, perched water may be encountered within the shallow granular soils encountered in the borings. The Trinity River and Lake Houston will influence the groundwater levels during construction of the structures nearby. Nearby drainage ditches, rice fields, and water detention ponds will likely provide a source of water to charge the shallow granular soils along the pipeline and canal alignment.

4.3 Variations in Subsurface Conditions

Our interpretations of soil conditions, as described in this report, are based on data obtained from our visual observations, geophysical data, sample borings, laboratory tests, and our experience. Although we have allowed for minor variations in the subsurface conditions, our descriptions may not be appropriate for subsurface conditions other than those reported herein. It is likely that variations in soil conditions are present outside the boring locations, especially given the spacing between boring locations along the project alignment. We recommend that additional borings be drilled at approximately 500 ft spacing along the proposed alignment to further identify subsurface conditions for final design.



5.0 TRINITY RIVER PUMP STATION

Based on the information provided by AECOM, we have developed recommendations for the proposed pump station, control building, and maintenance building in this section. We have included recommendations for shallow foundations including spread and strip footings, intake and pump wells including temporary retention system and earth pressures for permanent walls, general discussion of erosion control and bank stability.

5.1 Shallow Foundations

A foundation system should satisfy two basic and independent design criteria. First, the bearing pressure transmitted to the foundation soils should not exceed the net allowable soil bearing capacity, which includes an appropriate safety factor. Second, settlements during the operating life should not be of a magnitude that will cause structural damage to the structure or their utility connections. Settlements are a function of, among other things, the underlying soil conditions, the foundation size and shape, and the sustained applied foundation pressures of the foundation elements.

Based on our review of the field and laboratory tests performed on the soils encountered in the borings drilled, as well as our experience with similar projects, we believe that the proposed structures may be supported on shallow foundations. We consider shallow spread footings founded in the natural cohesive soils suitable the proposed structures. We recommend using a structural slab for the first floor slab for structures that are movement sensitive. However, a ground supported slab-on-grade may be used if the Owner is willing to accept the risk of potential movements from shrink-swell soils. We have included recommendations to reduce the potential for shrink-swell movement by constructing the first floor slab on properly placed and compacted structural clay fill or lime-stabilized clay fill pad. Recommendations for the placement of structural clay fill and lime-stabilized clay fill are provided in the Sections 9.3 and 9.4 of this report.

5.1.1 Spread and Strip Footings. We recommend that spread footings for the buildings be placed at a depth of 5 feet below existing grade, and be founded on competent cohesive soils. If weak, soft, or otherwise unsuitable soils are encountered at the proposed foundation depth, these soils should be over-excavated and replaced with flowable fill or lean concrete. Alternatively, the foundation depth could be increased. However, if greater foundation depths are desirable or required, we **should** be contacted to reevaluate the recommendations presented herein.

The allowable net bearing pressure for shallow foundations is a function of, among other items, the bearing surface, the strength of the foundation soils, the location of the foundation, the shape of the foundation, and the recommended factor of safety. Foundations should be proportioned so that the maximum contact pressure under various load combinations does not exceed the allowable net bearing pressure. We recommend designing the foundations for a net allowable



bearing pressure of 5,000 psf for foundations bearing on stiff to very stiff natural cohesive soils. The bearing pressure can be increased to 6,600 psf for infrequent transient loading conditions. We recommend designing the foundations for a net allowable bearing pressure of 2,000 psf for foundations bearing on properly placed and compacted fill soils. The bearing pressure can be increased to 2,600 psf for infrequent transient loading conditions. Bearing pressure, as used in this report, is defined on Plate 4. To calculate values of W_e , W_s , and W_f from Plate 4, use effective unit weights of 60 pcf for soil and 90 pcf for concrete.

A detailed settlement analysis was beyond the scope of this preliminary study. However, based on our experience with similar soils under similar loads, we expect consolidation settlements of shallow foundations placed on natural cohesive soils will be less than about 1 inch. We estimate foundations placed on fill soils will settle 1 to 2 percent of the height of the fill soils plus about 1 inch. The estimated settlement is based on uniformly loaded foundations with sustained bearing pressures that are no greater than the recommended allowable net bearing pressures. In addition, these preliminary estimates assume the foundations act as isolated foundations, that is, the clear spacing between adjacent foundations is equal to at least the width of the larger foundation. Differential settlements between new footings should be expected and may be on the order of one-half of the total settlement.

The soil conditions encountered during construction should be of similar consistency and strength of the soil conditions reported on the boring logs. All foundation excavations should be observed by the Geotechnical Engineer-of-Record or their qualified representative prior to placement of concrete. Structural clay fill should be used to backfill against spread and strip footings.

5.1.2 Slab-on-Grade. Proper design and installation of the floor slab is an essential aspect of construction similar to that planned at this site. Failure to properly design and install the first floor slab can contribute to the development of significant foundation distress. Foundation distress can lead to serviceability problems including, but not limited to, additional structural distress, floor slab movements, and various aesthetic concerns. As such, if the planned structure will be sensitive to such movements, a structural slab should be used.

We recommend that site preparation include the stripping of the top 2 feet of existing subgrade until competent cohesive soils are exposed at the proposed structure location. The site preparation activities should extend to at least 5 feet beyond the edge of the footprint of the proposed structures.

Once the existing surface soils have been stripped, the exposed subgrade should be proofrolled using a heavy (20-ton) rubber-tired vehicle, if accessible. The Geotechnical Engineer-of-Record or their qualified representative should observe the proofrolling activities. Areas of weak, wet, or otherwise unsuitable soil conditions should be identified and over-excavated to expose competent soils under the guidance of the Geotechnical Engineer-of-Record or their qualified representative.



After the completion of proofrolling activities, design grade should then be achieved using properly compacted structural clay fill or lime-stabilized clay. The placement of approximately 2 feet of structural clay fill or lime-stabilized clay fill will assist in developing the required design grade. The objective of the removal and replacement activities will be to create a uniform, low permeable, relatively homogeneous building pad thereby reducing the PVR of the foundations soils from 0.5 to 2 inches to on the order of less than an inch.

Some settlement of the placed fill material should be expected over the life of structure. Generally, settlement on the order of 1 to 2 percent of the fill height can be expected for the proposed backfill soils. Hence, we anticipate that consolidation settlement on the order of 0.5 inch may occur due to the self-weight of the fill if structural clay fill is used. A lower magnitude of settlement should be expected if lime-stabilized fill is used.

We recommend limiting the applied pressure beneath slabs-on-grade supported on structural clay fill and lime-stabilized clay to 1,200 psf. Applied pressures greater than 1,200 psf will likely require the use of supplemental foundations.

Exterior grade beams (or turned down edges) and interior grade beams should be used to support loads between footings and to stiffen slab-on-grade foundations. The depth of exterior and interior grade beams can be varied according to the structural requirements of the slab. However, we recommend that exterior grade beams (or turned down edges) for the slab-on-grade foundations extend at least 36 inches below lowest adjacent exterior grade to serve as a moisture barrier. Exterior and interior grade beams should be designed using an allowable net bearing pressure of 1,500 psf. We do **not** recommend the use of void boxes below grade beams for slab-on-grade foundations because of the potential to collect free water within the void space.

Positive drainage should be provided away from the buildings. We recommend using structural clay fill as backfill outside the building footprint. The low permeability of structural clay fill will help reduce the potential for moisture fluctuations along the building perimeter foundation. Moisture fluctuations can adversely affect floor slab performance.

5.2 Intake Structure and Pump Wells

We expect the proposed intake structure and pump wells will be constructed using an open-cut excavation. Recommendations for open-cut excavations are presented in Section 9.2. However, if open-cut excavations are not used, a temporary excavation retention system will be required to complete the construction excavations. Regardless of the construction methods used, surface and groundwater control will need to be implemented before, during, and after construction. We have also provided recommendations for the design of the permanent intake structure and pump wells. The following provides our recommendations for a temporary excavation retention system at this site.

5.2.1 Groundwater Control. We expect groundwater to be on the order of 8 to 12 feet below grade (about El. 30) in the vicinity of the proposed pump station. Information from AECOM



indicates the water in the Trinity River on average is at El. 24.6. Fluctuations should be expected during construction as well as over the life of the structure.

Given that excavations to construct the intake structure will extend to about El. -2, groundwater control will be an essential aspect of construction. Site grading at the surface should be established to promote surface drainage away from the excavation. Dewatering should be implemented during construction to reduce the potential disturbance to the excavation subgrade and to reduce the potential for slope failures as excavations progress. We recommend the dewatering system used during construction be permanently installed for use after construction for maintenance operations of the pump wells and intake structure. We expect dewatering to primarily occur in the Stratum II (about El. 30 to El. 15) and Stratum IV (El. -5 to El. -41) granular soils. We recommend a dewatering contractor be contracted to design and implement the required groundwater control. We anticipate that a wellpoint system will be required to facilitate the groundwater control.

A groundwater control system should be capable of lowering and maintaining (continuously without interruption) the water level at least 3 feet below the lowest excavation depth (or below the bottom of the pump wells over the life of the structure. During construction, we expect temporary diversion berms or sheet piles will be used to keep water from the Trinity River from flooding the excavation. Pumps should be used in excavations to remove any water that enters the excavation. We recommend providing backup power sources to maintain the groundwater control during power outages.

It will be critical to monitor the piezometric levels around the excavation by installing piezometers in both the Stratum II and Stratum IV granular soils. If the water level/pressure is not lowered in the bearing subgrade beneath the excavation, bottom instability is likely to occur, resulting in potential construction difficulties and movements greater than expected. We recommend underfloor drains (as discussed in Section 5.2.3) and foundation concrete be placed soon after the final excavation depth is achieved. We expect open excavations that extend below the surrounding water level to heave on the order of several inches within a couple of days if foundations are not placed within a day or two if proper groundwater control is not maintained.

Groundwater control will need to be installed and implemented at least a month before excavation occurs to dewater/depressurize the Stratum II granular soils at the site. Due to the close proximity of the Trinity River and the constant source of water, we do not believe it will be possible to completely dewater and depressurize the Stratum IV soils. However, during periods of constant pumping we believe the water level can be controlled sufficiently to facilitate construction of the proposed foundations, pump wells, and intake structures. We recommend that previous experience constructing the existing CWA pump station along the Trinity River be reviewed for design considerations.

5.2.2 Temporary Excavation System. A temporary retention system may be used to construct the proposed intake structure and pump wells. The temporary retention system may consist of



driven sheet piles or soldier pile and lagging. It should be noted that the design and construction of temporary excavation systems, similar to those described in this report, are often considered proprietary products. If this is the case, we recommend we be allowed to review the plan prepared by the excavation system contractor for the planned system prior to implementation.

Short-Term Lateral Pressures. The excavation retention system will experience lateral earth pressures resulting from a combination of soil pressure and surcharge loads. The system should be designed to resist lateral earth pressures imposed by the surrounding retained soil and any surcharge loads. A discussion of the distribution of lateral earth pressures on the proposed temporary excavation retention systems for preliminary estimation purposes is illustrated on Plate 5. In analyzing the retention system, it should be noted that the lateral pressures acting on the wall may be computed assuming that the pressures on Plate 5 are on a per-foot-of-wall basis. We recommend the passive resistance has been neglected in the upper 5 ft of soil beneath the bottom of the excavation to account for soil disturbance from construction activities. It also assumes that the groundwater control is implemented and the surrounding water is at least 3 ft below the excavation bottom.

The effects of surcharge loads from construction equipment, concrete trucks, and other heavy equipment should also be evaluated during the design of the temporary excavation retention system. Surcharge loads located near the temporary retention system will also impose lateral loads on the temporary retention system. As such, the temporary retention system should be designed to accommodate all transient and sustained surcharge loads. The lateral pressure distribution for surcharge loads is presented on Plate 6. Lateral earth pressures due to surcharge loads, as determined on Plate 6, should be added to the pressure distribution on Plate 5 when designing the retention system.

Furthermore, it should also be noted that ground surface movements, as a result of changes in lateral stresses within the subsurface soils, should be anticipated. As such, the potential for ground surface movements should be addressed during the design of the temporary retention system. The effects of potential ground surface movements on adjacent structures should also be evaluated during the design of the retention system.

Soldier or sheet piles for the retention system should be installed to a depth below adjacent excavation grade to provide sufficient resistance against lateral earth pressures and provide moment equilibrium as described above. Furthermore, piles should be sized such that their penetration below adjacent excavation grade is sufficient to provide resistance for all vertically applied loads including, but not limited to, the weight of the concrete and reinforcing steel, tiebacks and components, and wall weight.

Global Stability. Global stability about the excavation bottom should be addressed during the design of the retention systems. The stability analysis should address the effects of adjacent structures and groundwater control activities on the overall stability of the proposed excavation. The global stability analysis should also address the proposed penetration of soldier piles. Should



global stability movements occur, significant structural distress may be induced in adjacent structures and within the temporary retention system. If penetrations are not long enough, the soldier piles may rotate out of plane as a result of soil pressure. We would be pleased to assist in the global stability analysis of the proposed excavation and retention system once the excavation and loading conditions are determined.

5.2.3 Earth Pressures on Permanent Walls. Intake structure and pump well walls should be designed to withstand permanent lateral earth pressures resulting from a combination of soil pressure, hydrostatic pressure, and surcharge loads. The distribution of lateral earth pressures and surcharge loads on permanent non-yielding walls is presented on Plate 7. Proper drainage should be provided to help prevent the development of hydrostatic pressures behind the intake structure walls. Should hydrostatic pressures develop, the lateral earth pressure should be recalculated to account for the additional fluid pressures.

As discussed earlier, we understand that a sloped excavation may be used to construct the intake structure. If this is the case, care should be taken during backfill operations not to over compact the backfill soils. Over compaction may induce significant stresses on the walls. Settlement due to self-weight should be expected if structural clay fill is used. Our experience indicates that a properly placed and compacted structural clay backfill may settle on the order of 1 to 2 percent of its height under self-weight. Where granular backfill soils are used, the granular fill should be capped with at least 2 to 3 ft of low permeability structural clay fill. Granular fill soils should also be compatible with the basement wall drain system and natural soils. We expect granular soils to settle on the order of 0.5 percent of its height and soon after placement assuming a placement relative density of greater than 90 percent. Surface drainage should be diverted away from all basement walls.

Groundwater at this site will be subject to seasonal fluctuations and the water level in the Trinity River. For future maintenance purposes, it should be anticipated that the groundwater level will exist above the intake structure for extended periods of time during periods of wet weather. In addition, shallower perched water may also be present at higher elevations.

Wall and Underfloor Drain System. We recommend installing wall and underfloor drains along intake structure walls. We understand that CWA has observed distress at an existing pump station along the Trinity River due to excessive piezometric pressures behind the intake structure walls. We recommend evaluation of the system at the existing pump station be considered when designing the proposed wall drain system. Wall drains are generally installed to reduce hydrostatic pressures acting on the walls and to reduce the potential for seepage through the walls. The wall drain should consist of a 2- to 3-ft-wide wall of sand encircling the intake structure wall with a 4-inch-diameter slotted collector pipe at the base of the sand drain. A schematic of the wall drain and underfloor drain system is presented on Plate 8a. Recommendations for filter and collector pipe materials are presented on Plate 8b. The effects of long-term deterioration of timber lagging (if used) should also be addressed when designing wall drains.



The collector pipe or pipes should be sloped no flatter than 1/16 inch for every foot and should discharge into a sump or system of sumps. The end of the discharge pipe at the sump should be fitted with a backflow valve to help prevent flow back into the wall drain system. The collector pipe should be surrounded by at least 6 inches of filter sand. A 2- to 3-ft-thick clay cap should be installed over the sand to help reduce surface water infiltration into the wall drain system. An adequate number of cleanouts should be provided so that all collector pipes can be cleaned and flushed.

The wall drain system should be an independent system. The wall drain collector pipe should not be connected to other drainage systems that handle surface water runoff. The wall drain system should be periodically cleaned and preventative maintenance should be performed on a routine basis.

The underfloor drain beneath the pump wells and intake should consist of a series of lateral drain lines tied to primary collector lines that discharge into a sump or series of sumps. The drains should not be tied into the surface drainage system. The drainage layer beneath the slab should be at least 8 to 12 inches thick and consist of clean well-graded sand (ASTM C33) or well-graded crush stone. Collector pipes for the underfloor system should be sloped no flatter than 1/16 inch for every foot. Recommendations for filter and collector pipe materials are presented on Plate 8b.

Bearing Capacity. Based on information provided by AECOM, we expect the foundations of the intake structure and pump wells to bear at El. 0 to El. 3. From the borings drilled for this study, we expect the foundations to bear on cohesive soils or on the underfloor drain system. We recommend designing the foundations for a net allowable bearing pressure of 5,000 psf. The bearing pressure can be increased to 6,600 psf for infrequent transient loading conditions. Bearing pressure, as used in this report, is defined on Plate 4. To calculate values of W_e , W_s , and W_f from Plate 4, use effective unit weights of 60 pcf for soil and 90 pcf for concrete.

5.3 Erosion Control and Bank Stabilization

We understand Baird is performing a scour evaluation and will be providing bank stabilization recommendations. The following presents our general thoughts regarding slope stability and erosion protection along the Trinity River.

In all of our analyses, we have assumed that the soil between the pump station and the river will be relatively permanent and will not be allowed to erode with time. These soils, especially the granular soils encountered in our borings, should be protected from erosion by various means. We recommend that proper erosion control should be established around the pump station and intake structure. We believe that the erosion control be flexible and durable enough to accommodate some movement. Erosion control could include gabion baskets or rock filled mattresses along the surface of the slope and extend upstream and downstream some distance. Baird's recommendations and Fugro's recommendations should be reviewed for compatibility. Regardless of the erosion control implemented, a monitoring and maintenance plan should be developed for routine maintenance.



6.0 PAVEMENT RECOMMENDATIONS

The following section provides our general pavement recommendations for this project. We were not provided specific traffic loading conditions for the proposed pavements. As such, the following are general recommendations for the soil conditions at the pump station site.

6.1 Subgrade Preparation

The performance of an asphalt or concrete pavement ultimately depends on the underlying subgrade. Subgrade preparation for pavements should include clearing and stripping all significantly organic material, debris, and other deleterious materials from the site. Subgrade preparation for the proposed pavements should include the clearing and removal of any existing vegetation, in addition to the upper 6 inches of surficial soils. We recommend the surficial silty soils be treated with lime-fly ash or removed and replaced with structural clay fill.

After removing deleterious materials and stripping, the exposed subgrade should be proofrolled with a fully loaded dump truck or other heavy (20-ton), rubber-tired vehicle and observed to evaluate the condition of the subgrade. We recommend scheduling these activities during a relatively dry period. We do not recommend that subgrade preparation activities begin during or immediately after a significant rain event. It may be necessary to wait for the site to dry prior to restarting site preparation activities depending on the effectiveness of onsite drainage.

Areas of the subgrade that are observed to be soft, wet, weak, or contain deleterious materials or roots should be over-excavated to expose competent natural soils. Areas of the subgrade in which pumping or significant deflections are observed should also be over-excavated to expose competent natural soils or stabilized with lime-fly ash. Over-excavated areas should be backfilled with properly placed and compacted structural clay fill to attain rough site grade.

Grading activities should be conducted such that the recommended pavement sections, *i.e.* layer thickness, are adhered to across the pavement profile. We recommend that the Geotechnical Engineer-of-Record or their qualified representative be present onsite to observe all subgrade preparation for pavements.

6.2 Pavement Sections

Specific traffic loading information for the proposed pavements were not available at the time of this report. Table 6-1 provides typical pavement sections based on our experience with similar subsurface conditions. These sections are ***not*** based on a specific loading conditions (*e.g.* equivalent-single-axle-loads, *ESALs*) or pavement life expectancy.





Table 6-1. Typical Pavement Sections

<i>Pavement Type and Recommended Use</i>	<i>Material</i>	<i>Thickness</i>	<i>Reference or Specification</i>
Flexible Pavement (parking areas for cars and light-duty trucks)	Hot-Mix Asphaltic Concrete over	2 to 3 inches ⁽¹⁾	TxDOT Item 340 Type C or D
	Crushed Limestone Base over	6 inches	TxDOT Item 247 Type A, Grade 1
	Stabilized Subgrade	8 inches	See Text
Rigid Pavement (parking areas for cars and light duty trucks)	Portland Cement Concrete over	6 inches	TxDOT Item 360
	Stabilized Subgrade	8 inches	See Text
Rigid Pavement (truck and heavy traffic areas)	Portland Cement Concrete over	8 inches	TxDOT Item 360
	Stabilized Subgrade	8 inches	See Text

Notes:

1. Asphalt thickness will vary depending on actual traffic volume. In main drive areas, 3 inches of asphalt is more appropriate where as in parking areas with significantly less traffic volume, 2 inches may be suitable.

6.3 Stabilized Subgrade

If the surficial granular soils are left in place (*i.e.* not removed and replaced with structural clay fill during site preparation or to provide site access), we recommend stabilizing the subgrade using lime-fly ash. If the surficial granular soils are removed, we recommend placing lime-stabilized clay fill. The stabilized subgrade should be compacted to at least 95 percent of the maximum dry density as determined by ASTM D698 (Standard Proctor) at a moisture content within 1 percent “dry” to 3 percent “wet” of optimum moisture. Additional recommendations for lime-stabilization and lime-fly ash stabilization are discussed in the *Construction Considerations* Section of this report.

6.4 Crushed Limestone

The crushed limestone base should be in accordance with Texas Department of Transportation (TxDOT) *Standard Specifications for Construction of Highways, Streets, and Bridges*¹ Item 247.

¹ Texas Department of Transportation, *Standard Specifications for Construction of Highways, Streets, and Bridges*, 1993.



Crushed limestone should be compacted to 98 percent of the maximum dry density as determined by TxDOT Test Method Tex-113-E.

6.5 Asphalt

Hot mix asphaltic concrete (HMAC) should be placed in accordance with TxDOT Item 340. The HMAC should be either a Type D or Type C surface course mix. The HMAC should be compacted to between 91 and 95 percent of the theoretical density as described by TxDOT Item 340 Specifications.

6.6 Concrete

Portland cement concrete pavement should be in accordance with TxDOT Item 360. The concrete should have a compressive strength of 3,000 psi or greater at 28 days and be placed in accordance with American Concrete Institute (ACI) guidelines. The Structural Engineer-of-Record for the project should evaluate reinforcement and joint spacing for the concrete section. We recommend that the Portland cement concrete pavement be steel reinforced and that the concrete slabs have sufficient joints to allow for contraction and expansion of the concrete.

6.7 Drainage

The importance of drainage to the proper operation and function of any pavement cannot be overemphasized. The pavement and subgrade surface should be raised above adjacent grade and properly sloped into drainage inlets or lateral ditches. Water should not be allowed to pond on or adjacent to the pavement whereby the subgrade may become saturated. If the pavement subgrade does become saturated, the bearing capacity will be greatly reduced and the useful life of the pavement will be decreased. Periodic inspections and repair of cracks in pavement sections should be performed as part of routine facility maintenance.

6.8 Additional Considerations

We recognize that some of the surficial soils at this project site are moderate to highly plastic. These soils therefore have a moderate to high potential to exhibit shrink-swell behavior with moisture content fluctuations. We recommend that sand ***not*** be used as a leveling course beneath any pavements. The higher permeable granular soils may provide an avenue for moisture to penetrate into the plastic subgrade soils. Pavement distress may result from shrink-swell behavior as well as localized differential settlements of the subgrade fill soils. Thus, pavement maintenance should be performed on a routine basis and include, but not be limited to, the repair of significant stress cracks and joint separations.



7.0 CANAL RECOMMENDATIONS

We understand that the proposed canal could be as much as 10 ft below existing grade and perimeter embankment/levees could be as much as 10 ft above grade. The following provides some general geotechnical recommendations for a conceptual design of the proposed canal and embankments. We believe that the most critical geotechnical design and construction concerns for the encountered subsurface conditions are: 1) the stability of the proposed slopes, 2) shallow groundwater conditions and seepage control, 3) dispersive soils, and 4) erosion protection. Discussion and recommendations addressing each of these concerns is presented below.

7.1 Slope Stability

Canal and embankment/levee slopes should be designed and constructed to be stable with an appropriate factor of safety under short-term (undrained), long-term (drained), and rapid drawdown conditions. Undrained conditions model the slope immediate after construction before internal pore pressures have dissipated, and drained conditions model the slope after internal pore pressures have had sufficient time to dissipate. Rapid drawdown conditions refer to the conditions where the operational canal is drained, after being filled with water, rapidly without allowing time for seepage forces to dissipate. In each case, soil conditions should be based on the generalized site stratigraphy obtained during our field exploration, and the results of field and laboratory tests. The recommendations presented herein are for levees that are on the order of less than 10 feet above surrounding grade.

Based on our review of the soil conditions (*i.e.* predominantly high plasticity cohesive soils) and the assumption that the onsite soils will be reused, we recommend using 4-horizontal to 1-vertical slope when constructing the proposed canal to obtain the acceptable factors of safety. We recommend the top of the levee be on the order of 8 to 10 ft wide to be used as a maintenance road. This will also increase and improve the stability and reduce the potential seepage through the embankment/levee. Slopes should be constructed under "dry" conditions and be observed by the Geotechnical Engineer-of-Record or their qualified representative.

7.2 Groundwater Conditions and Seepage Control

We understand that the proposed canal will have a excavation depth no greater than about 10 ft below existing grade. As noted earlier, we observed depth-to-water levels as shallow as about 8 ft below existing grade in some cases. Thus, the presence of groundwater will be a major facet of construction and operations of the canal. If excavation is to proceed under dry conditions, the project contractor should be prepared to implement temporary groundwater control measures during the canal construction.

The soil conditions within the proposed excavation depths generally consist of natural cohesive soils with layers of granular soils. The encountered granular layers may provide a path for lateral



(side-slope) seepage. This could become a particular concern during construction if the water levels in the adjacent canals or ditches are higher than the depth of the canal excavation. Additionally, hydrostatic uplift on the clay liner and vertical seepage may also be encountered through the bottom of the canal excavation depending on the groundwater conditions at the time of construction. The contractor could have issues with bottom instability if water levels are shallower than the canal bottom before filling the canal. The Contractor should be prepared to address lateral and vertical seepage during the construction of the canal. We expect that sump areas with pumps will be able to handle most of the seepage. If unusual groundwater conditions are encountered along the alignment, the Geotechnical Engineer-of-Record should be consulted to observe the onsite conditions and provide additional recommendations as necessary.

7.3 Presence of Dispersive Soils

Laboratory tests generally did not indicate presence of dispersive soils. However, our experience in this area indicates they can be found in isolated areas that do not extend across the entire site. Ultimately, the degree that the project design addresses the presence of dispersive soils will be dependent upon how much risk the CWA is willing to accept. Thus, CWA may select to treat the presence of possible dispersive soils as a maintenance issue rather than a design issue. We can provide recommendations if CWA wishes to address the issue.

7.4 Erosion Protection

The performance of the canal will be dependent upon the ability of the slopes to maintain their integrity over the life of the canal. Therefore, the slopes will require erosion protection. The aim of erosion protection should be to reduce surface erosion from runoff. We expect that natural grass cover should be sufficient in providing adequate erosion protection for the slopes along the proposed canal. A layer of topsoil, usually on the order of 6 inches, will be required to promote grass growth. The grass cover should be properly maintained and the canal should be monitored for signs of distress. An operations plan should be developed to schedule periodic maintenance and provide procedures for addressing isolated erosion or other distress.

7.5 Construction of Canal and Embankment

7.5.1 Canal Excavation. We understand that within the canal alignment, the soils to a depth of up to 10 ft will be excavated and used for construction for the embankment/levees. While we expect the majority of the canal alignment to be excavated to expose primarily cohesive soils, there will be locations where the canal excavations will expose granular soils. Plate 9 presents a schematic cross-section of excavations exposing cohesive soils and granular soils. Where granular soils are encountered, we recommend over-excavating 24 inches and placing a clay liner. Recommendations for the properties of the clay liner are presented on Plate 9. Where cohesive soils are encountered, we recommend over-excavating 18 inches and placing a clay liner.



7.5.2 Embankment. As noted on the boring logs, the soils to a depth of up to 10 ft primarily consist of a mixture of high plasticity clays, moderate plasticity clays, and silts and silty sands. The clay soils generally have a very low hydraulic conductivity (*i.e.* seepage is less than granular soils). However, highly plastic clay soils also have a greater potential for shrink-swell and can develop shrinkage cracks and eventually develop zones of weakness in the embankments. These soils may be suitable for clay fill and used to construct the levees/embankments as long as CWA is aware of the potential risks associated with the use of such soils. We recommend that field observation and/or confirmatory laboratory tests be performed on potential fill soils prior to their use. To reduce the risk of shrinkage cracks, where possible, the contractor should use the higher plasticity cohesive soils near the core and interior of the levee and use lower plasticity cohesive soils near the surface and exterior of the levee. Plate 10 presents a general cross-section of the proposed embankment sections and recommendations for the soil properties and compaction requirements.

In the footprint of the embankment/levees, we recommend that clearing and grubbing to a depth of 12 to 18 inches to remove silty soils, organic, and deleterious material. We recommend cutting a key at least 24 inches deep along the center of the levee at least 4 ft wide. The area should be proofrolled and areas of loose or soft soil, organics, granular soil, or otherwise incompetent soils, should be removed and replaced with properly placed and compacted clay fill. Prior to placing the fill, the exposed surface should be scarified to a depth of 3 to 6 inches. The embankment/levees should be constructed to design grade using properly placed and compacted clay fill. Grass cover should be planted on the completed slopes as soon as possible to reduce the potential for erosion.

7.5.3 Fill Soils. Clay fill should be free of deleterious matter and should have an effective clod diameter less than 3 inches. Clay fill should *not* include dispersive soils. Clay fill should be placed in 6- to 8-inch-thick loose lifts and uniformly compacted to 95 percent of the maximum dry density at a moisture content of 1 percent "dry" to 3 percent "wet" of optimum as determined by ASTM D698 (Standard Proctor). Clay fill should be compacted by a sheepsfoot or padfoot type roller or by alternative methods that provide a "kneading" compaction equivalent to the sheepsfoot or padfoot roller. The earthwork contractor should scarify the top couple of inches of the underlying material before placing the next lift. Note that highly plastic soils are more difficult to place and compact properly. Therefore, good moisture control, quality control, and testing should be performed.

Soils used for the clay liner should have greater than 60 percent passing the No. 200 sieve, a liquid limit (LL) greater than 20 and a plasticity index (PI) greater 7, and a hydraulic conductivity less than 10^{-7} cm/s. We would expect embankments constructed out of properly placed and compacted fill to settle on the order of 1 to 3 percent of the levee height. For a 10-foot high levee, we would expect long-term consolidation settlements on the order of 1 to 3 inches.



7.6 Weir Structures

Through discussions with AECOM, we understand weir structures may be constructed along the canal alignment to maintain water levels throughout the canal. Although we have not been provided with the final locations or the type of weir structure, the following presents general considerations and preliminary recommendations for the design of the weirs.

Prior to final design, we recommend drilling a boring at each weir location to identify the subsurface conditions and to develop geotechnical recommendations. Generally, we recommend weirs be founded at least 3 feet below the base of the deepest part of the canal and extending 5 feet into the soils surrounding the canal. The weir should be designed to resist the lateral forces applied by the active earth pressure (150 psf) and water. We recommend using a preliminary bearing capacity of 2,500 psf for the weir foundation. We also recommend using a preliminary value of 300 psf for the passive pressure for cohesive soil to provide lateral support to the weir structure. These pressures include a factor of safety of 2.0. Proper erosion control should be provided upstream and downstream of the wear structure.



8.0 LAKE HOUSTON OUTFALL STRUCTURE

Current plans indicate there will be an outfall structure where the canal drains to Lake Houston. We have not been provided with any information by AECOM with regards to the type of structure that will be constructed at the proposed outfall. However, we expect a weir type structure may be constructed along with a metering or power generation facility. General recommendations for a weir structure is presented in Section 7.6. We can provide additional recommendations for other structures once details are developed by AECOM.



9.0 ADDITIONAL CONSTRUCTION CONSIDERATIONS

The following subsections provide our construction considerations for general site preparation including tree removal and general site access, shallow open-cut excavations, structural clay fill, lime stabilization, and lime fly-ash stabilization, and construction monitoring.

9.1 General Site Preparation Recommendations and Considerations

Several areas along the project alignment, including areas near the pump station, transition between pipeline and canal, and at the discharge into Lake Houston are heavily wooded and site preparation will be an essential aspect of construction. The following sections provide general recommendations for tree removal and site preparation.

9.1.1 Tree Removal. We recommend that the removal of trees within the footprint of the proposed structures and pavements and along the proposed alignment be conducted as soon as possible to allow the onsite soil moisture conditions to reach a new equilibrium. The potential for the onsite soils to exhibit expansive behavior, *i.e.* shrinkage and swelling, is a function of the soil moisture conditions at the time of construction and the degree that the moisture profile changes with time. The removal of trees should include the removal of all rootballs and roots associated with the root structures of the removed trees. The excavations should be filled with properly placed and compacted structural clay fill. We recommend any burning of site debris be performed outside of any potentially developed areas.

9.1.2 General Site Access. In addition, general site preparation should include clearing and grubbing all significant surficial vegetation, organic materials, debris, and other deleterious materials below and extending at least 5 feet beyond the edges of the footprint of the proposed developed areas. Moisture conditioning may be required depending on the moisture condition at the time of construction. Surficial granular soils may be encountered in these areas following site-clearing operations. The surficial granular soils, if encountered, may be problematic in their natural state during the proposed construction activities. These soils can be relatively strong and stable when they are dry, but when they become wet, they can quickly lose their strength and load carrying ability.

If site access becomes problematic, we recommend stripping the upper 6 inches of the existing granular soils below developed areas. If the remaining granular soils are dry at the time of construction, we recommend stabilizing all granular soils below developed with a combination of lime and fly ash. As much as 2 ft of soil may require stabilization. This will require a staging area where the soils can be stabilized before being replaced and compacted. Soil stabilization is discussed in more detail in the following sub-sections. If surficial stabilization is not effective, or the granular soils are wet at the time of construction, we recommend removing the granular soils completely and replacing them with properly placed and compacted structural clay fill.



9.2 Shallow Open-Cut Excavations

Excavation safety systems should be in accordance with federal OSHA Standards, 29 CFR Part 1926 (Revised July 1992), Subpart P, Excavations. Details for open-cut slopes and excavation shoring based on soil type and groundwater conditions are provided in the latest amended OSHA federal regulations.

Excavations should be designed in accordance with all applicable local, state, and federal trenching regulations. Based on our interpretation of the regulations and the subsurface conditions indicated in the borings drilled at this site, we classify the natural cohesive soils as Type B soils and the surficial granular soils and any fill soils as Type C soils. Excavations deeper than about 4 feet should be either braced or sloped back no steeper than 1-horizontal to 1-vertical in Type B soils and 1.5-horizontal to 1-vertical in Type C soils. Flatter slopes or bracing should be used if sloughing or raveling is observed.

We recommend that the Geotechnical Engineer-of-Record or their qualified representative observe foundation excavations immediately prior to placing concrete. The engineer should compare the soils exposed with those encountered in the soil test borings and document the results. Any significant differences should be brought to the attention of the Owner's representative.

Foundation soils exposed by the excavations should be protected from disturbance due to construction activities. We recommend that the foundations be placed the same day the excavation is completed. Consideration should be given to placing a seal slab of lean concrete to protect the bottom of excavations from disturbance. Good surface drainage away from all excavations should be established to prevent surface runoff from either flooding the excavations or ponding around the completed foundations. Pumps should be available onsite to handle any runoff or seepage into excavations. The contractor should separate excavated materials into stockpiles with similar properties for future use.

9.3 Structural Clay Fill

Structural clay fill may be used as backfill after the removal of the surficial soils and to attain design grade, to construct building pad, and as otherwise directed in this report. We recommend using low plasticity cohesive soils for structural clay fill. Structural clay fill should have a liquid limit of less than 40, and a plasticity index between 10 and 20. Structural clay fill should be free of deleterious matter and should have an effective clod diameter less than 3 inches. ***We do not recommend mixing moderate or high plasticity clays with sand to achieve the requirements of structural clay fill.*** We recommend that swell tests be performed to evaluate suitability of the material as structural clay fill especially in areas of the building pad.

Structural clay fill should be placed in 6- to 8-inch-thick loose lifts and uniformly compacted to 95 percent of the maximum dry density at a moisture content of 1 percent "dry" to 3 percent "wet" of optimum as determined by ASTM D698. Structural clay fill should be compacted by a



sheepsfoot or padfoot type roller, or by alternative methods that provide a “kneading” compaction equivalent to the sheepsfoot or padfoot roller. We recommend using hand-operated compaction equipment and 4-inch-thick loose lifts adjacent to foundations and in confined areas.

If wet weather or extended dry periods deteriorate the surface whereby a good bond cannot be formed between successive lifts, the earthwork Contractor should prepare the surface as necessary. This preparation may include removing or scarifying the top couple of inches of the underlying material before placing the next lift.

Some of the onsite cohesive soils meet the plasticity requirements for structural clay fill. We recommend that confirmatory tests should be conducted prior to the use of the onsite cohesive soils as structural clay fill.

9.4 Lime-Stabilized Clay Fill

Lime-stabilization may be used to modify potential clay fill materials. Laboratory tests should be conducted at the time of construction to determine the optimum lime content. The optimum lime content is the amount of lime necessary to achieve a pH of 12.4 (which represents lime fixation), while trying to achieve a plasticity (PI) of less than 20. For estimation purposes, about 4 to 6 percent lime, by dry weight, may be required to stabilize the onsite moderate to high plasticity clay soils. Organics, chemical fertilizers, and some clay minerals can modify the amount of lime necessary for lime fixation. We recommend that a lime series be performed using the specific soil samples and proposed lime additive.

Lime-stabilization should be done in accordance with the Lime Association recommendations. Key items for lime-stabilizing the clay soils include placing the proper percentage of lime, thoroughly mixing the lime into the clay soils, bringing the stabilized soil to the proper moisture content, allowing the stabilized soil to cure for at least 48 hours, adjusting the moisture content from 1 percent dry to 3 percent wet of optimum moisture content, pulverizing the soils again until the lime is thoroughly blended, then placing the stabilized soil in accordance with the recommendations discussed herein.

The moisture-density relationship should be established based on a material sample obtained on-site after stabilization with lime. A combination of sheepsfoot or padfoot rollers and pneumatic rollers is recommended to compact the lime-stabilized clay fill. We recommend using hand-operated compaction equipment and 4-inch-thick loose lifts adjacent to foundations and in confined areas. Care should be taken not to over-compact next to basement walls. Excessive compaction could induce lateral pressures that are greater than the design pressures.

The percentages of lime usually required to stabilize clay is detrimental to vegetation. Vegetation generally does not thrive well in or around lime-stabilized clay. To support vegetation, a thick layer of topsoil is usually placed on top of the stabilized clay.



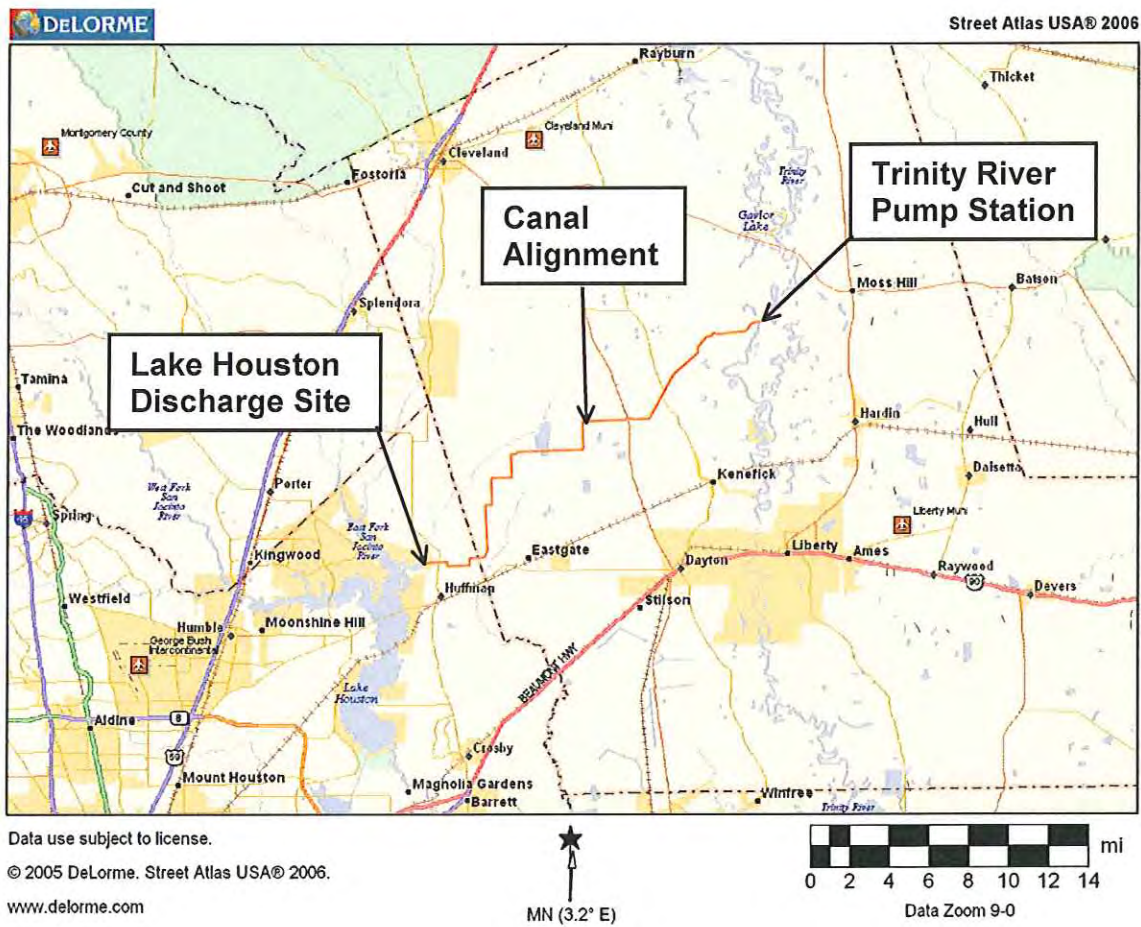
9.5 Lime-Fly Ash Stabilization

Lime-fly ash stabilization may be performed to treat the onsite granular soils. Laboratory tests should be performed at the time of construction to determine the optimum lime-fly ash content and the ratio to be applied to the silty clay soils. We estimate about 3 percent lime and 6 percent fly ash by dry weight may be required to stabilize the onsite silty soils. Generally, the recommended ratio of lime to fly ash is between 1-to-2 and 1-to-3. The actual amount of lime-fly ash required will vary depending on the type of fly ash available, the gradation of the silty clay soils, and the plasticity of the silty clay soils. Fly ash should conform to the requirements of ASTM C618 and meet the following requirements: 1) have a minimum CaO content of 20 percent, 2) loss on ignition should not exceed 3 percent, and 3) contain no lignite.

The lime-fly ash stabilized soil subgrade should be thoroughly mixed and then recompact to 95 percent of maximum dry density determined by Standard Proctor (ASTM D698). Mixing should be performed using an approved single-pass or multiple-pass rotary speed mixer to obtain a homogenous mixture. The moisture-density relationship should be established based on a material sample obtained from the on-site silty soils after stabilization with lime-fly ash has taken place.

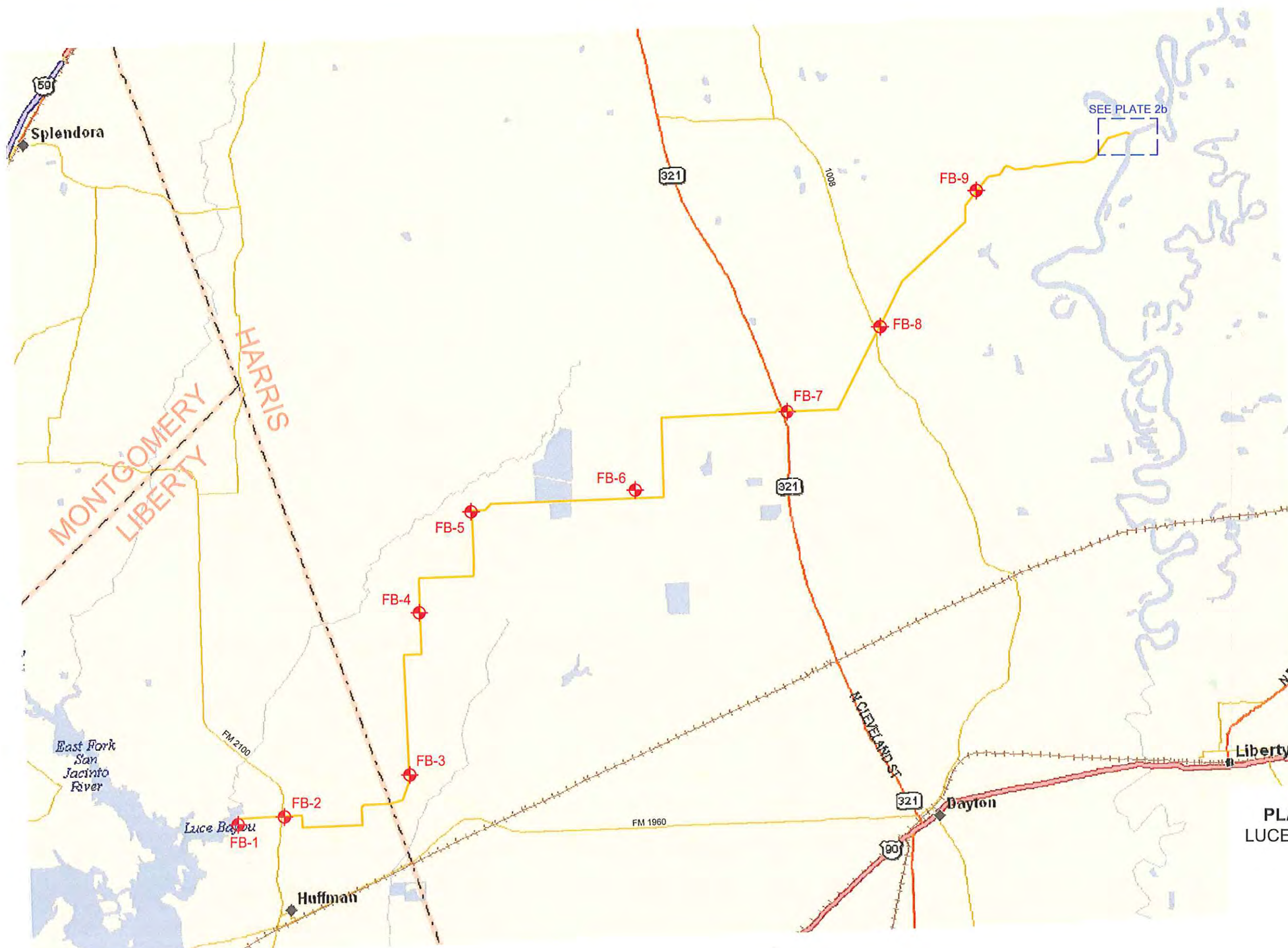


ILLUSTRATIONS



VICINITY MAP
LUCÉ BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HARRIS AND LIBERTY COUNTIES, TEXAS





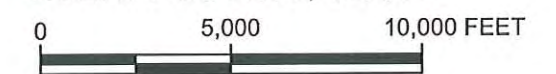
LEGEND

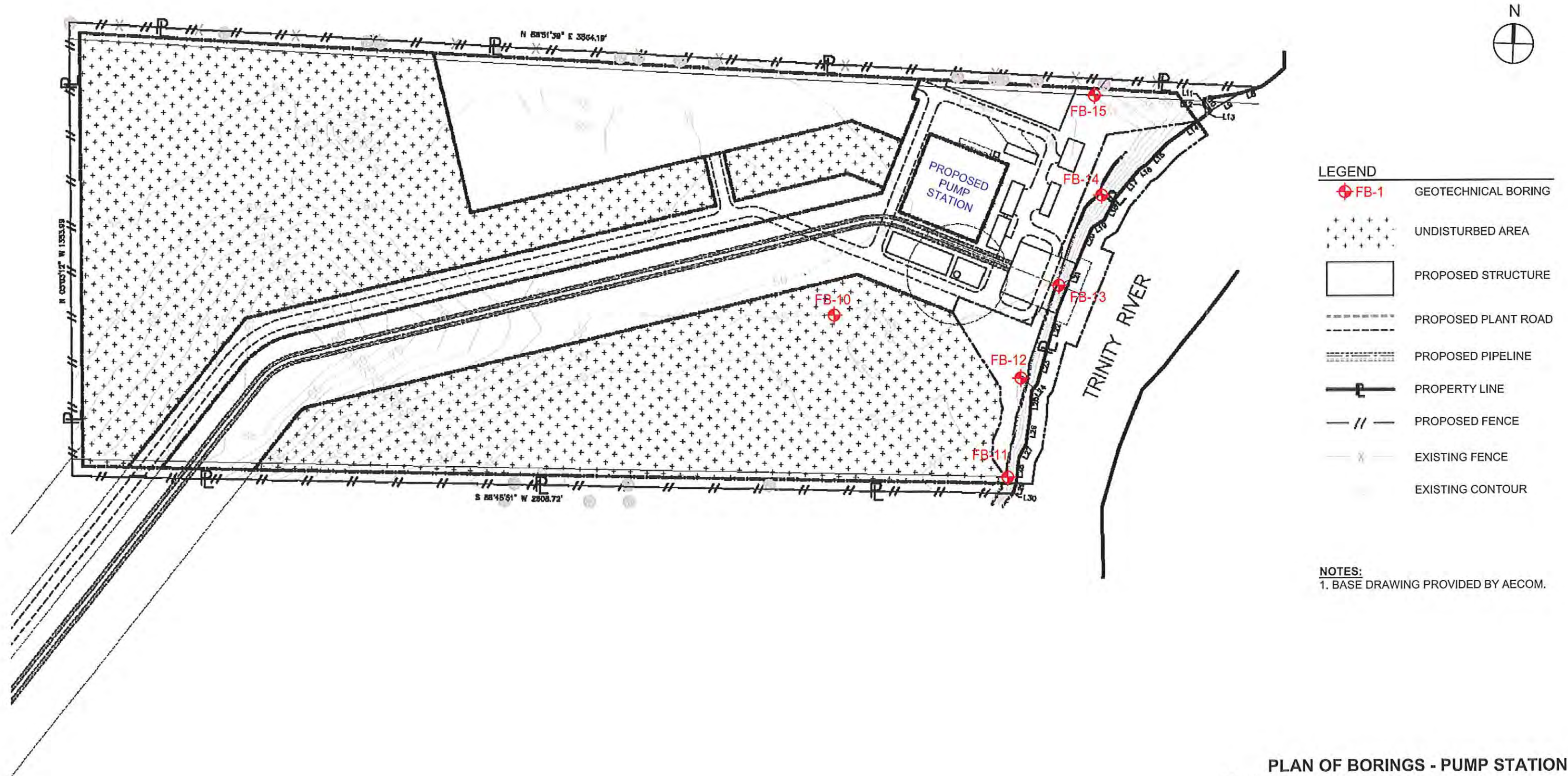
- FB-1 GEOTECHNICAL BORING
- CANAL ALIGNMENT

NOTES:

1. BORING LOCATIONS ARE APPROXIMATE.
2. BASE DRAWING PROVIDED BY AECOM.

**PLAN OF BORINGS - PROJECT ALIGNMENT
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 LIBERTY COUNTY, TEXAS**





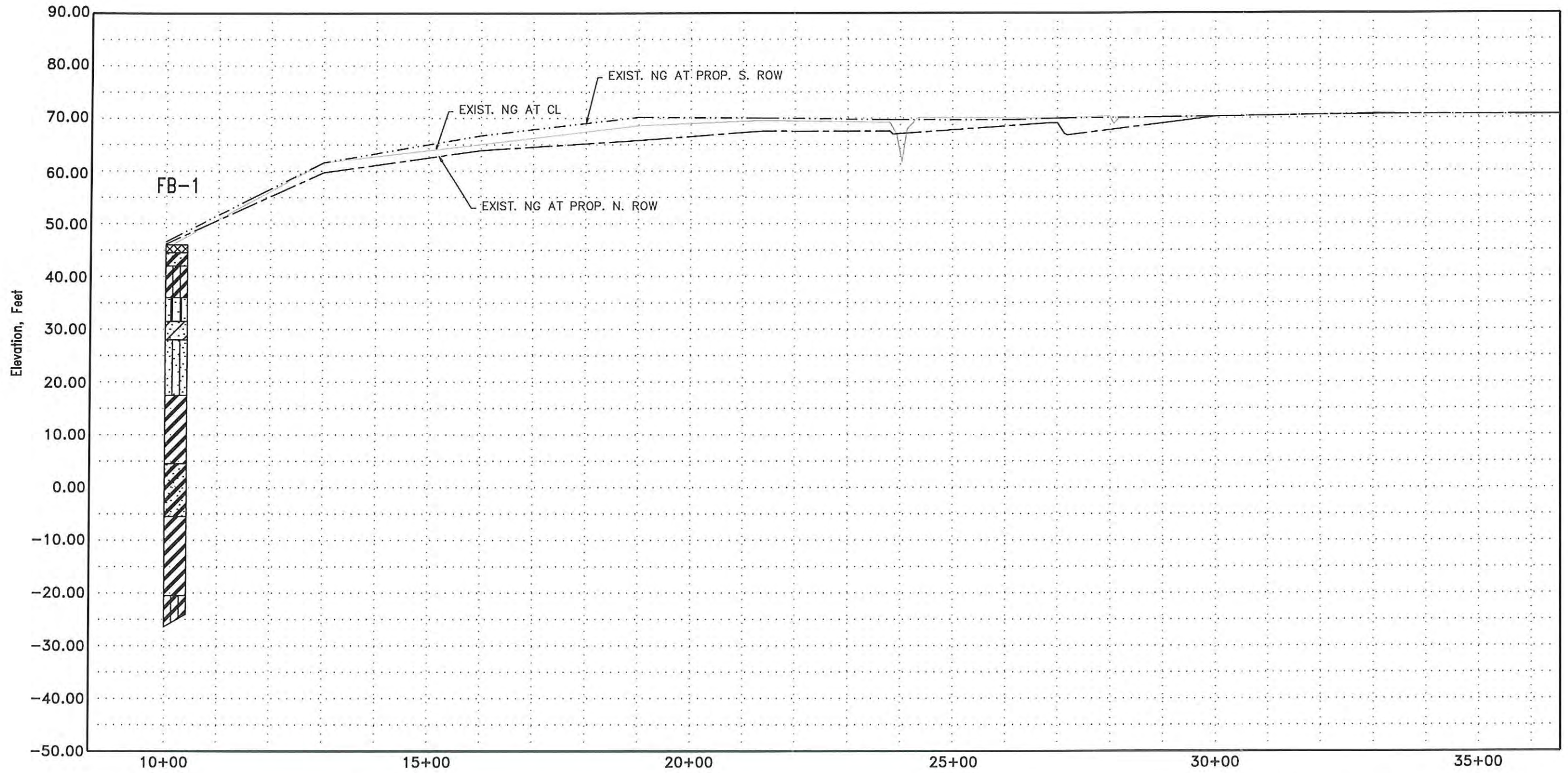
LEGEND

	FB-1	GEO TECHNICAL BORING
		UNDISTURBED AREA
		PROPOSED STRUCTURE
		PROPOSED PLANT ROAD
		PROPOSED PIPELINE
		PROPERTY LINE
		PROPOSED FENCE
		EXISTING FENCE
		EXISTING CONTOUR

NOTES:
1. BASE DRAWING PROVIDED BY AECOM.

PLAN OF BORINGS - PUMP STATION
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 LIBERTY COUNTY, TEXAS





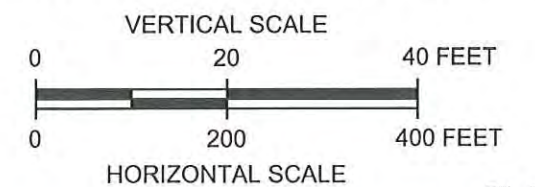
LEGEND

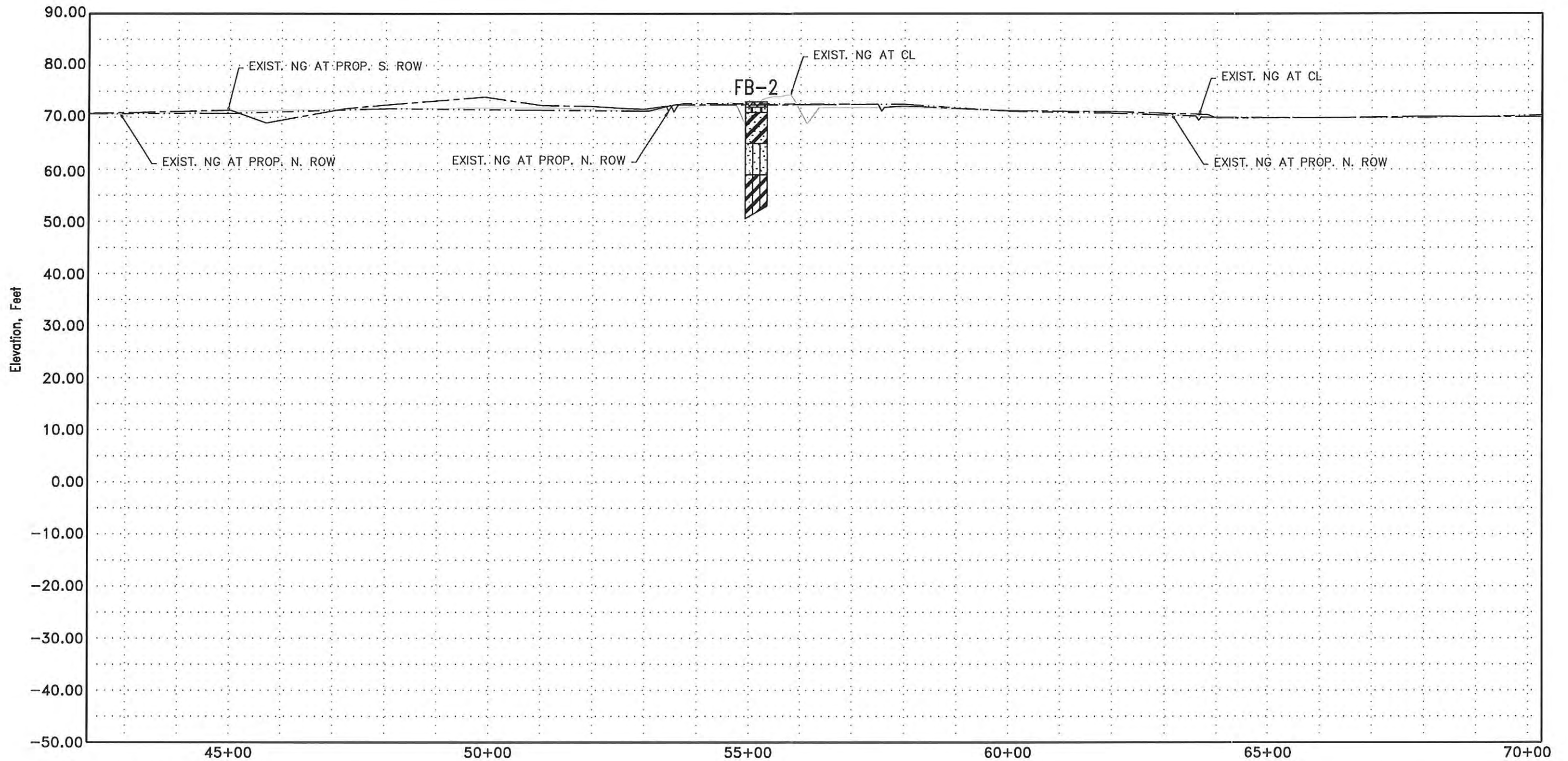
SAND	SILT	CLAY	FILL
SILTY SAND	SANDY SILT	SANDY CLAY	
CLAYEY SAND	CLAYEY SILT	SILTY CLAY	

Notes:

1. Data concerning subsurface conditions was obtained at boring locations only.
2. Alignment data provided by AECOM.

SUBSURFACE PROFILE - ALONG ALIGNMENT





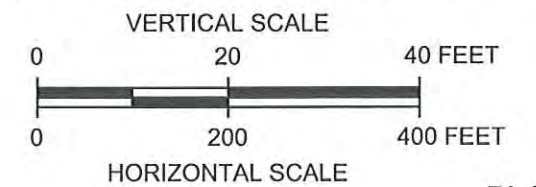
LEGEND

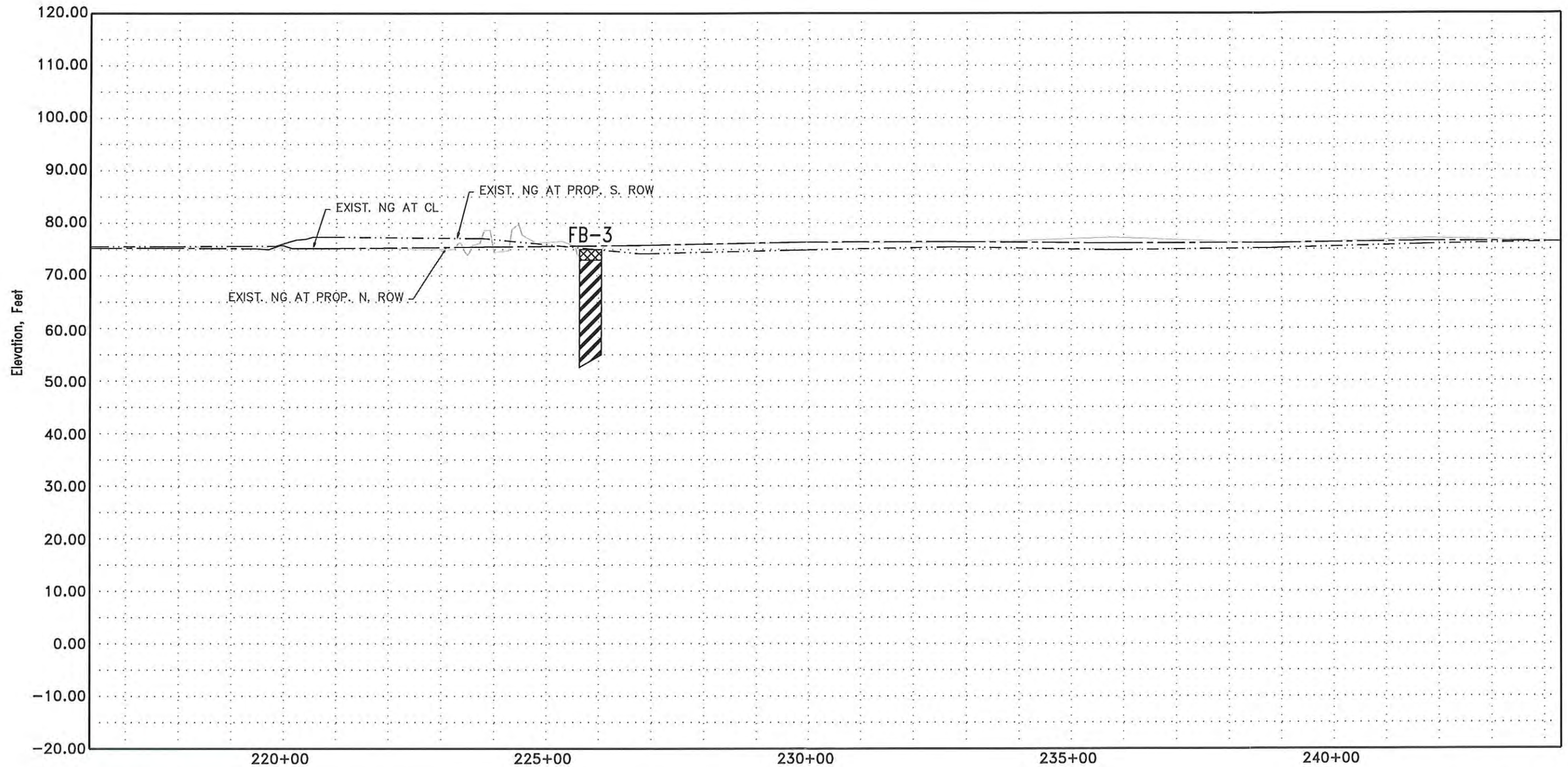
SAND	SILT	CLAY	FILL
SILTY SAND	SANDY SILT	SANDY CLAY	
CLAYEY SAND	CLAYEY SILT	SILTY CLAY	

Notes:

1. Data concerning subsurface conditions was obtained at boring locations only.
2. Alignment data provided by AECOM.

SUBSURFACE PROFILE - ALONG ALIGNMENT





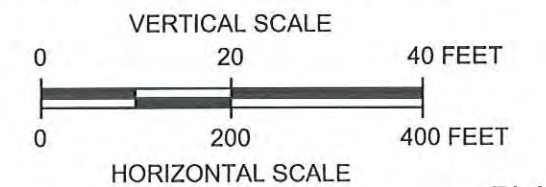
LEGEND

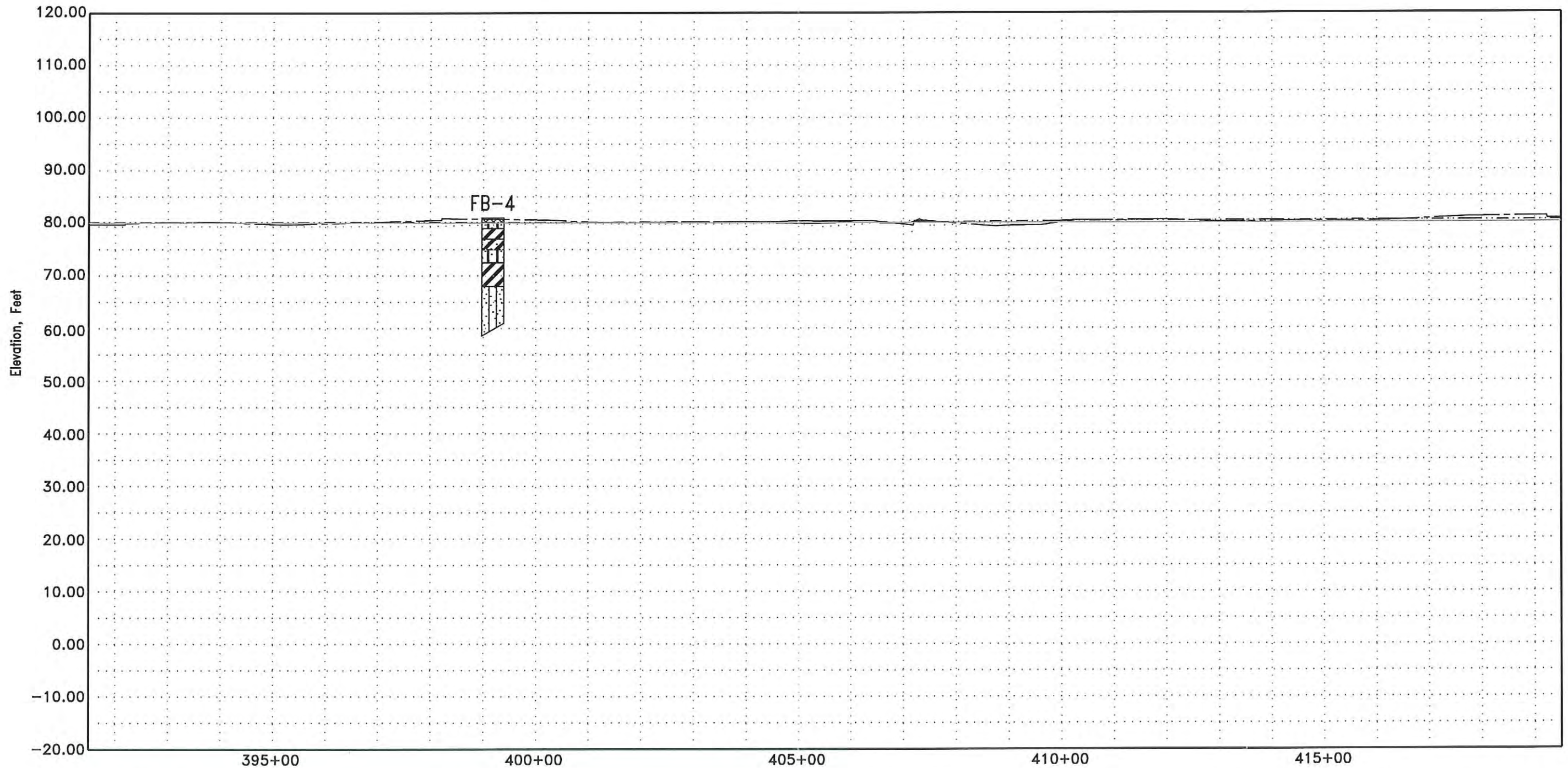
SAND	SILT	CLAY	FILL
SILTY SAND	SANDY SILT	SANDY CLAY	
CLAYEY SAND	CLAYEY SILT	SILTY CLAY	

Notes:

1. Data concerning subsurface conditions was obtained at boring locations only.
2. Alignment data provided by AECOM.

SUBSURFACE PROFILE - ALONG ALIGNMENT





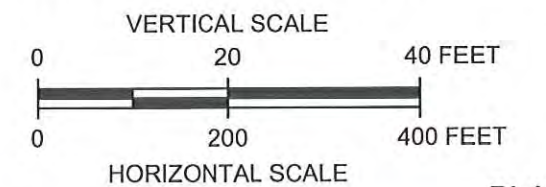
LEGEND

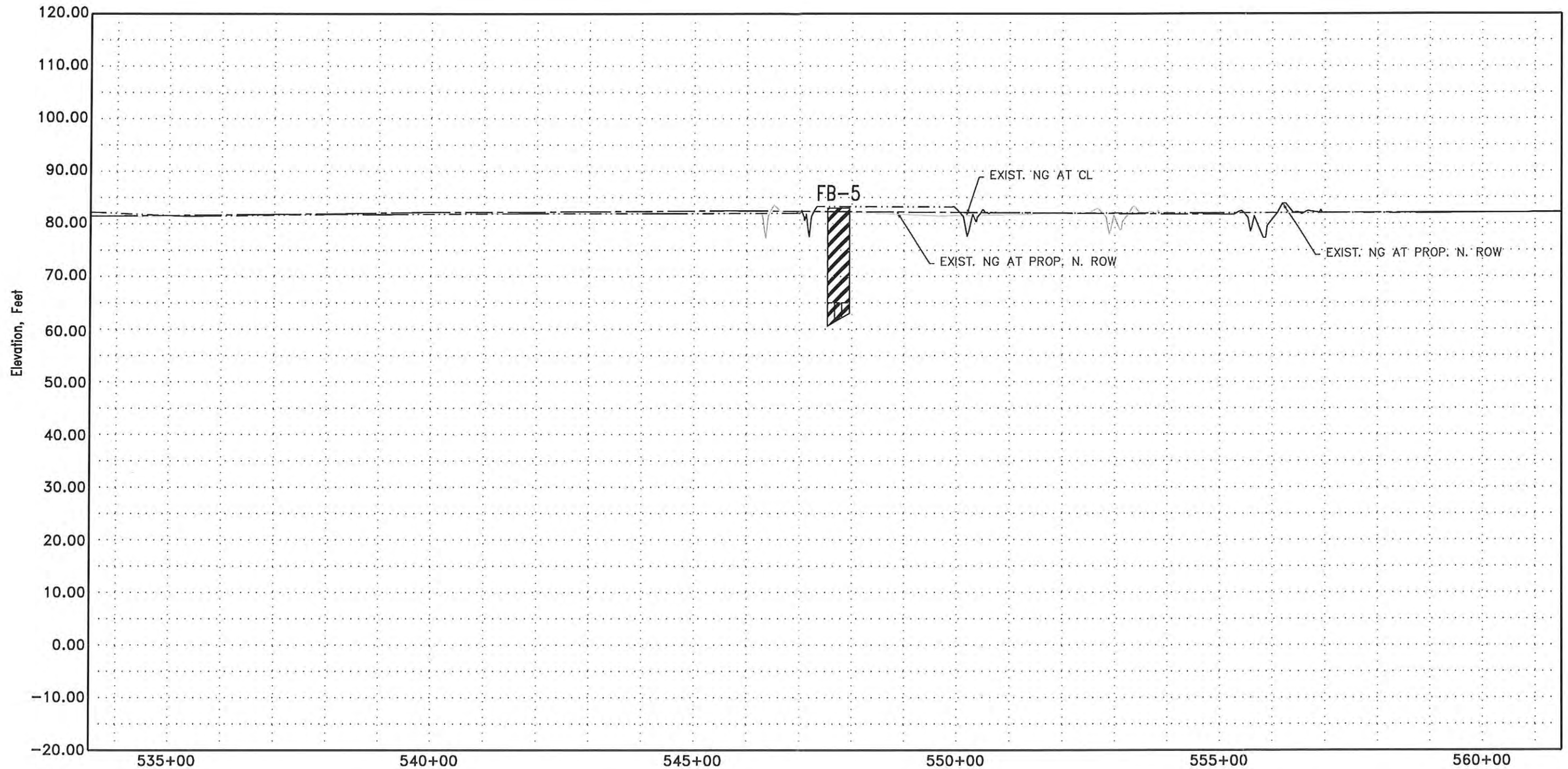
SAND	SILT	CLAY	FILL
SILTY SAND	SANDY SILT	SANDY CLAY	
CLAYEY SAND	CLAYEY SILT	SILTY CLAY	

Notes:

1. Data concerning subsurface conditions was obtained at boring locations only.
2. Alignment data provided by AECOM.

SUBSURFACE PROFILE - ALONG ALIGNMENT





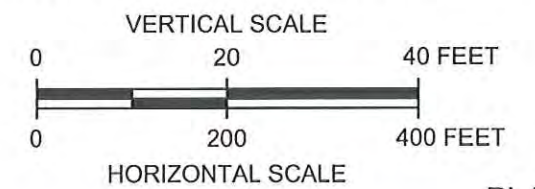
LEGEND

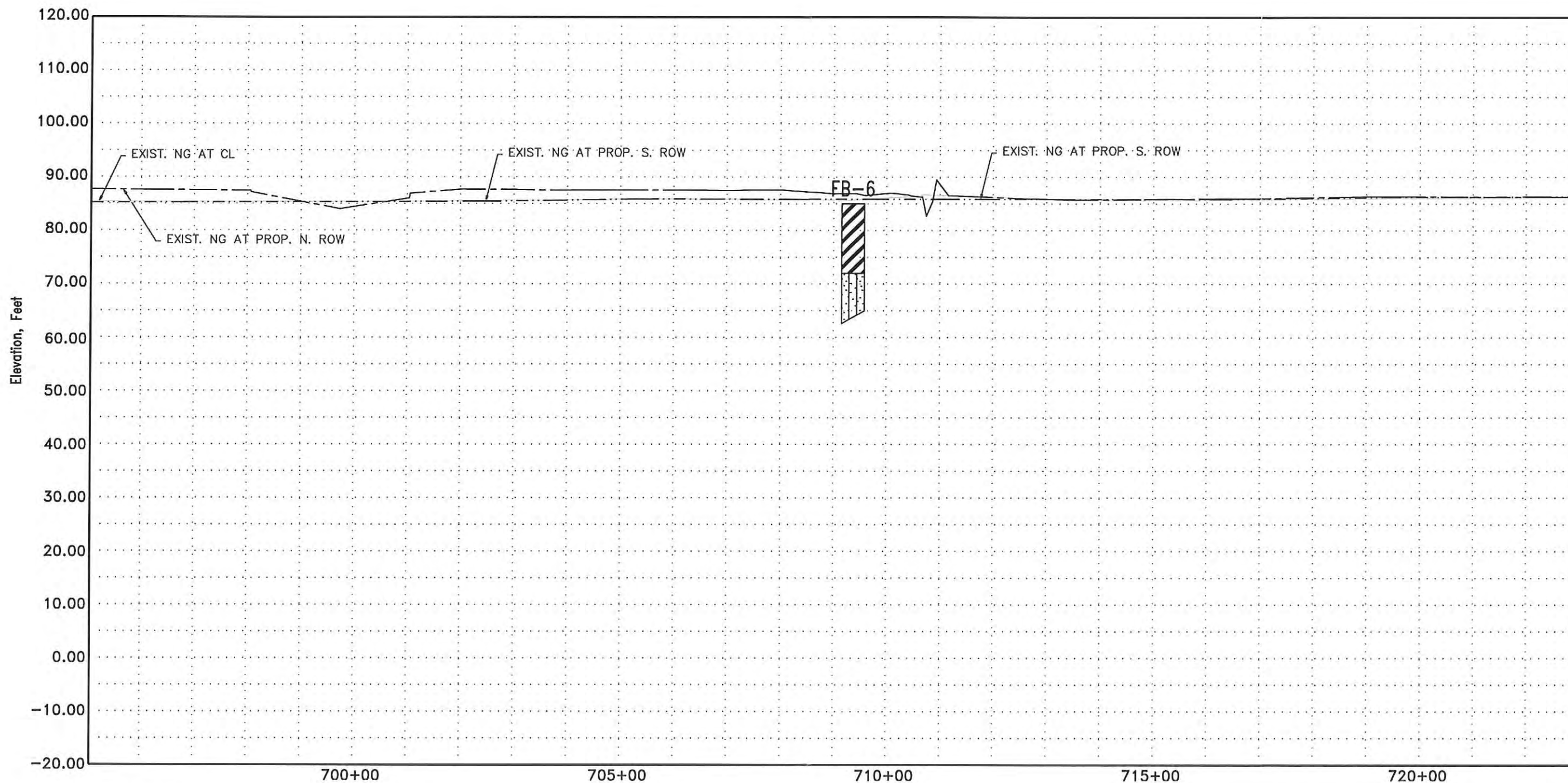
SAND	SILT	CLAY	FILL
SILTY SAND	SANDY SILT	SANDY CLAY	
CLAYEY SAND	CLAYEY SILT	SILTY CLAY	

Notes:

1. Data concerning subsurface conditions was obtained at boring locations only.
2. Alignment data provided by AECOM.

SUBSURFACE PROFILE - ALONG ALIGNMENT



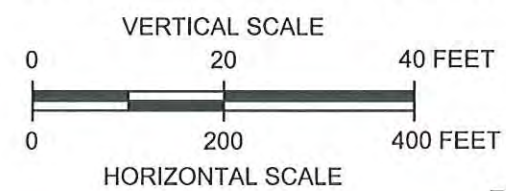


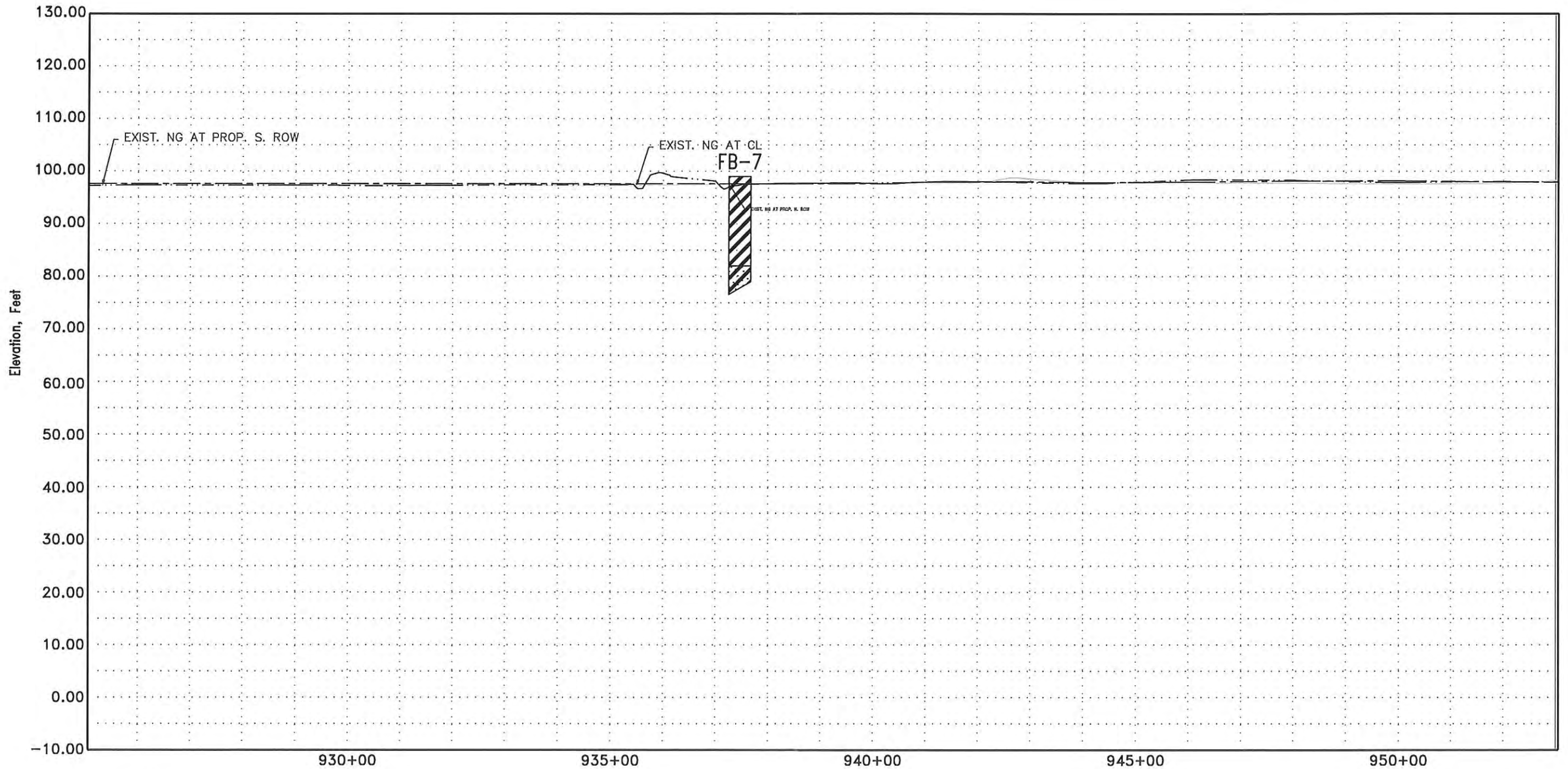
LEGEND

SAND	SILT	CLAY	FILL
SILTY SAND	SANDY SILT	SANDY CLAY	
CLAYEY SAND	CLAYEY SILT	SILTY CLAY	

Notes:
 1. Data concerning subsurface conditions was obtained at boring locations only.
 2. Alignment data provided by AECOM.

SUBSURFACE PROFILE - ALONG ALIGNMENT





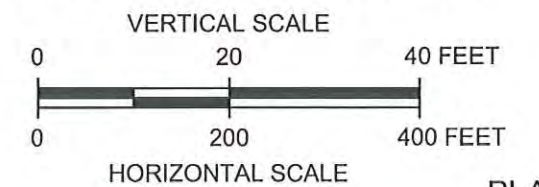
LEGEND

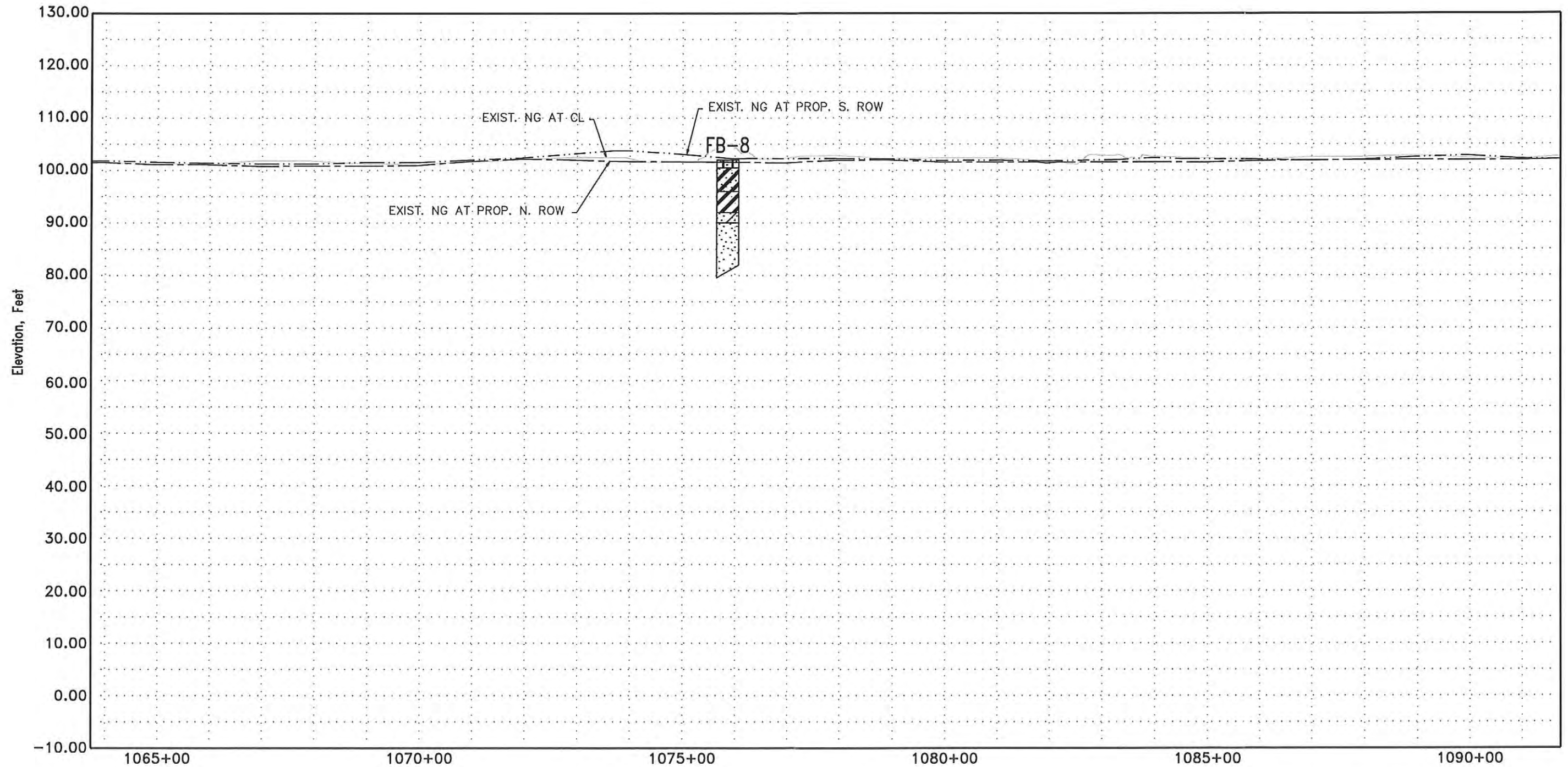
SAND	SILT	CLAY	FILL
SILTY SAND	SANDY SILT	SANDY CLAY	
CLAYEY SAND	CLAYEY SILT	SILTY CLAY	

Notes:

1. Data concerning subsurface conditions was obtained at boring locations only.
2. Alignment data provided by AECOM.

SUBSURFACE PROFILE - ALONG ALIGNMENT





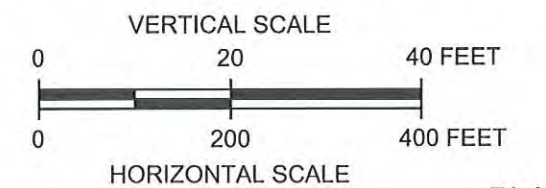
LEGEND

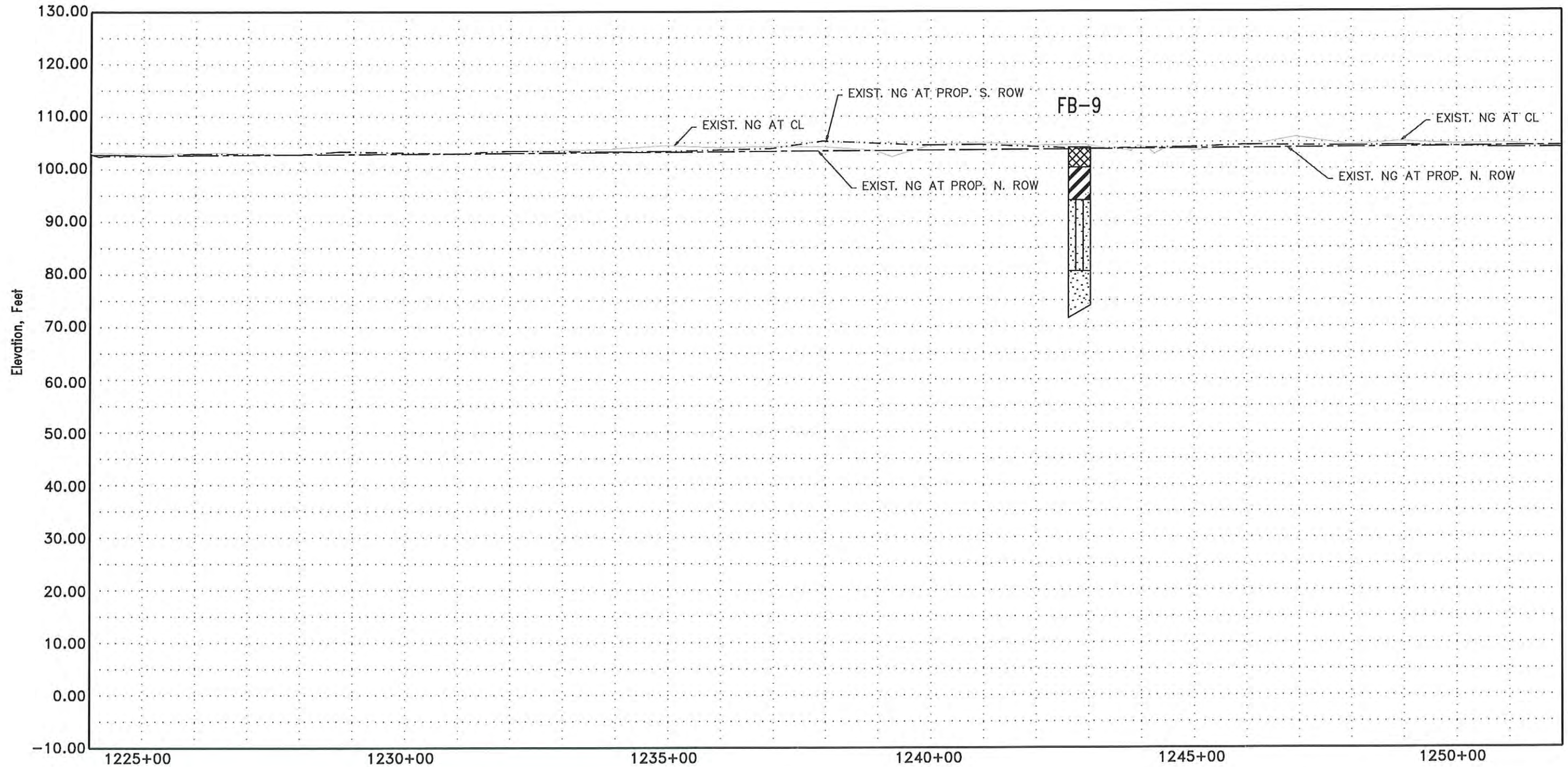
SAND	SILT	CLAY	FILL
SILTY SAND	SANDY SILT	SANDY CLAY	
CLAYEY SAND	CLAYEY SILT	SILTY CLAY	

Notes:

1. Data concerning subsurface conditions was obtained at boring locations only.
2. Alignment data provided by AECOM.

SUBSURFACE PROFILE - ALONG ALIGNMENT



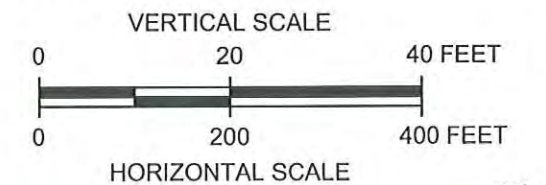


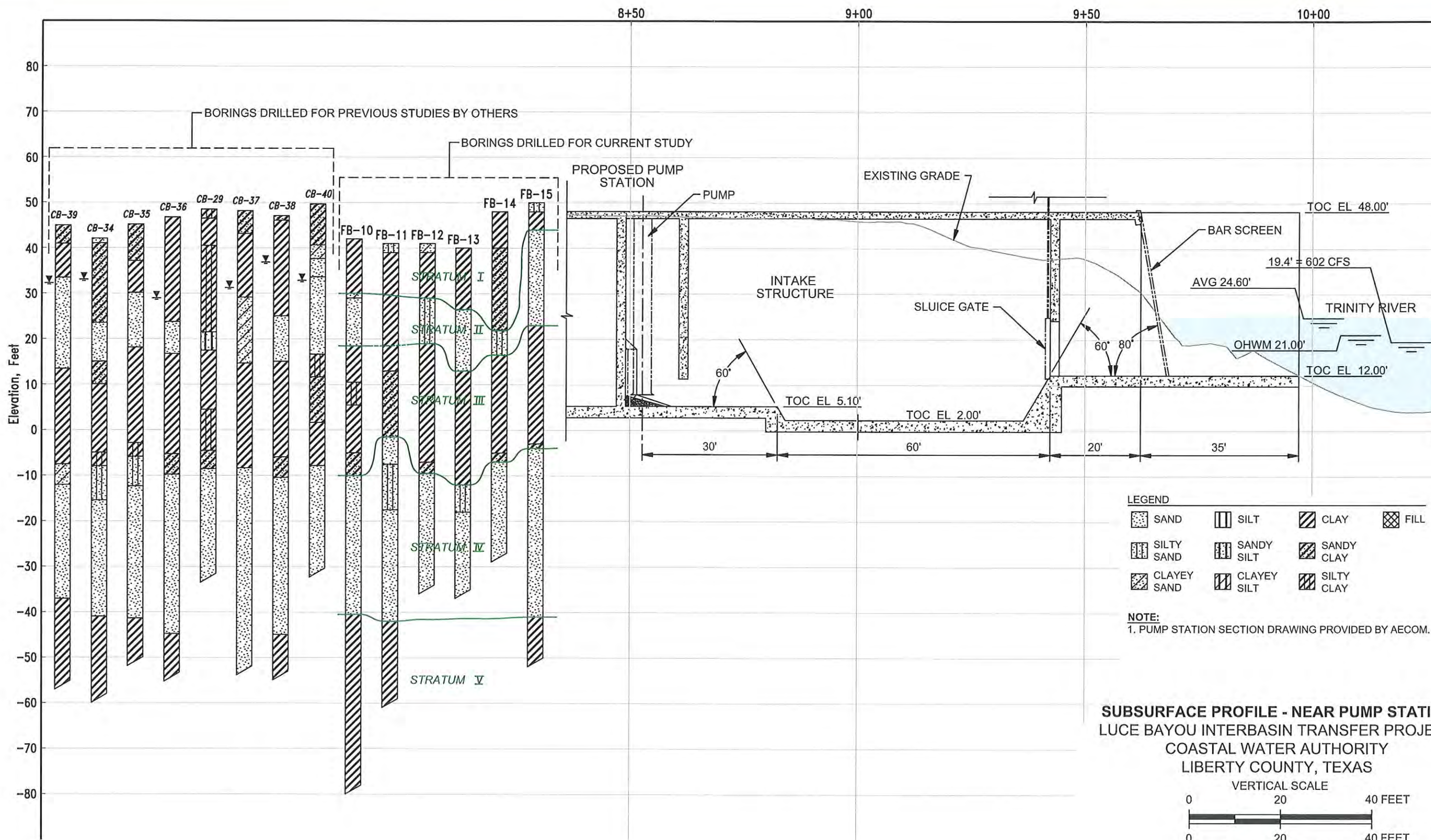
LEGEND

SAND	SILT	CLAY	FILL
SILTY SAND	SANDY SILT	SANDY CLAY	
CLAYEY SAND	CLAYEY SILT	SILTY CLAY	

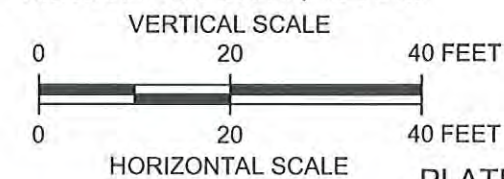
Notes:
 1. Data concerning subsurface conditions was obtained at boring locations only.
 2. Alignment data provided by AECOM.

SUBSURFACE PROFILE - ALONG ALIGNMENT





SUBSURFACE PROFILE - NEAR PUMP STATION
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 LIBERTY COUNTY, TEXAS



FOUNDATION DESIGN CRITERIA

A properly-sized foundation must satisfy the two following criteria with respect to the supporting soil.

1. For soil strength. The bearing pressure created on the base of the foundation by the maximum design load must be less than that which would cause shear failure in the soil. A factor of safety of 2 or more with respect to the soil shear strength is generally used.
2. For soil compressibility. The bearing pressure created on the base of the foundation by the sustained load must not produce sufficient consolidation in the underlying soil to result in foundation settlement that is detrimental to the safety or utility of the structure.

TERMS AND SYMBOLS

P = Column load (subscript can be used to denote character of load: P_s = sustained load, P_n = normal operating load, P_m = maximum design load).

W_e = Weight of soil located above base of foundation excavation and lowest adjacent grade.*

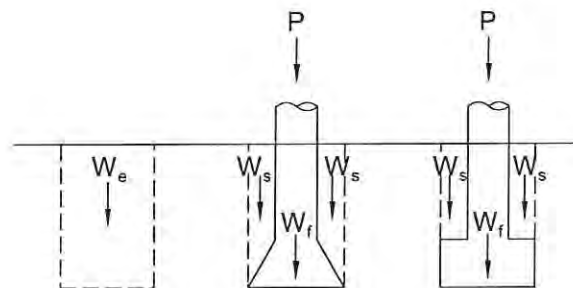
W_s = Weight of soil located above foundation.*

W_f = Weight of foundation.*

A = Area of base of foundation.

p = Average bearing pressure acting on soil (subscript can be used to correspond to column load: P_s, P_n, P_m).

* Position of groundwater level must be considered in determining weights. Effective, or buoyant, unit weights should be used below the highest expected groundwater level.



SYMBOLS

BEARING PRESSURES

Gross Bearing Pressure, p , for any column load is the total pressure acting on the base of the foundation.

$$p = 1/A (P + W_s + W_f)$$

Net Bearing Pressure, p' , for any column load is the difference between the gross bearing pressure acting on the base of the foundation and the soil pressure existing at that elevation from the lowest overlying or adjacent soils.

$$p' = 1/A (P + W_s + W_f - W_e)$$

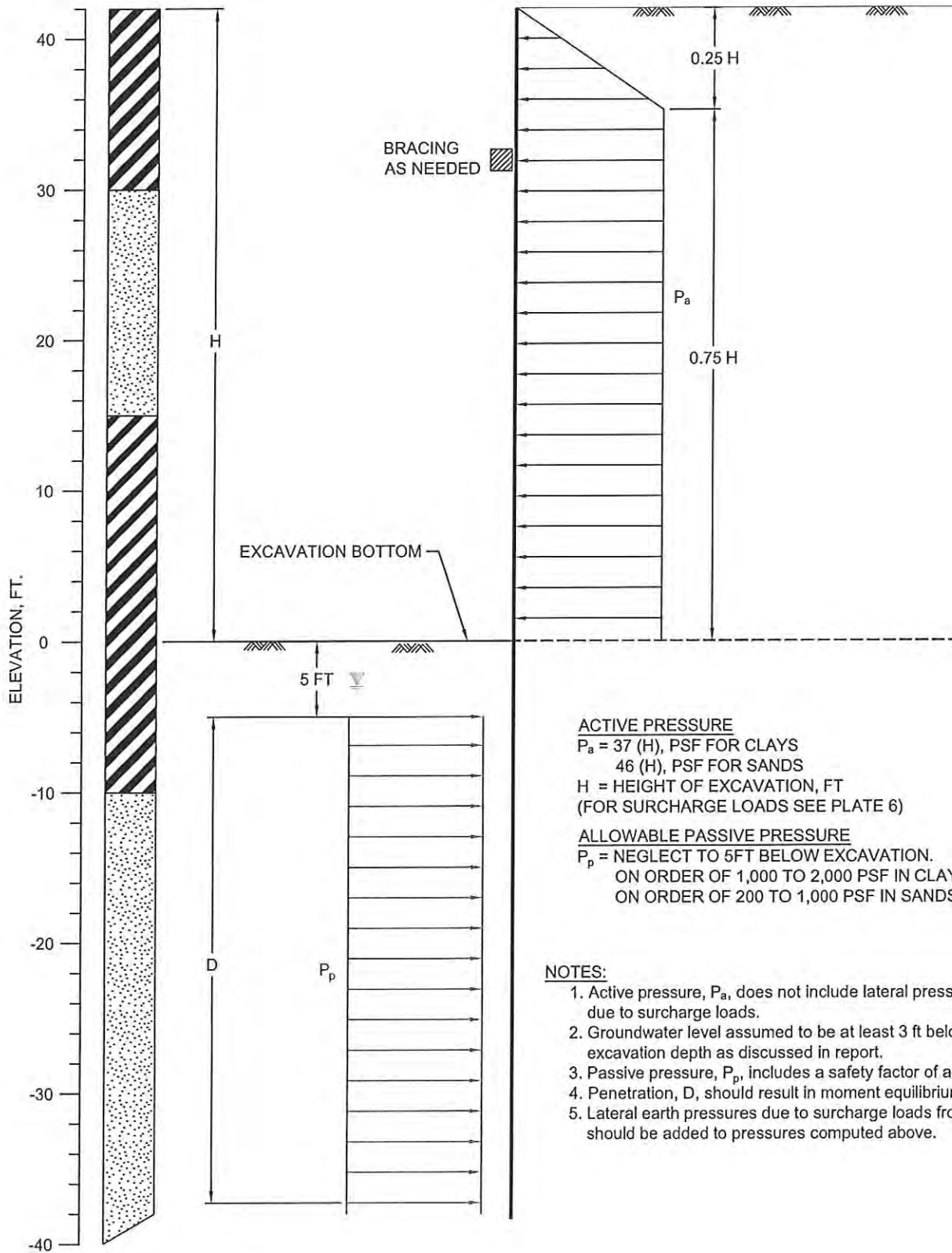
For analysis with regard to the first design criterion, soil strength, the column load in the above equations should usually be the maximum design load, P_m . Occasionally, the normal operating load, P_n , may also be used. If footing is loaded eccentrically, the increase in edge bearing pressure due to the eccentricity should be computed in the usual manner.

For analysis with regard to the second design criterion, soil compressibility, the column load in the above equations should be the sustained load, P_s . This load is the dead load plus the sustain live load.

For further references, see pp. 506 - 512, "Soil Mechanics in Engineering Practice" by Karl Terzaghi and Ralph B. Peck (2nd edition); and pp. 564 - 565, "Fundamentals of Soil Mechanics" by Donald W. Taylor.

COMPUTATION OF BEARING PRESSURES

LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HOUSTON, TEXAS



ACTIVE PRESSURE

$P_a = 37 (H)$, PSF FOR CLAYS

$46 (H)$, PSF FOR SANDS

H = HEIGHT OF EXCAVATION, FT
(FOR SURCHARGE LOADS SEE PLATE 6)

ALLOWABLE PASSIVE PRESSURE

$P_p =$ NEGLECT TO 5FT BELOW EXCAVATION.

ON ORDER OF 1,000 TO 2,000 PSF IN CLAYS

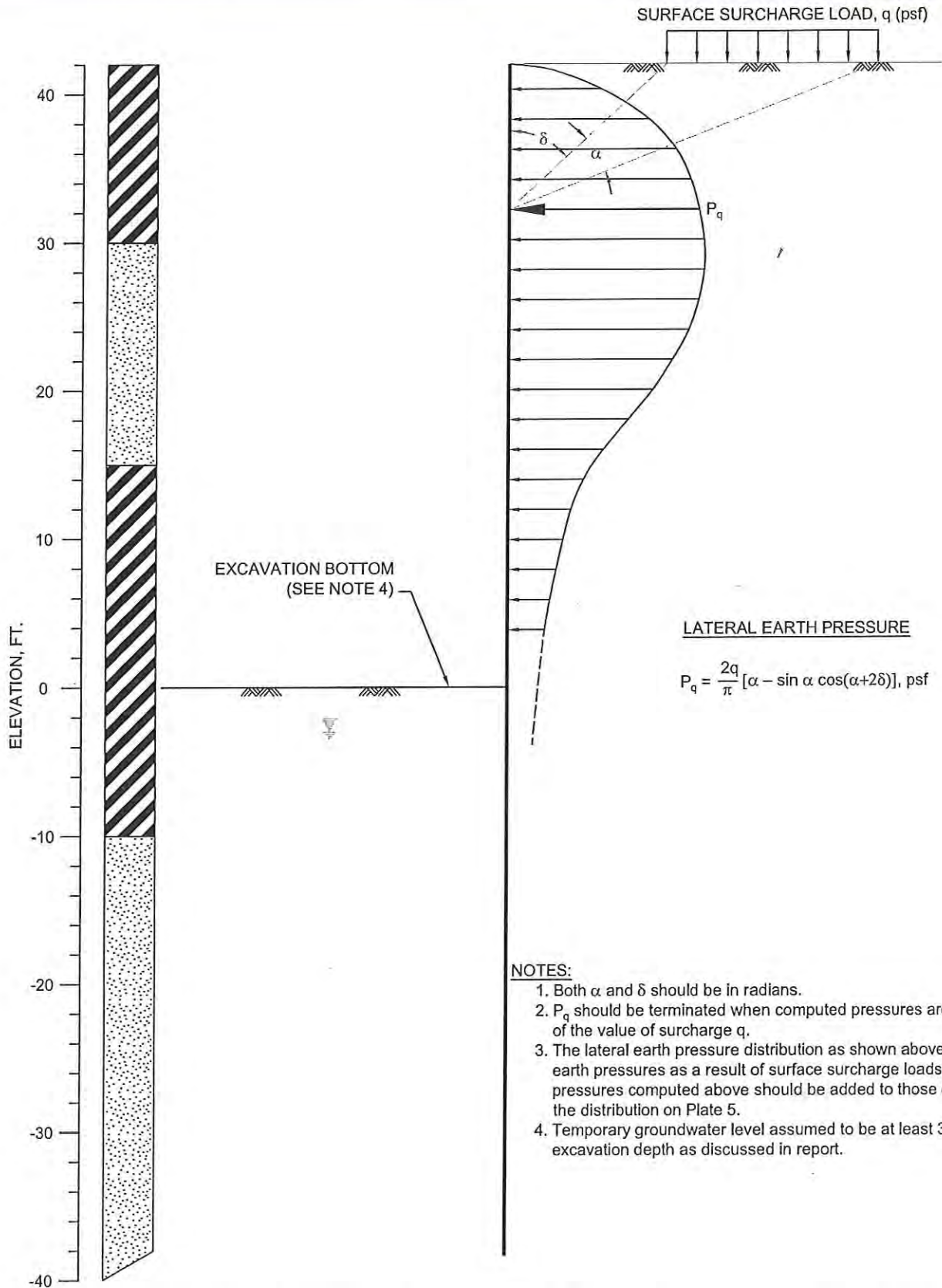
ON ORDER OF 200 TO 1,000 PSF IN SANDS

NOTES:

1. Active pressure, P_a , does not include lateral pressure due to surcharge loads.
2. Groundwater level assumed to be at least 3 ft below excavation depth as discussed in report.
3. Passive pressure, P_p , includes a safety factor of at least 2.0.
4. Penetration, D, should result in moment equilibrium.
5. Lateral earth pressures due to surcharge loads from Plate 6 should be added to pressures computed above.

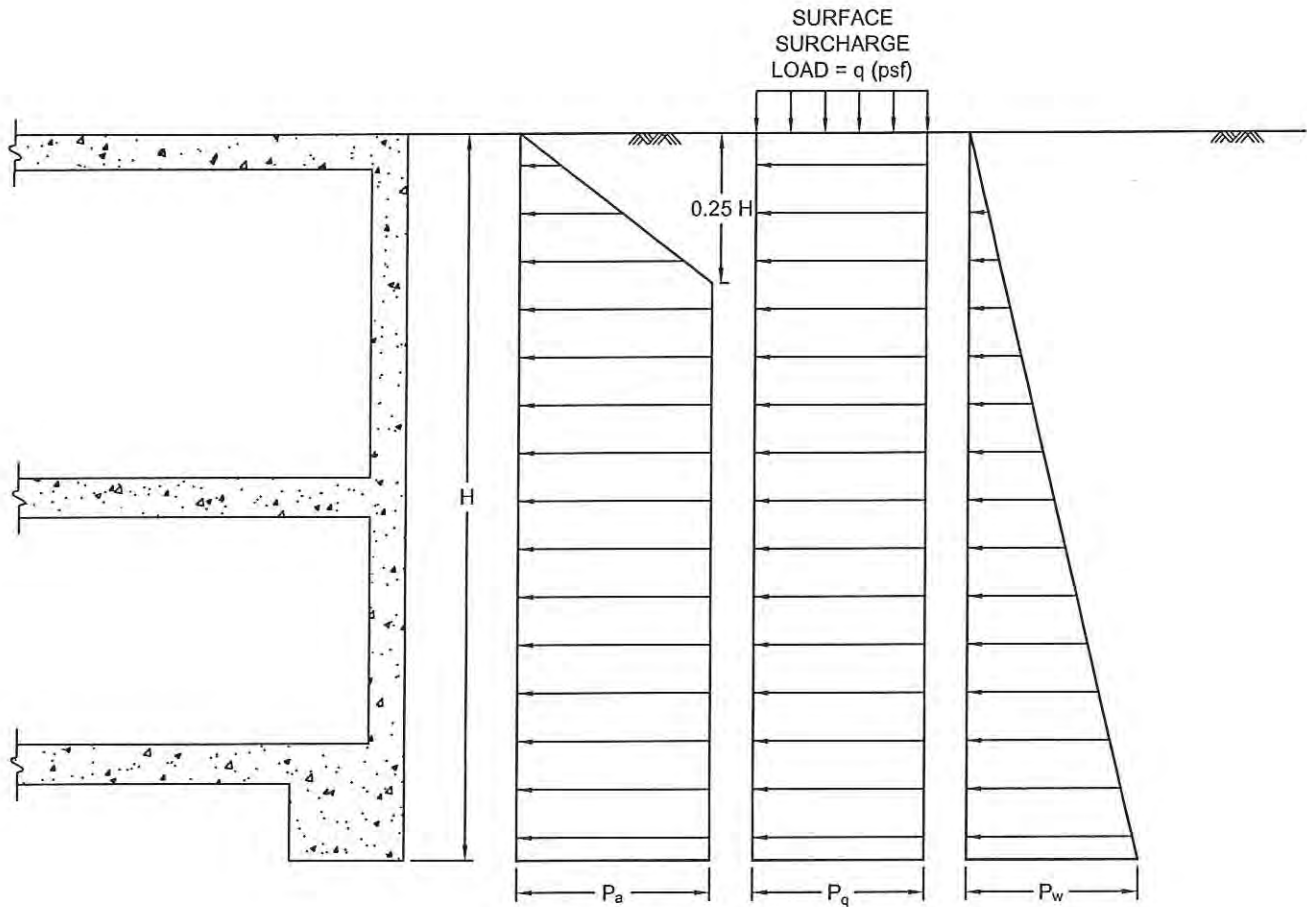
**TEMPORARY LATERAL EARTH PRESSURES
(TEMPORARY EXCAVATION RETENTION SYSTEM)**





**TEMPORARY LATERAL EARTH PRESSURES FROM SURFACE SURCHARGE LOADS
(TEMPORARY EXCAVATION RETENTION SYSTEM)**





ACTIVE PRESSURE

Soil: $P_a = 37 (H)$, psf for sand

46 (H), psf for clay

Surcharge: $P_q = 0.5 (q)$, psf

Water: $P_w = 62.4 (H)$, psf

H = Excavation Depth, ft

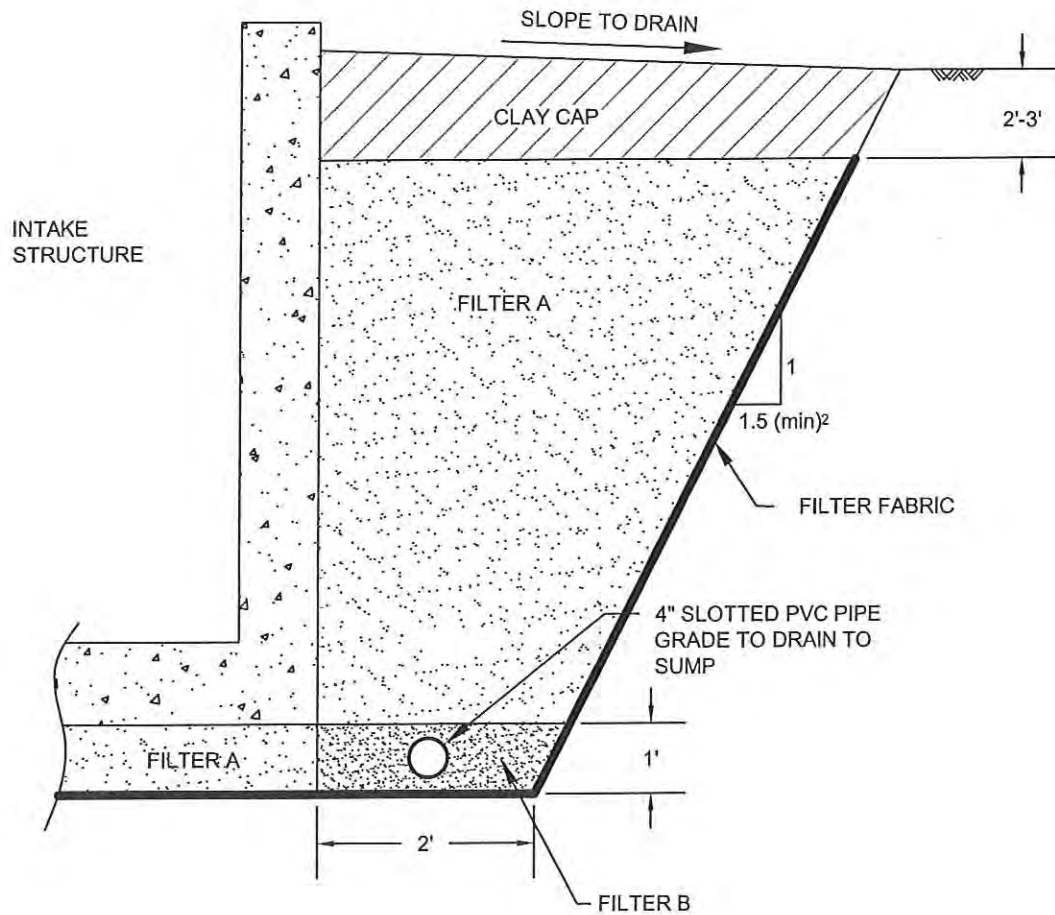
q = Surcharge Load, psf

NOTES:

1. The lateral earth pressures shown above are for properly placed fill soils in contact with permanent walls.
2. Refer to report text for recommendations relating to wall drains.
3. See report text for additional details.

LATERAL EARTH PRESSURES FOR PERMANENT PUMP STATION WALLS
LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
LIBERTY COUNTY, TEXAS
 (NOT TO SCALE)





NOTES:

- 1. Filter fabric and gradation of filter material presented on Plate 8b.
- 2. Slope in accordance with OSHA requirements for construction purposes.
- 3. See report text for additional drainage recommendations.

SCHEMATIC OF WALL DRAIN SYSTEM
LUCÉ BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
LIBERTY COUNTY, TEXAS
(NOT TO SCALE)



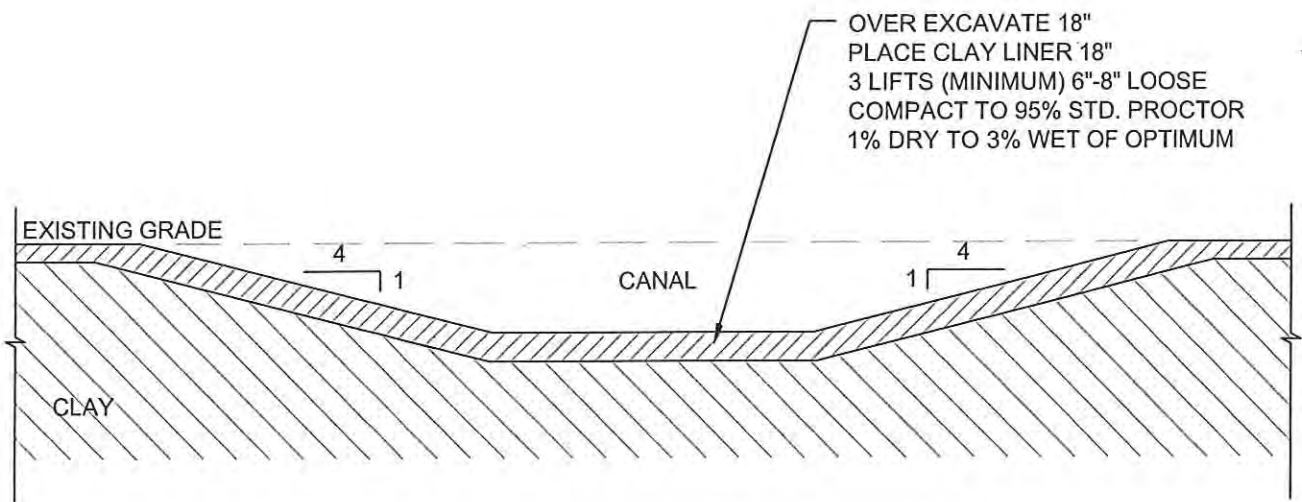
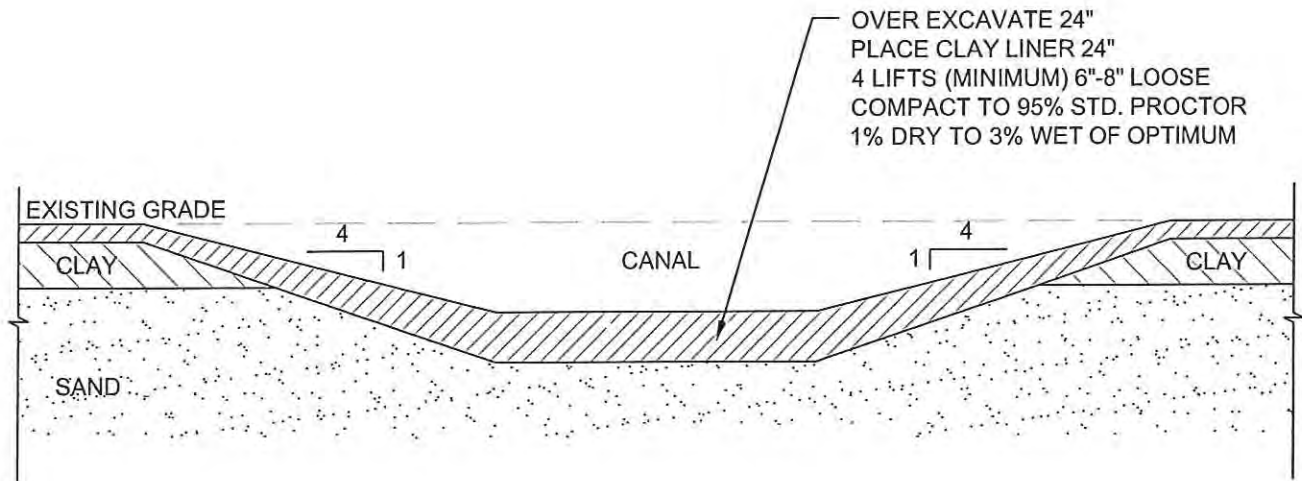
<i>Sieve No.</i>	<i>Percentage Passing</i>	
	<i>Filter A</i>	<i>Filter B</i>
1 inch	-	100
3/4 inch	-	90 - 100
1/2 inch	-	55 - 95
3/8 inch	100	20 - 85
4	95 - 100	0 - 60
8	80 - 100	-
16	50 - 85	0 - 6
30	25 - 60	-
50	10 - 30	-
100	2 - 10	-
200	0 - 3	-

Notes:

1. Filter A gradation is the same as the gradation for concrete fine sand aggregate given in ASTM C33.
2. Filter B gradation can be satisfied by materials meeting the specifications for Size No. 67 concrete coarse aggregate (3/4 inch to No. 4) given in ASTM C33.
3. All collector pipes should be Schedule 80 PVC.
4. Slotted collector pipes should consist of 0.100 inch slots.
5. Cleanouts should be provided to permit periodic cleaning and flushing of collector pipes.
6. Slotted collector pipes should be covered in Filter B material.
7. Filter Fabric should be polyester nonwoven needlepoint filter cloth, Mirafi 140N or equivalent.

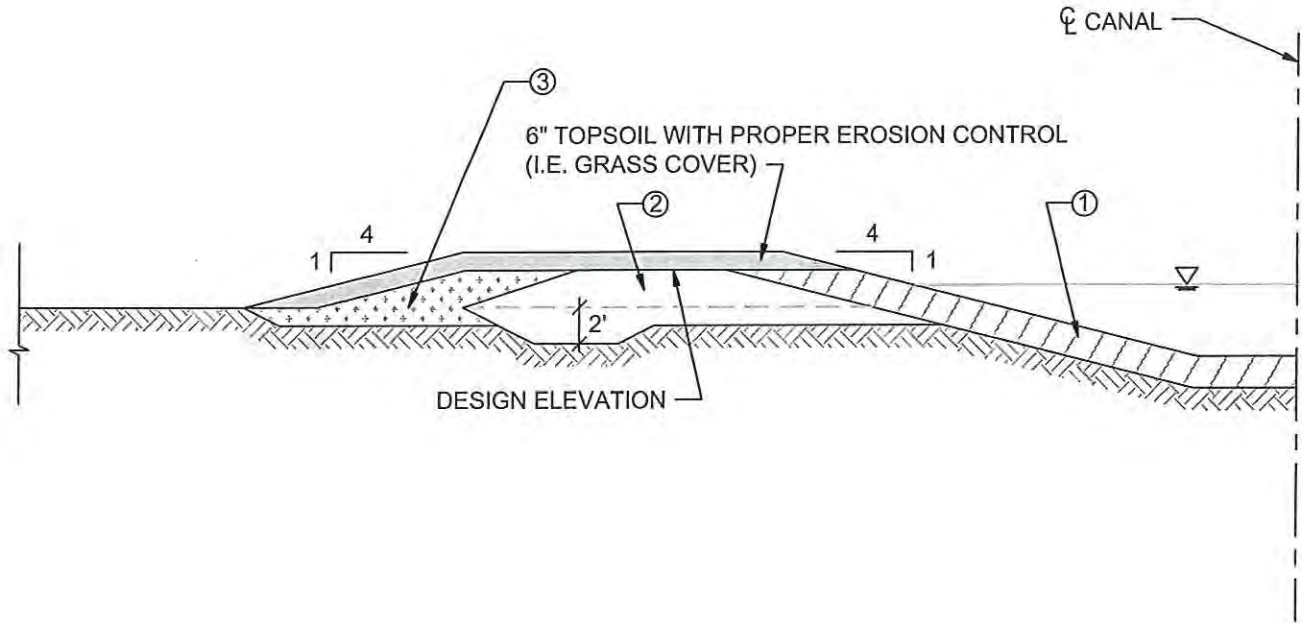


CLAY LINER: > 60% FINER THAN No. 200 SIEVE
LIQUID LIMIT > 20
PLASTICITY INDEX > 7
HYDRAULIC CONDUCTIVITY < 10 cm/s⁻⁷



CANAL EXCAVATION
LUCÉ BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HARRIS AND LIBERTY COUNTIES, TEXAS
(NOT TO SCALE)





ZONE	TYPICAL SOIL	K	LIQUID LIMIT	PLASTICITY INDEX	% FINES	COMPACTION (STD. PROCTOR)
1	CLAY LINER	10^{-7} cm/s	>20	>7	>60	>95% OPT. DENSITY 1% DRY TO 3% WET
2	CLAY FILL	NA	>20	>12	>60	>95% OPT. DENSITY 1% DRY TO 3% WET
3	GENERAL FILL	NA	NA	NA	NA	>90% OPT. DENSITY 1% DRY TO 3% WET

* ALL FILL FREE OF DEBRIS, ORGANICS, AND OTHER DELITERIOUS MATERIAL.

EMBANKMENT CONSTRUCTION
LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HARRIS AND LIBERTY COUNTIES, TEXAS
 (NOT TO SCALE)



APPENDIX A – LOGS OF BORINGS





DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°02'58" W 95°06'06" SURFACE EL.: 46' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH					
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT				
												0.5	1.0	1.5	2.0	2.5
				FILL: SANDY SILT, tan, with shell fragments	1.5											
				SANDY CLAY, very stiff, brown and gray			11	37	18	19						□ ⁺
5				SILTY CLAY, stiff, brown and gray, with silt pockets and calcareous nodules - with sandy silt seams below 6'	4.0	97	22	36	19	17			□			
10			43	SANDY SILT, very dense, brown and gray, with clay pockets	10.0	105	19									
			33				59	17	14	3						
15			28	CLAYEY SAND, medium dense, light gray and tan	14.5		49									
20				SILTY SAND, medium dense, brown and light gray, with sandy clay seams	18.0		17									
25			26													
30			23	CLAY, very stiff to hard, red, brown, and gray - with sand pockets to 35' - brown and gray below 33'	28.5											□ ⁺ 4.1●
35						113	18	39	18	21						□

NOTES:

- ▽: Water First Noticed. ▼: Depth To Water after 30 minutes.
- Terms and symbols defined on Plate A-16.
- Crumb test result, Grade 1 at 5', Grade 4 at 14'.
- Coordinates obtained with hand held GPS in field.

DATE: July 2, 2009
 TOTAL DEPTH: 70'
 CAVED DEPTH: 10.2'
 DRY AUGER: Surface to 12'
 WET ROTARY: 12' to 70'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: T. Mireles

LOG OF BORING NO. FB-1
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS

R:\04120209 PROJECTS\0001-0099\0412-09-0031 LUCEBAYOINDRAFTING_FUGRO\NEW_0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/28/2009



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°02'58" W 95°06'06" SURFACE EL.: 46' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH										
						UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT									
				STRATUM DESCRIPTION																	
				CLAY, very stiff to hard, brown and gray	41.5																
45				SANDY CLAY, very stiff to hard, gray and brown, with sand pockets		115		17													□+ 5.5●
				- with sandy silt pockets below 48'																	□+
50				CLAY, stiff to very stiff, gray and brown, slickensided	51.5																□
55						104		24													●
60																					□
65				- brown and gray below 63'																	□
66.5				SILTY CLAY, very stiff, brown and gray, with calcareous nodules and silt pockets	66.5																□
70					70.0	102		24													●
75																					

R:\04120209 PROJECTS\0001-0099\0412-09-0031 LUCEBAYOUIDRAFTING_FUGRONEW_0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/28/2009

NOTES:

- ▽: Water First Noticed. ▼: Depth To Water after 30 minutes.
- Terms and symbols defined on Plate A-16.
- Crumb test result, Grade 1 at 5', Grade 4 at 14'.
- Coordinates obtained with hand held GPS in field.

DATE: July 2, 2009
 TOTAL DEPTH: 70'
 CAVED DEPTH: 10.2'
 DRY AUGER: Surface to 12'
 WET ROTARY: 12' to 70'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: T. Mireles

LOG OF BORING NO. FB-1
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°03'04" W 95°05'15" SURFACE EL.: 73' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH						
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT					
				STRATUM DESCRIPTION													
				FILL: SILTY CLAY, gray, with shell fragments	1.0												
				SANDY SILT, tan	2.0												
				SANDY CLAY, stiff, tan and gray, with sand pockets and ferrous nodules		70	16	37	9	28							
5																	
				SILTY SAND, medium dense, fine-grained, brown and gray	8.0												
10			23														
			26														
			22														
15				SILTY CLAY, firm to very stiff, brown and light gray, with sand pockets	14.0	91	26	30	15	15							
20			22		20.0												
25																	
30																	
35																	

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NOTES:

1. ∇ : Water First Noticed. \blacktriangledown : Depth To Water after 10 minutes.
2. Terms and symbols defined on Plate A-16.
3. Crumb test result, Grade 1 at 5'.
4. Coordinates obtained with hand held GPS in field.

DATE: June 19, 2009
 TOTAL DEPTH: 20'
 CAVED DEPTH: 11'
 DRY AUGER: Surface to 12'
 WET ROTARY: 12' to 20'
 BACKFILL: Temporary Piezometer
 LOGGER: T. Mireles

LOG OF BORING NO. FB-2
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°03'40" W 95°02'55" SURFACE EL.: 75' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
				STRATUM DESCRIPTION														
				FILL: CLAY, hard, dark gray, with shell fragments	2.0	88	20	59	12	47								4.5
5				CLAY, stiff, gray and tan, with calcareous nodules		90	22	59	11	48								
				- with sand and silt pockets below 6'		67	15	47	12	35								
10				- with silt seams, 10' to 14'			22											
15			21				26											
20					20.0													
25																		
30																		
35																		

NOTES:

1. ▽: Water First Noticed. ▼: Depth To Water after 20 minutes.
2. Terms and symbols defined on Plate A-16.
3. Crumb test result, Grade 1 at 8'.
4. Coordinates obtained with hand held GPS in field.

DATE: June 19, 2009
 TOTAL DEPTH: 20'
 CAVED DEPTH: 11.3'
 DRY AUGER: Surface to 20'
 WET ROTARY: Not Applicable
 BACKFILL: Holeplug
 LOGGER: T. Mireles

LOG OF BORING NO. FB-3
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS

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DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°06'15" W 95°02'39" SURFACE EL.: 81' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
				STRATUM DESCRIPTION														
				FILL: CLAY, gray and tan	1.0													
				SANDY SILT, gray	2.0													
				CLAY, very stiff, gray, with silt pockets	4.0	110		9	31	11	20							4.7
5				SANDY CLAY, very stiff, tan and light gray, with calcareous nodules	6.0													
				SANDY SILT, brown	8.5													
10			13	CLAY, firm, brown and gray, with calcareous nodules and silt pockets	13.0			20	34	10	24							
15				SILTY SAND, medium dense, tan and light gray, with silty clay seams	20.0													
20			25															
25																		
30																		
35																		

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NOTES:

1. ▽: Water First Noticed.
2. Terms and symbols defined on Plate A-16.
3. Coordinates obtained with hand held GPS in field.
4. Crumb test result, Grade 1 at 3'.

DATE: August 5, 2009
 TOTAL DEPTH: 20'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Surface to 20'
 WET ROTARY: Not Applicable
 BACKFILL: Holeplug
 LOGGER: T. Mireles

LOG OF BORING NO. FB-4
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°07'50" W 95°01'38" SURFACE EL.: 83' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH					
							UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT				
STRATUM DESCRIPTION												0.5	1.0	1.5	2.0	2.5	
					CLAY, stiff to hard, gray												
5					- stiff, gray and tan below 4'	102		21	87	16	71						6.5
10					- with calcareous nodules below 8'	95		28	84	15	69						
15					- with silt pockets below 13'			24									
18.0					SILTY CLAY, firm, light gray and tan, with ferrous nodules	18.0											
20.0						20.0	122	17	21	12	9						

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NOTES:

1. Free water not encountered during drilling.
2. Terms and symbols defined on Plate A-16.
3. Coordinates obtained with hand held GPS in field.
4. Crumb test result, Grade 1 at 3'.

DATE: August 4, 2009
 TOTAL DEPTH: 20'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Surface to 20'
 WET ROTARY: Not Applicable
 BACKFILL: Holeplug
 LOGGER: T. Mireles

LOG OF BORING NO. FB-5
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°08'05" W 94°58'36" SURFACE EL.: 85' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH						
						UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT					
STRATUM DESCRIPTION												0.5	1.0	1.5	2.0	2.5	
				CLAY, very stiff, gray													□ ⁺
				- stiff below 3' - gray and tan, 4' to 13'		108		14	44	10	34						3.9▼
5				- with calcareous nodules and sand pockets below 6' - with ferrous nodules below 8'			78										
				SILTY SAND, medium dense, brown and gray, with clay seams													
10						103		23	57	11	46						
15						13.0											
20			25			20.0		39									
25																	
30																	
35																	
NOTES: 1. Free water not encountered during drilling. 2. Terms and symbols defined on Plate A-16. 3. Coordinates obtained with hand held GPS in field. 4. Crumb test result, Grade 1 at 7'.						DATE: August 5, 2009 TOTAL DEPTH: 20' CAVED DEPTH: Not Applicable DRY AUGER: Surface to 20' WET ROTARY: Not Applicable BACKFILL: Holeplug LOGGER: T. Mireles											

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LOG OF BORING NO. FB-6
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°09'15" W 94°55'45" SURFACE EL.: 99' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT, PCF	PASSING NO, 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
STRATUM DESCRIPTION				□ Penetrometer Unconfined ▼ ◇ Torvane Triaxial ● △ Field Vane Miniature Vane ▲														
				CLAY, stiff, gray - with sand pockets to 9'		84		66	14	52								
5				- tan and gray, with calcareous nodules below 4'	102	90	23	56	11	45								
10				- very stiff below 12'														
15				- with sand pockets below 14'														
17.0				SANDY CLAY, stiff, tan and light gray, with sand pockets														
20.0																		
25																		
30																		
35																		

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NOTES:

- Free water not encountered during drilling.
- Terms and symbols defined on Plate A-16.
- Crumb test result, Grade 1 at 3'.
- Coordinates obtained with hand held GPS in field.

DATE: June 19, 2009
 TOTAL DEPTH: 20'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Surface to 20'
 WET ROTARY: Not Applicable
 BACKFILL: Holeplug
 LOGGER: T. Mireles

LOG OF BORING NO. FB-7
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°10'33" W 94°53'59" SURFACE EL.: 102' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
				STRATUM DESCRIPTION														
				SANDY SILT, tan														
				SANDY CLAY, stiff, gray, with sand seams	1.5		63	11	18	13	5							
5			11	CLAY, stiff to very stiff, brown and gray, with sand pockets	6.0		69	20	46	11	35							
10				CLAYEY SAND, brown and gray	10.0													
15			30	SAND, medium dense, fine-grained, tan, with silt pockets	12.0													
20			23															
			50	- very dense below 18'	20.0													

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NOTES:

1. Free water not encountered during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb test result, Grade 4 at 2.5'.
4. Coordinates obtained with hand held GPS in field.

DATE: June 19, 2009
 TOTAL DEPTH: 20'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Surface to 20'
 WET ROTARY: Not Applicable
 BACKFILL: Temporary Piezometer
 LOGGER: T. Mireles

LOG OF BORING NO. FB-8
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2a COORDINATES: N 30°12'40" W 94°52'07" SURFACE EL.: 104' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
				STRATUM DESCRIPTION														
				FILL: SANDY SILT, tan														
5				CLAY, very stiff to hard, gray and red - gray and tan below 6' - with sand pockets below 8'	3.8													□ ⁺ □ ⁺
						116	82	13	49	10	39							□ ⁺ 7.4 □ ⁺
10				SILTY SAND, medium dense to dense, tan	10.0													
			43															
			24															
15			40															
			45															
20				SAND, medium dense to dense, tan, with silt pockets	23.5													
			29				7											
25																		
			35															
30					30.0		10											
35																		

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NOTES:

- Free water not encountered to a depth of 14' during drilling.
- Terms and symbols defined on Plate A-16.
- Crumb test result, Grade 4 at 5.5'.
- Coordinates obtained with hand held GPS in field.

DATE: July 16, 2009
 TOTAL DEPTH: 30'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Surface to 14'
 WET ROTARY: 14' to 30'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: E. Schulak

LOG OF BORING NO. FB-9
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 94°49'22" W 30°13'27" SURFACE EL.: 42' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
				STRATUM DESCRIPTION														
0-5				CLAY, very stiff, gray and tan														□+
5-10				- brown and gray, with sand pockets below 6' - very stiff to hard below 8' - with calcareous nodules below 10'	97		24	77	15	62								□+ 3.0▼
10-12				CLAYEY SAND, brown and gray	110	90	19	63	14	49								□+ 4.3▼
12-13				SAND, dense, fine to medium-grained, brown														□+
13-15			47	- very dense, fine to coarse below 18'		8												□+
15-20			50/10"															□+
20-23.5				CLAY, very stiff, brown and gray	23.5													□+
23.5-30			19		110		20	58	14	44								□+ 3.9●
30-31.5				SILTY CLAY, very stiff, gray and brown	31.5		21											□
31.5-36.5				CLAY, very stiff, brown and gray, slickensided, with calcareous nodules	36.5		24											□+

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NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Coordinates obtained with hand held GPS in field.

DATE: July 8, 2009
 TOTAL DEPTH: 120'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 120'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: T. Mireles

LOG OF BORING NO. FB-10
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 94°49'22" W 30°13'27" SURFACE EL.: 42' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
				STRATUM DESCRIPTION														
45				CLAY, very stiff, brown and gray, slickensided, with calcareous nodules														
47.0				SANDY CLAY, stiff, gray, with sand pockets	47.0													
50					97		30											
52.0				SAND, very dense, fine- to coarse-grained, tan	52.0													
55			50/9"															
60			50/9"			6												
65			50/8"															
70			50/9"															
75			50/7"															
50				- gray below 78'														
NOTES: 1. Depth-to-water measurements not performed during drilling. 2. Terms and symbols defined on Plate A-16. 3. Coordinates obtained with hand held GPS in field.						DATE: July 8, 2009 TOTAL DEPTH: 120' CAVED DEPTH: Not Applicable DRY AUGER: Not Applicable WET ROTARY: Surface to 120' BACKFILL: Cement-Bentonite Grout LOGGER: T. Mireles												

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LOG OF BORING NO. FB-10
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 94°49'22" W 30°13'27" SURFACE EL.: 42' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
				STRATUM DESCRIPTION														
				SAND, very dense, fine- to coarse-grained, gray														
85				CLAY, stiff to very stiff, gray - with sand pockets and sand seams to 85'	82.5													
90				- brown and gray, 88' to 98' - slickensided below 88' - very stiff below 90'	88		34	75	23	52								
95																		
100				- gray and brown below 98'			29											
105																		
110				- with silt pockets below 108'	97		27											3.8
115																		
			50/9"															

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NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Coordinates obtained with hand held GPS in field.

DATE: July 8, 2009
 TOTAL DEPTH: 120'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 120'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: T. Mireles

LOG OF BORING NO. FB-10
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'23" W 94°49'16" SURFACE EL.: 41' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
				STRATUM DESCRIPTION														
				SILTY SAND, tan, with clay and roots	2.0		51											
5				CLAY, very stiff, tan, with sand pockets - with roots to 6' - dark gray and tan - gray and tan, 6' to 8' - stiff, dark gray below 8' - with sand and organic material, 10' to 12'														
10						95	77	28	94	17	77							
15						88	92	34	82	18	64							
20				- with organic material, slickensided, 18' to 20'				41										
25																		
30				SANDY CLAY, firm, greenish gray - with shell fragments to 35' - with sand pockets to 40'	28.0													
35				- with sand seams, 33' to 40'		94	54	30										

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb test results, Grade 1 at 3' and 19'.
4. Coordinates obtained with hand held GPS in field.

DATE: July 15, 2009
 TOTAL DEPTH: 100'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 100'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: E. Schulak

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LOG OF BORING NO. FB-11
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'23" W 94°49'16" SURFACE EL.: 41' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH								
							UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT							
STRATUM DESCRIPTION																				
					SANDY CLAY, greenish gray - (Washed boring, 40' to 42.5')															
45				50/9"	SAND, very dense, fine- to coarse-grained, tan, with fine gravel	42.5		5												
50				13	SILTY SAND, medium dense, light brown	48.5														
55				20				19												
60				50/11"	SAND, very dense, fine to medium-grained, light brown, with silt	58.5														
65				50/5"																
70				50/5"																
75				50/4"																
								7												

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb test results, Grade 1 at 3' and 19'.
4. Coordinates obtained with hand held GPS in field.

DATE: July 15, 2009
 TOTAL DEPTH: 100'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 100'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: E. Schulak

LOG OF BORING NO. FB-11
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS

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DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'23" W 94°49'16" SURFACE EL.: 41' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH								
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT							
STRATUM DESCRIPTION						0.5	1.0	1.5	2.0	2.5	□ Penetrometer Unconfined ▼ ◇ Torvane Triaxial ● △ Field Vane Miniature Vane ▲								
				SAND, very dense, fine- to medium-grained, light brown, with silt															
				CLAY, very stiff, greenish gray, with shell fragments	83.0														
85																			
90						102		24	47	13	34								□
95																			
100					100.0														□+
105																			
110																			
115																			

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb test results, Grade 1 at 3' and 19'.
4. Coordinates obtained with hand held GPS in field.

DATE: July 15, 2009

TOTAL DEPTH: 100'

CAVED DEPTH: Not Applicable

DRY AUGER: Not Applicable

WET ROTARY: Surface to 100'

BACKFILL: Cement-Bentonite Grout

LOGGER: E. Schulak

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LOG OF BORING NO. FB-11
LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HOUSTON, TEXAS





DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'25" W 94°49'16" SURFACE EL.: 41' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH						
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT					
				STRATUM DESCRIPTION								0.5	1.0	1.5	2.0	2.5	
				CLAYEY SAND, with roots	2.0			6									□ ⁺
5				CLAY, very stiff, brown - brown and gray, 4' to 10' - with roots, 4' to 6'													□ ⁺
				- with sand partings below 8'		111		18									□ ⁺
10				- tan and gray below 10'				18									□ ⁺
15			33	SILTY SAND, medium dense to dense, fine-grained, tan, with clay pockets	12.0												
20			24					20									
25				CLAY, stiff to very stiff, tan and gray	22.0												
				- gray and brown, 28' to 38'		100		25	66	15	51						□ ⁺
30				- with calcareous nodules below 33'													●
				- with silt pockets, 33' to 35'													□ ⁺
35				- brown and gray below 38'				24									□ ⁺

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb test results, Grade 1 at 5', 11', and 24'.
4. Coordinates obtained with hand held GPS in field.

DATE: July 14, 2009
 TOTAL DEPTH: 75'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 75'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: E. Schulak

LOG OF BORING NO. FB-12
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS

R:\041202009 PROJECTS\0001-0099\0412-09-0031 LUCEBAYOINDRAFTING_FUGRONEW\0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/28/2009



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'25" W 94°49'16" SURFACE EL.: 41' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
				STRATUM DESCRIPTION														
				CLAY, stiff to very stiff, brown and gray, with calcareous nodules				35										
45				SANDY CLAY, stiff, greenish gray	48.0			20										
50				SAND, very dense, fine-grained, tan, with silt pockets	50.5													
55			50/8"					9										
60			50/6"															
65			50/10"															
70			50/11"					7										
75			50	- gray, with clay seams below 73'	75.0													

R:\0412\20309 PROJECTS\0001-0099\0412-09-0031 LUCEBAYOUIDRAFTING_FUGRO\FUGRO_NEW_0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/28/2009

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb test results, Grade 1 at 5', 11', and 24'.
4. Coordinates obtained with hand held GPS in field.

DATE: July 14, 2009
 TOTAL DEPTH: 75'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 75'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: E. Schulak

LOG OF BORING NO. FB-12
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'28" W 94°49'14" SURFACE EL.: 27' Approx.	STRATUM DEPTH, FT	CLASSIFICATION						SHEAR STRENGTH				
						UNIT DRY WT, PCF	PASSING NO, 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT				
STRATUM DESCRIPTION											0.5	1.0	1.5	2.0	2.5	
0																
5			28	CLAY, very stiff to hard, red, brown and gray - brown and gray below 2' - brown, with silt pockets below 4' - with calcareous nodules below 6' - very stiff, with silt seams below 8'	102		16	68	15	53						□ ⁺ 4.5
10			28		102	62	11	37	14	23						□ ⁺ 5.8
15			50/9"	SAND, very dense to dense, fine- to medium-grained, brown, with silt												□ ⁺
20			39			5										□ ⁺
25			33													□ ⁺
30				CLAY, stiff to very stiff, gray and red, slickensided - very stiff, 30' to 48' - with sand pockets below 33'	27.0											□ ⁺
35					106		21									□ ⁺
				- brown and gray below 38'	110	86	18	43	11	32						□ ⁺
																□ ⁺

R:\04120\2009 PROJECTS\0001-0099\0412-09-0031 LUCEBAYOUIDRAFTING_FUGRO\NEW_0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/29/2009

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb tests results, Grade 2 at 7' and Grade 1 at 29' and 49'.
4. Corrosion potential tests performed at 4.5', 12.5', and 40'.
5. Consolidated undrained triaxial tests performed at 12' and 35'.
6. Direct shear test performed at 20'.

DATE: July 9, 2009
 TOTAL DEPTH: 75'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 75'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: T. Mireles

LOG OF BORING NO. FB-13
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'28" W 94°49'14" SURFACE EL.: 27' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH										
							UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT									
45					CLAY, very stiff, brown and gray, slickensided, with sand pockets - with calcareous nodules below 43' - stiff below 44' - gray and brown below 46.5' - stiff to very stiff below 48'		92	88	23	61	17	44										
52.0				38	SILTY SAND, dense, fine-grained, gray			17														
58.0				50/8"	SAND, very dense, fine-grained, brown																	
65				50/7"																		
70				50/7"	- gray below 68'			4														
75				46	- with clay seams and organic material below 73'	75.0																

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb tests results, Grade 2 at 7' and Grade 1 at 29' and 49'.
4. Corrosion potential tests performed at 4.5', 12.5', and 40'.
5. Consolidated undrained triaxial tests performed at 12' and 35'.
6. Direct shear test performed at 20'.

DATE: July 9, 2009
 TOTAL DEPTH: 75'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 75'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: T. Mireles

LOG OF BORING NO. FB-13
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS

R:\041202009 PROJECTS\0001-0099\0412-09-0031 LUCEBAYOINDRAFTING_FUGRONEW_0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/28/2009



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'31" W 94°49'13" SURFACE EL.: 48' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ. FT						
				STRATUM DESCRIPTION														
5				CLAY, very stiff to hard, brown, with organic material - stiff, 5' to 7' - with silt pockets below 6' - hard below 7'	8.0	108	94	19	85	16	69							□ ⁺ 8.3 [▼] □ ⁺
10			23	SANDY CLAY, very stiff, brown - with calcareous pockets to 10' - tan and gray, with silt pockets below 10' - with sand seams below 14' - stiff below 16'			79		35	15	20							□ ⁺ □ ⁺ □ ⁺
20				- brown and gray, with calcareous nodules below 23'		64	19	27	18	9								□ ⁺ □ ⁺
25					26.0	102		24										□ ⁺ ●
30			18	SILTY SAND, medium dense, fine- to coarse-grained, tan, with clay seams			13											□ ⁺
35				CLAY, very stiff, gray and tan - slickensided below 38'	31.5													□ ⁺ □ ⁺
						97		29										● □ ⁺

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb test results, Grade 1 at 3' and Grade 3 at 13'.
4. Coordinates obtained with hand held GPS in field.

DATE: July 10, 2009
 TOTAL DEPTH: 75'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 75'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: E. Schulak

R:\04120\2009 PROJECTS\0001-0099\0412-09-0031 LUCEBAYOUIDRAFTING_FUGRONEW_0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/28/2009

LOG OF BORING NO. FB-14
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'31" W 94°49'13" SURFACE EL.: 48' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
							UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
					STRATUM DESCRIPTION														
45					CLAY, very stiff, gray and tan, slickensided - brown and gray, 43' to 48' - greenish gray and brown below 48' - firm below 49'		89		34										
53.0					SANDY CLAY, stiff, gray			77											
55.0					SAND, very dense, fine-grained, tan														
60																			
65																			
70																			
75																			

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Crumb test results, Grade 1 at 3' and Grade 3 at 13'.
4. Coordinates obtained with hand held GPS in field.

DATE: July 10, 2009

TOTAL DEPTH: 75'

CAVED DEPTH: Not Applicable

DRY AUGER: Not Applicable

WET ROTARY: Surface to 75'

BACKFILL: Cement-Bentonite Grout

LOGGER: E. Schulak

R:\041209\PROJECTS\0001-0099\0412-09-0031 LUCEBAYOUIDRAFTING_FUGRO\NEW_0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/28/2009

LOG OF BORING NO. FB-14
LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'33" W 94°49'13" SURFACE EL.: 50' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH						
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT					
				STRATUM DESCRIPTION													
				SILTY SAND, tan, with organic material													
				CLAY, very stiff, tan, with sand partings - stiff below 4'	2.0												□ ⁺
5						73	13	44	14	30							
			12	SAND, medium dense, fine-grained, tan, with silt	6.0												
			13														
10			15														
			28														
15			25	- light gray, 15' to 18'		9											
				- tan below 18'													
20			15														
				- dense below 23'													
25			38														
				CLAY, very stiff to hard, gray, tan and red	27.0												
30						112	18	56	12	44							□
				- gray and tan, slickensided below 33'													● 3.8
35																	□
							25										□

R:\0412\2009 PROJECTS\0001-0099\0412-09-0031 LUCEBAYOUIDRAFTING_FUGRO\NEW_0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/28/2009

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Coordinates obtained with hand held GPS in field.

DATE: July 13, 2009
 TOTAL DEPTH: 100'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 100'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: E. Schulak

LOG OF BORING NO. FB-15
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'33" W 94°49'13" SURFACE EL.: 50' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH								
						UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT							
STRATUM DESCRIPTION						0.5	1.0	1.5	2.0	2.5	<input type="checkbox"/> Penetrometer Unconfined ▼ <input type="checkbox"/> Torvane Triaxial ● <input type="checkbox"/> Field Vane Miniature Vane ▲								
45				CLAY, very stiff, gray and tan, slickensided - brown and gray, 43' to 48' - stiff to very stiff below 44' - greenish gray and brown below 48'	53.0	99		26											
55				SANDY CLAY, stiff, gray	54.0														
55				SAND, dense to very dense, fine-grained, gray, with silt															
60			50/8"					8											
65			50/11"	- tan, 63' to 73'															
70			31					7											
75			50/10"	- gray below 73'															
			50/6"																

NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Coordinates obtained with hand held GPS in field.

DATE: July 13, 2009
 TOTAL DEPTH: 100'
 CAVED DEPTH: Not Applicable
 DRY AUGER: Not Applicable
 WET ROTARY: Surface to 100'
 BACKFILL: Cement-Bentonite Grout
 LOGGER: E. Schulak

R:\04120\2009 PROJECTS\0001-0099\0412-09-0031 LUCEBAYOUIDRAFTING_FUGRO\NEW\0412-09-0031.GPJ FUGRO_SO (LAB DATA)_INDUSTRIAL GROUP 9/28/2009

LOG OF BORING NO. FB-15
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2b COORDINATES: N 30°13'33" W 94°49'13" SURFACE EL.: 50' Approx.	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH							
							UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
					STRATUM DESCRIPTION														
85				40	SAND, dense to very dense, fine-grained, gray, with silt - with fine gravel and sandy clay seams below 83'														
90				50/4"															
95					CLAY, stiff to very stiff, olive gray - with calcareous nodules below 98'	91.0													
100						100.0													
105																			
110																			
115																			

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NOTES:

1. Depth-to-water measurements not performed during drilling.
2. Terms and symbols defined on Plate A-16.
3. Coordinates obtained with hand held GPS in field.

DATE: July 13, 2009

TOTAL DEPTH: 100'

CAVED DEPTH: Not Applicable

DRY AUGER: Not Applicable

WET ROTARY: Surface to 100'

BACKFILL: Cement-Bentonite Grout

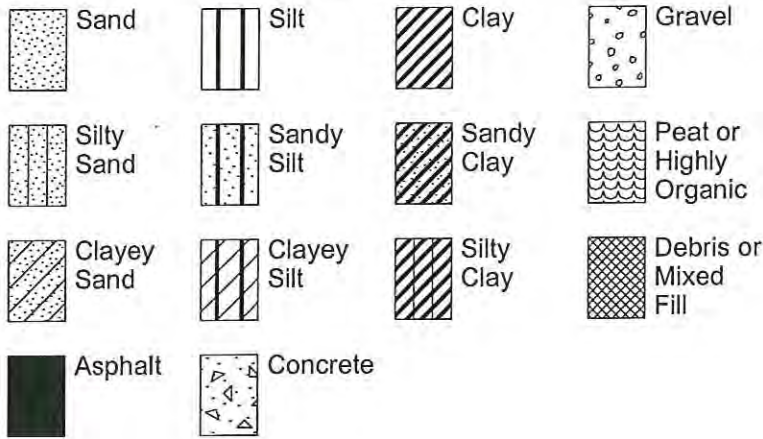
LOGGER: E. Schulak

LOG OF BORING NO. FB-15
LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HOUSTON, TEXAS

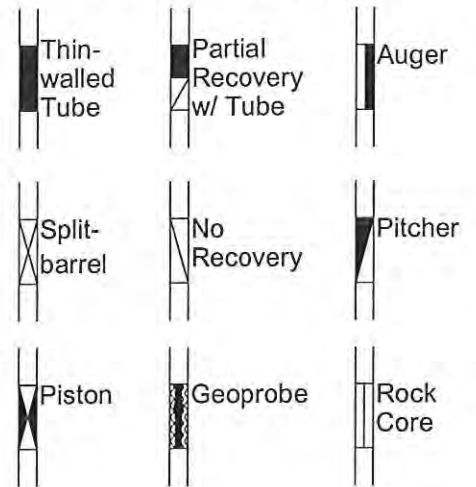




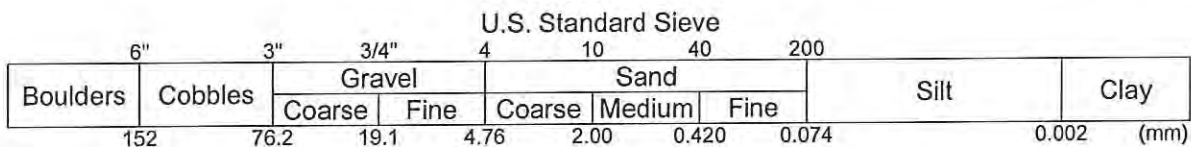
SOIL TYPES



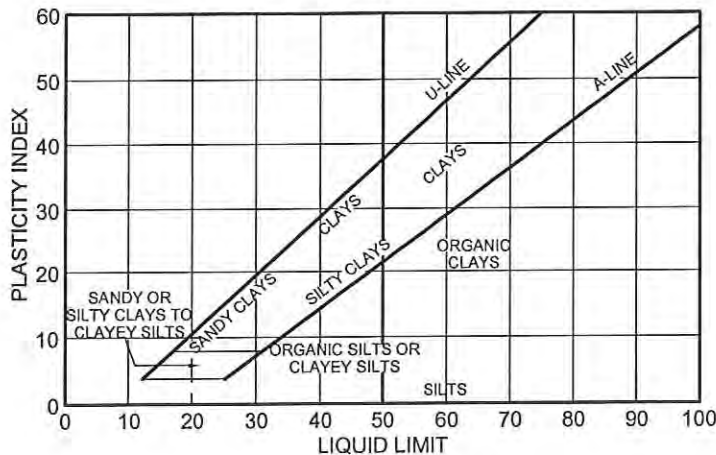
SAMPLER TYPES



SOIL GRAIN SIZE



PLASTICITY CHART



SOIL STRUCTURE

- Slickensided Having planes of weakness that appear slick and glossy.
- Fissured Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.
- Pocket Inclusion of material of different texture that is smaller than the diameter of the sample.
- Parting Inclusion less than 1/8 inch thick extending through the sample.
- Seam Inclusion 1/8 inch to 3 inches thick extending through the sample.
- Layer Inclusion greater than 3 inches thick extending through the sample.
- Laminated Soil sample composed of alternating partings or seams of different soil type.
- Interlayered Soil sample composed of alternating layers of different soil type.
- Intermixed Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.
- Calcareous Having appreciable quantities of carbonate.
- Carbonate Having more than 50% carbonate content.

TERMS AND SYMBOLS USED ON BORING LOGS

SOIL CLASSIFICATION (1 of 2)





STANDARD PENETRATION TEST (SPT)

A 2-in.-OD, 1-3/8-ID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. After the sampler is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the Standard Penetration Resistance or "N" value, which is recorded as blows per foot as described below.

SPLIT-BARREL SAMPLER DRIVING RECORD

Blows Per Foot	Description
25	25 blows drove sampler 12 inches, after initial 6 inches of seating.
50/7"	50 blows drove sampler 7 inches, after initial 6 inches of seating.
Ref/3"	50 blows drove sampler 3 inches during initial 6-inch seating interval.

NOTE: To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

DENSITY OF GRANULAR SOILS

Descriptive Term	*Relative Density, %	**Blows Per Foot (SPT)
Very Loose	< 15	0 to 4
Loose	15 to 35	5 to 10
Medium Dense	35 to 65	11 to 30
Dense	65 to 85	31 to 50
Very Dense	> 85	> 50

*Estimated from sampler driving record.

**Requires correction for depth, groundwater level, and grain size.

STRENGTH OF COHESIVE SOILS

Term	Undrained Shear Strength, ksf	Blows Per Foot (SPT) (approximate)
Very Soft	< 0.25	0 to 2
Soft	0.25 to 0.50	2 to 4
Firm	0.50 to 1.00	4 to 8
Stiff	1.00 to 2.00	8 to 16
Very Stiff	2.00 to 4.00	16 to 32
Hard	> 4.00	> 32

SHEAR STRENGTH TEST METHOD

U - Unconfined Q = Unconsolidated - Undrained Triaxial

P = Pocket Penetrometer T = Torvane V = Miniature Vane F = Field Vane

HAND PENETROMETER CORRECTION

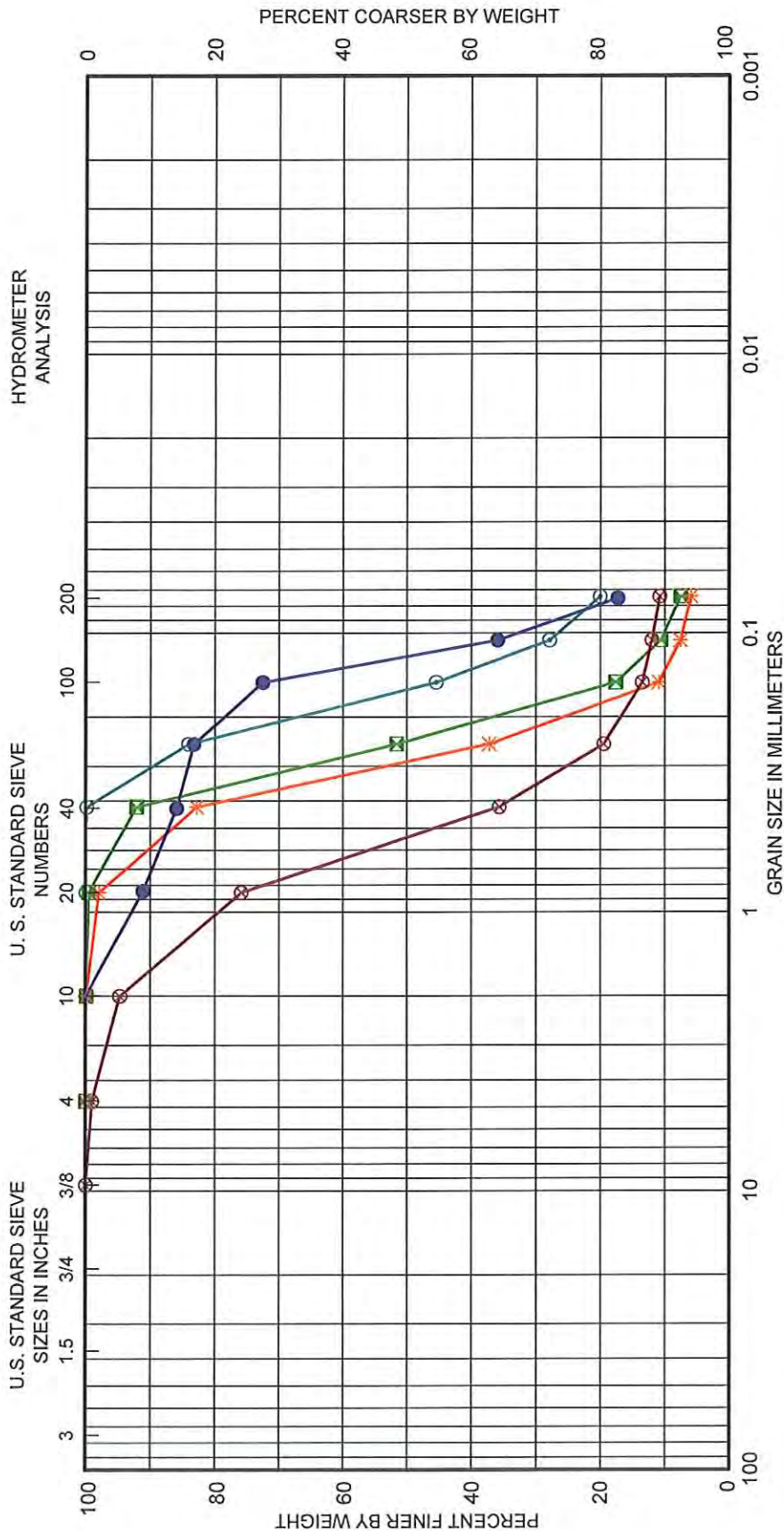
Our experience has shown that the hand penetrometer generally overestimates the in-situ undrained shear strength of over consolidated Pleistocene Gulf Coast clays. These strengths are partially controlled by the presence of macroscopic soil defects such as slickensides, which generally do not influence smaller scale tests like the hand penetrometer. Based on our experience, we have adjusted these field estimates of the undrained shear strength of natural, overconsolidated Pleistocene Gulf Coast soils by multiplying the measured penetrometer reading by a factor of 0.6. These adjusted strength estimates are recorded in the "Shear Strength" column on the boring logs. Except as described in the text, we have not adjusted estimates of the undrained shear strength for projects located outside of the Pleistocene Gulf Coast formations.

Information on each boring log is a compilation of subsurface conditions and soil or rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the logs may be transitional and approximate in nature. Water level measurements refer only to those observed at the time and places indicated, and can vary with time, geologic condition, or construction activity.



APPENDIX B – LABORATORY TEST RESULTS





SYMBOL	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

CLASSIFICATION

- SILTY SAND, brown, fine- to medium-grained
- SAND, tan, fine- to medium-grained
- SAND, tan, fine- to medium-grained
- SAND, gray, fine- to medium-grained
- SILTY SAND, gray, fine-grained

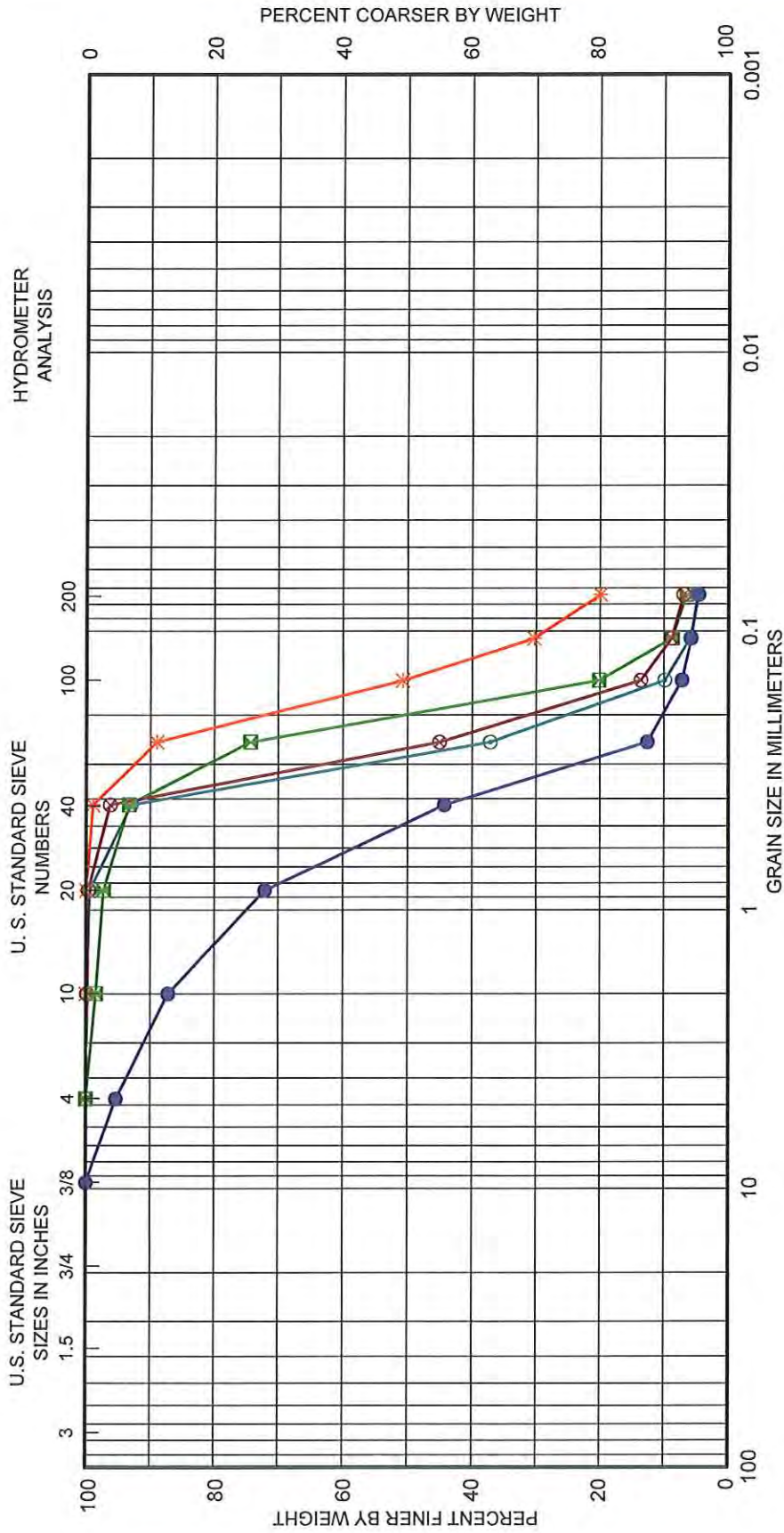
DEPTH, FT.

- 20
- 16
- 59.9
- 80
- 119.9

BORING

- FB-1
- FB-10
- FB-10
- FB-10
- FB-10

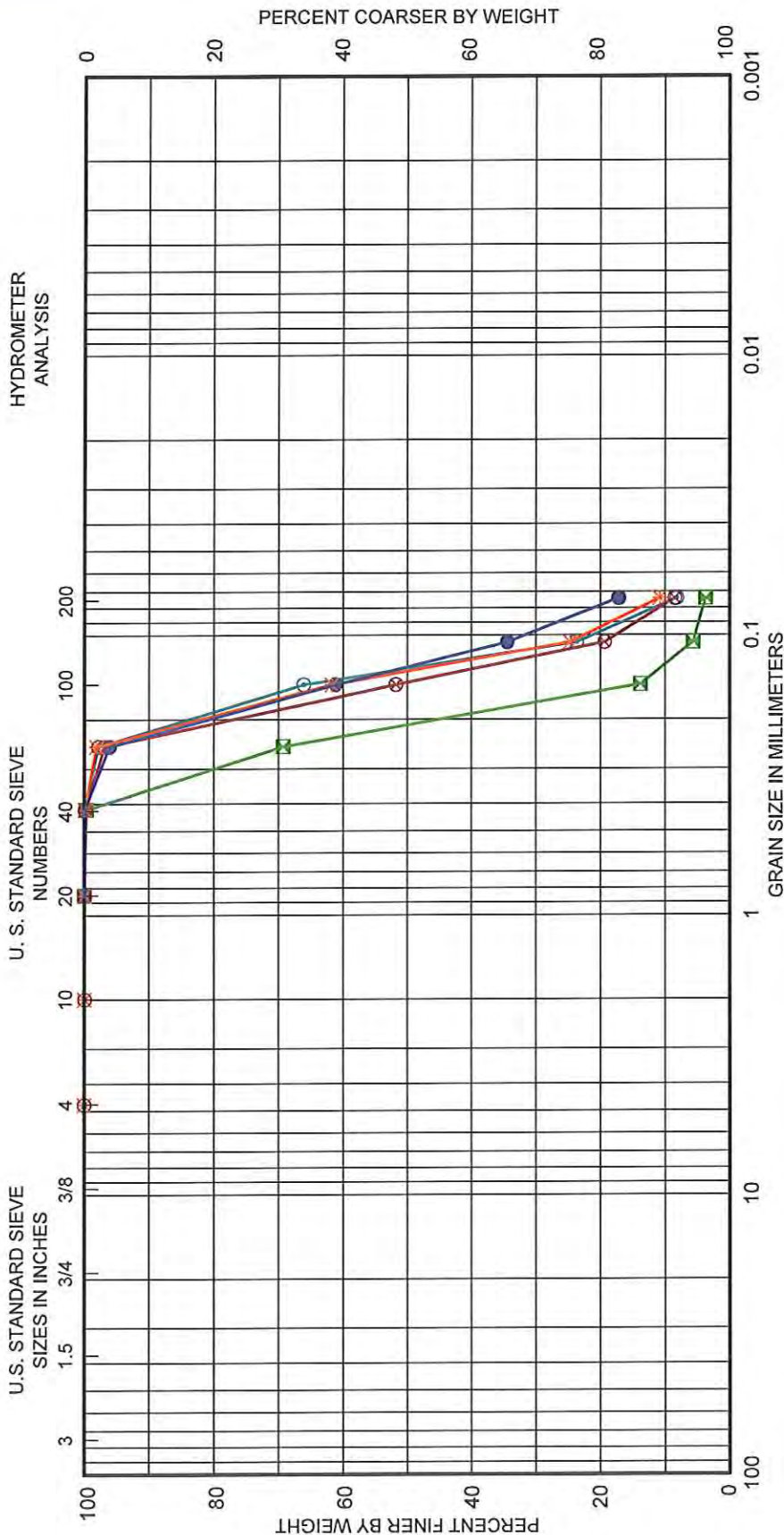
GRAIN SIZE CURVES
LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HOUSTON, TEXAS



GRAVEL		SAND			SILT or CLAY	
Coarse	Fine	Coarse	Medium	Fine		

SYMBOL	BORING		DEPTH, FT.	CLASSIFICATION
	FB-11	FB-12		
●	FB-11	FB-11	45	SAND, red, fine- to coarse-grained with fine gravel
■	FB-11	FB-11	80	SAND, gray, fine- to medium-grained
*	FB-12	FB-12	20	SILTY SAND, tan, fine-grained
⊗	FB-12	FB-12	70	SAND, gray, fine-grained, with silt
○	FB-13	FB-13	20	SAND, tan, fine- to medium-grained with silt

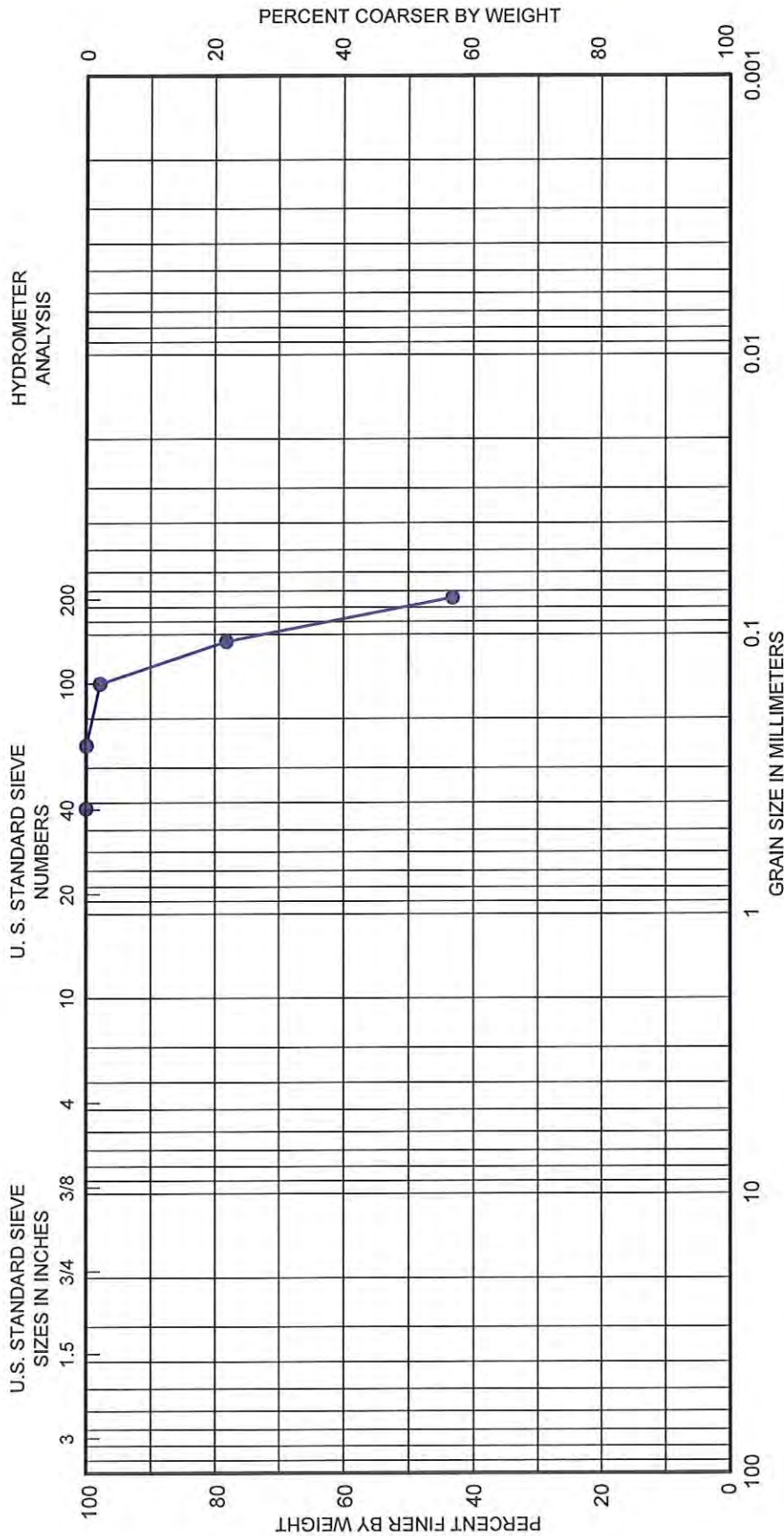
GRAIN SIZE CURVES
LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
HOUSTON, TEXAS



SYMBOL	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

BORING	DEPTH, FT.	CLASSIFICATION
FB-13	55	SILTY SAND, gray, fine-grained
FB-14	65	SAND, brown, fine-grained
FB-15	8	SAND, tan, fine-grained, with silt
FB-15	16	SAND, brown, fine-grained, with silt
FB-15	60	SAND, gray, fine-grained, with silt

GRAIN SIZE CURVES
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



GRAVEL		SAND		SILT or CLAY	
Coarse	Fine	Coarse	Medium	Fine	

CLASSIFICATION

Silty Sand, tan, fine-grained

DEPTH, FT

14

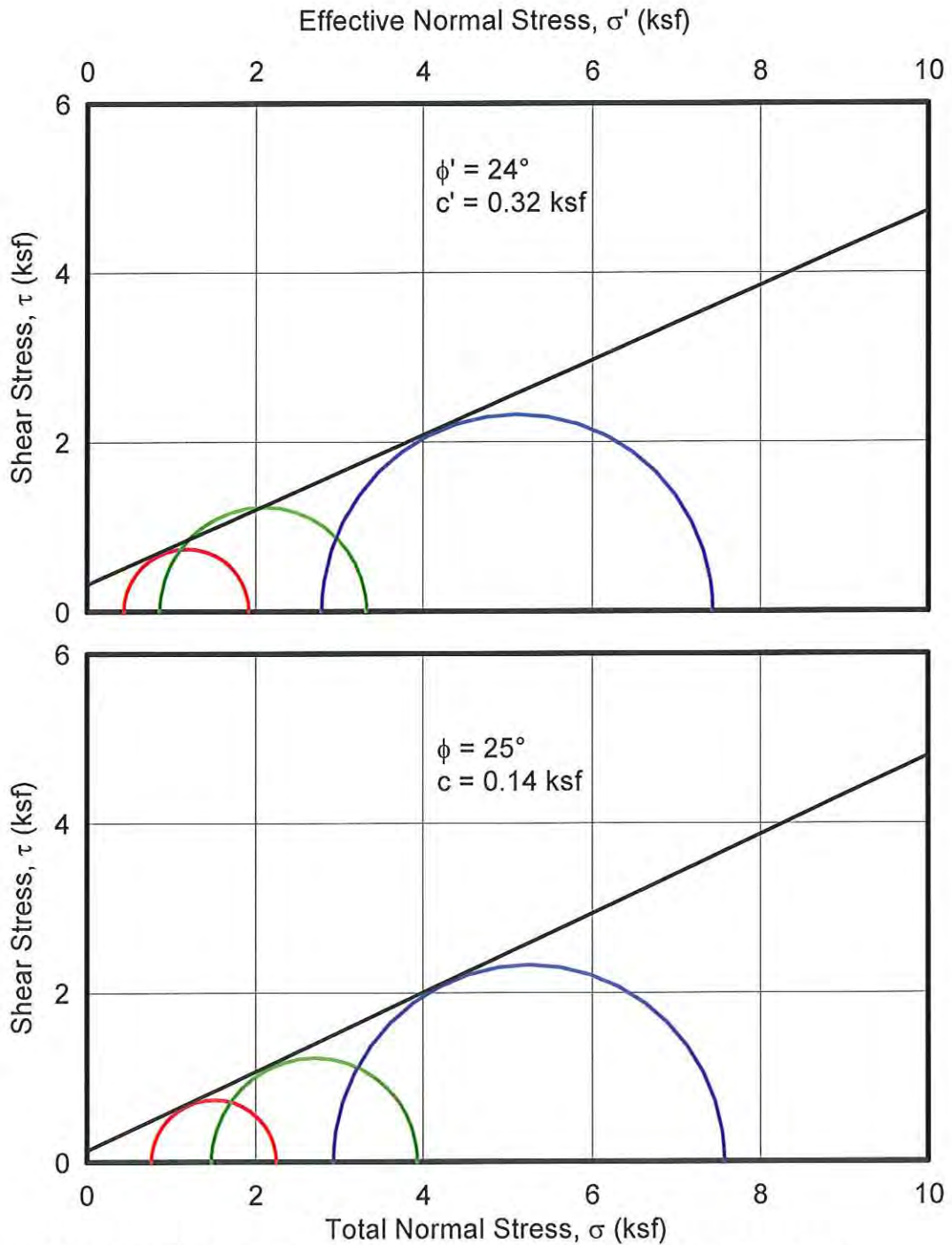
BORING

FB-9

SYMBOL

●

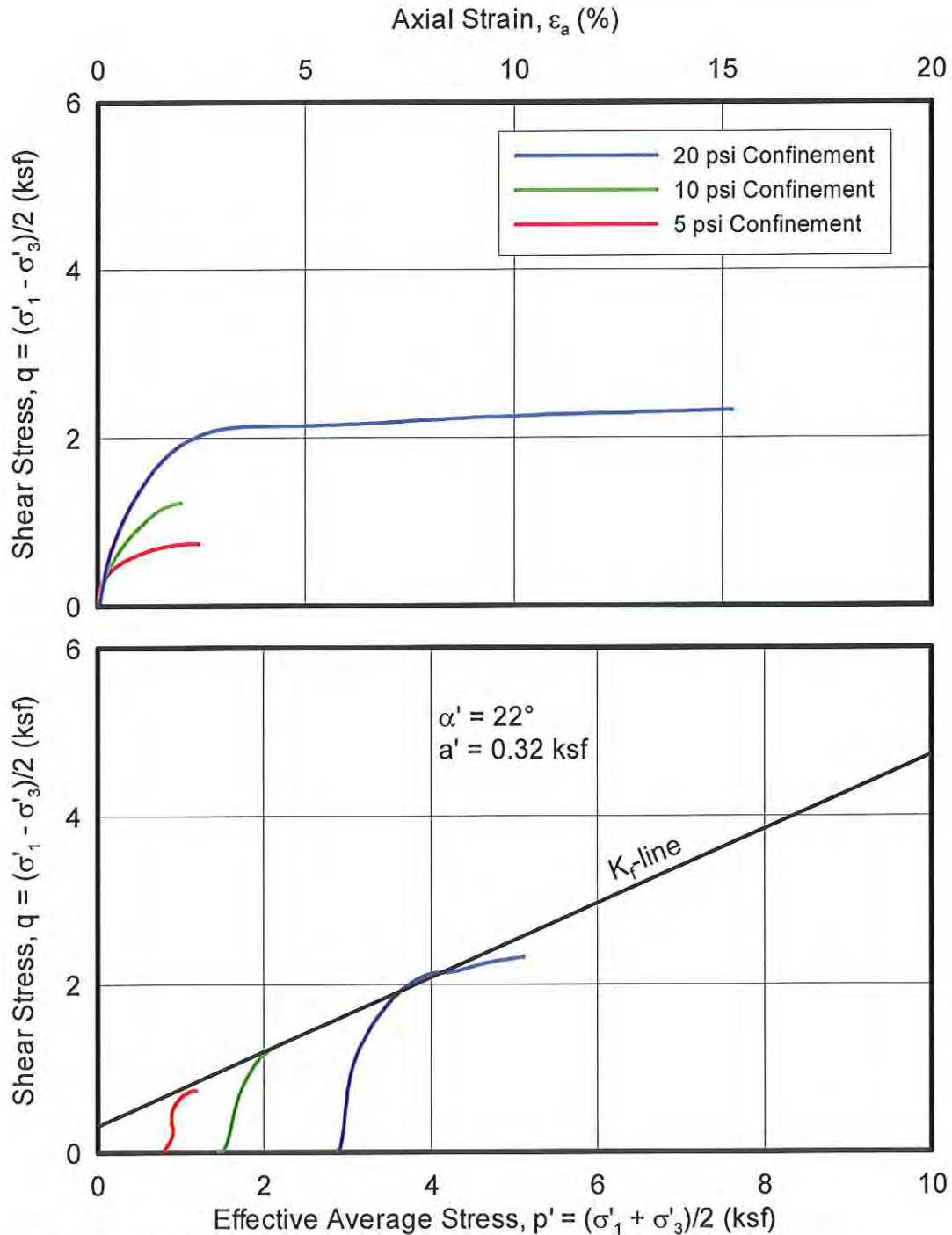
GRAIN SIZE CURVES
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



MATERIAL: CLAY, brown, with calcareous nodules, silt pockets, and silt seams
 INITIAL WATER CONTENT: 18 % LIQUID LIMIT: 64
 INITIAL WET UNIT WEIGHT: 127 pcf PLASTIC LIMIT: 15
 INITIAL DRY UNIT WEIGHT: 108 pcf PLASTICITY INDEX: 49
 INITIAL VOID RATIO: 0.59 SPECIFIC GRAVITY: 2.75 (assumed)

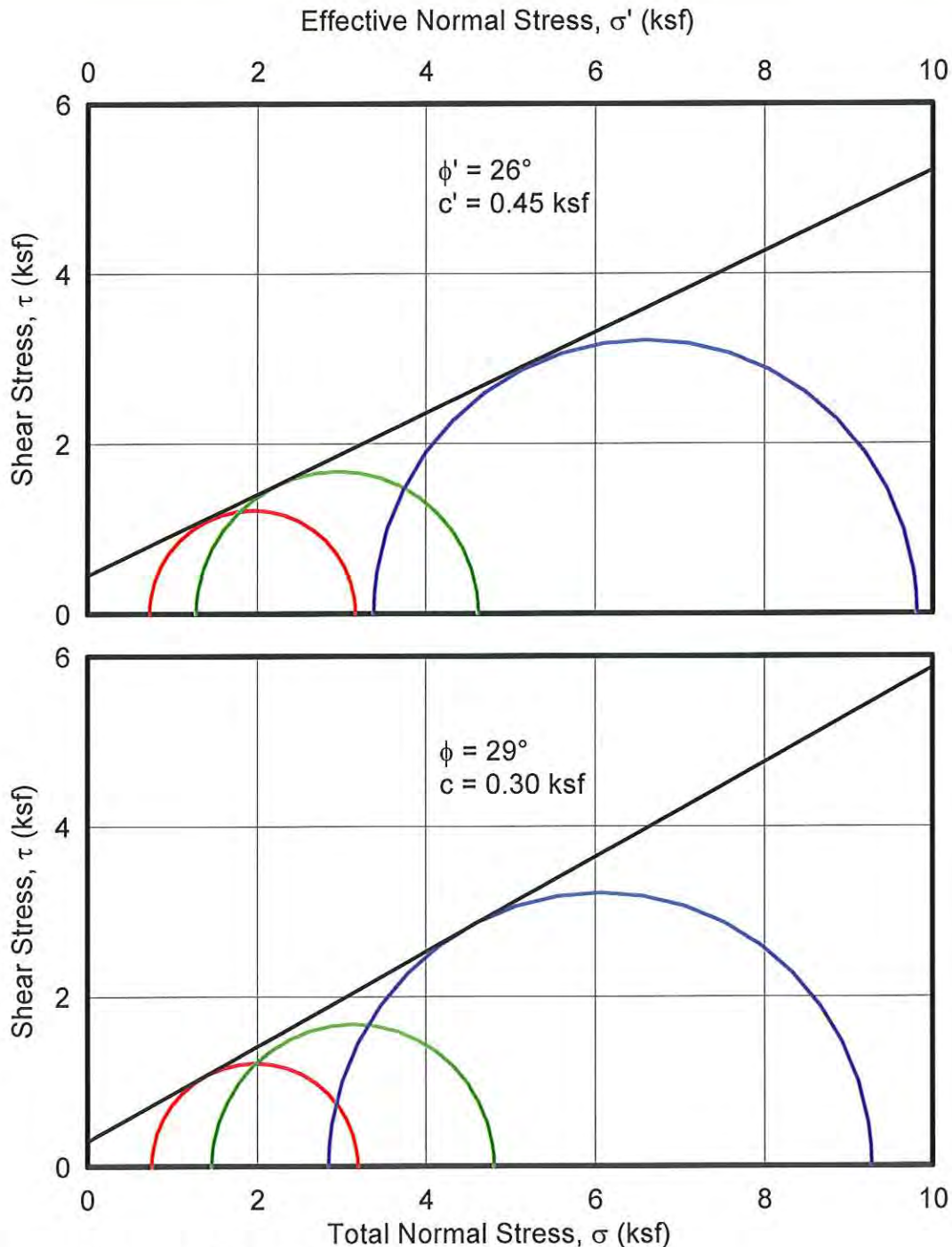
MULTI STAGE CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST RESULTS
 ISOTROPICALLY CONSOLIDATED - MOHR'S CIRCLES
 BORING B-13, 12 FT DEPTH
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS





MATERIAL: CLAY, brown, with calcareous nodules, silt pockets, and silt seams
 INITIAL WATER CONTENT: 18 % LIQUID LIMIT: 64
 INITIAL WET UNIT WEIGHT: 127 pcf PLASTIC LIMIT: 15
 INITIAL DRY UNIT WEIGHT: 108 pcf PLASTICITY INDEX: 49
 INITIAL VOID RATIO: 0.59 SPECIFIC GRAVITY: 2.75

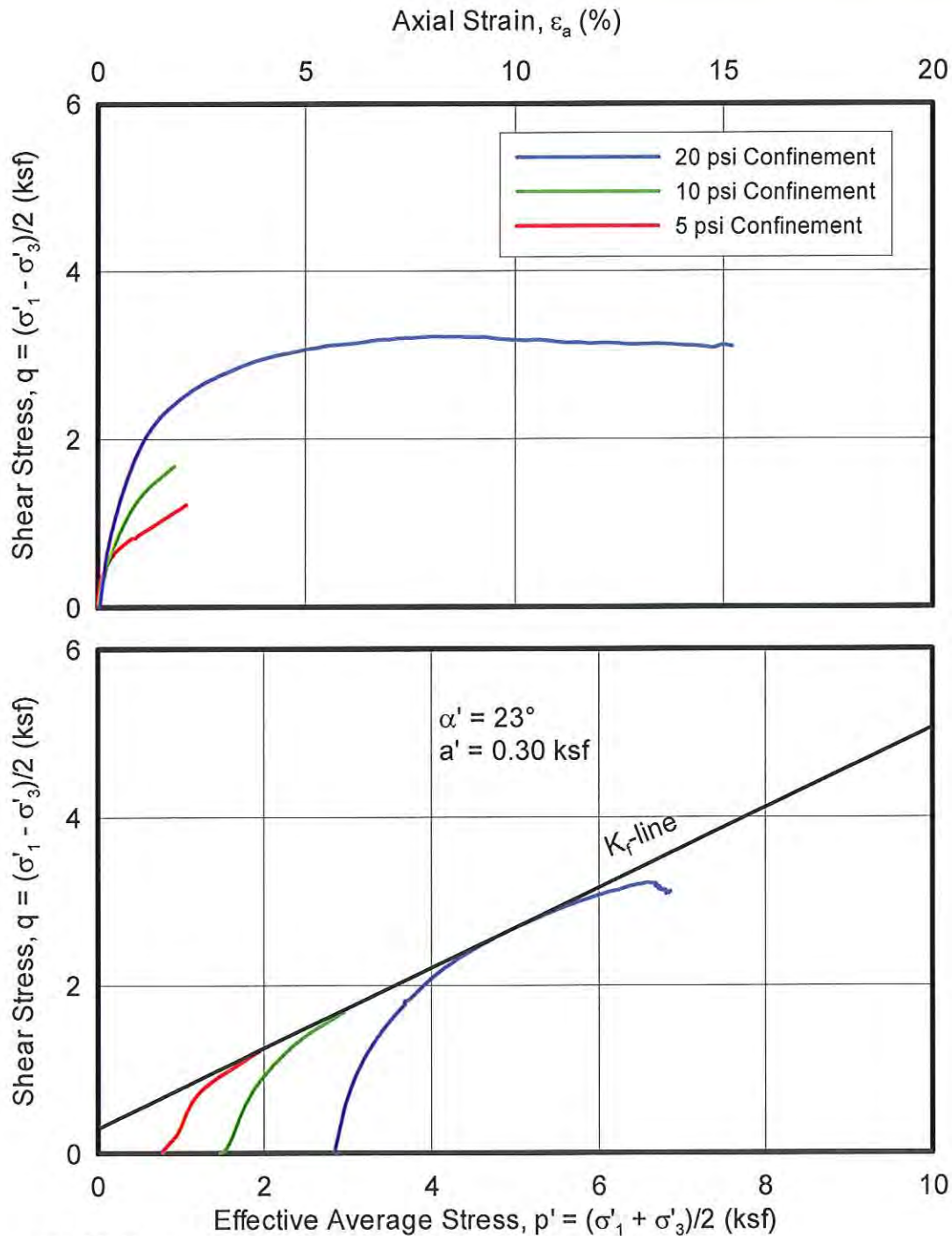
MULTI STAGE CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST RESULTS
 ISOTROPICALLY CONSOLIDATED - STRESS AND STRAIN CURVES
 BORING B-13, 12 FT DEPTH
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS



MATERIAL: CLAY, gray and red, slickensided, with sand pockets
 INITIAL WATER CONTENT: 18 % LIQUID LIMIT: 43
 INITIAL WET UNIT WEIGHT: 130 pcf PLASTIC LIMIT: 11
 INITIAL DRY UNIT WEIGHT: 110 pcf PLASTICITY INDEX: 32
 INITIAL VOID RATIO: 0.56 SPECIFIC GRAVITY: 2.75 (assumed)

MULTI STAGE CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST RESULTS
 ISOTROPICALLY CONSOLIDATED - MOHR'S CIRCLES
 BORING B-13, 35 FT DEPTH
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS

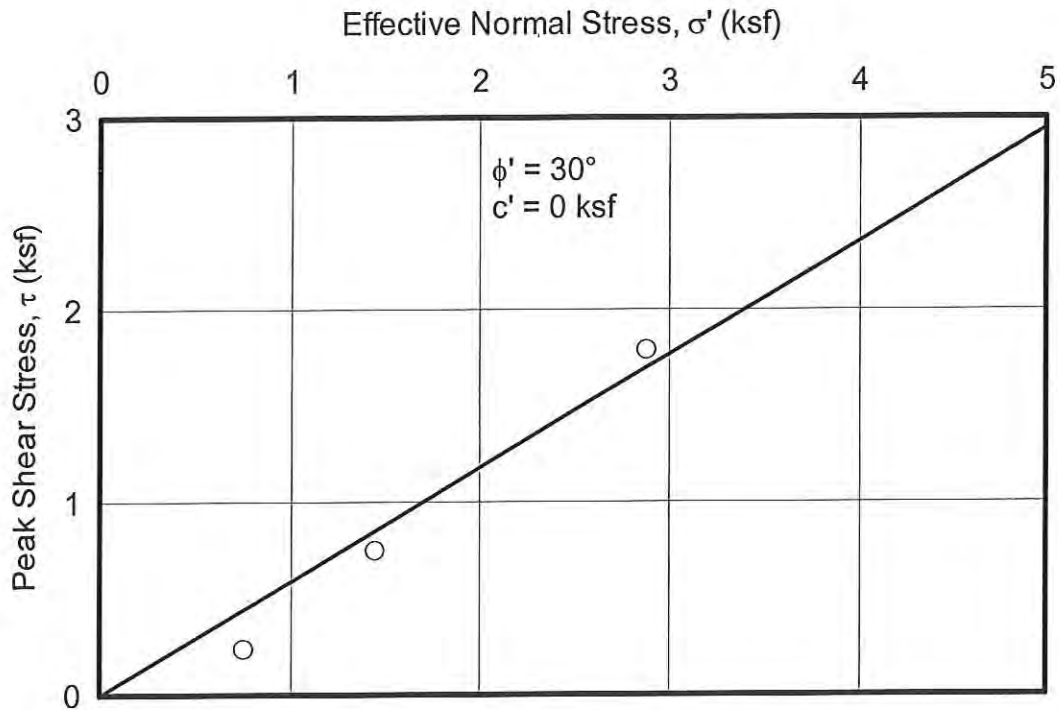




MATERIAL: CLAY, gray and red, slickensided, with sand pockets	
INITIAL WATER CONTENT: 18 %	LIQUID LIMIT: 43
INITIAL WET UNIT WEIGHT: 130 pcf	PLASTIC LIMIT: 11
INITIAL DRY UNIT WEIGHT: 110 pcf	PLASTICITY INDEX: 32
INITIAL VOID RATIO: 0.56	SPECIFIC GRAVITY: 2.75

MULTI STAGE CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST RESULTS
 ISOTROPICALLY CONSOLIDATED - STRESS AND STRAIN CURVES
 BORING B-13, 35 FT DEPTH
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS





MATERIAL: SAND, fine- to medium-graded, brown, with silt
 INITIAL WATER CONTENT: 18 %
 INITIAL WET UNIT WEIGHT: 116 pcf
 INITIAL DRY UNIT WEIGHT: 99 pcf
 INITIAL VOID RATIO: 0.73

Note:

1. Sample was remolded in the laboratory to initial unit weight and water content shown as noted.

DIRECT SHEAR TEST RESULTS
 BORING B-13, 20 FT DEPTH
 LUCE BAYOU INTERBASIN TRANSFER PROJECT
 COASTAL WATER AUTHORITY
 HOUSTON, TEXAS





APPENDIX C – CORROSION POTENTIAL GUIDELINES



CORROSION POTENTIAL GUIDELINES

Corrosion of Steel. Corrosion is a major factor in the life of steel elements in contact with soil. Corrosion is caused by migration of electrons from the steel into the surrounding soil. Three measurable soil properties that indicate the corrosion potential for steel in contact with soil are: 1) chloride ion concentration, 2) pH, and 3) electrical resistivity. It is generally accepted that corrosion of steel is most likely in environments that have chloride ions (even in low concentrations), low pH, and/or low resistivity.

The following table presents some general guidelines concerning the corrosion potential of a soil as a function of chloride ion concentration, pH, and electrical resistivity¹. Each of the columns in this table should be used independently of the others when evaluating soil corrosion potential. For example, it is not necessary to have a resistivity between 0 and 1,000 Ohm-cm **and** a pH between 0 and 4.5 to indicate a very high potential for corrosion.

Resistivity (Ohm-cm)	Chloride Ion Concentration (ppm)	pH	Corrosion Potential
0 – 1,000	> 500	0 - 4.5	Very High
1,000 – 2,000		4.5 - 5.5	High
2,000 – 5,000	< 500	5.5 - 6.5	Moderate
> 5,000		> 6.5	Mild

Degradation of Concrete. The degradation of concrete is caused by chemical agents in the soil or groundwater that react with concrete to either dissolve the cement paste or precipitate larger compounds which cause cracking and flaking. The concentration of water-soluble sulfates in the soils is a good indicator of the potential for chemical attack of concrete. Sulfate concentrations in soil can be used to evaluate the need for protection of concrete based on the following table².

Sulfate Ion Concentration (ppm)	Aggressiveness
> 20,000	Very Severe
2,000 to 20,000	Severe
1,000 to 2,000	Moderate
< 1,000	Mild

¹ Palmer, J. F., *Soil Resistivity Measurements and Analysis*, Materials Performance, Vol. 13, January 1974.

² *ACI Manual of Concrete Practice*, Part 1, Section 201.2R-12, American Concrete Institute, 1992.



APPENDIX D – GENERAL GUIDELINES FOR CRUMB TESTS



GENERAL GUIDELINES FOR CRUMB TESTS

Most clayey soils are moderately to highly resistant to erosion by water. To a large extent, this is due to the surface chemistry of the clay particles, causing them to attract to each other in the presence of water. However, some clayey soils have the tendency for individual particles to repel each other in the presence of water. Particles of these clayey soils, when exposed to freshwater, have a tendency to go into suspension in water by a process called "dispersion." Such clayey soils are collectively called "dispersive clays."

The crumb dispersion test is an empirical laboratory test used to qualitatively identify the presence of dispersive clays. We conducted crumb dispersion tests on selected soil samples within the vicinity of the proposed outfall structure. The results of this qualitative test can vary from "no reaction" (no evidence of dispersion properties) to "strong reaction" (definite indication of dispersive properties). The following table presents general guidelines for estimating the dispersive potential from crumb test results.

Grade	Reaction	Description	Dispersion Potential
1	None	Crumb may slake and run out of the beaker in flat pile but no sign of cloudy water caused by colloids in suspension.	Low
2	Slight	Bare hint of cloud in water at the surface of crumb. (If the cloud is easily visible, use Grade 3).	Moderate
3	Moderate	Easily recognizable cloud of colloids in suspension. Usually spreading out in thin streaks on bottom of beaker.	High
4	Strong	Colloidal cloud covers nearly whole bottom (at least 85 percent) of beaker, usually in a very thin skin. In extreme cases all the water in the beaker becomes cloudy.	Very High

Appendix C

Topographic and Bathymetric Survey



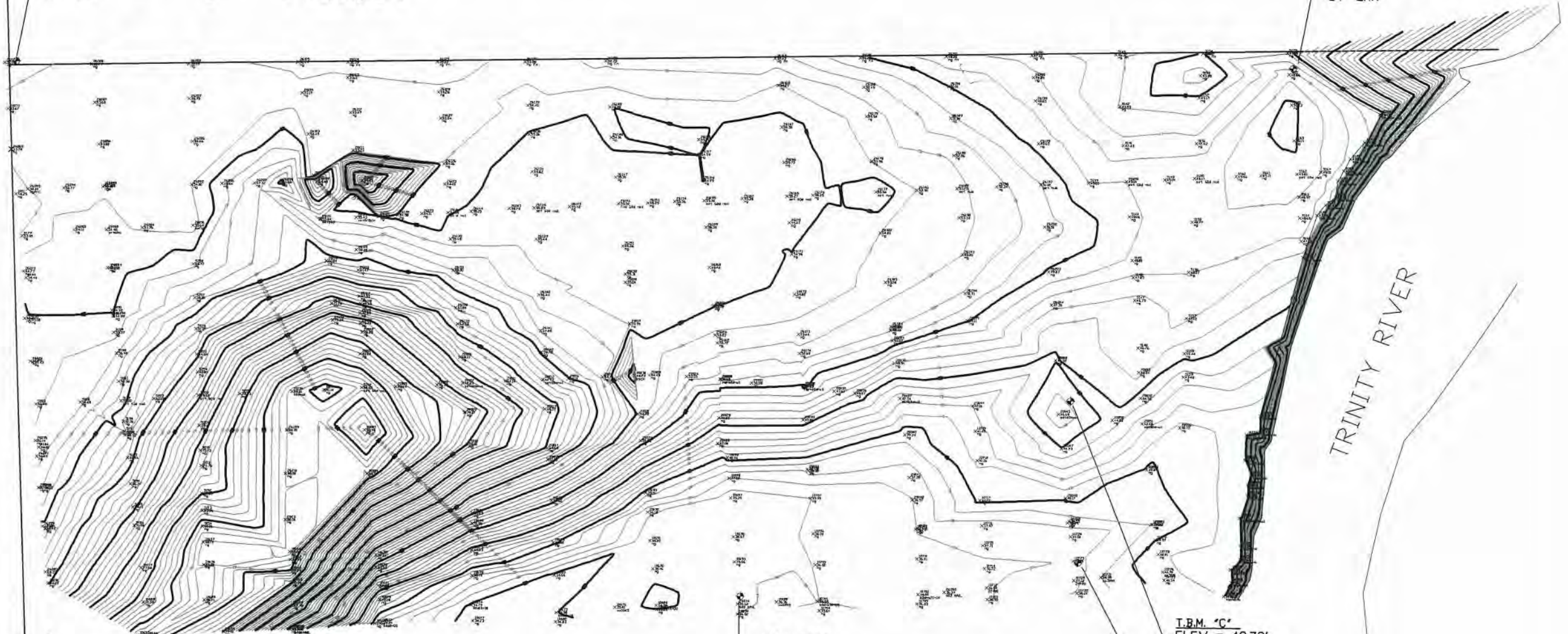
LEGEND

- = Elect. Pad Mount Transformer
- = Found 5/8" Iron Rod w/Cap
- = Point
- = Power Pole
- = Overhead Electrical Line
- = Water Valve/Meter
- = Fence
- = Electrolier
- = Flush Valve
- = Curb Inlet
- = Sanitary Manhole
- = Storm Manhole
- = Telephone Pedestal
- = Controlling Monument
- = Property Line



I.B.M. 'A'
ELEV = 55.82'
BENCH TIE SPIKE
W/YELLOW TAG
24" OAK

I.B.M. 'B'
ELEV = 45.29'
BENCH TIE SPIKE
W/YELLOW TAG
24" OAK



I.B.M. 'AA'
ELEV = 75.24'
BENCH TIE SPIKE
W/YELLOW TAG
15" OAK

I.B.M. 'BB'
ELEV = 38.32'
BENCH TIE SPIKE
W/YELLOW TAG
15" OAK

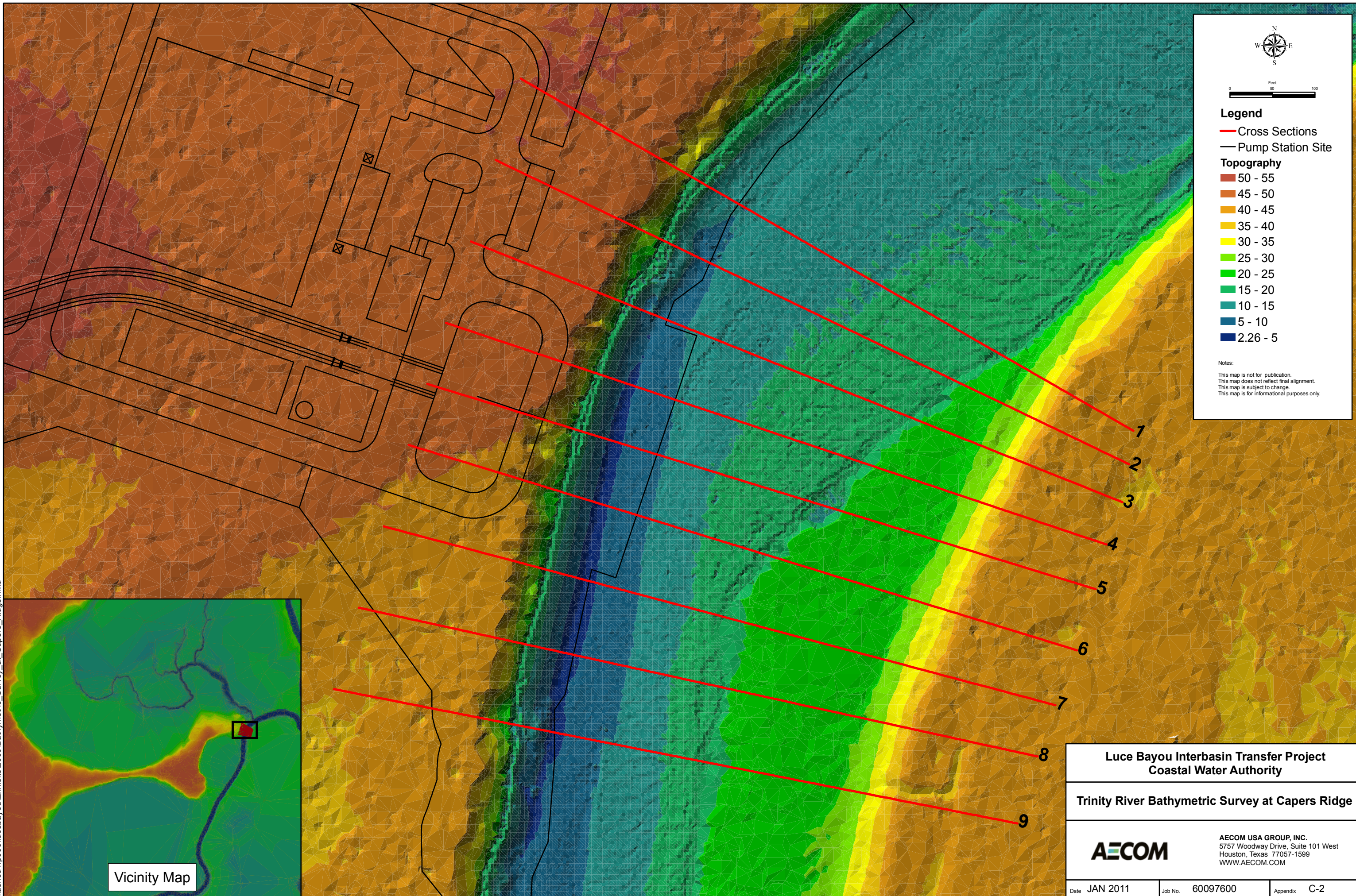
I.B.M. 'C'
ELEV = 48.72'
BENCH TIE SPIKE
W/YELLOW TAG
24" OAK

I.B.M. 'CC'
ELEV = 40.65'
BENCH TIE SPIKE
W/YELLOW TAG
15" OAK

TRINITY RIVER

RATNALA & BAHL, INC.		
11767 Katy Frey, Suite 510 HOUSTON, TEXAS 77079		
TOPOGRAPHIC SURVEY OF LUCE 96 ACRES TRACT		
SCALE: 1" = 100'	JOB NO: 2838	IN
DATE: 02/21/09	FIELD BOOK NO: 544-545	
DRAWN BY: MSC	DRAWING NO: N/A	

\\shou1f0006\lucebayou\Exhibits\2009\Bathymetric_Survey_at_Capers_Ridge.mxd



N
W — E
S

Feet
0 50 100

Legend

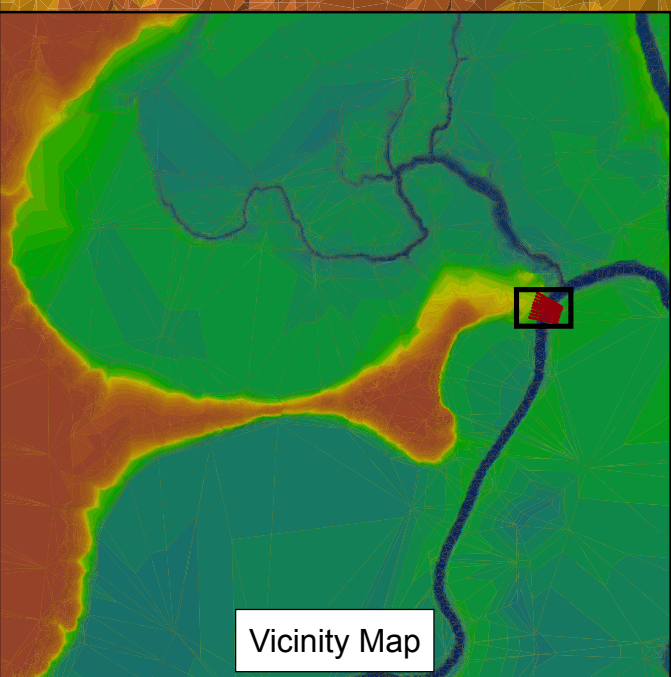
- Cross Sections
- Pump Station Site

Topography

- 50 - 55
- 45 - 50
- 40 - 45
- 35 - 40
- 30 - 35
- 25 - 30
- 20 - 25
- 15 - 20
- 10 - 15
- 5 - 10
- 2.26 - 5

Notes:

This map is not for publication.
This map does not reflect final alignment.
This map is subject to change.
This map is for informational purposes only.



Luce Bayou Interbasin Transfer Project
Coastal Water Authority

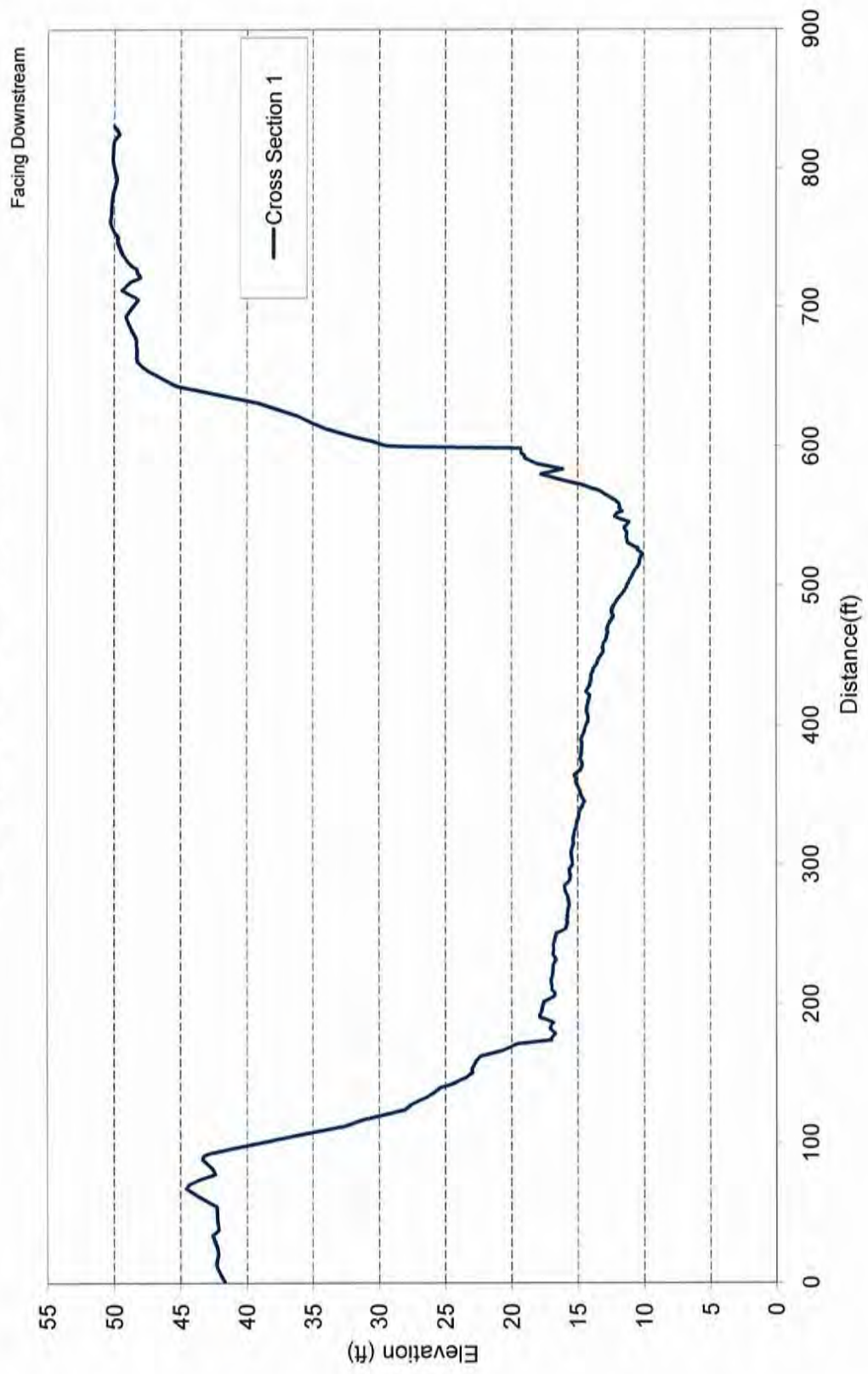
Trinity River Bathymetric Survey at Capers Ridge

AECOM

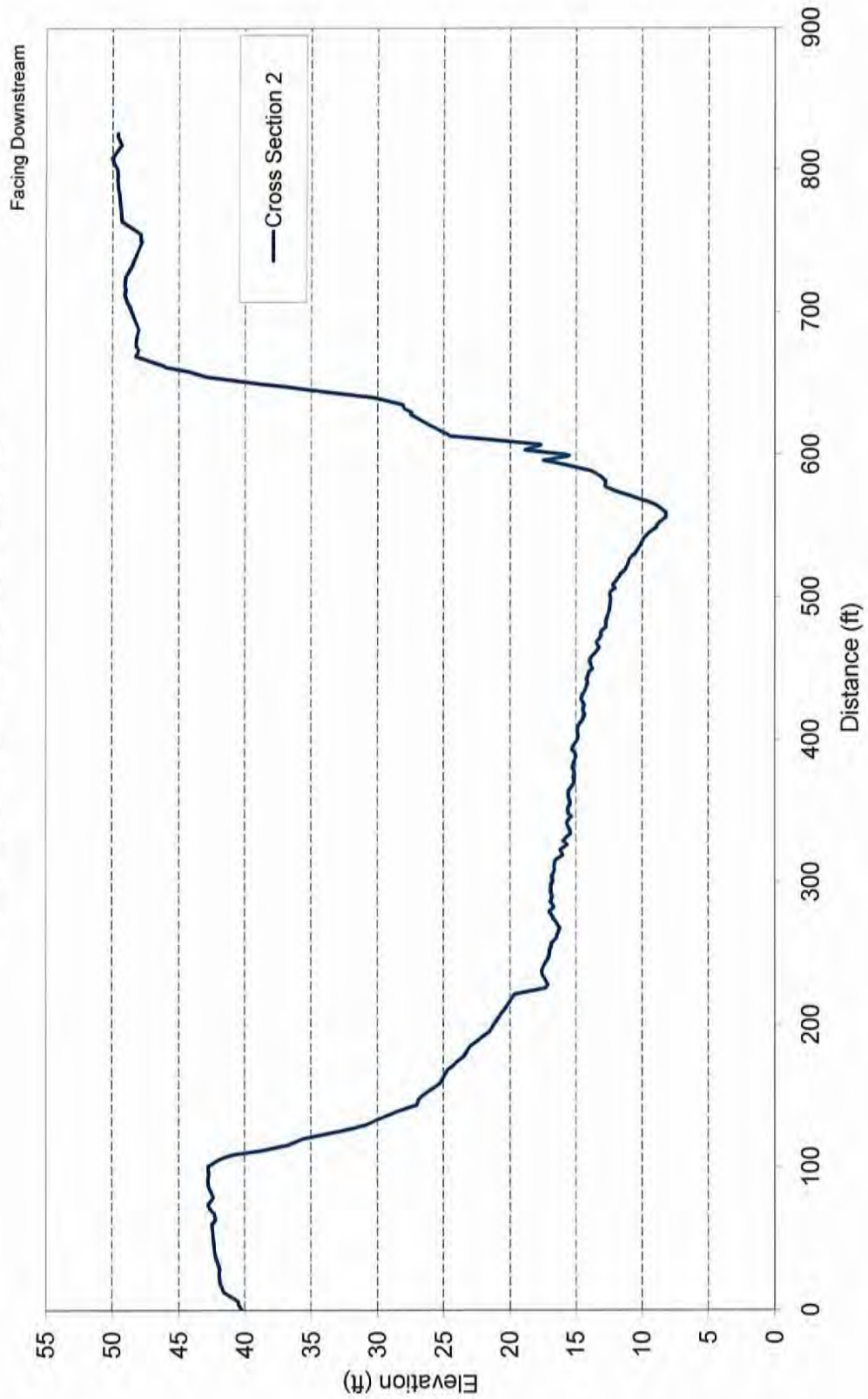
AECOM USA GROUP, INC.
5757 Woodway Drive, Suite 101 West
Houston, Texas 77057-1599
WWW.AECOM.COM

Date JAN 2011	Job No. 60097600	Appendix C-2
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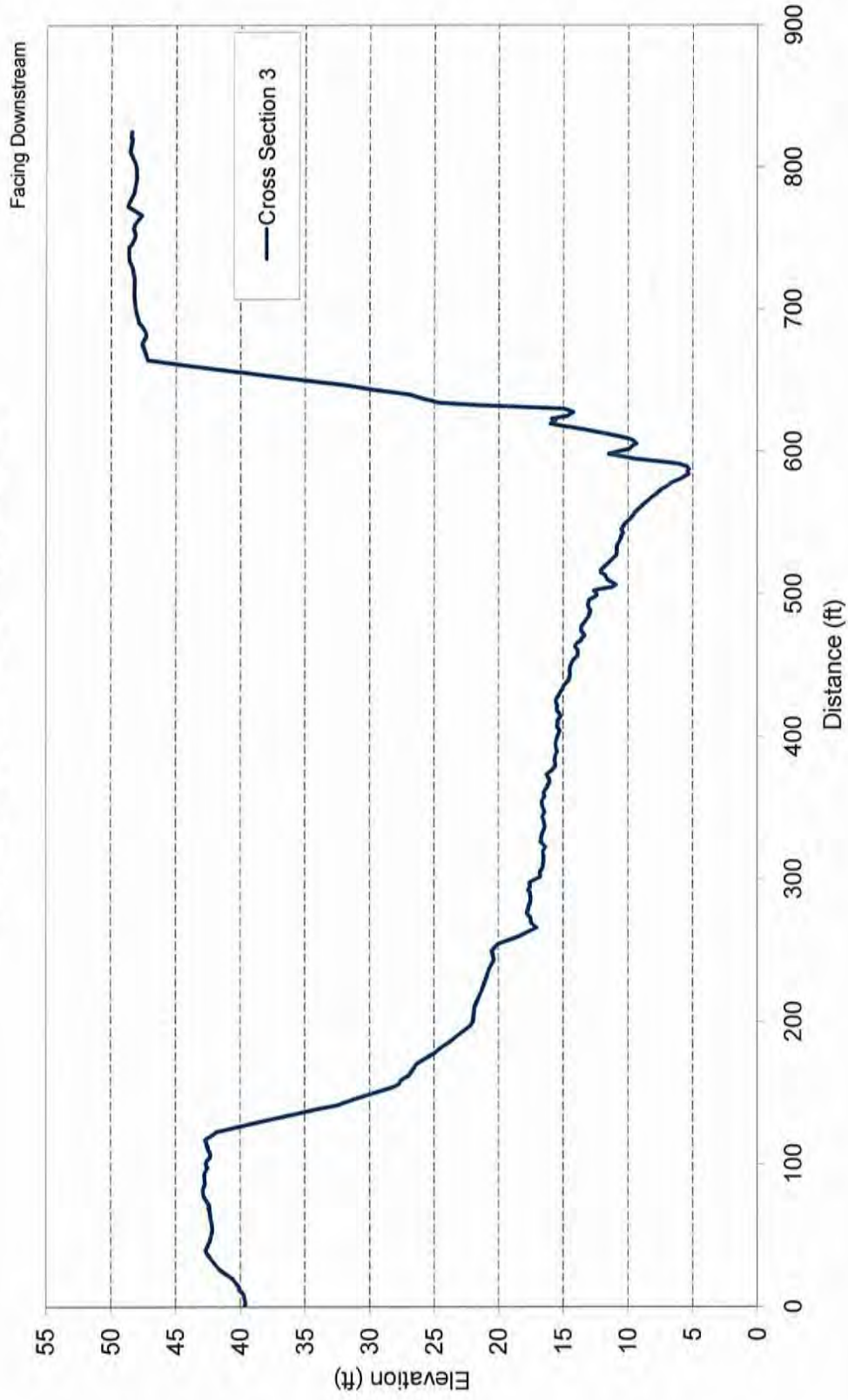
River Bed Elevation at Cross Section 1



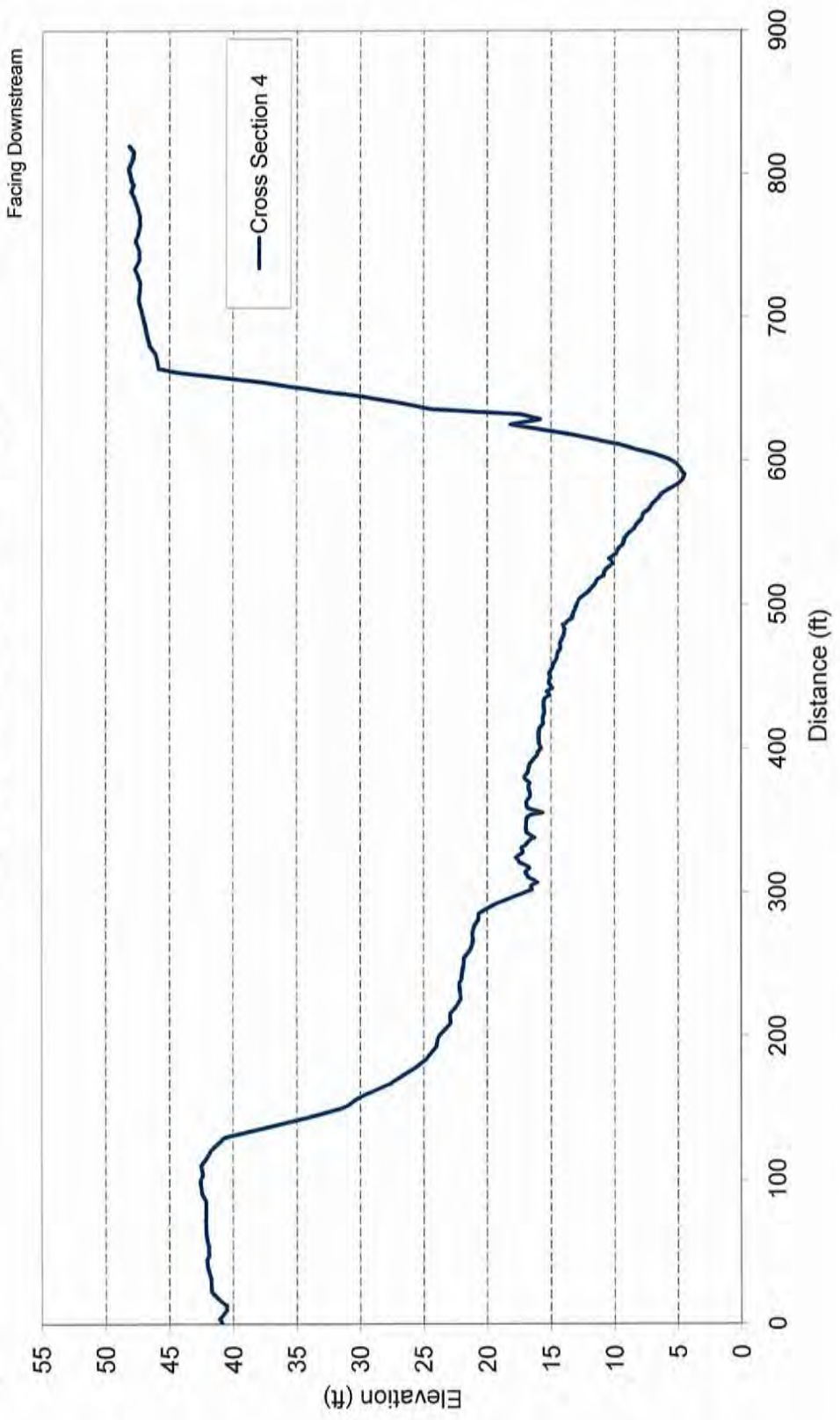
River Bed Elevation at Cross Section 2



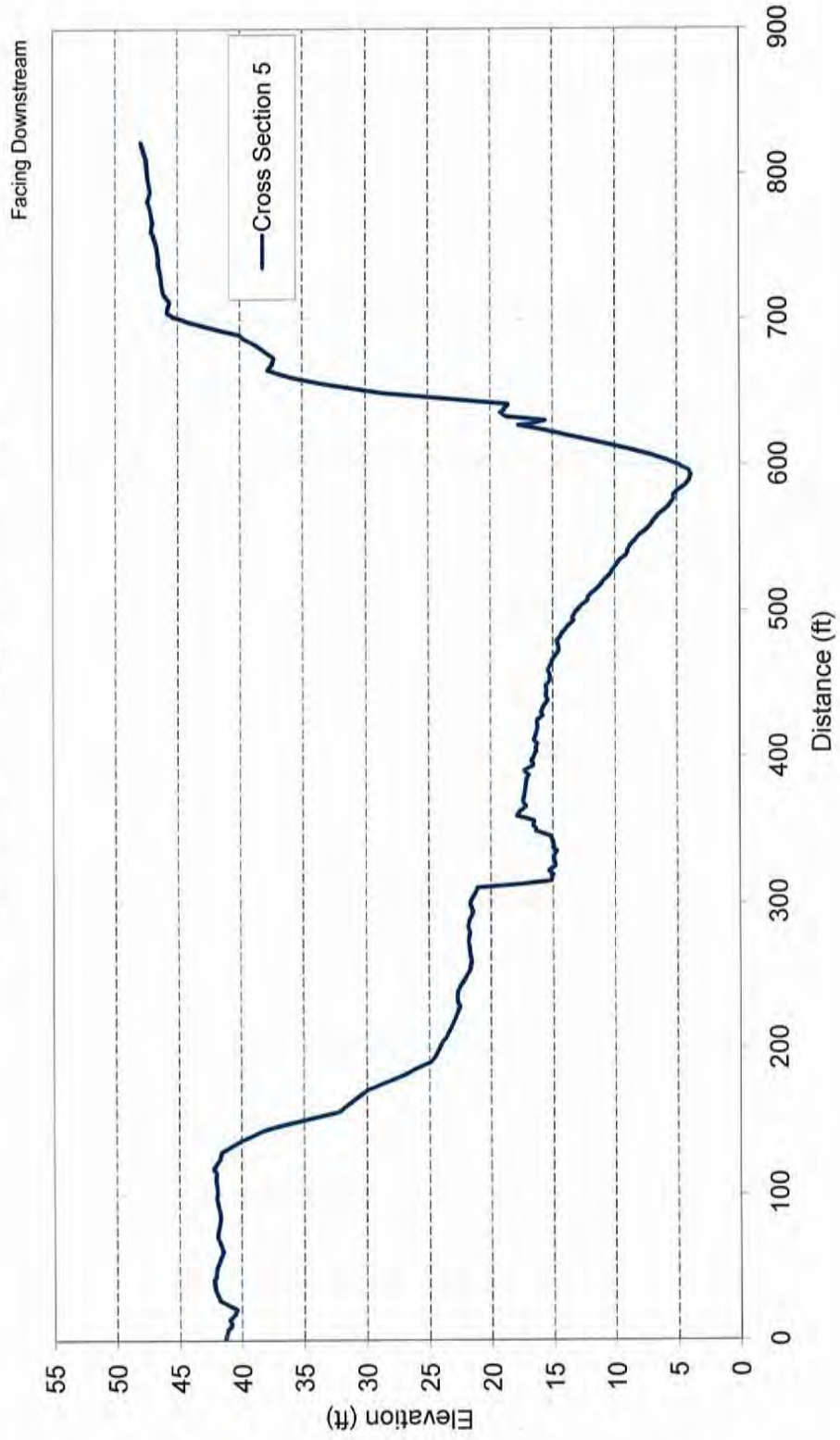
River Bed Elevation at Cross Section 3



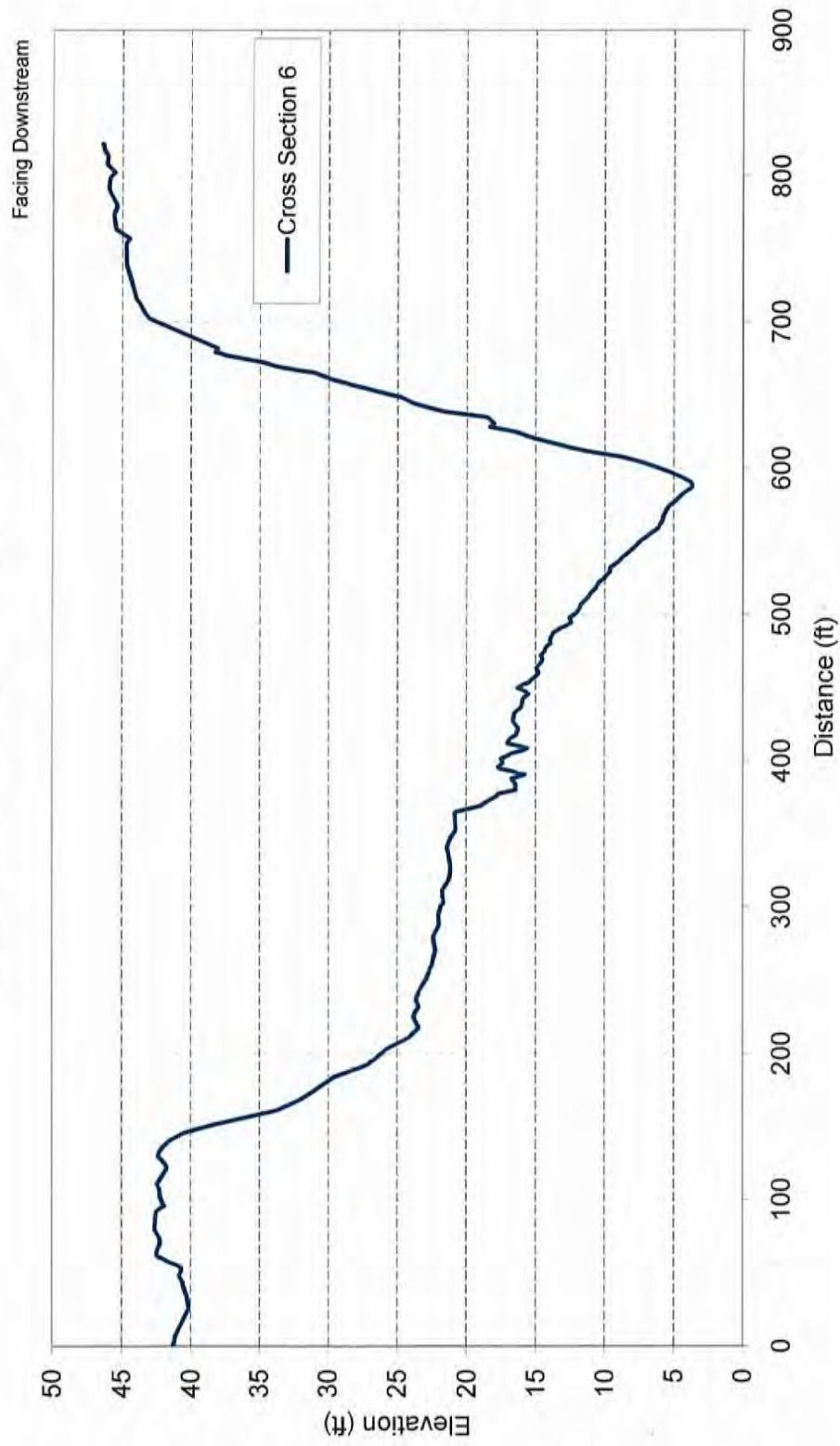
River Bed Elevation at Cross Section 4



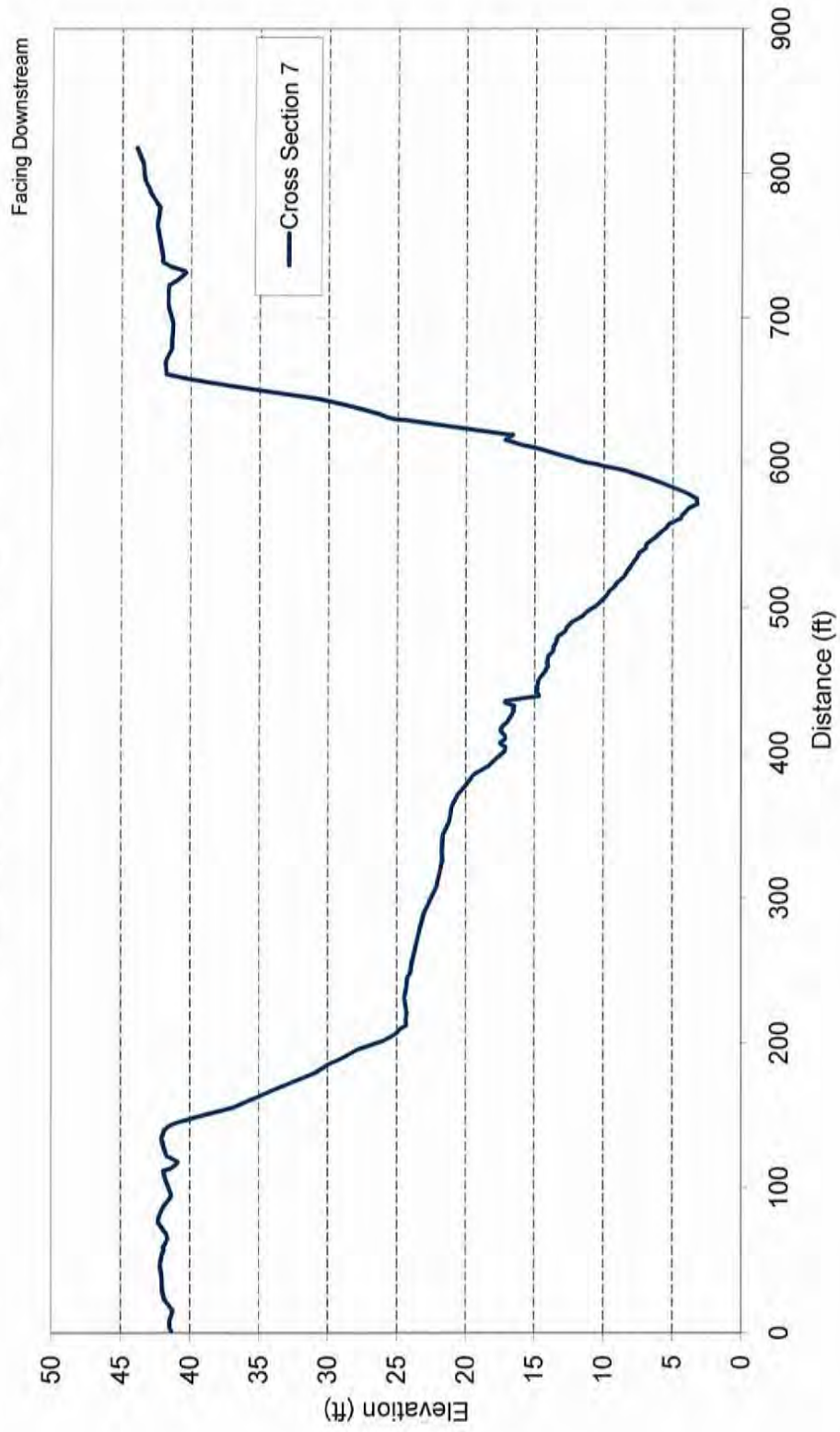
River Bed Elevation at Cross Section 5



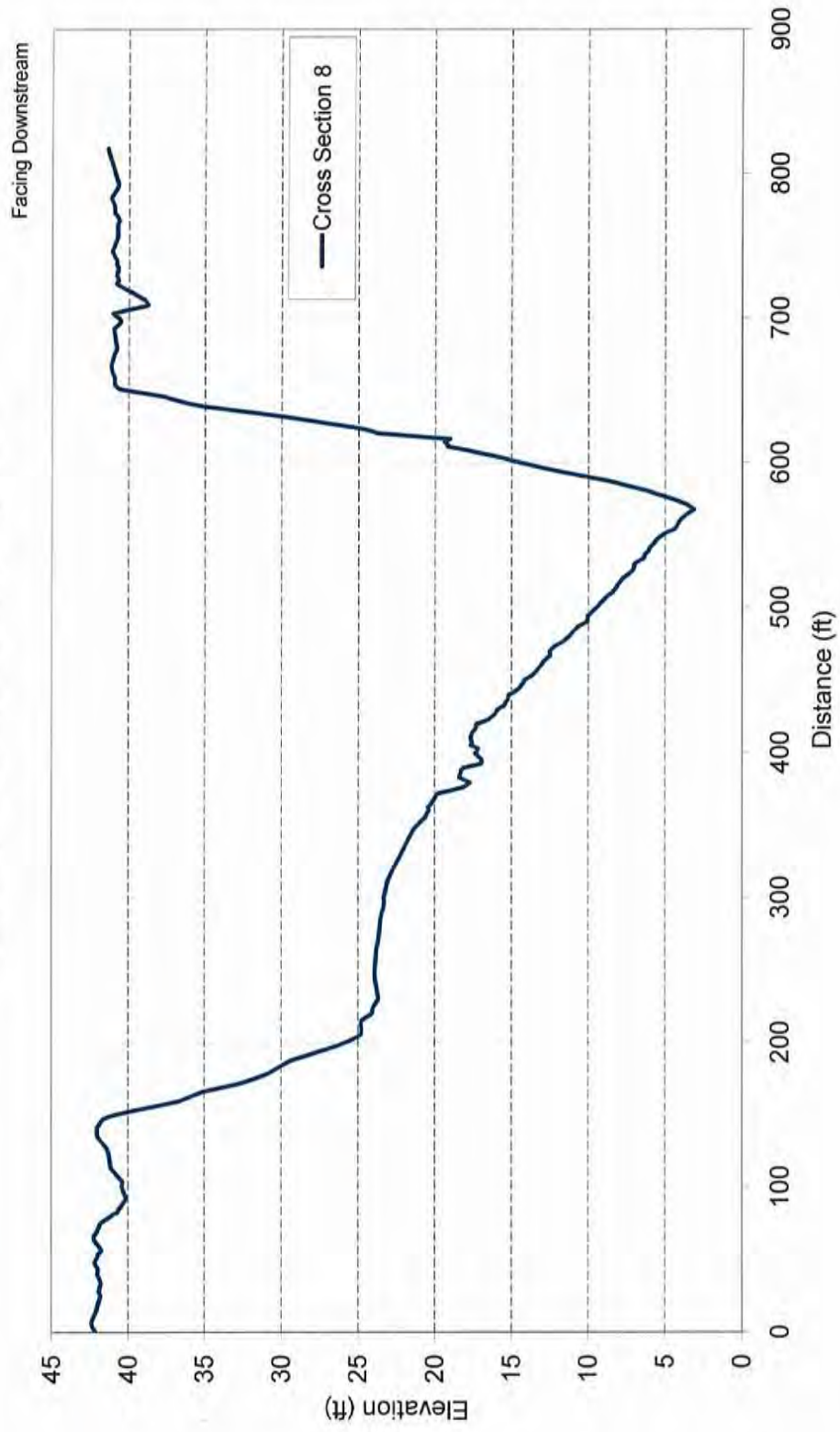
River Bed Elevation at Cross Section 6



River Bed Elevation at Cross Section 7



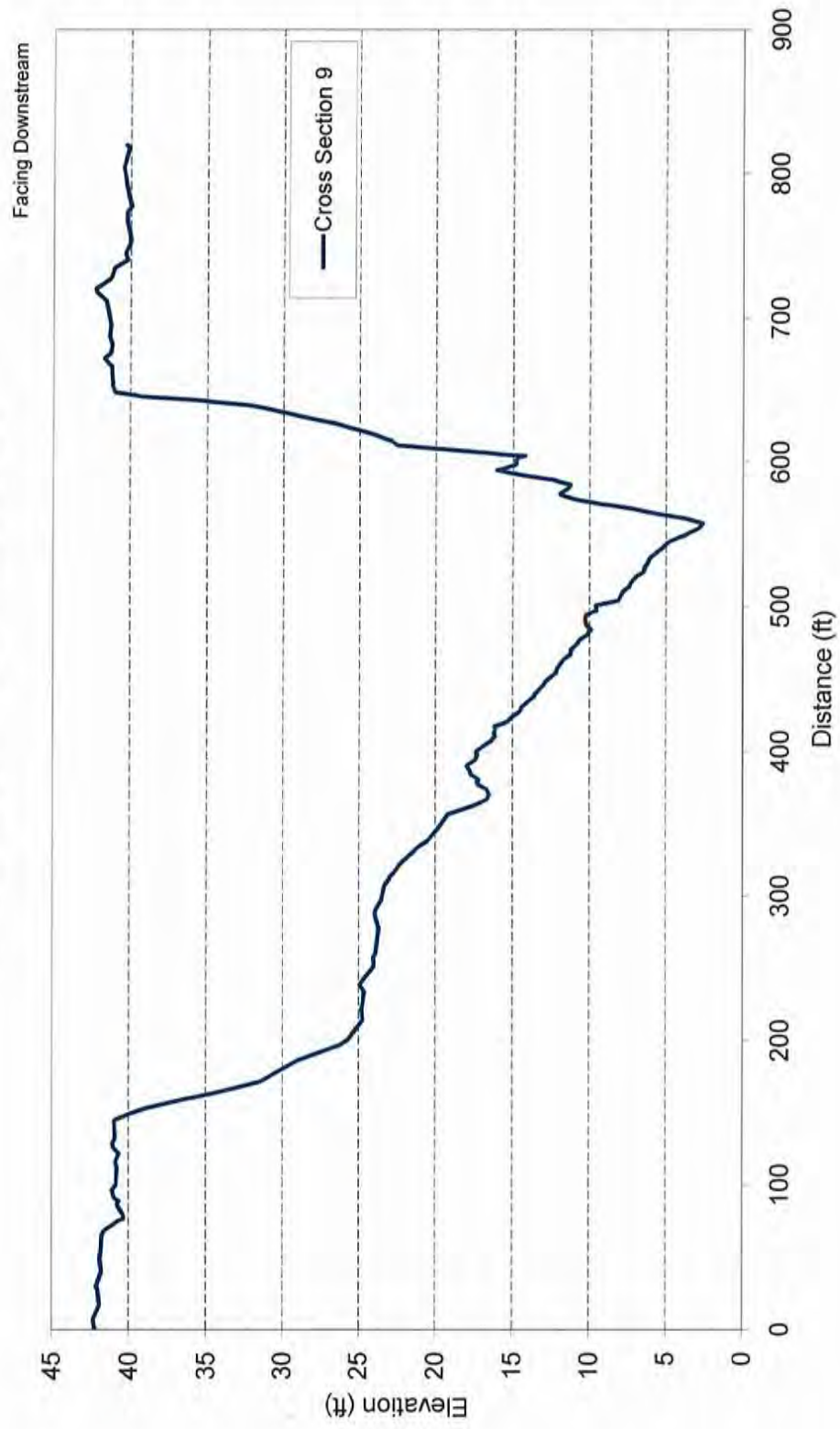
River Bed Elevation at Cross Section 8



Facing Downstream

— Cross Section 8

River Bed Elevation at Cross Section 9



Facing Downstream

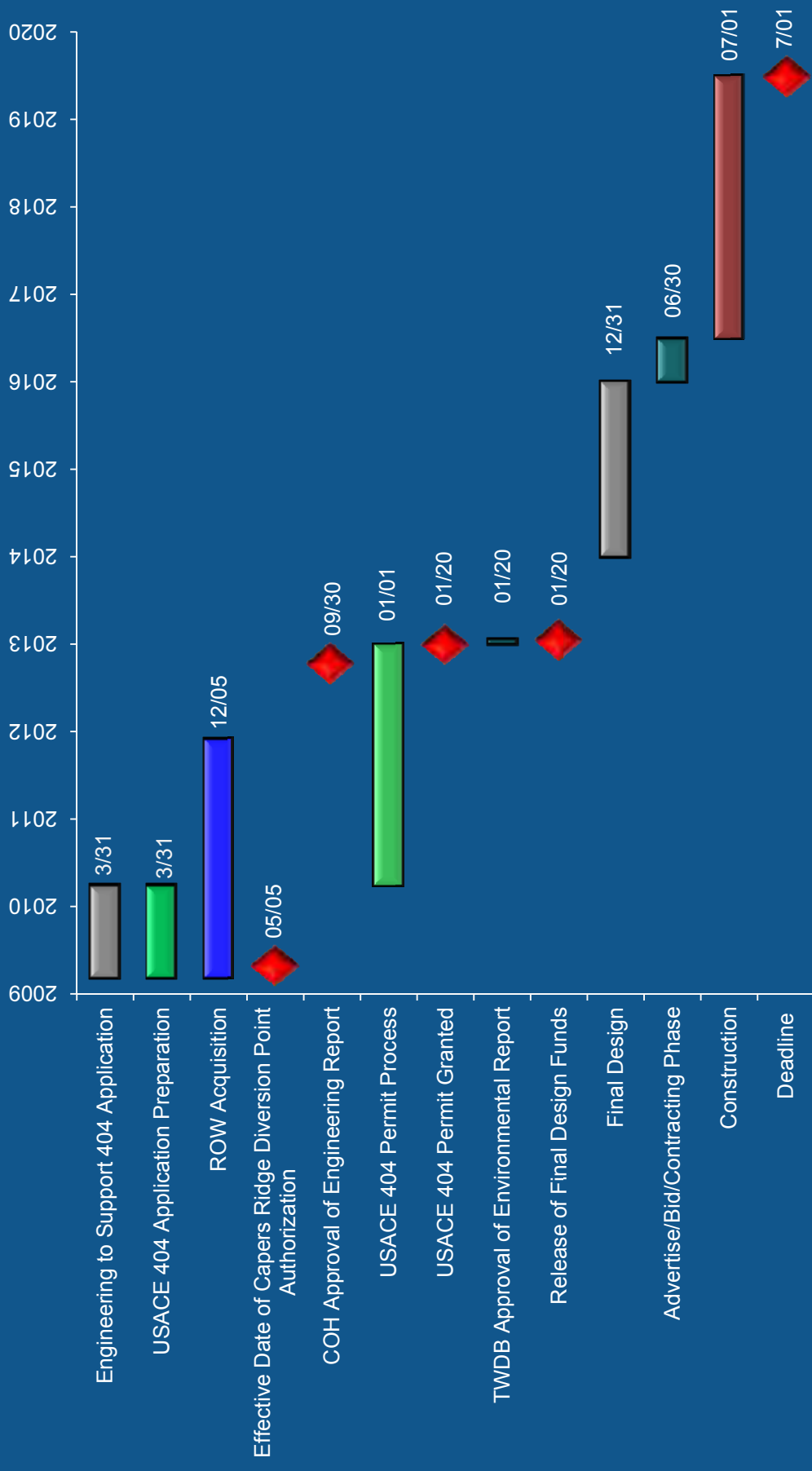
— Cross Section 9

Appendix D

Project Schedule and Cost Estimate



Implementation Schedule



**LUCE BAYOU INTERBASIN TRANSFER PROJECT
PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST**

Item description	Unit	Quantity	Unit price	Total price
Canal ^{1,2}	Mi	23.46	\$4,856,000	\$113,900,000
Pipeline ^{2,3}	Ft	16,000	\$2,818	\$45,100,000
Pump Station Facility ^{2,4}	LS	1	\$49,716,000	\$49,700,000
Electrical Transmission Service ^{2,5}	LS	1	\$12,815,400	\$12,800,000
Land Acquisition and Environmental Mitigation Costs ^{6,7}	LS	1	\$14,500,000	\$14,500,000
Engineering, Legal, and Financial Services ⁸	LS	1	\$59,000,000	\$59,000,000

GRAND TOTAL^{9, 10, 11}

\$295,000,000

Notes & Assumptions:

¹ Includes cost for the canal, canal maintenance facility, and settling basin

² Includes 30% contingency to cover unforeseen project changes or additions. A lower level of contingency (20%) was used in the OPCC provided in the 2007 Alternatives Analysis

³ Includes cost for two 108" pipelines; assumes open cut construction; depth of cover 6'; material cost of \$540/LF

⁴ Includes cost for the pump station structure, electrical building, control building, maintenance building, Phase 1 pumps, and associated Phase 1 piping and valves. Also includes auxiliary power generation facilities based on vender quote plus markup for installation, overhead, and profit, which were not included in the OPCC provided in the 2007 Alternatives Analysis.

⁵ Cost based on information provided by Sam Houston Electrical Cooperative. Similar costs were not included in the OPCC provided in the 2007 Alternatives Analysis

⁶ Acreages derived from County Appraisal District records and recent survey data, where available; includes all project area and 3,126.9 acres for mitigation

⁷ Includes 20% contingency to cover unforeseen damages and may include some litigation; actual total litigation cost subject to determination by CWA Counsel

⁸ Estimate based on 25% of Construction, Land, and Mitigation Costs

⁹ Grand Total based on Construction, Land, Mitigation, and Engineering, Legal, and Financial service costs

¹⁰ 2010 dollars; no escalation or inflation applied

¹¹ The above Engineer's Estimate is only an estimate of possible construction costs for budgeting purposes. This estimate is limited to the conditions existing at its issuance and is not a guaranty of actual price or cost. Uncertain market conditions such as, but not limited to: local labor or contractor availability, wages, other work, material market fluctuations, price escalations, force majeure events, and developing bidding conditions etc may affect the accuracy of this estimate. AECOM is not responsible for any variance from this estimate or actual prices and conditions obtained.

CANAL CONVEYANCE COST

Item No	Item description	Unit	Quantity	Unit price	Total price
1	Excavation & Grading	CY	2,996,691	\$5.00	\$ 14,983,500
2	Clearing & Grubbing	AC	846	\$10,000.00	\$ 8,462,300
3	Hydromulch Seeding	AC	768	\$1,500.00	\$ 1,152,600
4	8" Crushed Aggregate (maintenance road)	SY	172,044	\$14.50	\$ 2,494,600
5	6" Lime Stabilized Subgrade (maintenance road)	SY	199,572	\$3.00	\$ 598,700
6	6% Lime (maintenance road)	Ton	2,694	\$145.00	\$ 390,700
7	Compacted Embankment	CY	722,264	\$5.00	\$ 3,611,300
8	Clay Lining	CY	1,021,896	\$2.00	\$ 2,043,800
9	Transportation of soil	CY/Mile	204,379	\$2.80	\$ 572,300
10	Fill in Waste Area	CY	1,635,164	\$2.00	\$ 3,270,300
11	Outfall Structure	Ea	1	\$1,018,000.00	\$ 1,018,000
12	4 Strand-Barbed Wire Fence (including posts and wires)	LF	242,600	\$7.00	\$ 1,698,200
13	6'-Chain Link Fence at Crossing Locations (including gates and posts)	LF	6,000	\$15.00	\$ 90,000
14	6" Concrete Lining (canal bends)	SY	44,240	\$50.00	\$ 2,212,000
15	Canal Maintenance Facility	LS	1	\$4,512,000.00	\$ 4,512,000
16	Water Level Control Gates (dual gates per each)	Ea	7	\$329,000.00	\$ 2,303,000
17	Electrical Easements Crossings	LS	1	\$896,000.00	\$ 896,000
18	Temporary Pavement (road crossings)	SY	3,800	\$14.00	\$ 53,200
19	Set Type 1 (road crossings)	Ea	1	\$8,000.00	\$ 8,000
20	Trench Protection (road crossings)	LF	1,500	\$10.00	\$ 15,000
21	Concrete Box Culverts- 7' x 5' (road crossings)	LF	500	\$200.00	\$ 100,000
22	Concrete Box Culverts- 8' x 7' (road crossings)	LF	738	\$295.00	\$ 217,710
23	Concrete Box Culverts- 9' x 5' (road crossings)	LF	2,400	\$302.00	\$ 724,800
24	Concrete Box Culverts- 10' x 5' (road crossings)	LF	396	\$410.00	\$ 162,360
25	Cast-in-place Headwall/Wingwalls- 10' (road crossings)	Ea	2	\$18,000.00	\$ 36,000
26	Cast-in-place Headwall/Wingwalls- 9' (road crossings)	Ea	4	\$18,500.00	\$ 74,000
27	Cast-in-place Headwall/Wingwalls- 8' (road crossings)	Ea	5	\$15,000.00	\$ 75,000
28	Cut & Restoring Pavemnet (ASPH)	SY	1,688	\$50.00	\$ 84,400
29	Concrete Box Culverts- 10' x 7' (canal siphon)	LF	15,200	\$600.00	\$ 9,120,000
30	Concrete Box Culverts- 5' x 7' (canal siphon)	LF	15,200	\$200.00	\$ 3,040,000
31	Concrete Box Culvert- 6' x 3' (canal siphon)	LF	5,700	\$200.00	\$ 1,140,000
32	Cast-in-place Headwall/Wingwalls- 10' x 7' (canal siphon)	Ea	38	\$38,500.00	\$ 1,463,000
33	Pipeline Adjustment/Relocation	LS	1	\$14,598,000.00	\$ 14,598,000
34	Bridge (private access)	Ea	5	\$233,750.00	\$ 1,168,800

CANAL CONVEYANCE COST

Item No	Item description	Unit	Quantity	Unit price	Total price
35	Clearing & Grubbing (sedimentation basin area)	AC	28	\$9,071.00	\$ 254,000
36	Excavation & Grading (sedimentation basin area)	CY	60,592	\$5.00	\$ 303,000
37	12" Type I Sand (sedimentation basin)	SY	2,495	\$20.00	\$ 49,900
38	8" Concrete Lining (sedimentation basin)	SY	2,646	\$55.00	\$ 145,500
39	Storm Water Pollution Prevention	LS	1	\$1,127,000	\$ 1,127,000
40	Mobilization	LS	1	\$3,371,000.00	\$ 3,371,000

Total Cost	\$ 87,639,970
30% Contingency	\$ 26,291,991
Total Canal Construction Cost	\$ 113,931,961
Total Canal Distances (miles)	23.46
Total Estimated Cost per Mile (rounded to nearest thousand \$)	\$ 4,856,000

Notes & Assumptions:

1. Cost estimation based on historical material and construction costs available, including recent bid tabulations
2. Quantities based on the PER canal design
3. Assumed 6 road crossings, 19 canal siphons and 1 electrical crossing
4. Assumed two water level control gates at each proposed gate location
5. Clearing and grubbing cost was weighted based on approx. % of cleared vs. vegetated areas
6. Assumed one maintenance facility per direction from CWA
7. Chain link fences assumed at all road crossings, remaining ROW enclosed in barbed wire fence
8. Sedimentation basin area and material based on preliminary design; inflow and outflow weir concrete lined; remaining area grass lined
9. Dewatering costs are assumed to not be substantial at this time and are covered by contingency per geotechnical subconsultant preliminary findings
10. Line Item 33 based on 20 identified pipeline crossings, based on limited response/data received from pipeline companies in response to request for information
11. Mobilization was assumed to be 4% of the total cost
12. Assumed 20% of the clay lining will require transportation per geotechnical subconsultant preliminary findings

PIPELINE OPEN CUT CONVEYANCE COST

Item No	Item description	Unit	Quantity	Unit price	Total price
1	Clearing & Grubbing	Ac	141	\$ 10,000.00	\$ 1,408,200
2	Excavation & Grading	CY	88,775	\$ 5.00	\$ 443,900
3	Grading and Compaction of Waste Area	CY	227,627	\$ 2.00	\$ 455,300
4	108-inch Steel Pipe, Open Cut (Includes 2 separate pipes)	LF	15,520	\$ 1,600.00	\$ 24,832,000
5	108-inch Butterfly Valve & Manhole (6000' cc)	Ea	6	\$ 260,000.00	\$ 1,560,000
6	Access Manholes	Ea	6	\$ 20,000.00	\$ 120,000
7	Access Manhole for Drainage	Ea	6	\$ 25,000.00	\$ 150,000
8	Cathodic Protection System, including test stations, insulating joints, etc. assuming electricity is available	LS	1	\$ 245,000.00	\$ 245,000
9	12" Combination Air Valve Assembly with Vent piping, Bollards and Service Manhole, Complete in Place	Ea	18	\$ 50,000.00	\$ 900,000
10	6" Flushing Valve Assembly	Ea	8	\$ 3,500.00	\$ 28,000
11	2" Hot Mix Asphalt Concrete (access road)	Ton	16,439	\$ 112.00	\$ 1,841,200
12	6" Stabilized Subgrade (access road)	SY	107,296	\$ 3.00	\$ 321,900
13	6% Lime (access road)	Ton	1,448	\$ 145.00	\$ 210,000
14	6" Crushed Aggregate Base (access road)	SY	103,464	\$ 4.27	\$ 441,800
15	Block Sodding	SY	6,898	\$ 5.00	\$ 34,500
16	Storm Water Pollution Prevention	LS	1	\$ 355,214.67	\$ 355,200
17	Mobilization	LS	1	\$ 1,334,000.00	\$ 1,334,000

Total Cost	\$ 34,681,000
30% Contingency	\$ 10,404,300
Total Pipeline Construction Cost	\$ 45,085,300
Total Pipeline Distance (miles)	3.03
Total estimated cost per mile (rounded to nearest thousand \$)	\$ 14,880,000

Notes & Assumptions:

1. Cost estimation based on historical material and construction cost available, including recent bid tabulations
2. Valves, fittings and, manholes quantities based on the PER pipeline design
3. Cathodic protection is assumed to be 0.75% of total pipeline construction cost
4. Pipeline cost includes pipe material, delivery, installation, excavation and backfill
5. Excavation and grading reflects values for ditches and access road
6. Mobilization was assumed to be 4% of total cost

CAPERS RIDGE PUMP STATION COST

Item No	Item description	Unit	Quantity	Unit price	Total price
Civil Items					
1	Clearing and Grubbing	AC	20	\$10,000.00	\$ 200,000
2	Site Grading	AC	10	\$3,600.00	\$ 36,000
3	Storm Water Retention Pond	CY	8,300	\$6.24	\$ 52,000
4	Storm Water Outfalls	EA	2	\$41,500.00	\$ 83,000
5	Drainage Swale	LF	4,000	\$5.00	\$ 20,000
6	8" Reinforced Concrete Roadway	SY	8,667	\$35.00	\$ 303,000
7	Stabilized Subgrade (8")	SY	8,667	\$3.40	\$ 29,000
8	6' Chain Link Fence w/ 3 Strands BW - Pump Station	LF	2,080	\$20.00	\$ 42,000
9	6' Chain Link Fence w/ 3 Strands BW - Site Boundary	LF	7,050	\$20.00	\$ 141,000
10	Excavation and Hauling - PS Foundation	CY	25,185	\$6.24	\$ 157,000
11	Excavation and Hauling - Roadways	CY	7,079	\$6.24	\$ 44,000
12	Excavation and Hauling - Sediment Ponds	CY	16,667	\$6.24	\$ 104,000
13	Grading and Compaction of Fill Areas	CY	43,631	\$2.00	\$ 87,000
14	Hydromulch	MSF	170	\$23.00	\$ 4,000
15	Landscaping	LS	1	\$10,000.00	\$ 10,000
16	Filter Fabric Erosion Control Silt Fence & Maintenance	LF	5,000	\$3.00	\$ 15,000
17	Pollution Prevention - Misc.	LS	1	\$5,000.00	\$ 5,000
Structural Items					
18	Pump Station Control Building	SF	4,500	\$210.00	\$ 945,000
19	Pump Station Electrical Building	SF	2,900	\$160.00	\$ 464,000
20	Pump Station Maintenance Building	SF	2,660	\$160.00	\$ 426,000
21	Pump Station Foundation Slab	CY	1,704	\$400.00	\$ 682,000
22	Pump Station Concrete Walls	CY	2,605	\$650.00	\$ 1,693,000
23	Pump Station Concrete Top Slab	CY	625	\$550.00	\$ 344,000
24	Pump Station Catwalks	SF	74	\$550.00	\$ 41,000
25	Pump Station Concrete Stairs	EA	2	\$4,290.00	\$ 9,000
26	Pump Station Access Doors	EA	9	\$5,000.00	\$ 45,000
27	Pump Station Hand Rails	LF	1,200	\$62.00	\$ 74,000
28	Header Concrete Slab	CY	306	\$400.00	\$ 122,000
29	Rip Rap at Intake Structure Bottom, 24" thick	SY	711	\$124.00	\$ 88,000
30	Slope Protection - Rip Rap 18" thick	SY	2,667	\$93.00	\$ 248,000
31	Pump Station Exterior Wall Waterproofing	SF	23,000	\$10.00	\$ 230,000
32	Grout at Bottom of Pump Intake Basin	CY	67	\$200.00	\$ 13,000
Mechanical Items					
33	Verticle Turbine Pumps	EA	3	\$893,228.00	\$ 2,680,000
34	Electrical Motor	EA	3	\$665,332.50	\$ 1,996,000
35	Ball Valve with Electro-hydraulic Actuator	EA	3	\$211,312.50	\$ 634,000
36	48" coupling with restraint rods	EA	16	\$3,306.25	\$ 53,000
37	Air release and vacuum assembly (pumps)	EA	16	\$6,037.50	\$ 97,000

CAPERS RIDGE PUMP STATION COST

Item No	Item description	Unit	Quantity	Unit price	Total price
38	Pipe Supports (48")	EA	28	\$1,500.00	\$ 42,000
39	48" Butterfly Valve	EA	3	\$30,187.50	\$ 91,000
40	84" Header	LS	1	\$400,000.00	\$ 400,000
41	108" to 84" Reducer	EA	2	\$40,000.00	\$ 80,000
42	Air release and vacuum assembly (header)	EA	2	\$24,150.00	\$ 48,000
43	84" Butterfly valve	EA	5	\$108,675.00	\$ 543,000
44	Pipe Supports (84")	EA	12	\$5,000.00	\$ 60,000
45	84" Coupling with Restraint Rods	EA	2	\$7,273.75	\$ 15,000
46	48" Long Radius Dual Elbow	EA	8	\$25,000.00	\$ 200,000
47	Asiatic Clam Control System	LS	1	\$1,000,000.00	\$ 1,000,000
48	Flow Metering Station	LS	1	\$590,281.04	\$ 590,000
49	Dual 108" Steel Pipe - Open Cut	LF	400	\$1,600.00	\$ 640,000
50	Dual 84" Steel Pipe - Open Cut	LF	100	\$1,000.00	\$ 100,000
51	Trash Rack (2" Bar Screen)	LS	1	\$650,832.84	\$ 651,000
52	Trash Rack Cleaning Mechanism	LS	1	\$3,201,709.00	\$ 3,202,000
53	Sluice Gate - 10' by 10' with Electric Actuator	EA	8	\$225,000.00	\$ 1,800,000
54	Sluice Gate - 11' by 7' with Electric Actuator	EA	8	\$225,000.00	\$ 1,800,000
55	Pump Station Sump with rails and hardware	EA	8	\$50,000.00	\$ 400,000
56	Sump Hatch	EA	8	\$5,000.00	\$ 40,000
57	Sump Piping / header	LF	1,500	\$76.00	\$ 114,000
58	Sediment Handling - return piping	LF	1,500	\$44.50	\$ 67,000
59	Water Well	LS	1	\$200,000.00	\$ 200,000
60	Potable Water Tank	Gal	23,000	\$0.75	\$ 17,000
61	Potable Water Pump House	SF	500	\$50.00	\$ 25,000
62	Process Water Pumps	EA	3	\$30,000.00	\$ 90,000
63	Pressure Tank	EA	1	\$10,000.00	\$ 10,000
64	Chlorination System	LS	1	\$20,000.00	\$ 20,000
65	4" Potable Water Lines	LF	1,000	\$24.20	\$ 24,000
66	2" Potable Water Lines	LF	1,720	\$25.00	\$ 43,000
67	8" Sanitary Sewer Lines	LF	1,000	\$28.40	\$ 28,000
68	Sanitary Sewer Manholes	EA	4	\$2,500.00	\$ 10,000
69	Fire Suppression System	SF	7,160	\$6.41	\$ 46,000
70	Fire Alarm System	SF	10,060	\$3.00	\$ 30,000
71	Septic Tank and Drain Field	LS	1	\$12,250.00	\$ 12,000
72	Dual Post Hoist	EA	2	\$18,650.00	\$ 37,000
73	Overhead Crane (monorail)	EA	2	\$15,000.00	\$ 30,000
74	Automatic Gate	EA	2	\$5,000.00	\$ 10,000
75	Miscellaneous Mechanical	LS	1	\$200,000.00	\$ 200,000
Electrical Items					
76	Power Transformers	LS	2	\$1,376,320.00	\$ 2,753,000
77	3000 amp Main circuit Breaker	LS	2	\$95,634.00	\$ 191,000
78	TIE Circuit Breaker	LS	1	\$95,634.00	\$ 96,000
79	1900 Motor Starters	LS	6	\$119,542.50	\$ 717,000
80	5 KV station switch for facility distribution	LS	2	\$26,565.00	\$ 53,000

CAPERS RIDGE PUMP STATION COST

Item No	Item description	Unit	Quantity	Unit price	Total price
81	Station service and facility service transformers	LS	3	\$35,420.00	\$ 106,000
82	Low Voltage Motor Control Center	LS	1	\$61,985.00	\$ 62,000
83	Dry type transformers	LS	4	\$2,656.50	\$ 11,000
84	5 KV Conduit	LF	3500	\$18.98	\$ 66,000
85	600 volt conduit	LF	7500	\$6.33	\$ 47,000
86	Site Lighting Poles	EA	10	\$3,795.00	\$ 38,000
87	Instrument devices (not including flow meters)	EA	20	\$1,897.50	\$ 38,000
88	Gate operator + associated devices	EA	2	\$10,752.50	\$ 22,000
89	Pump Station Structure Lighting and Miscellaneous	LF	1	\$28,462.50	\$ 28,000
90	5 KV conductors	LF	11375	\$7.59	\$ 86,000
91	600 volt conductors	LF	22500	\$1.27	\$ 28,000
92	Instrumentation conductors	LF	3800	\$1.90	\$ 7,000
93	Security sensors	EA	40	\$253.00	\$ 10,000
94	Miscellaneous Electrical	LS	1	\$300,000.00	\$ 300,000
95	Communication system to CWA	LS	1	\$284,625.00	\$ 285,000
96	Pump Station Control System	LS	1	\$442,750.00	\$ 443,000
97	HMI development at CWA and Pump Station	LS	1	\$202,400.00	\$ 202,000
98	Report generation	LS	1	\$134,090.00	\$ 134,000
99	Software Development and Programming	LS	1	\$695,750.00	\$ 696,000
Construction Methods					
100	Concrete Batch Plant	LS	1	\$250,000.00	\$ 250,000
101	Construction Dewatering	LS	1	\$300,000.00	\$ 300,000
102	Pump Station Barge	LS	1	\$50,000.00	\$ 50,000
103	Cofferdam	LS	1	\$1,450,312.50	\$ 1,450,000
Other Items					
104	Project Remoteness Mark-up (1.5%)	LS	1	\$501,000.00	\$ 501,000
105	Mobilization & De-Mobilization (10%)	LS	1	\$3,340,000.00	\$ 3,340,000
106	Bonds & Insurance (3%)	LS	1	\$1,002,000.00	\$ 1,002,000

Total Cost	\$ 38,243,000
30% Contingency	\$ 11,473,000
Total Capers Ridge Pump Station Construction Cost	\$ 49,716,000

PUMP STATION ELECTRICAL TRANSMISSION COST

Item No	Item description	Unit	Quantity	Unit price	Total price
Electrical Transmission					
1	Transmission Service Tap	LS	1	\$2,000,000.00	\$ 2,000,000
2	Transmission Lines	MILE	8.4	\$614,000.00	\$ 5,158,000
3	Electrical Substation	LS	1	\$2,700,000.00	\$ 2,700,000

Total Cost	\$ 9,858,000
30% Contingency	\$ 2,957,400
Total Electrical Transmission Construction Cost	\$ 12,815,400

CANAL MAINTENANCE FACILITY

Item No	Item description	Unit	Quantity	Unit price	Total price
Civil Items					
1	Clearing and Grubbing	AC	2.65	\$5,000.00	\$ 13,000
2	Site Grading	AC	2.65	\$3,600.00	\$ 10,000
3	Excavation	CY	2180.00	\$6.24	\$ 14,000
4	6" Crushed Aggregate Base (Staging Area)	SY	2723.00	\$9.60	\$ 26,000
5	8" Lime Stabilized Subgrade (Staging Area)	SY	2723.00	\$3.40	\$ 9,000
6	Storm Water Retention Pond	CY	1613.00	\$6.24	\$ 10,000
7	Storm Water Outfall Structure (24")	EA	1.00	\$3,000.00	\$ 3,000
8	Drainage Swale	LF	1100.00	\$5.00	\$ 6,000
9	8" Reinforced Concrete Paving	SY	4360.00	\$35.00	\$ 153,000
10	8" Lime Stabilized Subgrade	SY	4360.00	\$3.40	\$ 15,000
11	6' Chain Link Fence w/ 3 Strands Barbed Wire	LF	1608.00	\$20.00	\$ 32,000
12	Pollution Prevention	LS	1.00	\$10,000.00	\$ 10,000
13	Hydromulch	LS	1.00	\$5,000.00	\$ 5,000
14	Landscaping	LS	1.00	\$10,000.00	\$ 10,000
15	Miscellaneous Civil	LS	1.00	\$50,000.00	\$ 50,000
Mechanical Items					
16	Vehicle Wash (including oil water separator)	EA	1.00	\$10,000.00	\$ 10,000
17	Gas/Diesel Fuel Tank (12,000 gallons)	EA	1.00	\$42,000.00	\$ 42,000
18	Gas/Diesel Fuel Pump	EA	1.00	\$5,000.00	\$ 5,000
19	Automatic Gate	EA	2.00	\$5,000.00	\$ 10,000
20	2" Potable Water Lines	LF	570.00	\$25.00	\$ 14,000
21	8" Sanitary Sewer Lines	LF	300.00	\$28.40	\$ 9,000
22	Septic Tank and Drain Field	EA	1.00	\$2,244.00	\$ 2,000
23	Natural Gas Line	LF	570.00	\$30.00	\$ 17,000
24	Dual Post Vehicle Lifts	EA	3.00	\$18,650.00	\$ 56,000
25	Overhead Bridge Crane (50 ft span - 10 ton)	EA, valves, fittings	1.00	\$72,000.00	\$ 72,000
26	Water Well	LS	1	\$200,000.00	\$ 200,000
27	Potable Water Tank	Gal	28,171	\$0.75	\$ 21,000
28	Potable Water Pump House	SF	300	\$50.00	\$ 15,000
29	Process Water Pumps	EA	2	\$20,000.00	\$ 40,000
30	Pressure Tank	EA	1	\$10,000.00	\$ 10,000

Item No	Item description	Unit	Quantity	Unit price	Total price
31	Chlorination System	LS	1	\$10,000.00	\$ 10,000
26	Fire Alarm System	SF	7560.00	\$3.00	\$ 23,000
27	Fire Suppression System	SF	7560.00	\$6.41	\$ 48,000
28	Miscellaneous Mechanical	LS	1.00	\$75,000.00	\$ 75,000
Structural Items					
29	Canal Maint. Facility - Maintenance (36' x 166.5')	SF	5,994	\$150.00	\$ 899,000
30	Canal Maint. Facility - Office Space (36' x 43.5')	SF	1,566	\$200.00	\$ 313,000
31	Vehicle Shed	SF	1,875	\$50.00	\$ 94,000
Electrical Items					
32	Electrical (20%)	LS	1.00	\$470,200.00	\$ 470,000
33	Backup Generator (500 kW)	EA	1.00	\$229,957.00	\$ 230,000
34	Transfer Switch	EA	1.00	\$21,226.80	\$ 21,000
Other Items					
35	Mobilization & De-Mobilization (10%)	LS	1.00	\$307,200.00	\$ 307,000
36	Bonds & Insurance (3%)	LS	1.00	\$92,160.00	\$ 92,000

Total Cost	<u>\$ 3,471,000</u>
30% Contingency	<u>\$ 1,041,000</u>
Total Maintenance Facility Construction Cost	\$ 4,512,000

Appendix E

Hydraulic Output Data



Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)
	124000	774	105.66	97.99	7.67	1.99
	123500	774	105.59	97.89	7.7	1.98
	123000	774	105.52	97.79	7.73	1.97
	122000	774	105.38	97.6	7.78	1.94
	121827	774	105.18	97.79	7.39	3.74
Siphon	121727	774	105.13	87.7	17.43	3.69
	121527	774	105.03	87.7	17.33	3.69
	121427	774	104.97	97.7	7.27	3.69
	121327	774	105.07	97.6	7.47	2.08
	120500	774	104.95	97.3	7.65	2
	120174	774	104.9	97.25	7.65	2
	120074	774	104.73	97.5	7.23	3.69
Siphon	119974	774	104.68	87.5	17.18	3.69
	119774	774	104.58	87.5	17.08	3.69
	119674	774	104.54	97.3	7.24	3.58
	119574	774	104.63	97.1	7.53	2.05
	119000	774	104.54	97.01	7.53	2.05
	118816	774	104.51	97.01	7.5	2.06
	118716	774	104.33	97.21	7.12	3.8
Siphon	118616	774	104.29	87.01	17.28	3.69
	118416	774	104.18	87.01	17.17	3.69
	118316	774	104.13	97.01	7.12	3.69
	118216	774	104.22	96.85	7.37	2.12
	118000	774	104.19	96.82	7.37	2.12
	117500	774	104.1	96.72	7.38	2.12
	117000	774	104.02	96.62	7.4	2.11
	116500	774	103.93	96.52	7.41	2.1
	115500	774	103.77	96.33	7.44	2.09
	115271	774	103.73	96.33	7.4	2.11
	115171	774	103.56	96.42	7.14	3.74
Siphon	115071	774	103.51	86.33	17.18	3.69
	114871	774	103.4	86.33	17.07	3.69
	114771	774	103.35	96.33	7.02	3.69
	114671	774	103.45	96.13	7.32	2.15



Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)	
	114500	774	103.42	96.13	7.29	2.16	
	113500	774	103.24	95.94	7.3	2.15	
	113419	774	103.08	96.13	6.95	3.74	
Siphon	113319	774	103.03	86.03	17	3.69	
	113119	774	102.92	86.03	16.89	3.69	
	113019	774	102.87	96.03	6.84	3.77	
	113000	774	103	95.84	7.16	2.22	
	112500	774	102.9	95.74	7.16	2.22	
	111500	774	102.71	95.54	7.17	2.22	
	111394	774	102.54	95.74	6.8	3.8	
Siphon	111294	774	102.51	85.64	16.87	3.69	
	111094	774	102.4	85.64	16.76	3.69	
	110994	774	102.33	95.64	6.69	3.86	
	110894	774	102.45	95.38	7.07	2.27	
	110500	774	102.36	95.35	7.01	2.3	
	110000	774	102.26	95.25	7.01	2.3	
	109500	774	102.15	95.15	7	2.3	
	109372	Water Level Control Gate					
	109000	774	101.82	93.77	8.05	1.84	
	108500	774	101.76	93.73	8.03	1.85	
	108000	774	101.7	93.68	8.02	1.85	
	107770	774	101.67	93.64	8.03	1.85	
	107750	774	101.55	93.64	7.91	3.5	
	107656	FM 2326 Culvert					
	107650	774	101.27	93.64	7.63	3.62	
	107630	774	101.4	93.64	7.76	1.95	
	107500	774	101.39	93.64	7.75	1.96	
	107000	774	101.32	93.59	7.73	1.97	
	106980	774	101.18	93.59	7.59	3.64	
	106940	FM 1008 Culvert					
	106880	774	100.89	93.59	7.3	3.79	
	106860	774	101.02	93.59	7.43	2.09	
	106500	774	100.96	93.55	7.41	2.1	
	106000	774	100.88	93.5	7.38	2.12	



Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)	
	105500	774	100.79	93.46	7.33	2.14	
	104500	774	100.61	93.36	7.25	2.18	
	104123	774	100.54	93.36	7.18	2.22	
	104023	774	100.37	93.41	6.96	3.71	
Siphon	103923	774	100.33	83.36	16.97	3.69	
	103723	774	100.23	83.36	16.87	3.69	
	103623	774	100.17	93.36	6.81	3.79	
	103500	774	100.27	93.27	7	2.31	
	103171	Water Level Control Gate					
	103000	774	98.85	91.24	7.61	2.02	
	102500	774	98.78	91.18	7.6	2.02	
	102000	774	98.7	91.12	7.58	2.03	
	101500	774	98.62	91.06	7.56	2.03	
	101000	774	98.55	91	7.55	2.04	
	100500	774	98.47	90.94	7.53	2.05	
	100000	774	98.39	90.88	7.51	2.06	
	99500	774	98.31	90.82	7.49	2.07	
	99000	774	98.23	90.76	7.47	2.08	
	98000	774	98.07	90.64	7.43	2.07	
	97873	774	97.89	90.76	7.13	3.72	
Siphon	97773	774	97.84	80.7	17.14	3.69	
	97573	774	97.73	80.7	17.03	3.69	
	97473	774	97.68	90.7	6.98	3.7	
	97373	774	97.78	90.52	7.26	2.17	
	97000	774	97.71	90.52	7.19	2.21	
	96500	774	97.61	90.46	7.15	2.22	
	96000	773	97.52	90.4	7.12	2.24	
	95500	773	97.41	90.34	7.07	2.26	
	95150	767	97.34	90.34	7	2.28	
	95122	Water Level Control Gate					
	95000	767	93.39	86	7.39	2.09	
	94500	775	93.32	85.9	7.42	2.1	
	94000	773	93.23	85.8	7.43	2.09	
	93500	774	93.15	85.7	7.45	2.08	



Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)
	93140	774	93.1	85.62	7.48	2.07
	93120	774	92.95	85.6	7.35	3.76
	93030	FM 321 Culvert				
	92970	774	92.64	85.6	7.04	3.92
	92950	774	92.79	85.6	7.19	2.21
	92500	774	92.7	85.5	7.2	2.2
	92000	774	92.61	85.4	7.21	2.2
	91500	774	92.52	85.3	7.22	2.19
	91000	774	92.42	85.2	7.22	2.19
	90500	774	92.33	85.1	7.23	2.19
	90000	774	92.24	85	7.24	2.18
	89500	774	92.15	84.9	7.25	2.18
	89000	774	92.06	84.8	7.26	2.17
	88500	774	91.97	84.7	7.27	2.17
	88000	774	91.87	84.6	7.27	2.17
	87500	774	91.79	84.5	7.29	2.16
	86500	774	91.61	84.3	7.31	2.15
	86247	774	91.56	84.3	7.26	2.17
	86147	774	91.38	84.4	6.98	3.8
Siphon	86047	774	91.34	74.2	17.14	3.69
	85847	774	91.24	74.2	17.04	3.69
	85747	774	91.15	84.2	6.95	3.71
	85647	774	91.21	84.1	7.11	2.24
	85500	774	91.18	84.1	7.08	2.26
	85000	774	91.08	84	7.08	2.26
	84500	774	90.98	83.9	7.08	2.26
	84000	774	90.88	83.8	7.08	2.26
	83500	774	90.78	83.7	7.08	2.26
	83000	774	90.68	83.6	7.08	2.26
	82500	774	90.57	83.5	7.07	2.27
	82000	774	90.47	83.4	7.07	2.27
	81500	774	90.37	83.3	7.07	2.27
	81000	774	90.27	83.2	7.07	2.27
	80500	774	90.16	83.1	7.06	2.27



Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)
	80000	774	90.06	83	7.06	2.27
	79500	774	89.96	82.9	7.06	2.27
	79000	774	89.86	82.8	7.06	2.27
	78500	774	89.75	82.7	7.05	2.28
	78000	774	89.65	82.6	7.05	2.28
	77500	774	89.55	82.5	7.05	2.28
	77000	773	89.44	82.4	7.04	2.28
	76500	774	89.34	82.3	7.04	2.28
	76000	774	89.23	82.2	7.03	2.28
	75500	774	89.13	82.1	7.03	2.29
	75000	775	89.02	82	7.02	2.29
	74500	775	88.92	81.9	7.02	2.3
	74000	775	88.81	81.82	6.99	2.31
	73501	Water Level Control Gate				
	73500	775	86.95	79.43	7.52	2.06
	73000	775	86.87	79.35	7.52	2.06
	72500	775	86.79	79.28	7.51	2.06
	72000	775	86.71	79.21	7.5	2.07
	71500	775	86.63	79.14	7.49	2.07
	71000	774	86.55	79.06	7.49	2.07
	70500	774	86.47	78.99	7.48	2.07
	70000	774	86.39	78.92	7.47	2.08
	69500	773	86.31	78.84	7.47	2.08
	69000	773	86.22	78.77	7.45	2.08
	68500	773	86.14	78.7	7.44	2.09
	68000	773	86.06	78.63	7.43	2.09
	67500	774	85.98	78.55	7.43	2.1
	67000	774	85.89	78.48	7.41	2.1
	66500	774	85.81	78.41	7.4	2.11
	66000	774	85.73	78.33	7.4	2.11
	65500	774	85.64	78.26	7.38	2.12
	65000	774	85.56	78.19	7.37	2.12
	64500	774	85.47	78.12	7.35	2.13
	64000	774	85.38	78.04	7.34	2.14



Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)
	63500	774	85.29	77.97	7.32	2.14
	63000	774	85.21	77.9	7.31	2.15
	62500	774	85.12	77.82	7.3	2.16
	62000	774	85.03	77.75	7.28	2.17
	61500	774	84.93	77.68	7.25	2.18
	61000	774	84.84	77.61	7.23	2.19
	60500	774	84.75	77.53	7.22	2.19
	60000	774	84.65	77.46	7.19	2.21
	59500	774	84.56	77.39	7.17	2.22
	59000	774	84.46	77.31	7.15	2.23
	58500	774	84.36	77.24	7.12	2.24
	58000	774	84.26	77.17	7.09	2.26
	57000	774	84.05	77.02	7.03	2.29
	56708	774	83.99	77.02	6.97	2.32
	56608	774	83.81	77.17	6.64	3.88
Siphon	56508	774	83.79	67.1	16.69	3.69
	56308	774	83.69	67.1	16.59	3.69
	56208	774	83.61	77.1	6.51	3.97
	56108	774	83.72	76.88	6.84	2.39
	56000	774	83.69	76.88	6.81	2.4
	55500	774	83.57	76.8	6.77	2.43
	55000	774	83.44	76.73	6.71	2.46
	54500	774	83.31	76.66	6.65	2.5
	54000	774	83.17	76.59	6.58	2.54
	53500	774	83.03	76.51	6.52	2.58
	53000	774	82.87	76.44	6.43	2.63
	52500	774	82.71	76.37	6.34	2.69
	52000	775	82.54	76.29	6.25	2.76
	51500	775	82.35	76.22	6.13	2.84
	51000	762	82.26	75.25	7.01	2.26
	50994	Water Level Control Gate				
	50500	762	81.59	73.92	7.67	1.96
	50000	774	81.53	73.84	7.69	1.98
	49500	775	81.46	73.77	7.69	1.99



Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)
	49000	775	81.39	73.69	7.7	1.98
	48000	774	81.24	73.54	7.7	1.98
	47657	774	81.19	73.54	7.65	2
	47557	774	81.02	73.61	7.41	3.72
Siphon	47457	774	80.97	63.54	17.43	3.69
	47257	774	80.86	63.54	17.32	3.69
	47157	774	80.81	73.54	7.27	3.69
	47057	774	80.91	73.38	7.53	2.05
	47000	774	80.9	73.38	7.52	2.05
	46500	774	80.82	73.3	7.52	2.05
	46000	774	80.75	73.23	7.52	2.06
	45500	774	80.67	73.15	7.52	2.06
	45000	774	80.59	73.07	7.52	2.06
	44500	774	80.51	72.99	7.52	2.06
	44000	774	80.43	72.92	7.51	2.06
	43500	774	80.35	72.84	7.51	2.06
	42500	774	80.2	72.68	7.52	2.06
	42223	774	80.15	72.68	7.47	2.08
	42123	774	79.98	72.76	7.22	3.73
Siphon	42023	774	79.93	62.68	17.25	3.69
	41823	774	79.82	62.68	17.14	3.69
	41723	774	79.77	72.68	7.09	3.69
	41623	774	79.87	72.53	7.34	2.14
	41500	774	79.84	72.53	7.31	2.15
	41000	774	79.76	72.45	7.31	2.15
	40500	774	79.67	72.37	7.3	2.16
	40000	774	79.58	72.3	7.28	2.17
	39500	774	79.48	72.22	7.26	2.17
	39000	774	79.39	72.14	7.25	2.18
	38500	774	79.3	72.06	7.24	2.18
	38000	774	79.21	71.99	7.22	2.19
	37500	774	79.11	71.91	7.2	2.2
	37000	774	79.02	71.83	7.19	2.21
	36500	774	78.92	71.75	7.17	2.22



Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)
	36000	774	78.82	71.68	7.14	2.23
	35500	774	78.72	71.6	7.12	2.24
	35000	774	78.62	71.52	7.1	2.25
	34500	774	78.52	71.45	7.07	2.27
	34000	774	78.42	71.37	7.05	2.28
	33500	774	78.31	71.29	7.02	2.29
	33000	774	78.21	71.21	7	2.31
	32500	774	78.1	71.14	6.96	2.33
	31500	774	77.87	70.98	6.89	2.36
	31200	774	77.8	70.98	6.82	2.4
	31100	774	77.62	71.14	6.48	3.98
Siphon	31000	774	77.61	60.98	16.63	3.69
	30800	774	77.5	60.98	16.52	3.69
	30700	774	77.41	70.98	6.43	4.01
	30600	774	77.54	70.52	7.02	2.29
	30500	774	77.52	70.52	7	2.3
	30472	Water Level Control Gate				
	30000	774	75.76	67.71	8.05	1.84
	29500	774	75.7	67.64	8.06	1.84
	29000	774	75.64	67.56	8.08	1.83
	28500	774	75.58	67.48	8.1	1.82
	28000	774	75.53	67.4	8.13	1.81
	27500	774	75.47	67.33	8.14	1.81
	27000	774	75.42	67.25	8.17	1.8
	26500	774	75.36	67.17	8.19	1.79
	26000	774	75.31	67.1	8.21	1.78
	25000	774	75.21	66.94	8.27	1.76
	24925	774	75.2	66.94	8.26	1.77
	24825	774	75.02	67.1	7.92	3.74
Siphon	24725	774	74.97	57	17.97	3.69
	24325	774	74.76	57	17.76	3.69
	24225	774	74.71	67	7.71	3.69
	24125	774	74.82	66.79	8.03	1.85
	24000	774	74.8	66.79	8.01	1.86



Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)
	23500	774	74.74	66.71	8.03	1.85
	23000	774	74.68	66.63	8.05	1.84
	22500	774	74.63	66.56	8.07	1.84
	22450	774	74.5	66.56	7.94	3.48
	22400	Wolf Rd. Culvert				
	22380	774	74.22	66.56	7.66	3.61
	22360	774	74.35	66.56	7.79	1.94
	22000	774	74.3	66.48	7.82	1.93
	21500	774	74.23	66.4	7.83	1.92
	21000	774	74.17	66.32	7.85	1.93
	20500	774	74.1	66.25	7.85	1.93
	20000	774	74.04	66.17	7.87	1.91
	19000	774	73.91	66.02	7.89	1.9
	18715	774	73.87	66.02	7.85	1.92
	18615	774	73.7	66.09	7.61	3.72
Siphon	18515	774	73.65	56.02	17.63	3.69
	18315	774	73.54	56.02	17.52	3.69
	18215	774	73.49	66.02	7.47	3.69
	18115	774	73.59	65.86	7.73	1.97
	18000	774	73.58	65.86	7.72	1.97
	17500	774	73.51	65.78	7.73	1.97
	17000	774	73.44	65.71	7.73	1.96
	16500	774	73.37	65.63	7.74	1.95
	16000	774	73.3	65.55	7.75	1.96
	15960	774	73.16	65.55	7.61	3.64
	15860	Willy Ln. Culvert				
	15810	774	72.82	65.55	7.27	3.81
	15770	774	72.96	65.55	7.41	2.11
	15500	774	72.91	65.47	7.44	2.09
	15000	774	72.83	65.4	7.43	2.1
	14000	774	72.66	65.24	7.42	2.1
	13649	774	72.6	65.24	7.36	2.13
	13549	774	72.43	65.32	7.11	3.73
Siphon	13449	774	72.38	55.24	17.14	3.69



Table E-1

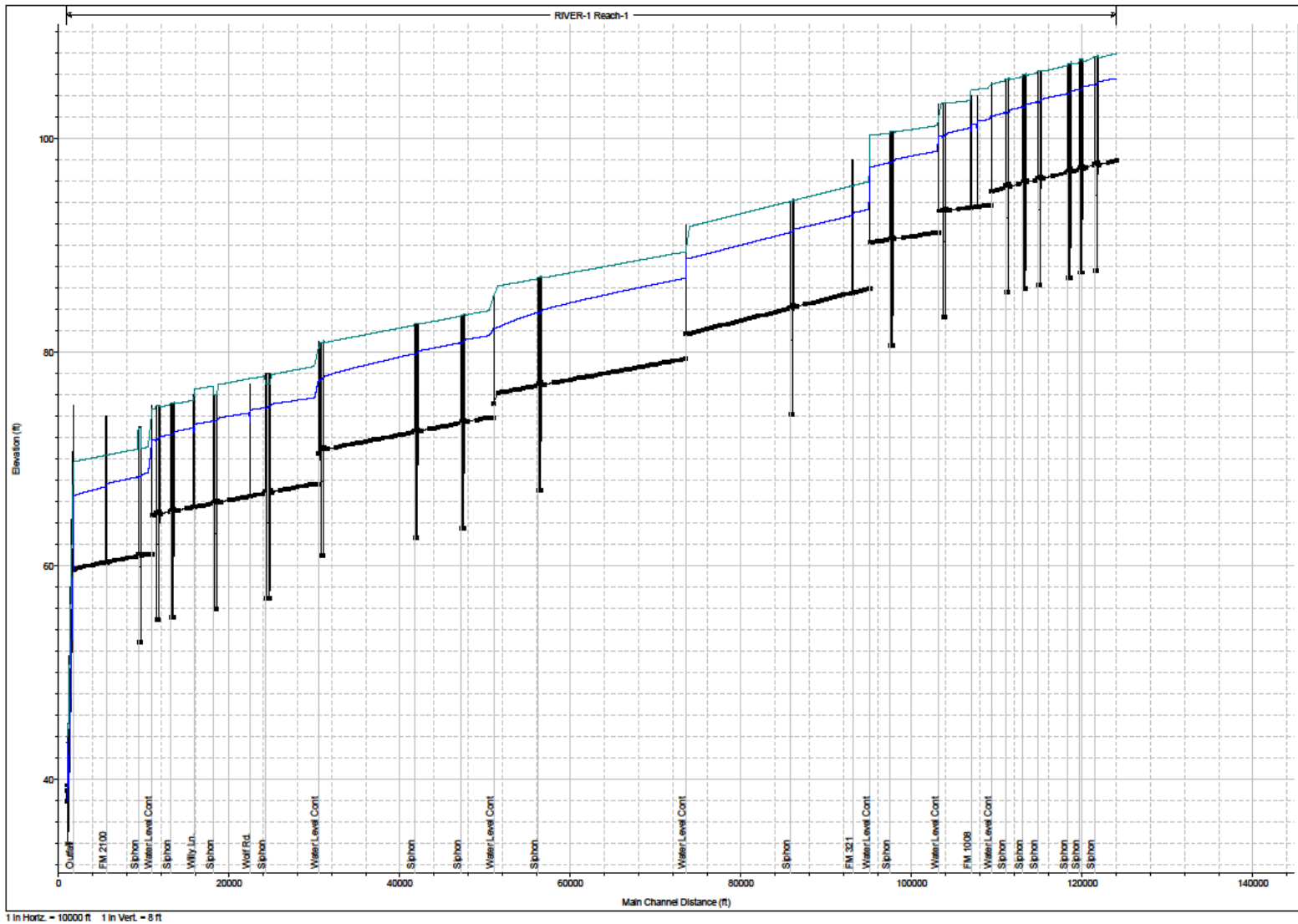
	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)	
	13249	774	72.28	55.24	17.04	3.69	
	13149	774	72.23	65.24	6.99	3.69	
	13000	774	72.31	65.09	7.22	2.19	
	12000	774	72.12	64.94	7.18	2.21	
	11931	774	72.11	64.94	7.17	2.22	
	11831	774	71.94	65.09	6.85	3.76	
Siphon	11731	774	71.91	55.01	16.9	3.69	
	11531	774	71.8	55.01	16.79	3.69	
	11431	774	71.74	65.01	6.73	3.83	
	11331	774	71.85	64.78	7.07	2.27	
	11000	774	71.78	64.78	7	2.3	
	10522	Water Level Control Gate					
	10500	774	68.71	61.14	7.57	2.03	
	10000	774	68.64	61.07	7.57	2.03	
	9845	774	68.61	61.07	7.54	2.04	
	9745	774	68.48	61	7.48	3.45	
Siphon	9645	774	68.41	52.92	15.49	3.7	
	9445	774	68.3	52.92	15.38	3.7	
	9345	774	68.25	61.14	7.11	3.71	
	9245	774	68.35	60.91	7.44	2.09	
	9000	774	68.31	60.91	7.4	2.11	
	8500	774	68.22	60.83	7.39	2.11	
	8000	774	68.14	60.76	7.38	2.12	
	7500	774	68.05	60.68	7.37	2.12	
	7000	774	67.97	60.6	7.37	2.12	
	6500	774	67.88	60.52	7.36	2.13	
	6000	774	67.79	60.44	7.35	2.13	
	5657	774	67.73	60.37	7.36	2.12	
	5637	774	67.59	60.37	7.22	3.84	
	5563	FM 2100 Culvert					
	5487	774	67.28	60.37	6.91	4.01	
	5467	774	67.43	60.37	7.06	2.27	
	5000	774	67.34	60.29	7.05	2.28	
	4500	774	67.23	60.21	7.02	2.29	

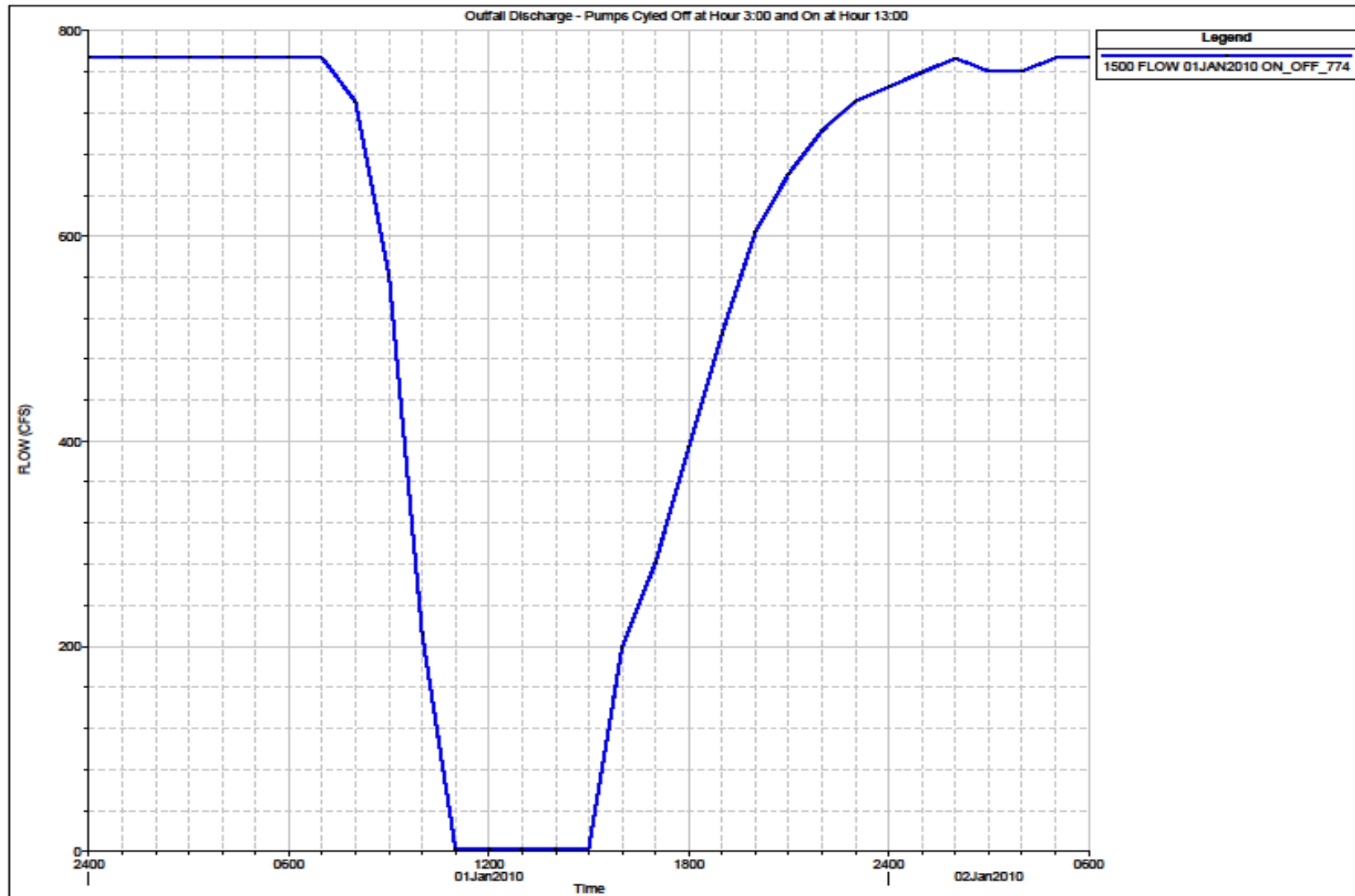


Table E-1

	Canal Station	Q Total (cfs)	W.S. Elev (ft)	Flow Line (ft)	Depth	Vel Chnl (ft/s)	
	4000	774	67.12	60.13	6.99	2.31	
	3500	774	67.02	60.05	6.97	2.32	
	3000	774	66.9	59.98	6.92	2.34	
	2500	775	66.79	59.9	6.89	2.37	
	2000	773	66.67	59.82	6.85	2.38	
	1814	772	66.64	59.64	7	2.3	
	1750	Water Level Control Gate					
	1739	772	64.33	59.63	4.7	5.51	
	1738	772	64.33	59.63	4.7	5.51	
	1500	Outfall Pipe					
	1096	772	43.5	34	9.5	2.72	
	996	771	43.49	34	9.49	2.72	
	995	771	43.57	34	9.57	0.9	
	994.5	Stilling Basin					
	994	771	43.49	39	4.49	1.91	
	993	771	43.49	39	4.49	1.91	
	923	771	43.5	38	5.5	1.6	





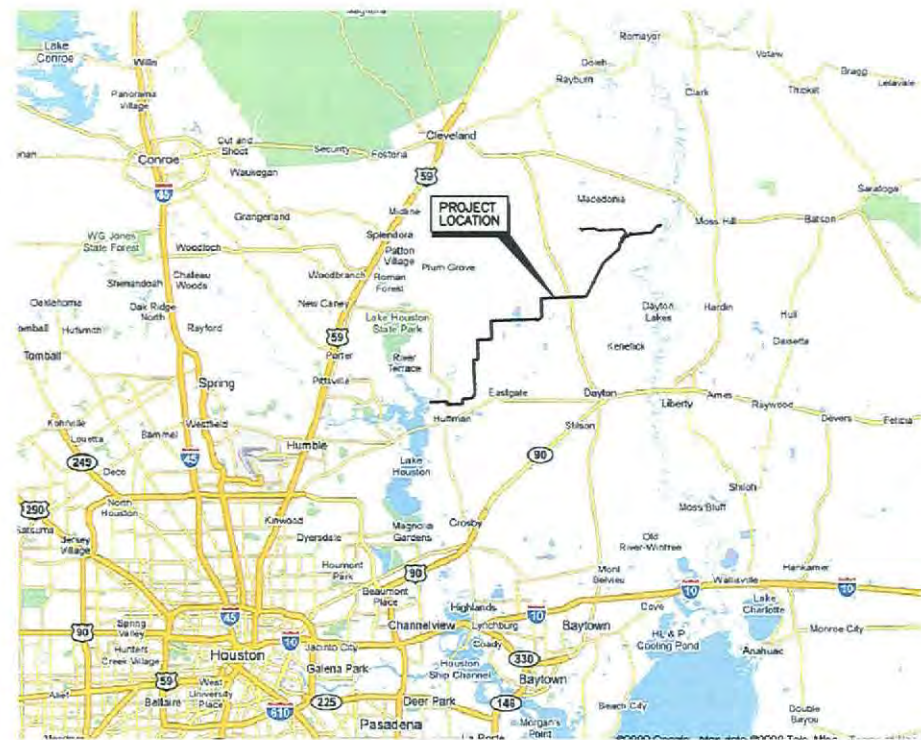


COASTAL WATER AUTHORITY

LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY ENGINEERING REPORT

VOLUME II



LOCATION MAP
NTS



EXECUTIVE OFFICERS

GARY N. ORADAT, P.E.
JOHN J. BALDWIN
JERRY L. BERRY

BOARD OF DIRECTORS

KURT F. METYKO, P.E.
F. WILLIAM OTHON, P.E.
ALAN D. CONNER
DOUGLAS E. WALKER
ZEBULUN NASH
JOHN ODIS COBB, P.E.
GITI ZARINKELK, P.E., F. SAME

SHT. NO.

SHT. TITLE

EXHIBIT A: GENERAL

A-1 PROJECT OVERVIEW
A-2 PROJECT OVERVIEW - DETAIL
A-3 PRELIMINARY OPERATIONS PLAN - OVERVIEW
A-4 PIPELINE PIGGING EXHIBIT
A-5 CROSSINGS LOCATIONS
A-6 LIBERTY COUNTY MASTER THOROUGHFARE PLAN

EXHIBIT B: PUMP STATION

B-1 PRELIMINARY MECHANICAL FLOW DIAGRAM
B-2 PRELIMINARY EXISTING SITE PLAN
B-3.1 PRELIMINARY PROPOSED SITE PLAN
B-3.2 PRELIMINARY PROPOSED ENLARGED SITE PLAN
B-4 PRELIMINARY PUMP STATION PLAN, OPTION 1 ABOVEGROUND HEADER
B-5 PRELIMINARY PUMP STATION PLAN, OPTION 2 HEADER IN VALVE VAULT
B-6 PRELIMINARY PUMP STATION SECTION, OPTION 1 ABOVEGROUND HEADER
B-7 PRELIMINARY PUMP STATION SECTION, OPTION 2 HEADER IN VALVE VAULT
B-8 PRELIMINARY PUMP STATION HYDRAULIC PROFILE
B-9 PRELIMINARY PUMP BAY AREA PLAN
B-10 PRELIMINARY PUMP BAY AREA SECTIONS
B-11 PRELIMINARY SEDIMENT HANDLING FACILITY SCHEMATIC OPTION 1
B-12 PRELIMINARY SEDIMENT HANDLING FACILITY SCHEMATIC OPTION 2
B-13 SUBSTATION PRELIMINARY ONE LINE DIAGRAM
B-14 PRELIMINARY ONE LINE DIAGRAM SHEET 1 OF 4
B-15 PRELIMINARY ONE LINE DIAGRAM SHEET 2 OF 4
B-16 PRELIMINARY ONE LINE DIAGRAM SHEET 3 OF 4
B-17 PRELIMINARY ONE LINE DIAGRAM SHEET 4 OF 4

EXHIBIT C: CANAL AND WATER LINE SYSTEM

C-1 THRU
C-245 SEE EXHIBIT FOR SHEET LISTING

AECOM AECOM TECHNICAL SERVICES, INC.
8715 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057-1599
9366 AECOM COW
TYPE REG. NO. F-3880

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



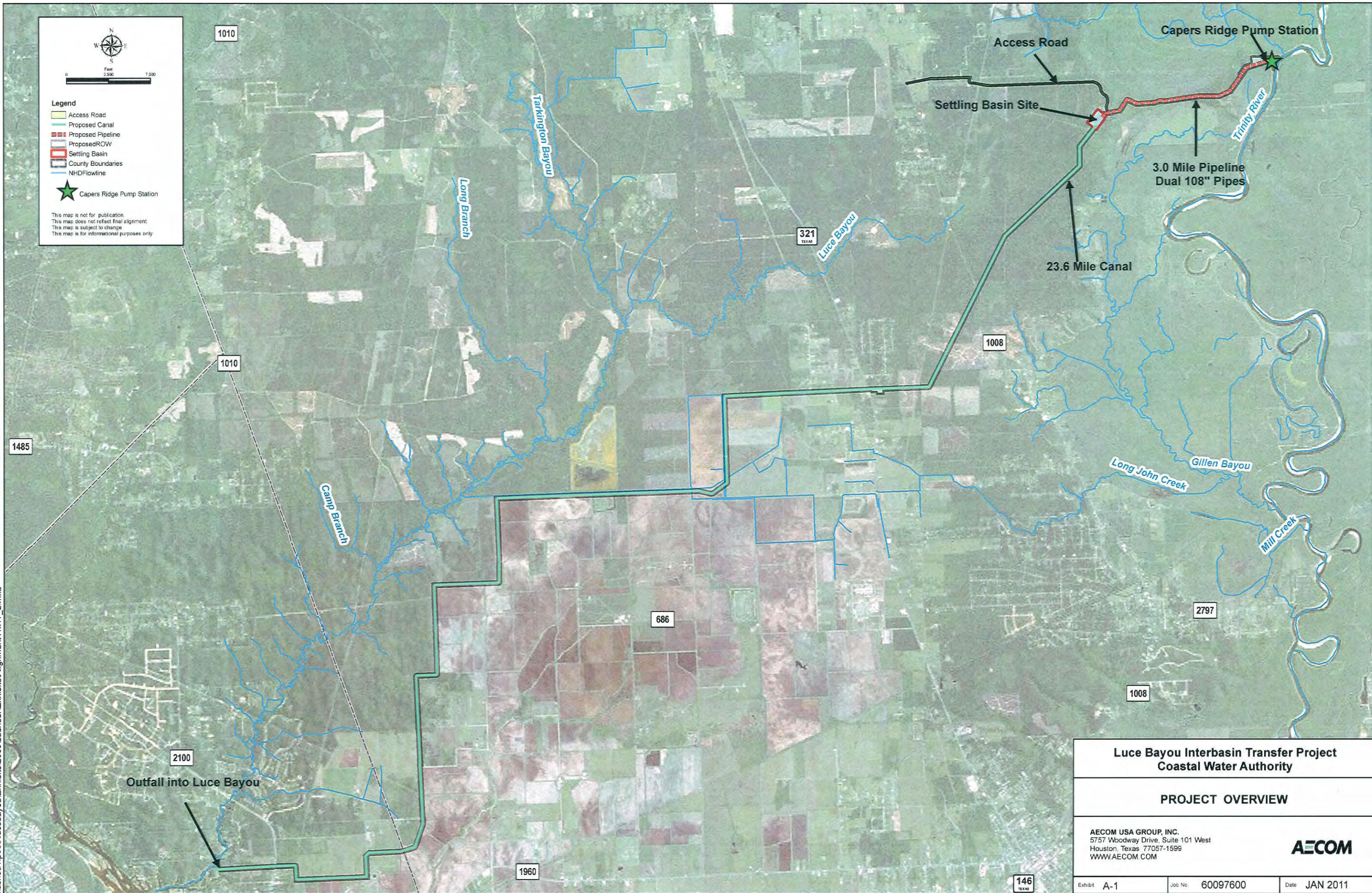
SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

DRAWING SCALE	
AS SHOWN	

EXHIBIT: SHEET NO. OF

ISSUE DATE: JANUARY, 2011



**Luce Bayou Interbasin Transfer Project
Coastal Water Authority**

PROJECT OVERVIEW

AECOM USA GROUP, INC.
5757 Woodway Drive, Suite 101 West
Houston, Texas 77057-1599
WWW.AECOM.COM

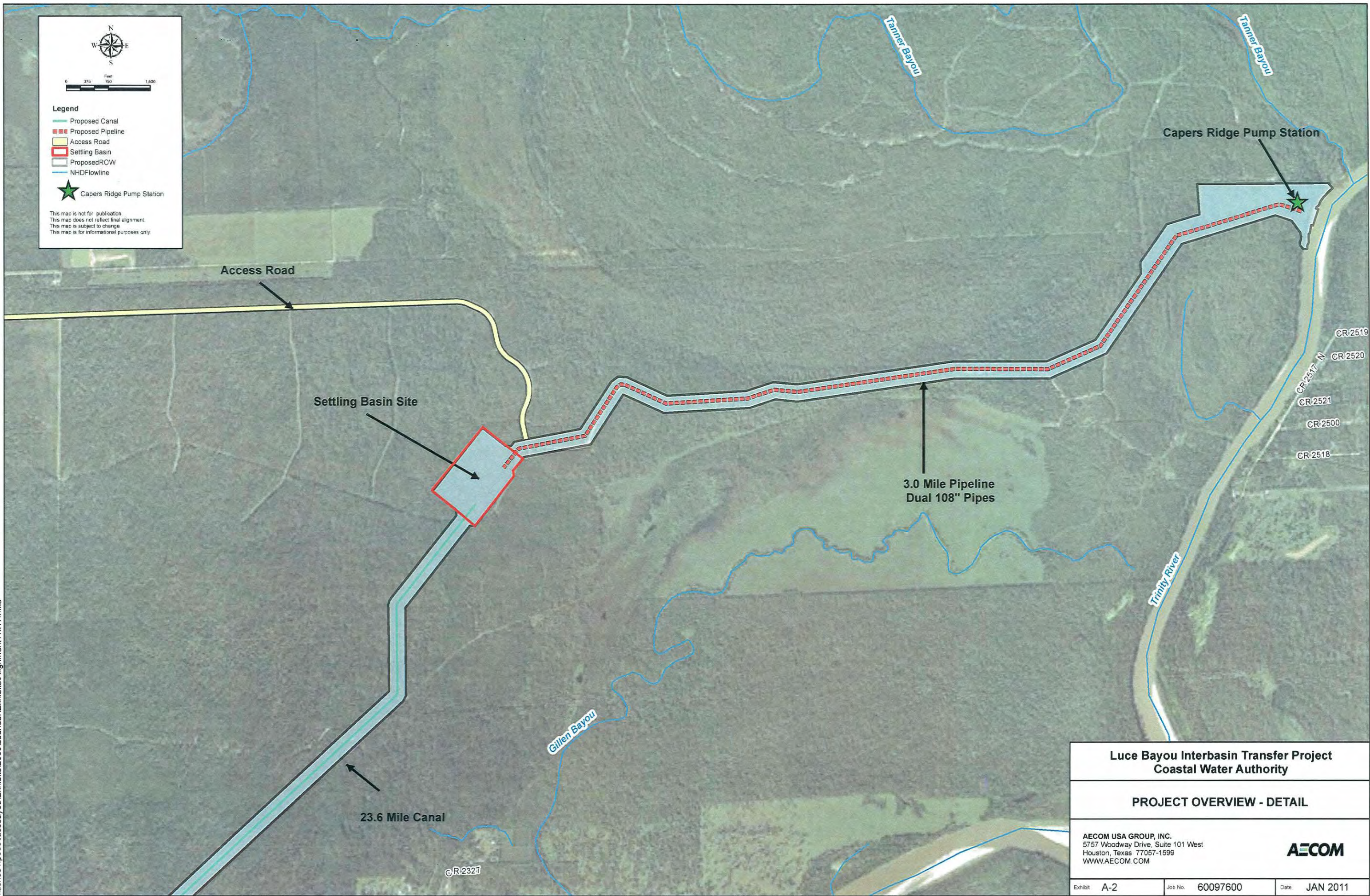


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Legend

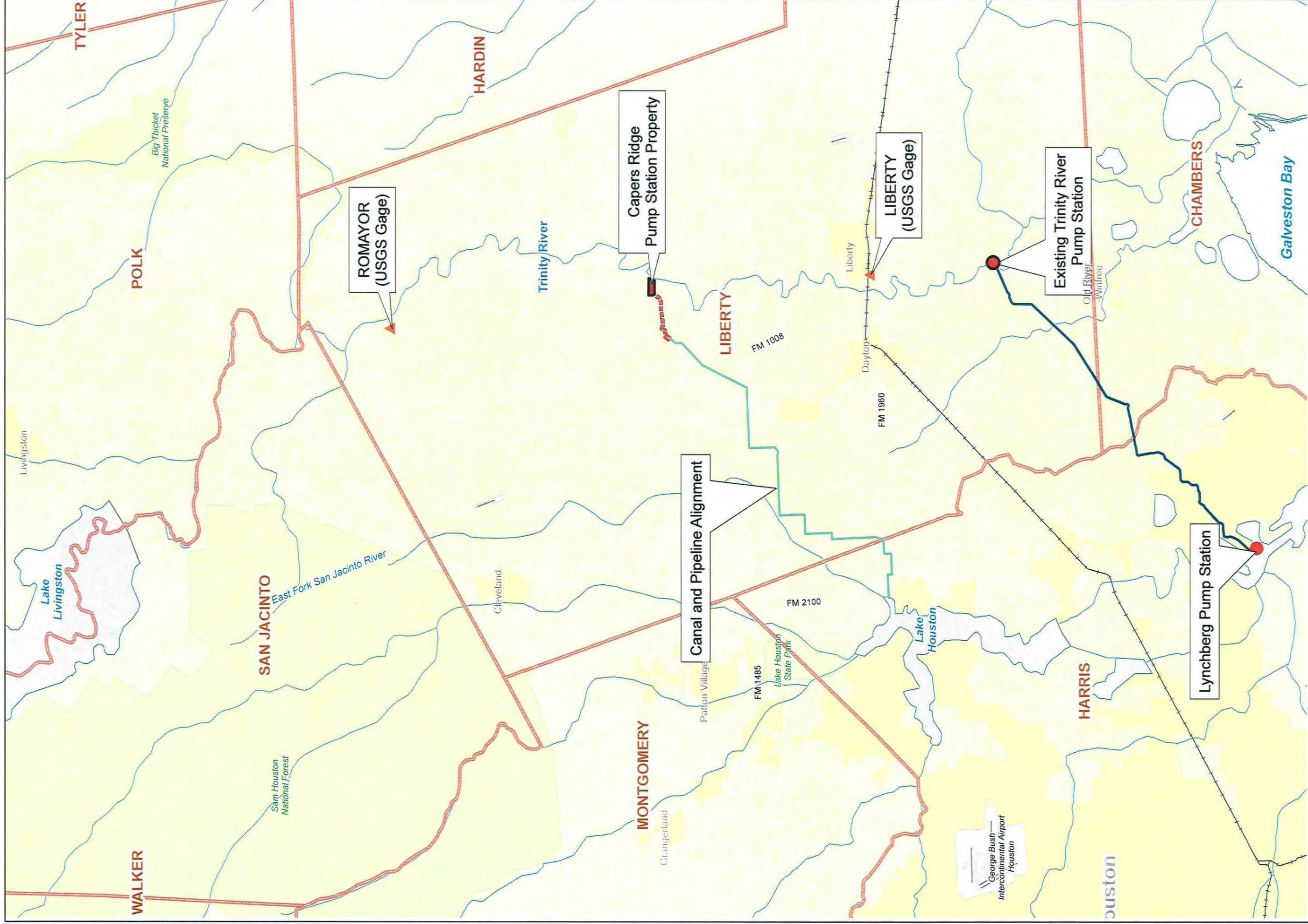
- Proposed Canal
- Proposed Pipeline
- Access Road
- Settling Basin
- Proposed ROW
- NHDFlowline
- Capers Ridge Pump Station

This map is not for publication.
 This map does not reflect final alignment.
 This map is subject to change.
 This map is for informational purposes only.



Luce Bayou Interbasin Transfer Project Coastal Water Authority		
PROJECT OVERVIEW - DETAIL		
<small>AECOM USA GROUP, INC. 5757 Woodway Drive, Suite 101 West Houston, Texas 77057-1599 WWW.AECOM.COM</small>		AECOM
Exhibit	A-2	Date
Job No.	60097600	JAN 2011

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Source - ESRI (2002)



- Legend**
- Proposed Canal
 - - - Proposed Pipeline
 - Existing Canal
 - ▲ USGS Gage
 - County Boundary

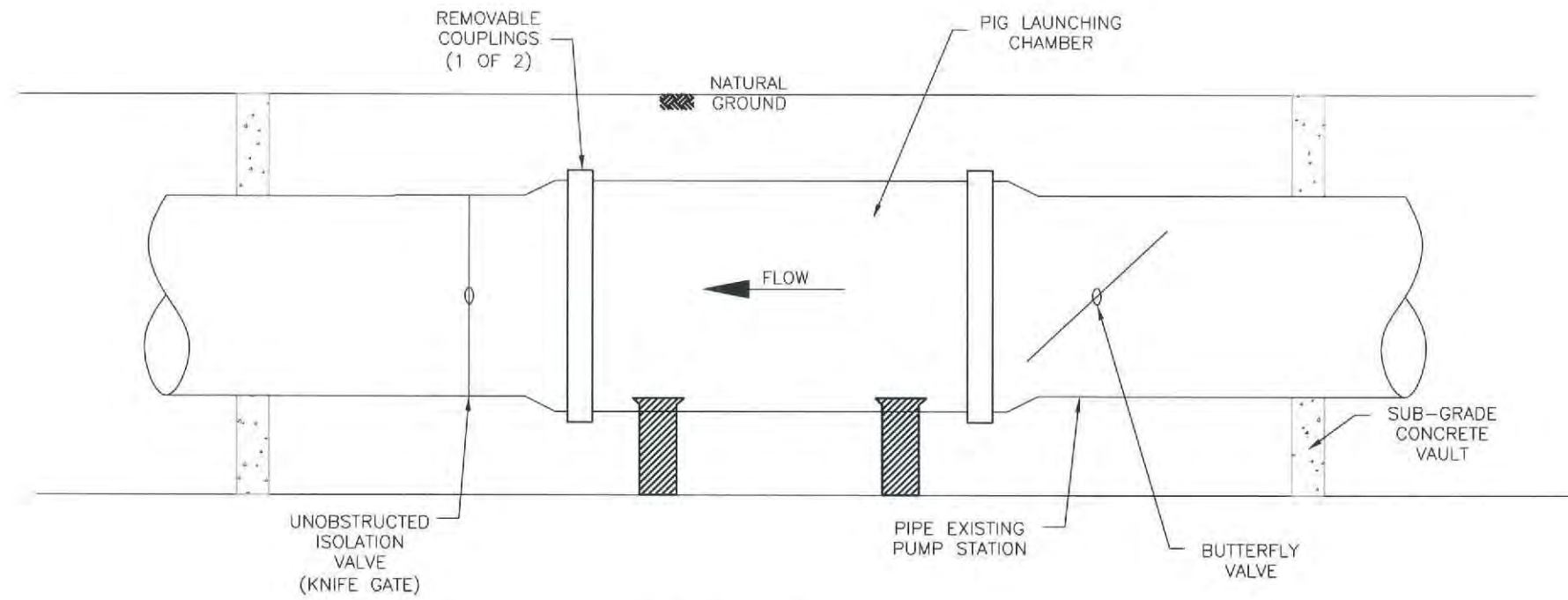
Luce Bayou Interbasin Transfer Project
Coastal Water Authority

Preliminary Operations Plan - Overview

AECOM USA Group, Inc.
5757 Woodway Drive, Suite 101W
Houston, Texas 77057-1599
www.aecom.com
TBPE Reg. No. F-3082

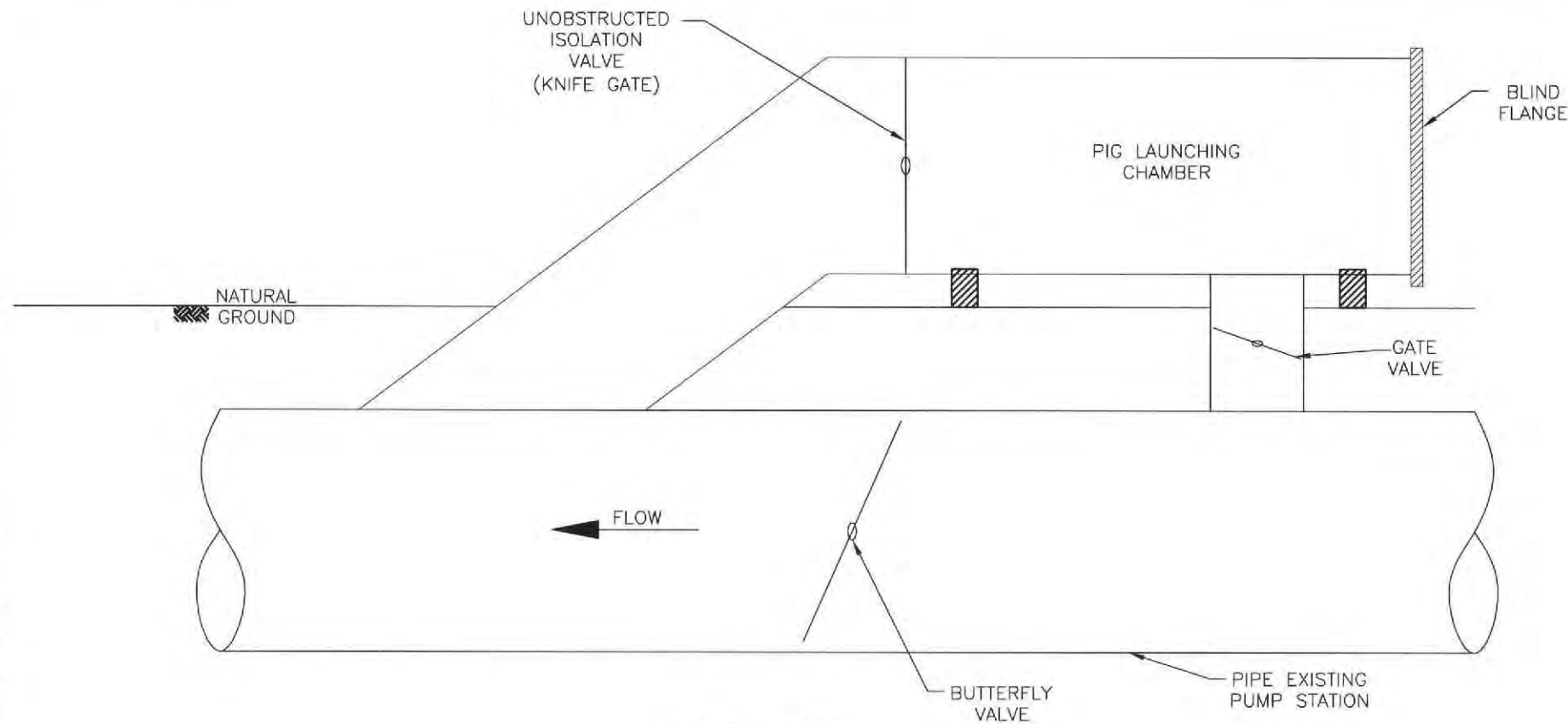


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DETAIL 1 - INLINE
LAUNCH STATION
SCALE: N.T.S.

NOTES:
1. INLINE SYSTEM TO BE CONSTRUCTED WITH AN ACCESS VAULT AT THE BEGINNING AND END OF THE PIPELINE.
2. REMOVABLE PIG LAUNCHING CHAMBER IS DESIGNED TO INCLUDE TRACKS TO SIMPLIFY INSTALLATION



DETAIL 2 - OFFSET
LAUNCH STATION
SCALE: N.T.S.

NOTES:
1. LAUNCH STATION CAN BE ROTATED AROUND CENTERLINE OF PIPE TO ALLOW FOR A HORIZONTALLY LEVEL LAUNCH. HOWEVER, THIS WILL REQUIRE A SUBGRADE CONG. VAULT.

AECOM AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
WWW.AECOM.COM
TSP# REG. NO. F-3580

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PIGGING EXHIBIT

DRAWING SCALE

AS SHOWN

EXHIBIT A-4

No.	Date	Revisions

CROSSINGS TABLE

PIPELINE CROSSINGS				
	COMPANY THAT OWNS/ OPERATES THE PIPELINE	PIPE SIZE (INCHES)	TYPE OF MATERIAL CARRIED BY PIPELINE	PARCEL ID
1P	BP PIPELINES (NORTH AMERICA),INC	12.75	CRUDE OIL	PARCEL 50
2P	KINDER MORGAN TEXAS PIPELINE LLC	24.00	NATURAL GAS	PARCEL 50
3P	KINDER MORGAN TEXAS PIPELINE LLC	16.00	NATURAL GAS	PARCEL 50
4P	SUNOCO PIPELINE L.P.	10.75	CRUDE OIL	PARCEL 50
5P	MUSTANG PIPELINE COMPANY	10.75	PROPANE	PARCEL 50
6P	MUSTANG PIPELINE COMPANY	6.63	PROPYLENE	PARCEL 50
7P	TEPPCO	12.75	LIQUID PETROLEUM PRODUCTS	PARCEL 50
8P	CONOCOPHILLIPS PIPE LINE COMPANY	24.00	PROPYLENE	PARCEL 43
9P	KINDER MORGAN TEXAS PIPELINE LLC	24.00	NATURAL GAS	PARCEL 39.8
10P	WILLIAMS/TRANSCONTINENTAL GAS P.	30.00	NATURAL GAS	PARCEL 39.8
11P	WILLIAMS/TRANSCONTINENTAL GAS P.	30.00	NATURAL GAS	PARCEL 39.8
12P	KINDER MORGAN TEXAS PIPELINE LLC	30.00	NATURAL GAS	PARCEL 23.4
13P	KINDER MORGAN TEXAS PIPELINE LLC	30.00	NATURAL GAS	PARCEL 23.4
14P	ONEOK NGL PIPELINE, L.P.	14.00	LIQUIFIED PETROLEUM GAS	PARCEL 22
15P	ONEOK NGL PIPELINE, L.P.	12.00	LIQUIFIED PETROLEUM GAS	PARCEL 22
16P	ONEOK NGL PIPELINE, L.P.	8.00	LIQUIFIED PETROLEUM GAS	PARCEL 22
17P	CHEVRON PIPE LINE COMPANY	10.75	LIQUEFIED PETROLEUM GAS	PARCEL 12
18P	CHEVRON PIPE LINE COMPANY	10.75	LIQUEFIED PETROLEUM GAS	PARCEL 12
19P	TEPPCO	10.75	LIQUID PETROLEUM PRODUCTS	PARCEL 12
20P	BUCKEYE GULF COAST PIPELINES,L.P BP PIPELINES (NORTH AMERICA),INC	10.75	ETHYLENE	PARCEL 12 PARCEL 52
	KOCH PIPELINE COMPANY, L.P.	All pipelines in the area were sold to various other companies , all pipelines in the area were abandoned and/or salvage.		

ROAD CROSSINGS		
	ROAD NAME	TYPE OF ROAD
1R	FM 2100	MAJOR
2R	WILLY LN	MAJOR
3R	CR 624	LOCAL
4R	SH 321	MAJOR
5R	FM 1008	LOCAL
6R	CR 2326	LOCAL

CANAL SIPHON CROSSINGS		
1S-18S	NAME OF STREAM	COUNTY
1S-18S	UNNAMED STREAM	HARRIS/ LIBERTY

ELECTRICAL EASEMENTS CROSSINGS			
	NAME OF ELECTRICAL CROSSING	COUNTY	PARCEL ID
1E	ENTERGY	HARRIS	PARCEL 43
2E	ENTERGY	LIBERTY	PARCEL 21

Legend

- ▲ Electrical Crossing
- ▲ Pipeline Crossing
- Siphon Location
- Road Crossing
- Pipelines
- Luce Bayou Centerline
- Corridor Parcels
- County Boundaries



This map is not for publication.
 This map does not reflect final alignment.
 This map is subject to change.
 This map is for informational purposes only.

AECOM
 AECOM USA GROUP, INC.
 5757 WOODWAY SUITE 101 WEST
 HOUSTON, TEXAS 77057 -1599
 WWW.TCB.AECOM.COM
 TBE REG NO F - 3082



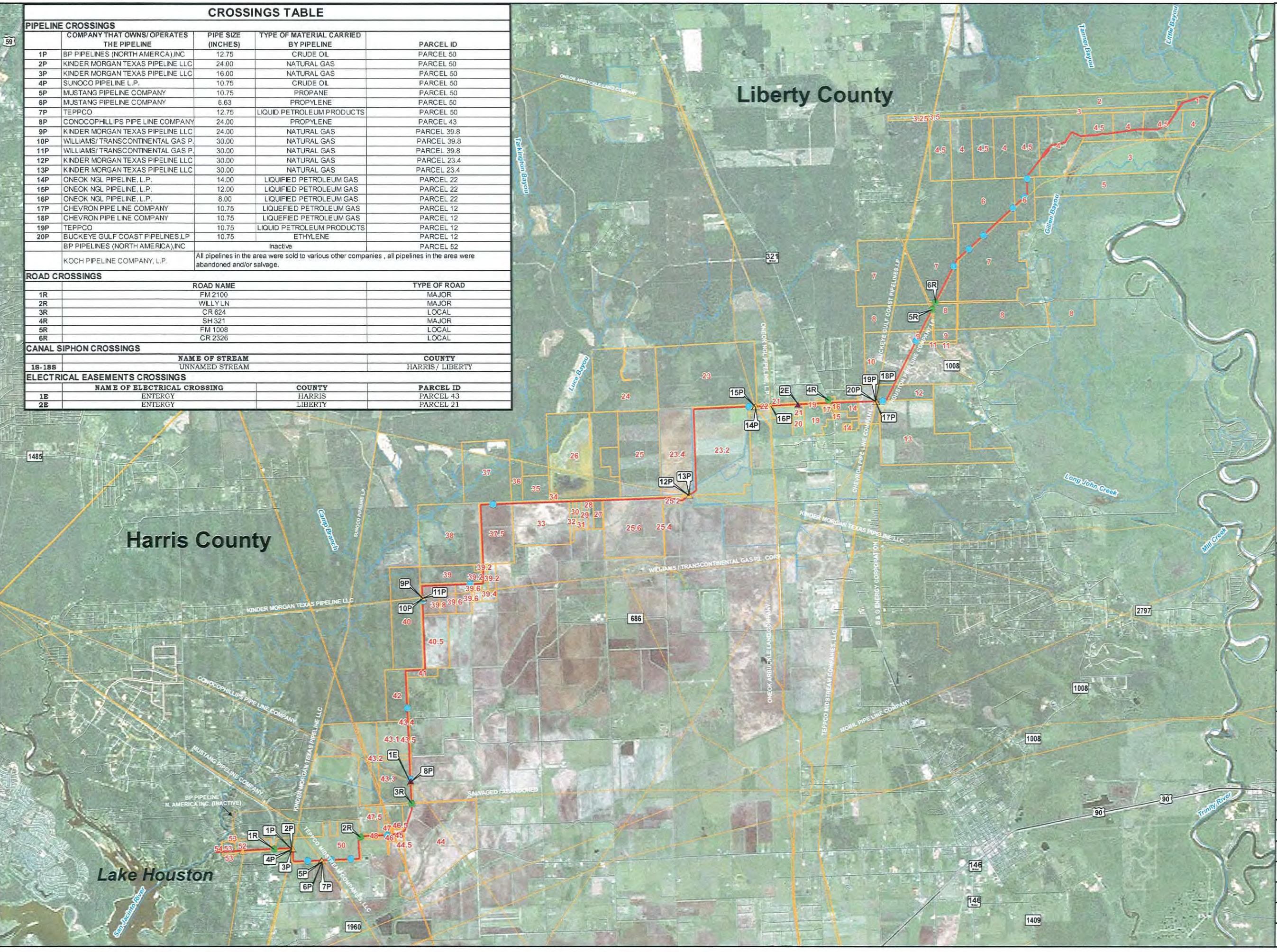
SURVEYED BY:
 FB NO.

LUCE BAYOU INTERBASIN TRANSFER PROJECT
COASTAL WATER AUTHORITY
Crossings Locations

DRAWING SCALE
 AS SHOWN

EXHIBIT A-5

O:\Work Order 64.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Crossings\PipelineCrossings.mxd



Liberty County

Harris County

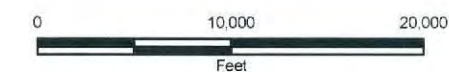
Lake Houston

FUTURE PROPOSED ROAD CROSSINGS

CROSSING NUMBER	ROADWAY	ROADWAY TYPE
1	N. LAKE HOUSTON PKWY	MAJOR COLLECTOR
2	FM 1010	MAJOR COLLECTOR
3	CR 668	MAJOR THOROUGHFARE
4	UNNAMED	MAJOR THOROUGHFARE
5	CR 680	MAJOR THOROUGHFARE
6	CR 6242	MAJOR COLLECTOR
7	CR 677	MAJOR COLLECTOR
8	CR 622	MAJOR COLLECTOR
9	FM 686	MAJOR COLLECTOR
10	CR 615	MAJOR THOROUGHFARE
11	US HIGHWAY 99	FREEWAY
12	BENNIE TERRELL RD	MAJOR COLLECTOR
13	CR 609	MAJOR COLLECTOR
14	CR 678	MAJOR COLLECTOR
15	CR 2309	MAJOR COLLECTOR

Legend

- Proposed Major Collector
- Proposed Major Thoroughfare or Collector
- Proposed Freeway
- Luce Bayou ITP Centerline
- County Boundaries



Notes: Proposed future road crossings shown were provided by Liberty County. Beginning and ending roadway improvement locations are approximate and were provided by Liberty County Engineering Department.

This map is not for publication.
This map does not reflect final alignment.
This map is subject to change.
This map is for informational purpose only.



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LUCE BAYOU INTERBASIN TRANSFER PROJECT

COASTAL WATER AUTHORITY
Liberty County Master
Thoroughfare and Collector Plan

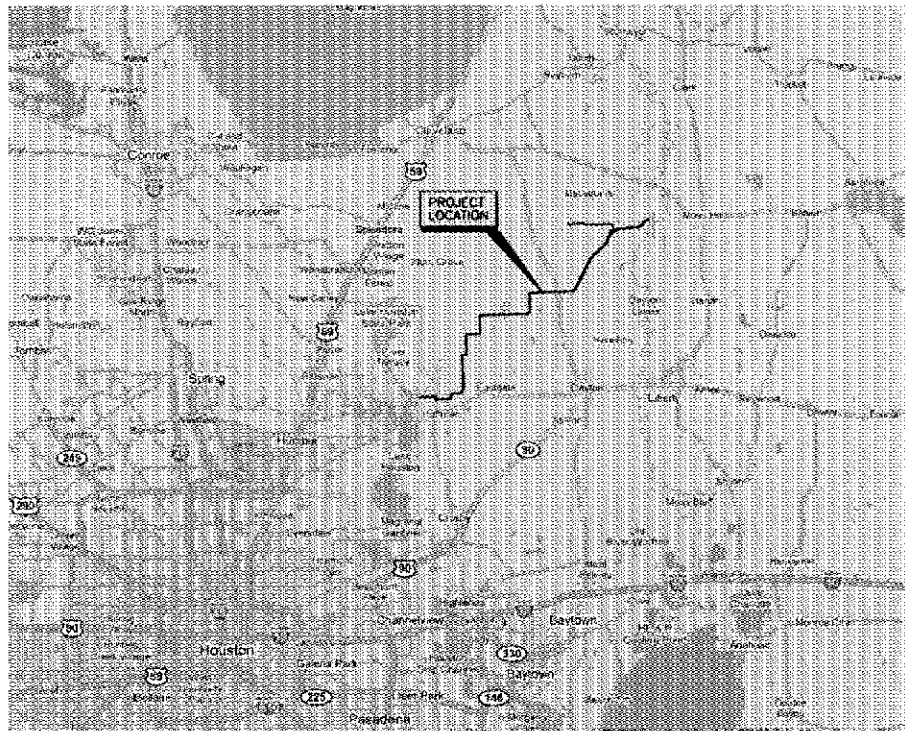
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AS SHOWN

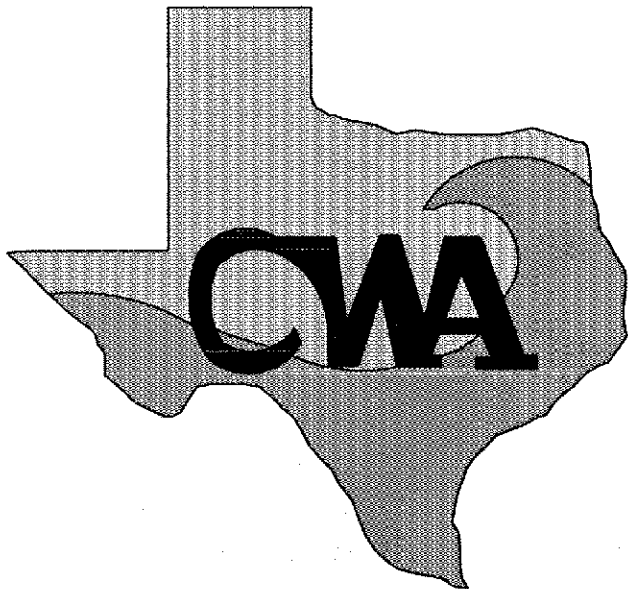
EXHIBIT A-6

U:\WORK ORDER 614\0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Crossings-Future Crossings_Map.mxd

COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT PROPOSED PUMP STATION



LOCATION MAP
NTS



EXECUTIVE OFFICERS

GARY N. ORADAT, P.E.
JOHN J. BALDWIN
JERRY L. BERRY

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COASTAL WATER AUTHORITY
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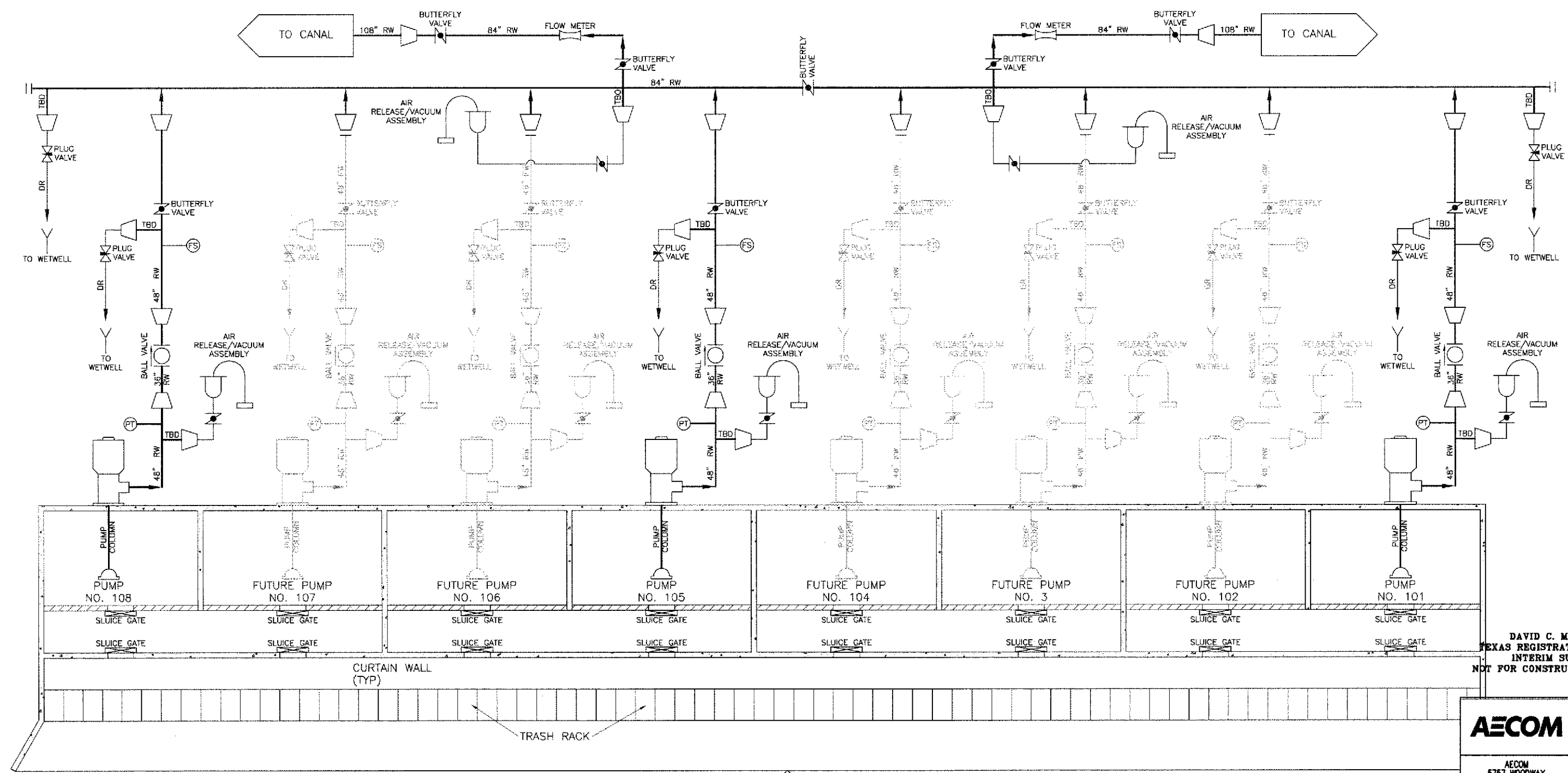
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ISSUE DATE: JANUARY, 2011

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 DWG. NAME: W06B\PumpStationFlow2.dwg



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- LEGEND**
- (FS) FLOW SWITCH
 - (PT) PRESSURE SWITCH
 - ◁ DENOTES PIPE SIZE CHANGE
 - DR DRAIN
 - RW RAW WATER
 - TBD TO BE DETERMINED

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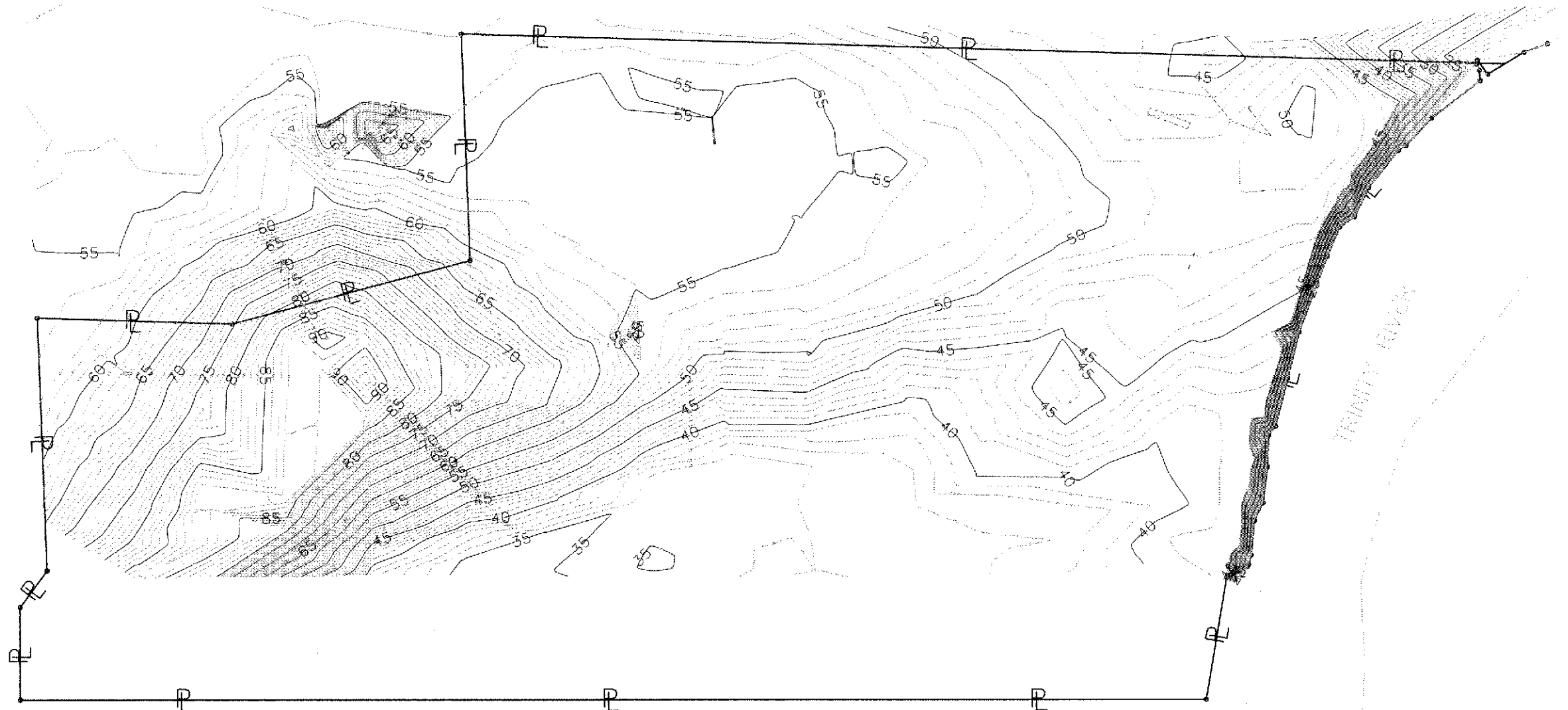
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 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY MECHANICAL FLOW DIAGRAM

DRAWING SCALE	AS SHOWN
SHEET NO.	OF

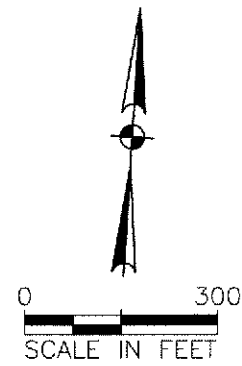
EXHIBIT: B-1

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LEGEND:

- PROPERTY LINE
- EXISTING FENCE
- EXISTING CONTOUR



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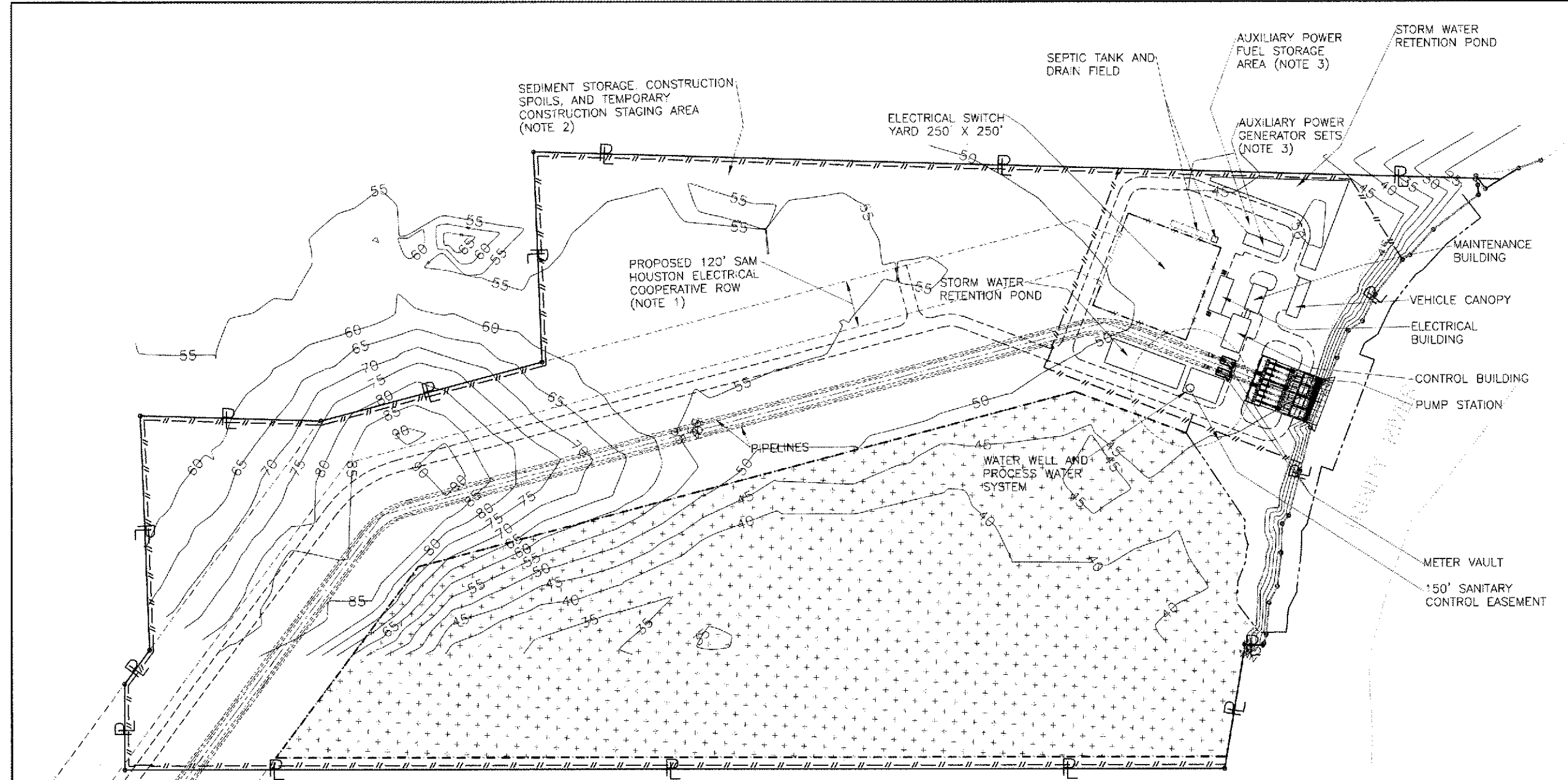
LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY EXISTING SITE PLAN

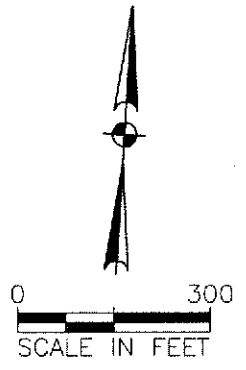
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 AS SHOWN

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- NOTES:**
1. EXACT ROW LOCATION FOR UTILITY CONNECTION HAS NOT YET BEEN DETERMINED BY SAM HOUSTON ELECTRICAL COOPERATIVE.
 2. ACTUAL AREA REQUIRED FOR SEDIMENT STORAGE WILL DEPEND ON THE FINAL DESIGN OF THE INTAKE STRUCTURE, PUMP SELECTION, AND SEDIMENT EXTRACTION SYSTEM.
 3. USE OF AUXILIARY POWER HAS NOT YET BEEN CONFIRMED.



- LEGEND:**
- UNDISTURBED AREA
 - PROPOSED STRUCTURE
 - PROPOSED PLANT PAVING
 - PROPOSED PIPELINE
 - PROPERTY LINE
 - PROPOSED FENCE
 - EXISTING FENCE
 - EXISTING CONTOUR

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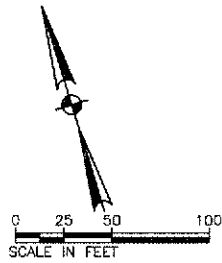
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 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

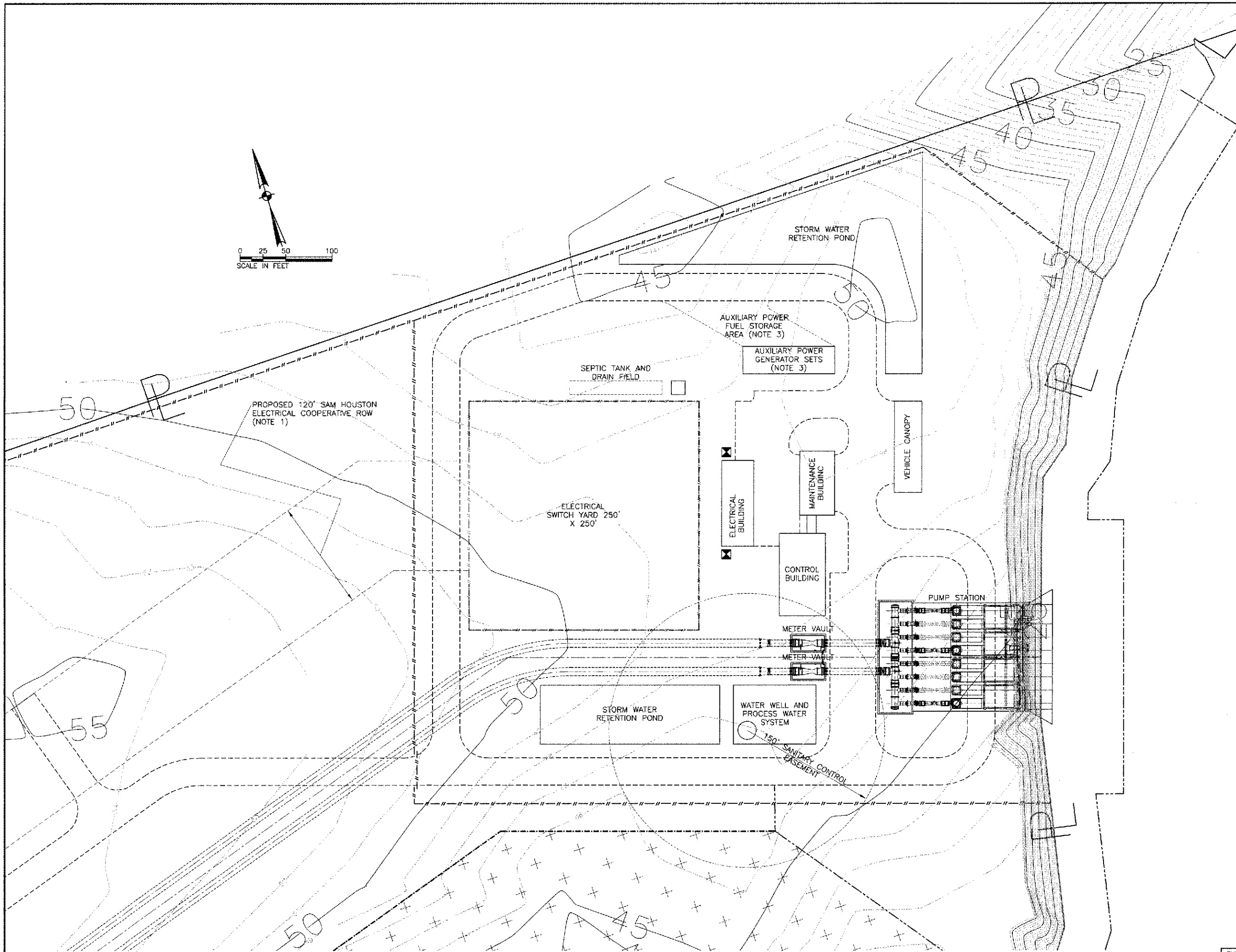
PRELIMINARY PROPOSED SITE PLAN

DRAWING SCALE	AS SHOWN
SHEET NO.	OF

EXHIBIT: B-3.1



- NOTES:**
1. EXACT ROW LOCATION FOR UTILITY CONNECTION HAS NOT YET BEEN DETERMINED BY SAM HOUSTON ELECTRICAL COOPERATIVE.
 2. ACTUAL AREA REQUIRED FOR SEDIMENT STORAGE WILL DEPEND ON THE FINAL DESIGN OF THE INTAKE STRUCTURE, PUMP SELECTION, AND SEDIMENT EXTRACTION SYSTEM.
 3. USE OF AUXILIARY POWER HAS NOT YET BEEN CONFIRMED.



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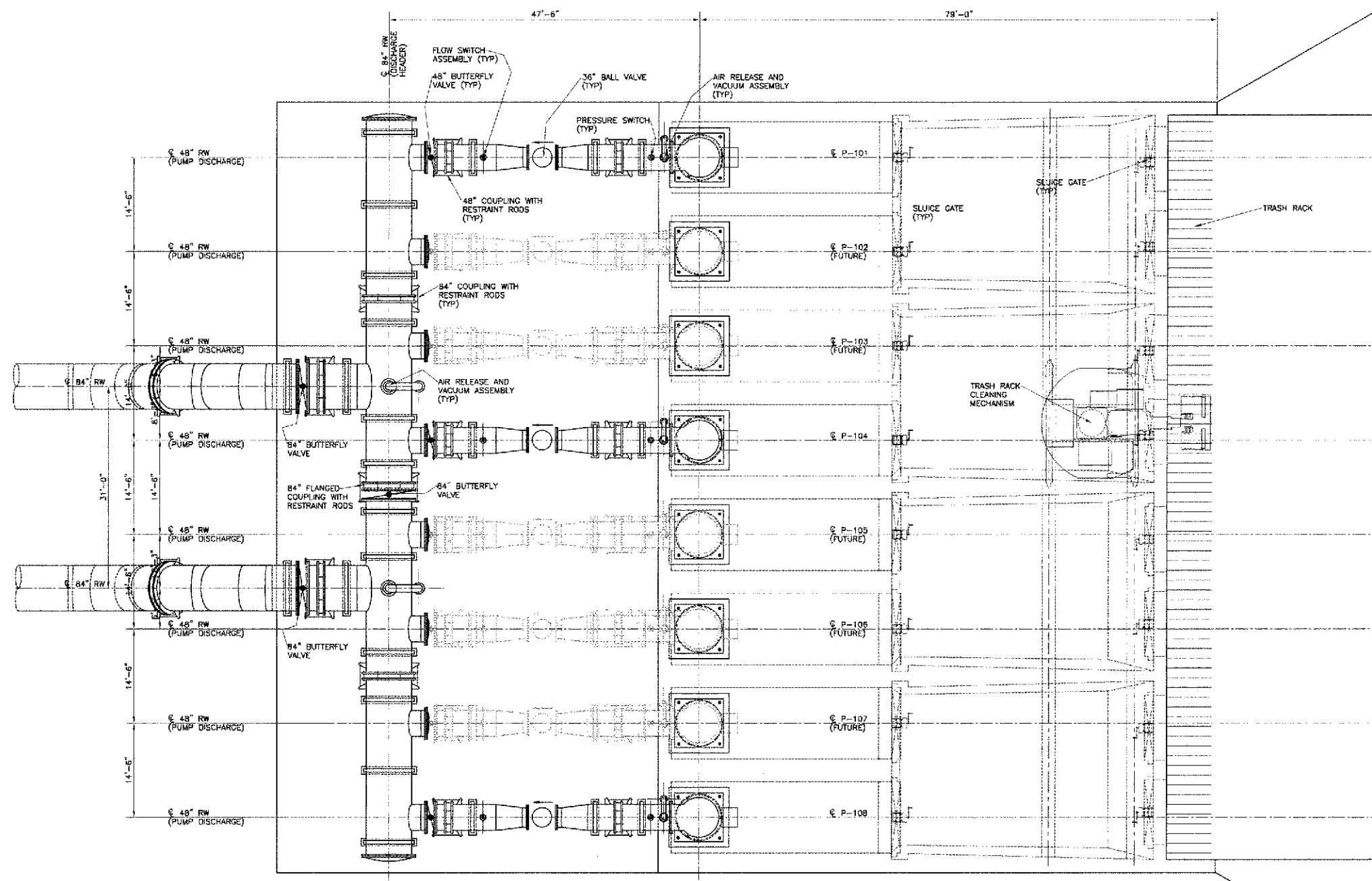
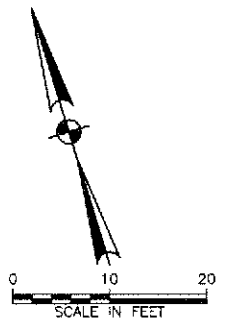
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY PROPOSED
 ENLARGED SITE PLAN

DRAWING SCALE
 AS SHOWN

EXHIBIT: B-3.2 SHEET NO. OF

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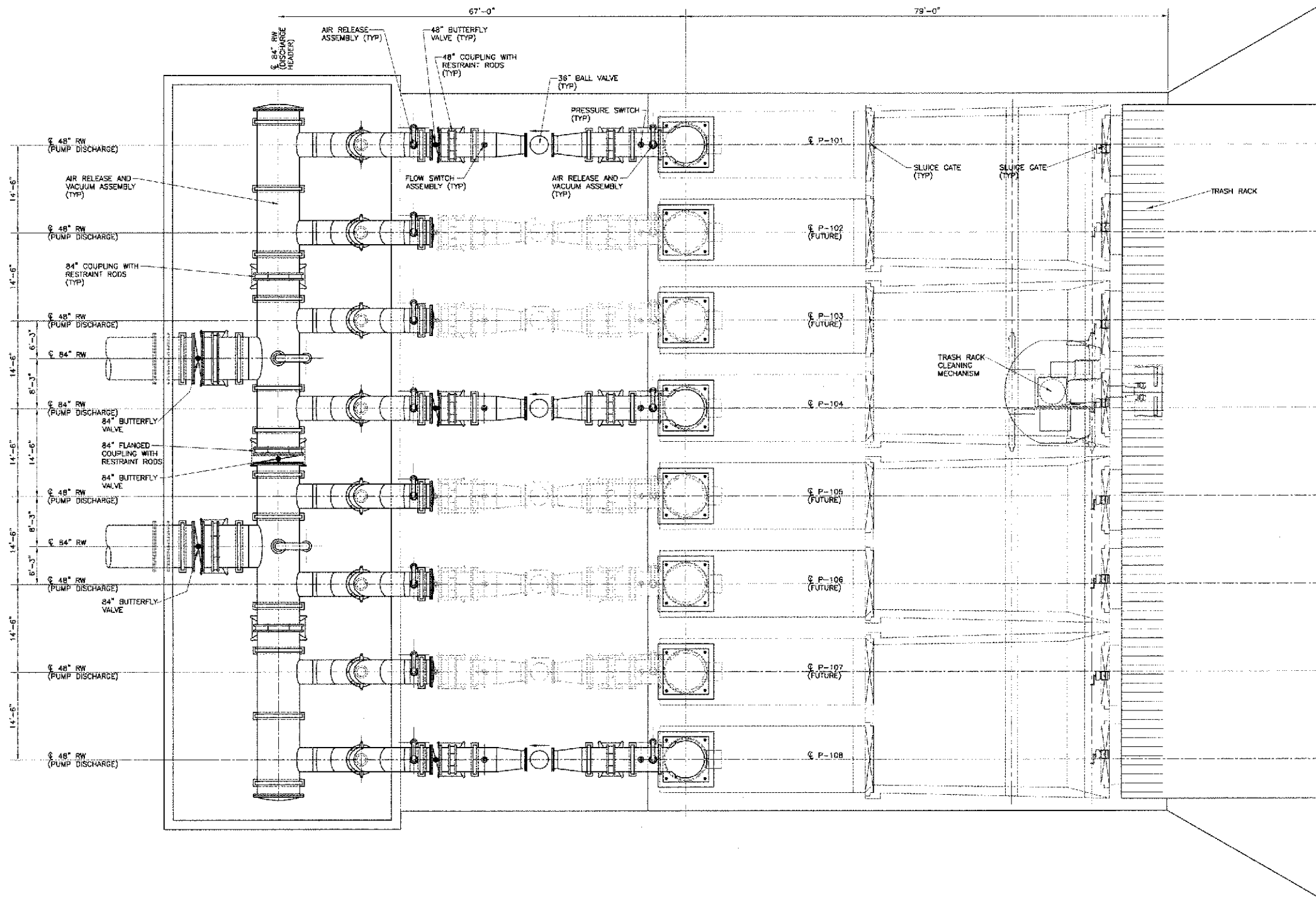
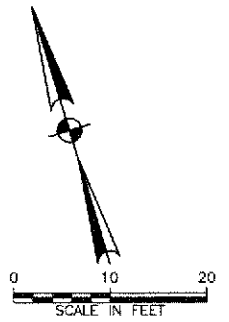
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY PUMP STATION
 PLAN, OPTION 1
 ABOVEGROUND HEADER

DRAWING SCALE
 AS SHOWN

EXHIBIT: B-4 SHEET NO. OF

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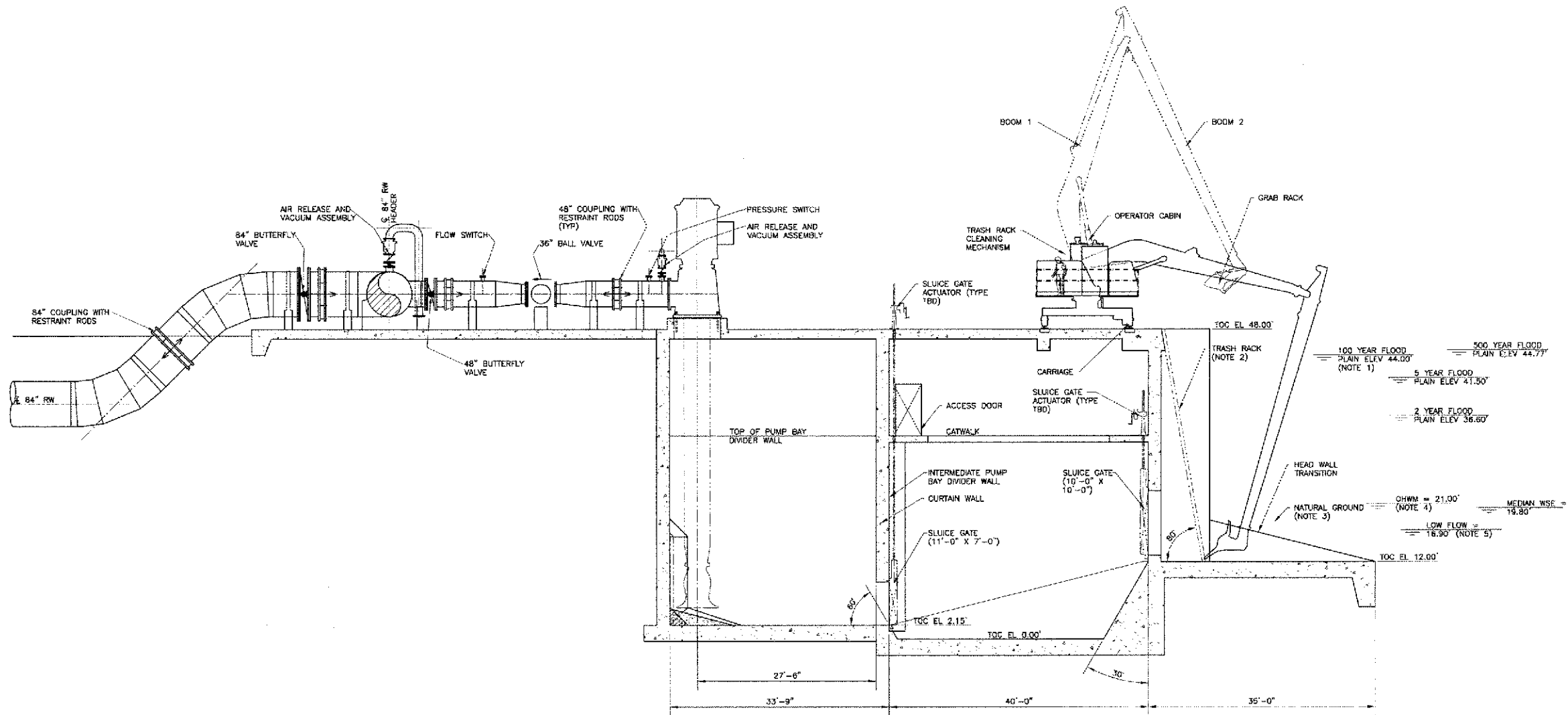
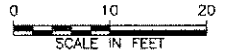
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY PUMP STATION
 PLAN, OPTION 2
 HEADER IN VALVE VAULT

DRAWING SCALE
 AS SHOWN

EXHIBIT: B-5 SHEET NO. OF

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NOTES:

1. 100 YEAR FLOOD PLAIN ELEVATION AS SHOWN BASED ON FIRM PANEL 4829100325C, EFFECTIVE DATE: MAY 2, 2009, REFERENCED TO NAVD 88, 2001 ADJUSTMENT.
2. PRELIMINARY TRASH RACK DESIGN CONSIST OF 1/2" WIDE BARS SPACED 2-INCHES APART (OUTSIDE EDGE TO OUTSIDE EDGE). DEPTH AND HORIZONTAL BRACING TO BE DETERMINED LATER.
3. NATURAL GROUND ELEVATION SHOWN AT CENTERLINE OF PUMP STATION, REFERENCED TO NAVD 88, 2001 ADJUSTMENT.
4. OHWM = ORDINARY HIGH WATER MARK.
5. LOW FLOW WATER SURFACE ELEVATION ASSUMES A FLOW RATE OF 1,000 CFS..

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 TYPE NO. 7-3000

AECOM
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 713.780.4100 tel.
 713.780.0638 fax.



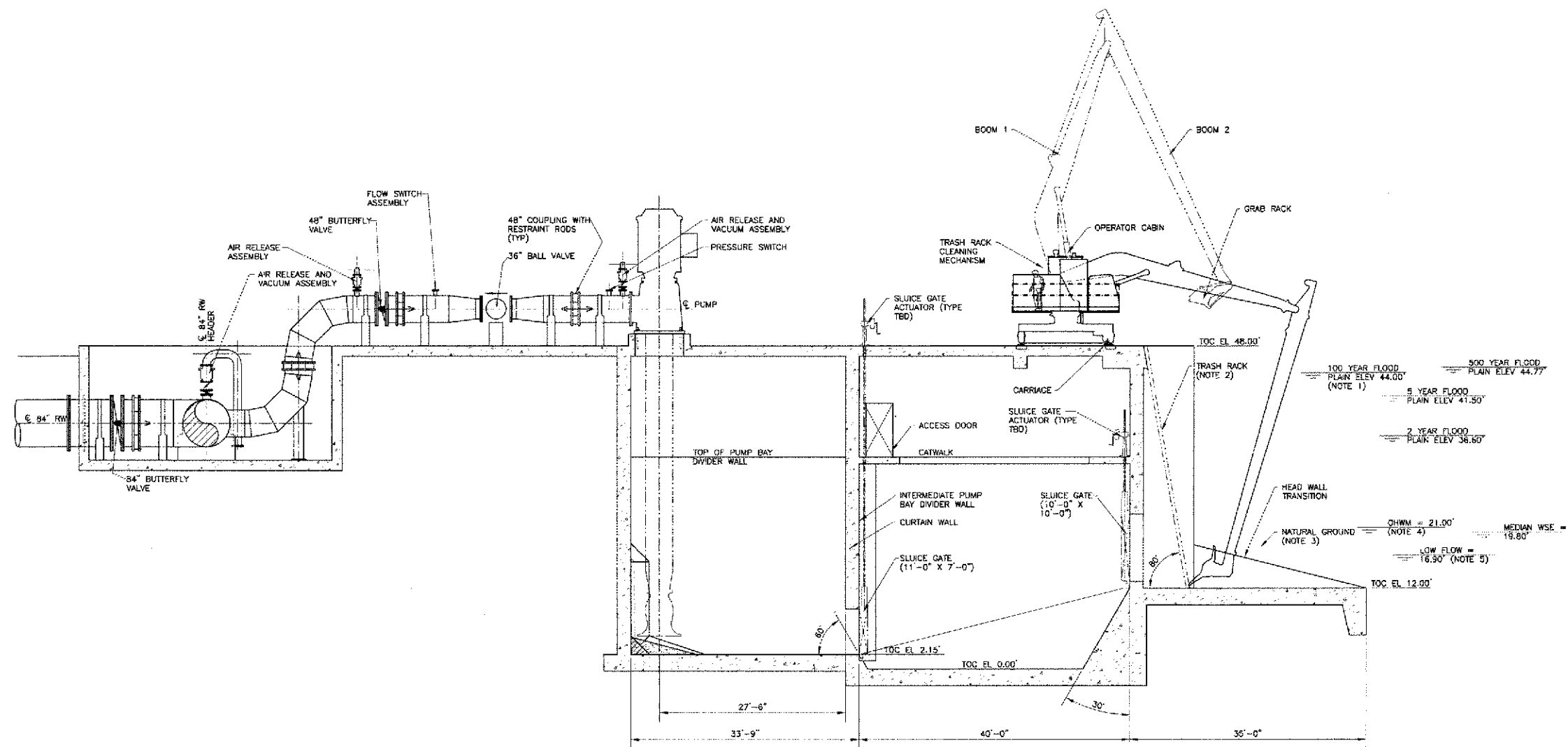
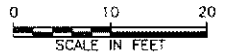
SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY PUMP STATION
 SECTION, OPTION 1
 ABOVEGROUND HEADER

DRAWING SCALE
 AS SHOWN

EXHIBIT: B-6 SHEET NO. OF



NOTES:

1. 100 YEAR FLOOD PLAIN ELEVATION AS SHOWN BASED ON FIRM PANEL 4529100325C, EFFECTIVE DATE: MAY 2, 2009, REFERENCED TO NAVD 88, 2001 ADJUSTMENT.
2. PRELIMINARY TRASH RACK DESIGN CONSIST OF 1/2" WIDE BARS SPACED 2-INCHES APART (OUTSIDE EDGE TO OUTSIDE EDGE). DEPTH AND HORIZONTAL BRACING TO BE DETERMINED LATER.
3. NATURAL GROUND ELEVATION SHOWN AT CENTERLINE OF PUMP STATION, REFERENCED TO NAVD 88, 2001 ADJUSTMENT.
4. QHWM = ORDINARY HIGH WATER MARK.
5. LOW FLOW WATER SURFACE ELEVATION ASSUMES A FLOW RATE OF 1,000 CFS.

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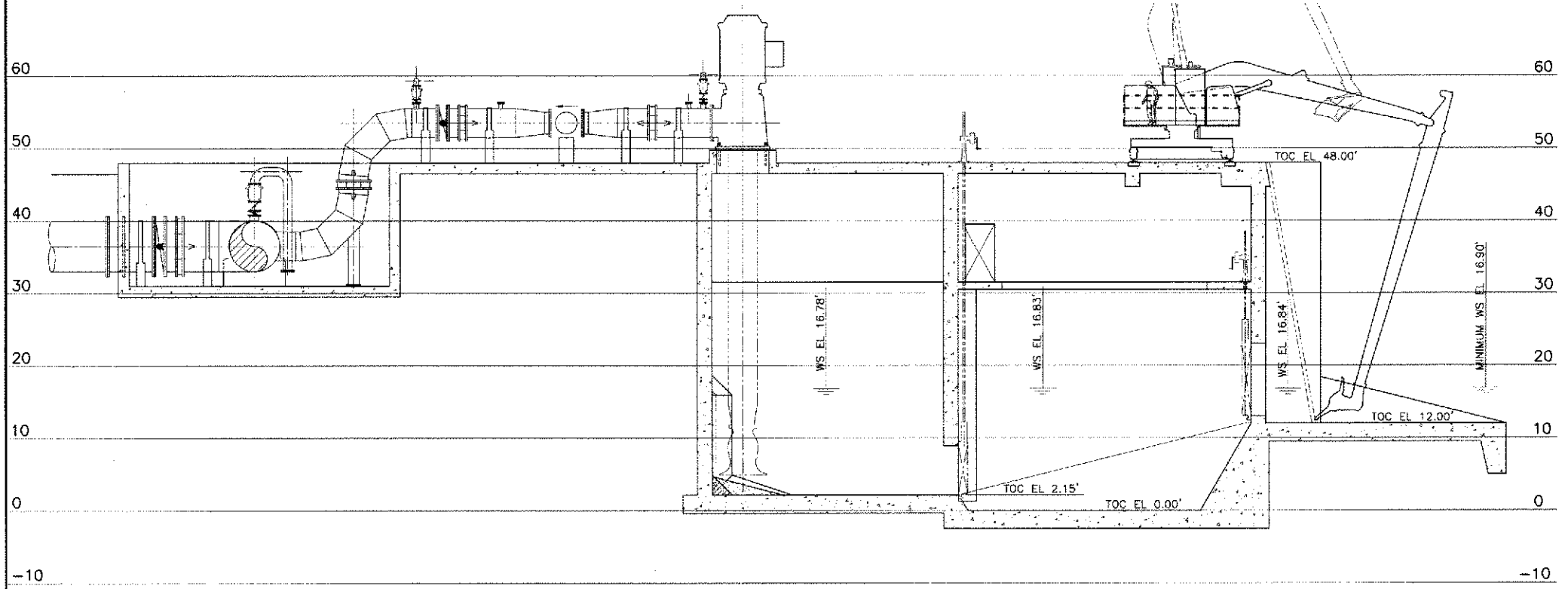
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY PUMP STATION
SECTION, OPTION 2
HEADER IN VALVE VAULT

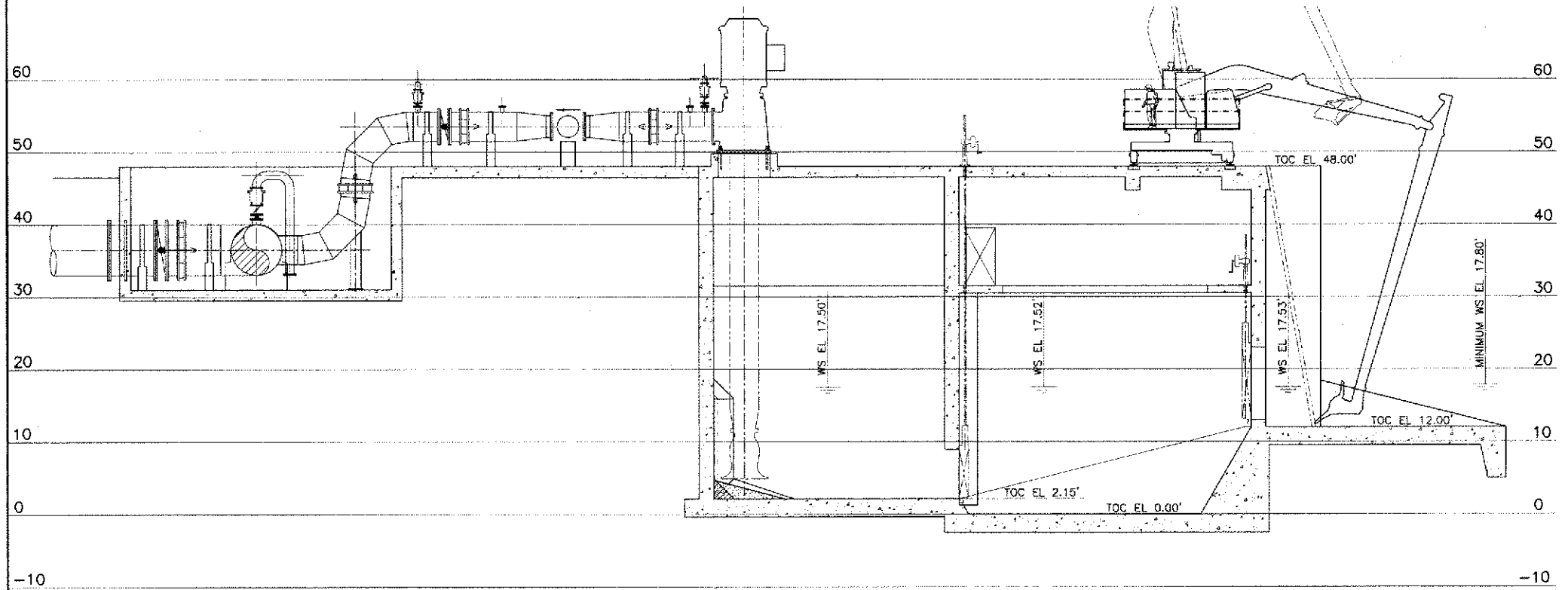
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AS SHOWN

EXHIBIT: B-7 SHEET NO. OF

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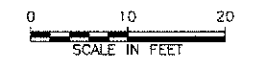
HYDRAULIC PROFILE TWO PUMPS OPERATING AT 49,600 GPM



HYDRAULIC PROFILE ALL PUMPS OPERATING AT 49,400 GPM

WSE AT VARIOUS FLOWRATES		
FLOW (CFS)	COMMENTS	WSE (FT)
1,000	LOW FLOW SCENARIO 1	16.9
1,500	LOW FLOW SCENARIO 2	17.8
3,000	APPROXIMATE MEDIAN FLOW	19.8
6,000	FLOW SCENARIO 3	22.3
48,600	2 YEAR DESIGN FLOW	35.6
73,100	5 YEAR DESIGN FLOW	41.5
86,300	10 YEAR DESIGN FLOW	42.1
130,000	100 YEAR DESIGN FLOW	44.0
159,500	500 YEAR DESIGN FLOW	44.7

NOTE:
 DURING LOW PUMPING OPERATIONS, THE MINIMUM ANTICIPATED WATER SURFACE ELEVATION IN THE TRINITY RIVER IS 16.90 FEET. DURING HIGH PUMPING OPERATIONS (500 MGD), THE MINIMUM ANTICIPATED WATER SURFACE ELEVATION IN THE TRINITY RIVER WILL BE 17.80 FEET. MINIMUM TRINITY RIVER ELEVATIONS ARE CONTROLLED BY THE TRA THROUGH RELEASES FROM LAKE LIVINGSTON, WHICH ARE PROVIDED TO MEET DOWNSTREAM WATER RIGHT DEMANDS.



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 TYPE REG. NO. P-3880

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 HOUSTON, TEXAS 77057
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 713.780.0838 fax.



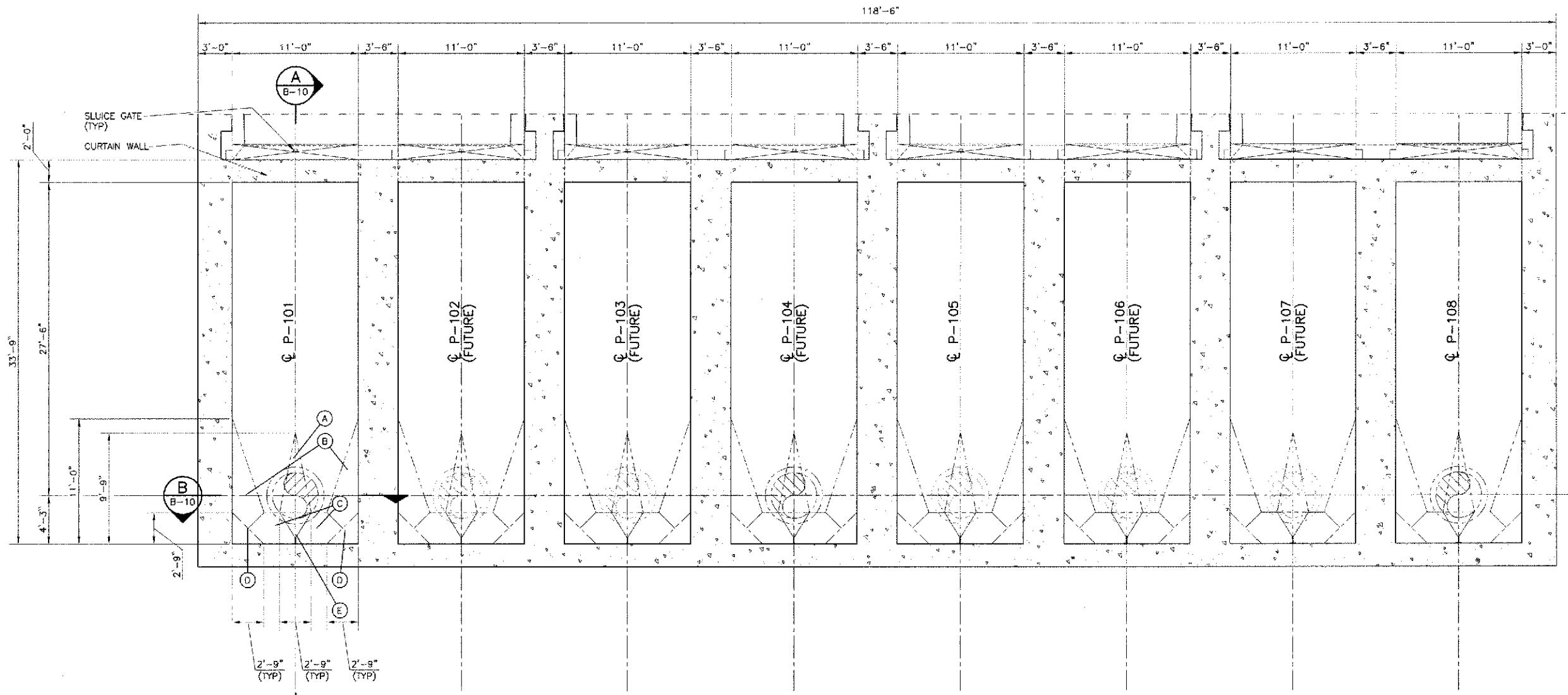
SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY PUMP STATION
 HYDRAULIC PROFILE

DRAWING SCALE	AS SHOWN
SHEET NO.	OF

LAST MODIFIED: Jan 27, 2011 - 3:12pm
 BY USER: gomerj
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PUMP BAY AREA PLAN
 SCALE: 3/32" = 1'-0"

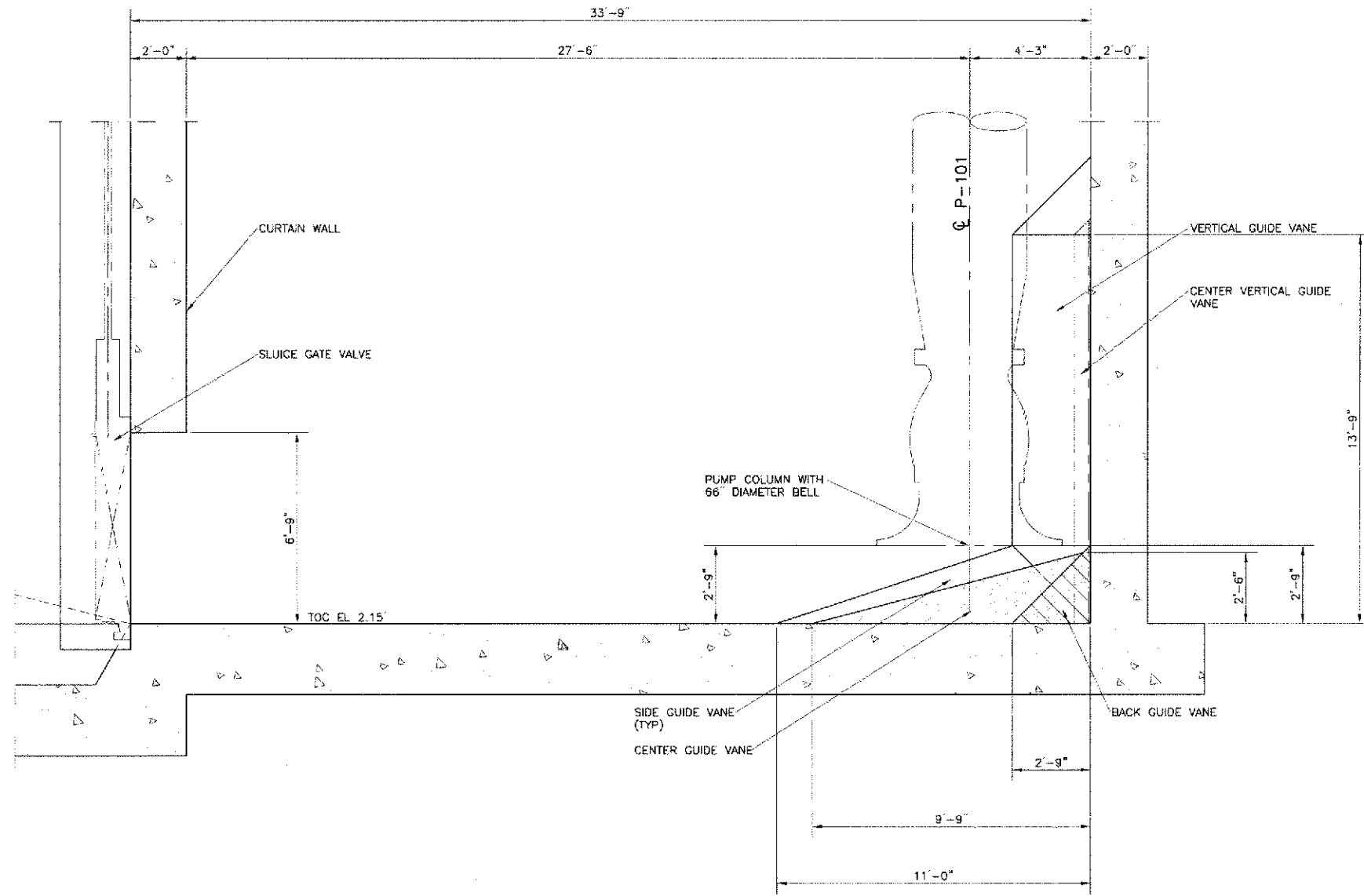
ITEM	DESCRIPTION
A	CENTER GUIDE VANE
B	SIDE GUIDE VANE
C	BACK GUIDE VANE
D	VERTICAL GUIDE VANE
E	CENTER VERTICAL GUIDE VANE

NOTE
 1. GUIDE VANE DIMENSIONS ARE ONLY BASED ON PRELIMINARY INFORMATION AND SHOULD BE REFINED DURING FINAL DESIGN THROUGH PHYSICAL MODELING AND CONSULTATION WITH PUMP MANUFACTURERS.

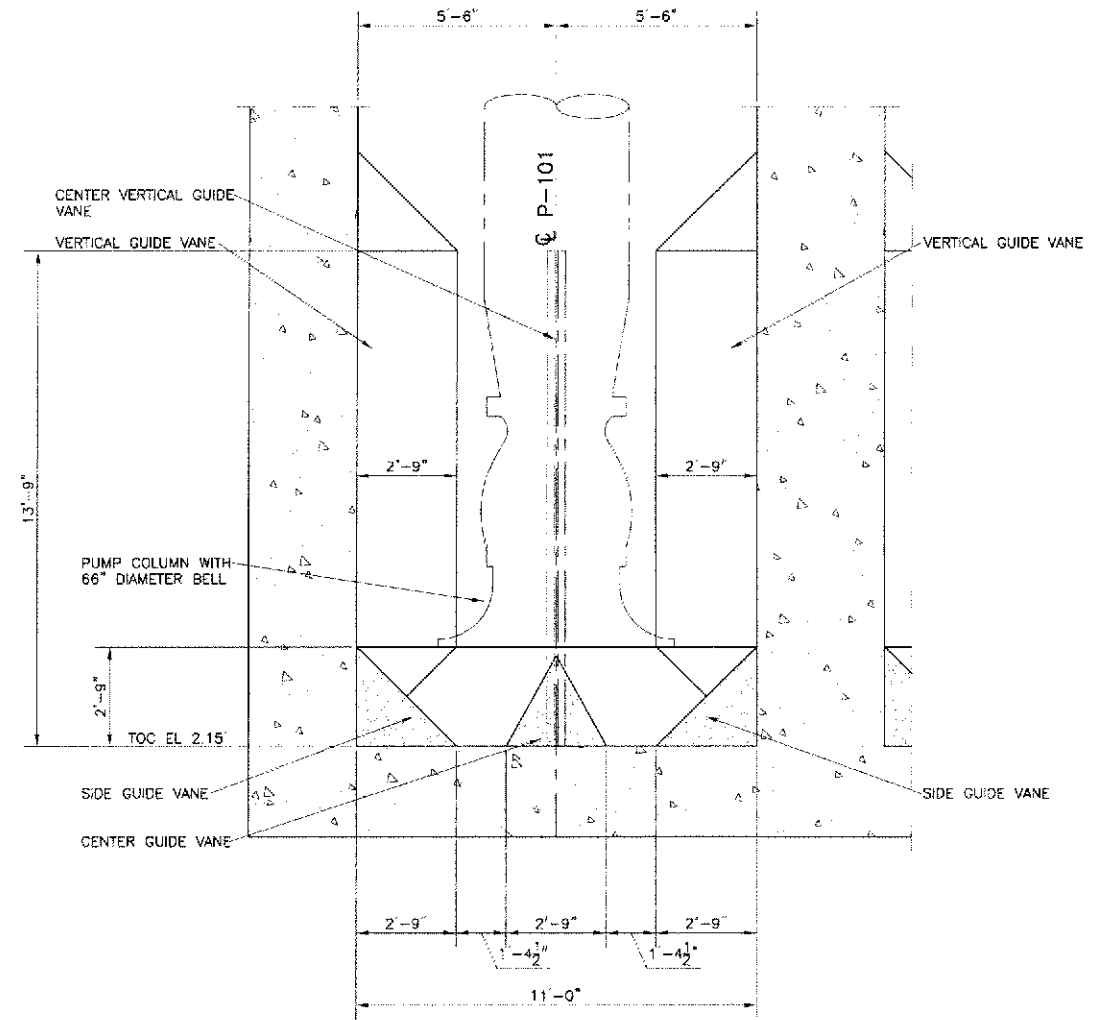
MICHAEL S. KANE, P.E.
 TEXAS REGISTRATION NO. 81990
 INTERIM SUBMITTAL
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 <small>AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057-1000 WWW.AECOM.COM TELE: 713.780.1100 FAX: 713.780.0838</small>		
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SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT		
PRELIMINARY PUMP BAY AREA PLAN		
DRAWING SCALE AS SHOWN		
EXHIBIT: B-9	SHEET NO.	OF

LAST MODIFIED: Jan 27, 2011 - 3:12pm BY USER: garner
 DWG. LOCATION: O:\Work Order 614.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cadd\PumpStation\W066910PumpStation.dwg



SECTION A
 SCALE: 3/16"=1'-0" B-9



SECTION B
 SCALE: 3/16"=1'-0" B-9

NOTE
 1. GUIDE VANE DIMENSIONS ARE ONLY BASED ON PRELIMINARY INFORMATION AND SHOULD BE REFINED DURING FINAL DESIGN THROUGH PHYSICAL MODELING AND CONSULTATION WITH PUMP MANUFACTURERS.

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 713.780.0838 fax.

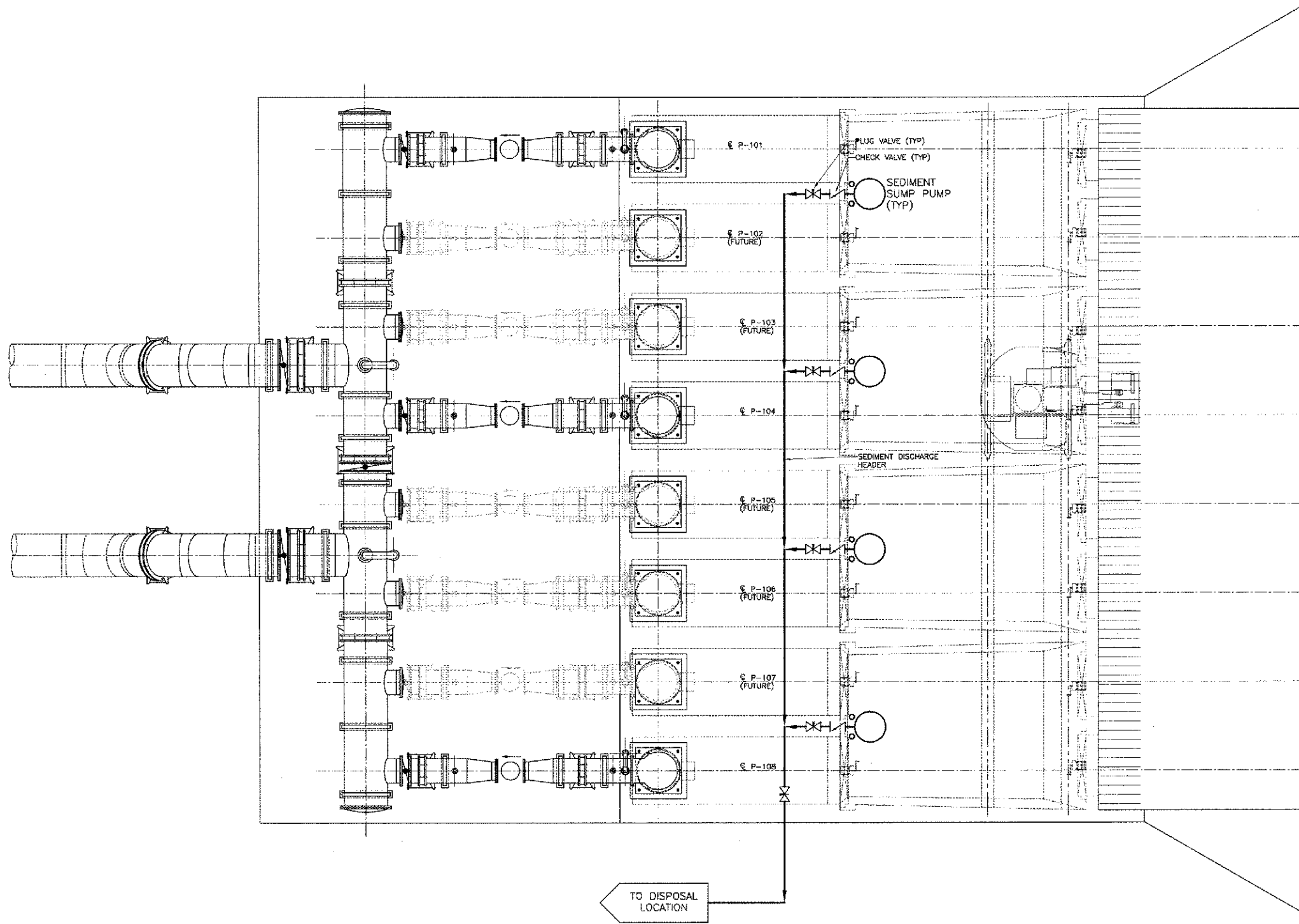


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 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY PUMP BAY AREA
 SECTIONS

DRAWING SCALE	
AS SHOWN	
EXHIBIT: B-10	SHEET NO. OF



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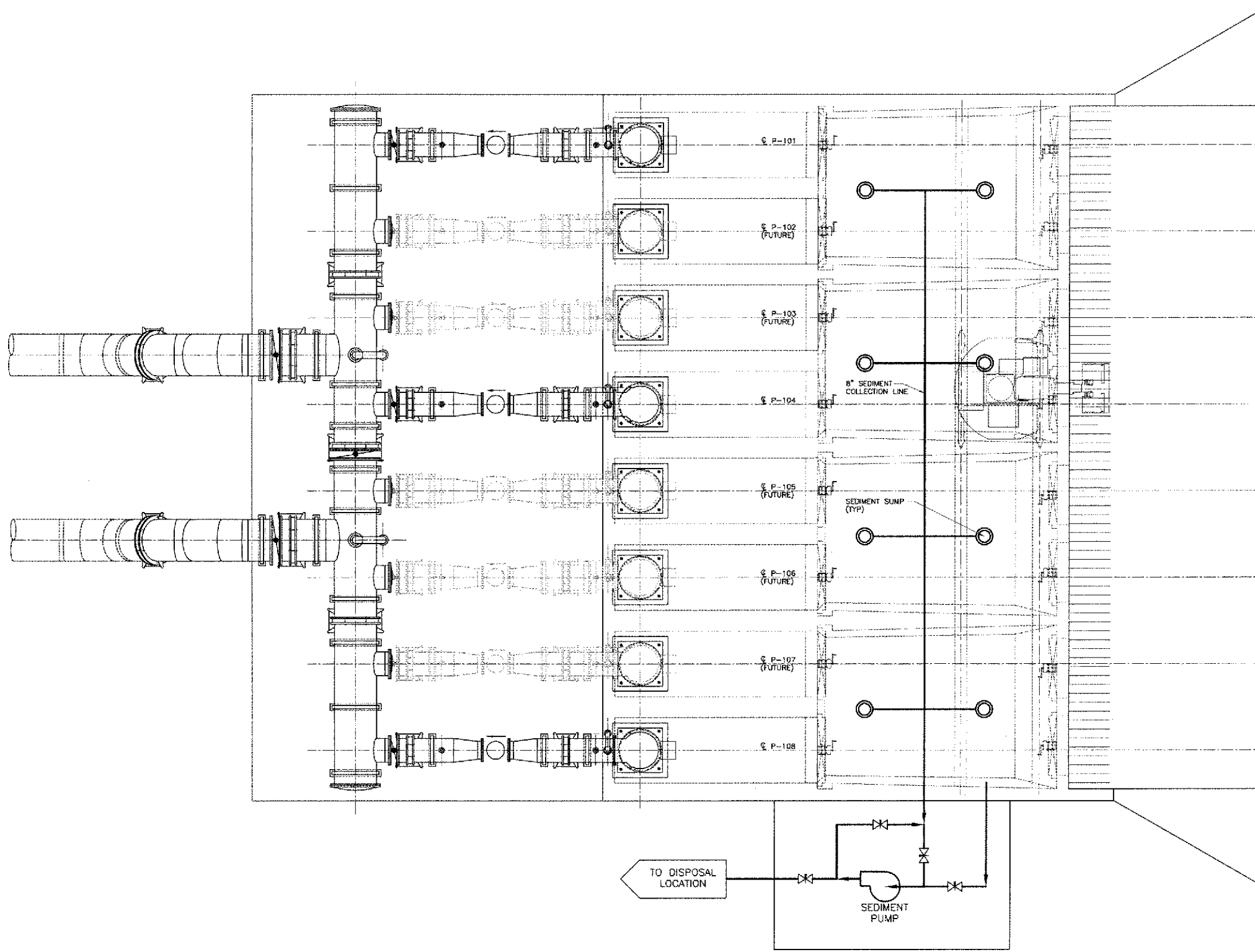
SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY SEDIMENT
 HANDLING FACILITY SCHEMATIC
 OPTION 1

DRAWING SCALE	
NOT TO SCALE	
SHEET NO.	OF

EXHIBIT: B-11

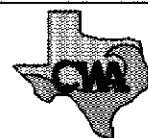
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PRELIMINARY SEDIMENT
 HANDLING FACILITY SCHEMATIC
 OPTION 2

DRAWING SCALE	
NOT TO SCALE	
SHEET NO.	OF

EXHIBIT: B-12

LAST MODIFIED: Jan 27, 2011 - 3:25pm BY USER: gernerl
 DWG. LOCATION: C:\Work Order 6\4.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cadd\PumpStation\
 DWG. NAME: W06B12\PumpStationSedPlan2.dwg

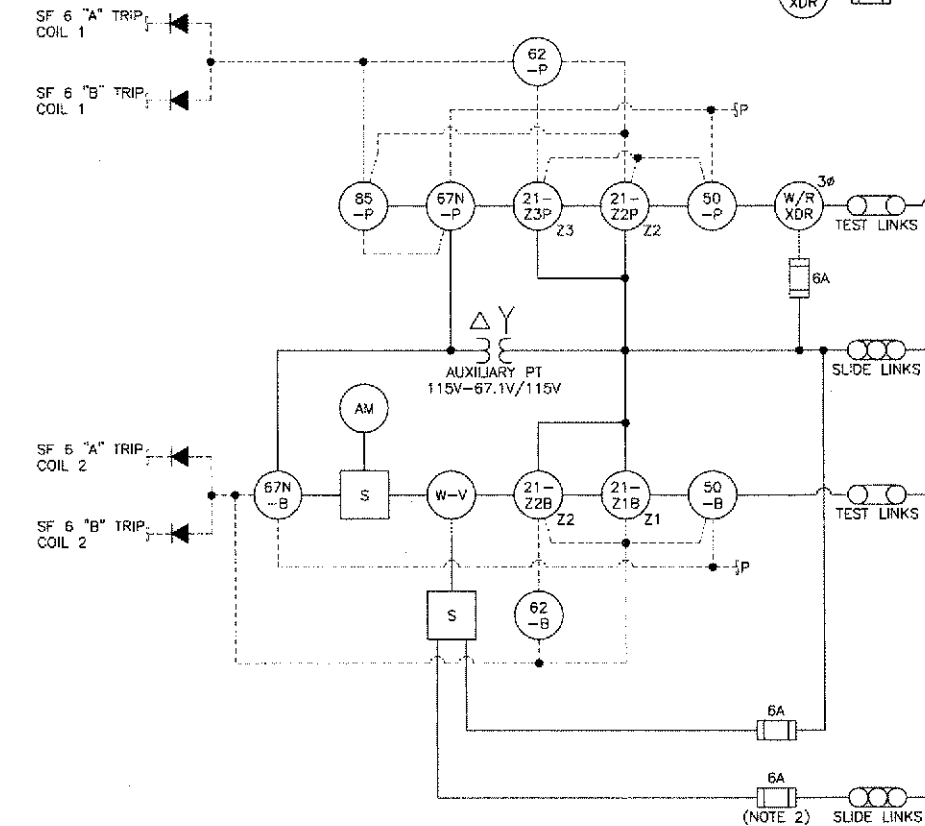
CARRIER PRIMARY RELAYS		
DEVICE NO.	TYPE	FUNCTION
21-Z2P	KD-10	ZONE 2 - PRIMARY
21-Z3P	KD-11	ZONE 3 - PRIMARY
50-P	ITH	FAULT DETECTOR
62-P	TD-4	TIMER FOR PRIMARY RELAYS
67N-P	KRP	GROUND RELAY - PRIMARY
85-P	KA-4	CARRIER AUXILIARY RELAY

CLOSING SCHEME RELAYS		
DEVICE NO.	TYPE	FUNCTION
25	CVE	SYNCHRO-VERIFIER RELAY
27/59	CV-2	UNDERVOLTAGE RELAY
79	RC	RECLOSEING RELAY
83	MG. SG	AUXILIARY RELAYS

BUS RELAYS		
DEVICE NO.	TYPE	FUNCTION
50-1A	SC	BUS 1 O.C. RELAY PRIMARY
50-2A	SC	BUS 2 O.C. RELAY PRIMARY
86-1	WL	BUS 1 LOCKOUT RELAY
86-2	WL	BUS 2 LOCKOUT RELAY
50/51-1B	CO .5-2.5	BUS 1 O.C. RELAY BACKUP
50/51-2B	CO .5-2.5	BUS 2 O.C. RELAY BACKUP

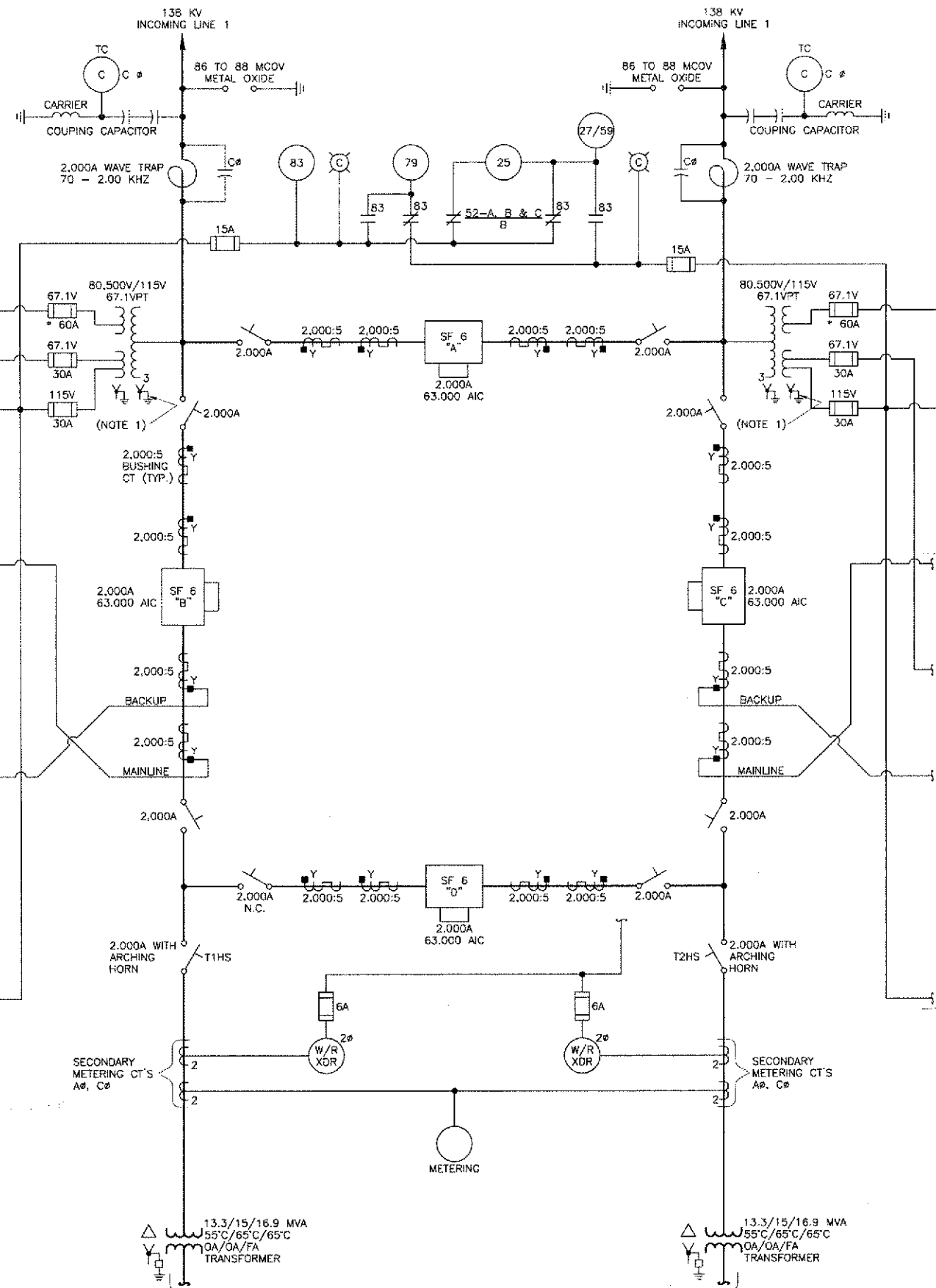
NON CARRIER BACKUP RELAYS		
DEVICE NO.	TYPE	FUNCTION
21-Z1B	KD-10	ZONE 1 - BACKUP
21-Z2B	KD-10	ZONE 2 - BACKUP
50-B	ITH	FAULT DETECTOR
62-B	TD-5	TIMER FOR BACKUP RELAYS
67N-B	IRP-B	GROUND RELAY BACKUP

* 60A FUSE FOR METERING TO BE ONE OF THE FOLLOWING TYPES:
 GOUD-SHAWMUT * TR60R
 BUSSN=MAN * FRN-W-60
 ECONOMY * ECNR 60W



NOTES:

- PT SECONDARY WINDINGS ARE TO BE GROUNDED WYE WITH ONE GROUND POINT AT RELAY PANEL AND ENERGY METERING PANEL.
- POTENTIAL FUSING:
 A.) 30A FUSES AT PT JUNCTION BOX.
 B.) 15A FUSES AT RELAY PANEL.
 C.) 6A FUSES FOR INDIVIDUAL DEVICES.
- ALL SF-6'S RATED 138V, 2,000A, 63KAIC.



- LEGEND CONTINUATION:**
- 83 -1 POTENTIAL ROLLOVER
 - W/R XDR WATT/VAR TRANSDUCER
 - TERMINAL BLOCK
 - SLIDE LINKS
 - TEST LINKS OR TEST TERMINALS

- LEGEND:**
- SF 6 "A" CIRCUIT BREAKER
 - FUSE(S)
 - TRANSFORMER, TWO WINDING AUXILIARY
 - CURRENT TRANSFORMER MULTI-RATIO
 - 138 KV DISCONNECT SWITCH WITH ARC HORNS
 - LIGHTING ARRESTOR
 - SS-2 SELECTOR SWITCH
 - INDICATOR LIGHT, C - CLEAR LENS
 - AM AMMETER
 - W-V WATTMETER-VARMETER
 - 21 PROTECTION RELAY, "21" DENOTES IEEE DEVICE
 - C TC POWER LINE CARRIER

RELAYING SAME AS LINE 1 (EXCEPT CHANGE SF 6 "B" TRIP COIL TO SF 6 "C" TRIP COIL 1/2)

REFER TO DWG. NO. B-14 FOR CONTINUATION

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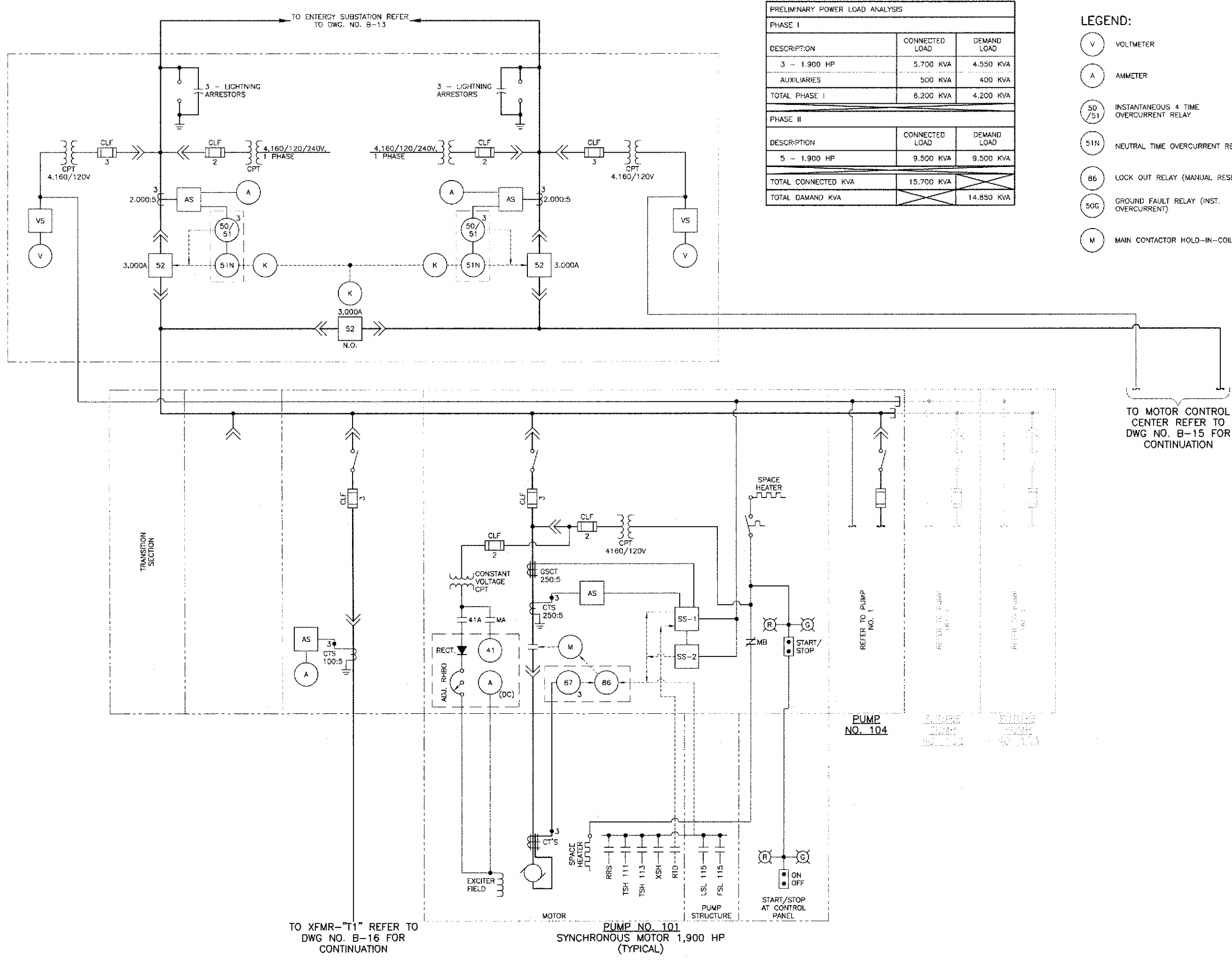
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

SUBSTATION PRELIMINARY ONE LINE DIAGRAM

DRAWING SCALE
 NOT TO SCALE

LAST MODIFIED: Jan 27, 2011 - 3:23pm BY USER: gernerj
 DWG. LOCATION: C:\Work Order 6\4.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Coad\PumpStation\
 DWG. NAME: W05B1314151617PumpStationOneLine.dwg

LAST MODIFIED: Jan 27, 2011 - 3:23pm BY USER: gernerf
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 DWG. NAME: W06B131415151617PumpStationOneLine.dwg



PRELIMINARY POWER LOAD ANALYSIS		
PHASE I		
DESCRIPTION	CONNECTED LOAD	DEMAND LOAD
3 - 1,900 HP	5,700 KVA	4,550 KVA
AUXILIARIES	500 KVA	400 KVA
TOTAL PHASE I	6,200 KVA	4,200 KVA
PHASE II		
DESCRIPTION	CONNECTED LOAD	DEMAND LOAD
5 - 1,900 HP	9,500 KVA	9,500 KVA
TOTAL CONNECTED KVA	15,700 KVA	
TOTAL DEMAND KVA		14,850 KVA

LEGEND:

- (V) VOLTMETER
- (A) AMMETER
- (50/51) INSTANTANEOUS 4 TIME OVERCURRENT RELAY
- (51N) NEUTRAL TIME OVERCURRENT RELAY
- (86) LOCK OUT RELAY (MANUAL RESET)
- (50G) GROUND FAULT RELAY (INST. OVERCURRENT)
- (M) MAIN CONTACTOR HOLD-IN-COIL

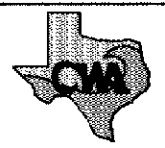
LEGEND: (CONTINUATION)

- (41) FIELD APPLICATION TIMER RELAY
- (87) MOTOR DIFFERENTIAL RELAY
- (CS) CONTROL SWITCH
- (AS) AMMETER SWITCH
- (VS) VOLTMETER SWITCH
- (52) DRAWOUT AIR CIRCUIT BREAKER
- (SS-1) SOLID STATE MOTOR PROTECTION MALFUNCTION UNIT WITH:
1. OVERTEMPERATURE/OVERLOAD
2. PHASE BALANCE
3. GROUND FAULT
- (SS-2) SOLID STATE SLIP PULLOUT RELAY

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PRELIMINARY ONE LINE
 DIAGRAM SHEET 1 OF 4

DRAWING SCALE	
NOT TO SCALE	
SHEET NO.	OF

EXHIBIT: B-14

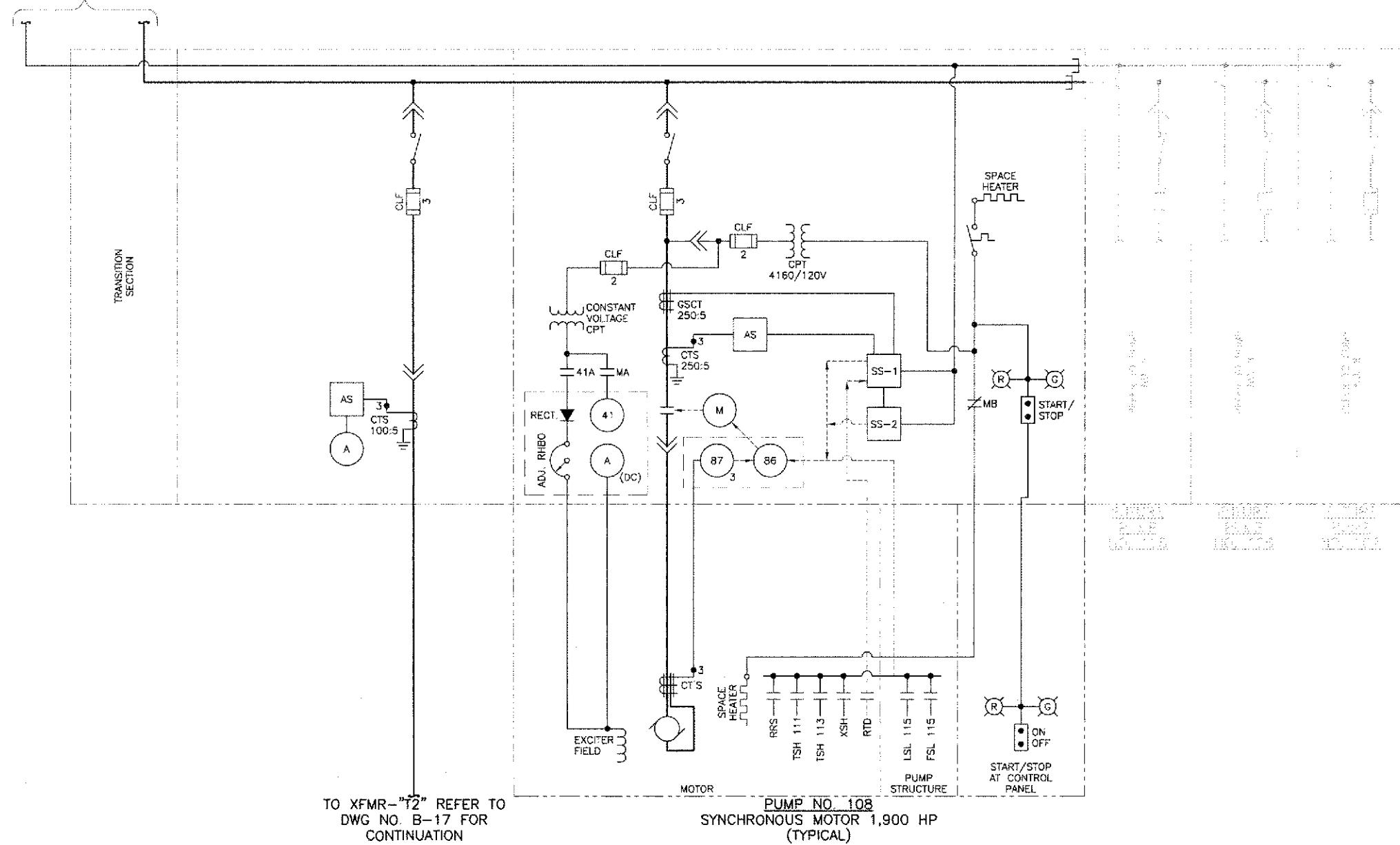
TO XFMR-"T1" REFER TO DWG NO. B-16 FOR CONTINUATION

PUMP NO. 101
 SYNCHRONOUS MOTOR 1,900 HP
 (TYPICAL)

PUMP NO. 104

TO MOTOR CONTROL CENTER REFER TO DWG NO. B-15 FOR CONTINUATION

TO MOTOR CONTROL CENTER REFER TO DWG NO. B-14 FOR CONTINUATION



TO XFMR-"T2" REFER TO DWG NO. B-17 FOR CONTINUATION

PUMP NO. 108
SYNCHRONOUS MOTOR 1,900 HP
(TYPICAL)

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PRELIMINARY ONE LINE
DIAGRAM SHEET 2 OF 4

DRAWING SCALE
NOT TO SCALE

EXHIBIT: B-15 SHEET NO. OF

LAST MODIFIED: Jan 27, 2011 - 3:24pm BY USER: gerner
DWG. LOCATION: G:\Work_Order_6\4.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cadd\PumpStation\
DWG. NAME: WOB6\314151617PumpStationLine.dwg

TO MOTOR CONTROL CENTER REFER TO DWG NO. B-14 FOR CONTINUATION

SWITCHBOARD "SW"

1,000 AMP, 35 KAIC
480V/277V, 3 PHASE, 4 WIRE

1,000 AMP, 35 KAIC
480V/277V, 3 PHASE, 4 WIRE

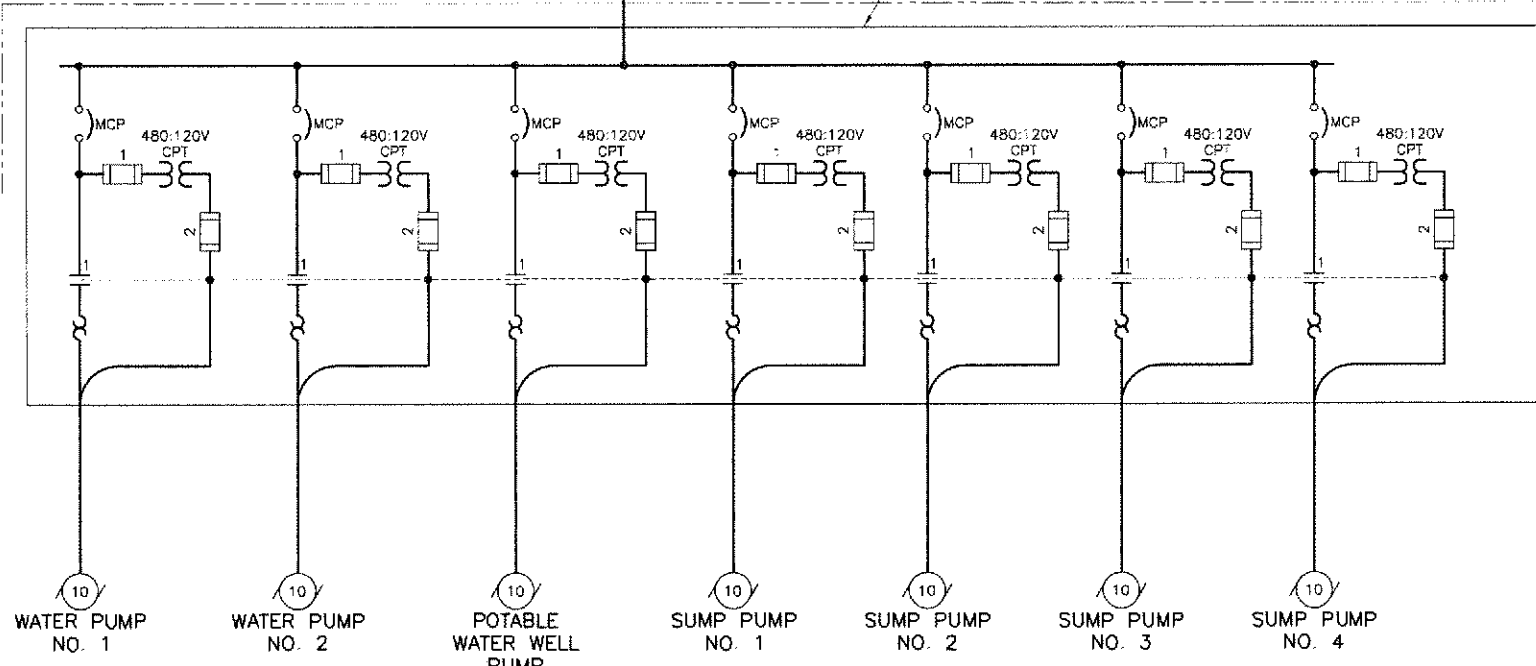
MATCHLINE "A" REFER TO THIS DWG FOR CONTINUATION

MATCHLINE "A" REFER TO THIS DWG FOR CONTINUATION

MATCHLINE "B" REFER TO DWG NO. B-17 FOR CONTINUATION

TRASH RACK CONTROL PANEL

HPU
TRASH RACK
OIL



MONORAIL CRANE NO. 1 CONTROL PANEL

MONORAIL CRANE NO. 1

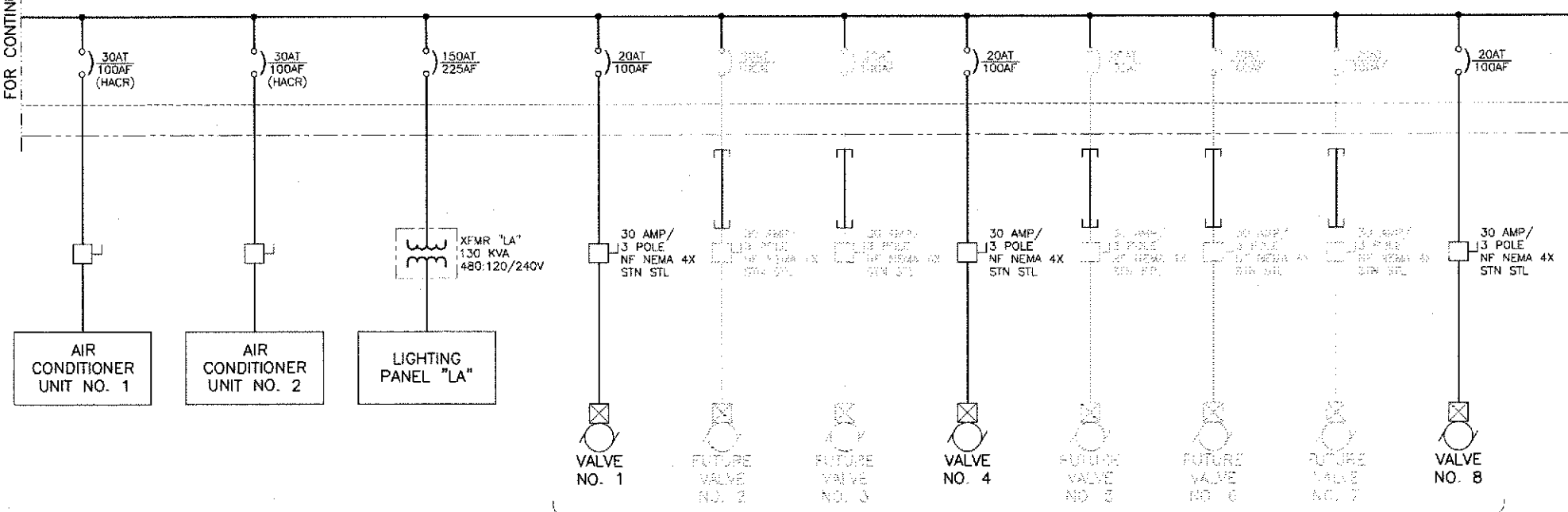
MONORAIL CRANE NO. 2 CONTROL PANEL

HYDRAULIC LIFT CRANE NO. 1

MONORAIL CRANE NO. 3 CONTROL PANEL

HYDRAULIC LIFT CRANE NO. 2

SWITCHBOARD "SW"



CONTROL VALVE ACTUATOR MOTORS

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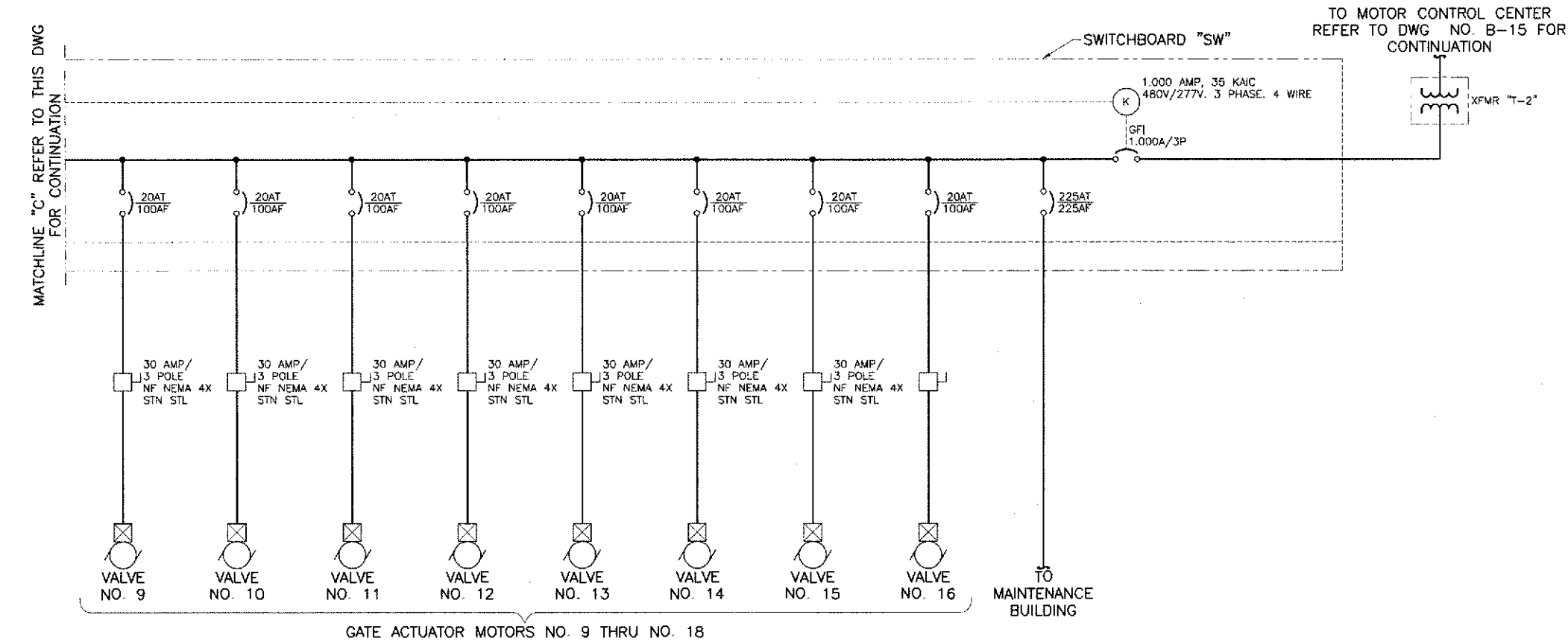
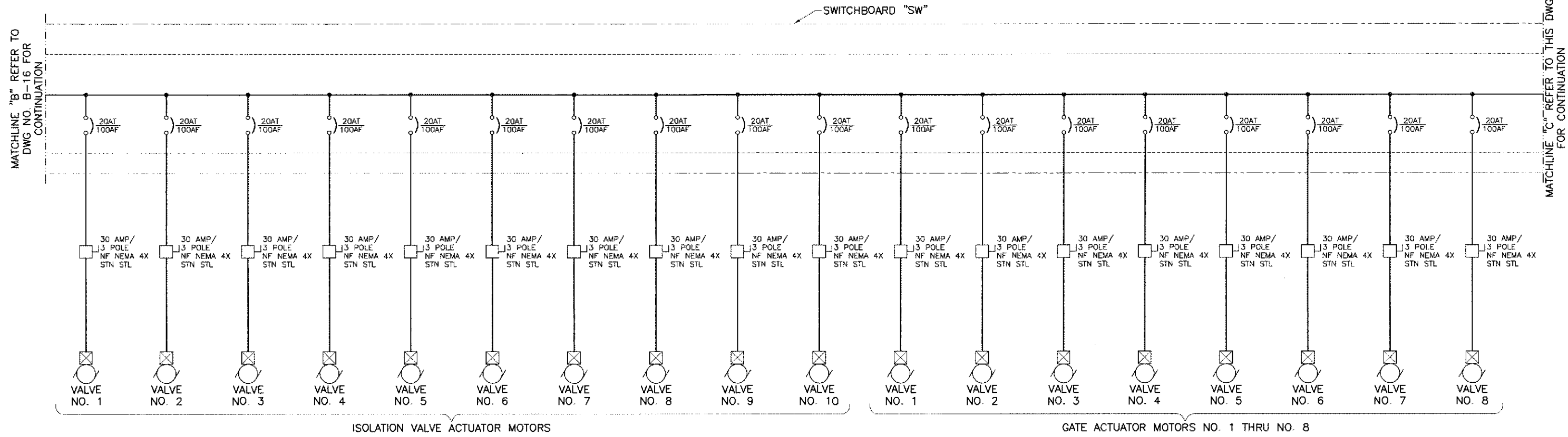
PRELIMINARY ONE LINE
DIAGRAM SHEET 3 OF 4

DRAWING SCALE
NOT TO SCALE

EXHIBIT: B-16 SHEET NO. OF

LAST MODIFIED: Jan 27, 2011 - 3:24pm BY USER: gernerj
DWG. LOCATION: O:\Work Order 6\4.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cadd\PumpStation\ DWG. NAME: W06B1314151617PumpStation.dwg

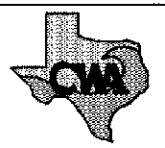
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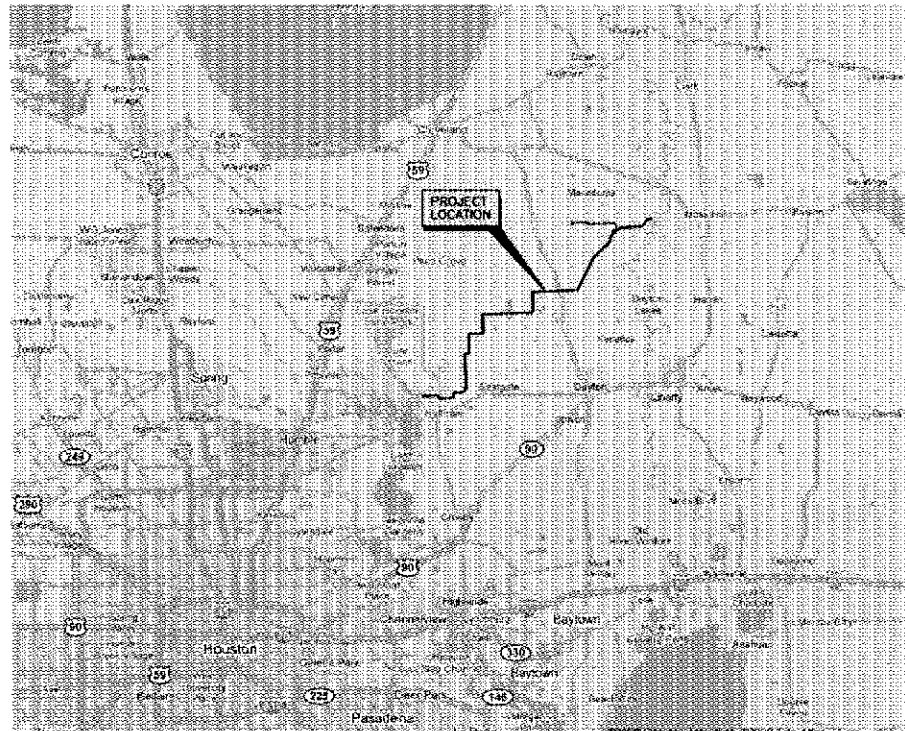
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 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PRELIMINARY ONE LINE
 DIAGRAM SHEET 4 OF 4

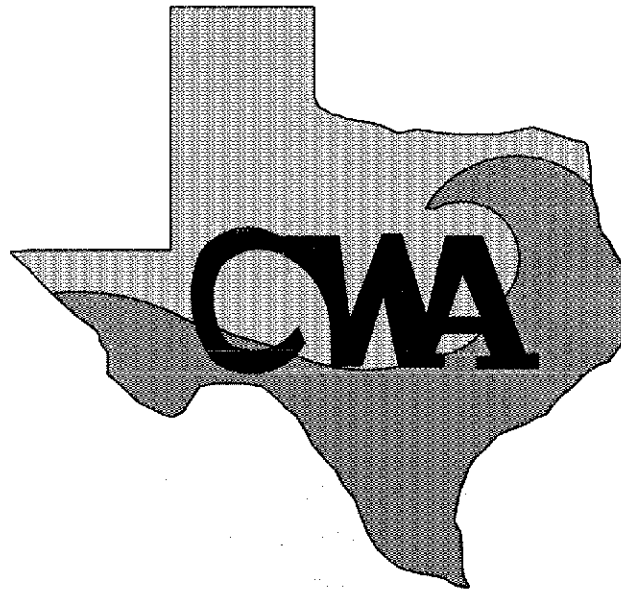
DRAWING SCALE	
NOT TO SCALE	
SHEET NO.	OF

EXHIBIT: B-17

COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT PROPOSED CANAL AND WATER LINE SYSTEM



LOCATION MAP
NTS



EXECUTIVE OFFICERS

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JERRY L. BERRY

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LUCE BAYOU INTERBASIN TRANSFER PROJECT

DRAWING SCALE
AS SHOWN

EXHIBIT: SHEET NO. 1 of 245

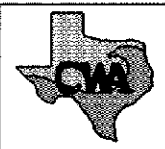
ISSUE DATE: JANUARY, 2011

SHT. NO.	GENERAL	SHT. NO.	PLAN AND PROFILE CONTINUED	SHT. NO.	PLAN AND PROFILE CONTINUED	SHT. NO.	POLLUTION PREVENTION PLANS
01	COVER SHEET	62	CANAL PLAN & PROFILE STA 350+00 TO STA 361+50	138	SEDIMENTATION BASIN DETAILED PLAN	206	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 1 OF 25)
02	SHEET INDEX	63	CANAL PLAN & PROFILE STA 361+50 TO STA 374+00	139	PIPELINE PLAN & PROFILE STA 2000+00 TO STA 2012+50	207	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 2 OF 25)
03	CANAL TYPICAL CROSS SECTIONS	64	CANAL PLAN & PROFILE STA 374+00 TO STA 386+50	140	PIPELINE PLAN & PROFILE STA 2012+50 TO STA 2025+00	208	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 3 OF 25)
04	PIPELINE AND ACCESS ROAD TYPICAL CROSS SECTIONS	65	CANAL PLAN & PROFILE STA 386+50 TO STA 399+00	141	PIPELINE PLAN & PROFILE STA 2025+00 TO STA 2037+50	209	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 4 OF 25)
05	PROPOSED SIPHON DETAIL AND CROSS SECTION	66	CANAL PLAN & PROFILE STA 399+00 TO STA 411+50	142	PIPELINE PLAN & PROFILE STA 2037+50 TO STA 2050+00	210	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 5 OF 25)
06	PROPOSED ROAD CROSSING DETAIL	67	CANAL PLAN & PROFILE STA 411+50 TO STA 424+00	143	PIPELINE PLAN & PROFILE STA 2050+00 TO STA 2062+50	211	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 6 OF 25)
	DRAINAGE AND STORM SEWER	68	CANAL PLAN & PROFILE STA 424+00 TO STA 435+00	144	PIPELINE PLAN & PROFILE STA 2062+50 TO STA 2075+00	212	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 7 OF 25)
07	OVERALL PROJECT DRAINAGE AREA MAP	69	CANAL PLAN & PROFILE STA 435+00 TO STA 447+50	145	PIPELINE PLAN & PROFILE STA 2075+00 TO STA 2087+50	213	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 8 OF 24)
08	PROJECT DRAINAGE AREA MAP (SHEET 1 OF 5)	70	CANAL PLAN & PROFILE STA 447+50 TO STA 460+00	146	PIPELINE PLAN STA 2087+50 TO STA 2100+00	214	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 9 OF 25)
09	PROJECT DRAINAGE AREA MAP (SHEET 2 OF 5)	71	CANAL PLAN & PROFILE STA 460+00 TO STA 472+50	147	PIPELINE PROFILE STA 2087+50 TO STA 2100+00	215	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 10 OF 25)
10	PROJECT DRAINAGE AREA MAP (SHEET 3 OF 5)	72	CANAL PLAN & PROFILE STA 472+50 TO STA 482+50	148	PIPELINE PLAN STA 2100+00 TO STA 2112+50	216	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 11 OF 25)
11	PROJECT DRAINAGE AREA MAP (SHEET 4 OF 5)	73	CANAL PLAN & PROFILE STA 482+50 TO STA 492+50	149	PIPELINE PROFILE STA 2100+00 TO STA 2112+50	217	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 12 OF 25)
12	PROJECT DRAINAGE AREA MAP (SHEET 5 OF 5)	74	CANAL PLAN & PROFILE STA 492+50 TO STA 505+00	150	PIPELINE PLAN & PROFILE STA 2112+50 TO STA 2125+00	218	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 13 OF 25)
	SHEET AND BORING LAYOUTS	75	CANAL PLAN & PROFILE STA 505+00 TO STA 517+50	151	PIPELINE PLAN & PROFILE STA 2125+00 TO STA 2137+50	219	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 14 OF 25)
13	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 1 OF 13)	76	CANAL PLAN & PROFILE STA 517+50 TO STA 530+00	152	PIPELINE PLAN STA 2137+50 TO STA 2150+00	220	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 15 OF 25)
14	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 2 OF 13)	77	CANAL PLAN & PROFILE STA 530+00 TO STA 542+50	153	PIPELINE PROFILE STA 2137+50 TO STA 2150+00	221	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 16 OF 25)
15	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 3 OF 13)	78	CANAL PLAN & PROFILE STA 542+50 TO STA 551+00	154	PIPELINE PLAN & PROFILE STA 2150+00 TO PUMP STATION	222	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 17 OF 25)
16	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 4 OF 13)	79	CANAL PLAN & PROFILE STA 551+00 TO STA 562+50	155	ACCESS ROAD PLAN & PROFILE STA 3000+00 TO STA 3012+50	223	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 18 OF 25)
17	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 5 OF 13)	80	CANAL PLAN & PROFILE STA 562+50 TO STA 575+00	156	ACCESS ROAD PLAN & PROFILE STA 3012+50 TO STA 3025+00	224	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 19 OF 25)
18	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 6 OF 13)	81	CANAL PLAN & PROFILE STA 575+00 TO STA 587+50	157	ACCESS ROAD PLAN & PROFILE STA 3025+00 TO STA 3037+50	225	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 20 OF 25)
19	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 7 OF 13)	82	CANAL PLAN & PROFILE STA 587+50 TO STA 600+00	158	ACCESS ROAD PLAN & PROFILE STA 3037+50 TO STA 3050+00	226	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 21 OF 25)
20	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 8 OF 13)	83	CANAL PLAN & PROFILE STA 600+00 TO STA 612+50	159	ACCESS ROAD PLAN & PROFILE STA 3050+00 TO STA 3062+50	227	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 22 OF 25)
21	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 9 OF 13)	84	CANAL PLAN & PROFILE STA 612+50 TO STA 625+00	160	ACCESS ROAD PLAN & PROFILE STA 3062+50 TO STA 3075+00	228	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 23 OF 25)
22	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 10 OF 13)	85	CANAL PLAN & PROFILE STA 625+00 TO STA 637+50	161	ACCESS ROAD PLAN & PROFILE STA 3075+00 TO STA 3087+50	229	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 24 OF 25)
23	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 11 OF 13)	86	CANAL PLAN & PROFILE STA 637+50 TO STA 650+00	162	ACCESS ROAD PLAN & PROFILE STA 3087+50 TO STA 3100+00	230	STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 25 OF 25)
24	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 12 OF 13)	87	CANAL PLAN & PROFILE STA 650+00 TO STA 662+50	163	ACCESS ROAD PLAN & PROFILE STA 3100+00 TO STA 3112+50	231	STORM WATER POLLUTION PREVENTION PLAN - PIPELINE (SHEET 1 OF 4)
25	CANAL SHEET LAYOUT AND BORING PLAN (SHEET 13 OF 13)	88	CANAL PLAN & PROFILE STA 662+50 TO STA 675+00	164	ACCESS ROAD PLAN & PROFILE STA 3112+50 TO STA 3125+00	232	STORM WATER POLLUTION PREVENTION PLAN - PIPELINE (SHEET 2 OF 4)
26	PIPELINE SHEET LAYOUT AND BORING PLAN (SHEET 1 OF 2)	89	CANAL PLAN & PROFILE STA 675+00 TO STA 687+50	165	ACCESS ROAD PLAN & PROFILE STA 3125+00 TO STA 3137+50	233	STORM WATER POLLUTION PREVENTION PLAN - PIPELINE (SHEET 3 OF 4)
27	PIPELINE SHEET LAYOUT AND BORING PLAN (SHEET 2 OF 2)	90	CANAL PLAN & PROFILE STA 687+50 TO STA 700+00	166	ACCESS ROAD PLAN & PROFILE STA 3137+50 TO STA 3150+00	234	STORM WATER POLLUTION PREVENTION PLAN - PIPELINE (SHEET 4 OF 4)
28	ACCESS ROAD SHEET LAYOUT AND BORING PLAN (SHEET 1 OF 4)	91	CANAL PLAN & PROFILE STA 700+00 TO STA 712+50	167	ACCESS ROAD PLAN & PROFILE STA 3150+00 TO STA 3162+50	235	STORM WATER POLLUTION PREVENTION PLAN - ACCESS ROAD (SHEET 1 OF 4)
29	ACCESS ROAD SHEET LAYOUT AND BORING PLAN (SHEET 2 OF 4)	92	CANAL PLAN & PROFILE STA 712+50 TO STA 725+00	168	ACCESS ROAD PLAN & PROFILE STA 3162+50 TO STA 3175+00	236	STORM WATER POLLUTION PREVENTION PLAN - ACCESS ROAD (SHEET 2 OF 4)
30	ACCESS ROAD SHEET LAYOUT AND BORING PLAN (SHEET 3 OF 4)	93	CANAL PLAN & PROFILE STA 725+00 TO STA 737+50	169	ACCESS ROAD PLAN & PROFILE STA 3175+00 TO STA 3187+50	237	STORM WATER POLLUTION PREVENTION PLAN - ACCESS ROAD (SHEET 3 OF 4)
31	ACCESS ROAD SHEET LAYOUT AND BORING PLAN (SHEET 4 OF 4)	94	CANAL PLAN & PROFILE STA 737+50 TO STA 750+00	170	ACCESS ROAD PLAN & PROFILE STA 3200+00 TO STA 3212+50	238	STORM WATER POLLUTION PREVENTION PLAN - ACCESS ROAD (SHEET 4 OF 4)
	PLAN AND PROFILES	95	CANAL PLAN & PROFILE STA 750+00 TO STA 762+50	171	ACCESS ROAD PLAN & PROFILE STA 3212+50 TO STA 3225+00	239	SWPPP LAYOUT - FM 2100
32	CANAL PLAN & PROFILE STA 5+50 TO STA 18+00	96	CANAL PLAN & PROFILE STA 762+50 TO STA 775+00	172	ACCESS ROAD PLAN & PROFILE STA 3225+00 TO STA 3237+50	240	SWPPP LAYOUT - SCOTT RD
33	CANAL PLAN & PROFILE STA 18+00 TO STA 26+00	97	CANAL PLAN & PROFILE STA 775+00 TO STA 787+50	173	ACCESS ROAD PLAN & PROFILE STA 3237+50 TO STA 3250+00	241	SWPPP LAYOUT - WOLFE RD
34	CANAL PLAN & PROFILE STA 26+00 TO STA 35+00	98	CANAL PLAN & PROFILE STA 787+50 TO STA 800+00	174	ACCESS ROAD PLAN & PROFILE STA 3250+00 TO STA 3262+50	242	SWPPP LAYOUT - SH 321
35	CANAL PLAN & PROFILE STA 35+00 TO STA 47+50	99	CANAL PLAN & PROFILE STA 800+00 TO STA 810+00	175	ACCESS ROAD PLAN & PROFILE STA 3262+50 TO STA 3275+00	243	SWPPP LAYOUT - FM 1008
36	CANAL PLAN & PROFILE STA 47+50 TO STA 60+00	100	CANAL PLAN & PROFILE STA 810+00 TO STA 822+50	176	ACCESS ROAD PLAN & PROFILE STA 3275+00 TO STA 3287+50	244	SWPPP LAYOUT - CR 2326
37	CANAL PLAN & PROFILE STA 60+00 TO STA 70+00	101	CANAL PLAN & PROFILE STA 822+50 TO STA 835+00	177	ACCESS ROAD PLAN & PROFILE STA 3287+50 TO STA 3300+00	245	STORM WATER POLLUTION PREVENTION PLAN DETAILS
38	CANAL PLAN & PROFILE STA 70+00 TO STA 80+00	102	CANAL PLAN & PROFILE STA 835+00 TO STA 847+50	178	ACCESS ROAD PLAN & PROFILE STA 3300+00 TO STA 3312+50		
39	CANAL PLAN & PROFILE STA 80+00 TO STA 90+00	103	CANAL PLAN & PROFILE STA 847+50 TO STA 855+00	179	ACCESS ROAD PLAN & PROFILE STA 3312+50 TO STA 3325+00		
40	CANAL PLAN & PROFILE STA 90+00 TO STA 102+50	104	CANAL PLAN & PROFILE STA 855+00 TO STA 862+50	180	ACCESS ROAD PLAN & PROFILE STA 3325+00 TO STA 3337+50		
41	CANAL PLAN & PROFILE STA 102+50 TO STA 112+00	105	CANAL PLAN & PROFILE STA 862+50 TO STA 872+50	181	ACCESS ROAD PLAN & PROFILE STA 3337+50 TO STA 3350+00		
42	CANAL PLAN & PROFILE STA 112+00 TO STA 119+00	106	CANAL PLAN & PROFILE STA 872+50 TO STA 885+00	182	ACCESS ROAD PLAN & PROFILE STA 3350+00 TO STA 3357+81		
43	CANAL PLAN & PROFILE STA 119+00 TO STA 127+50	107	CANAL PLAN & PROFILE STA 885+00 TO STA 897+50				
44	CANAL PLAN & PROFILE STA 127+50 TO STA 140+00	108	CANAL PLAN & PROFILE STA 897+50 TO STA 910+00				
45	CANAL PLAN & PROFILE STA 140+00 TO STA 152+50	109	CANAL PLAN & PROFILE STA 910+00 TO STA 921+00				
46	CANAL PLAN & PROFILE STA 152+50 TO STA 163+50	110	CANAL PLAN & PROFILE STA 921+00 TO STA 932+00				
47	CANAL PLAN & PROFILE STA 163+50 TO STA 176+00	111	CANAL PLAN & PROFILE STA 932+00 TO STA 941+00	183	PROP CANAL AT FM 2100 - TRAFFIC CONTROL TYPICAL SECTIONS		
48	CANAL PLAN & PROFILE STA 176+00 TO STA 188+50	112	CANAL PLAN & PROFILE STA 941+00 TO STA 953+50	184	TRAFFIC CONTROL LAYOUT FM 2100 - PHASE I - STAGE 1 & STAGE 2		
49	CANAL PLAN & PROFILE STA 188+50 TO STA 201+00	113	CANAL PLAN & PROFILE STA 953+50 TO STA 966+00	185	TRAFFIC CONTROL LAYOUT FM 2100 - PHASE II - STAGE 1 & STAGE 2		
50	CANAL PLAN & PROFILE STA 201+00 TO STA 213+50	114	CANAL PLAN & PROFILE STA 966+00 TO STA 978+50	186	PROP CANAL AT SCOTT RD - TRAFFIC CONTROL TYPICAL SECTIONS		
51	CANAL PLAN & PROFILE STA 213+50 TO STA 226+00	115	CANAL PLAN & PROFILE STA 978+50 TO STA 991+00	187	TRAFFIC CONTROL LAYOUT AT SCOTT RD - PHASE I - STAGE 1 & STAGE 2		
52	CANAL PLAN & PROFILE STA 226+00 TO STA 238+50	116	CANAL PLAN & PROFILE STA 991+00 TO STA 1003+50	188	TRAFFIC CONTROL LAYOUT AT SCOTT RD - PHASE II - STAGE 1 & STAGE 2		
53	CANAL PLAN & PROFILE STA 238+50 TO STA 251+00	117	CANAL PLAN & PROFILE STA 1003+50 TO STA 1016+00	189	TRAFFIC CONTROL LAYOUT AND TYPICAL SECTIONS AT WOLFE RD		
54	CANAL PLAN & PROFILE STA 251+00 TO STA 263+50	118	CANAL PLAN & PROFILE STA 1016+00 TO STA 1028+50	190	PROP CANAL AT SH 321 - TRAFFIC CONTROL TYPICAL SECTIONS		
55	CANAL PLAN & PROFILE STA 263+50 TO STA 276+00	119	CANAL PLAN & PROFILE STA 1028+50 TO STA 1041+00	191	TRAFFIC CONTROL LAYOUT AND TYPICAL SECTIONS AT SH 321 - PHASE I		
56	CANAL PLAN & PROFILE STA 276+00 TO STA 288+50	120	CANAL PLAN & PROFILE STA 1041+00 TO STA 1053+50	192	TRAFFIC CONTROL LAYOUT SH 321 - PHASE II - STAGE 1 & STAGE 2		
57	CANAL PLAN & PROFILE STA 288+50 TO STA 301+00	121	CANAL PLAN & PROFILE STA 1053+50 TO STA 1066+00	193	PROP CANAL AT FM 1008 - TRAFFIC CONTROL TYPICAL SECTIONS		
58	CANAL PLAN & PROFILE STA 301+00 TO STA 313+50	122	CANAL PLAN & PROFILE STA 1066+00 TO STA 1078+50	194	TRAFFIC CONTROL LAYOUT FM 1008 - PHASE I - STAGE 1 & STAGE 2		
59	CANAL PLAN & PROFILE STA 313+50 TO STA 326+00	123	CANAL PLAN & PROFILE STA 1078+50 TO STA 1090+00	195	TRAFFIC CONTROL LAYOUT FM 1008 - PHASE II - STAGE 1 & STAGE 2		
60	CANAL PLAN & PROFILE STA 326+00 TO STA 338+50	124	CANAL PLAN & PROFILE STA 1090+00 TO STA 1102+50	196	PROP CANAL AT CR 2326 - TRAFFIC CONTROL TYPICAL SECTIONS		
61	CANAL PLAN & PROFILE STA 338+50 TO STA 350+00	125	CANAL PLAN & PROFILE STA 1102+50 TO STA 1115+00	197	TRAFFIC CONTROL LAYOUT CR 2326 - PHASE I - STAGE 1 & STAGE 2		
		126	CANAL PLAN & PROFILE STA 1115+00 TO STA 1127+50	198	TRAFFIC CONTROL LAYOUT CR 2326 - PHASE II - STAGE 1 & STAGE 2		
		127	CANAL PLAN & PROFILE STA 1127+50 TO STA 1140+00	199	PROP CANAL TRAFFIC CONTROL - TCP (1-1)-98		
		128	CANAL PLAN & PROFILE STA 1140+00 TO STA 1152+50	200	PROP CANAL TRAFFIC CONTROL - TCP (1-2)-98		
		129	CANAL PLAN & PROFILE STA 1152+50 TO STA 1165+00	201	PROP CANAL TRAFFIC CONTROL - TCP (1-3)-98		
		130	CANAL PLAN & PROFILE STA 1165+00 TO STA 1177+50				
		131	CANAL PLAN & PROFILE STA 1177+50 TO STA 1187+50				
		132	CANAL PLAN & PROFILE STA 1187+50 TO STA 1200+00				
		133	CANAL PLAN & PROFILE STA 1200+00 TO STA 1209+00				
		134	CANAL PLAN & PROFILE STA 1209+00 TO STA 1218+00	202	CANAL MAINTENANCE FACILITY CONCEPTUAL LAYOUT		
		135	CANAL PLAN & PROFILE STA 1218+00 TO STA 1227+50	203	CONCEPTUAL BRIDGE DETAIL		
		136	CANAL PLAN & PROFILE STA 1227+50 TO STA 1240+00	204	WATER CONTROL STRUCTURE DETAIL		
		137	CANAL PLAN & PROFILE STA 1235+00 TO SEDIMENTATION BASIN	205	TYPICAL EROSION PROTECTION AT 90 DEGREE BEND		

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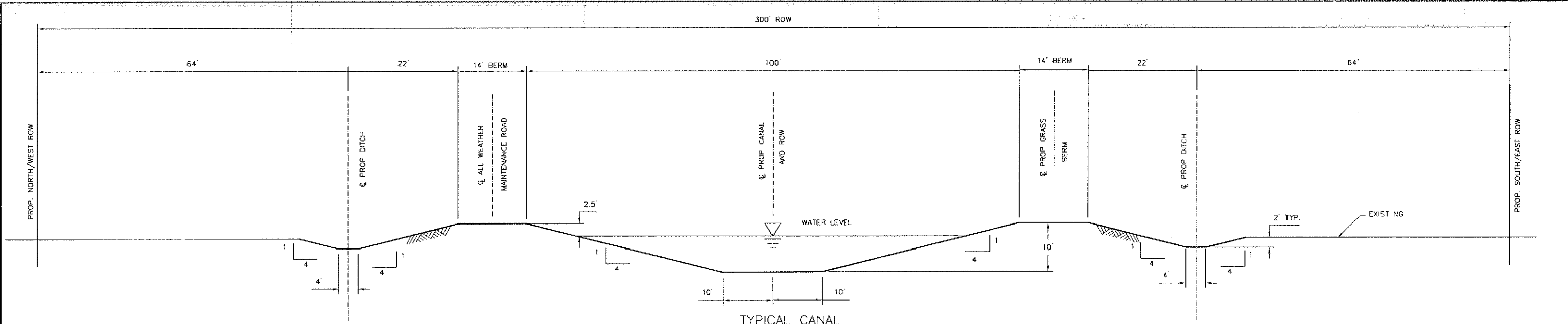
SHEET INDEX

DRAWING SCALE

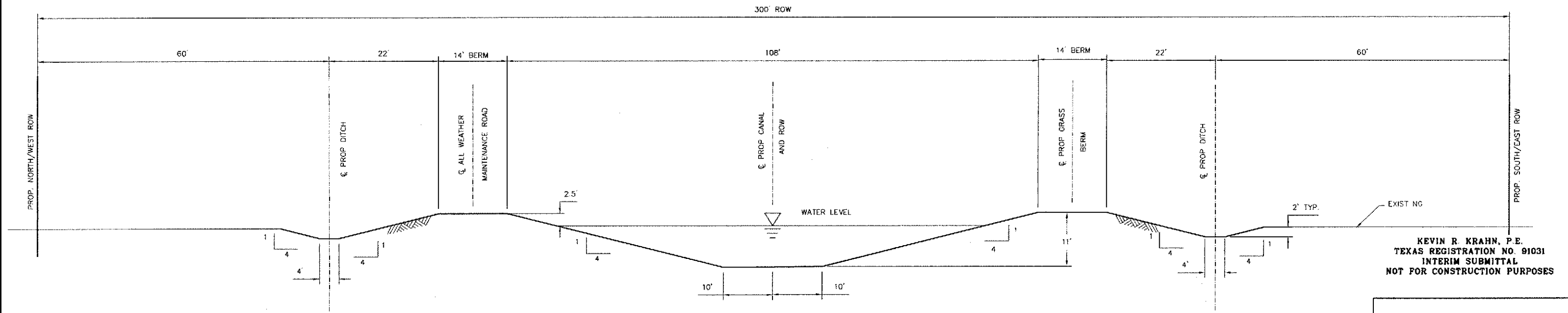
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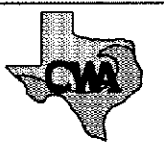


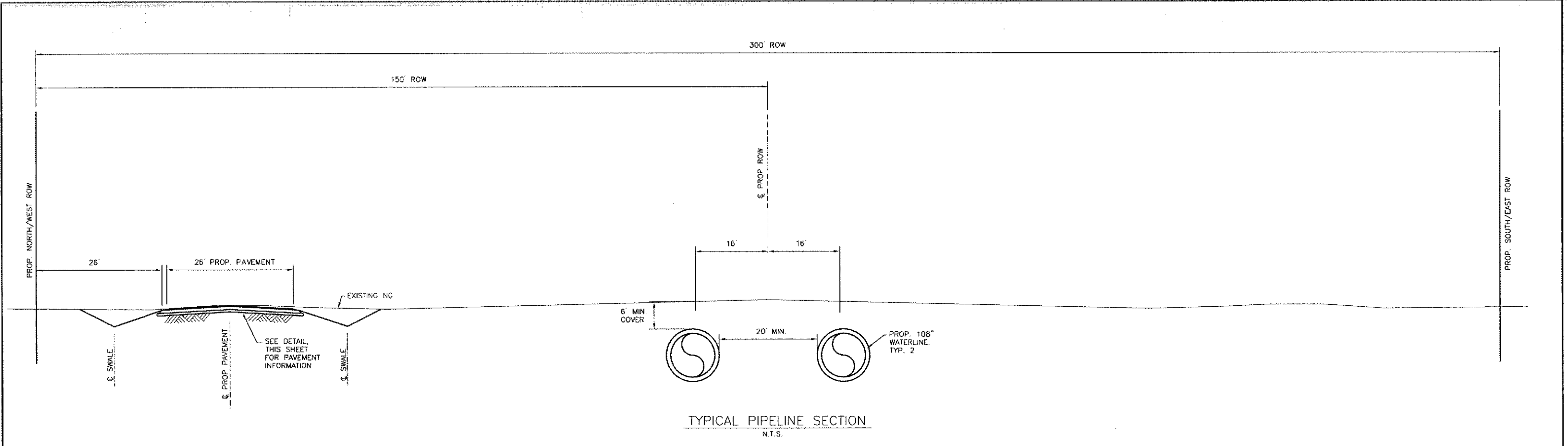
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 (STA 5+00 TO STA 162+00, STA 303+00 TO STA 1074+00, AND
 STA 1095+00 TO SEDIMENTATION BASIN)



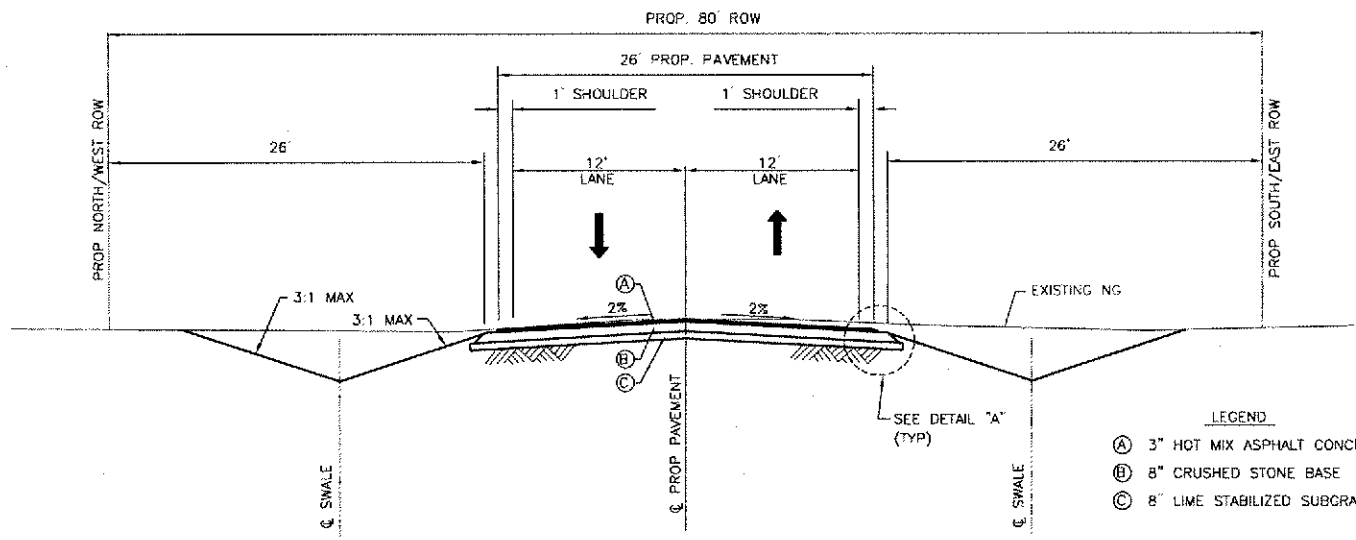
TYPICAL CANAL
 CROSS SECTION
 (STA 162+00 TO STA 303+00 AND
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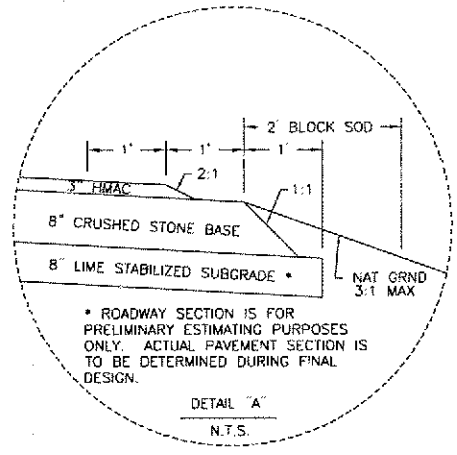
 <small>AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057 WWW.AECOM.COM TEL: 713.780.4100 FAX: 713.780.0838</small>		
AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 Tel. 713.780.0838 Fax.		
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CANAL TYPICAL CROSS SECTIONS		
DRAWING SCALE NTS		
SHEET NO. 3 OF 245		



TYPICAL PIPELINE SECTION
N.T.S.

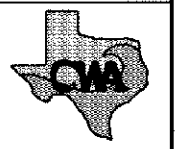


TYPICAL ASPHALT PAVEMENT SECTION - ACCESS ROAD
N.T.S.



- LEGEND
- (A) 3" HOT MIX ASPHALT CONCRETE
 - (B) 8" CRUSHED STONE BASE
 - (C) 8" LIME STABILIZED SUBGRADE

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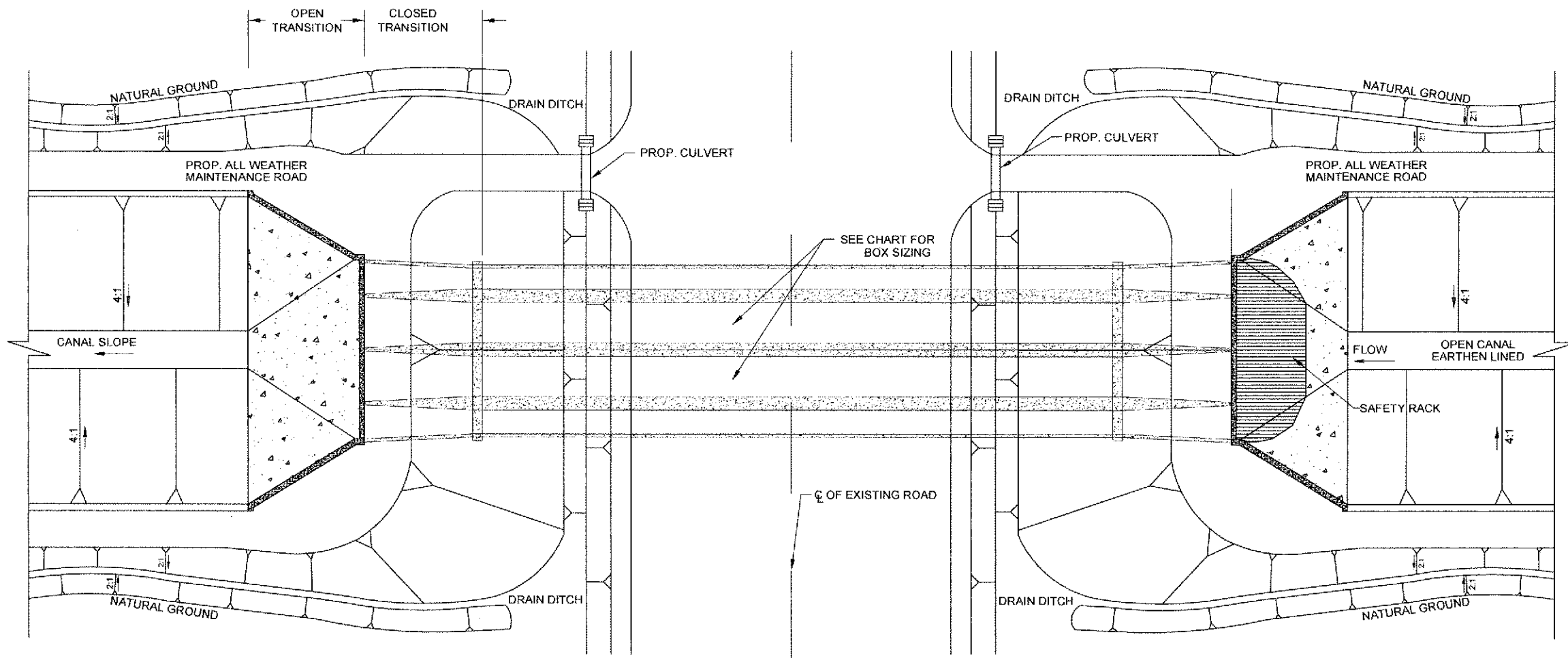


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PIPELINE AND ACCESS ROAD
TYPICAL CROSS SECTIONS

DRAWING SCALE	
AS SHOWN	
SHEET NO. 4	of 245

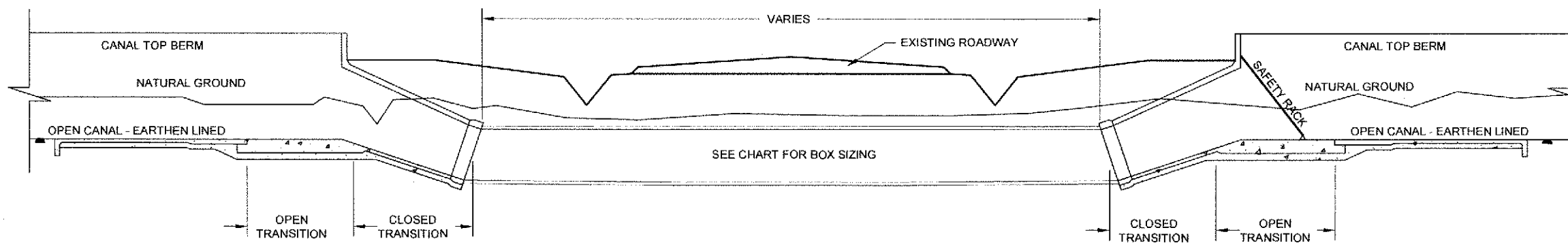
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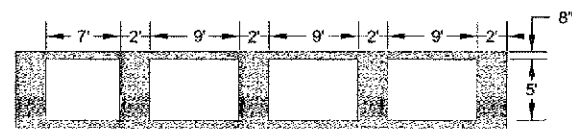
PLAN VIEW
SCALE: N.T.S.

NOTE:
FENCING AND ACCESS
CONTROL TO BE DETERMINED
DURING FINAL DESIGN

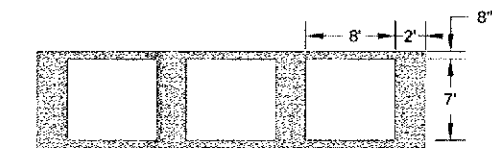
ROADWAY	BOX CULVERTS
FM 2100	3 - 9'X5', 1 - 7'X5'
WOLFE RD	3 - 9'X5', 1 - 7'X5'
SH 321	3 - 8'X7'
FM 1008	3 - 9'X5', 1 - 7'X5'
CR 2326	3 - 9'X5', 1 - 7'X5'



PROFILE VIEW
SCALE: N.T.S.



TYPICAL SIPHON CROSS SECTION
SCALE: N.T.S.

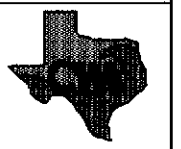


SIPHON CROSS SECTION - SH 321
SCALE: N.T.S.

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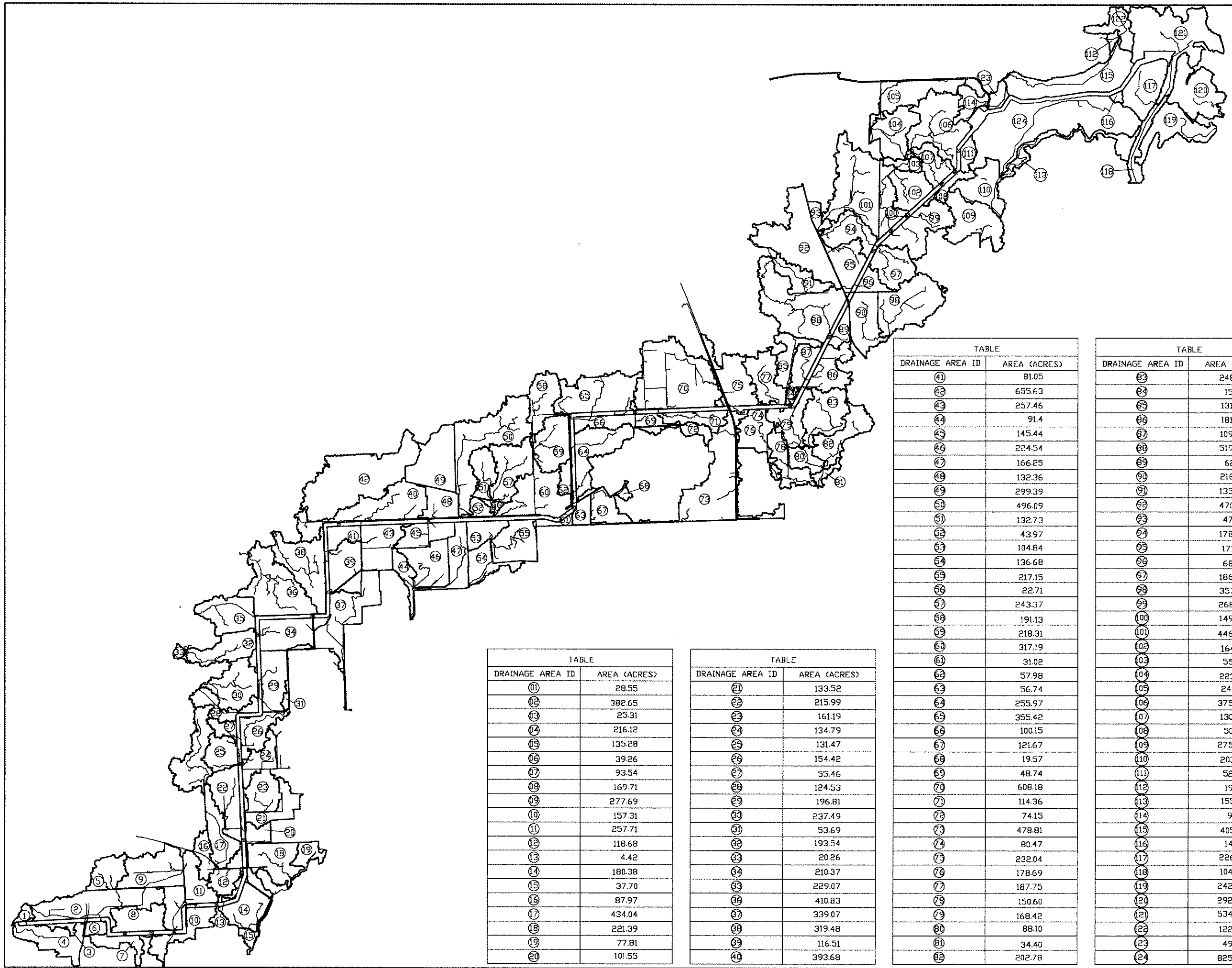
PROPOSED ROAD
CROSSING DETAIL

DRAWING SCALE
AS SHOWN

SHEET NO. 6 of 245

LAST MODIFIED: Jun 28, 2011 - 8:44am
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LEGEND

- CATCHMENT AREA
- DRAINAGE LINE
- PROPOSED ROW
- DRAINAGE AREA ID

N.T.S.

Note: Drainage Area maps are for preliminary use only. A full drainage analysis will be required during final design.

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TABLE	
DRAINAGE AREA ID	AREA (ACRES)
01	28.55
02	382.65
03	25.31
04	216.12
05	135.28
06	39.26
07	93.54
08	169.71
09	277.69
10	157.31
11	257.71
12	118.68
13	4.42
14	180.38
15	37.70
16	87.97
17	434.04
18	221.39
19	77.81
20	101.55

TABLE	
DRAINAGE AREA ID	AREA (ACRES)
21	133.52
22	215.99
23	161.19
24	134.79
25	131.47
26	154.42
27	55.46
28	124.53
29	196.81
30	237.49
31	53.69
32	193.54
33	20.26
34	210.37
35	229.87
36	410.83
37	339.07
38	319.48
39	116.51
40	393.68

TABLE	
DRAINAGE AREA ID	AREA (ACRES)
41	81.05
42	655.63
43	257.46
44	91.4
45	145.44
46	224.54
47	166.25
48	132.36
49	299.39
50	496.09
51	132.73
52	43.97
53	104.84
54	136.68
55	217.15
56	22.71
57	243.37
58	191.13
59	218.31
60	317.19
61	31.02
62	57.98
63	56.74
64	255.97
65	355.42
66	100.15
67	121.67
68	19.57
69	48.74
70	608.18
71	114.36
72	74.15
73	478.81
74	80.47
75	232.04
76	178.69
77	187.75
78	150.60
79	168.42
80	88.10
81	34.40
82	202.78

TABLE	
DRAINAGE AREA ID	AREA (ACRES)
83	248.71
84	15.82
85	131.89
86	181.99
87	109.79
88	519.77
89	62.71
90	216.04
91	135.42
92	470.07
93	47.46
94	178.69
95	171.03
96	68.36
97	186.73
98	357.19
99	268.08
100	149.86
101	446.62
102	164.13
103	55.67
104	223.15
105	241.00
106	375.36
107	130.46
108	50.94
109	275.22
110	203.19
111	52.58
112	19.82
113	155.71
114	91.10
115	405.81
116	14.69
117	226.71
118	104.57
119	242.25
120	292.62
121	534.73
122	122.38
123	49.28
124	825.66

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OVERALL PROJECT
 DRAINAGE AREA MAP

DRAWING SCALE
 AS SHOWN

SHEET NO. **7** OF 245

LAST MODIFIED: Jan 25, 2011 - 11:46am BY USER: rajavarapara
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MATCHLINE STA 361+00



LEGEND

- CATCHMENT AREA
- DRAINAGE LINE
- PROPOSED ROW
- DRAINAGE AREA ID
- FLOW DIRECTION

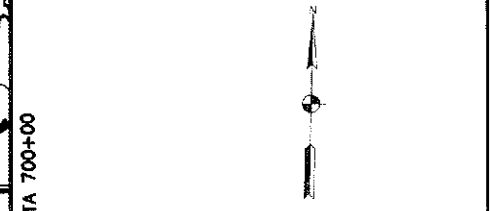
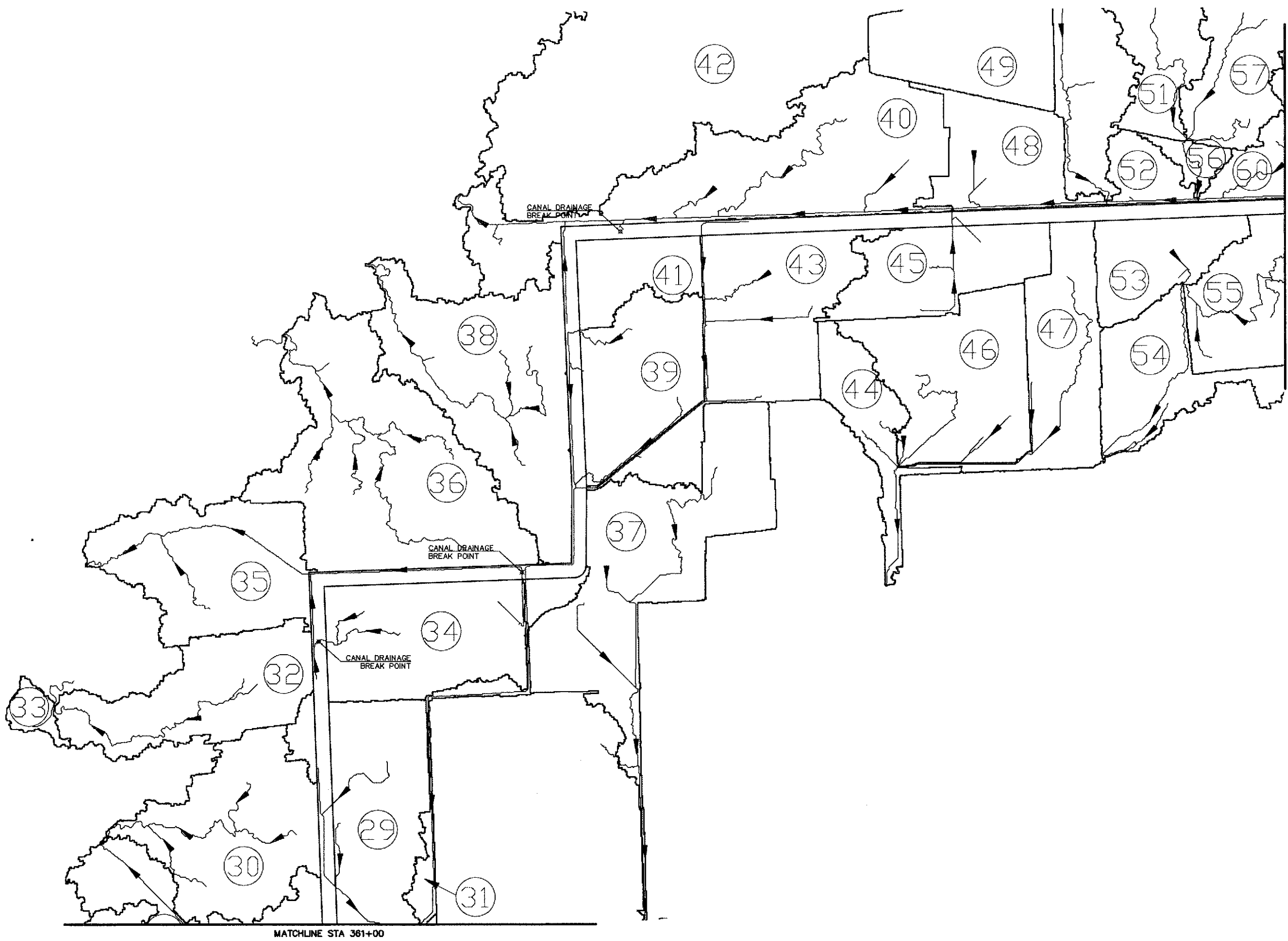
HORIZONTAL SCALE: 1" = 2000'

Note: Drainage Area maps are for preliminary use only. A full drainage analysis will be required during final design.

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<p>PROJECT DRAINAGE AREA MAPS (SHEET 1 OF 5)</p>	
<p>DRAWING SCALE AS SHOWN</p>	
<p>SHEET NO. 8 OF 24</p>	

LAST MODIFIED: Jan 25, 2011 - 11:50am BY USER: rdjowen@ac.com
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LEGEND

- CATCHMENT AREA
- DRAINAGE LINE
- PROPOSED ROW
- DRAINAGE AREA ID
- FLOW DIRECTION

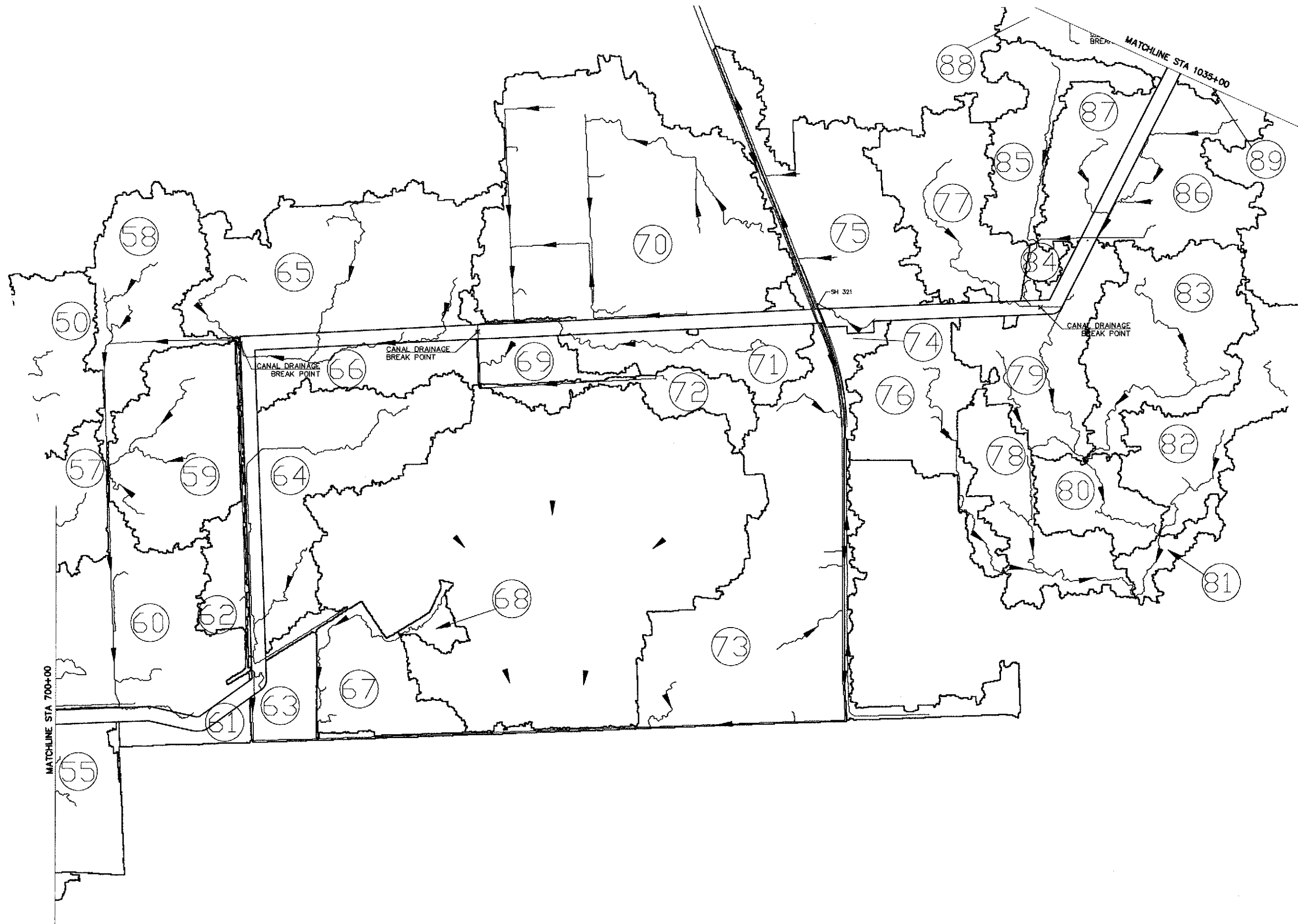
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 HORIZONTAL SCALE: 1" = 2000'

Note: Drainage Area maps are for preliminary use only. Additional analysis will be required during final design.

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PROJECT DRAINAGE AREA MAPS (SHEET 2 OF 5)	
DRAWING SCALE AS SHOWN	
SHEET NO. 9 OF 245	

LAST MODIFIED: Jan 25, 2011 - 11:53am BY USER: rajaraman
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LEGEND

- CATCHMENT AREA
- DRAINAGE LINE
- PROPOSED ROW
- DRAINAGE AREA IO
- FLOW DIRECTION

1000 0 1000 2000
 HORIZONTAL SCALE 1" = 2000'

Note: Drainage Area maps are for preliminary use only. A full drainage analysis will be required during final design.

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PROJECT DRAINAGE AREA MAPS (SHEET 3 OF 5)	
DRAWING SCALE AS SHOWN	
SHEET NO. 10 OF 24	

LAST MODIFIED: Jan 25, 2011 - 12:00pm BY USER: rdjones@houston
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LEGEND

- CATCHMENT AREA
- DRAINAGE LINE
- PROPOSED ROW
- DRAINAGE AREA ID
- FLOW DIRECTION

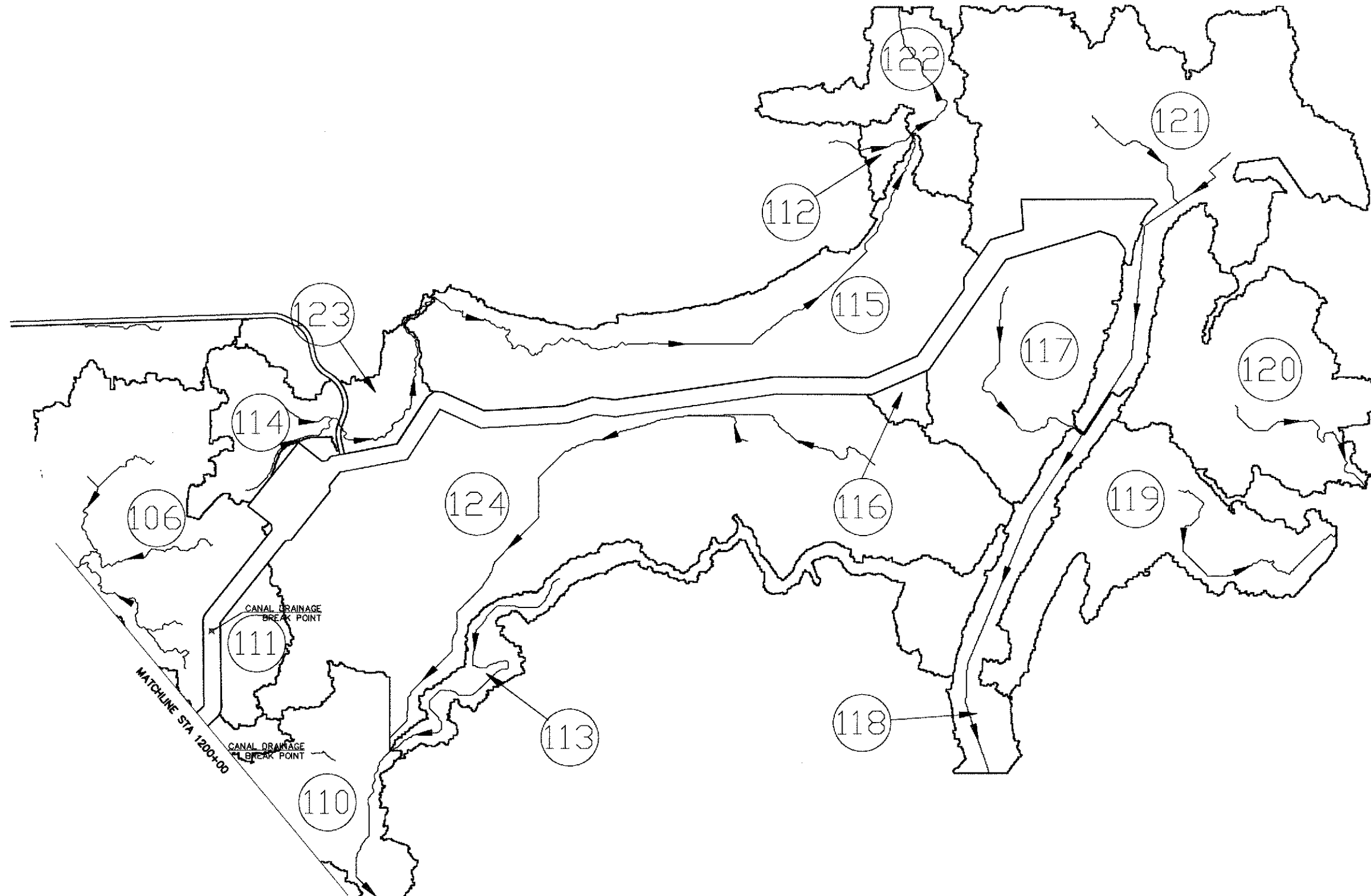
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Note: Drainage Area maps are for preliminary use only. A full drainage analysis will be required during final design.






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PROJECT DRAINAGE AREA MAPS (SHEET 4 OF 5)	
DRAWING SCALE AS SHOWN	
SHEET NO. 11 of 24	

LAST MODIFIED: Jan 25, 2011, 11:57am BY USER: rajivaraman
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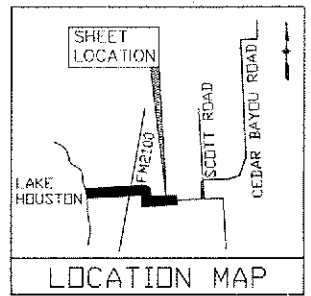
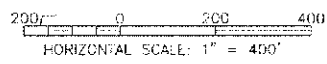
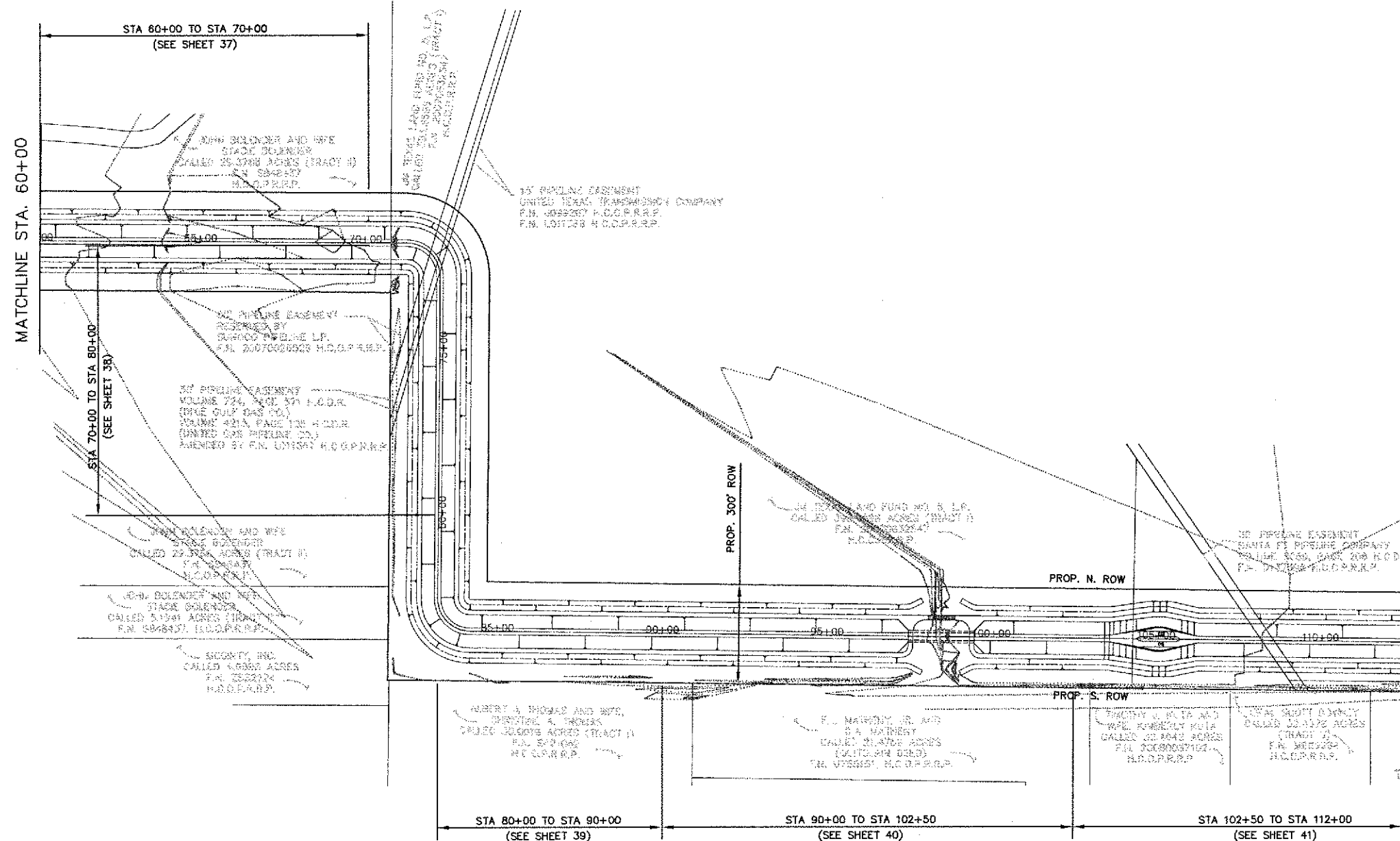
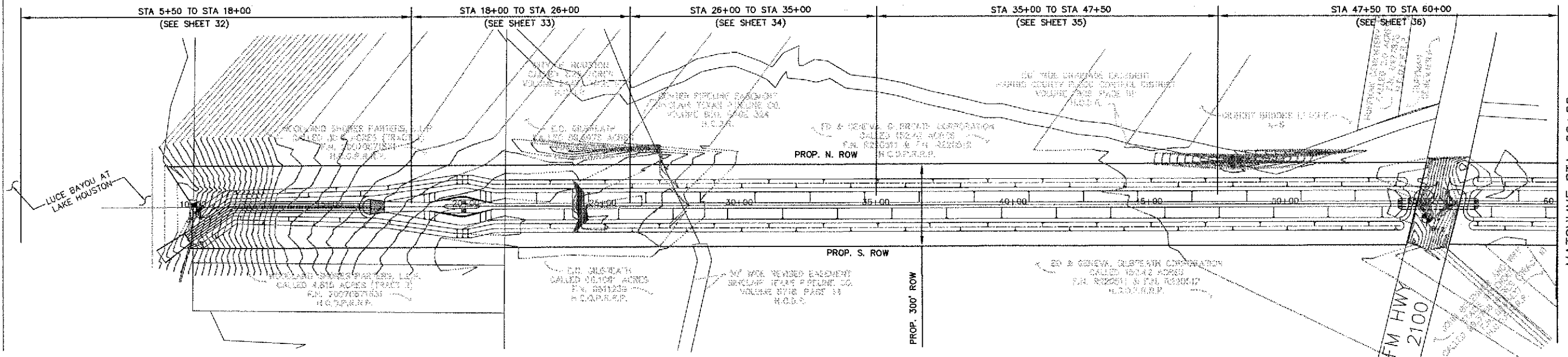
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-  DRAINAGE LINE
-  PROPOSED ROW
-  DRAINAGE AREA ID
-  FLOW DIRECTION

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 HORIZONTAL SCALE: 1" = 2000'

Note: Drainage Area maps are for preliminary use only. A full drainage analysis will be required during final design.

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COASTAL WATER AUTHORITY <small>LUCE BAYOU INTERBASIN TRANSFER PROJECT</small>		
<p align="center">PROJECT DRAINAGE AREA MAPS (SHEET 5 OF 5)</p>		
<small>DRAWING SCALE AS SHOWN</small>		
<p align="right">SHEET NO. 12 OF 24</p>		

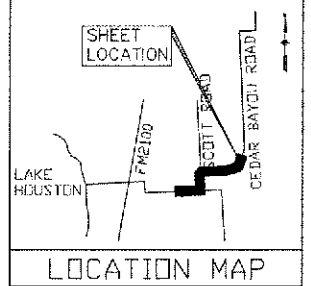
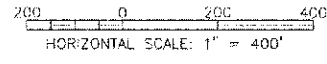
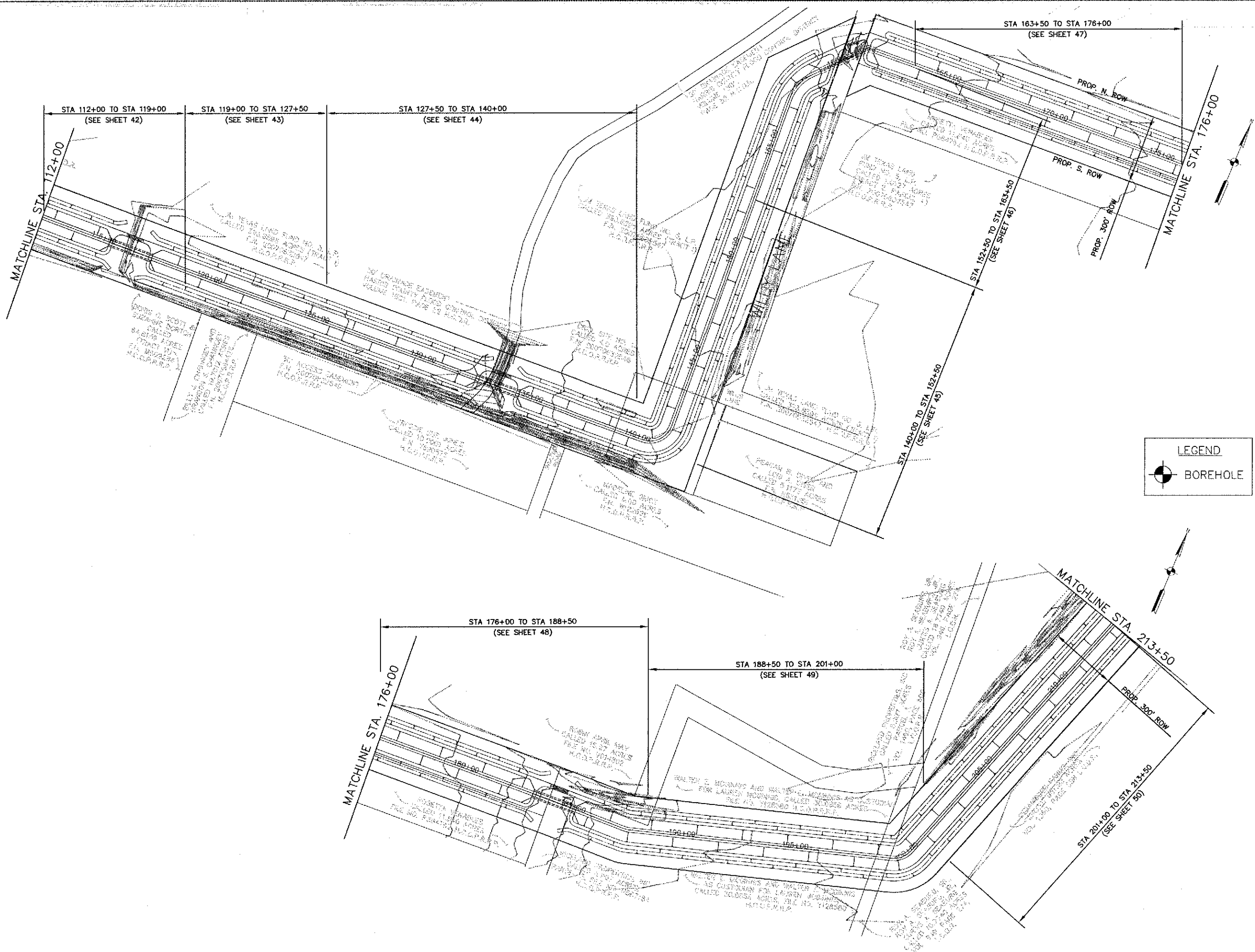


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CANAL SHEET LAYOUT AND BORING PLAN (SHEET 1 OF 13)	
DRAWING SCALE AS SHOWN	
SHEET NO. 13 of 24	

LAST MODIFIED: Jun 27, 2011 - 5:30pm
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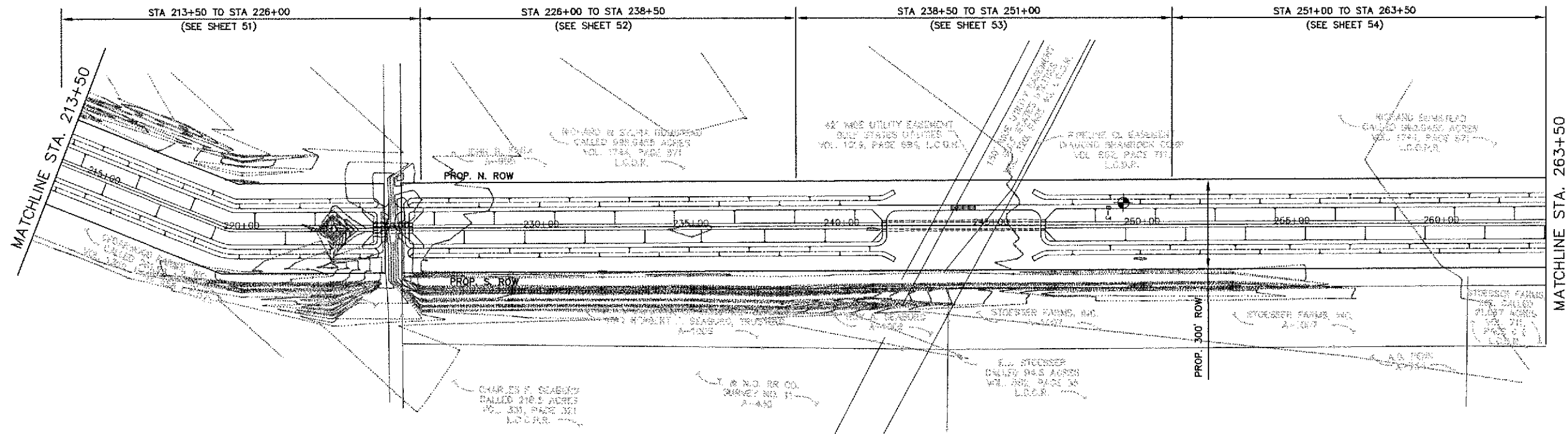
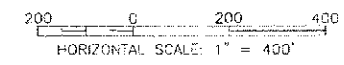


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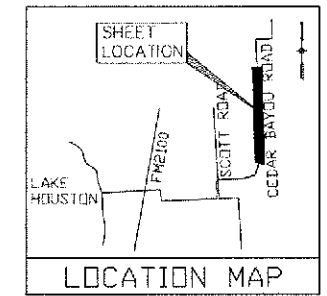
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 (SHEET 2 OF 13)

DRAWING SCALE
AS SHOWN

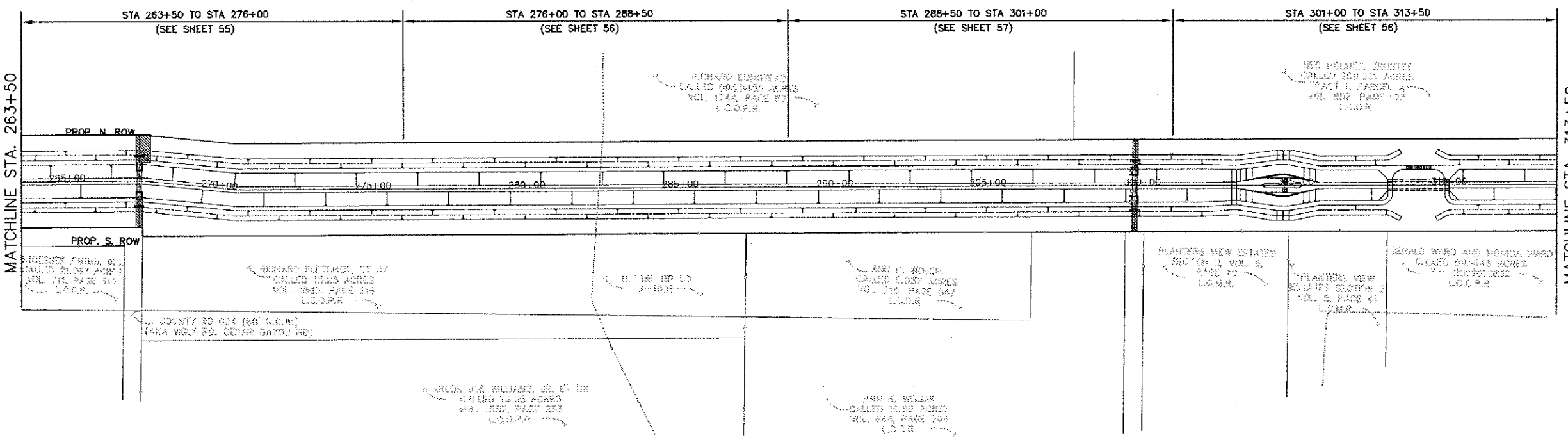
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MATCHLINE STA. 263+50



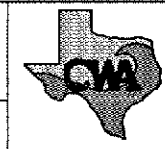
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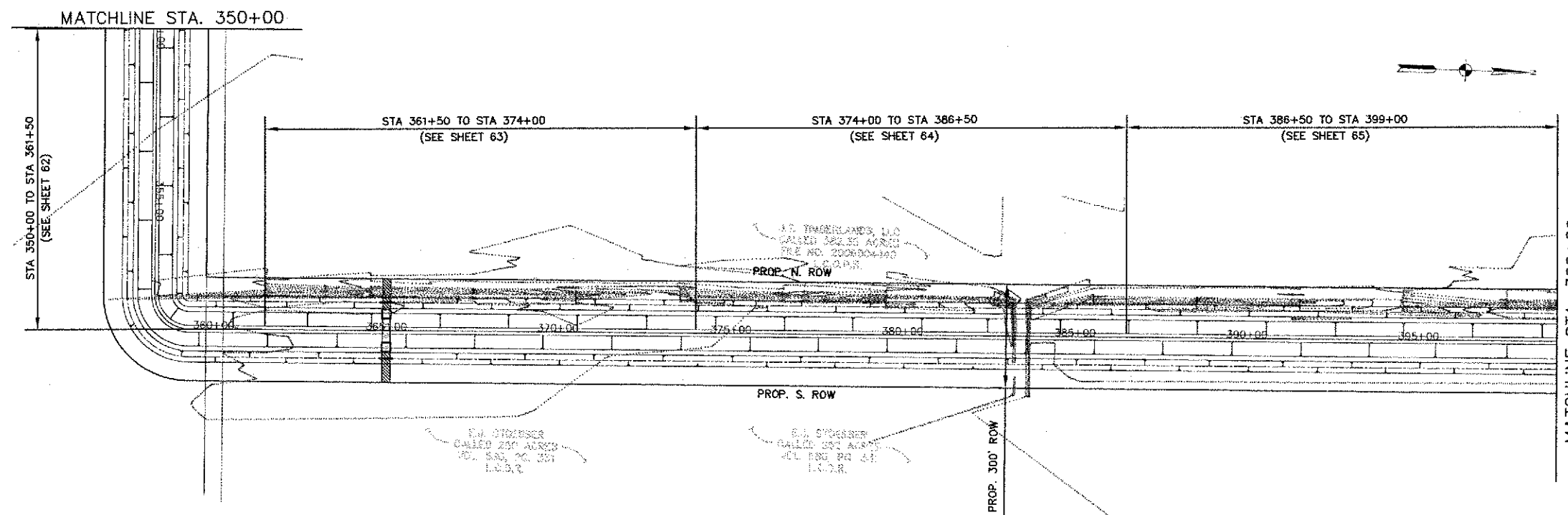
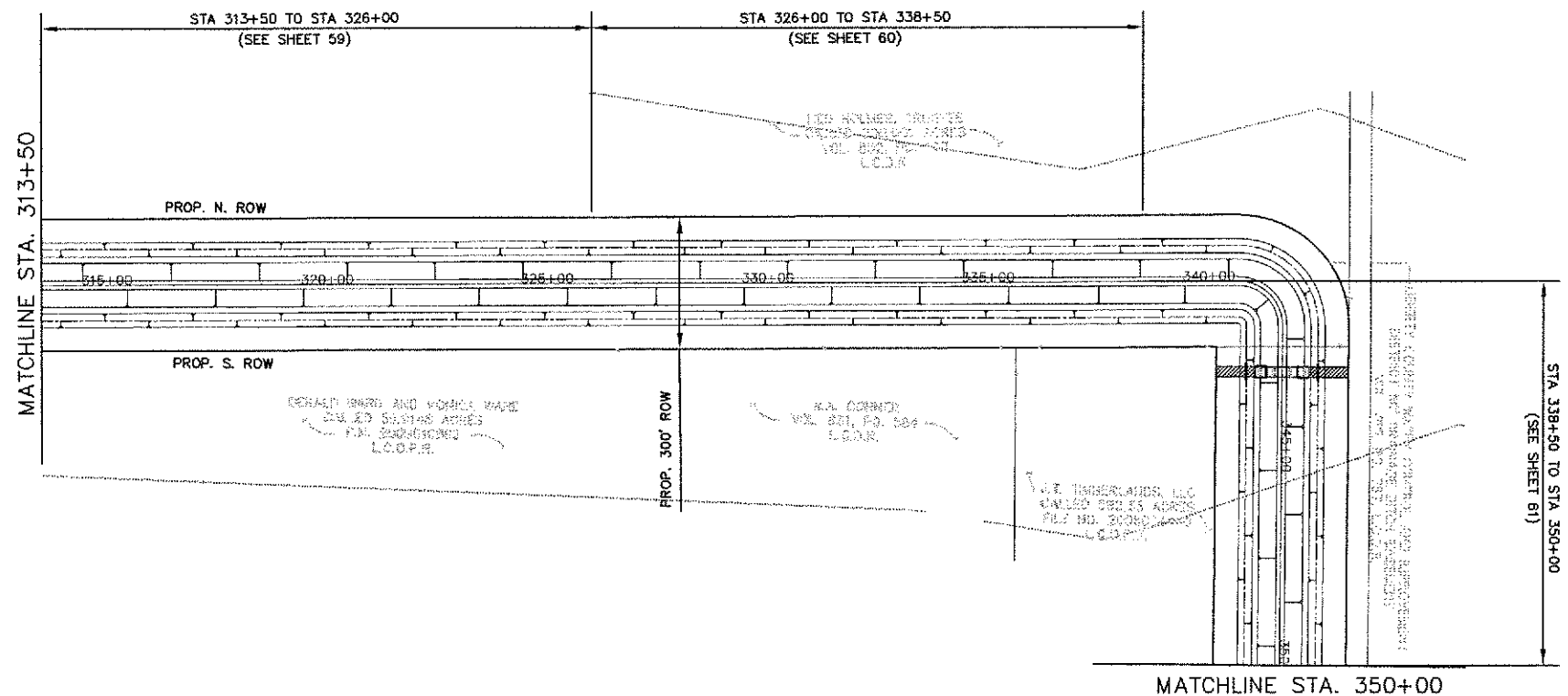


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CANAL SHEET LAYOUT
 AND BORING PLAN
 (SHEET 3 OF 13)

DRAWING SCALE	AS SHOWN
SHEET NO.	15 OF 24

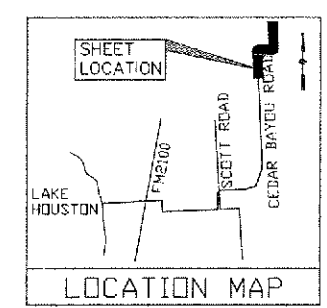
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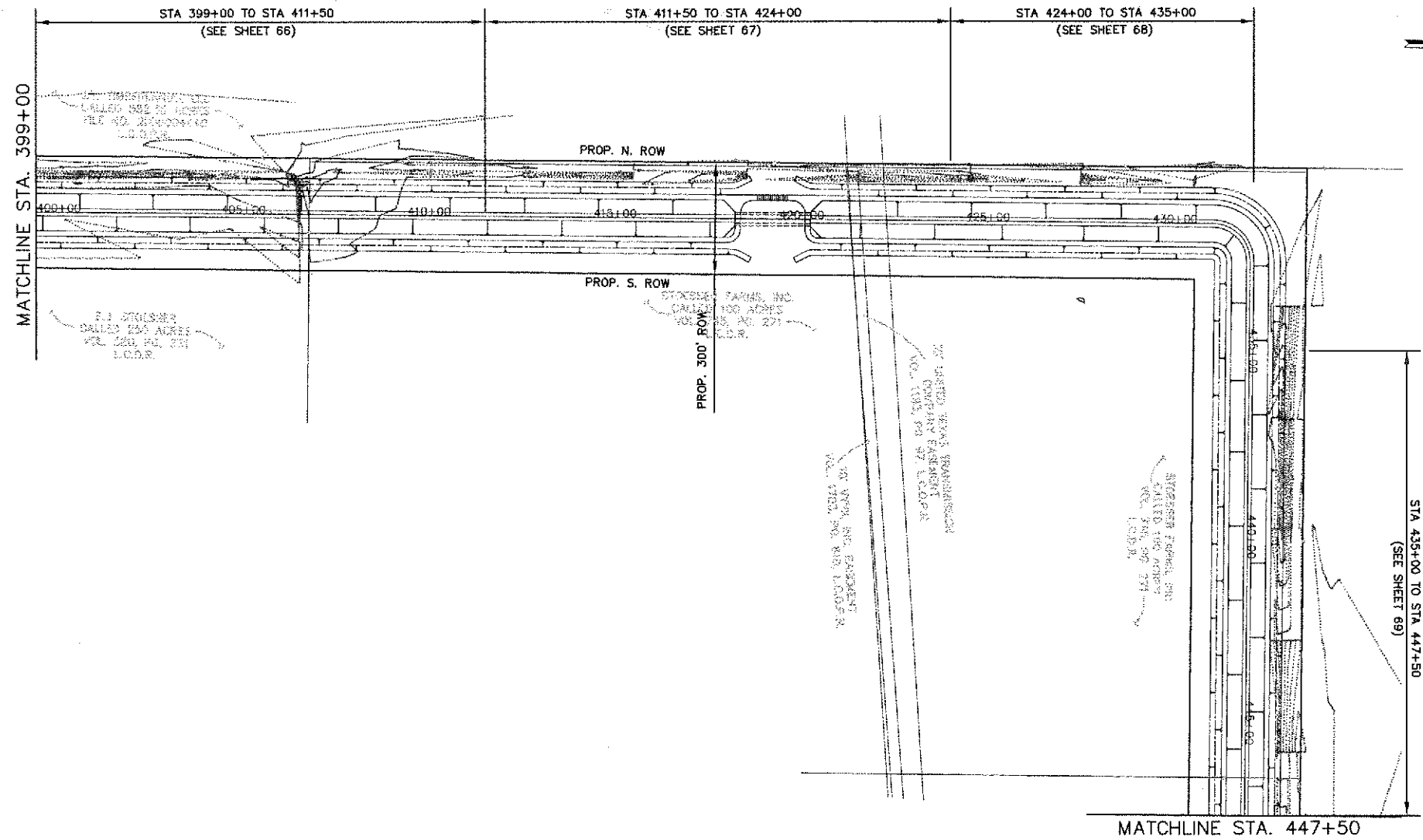
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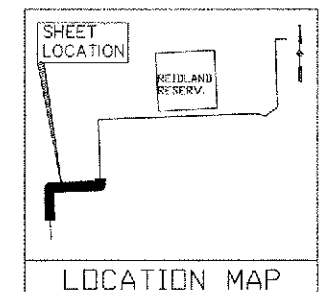
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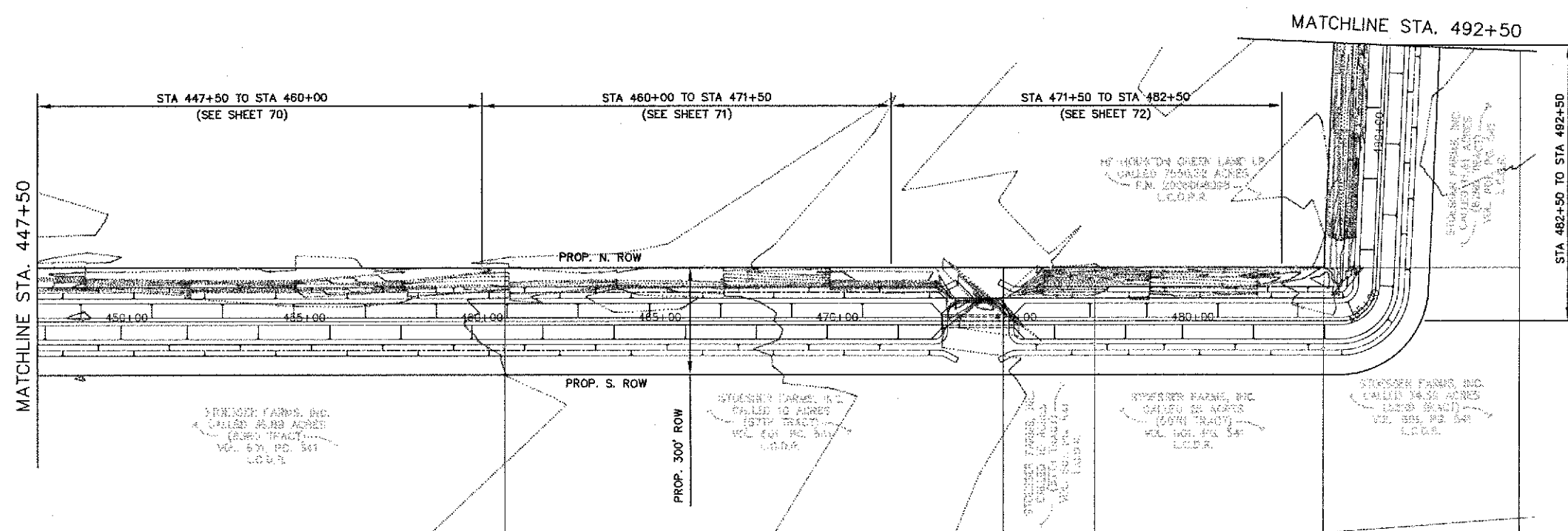
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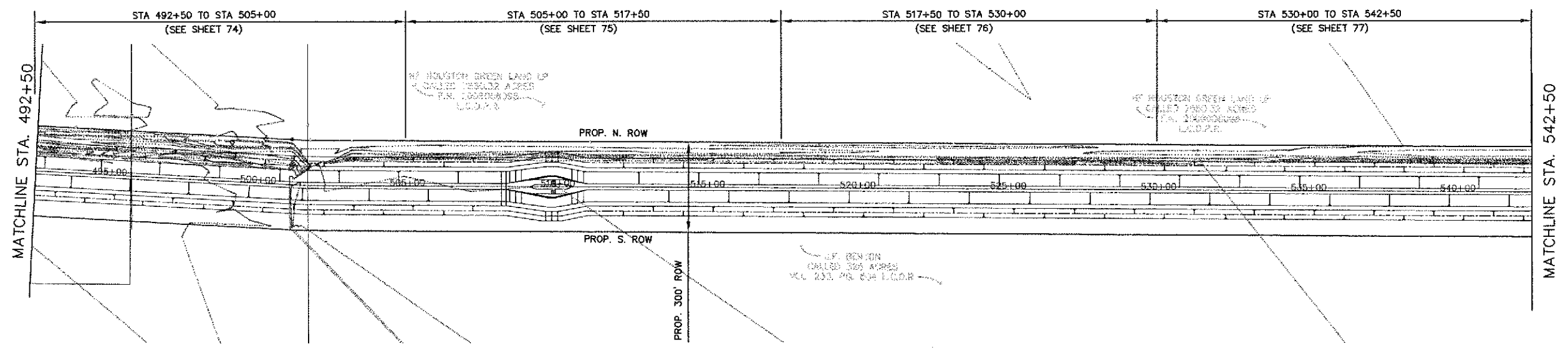
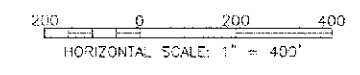
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CANAL SHEET LAYOUT
 AND BORING PLAN
 (SHEET 5 OF 13)

DRAWING SCALE
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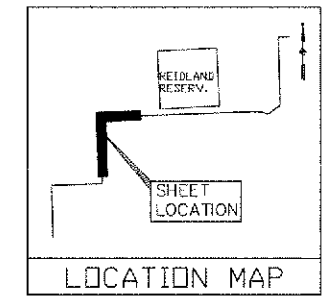
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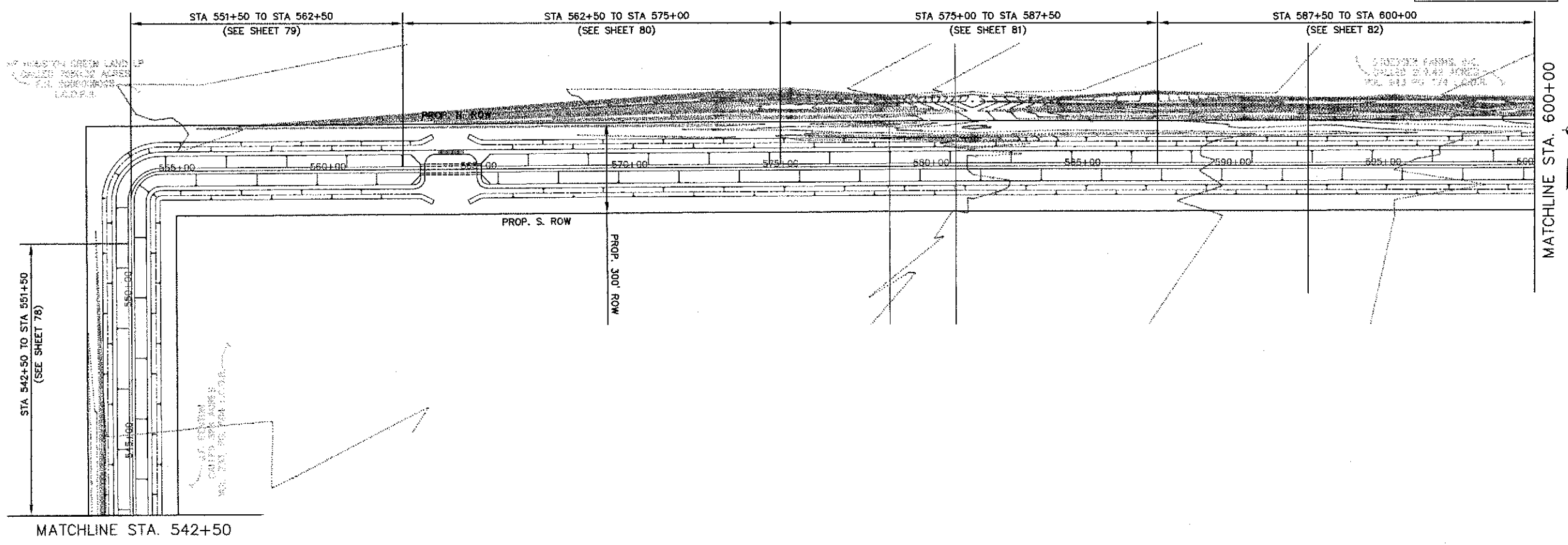


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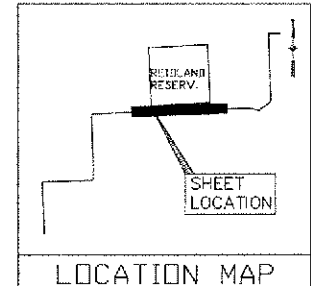
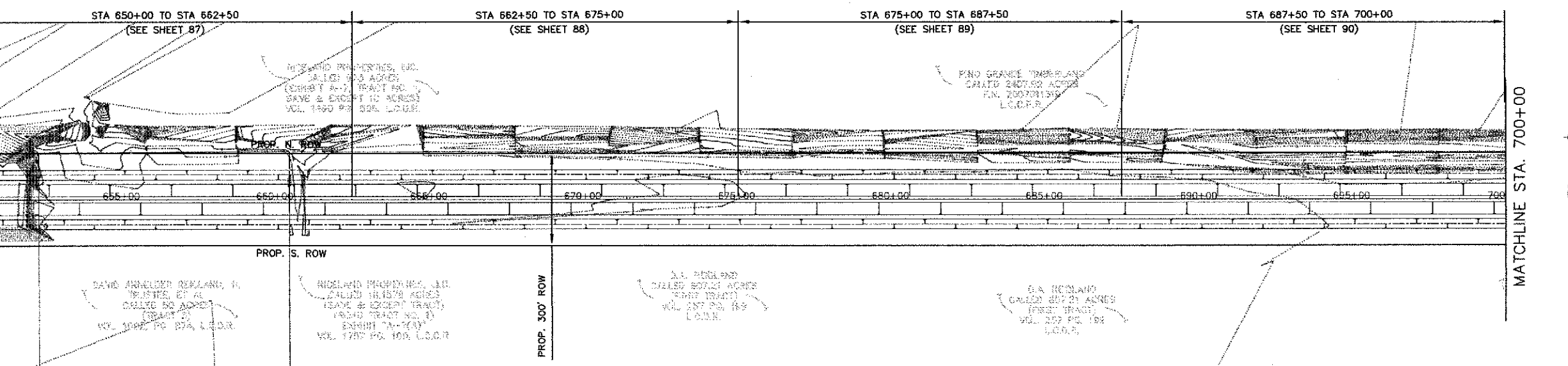
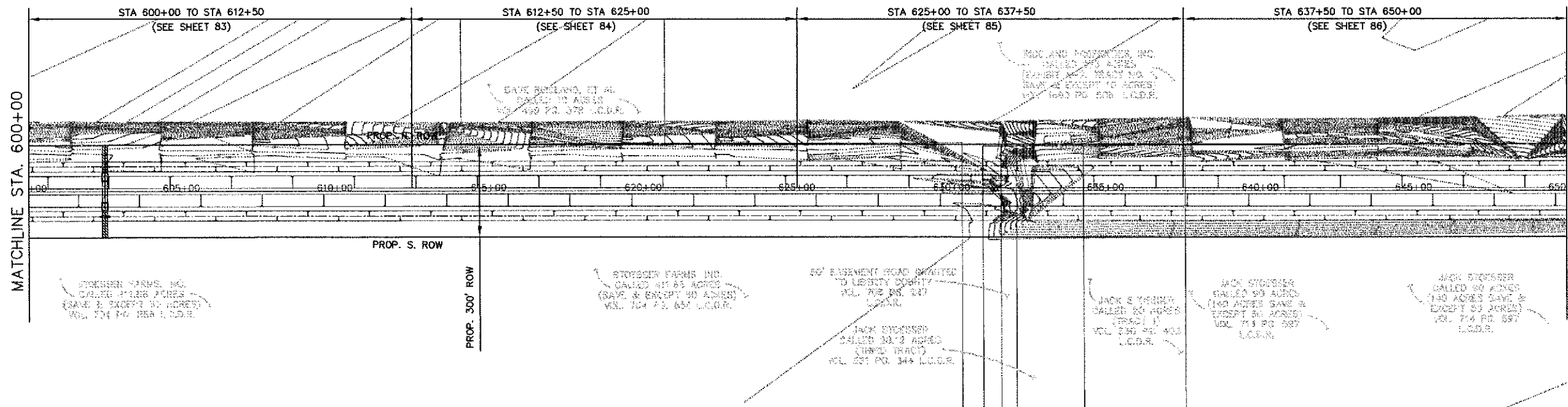
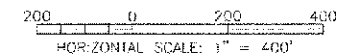
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 AND BORING PLAN
 (SHEET 6 OF 13)

DRAWING SCALE
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SHEET NO. 18 OF 245



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713.780.0838 fax



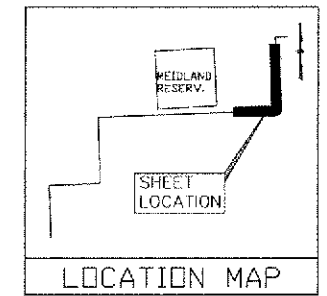
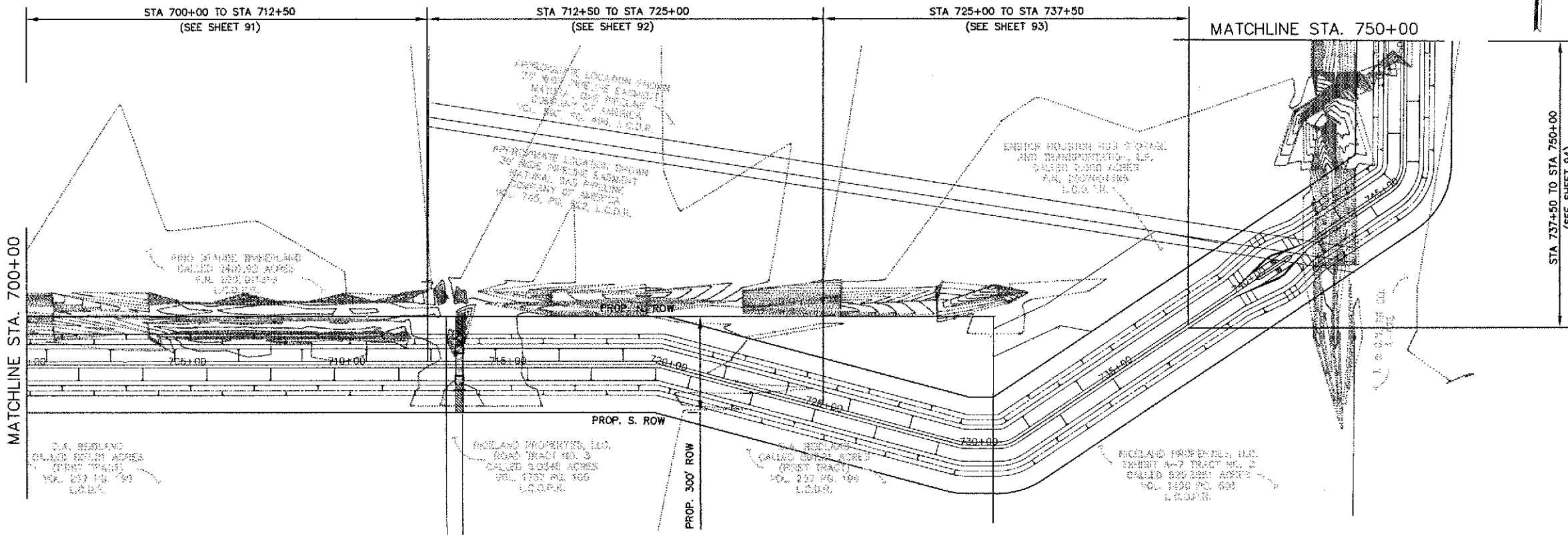
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CANAL SHEET LAYOUT
AND BORING PLAN
(SHEET 7 OF 13)

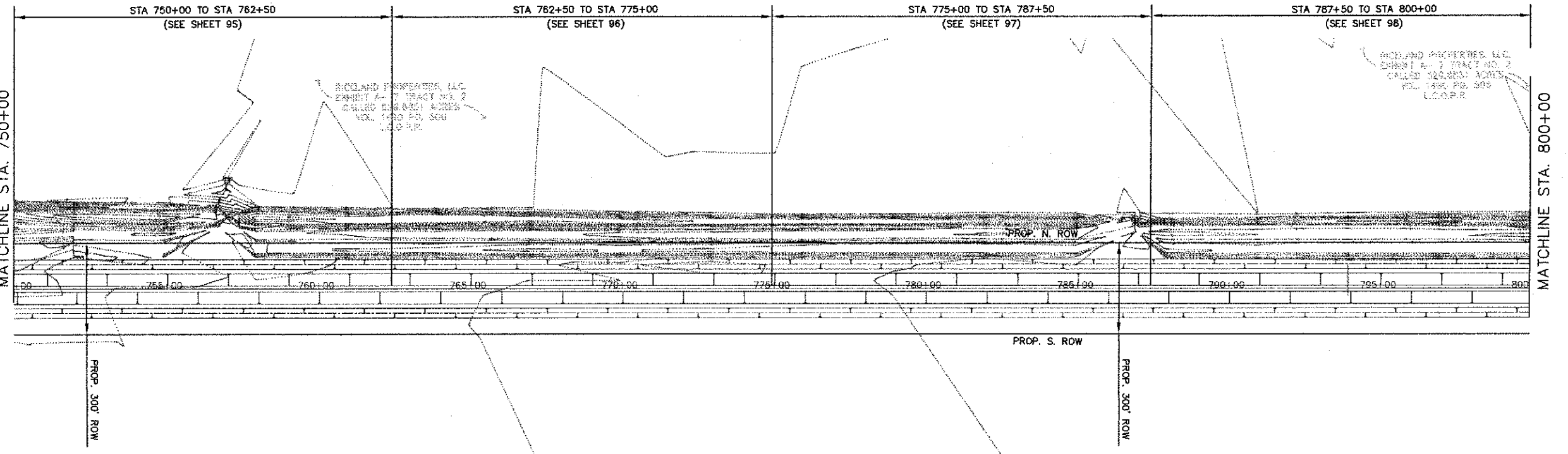
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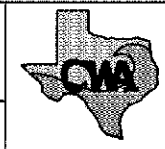
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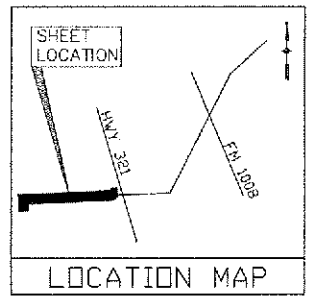
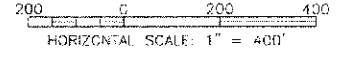
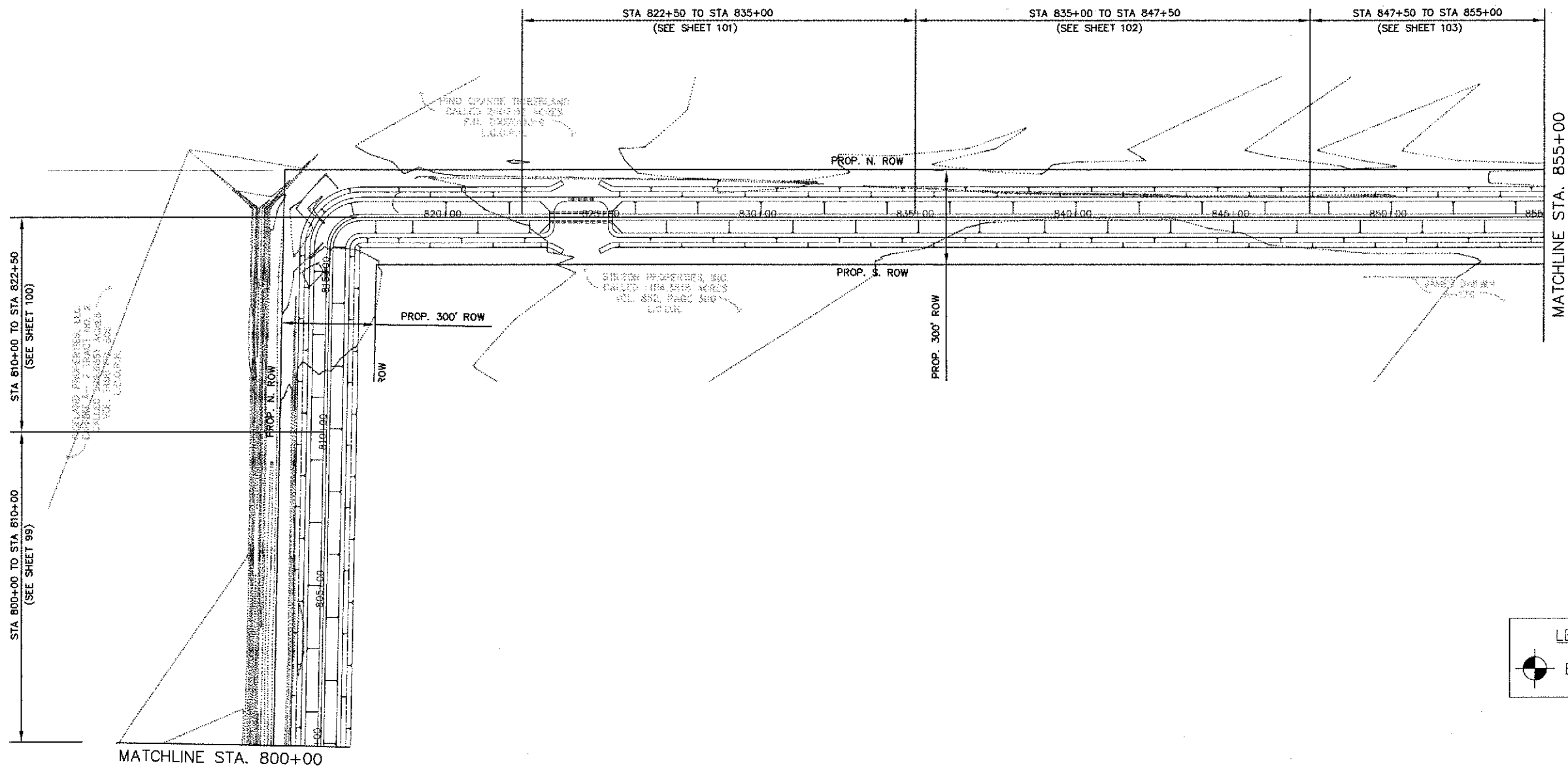
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL SHEET LAYOUT
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 (SHEET 8 OF 13)

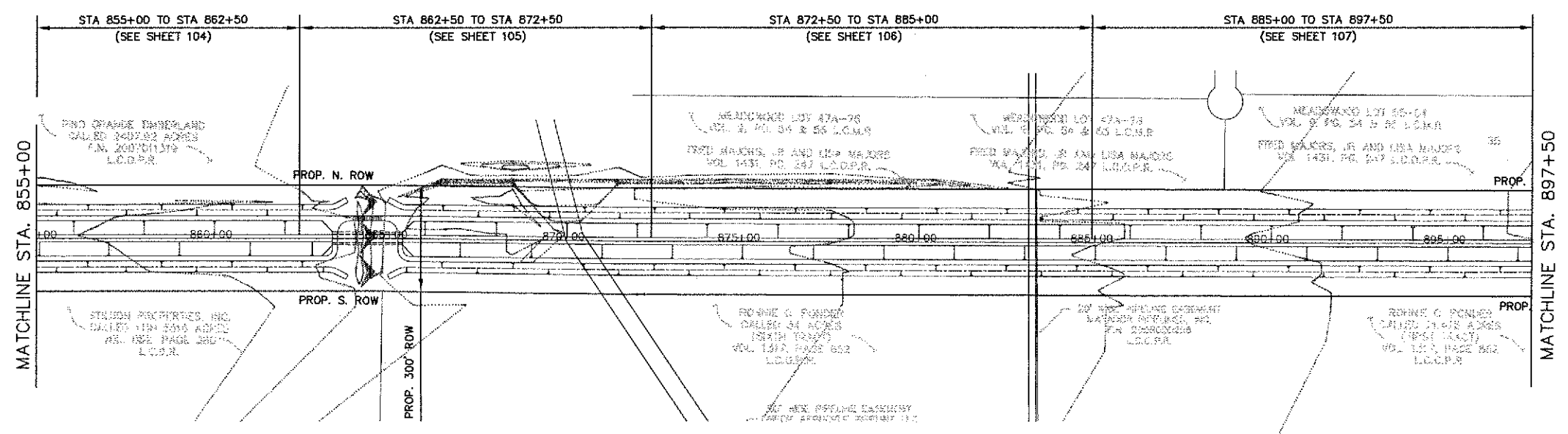
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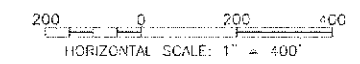
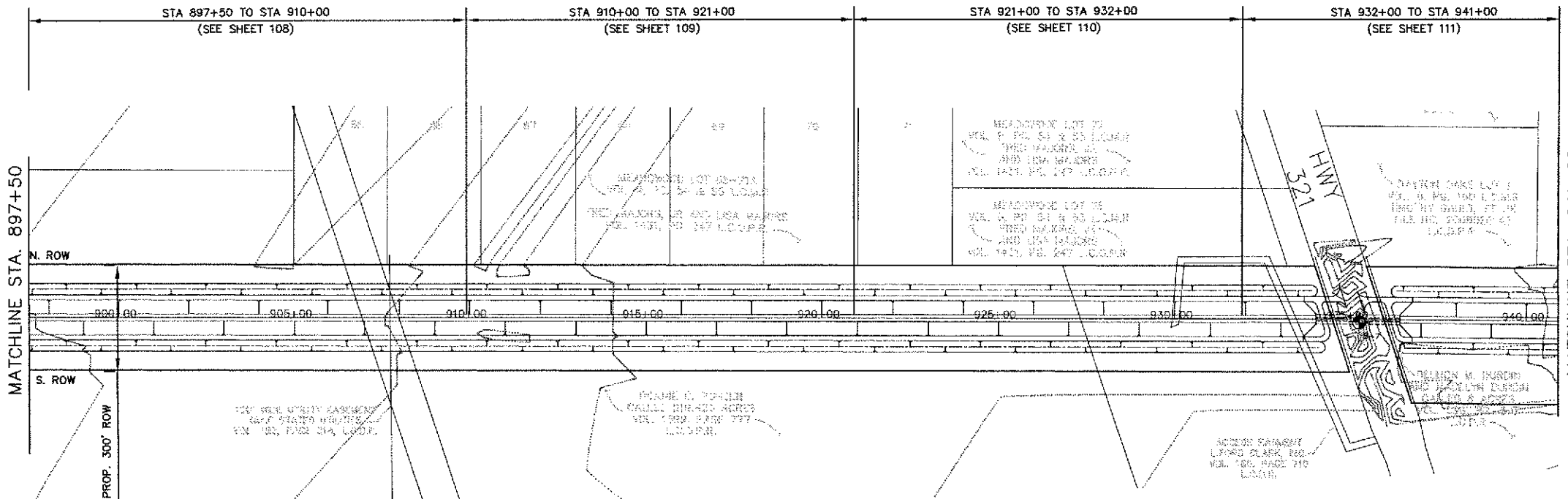
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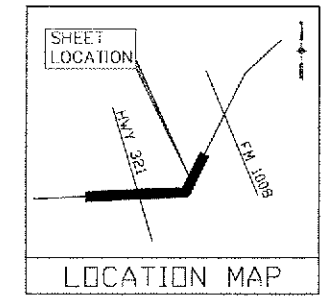


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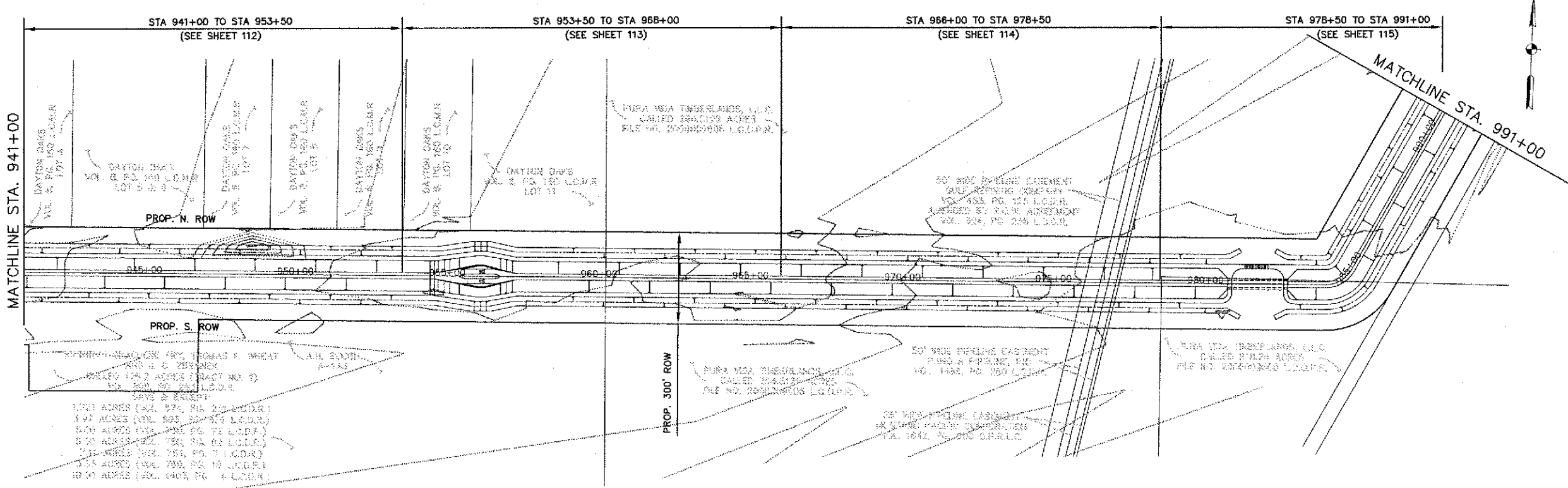


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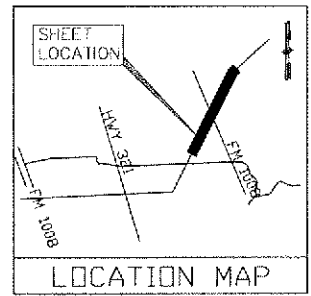
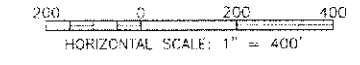
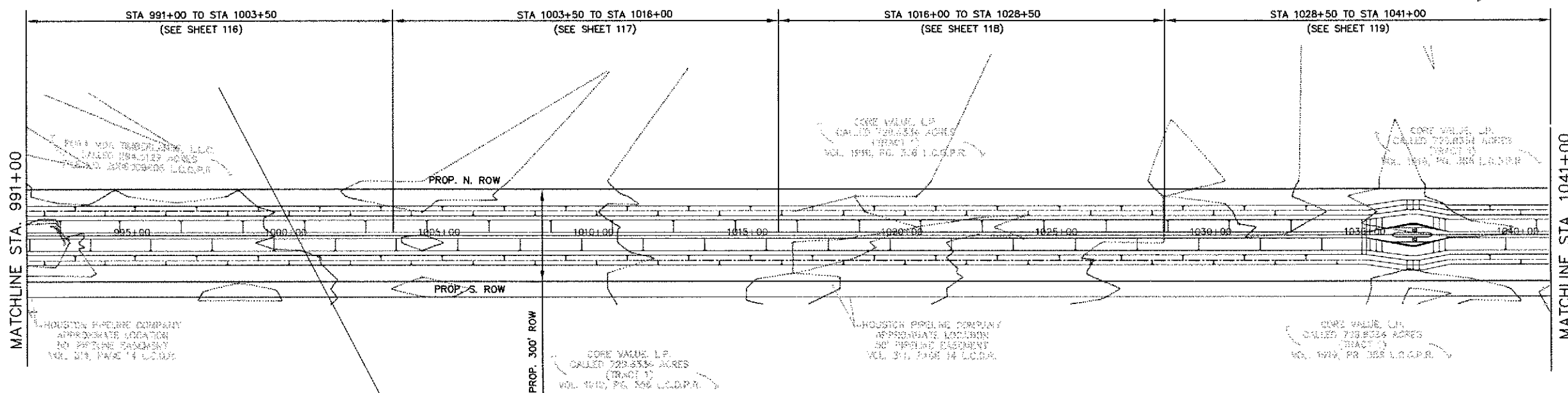
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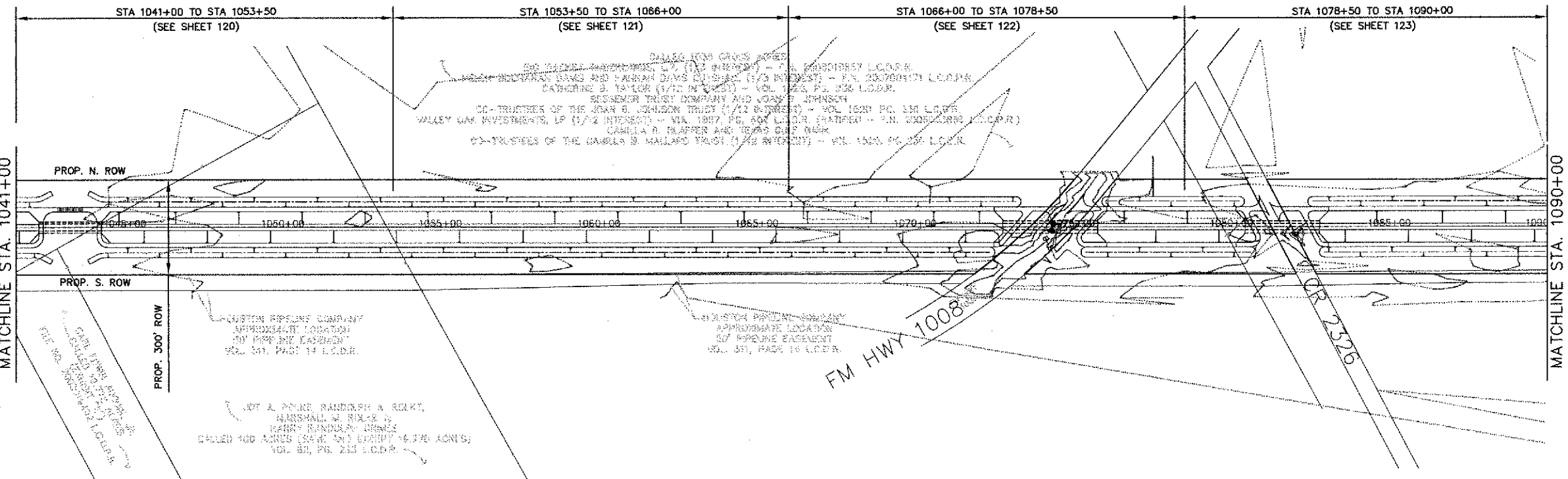
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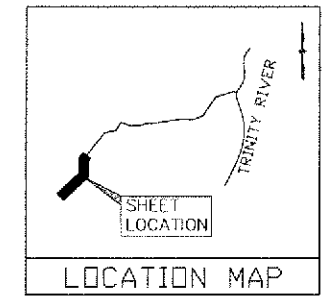
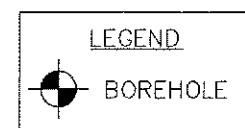
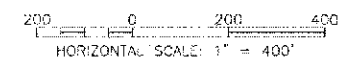
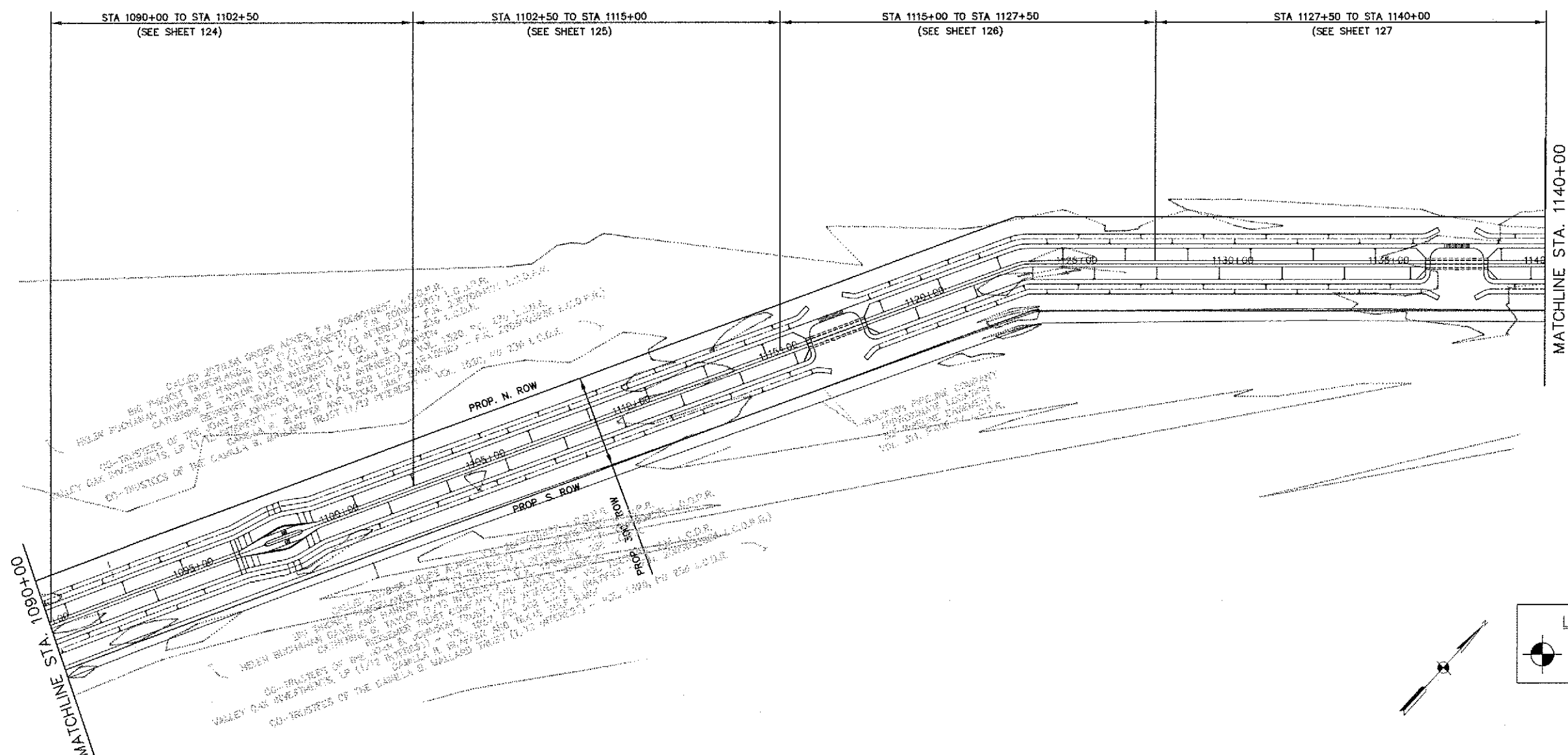
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 AND BORING PLAN
 (SHEET 11 OF 13)

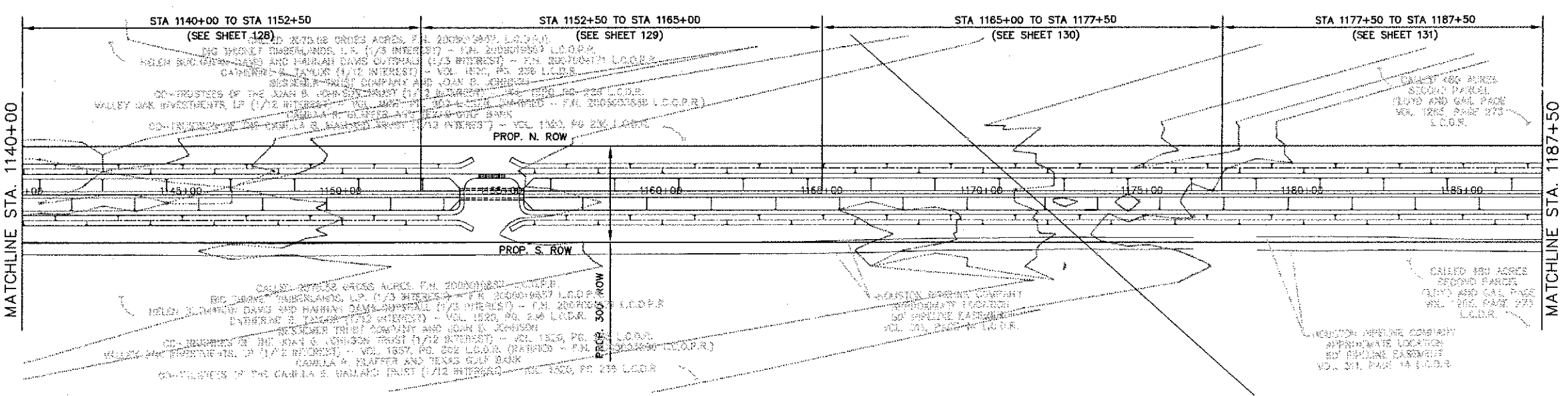
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SHEET NO.	23 OF 24S

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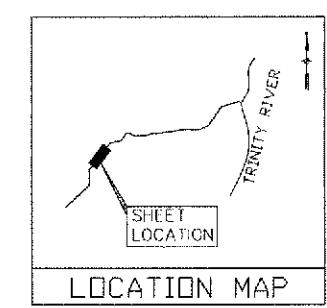
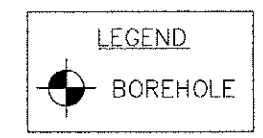
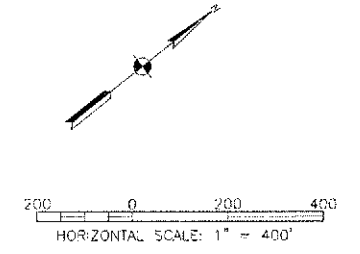
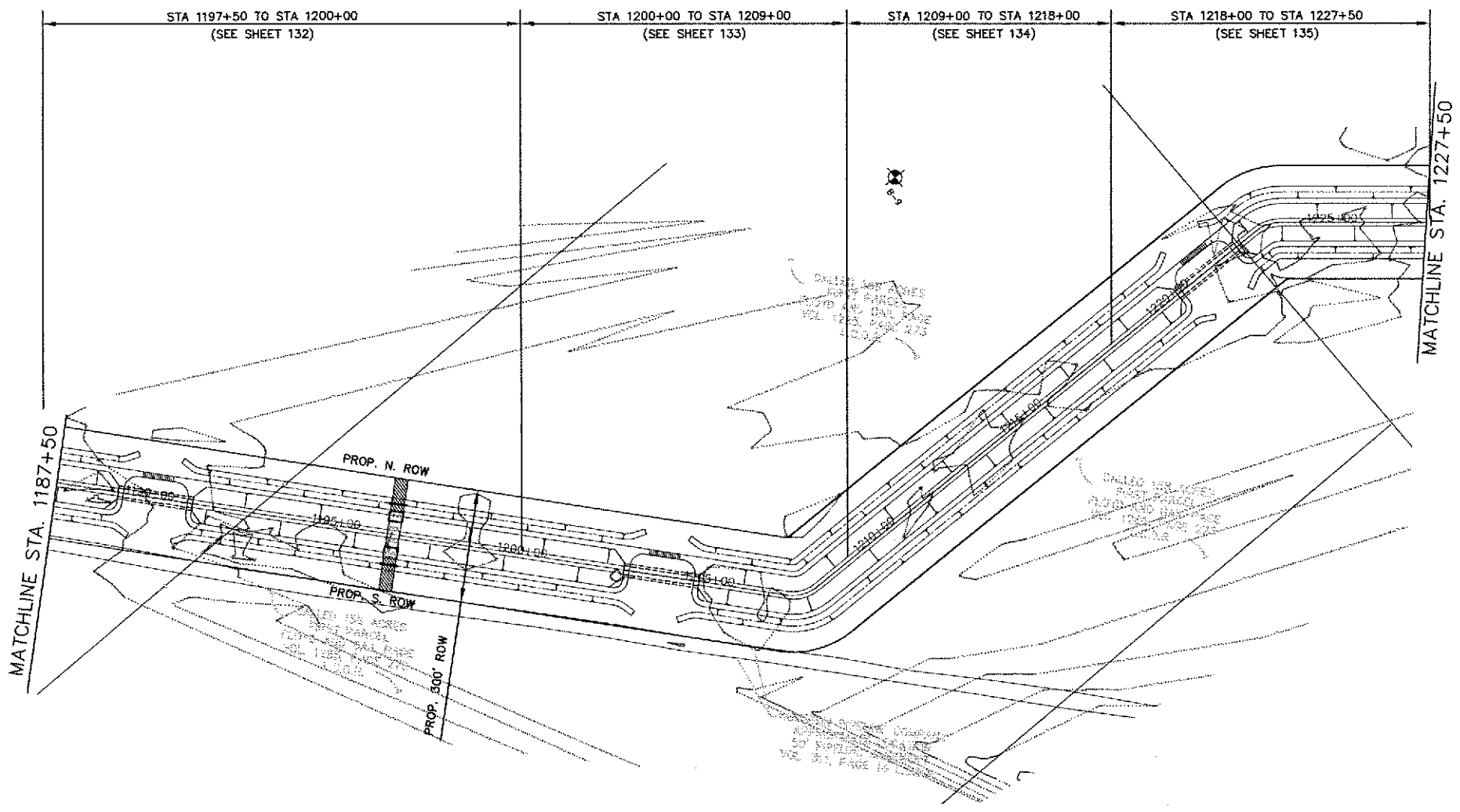
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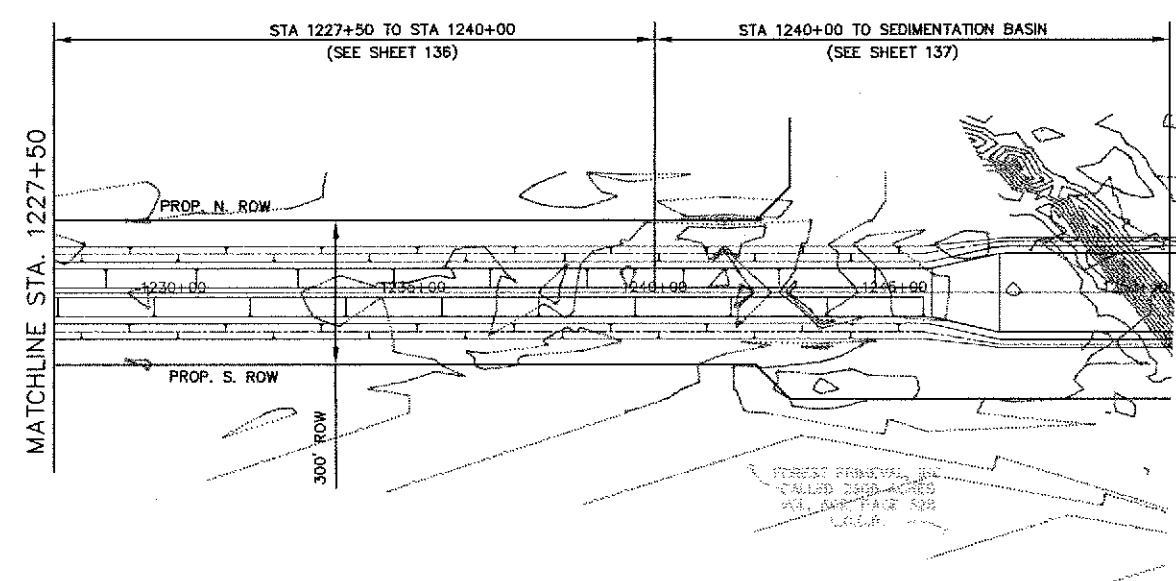
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CANAL SHEET LAYOUT
 AND BORING PLAN
 (SHEET 12 OF 13)

DRAWING SCALE	AS SHOWN
SHEET NO.	24 of 245

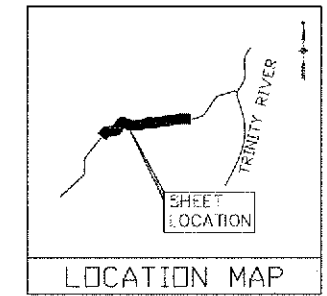
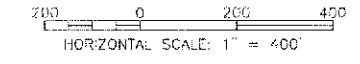
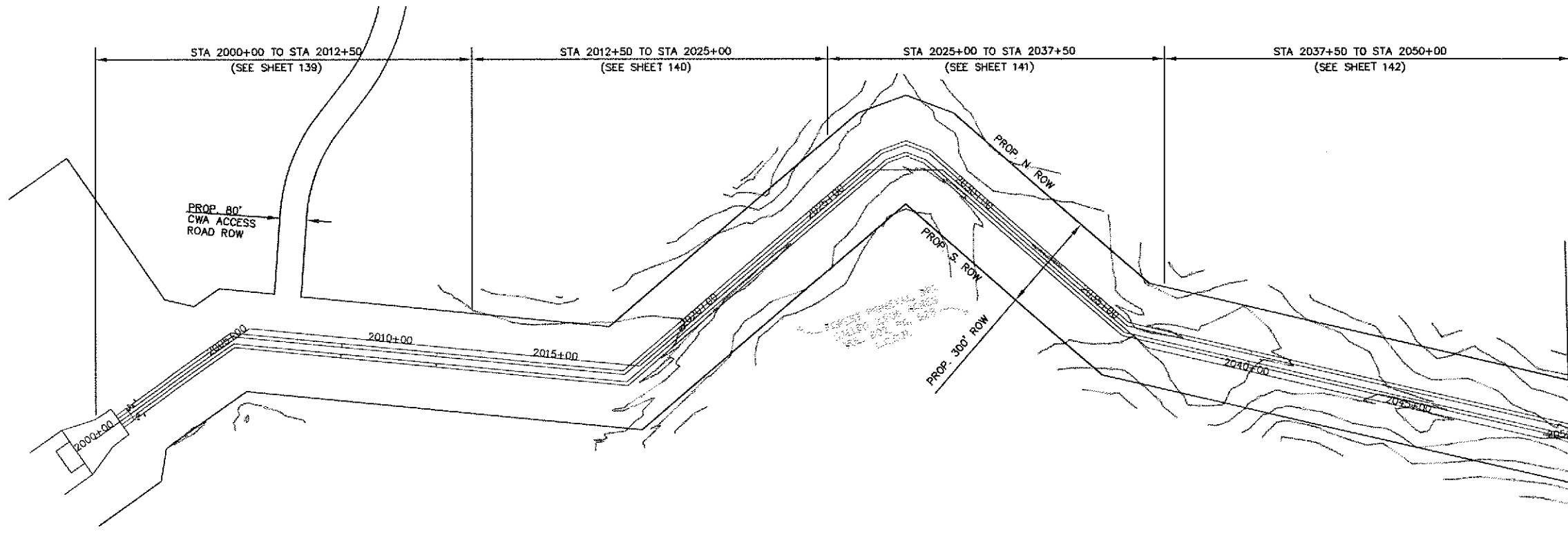


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 TEXAS REGISTRATION NO. 91031
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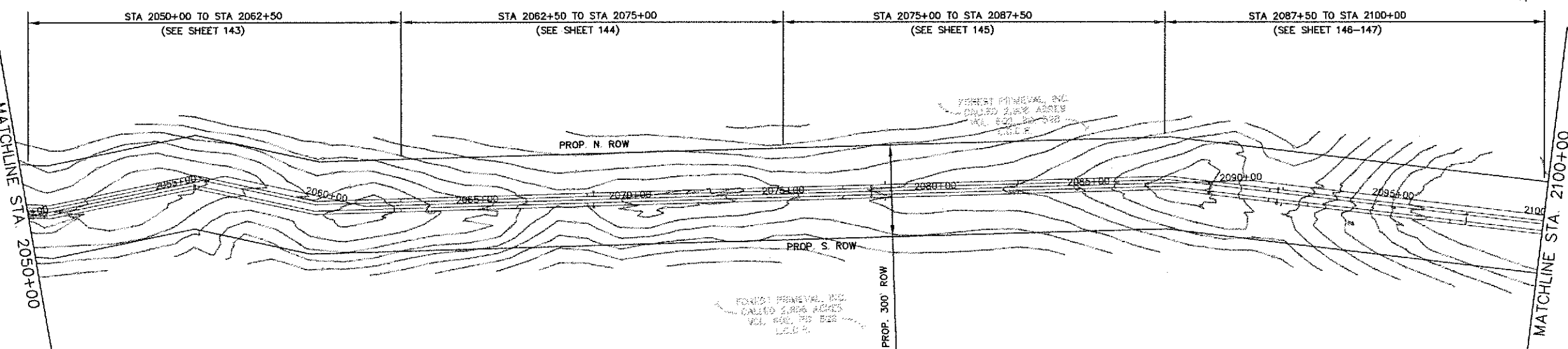


		<small>AECOM TECHNICAL SERVICES, INC. 5151 WOODWAY, SUITE 101 WEST HOUSTON, TEXAS 77057-1599 WWW.AECOM.COM TYPE REC. NO. P-1980</small>
<small>AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.</small>		
<small>SURVEYED BY: FB NO.</small>		
COASTAL WATER AUTHORITY <small>LUCE BAYOU INTERBASIN TRANSFER PROJECT</small>		
<p style="text-align: center;">CANAL SHEET LAYOUT AND BORING PLAN (SHEET 13 OF 13)</p>		
<small>DRAWING SCALE AS SHOWN</small>		
<p style="text-align: right;">SHEET NO. 25 OF 245</p>		

LAST MODIFIED: Jan 27, 2011 - 5:40pm BY USER: ThompsonB
 DWG. LOCATION: C:\Work\Drawn\10 ENGINEERING NOTES & CALCULATIONS\1.3 Civil Notes and Calculations\Cadd\PWD\Sheets\
 DWS. NAME: overallplan13.dwg



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 5757 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057-1999
 WWW.AECOM.COM P: 713.780.8388 F: 713.780.8388

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

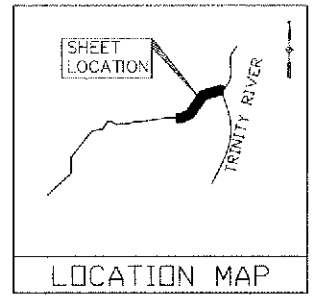
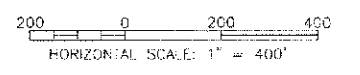
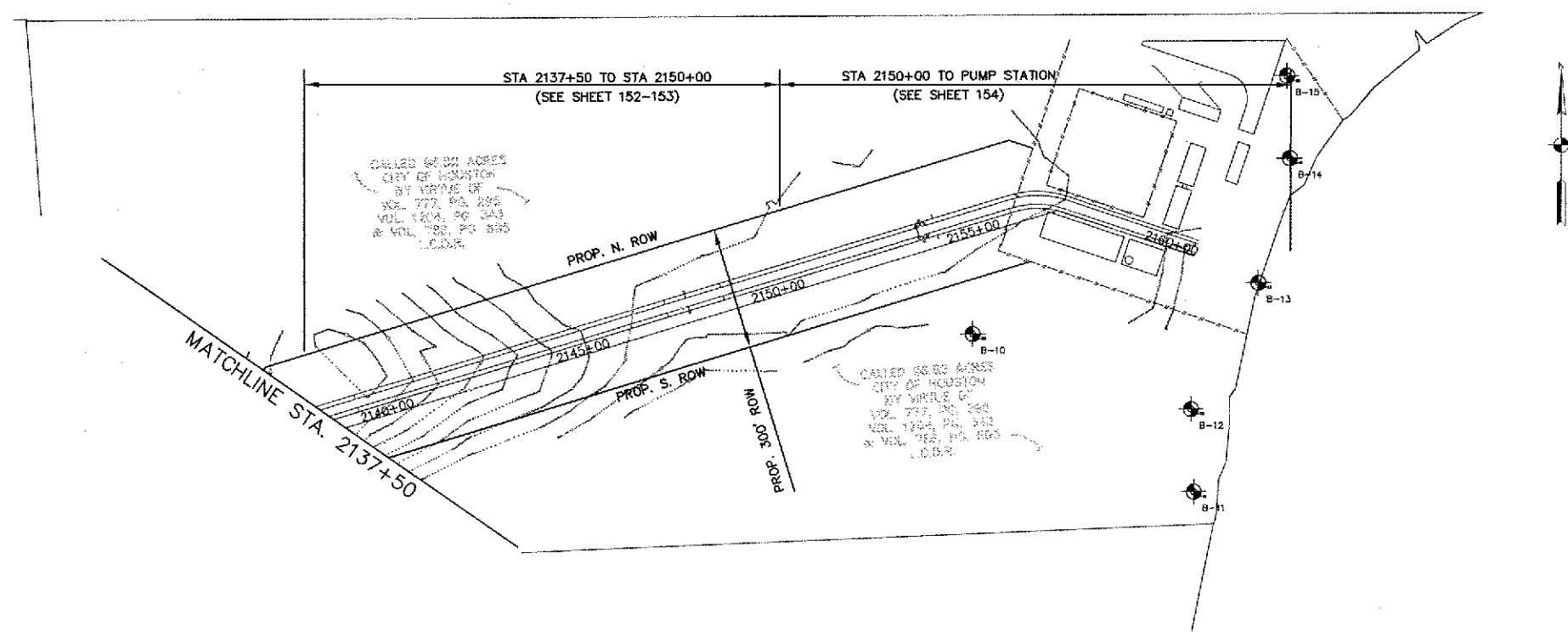
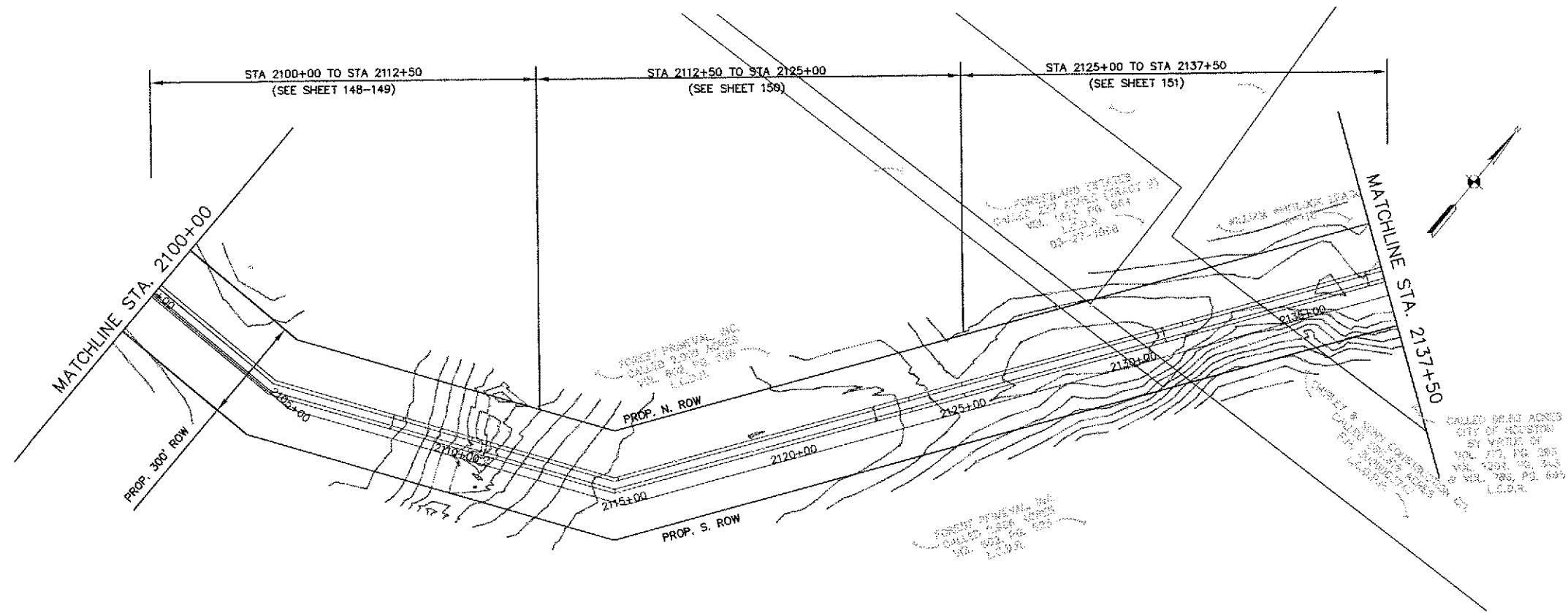


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 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE SHEET
 LAYOUT AND BORING
 PLAN (SHEET 1 OF 2)

DRAWING SCALE	AS SHOWN
SHEET NO	26 of 245

LAST MODIFIED: Jan 27, 2011 - 5:40pm BY USER: ThompsonB
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AECOM
AECOM TECHNICAL SERVICES, INC.
 5157 WOODWAY, SUITE 180 WEST
 HOUSTON, TEXAS 77057-1559
 WWW.AECOM.COM
 TAPE REG. NO. P-1580

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

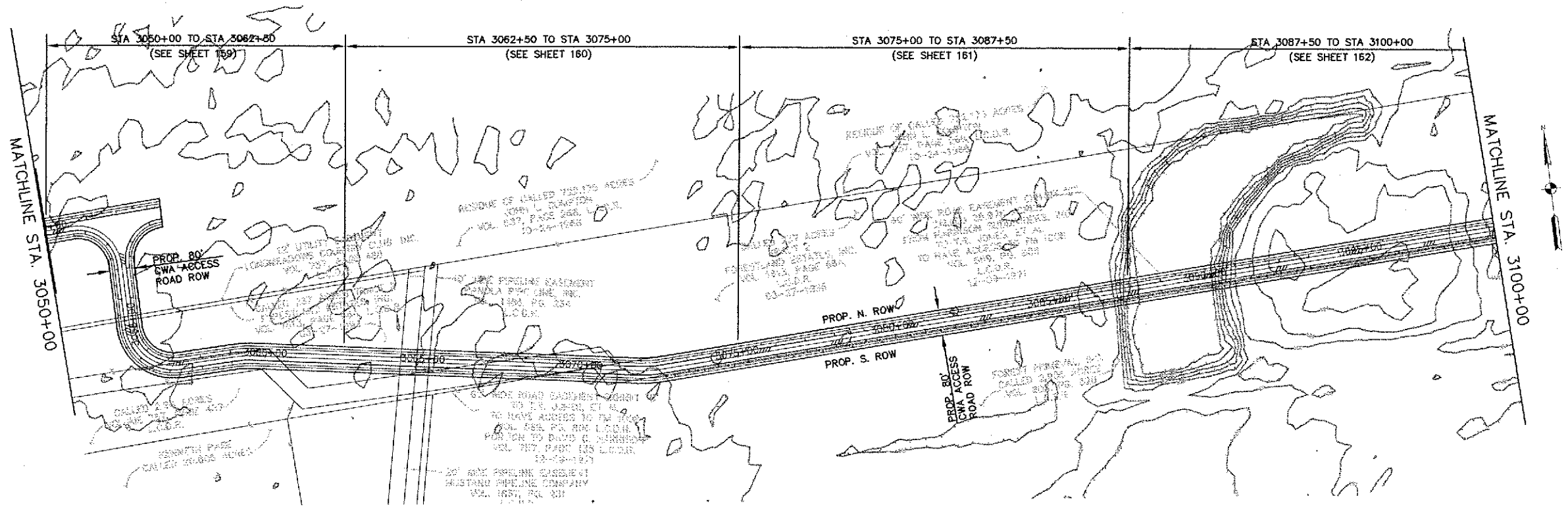
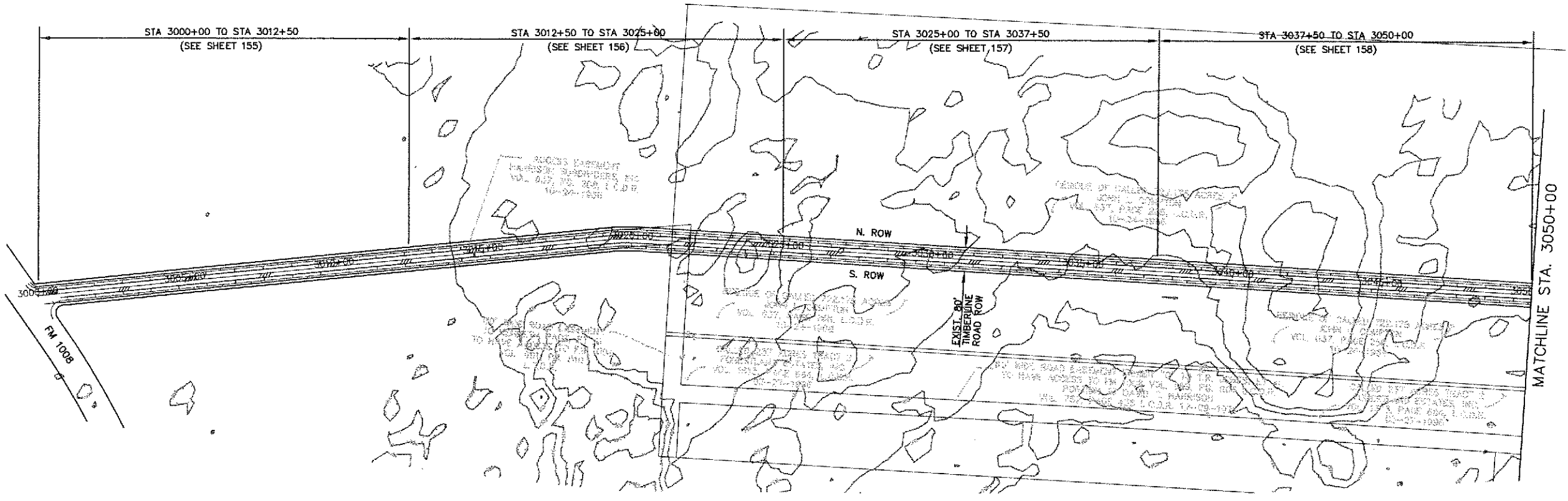


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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE SHEET
 LAYOUT AND BORING
 PLAN (SHEET 2 OF 2)

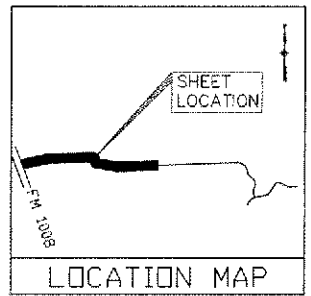
DRAWING SCALE	AS SHOWN
SHEET NO. 27	OF 245

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LEGEND

 BOREHOLE




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AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057-1099
 WWW.AECOM.COM
 TSP, INC. REG. P-3580

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



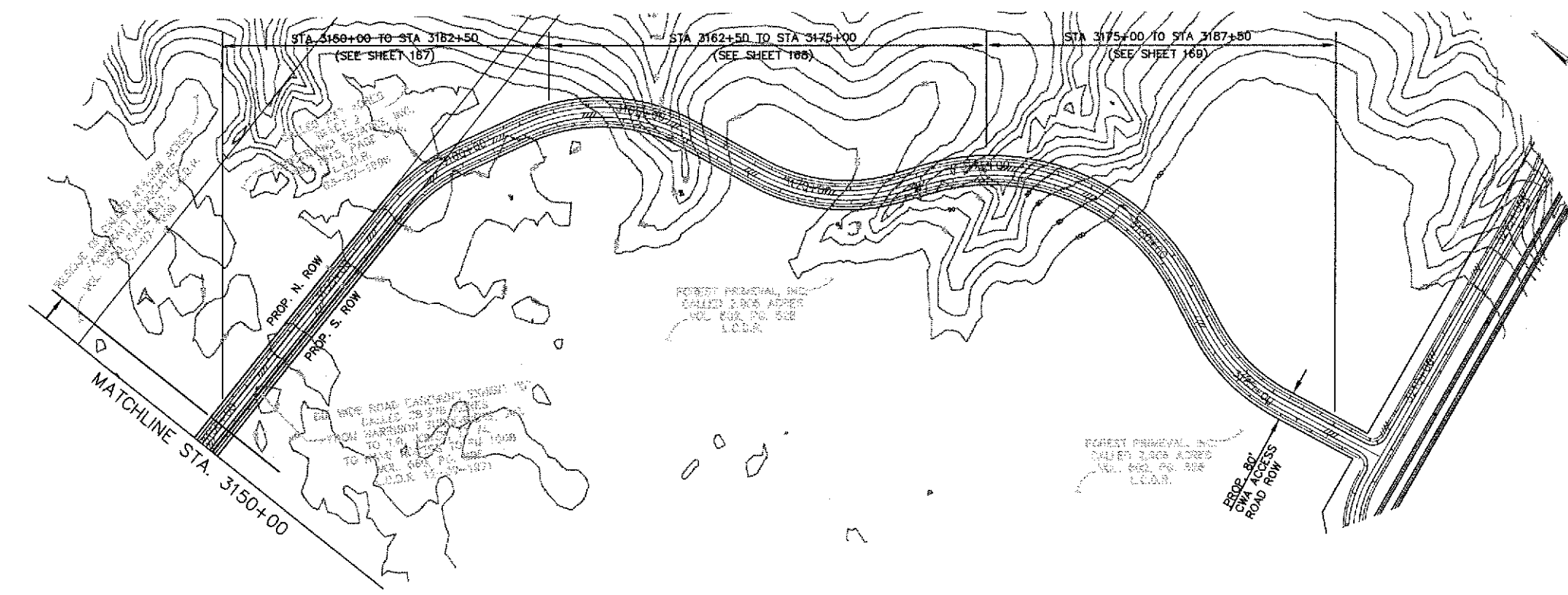
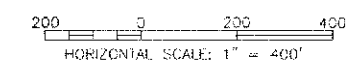
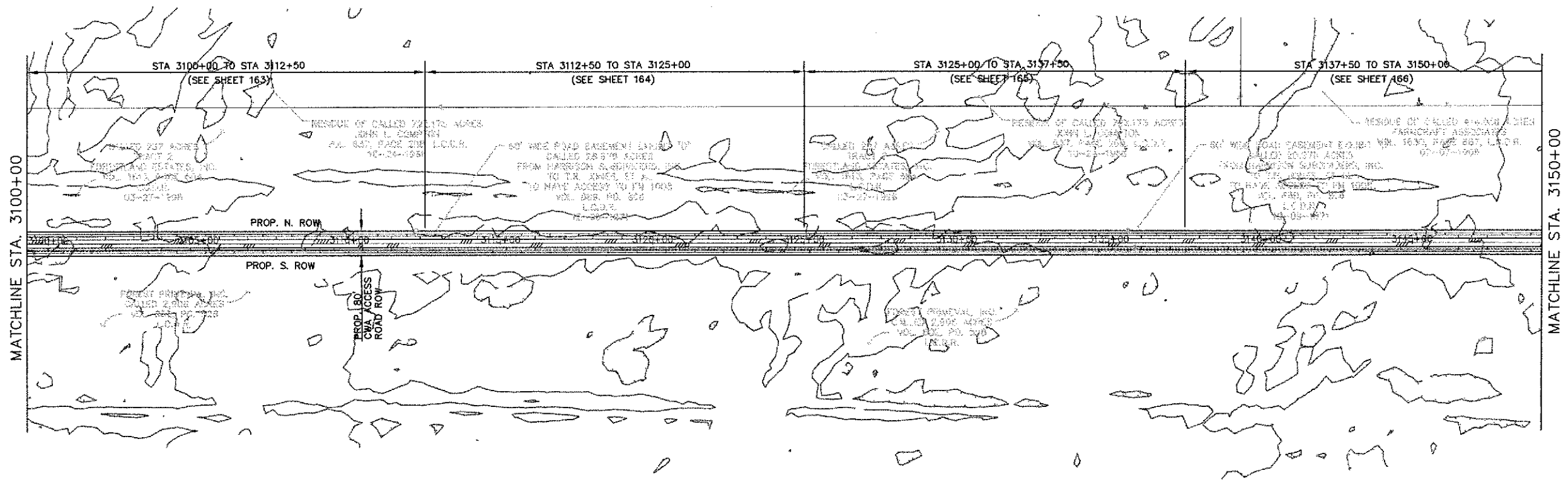
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD SHEET
 LAYOUT AND BORING
 PLAN (SHEET 1 OF 4)

DRAWING SCALE	AS SHOWN
SHEET NO.	28 of 245

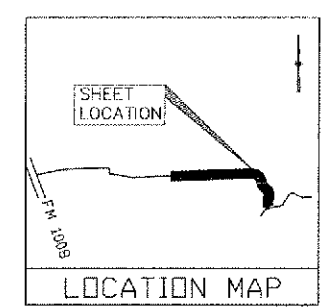
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LAST MODIFIED: Jan 27, 2011 - 5:41pm BY USER: ThompsonB
 DNG LOCATION: C:\Work Order 6\1.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cadd\PWD\Sheets\A
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LEGEND

BOREHOLE



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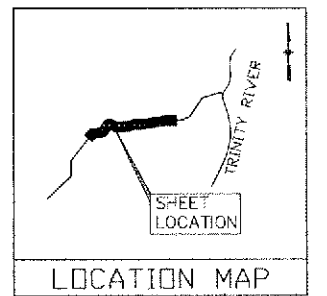
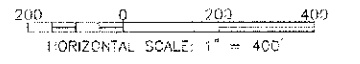
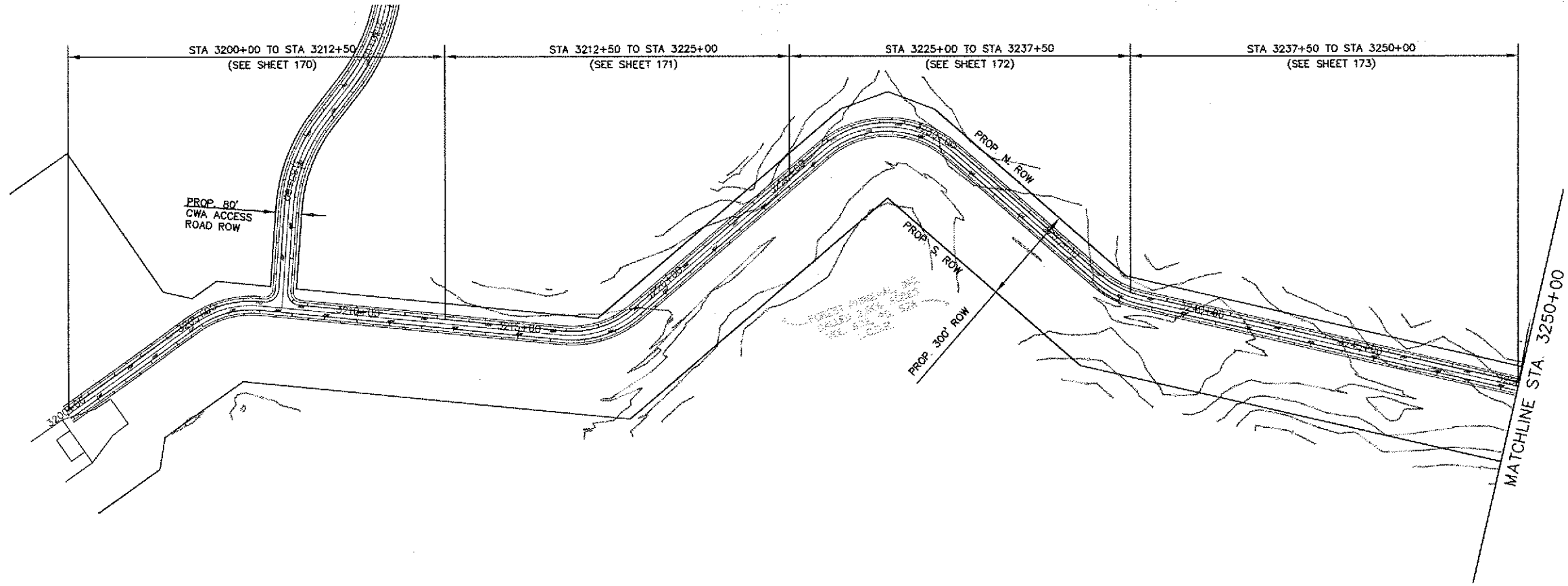
AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057-1599
 WWW.AECOM.COM
 TELE (281) 410-3388

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

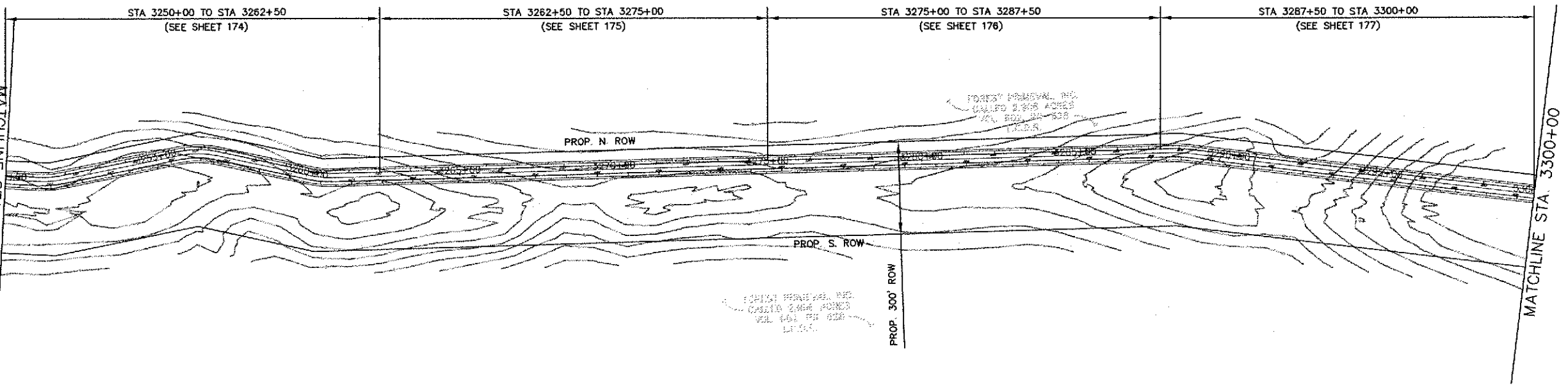
SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD SHEET
 LAYOUT AND BORING
 PLAN (SHEET 2 OF 4)

DRAWING SCALE	AS SHOWN
SHEET NO.	29 OF 245

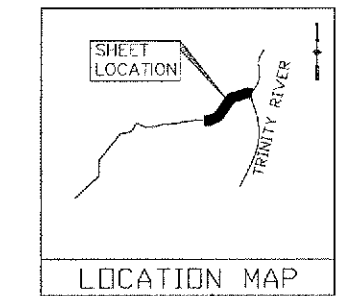
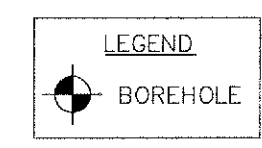
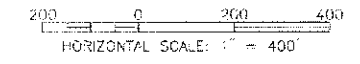
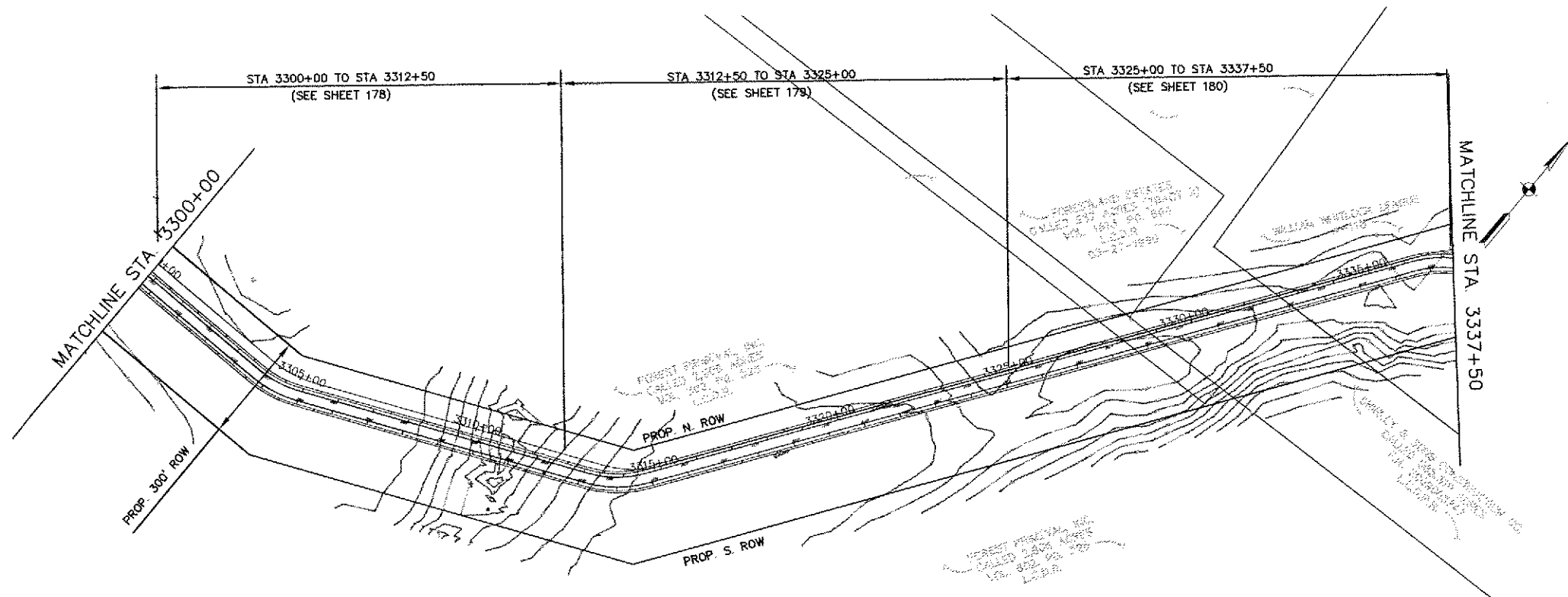


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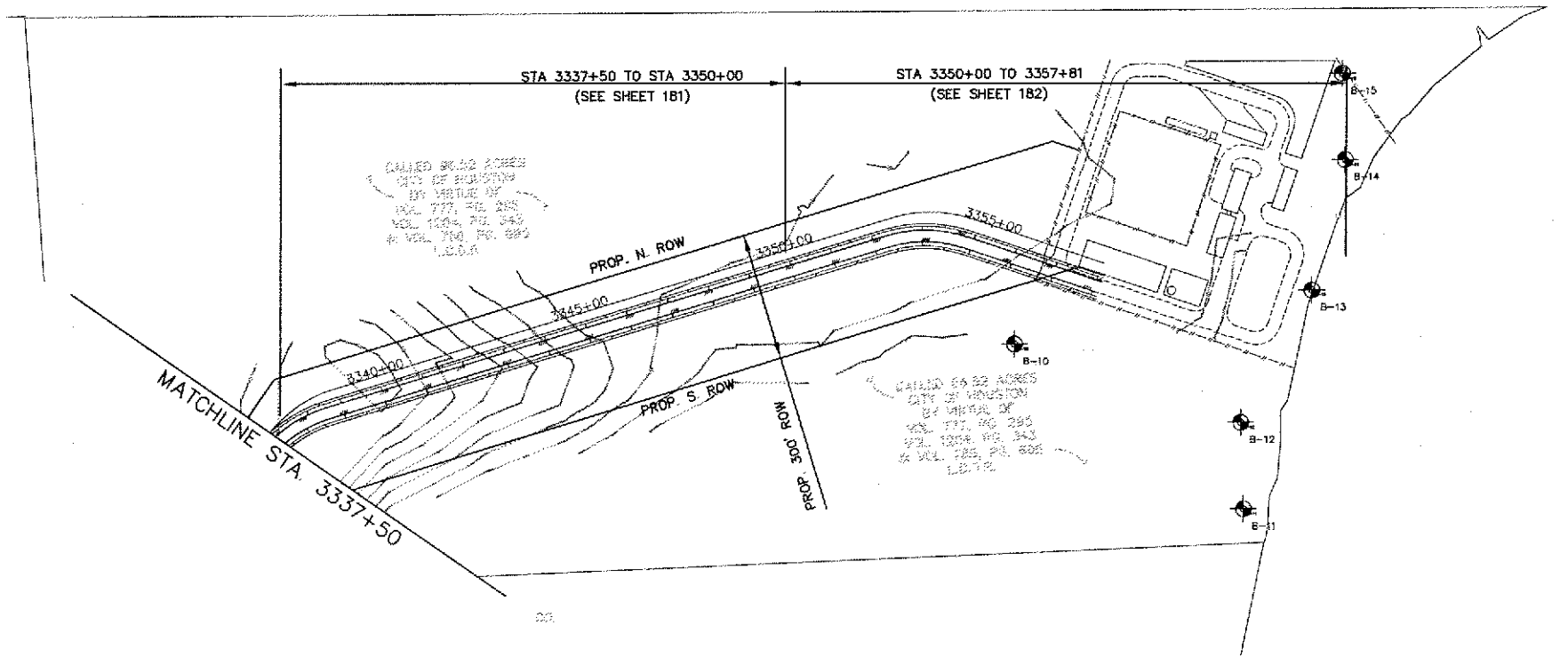


		<small>AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057-1598 WWW.AECOM.COM TSPC REG. NO. F-2500</small>
<small>AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.</small>		
<small>SURVEYED BY: FB NO.</small>		
COASTAL WATER AUTHORITY <small>LUCE BAYOU INTERBASIN TRANSFER PROJECT</small>		
<p style="text-align: center;">ACCESS ROAD SHEET LAYOUT AND BORING PLAN (SHEET 3 OF 4)</p>		
<small>DRAWING SCALE AS SHOWN</small>		
<p style="text-align: right;">SHEET NO. 30 of 243</p>		

LAST MODIFIED: Jun 27, 2011 - 5:41 PM BY USER: ThompsonB
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AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



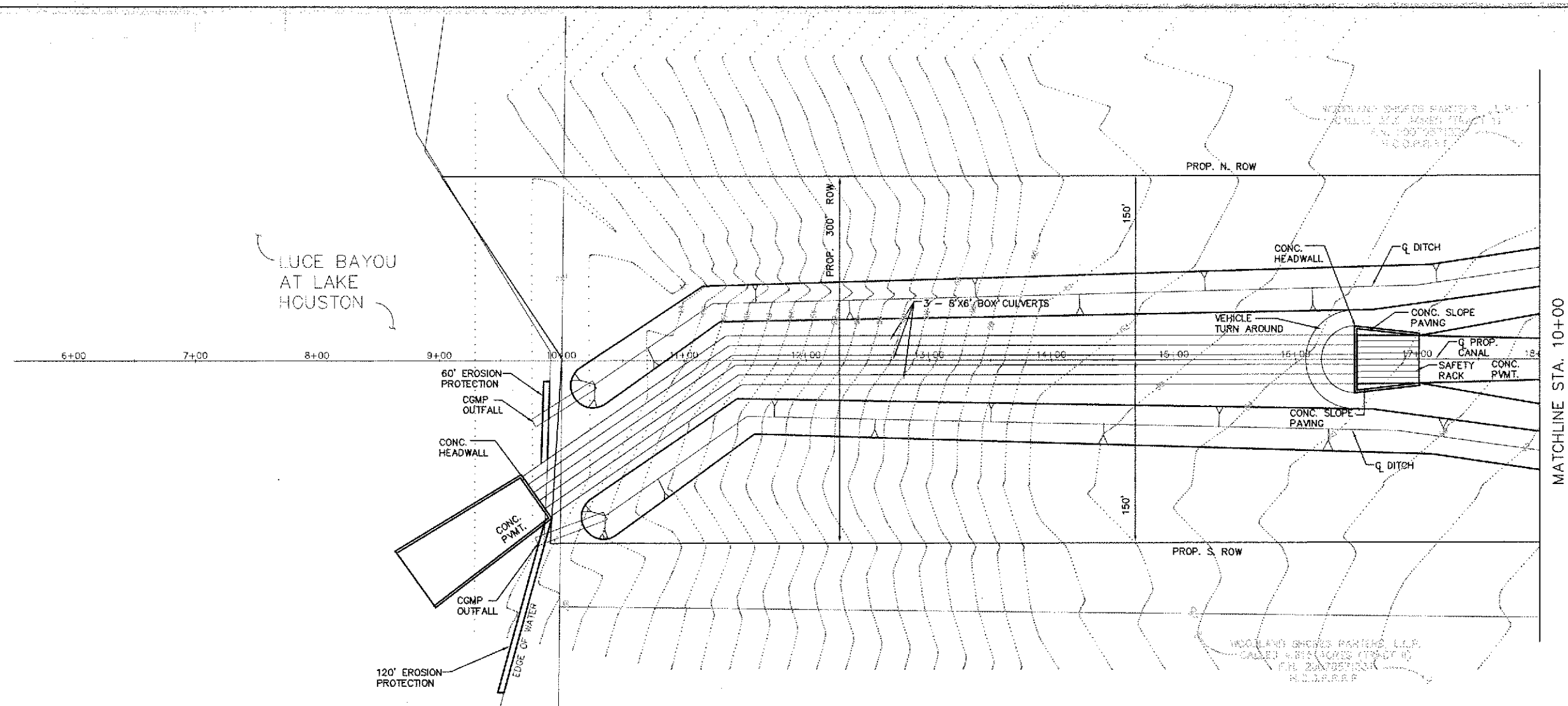
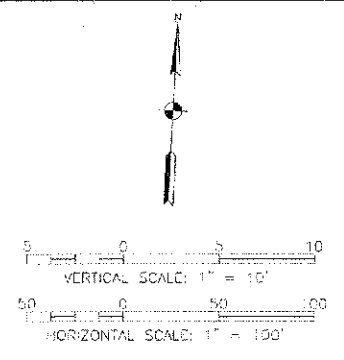
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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

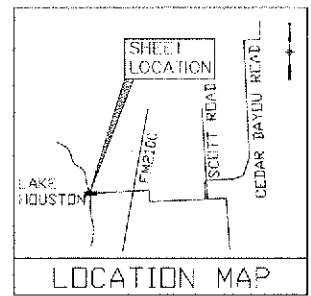
ACCESS ROAD SHEET
 LAYOUT AND BORING
 PLAN (SHEET 4 OF 4)

DRAWING SCALE	AS SHOWN
SHEET NO. 31	OF 249

LAST MODIFIED: Jan 27, 2011 - 5:42pm
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 BY USER: ThompsonB1



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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TEXAS REGISTRATION NO. 91031
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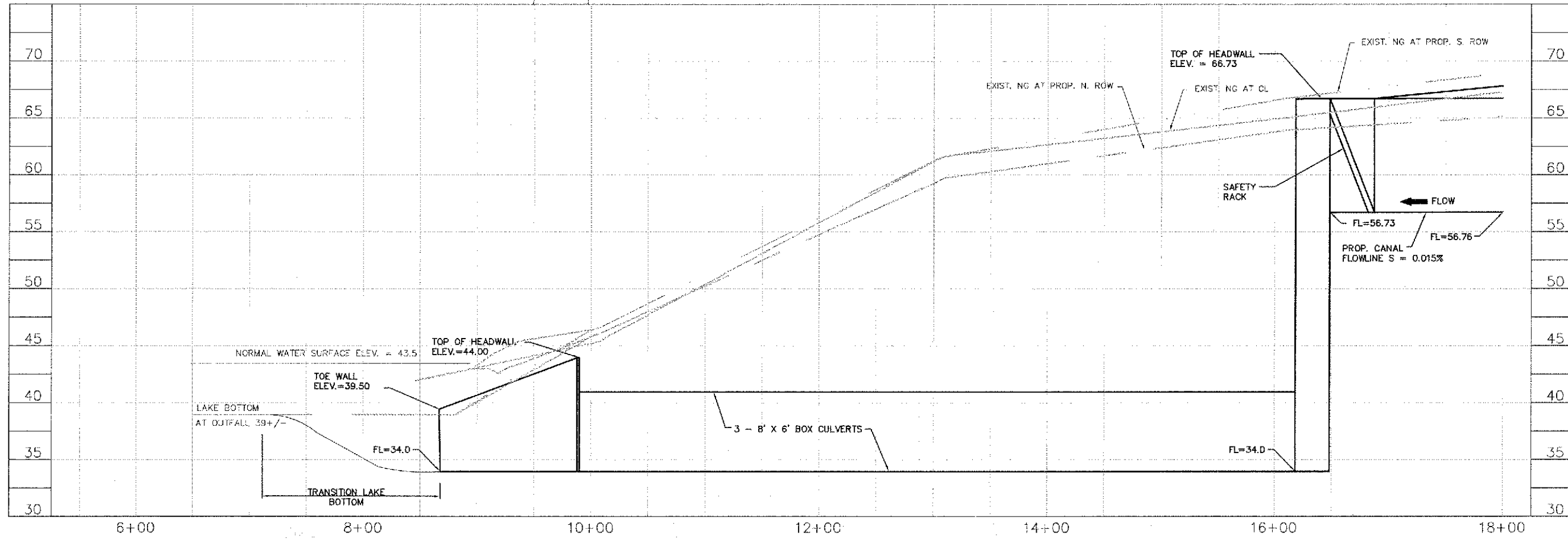
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

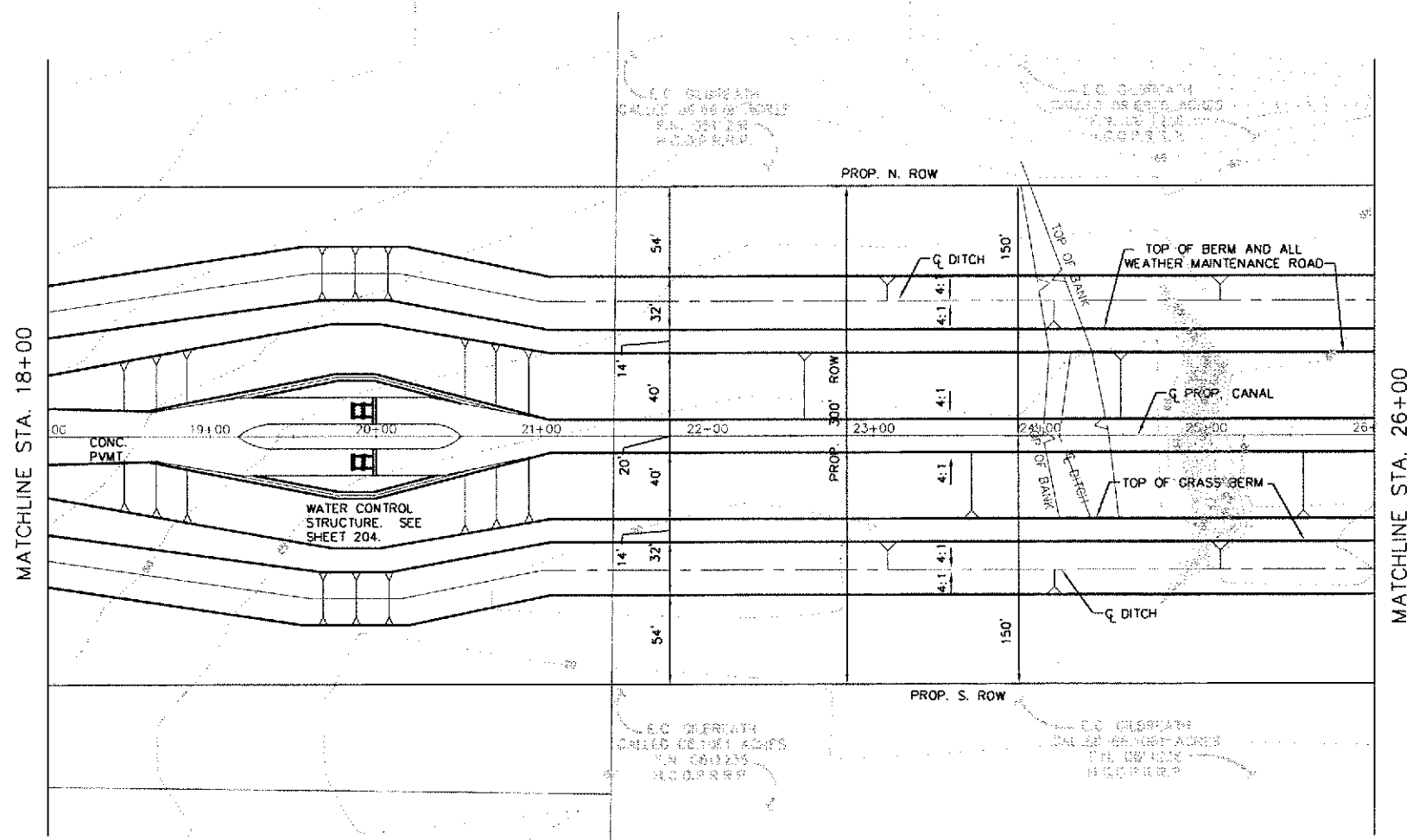
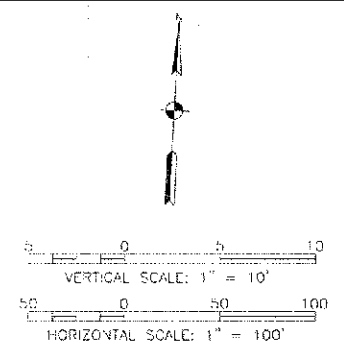
CANAL PLAN &
PROFILE STA 5+50 TO
STA 18+00

DRAWING SCALE
AS SHOWN

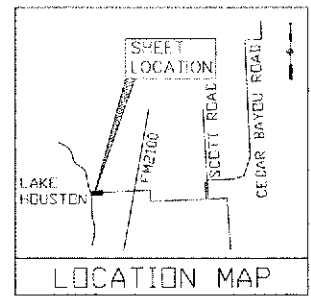
SHEET NO. 32 of 249



LAST MODIFIED: Jan 27, 2011 - 3:35pm BY USER: ThompsonB
 DWG. LOCATION: C:\Work Space\B\10\ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cadd\PRD\Sheets\



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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5107 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.
WWW.AECOM.COM
TYPE REG. NO. F-3380

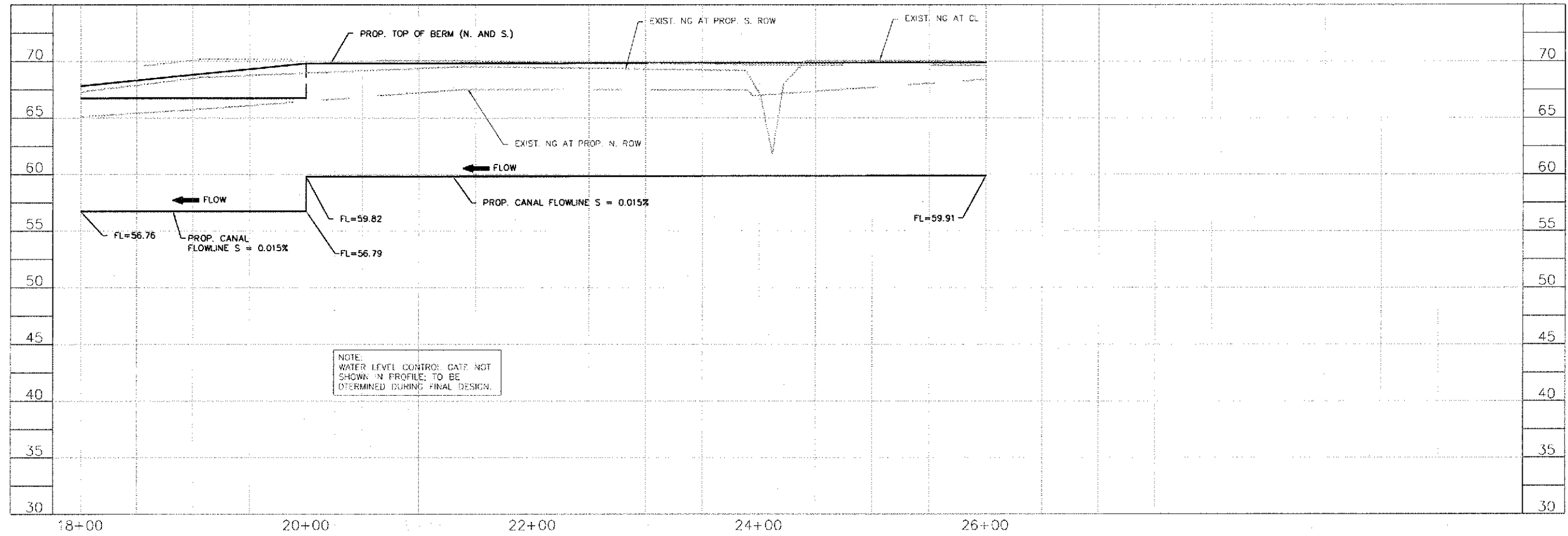
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

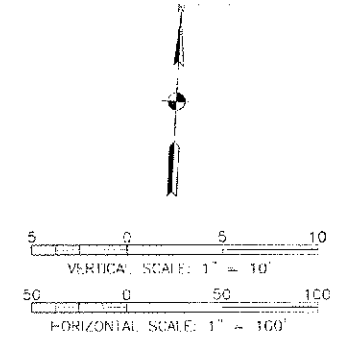
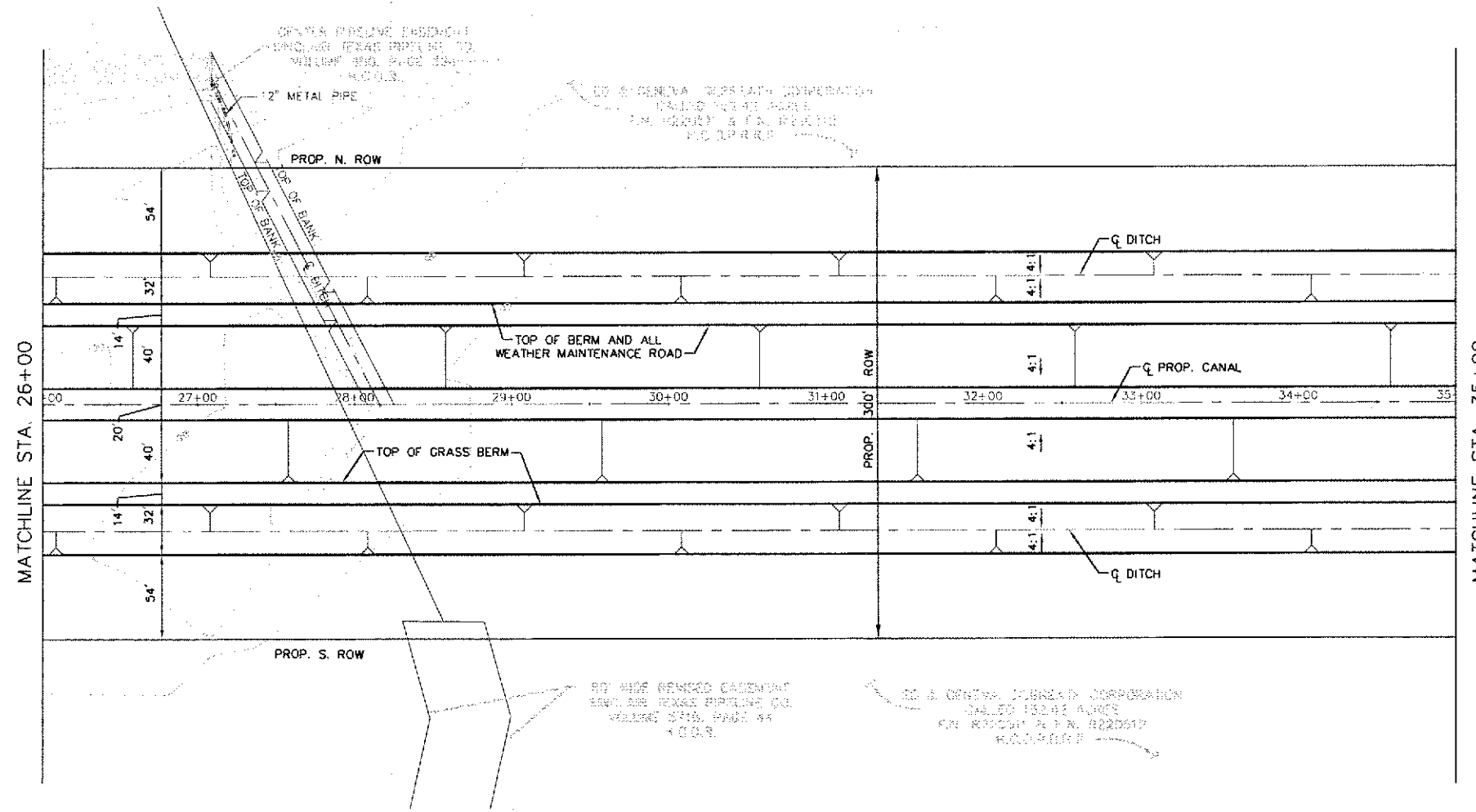
CANAL PLAN &
PROFILE STA 18+00
TO STA 26+00

DRAWING SCALE	
AS SHOWN	

SHEET NO. **33** OF **245**

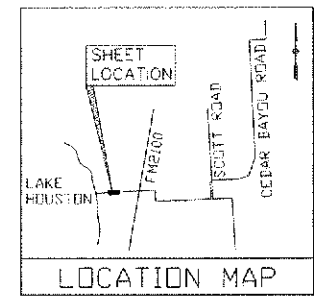


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 DWG. NAME: CanalP&P1.dwg



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

NOTE:
THERE ARE EXISTING PIPELINES
IN THIS AREA. THESE ARE NOT
SHOWN IN PROFILE VIEW DUE TO
LACK OF INFORMATION.



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HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax
WWW.AECOM.COM
DPO: P.O. BOX 1-3580

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

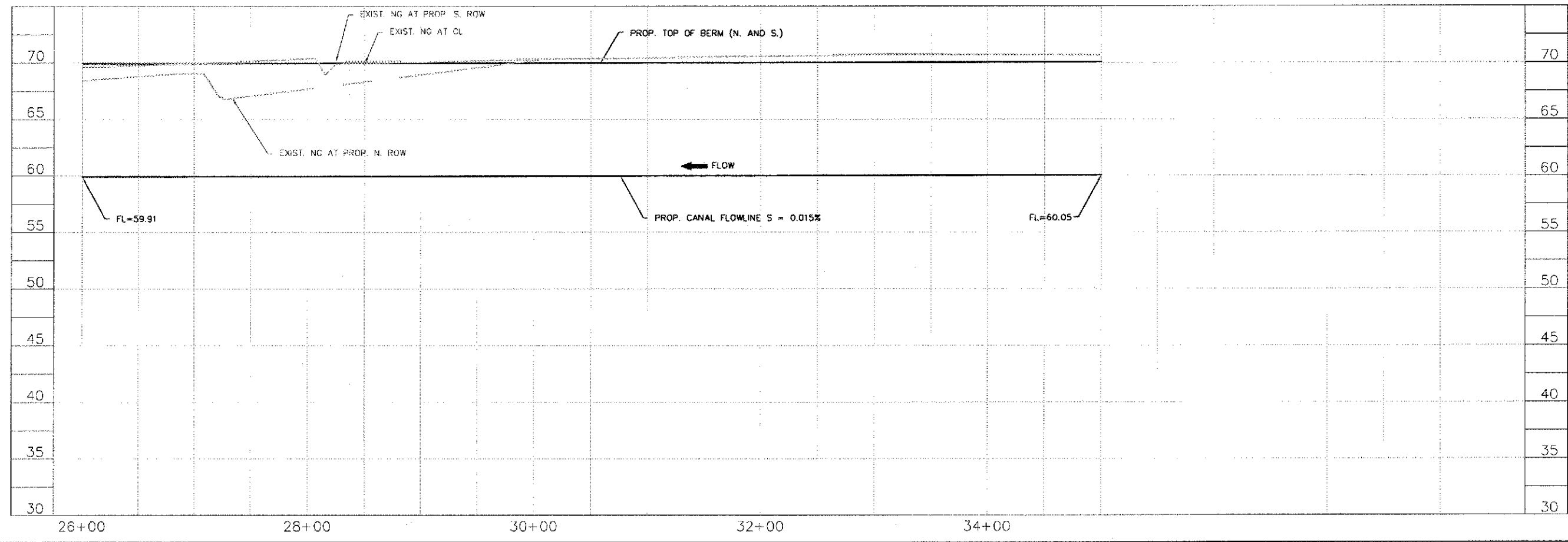
SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 26+00
TO STA 35+00

DRAWING SCALE
AS SHOWN

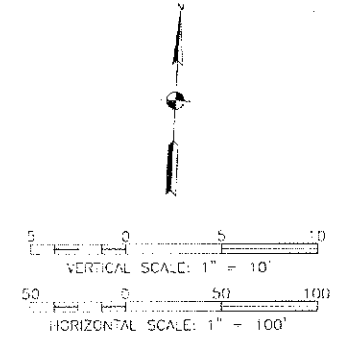
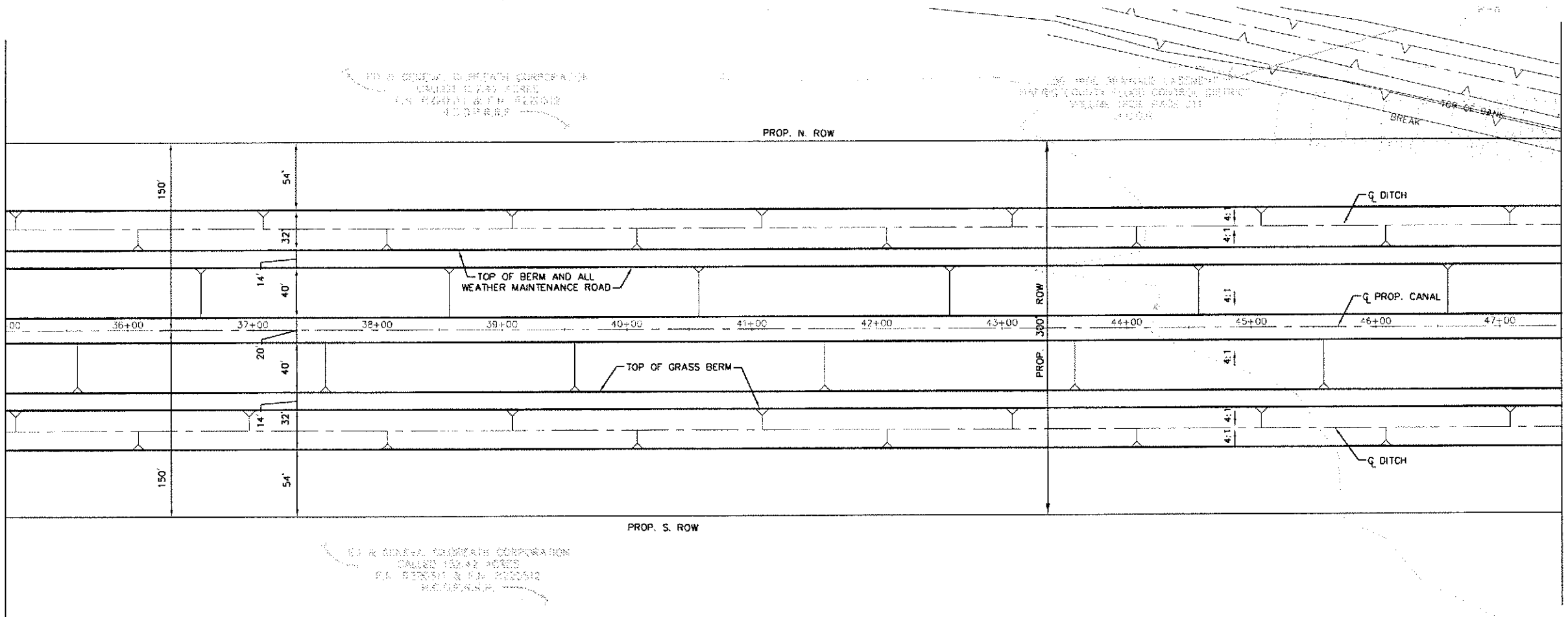
SHEET NO. 34 OF 245



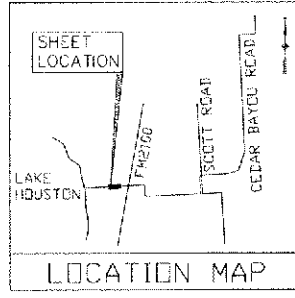
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DWC NAME: CanalP&P2.dwg

MATCHLINE STA. 35+00

MATCHLINE STA. 47+50



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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HOUSTON, TEXAS 77057
713.780.4100 tel
713.780.0838 fax
WWW.AECOM.COM
TSPC REG. NO. F-3580

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel
713.780.0838 fax

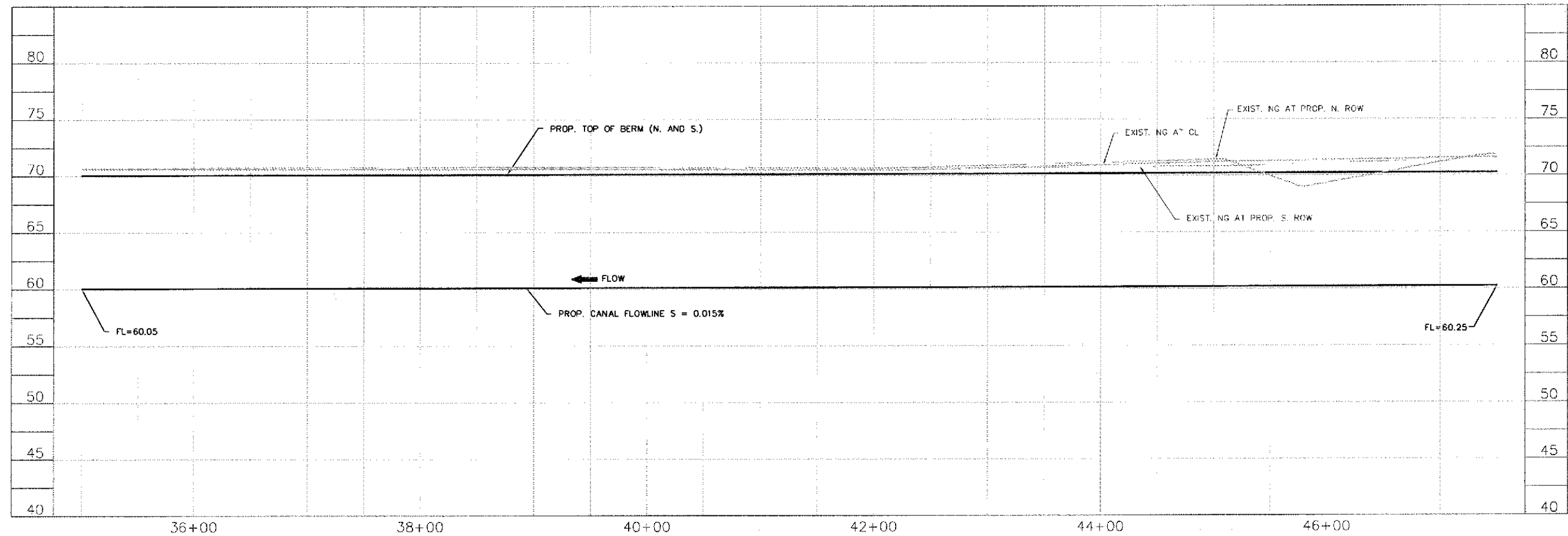
SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 35+00
TO STA 47+50

DRAWING SCALE
AS SHOWN

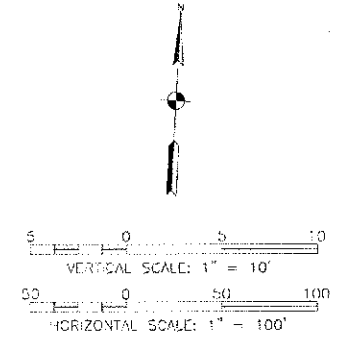
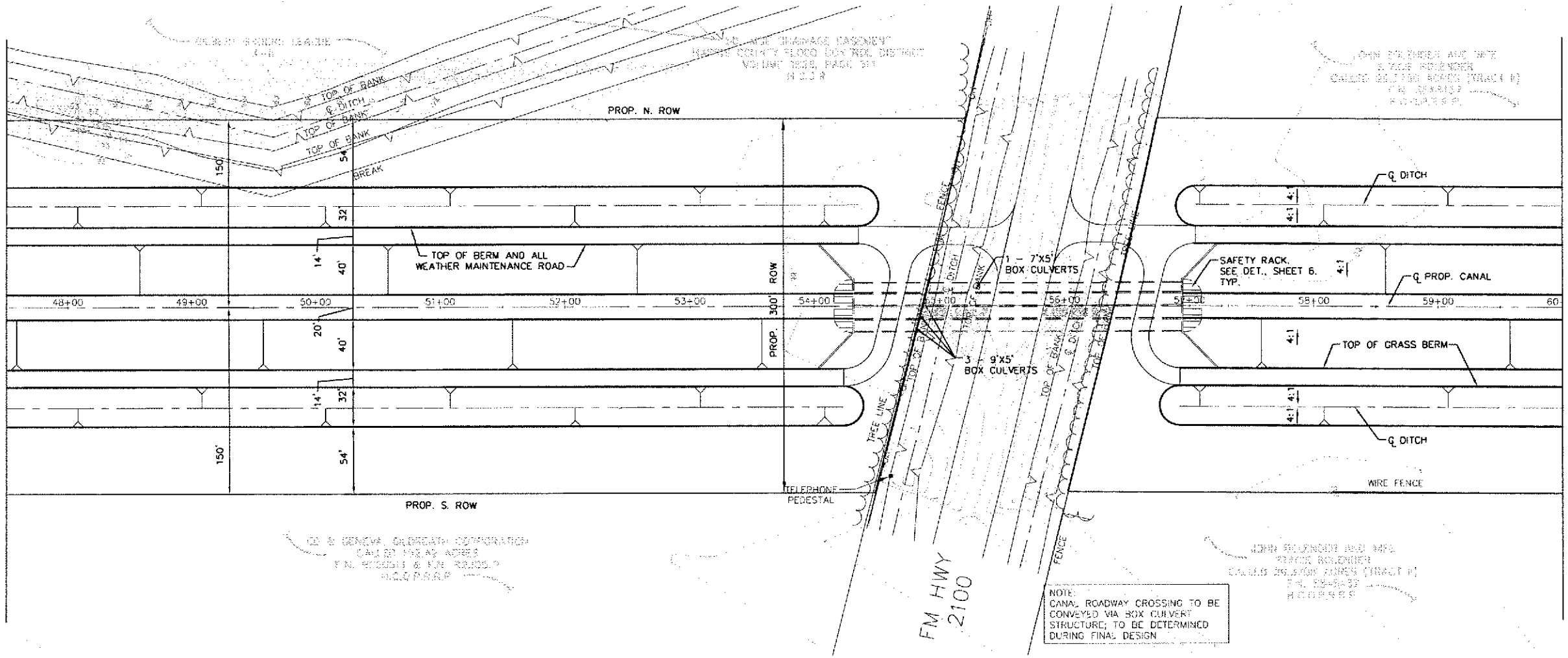
SHEET NO. 35 OF 245



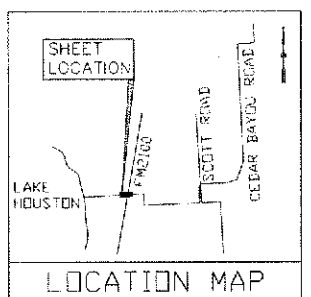
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MATCHLINE STA. 47+50

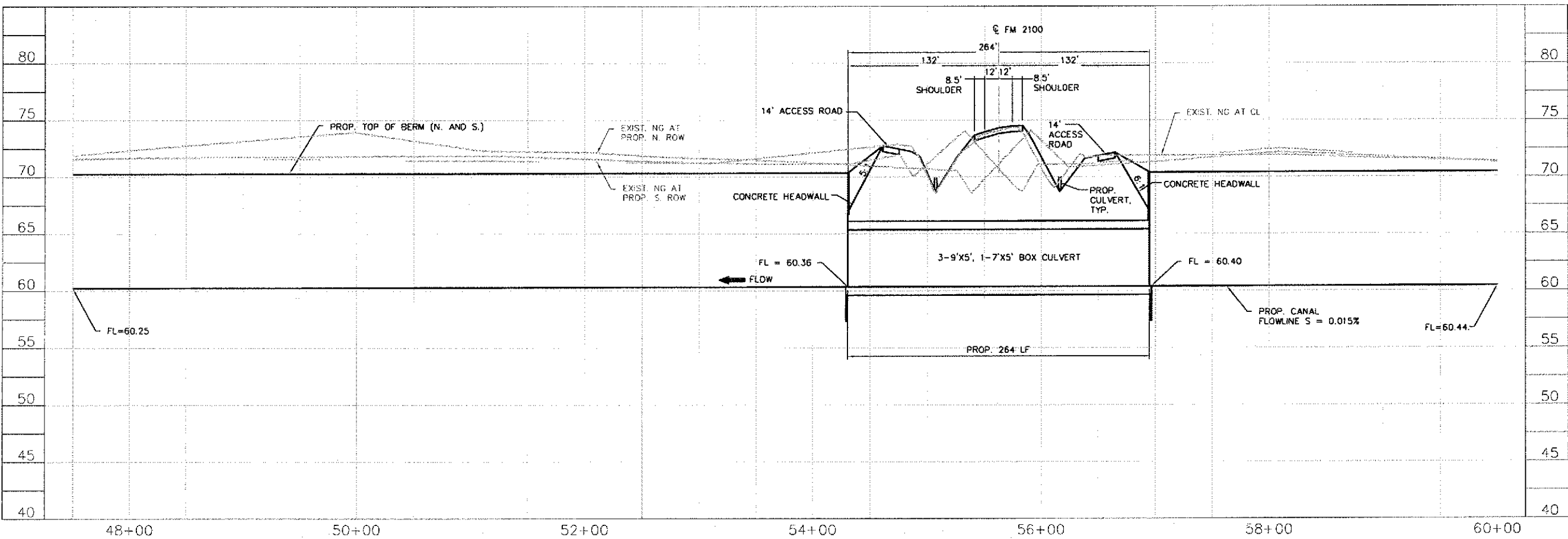
MATCHLINE STA. 60+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



NOTE:
CANAL ROADWAY CROSSING TO BE
CONVEYED VIA BOX CULVERT
STRUCTURE; TO BE DETERMINED
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
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AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax



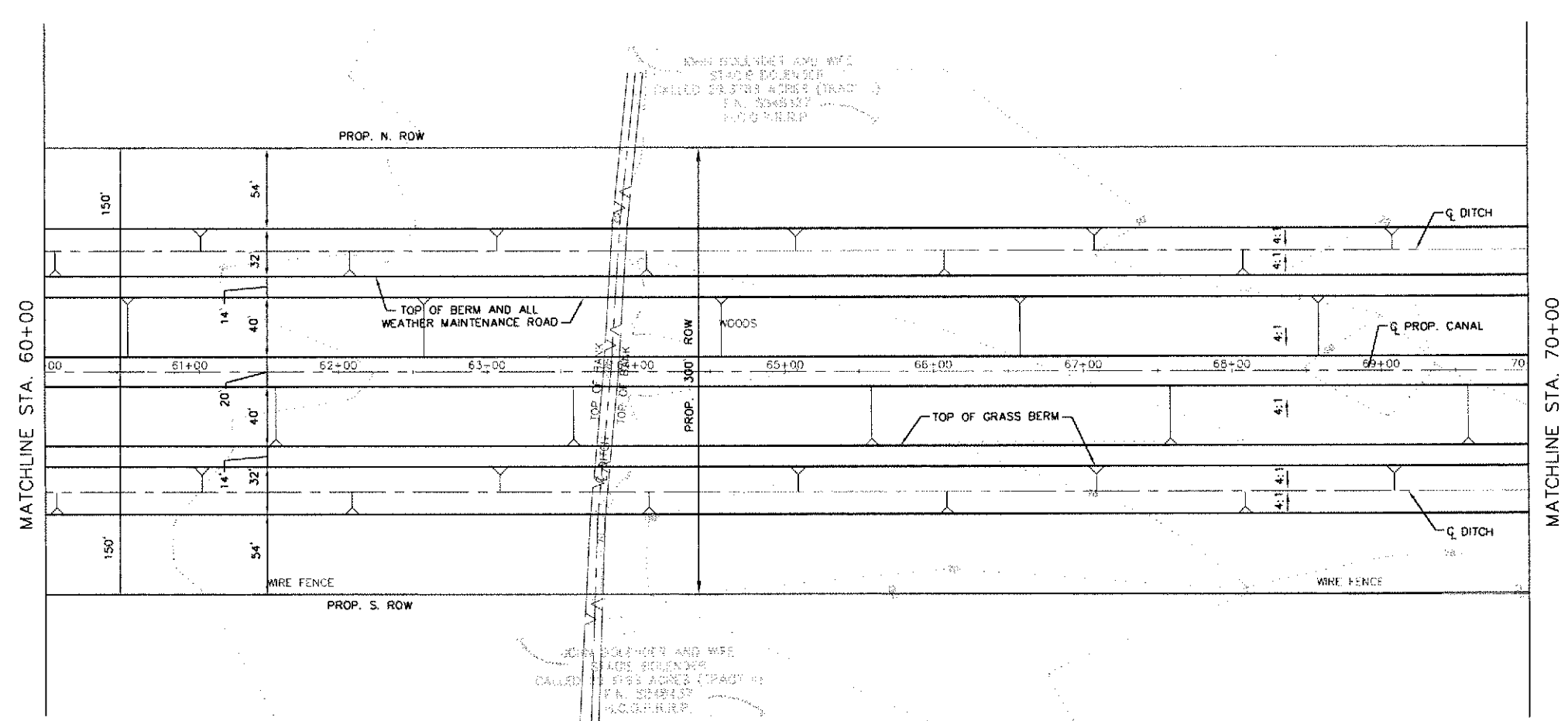
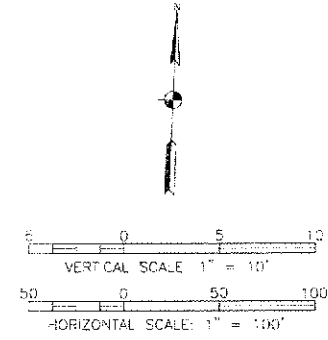
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 47+50
TO STA 60+00

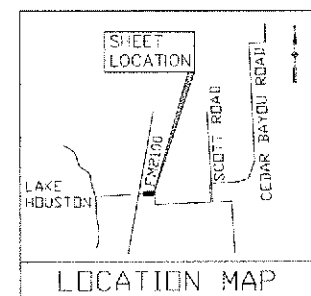
DRAWING SCALE
AS SHOWN

SHEET NO. 36 OF 245

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DWG. NAME: Coad\FWD\F4.dwg



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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INTERIM SUBMITTAL
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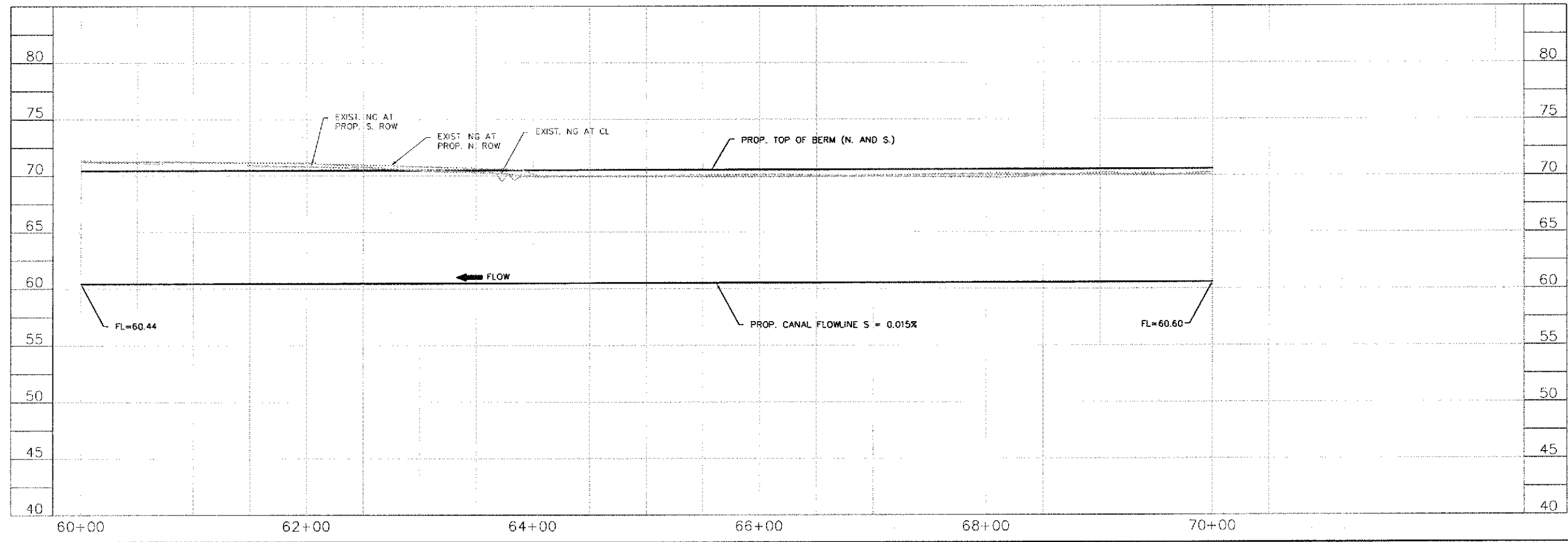


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

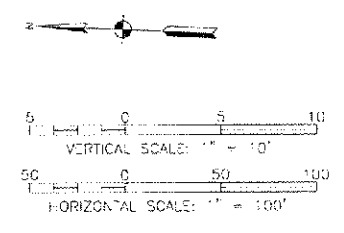
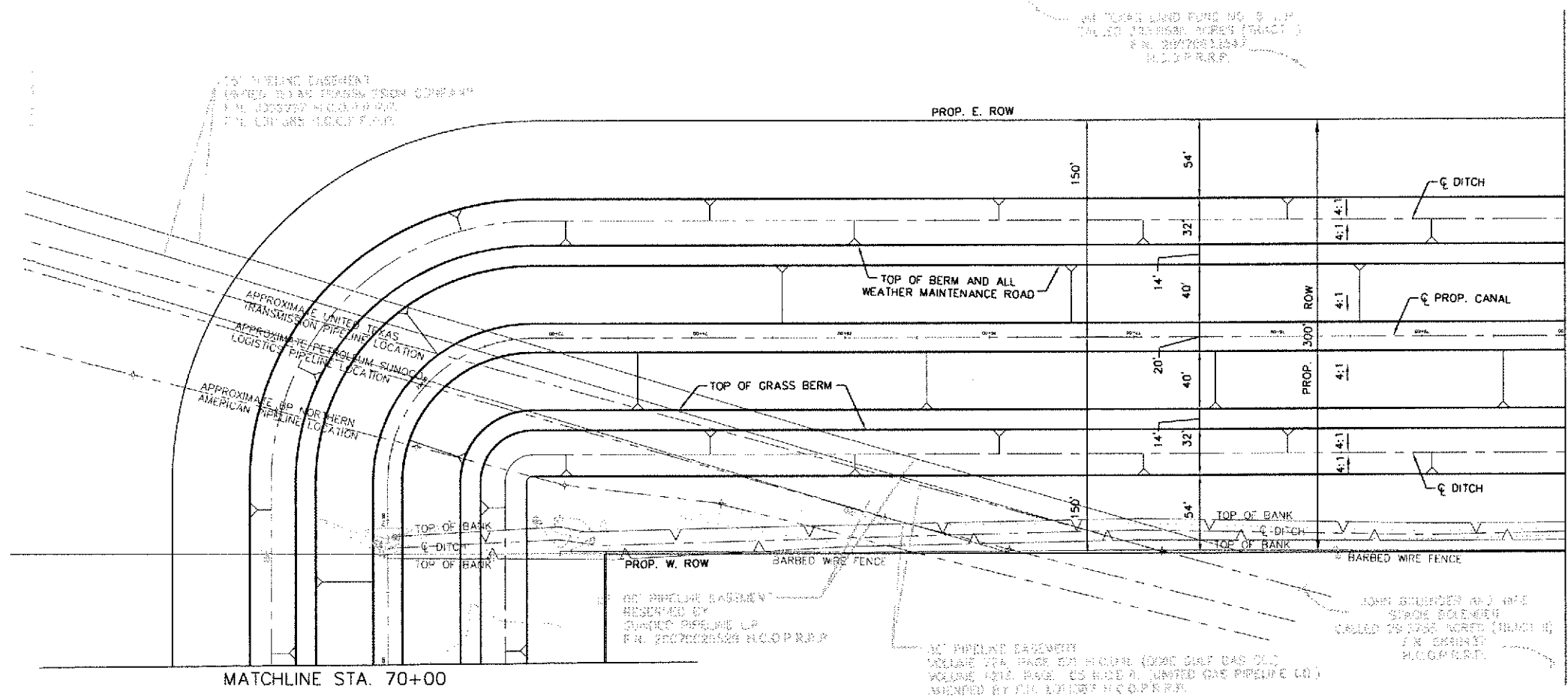
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PROFILE STA 60+00
TO STA 70+00

DRAWING SCALE
AS SHOWN

SHEET NO. 37 OF 245

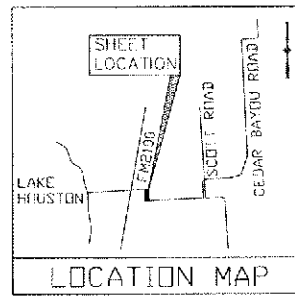


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 DWG NAME: CanalP&P.dwg



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

NOTE:
THERE ARE EXISTING PIPELINES
IN THIS AREA. THESE ARE NOT
SHOWN IN PROFILE VIEW DUE TO
LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

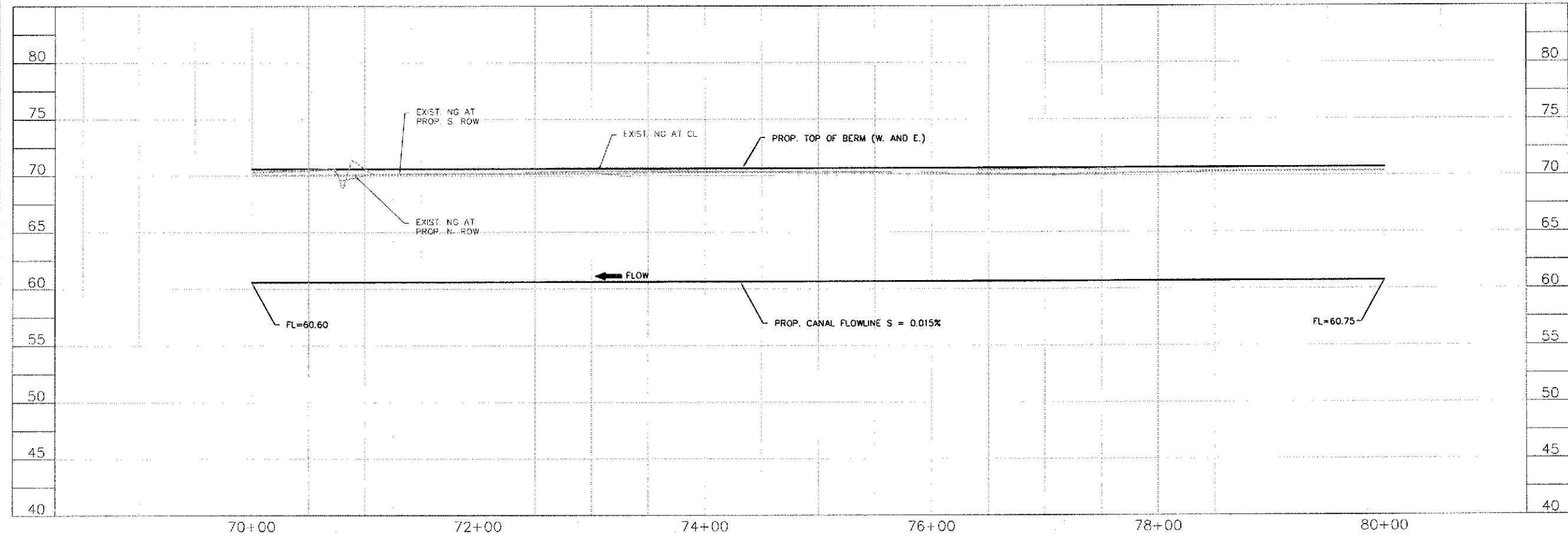
AECOM AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057-1599
713.780.4100 tel.
713.780.0838 fax.



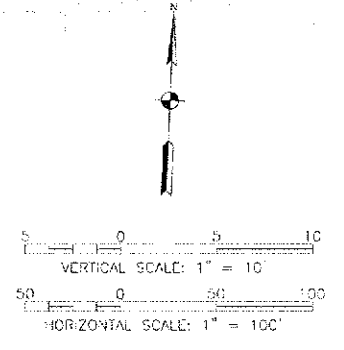
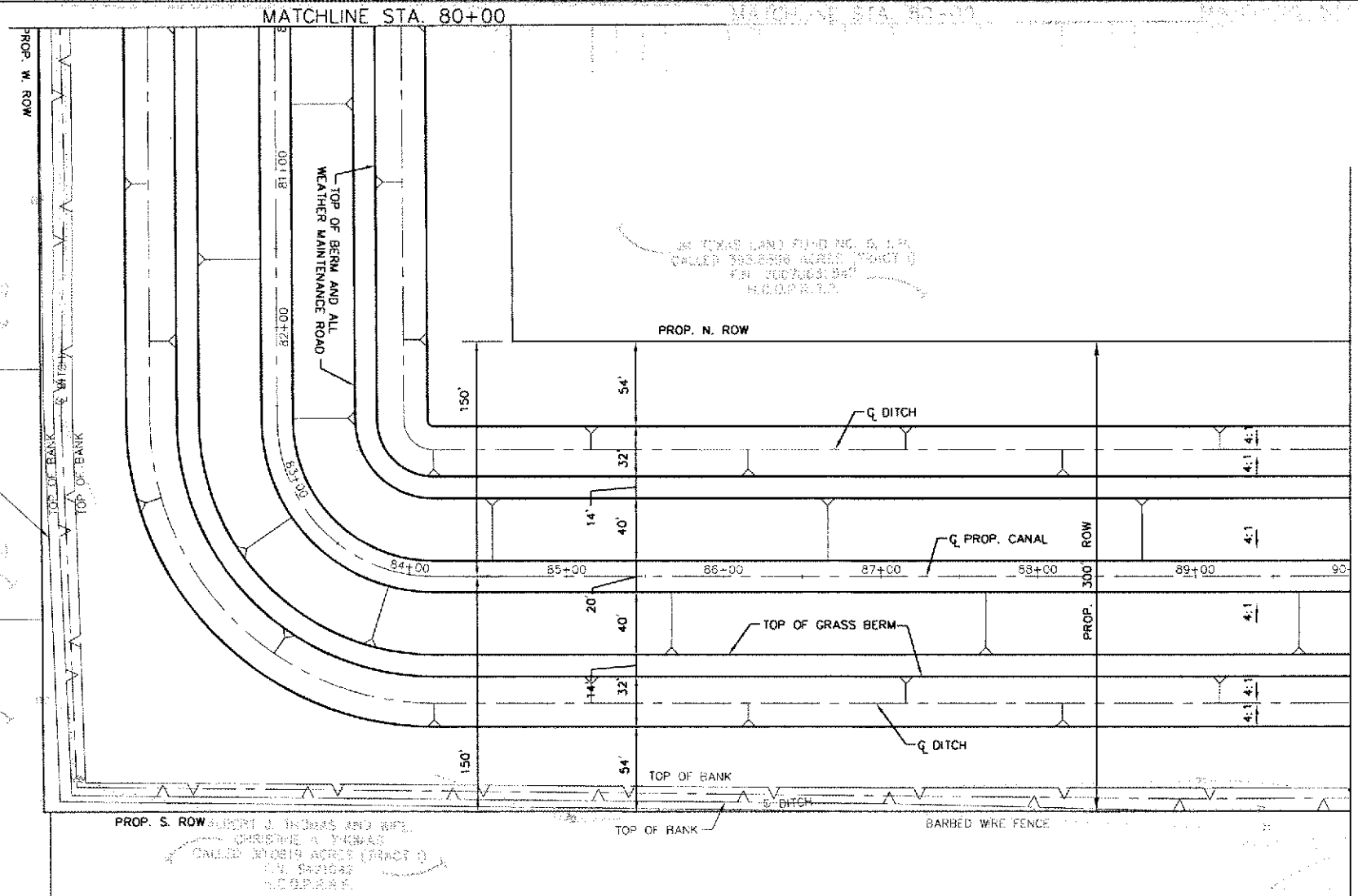
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 70+00
TO STA 80+00

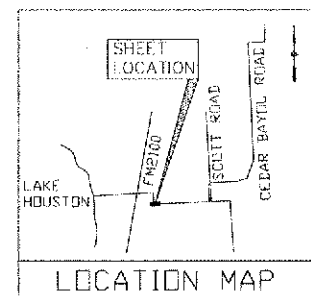
DRAWING SCALE	AS SHOWN
SHEET NO.	38 OF 245



LAST MODIFIED: Jun 27, 2011 - 3:37pm BY USER: ImpsonBH
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DWG NAME: Casa\FWC\6.dwg



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
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AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

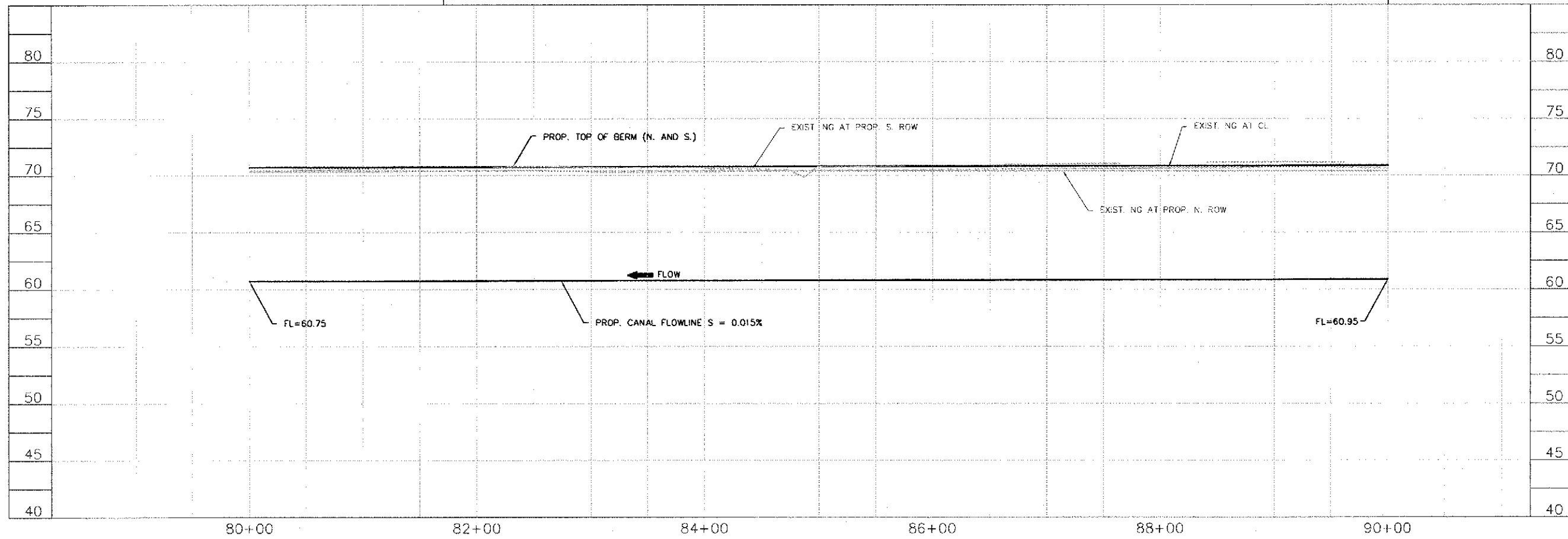


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 80+00
TO STA 90+00

DRAWING SCALE
AS SHOWN

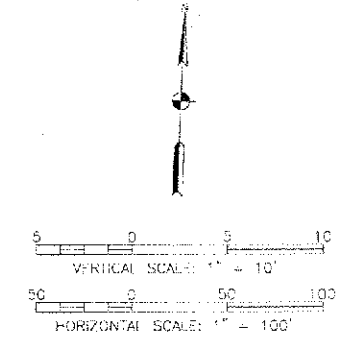
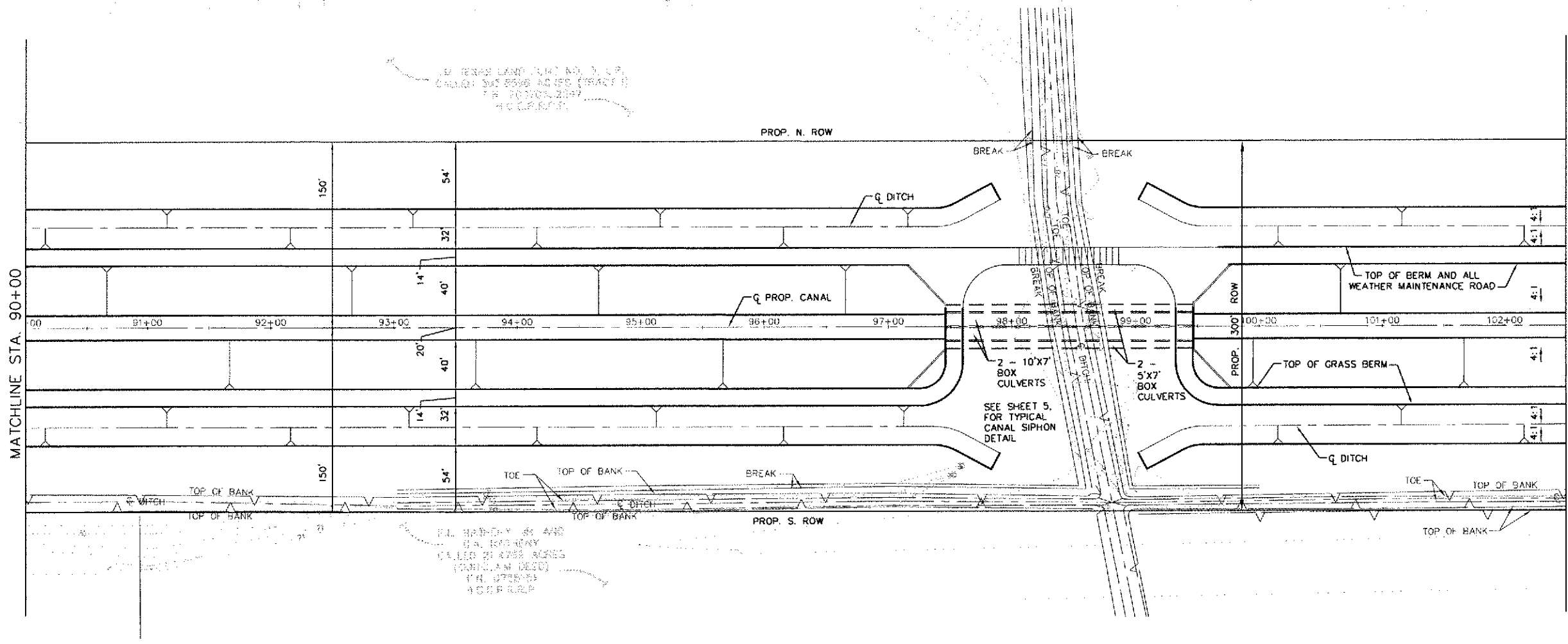
SHEET NO. 39 of 245



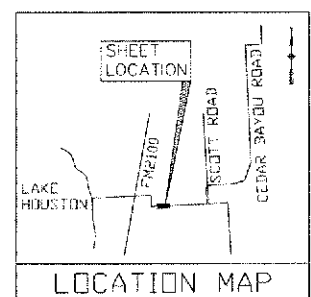
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MATCHLINE STA. 90+00

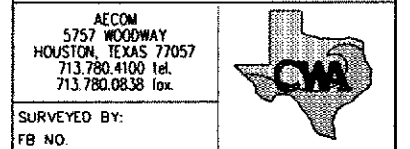
MATCHLINE STA. 102+50



NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN



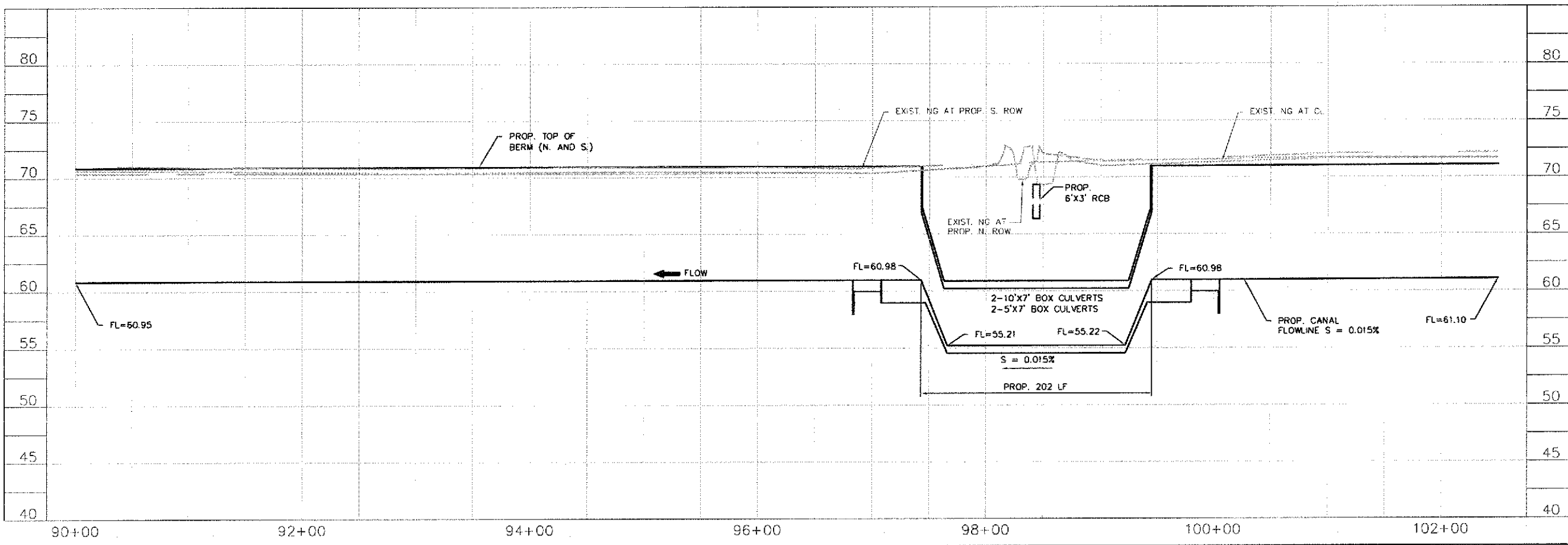
KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES



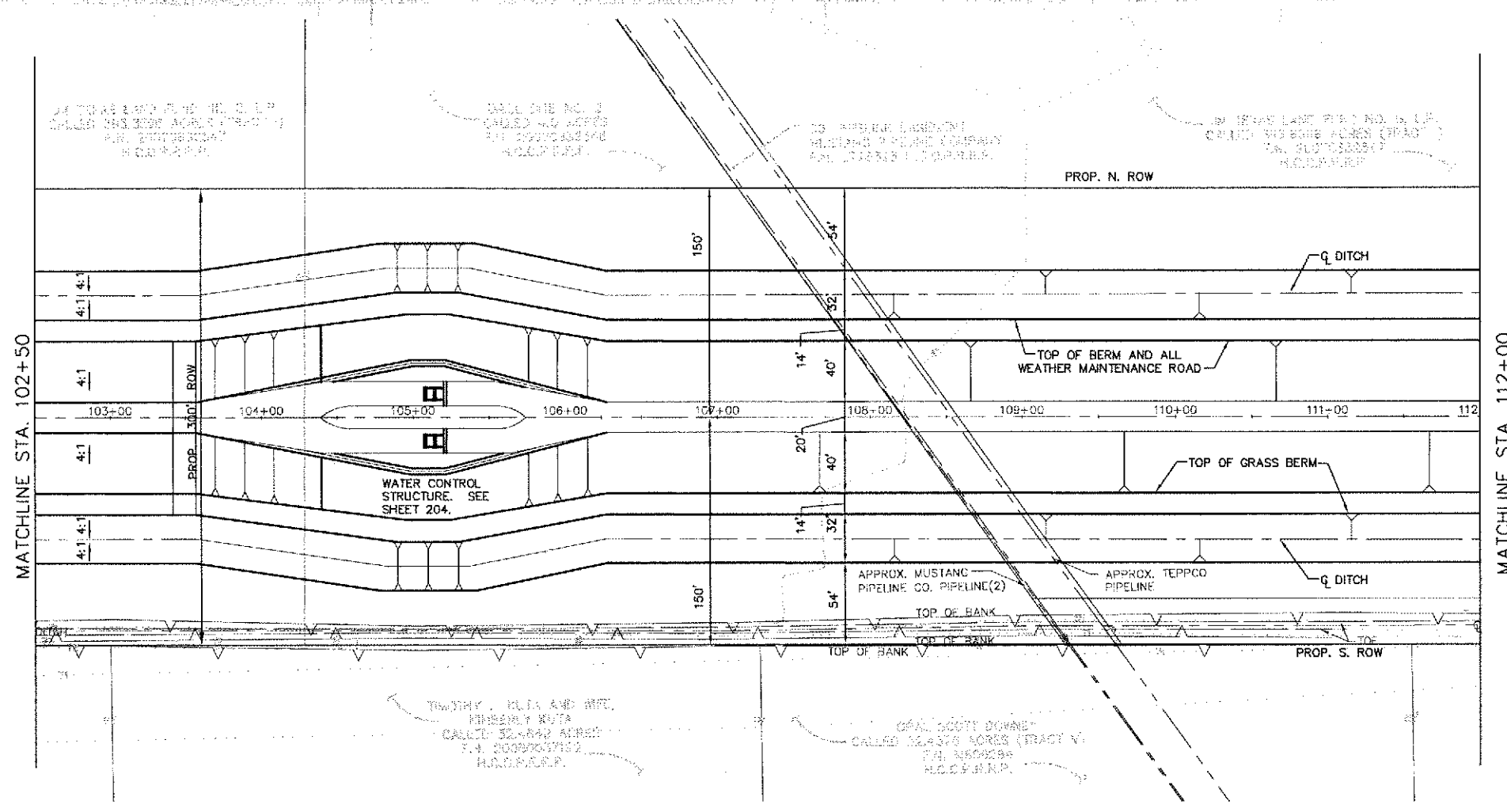
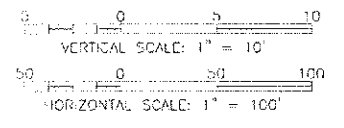
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 90+00
TO STA 102+50

DRAWING SCALE	AS SHOWN
SHEET NO. 40 OF 245	

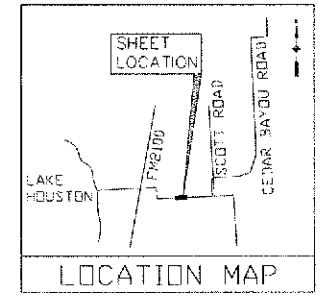


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NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

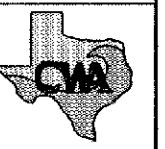
NOTE: THERE ARE EXISTING PIPELINES IN THIS AREA. THESE ARE NOT SHOWN IN PROFILE VIEW DUE TO LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
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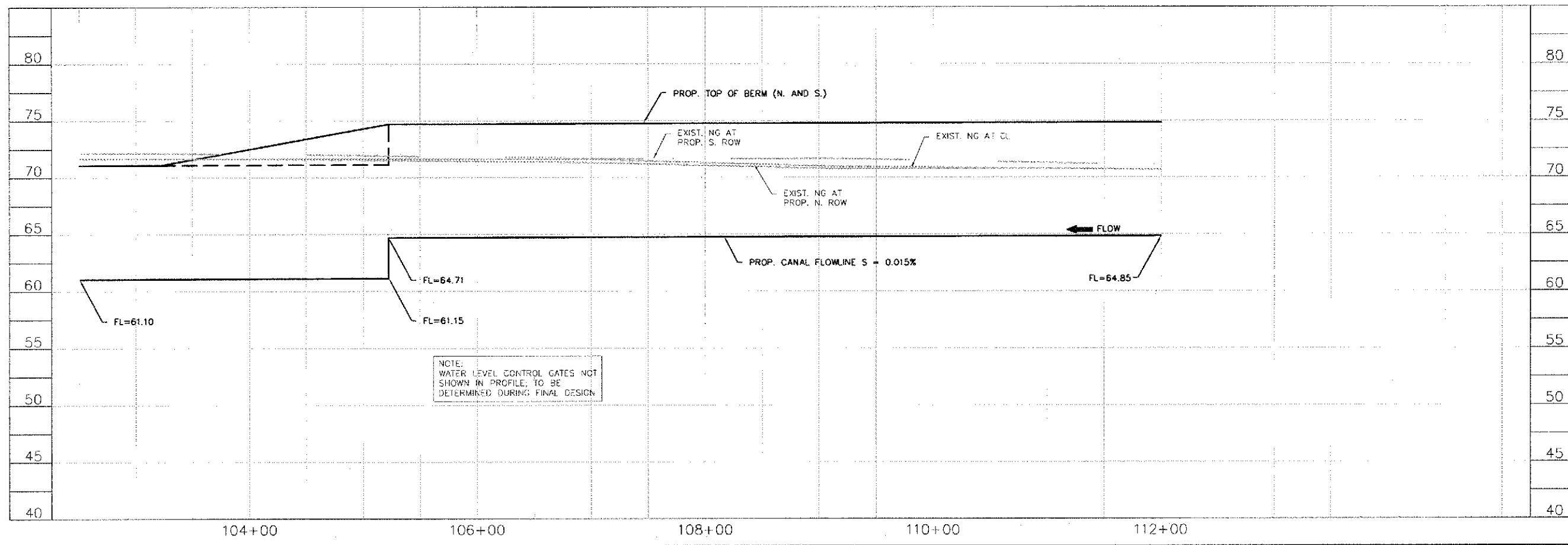
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



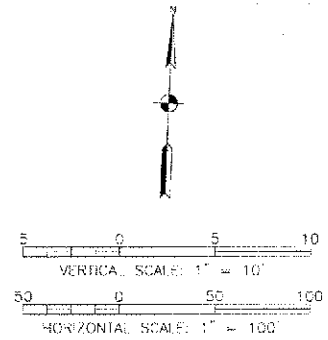
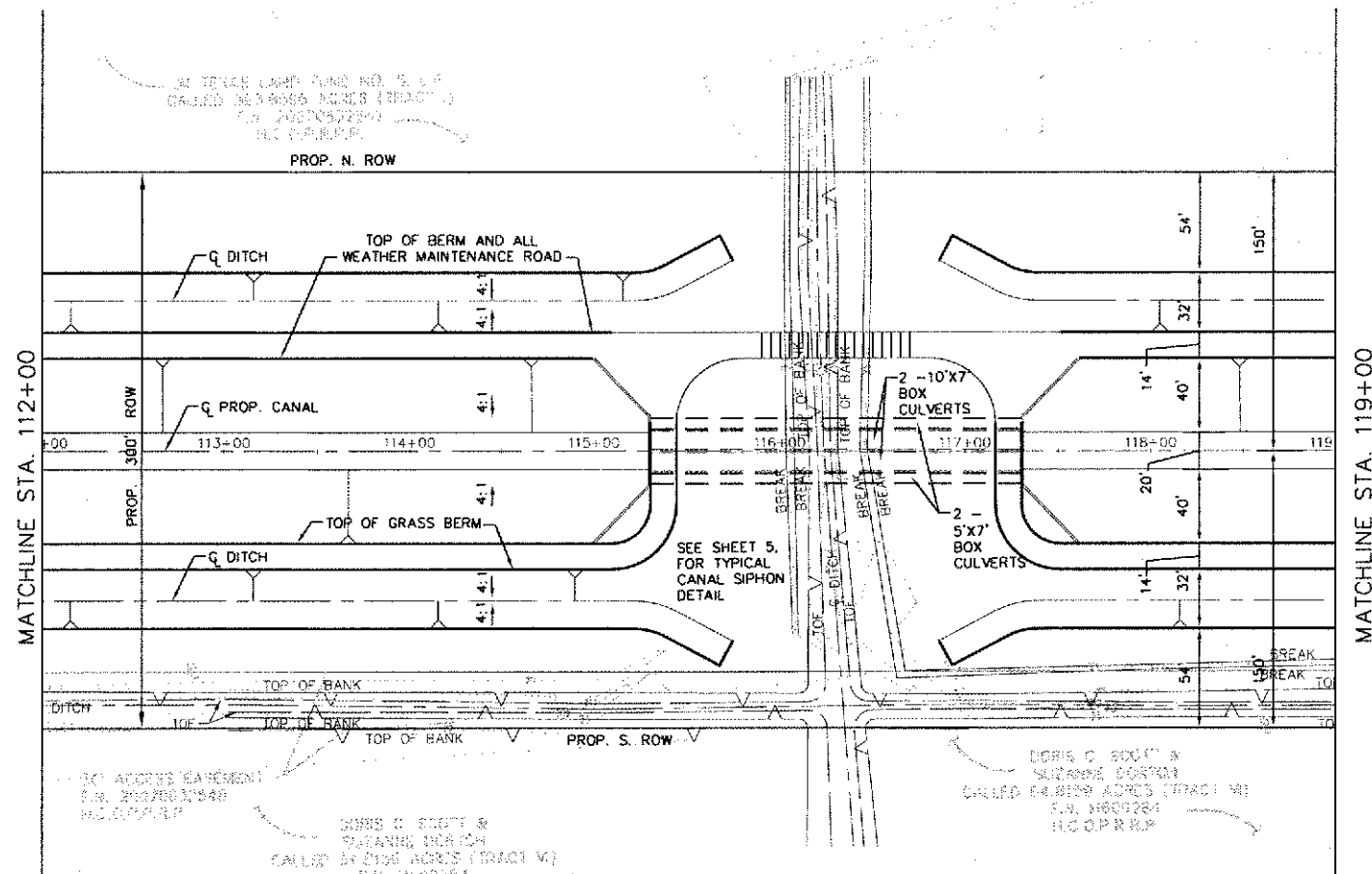
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 102+50
TO STA 112+00

DRAWING SCALE
AS SHOWN
SHEET NO. 41 of 245

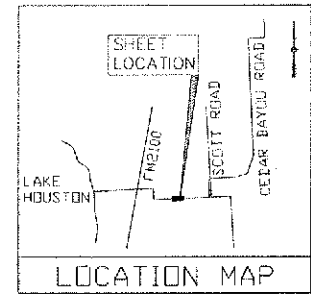


LAST MODIFIED: Jan 27, 2011 - 3:39pm BY USER: ThompsonB
DWC LOCATION: C:\Users\B\OneDrive\Engineering Notes & Calculations\4-3 Civil Notes and Calculations\Code\PMO\Sheets\DWG. NAME: CanalP&P.dwg



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

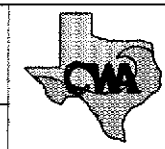
NOTE:
THERE ARE EXISTING PIPELINES
IN THIS AREA. THESE ARE NOT
SHOWN IN PROFILE VIEW DUE TO
LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
3701 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057-1378
WWW.AECOM.COM F-15500

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 Tel.
713.780.0838 fax

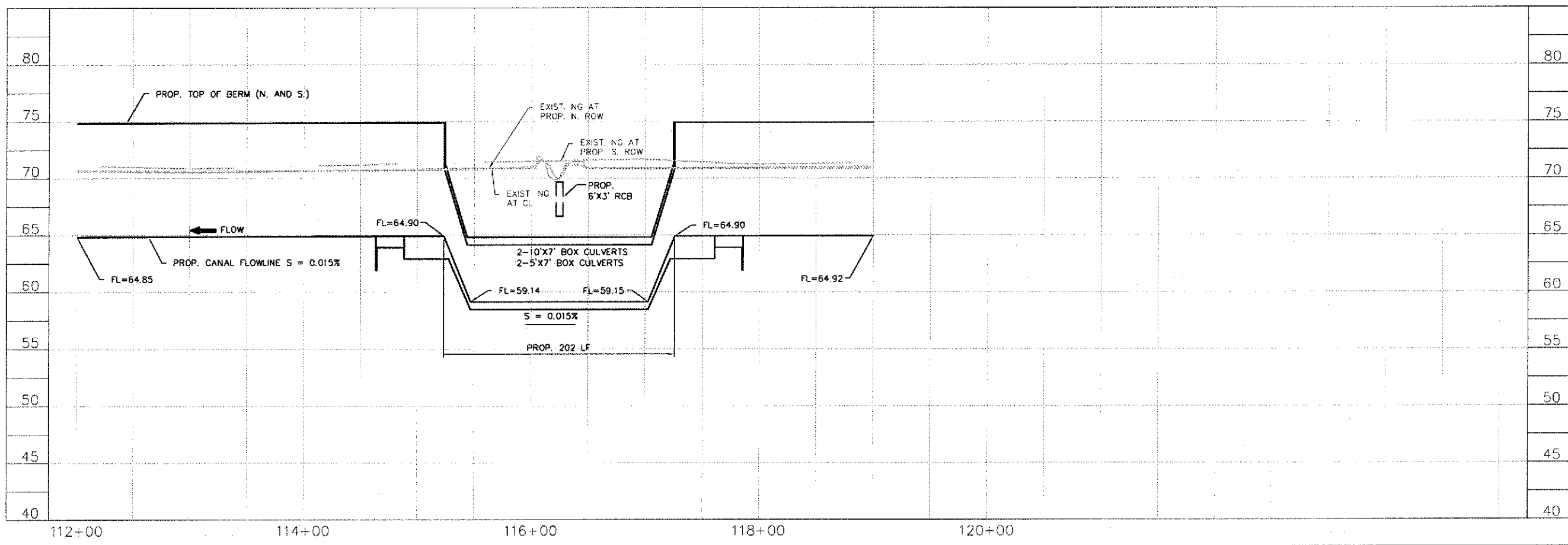


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

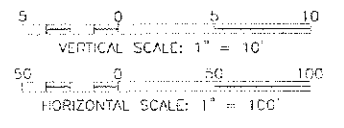
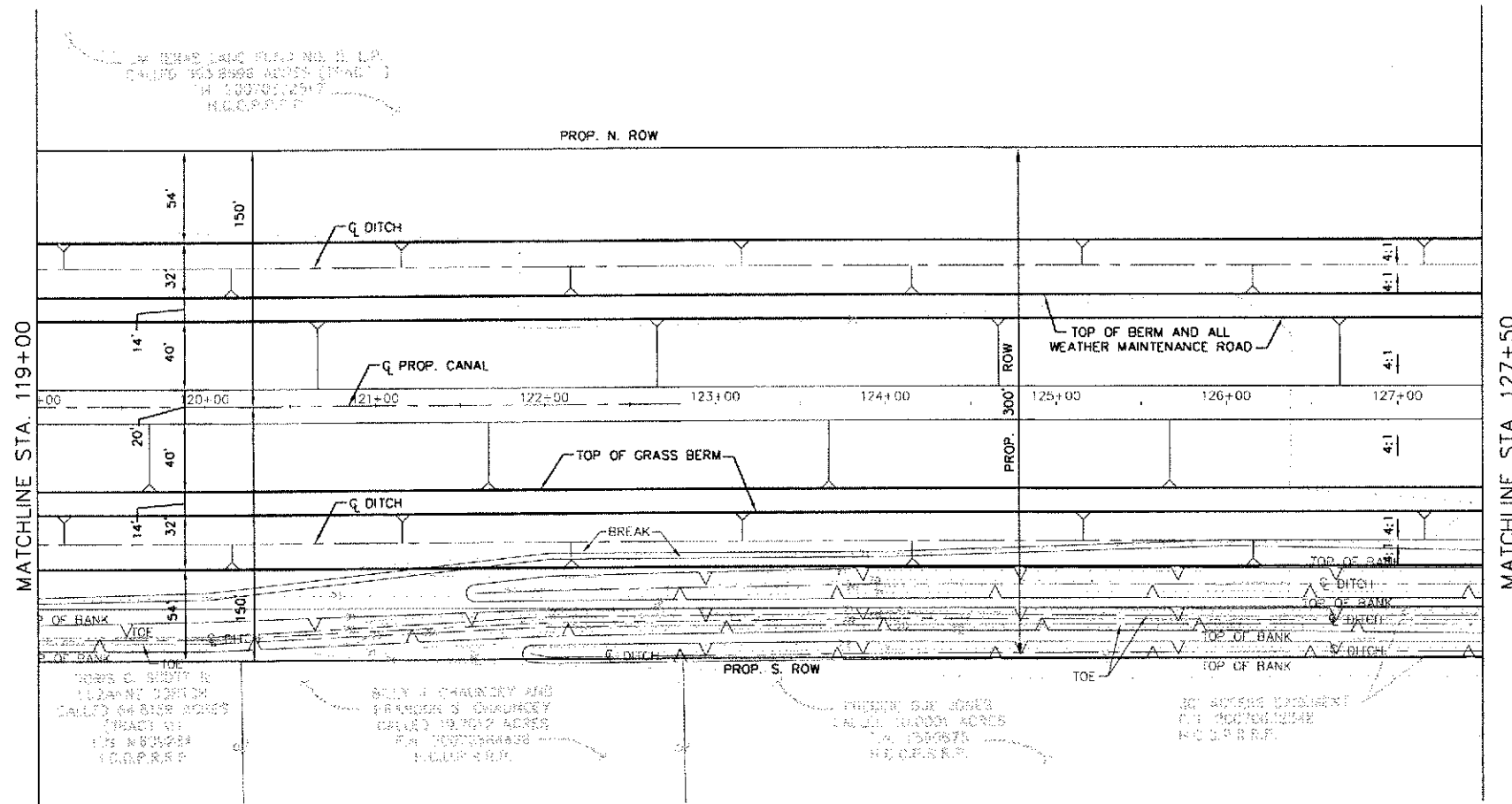
CANAL PLAN &
PROFILE STA 112+00
TO STA 119+00

DRAWING SCALE
AS SHOWN

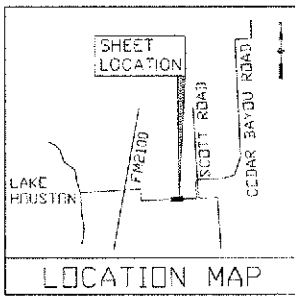
SHEET NO. 42 OF 245



LAST MODIFIED: Jan 27, 2011 - 3:39pm BY USER: ThompsonB
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DWG. NAME: Canal&P&B.dwg



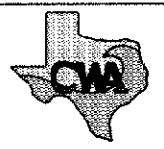
NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
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AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

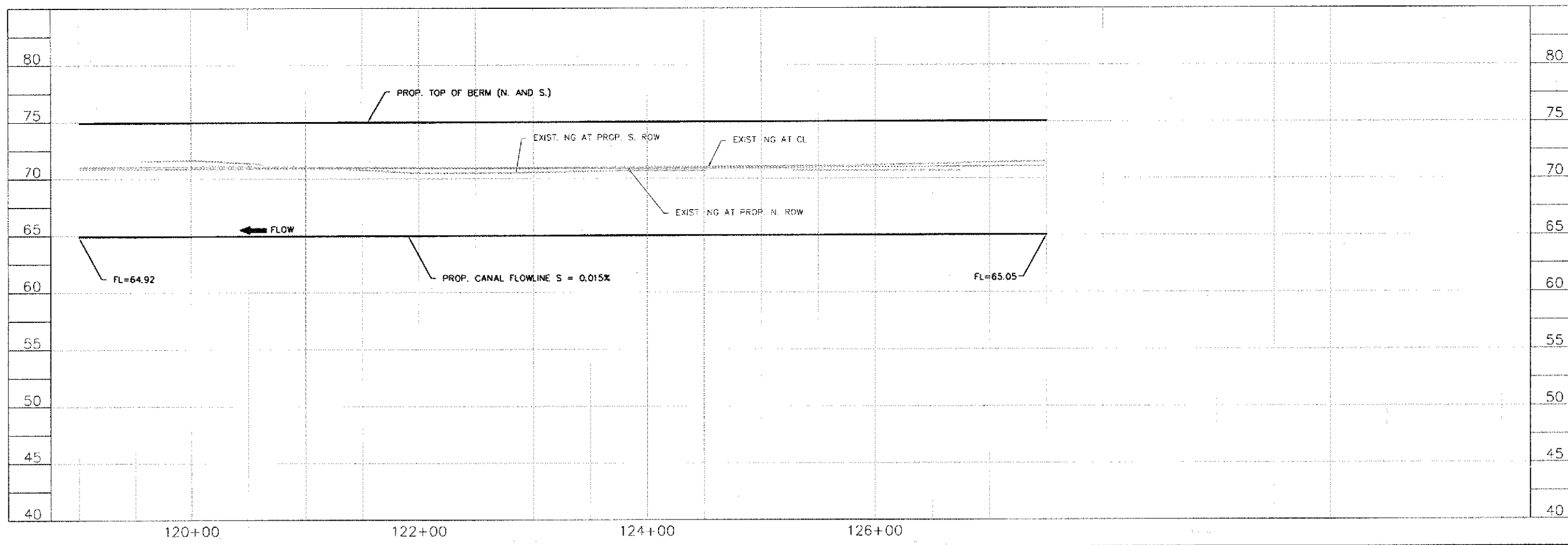


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 119+00
TO STA 127+50

DRAWING SCALE
AS SHOWN

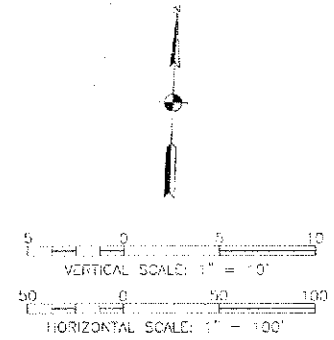
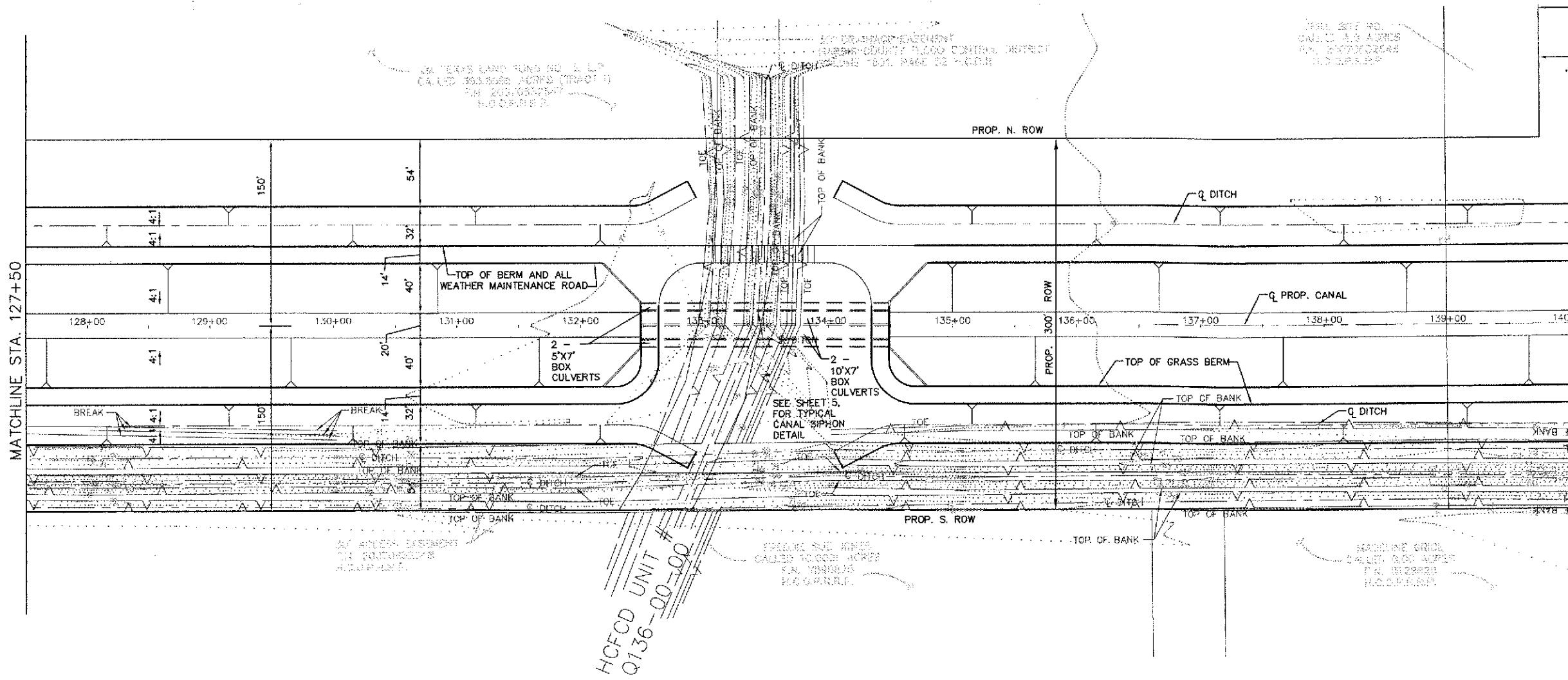
SHEET NO. 93 OF 248



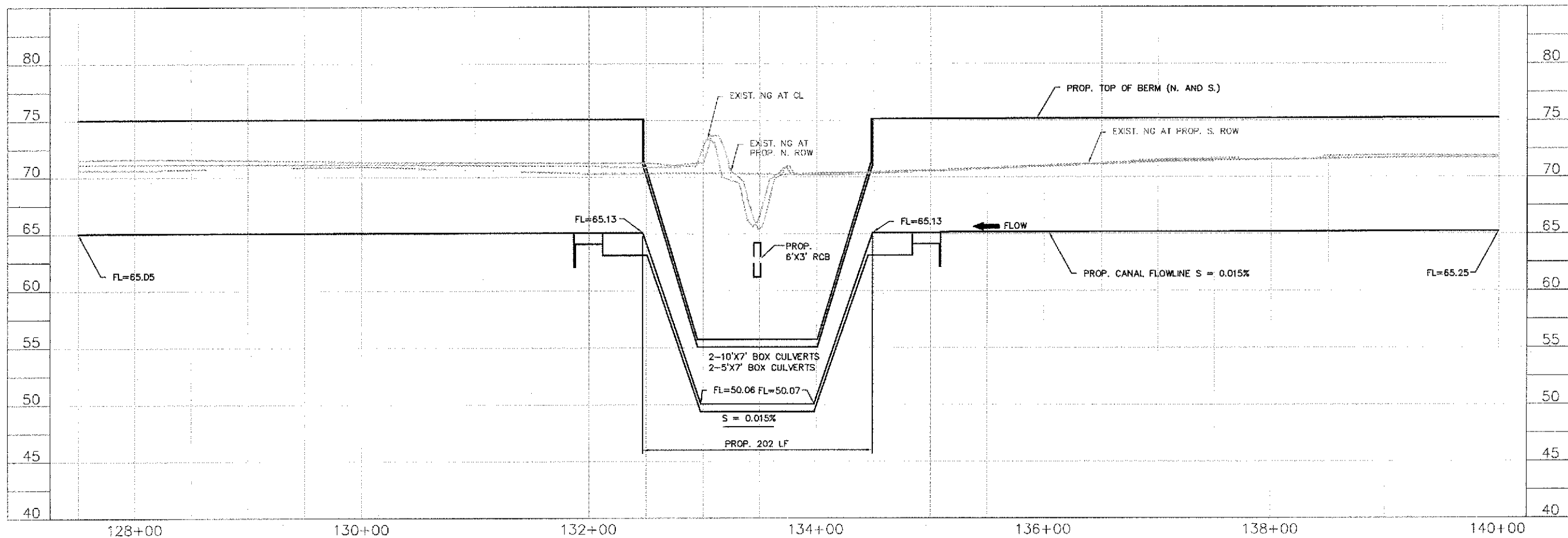
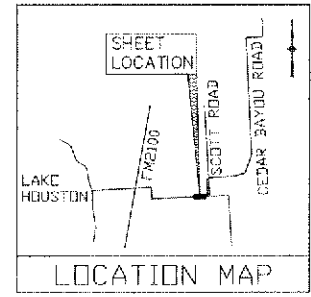
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MATCHLINE STA. 127+50

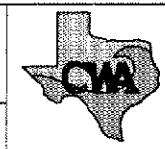
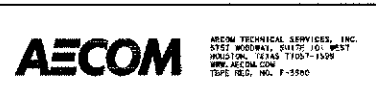
MATCHLINE STA. 140+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

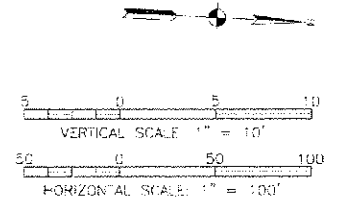
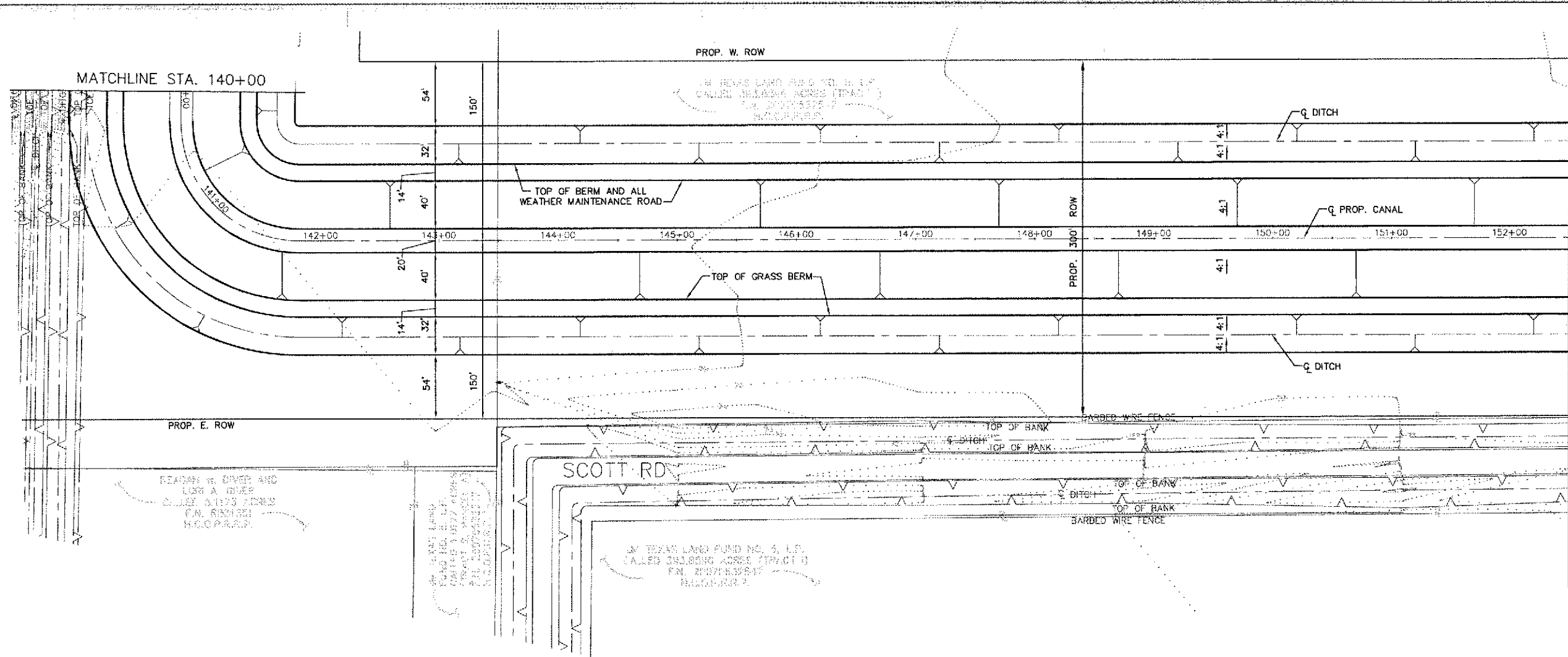
CANAL PLAN &
PROFILE STA 127+50
TO STA 140+00

DRAWING SCALE
AS SHOWN

SHEET NO. 44 OF 245

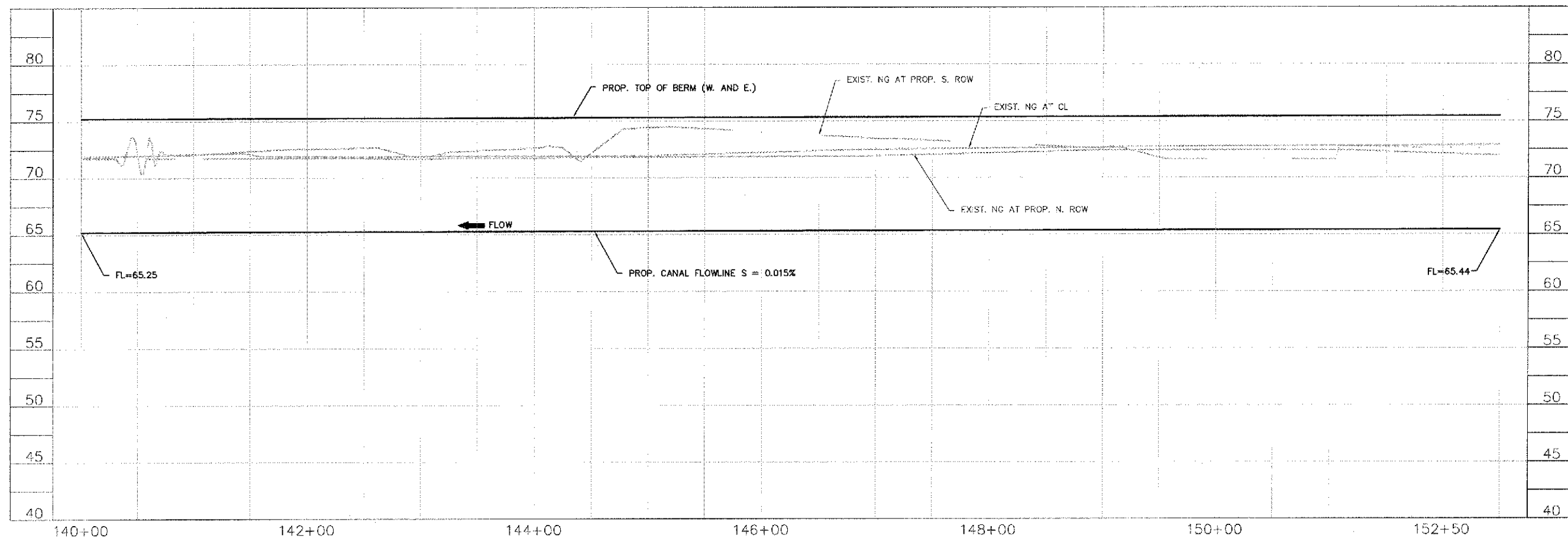
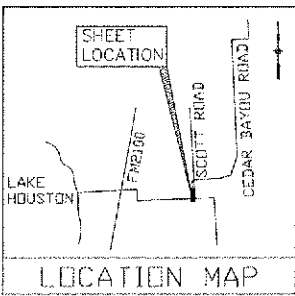
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DWG. NAME: Canal&P1.dwg

LAST MODIFIED: Jan 27, 2011 - 3:48pm BY USER: Thompasmh
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 DWG. NAME: Canal01.dwg



MATCHLINE STA. 152+50

NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN




KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057
 TEL: 713.780.4100 FAX: 713.780.0838
 TYPE: REG. NO. F-3500

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

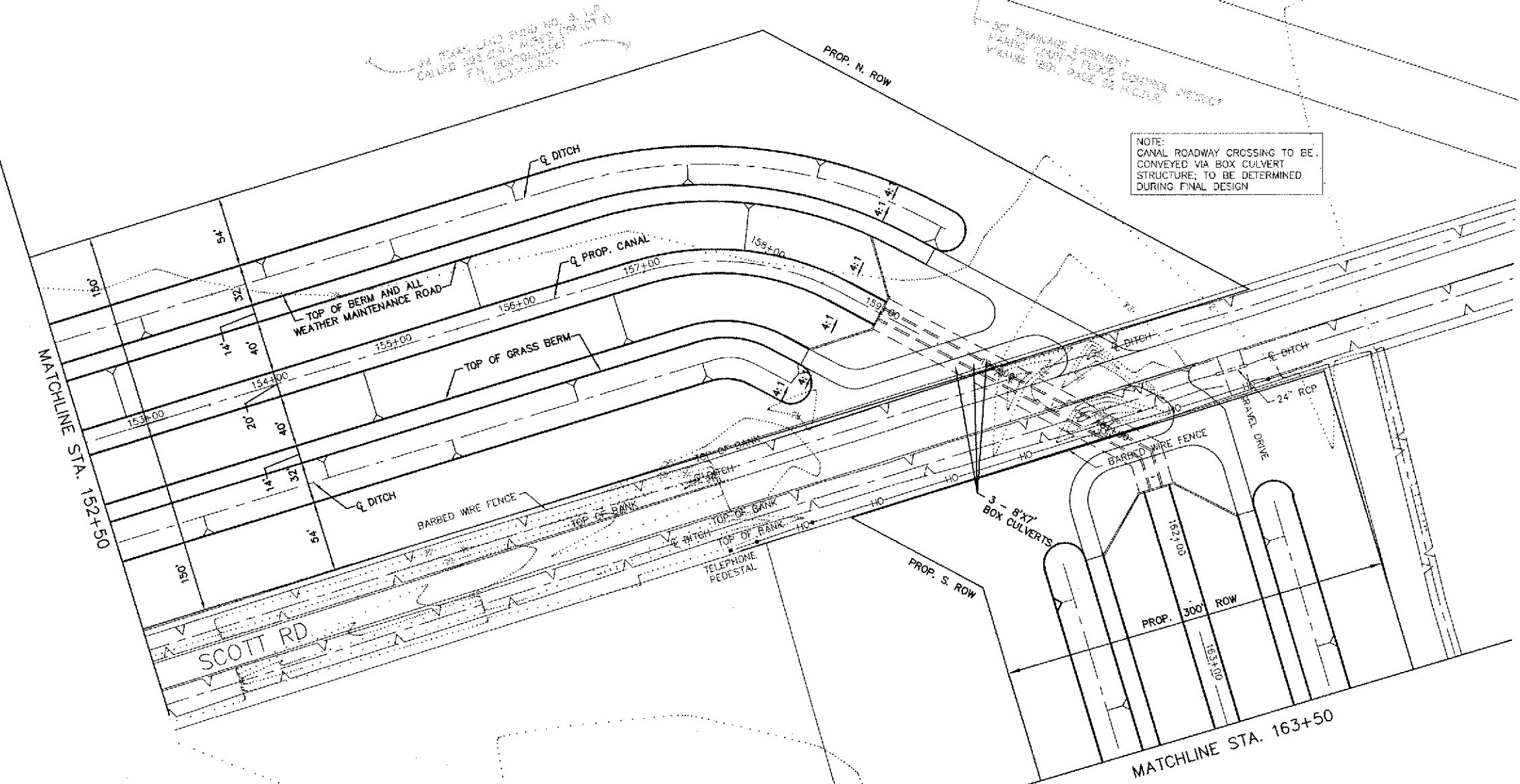
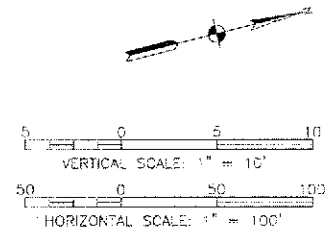
SURVEYED BY:
 FB NO.



COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

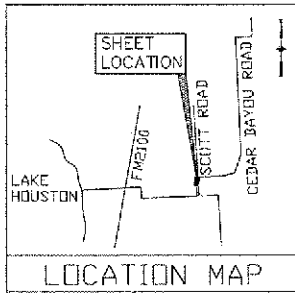
CANAL PLAN &
 PROFILE STA 140+00
 TO STA 152+50

DRAWING SCALE	AS SHOWN
SHEET NO. 45 OF 245	

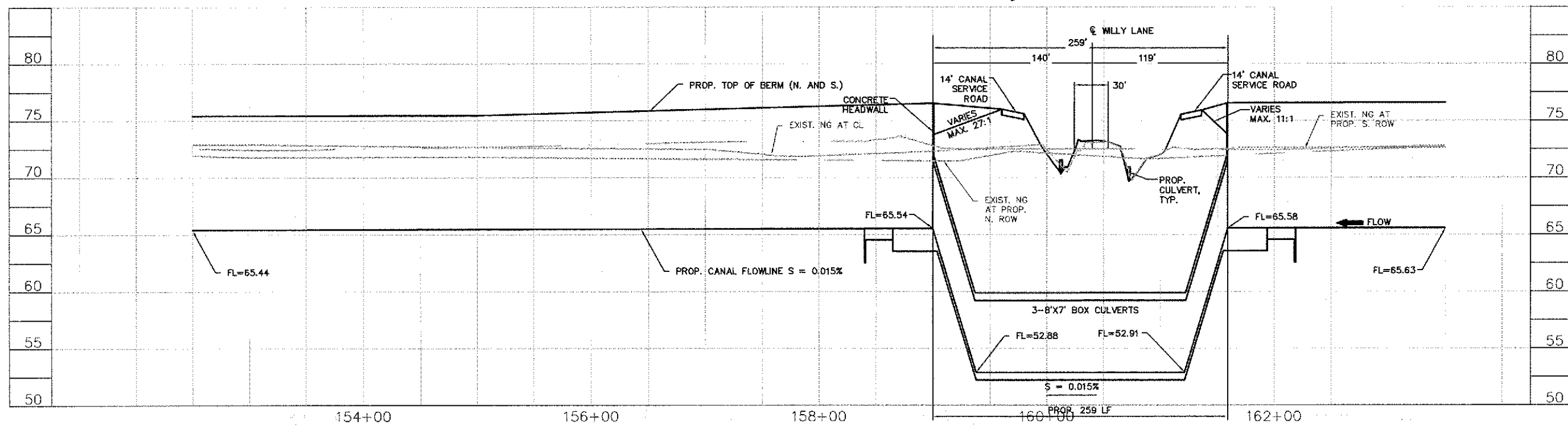


NOTE:
CANAL ROADWAY CROSSING TO BE
CONVEYED VIA BOX CULVERT
STRUCTURE; TO BE DETERMINED
DURING FINAL DESIGN

NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES



AECOM AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY HOUSTON, TEXAS 77057
713.780.4100 tel. 713.780.0838 fax.

CWA

SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 152+50
TO STA 163+50

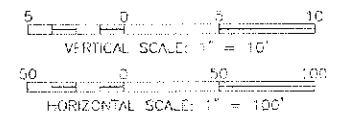
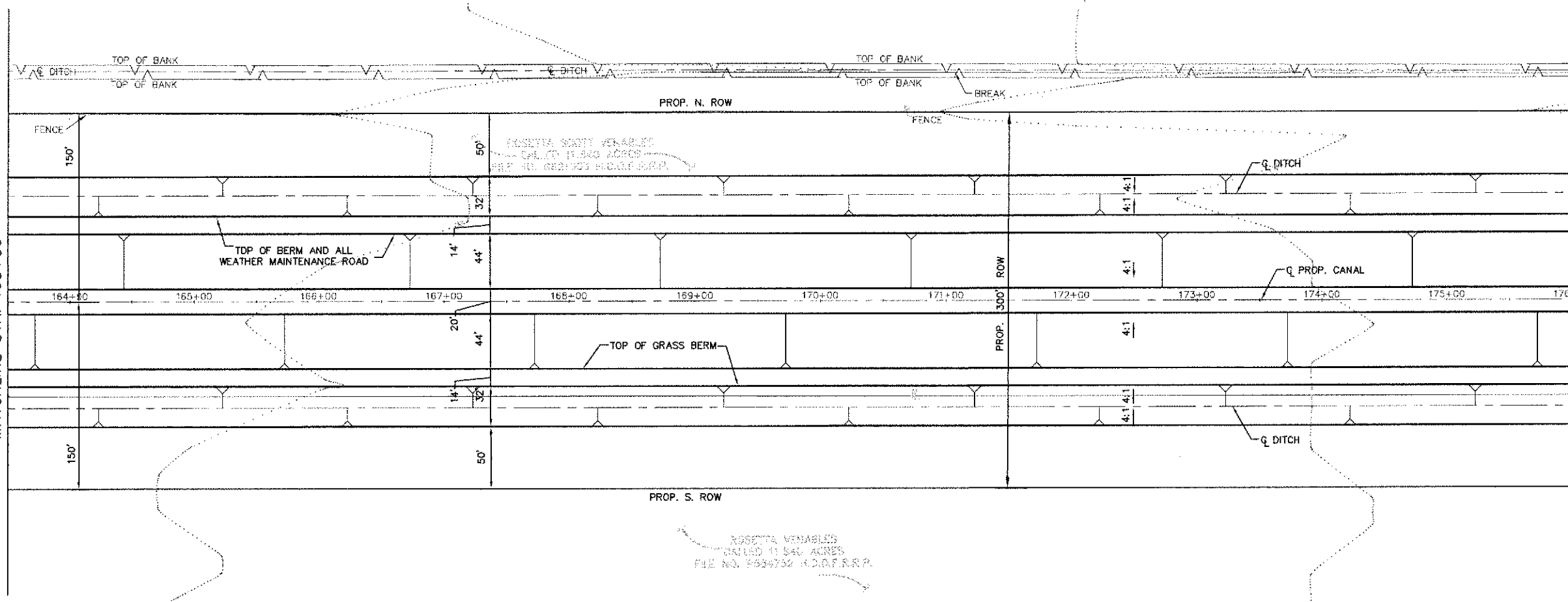
DRAWING SCALE
AS SHOWN

SHEET NO. 46 OF 249

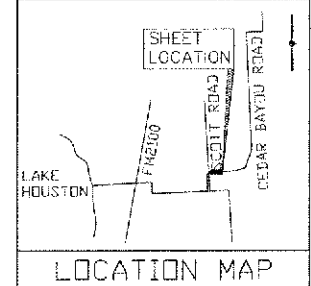
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DWG. NAME: Coad\PWD\3.4.0

MATCHLINE STA. 163+50

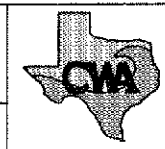
MATCHLINE STA. 176+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

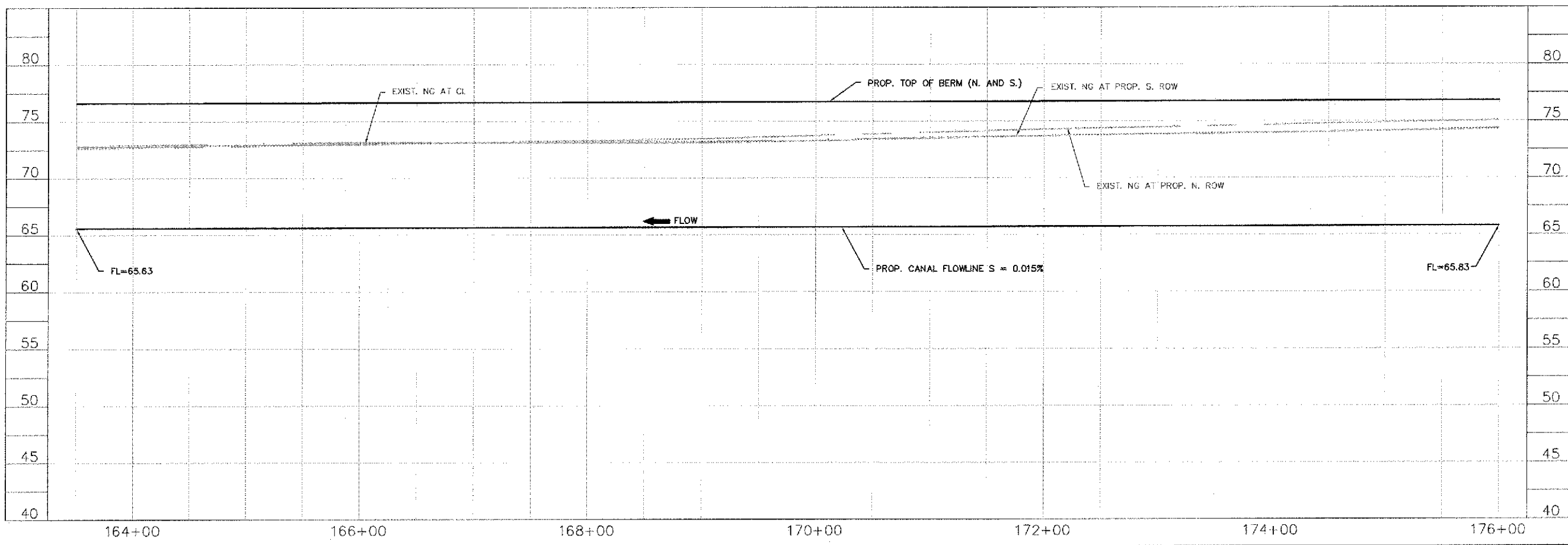


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 163+50
TO STA 176+00

DRAWING SCALE
AS SHOWN

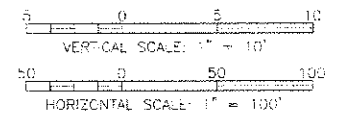
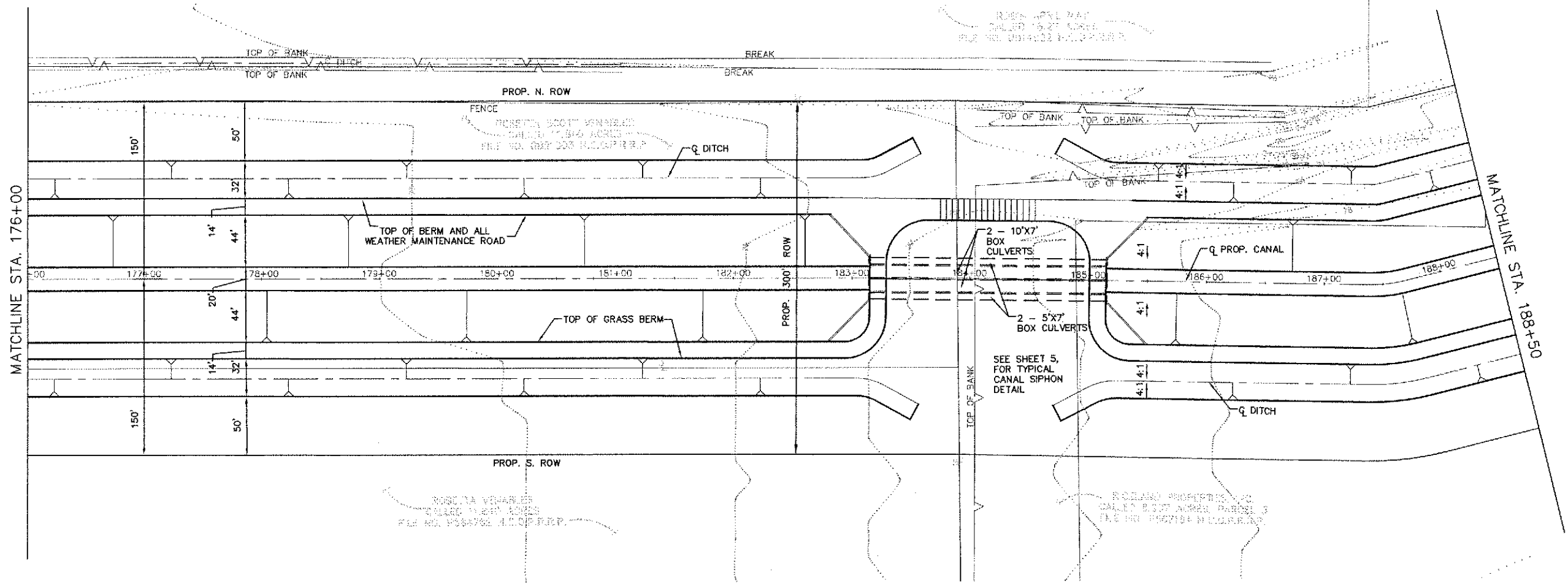
SHEET NO. 47 OF 247



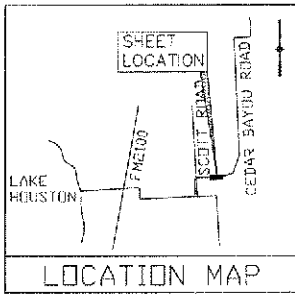
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 DWG. NAME: Canal&P14.dwg

MATCHLINE STA. 176+00

MATCHLINE STA. 188+50



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



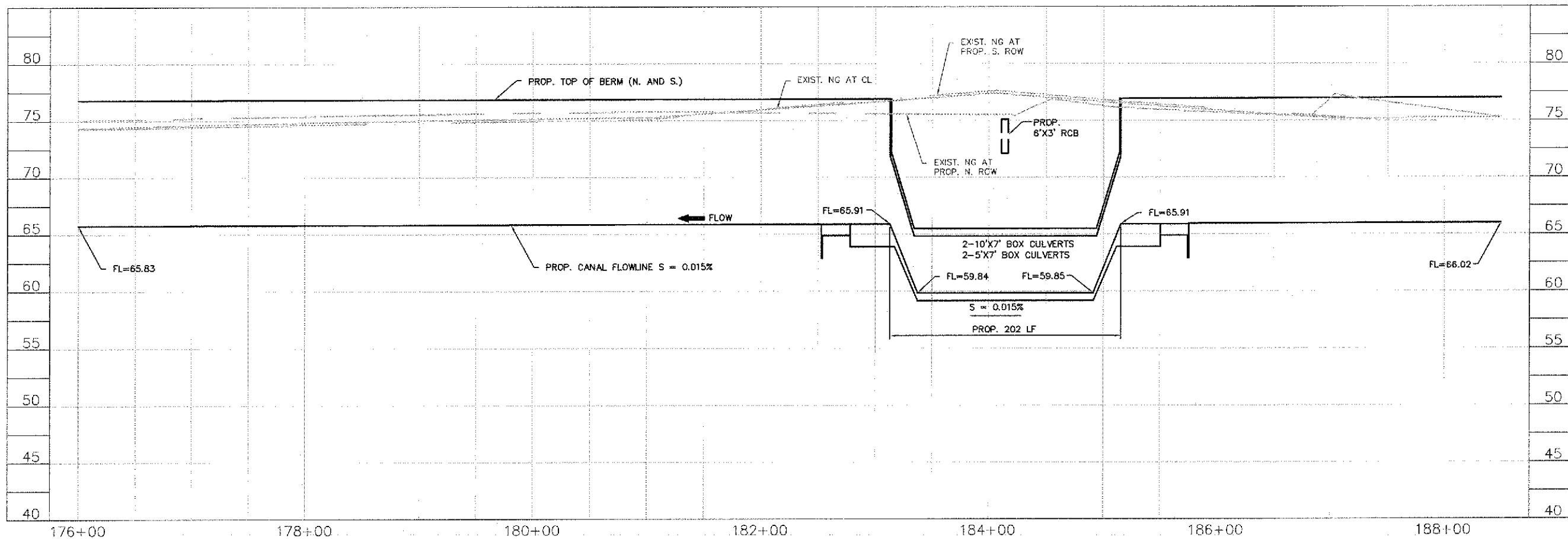
KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

CWA

SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT



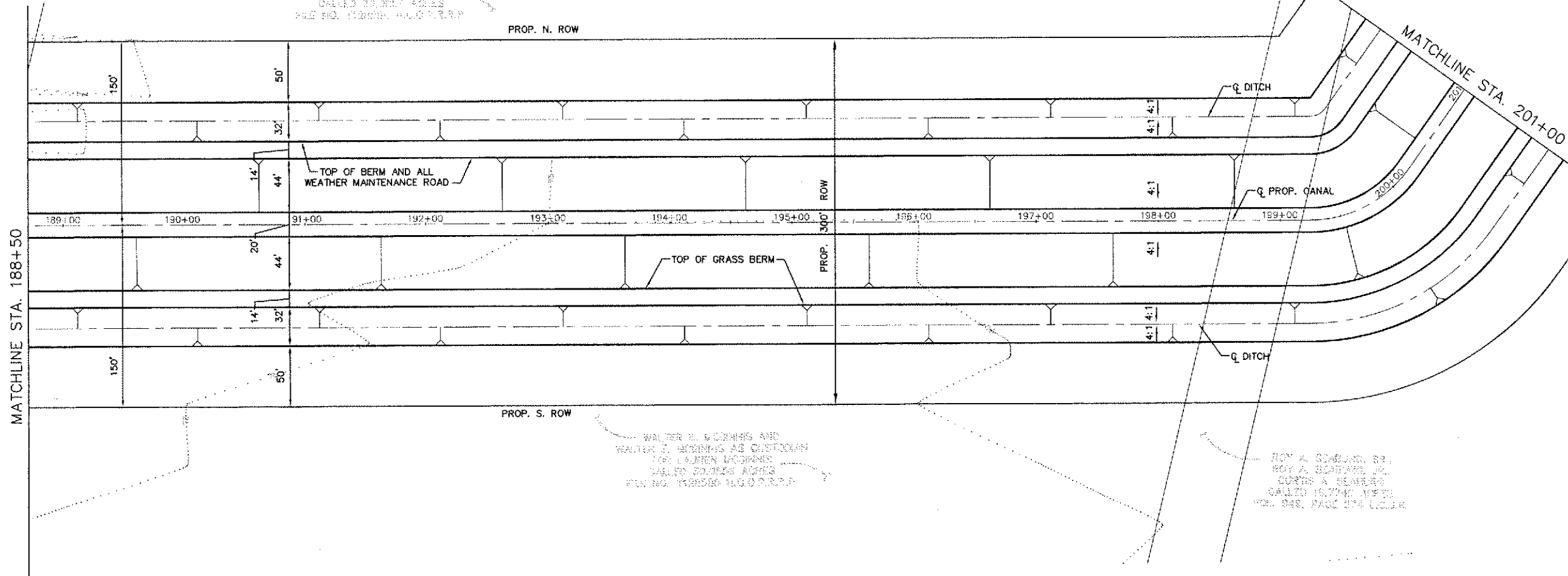
CANAL PLAN &
PROFILE STA 176+00
TO STA 188+50

DRAWING SCALE
AS SHOWN

SHEET NO. **48** of **245**

LAST MODIFIED: Jan 27, 2011 - 3:51pm BY USER: Thompson, B
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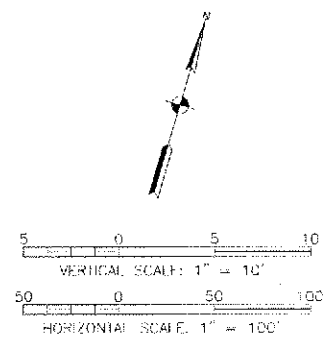
MATCHLINE STA. 188+50



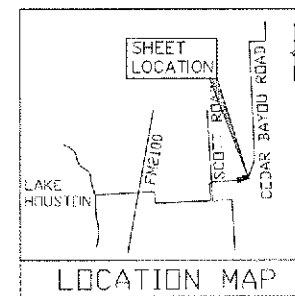
WALTER E. ROBINSON AND
WALTER E. ROBINSON AS QUOTED
FOR LAUREN WOODMAN
CALLED 15,7746 157751
FILE NO. 157751, 157752

WALTER E. ROBINSON AND
WALTER E. ROBINSON AS QUOTED
FOR LAUREN WOODMAN
CALLED 15,7746 157751
FILE NO. 157751, 157752

ROY A. SCHWAB, SR.
ROY A. SCHWAB, JR.
DORIS A. SCHWAB
CALLED 15,7746 157751
FILE NO. 157746, 157751



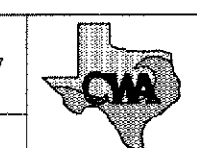
NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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AECOM
AECOM TECHNICAL SERVICES, INC.
5101 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057-1887
WWW.AECOM.COM
TELEPHONE NO. 713-850-0000

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

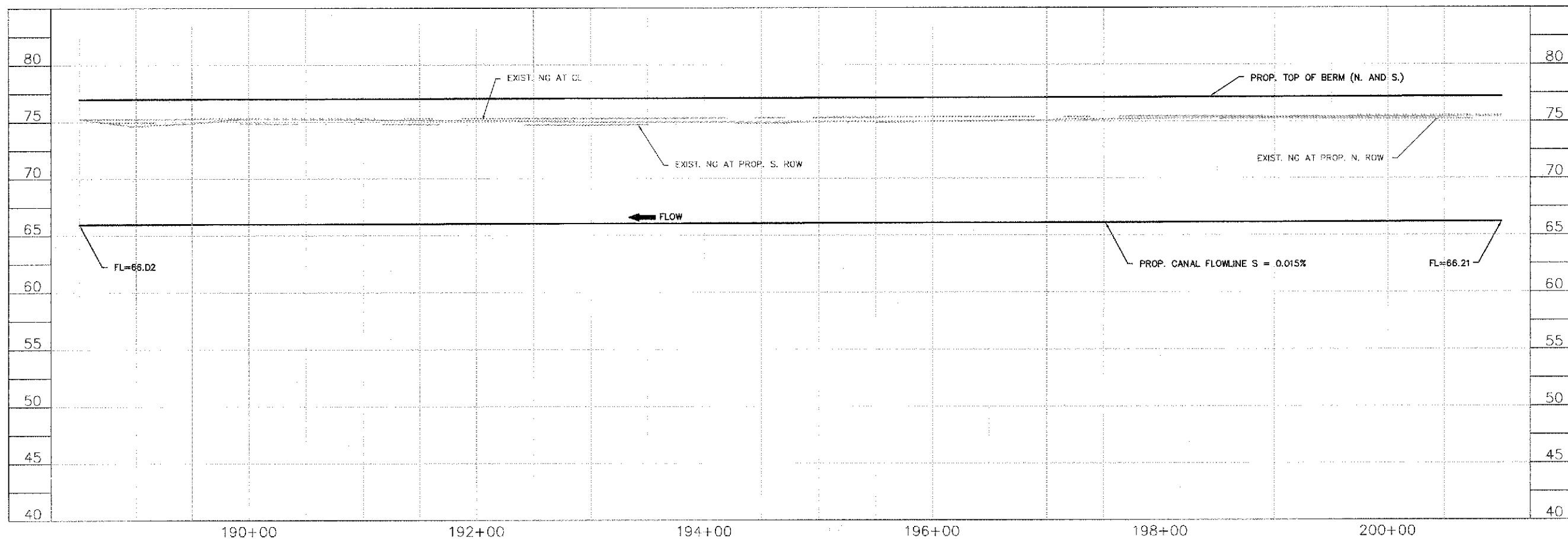


SURVEYED BY:
FB NO.

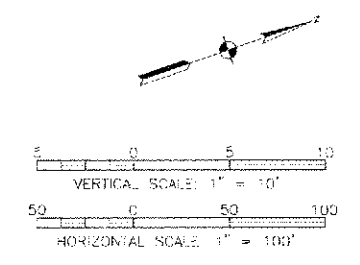
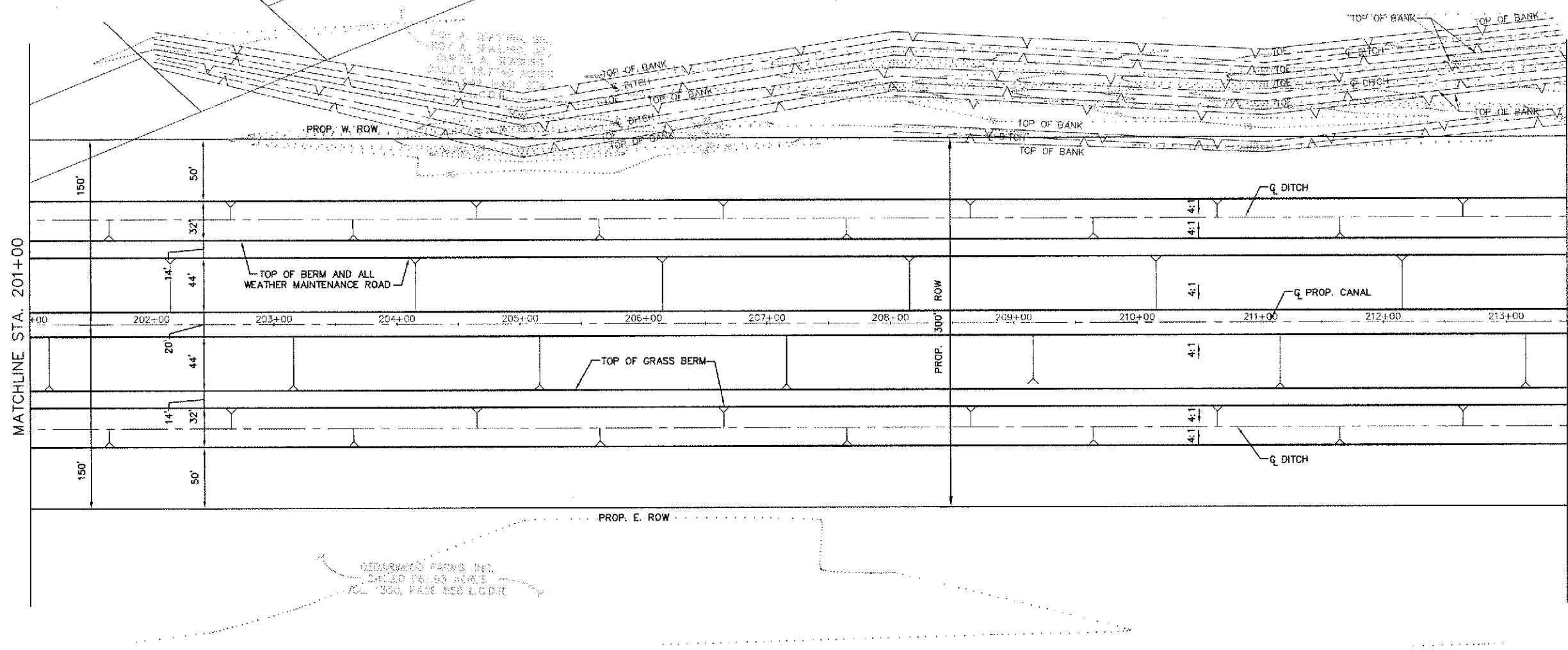
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 188+50
TO STA 201+00

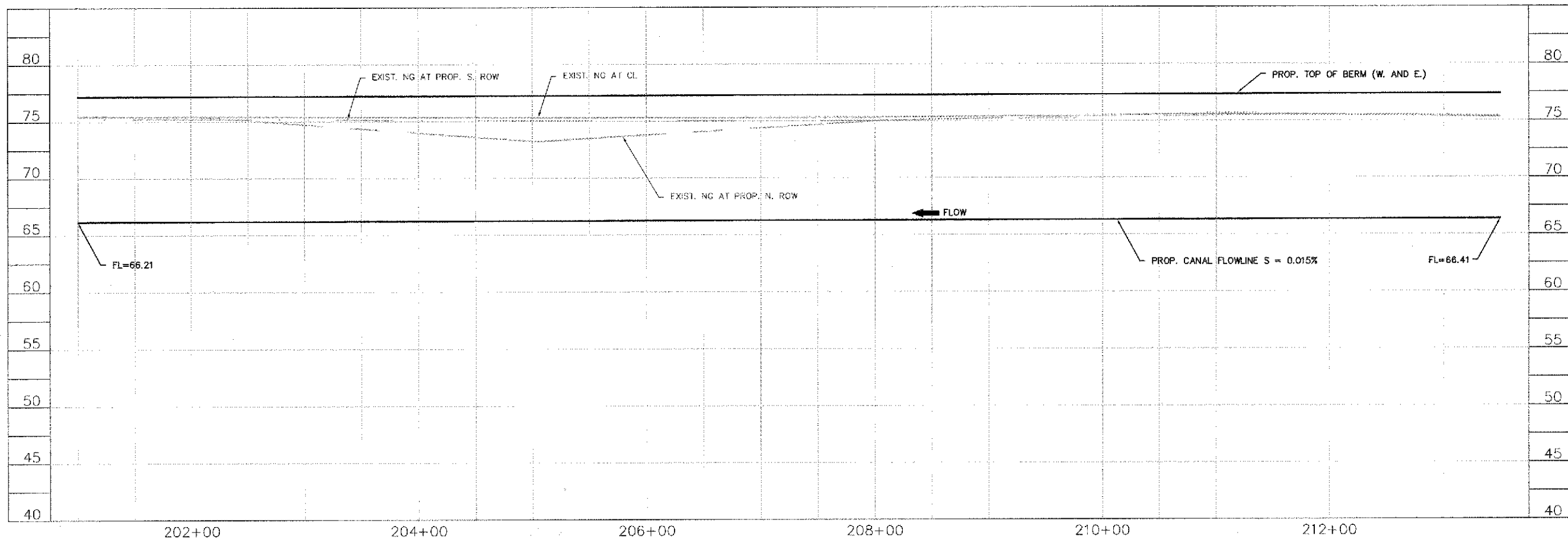
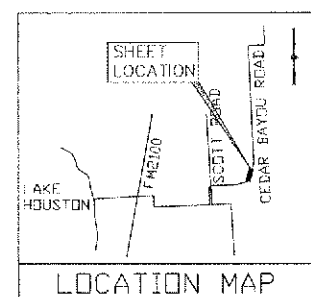
DRAWING SCALE	AS SHOWN
SHEET No. 49 of 245	



LAST MODIFIED: Jan 27, 2011 - 3:51pm BY USER: ThompasoBI
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DWG. NAME: CanalP&P16.dwg



NOTE:
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DURING FINAL DESIGN



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5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel
713.780.0838 fax

SURVEYED BY:
FB NO.



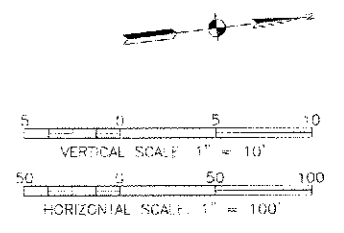
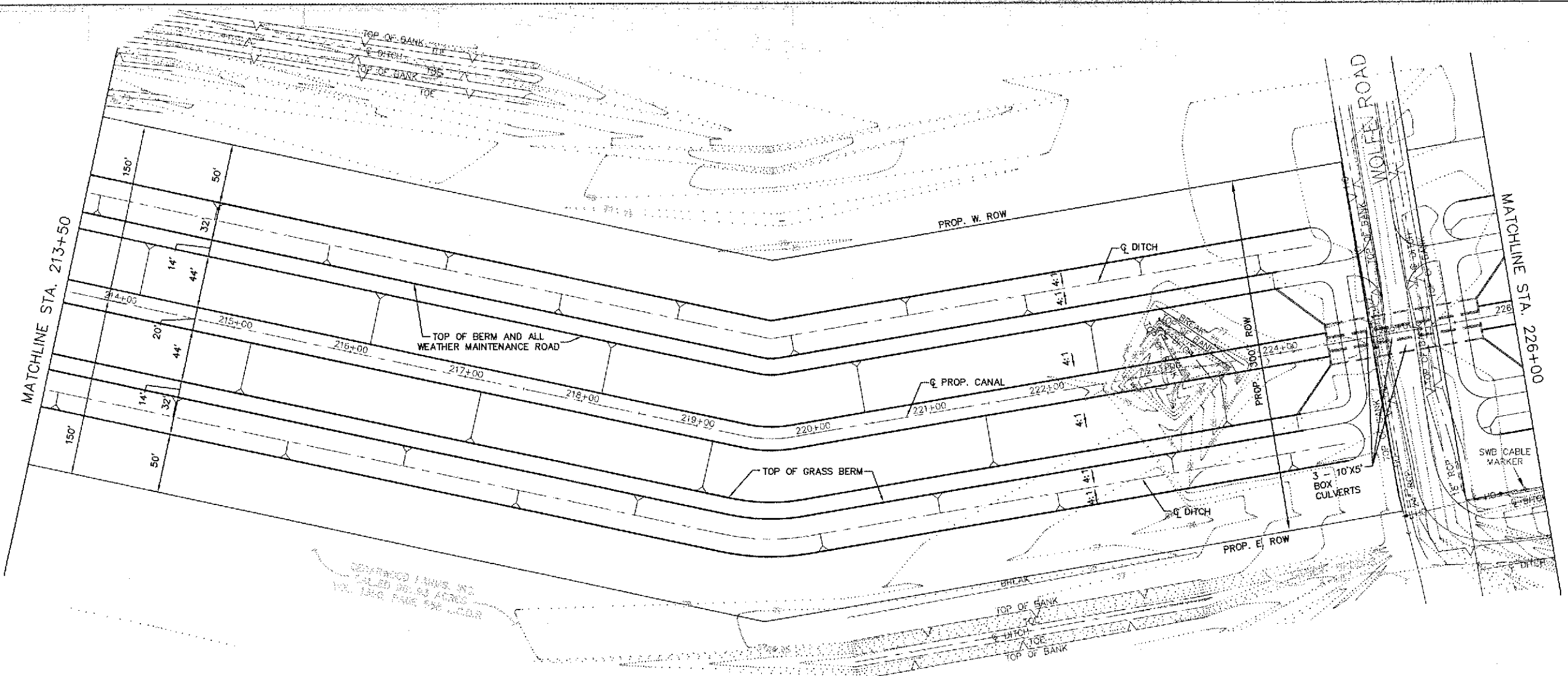
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 201+00
TO STA 213+50

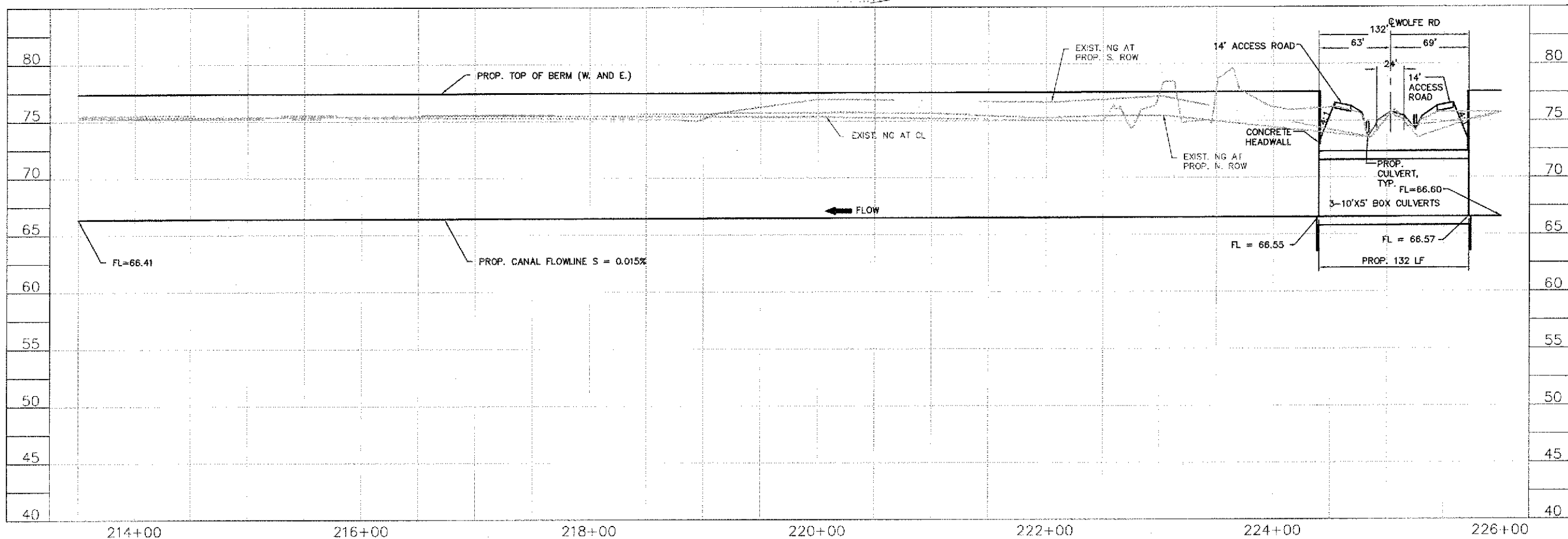
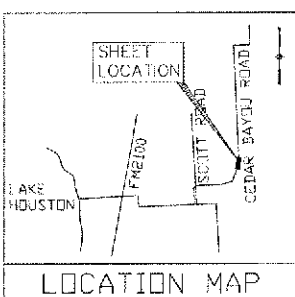
DRAWING SCALE
AS SHOWN

SHEET NO. 50 OF 245

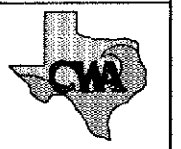
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DWG. NAME: Canal\817.dwg



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

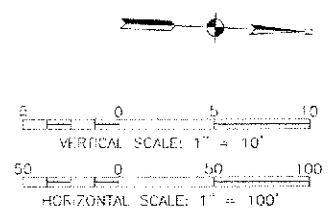
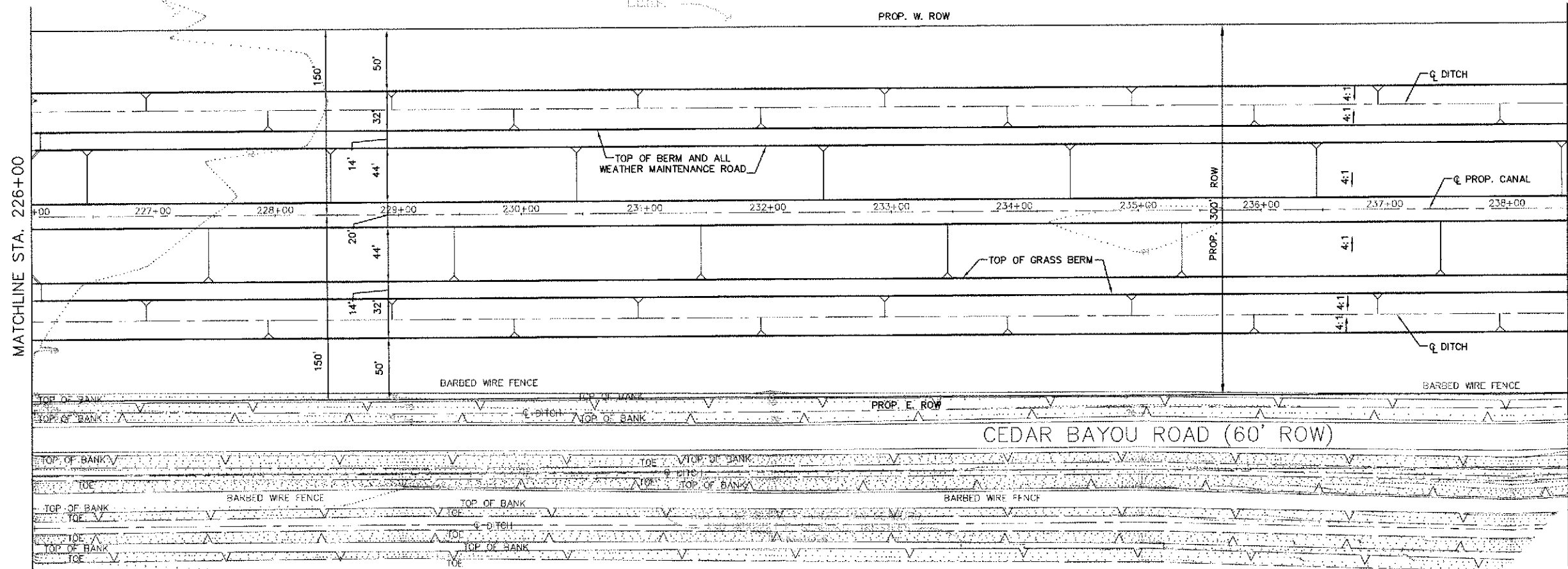
CANAL PLAN &
PROFILE STA 213+50
TO STA 226+00

DRAWING SCALE
AS SHOWN

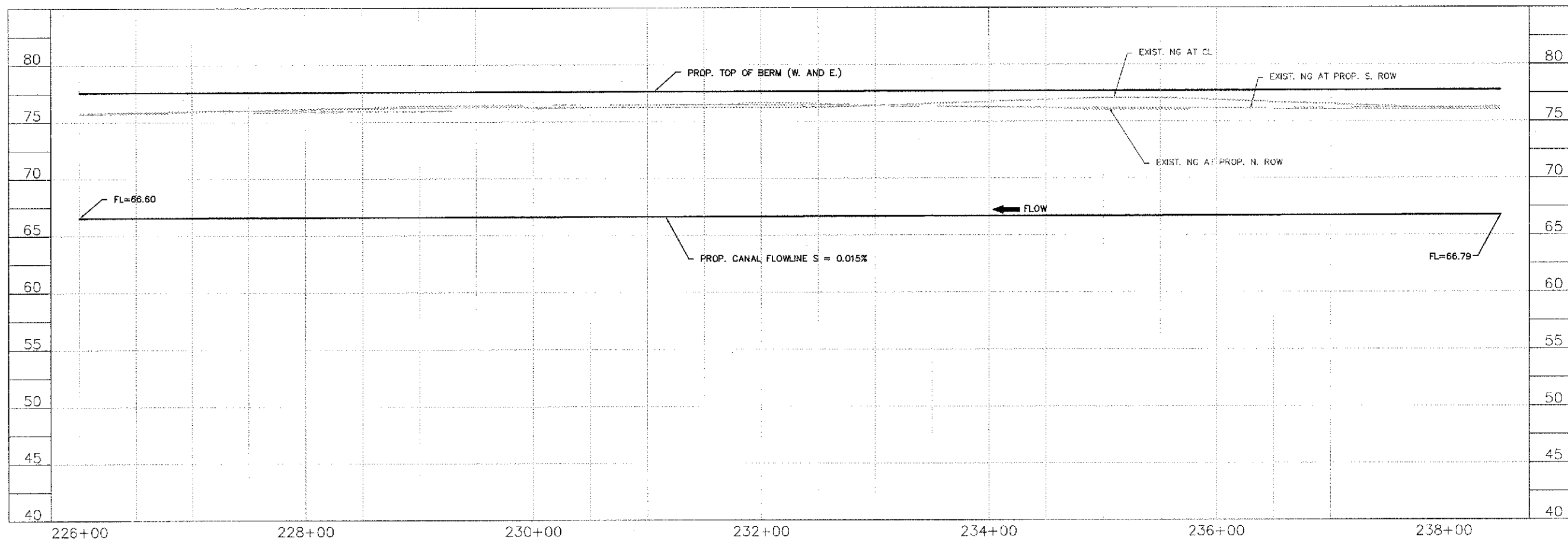
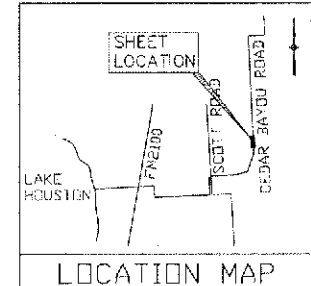
SHEET NO. **51** OF **245**

LAST MODIFIED: Jan 27, 2011 - 3:52pm BY USER: ThompsonB
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 DWG. NAME: CanalPlan18.dwg

PROPOSED 6' DITCH & BERM
 100' WIDE, 10' DEEP
 100' WIDE, 10' DEEP
 100' WIDE, 10' DEEP



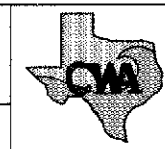
NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 226+00
 TO STA 238+50

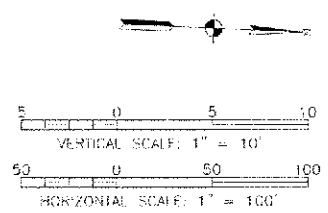
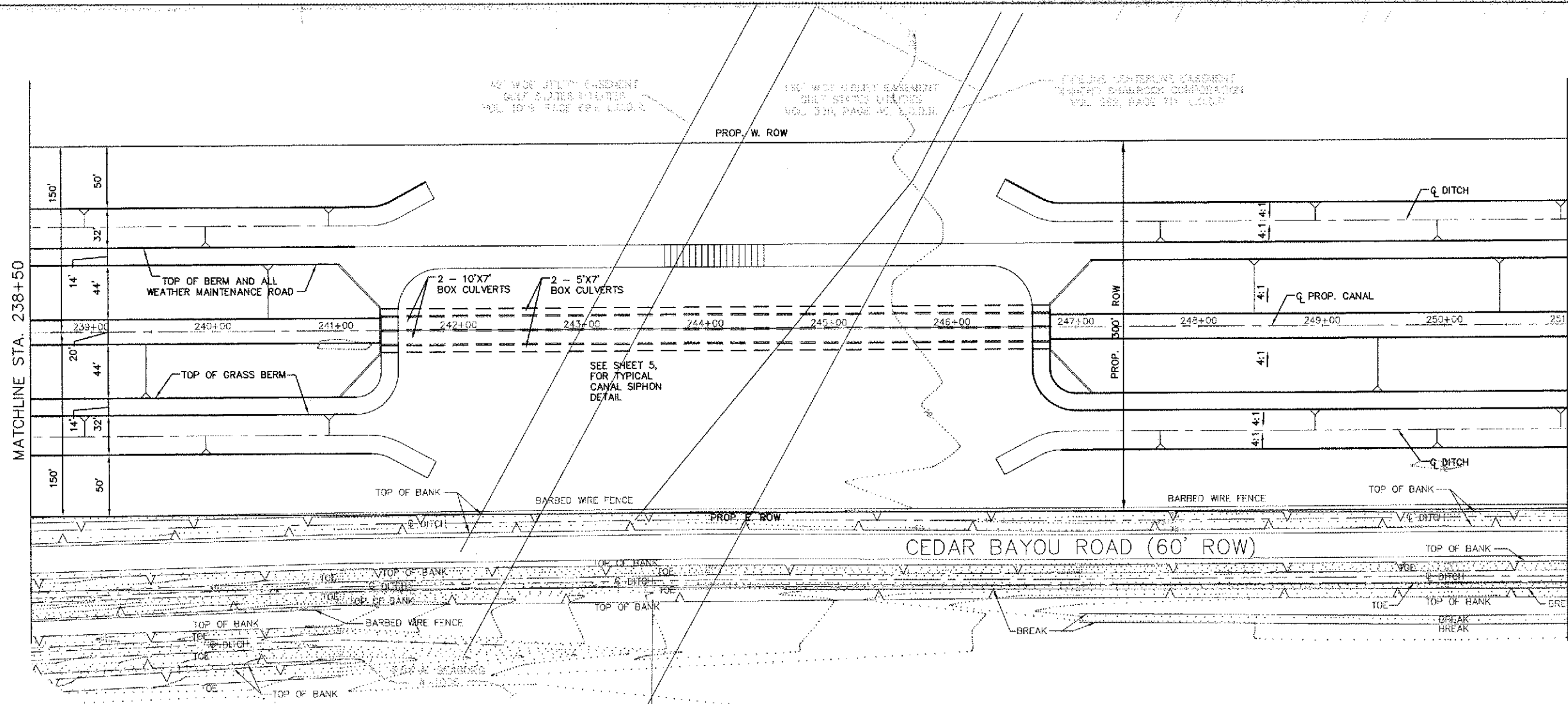
DRAWING SCALE
 AS SHOWN

SHEET No. 52 of 245

LAST MODIFIED: Jan 27, 2011 3:53pm BY USER: ThomasaB
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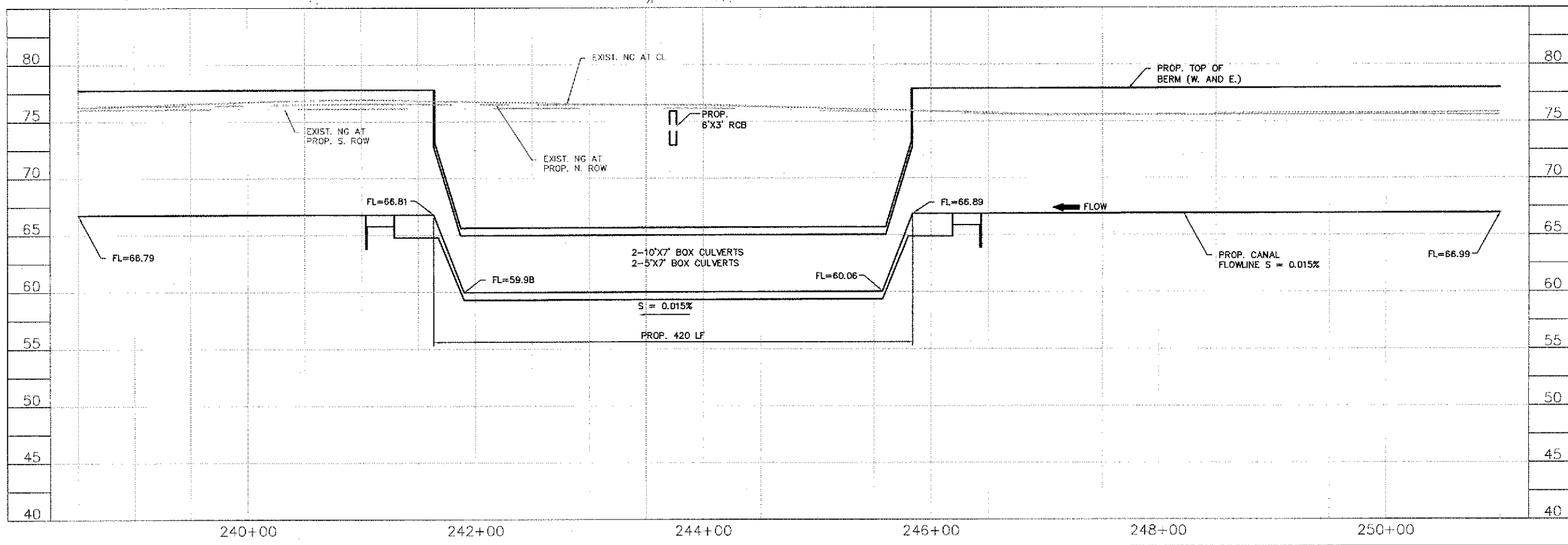
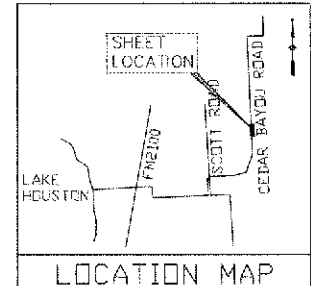
MATCHLINE STA. 238+50

MATCHLINE STA. 251+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

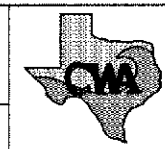
NOTE:
THERE ARE EXISTING PIPELINES
IN THIS AREA. THESE ARE NOT
SHOWN IN PROFILE VIEW DUE TO
LACK OF INFORMATION.



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TEXAS REGISTRATION NO. 91031
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713.780.0838 fax.



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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

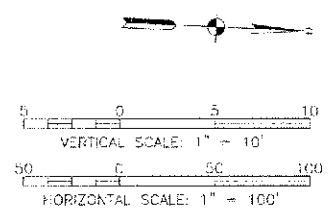
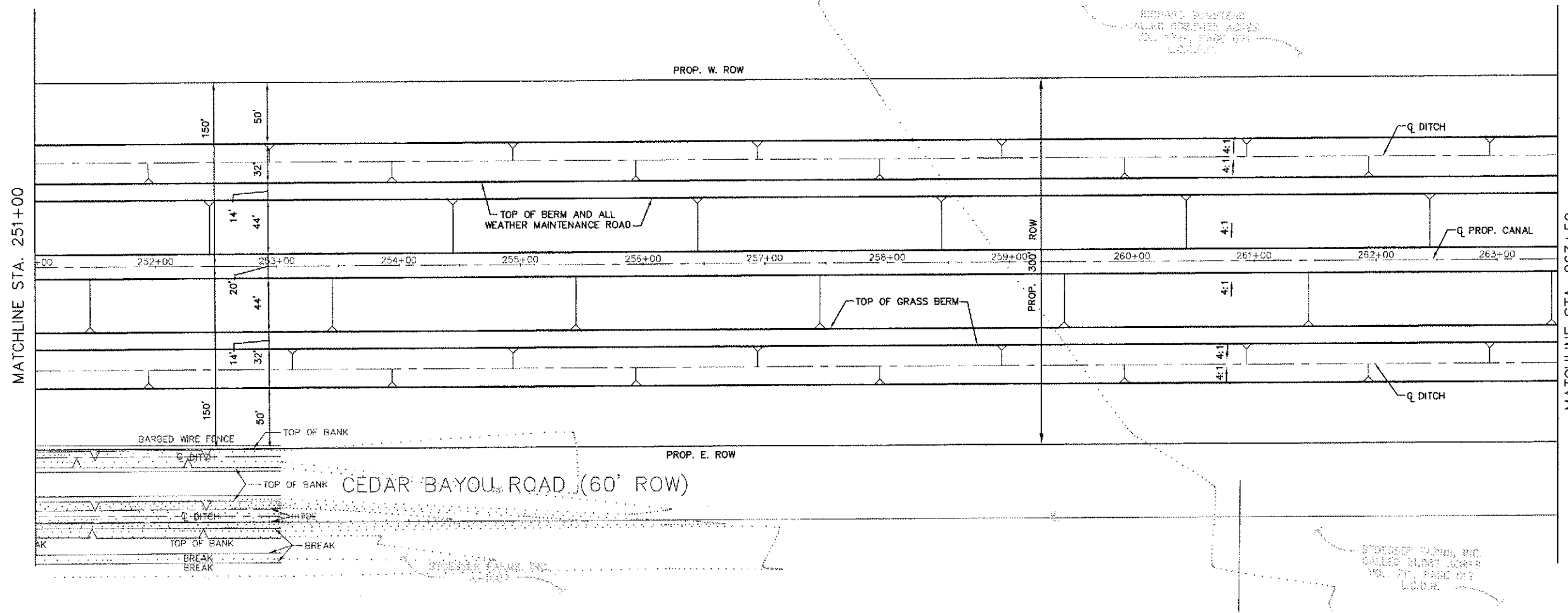
CANAL PLAN &
PROFILE STA 238+50
TO STA 251+00

DRAWING SCALE
AS SHOWN

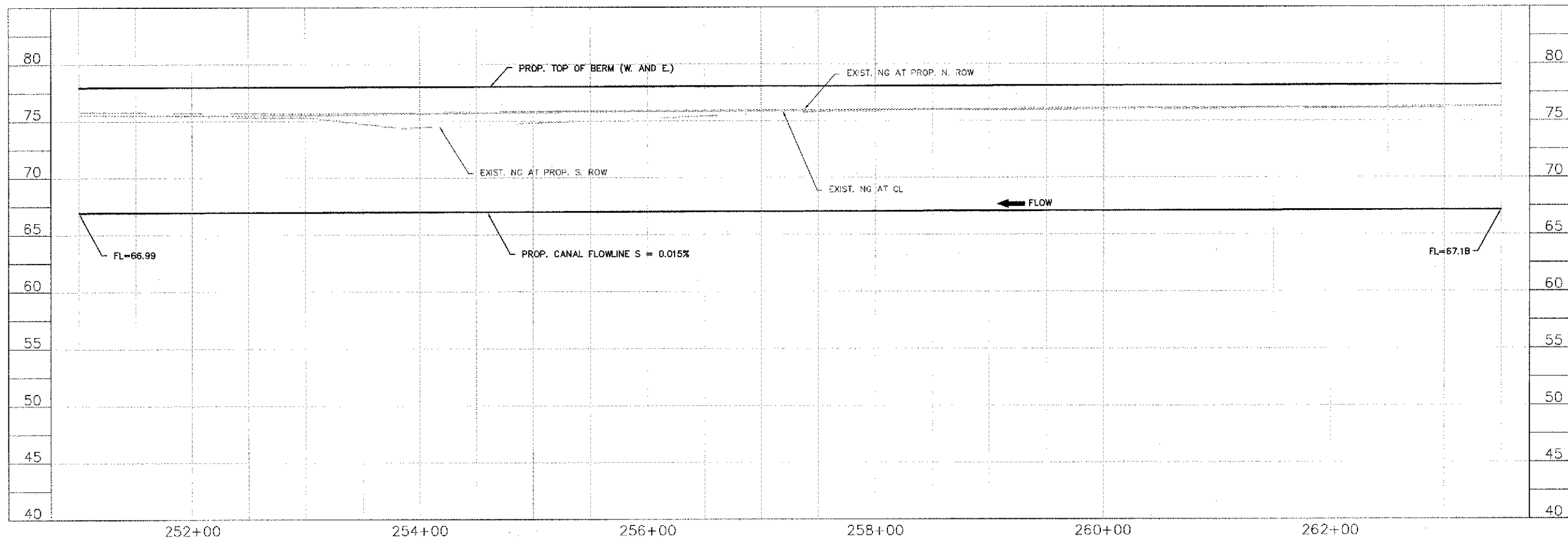
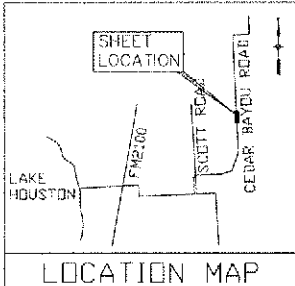
SHEET NO. 53 OF 245

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 DWG. NAME: Canal2220.dwg Civil Notes and Calculations\Cad\PMO\Sheets

LAST MODIFIED: Jan 27, 2011 3:56pm BY USER: ThereseB
 DWG. LOCATION: D:\WORK\ORDER 6110 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cadd\PM\Streets\DWG. NAME: Coastal.P21.dwg



NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



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 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



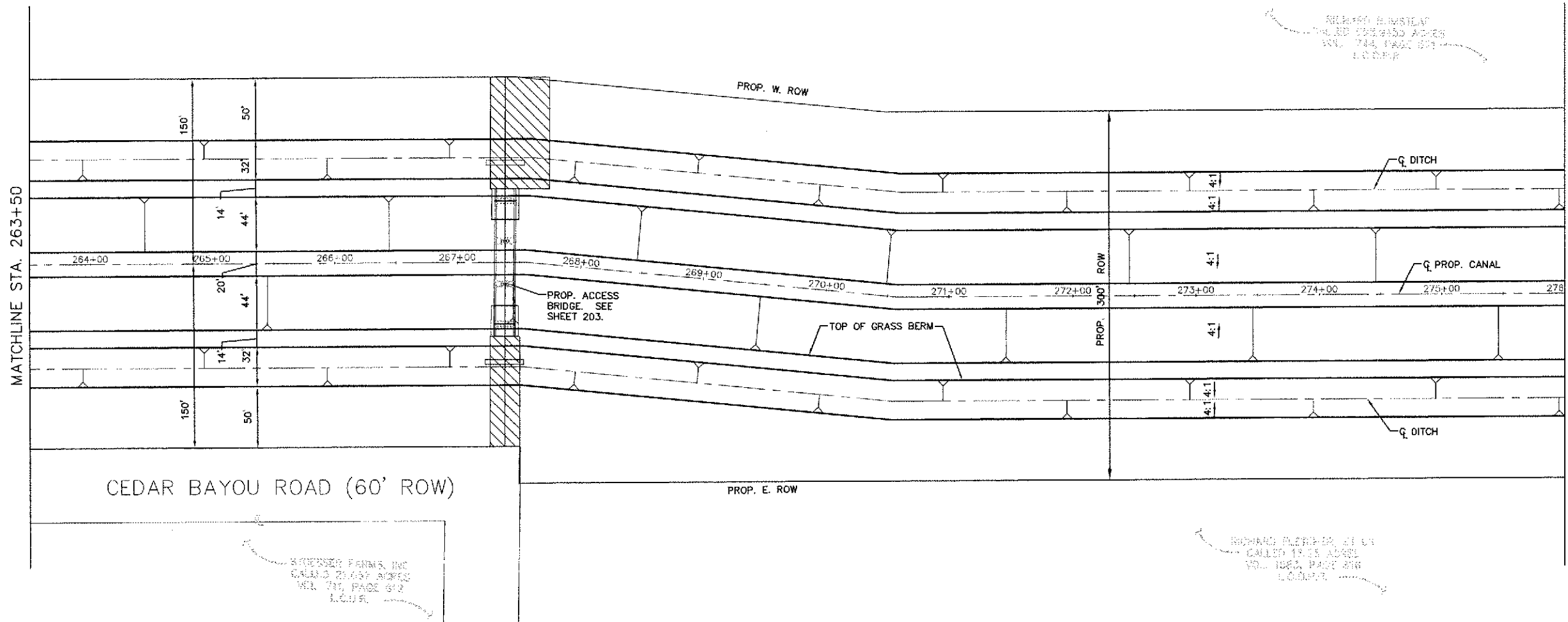
SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 251+00
 TO STA 263+50

DRAWING SCALE
 AS SHOWN
 SHEET NO. 54 OF 245

MATCHLINE STA. 263+50

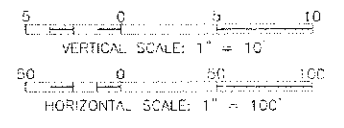
MATCHLINE STA. 276+00



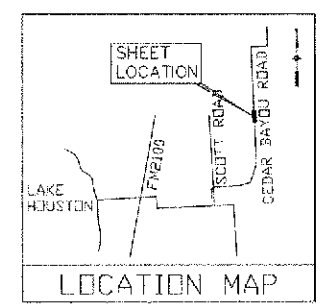
CEDAR BAYOU ROAD (60' ROW)

BRUNSON FARM, INC
 CALLED 20.457 ACRES
 VOL. 710, PAGE 612
 L.C.O.R.

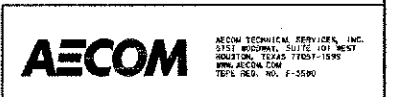
BRUNSON FARM, INC
 CALLED 17.15 ACRES
 VOL. 1083, PAGE 218
 L.C.O.R.



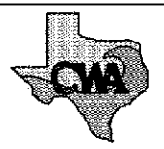
NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

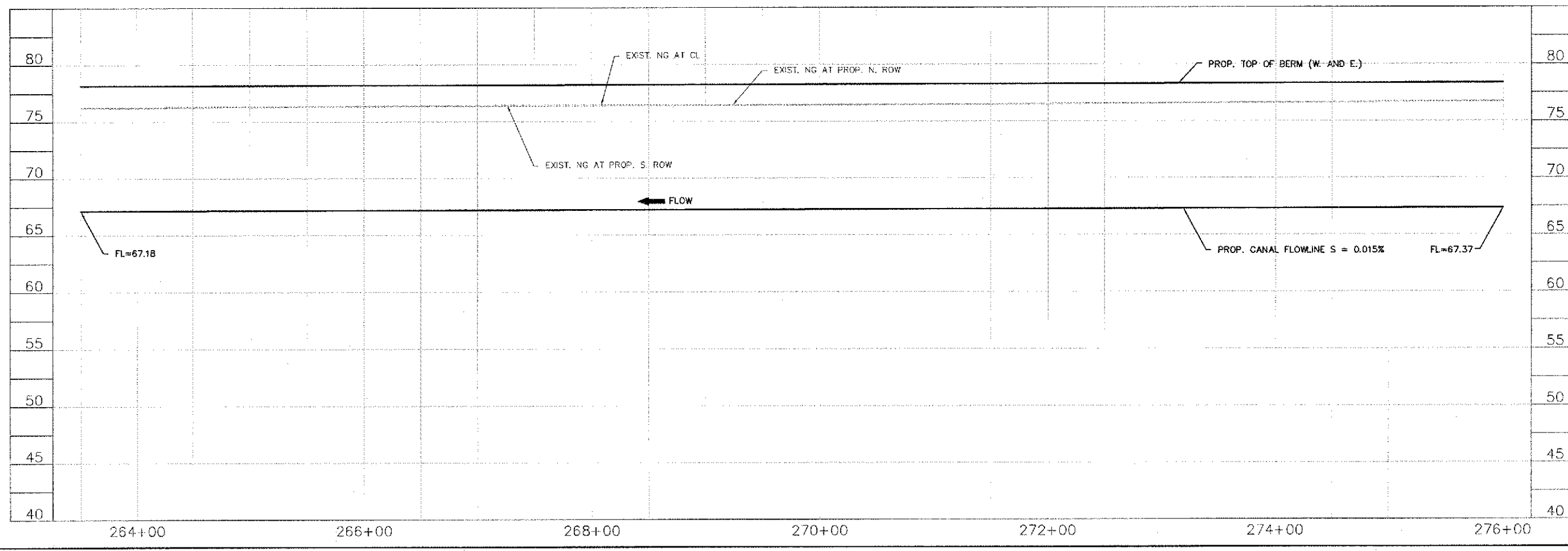


SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 263+50
 TO STA 276+00

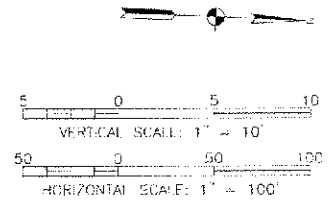
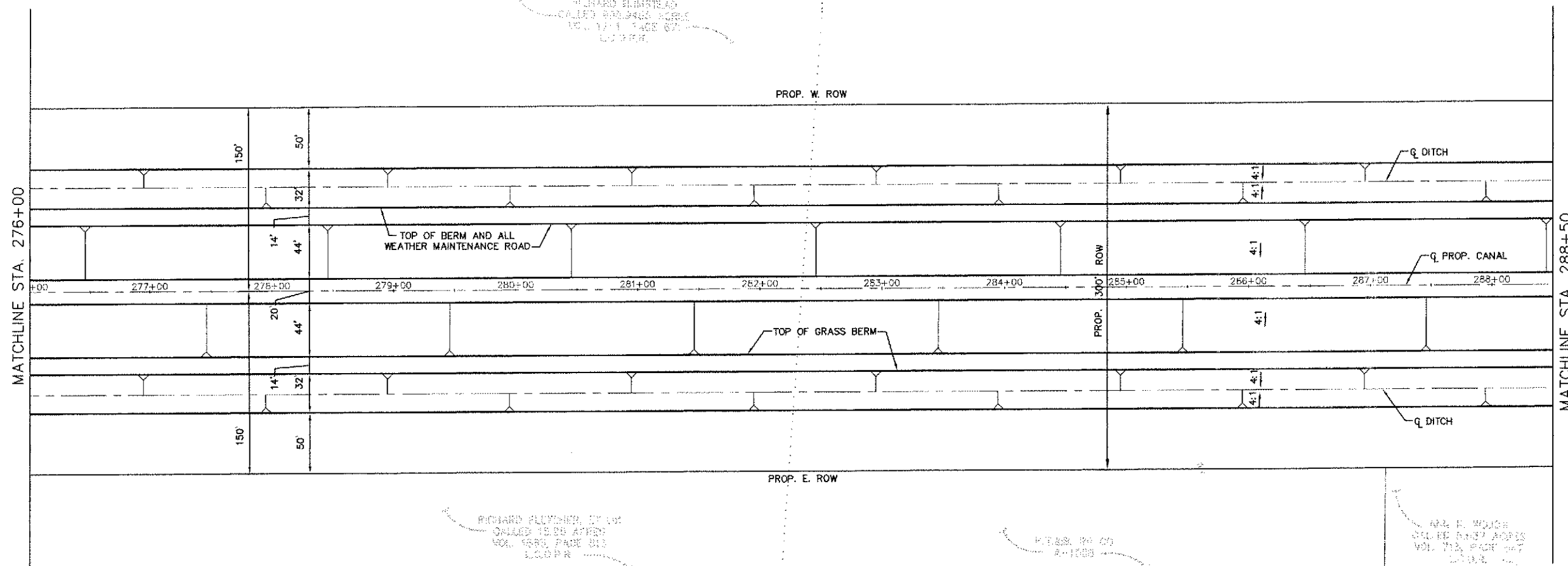
DRAWING SCALE
 AS SHOWN

SHEET NO. **55** OF **245**

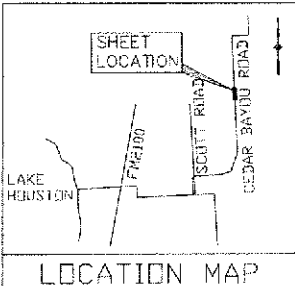


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LAST MODIFIED: Jan 27, 2011 - 3:57pm BY USER: Thompsett
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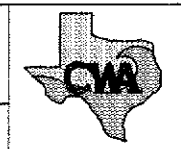
NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



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AECOM TECHNICAL SERVICES, INC.
 5101 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77056-1099
 WWW.AECOM.COM
 (281) 486-7000

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

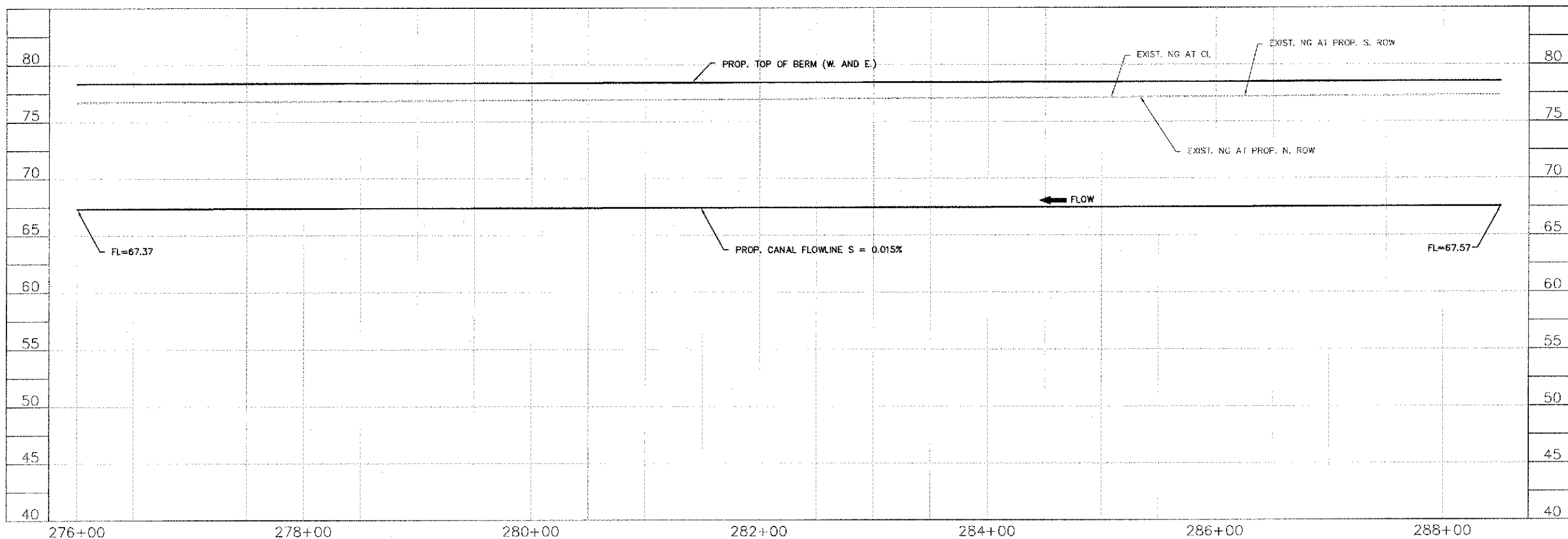


SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 276+00
 TO STA 288+50

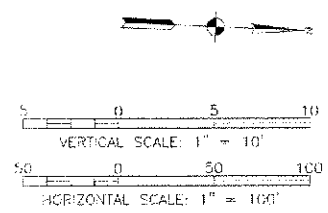
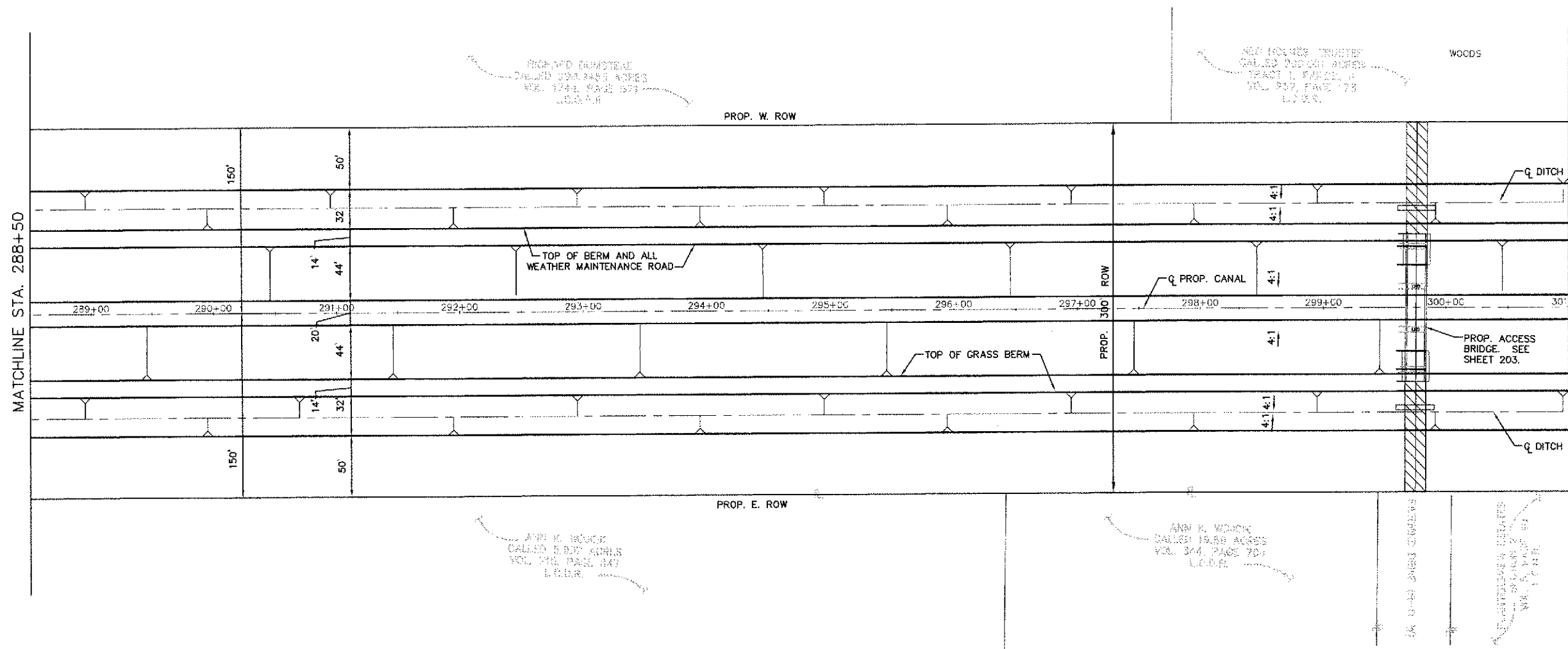
DRAWING SCALE
 AS SHOWN

SHEET NO. 56 OF 245

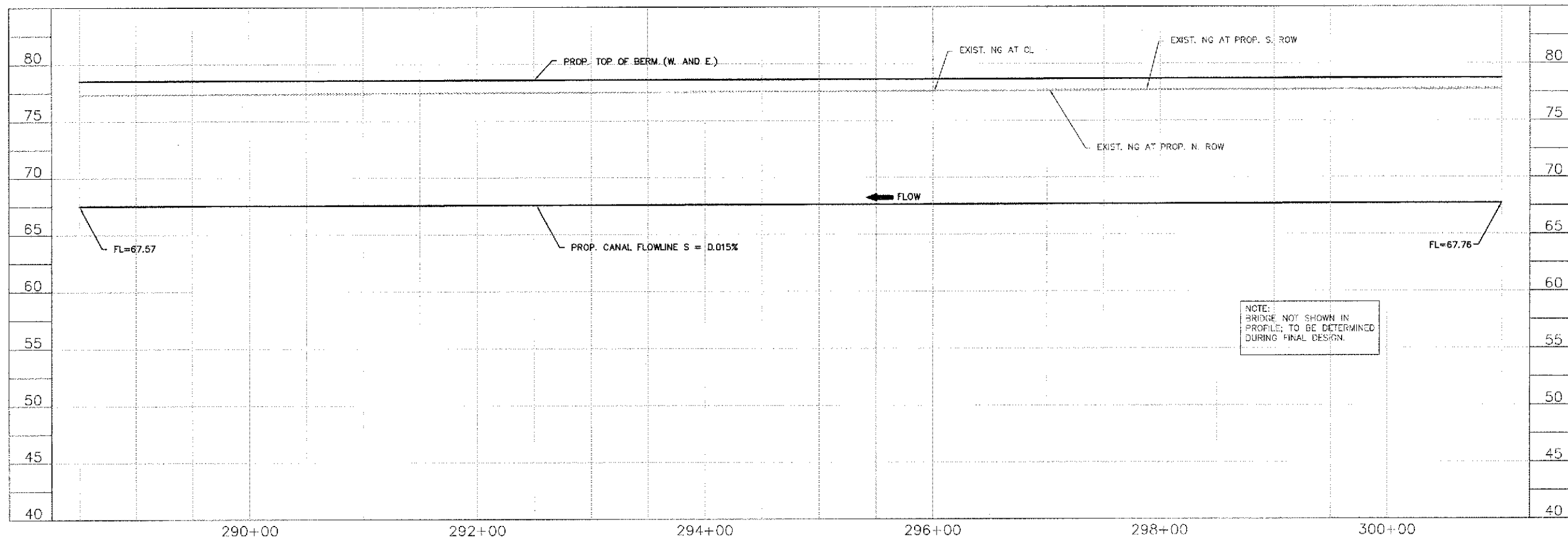
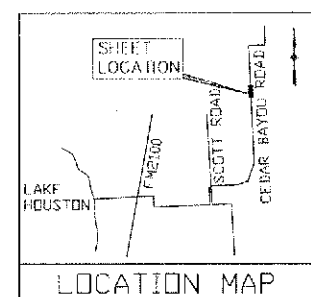


MATCHLINE STA. 288+50

MATCHLINE STA. 301+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



NOTE:
BRIDGE NOT SHOWN IN
PROFILE; TO BE DETERMINED
DURING FINAL DESIGN.

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INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax
WWW.AECOM.COM
TYPE: REG. NO. P-3550

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

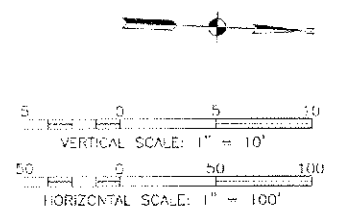
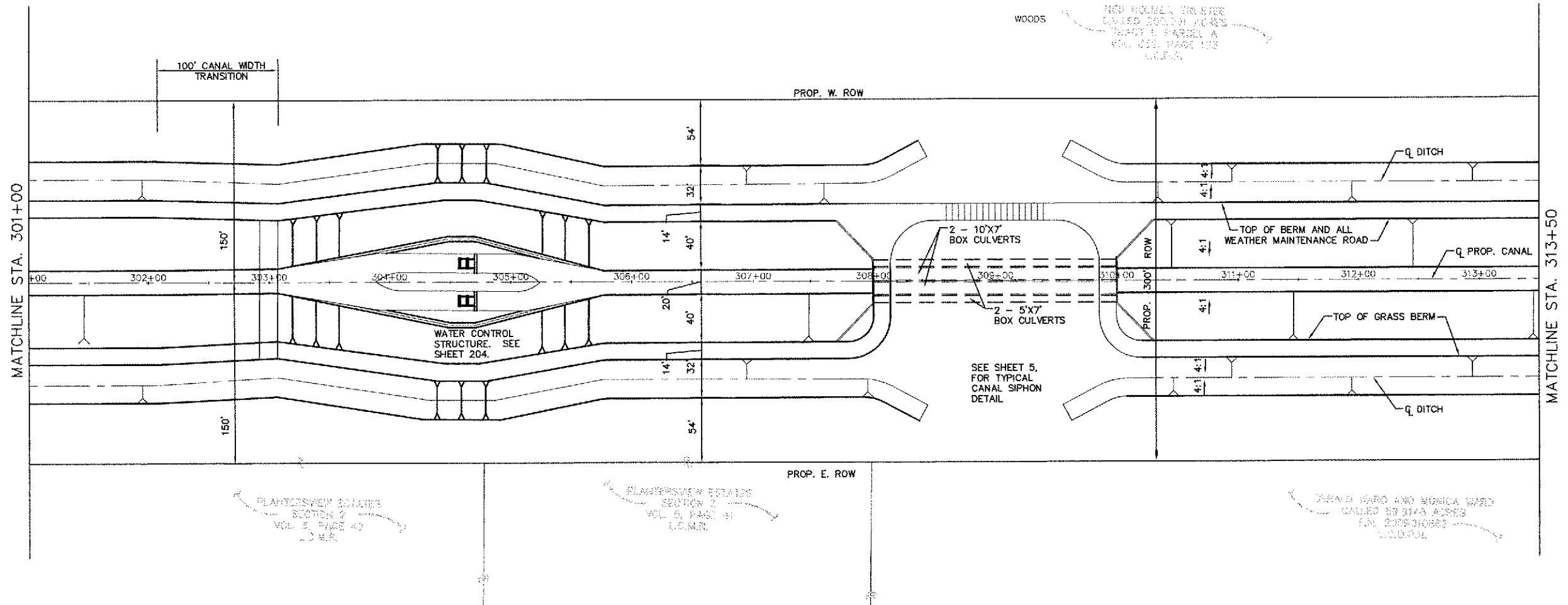
SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

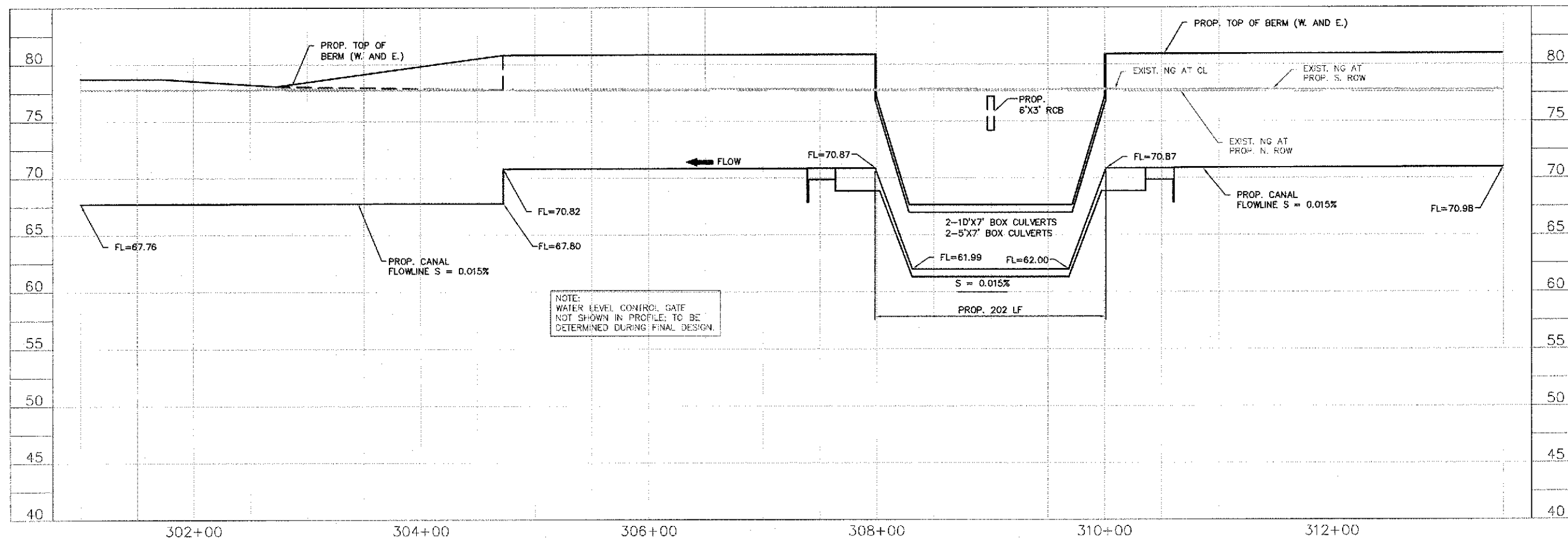
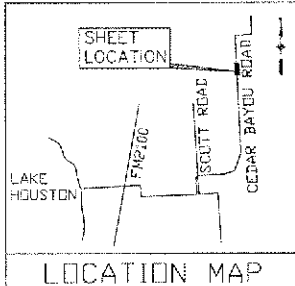
CANAL PLAN &
PROFILE STA 288+50
TO STA 301+00

DRAWING SCALE	AS SHOWN
SHEET NO. 57 OF 245	

LAST MODIFIED: Jan 27, 2011 - 3:57pm BY USER: Thompson, B
 PLOT LOCATION: C:\Users\B\Documents\6140 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cood\PH\Sheets\DWG: Canal\245.dwg
 PLOT DATE: 01/27/2011 3:57:00 PM



NOTE:
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HOUSTON, TEXAS 77057
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713.780.0838 fax.

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713.780.4100 tel.
713.780.0838 fax.

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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

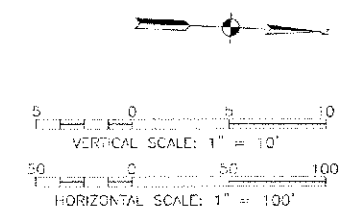
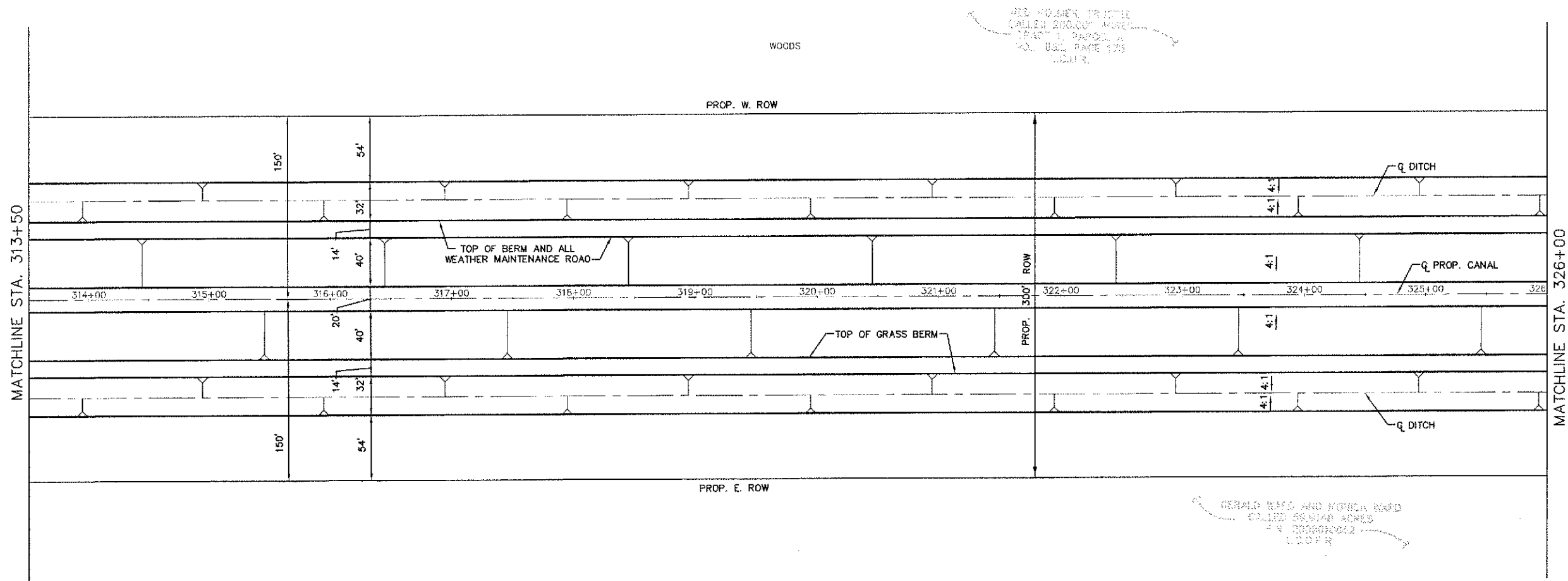
CANAL PLAN &
PROFILE STA 301+00
TO STA 313+50

DRAWING SCALE
AS SHOWN

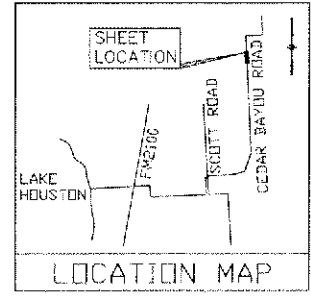
SHEET NO. 58 OF 245

LAST MODIFIED: Jan 27, 2011 - 3:57pm BY USER: ThompsonBl
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 DWG. NAME: Canal&P&S.dwg

LAST MODIFIED: Jan 27, 2011 - 3:58pm BY USER: ThompsonB
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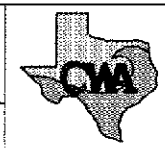
NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



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 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

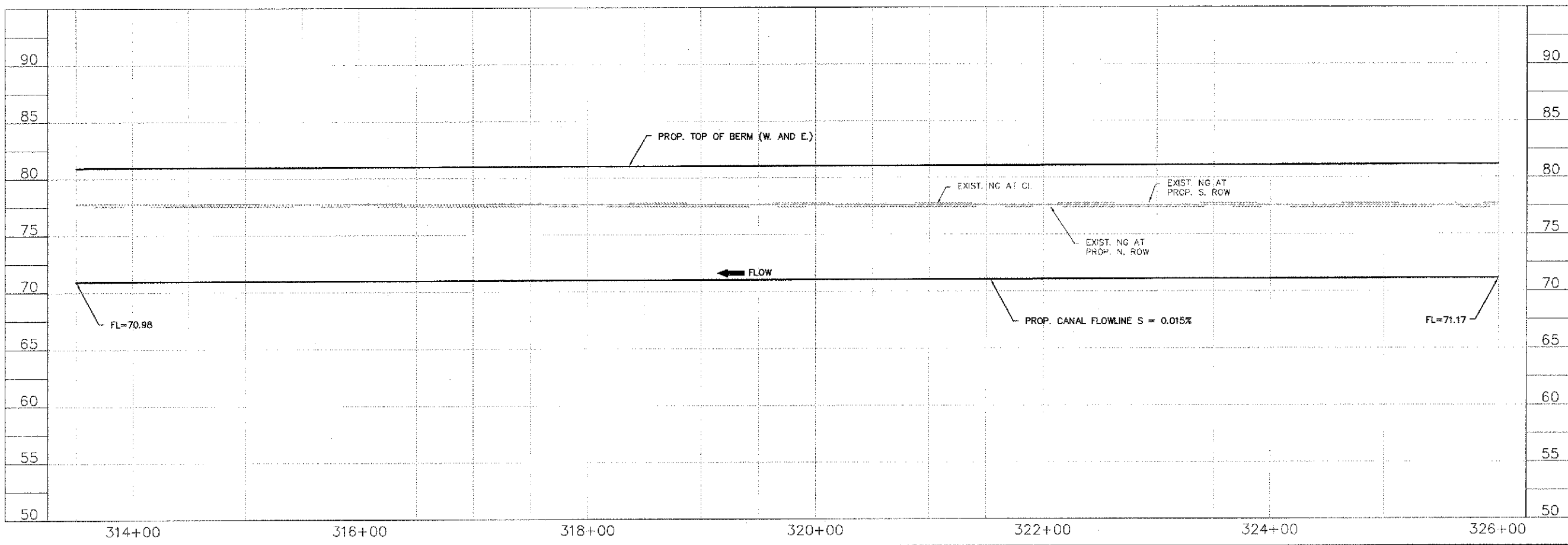


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 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



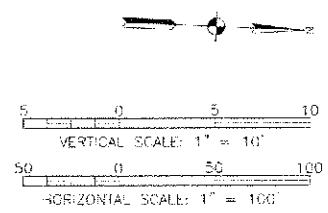
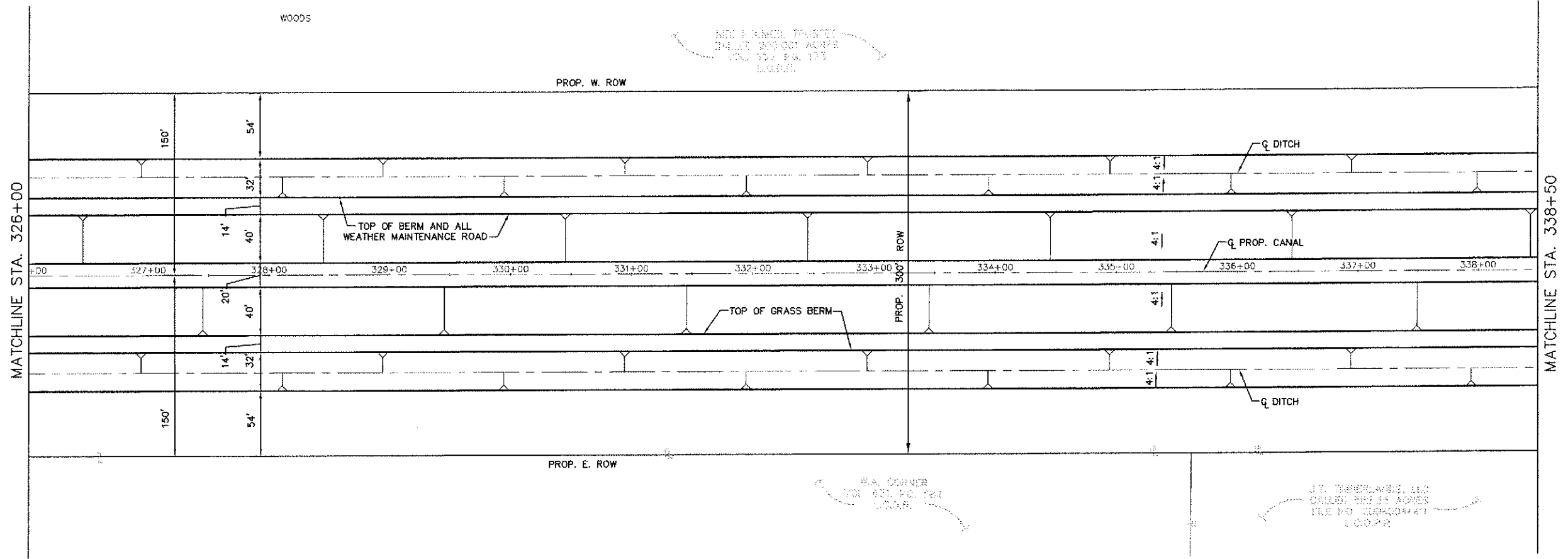
SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 313+50
 TO STA 326+00

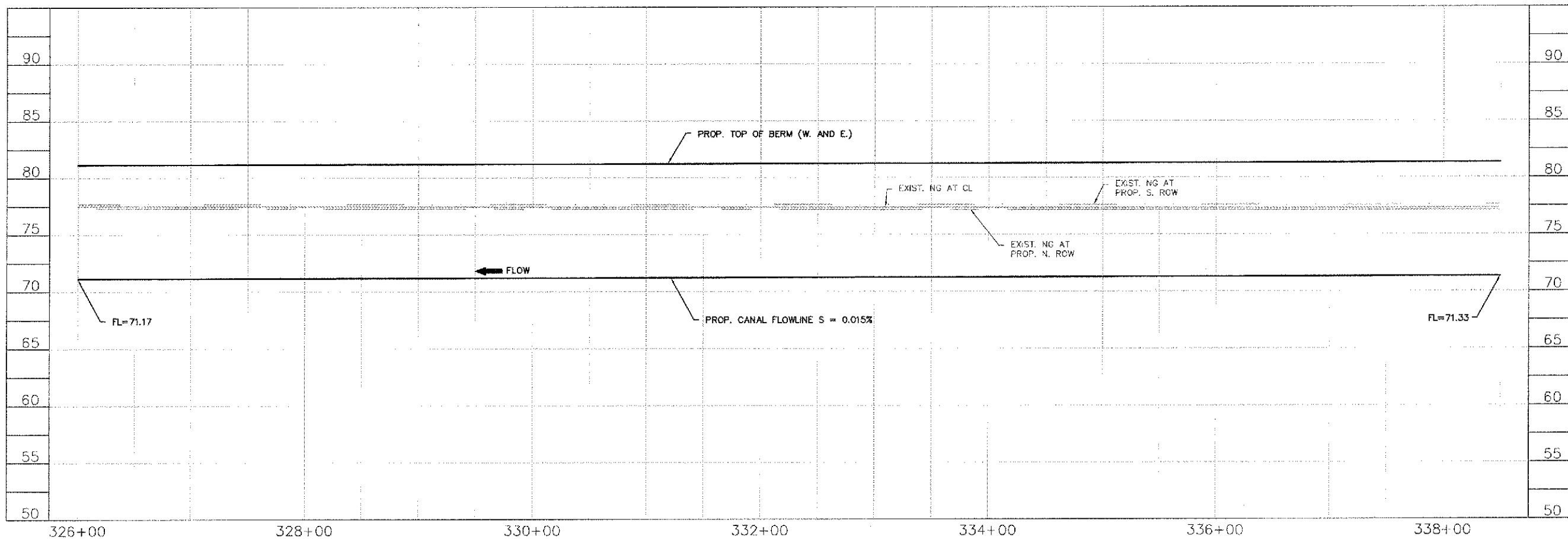
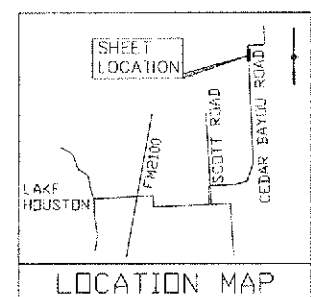


DRAWING SCALE
 AS SHOWN

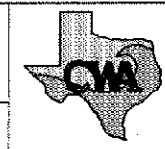
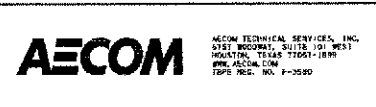
SHEET NO. 59 OF 249



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES



SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 326+00
TO STA 338+50

DRAWING SCALE
AS SHOWN

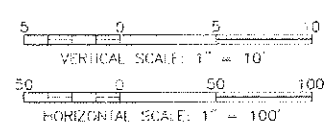
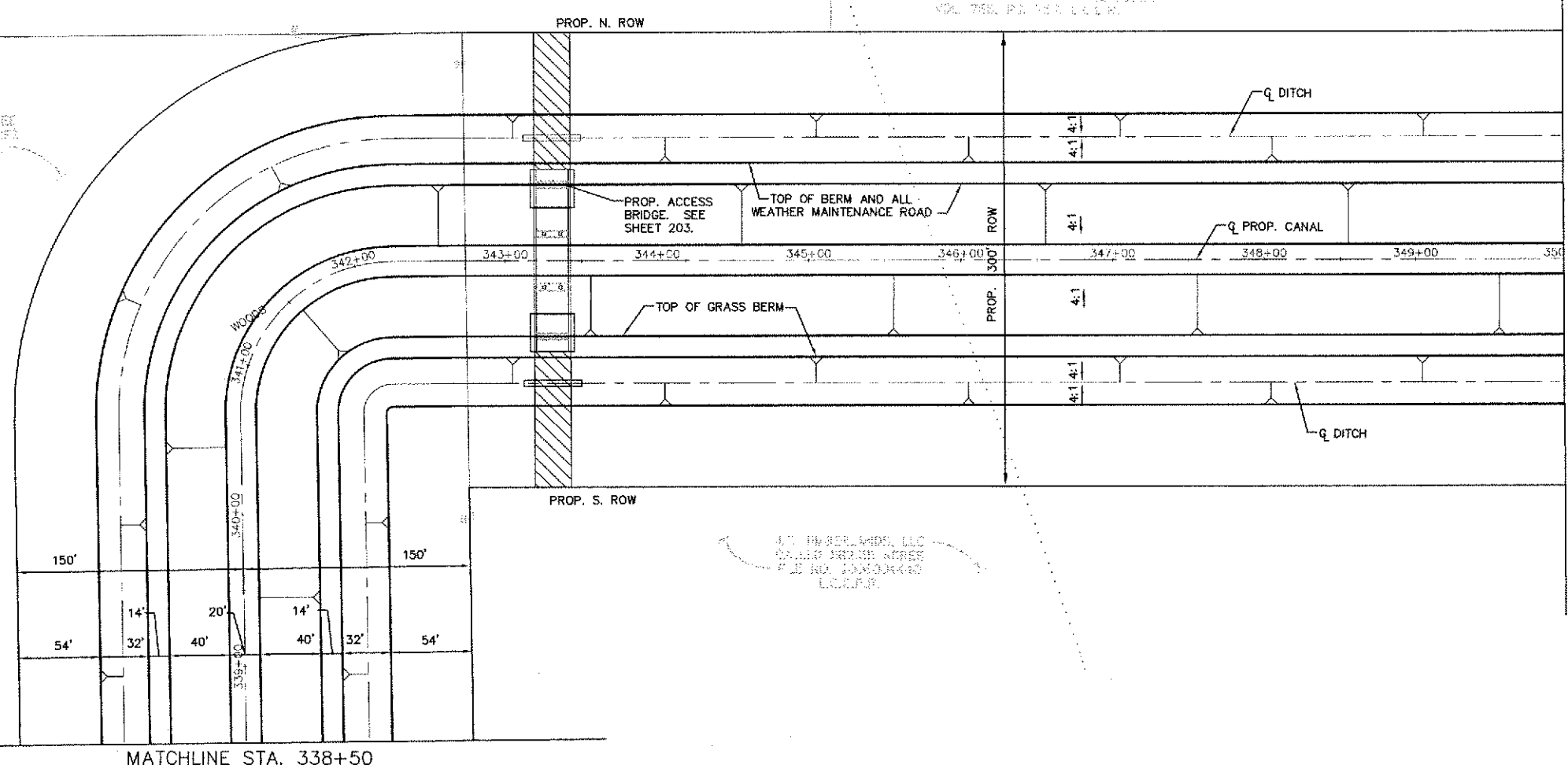
SHEET NO. 60 OF 295

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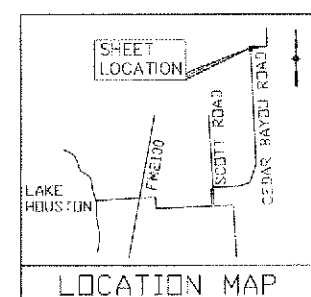
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 DWG. NAME: Canal#228.dwg

RED LINES, TRAPED
 CHANNELS, SEE
 VOL. 02 OF THE
 L.C.D.R.

ORDER: COUNTY WATER CONTROL A&I IMPROVEMENT
 DISTRICT OF LUCAS COUNTY, OHIO
 VOL. 02 OF THE L.C.D.R.



NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN

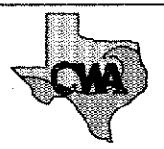


KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES



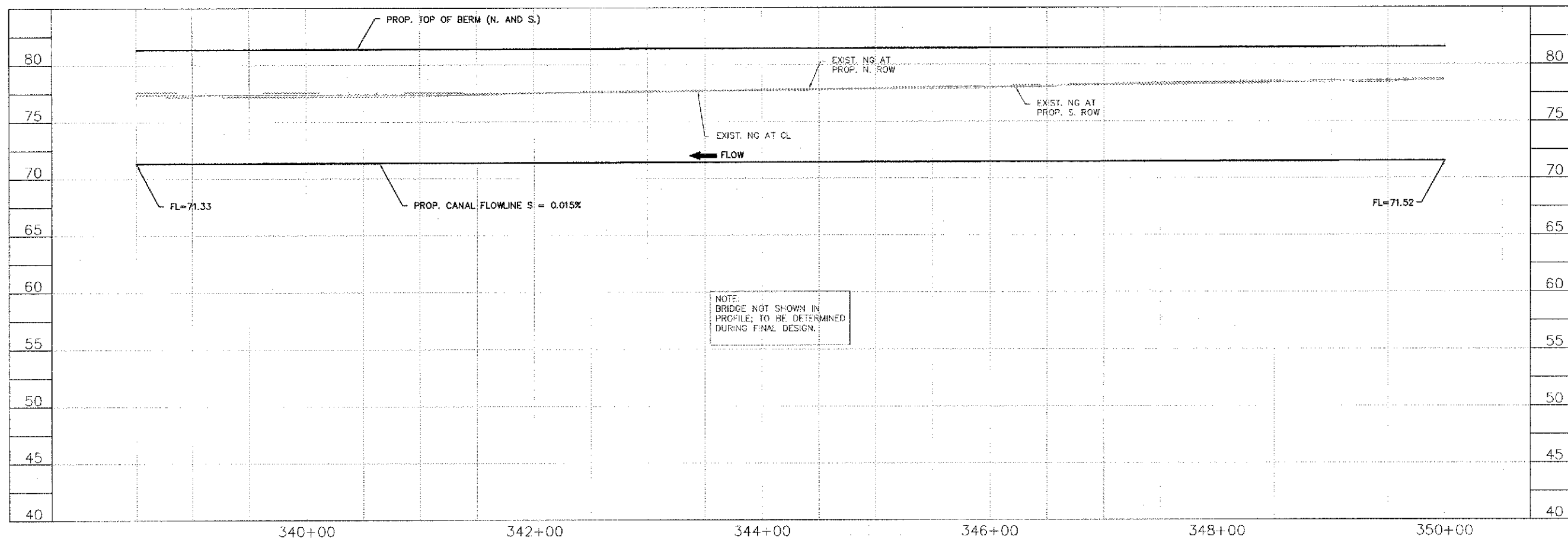
AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax

SURVEYED BY:
 FB NO.



COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

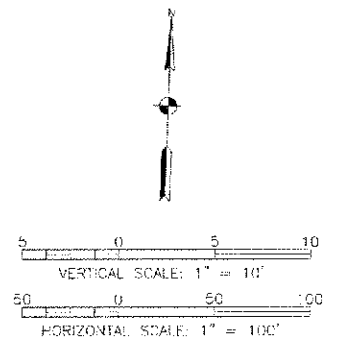
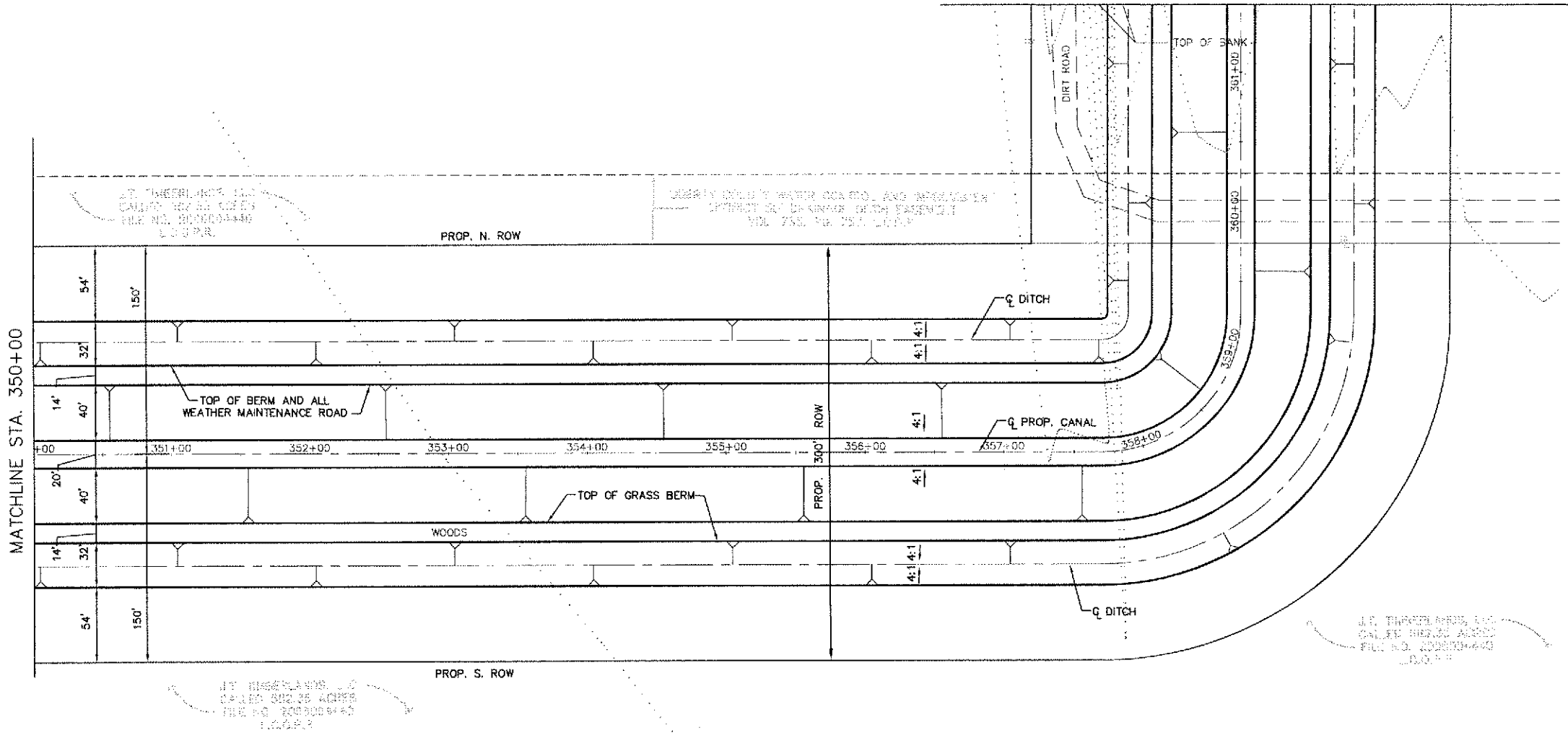
CANAL PLAN &
 PROFILE STA 338+50
 TO STA 350+00



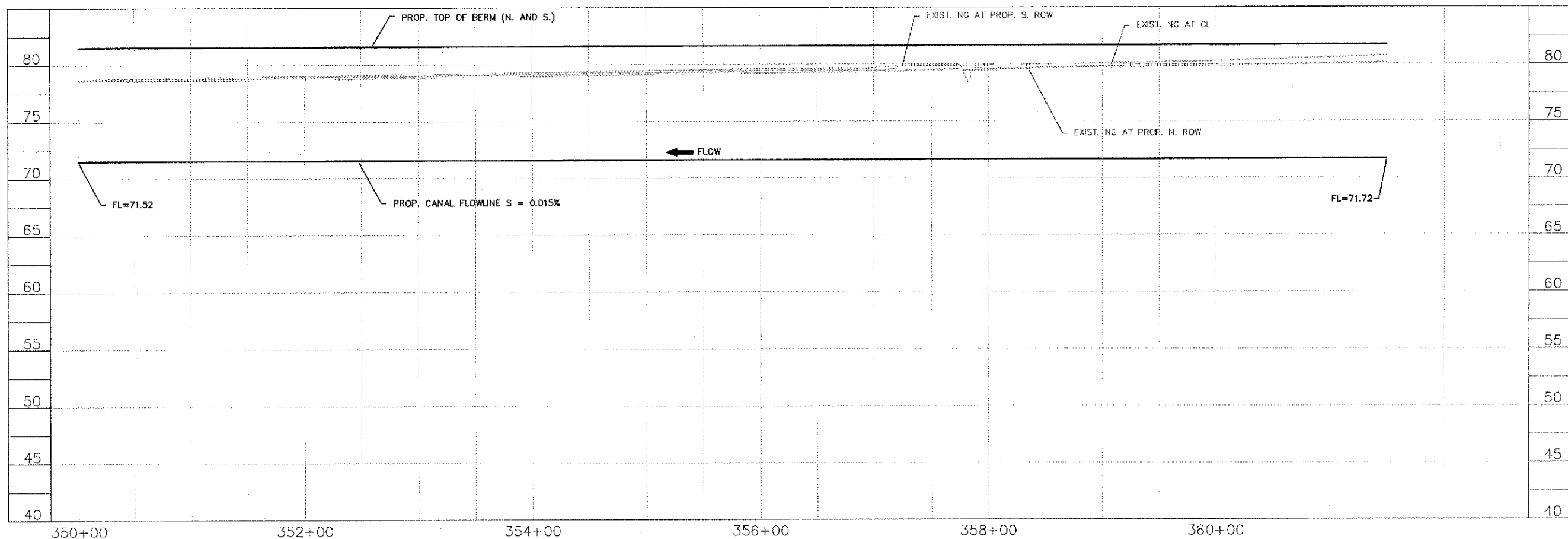
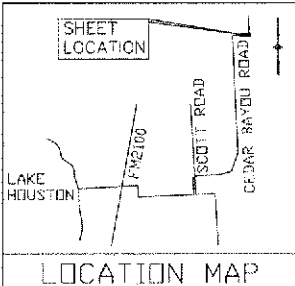
DRAWING SCALE
 AS SHOWN

MATCHLINE STA. 361+50

MATCHLINE STA. 350+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

CWA

SURVEYED BY:
FB NO.

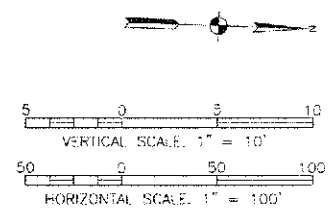
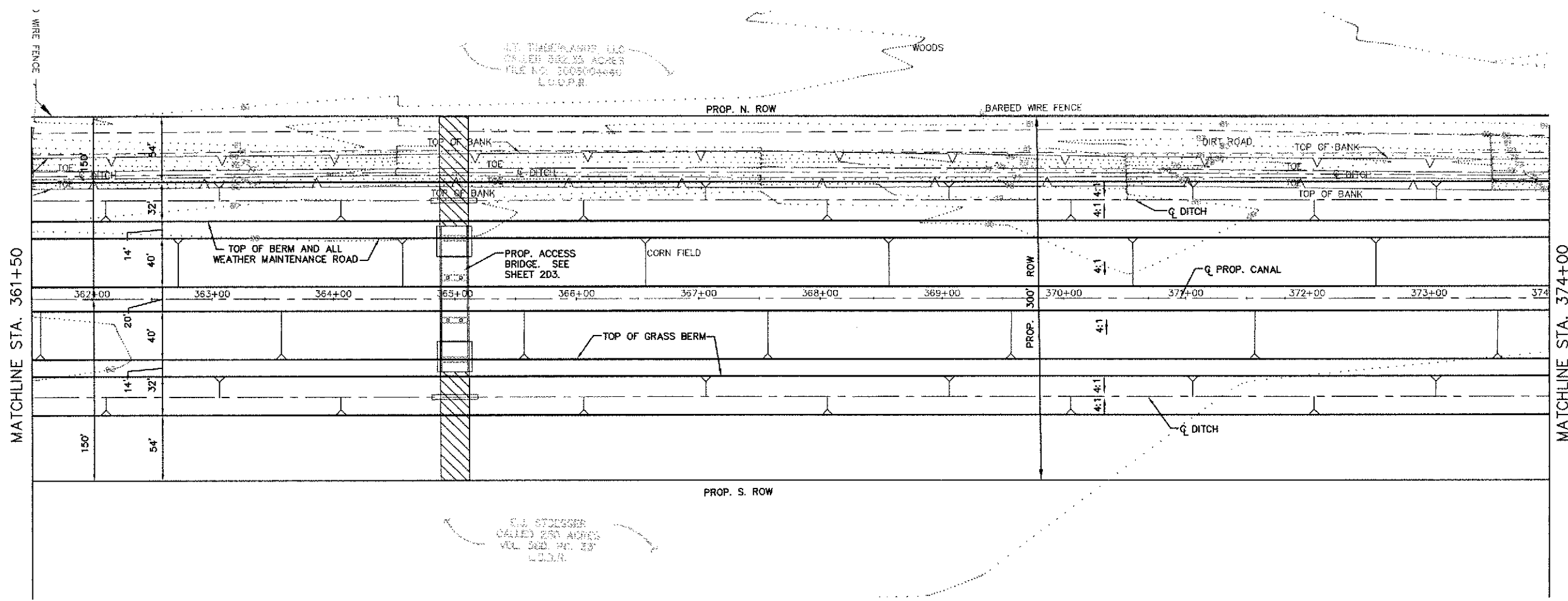
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 350+00
TO STA 361+50

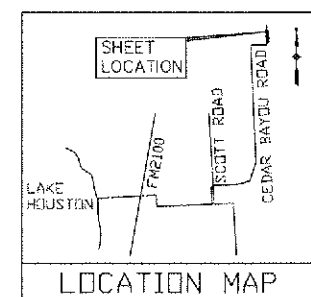
DRAWING SCALE
AS SHOWN

SHEET NO. 62 OF 145

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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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TEXAS REGISTRATION NO. 91031
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AECOM
AECOM TECHNICAL SERVICES, INC.
5101 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057-1596
WWW.AECOM.COM
TYPE REG. NO. P-3580

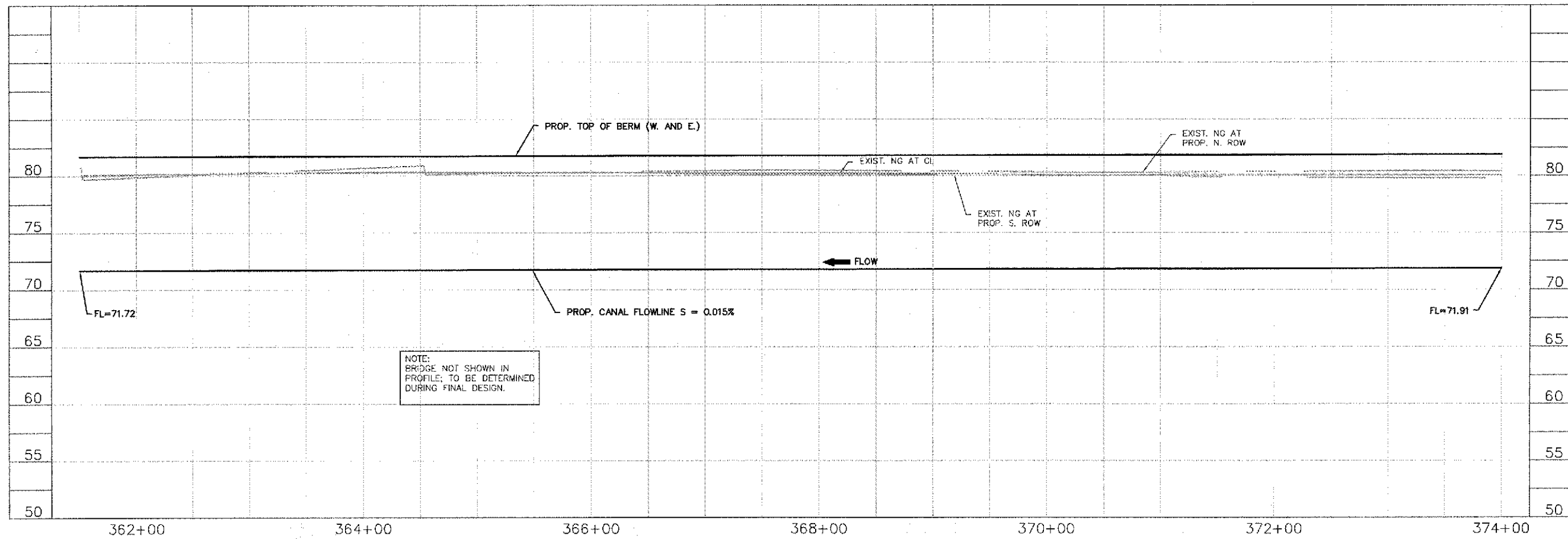
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 Tel.
713.780.0838 Fax.

SURVEYED BY:
FB NO.

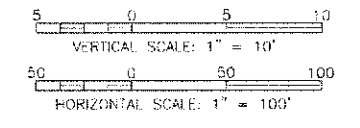
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 361+50
TO STA 374+00

DRAWING SCALE	AS SHOWN
SHEET NO. 63 OF 145	

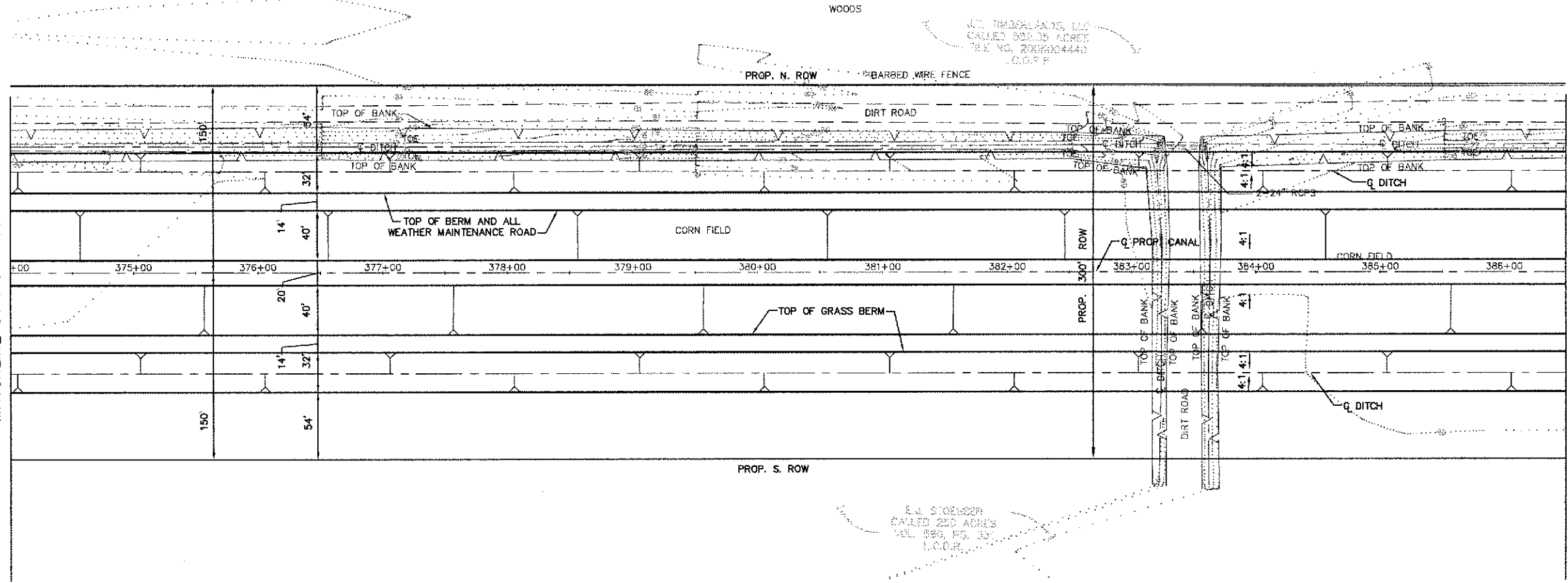


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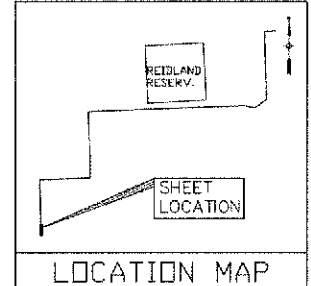


MATCHLINE STA. 374+00

MATCHLINE STA. 386+50



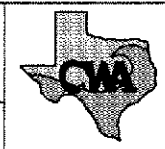
NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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TEXAS REGISTRATION NO. 91031
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NOT FOR CONSTRUCTION PURPOSES



AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

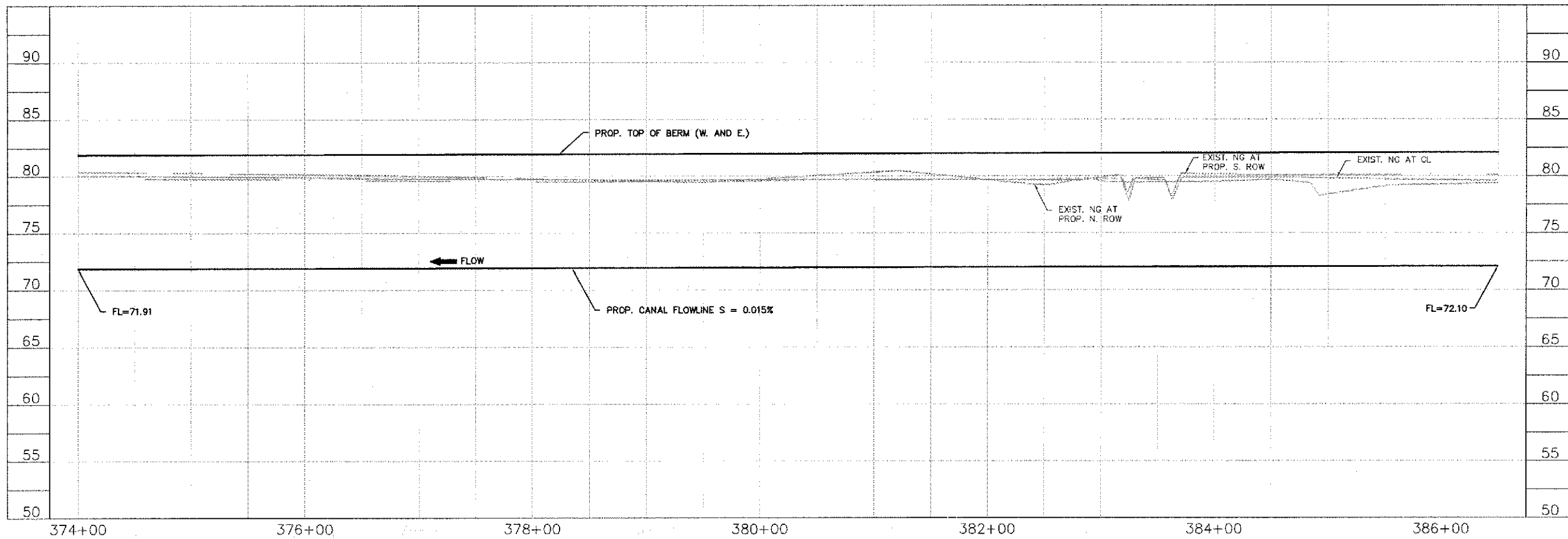


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

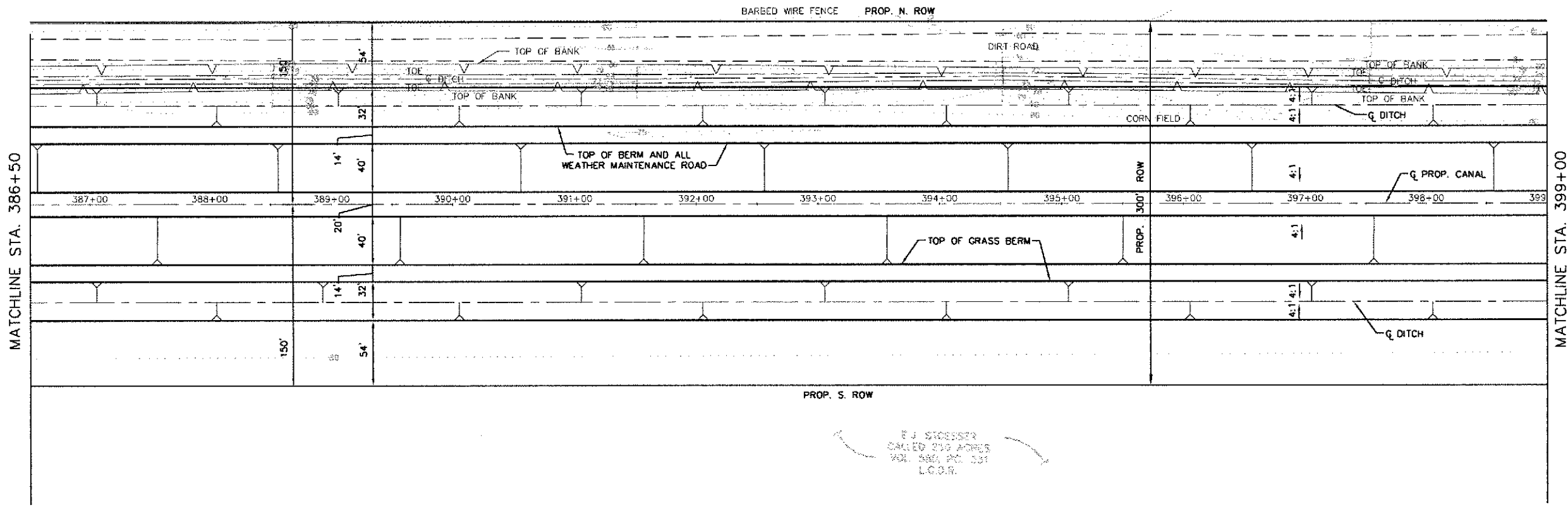
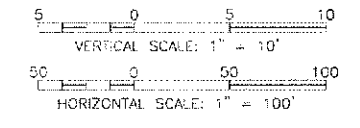
CANAL PLAN &
PROFILE STA 374+00
TO STA 386+50

DRAWING SCALE
AS SHOWN

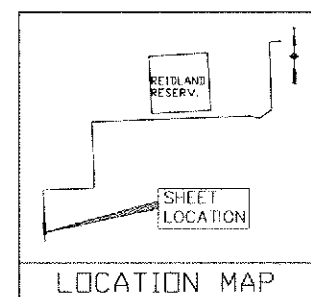
SHEET NO. 64 OF 295



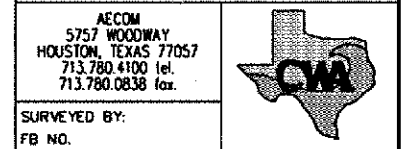
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BY USER: ThompsonBI
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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
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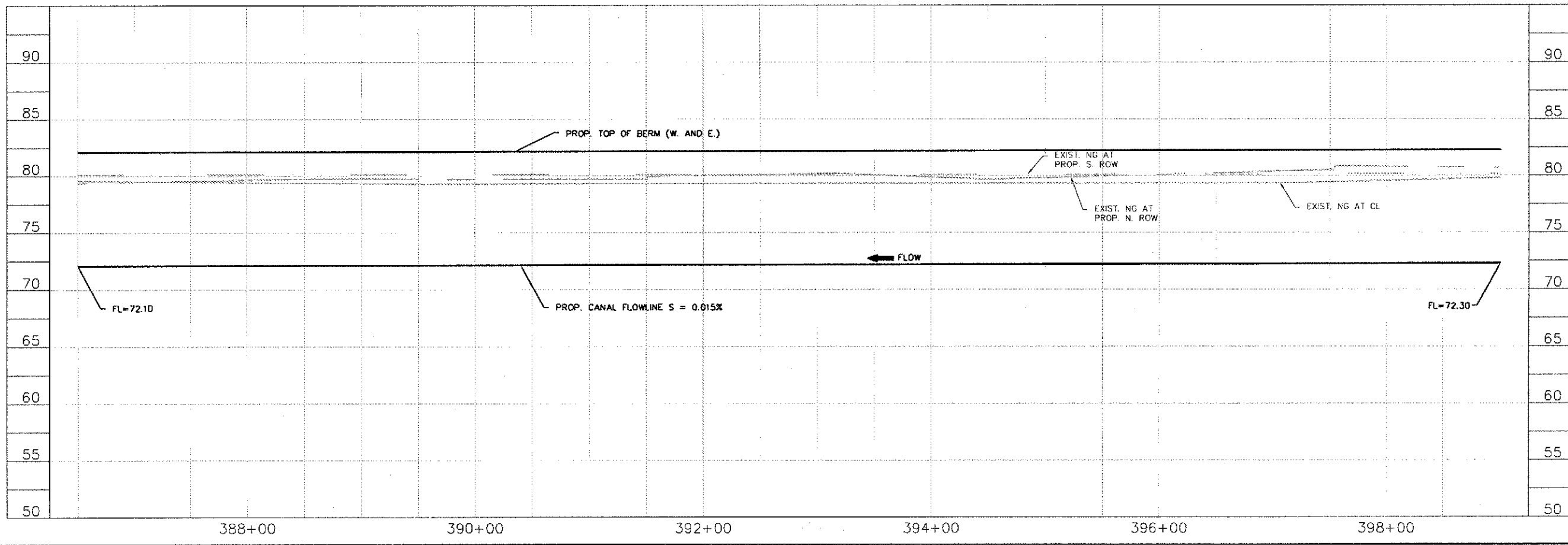


SURVEYED BY:
FB NO.

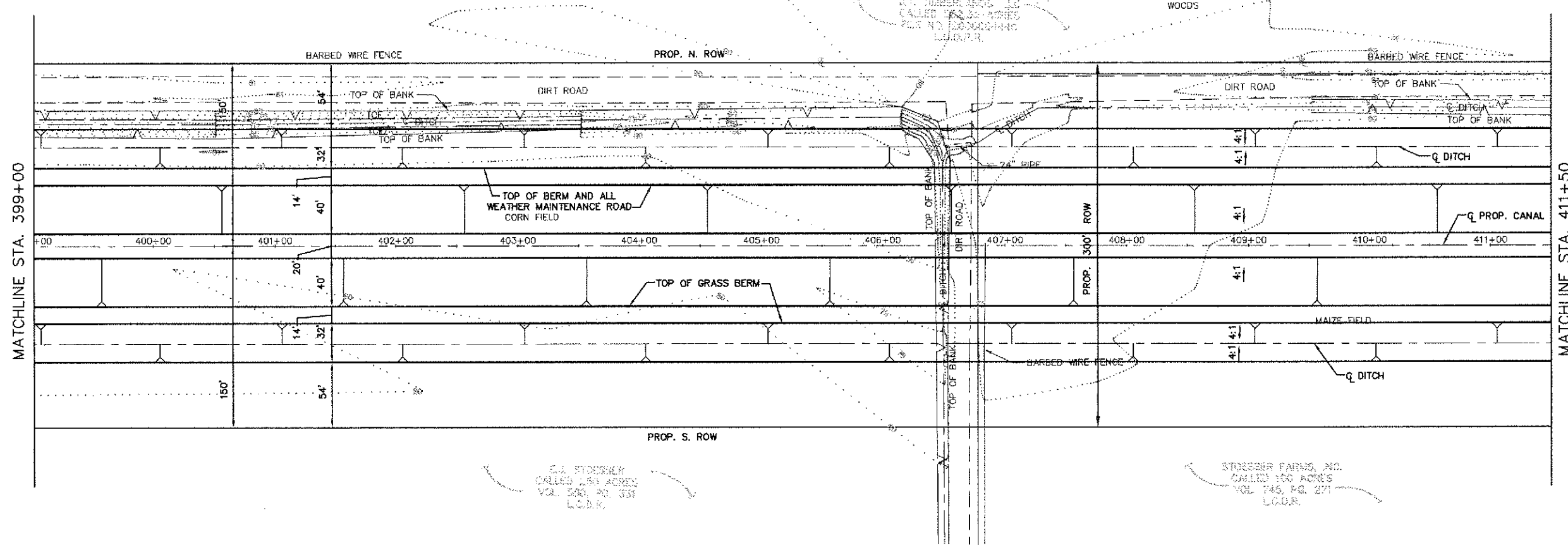
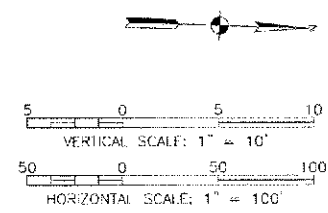
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 386+50
TO STA 399+00

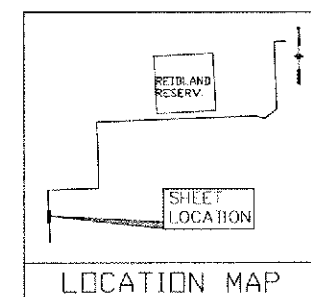
DRAWING SCALE	AS SHOWN
SHEET NO. 65 OF 245	



LAST MODIFIED: Jan 28, 2011 - 7:44am BY USER: Thompson@
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 DWG NAME: CanalPAP22.dwg



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
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AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0638 fax.

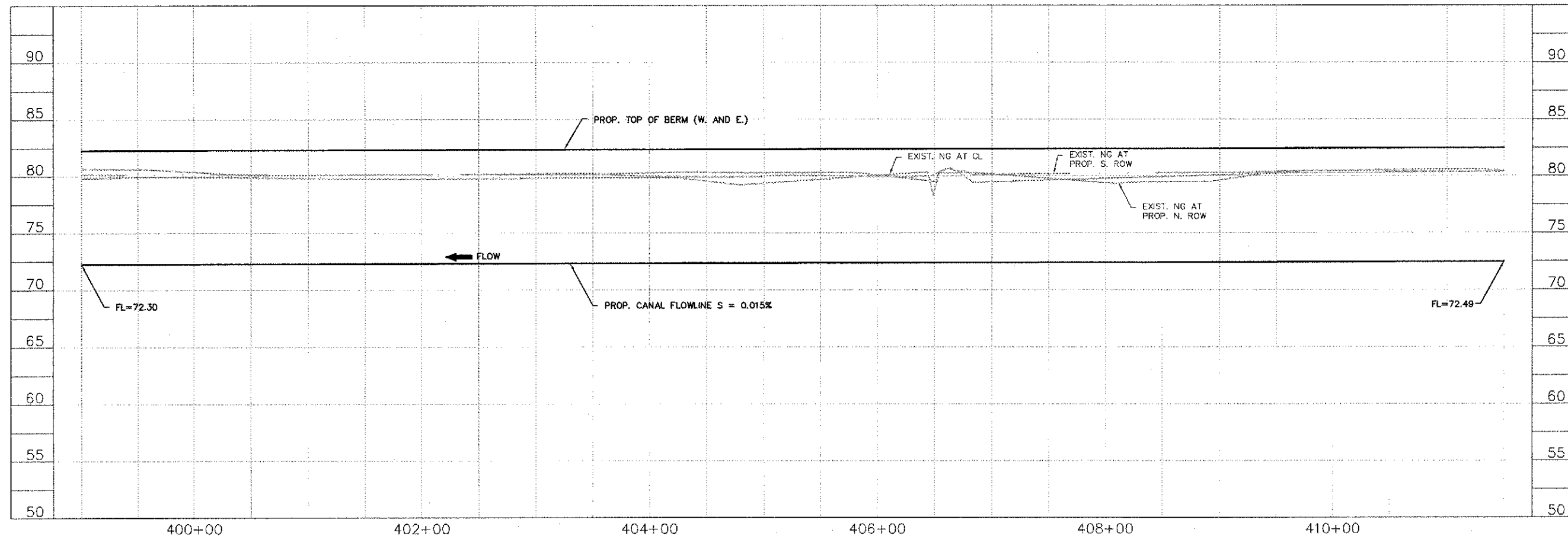
SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUGUE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 399+00
TO STA 411+50

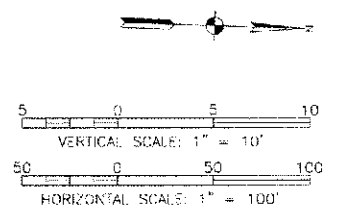
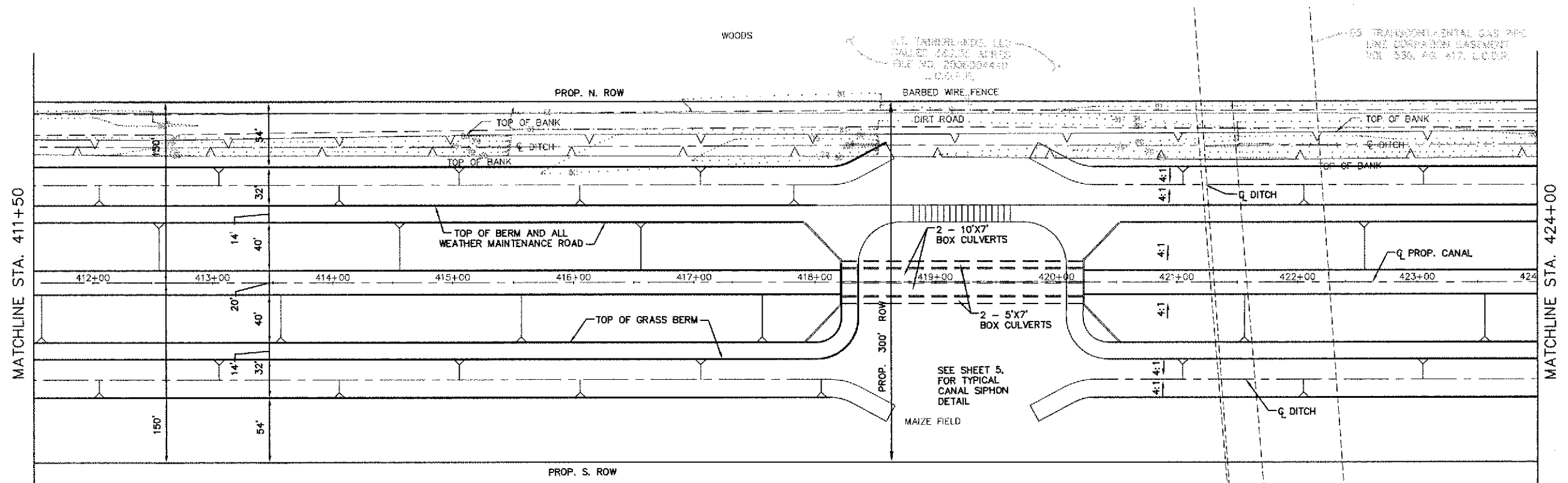
DRAWING SCALE
AS SHOWN

SHEET NO. 66 OF 241



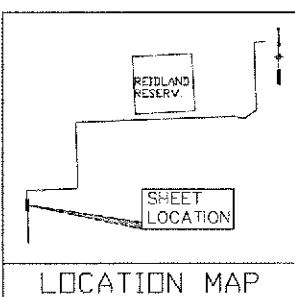
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 BY USER: ThompsonB
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LAST MODIFIED: Jun 28, 2011 7:40am BY USER: ThompsonB
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NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

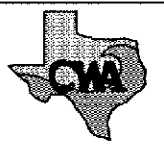
NOTE: THERE ARE EXISTING PIPELINES IN THIS AREA. THESE ARE NOT SHOWN IN PROFILE VIEW DUE TO LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

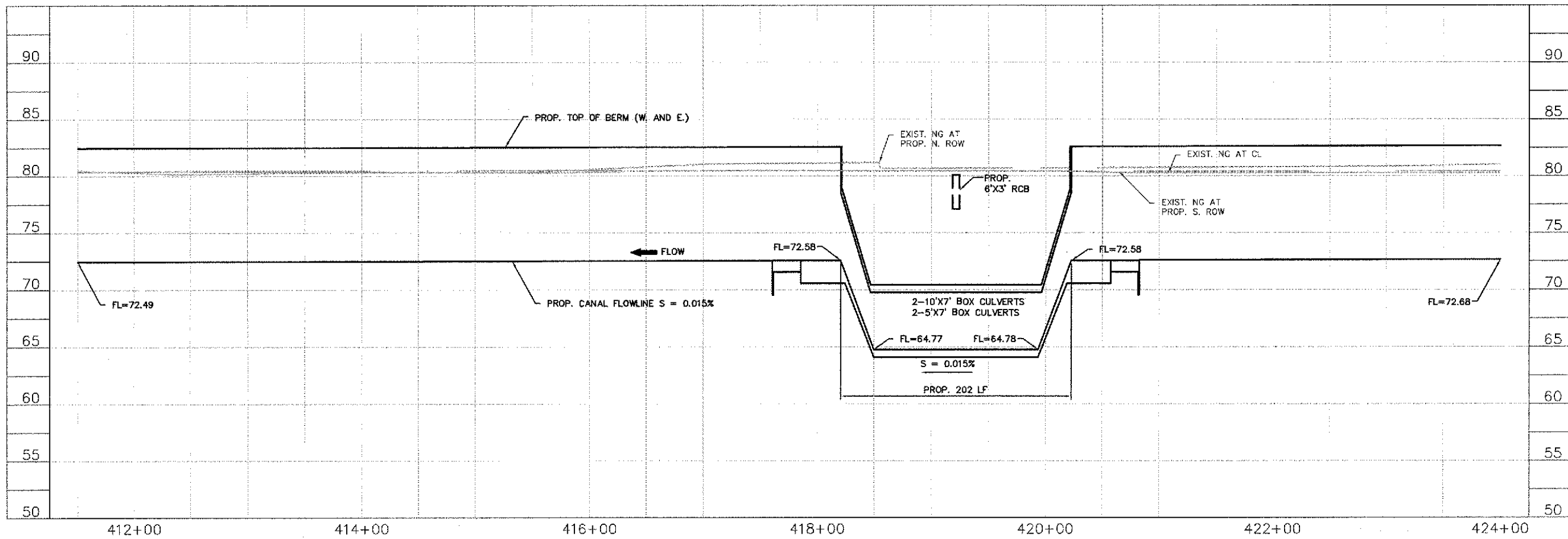


SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

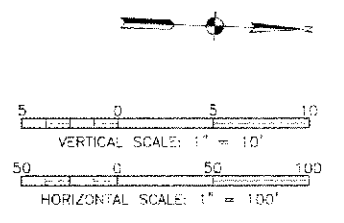
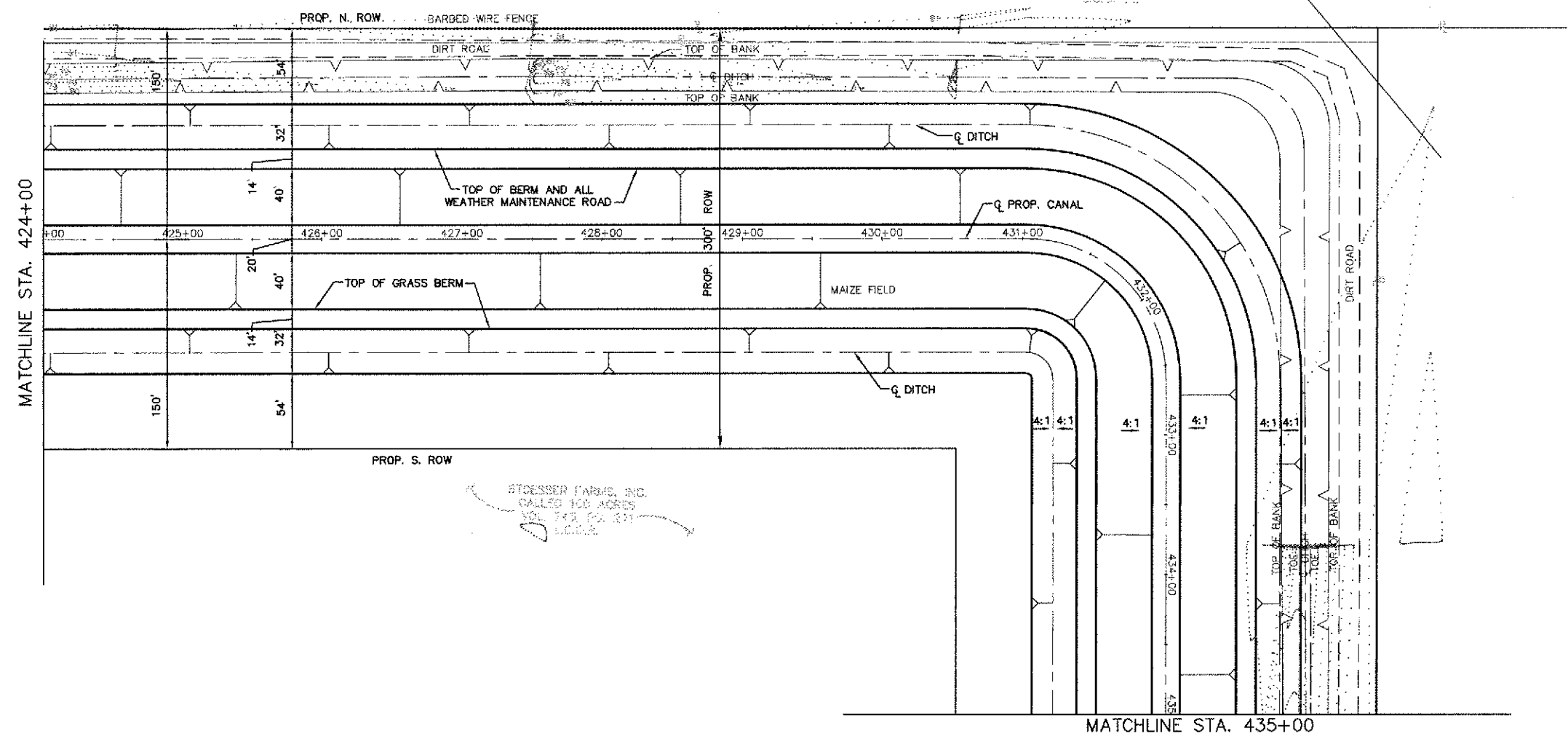
CANAL PLAN &
 PROFILE STA 411+50
 TO STA 424+00

DRAWING SCALE
 AS SHOWN

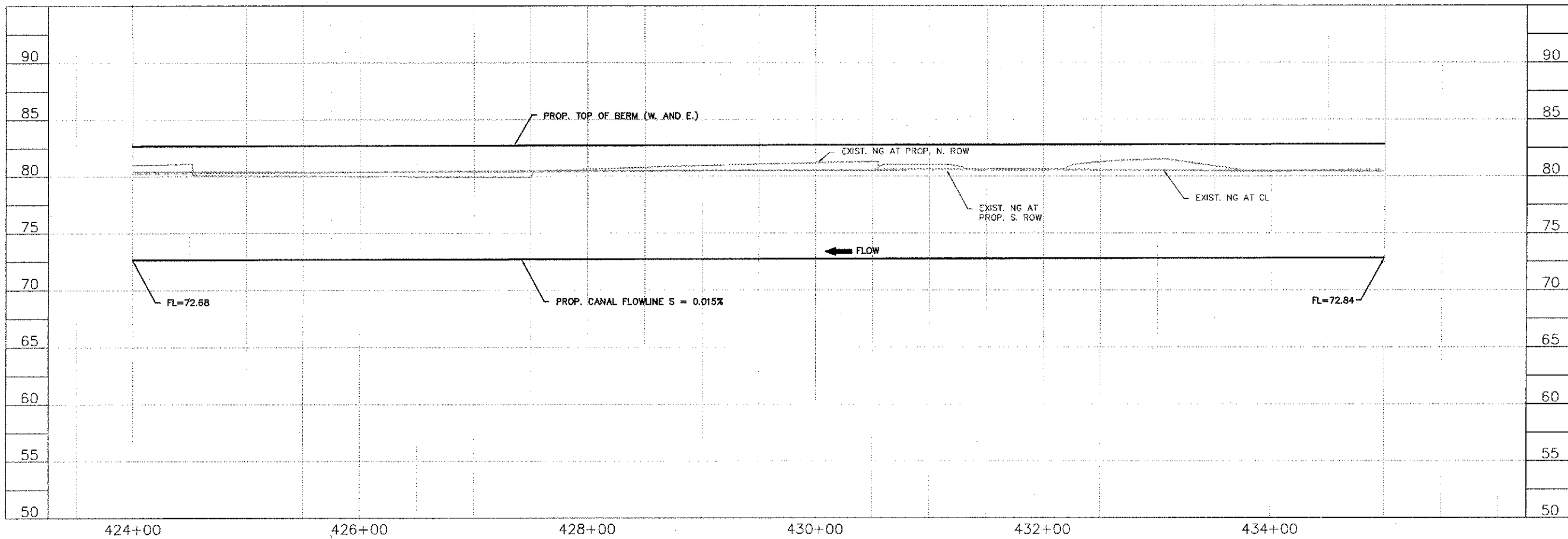
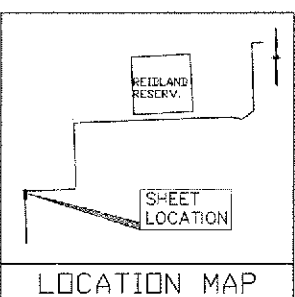
SHEET NO. 67 OF 245



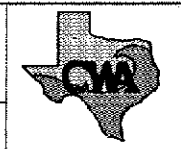
7.7 ACRES, 1.15
 361.47 352.55 ACRES
 FILE NO. 000004440
 L.C.O. 9.8



NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 424+00
 TO STA 435+00

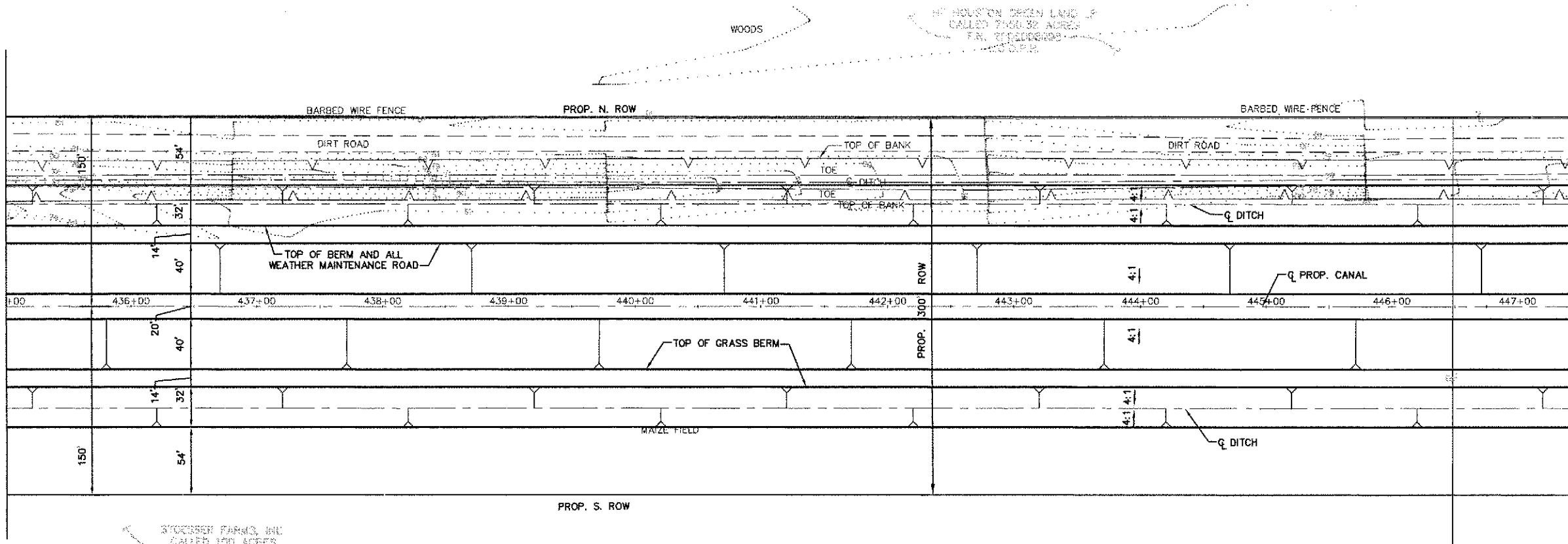
DRAWING SCALE
 AS SHOWN

SHEET NO. 68 OF 245

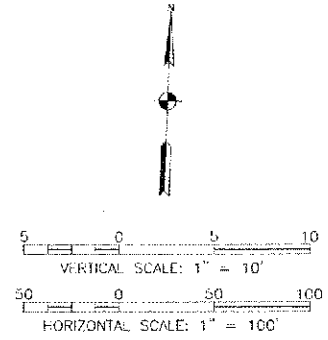
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MATCHLINE STA. 435+00

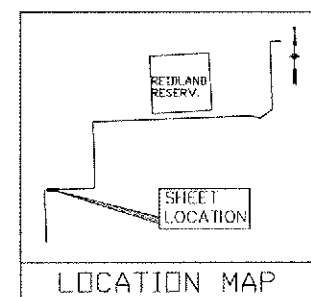
MATCHLINE STA. 447+50



STOCKER FARM, INC
CALLED 100 ACRES
VOL. 740, PG. 271
L.C.D.R.



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN




KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax
REG. NO. F-3590

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

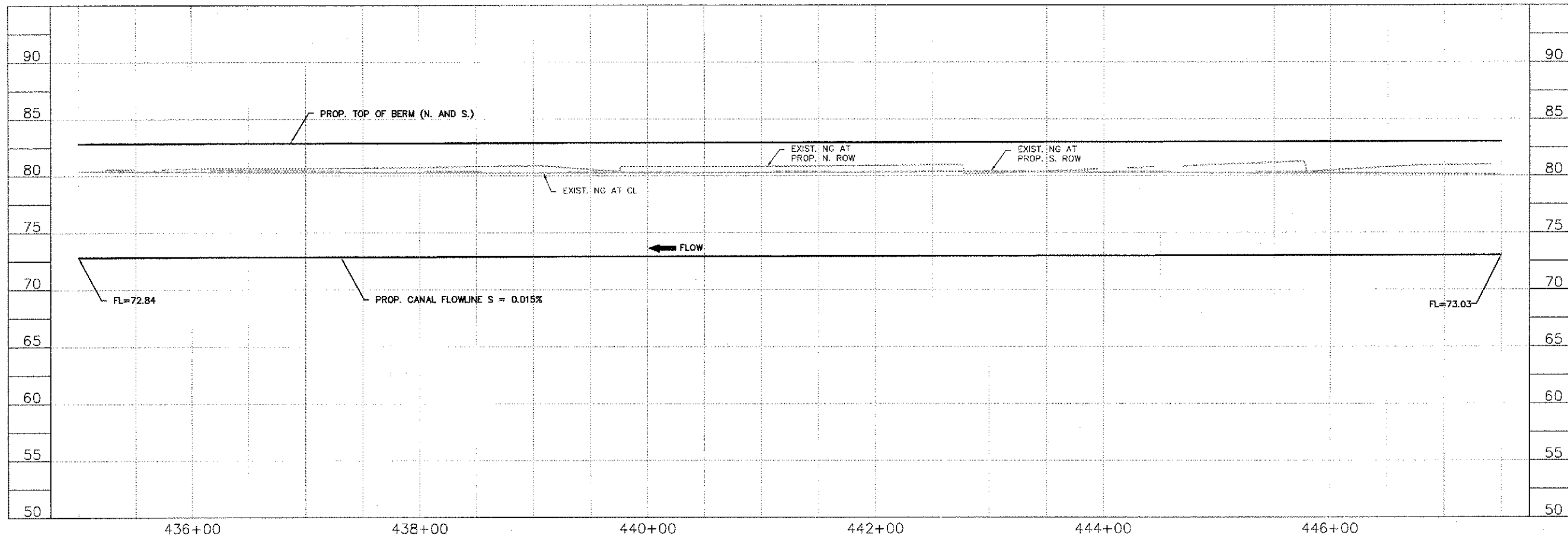
SURVEYED BY:
FB NO.



COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 435+00
TO STA 447+50

DRAWING SCALE	AS SHOWN
SHEET NO. 69 OF 298	

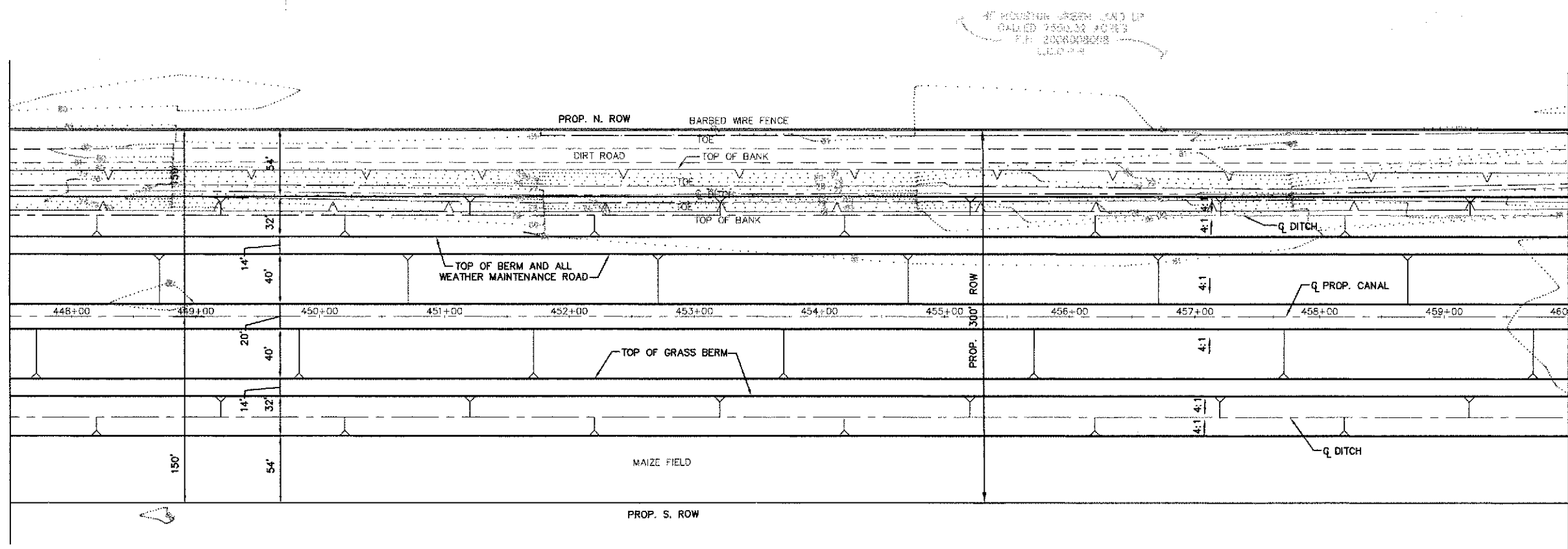


LAST MODIFIED: 06/28/2011 - 7:41:07 PM BY USER: THOMPSON, B
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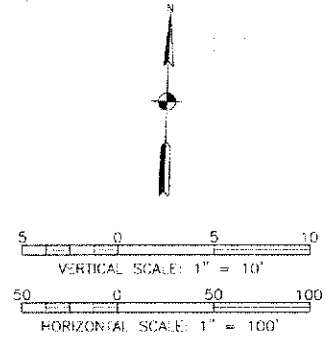
MATCHLINE STA. 447+50

MATCHLINE STA. 460+00

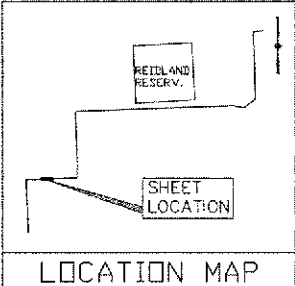


DIKESSER FARMS, INC.
 CALLED 66.66 ACRES
 (BIRD TRACT)
 VOL. 80, PG. 54
 L.O.B.

4" ROYSTER GREEN SAND LIP
 CALLED 2500.32 ACRES
 P.L. 200808088
 L.O.B.



NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES



AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



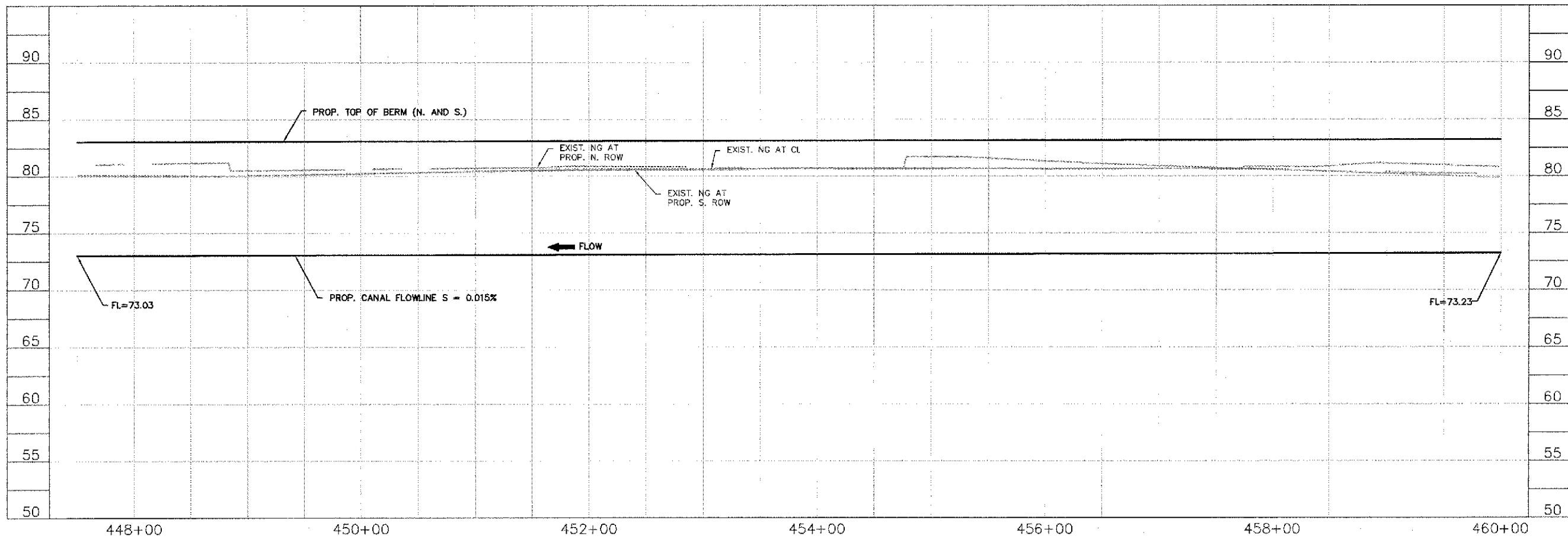
SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 447+50
 TO STA 460+00

DRAWING SCALE
 AS SHOWN

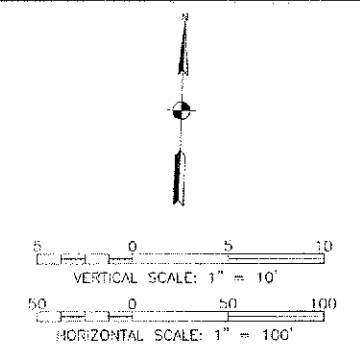
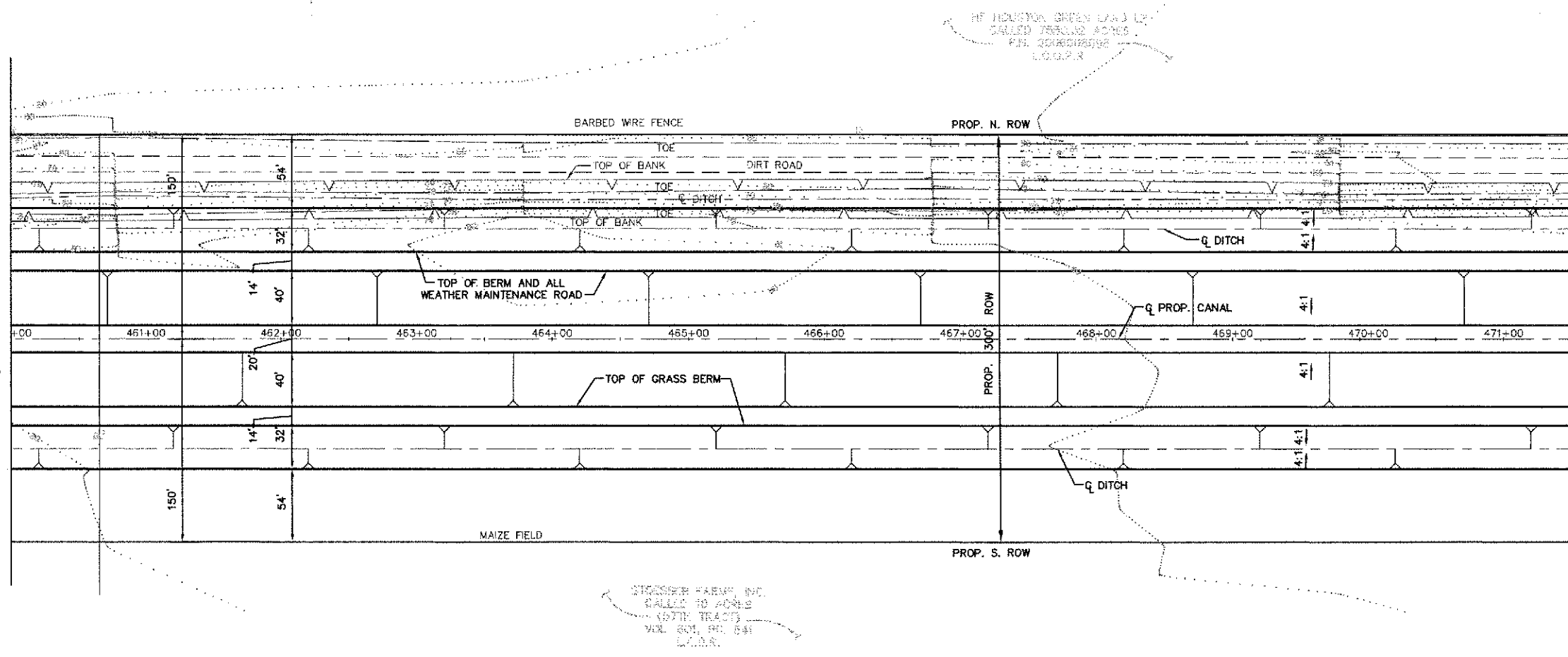
SHEET NO. 70 OF 248



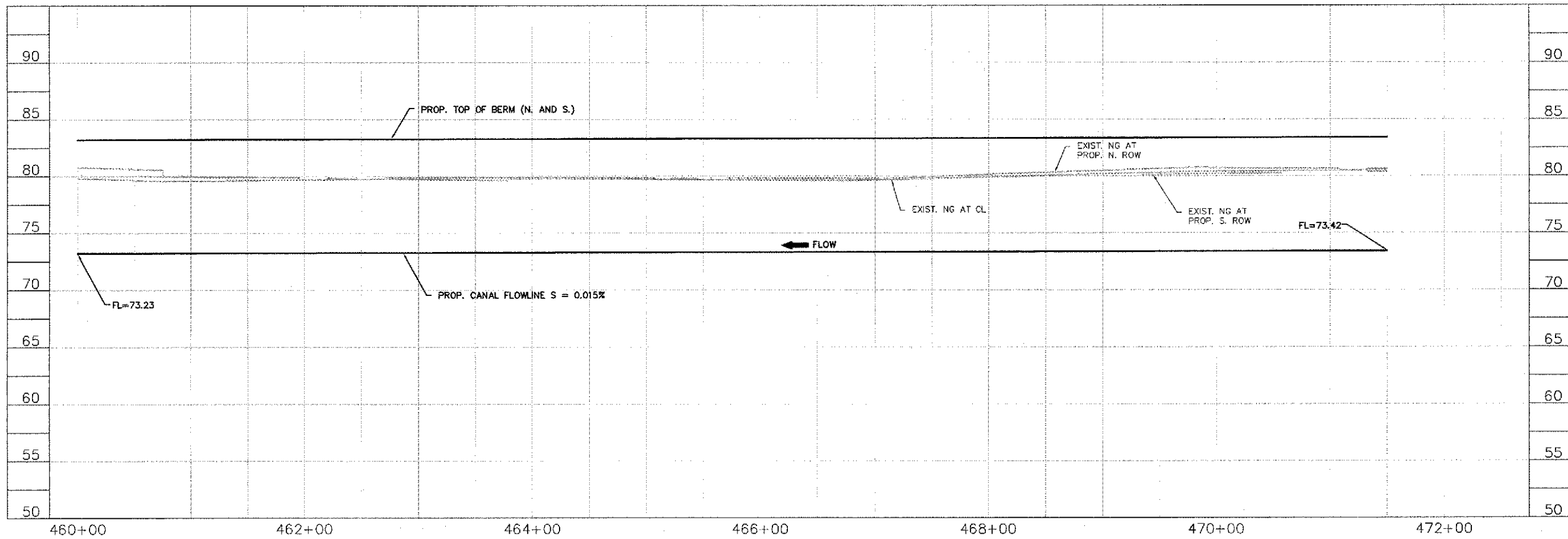
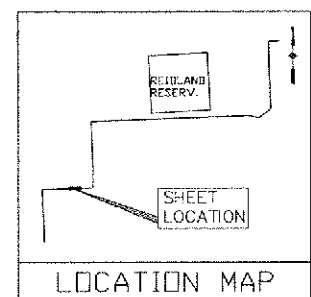
LAST MODIFIED: Jan 28, 2011 - 7:42am BY USER: ThompsonBI
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 DWG NAME: CanalP&P35.dwg

MATCHLINE STA. 460+00

MATCHLINE STA. 471+50



NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN




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AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057-1599
 WWW.AECOM.COM
 TYPE NO. 100 F-1550

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

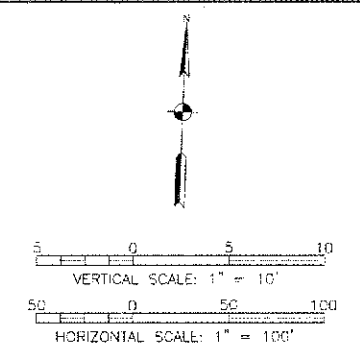
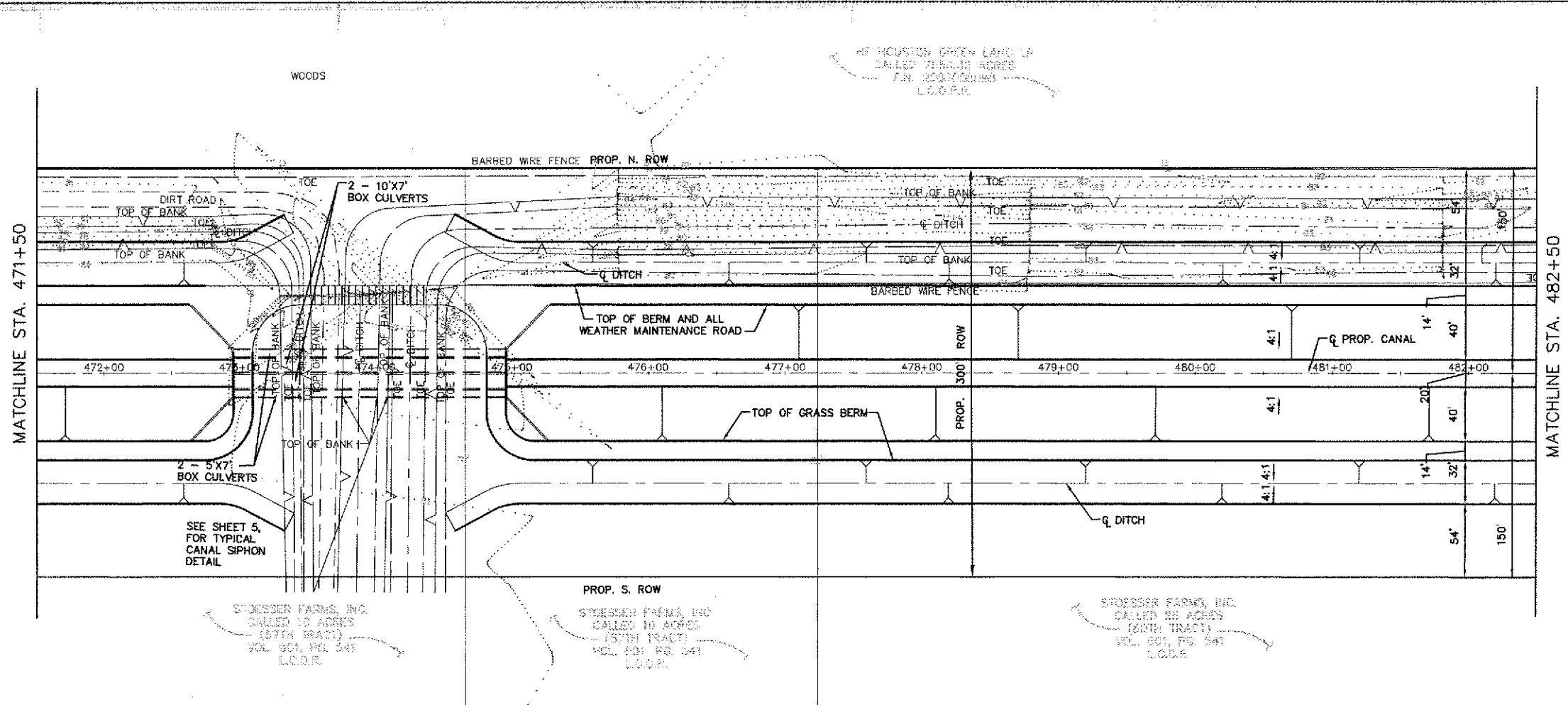
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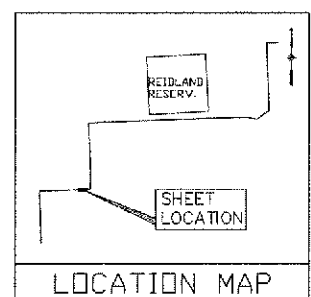
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 460+00
 TO STA 471+50

DRAWING SCALE	AS SHOWN
SHEET NO. 71 of 245	



NOTE:
DESIGN OF DRAINAGE TO OCCUR
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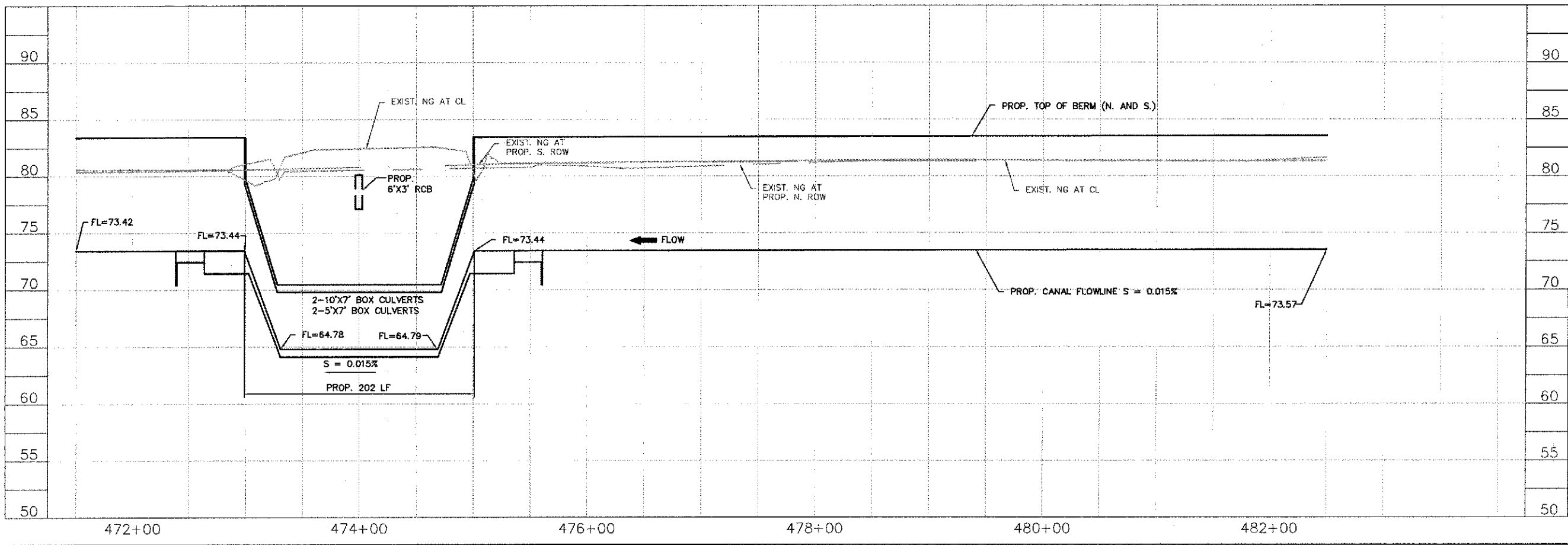
SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 471+50
TO STA 482+50

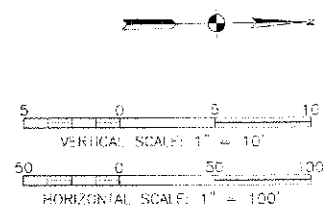
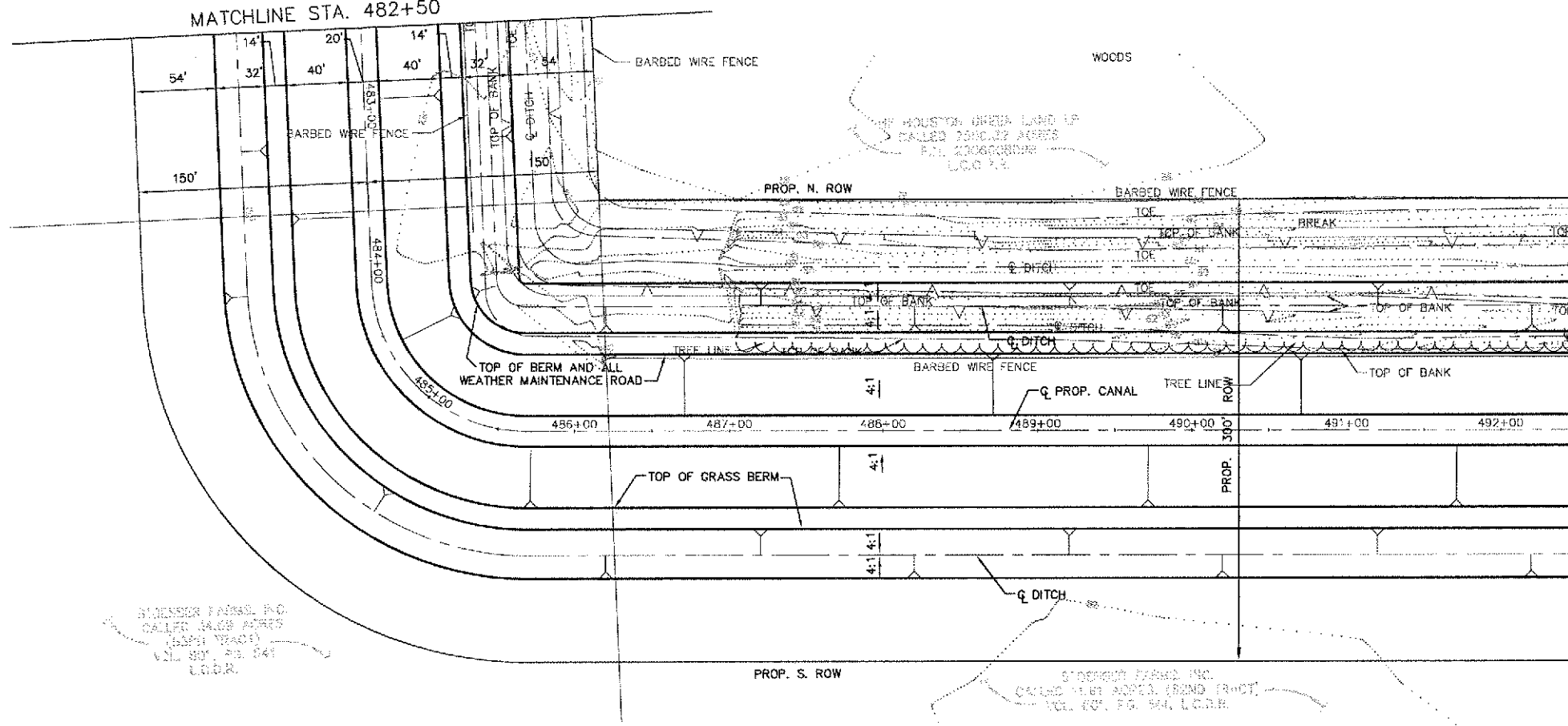
DRAWING SCALE
AS SHOWN

SHEET NO. 72 OF 74

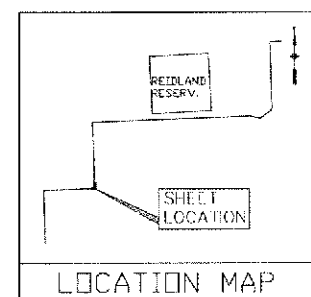


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MATCHLINE STA. 482+50

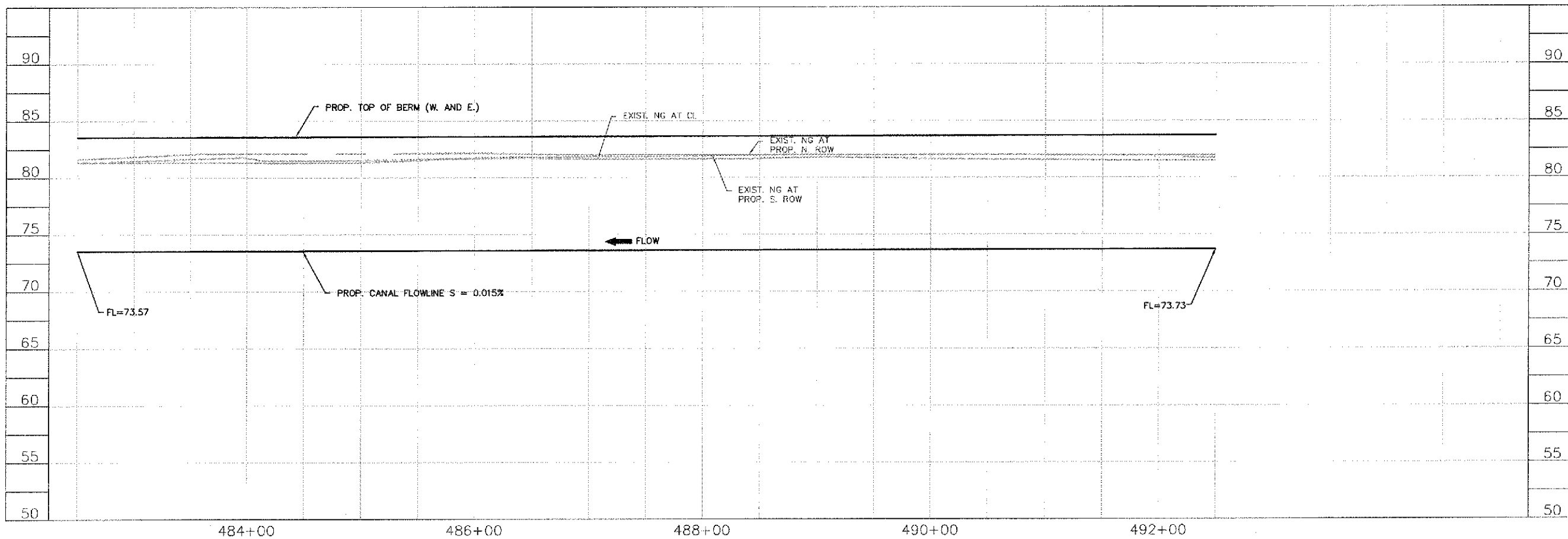


NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



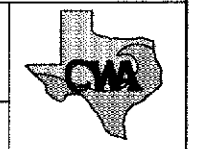
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CALLED 2000 ACRES
(LAMP TRACT)
VOL. 807, PG. 241
L.C.D.R.

STUESER FARMS, INC.
CALLED 1161 ACRES (ROUND TRACT)
VOL. 807, PG. 241, L.C.D.R.



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5757 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.
www.aecom.com T-9580

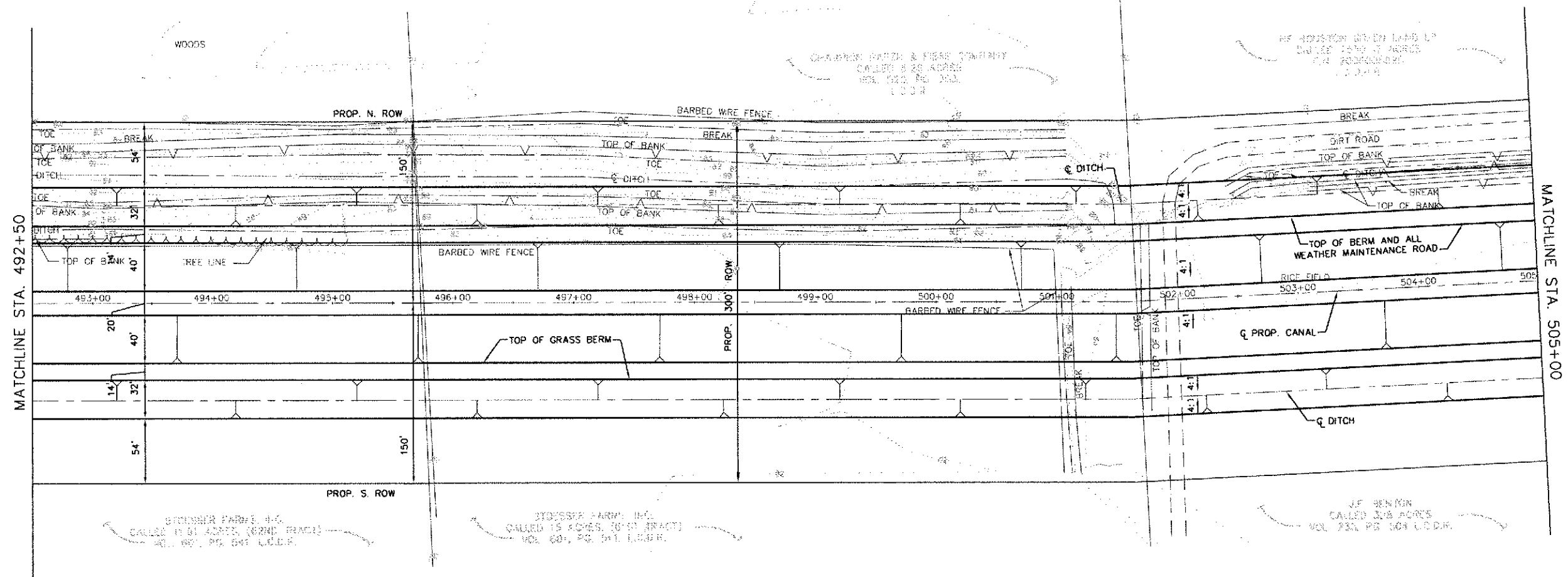
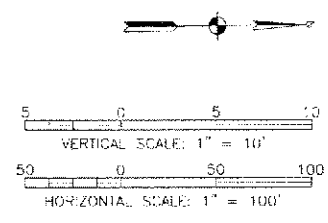


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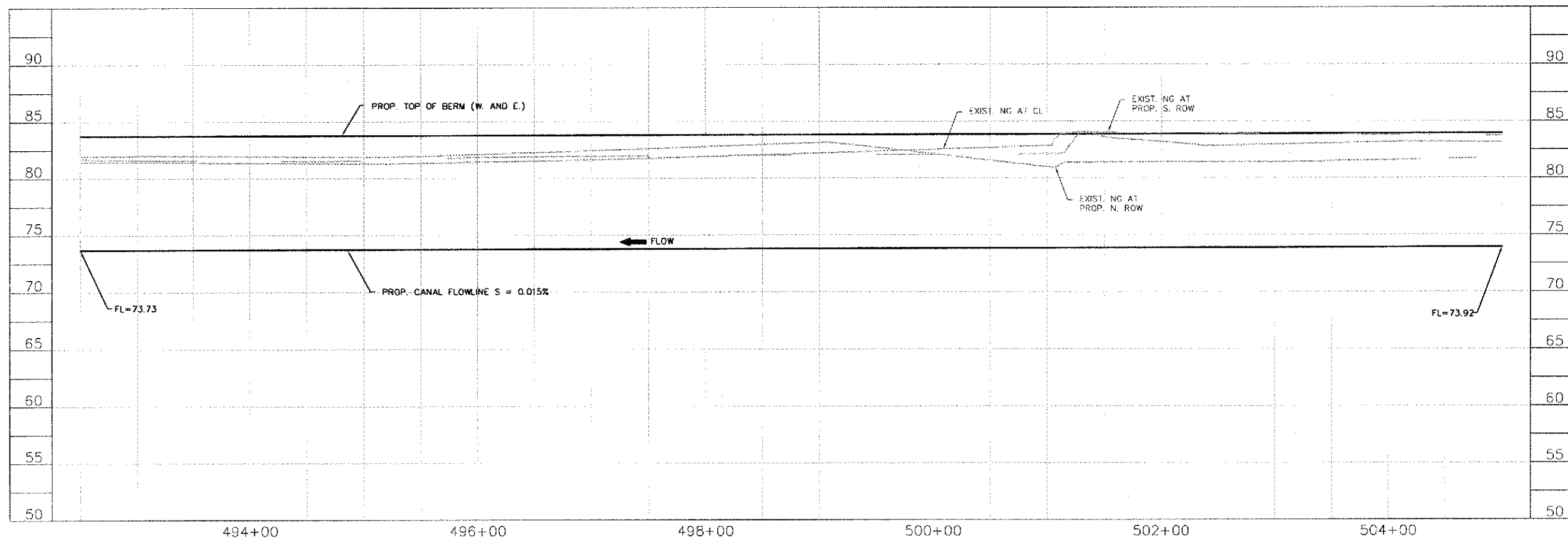
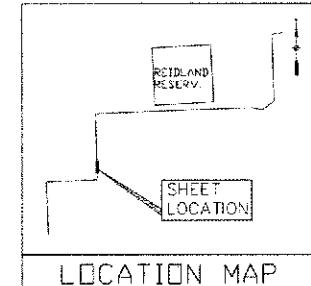
CANAL PLAN &
PROFILE STA 482+50
TO STA 492+50

DRAWING SCALE
AS SHOWN

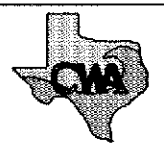
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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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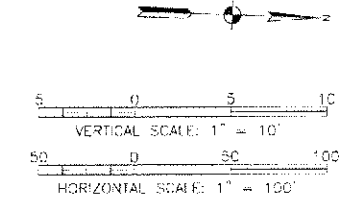
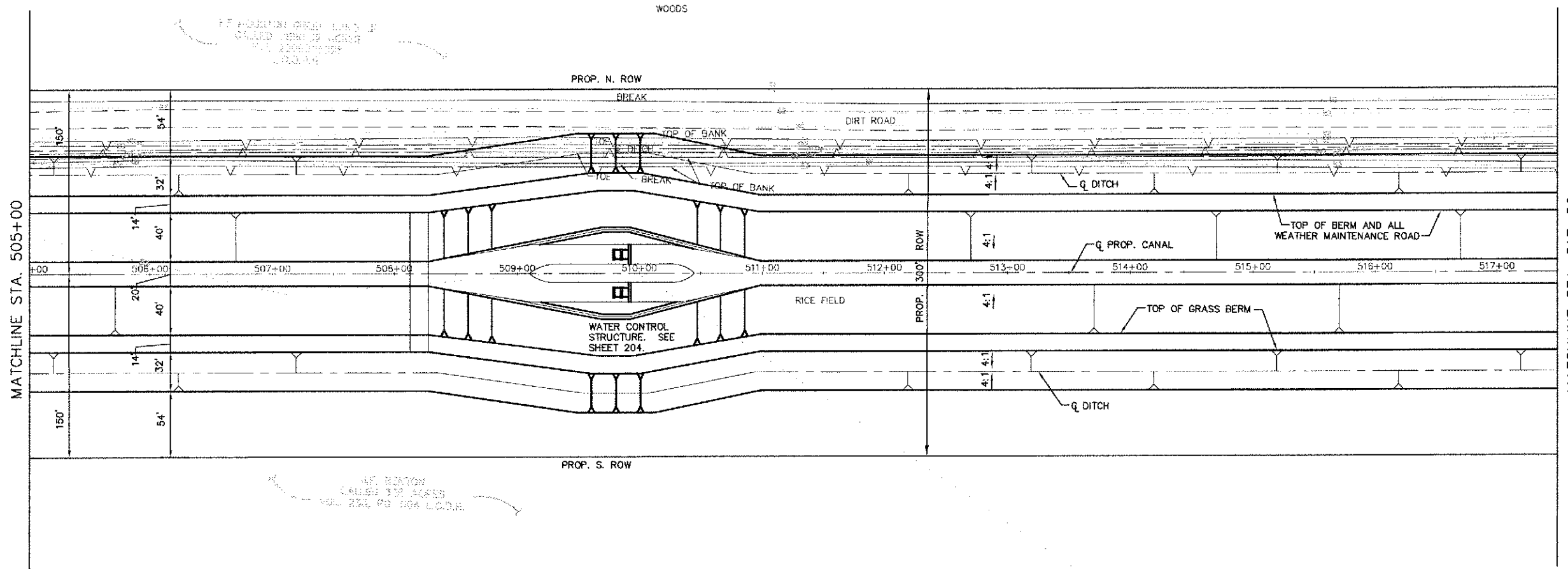
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COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
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TO STA 505+00

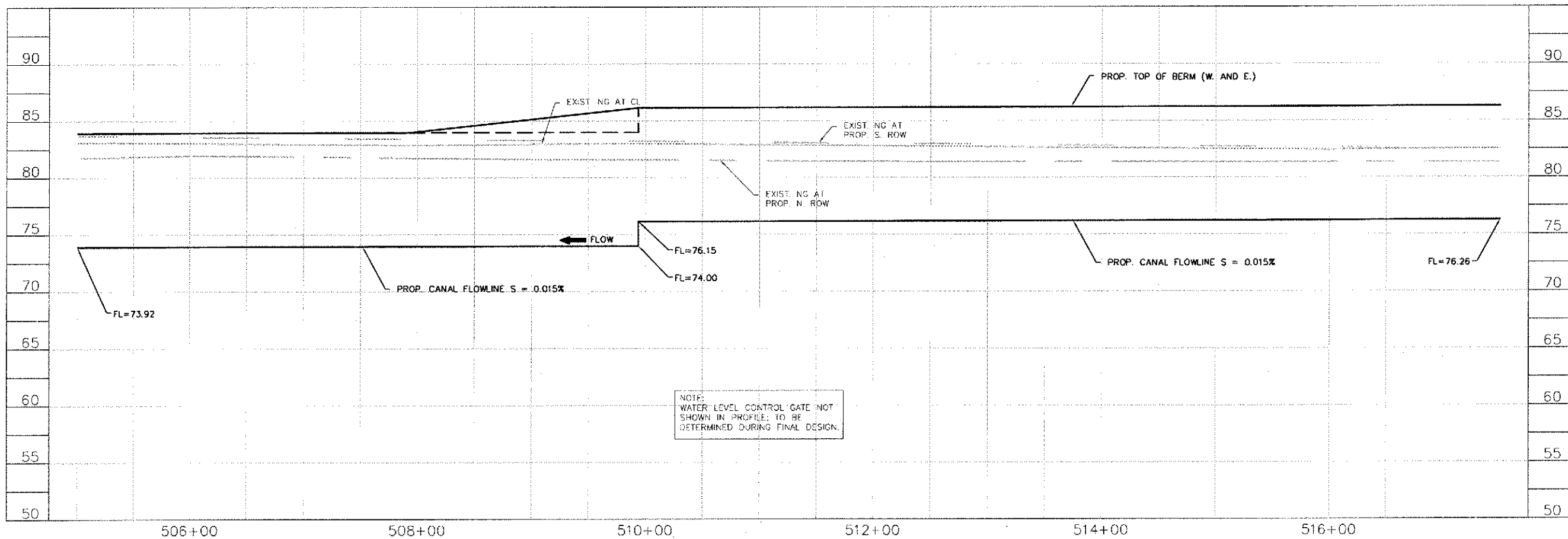
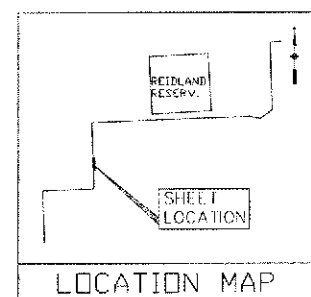
DRAWING SCALE
AS SHOWN

SHEET NO. 74 OF 148

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NOTE:
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713.780.0838 fax



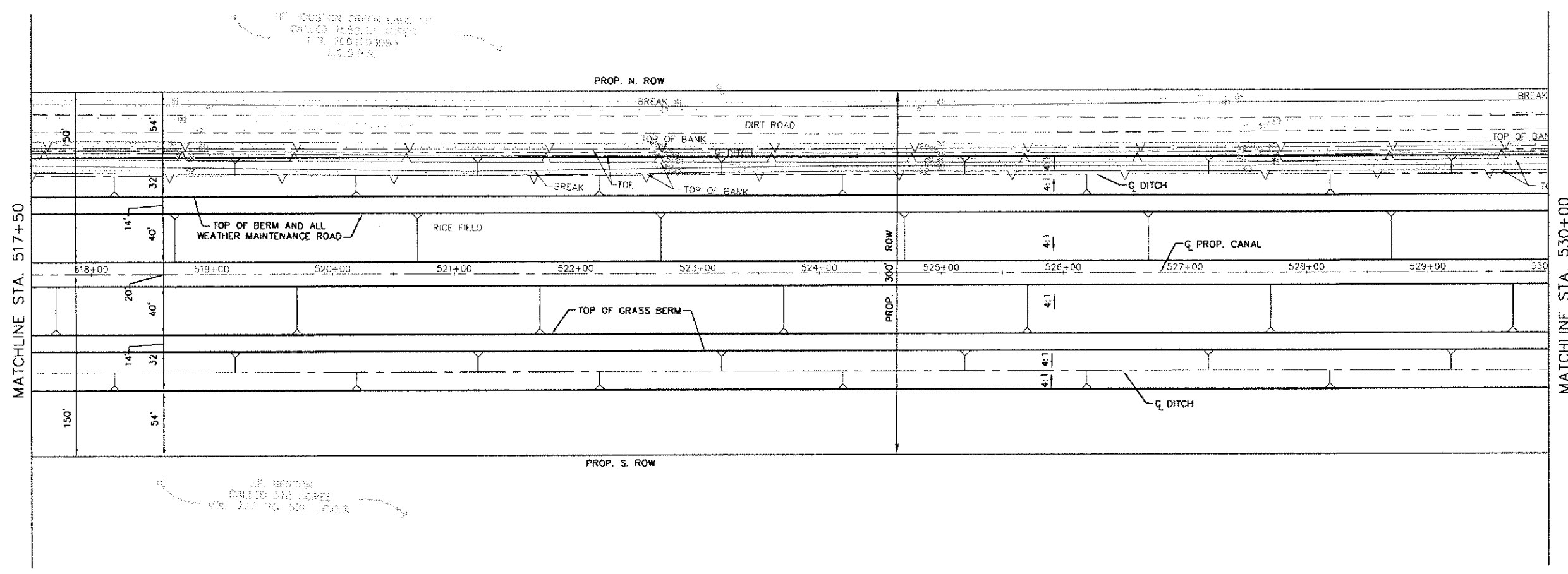
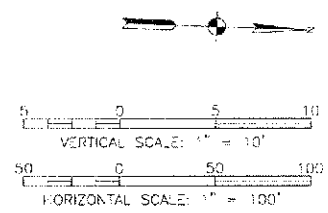
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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 505+00
TO STA 517+50

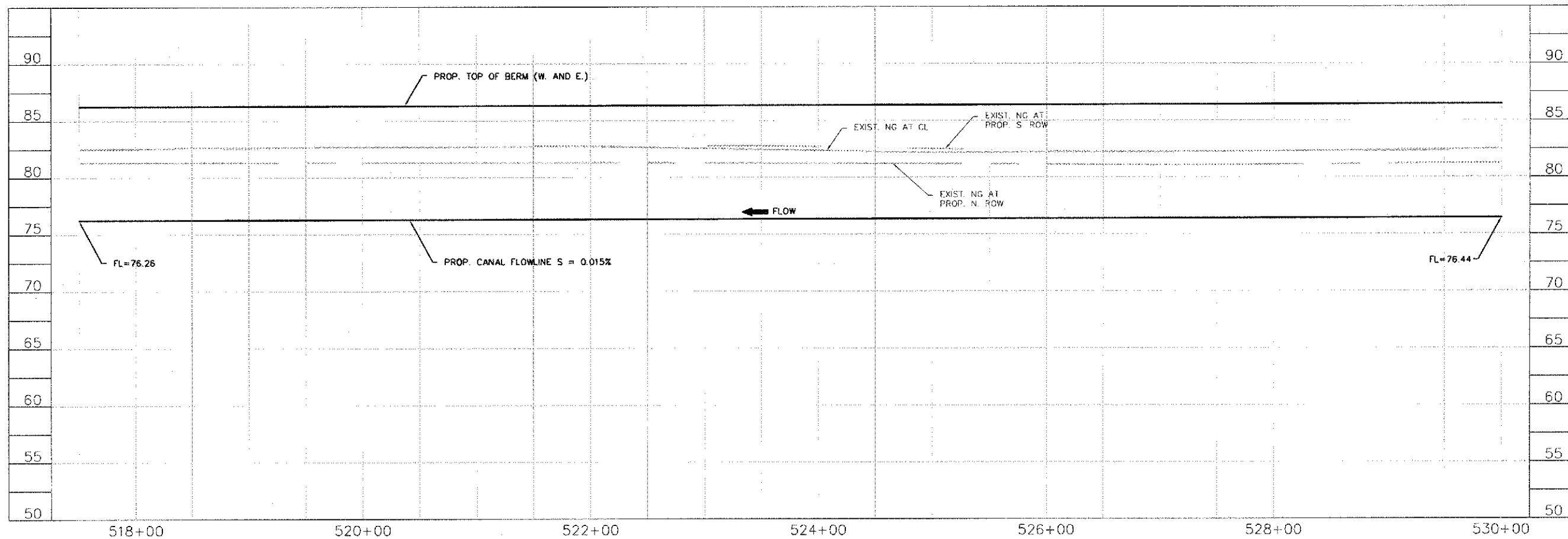
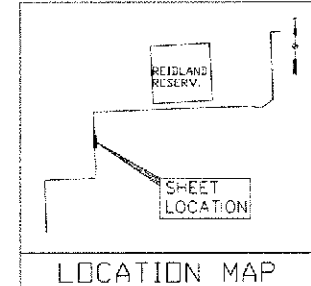
DRAWING SCALE
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SHEET NO. 25 OF 245

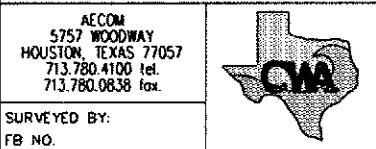
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NOTE:
DESIGN OF DRAINAGE TO OCCUR
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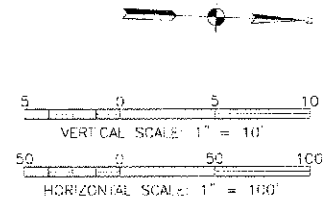
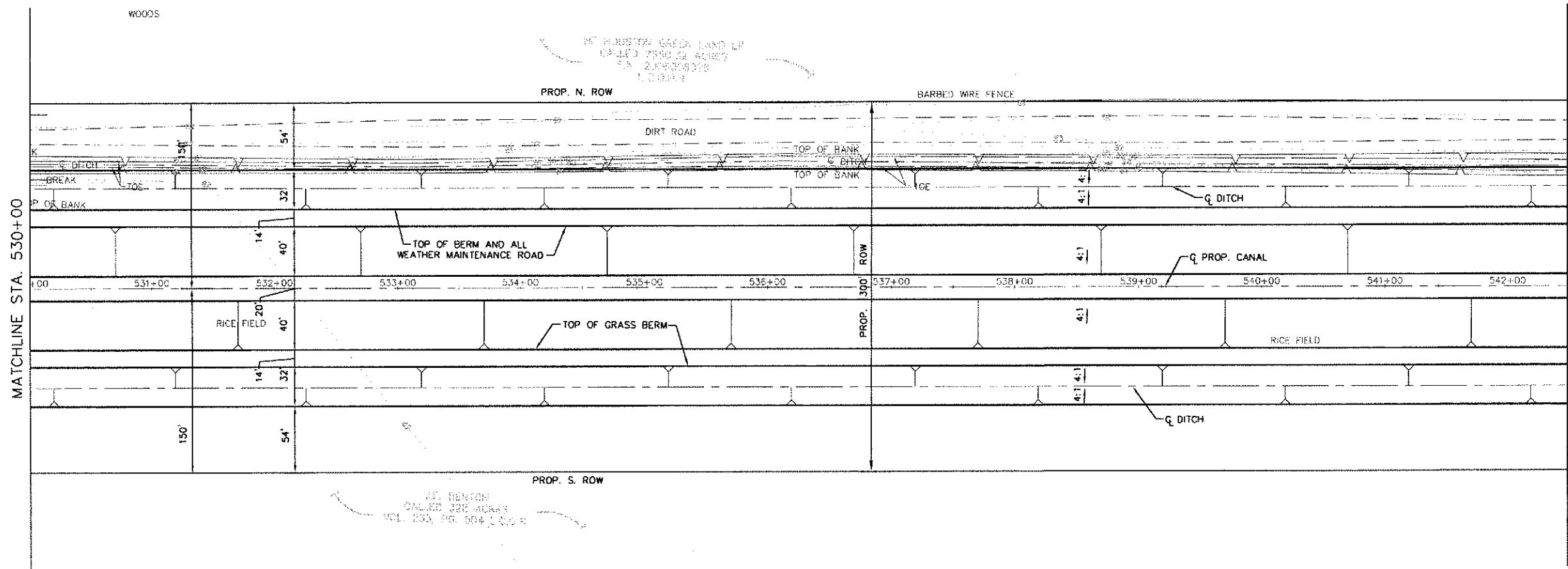
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FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

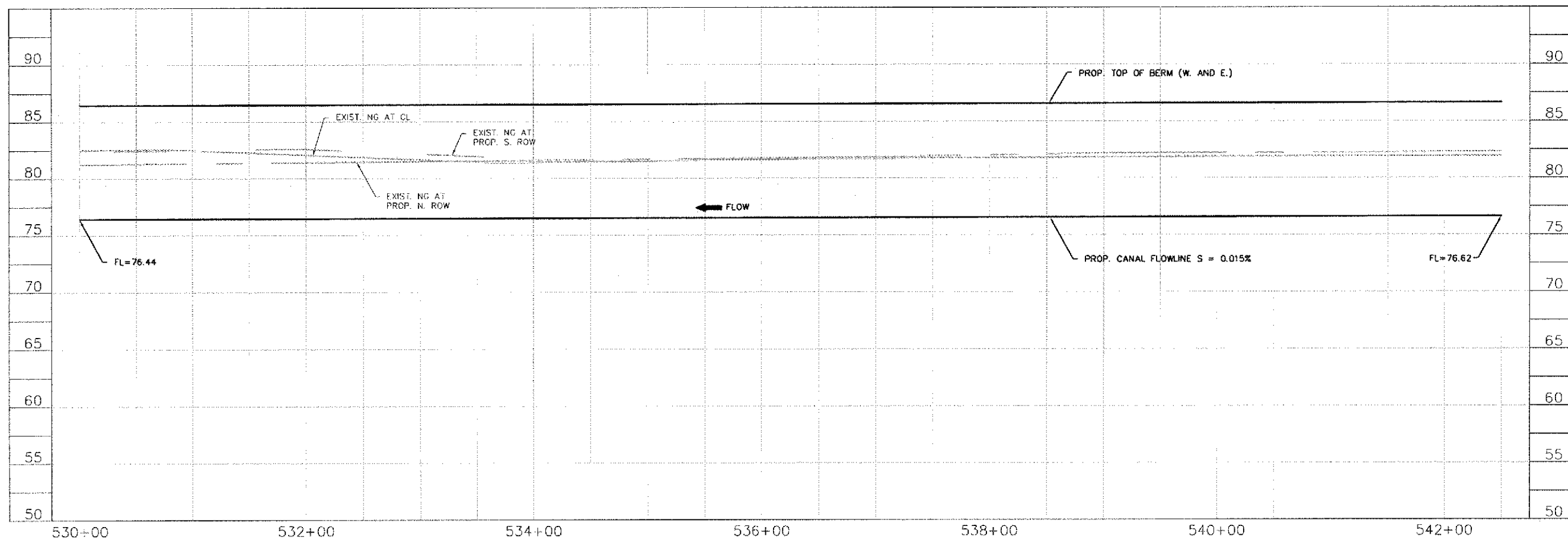
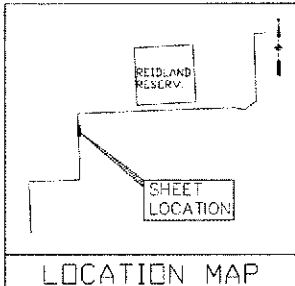
CANAL PLAN &
PROFILE STA 517+50
TO STA 530+00

DRAWING SCALE	AS SHOWN
SHEET NO. 76 OF 245	

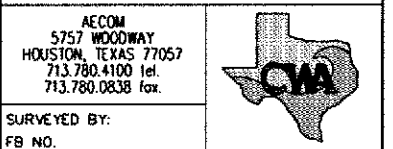
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NOTE:
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COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT

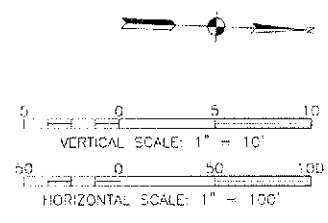
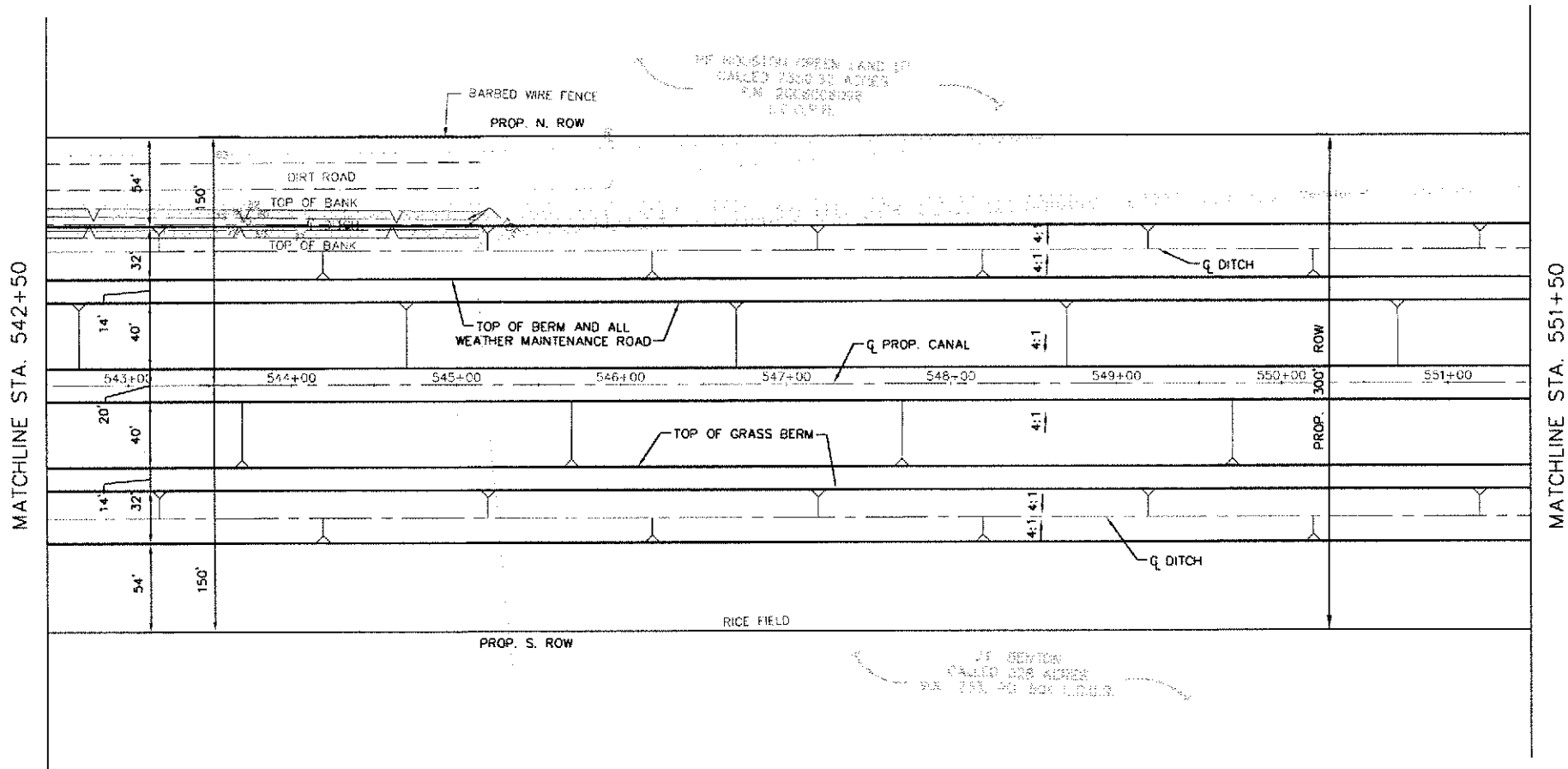
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PROFILE STA 530+00
TO STA 542+50

DRAWING SCALE
AS SHOWN

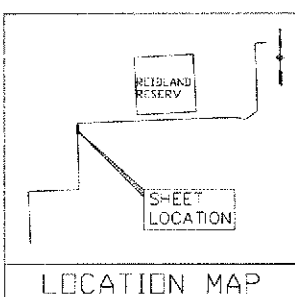
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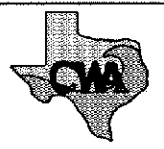
NOTE:
 DESIGN OF DRAINAGE TO OCCUR
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 HOUSTON, TEXAS 77057
 713.780.4100 Tel.
 713.780.0838 Fax

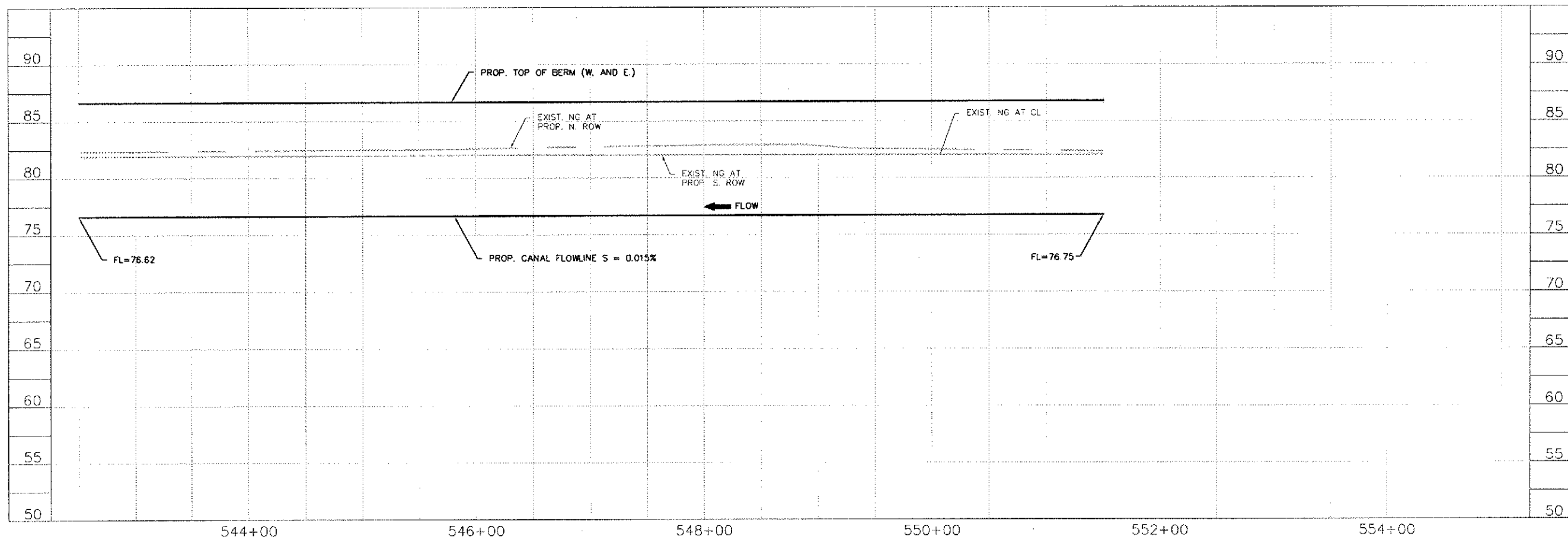


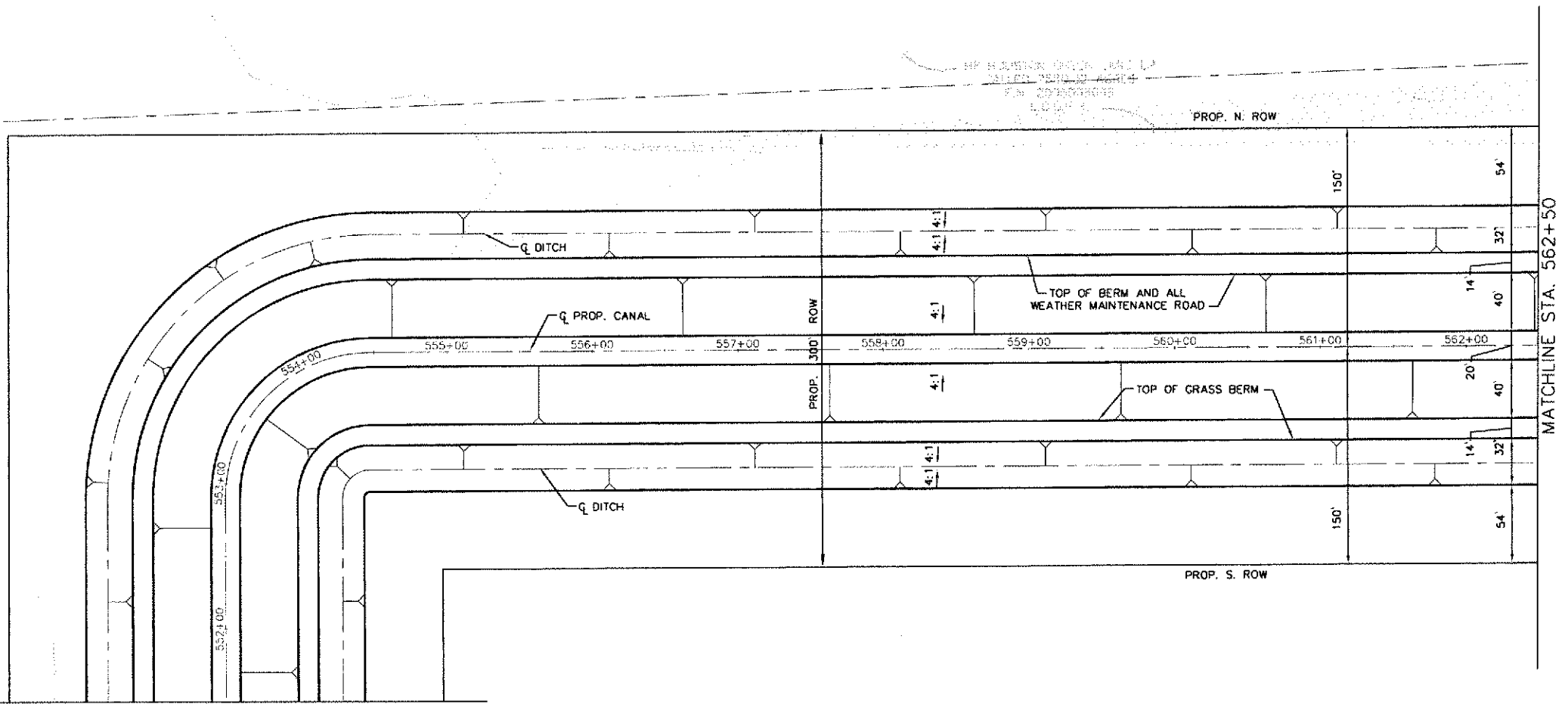
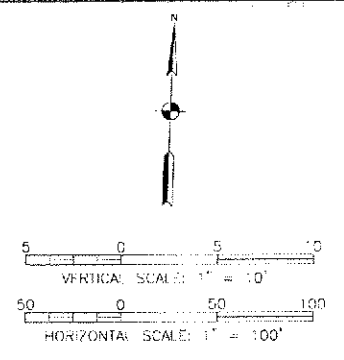
SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 542+50
 TO STA 551+50

DRAWING SCALE	AS SHOWN
SHEET NO. 78 of 215	

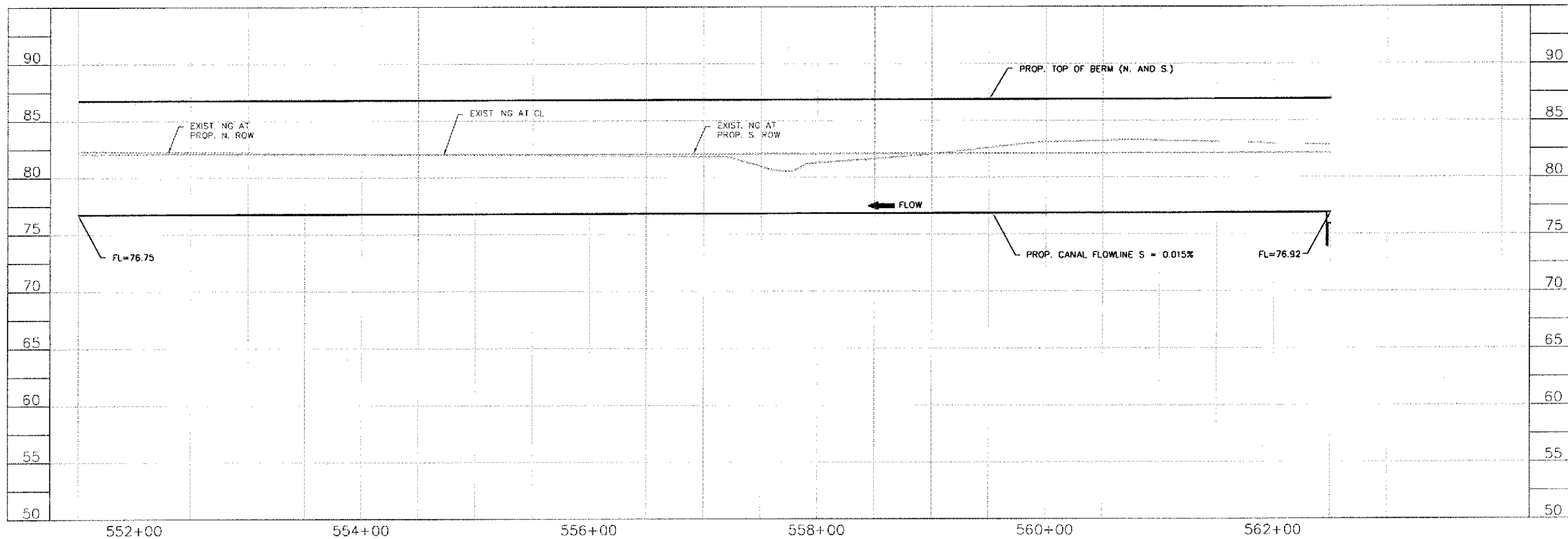
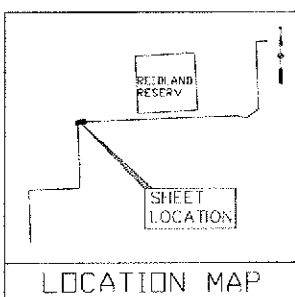




MATCHLINE STA. 551+50

MATCHLINE STA. 562+50

NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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AECOM AECOM TECHNICAL SERVICES, INC.
5157 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax
TYPE REC. NO. 7-3580

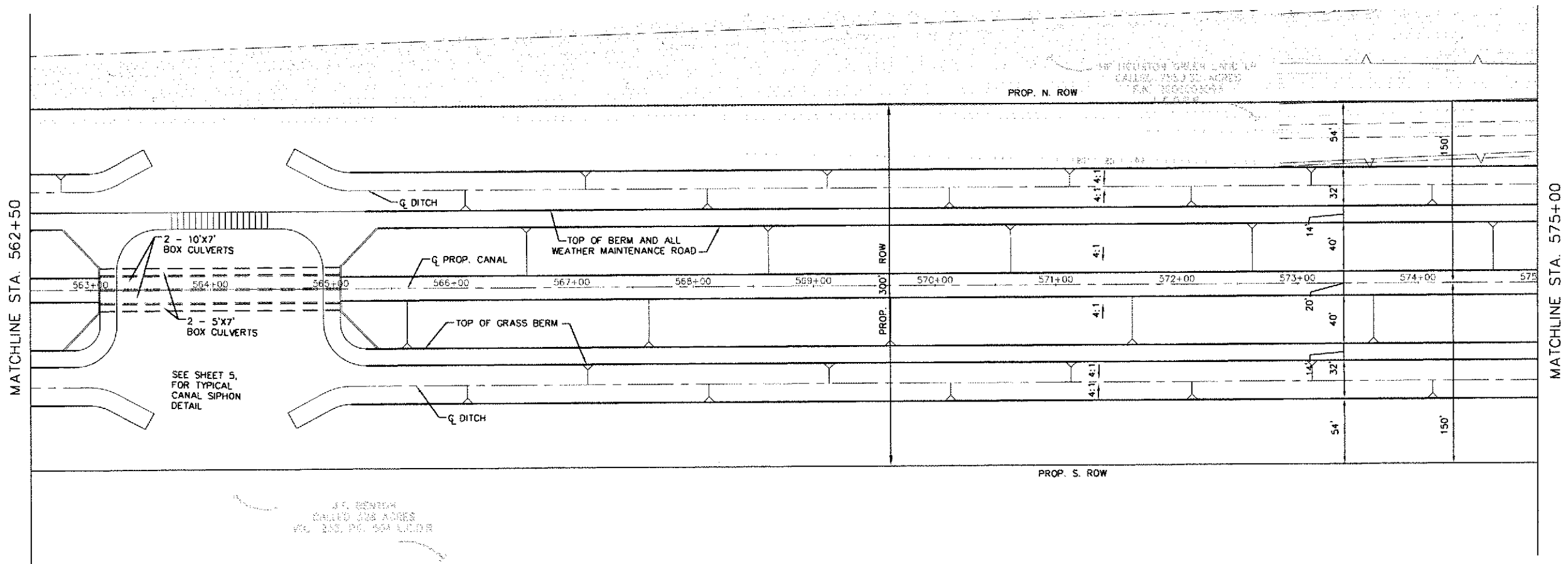
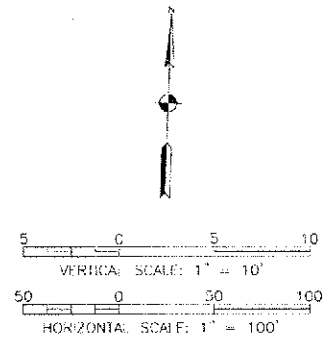
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

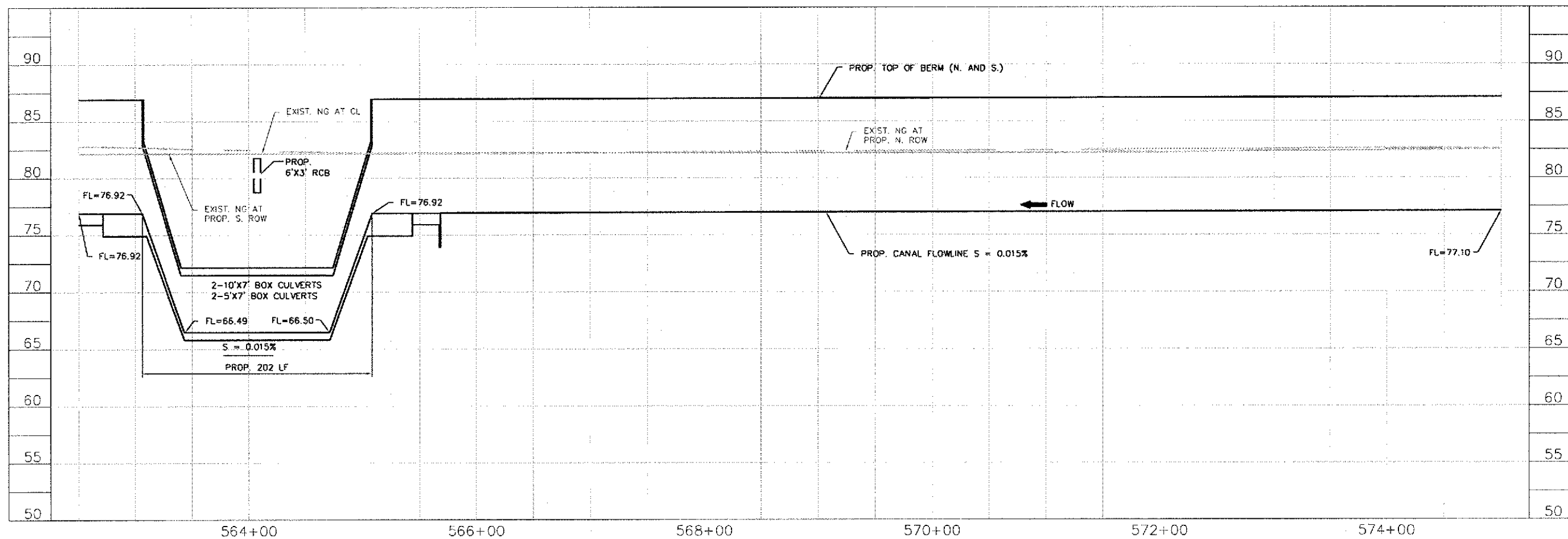
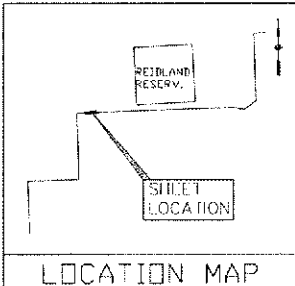
CANAL PLAN &
PROFILE STA 551+50
TO STA 562+50

DRAWING SCALE	AS SHOWN
SHEET NO.	79 of 245

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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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HOUSTON, TEXAS 77057
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WWW.AECOM.COM
FPE REG. NO. P-3540

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

SURVEYED BY:
FB ND.

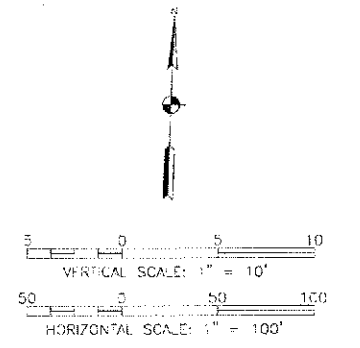
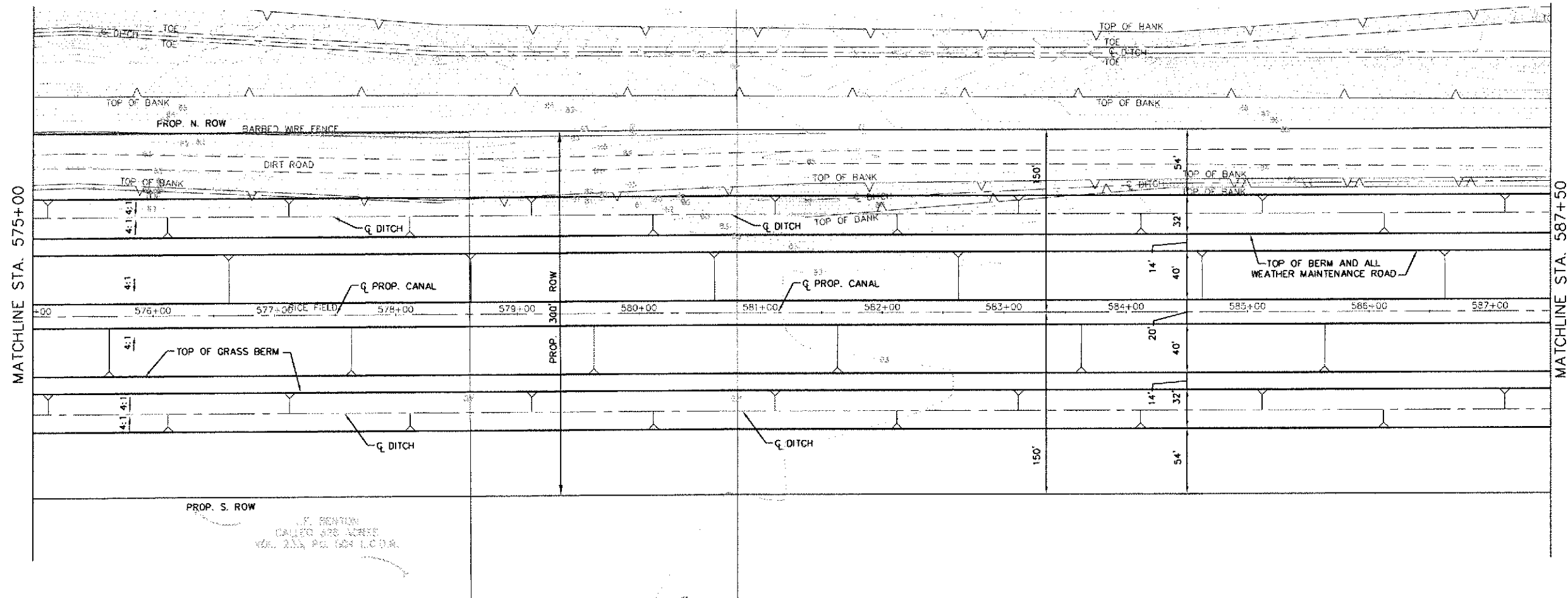
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 562+50
TO STA 575+00

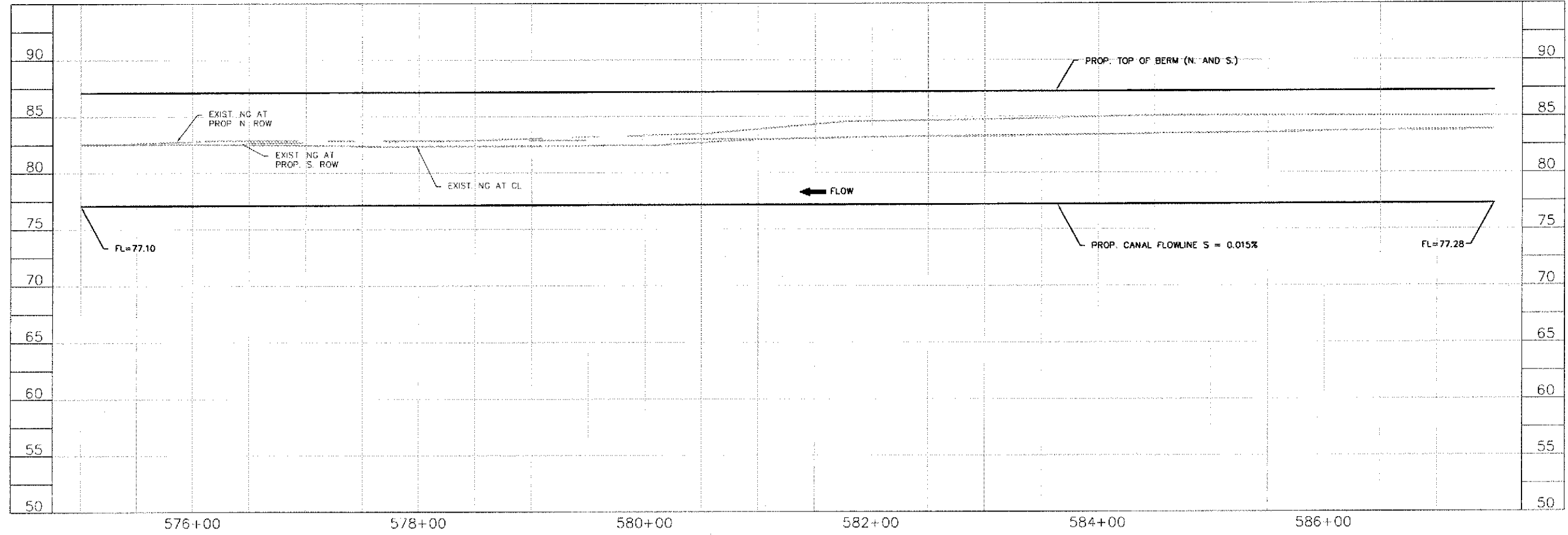
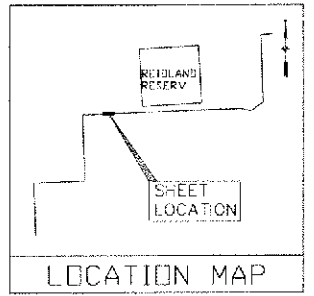
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NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



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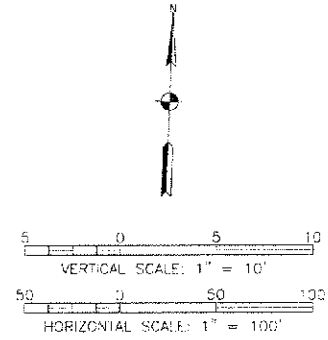
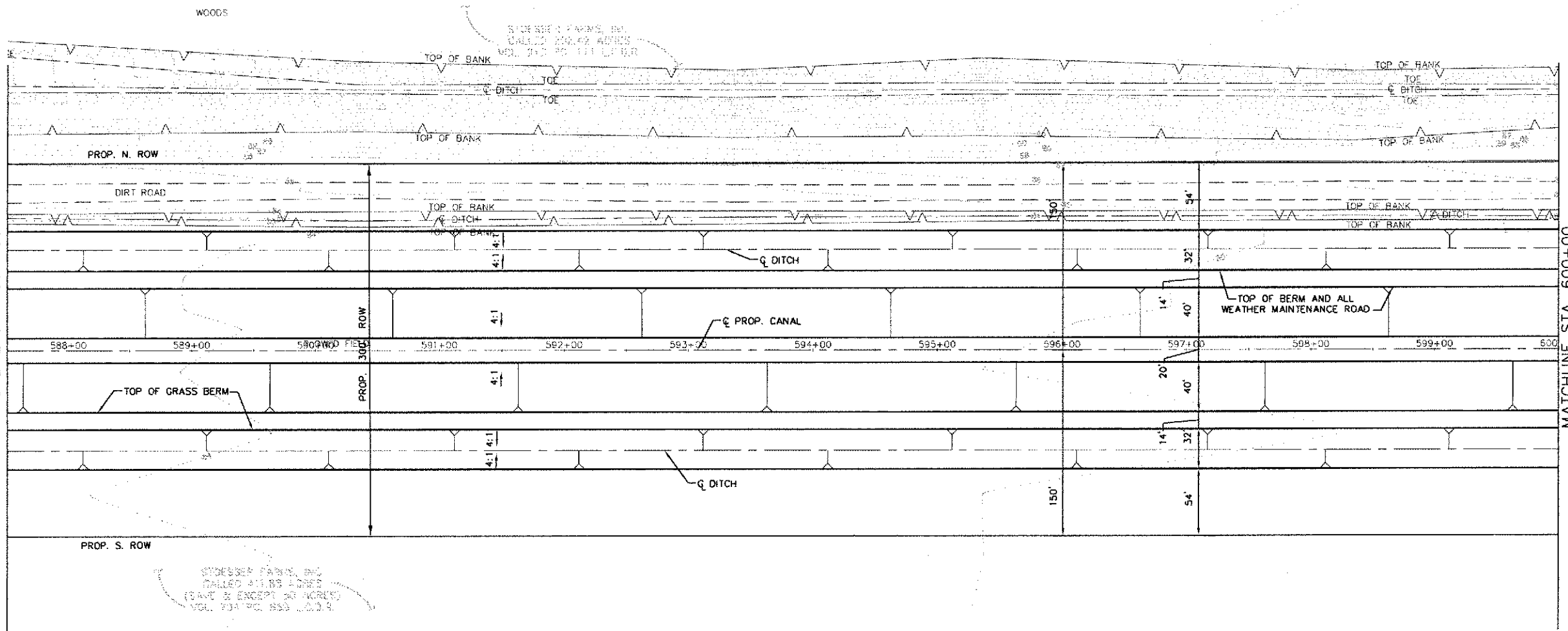
CANAL PLAN &
 PROFILE STA 575+00
 TO STA 587+50

DRAWING SCALE
 AS SHOWN

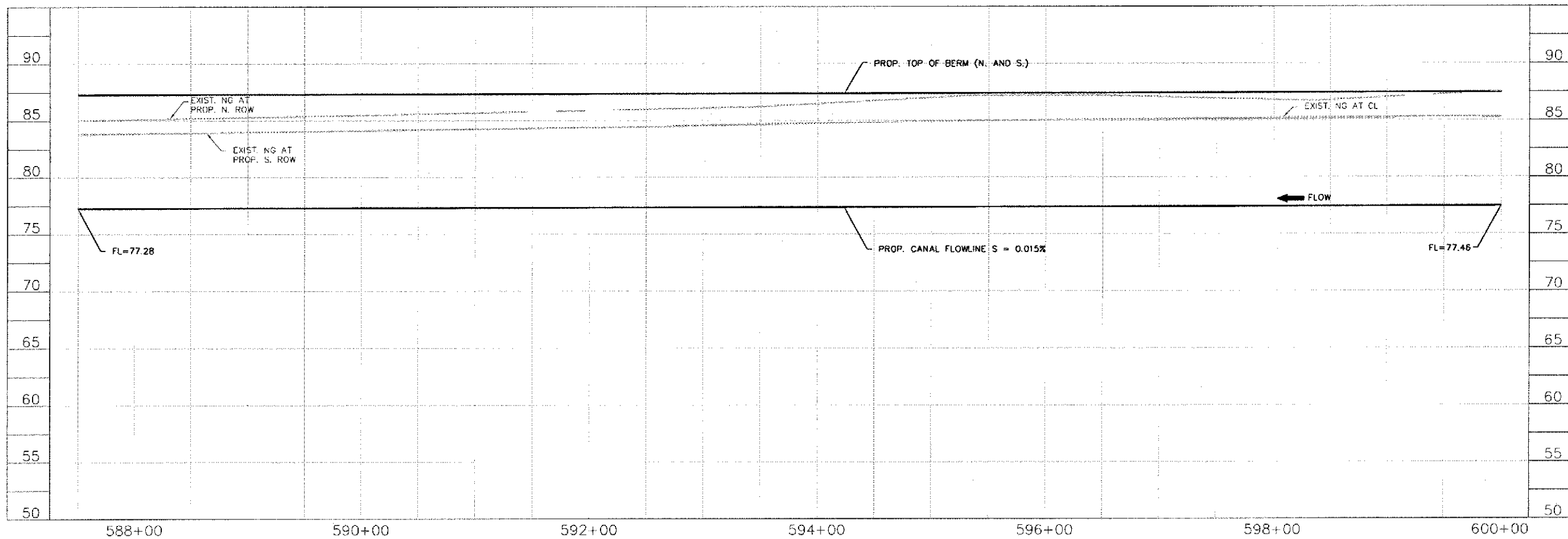
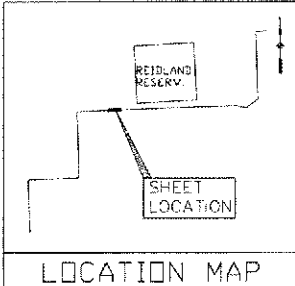
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MATCHLINE STA. 587+50

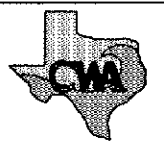
MATCHLINE STA. 600+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 587+50
TO STA 600+00

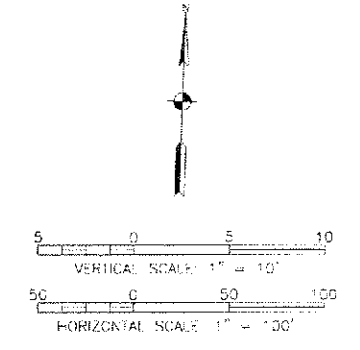
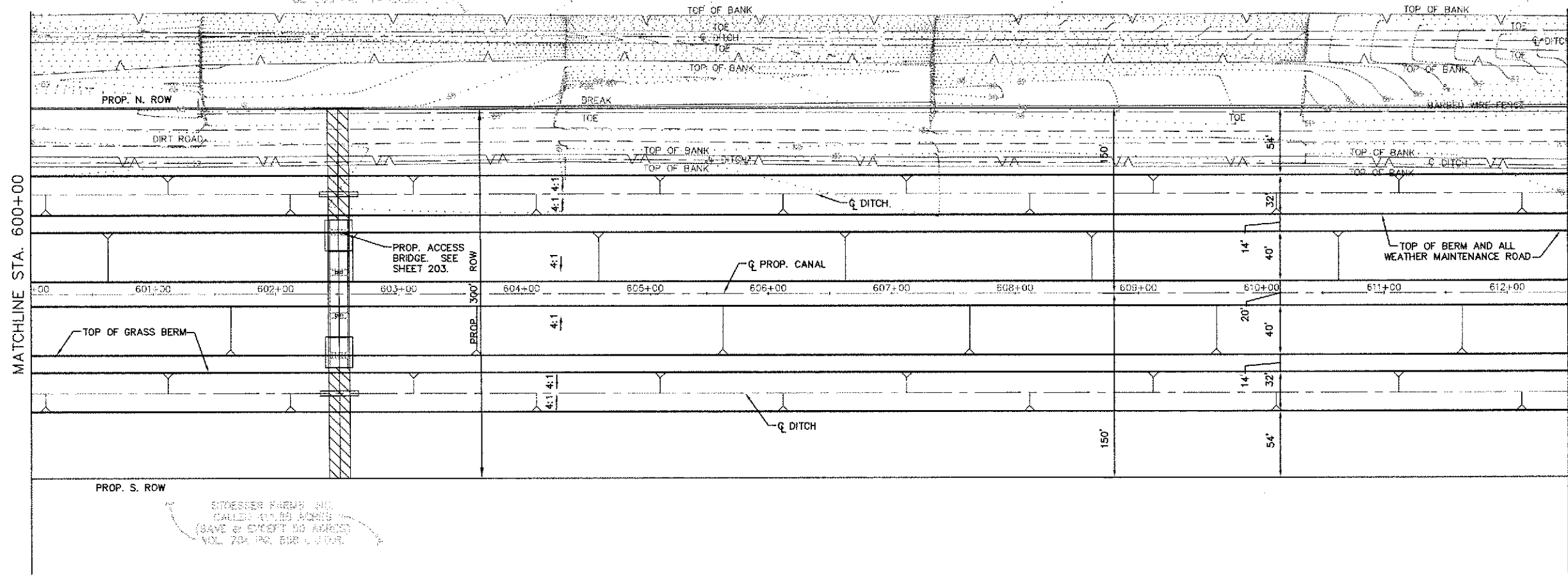
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SHEET NO. **8** OF **25**

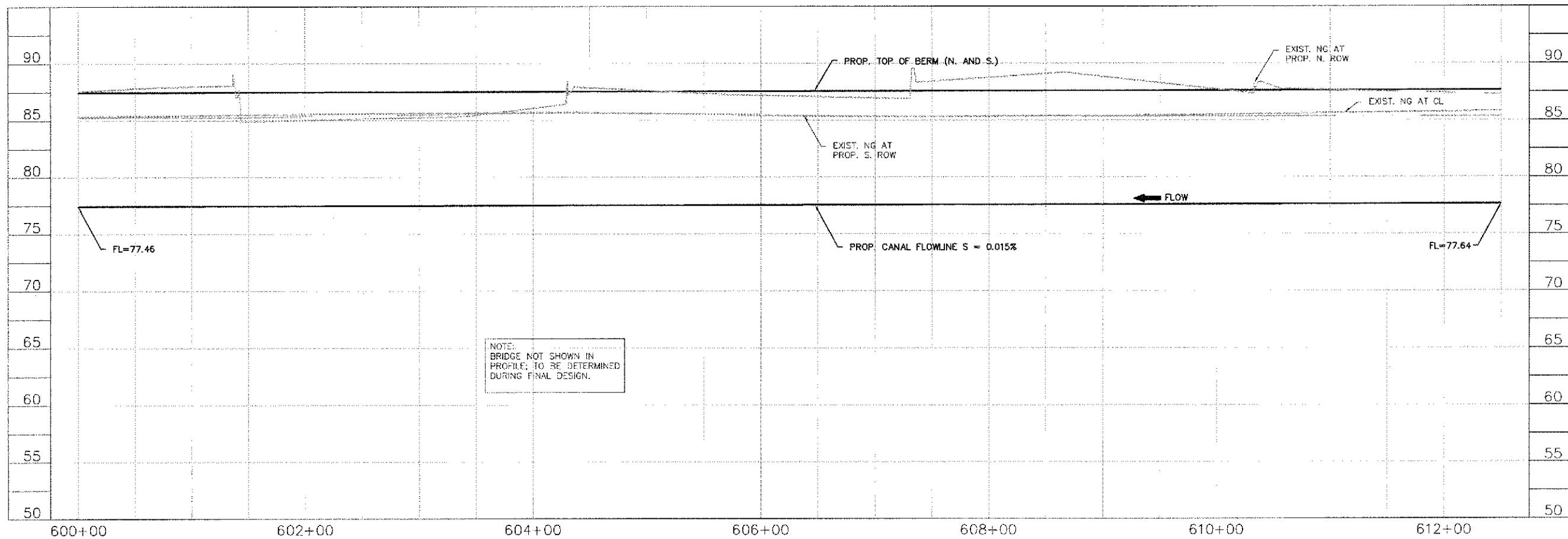
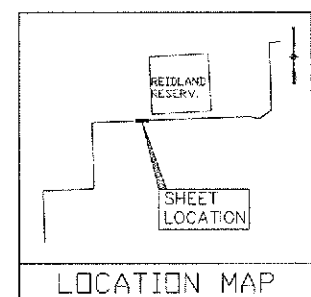
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MATCHLINE STA. 600+00

MATCHLINE STA. 612+50



NOTE:
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DURING FINAL DESIGN



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713.780.4100 tel.
713.780.0838 fax.

SURVEYED BY:
FB NO.

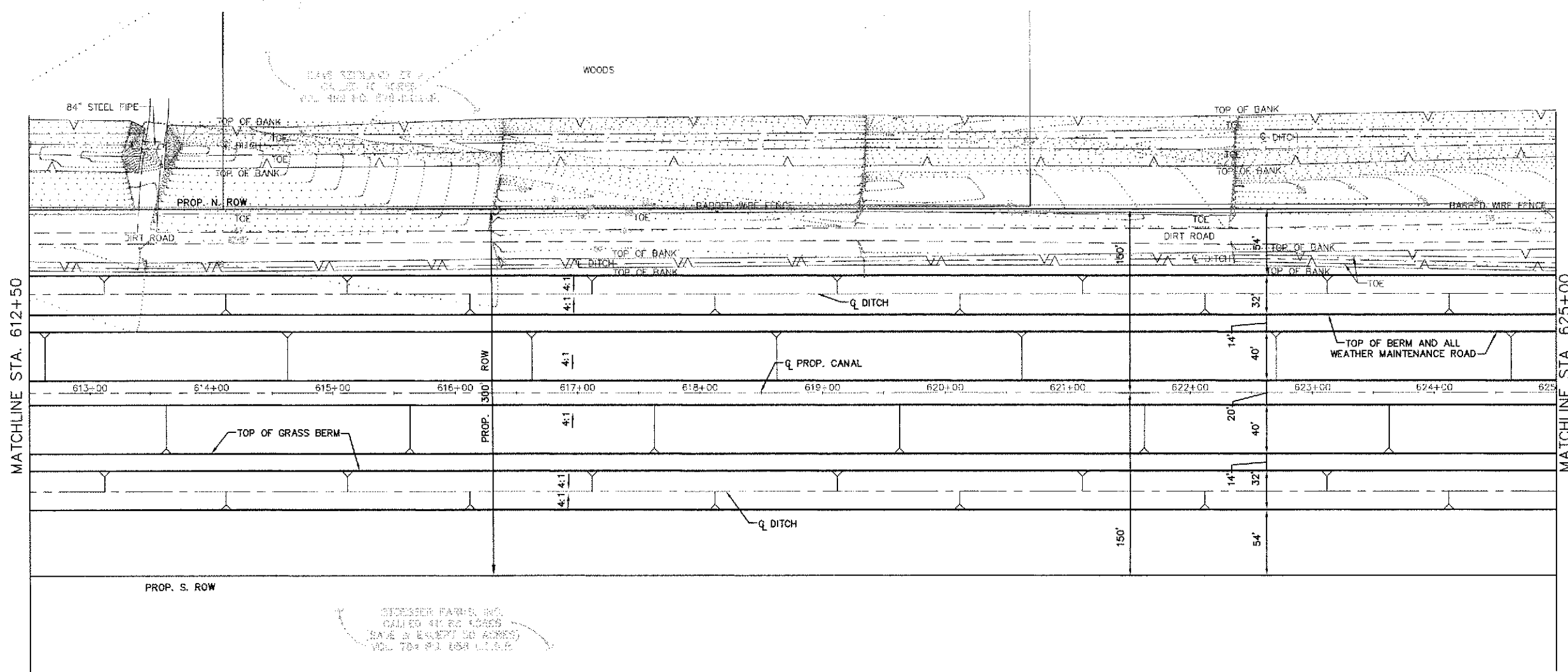
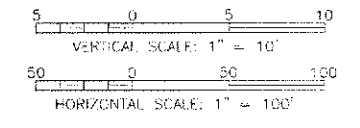
COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 600+00
TO STA 612+50

DRAWING SCALE
AS SHOWN

SHEET NO. 83 of 245

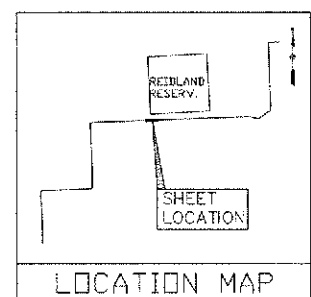
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MATCHLINE STA. 612+50

MATCHLINE STA. 625+00

NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
6761 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057
WWW.AECOM.COM
713.780.1000

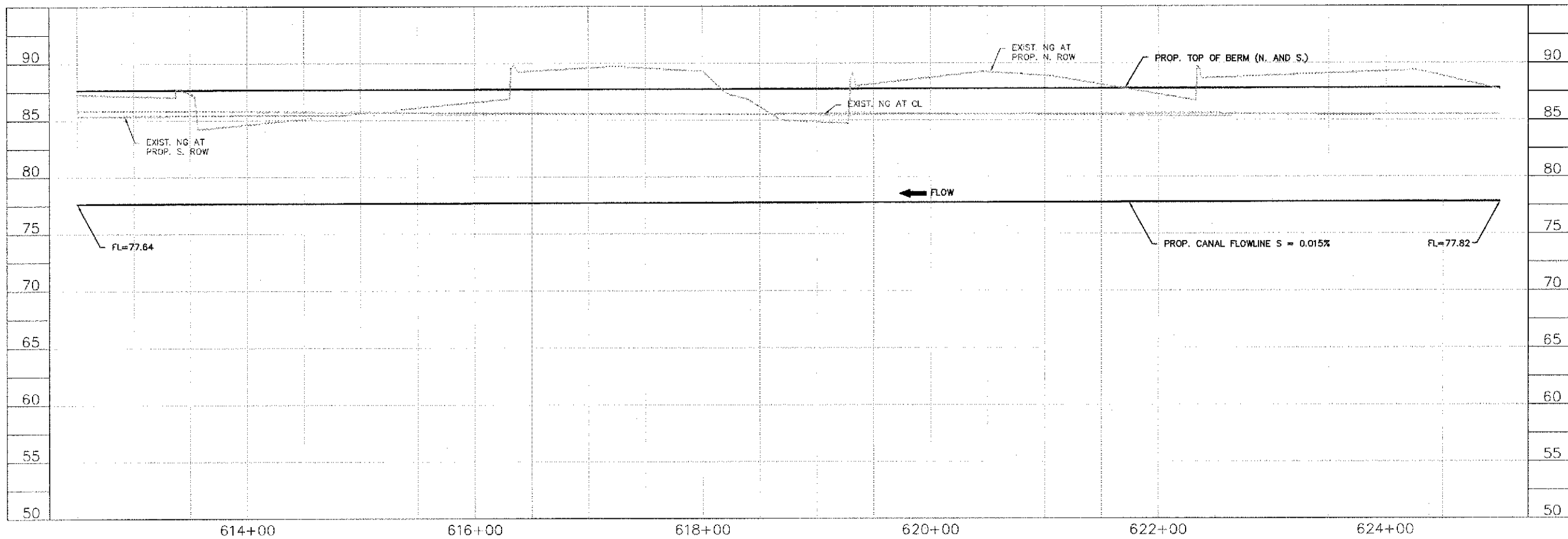
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

SURVEYED BY:
FB NO.

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LUCE BAYOU INTERBASIN TRANSFER PROJECT

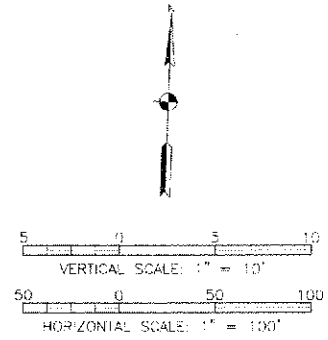
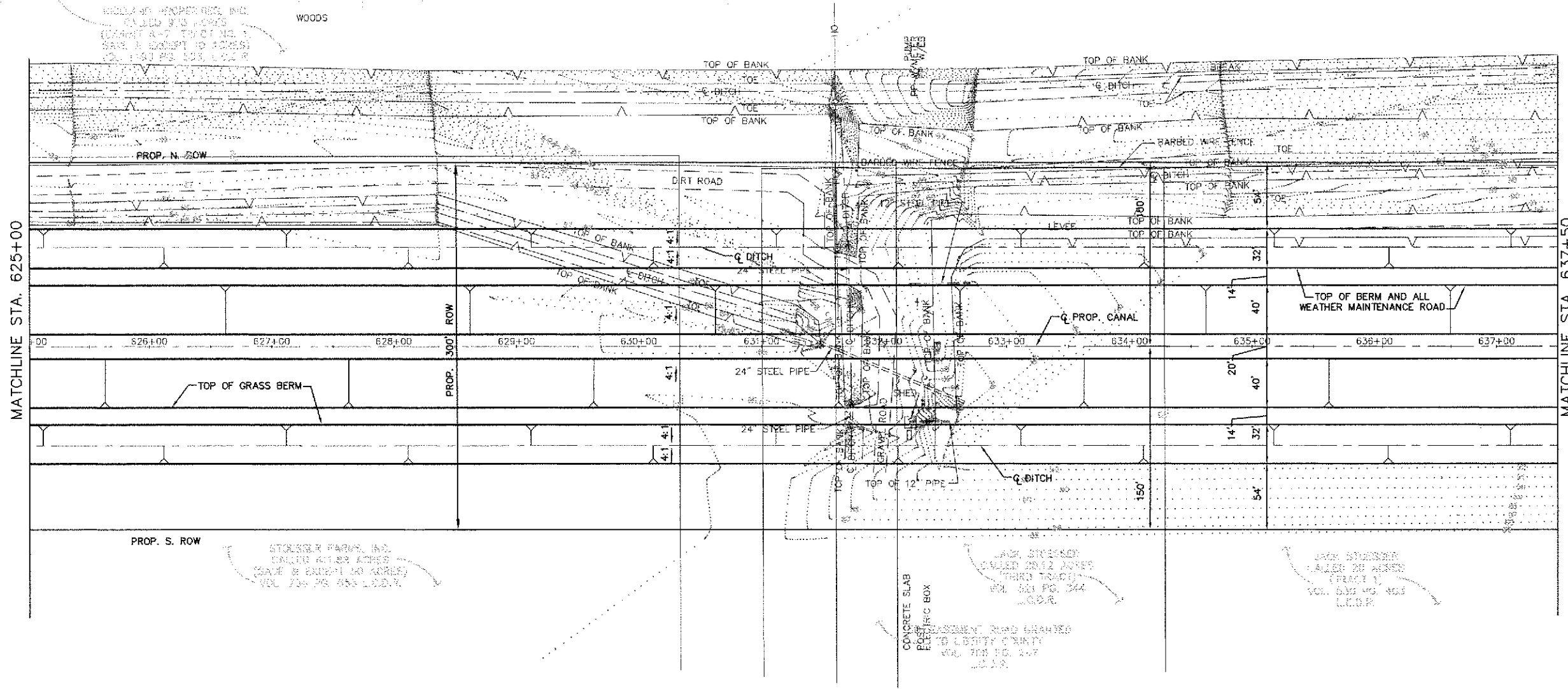
CANAL PLAN &
PROFILE STA 612+50
TO STA 625+00

DRAWING SCALE	AS SHOWN
SHEET NO. 84 OF 245	

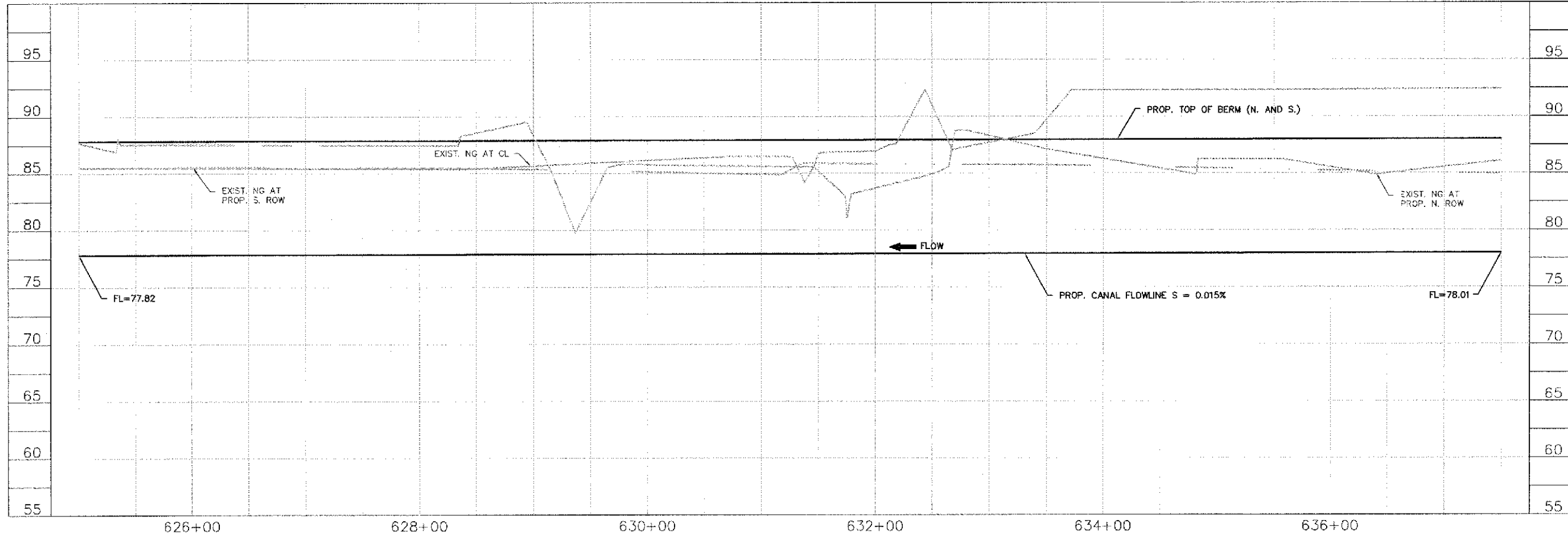
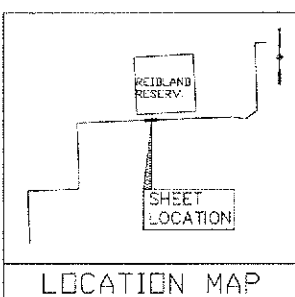


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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

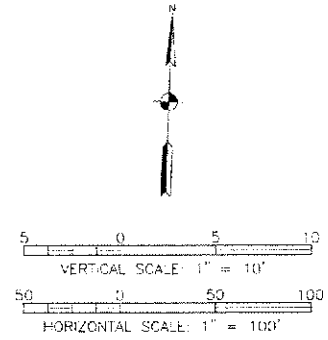
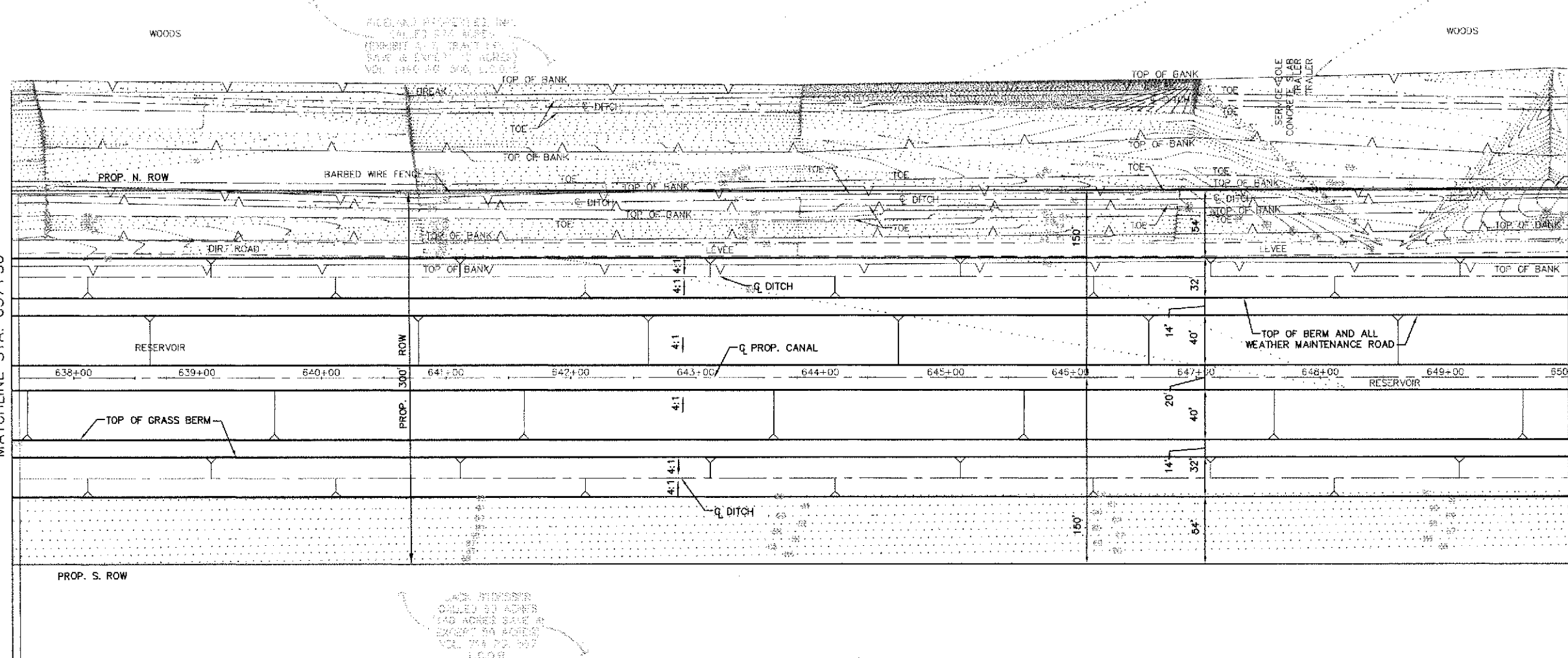


KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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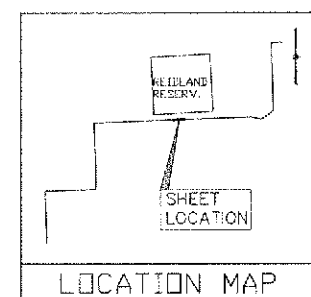
AECOM <small>AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 101 WEST HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.</small>	
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT	
CANAL PLAN & PROFILE STA 625+00 TO STA 637+50	
DRAWING SCALE AS SHOWN	
SHEET NO. 85 OF 245	

MATCHLINE STA. 637+50

MATCHLINE STA. 650+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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TEXAS REGISTRATION NO. 91031
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AECOM AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.
WWW.AECOM.COM
TDD: P.O. BOX 21-8583

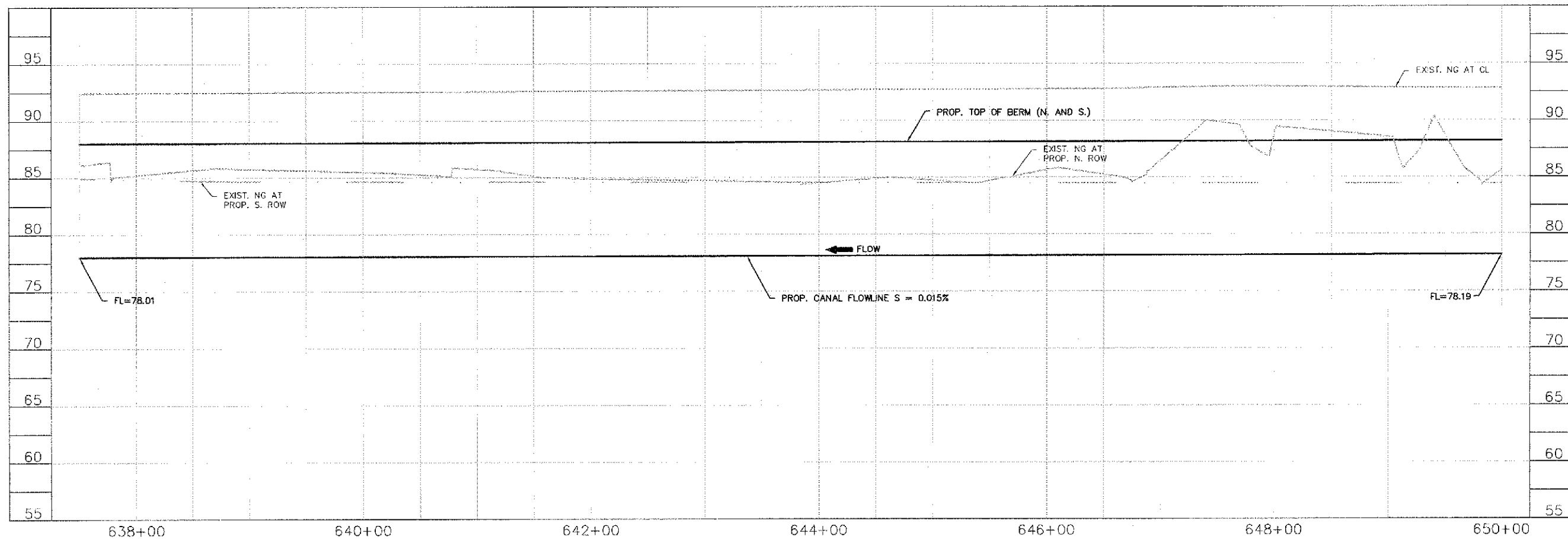
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

SURVEYED BY:
FB NO.

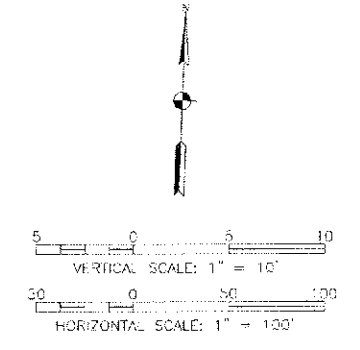
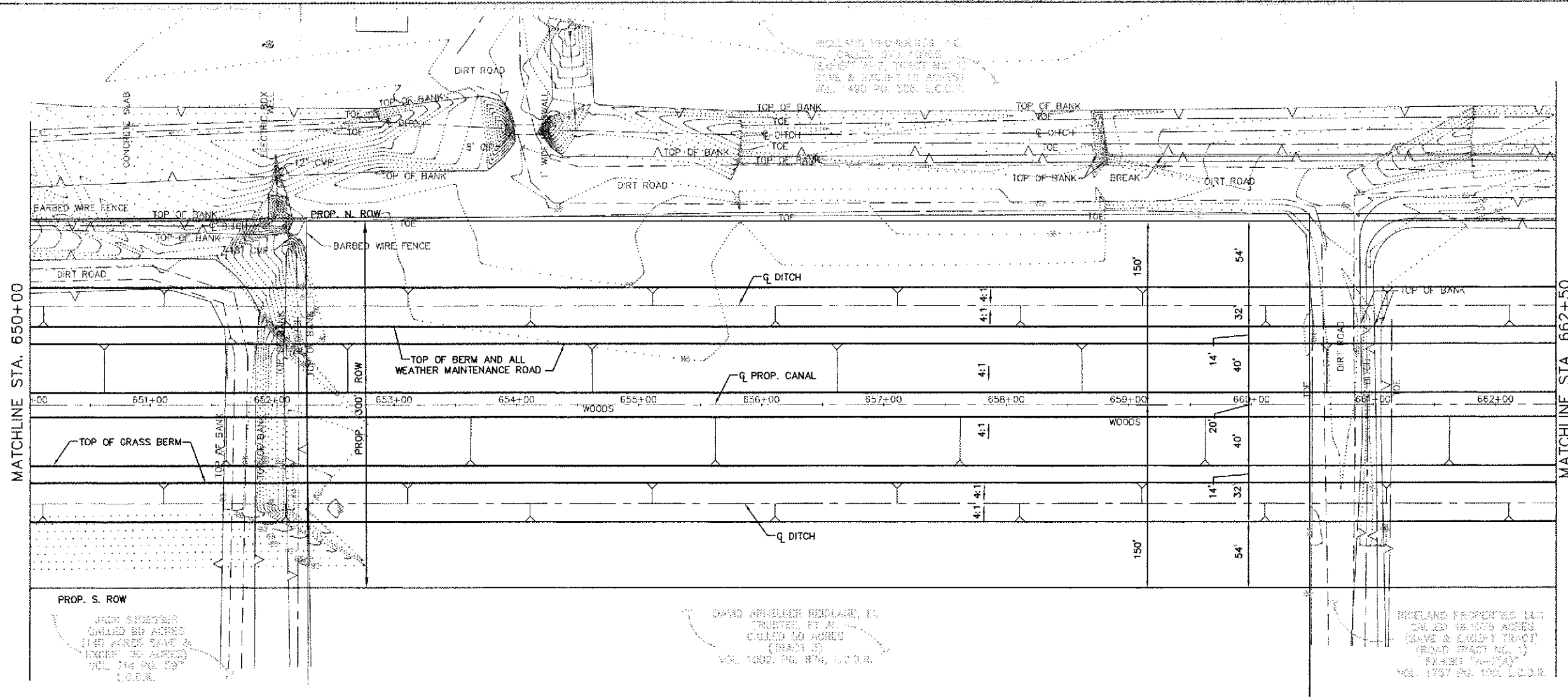
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 637+50
TO STA 650+00

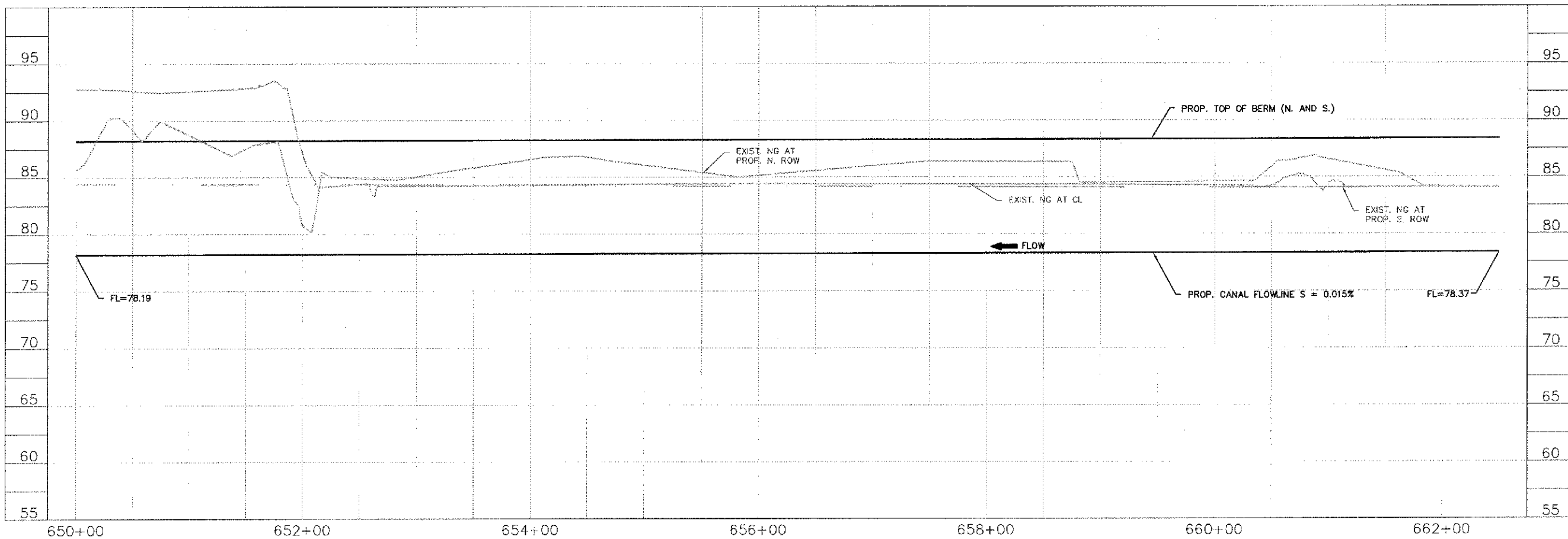
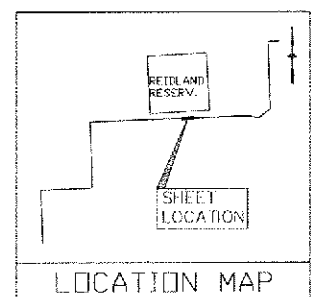
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SHEET NO. 86 OF 245	



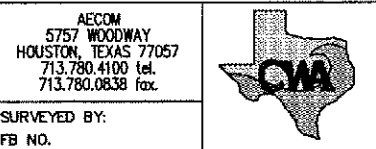
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NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN



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 TEXAS REGISTRATION NO. 91031
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SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUJCE BAYOU INTERBASIN TRANSFER PROJECT

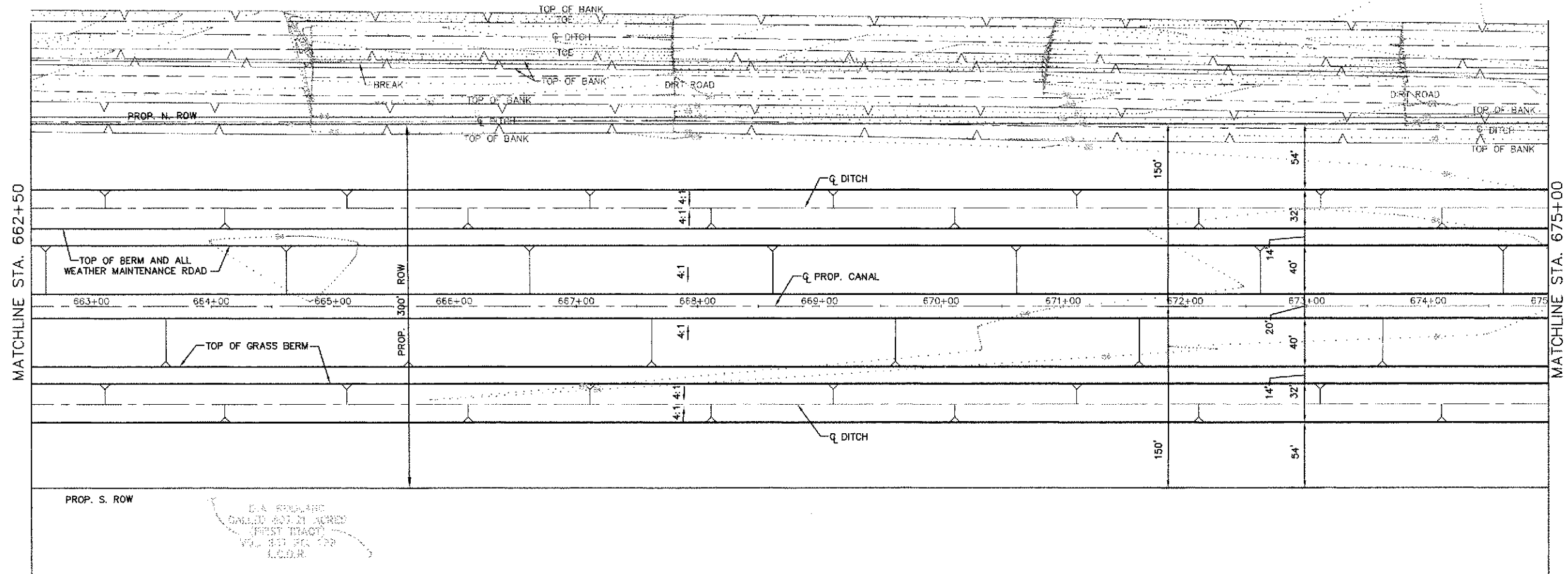
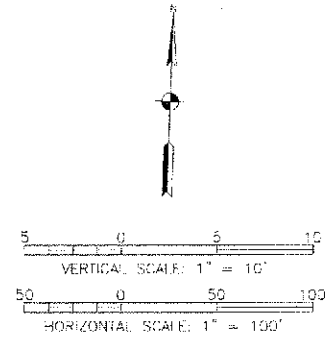
CANAL PLAN &
 PROFILE STA 650+00
 TO STA 662+50

DRAWING SCALE
 AS SHOWN

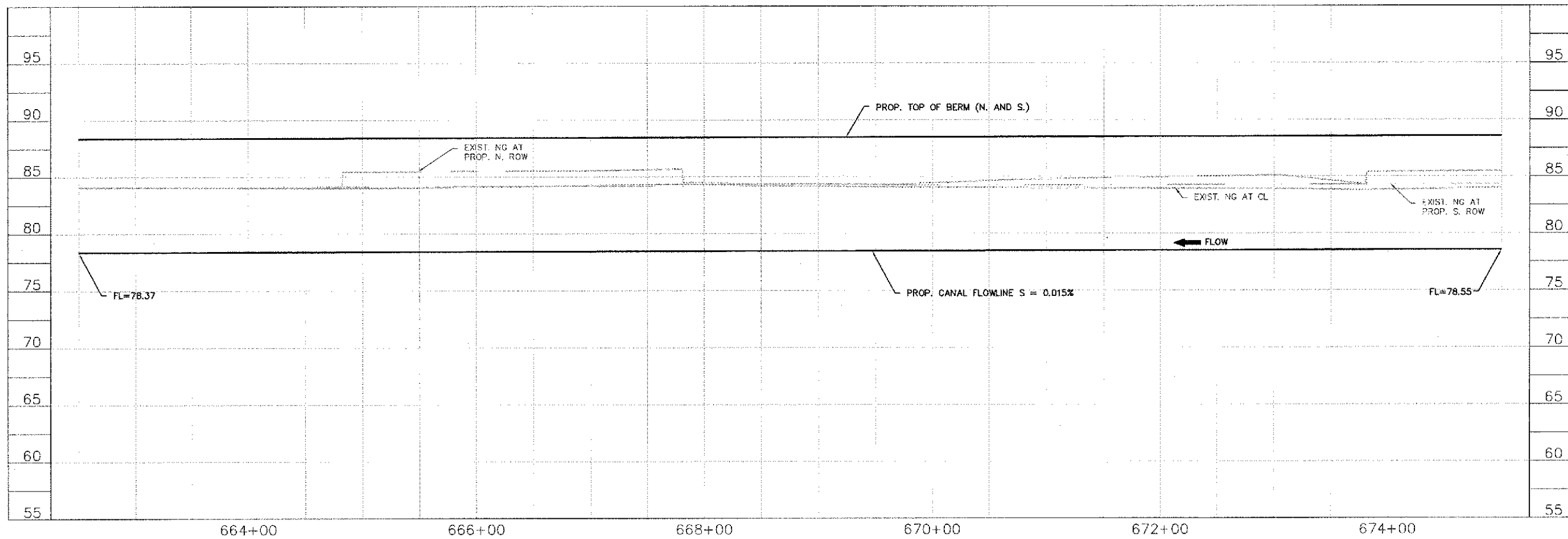
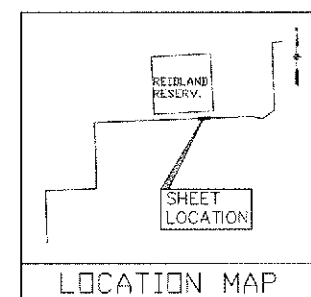
SHEET NO. 87 OF 245

LAST MODIFIED: Jun 27, 2011 - 4:12pm
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EXC. AND PRESERVE 140
 CALLED 873 ADDED
 (FORM A-7 TRACT NO.
 SA & EXCEPT IS ADDED
 VOL. 1400 P. 306 L.O.D.R.



NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax
 WWW.AECOM.COM
 TSP# REG. NO. 1-2580

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

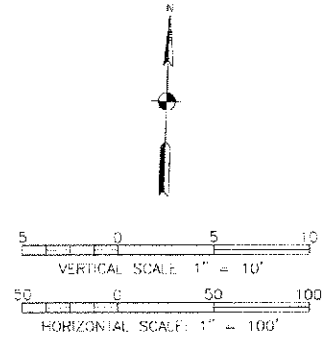
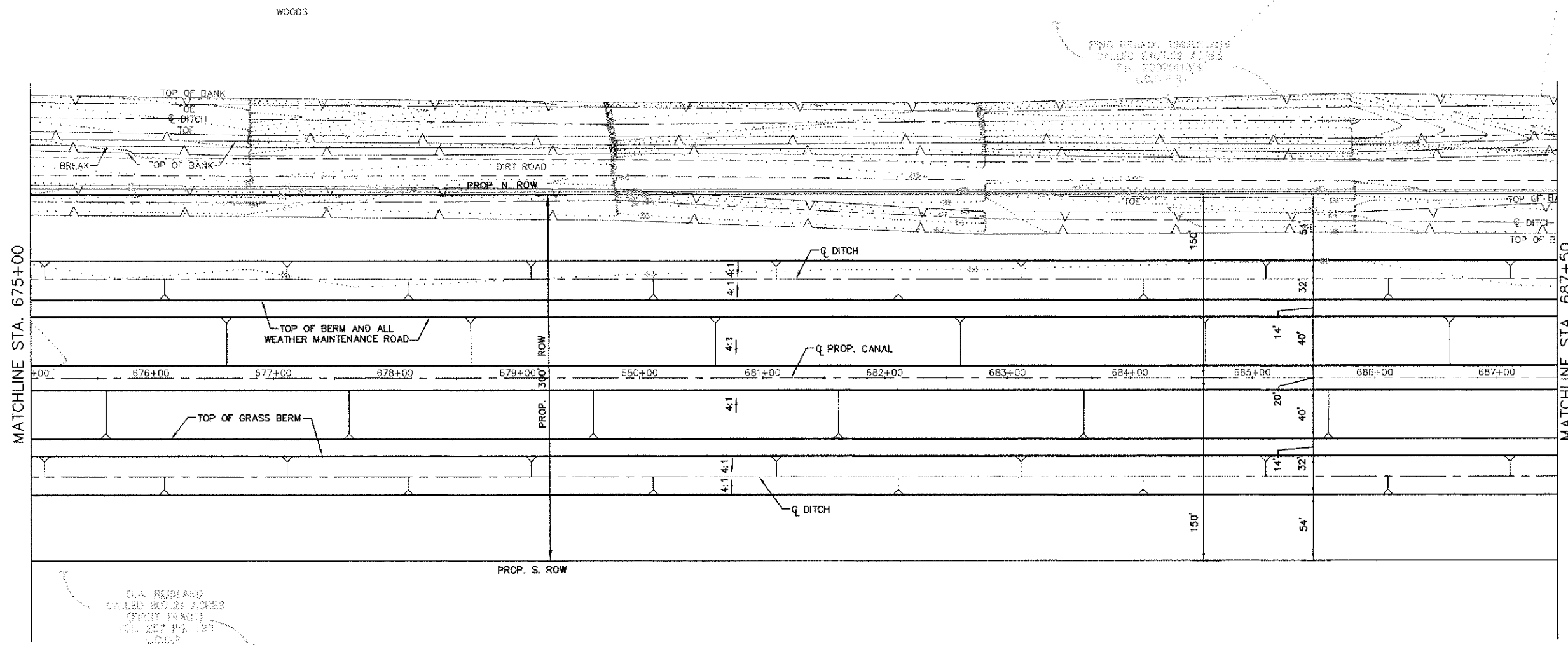
CANAL PLAN &
 PROFILE STA 662+50
 TO STA 675+00

DRAWING SCALE	AS SHOWN
SHEET NO. 88 OF 145	

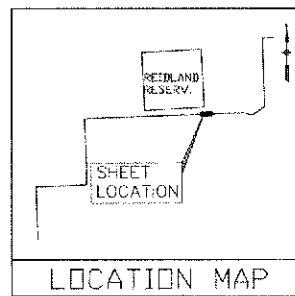
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MATCHLINE STA. 675+00

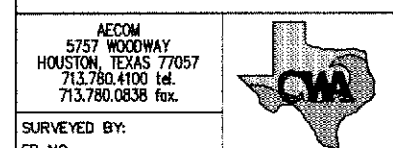
MATCHLINE STA. 687+50



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



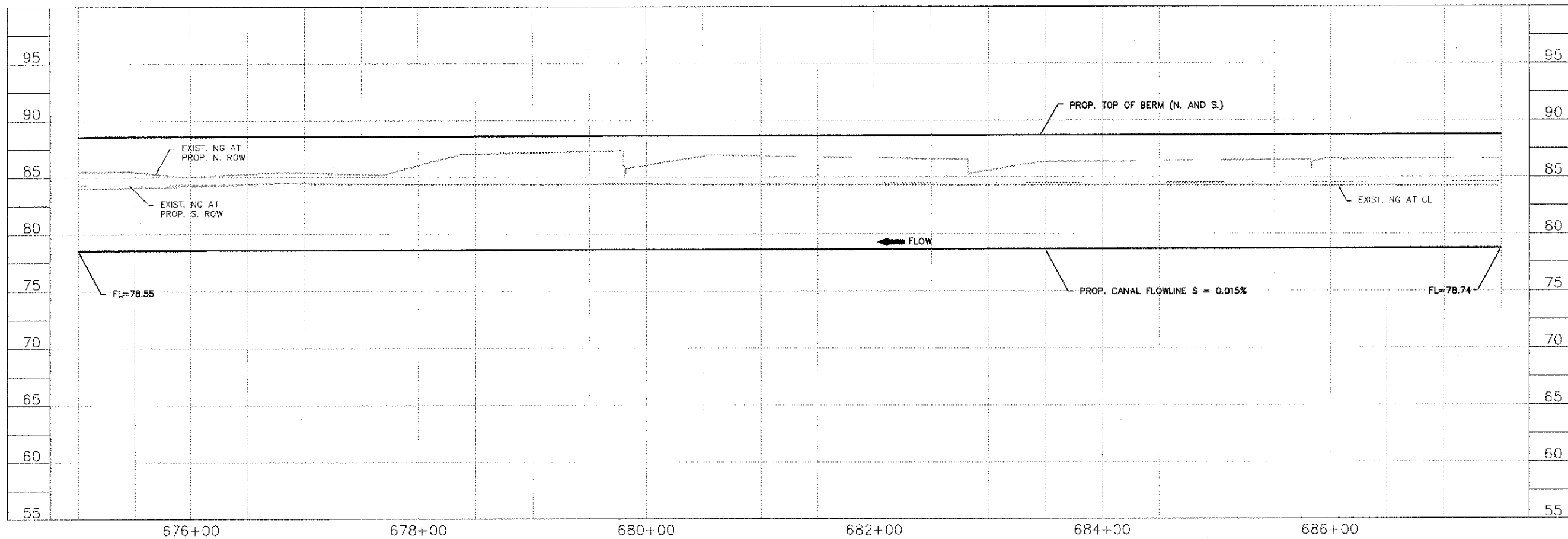
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COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 675+00
TO STA 687+50

DRAWING SCALE	AS SHOWN
SHEET NO. 89 OF 245	

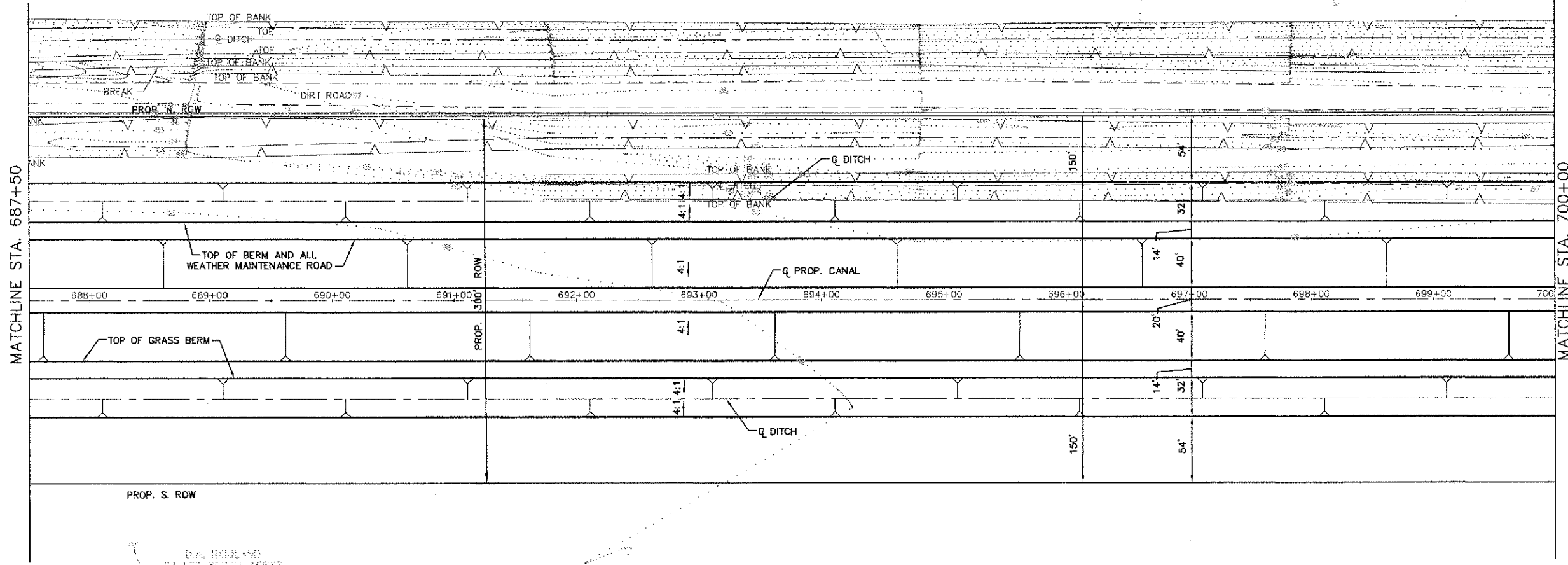


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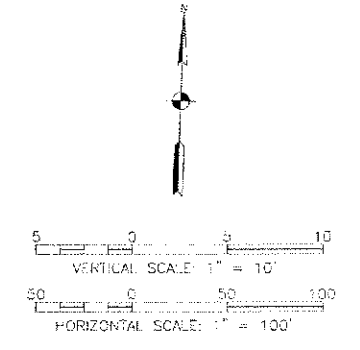
MATCHLINE STA. 687+50

MATCHLINE STA. 700+00

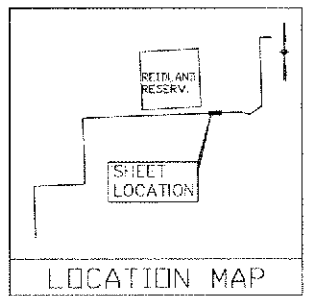


D.A. WILKINS
 CALLED 8/22/11 AFTER
 (PHOTO TAKEN)
 FOR 137 AND THE
 L.C.R.R.

THE CANAL THROUGH
 CALLS 137 AND 138
 FOR 137 AND 138
 L.C.R.R.



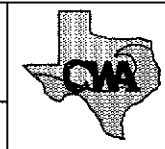
NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
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AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057-1592
 WWW.AECOM.COM
 713.780.8338 FAX

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

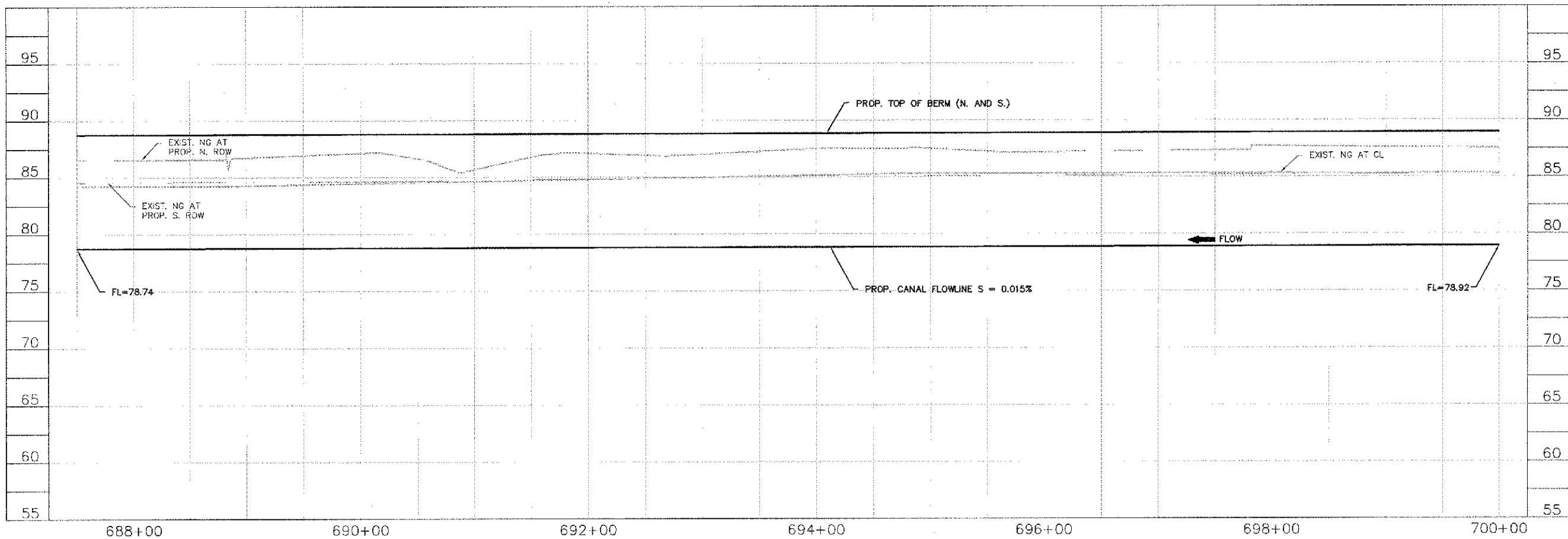


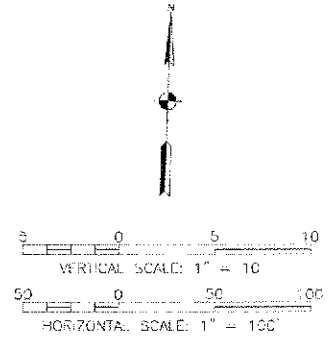
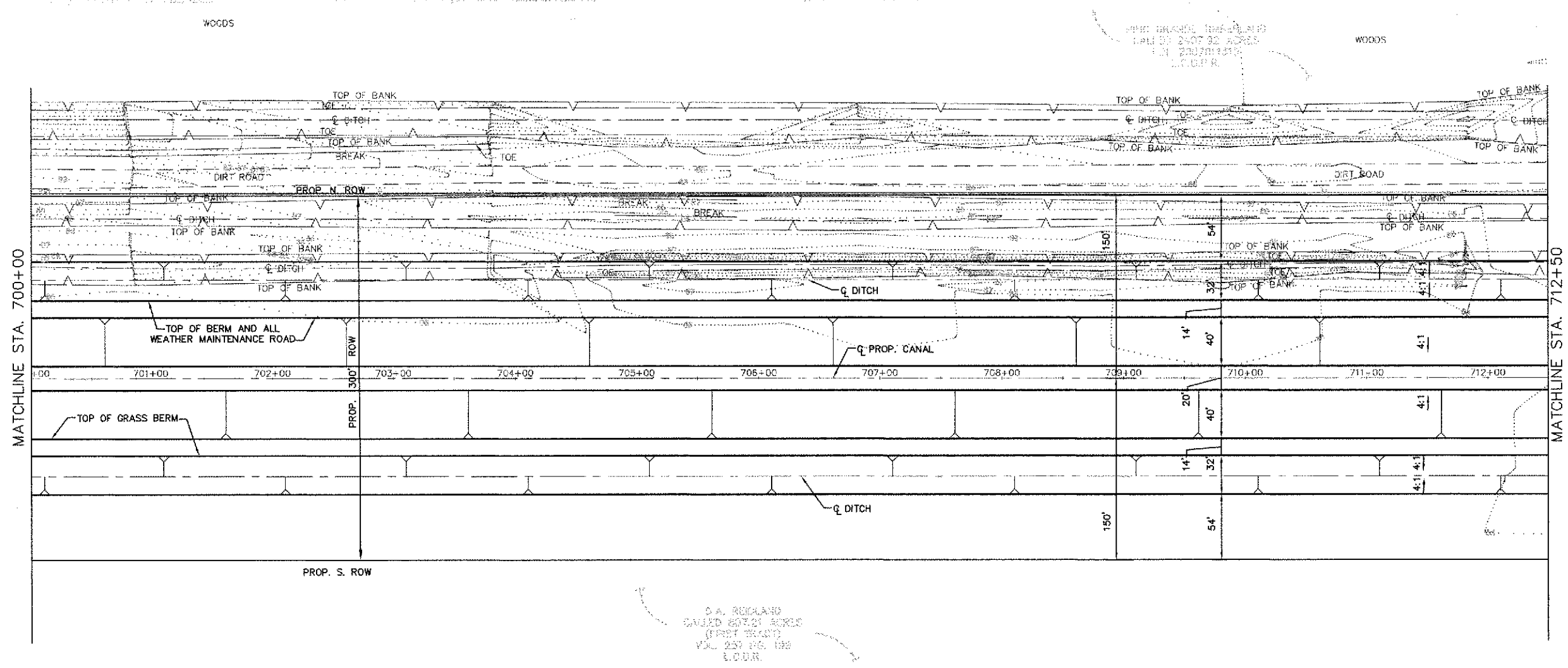
SURVEYED BY:
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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
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 TO STA 700+00

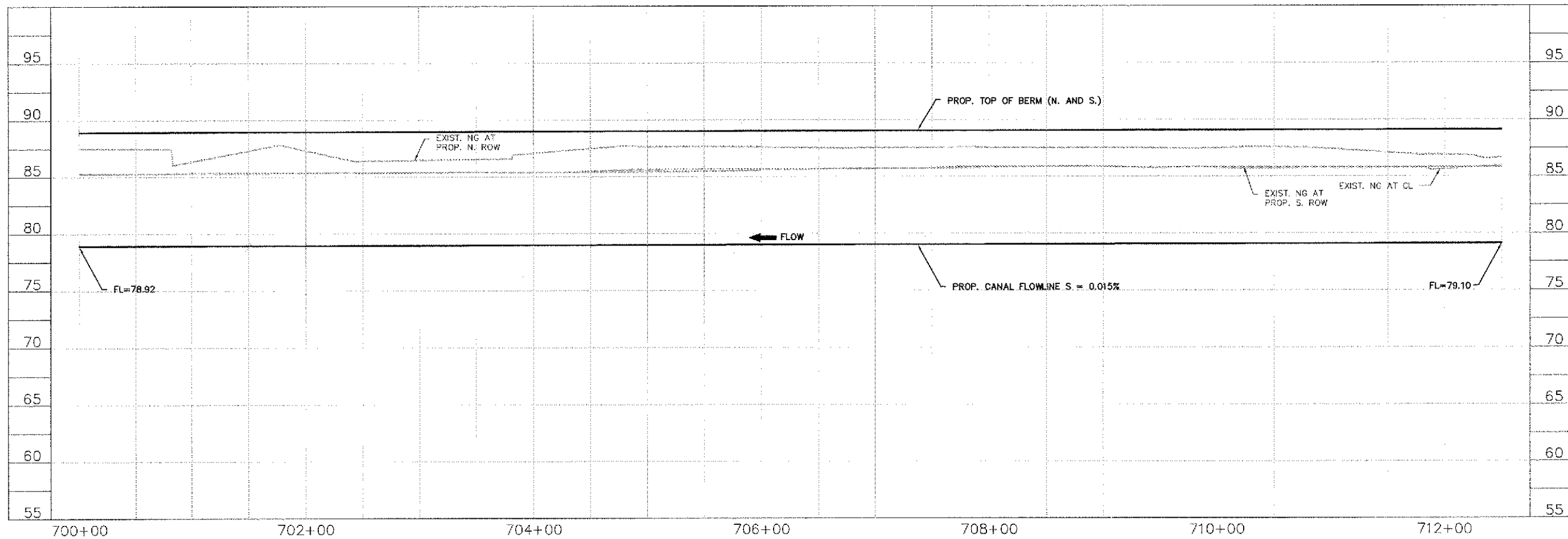
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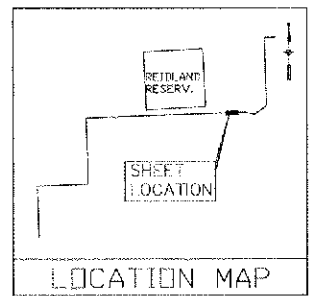




D.A. RICKLAND
 SAILED 807.21 ACRES
 (FIRST TRACT)
 VOL. 227 PG. 138
 S.O.D.R.



NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



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 AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax



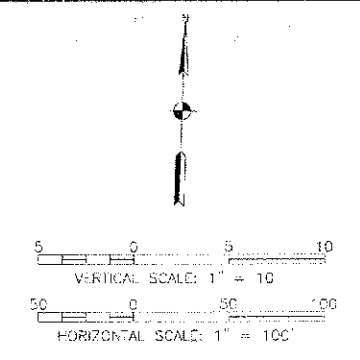
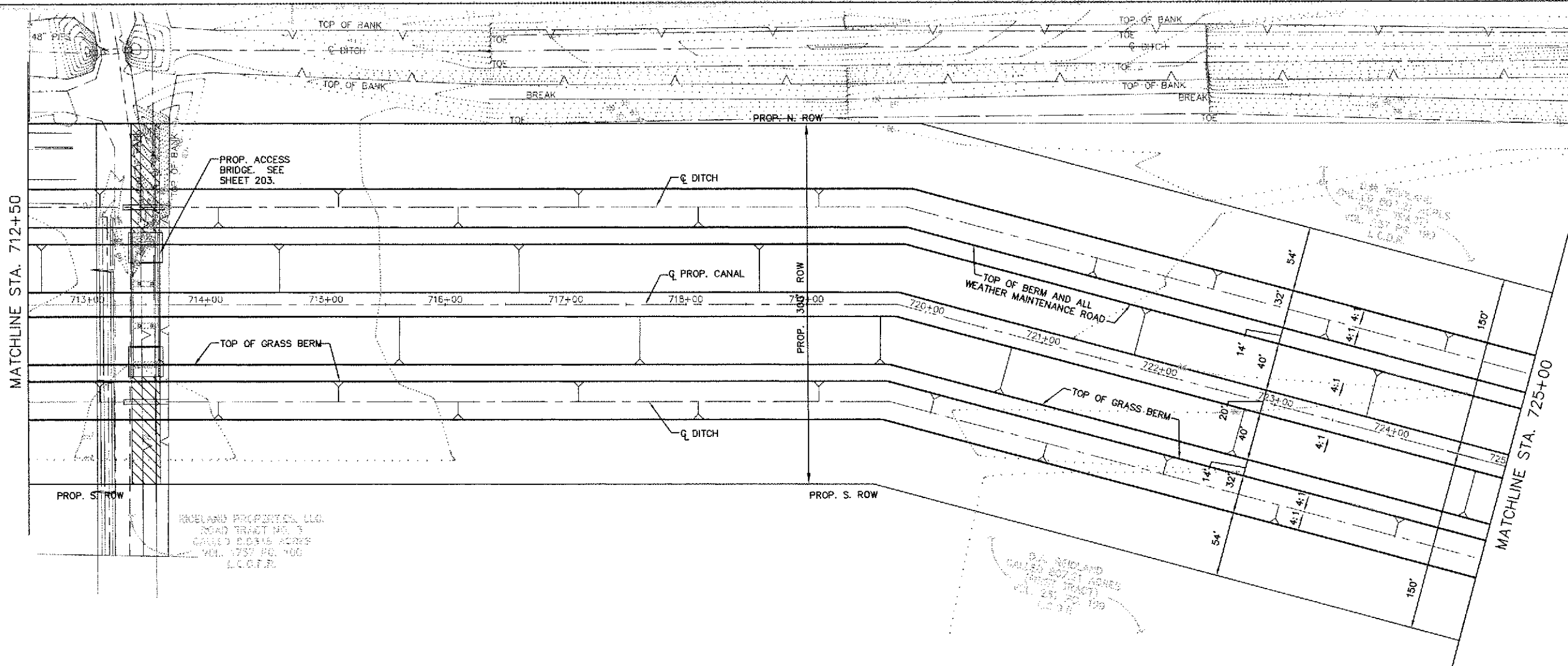
SURVEYED BY:
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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 700+00
 TO STA 712+50

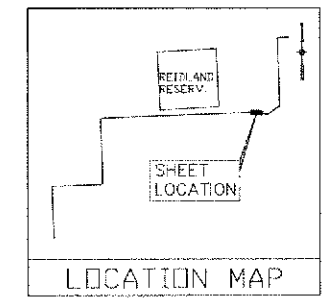
DRAWING SCALE
 AS SHOWN

SHEET NO. 91 OF 245

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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

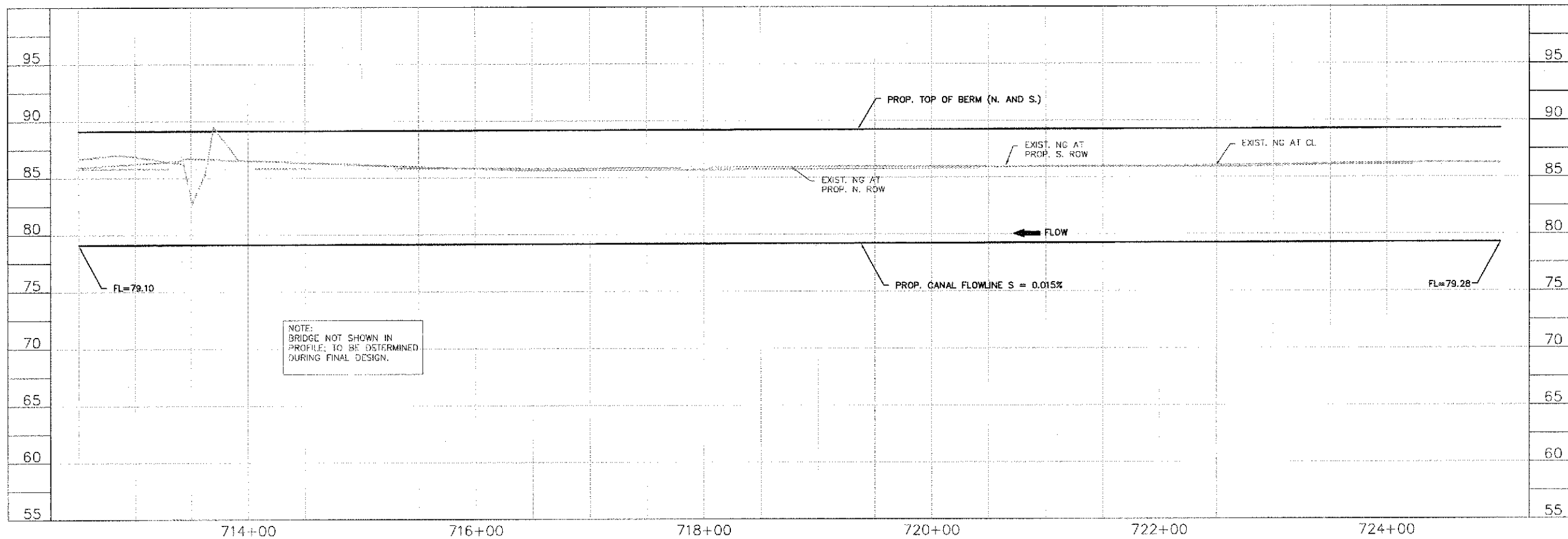
AECOM AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax
www.aecom.com
TSP REG. NO. F-3650

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 712+50
TO STA 725+00

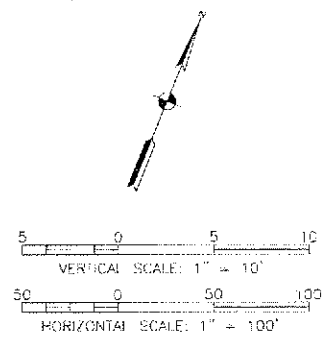
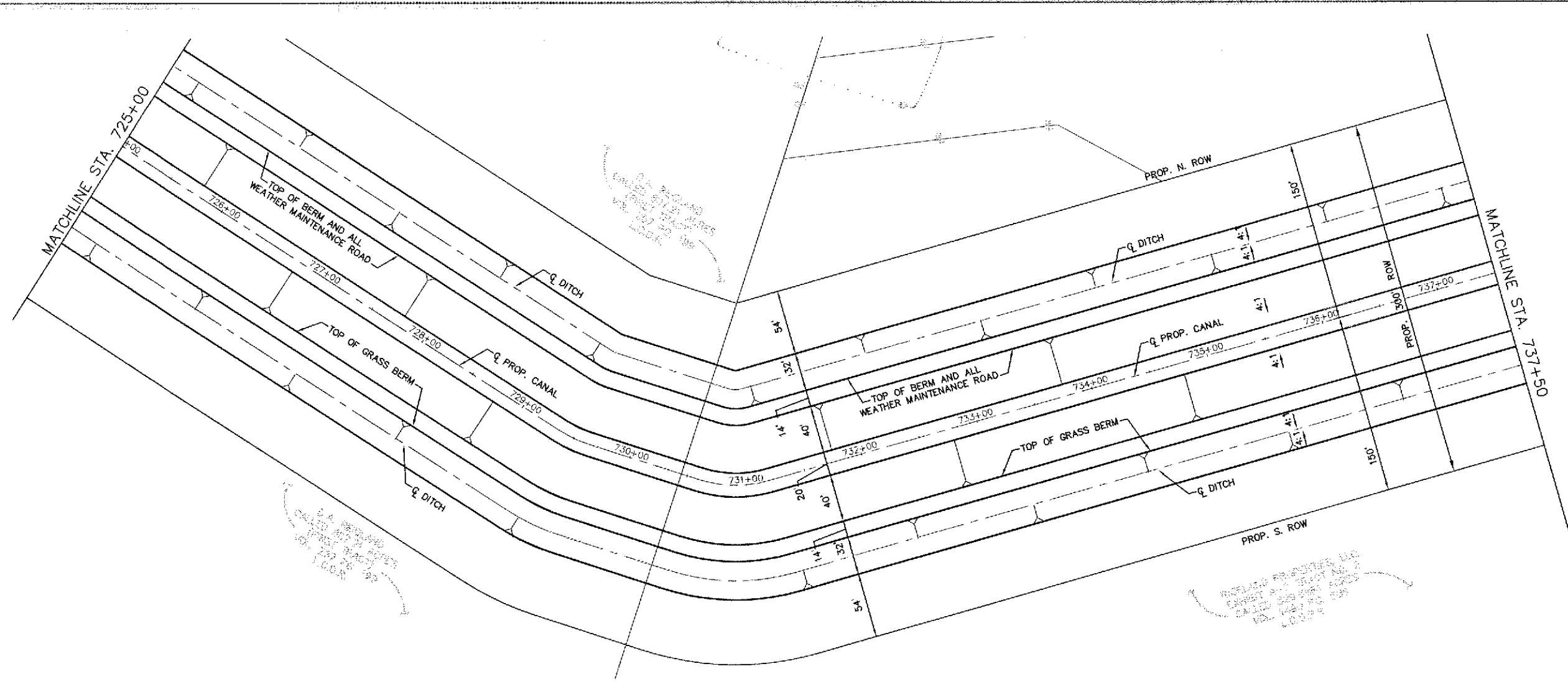
DRAWING SCALE	AS SHOWN
SHEET NO. 92 OF 145	



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PROFILE; TO BE DETERMINED
DURING FINAL DESIGN.

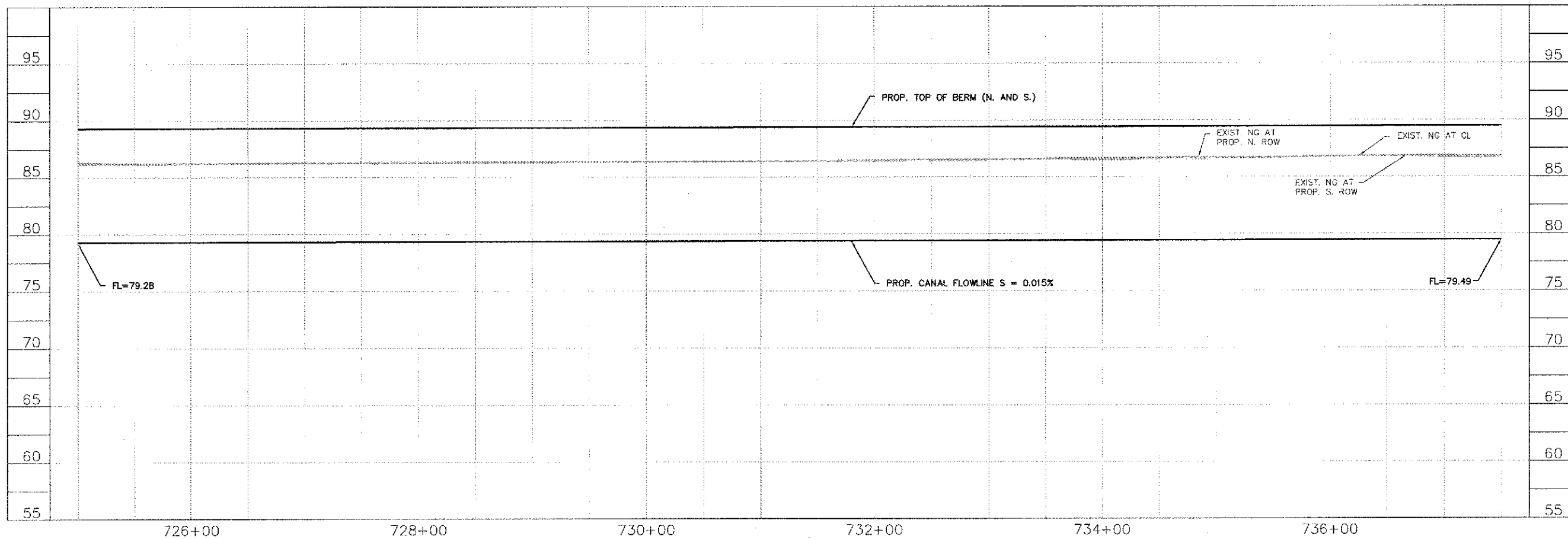
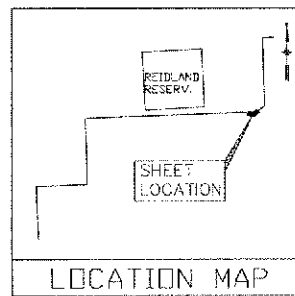
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LAST MODIFIED: Jan 27, 2011 - 4:17pm BY USER: ThompsonB
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NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN

NOTE:
 THERE ARE EXISTING PIPELINES
 IN THIS AREA - THESE ARE NOT
 SHOWN IN PROFILE VIEW DUE TO
 LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
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AECOM
AECOM TECHNICAL SERVICES, INC.
 5151 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057
 WWW.AECOM.COM
 TEL: 713.780.1000 FAX: 713.780.1001

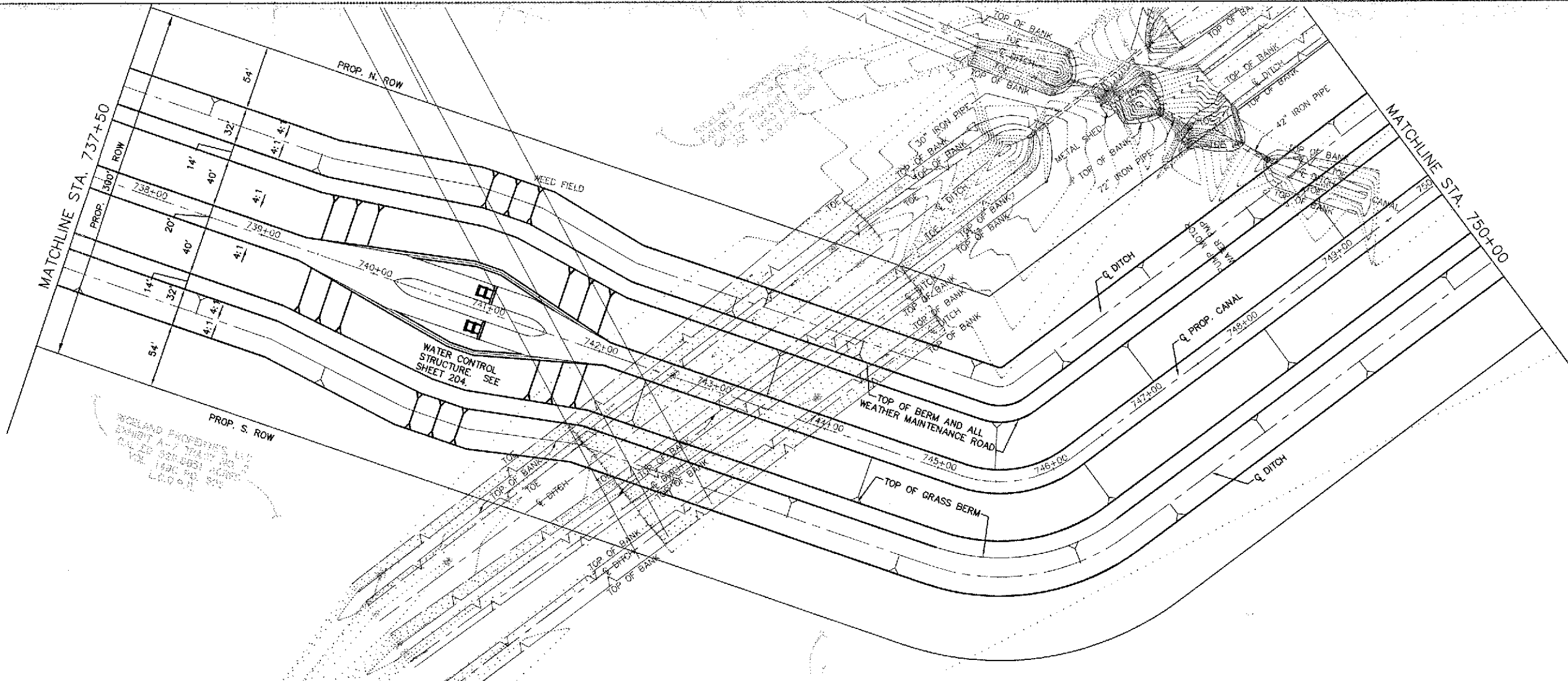
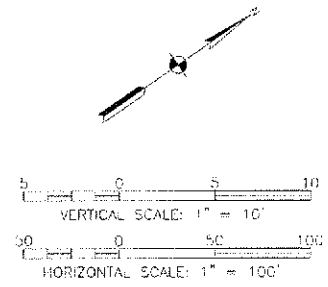
AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

SURVEYED BY:
 FB NO.

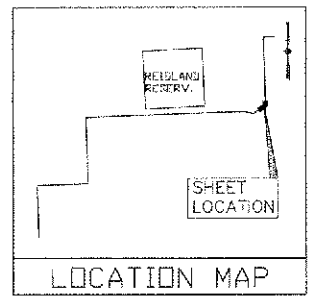
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 725+00
 TO STA 737+50

DRAWING SCALE	AS SHOWN
SHEET No. 93 of 249	




NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 1300 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

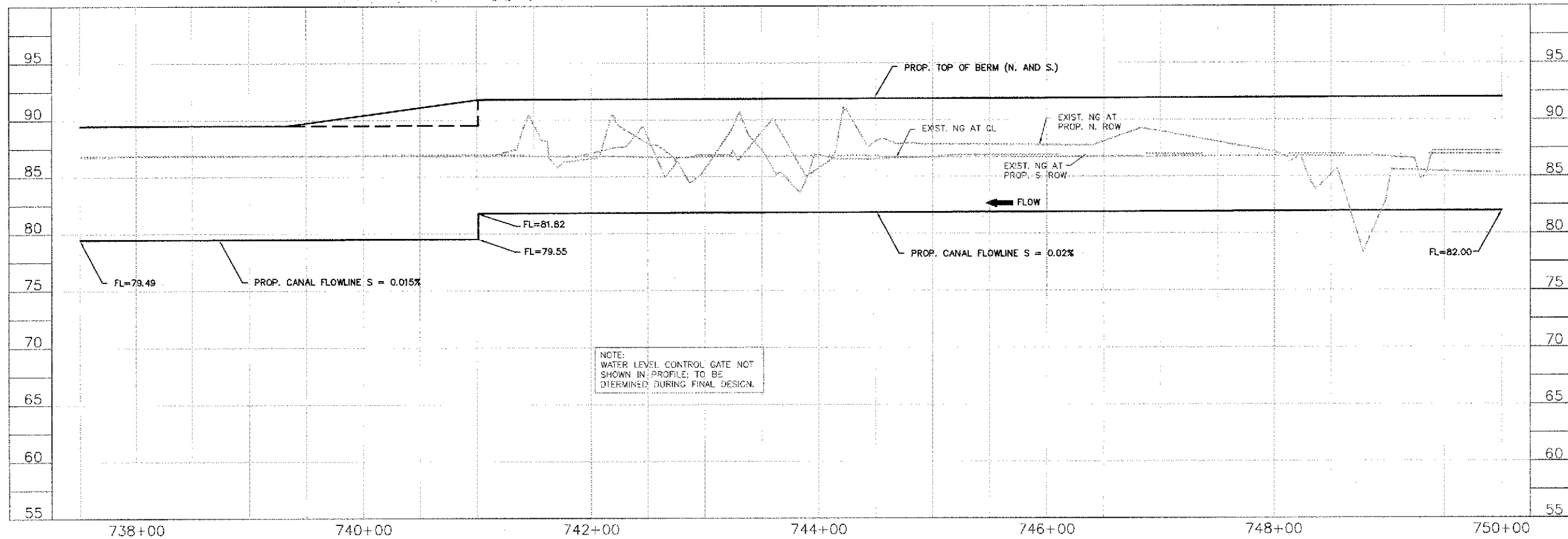
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax



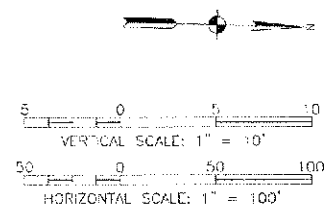
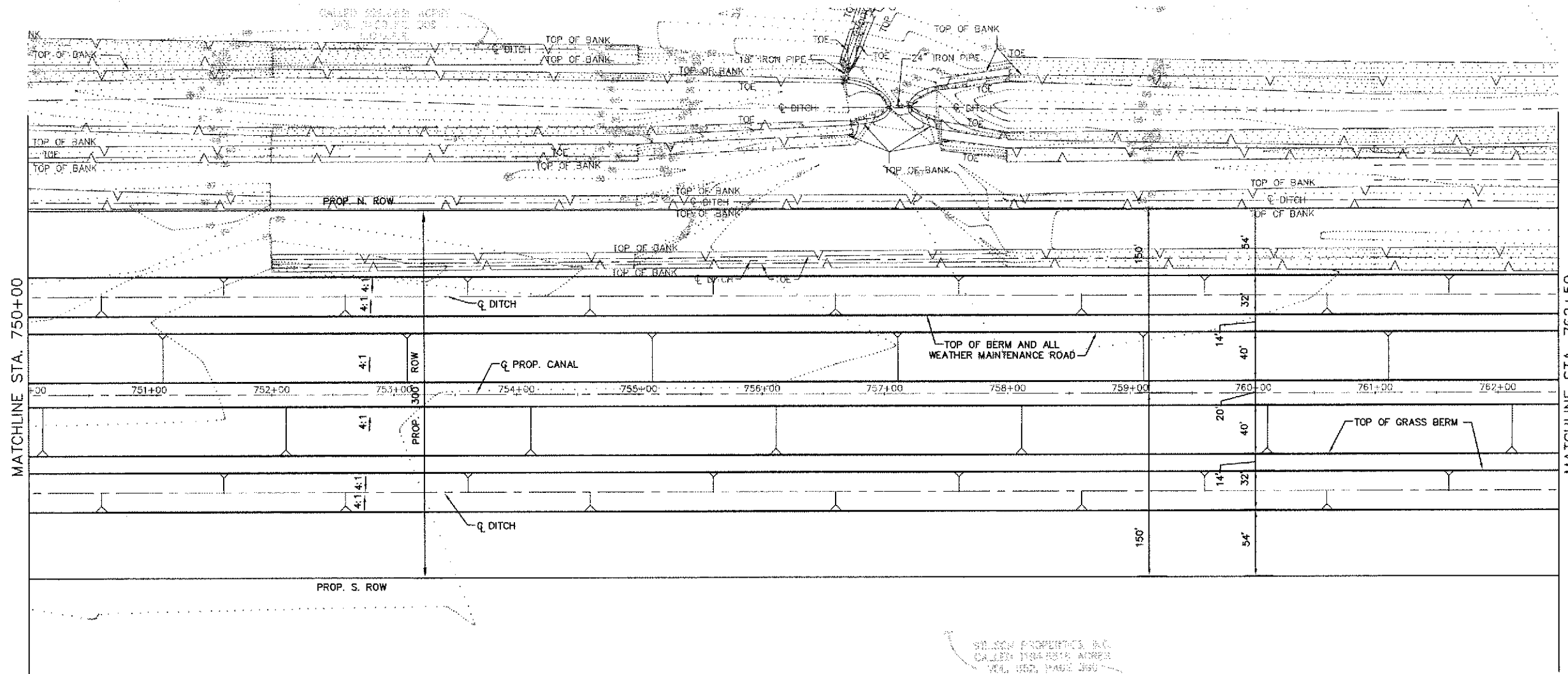
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 737+50
TO STA 750+00

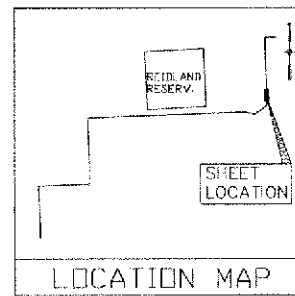
DRAWING SCALE	AS SHOWN
SHEET No. 94 of 295	



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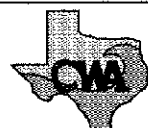
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DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
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AECOM AECOM TECHNICAL SERVICES, INC.
5151 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

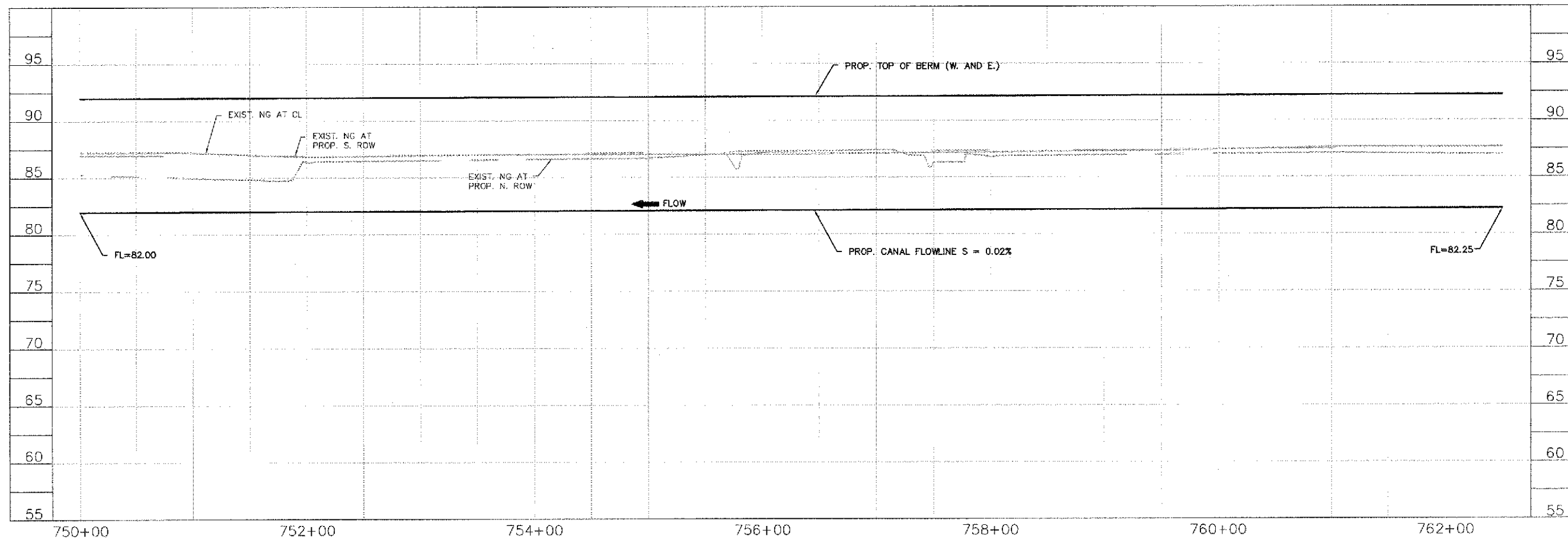
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



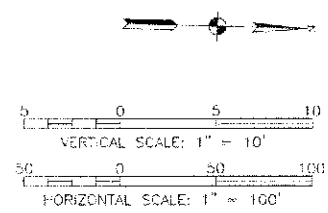
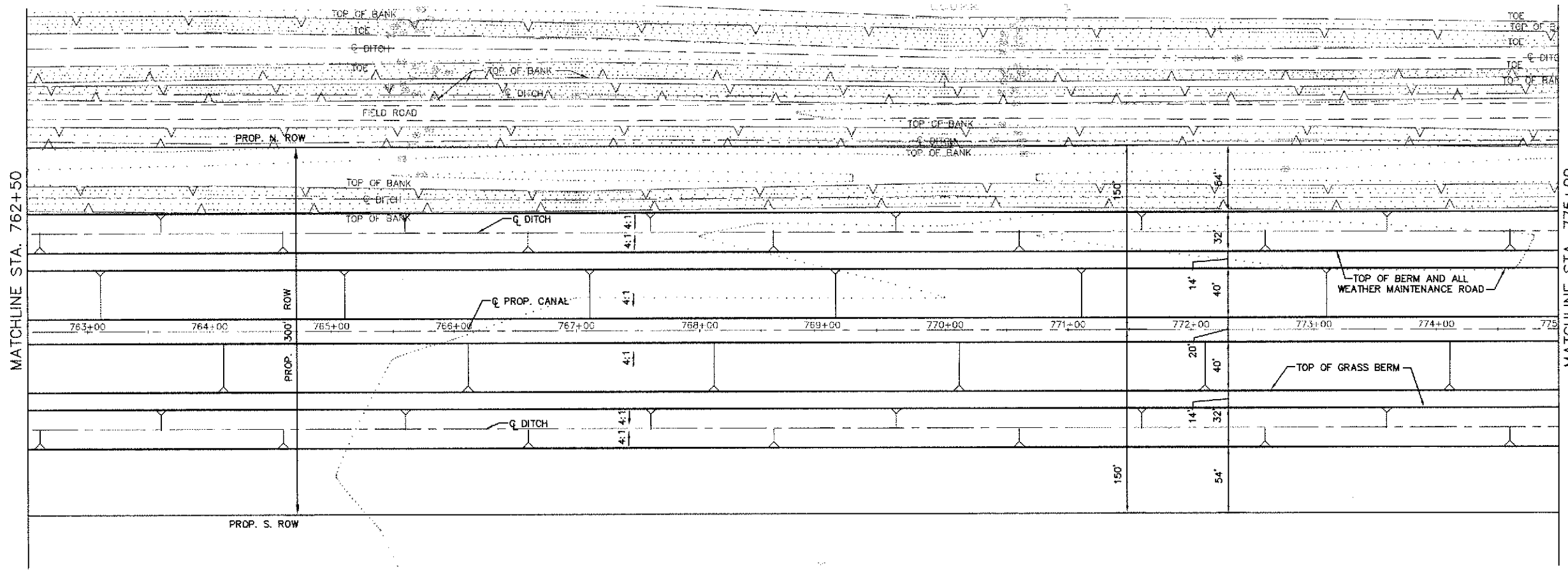
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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 750+00
TO STA 762+50

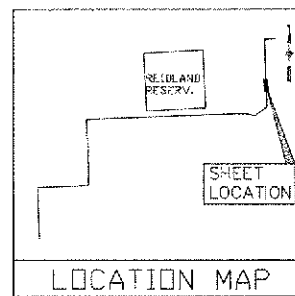
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SHEET NO.	95 of 245



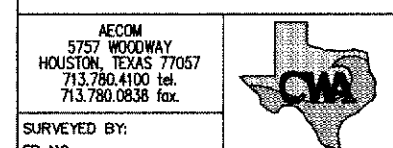
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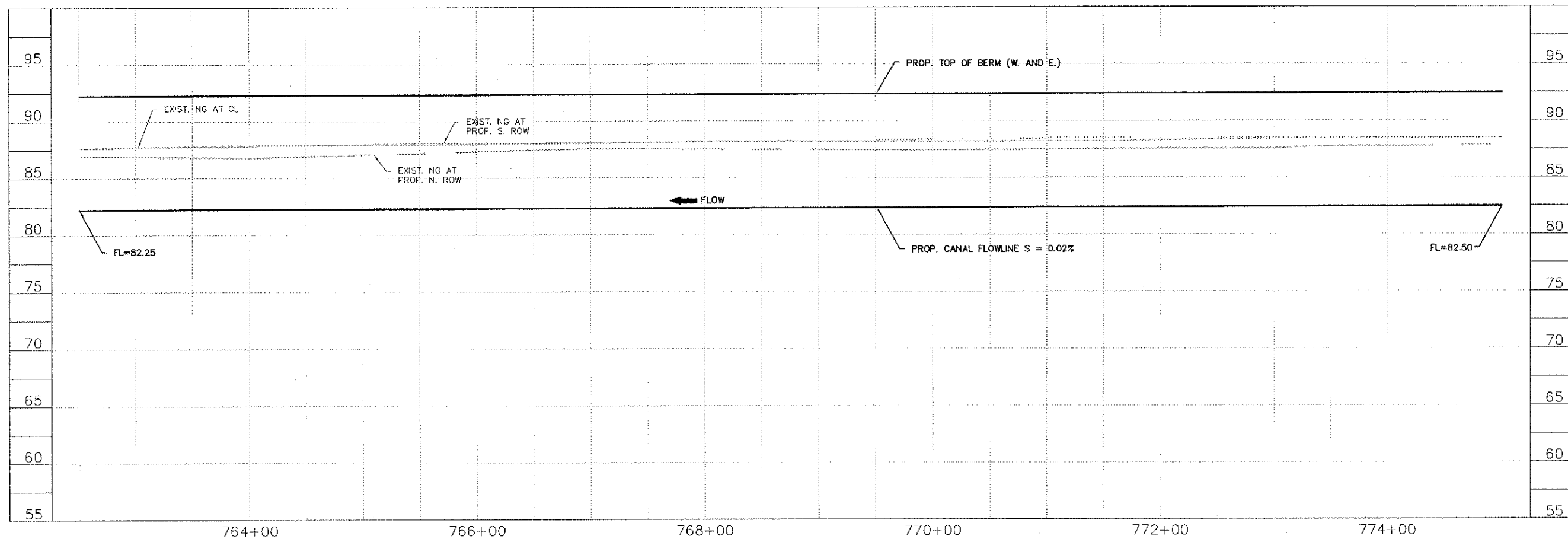


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LUCE BAYOU INTERBASIN TRANSFER PROJECT

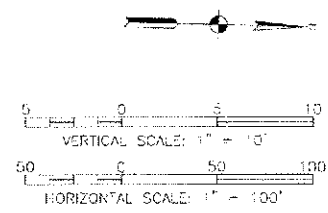
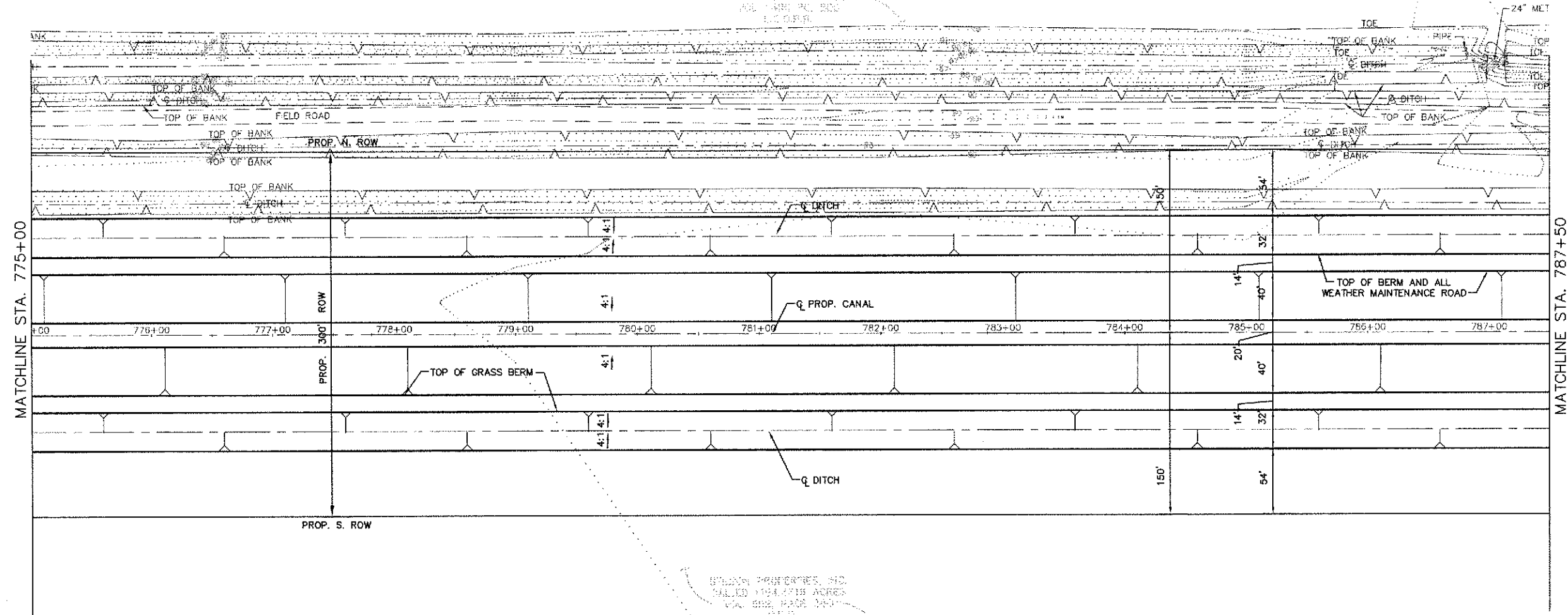
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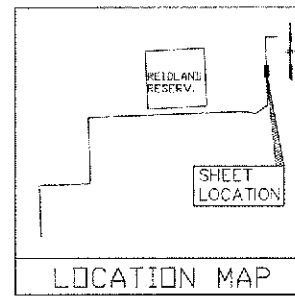


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WETLAND PROPERTIES, INC.
 15000 W. 10TH STREET, SUITE 100
 HOUSTON, TEXAS 77057-1000
 TEL: 713.780.4100
 FAX: 713.780.0838
 WWW.WETLANDS.COM



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AECOM TECHNICAL SERVICES, INC.
 5157 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057-1000
 WWW.AECOM.COM
 TYPE REG. NO. P-3580

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

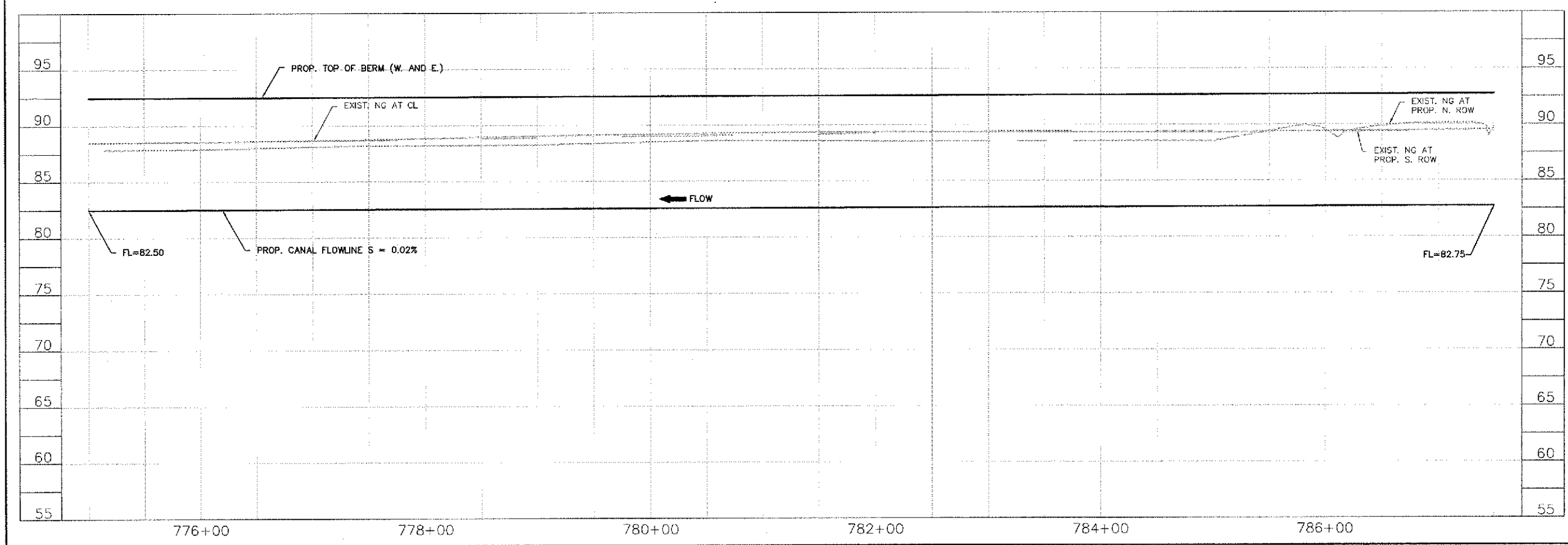


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 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
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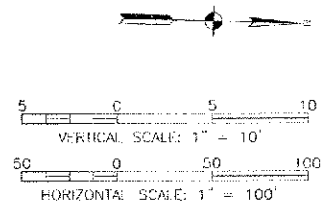
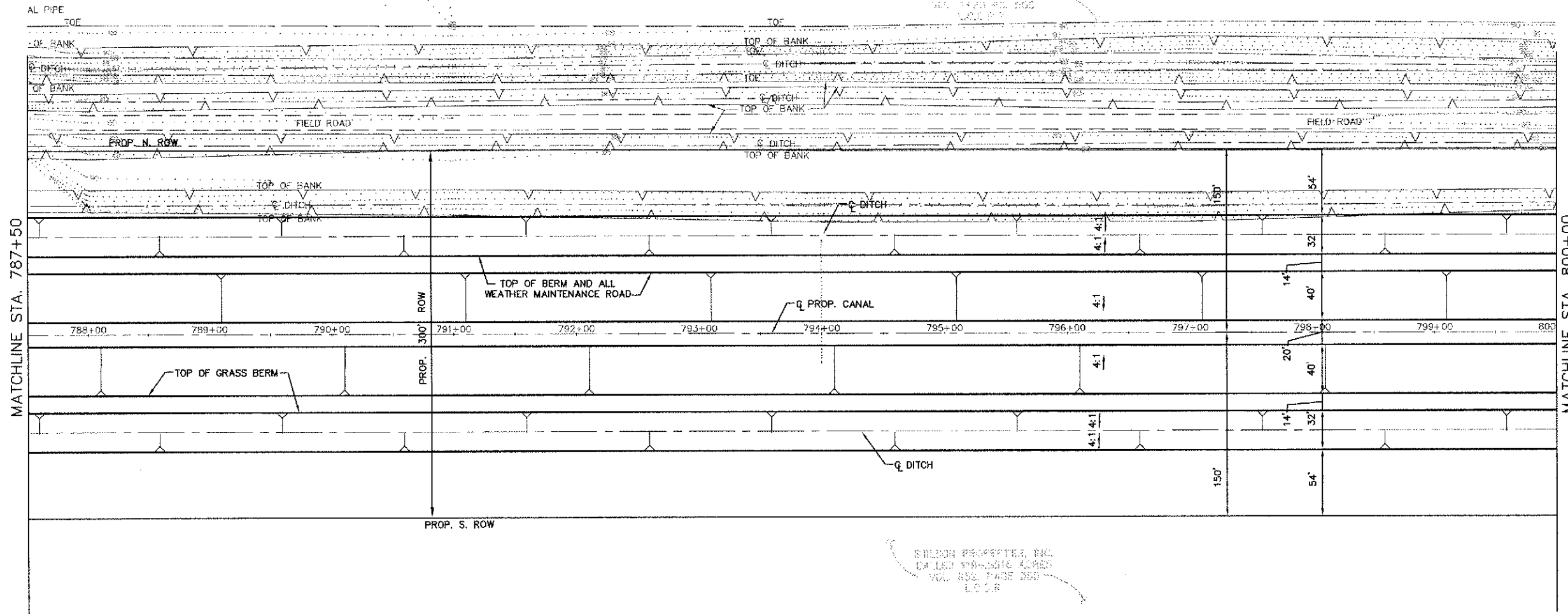
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SHEET NO. 97 of 145

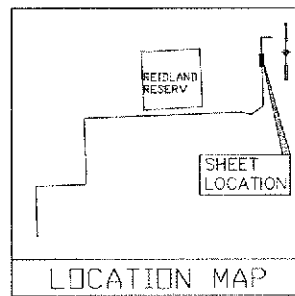


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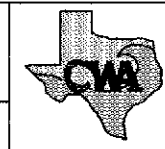
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AECOM TECHNICAL SERVICES, INC.
 5157 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057-1007
 WWW.AECOM.COM
 TYPE: REG. NO. 7-1580

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

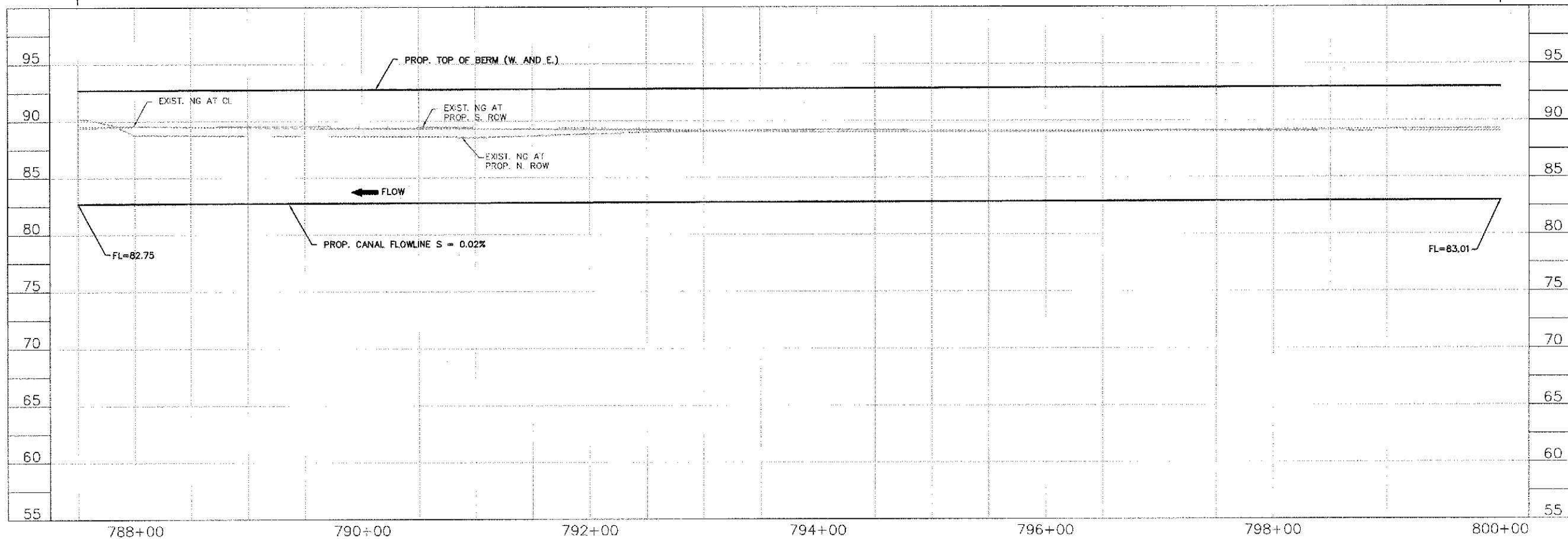


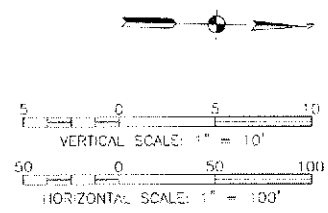
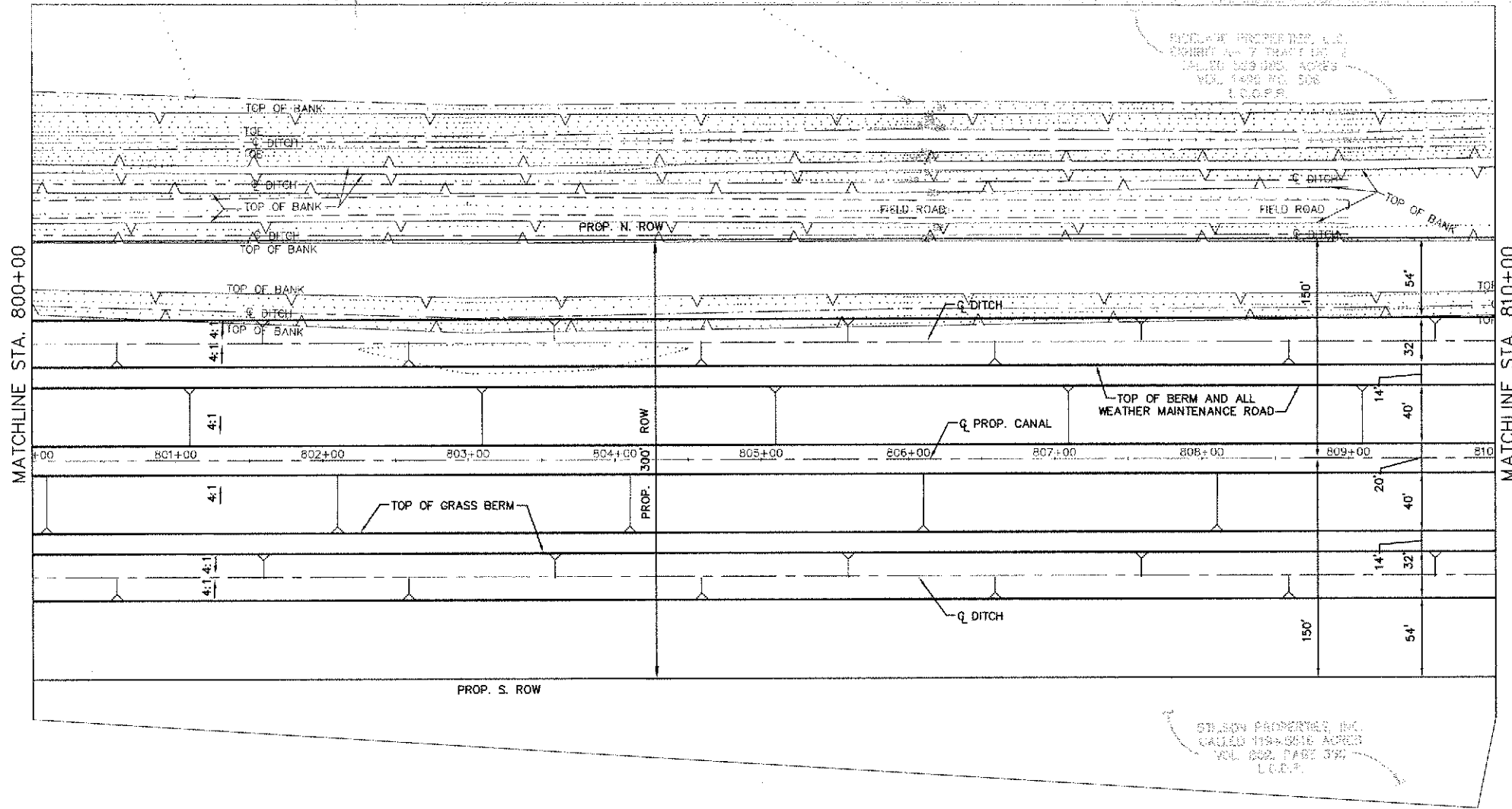
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COASTAL WATER AUTHORITY
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CANAL PLAN &
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 TO STA 800+00

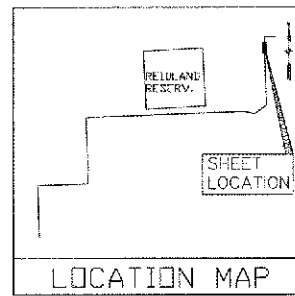
DRAWING SCALE
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SHEET NO. 98 OF 145





NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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TEXAS REGISTRATION NO. 91031
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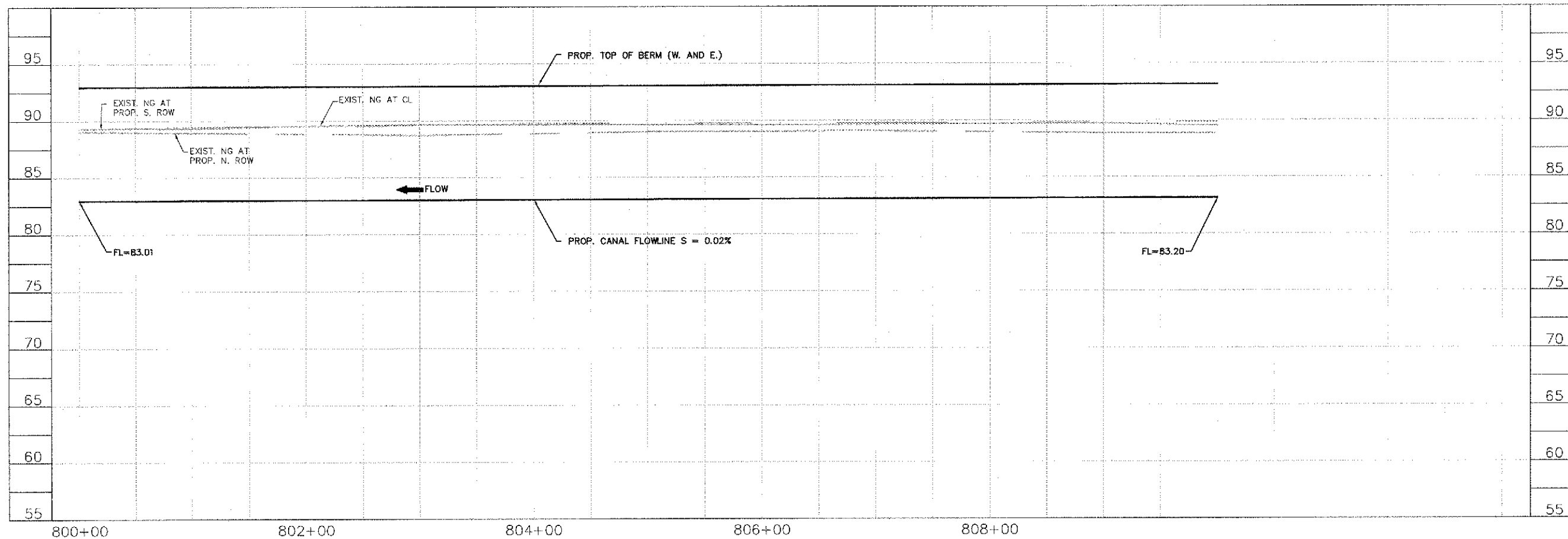


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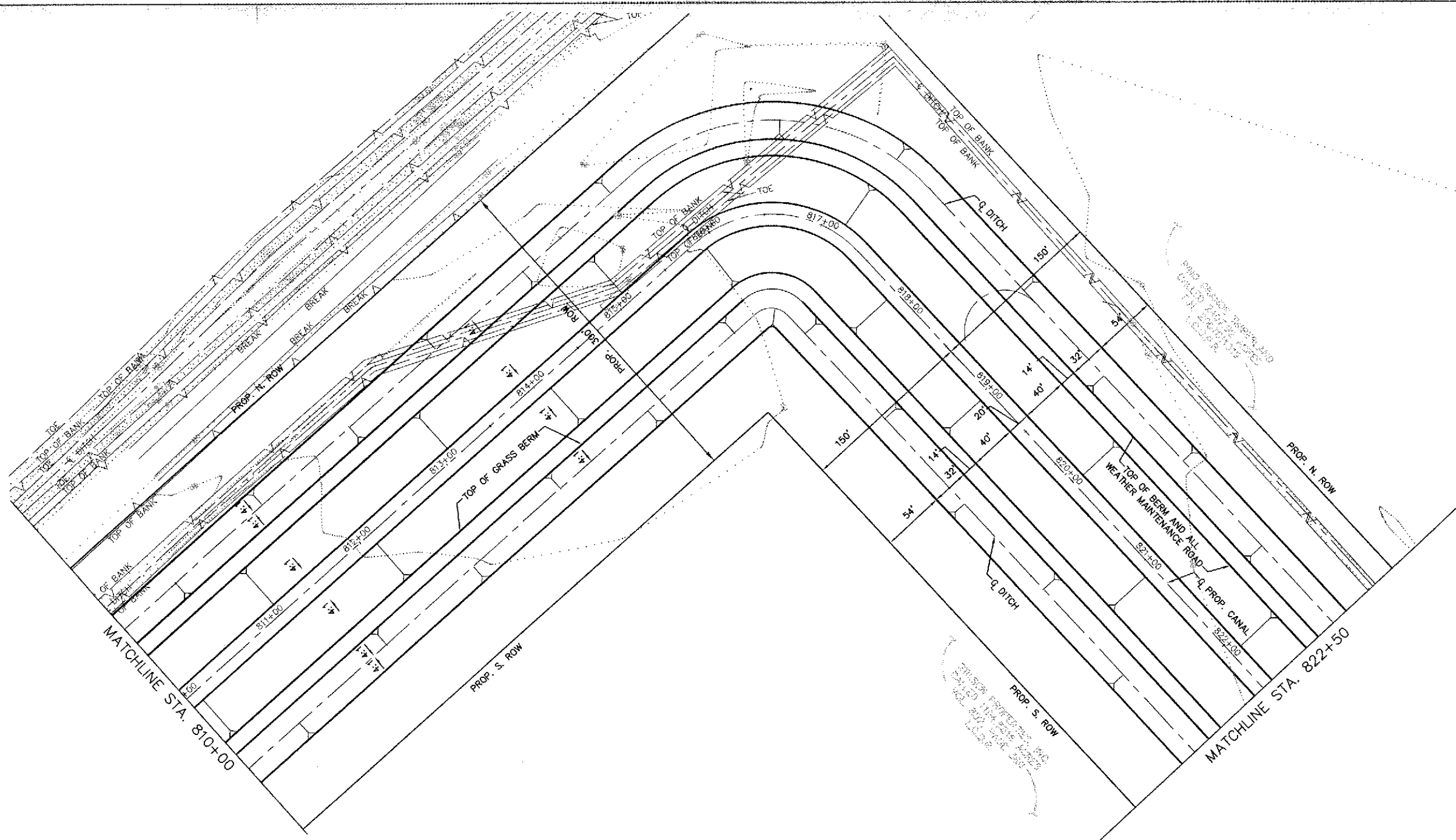
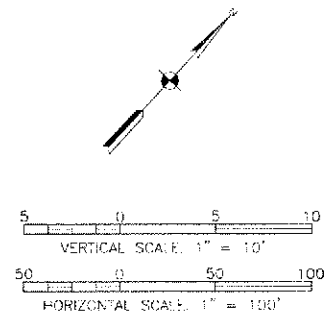
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TO STA 810+00

DRAWING SCALE
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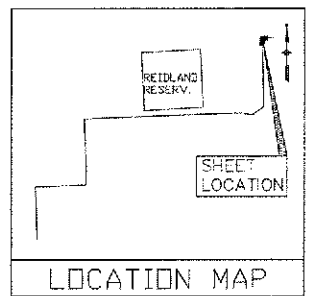
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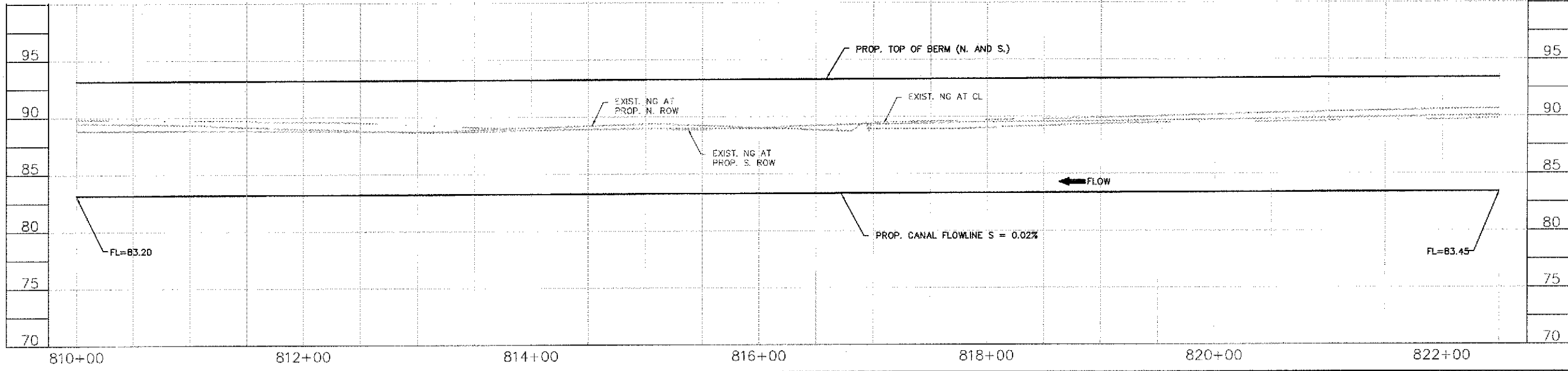
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NOTE:
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5707 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
WWW.AECOM.COM TEL: 713.780.4100 FAX: 713.780.0838



AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

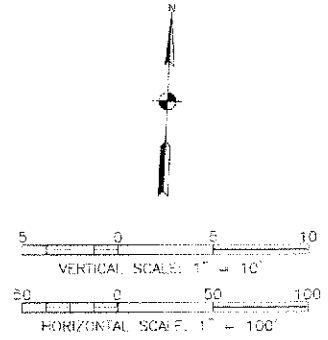
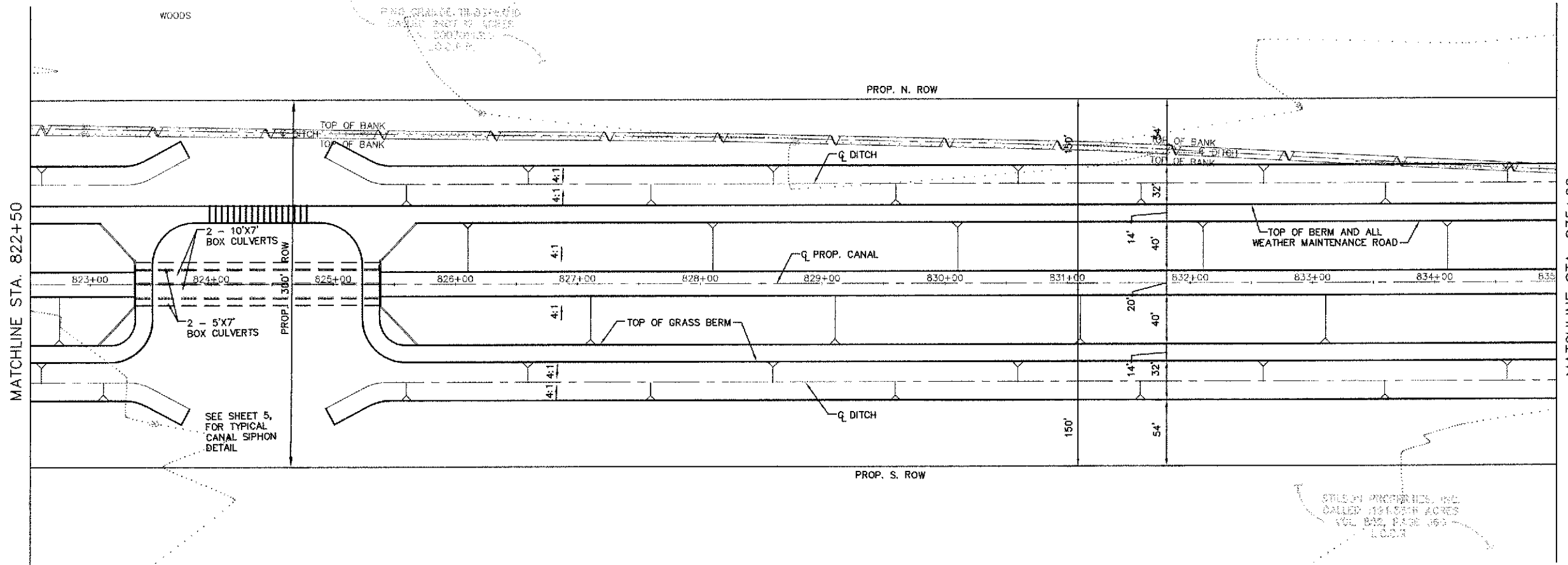
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LJCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
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TO STA 822+50

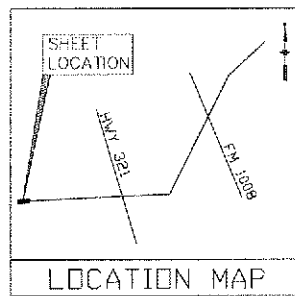
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SHEET NO. 100 OF 245

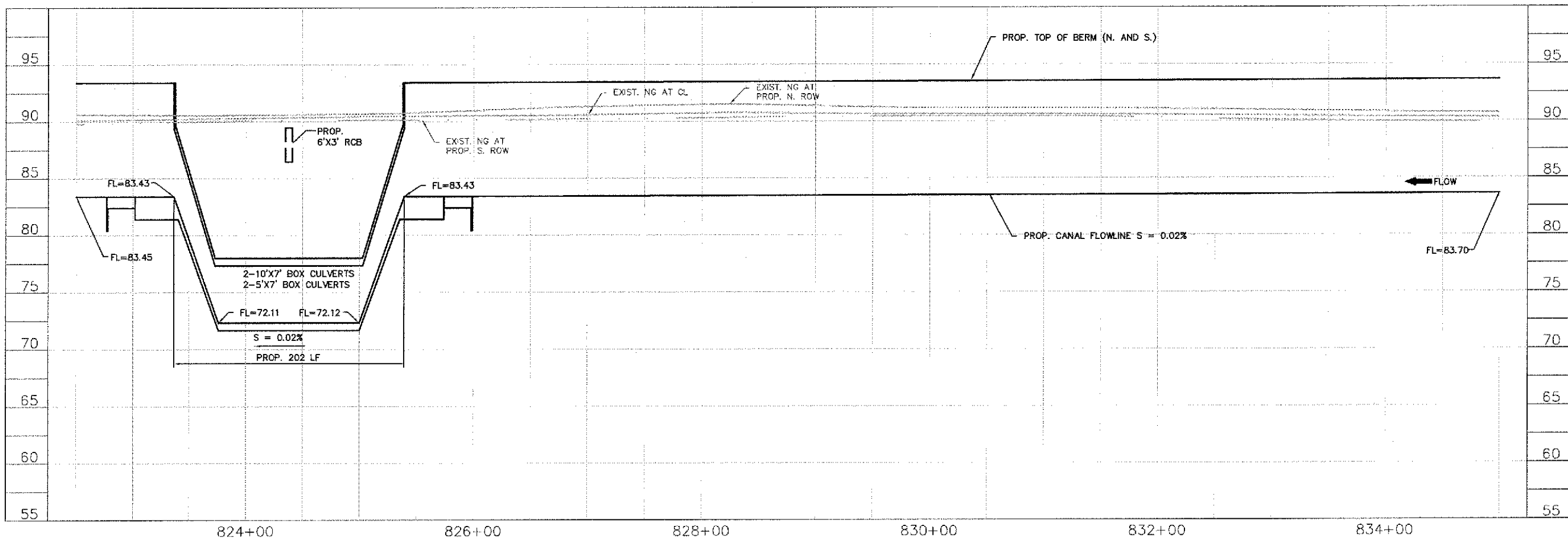
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NOTE:
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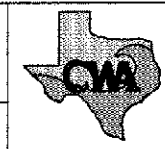


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713.780.4100 tel.
713.780.0838 fax
WWW.AECOM.COM
TSP, INC., INC. 1-3020

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax



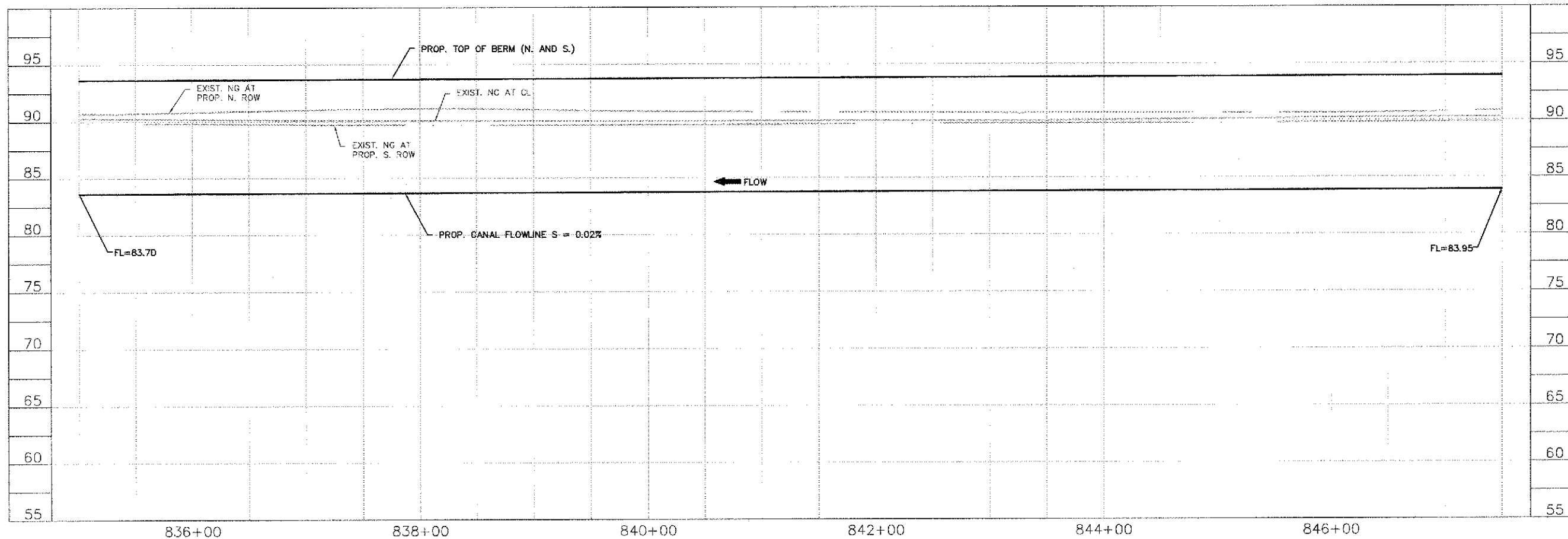
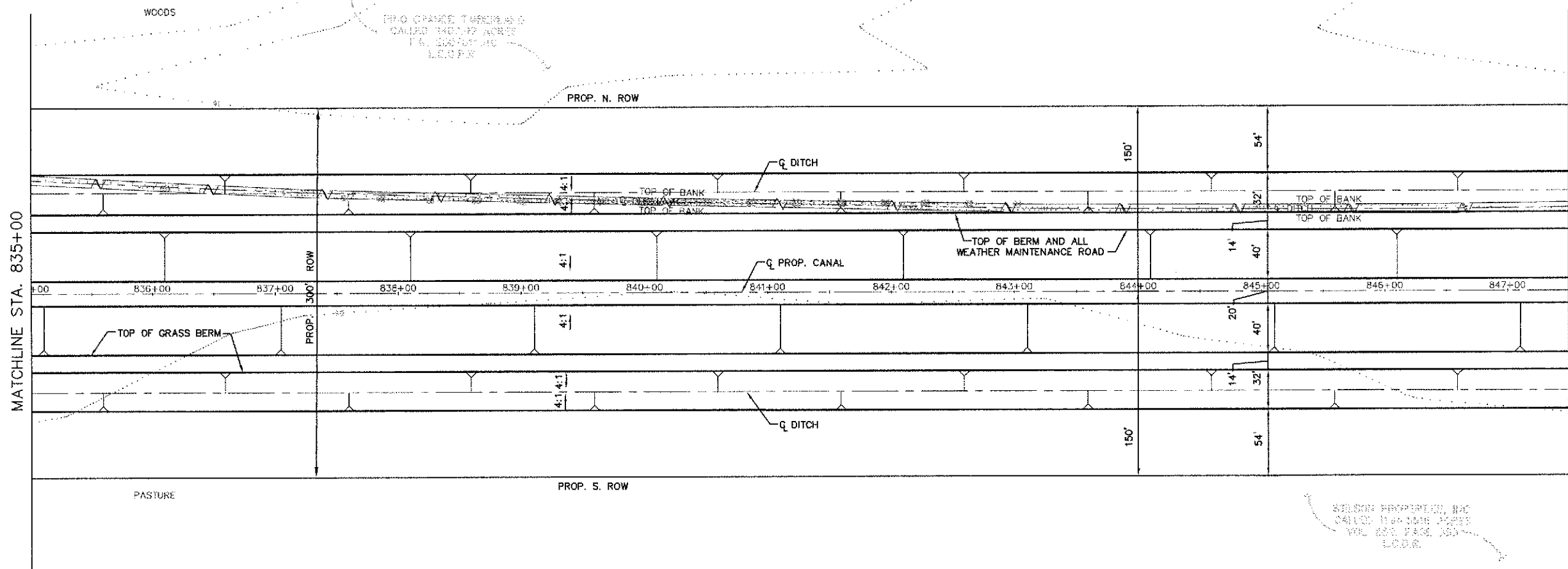
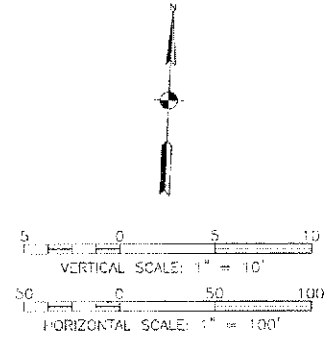
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COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

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TO STA 835+00

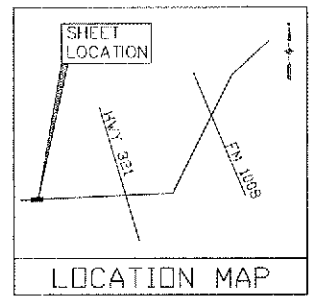
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SHEET NO. 101 OF 245

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AECOM TECHNICAL SERVICES, INC.
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HOUSTON, TEXAS 77057
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WWW.AECOM.COM
TYPE REG. NO. P-1486

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

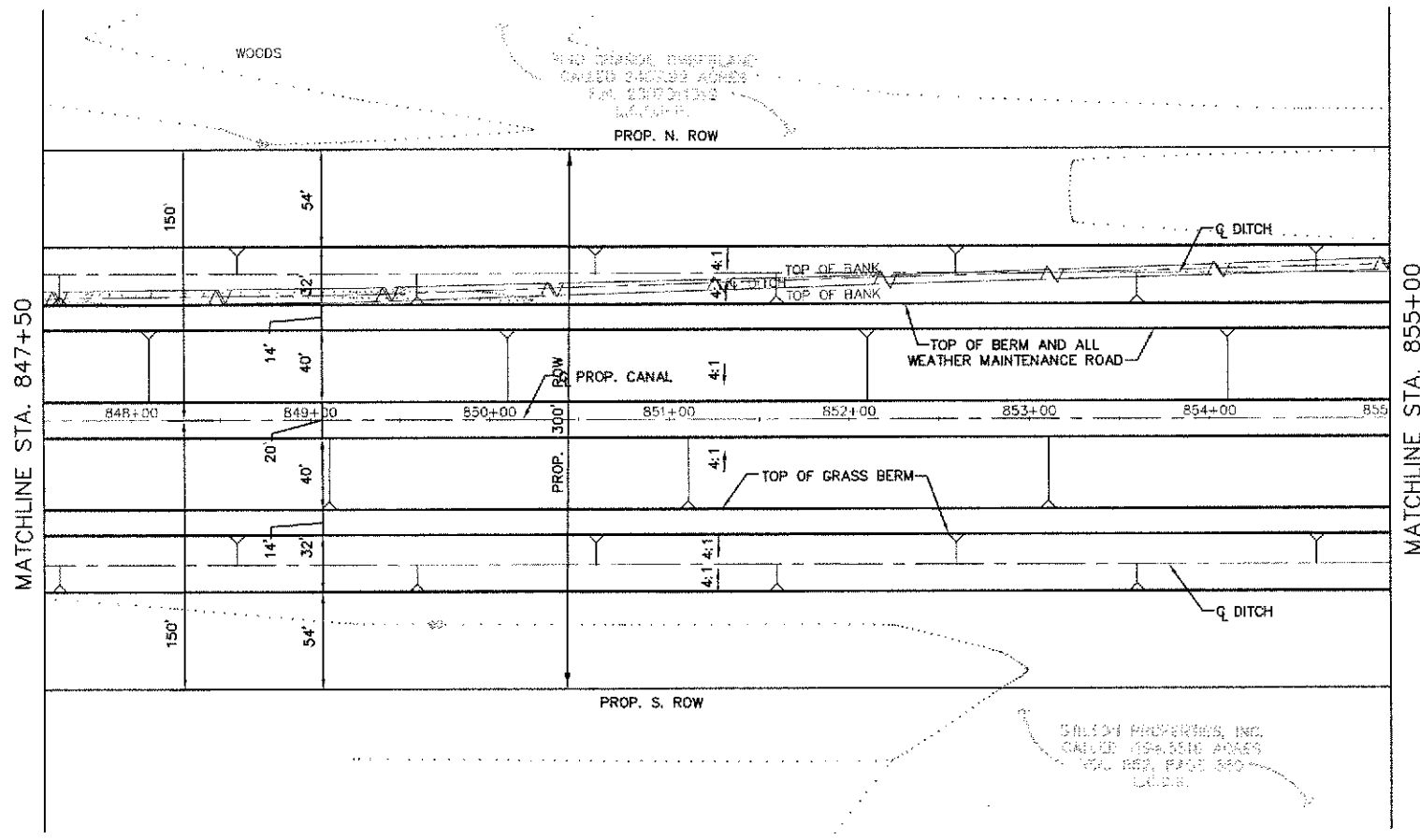
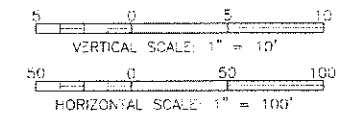
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COASTAL WATER AUTHORITY
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CANAL PLAN &
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TO STA 847+50

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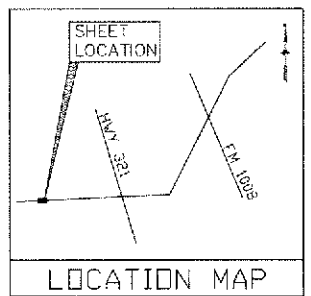
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MATCHLINE STA. 855+00

MATCHLINE STA. 847+50

NOTE:
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AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel
713.780.0838 fax



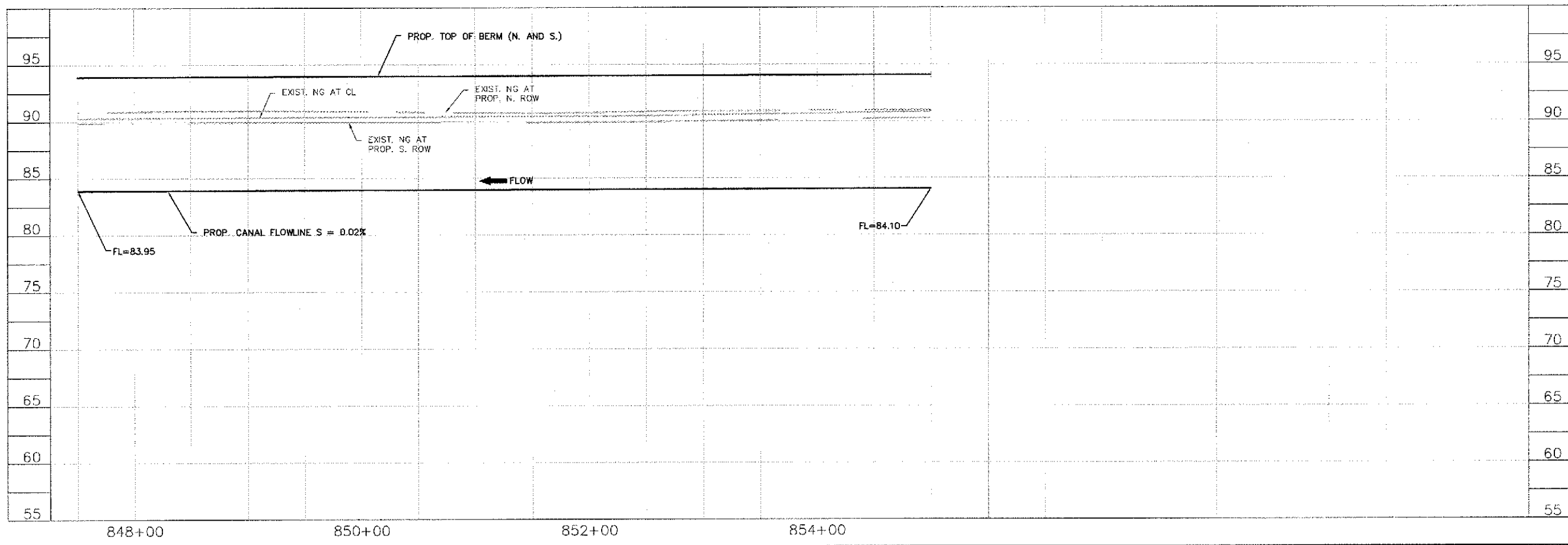
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COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

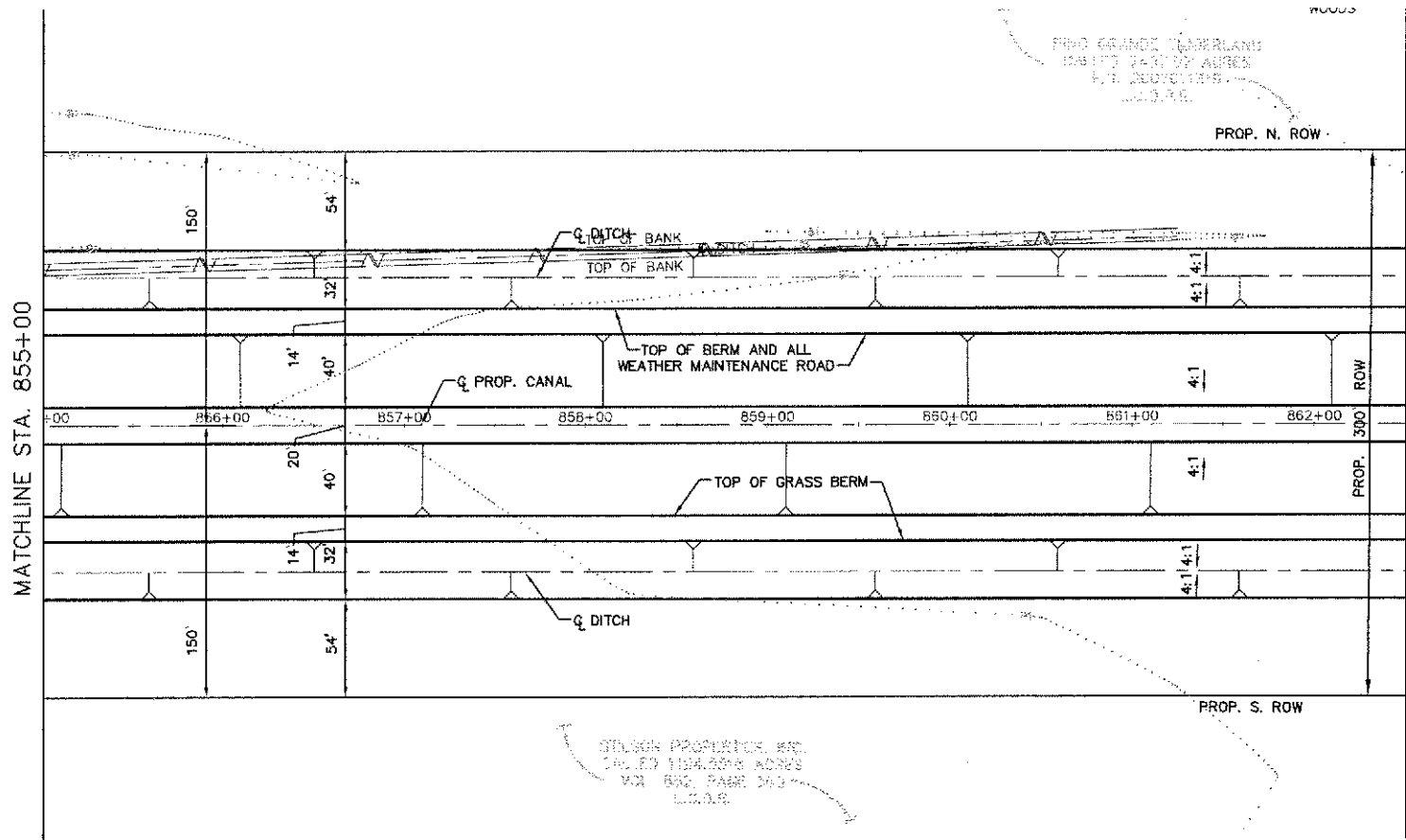
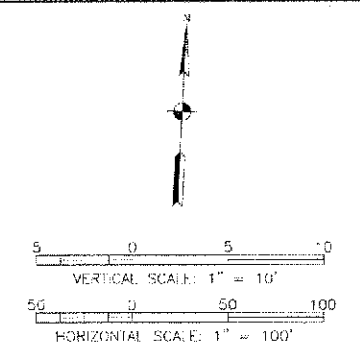
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PROFILE STA 847+50
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DRAWING SCALE
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SHEET NO. 103 OF 215

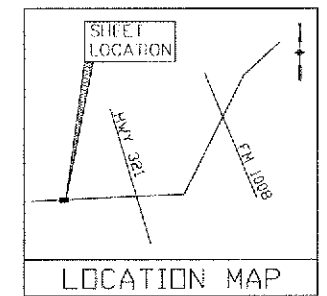


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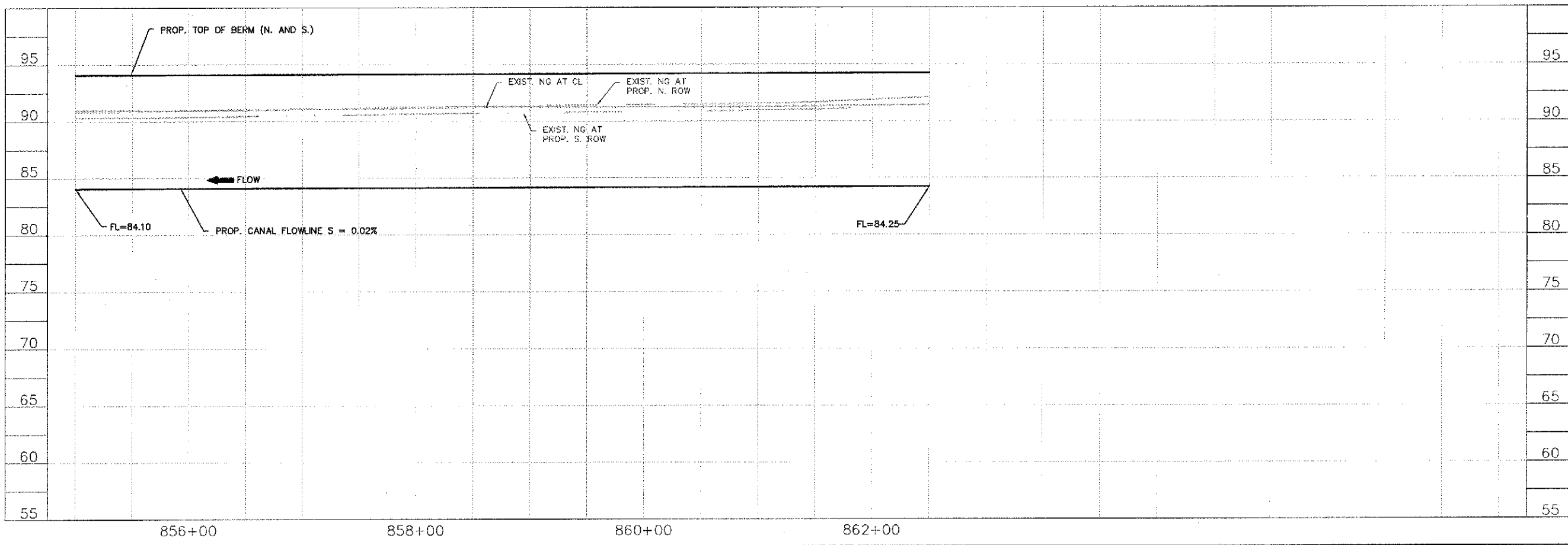


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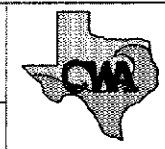
NOTE:
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DURING FINAL DESIGN



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AECOM TECHNICAL SERVICES, INC.
8757 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax



AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

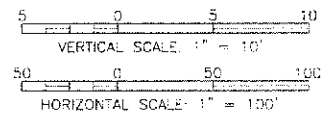
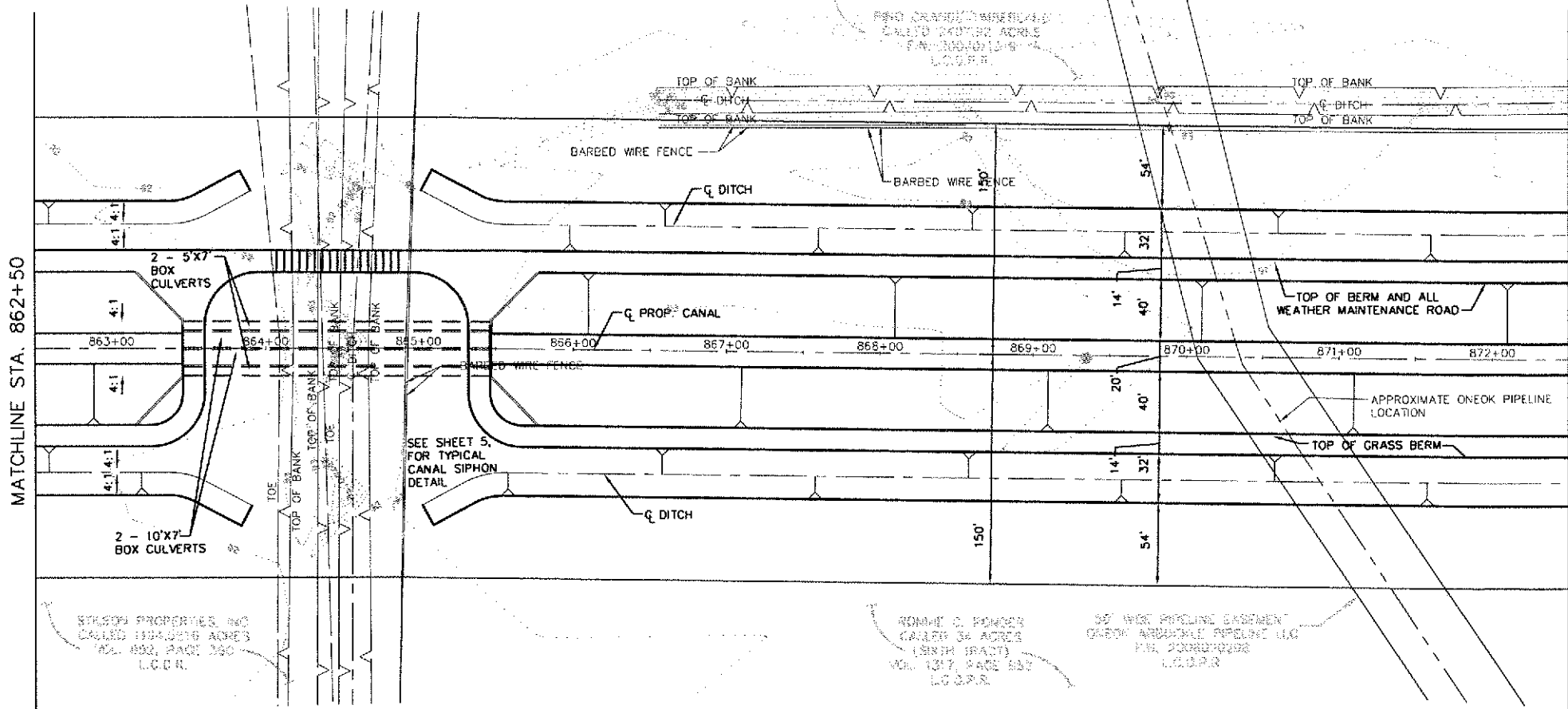
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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 855+00
TO STA 862+50

DRAWING SCALE
AS SHOWN

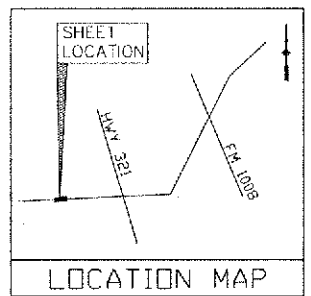
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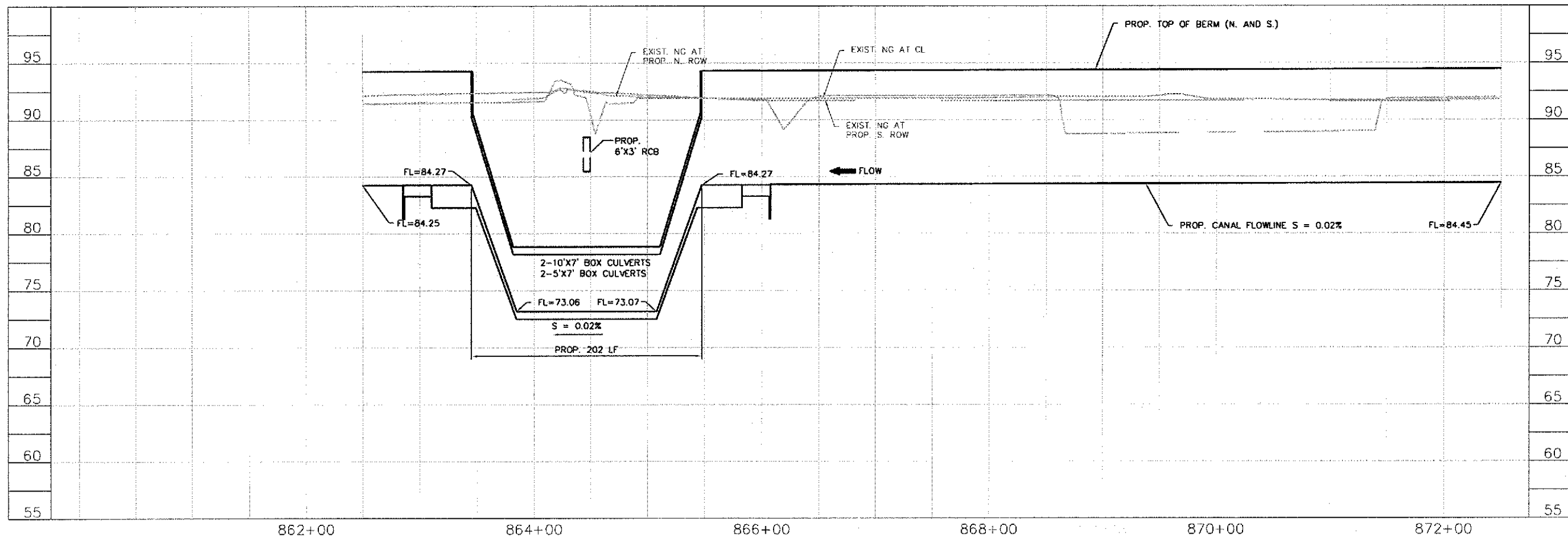
AECOM
AECOM TECHNICAL SERVICES, INC.
3157 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

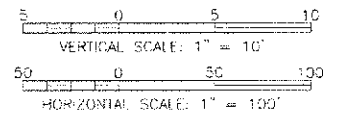
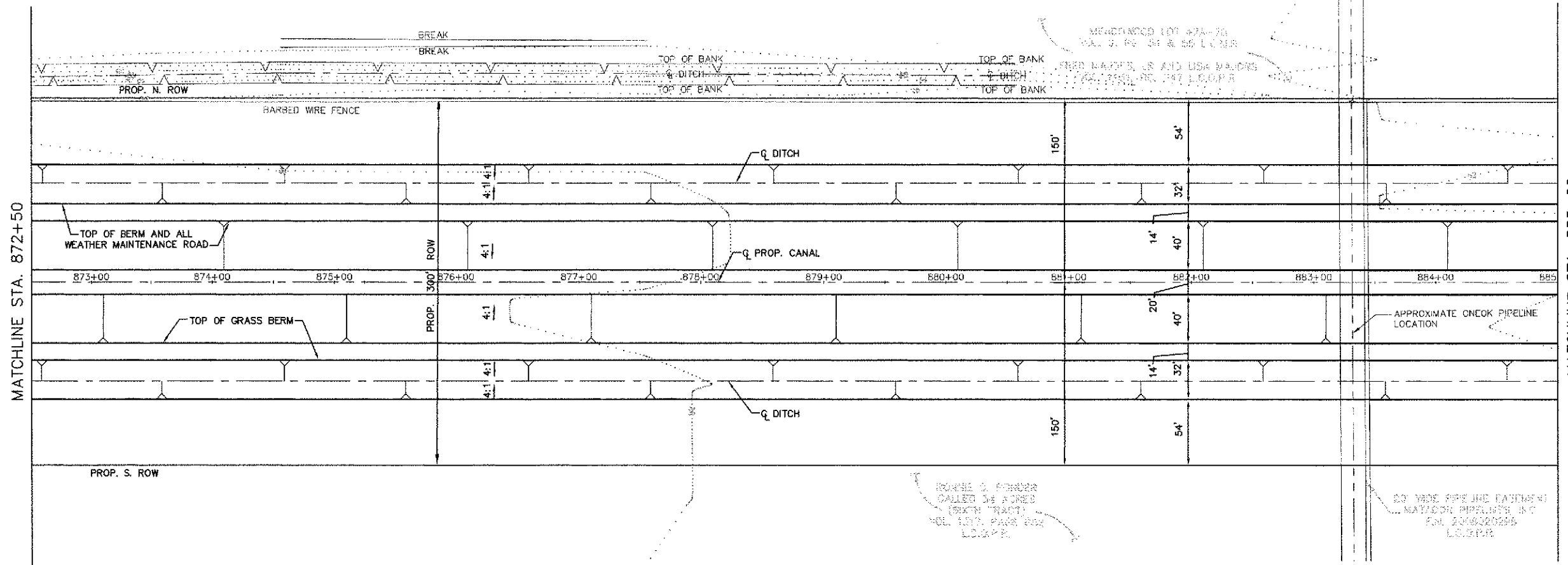
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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 862+50
TO STA 872+50

DRAWING SCALE	AS SHOWN
SHEET NO. 105 OF 244	

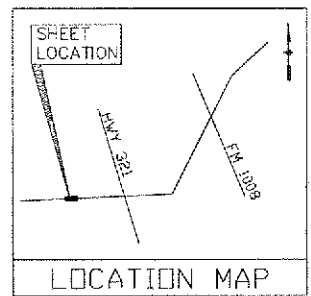


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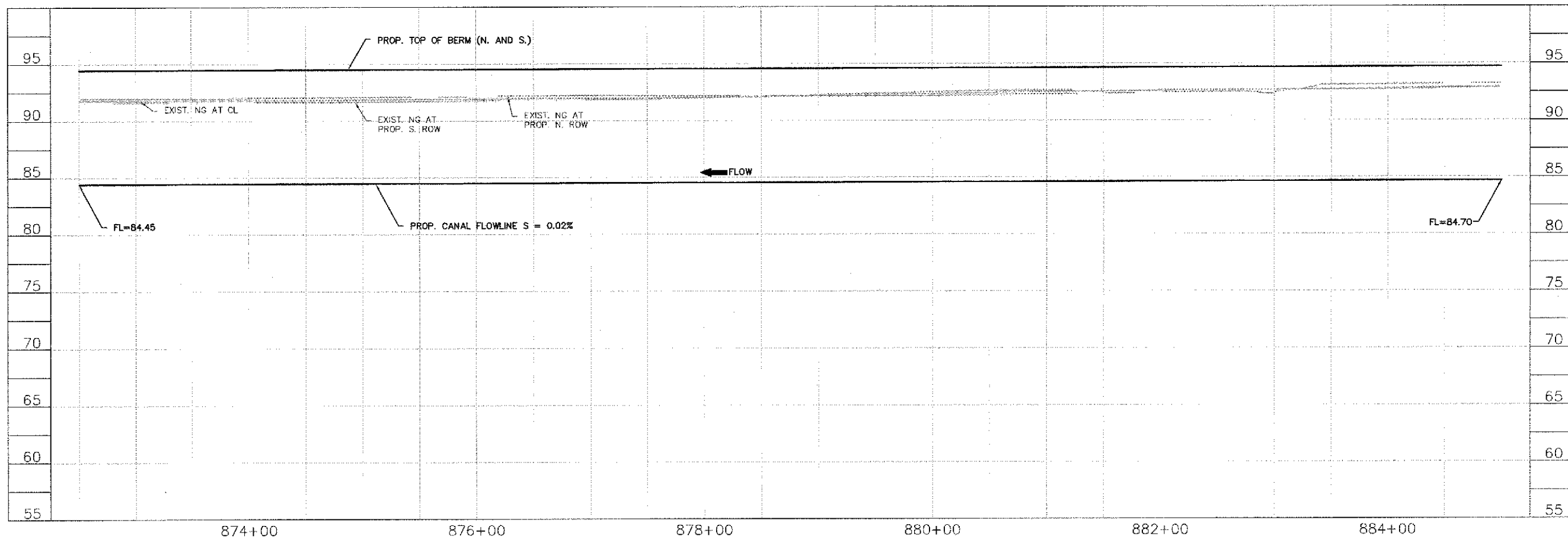


NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

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IN THIS AREA. THESE ARE NOT
SHOWN IN PROFILE VIEW DUE TO
LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES



AECOM AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 100 WEST
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713.780.4100 tel.
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WWW.AECOM.COM
TYPE REG. NO. 4-5580

CWA

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FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 872+50
TO STA 885+00

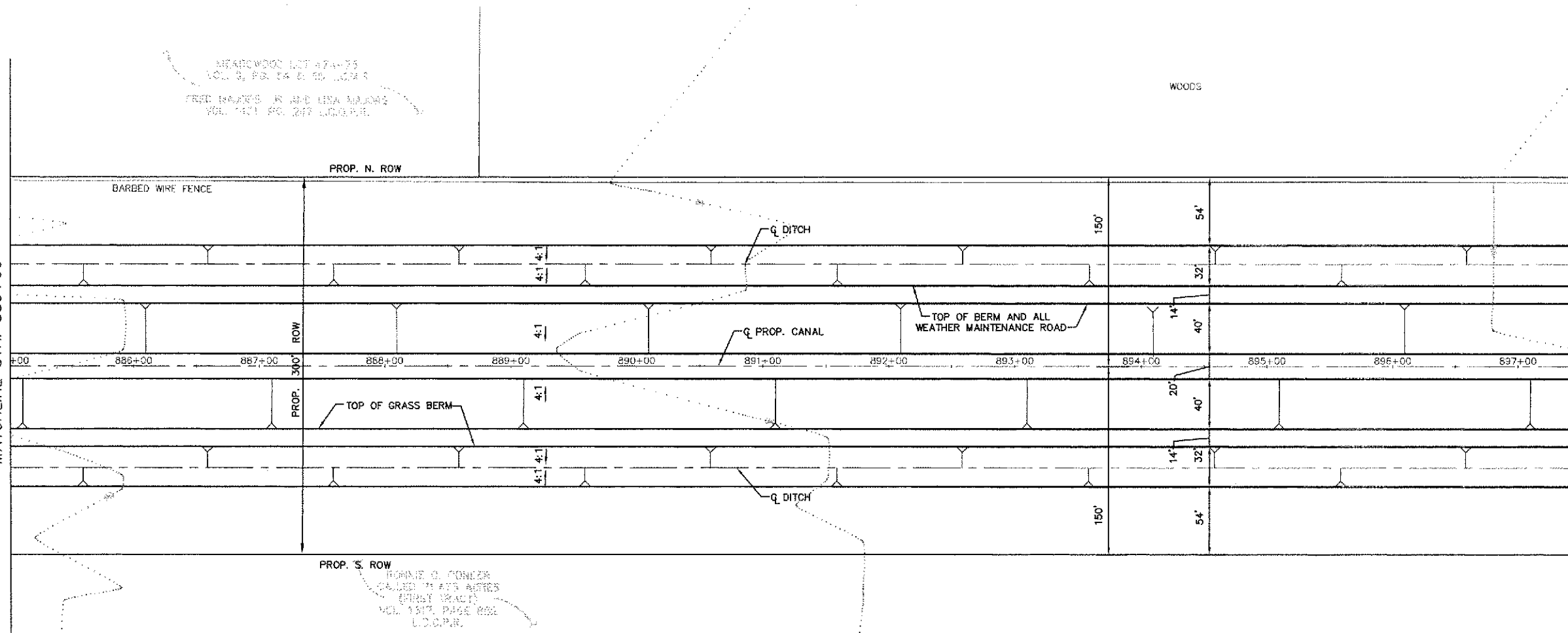
DRAWING SCALE
AS SHOWN

SHEET NO. 104 of 205

LAST MODIFIED: Jan 27, 2011 - 4:38pm BY USER: ThompsonBI
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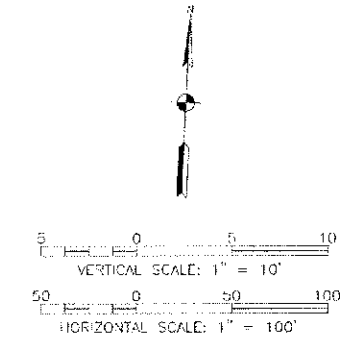
MATCHLINE STA. 885+00

MATCHLINE STA. 897+50

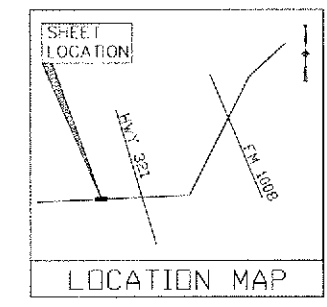


MEADOWS LOT 474-75
VOL. 5, PG. 14 & 15, L.C.P.R.
FRED HAYES, JR AND LISA HAYES
VOL. 141, PG. 247, L.C.P.R.

PROP. S. ROW
RODNEY G. GONZA
CALLED IN A'S NOTES
(FIRST PAGE)
VOL. 151, PAGE 882
L.C.P.R.



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

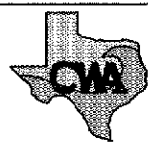


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713.780.0838 fax.

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HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

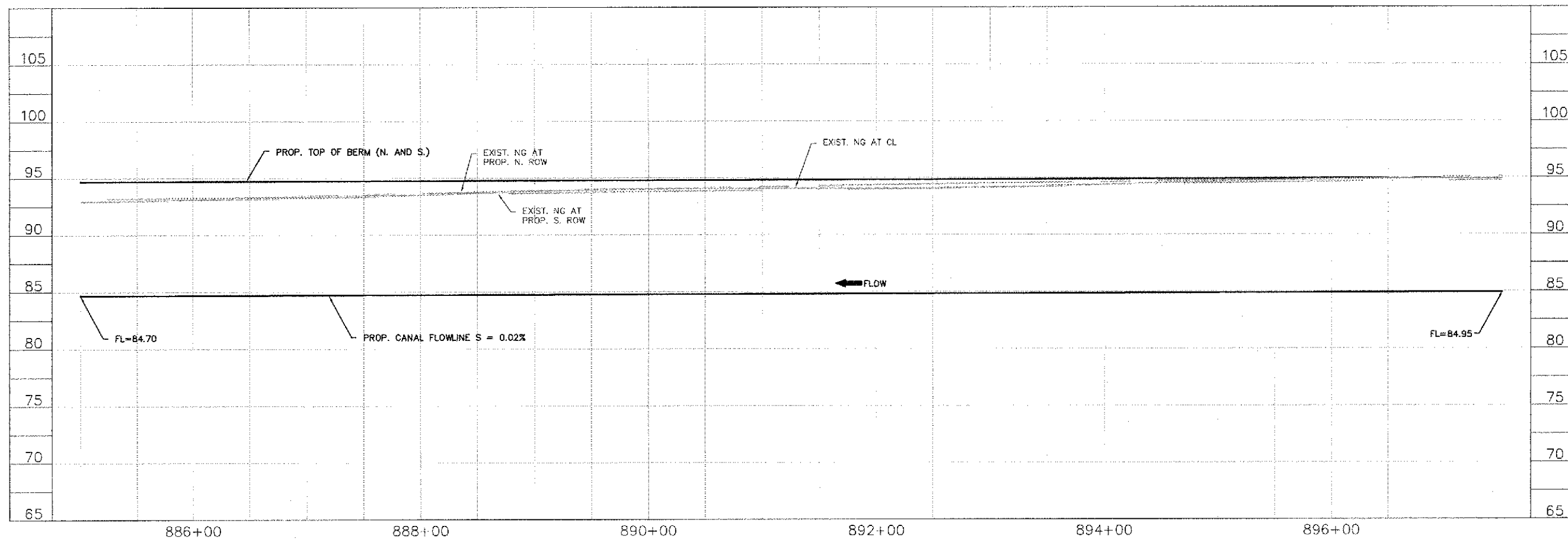
SURVEYED BY:
FB NO.



COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
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TO STA 897+50

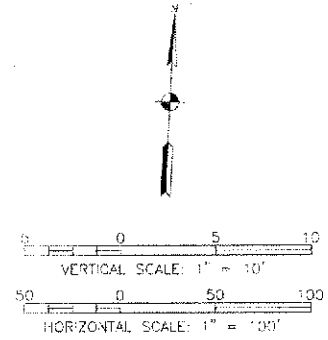
DRAWING SCALE	AS SHOWN
SHEET NO. 167 OF 245	



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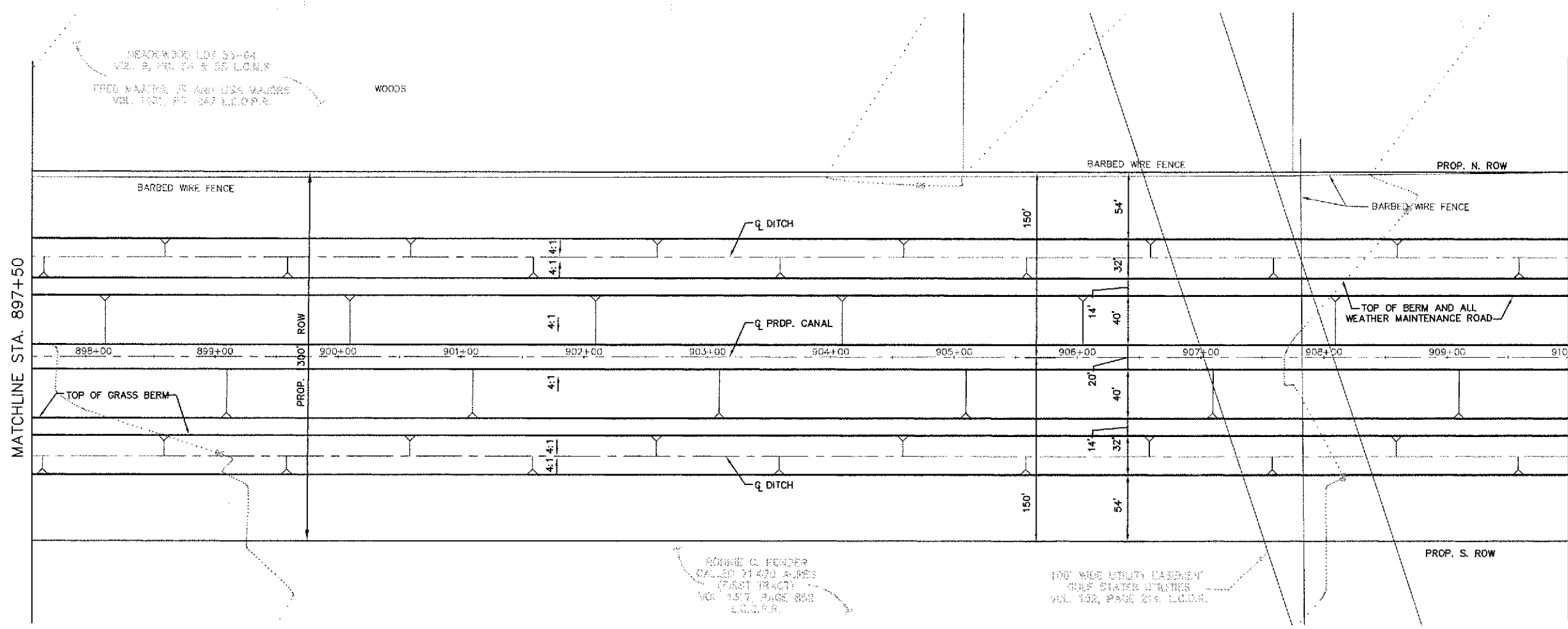
RECORDED LOT 55-04
VOL. 2, PD. 04 & 05 L.C.O.R.
FRED MARTIN JR AND USA PARTNERS
VOL. 107, PD. 047 L.C.O.P.R.

WOODS



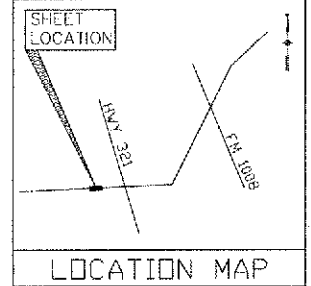
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MATCHLINE STA. 910+00

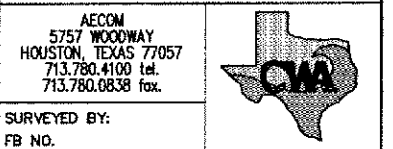


NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

NOTE:
THERE ARE EXISTING PIPELINES
IN THIS AREA. THESE ARE NOT
SHOWN IN PROFILE VIEW DUE TO
LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
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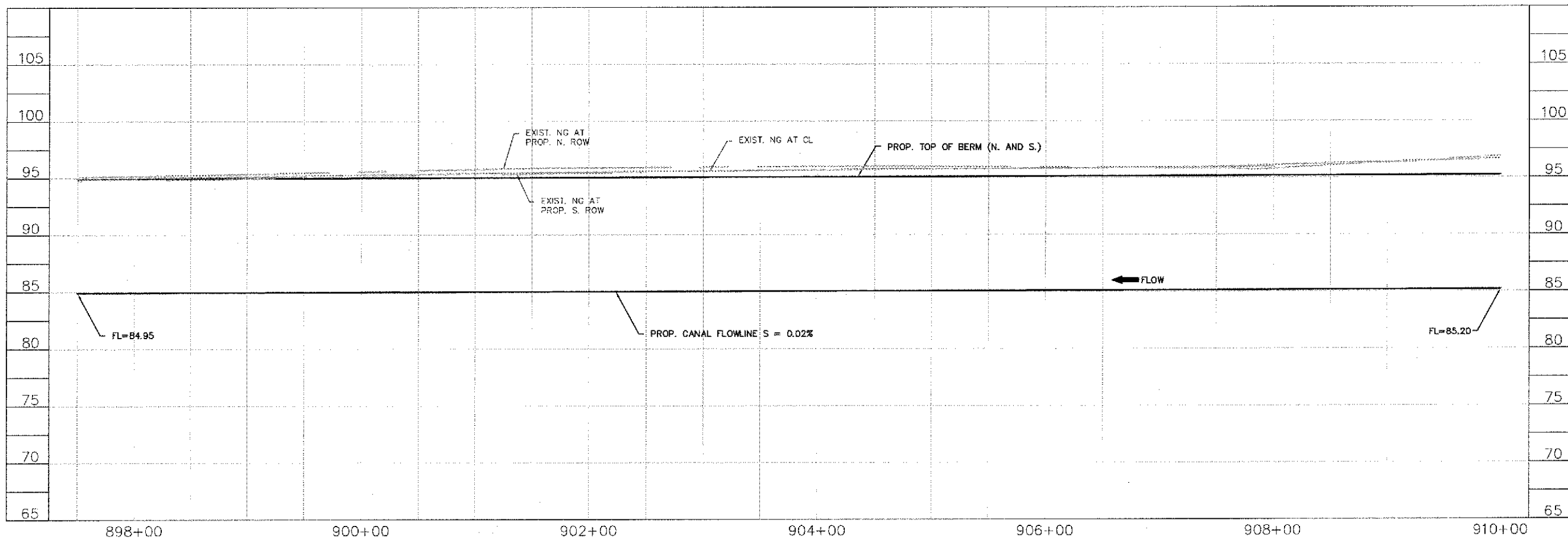


COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 897+50
TO STA 910+00

DRAWING SCALE
AS SHOWN

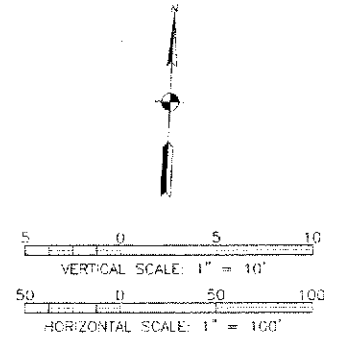
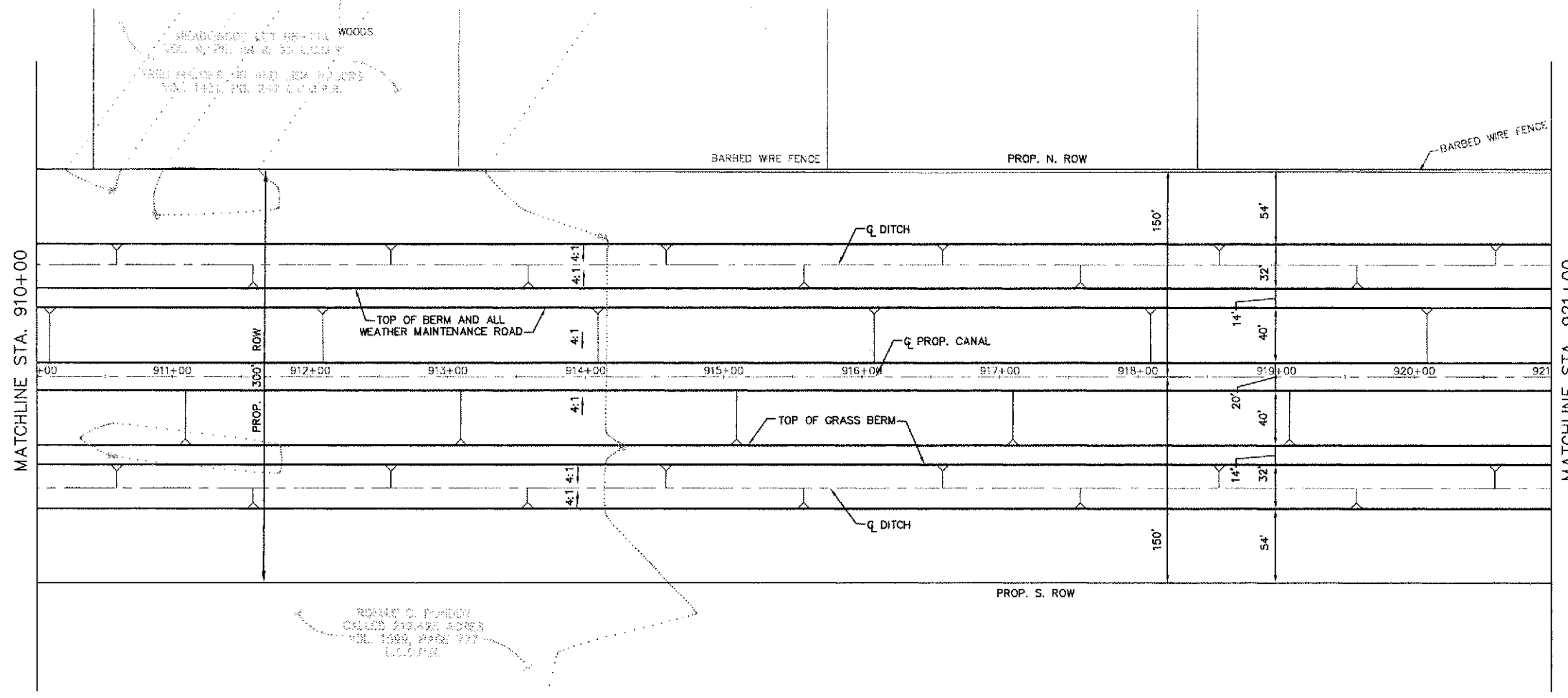
SHEET NO. 108 of 215



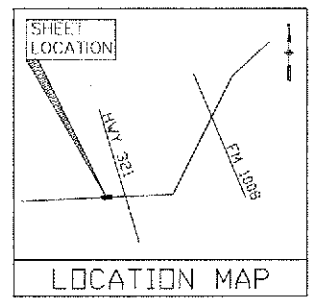
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MATCHLINE STA. 910+00

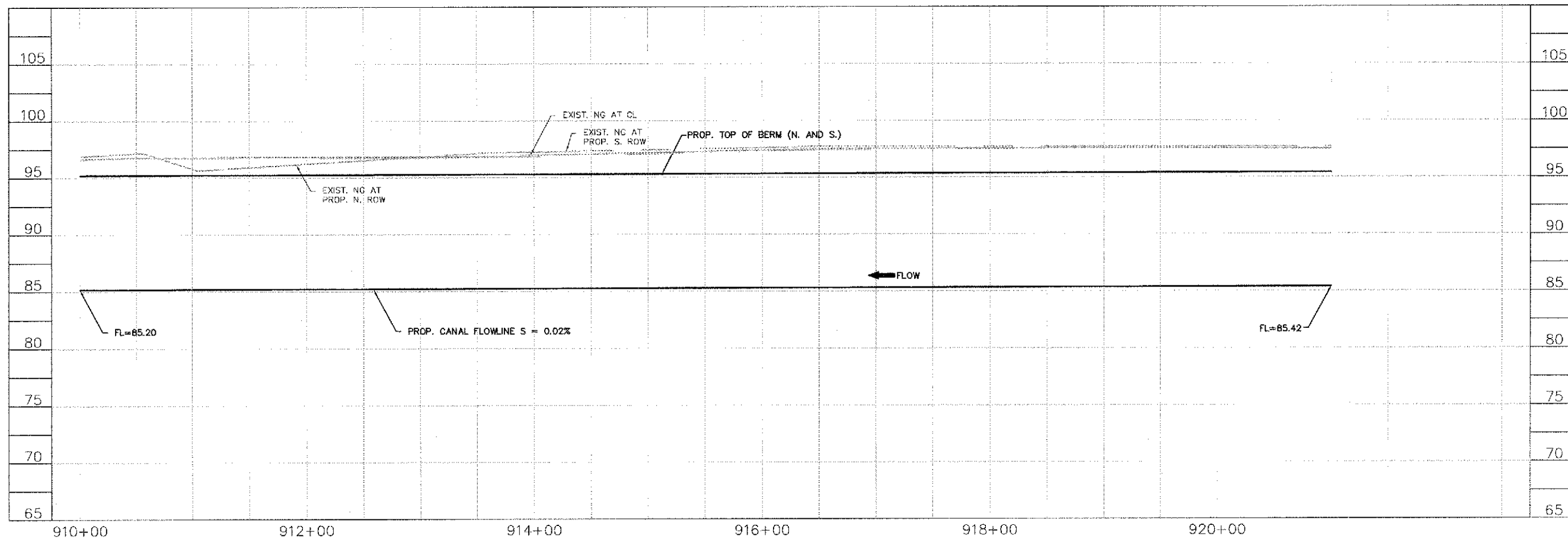
MATCHLINE STA. 921+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 910+00
TO STA 921+00

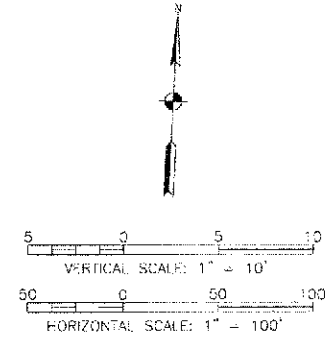
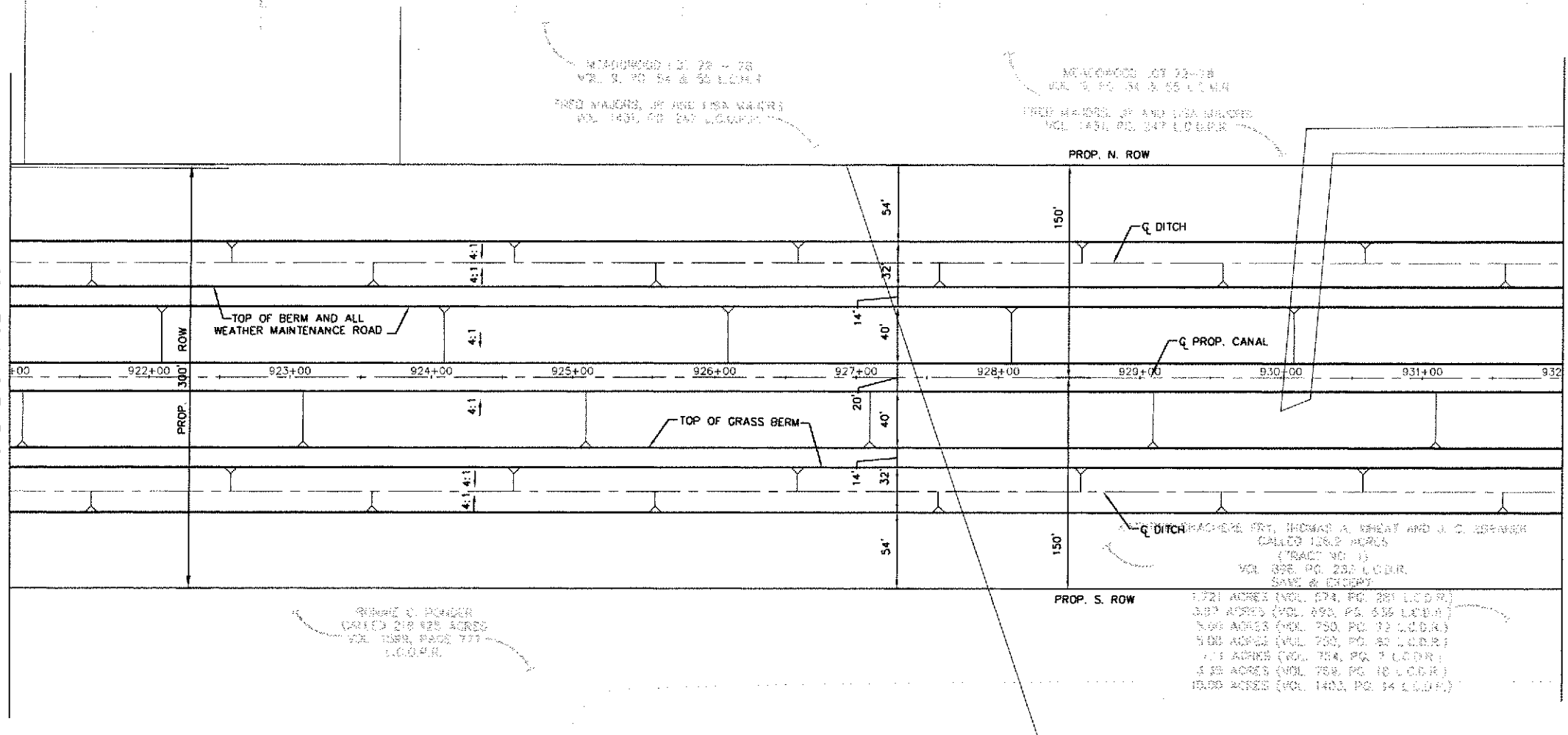
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SHEET NO. 109 OF 245

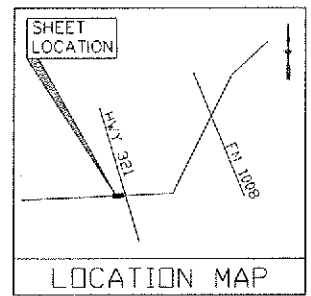
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DWG. NAME: Cood2273.dwg

MATCHLINE STA. 921+00

MATCHLINE STA. 932+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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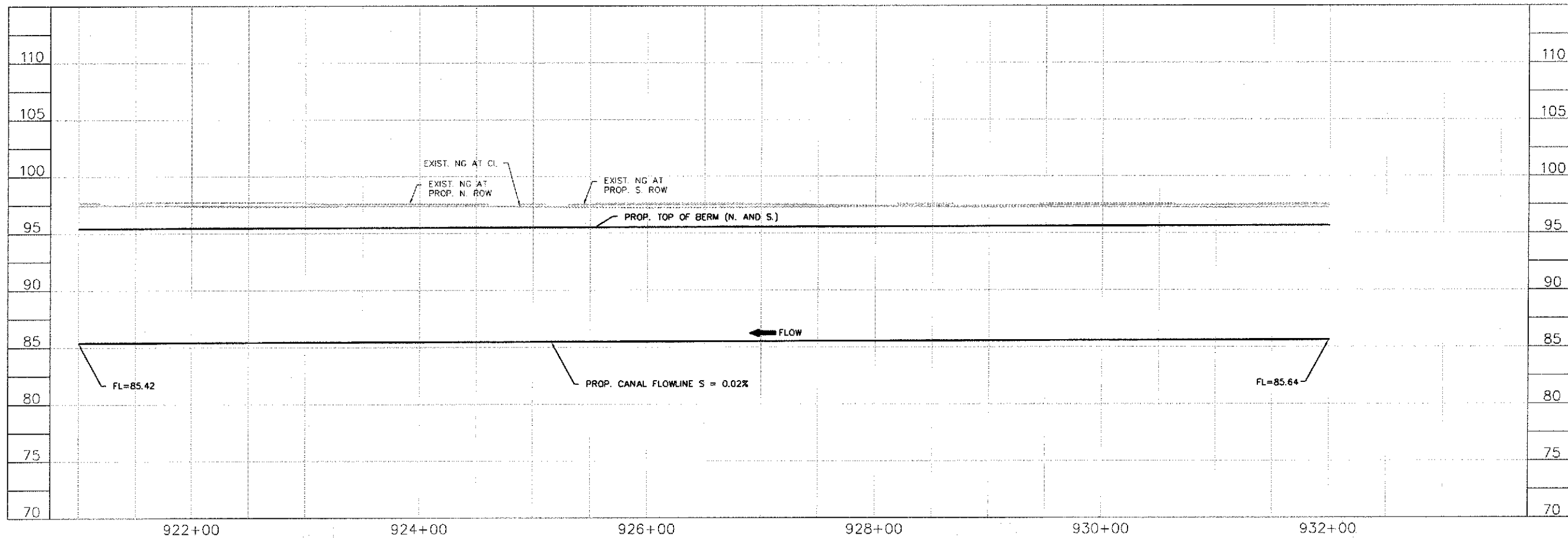


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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

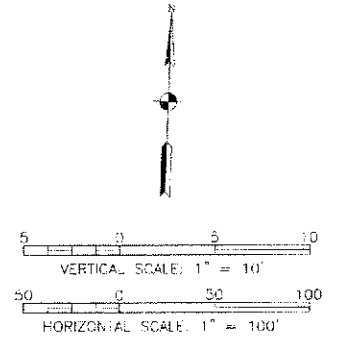
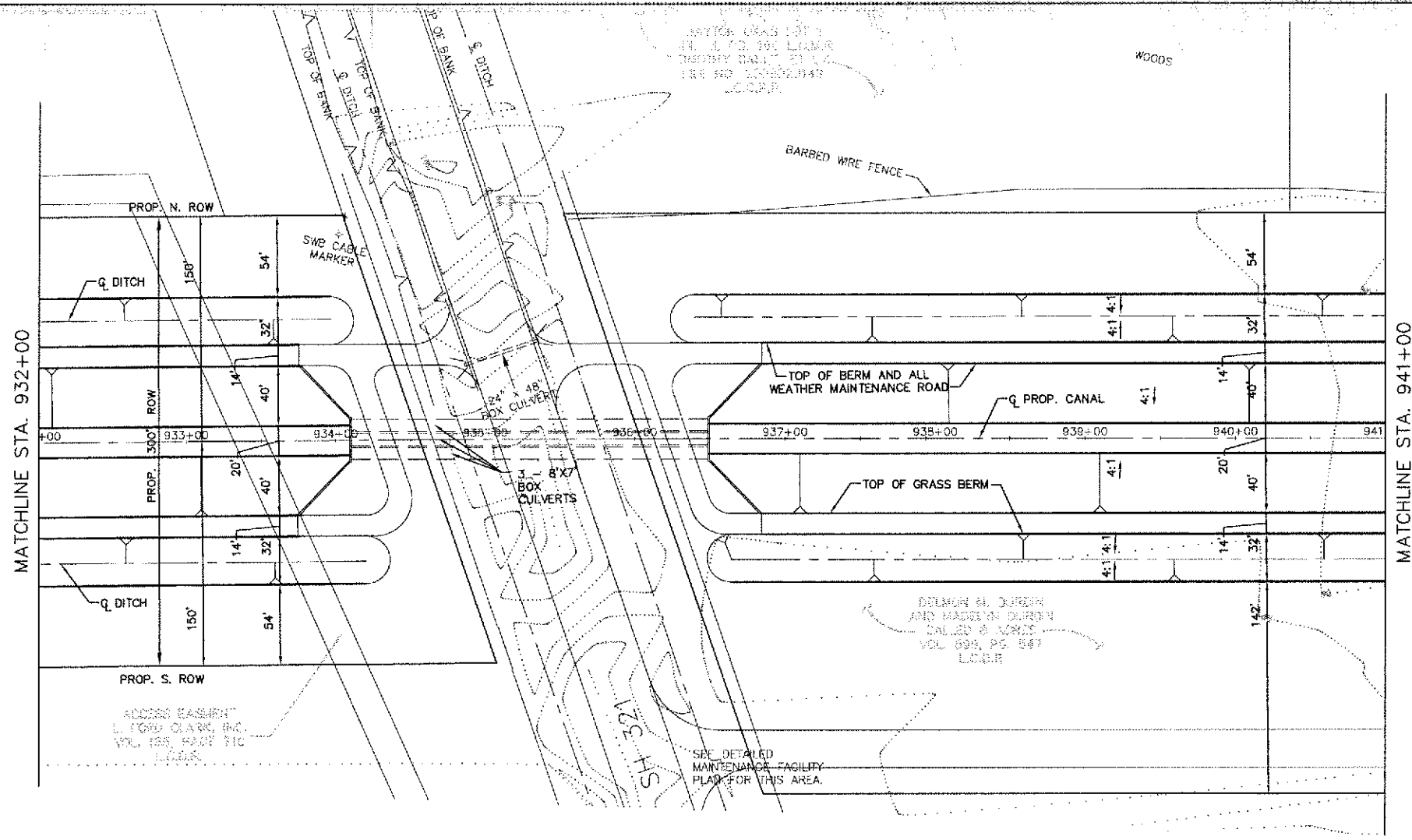
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PROFILE STA 921+00
TO STA 932+00

DRAWING SCALE
AS SHOWN

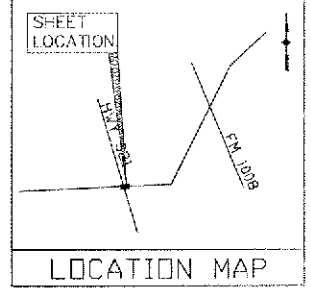
SHEET NO. 116 of 296



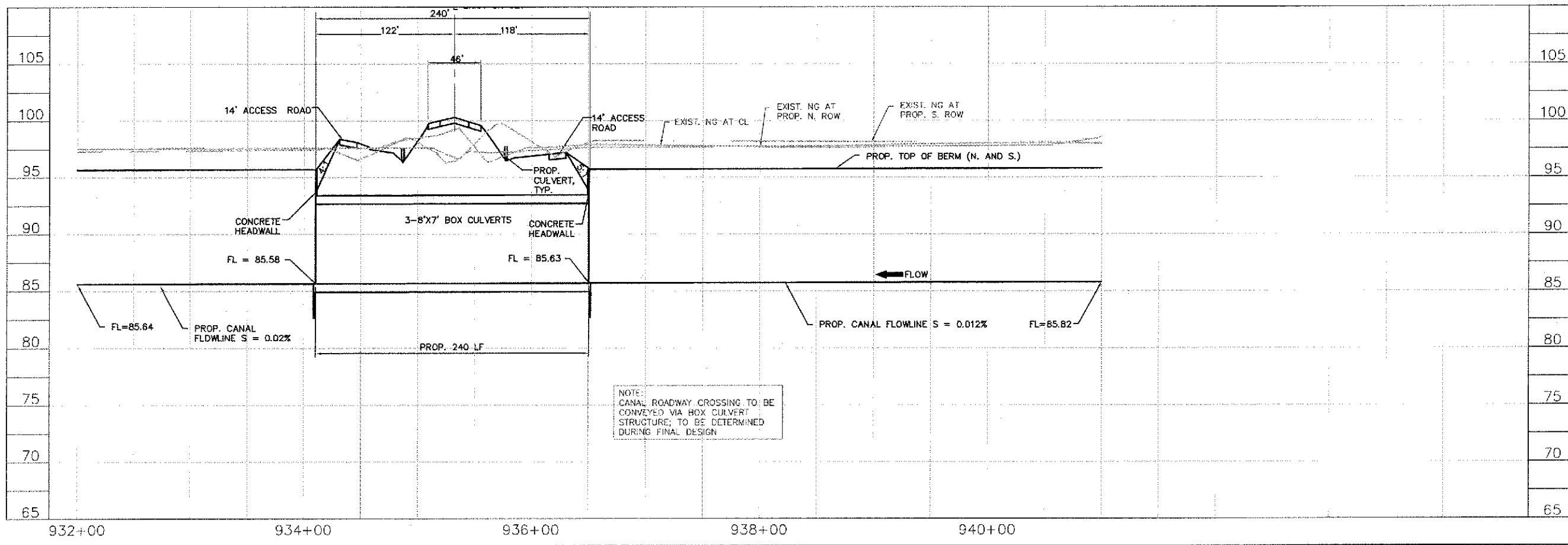
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NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

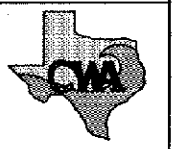


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NOTE: CANAL ROADWAY CROSSING TO BE CONVEYED VIA BOX CULVERT STRUCTURE; TO BE DETERMINED DURING FINAL DESIGN

AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



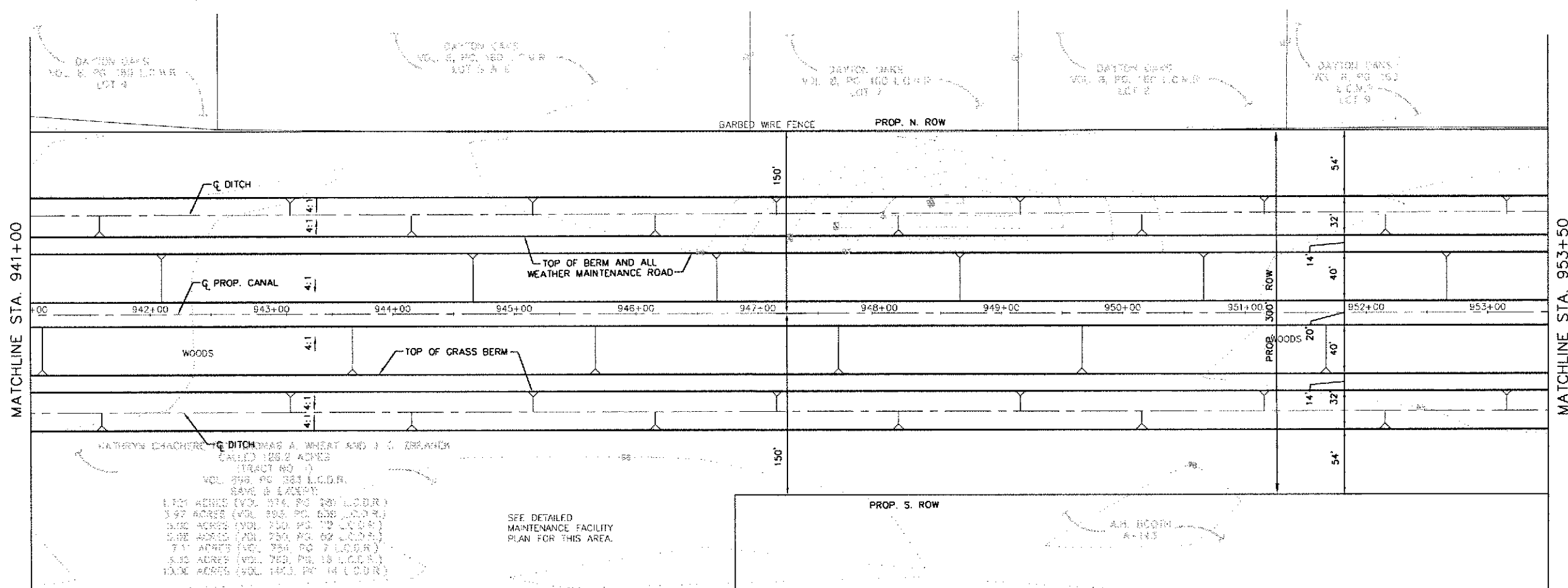
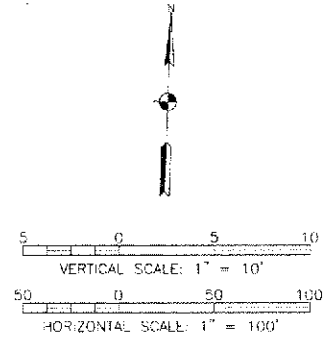
SURVEYED BY:
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LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 932+00
TO STA 941+00

DRAWING SCALE
AS SHOWN

SHEET NO. 111 OF 245

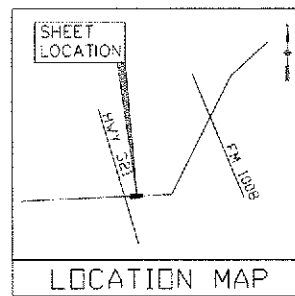
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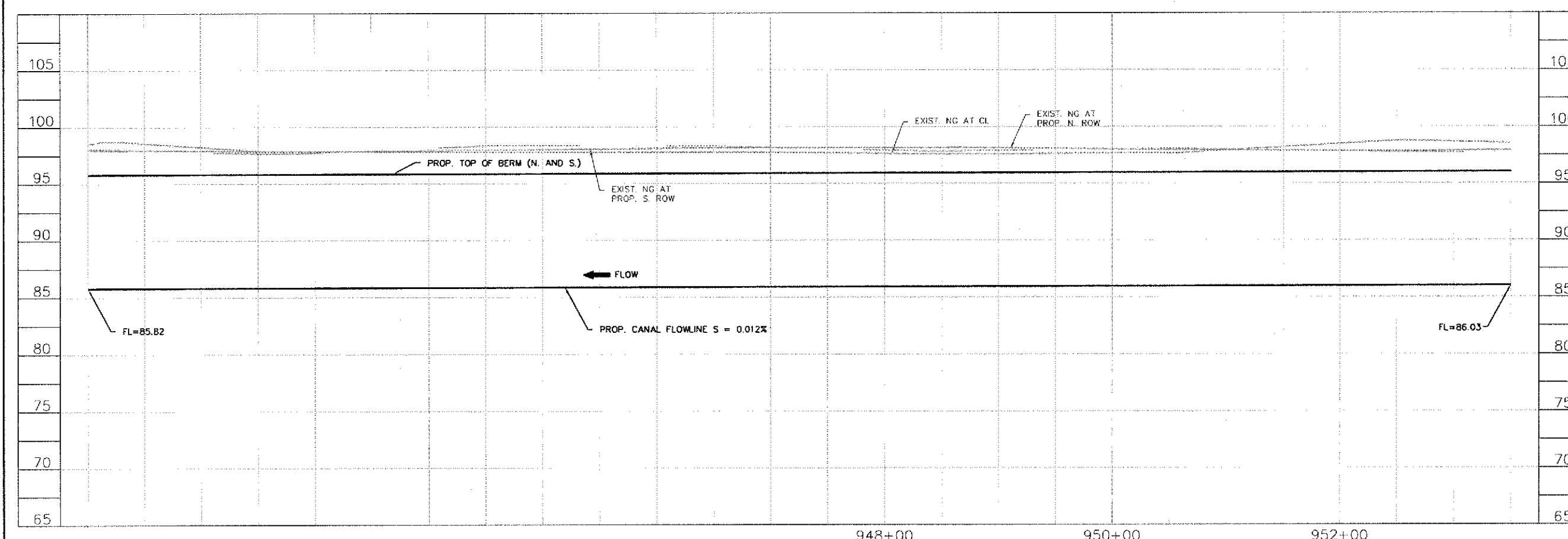
KATHRYN CRACHER 7.0 ACRES
 1.00 ACRES (VOL. 374, PG. 281 L.C.D.R.)
 3.97 ACRES (VOL. 388, PG. 638 L.C.D.R.)
 3.02 ACRES (VOL. 300, PG. 12 L.C.D.R.)
 2.02 ACRES (VOL. 750, PG. 62 L.C.D.R.)
 7.11 ACRES (VOL. 756, PG. 7 L.C.D.R.)
 5.32 ACRES (VOL. 763, PG. 18 L.C.D.R.)
 10.06 ACRES (VOL. 1403, PG. 14 L.C.D.R.)

SEE DETAILED
 MAINTENANCE FACILITY
 PLAN FOR THIS AREA.

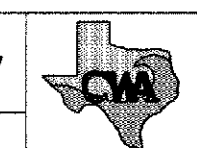
NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN



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 WWW.AECOM.COM
 1996 INCL. INC. # 2520



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CANAL PLAN &
 PROFILE STA 941+00
 TO STA 953+50

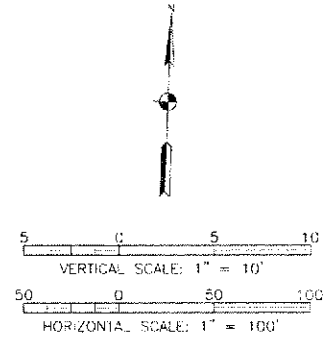
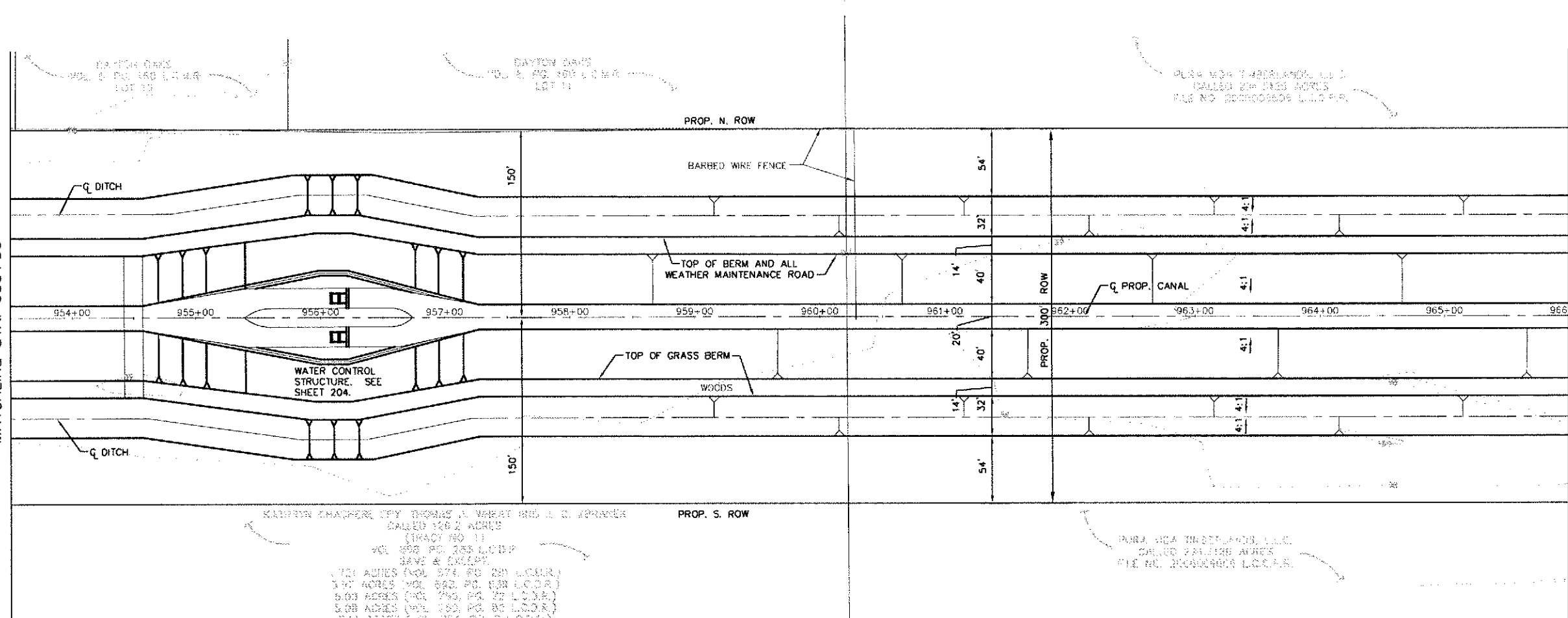
DRAWING SCALE
 AS SHOWN

SHEET NO. 12 of 245

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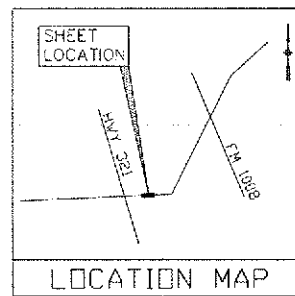
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MATCHLINE STA. 966+00

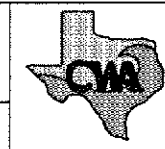


NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

NOTE:
THERE ARE EXISTING PIPELINES
IN THIS AREA. THESE ARE NOT
SHOWN IN PROFILE VIEW DUE TO
LACK OF INFORMATION.



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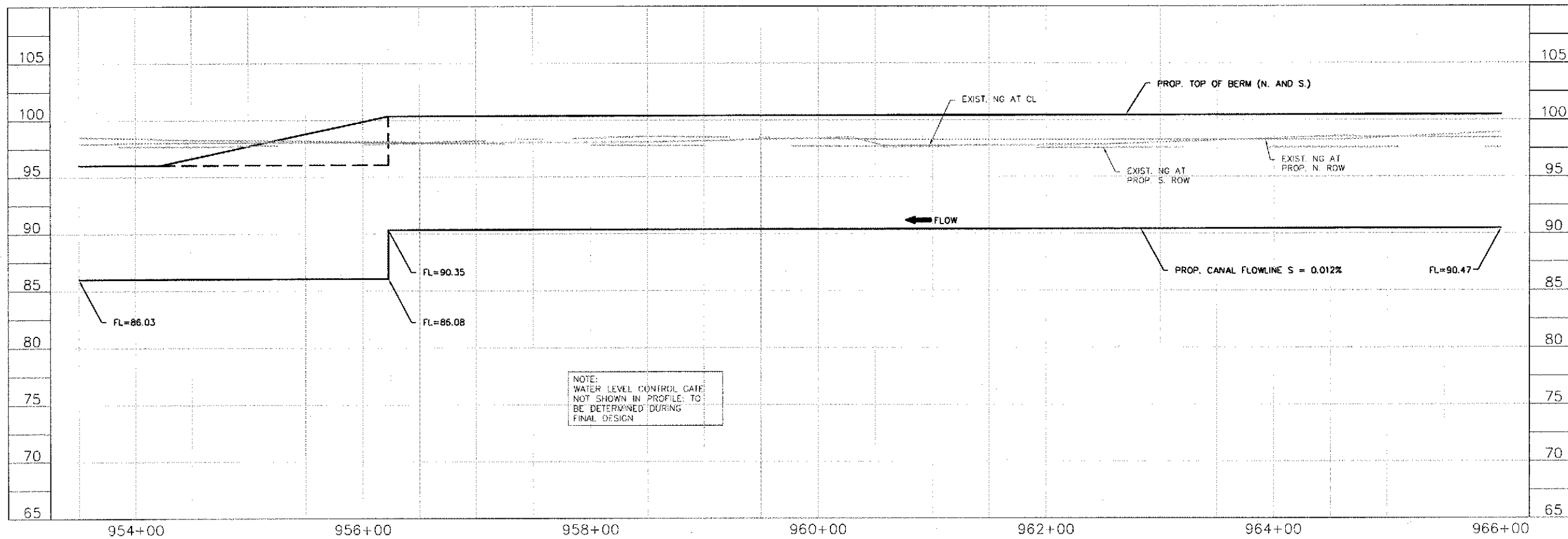


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LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 953+50
TO STA 966+00

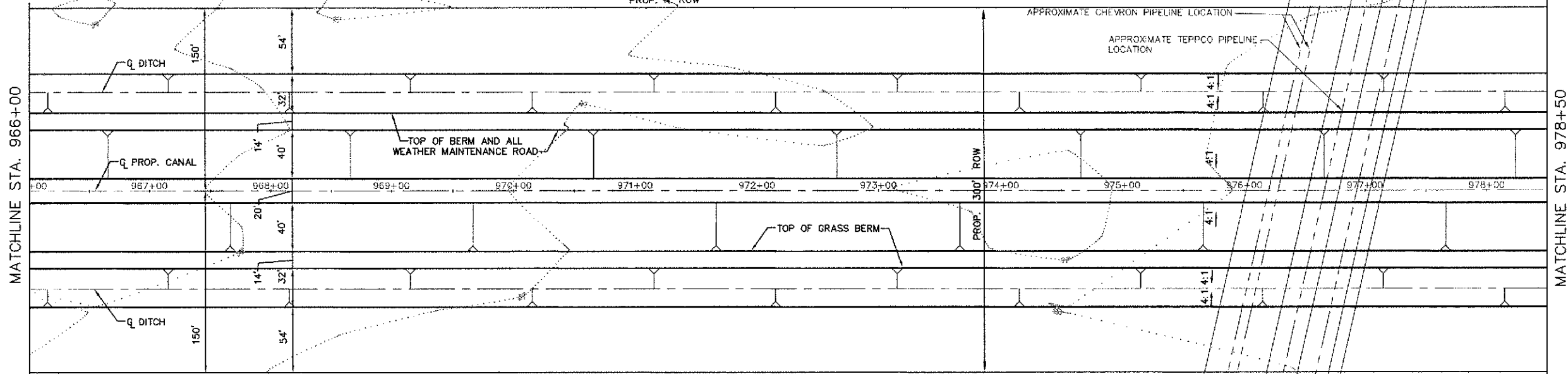
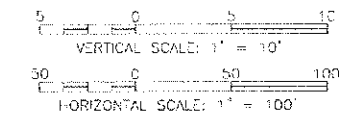
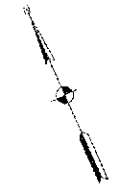
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SHEET NO. 113 OF 215



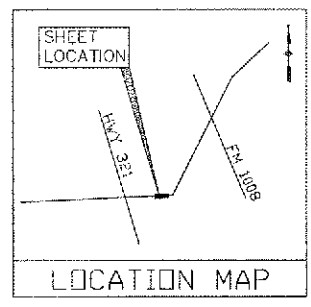
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WATER LEVEL CONTROL GATE
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BE DETERMINED DURING
FINAL DESIGN

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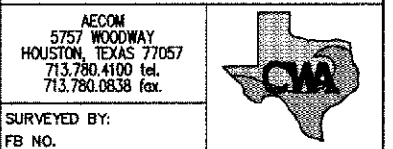


NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

NOTE: THERE ARE EXISTING PIPELINES IN THIS AREA. THESE ARE NOT SHOWN IN PROFILE VIEW DUE TO LACK OF INFORMATION.



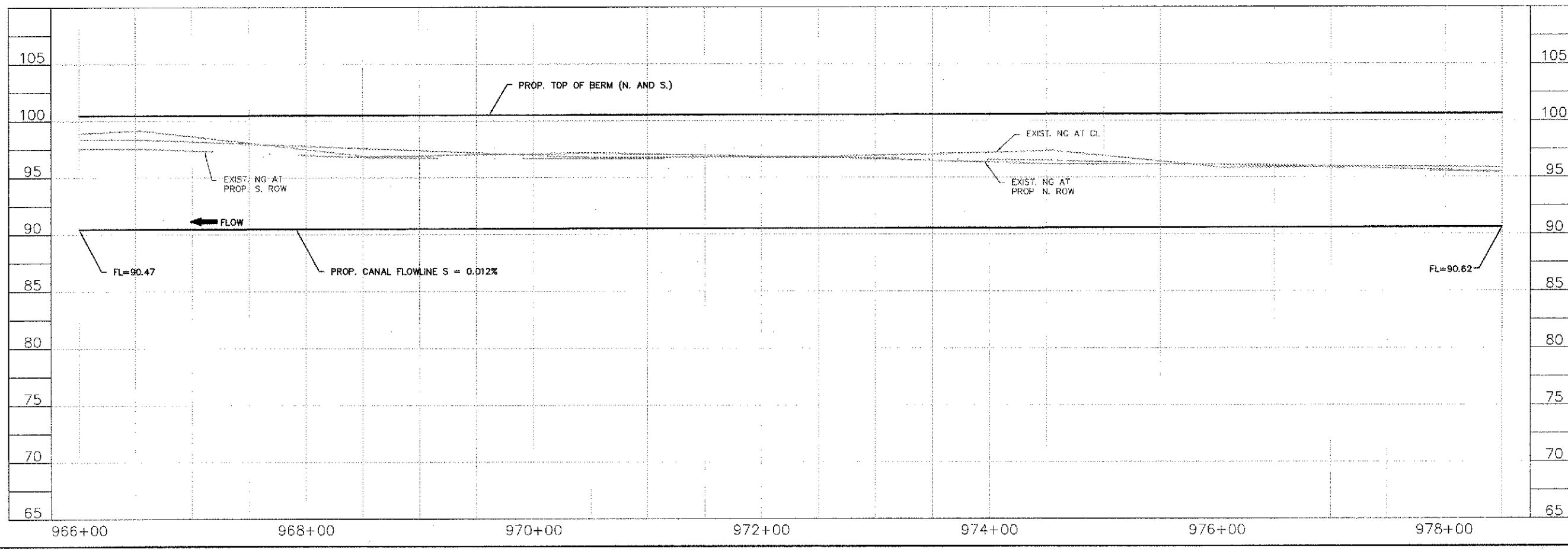
KEVIN R. KRAHN, P.E.
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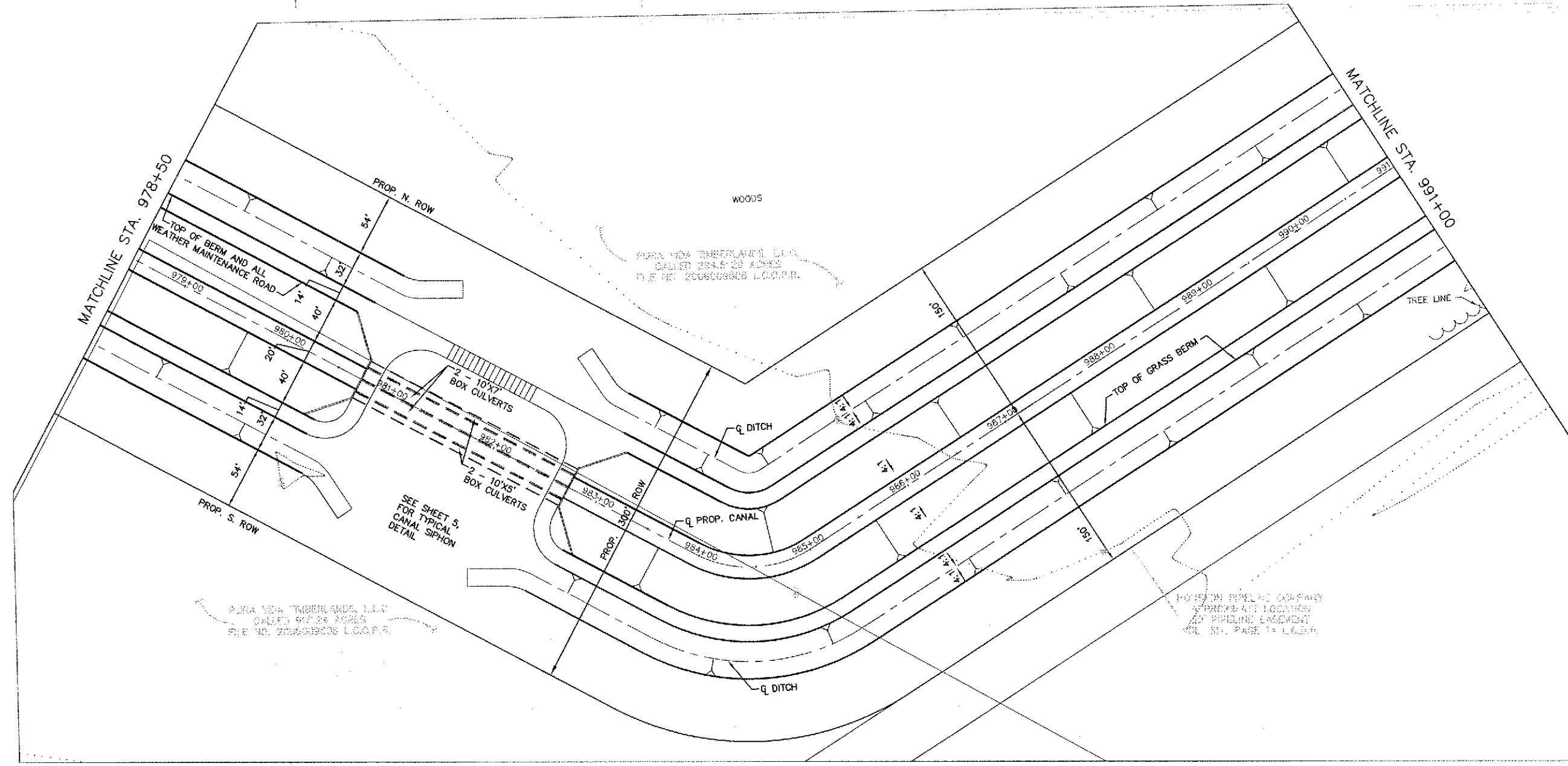
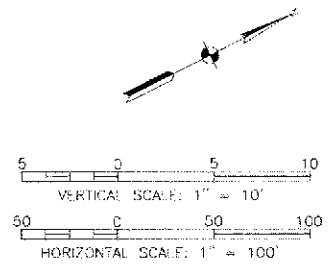
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LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 966+00
TO STA 978+50

DRAWING SCALE
AS SHOWN
SHEET No. 14 of 245

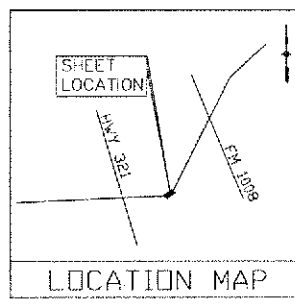


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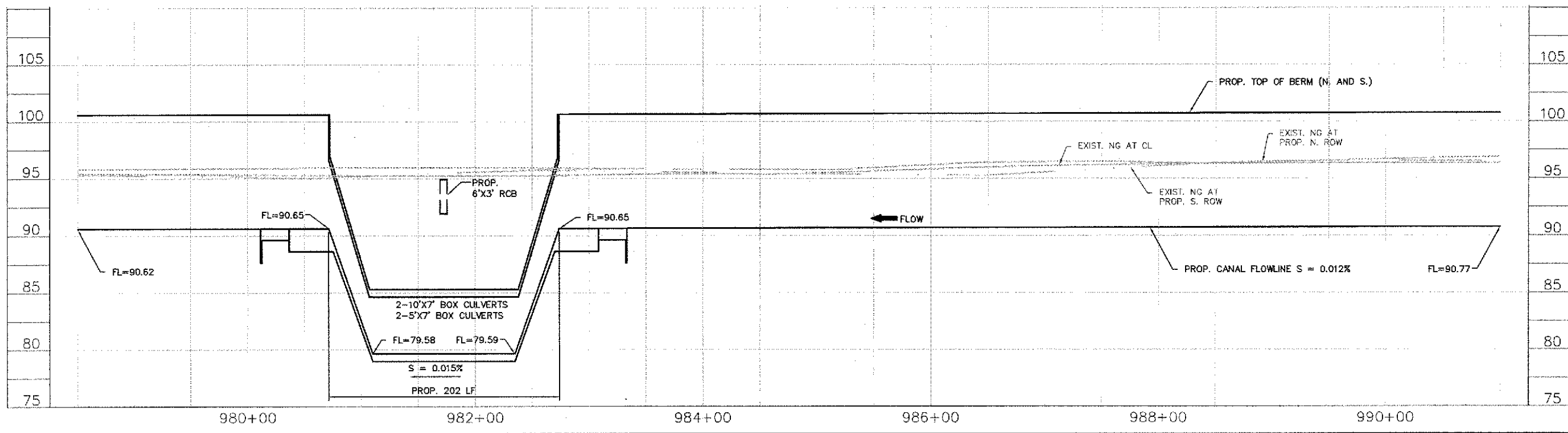


NOTE:
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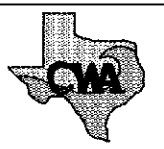


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TSP & REG. NO. F-3590

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



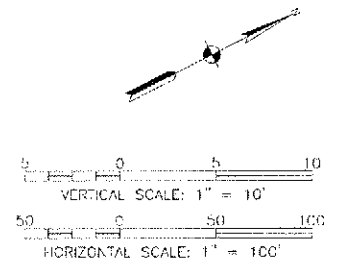
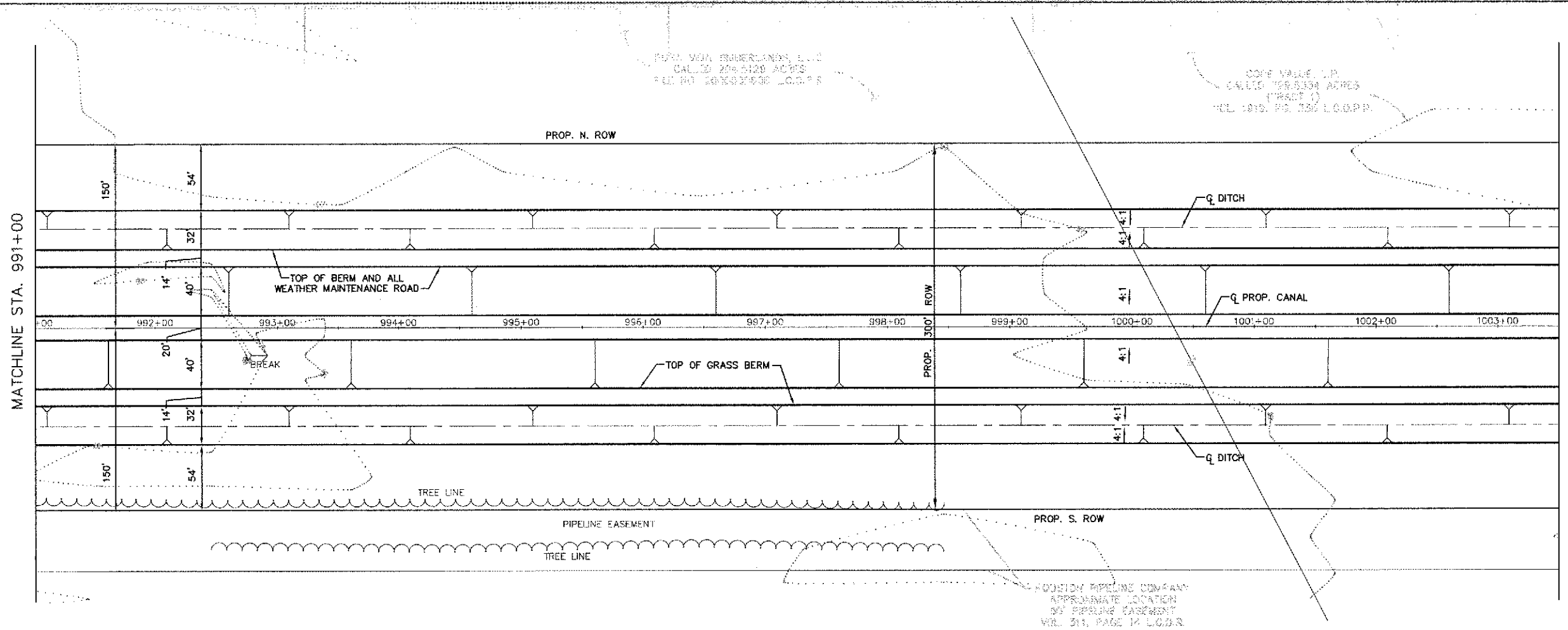
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 978+50
TO STA 991+00

DRAWING SCALE
AS SHOWN
SHEET NO. **115** OF **215**

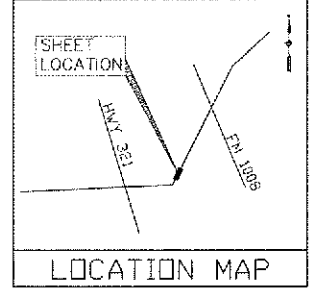
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NOTE:
DESIGN OF DRAINAGE TO OCCUR
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AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.
 WWW.AECOM.COM
 TDEC REG. NO. P-8580

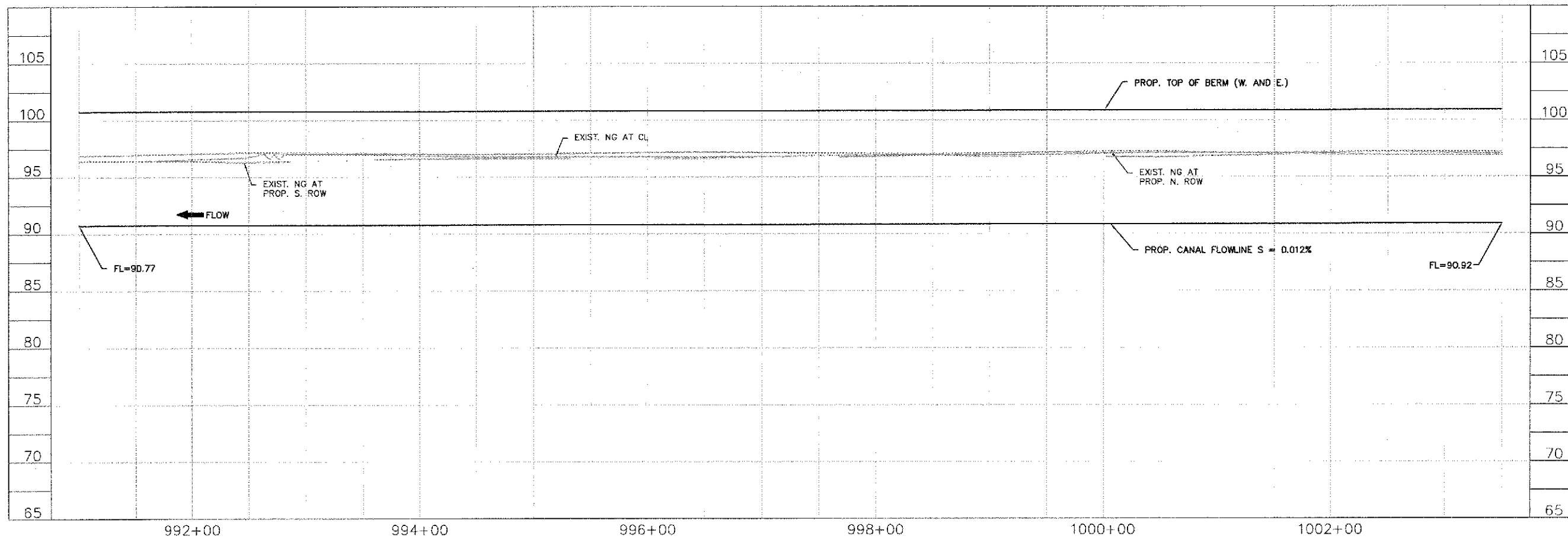
AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

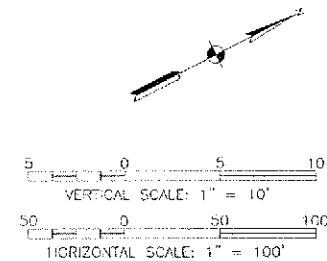
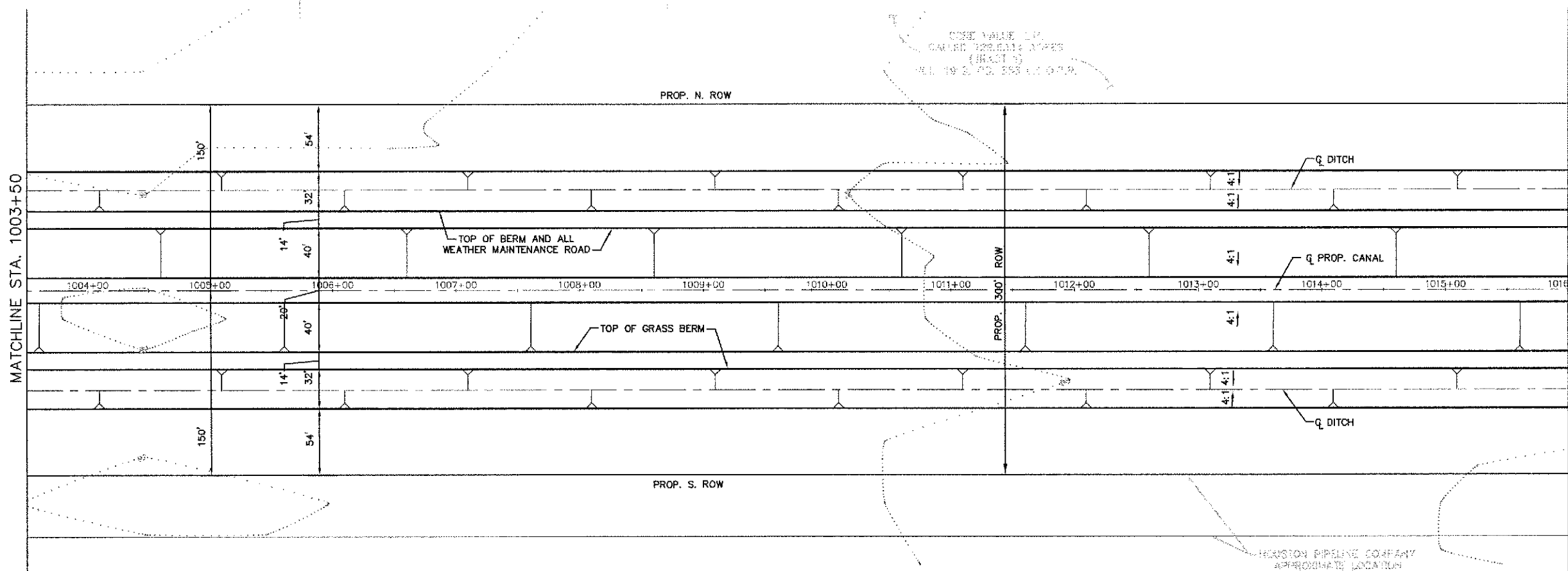
CANAL PLAN &
 PROFILE STA 991+00
 TO STA 1003+50

DRAWING SCALE	AS SHOWN
SHEET NO. 116 OF 245	



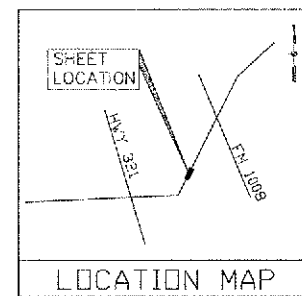
MATCHLINE STA. 1003+50

MATCHLINE STA. 1016+00



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

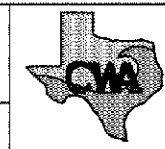
NOTE:
THERE ARE EXISTING PIPELINES
IN THIS AREA. THESE ARE NOT
SHOWN IN PROFILE VIEW DUE TO
LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
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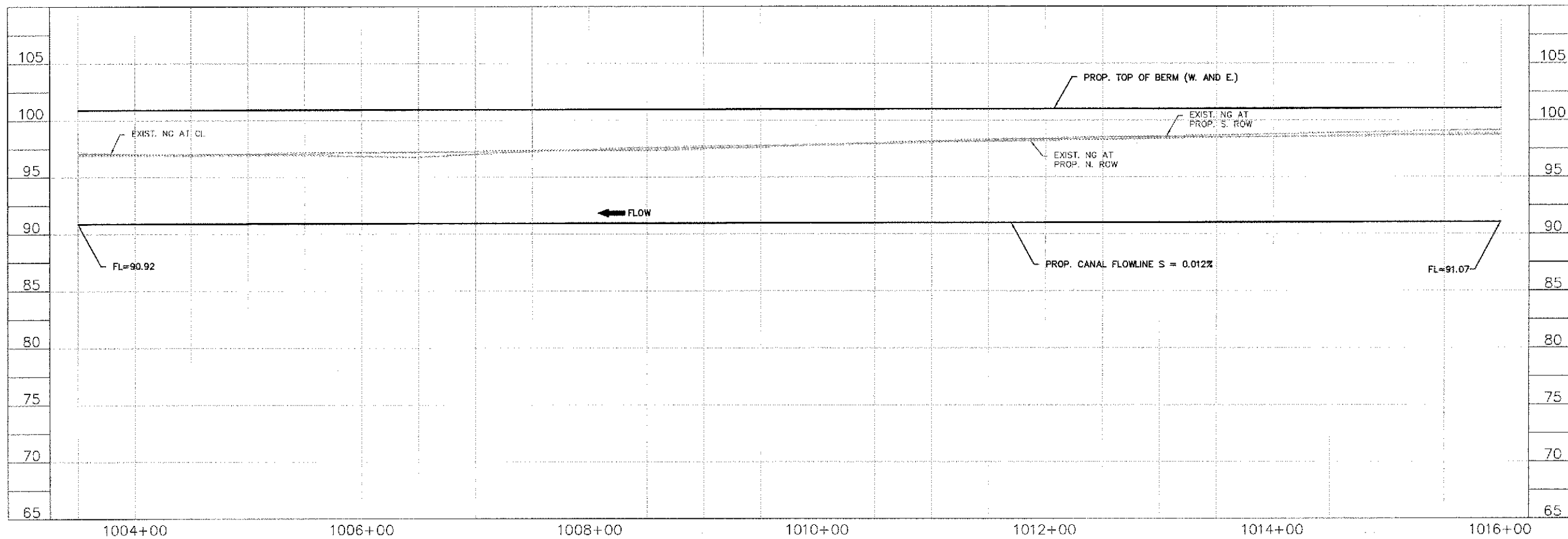
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel
713.780.0838 fax



SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 1003+50
TO STA 1016+00

DRAWING SCALE	AS SHOWN
SHEET NO. 117 of 215	

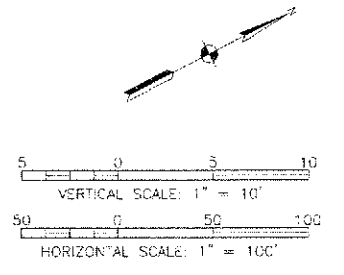
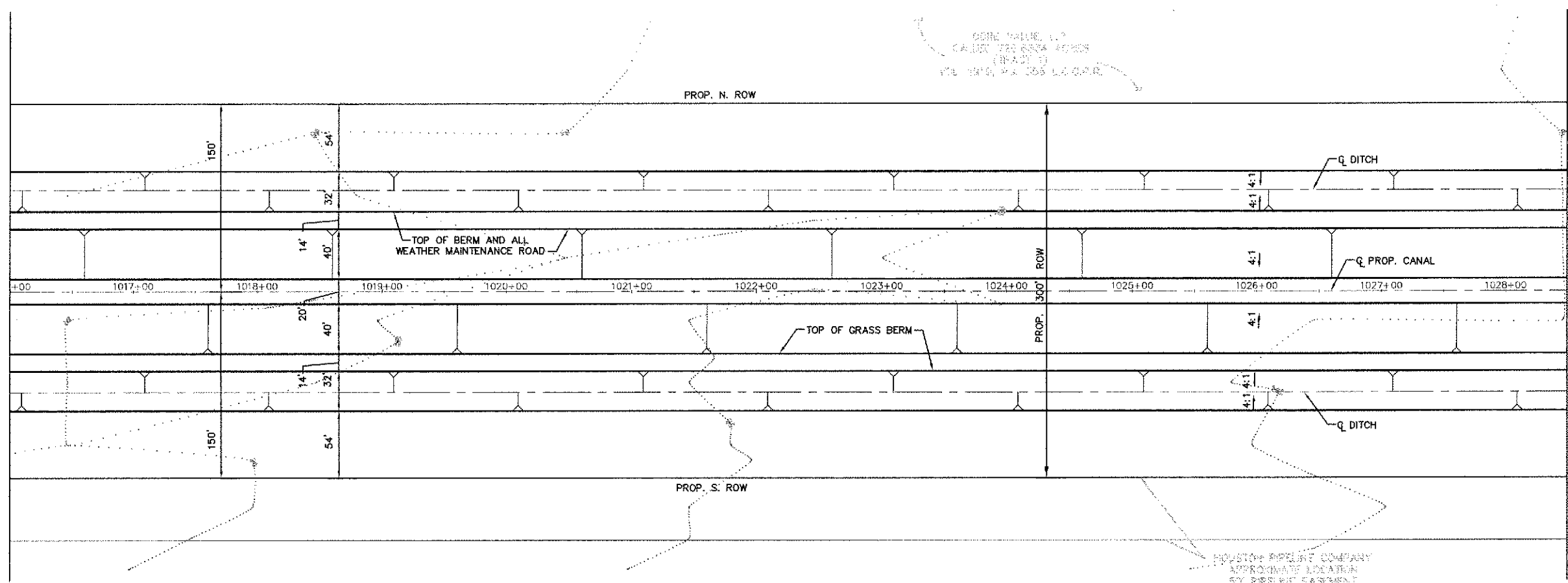


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LAST MODIFIED: Jan 27, 2011 - 4:39pm
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MATCHLINE STA. 1016+00

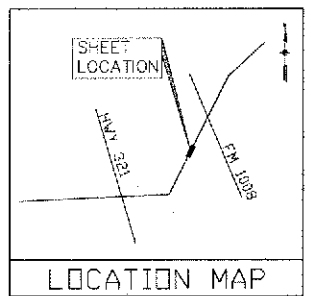
MATCHLINE STA. 1028+50



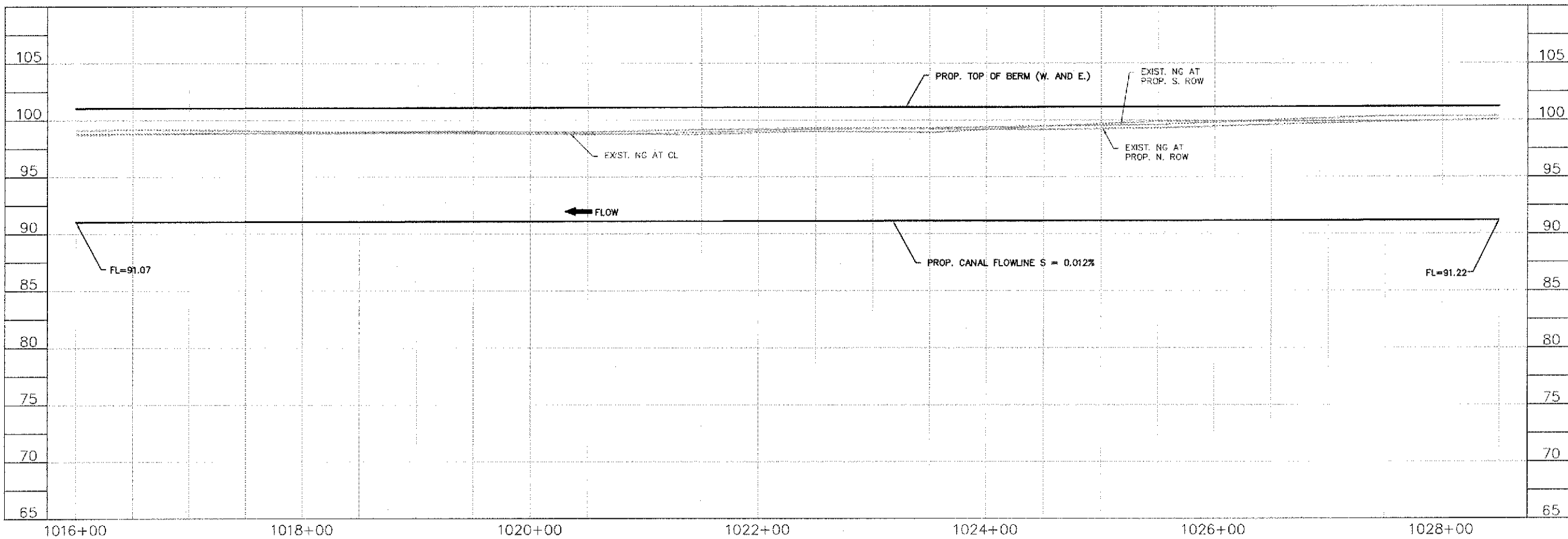
NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN

NOTE:
 THERE ARE EXISTING PIPELINES
 IN THIS AREA. THESE ARE NOT
 SHOWN IN PROFILE VIEW DUE TO
 LACK OF INFORMATION.

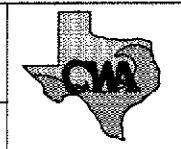
HOUSTON PIPELINE COMPANY
 APPROXIMATE LOCATION
 BY PIPELINE SEGMENT
 VOL. 211, PAGE 14 L.C.D.R.



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



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 FB NO.

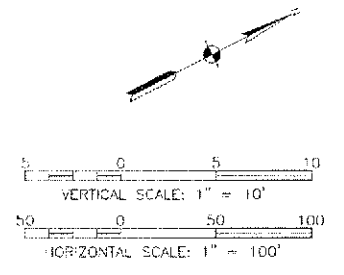
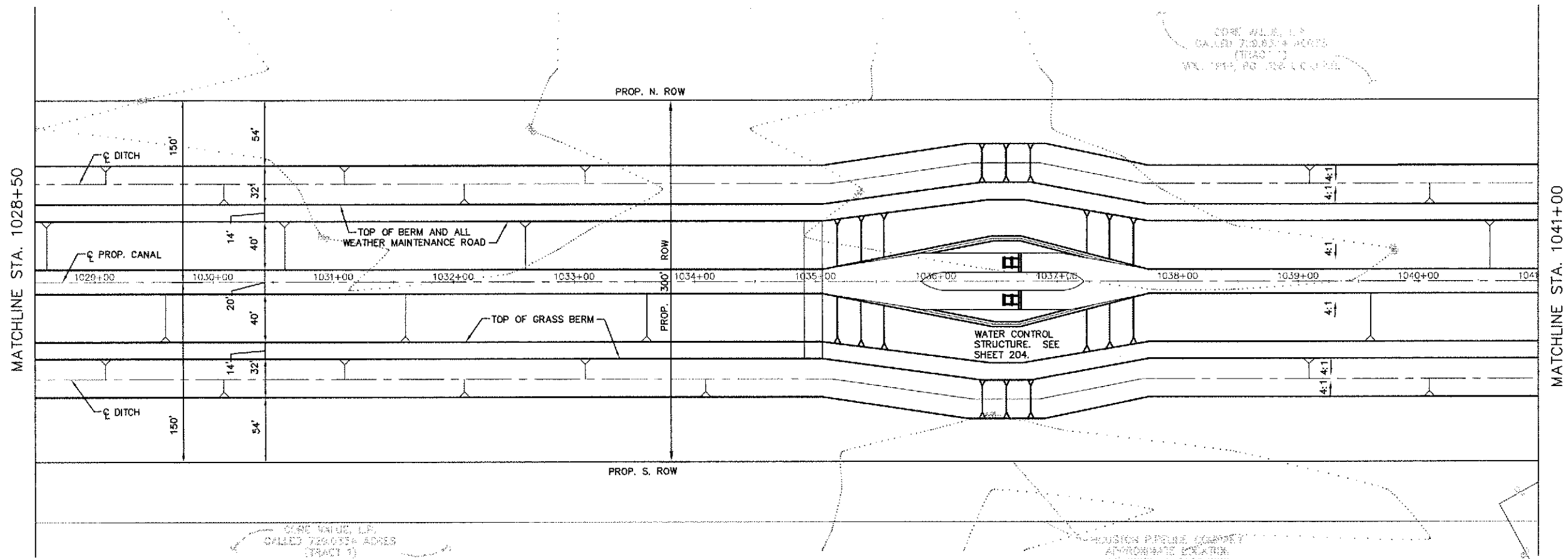
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 1016+00
 TO STA 1028+50

DRAWING SCALE
 AS SHOWN

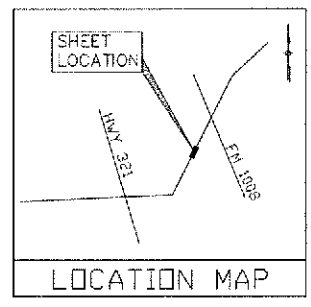
SHEET NO. 118 OF 245

LAST MODIFIED: JAN 27, 2011 - 4:38PM BY USER: ThompsonB
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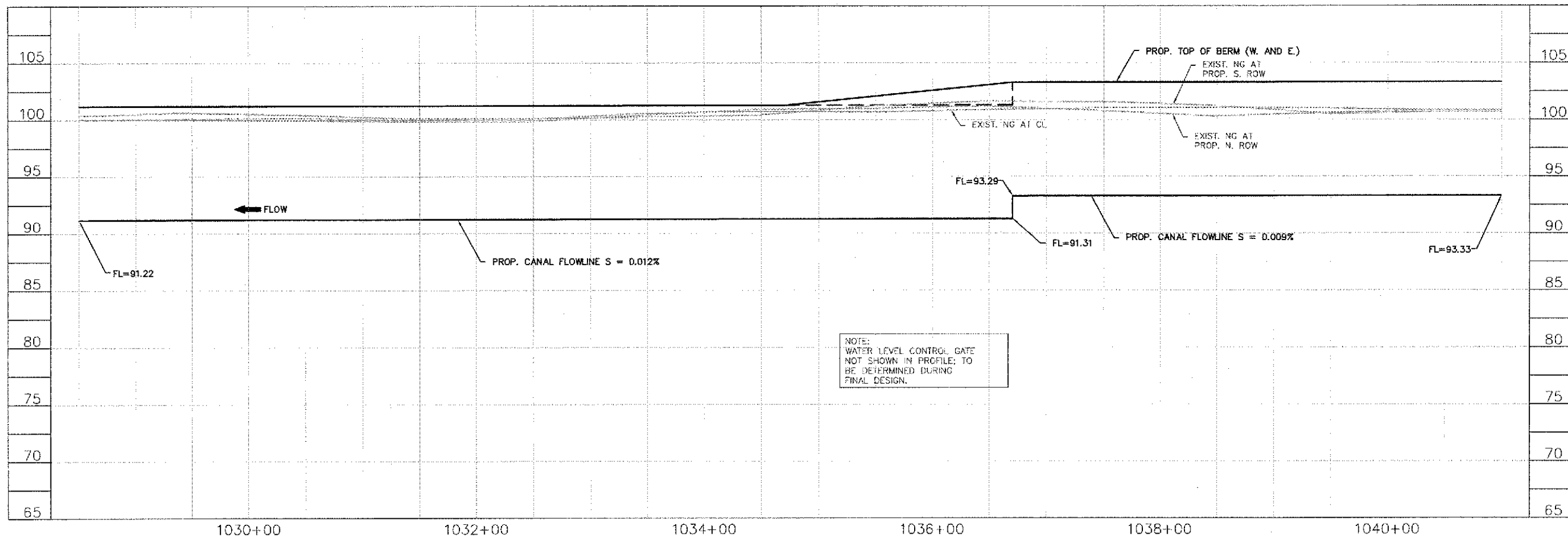


NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

NOTE: THERE ARE EXISTING PIPELINES IN THIS AREA. THESE ARE NOT SHOWN IN PROFILE VIEW DUE TO LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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AECOM
 AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax
 WWW.AECOM.COM
 TSP REG. NO. P-5580

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

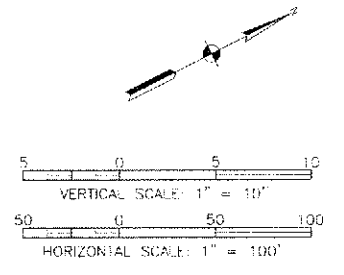
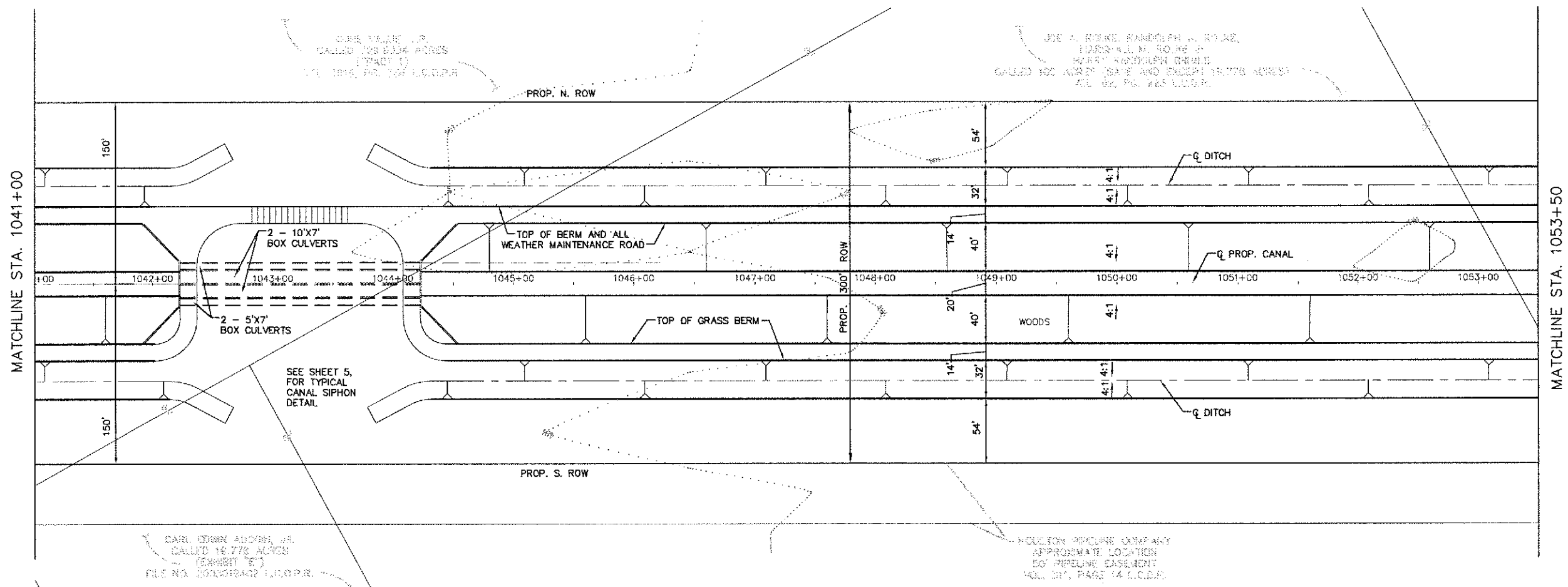
SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 1028+50
 TO STA 1041+00

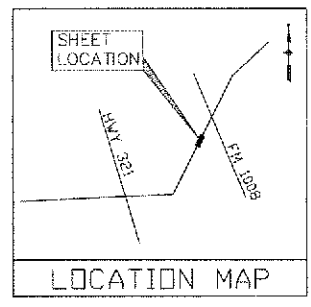
DRAWING SCALE	AS SHOWN
SHEET No. 119 of 245	

LAST MODIFIED: Jan 27, 2011 - 4:39pm BY USER: ThompsonB
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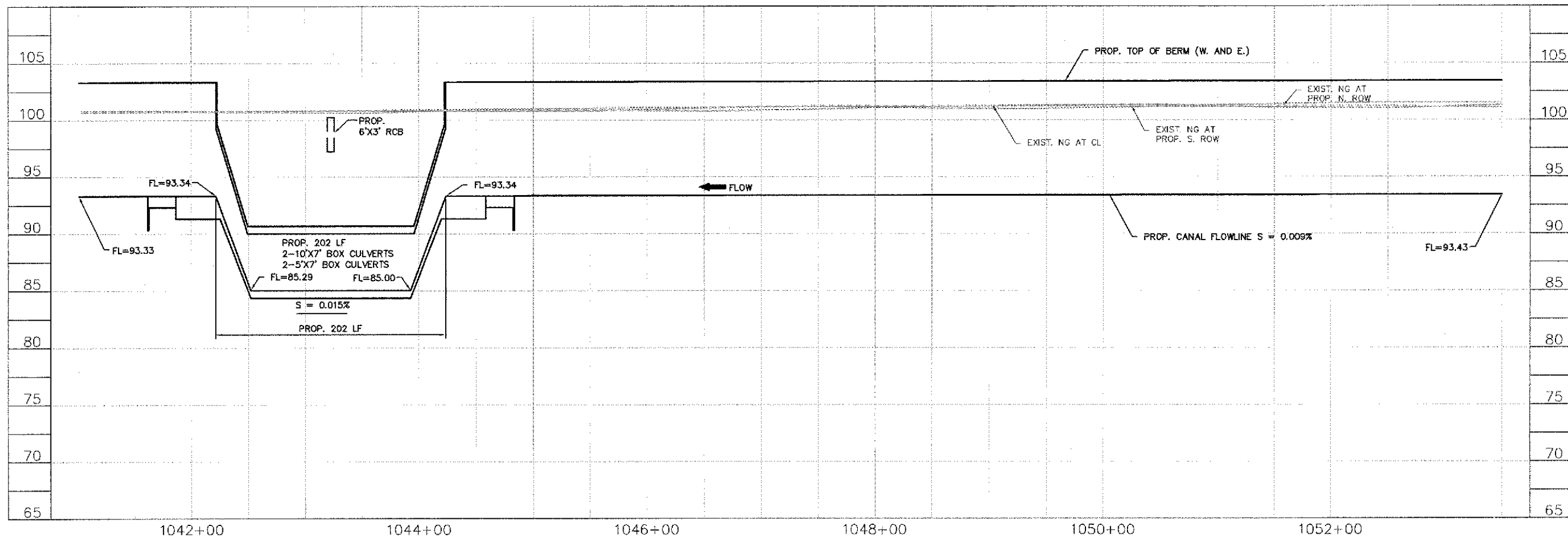


NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN

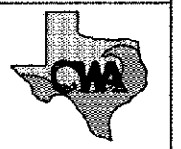
NOTE:
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 IN THIS AREA. THESE ARE NOT
 SHOWN IN PROFILE VIEW DUE TO
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 AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax
 WWW.AECOM.COM
 TSP# REG. NO. 1-2580



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 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

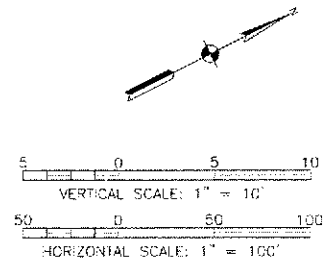
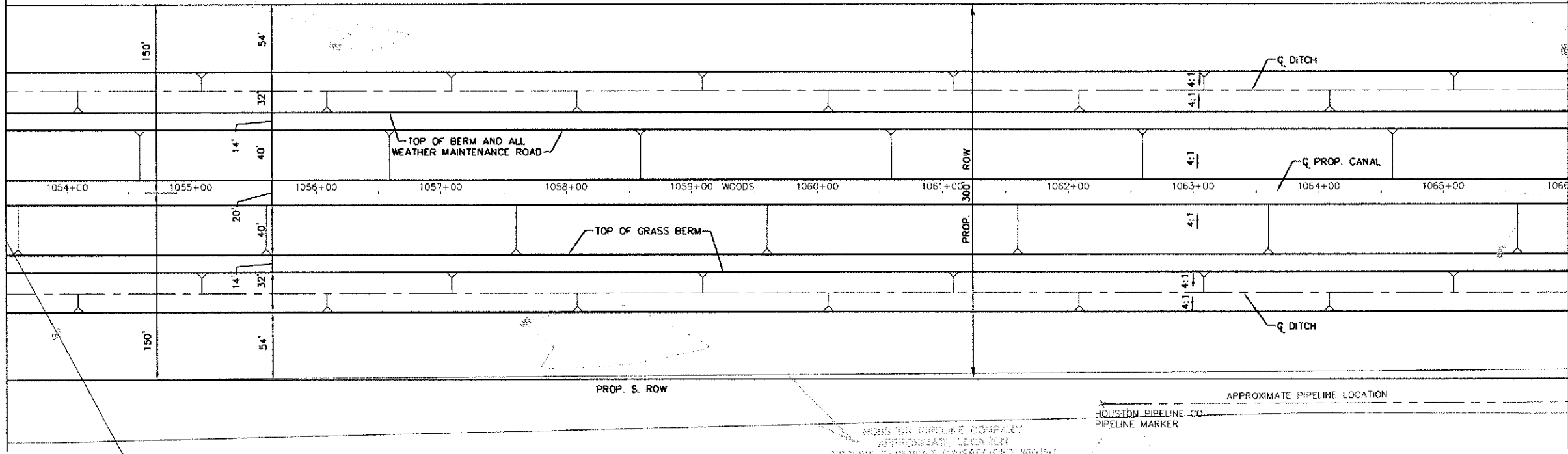
CANAL PLAN &
 PROFILE STA 1041+00
 TO STA 1053+50

DRAWING SCALE
 AS SHOWN
 SHEET NO. 120 OF 245

CALL TO THE DRAINAGE DISTRICTS
 DISTRICT NO. 1 (L.A.S. DISTRICT) - P.M. 2005/0001 L.O.D.R.
 DISTRICT NO. 2 (L.A.S. DISTRICT) - P.M. 2005/0002 L.O.D.R.
 DISTRICT NO. 3 (L.A.S. DISTRICT) - P.M. 2005/0003 L.O.D.R.
 DISTRICT NO. 4 (L.A.S. DISTRICT) - P.M. 2005/0004 L.O.D.R.
 DISTRICT NO. 5 (L.A.S. DISTRICT) - P.M. 2005/0005 L.O.D.R.
 DISTRICT NO. 6 (L.A.S. DISTRICT) - P.M. 2005/0006 L.O.D.R.
 DISTRICT NO. 7 (L.A.S. DISTRICT) - P.M. 2005/0007 L.O.D.R.
 DISTRICT NO. 8 (L.A.S. DISTRICT) - P.M. 2005/0008 L.O.D.R.
 DISTRICT NO. 9 (L.A.S. DISTRICT) - P.M. 2005/0009 L.O.D.R.
 DISTRICT NO. 10 (L.A.S. DISTRICT) - P.M. 2005/0010 L.O.D.R.

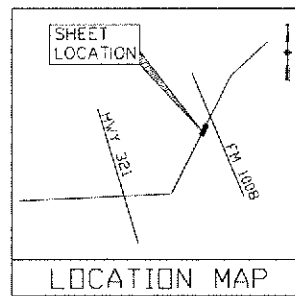
MATCHLINE STA. 1053+50

MATCHLINE STA. 1066+00

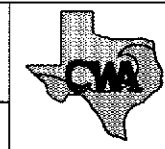


NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

NOTE: THERE ARE EXISTING PIPELINES IN THIS AREA. THESE ARE NOT SHOWN IN PROFILE VIEW DUE TO LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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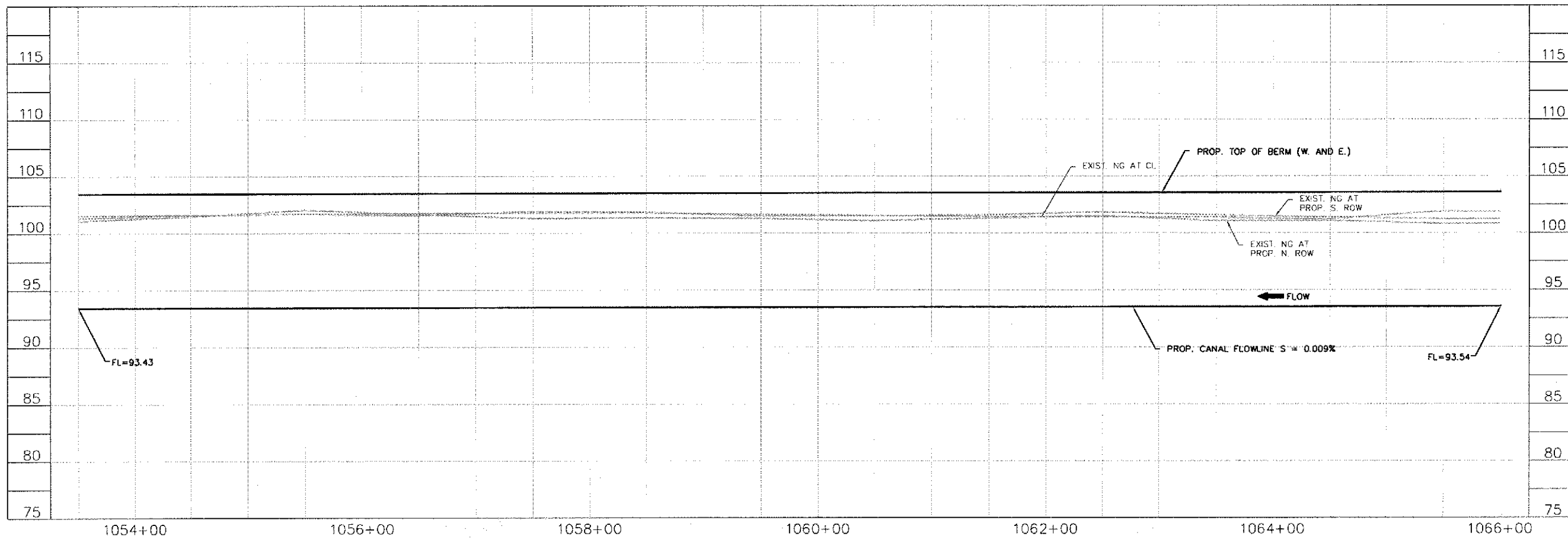


SURVEYED BY:
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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 1053+50
 TO STA 1066+00

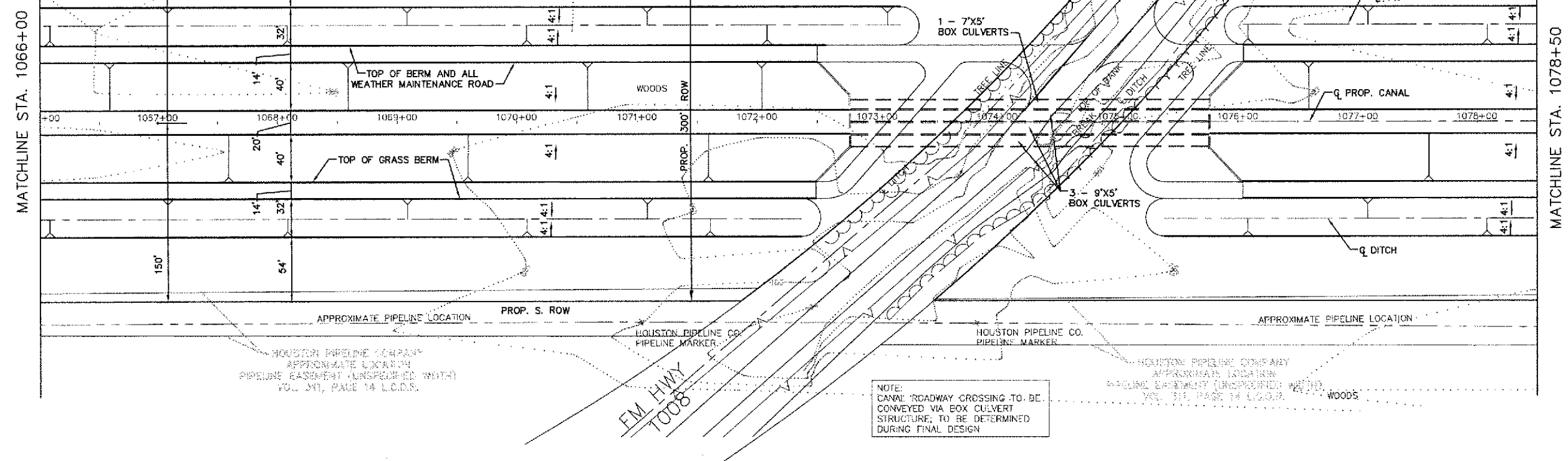
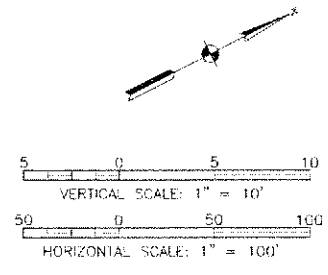
DRAWING SCALE
 AS SHOWN

SHEET NO. 121 OF 145



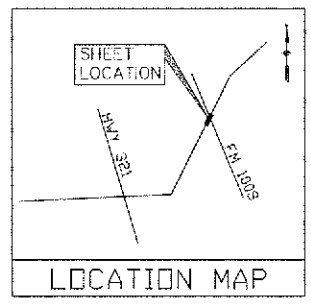
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 BY USER: ThompsonB
 DWG. LOCATION: C:\Work Order 6\4.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes enrf Calculations\Cadd\FWD\Sheets\DWG. NAME: CanalP&P.dwg

VALLEY, 0.35 GROSS ACRES
 FIDELITY INVESTMENTS, LP (1/3 INTEREST) - VOL. 1500, PAGE 14 L.C.D.S.
 FIDELITY INVESTMENTS, LP (1/3 INTEREST) - VOL. 1500, PAGE 14 L.C.D.S.
 CAD (C/O D. TAYLOR) (1/2 INTEREST) - VOL. 1500, PAGE 14 L.C.D.S.
 BRITISH TRUST COMPANY AND JOHN S. JOHNSON
 "AS TRUSTEES OF THE JOHN S. JOHNSON TRUST" (1/10 INTEREST) - VOL. 1500, PAGE 14 L.C.D.S.
 VALLEY OIL INVESTMENTS, LP (1/10 INTEREST) - VOL. 1500, PAGE 14 L.C.D.S.
 CAMILLA S. SWANER AND TRACY DINE BANK
 CO-TRUSTEES OF THE CAMILLA S. SWANER TRUST (1/30 INTEREST) - VOL. 1500, PAGE 14 L.C.D.S.

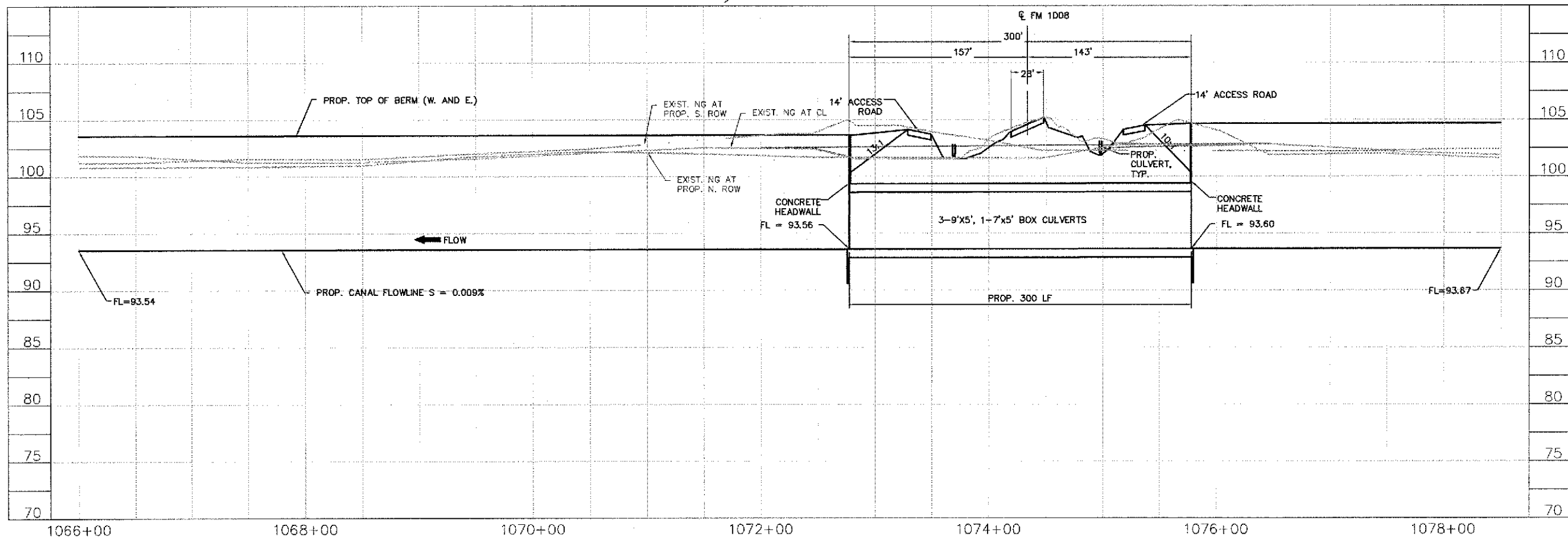


NOTE:
 DESIGN OF DRAINAGE TO OCCUR
 DURING FINAL DESIGN

NOTE:
 THERE ARE EXISTING PIPELINES
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KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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AECOM
 AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax



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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

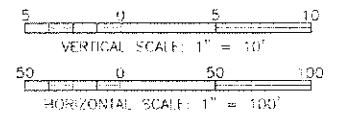
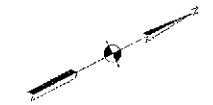
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 TO STA 1078+50

DRAWING SCALE
 AS SHOWN

SHEET NO. 122 of 246

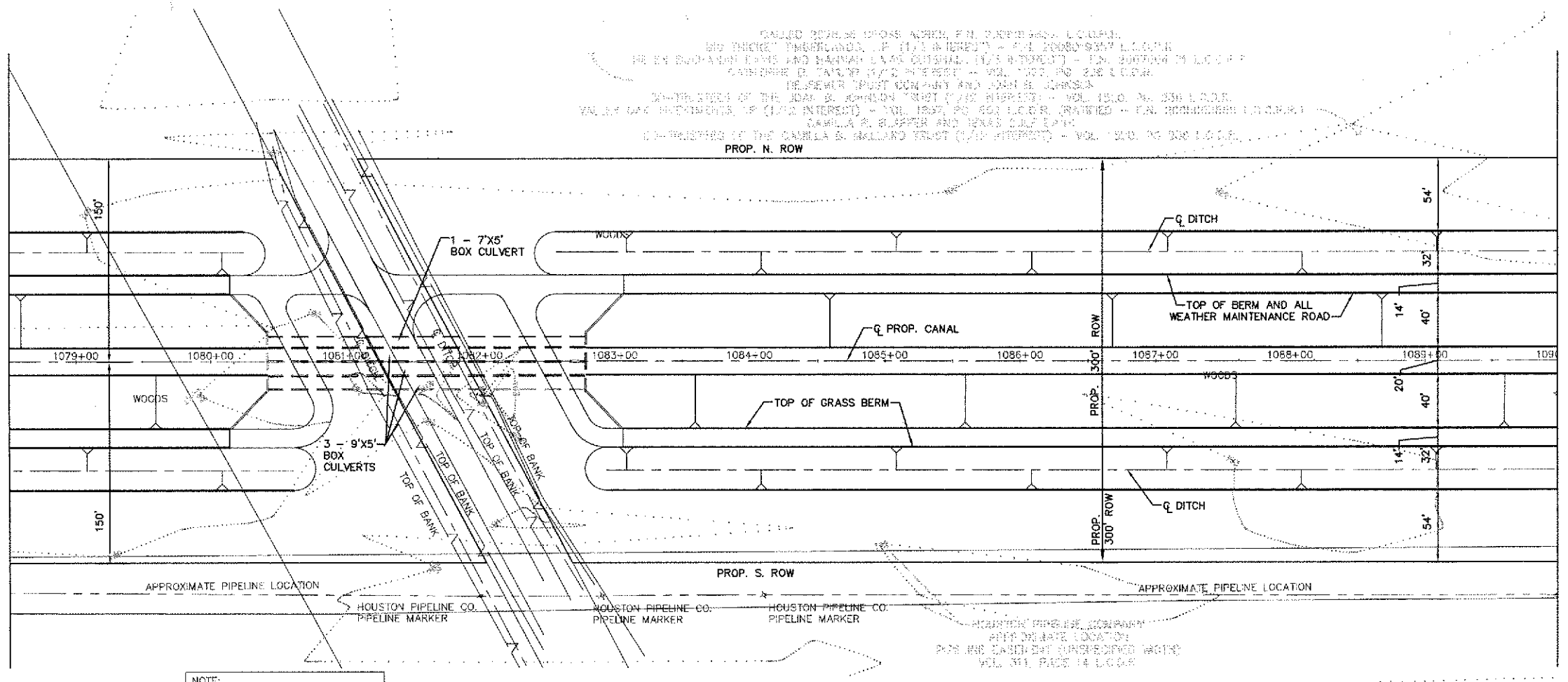
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 DWG LOCATION: C:\work\order 5\10 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cadd\PWD\Sheets\

CALLED REFERENCE ACROSS FROM PARALLEL LOCATED
 BY THOMAS, THOMPSON, P. (1/1 INTEREST) - VOL. 20080-3547 L.O.C.R.
 OR BY BOWMAN, DAVID AND MARIAN, L.A.M. (1/1 INTEREST) - VOL. 20080-3547 L.O.C.R.
 CARRIAGE D. T.A.M. INTEREST - VOL. 2001, PG. 236 L.O.C.R.
 BELSER, TRUST COMPANY AND JOHN B. JOHNSON
 DE-TRUSTEES OF THE JOAN & ARMON TRUST (1/1 INTEREST) - VOL. 1510, N. 356 L.O.C.R.
 VALLEY OAK PATENTERS (1/1 INTEREST) - VOL. 1897, PG. 603 L.O.C.R. (PARTIAL - CAL. 20080800 L.O.C.R.)
 CAROL A. SLIPPER AND DEAN D.L.P. (1/1)
 DE-TRUSTEES OF THE CAROL A. SLIPPER TRUST (1/1 INTEREST) - VOL. 1820, PG. 520 L.O.C.R.



MATCHLINE STA. 1078+50

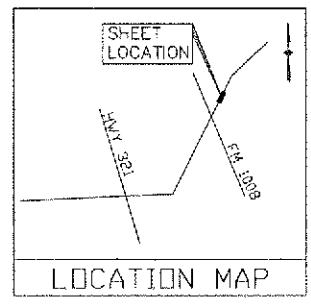
MATCHLINE STA. 1090+00



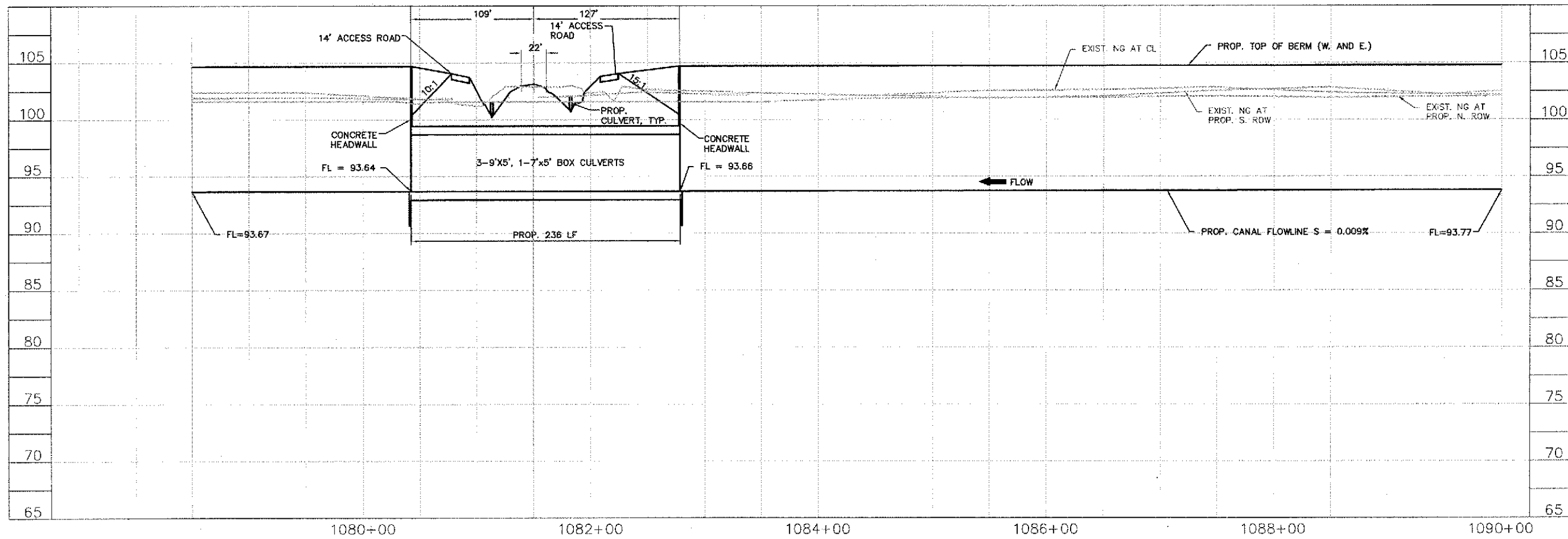
NOTE:
CANAL ROADWAY CROSSING TO BE
CONVEYED VIA BOX CULVERT
STRUCTURE; TO BE DETERMINED
DURING FINAL DESIGN

NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

NOTE:
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IN THIS AREA. THESE ARE NOT
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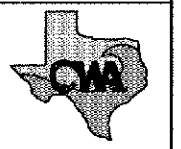


KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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AECOM AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax



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 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

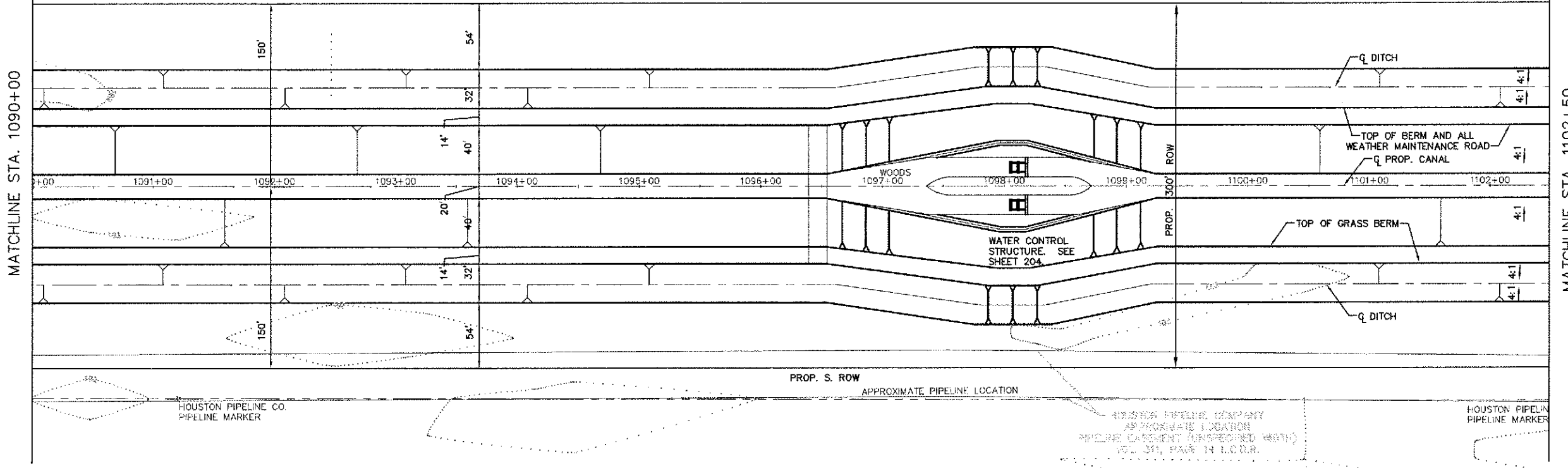
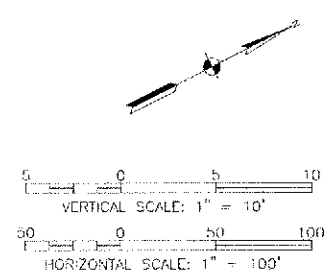
142 CANAL PLAN &
 PROFILE STA 1078+50
 TO STA 1090+00

DRAWING SCALE
 AS SHOWN

SHEET NO. **123** of **248**

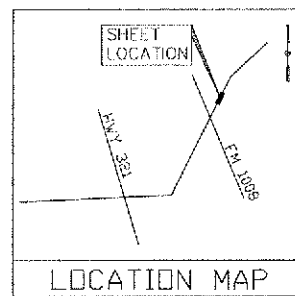
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 DWG. NAME: Coad\FWD\FWD.dwg

CALLED BEHIND JOHN JAMES, F.A. 1915 (1/10 INTEREST) - VOL. 100A, P. 235 L.O.R.
 WILSON BUCKHART JAMES AND HANNON JAMES (1/2 INTEREST) - VOL. 100B, P. 100 L.O.R.
 GABRIELLE H. TAYLOR (1/2 INTEREST) - VOL. 100C, P. 235 L.O.R.
 BESSIE TRIST COMPANY AND JOHN E. JOHNSON
 CO-TRUSTEES OF THE JOHN B. JOHNSON TRUST (1/10 INTEREST) - VOL. 100A, P. 235 L.O.R.
 VALLEY OAK TRUST (1/10 INTEREST) - VOL. 100B, P. 100 L.O.R. (TRUST) - VOL. 100C, P. 235 L.O.R.
 CAMILLA R. SHAFER AND TRAVIS BULL BARK
 CO-TRUSTEES OF THE CAMILLA R. WALLARD TRUST (1/10 INTEREST) - VOL. 100B, P. 100 L.O.R.
PROP. N. ROW



NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN


NOTE: THERE ARE EXISTING PIPELINES IN THIS AREA. THESE ARE NOT SHOWN IN PROFILE VIEW DUE TO LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax
 WWW.AECOM.COM
 TWC REG. NO. P-5380

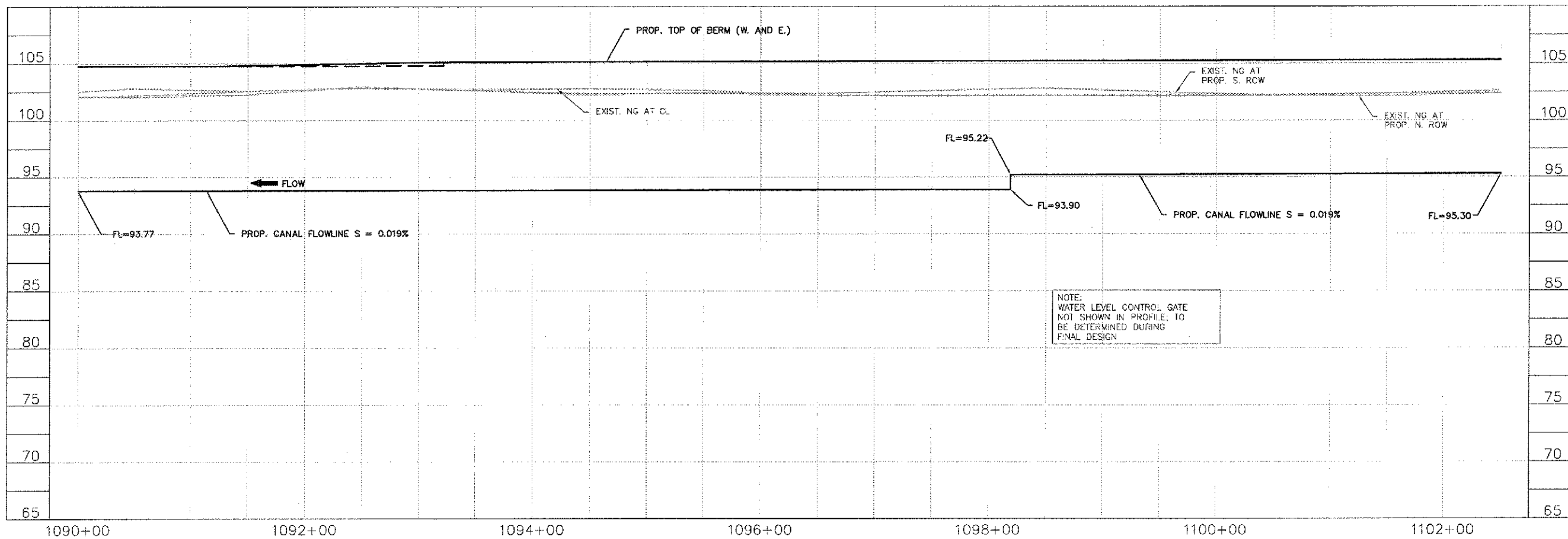
AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
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 713.780.0838 fax.



SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

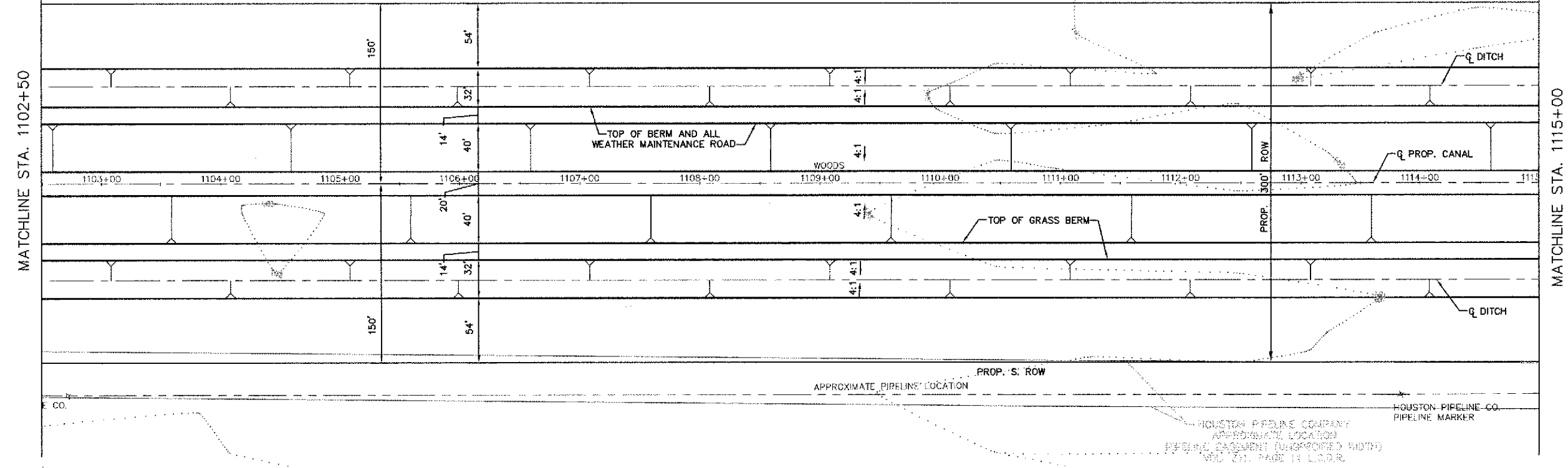
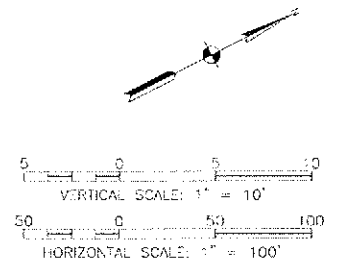
CANAL PLAN &
 PROFILE STA 1090+00
 TO STA 1102+50

DRAWING SCALE	AS SHOWN
SHEET NO. 24 OF 245	



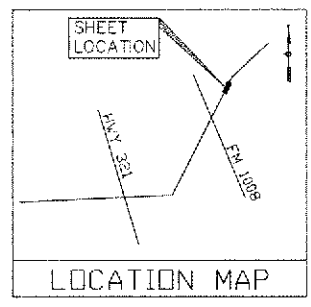
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 DWS_LOCATION: D:\Work Order 6\4.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Coad\FWD\Sheets\DWG_NAME: CanalP&P99.dwg

24.00 ACRES IN SECTION 10, T.10N, R.10E, S.10E, CO. HARRIS, TEXAS
 BEING PART OF THE TRACT DESCRIBED IN THE ORDER OF THE COMMISSIONERS OF THE GENERAL LAND OFFICE, DATED JANUARY 1, 1902, AND RECORDED IN VOLUME 10, PAGE 11, OF THE PUBLIC RECORDS OF THE COUNTY OF HARRIS, TEXAS.
 BEING PART OF THE TRACT DESCRIBED IN THE ORDER OF THE COMMISSIONERS OF THE GENERAL LAND OFFICE, DATED JANUARY 1, 1902, AND RECORDED IN VOLUME 10, PAGE 11, OF THE PUBLIC RECORDS OF THE COUNTY OF HARRIS, TEXAS.
 BEING PART OF THE TRACT DESCRIBED IN THE ORDER OF THE COMMISSIONERS OF THE GENERAL LAND OFFICE, DATED JANUARY 1, 1902, AND RECORDED IN VOLUME 10, PAGE 11, OF THE PUBLIC RECORDS OF THE COUNTY OF HARRIS, TEXAS.
 BEING PART OF THE TRACT DESCRIBED IN THE ORDER OF THE COMMISSIONERS OF THE GENERAL LAND OFFICE, DATED JANUARY 1, 1902, AND RECORDED IN VOLUME 10, PAGE 11, OF THE PUBLIC RECORDS OF THE COUNTY OF HARRIS, TEXAS.

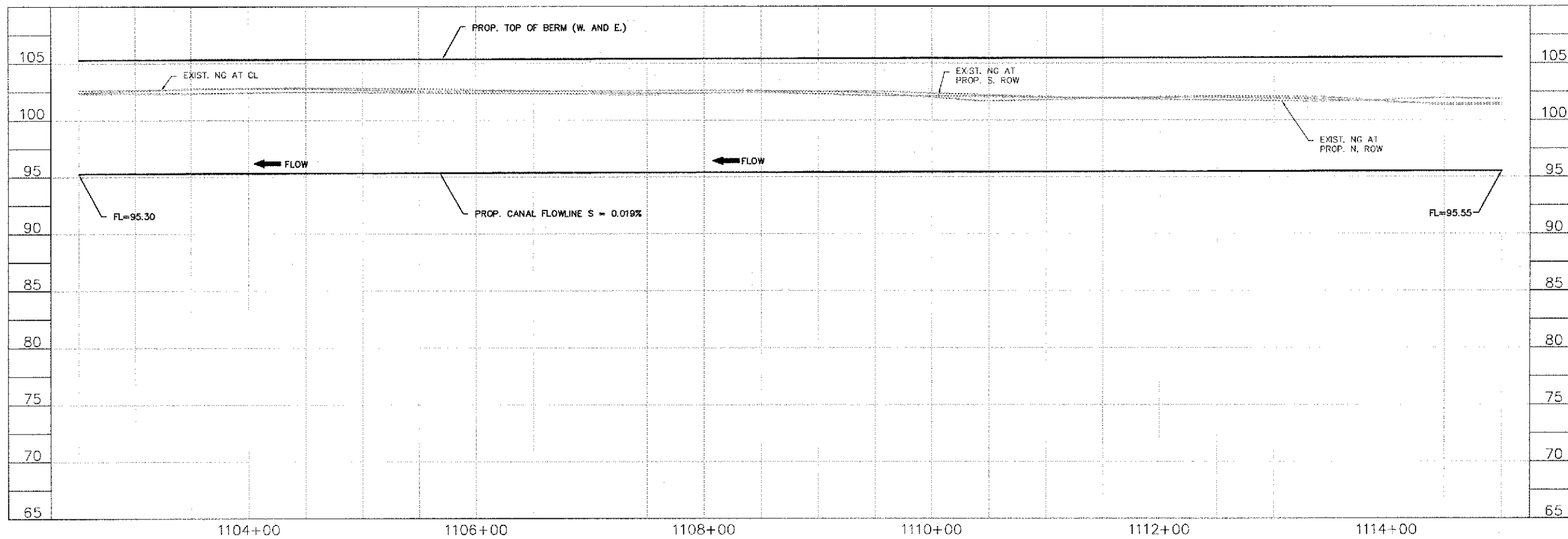


NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

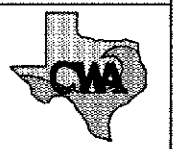
NOTE: THERE ARE EXISTING PIPELINES IN THIS AREA. THESE ARE NOT SHOWN IN PROFILE VIEW DUE TO LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES



AECOM
 AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



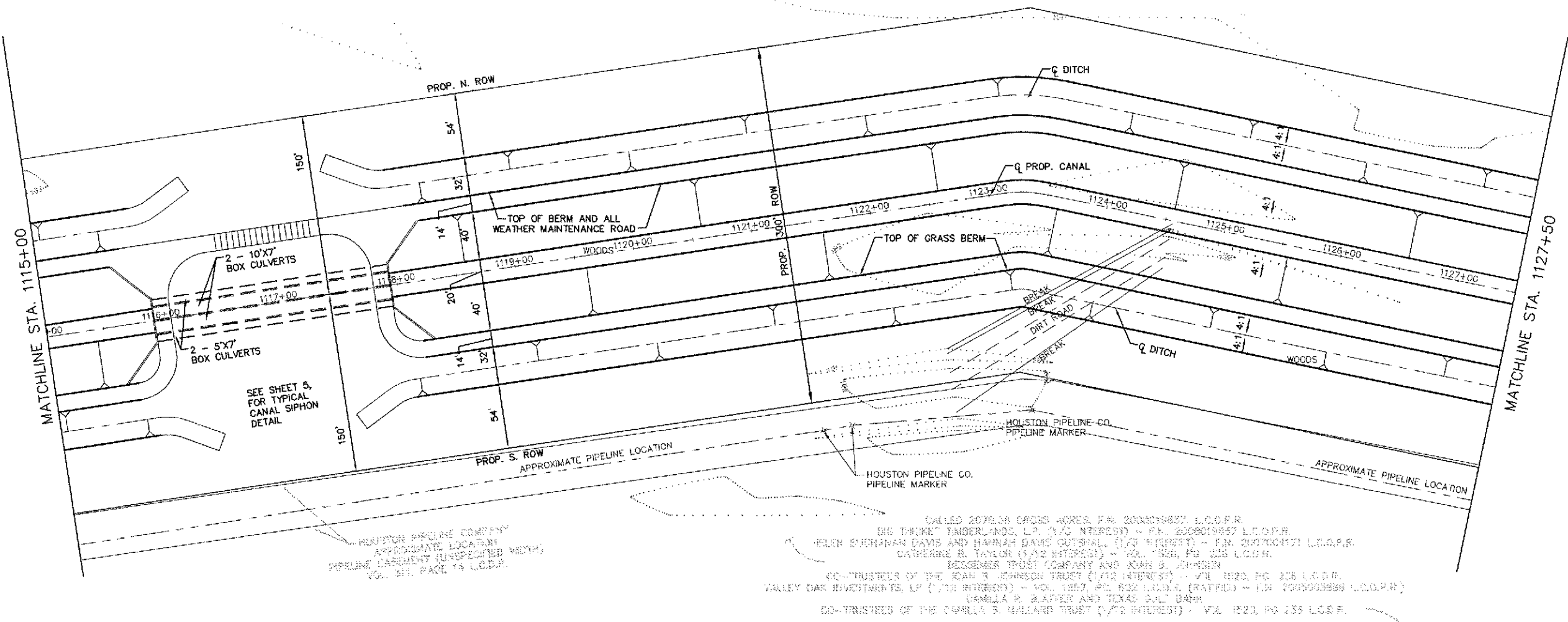
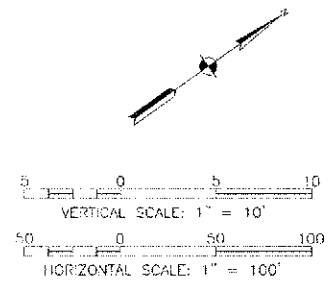
SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 1102+50
 TO STA 1115+00

DRAWING SCALE
 AS SHOWN

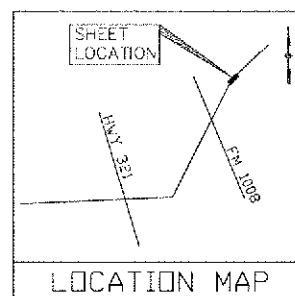
SHEET NO. 125 of 245

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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

NOTE:
THERE ARE EXISTING PIPELINES
IN THIS AREA. THESE ARE NOT
SHOWN IN PROFILE VIEW DUE TO
LACK OF INFORMATION.



HOUSTON PIPELINE COMPANY
APPROXIMATE LOCATION
PIPELINE (ASSUMED UNSPECIFIED WIDTH)
VOL. 31, PAGE 14 L.C.D.R.

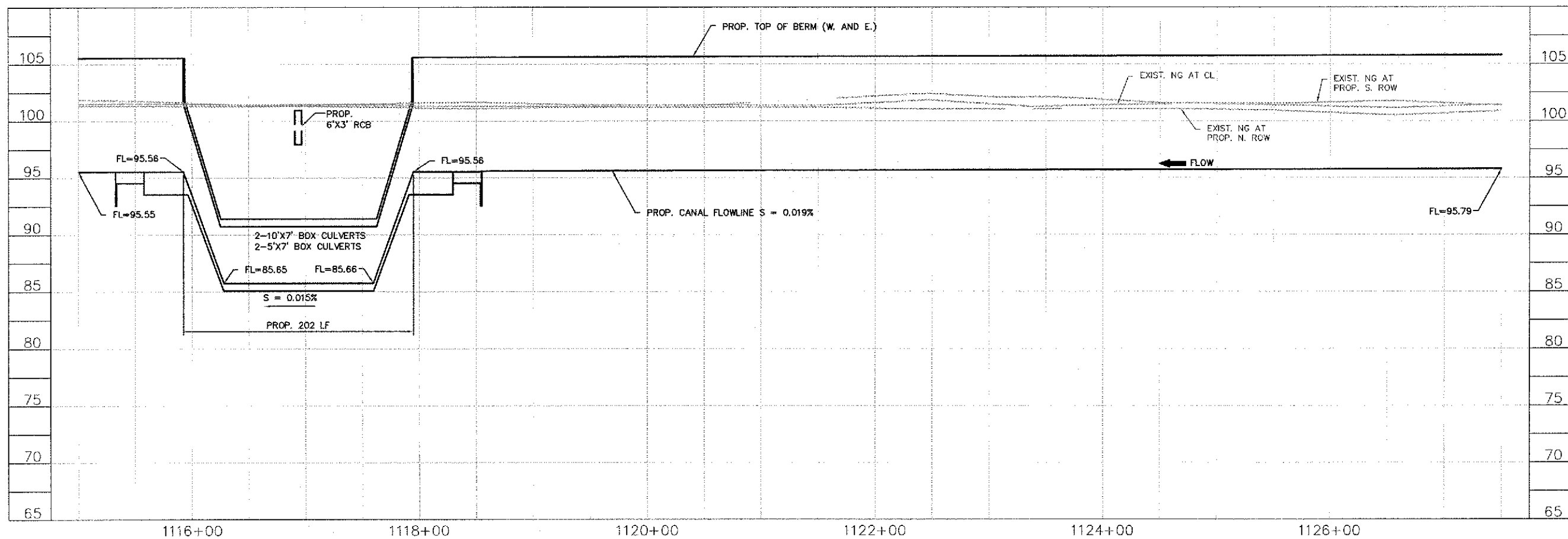
HOUSTON PIPELINE CO.
PIPELINE MARKER

HOUSTON PIPELINE CO.
PIPELINE MARKER

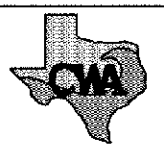
APPROXIMATE PIPELINE LOCATION

APPROXIMATE PIPELINE LOCATION

CALL 20760 CROSS ACRES, P.R. 200000007 L.C.D.R.
BIG THicket TIMBERLAND, L.P. (1/2 INTEREST) - P.L. 200001007 L.C.D.R.
HELEN SIOGHANAN DAVIS AND HANNAH DAVIS OUTSIAL (1/2 INTEREST) - P.L. 200001007 L.C.D.R.
CATHERINE B. TAYLOR (1/2 INTEREST) - VOL. 182B, PG. 255 L.C.D.R.
BEECHER TRUST COMPANY AND JOHN S. JOHNSON
CO-TRUSTEES OF THE ROAN S. JOHNSON TRUST (1/2 INTEREST) - VOL. 182D, PG. 208 L.C.D.R.
VALLEY OAK INVESTMENTS, L.P. (1/2 INTEREST) - VOL. 182D, PG. 202 L.C.D.R. (RATIFIED - P.L. 200003360 L.C.D.R.)
DANIELA R. BLAIR AND TEXAS OIL BARR
CO-TRUSTEES OF THE OPILLA S. MULLARD TRUST (1/2 INTEREST) - VOL. 182D, PG. 235 L.C.D.R.



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LUCE BAYOU INTERBASIN TRANSFER PROJECT

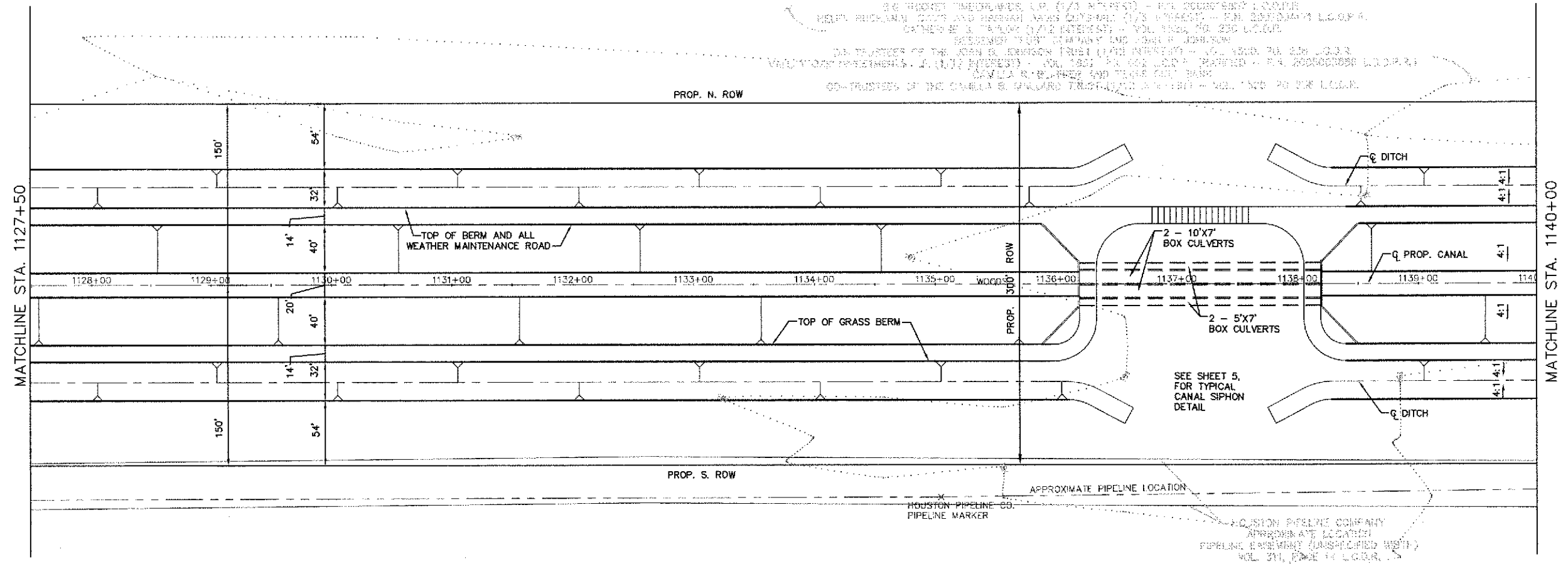
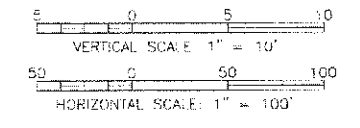
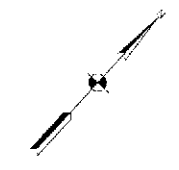
CANAL PLAN &
PROFILE STA 1115+00
TO STA 1127+50

DRAWING SCALE
AS SHOWN

SHEET No. **126** of **245**

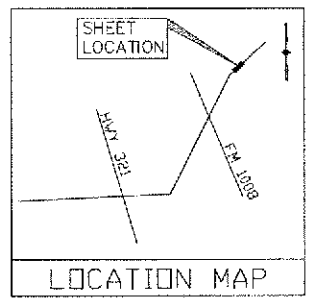
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 DWG. NAME: CanalP&P1.dwg

CALLED BY: MISS BRUCE WOOD, P.E. 200800007, LOCAL 11
 80 FRONTIER WOODLAND, L.P. (1/3 INTEREST) - FOR CONDUIT SYPHON
 WELLS RICHMAN CO. AND HERRICK AGENS COMPANY (1/3 INTEREST) - FOR CONDUIT SYPHON
 GARDNER & TAYLOR (1/2 INTEREST) - FOR CONDUIT SYPHON
 RESIDENT TRUST COMPANY AND DONALD R. JOHNSON
 DONALD R. JOHNSON TRUST (1/2 INTEREST) - FOR CONDUIT SYPHON
 VALLEY OF HOUSTON, A (1/2 INTEREST) - FOR CONDUIT SYPHON
 CAMILLA R. JOHNSON AND TRUST COMPANY
 CO-TRUSTEES OF THE CAMILLA R. JOHNSON TRUST (1/2 INTEREST) - FOR CONDUIT SYPHON



NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

NOTE: THERE ARE EXISTING PIPELINES IN THIS AREA. THESE ARE NOT SHOWN IN PROFILE VIEW DUE TO LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

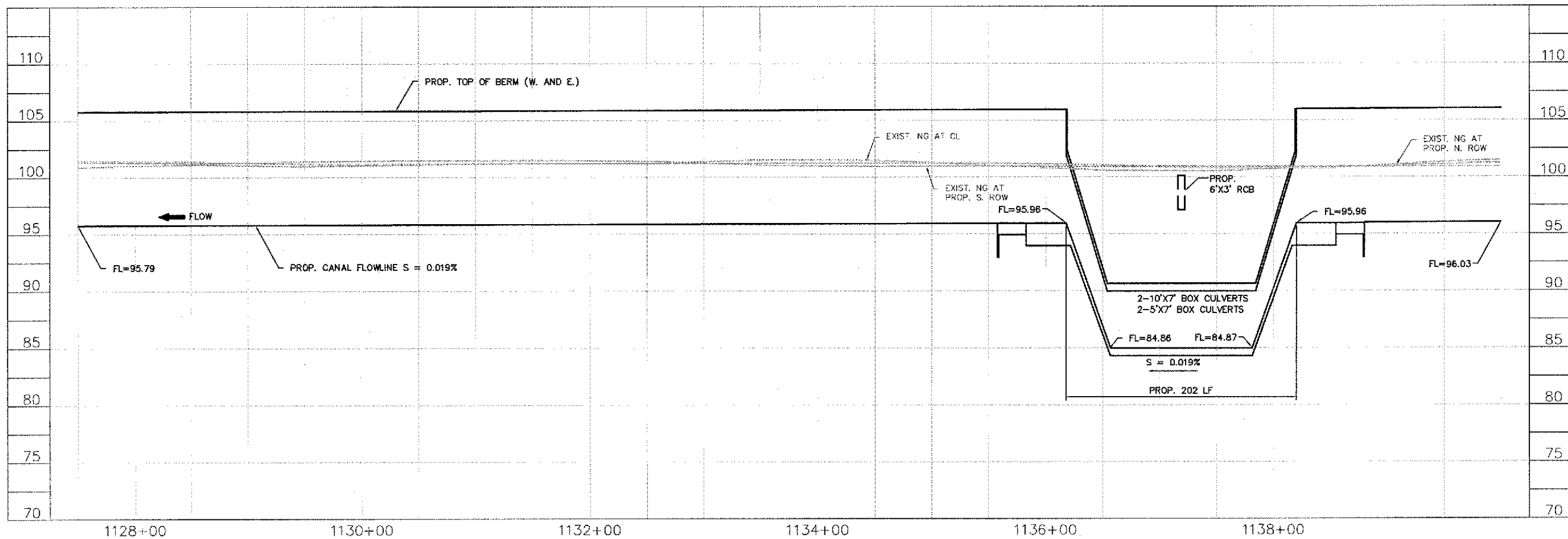
AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.
 WWW.AECOM.COM
 TYPE REG. NO. 1-2580

SURVEYED BY:
 FB NO.

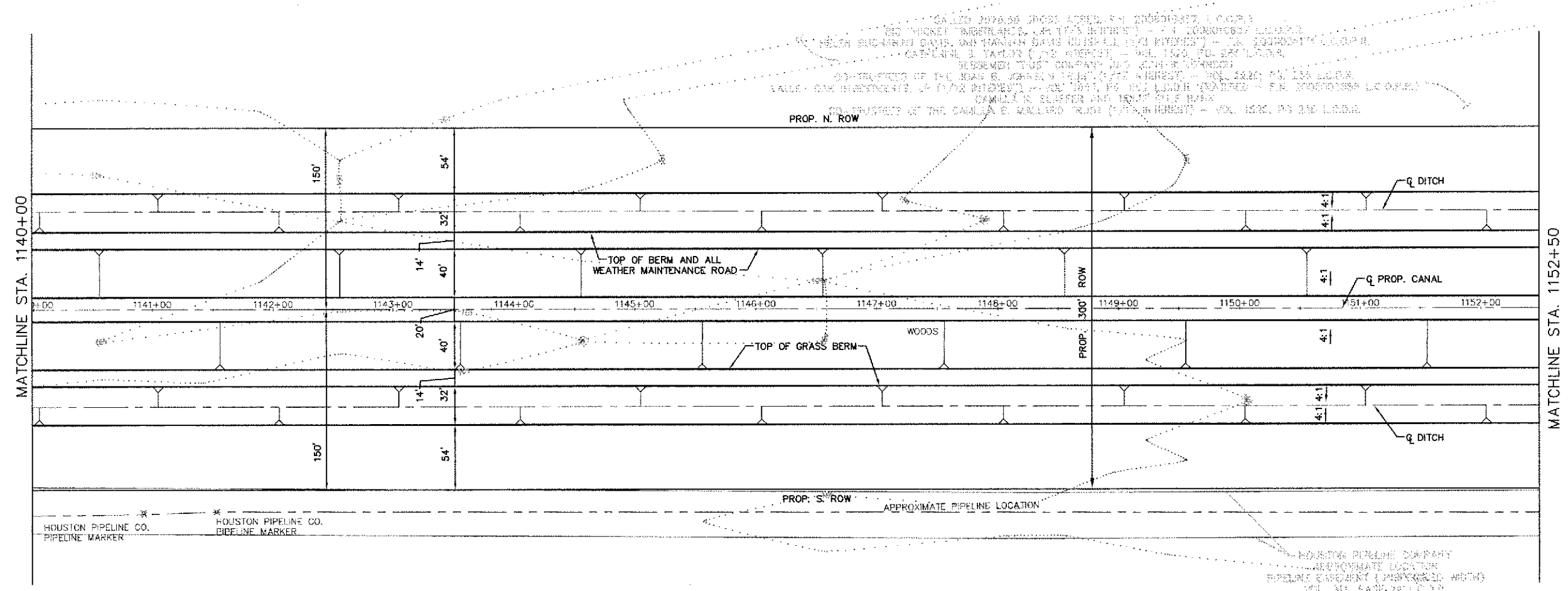
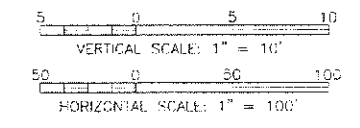
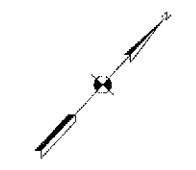
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 1127+50
 TO STA 1140+00

DRAWING SCALE	AS SHOWN
SHEET NO. 127 OF 245	

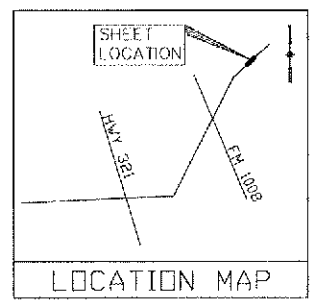


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 DWG. NAME: Canal2RPS2.dwg



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

NOTE:
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KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
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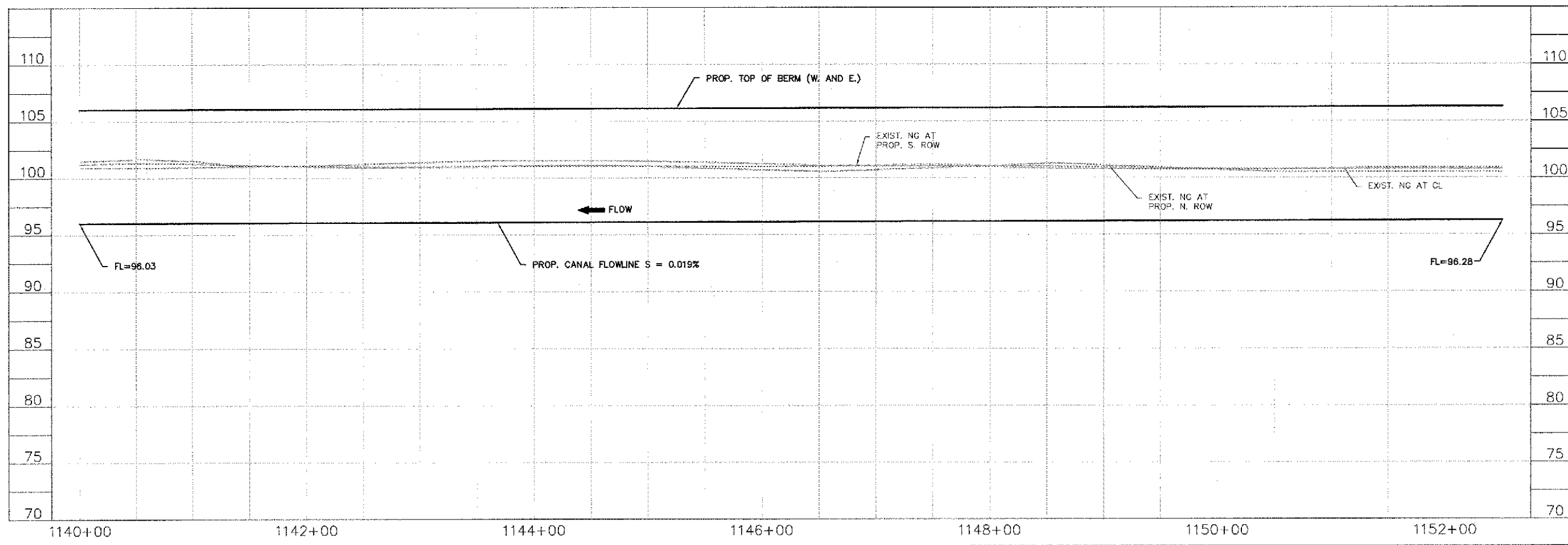


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CWA logo

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

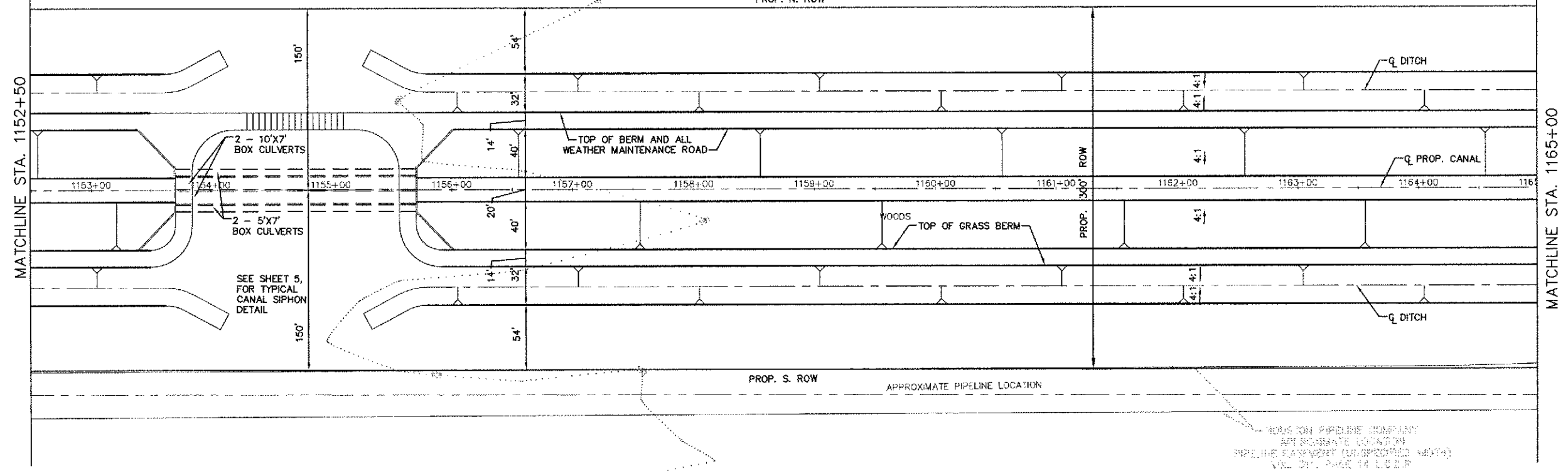
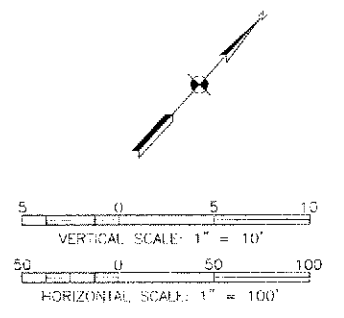
CANAL PLAN &
PROFILE STA 1140+00
TO STA 1152+00

DRAWING SCALE	AS SHOWN
SHEET No.	118 of 245



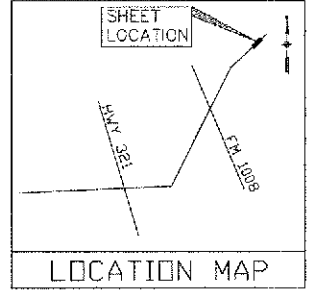
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 DWG. NAME: Canal\8933.dwg

1. THE PROJECT WILL BE CONSTRUCTED AS SHOWN FOR THE INTERIM SUBMITTAL. THE DESIGN IS BASED ON THE INFORMATION PROVIDED AND THE DESIGNER ASSUMES NO LIABILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED.
 2. THE DESIGNER HAS CONDUCTED VISUAL INSPECTIONS OF THE PROJECT AREA AND HAS OBSERVED THE EXISTING CONDITIONS. THE DESIGNER HAS NOT CONDUCTED ANY FIELD SURVEYS OR TESTS.
 3. THE DESIGNER HAS CONDUCTED VISUAL INSPECTIONS OF THE PROJECT AREA AND HAS OBSERVED THE EXISTING CONDITIONS. THE DESIGNER HAS NOT CONDUCTED ANY FIELD SURVEYS OR TESTS.
 4. THE DESIGNER HAS CONDUCTED VISUAL INSPECTIONS OF THE PROJECT AREA AND HAS OBSERVED THE EXISTING CONDITIONS. THE DESIGNER HAS NOT CONDUCTED ANY FIELD SURVEYS OR TESTS.
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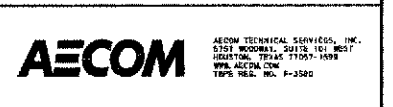


NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

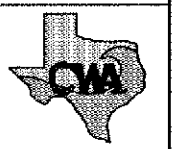
NOTE: THERE ARE EXISTING PIPELINES IN THIS AREA. THESE ARE NOT SHOWN IN PROFILE VIEW DUE TO LACK OF INFORMATION.



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
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AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



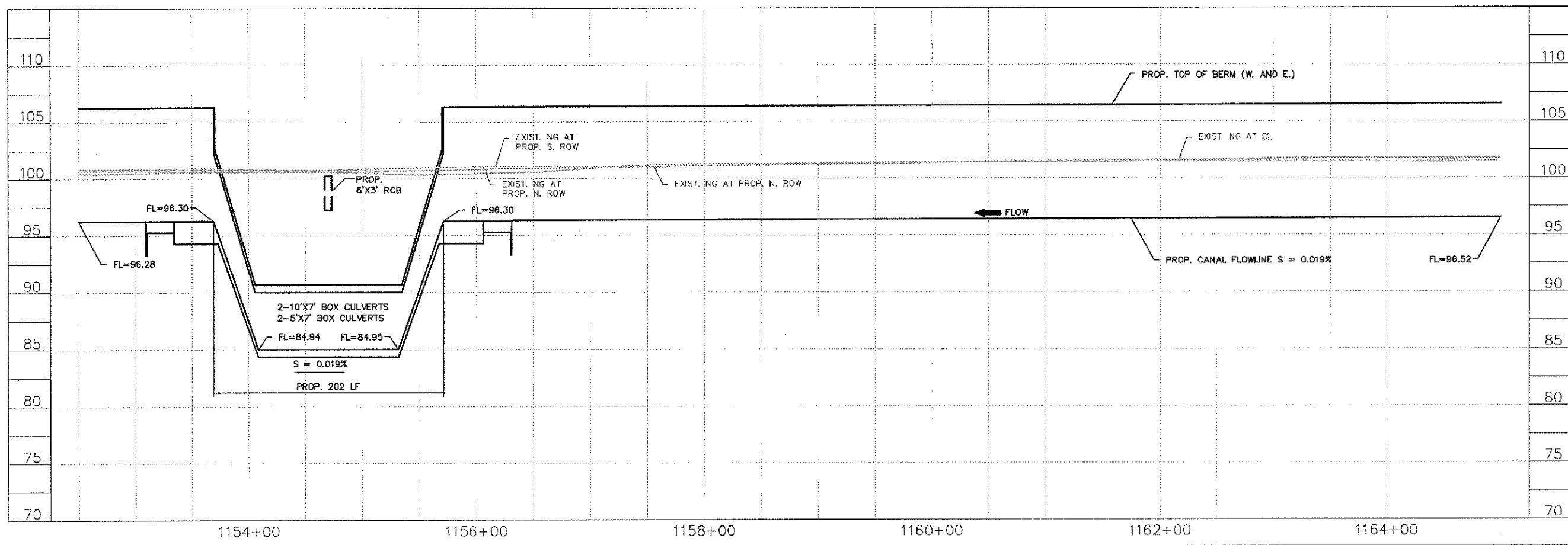
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 FB NO.

COASTAL WATER AUTHORITY

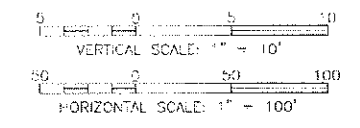
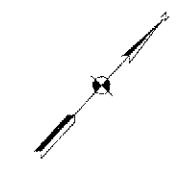
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
 PROFILE STA 1152+50
 TO STA 1165+00

DRAWING SCALE	AS SHOWN
SHEET NO. 124 of 245	

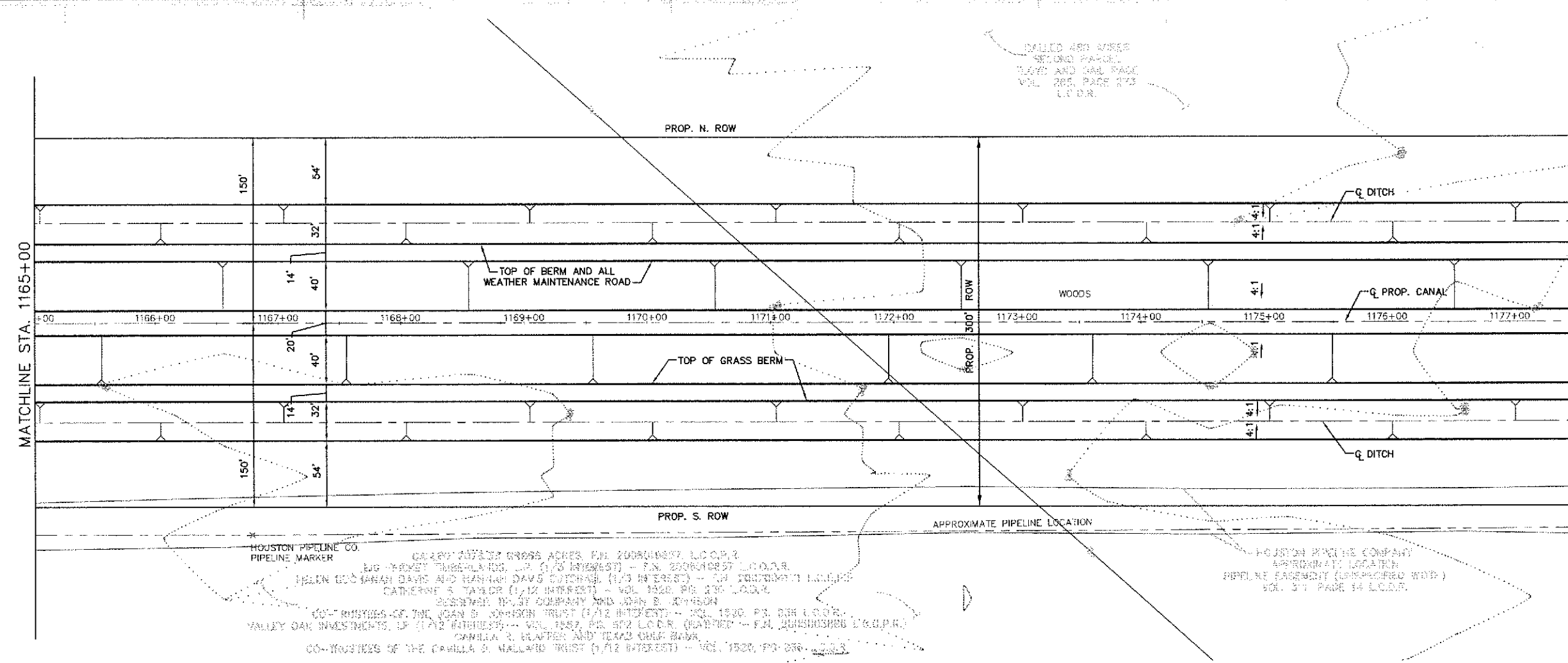


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MATCHLINE STA. 1165+00

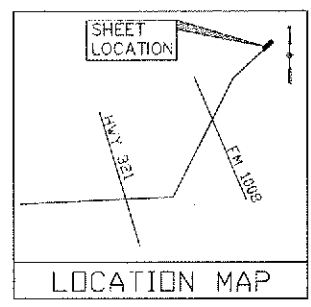
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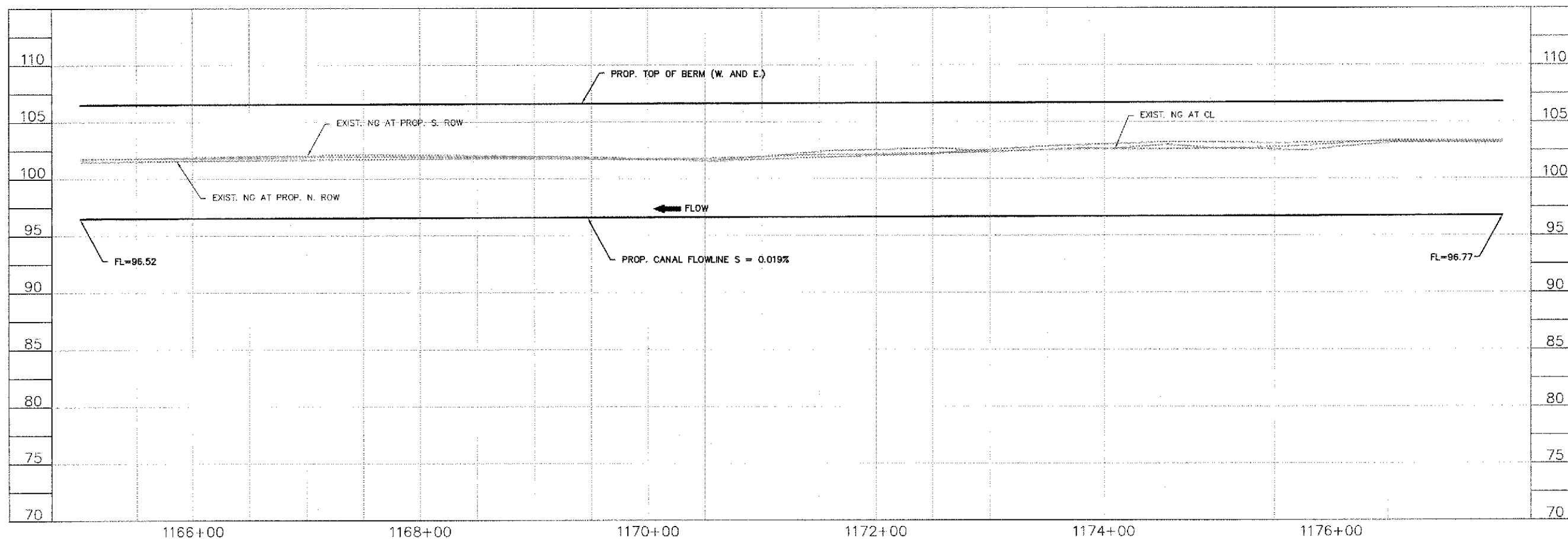
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HELEN BOULANGER DAVID AND HANNAH DAVID CUTCHALL (1/3 INTEREST) - P.M. 200400007, L.O.P.R.
CATHERINE S. TAYLOR (1/12 INTEREST) - VOL. 1422, PG. 136, L.O.P.R.
BUSINESS TRUST COMPANY AND JOHN B. JOHNSON
CO-TRUSTEES OF THE JOHN B. JOHNSON TRUST (1/12 INTEREST) - VOL. 1500, PG. 208, L.O.P.R.
VALLEY OAK INVESTMENTS, LP (1/12 INTEREST) - VOL. 1552, PG. 572, L.O.P.R. (PARTIAL) - P.M. 200400007, L.O.P.R.
DANIELA R. BLATTNER AND TERRY GREG BRYAN
CO-TRUSTEES OF THE DANIELA R. BLATTNER TRUST (1/12 INTEREST) - VOL. 1500, PG. 208, L.O.P.R.

NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

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KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
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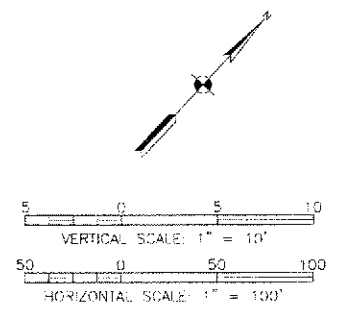
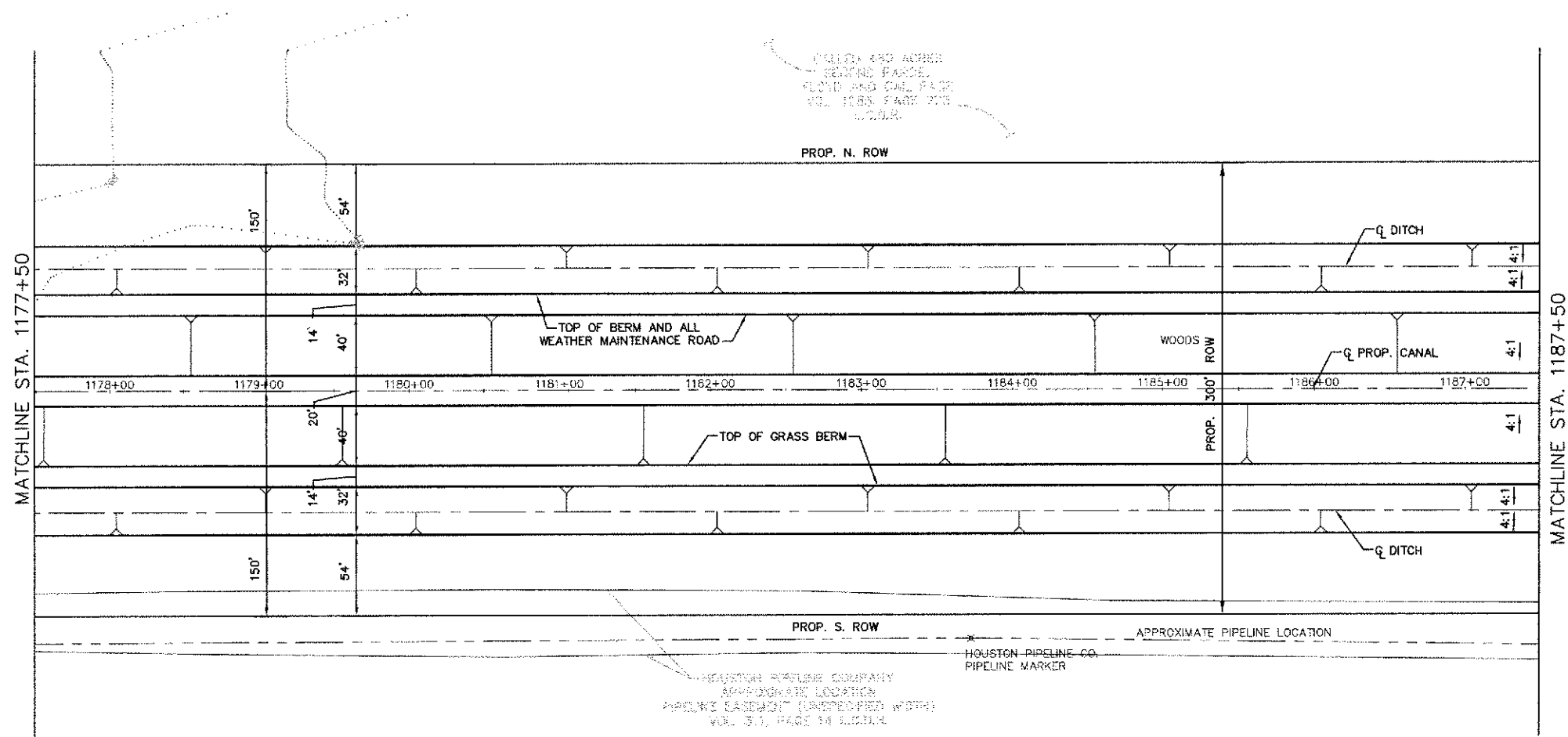
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 1165+00
TO STA 1177+50

DRAWING SCALE
AS SHOWN

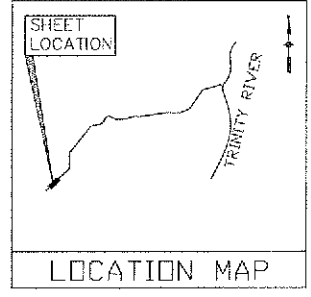
SHEET NO. 13 OF 24

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DRG. NAME: Canal\PSB.dwg



NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN


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KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
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AECOM AECOM TECHNICAL SERVICES, INC.
5101 WOODWAY, SUITE 101, HOUSTON, TEXAS 77057
WWW.AECOM.COM TEL: 713.780.4100 FAX: 713.780.0838

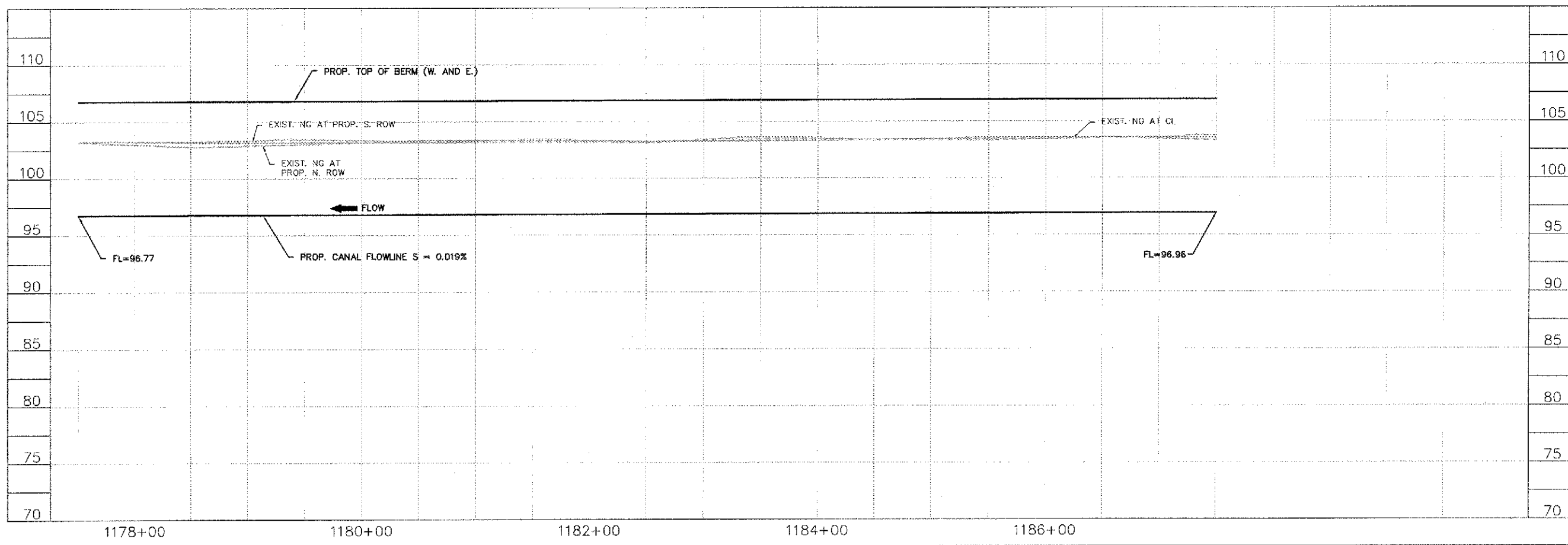
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



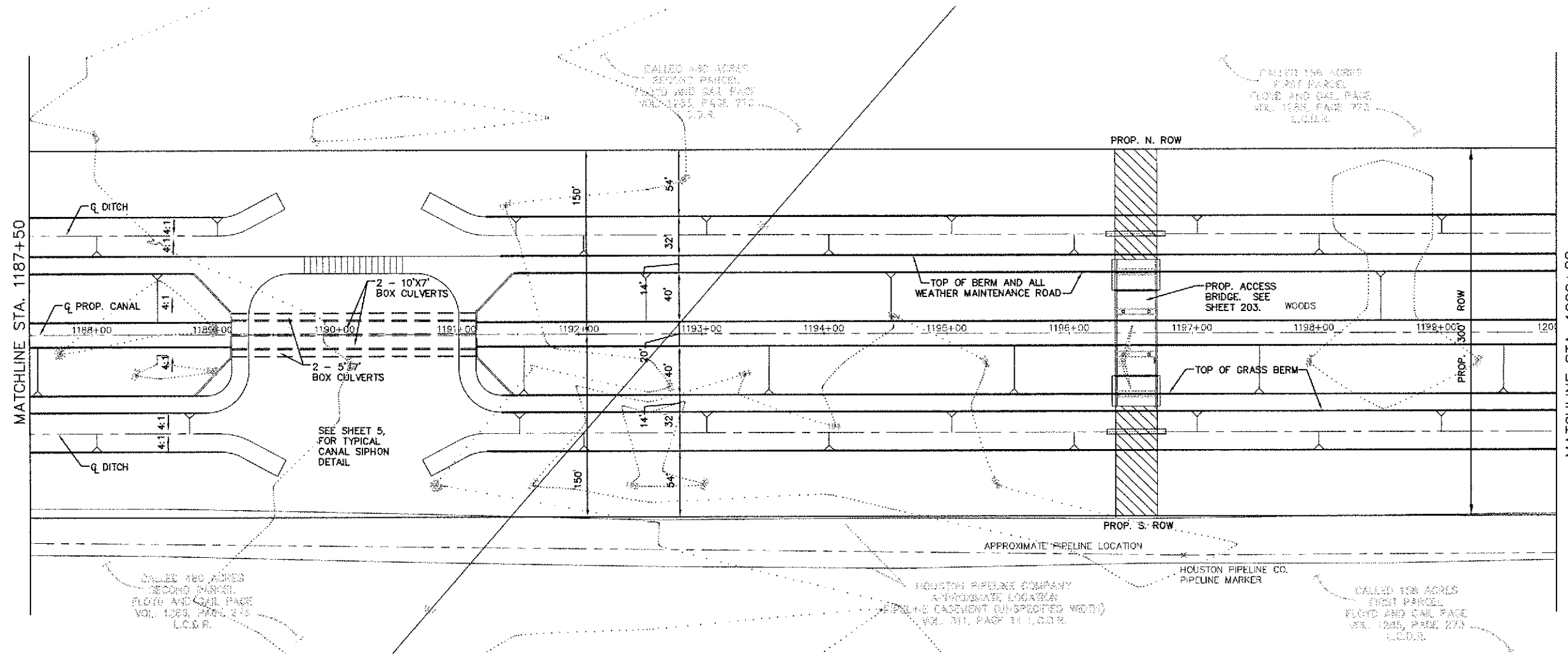
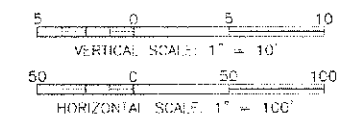
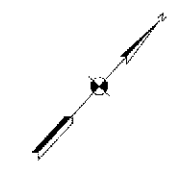
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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 1177+50
TO STA 1187+50

DRAWING SCALE	AS SHOWN
SHEET NO. 131 OF 245	

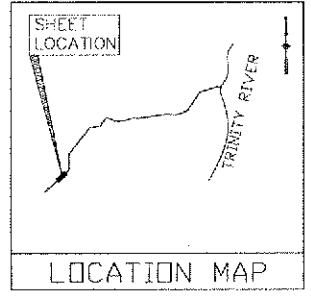


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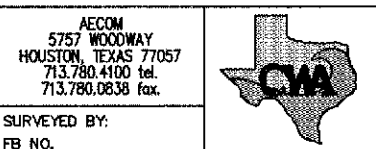


NOTE: DESIGN OF DRAINAGE TO OCCUR DURING FINAL DESIGN

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KEVIN E. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
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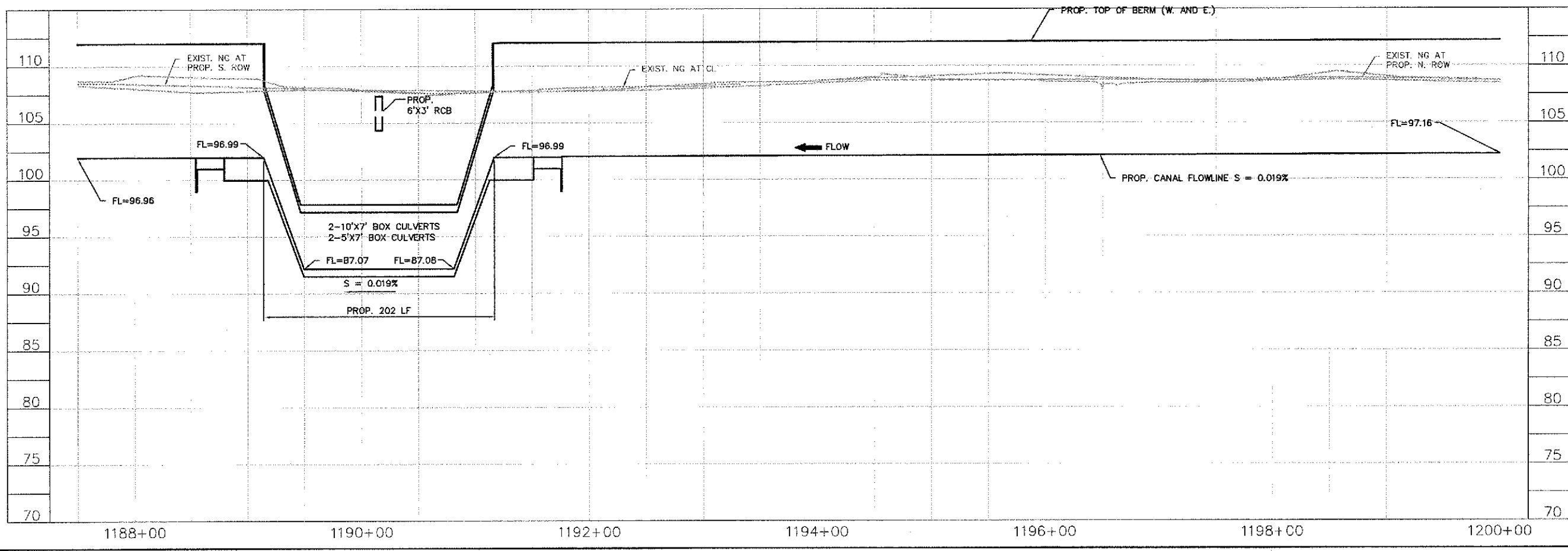


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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

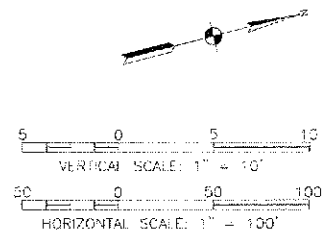
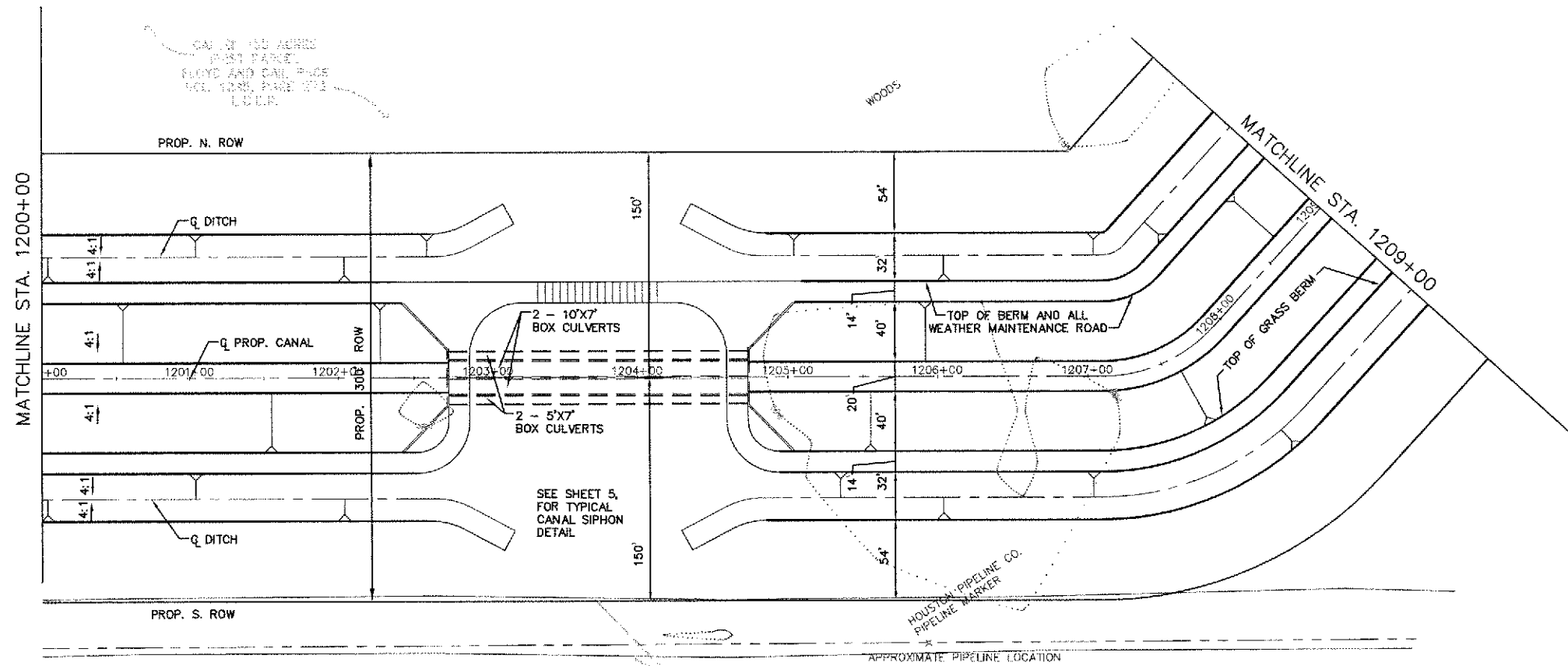
CANAL PLAN &
PROFILE STA 1187+50
TO STA 1200+00

DRAWING SCALE
AS SHOWN

SHEET NO. 172 OF 245

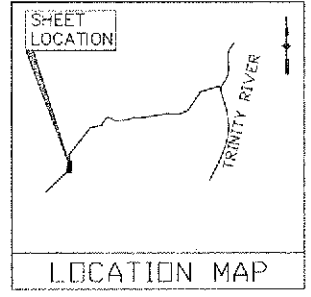


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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

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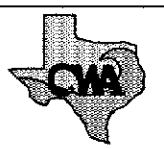


KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 01031
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AECOM
AECOM TECHNICAL SERVICES, INC.
5157 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057-1009
WWW.AECOM.COM
TSPS REG. NO. F-2589

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

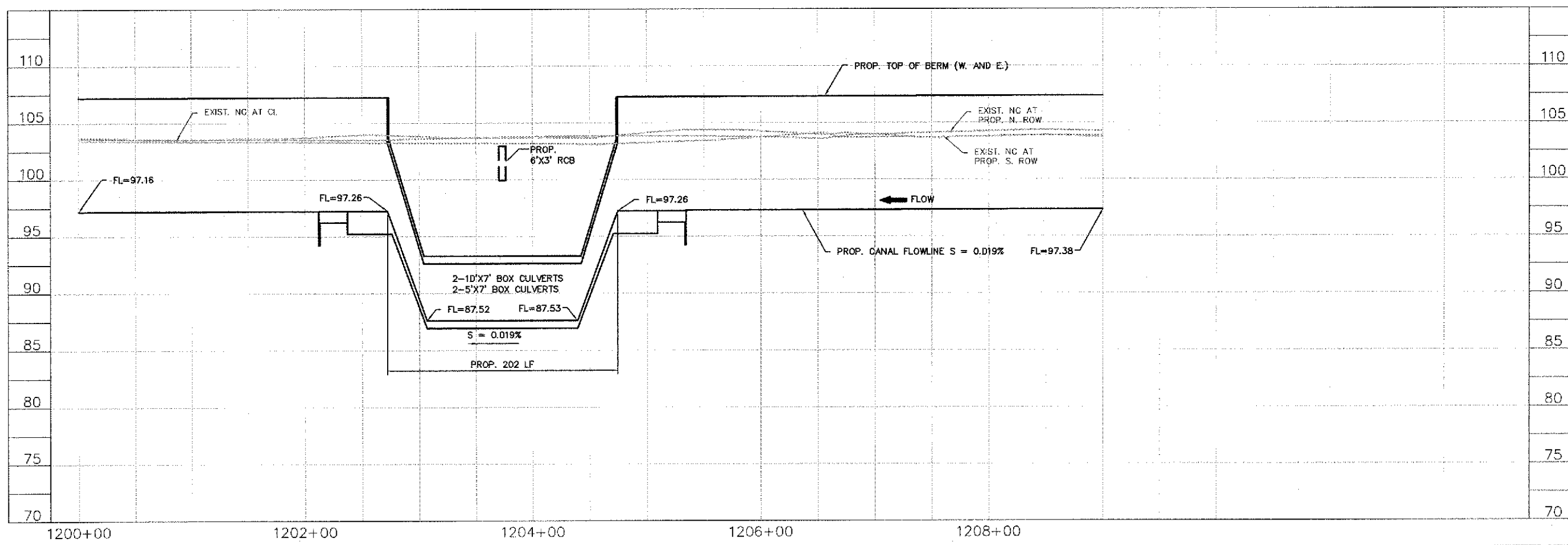
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FB NO.



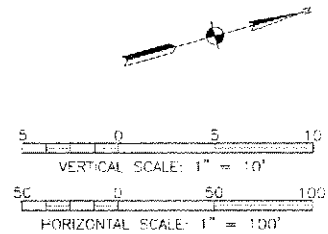
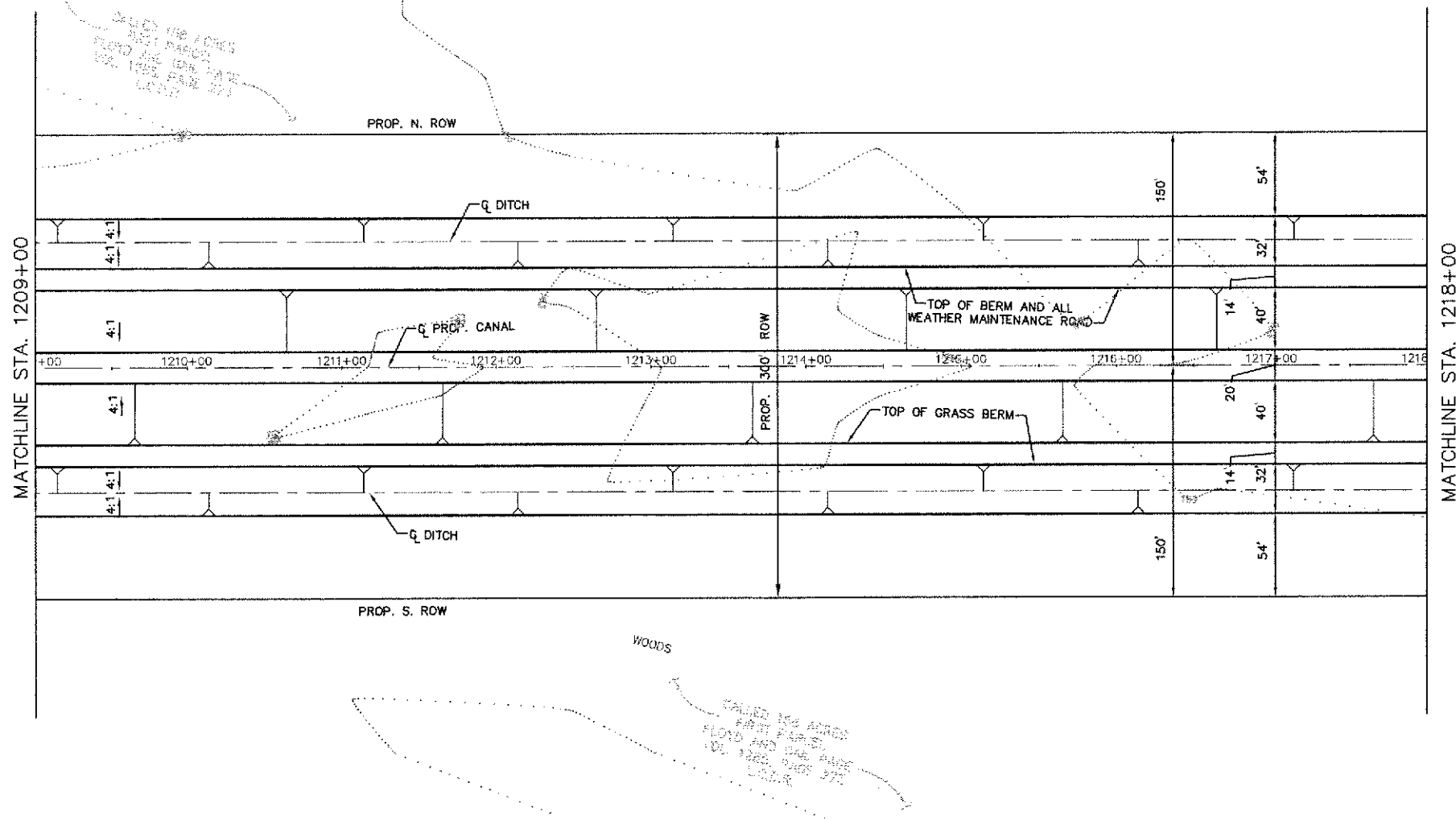
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 1200+00
TO STA 1209+00

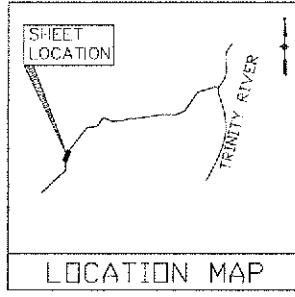
DRAWING SCALE	AS SHOWN
SHEET NO.	13 OF 24



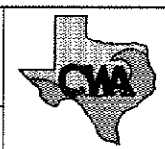
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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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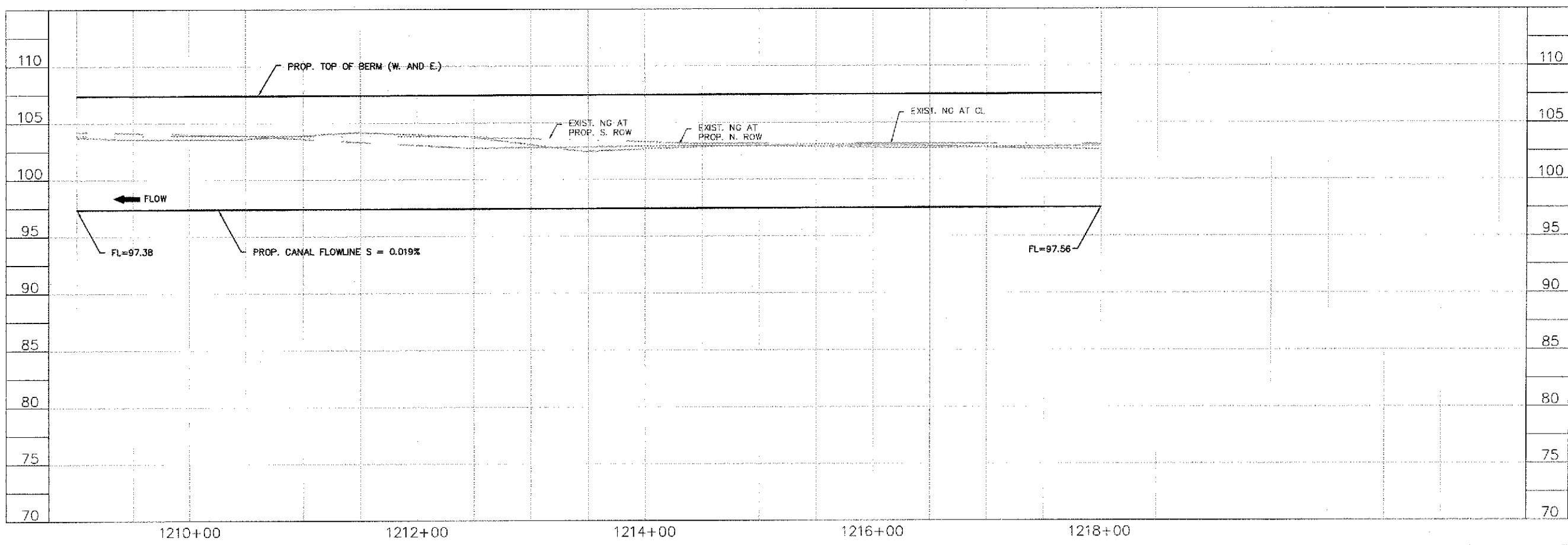


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT

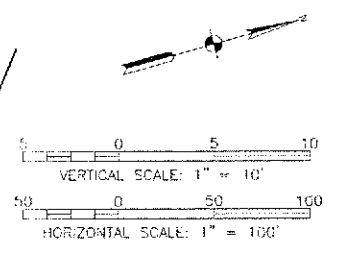
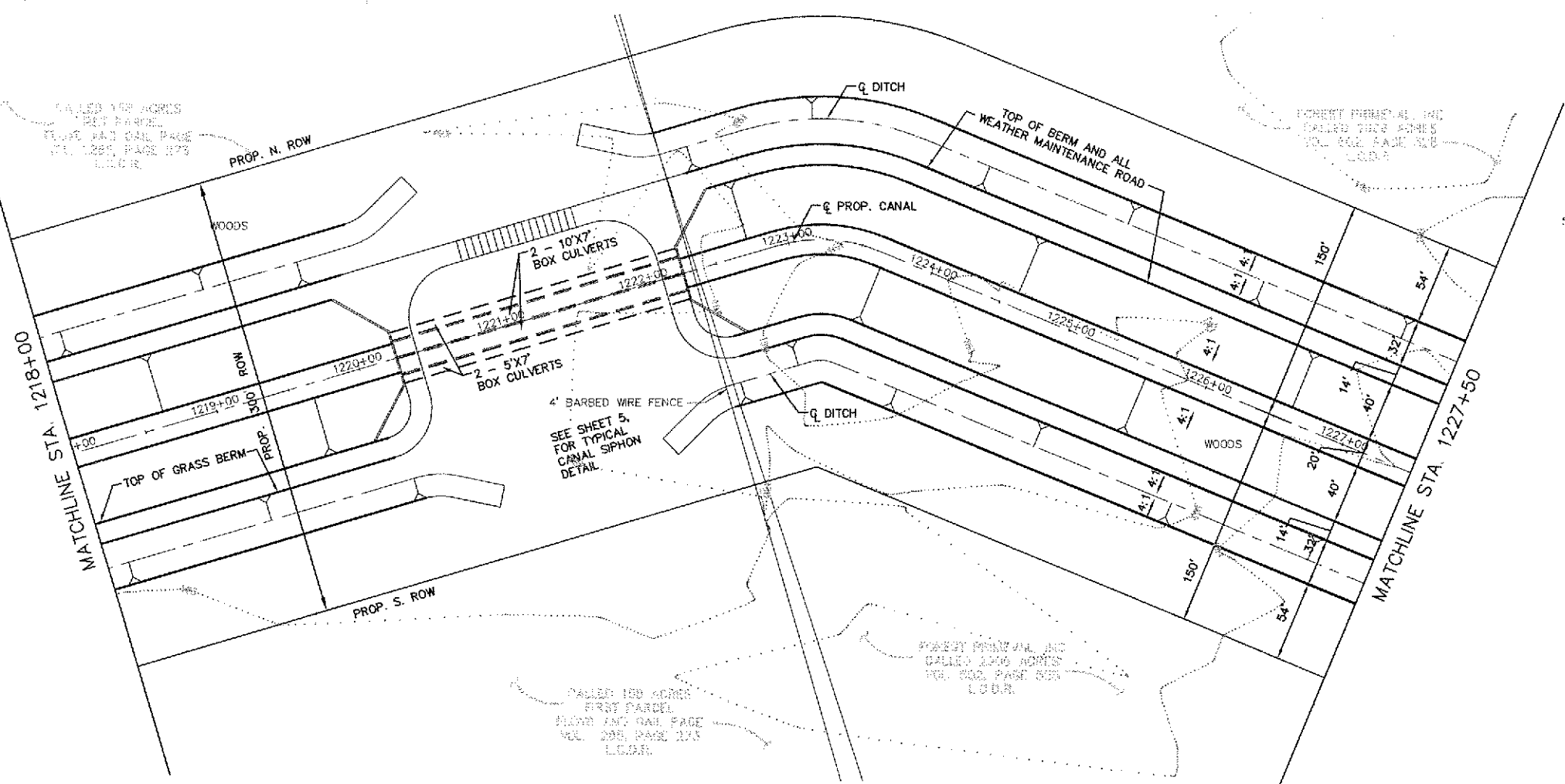
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PROFILE STA 1209+00
TO STA 1218+00

DRAWING SCALE
AS SHOWN

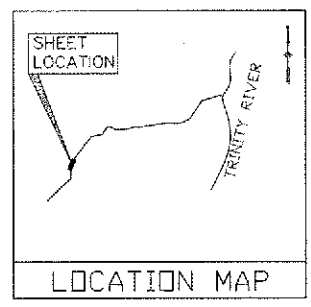
SHEET NO. 139 OF 215



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NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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HOUSTON, TEXAS 77057
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713.780.0838 fax.
WWW.AECOM.COM
TYPE REG. NO. P-2580

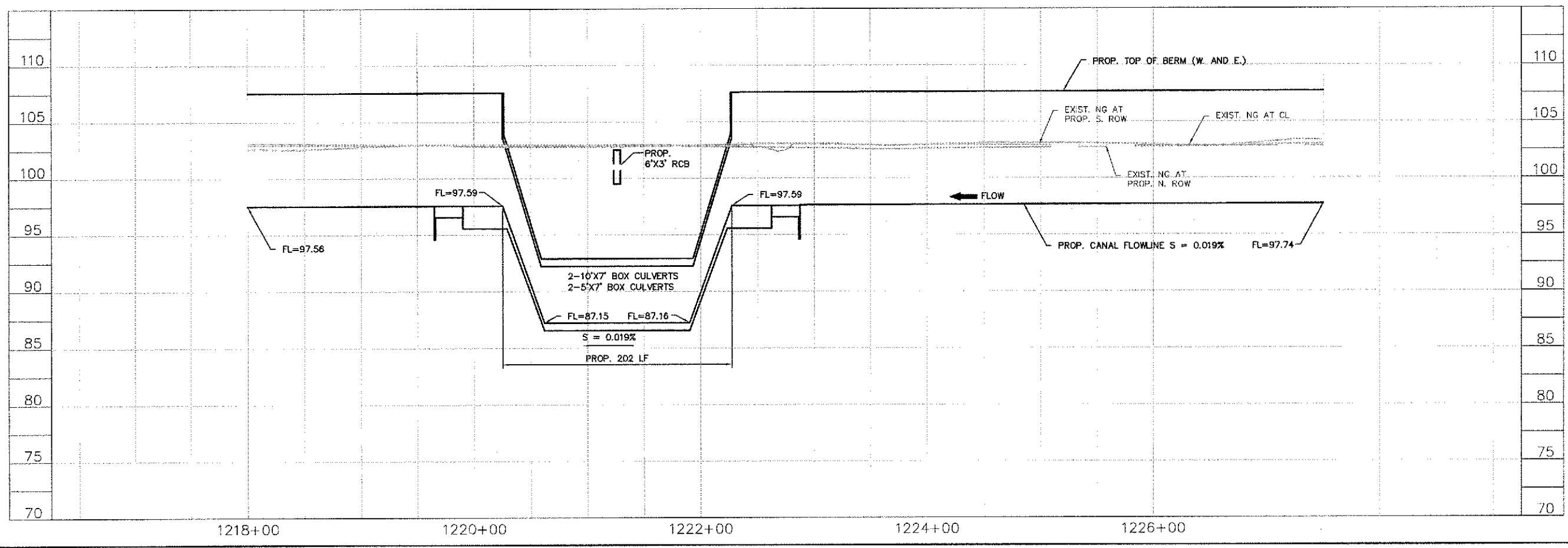
AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



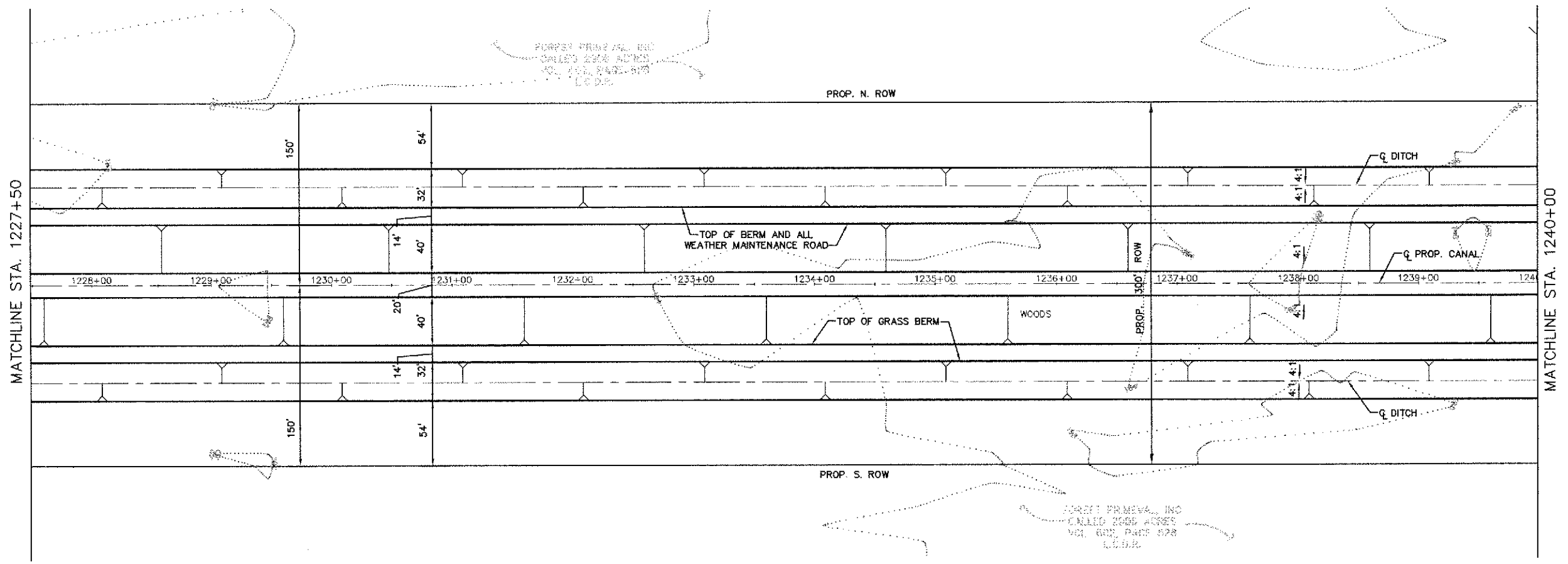
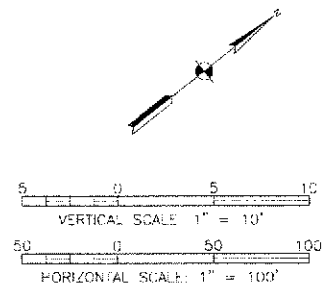
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 1218+00
TO STA 1227+50

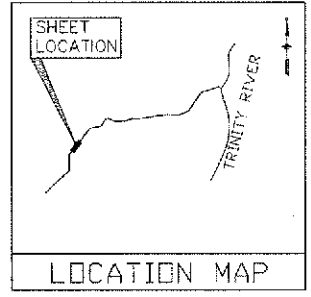
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SHEET No.	135 of 205



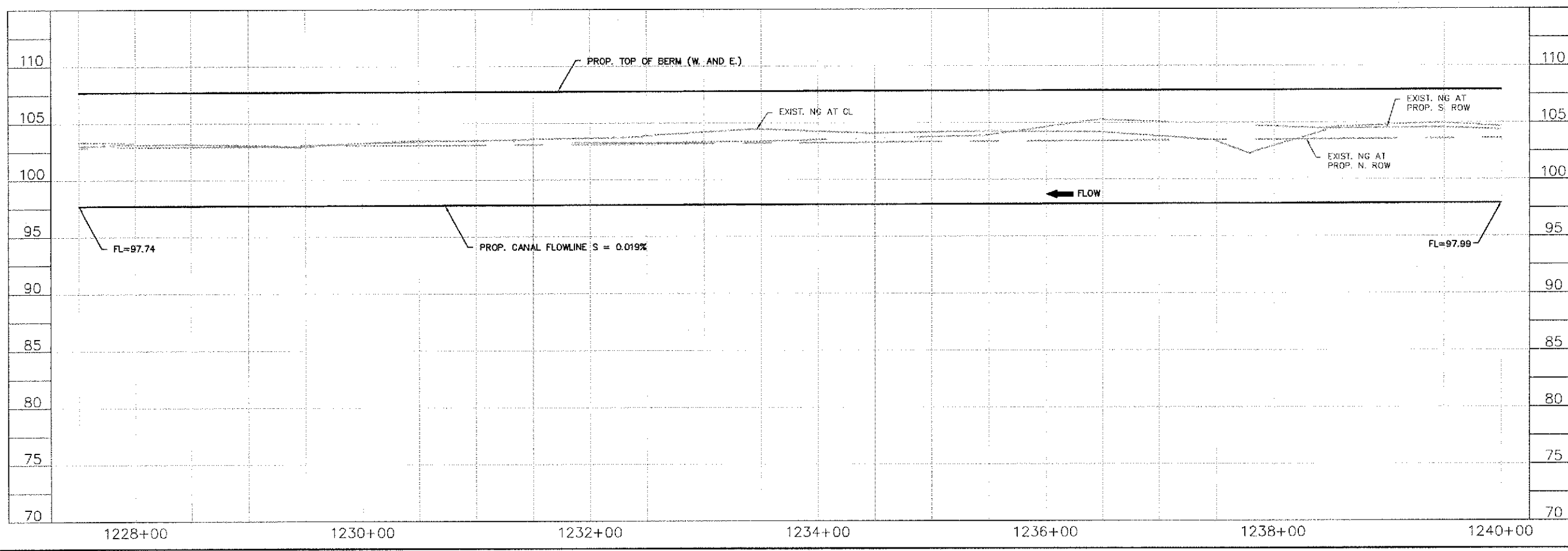
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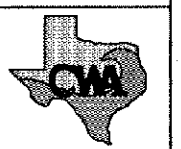
NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN



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AECOM TECHNICAL SERVICES, INC.
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713.780.0838 fax.



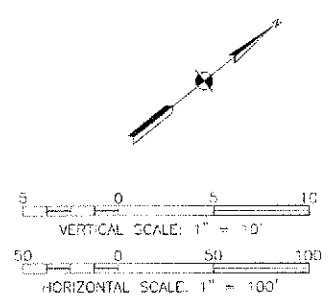
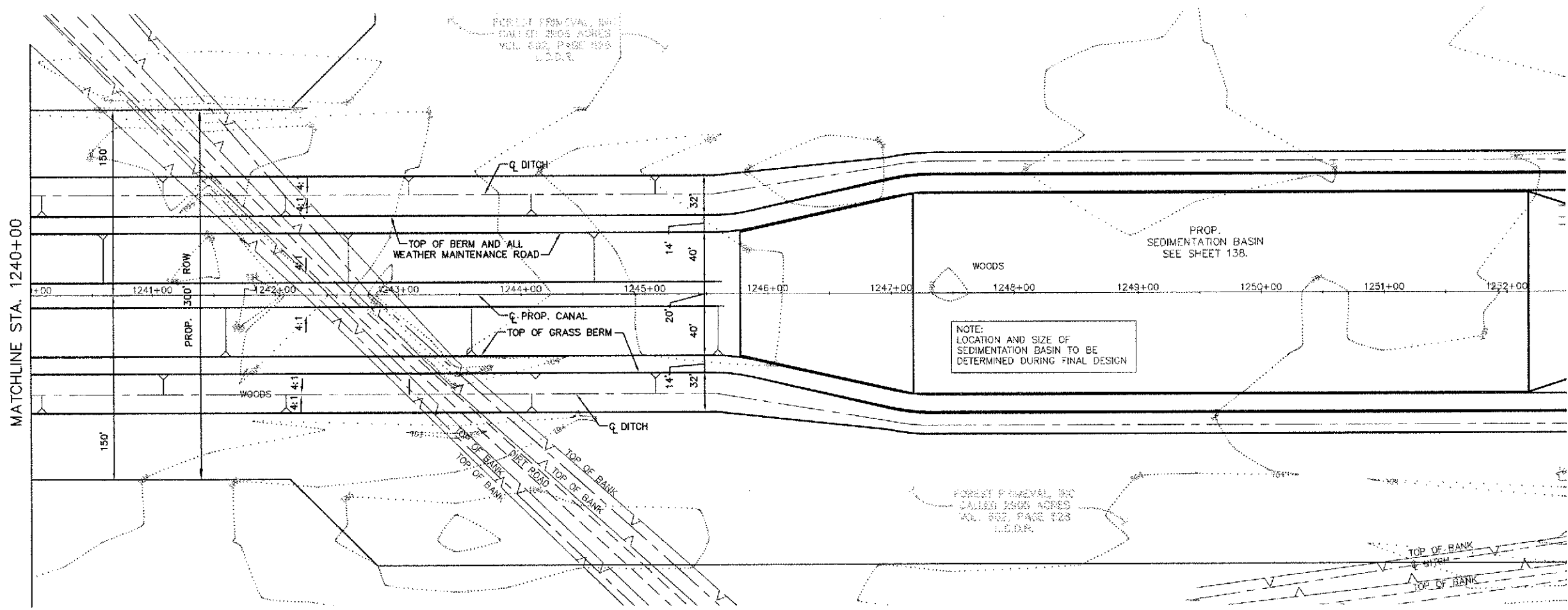
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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 1227+50
TO STA 1240+00

DRAWING SCALE
AS SHOWN

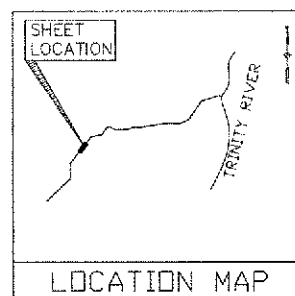
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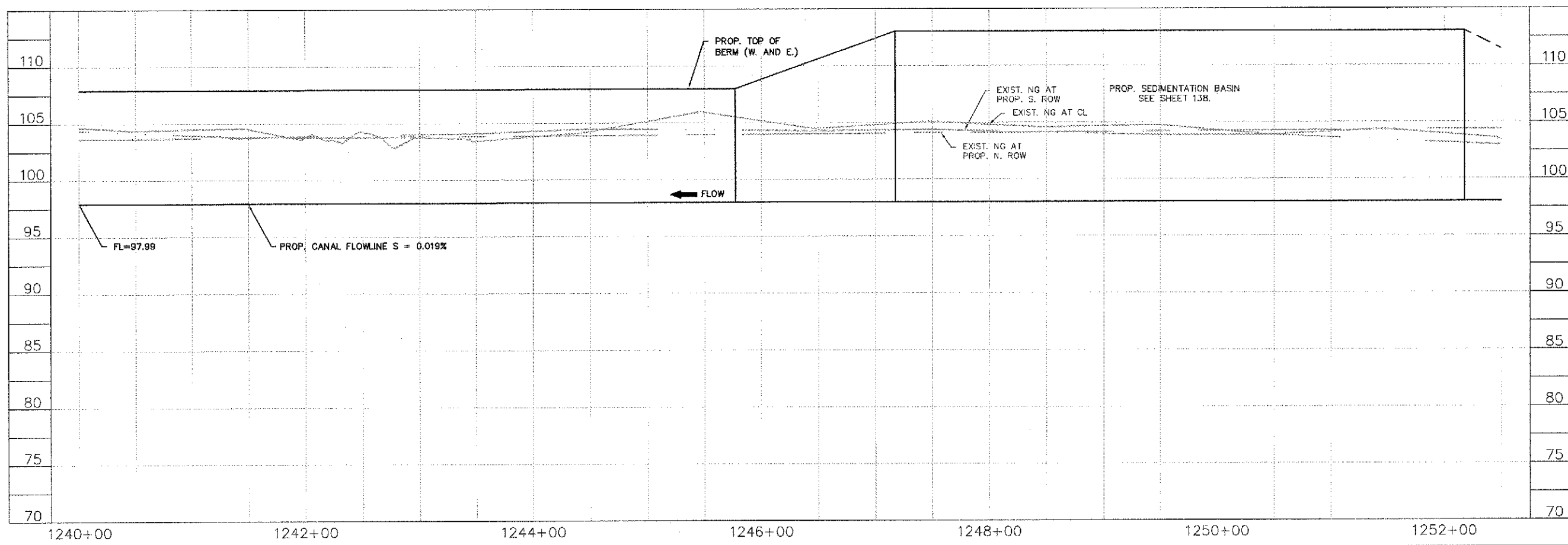


NOTE:
LOCATION AND SIZE OF
SEDIMENTATION BASIN TO BE
DETERMINED DURING FINAL DESIGN

NOTE:
DESIGN OF DRAINAGE TO OCCUR
DURING FINAL DESIGN

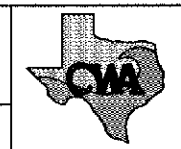


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TSP REG. NO. P-18890

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5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



SURVEYED BY:
FB NO.

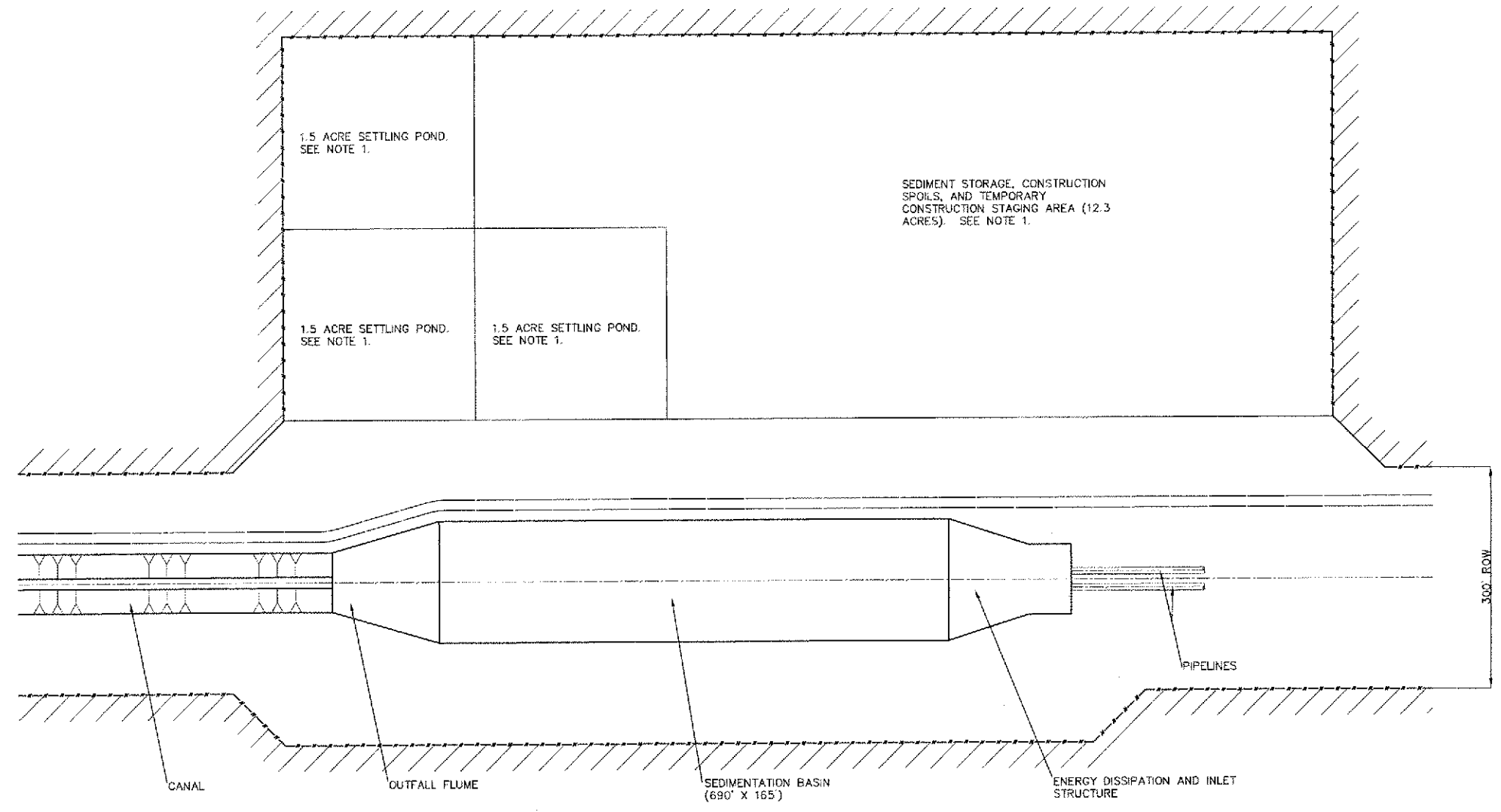
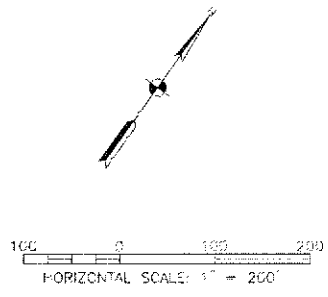
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL PLAN &
PROFILE STA 1240+00
TO SEDIMENTATION
BASIN

DRAWING SCALE	AS SHOWN

SHEET NO. 137 OF 245

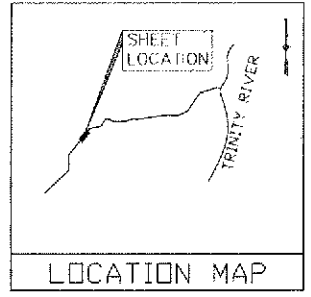
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 DWS: NAME: Canal\2101.dwg



CWA DISTURBED AREA CALCULATIONS

ADDITIONAL DISTURBED AREA FOR SEDIMENTATION BASIN	15.01 ACRES
SEDIMENT STORAGE, SETTLING PONDS, CONSTRUCTION SPOILS, AND TEMPORARY CONSTRUCTION STAGING AREA	16.95 ACRES
TOTAL AREA DISTURBED BY CWA	31.96 ACRES

- NOTES:**
- SYSTEM OF THREE (3) 1.50 ACRE PONDS ARE USED TO SEPARATE SOLIDS FROM DREDGE SPOILS PRIOR TO PERMANENT DISPOSAL IN THE SEDIMENT STORAGE AREA. AFTER SEPARATION, CLARIFIED WATER IS RETURNED TO THE CANAL.
 - SEDIMENTATION BASIN LAYOUT BASED ON CONCEPTUAL DESIGN. ACTUAL SIZE AND DIMENSIONS TO BE DETERMINED DURING FINAL DESIGN.



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LEGEND

	UNDISTURBED AREA
	PROPOSED STRUCTURE
	PROPOSED PIPELINE
	PROPOSED ROADWAY
	PROPOSED FENCE



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SEDIMENTATION BASIN
 DETAILED PLAN

DRAWING SCALE	AS SHOWN
SHEET NO.	38 of 245

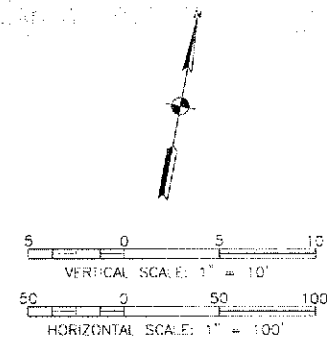
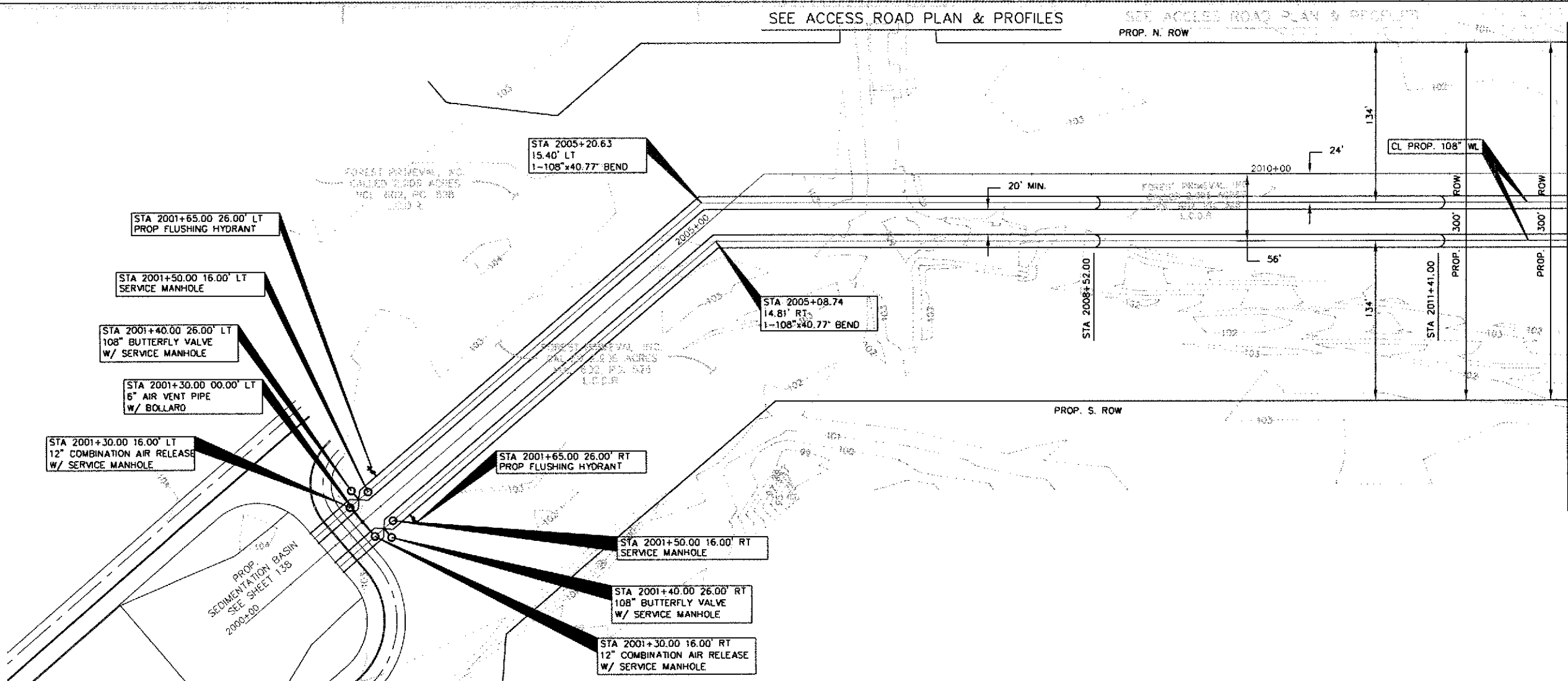
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SEE ACCESS ROAD PLAN & PROFILES

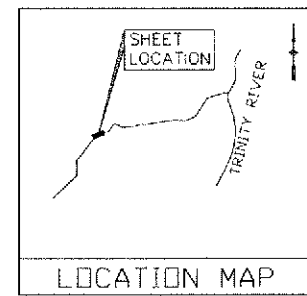
SEE ACCESS ROAD PLAN & PROFILES

PROP. N. ROW

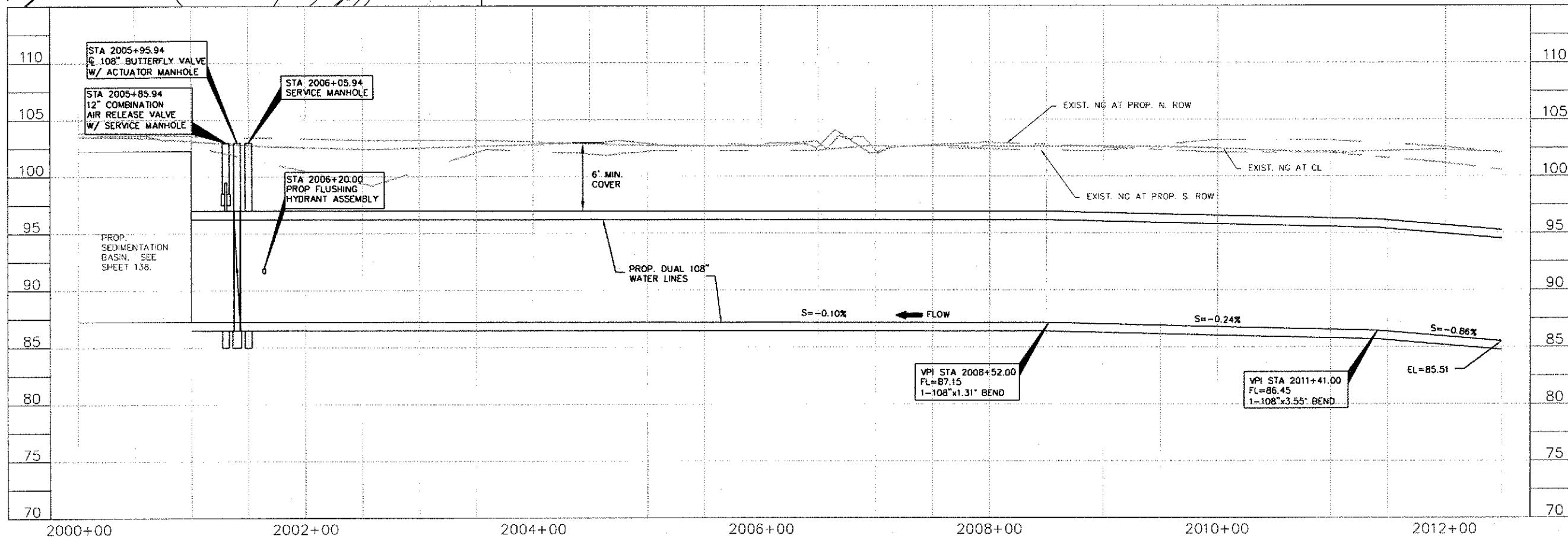
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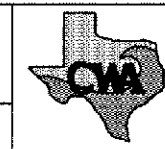
NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS



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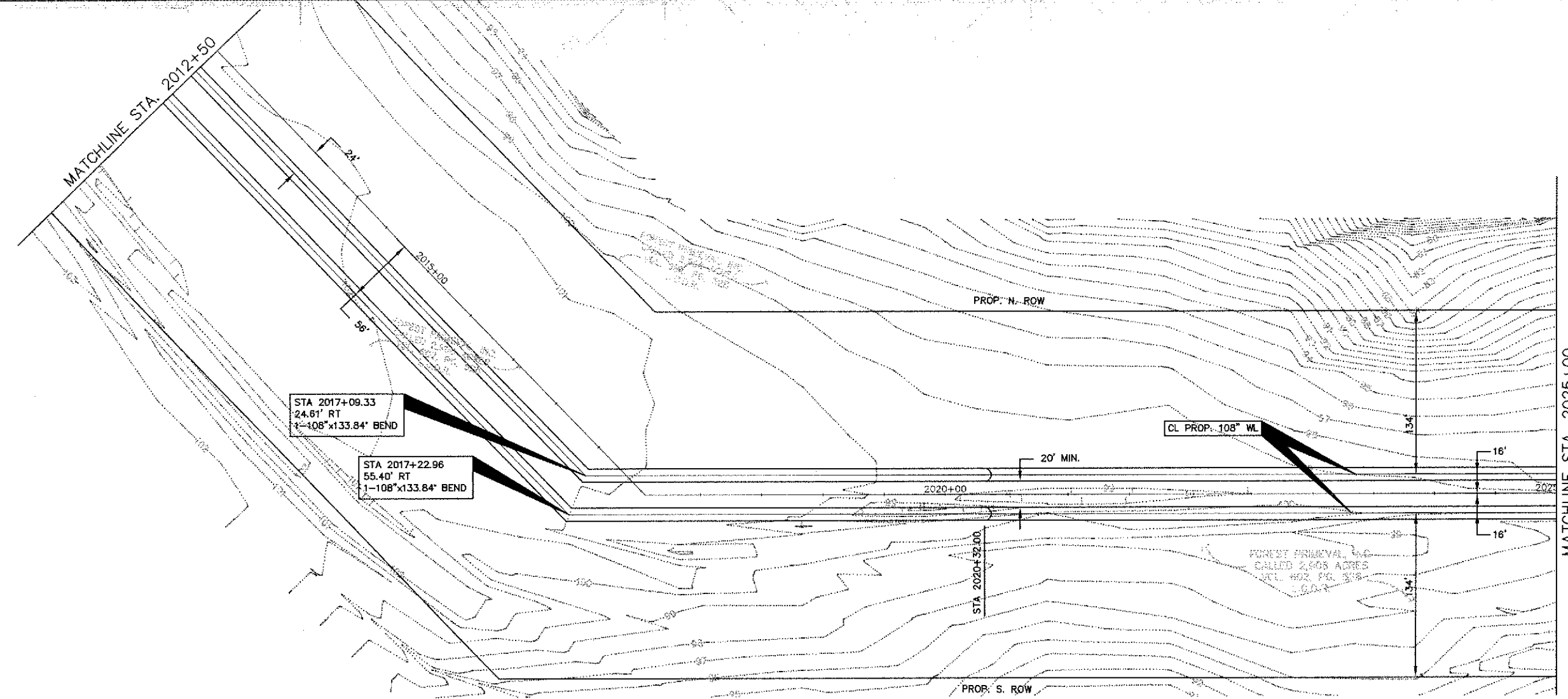
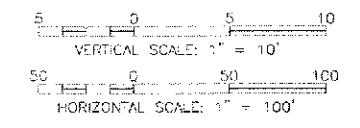
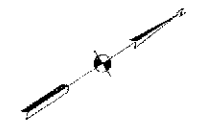
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 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PLAN &
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 TO STA 2012+50

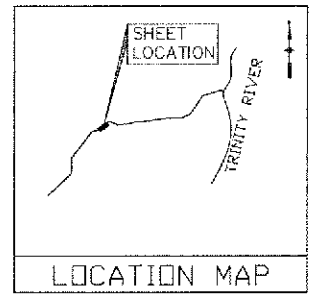
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 AS SHOWN

SHEET NO. 139 OF 245

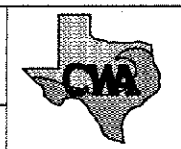
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NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS

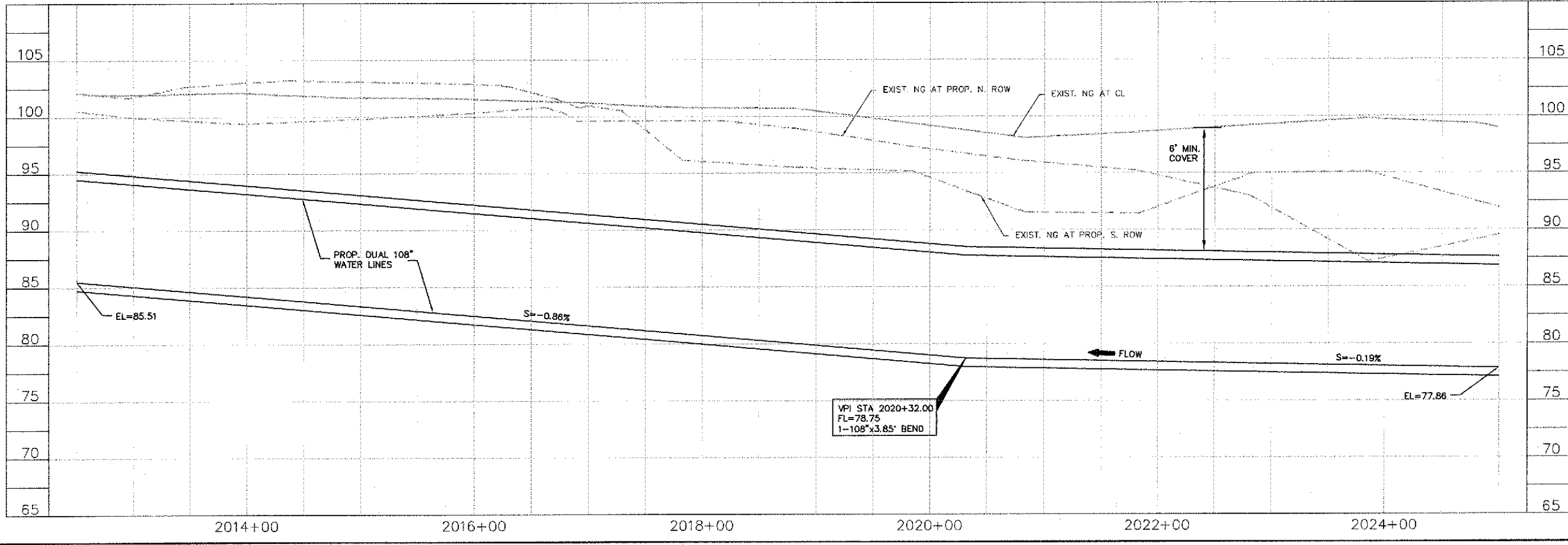


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PIPELINE PLAN &
PROFILE STA 2012+50
TO STA 2025+00

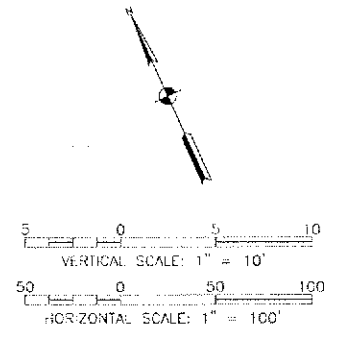
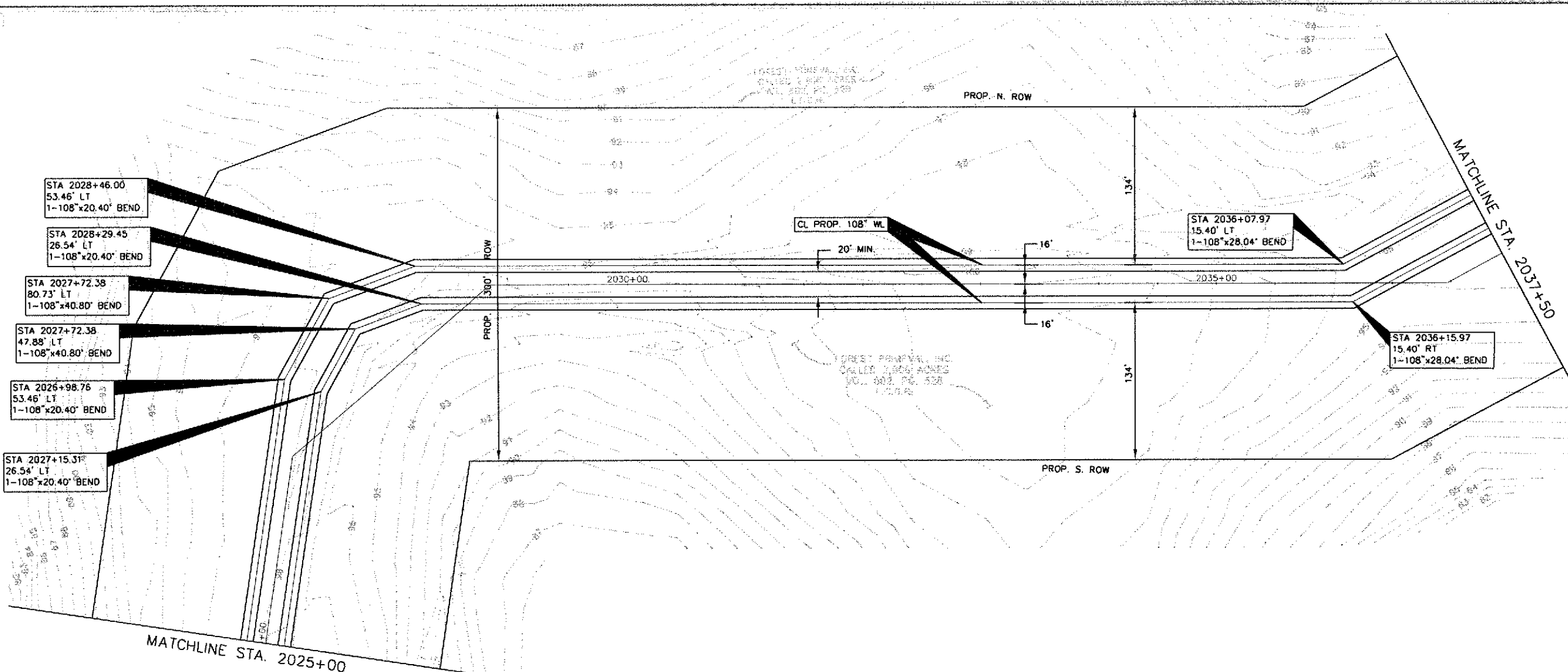


DRAWING SCALE
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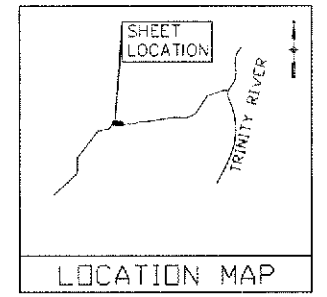
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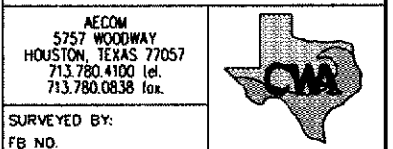
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NOTE: LOCATION, SPACING, AND SIZES OF WATERLINE VALVES AND OTHER APPURTENANCES TO BE REVISED FOLLOWING FUTURE INVESTIGATION AND TRANSIENT ANALYSIS



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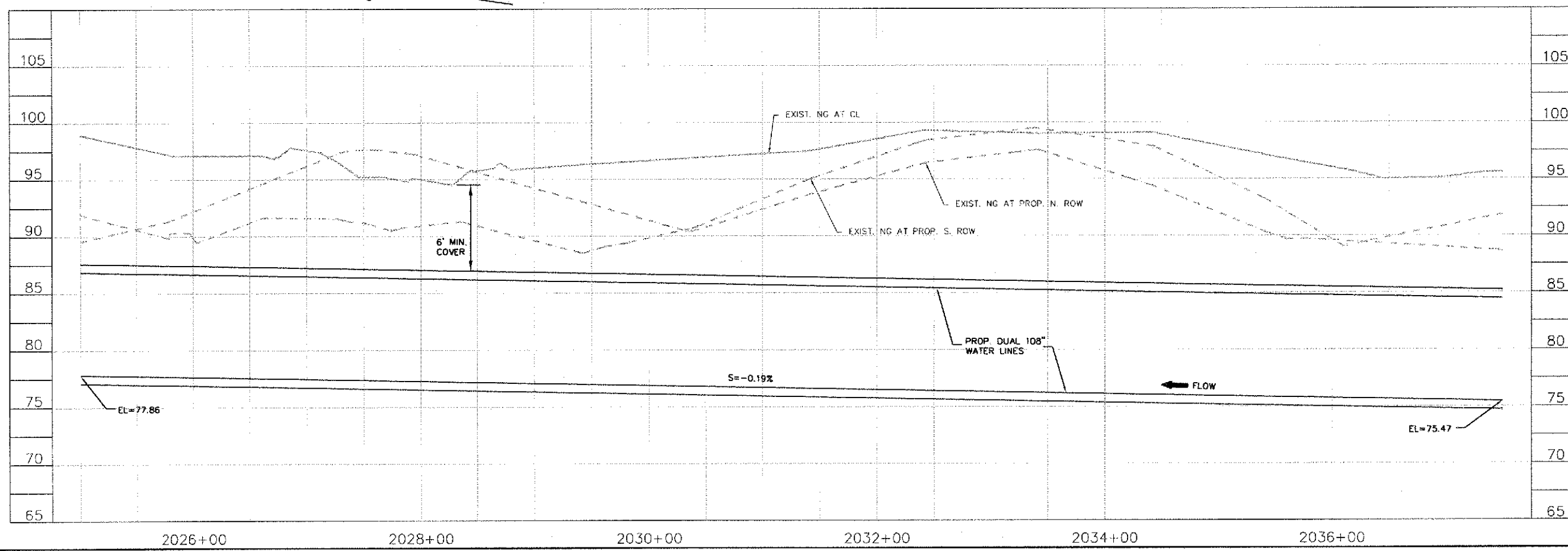


SURVEYED BY:
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PIPELINE PLAN &
 PROFILE STA 2025+00
 TO STA 2037+50

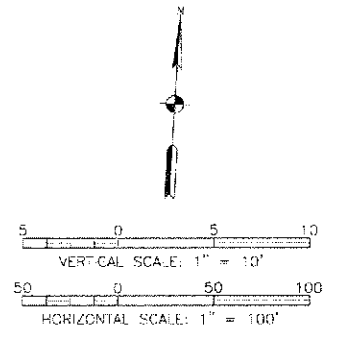
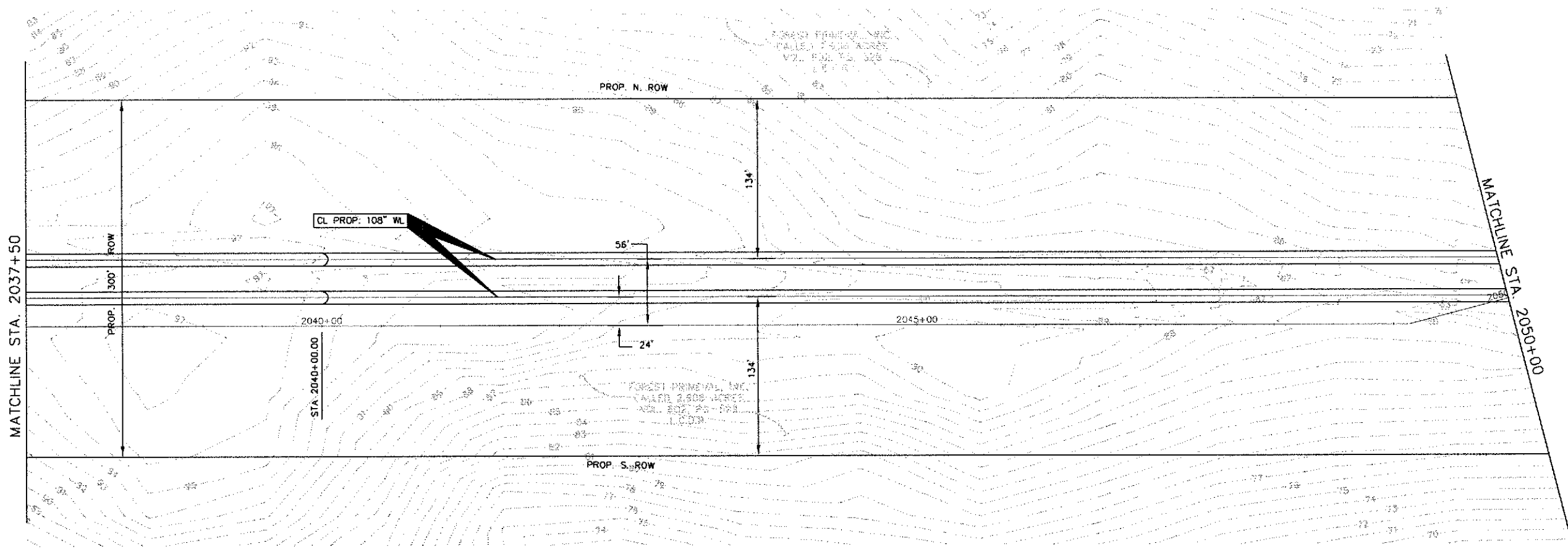
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SHEET NO. 141 OF 215

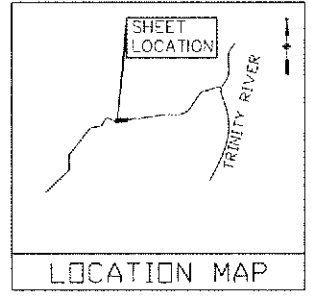


MATCHLINE STA. 2037+50

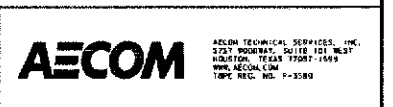
MATCHLINE STA. 2050+00



NOTE:
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 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
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 713.780.0838 fax.

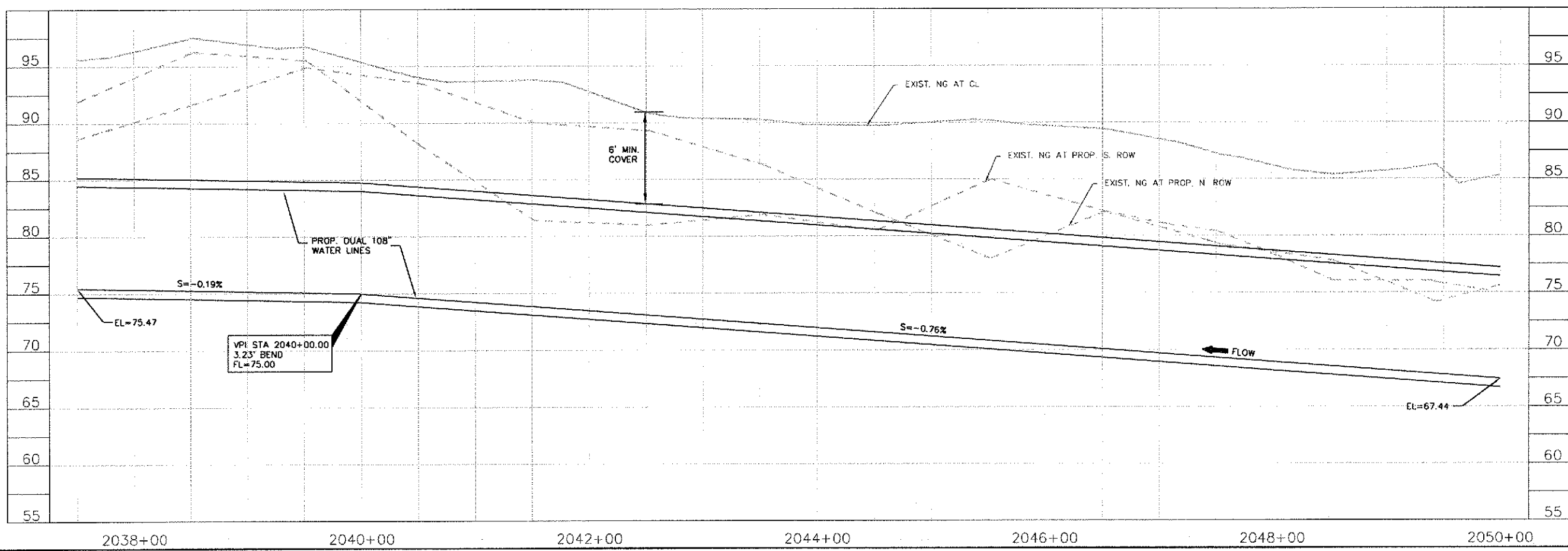
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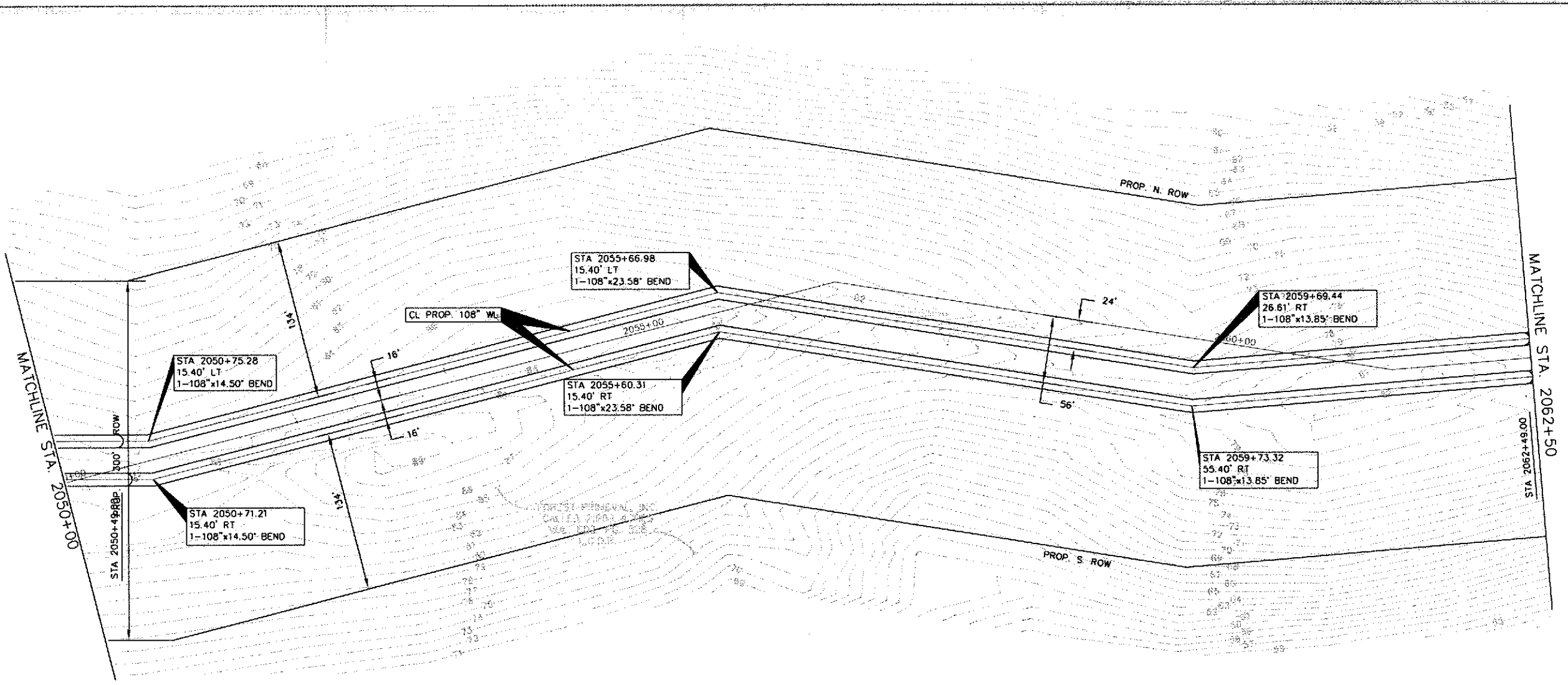
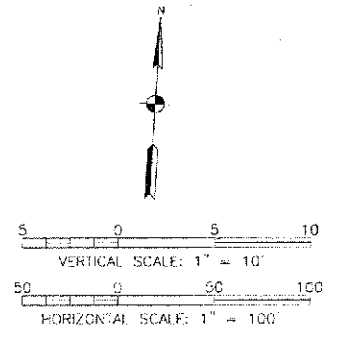
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PLAN &
 PROFILE STA 2037+50
 TO STA 2050+00

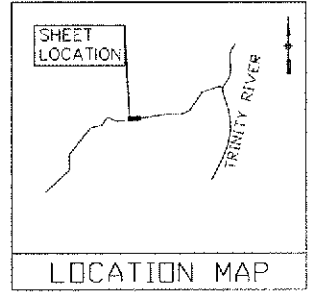
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SHEET NO.	192 of 295



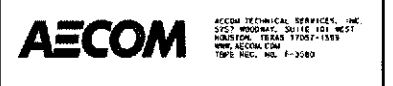
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NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
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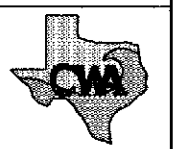


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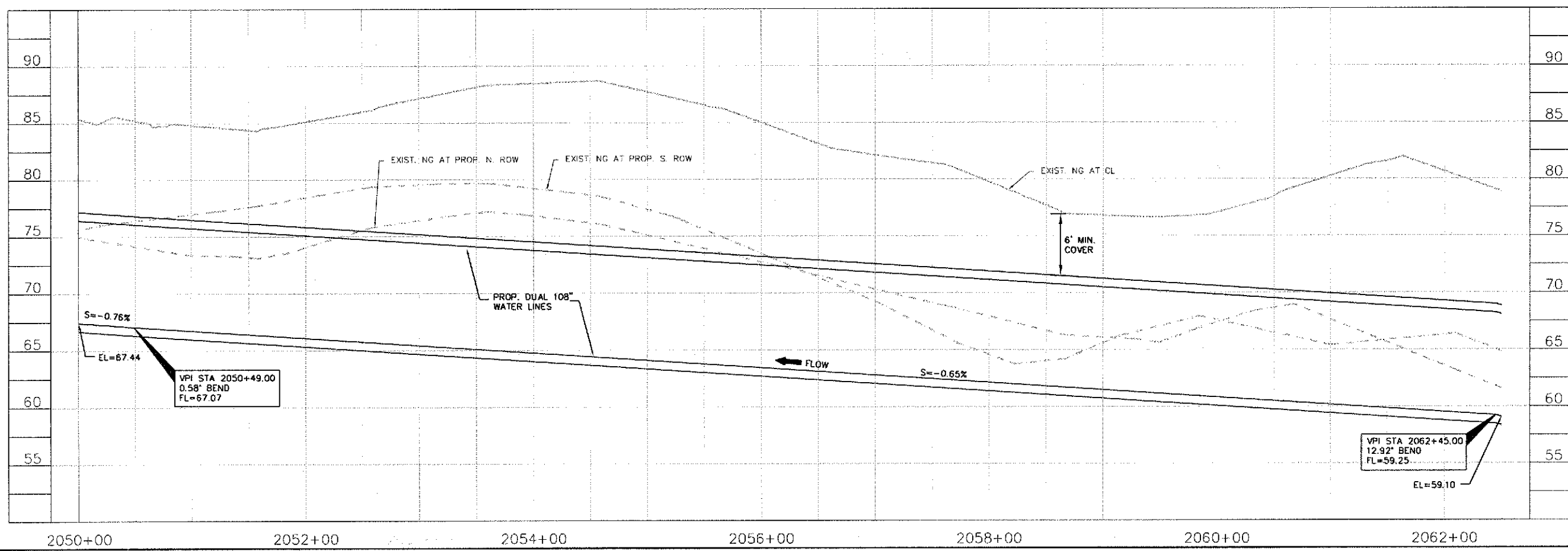
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HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

SURVEYED BY:
FB NO.



COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

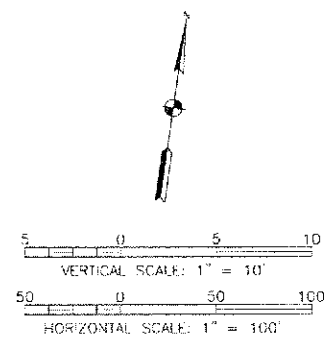
PIPELINE PLAN &
PROFILE STA 2050+00
TO STA 2062+50



DRAWING SCALE
AS SHOWN

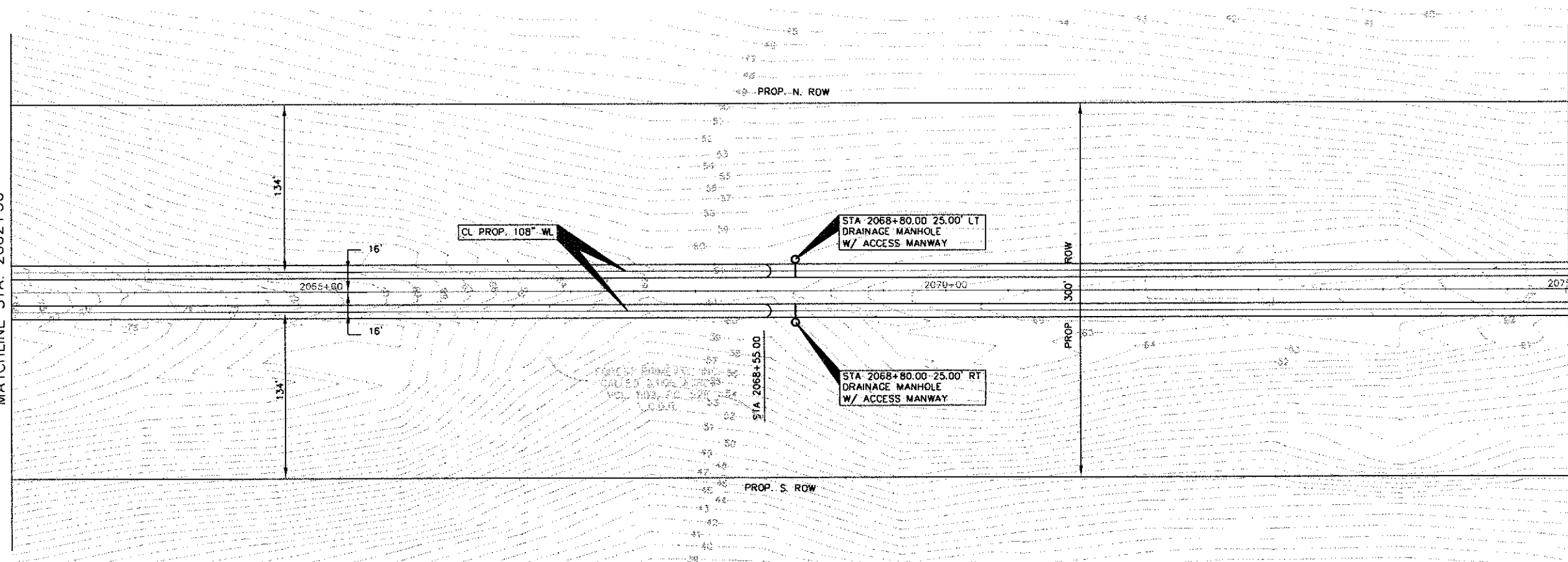
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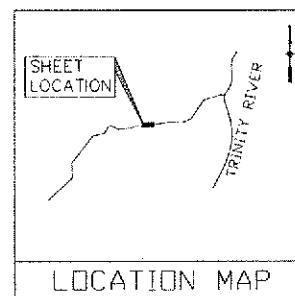


MATCHLINE STA. 2062+50

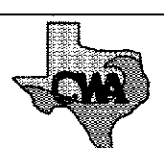
MATCHLINE STA. 2075+00



NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS



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TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
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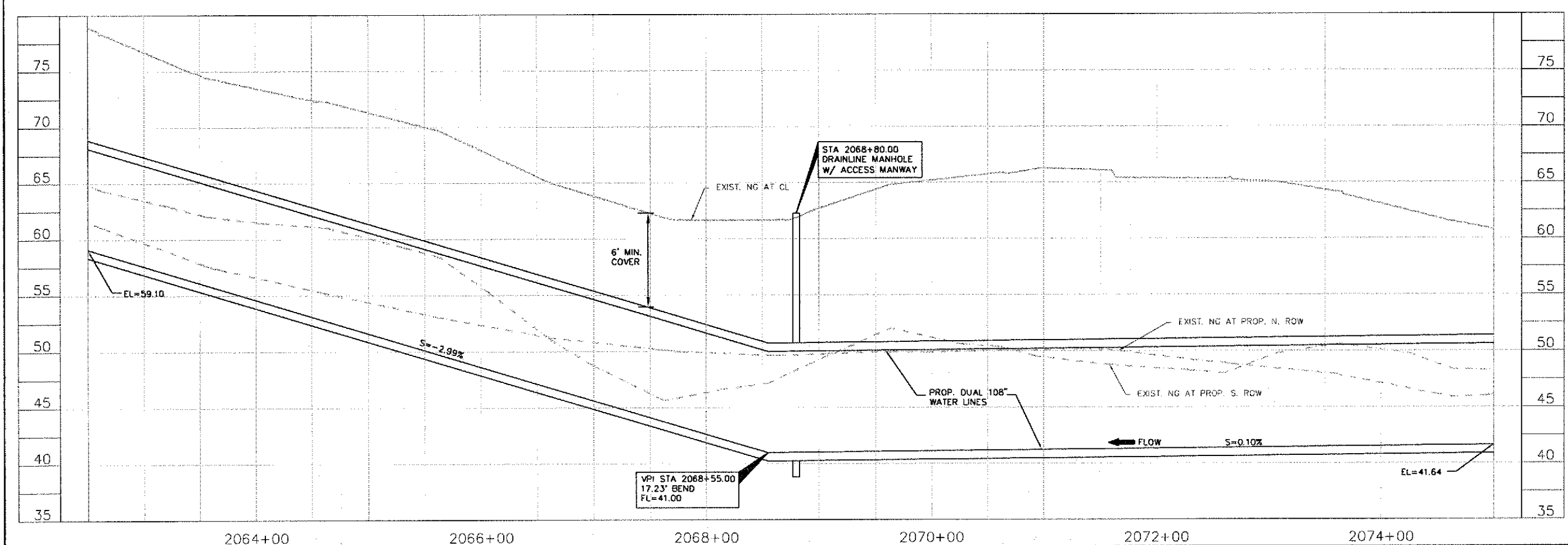


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COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

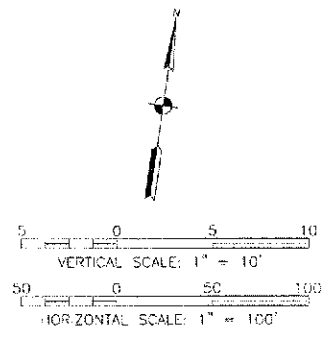
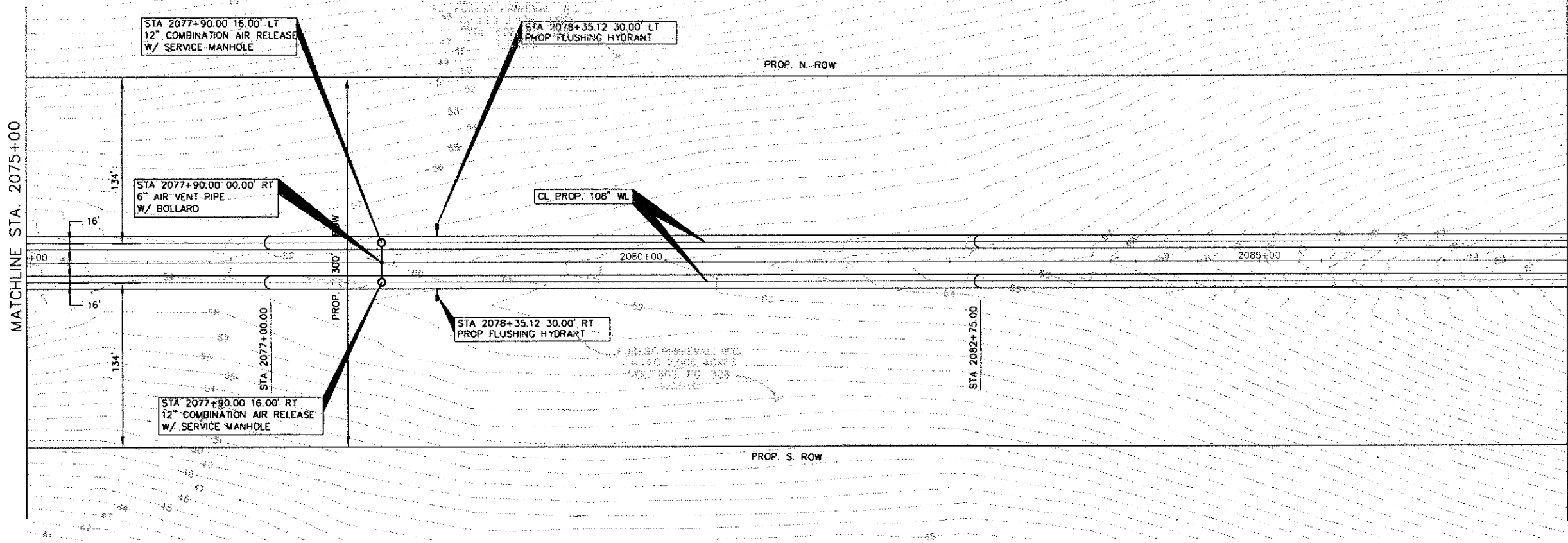
PIPELINE PLAN &
PROFILE STA 2062+50
TO STA 2075+00

DRAWING SCALE
AS SHOWN

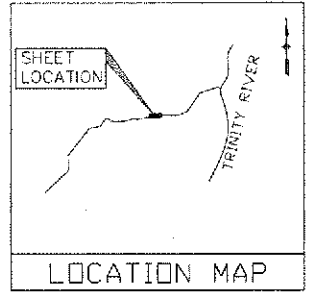
SHEET NO. 144 OF 249



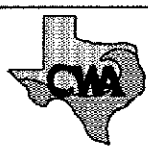
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NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISID
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS

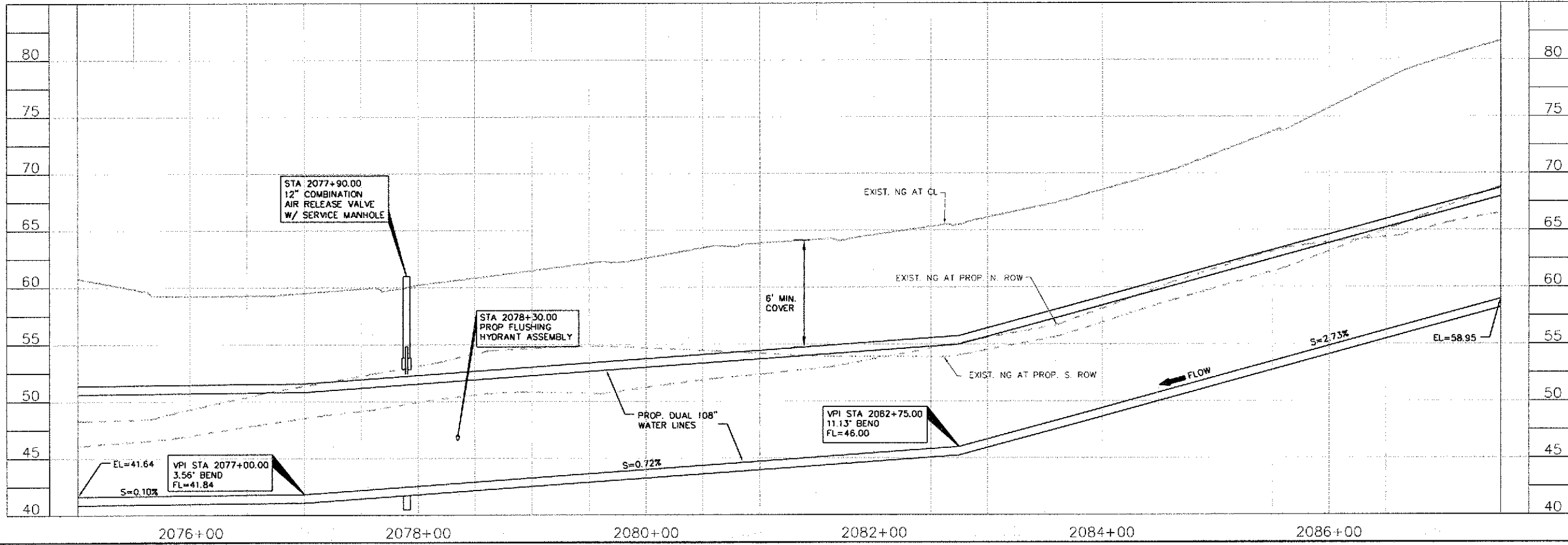


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 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES



COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

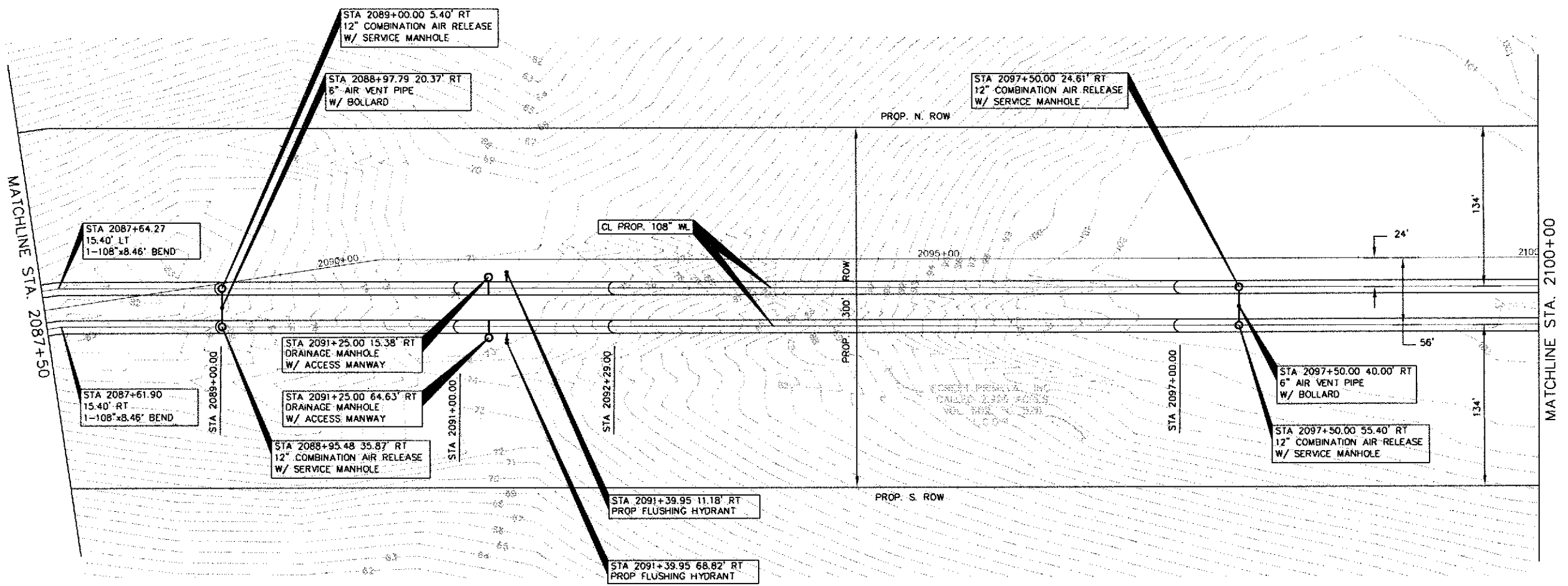
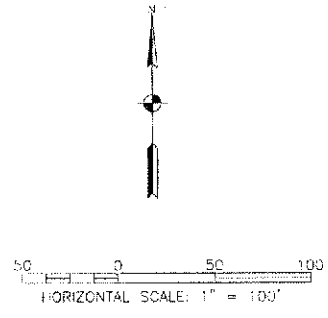
PIPELINE PLAN &
 PROFILE STA 2075+00
 TO STA 2087+50



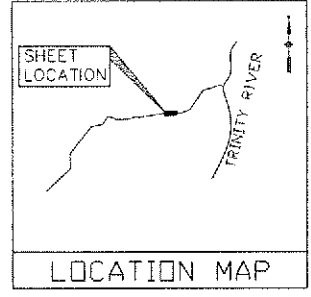
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 AS SHOWN

SHEET NO. 195 of 243

LAST MODIFIED: Jan 27, 2011 4:57pm BY USER: ThompsonBI
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NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS

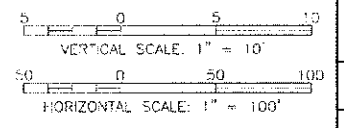
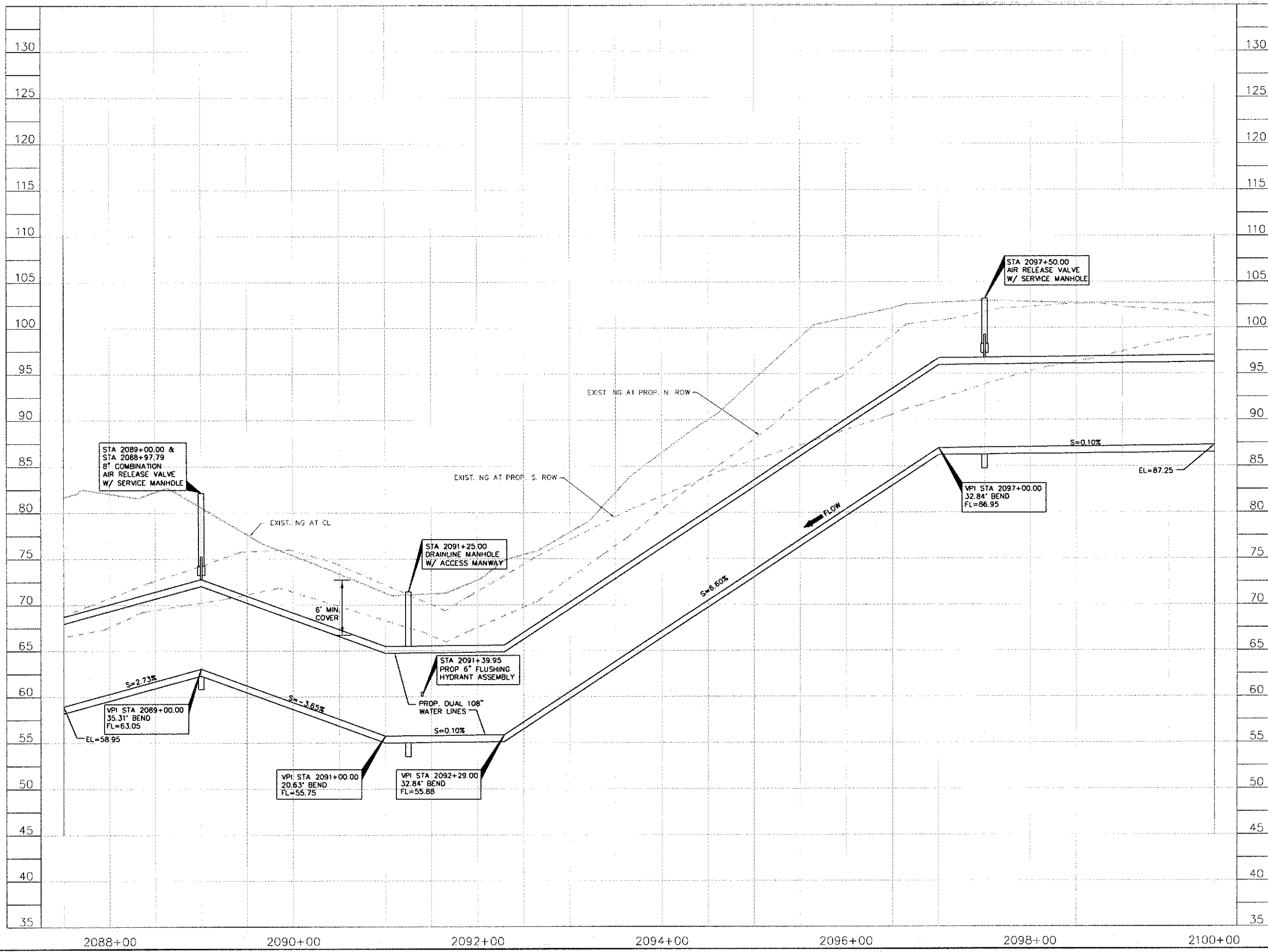


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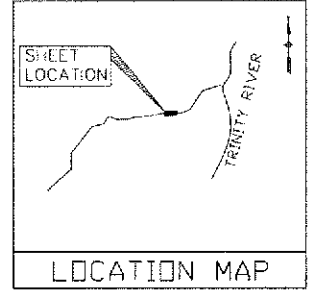
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SURVEYED BY: FB NO.	
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT	
PIPELINE PLAN STA 2087+50 TO STA 2100+00	
DRAWING SCALE AS SHOWN	
SHEET NO. 146 OF 245	

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NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS



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AECOM AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax
 WWW.AECOM.COM
 TYPE REC. NO. P-2180

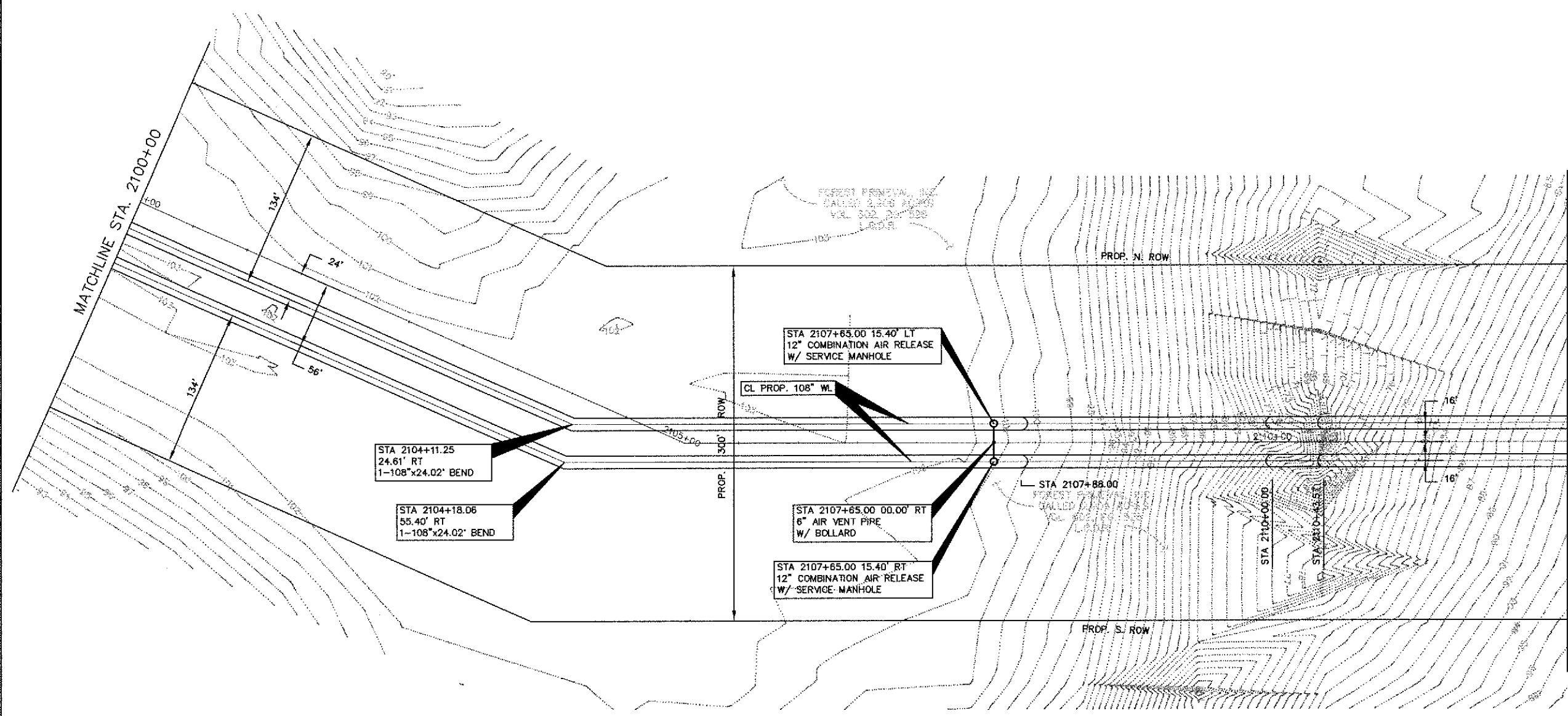
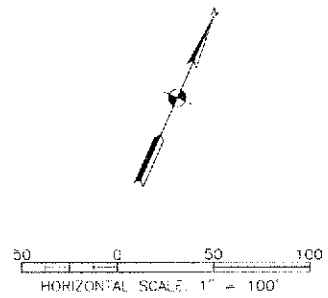
AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax

SURVEYED BY:
 FB NO.

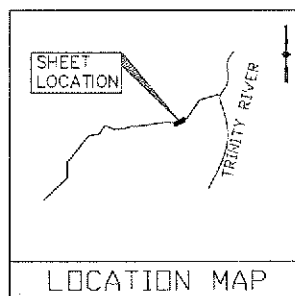
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PROFILE STA
 2087+50 TO STA
 2100+00

DRAWING SCALE	AS SHOWN
SHEET NO.	47 of 295



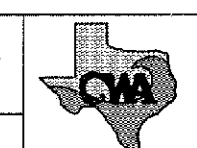
NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
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 AND TRANSIENT ANALYSIS



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AECOM
AECOM TECHNICAL SERVICES, INC.
 5701 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057-1008
 WWW.AECOM.COM F-2500

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



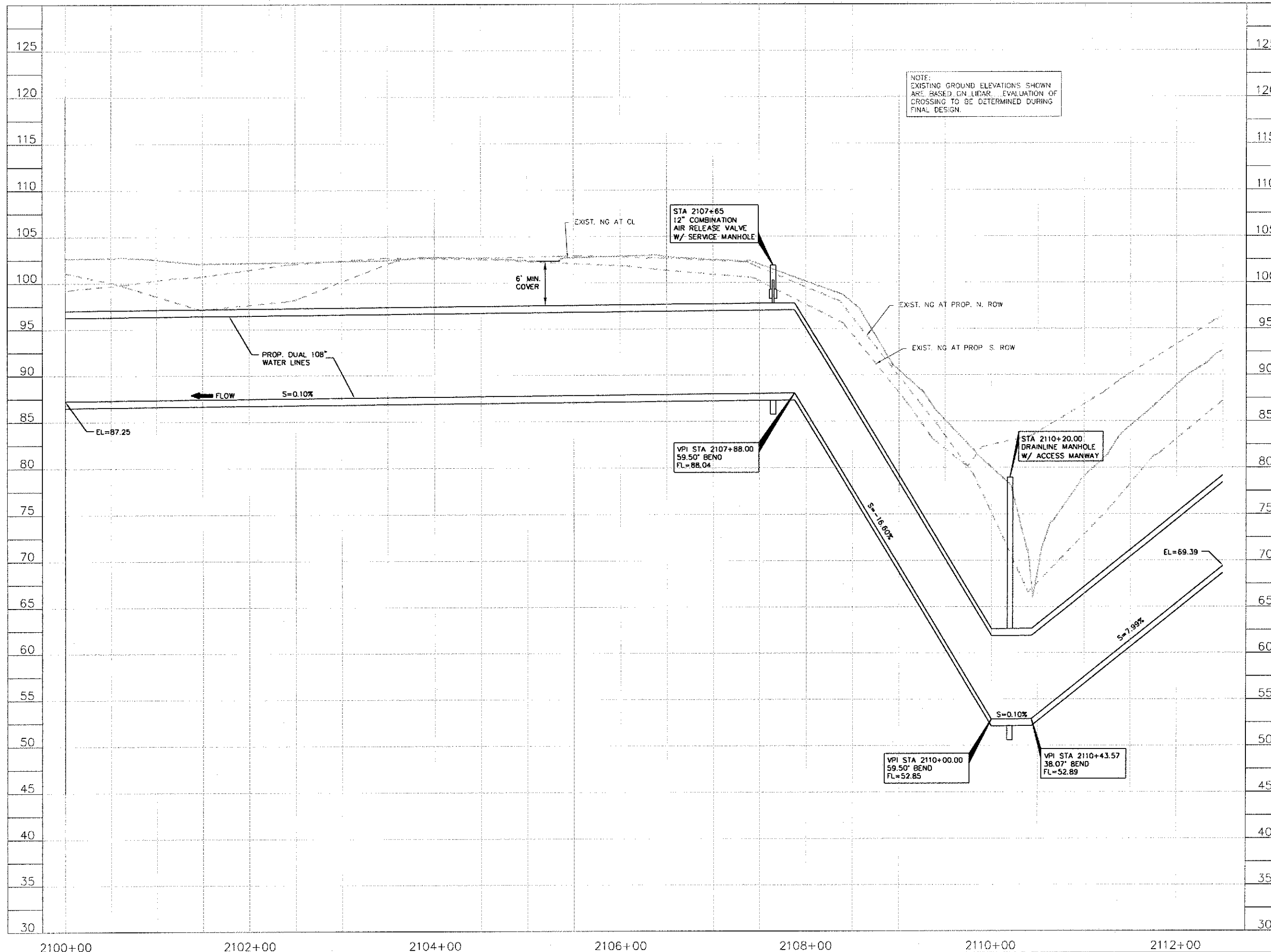
SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PLAN STA
 2100+00 TO STA
 2112+50

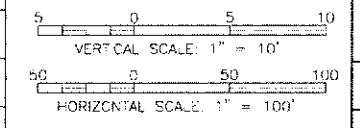
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SHEET NO.	148 OF 245

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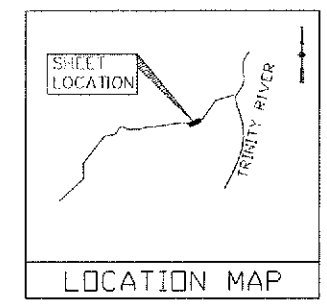
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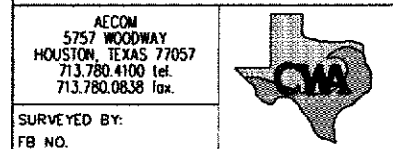
NOTE:
 EXISTING GROUND ELEVATIONS SHOWN
 ARE BASED ON LIDAR. EVALUATION OF
 CROSSING TO BE DETERMINED DURING
 FINAL DESIGN.



NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS



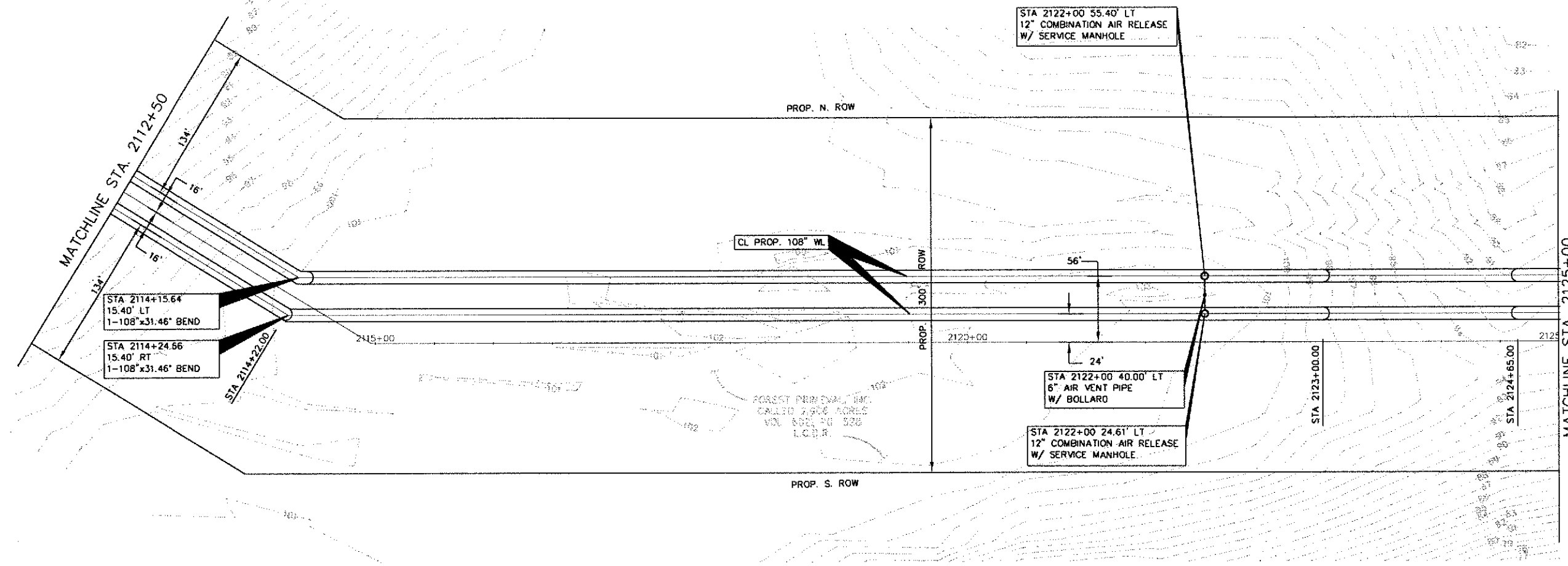
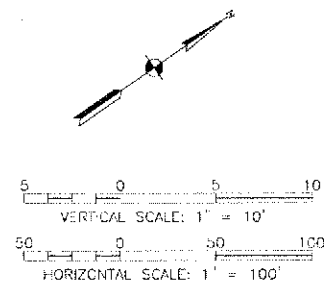
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 TEXAS REGISTRATION NO. 91031
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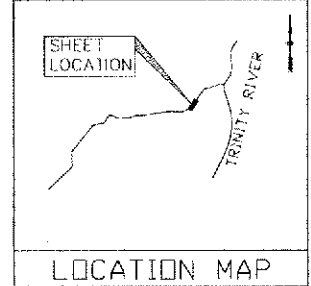
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 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PROFILE STA
 2100+00 TO STA
 2112+50

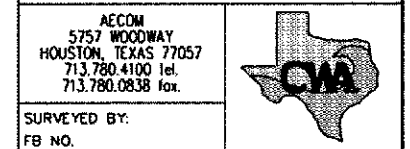
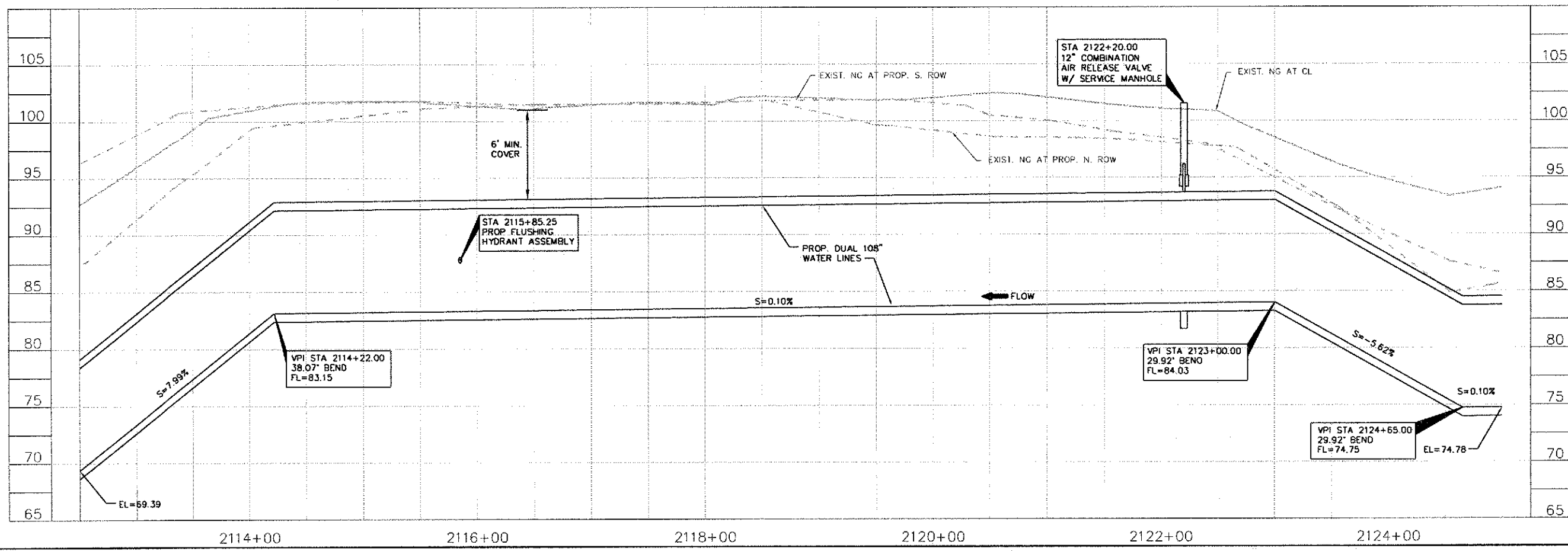
DRAWING SCALE	AS SHOWN
SHEET NO.	149 OF 295



NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
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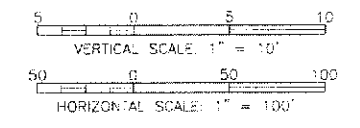
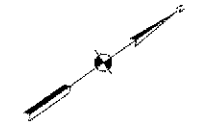


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PLAN &
PROFILE STA 2112+50
TO STA 2125+00

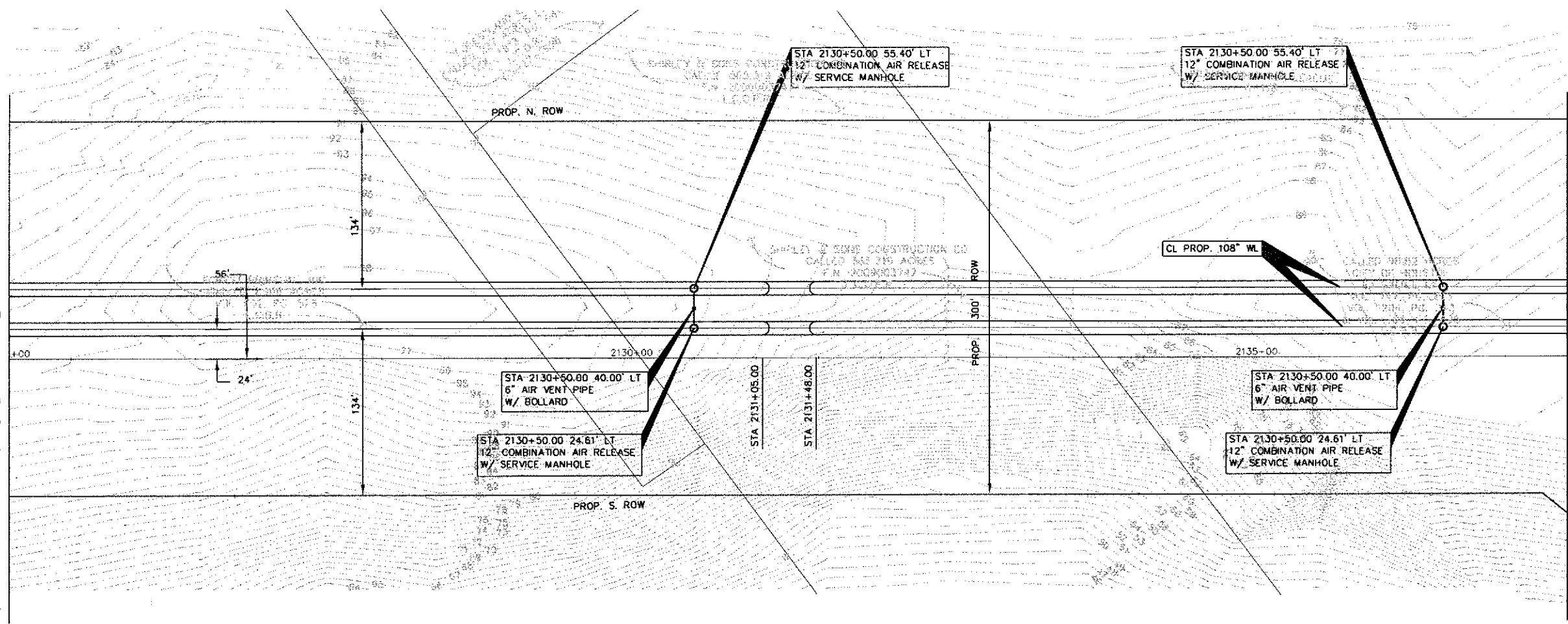
DRAWING SCALE	AS SHOWN
SHEET NO. 150 of 245	

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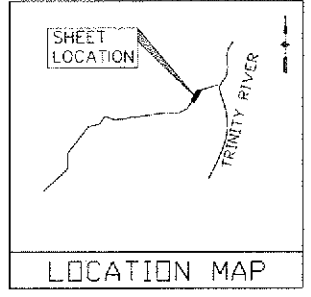


MATCHLINE STA. 2125+00

MATCHLINE STA. 2137+50



NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS



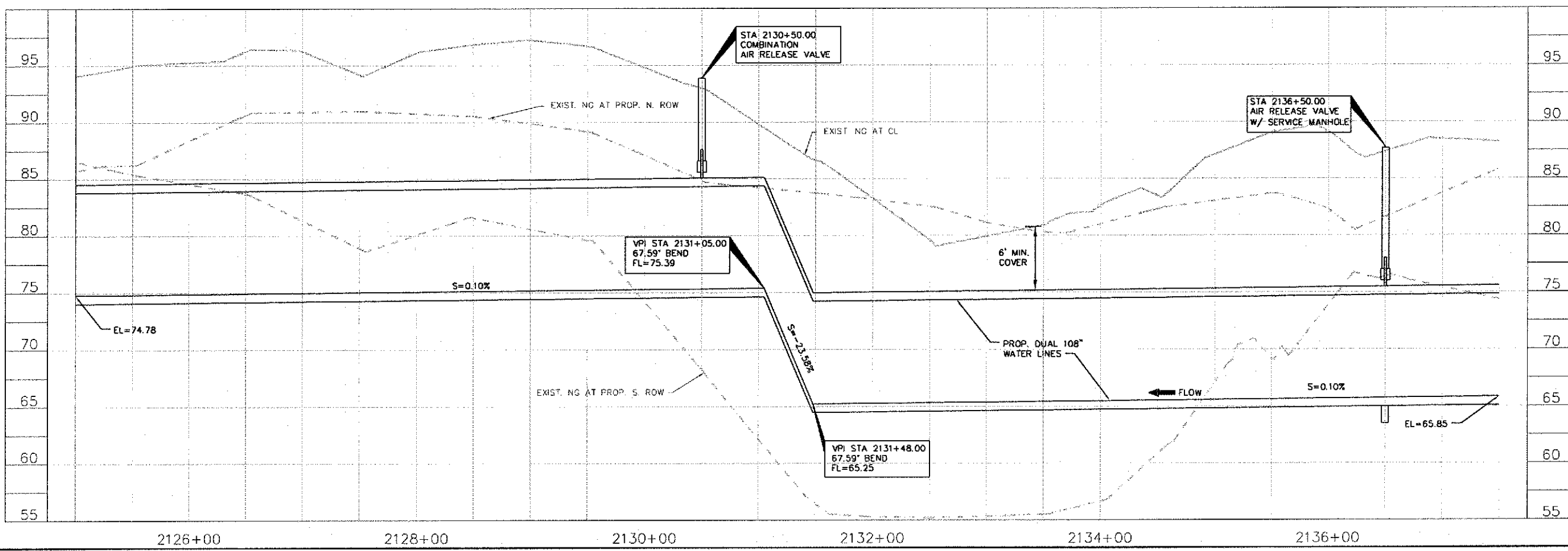
KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES



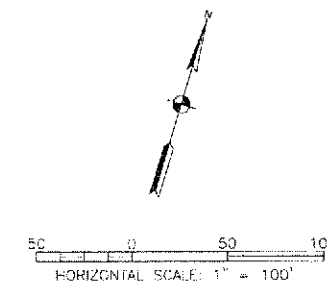
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FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PLAN &
PROFILE STA 2125+00
TO STA 2137+50

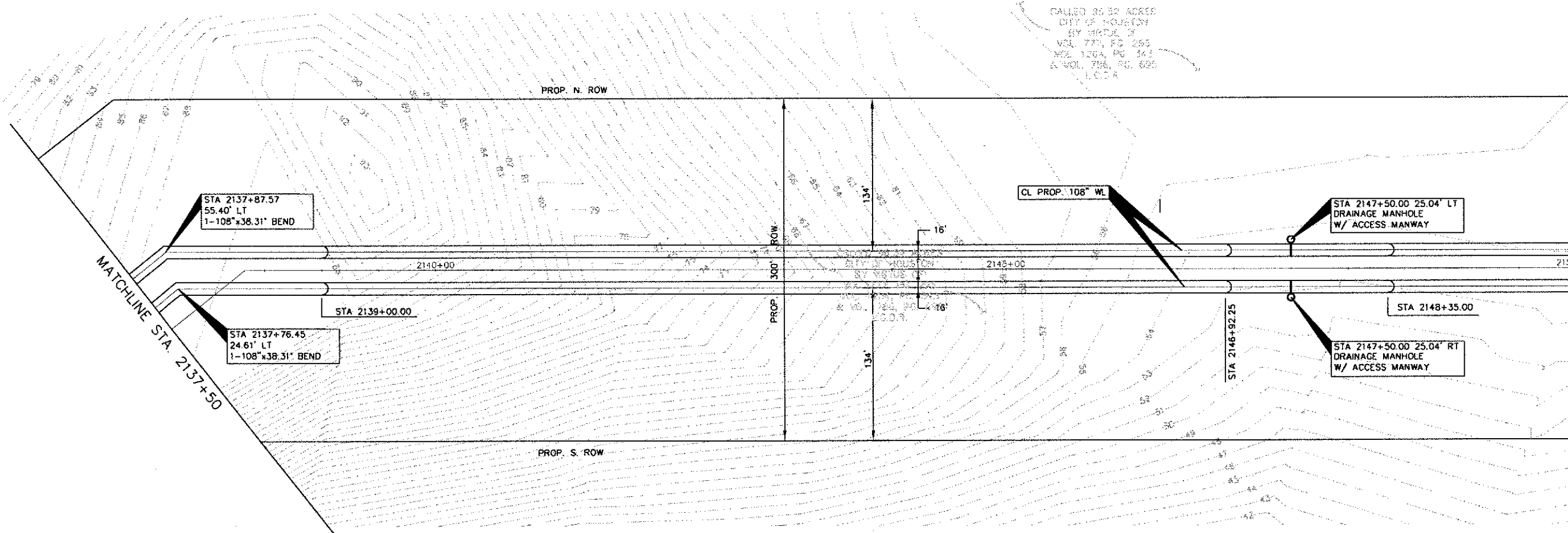
DRAWING SCALE	AS SHOWN
SHEET NO.	15 of 245



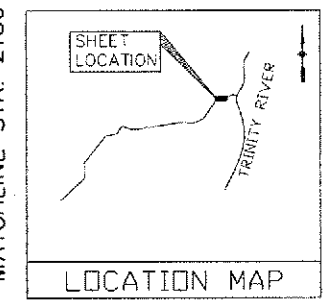
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CALLED AS 32 ACRES
 CITY OF HOUSTON
 BY M.K.D. OF
 VOL. 771, PG. 255
 VOL. 1204, PG. 141
 & VOL. 786, PG. 605
 L.C.D.R.



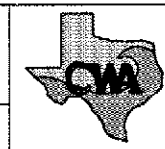
NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
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 AND TRANSIENT ANALYSIS



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AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



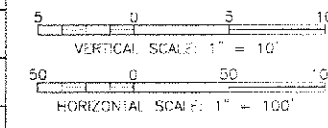
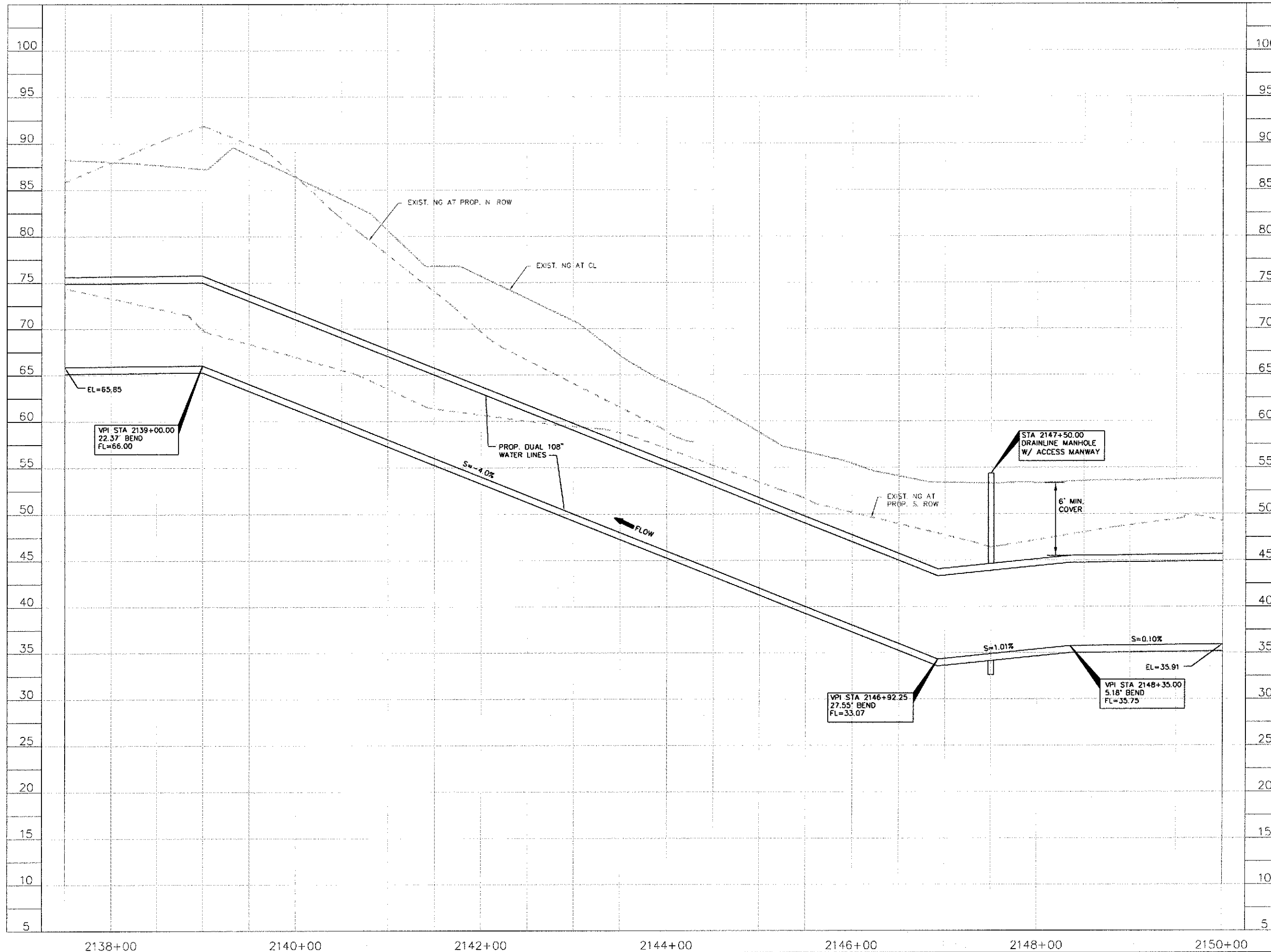
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 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PLAN STA
 2137+50 TO STA
 2150+00

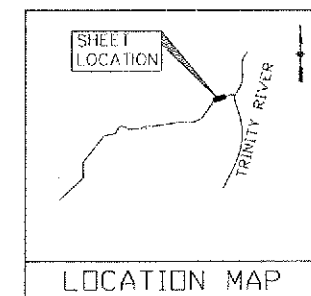
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SHEET NO.	152 OF 243

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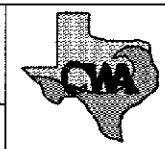
NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
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 AND TRANSIENT ANALYSIS



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AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057-1008
 WWW.AECOM.COM
 T&E REG. NO. 1-3280

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 Int.
 713.780.0838 Fax.



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 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE PROFILE STA
 2137+50 TO STA
 2150+00

DRAWING SCALE	AS SHOWN
SHEET NO. 153 OF 245	

MATCHLINE STA. 2150+00

ROW
300'
PROP.
134'

STA 2153+40.00 16.00' LT
12" COMBINATION AIR RELEASE
W/ SERVICE MANHOLE

STA 2153+50.00 16.00' LT
108" BUTTERFLY VALVE
W/ SERVICE MANHOLE

STA 2153+60.00 16.00' LT
SERVICE MANHOLE

STA 2057+15.12 10.60' RT
PROP FLUSHING HYDRANT

STA 2153+40.00 00.00' RT
6" AIR VENT PIPE
W/ BOLLARD

CL PROP. 108" WL

CALLED 95.52 ACRES
CITY OF HOUSTON
BY ORDER OF
108 171-40-233
400 1204, 015 143
A VOL. 789, PG. 205
1-1-2004

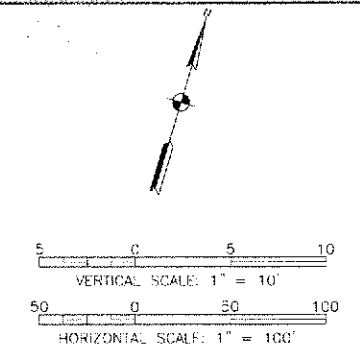
STA 2153+40.00 16.00' RT
12" COMBINATION AIR RELEASE
W/ SERVICE MANHOLE

STA 2057+15.12 69.40' RT
PROP FLUSHING HYDRANT

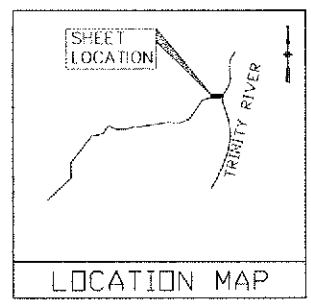
STA 2153+60.00 16.00' RT
SERVICE MANHOLE

STA 2153+50.00 16.00' RT
108" BUTTERFLY VALVE
W/ SERVICE MANHOLE

PROP. S. ROW



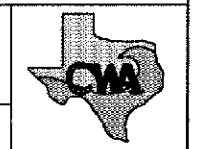
NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
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AND TRANSIENT ANALYSIS



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AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 (ext. 713.780.0838 fax)

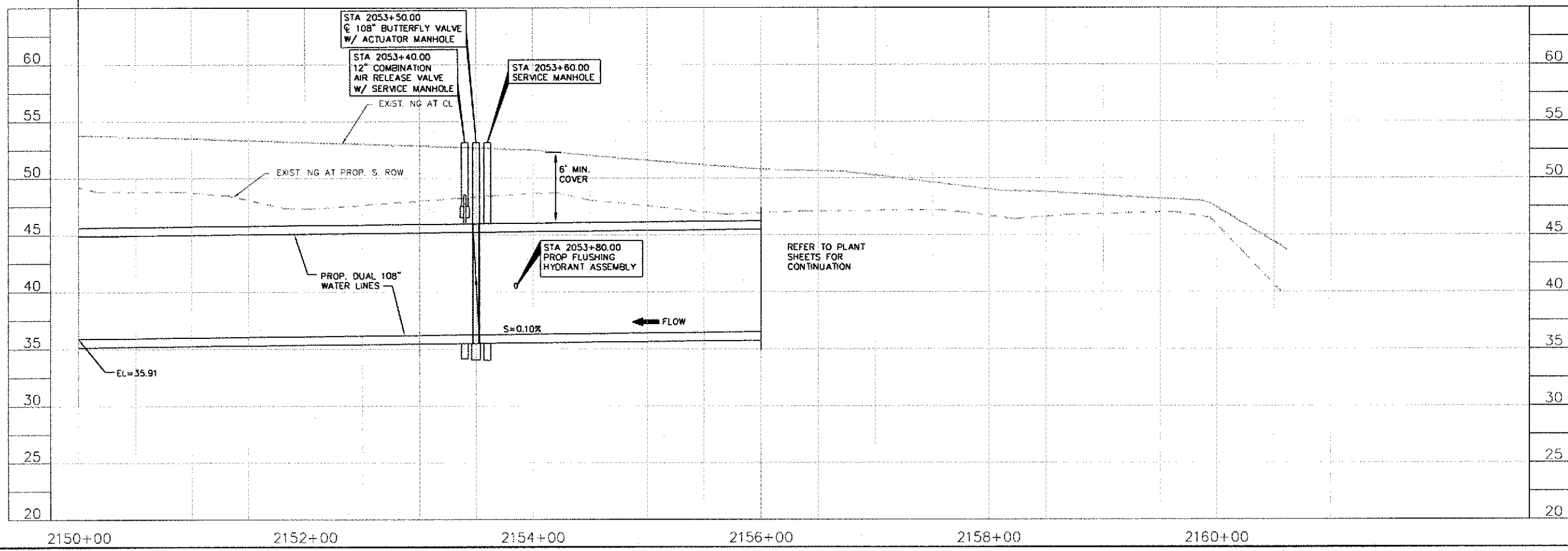


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FB NO.

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LUCE BAYOU INTERBASIN TRANSFER PROJECT

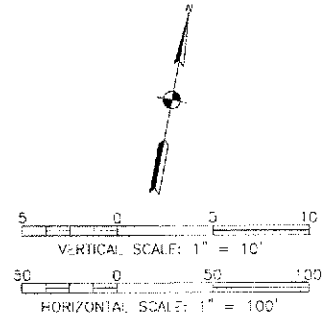
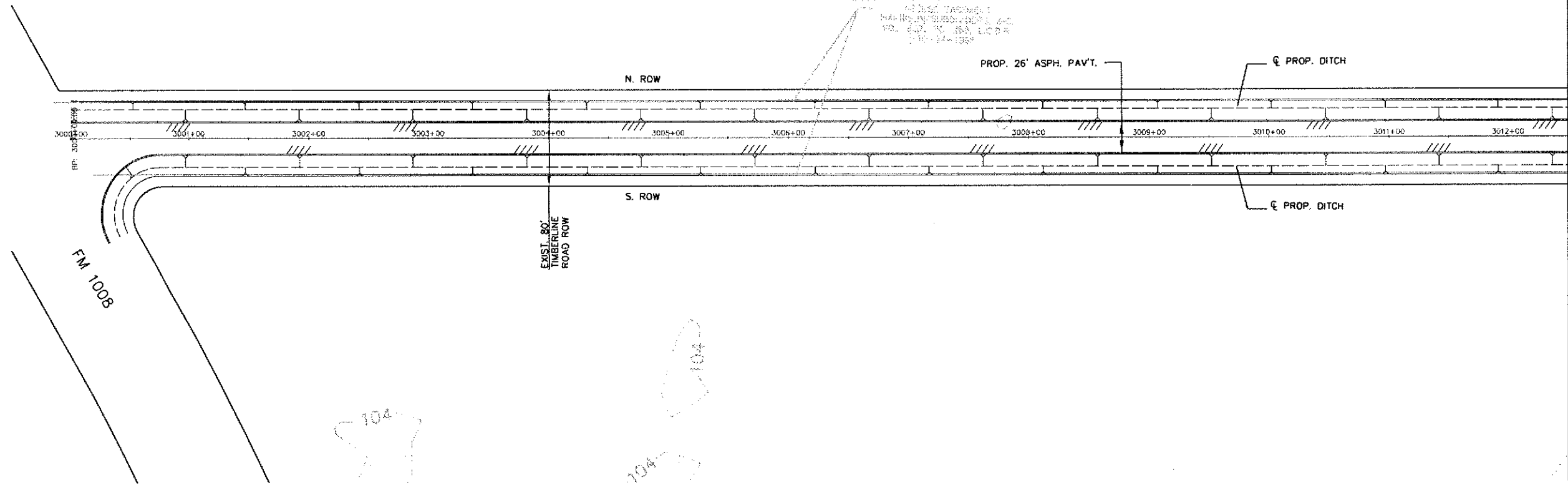
PIPELINE PLAN &
PROFILE STA 2150+00
TO PUMP STATION

DRAWING SCALE	AS SHOWN
SHEET NO.	154 of 245



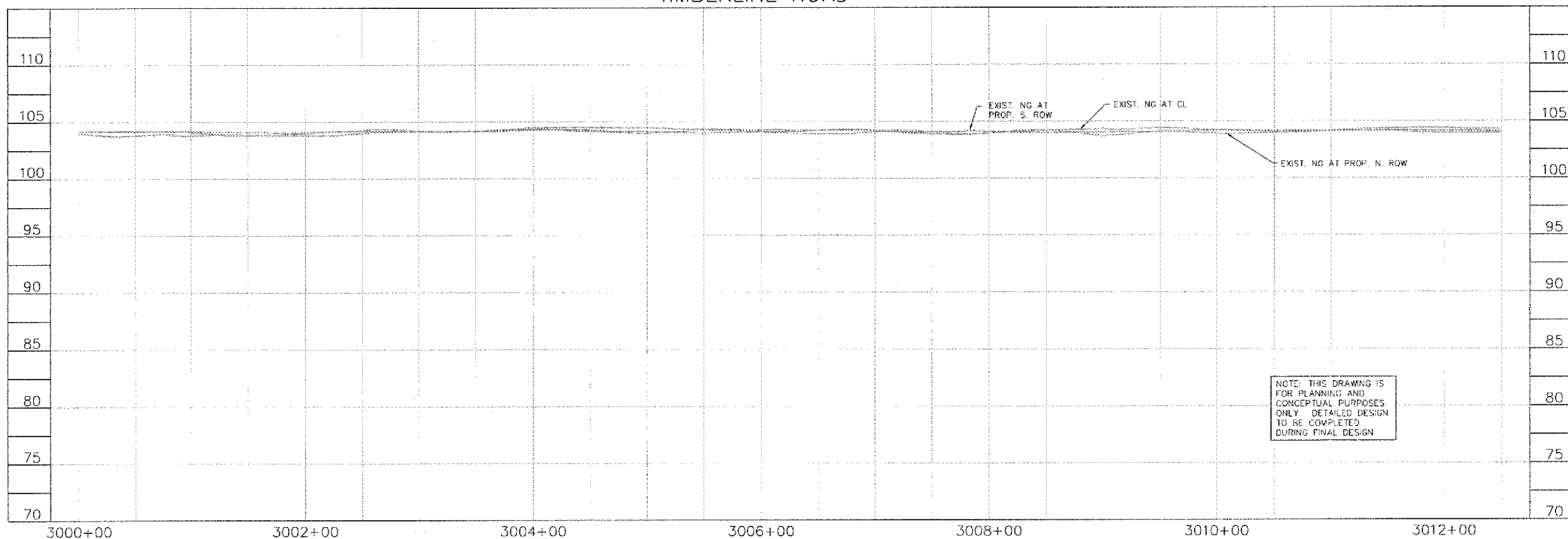
REFER TO PLANT
SHEETS FOR
CONTINUATION

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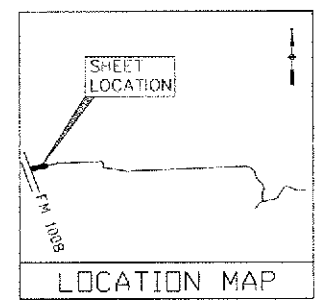


MATCHLINE STA. 3012+50

TIMBERLINE ROAD




NOTE: THIS DRAWING IS FOR PLANNING AND CONCEPTUAL PURPOSES ONLY. DETAILED DESIGN TO BE COMPLETED DURING FINAL DESIGN.



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TEXAS REGISTRATION NO. 91031
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AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax
www.aecom.com
TEPE REG. NO. P-3590

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

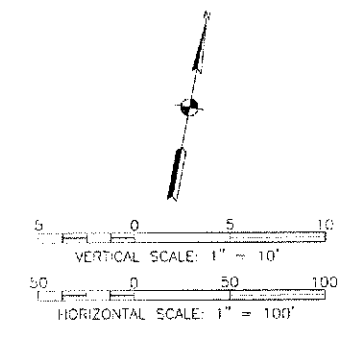
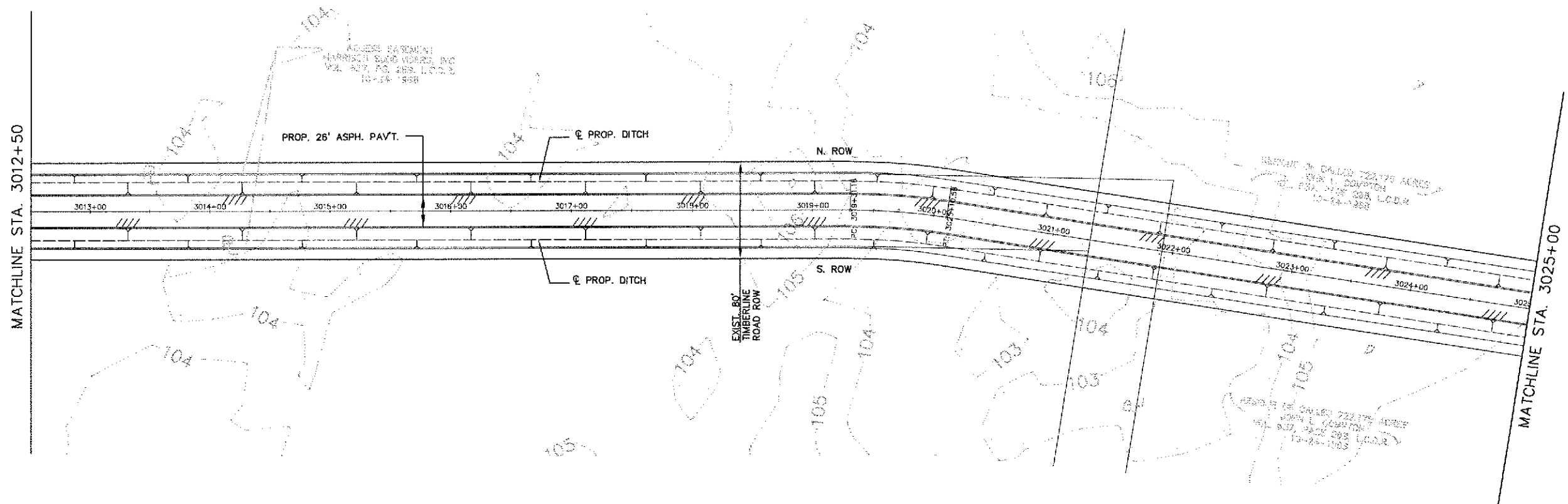


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCÉ BAYOU INTERBASIN TRANSFER PROJECT

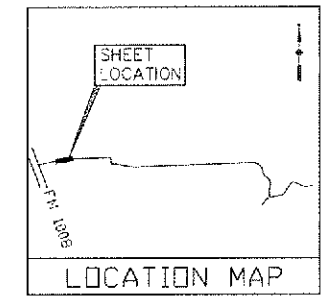
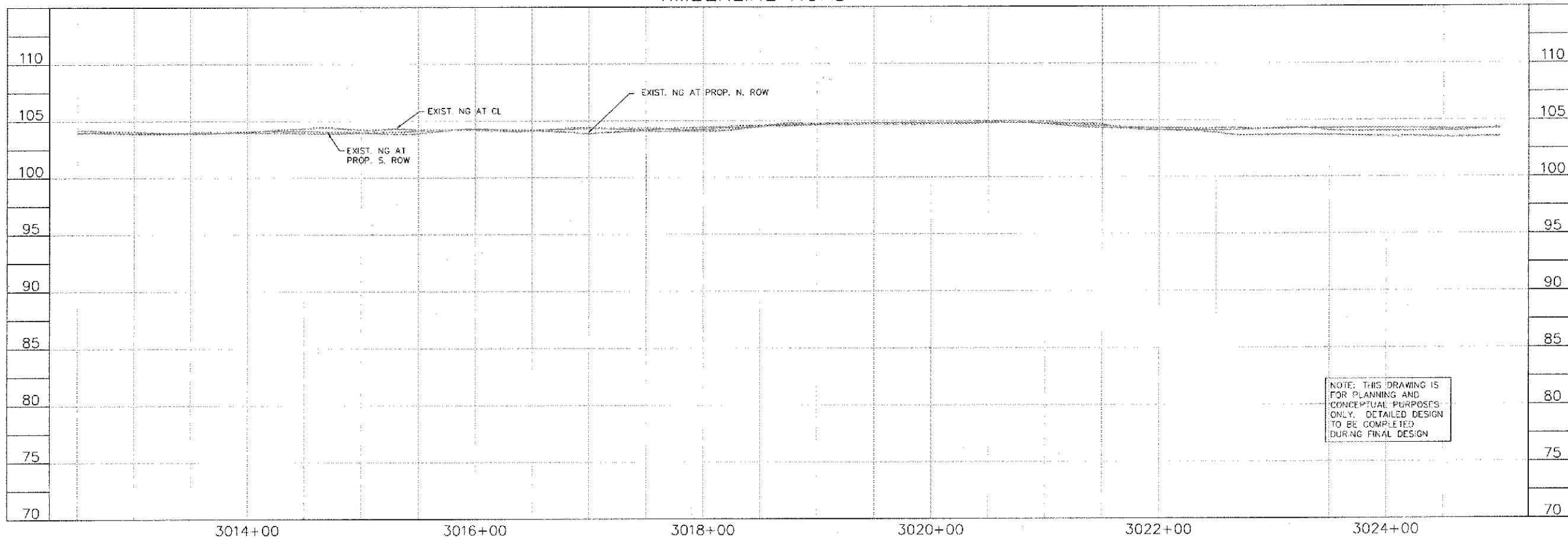
ACCESS ROAD PLAN &
PROFILE STA 3000+00
TO STA 3012+50

DRAWING SCALE	AS SHOWN
SHEET NO. 155 of 245	

LAST MODIFIED: Jan 27, 2011 - 9:01am BY USER: ThomasonBI
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DWG. NAME: ART1221.dwg



TIMBERLINE ROAD



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AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax
 www.aecom.com
 TSP REG. NO. F-3580

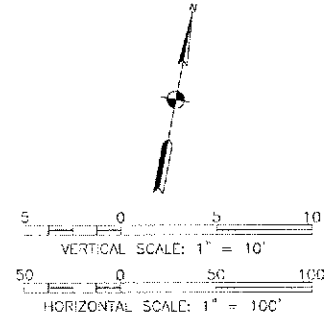
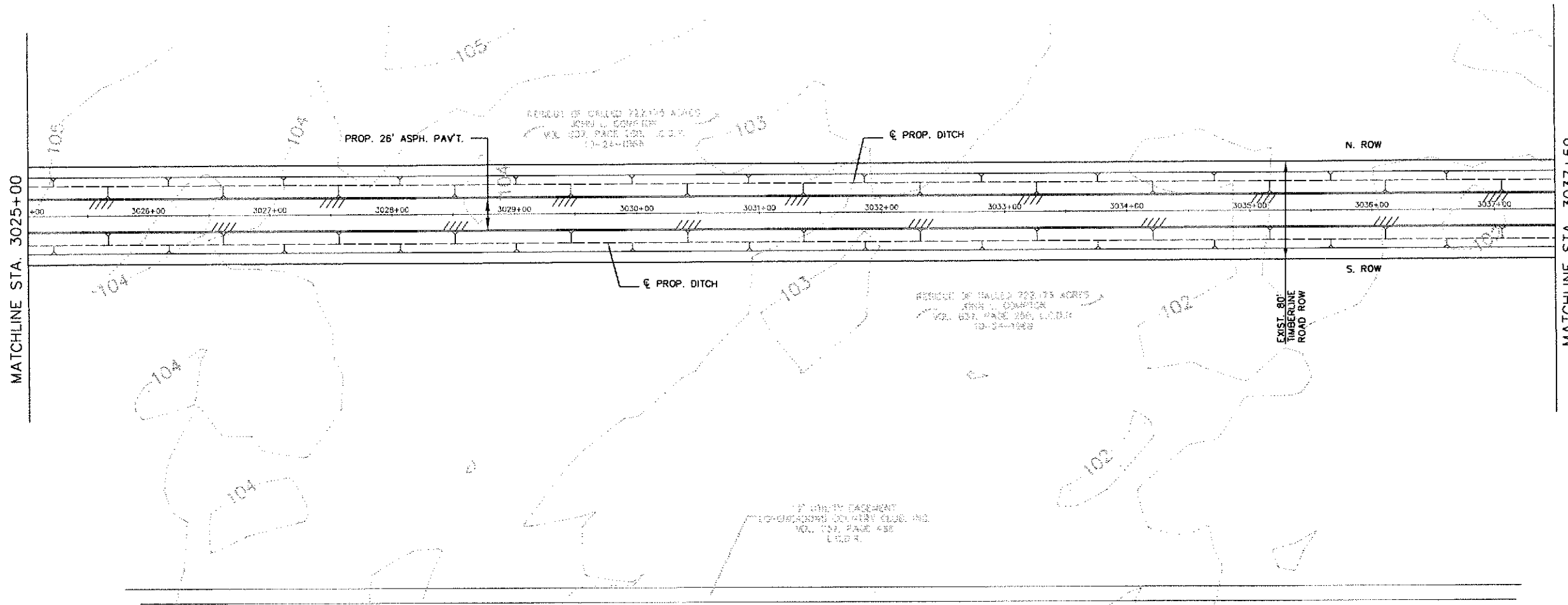
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COASTAL WATER AUTHORITY

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

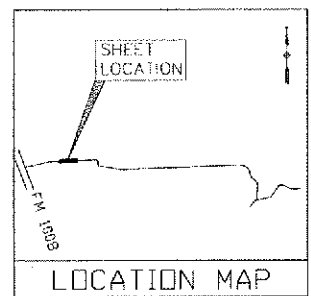
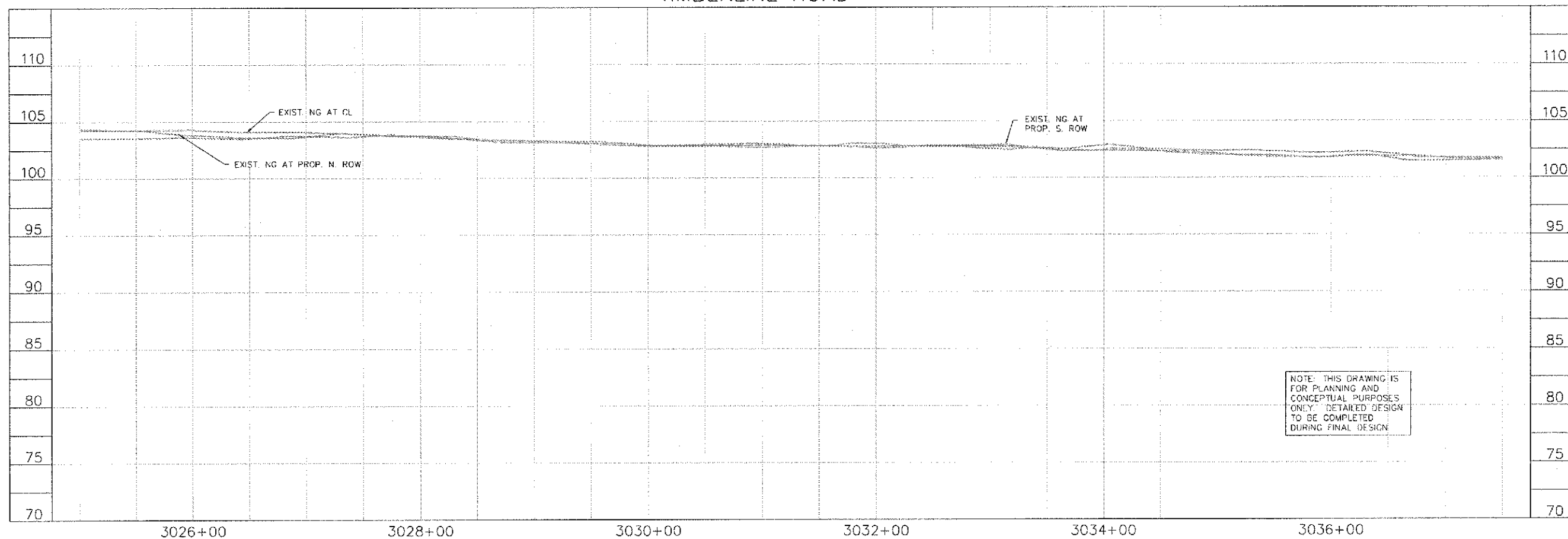
ACCESS ROAD PLAN &
 PROFILE STA 3012+50
 TO STA 3025+00

DRAWING SCALE	AS SHOWN
SHEET NO. 156 OF 245	

LAST MODIFIED: Jan 27, 2011 - 5:01pm BY USER: ThompsonB
 DWG LOCATION: G:\Work Order 6\4.0 ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cadd\PMO\Streets\ DWG. NAME: ART1P&P2.dwg



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 713.780.4100 tel.
 713.780.0838 fax

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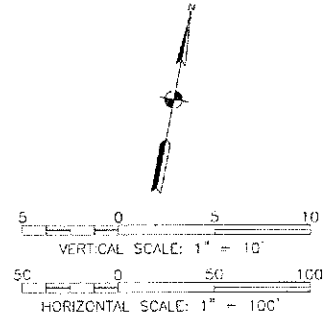
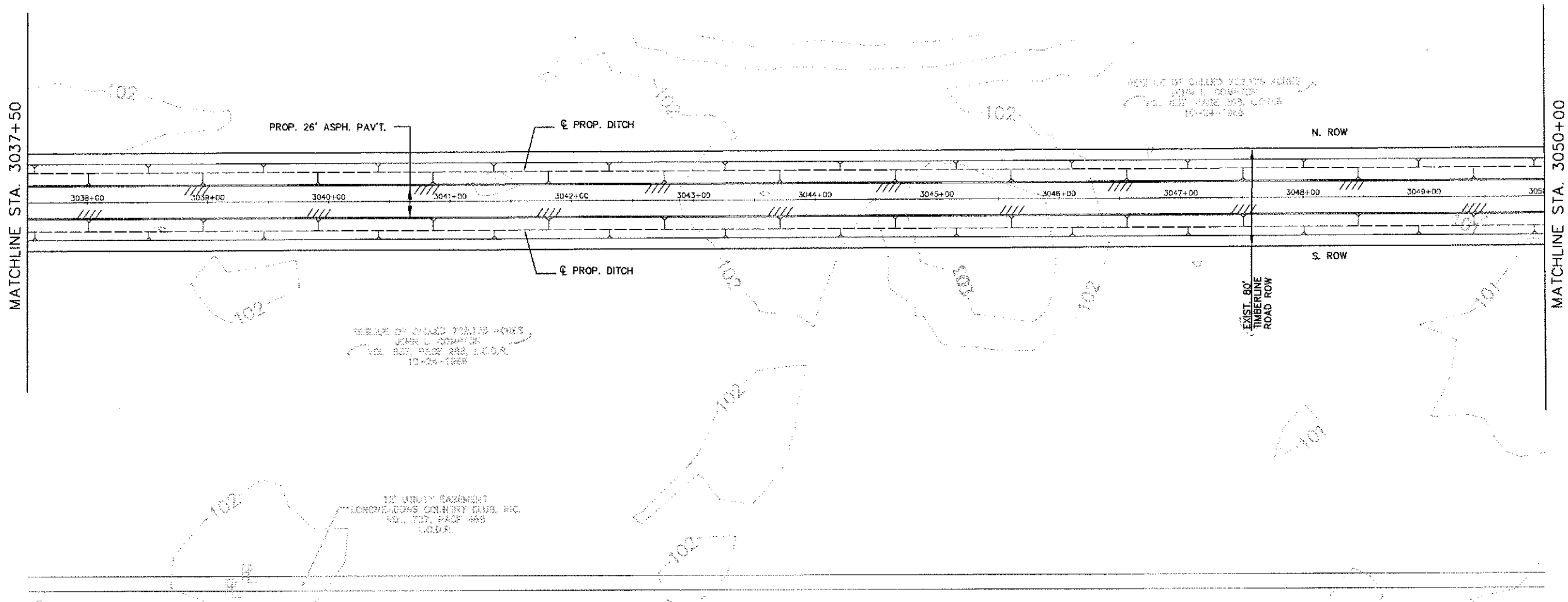
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DRAWING SCALE
 AS SHOWN

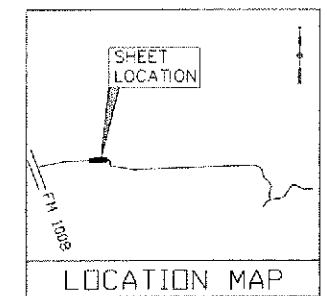
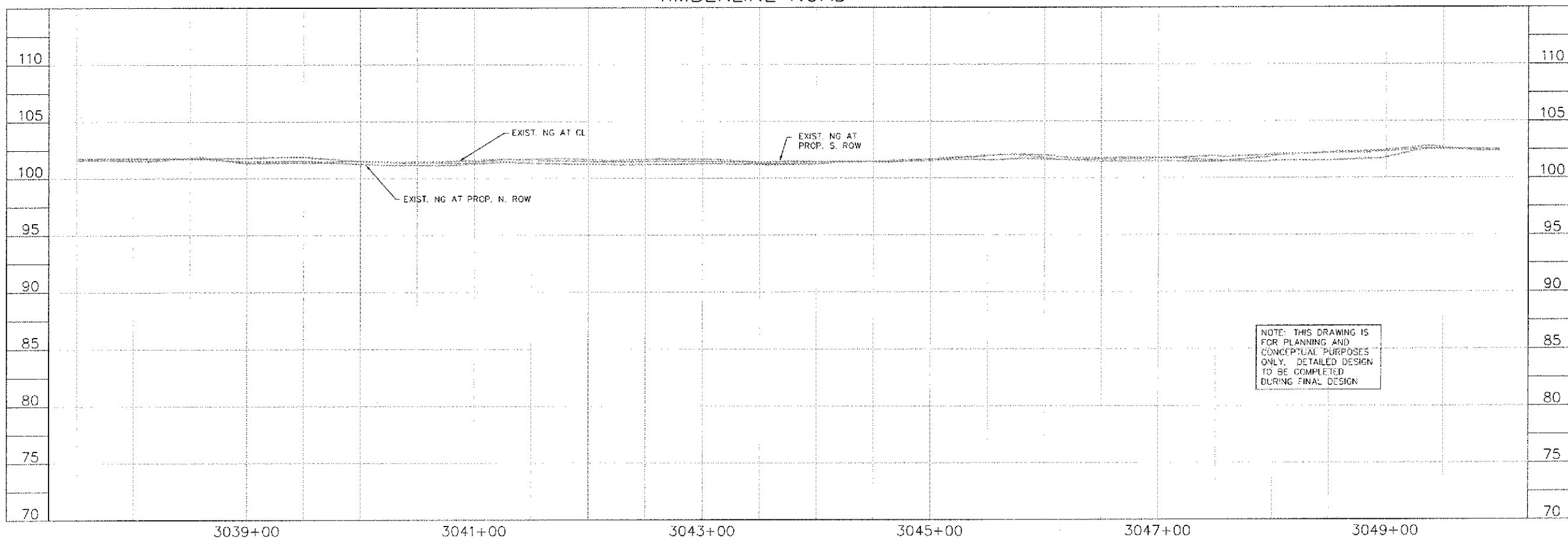
SHEET NO. 157 of 248

NOTE: THIS DRAWING IS FOR PLANNING AND CONCEPTUAL PURPOSES ONLY. DETAILED DESIGN TO BE COMPLETED DURING FINAL DESIGN.

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AECOM TECHNICAL SERVICES, INC.
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HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

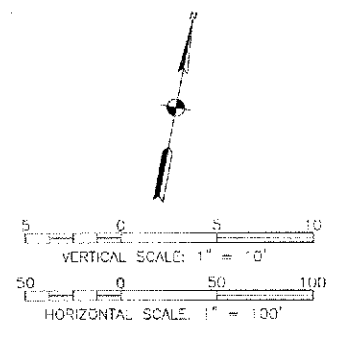
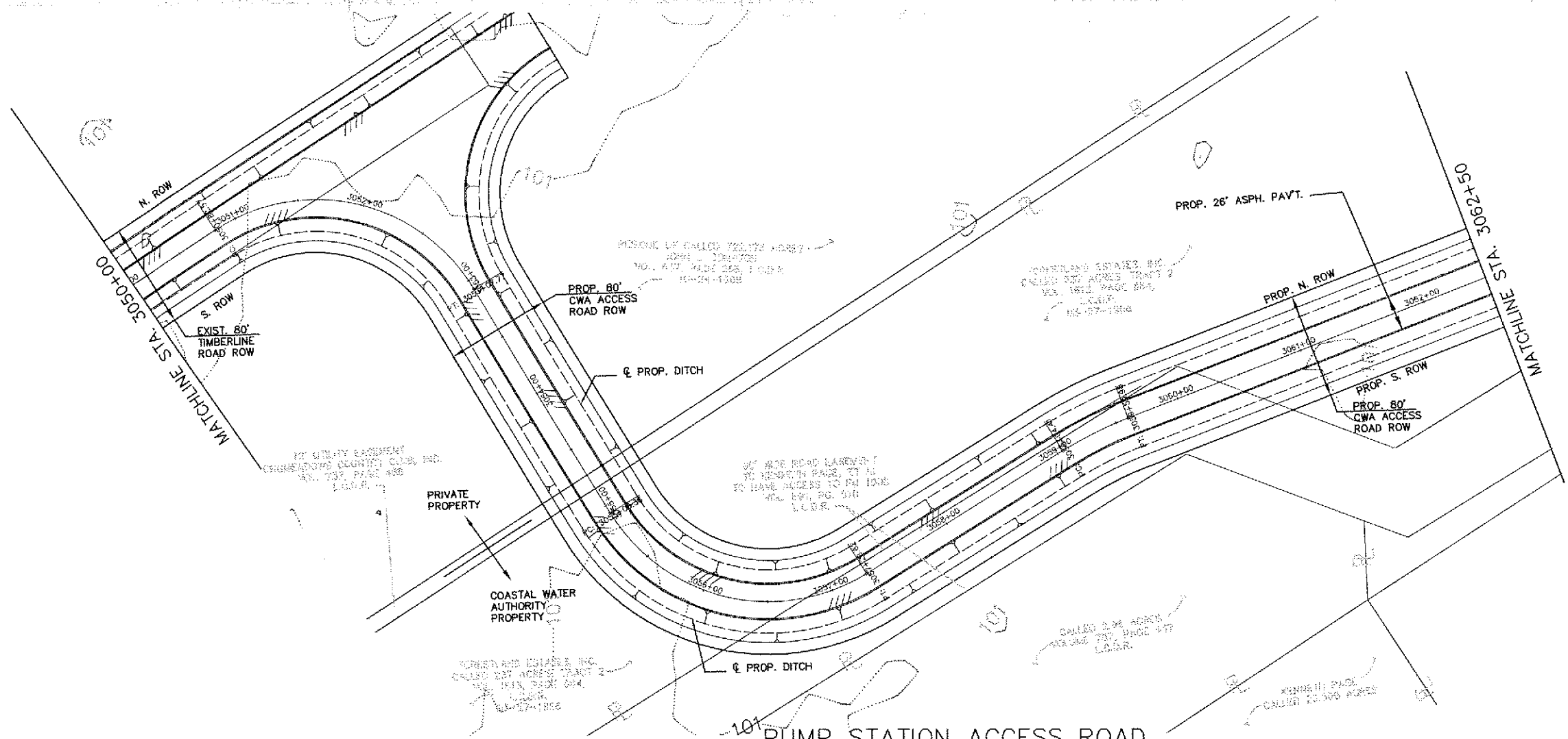
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COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

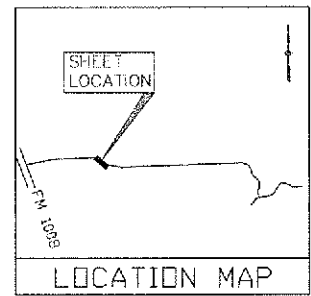
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TO STA 3050+00

DRAWING SCALE	AS SHOWN
SHEET NO.	158 OF 295

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AECOM AECOM TECHNICAL SERVICES, INC.
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HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

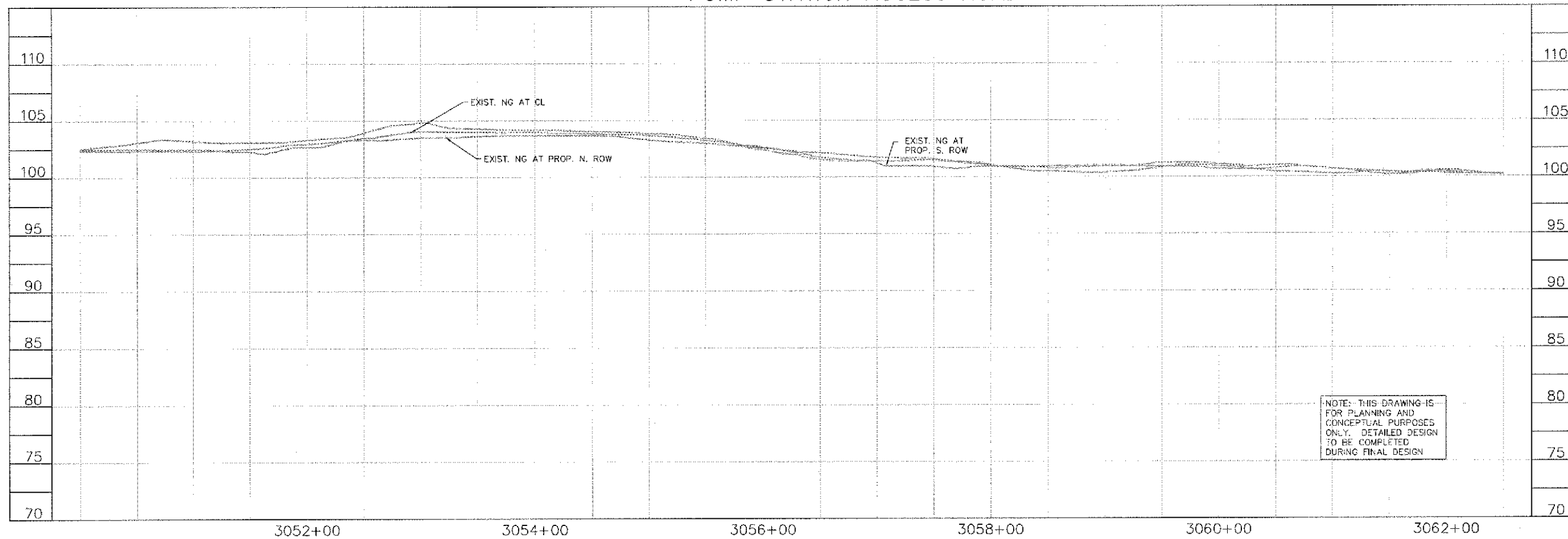


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD PLAN &
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TO STA 3062+50

DRAWING SCALE
AS SHOWN

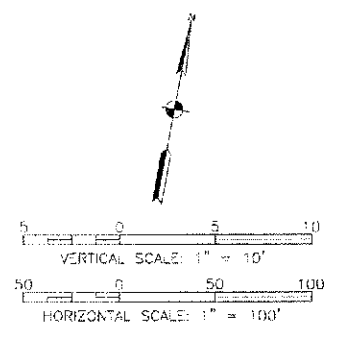
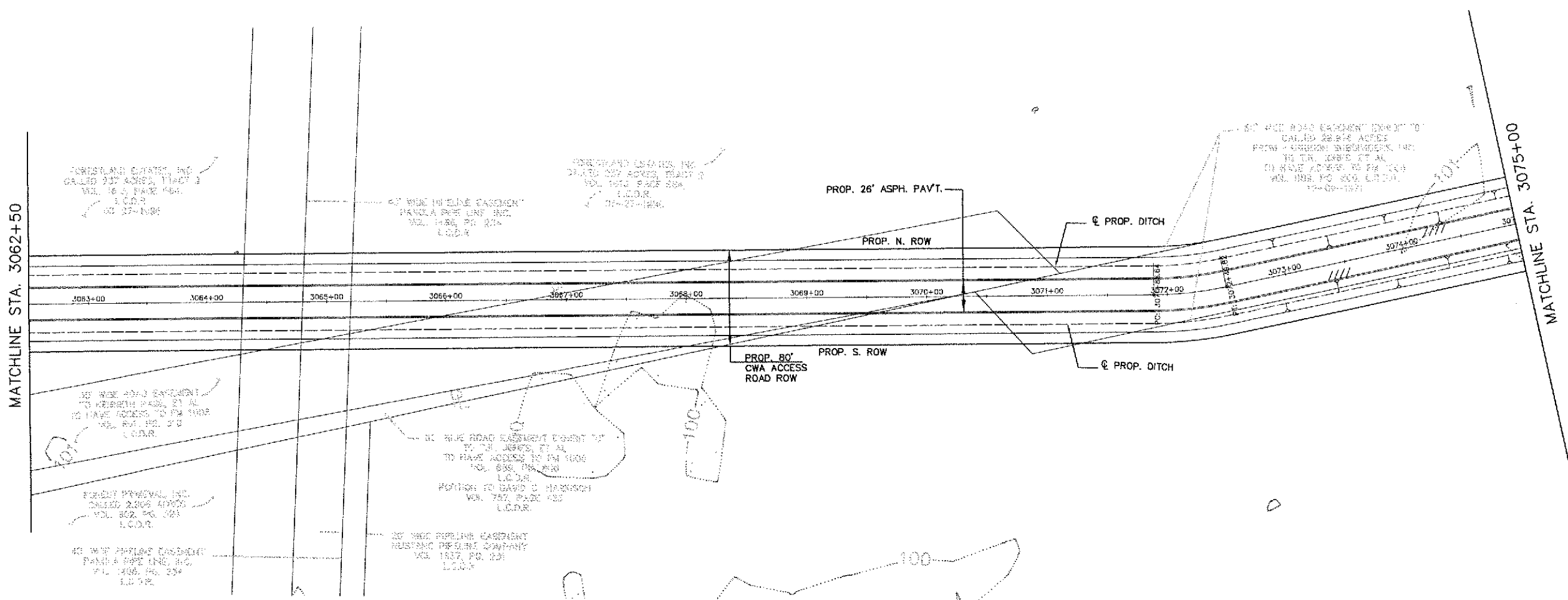
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NOTE: THIS DRAWING IS FOR PLANNING AND CONCEPTUAL PURPOSES ONLY. DETAILED DESIGN TO BE COMPLETED DURING FINAL DESIGN.

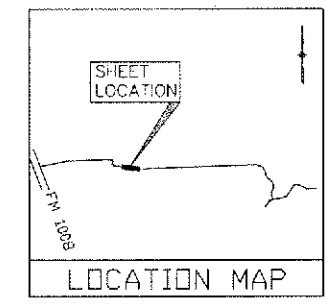
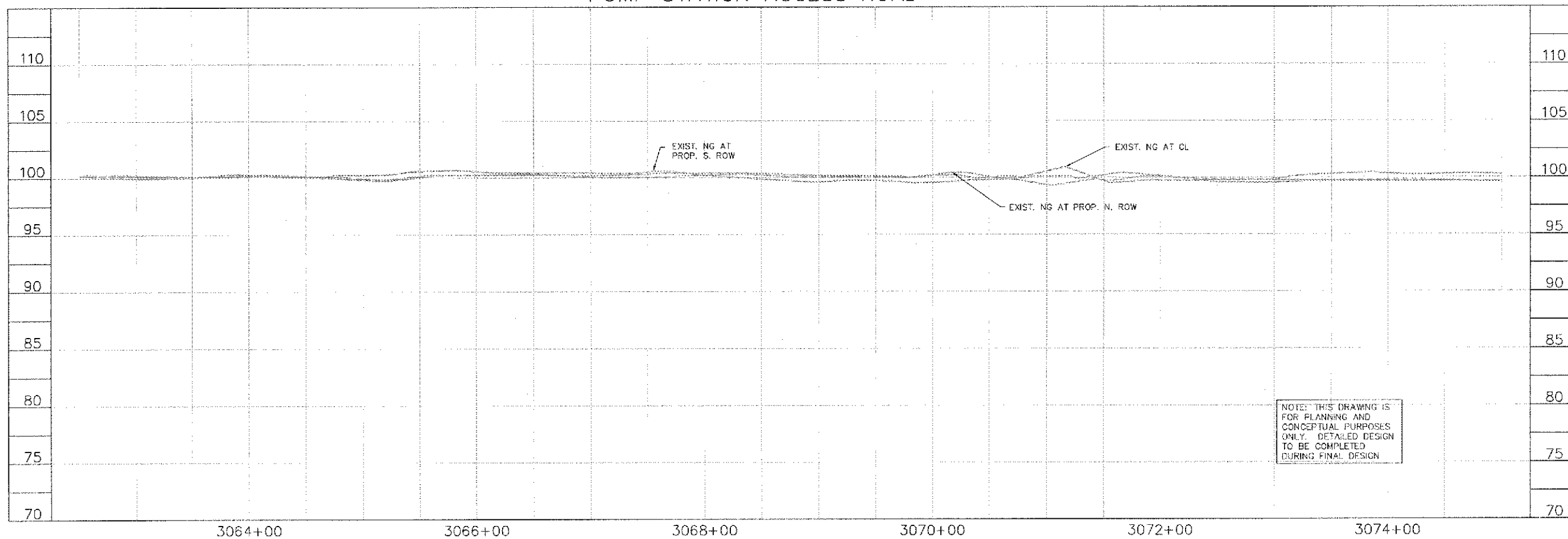
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NOTE: SURVEY FIELD NOTES SHOWN FOR REFERENCE PURPOSES ONLY. THE COASTAL WATER AUTHORITY IS THE UNDERLYING FEE OWNER.

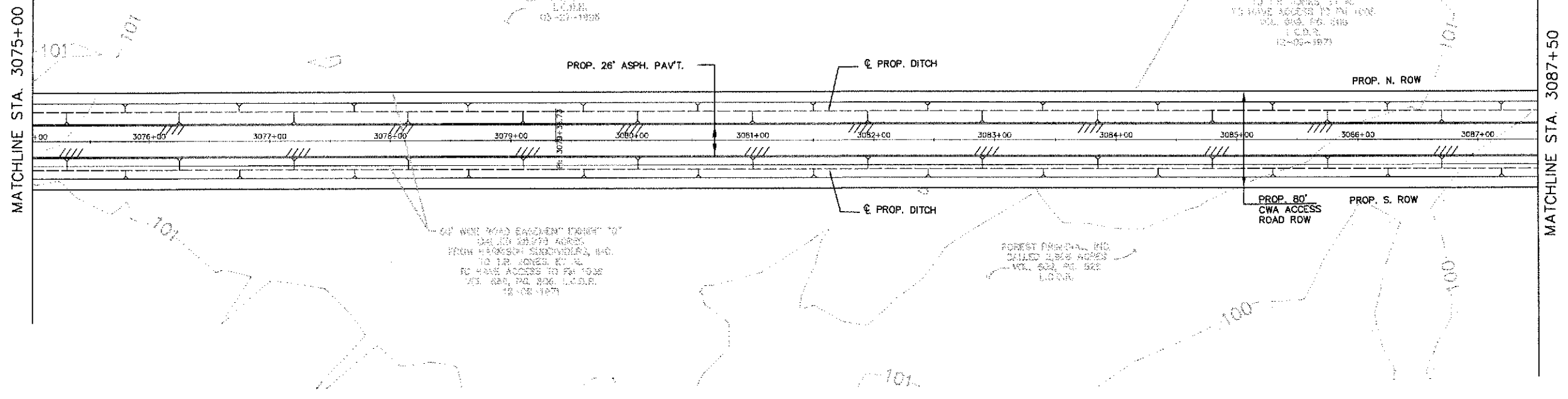
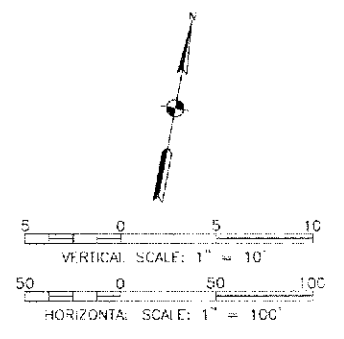
PUMP STATION ACCESS ROAD



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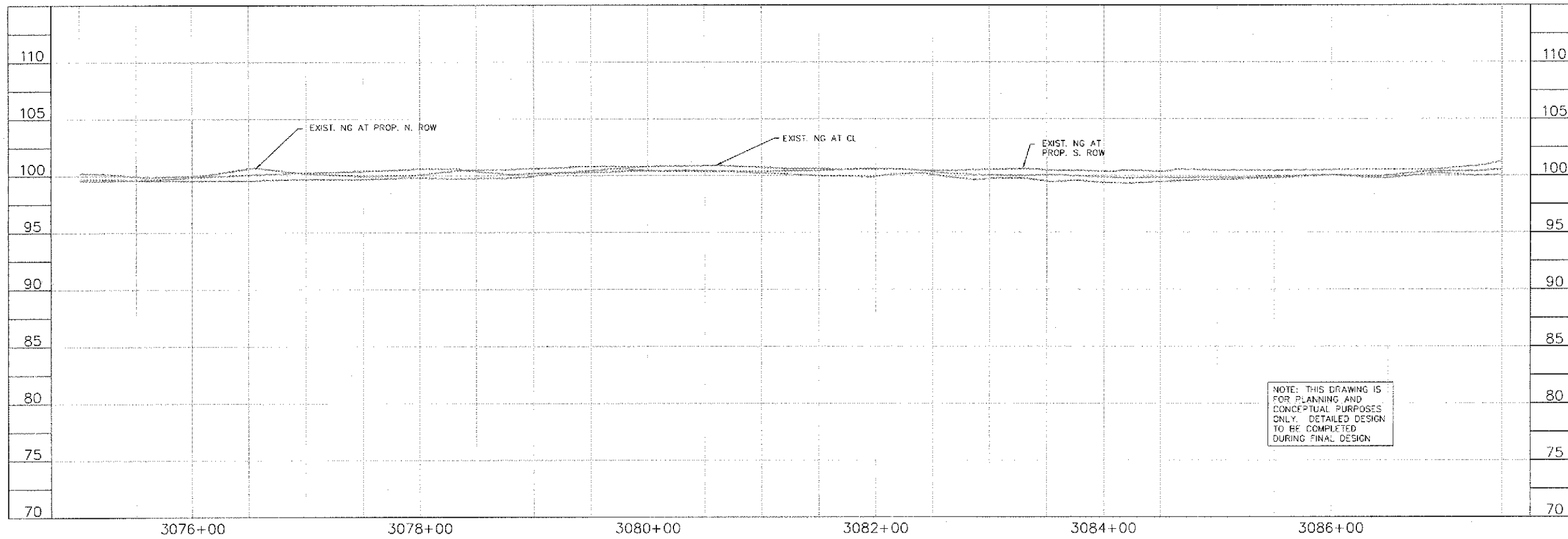
AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.	
SURVEYED BY: FB NO.	
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT	
ACCESS ROAD PLAN & PROFILE STA 3062+50 TO STA 3075+00	
DRAWING SCALE AS SHOWN	
SHEET NO. 160 OF 245	

NOTE: THIS DRAWING IS FOR PLANNING AND CONCEPTUAL PURPOSES ONLY. DETAILED DESIGN TO BE COMPLETED DURING FINAL DESIGN

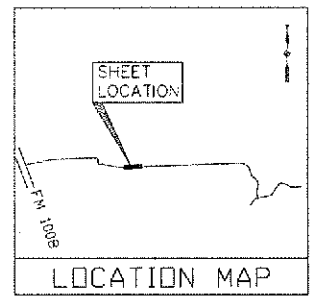


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PUMP STATION ACCESS ROAD



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AECOM
AECOM TECHNICAL SERVICES, INC.
5107 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057-1599
WWW.AECOM.COM
TYPE REG. NO. 7-1580

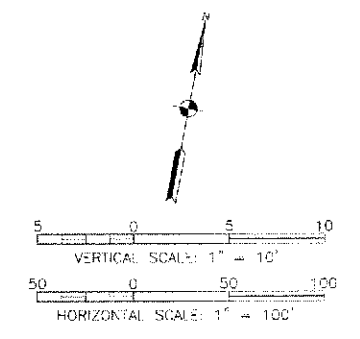
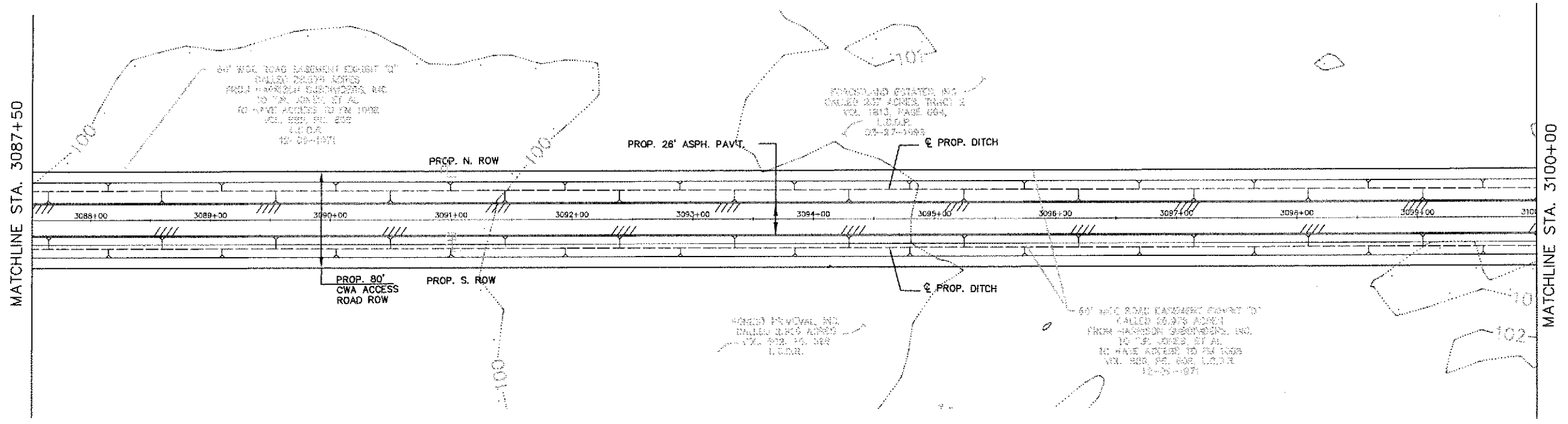
AECOM
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HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

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FB NO.
COASTAL WATER AUTHORITY
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ACCESS ROAD PLAN &
PROFILE STA 3075+00
TO STA 3087+50

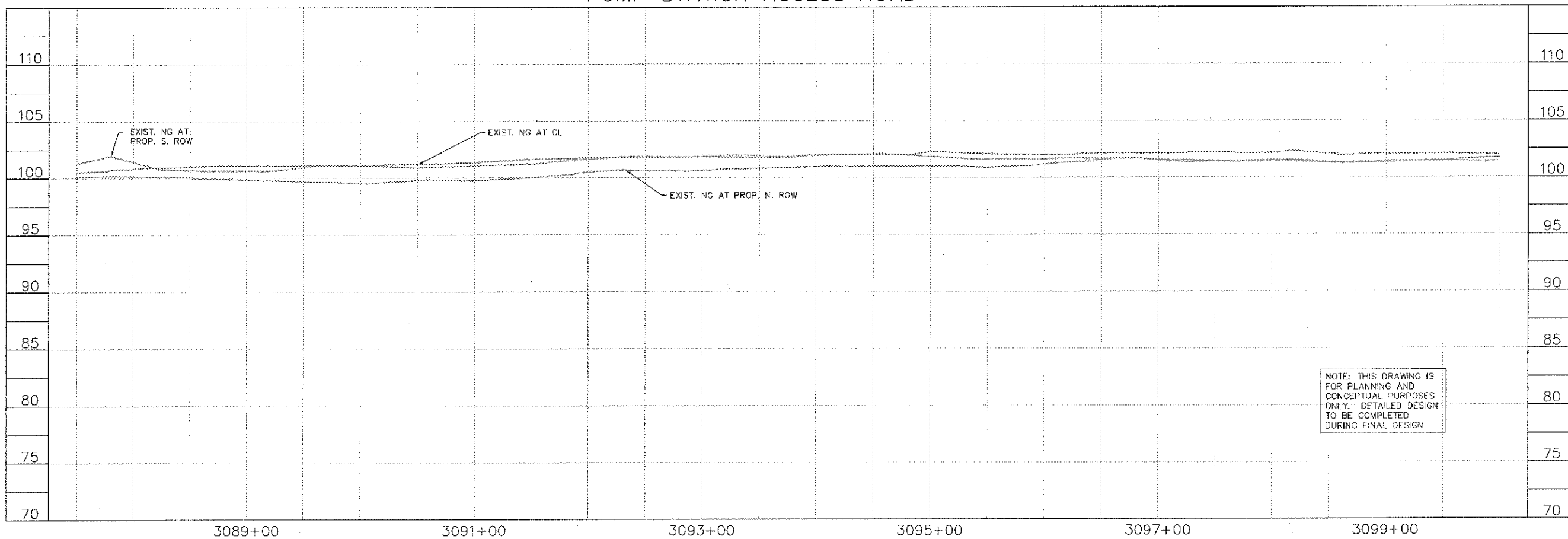
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SHEET NO. 161 of 245	

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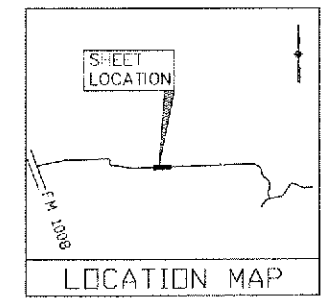


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HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

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COASTAL WATER AUTHORITY
LULIE BAYOU INTERBASIN TRANSFER PROJECT

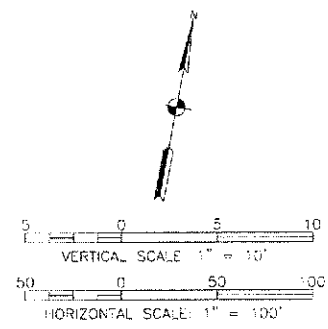
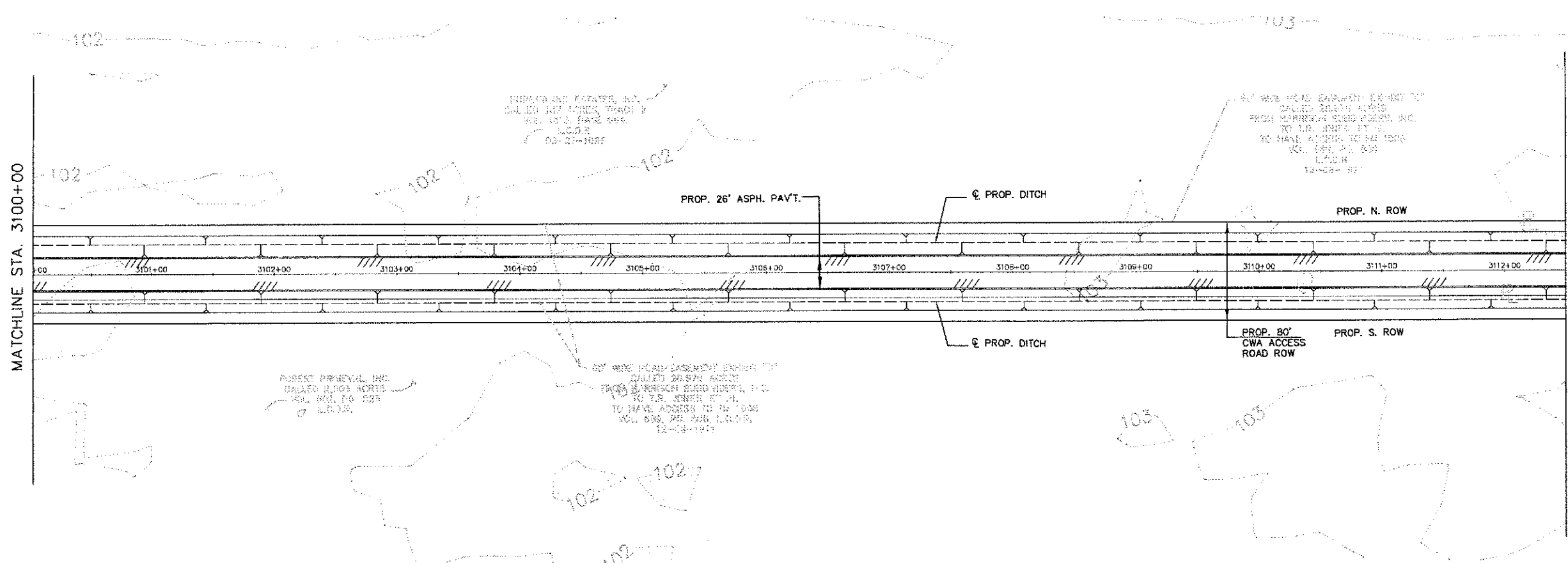
ACCESS ROAD PLAN &
PROFILE STA 3087+50
TO STA 3100+00

DRAWING SCALE	AS SHOWN
SHEET NO. 12 OF 245	

LAST MODIFIED: Jan 27, 2011 - 5:06pm BY USER: ThompasoB
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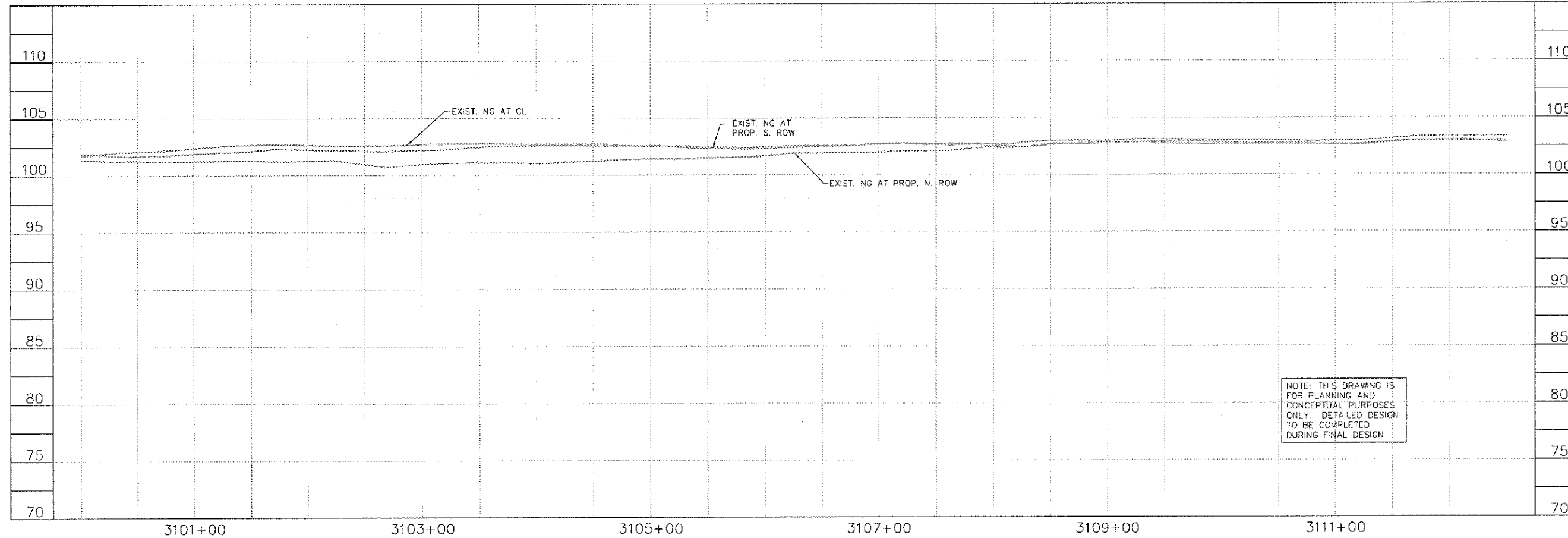
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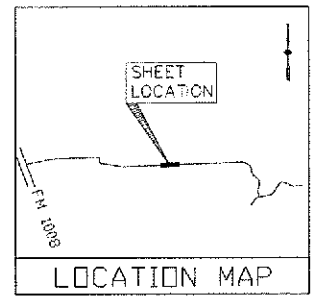


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HOUSTON, TEXAS 77057
713.780.4100 Int.
713.780.0838 Fax.



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FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD PLAN &
PROFILE STA 3100+00
TO STA 3112+50

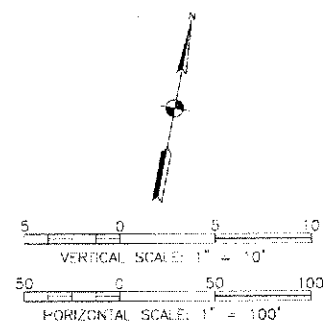
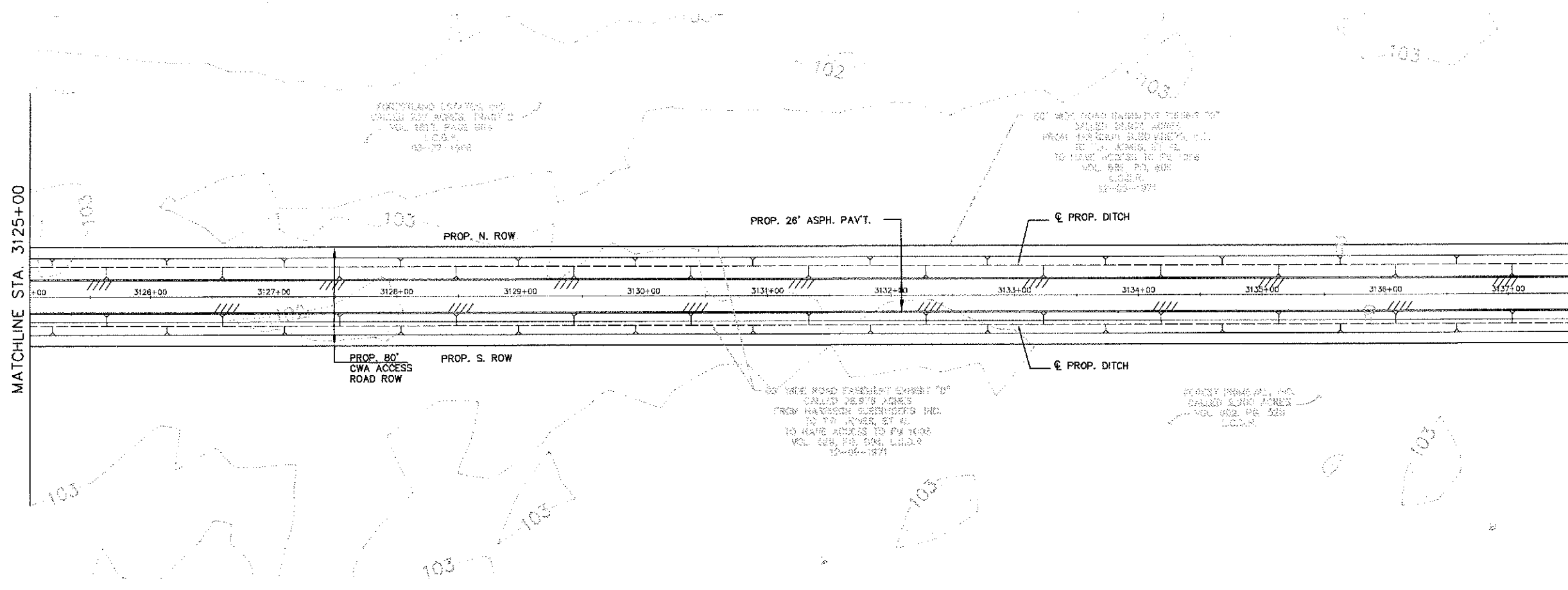
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AS SHOWN

SHEET NO. 163 of 245

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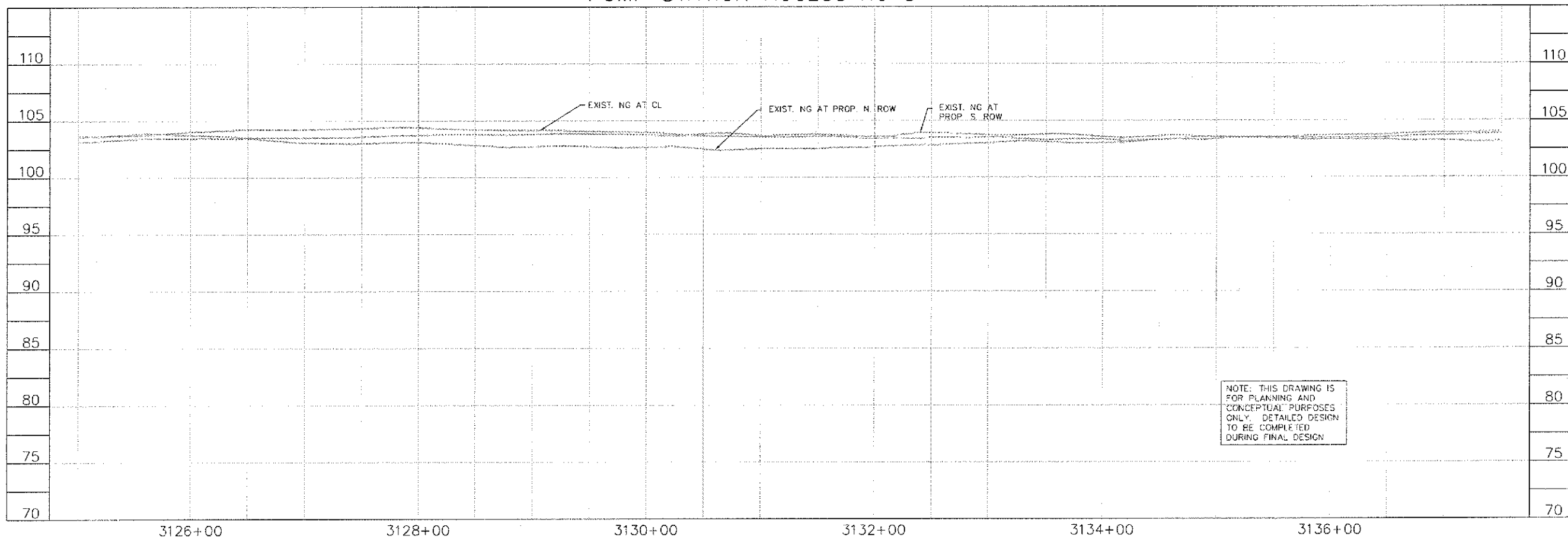
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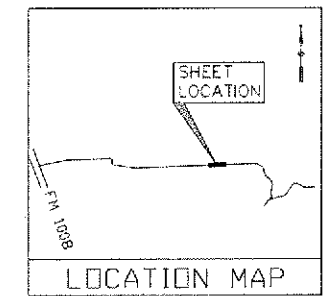


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ACCESS ROAD PLAN &
PROFILE STA 3112+50
TO STA 3125+00

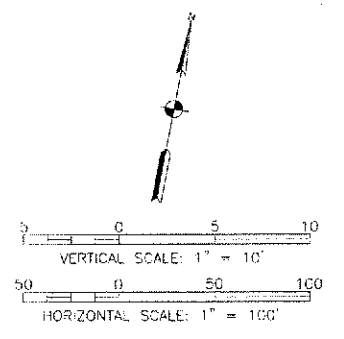
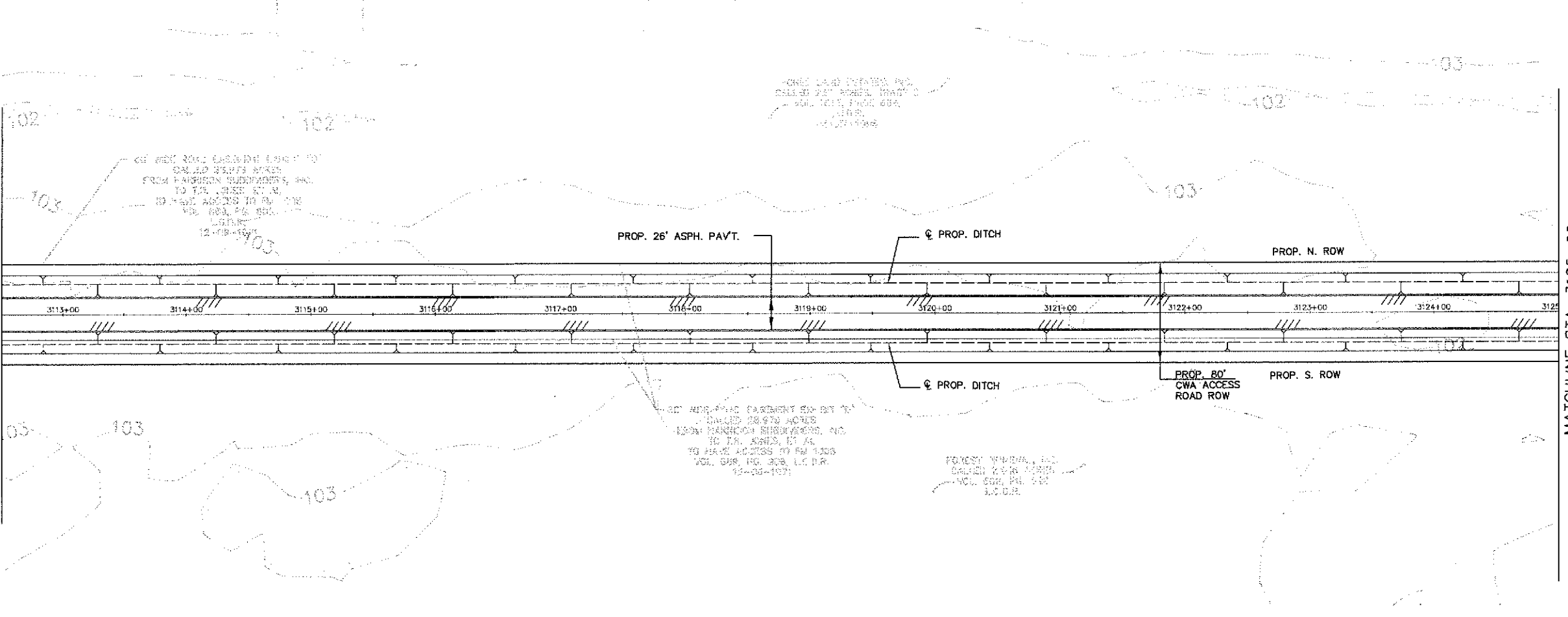
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AS SHOWN

SHEET NO. 169 of 245

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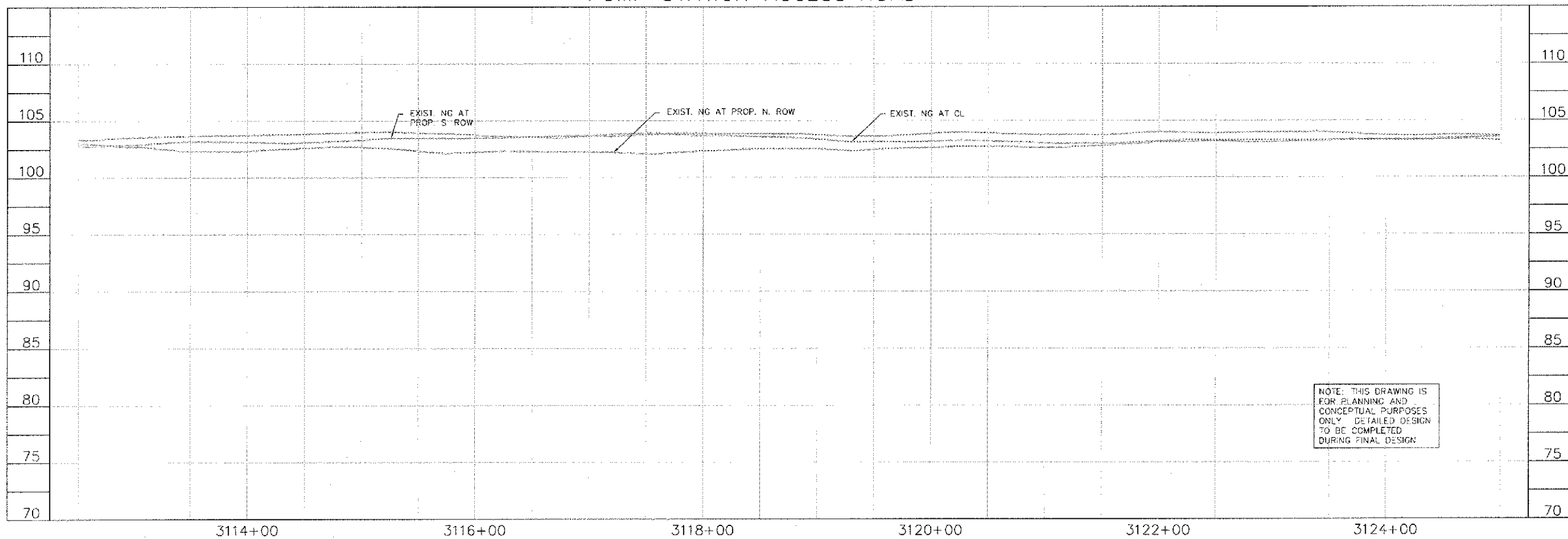
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MATCHLINE STA. 3125+00

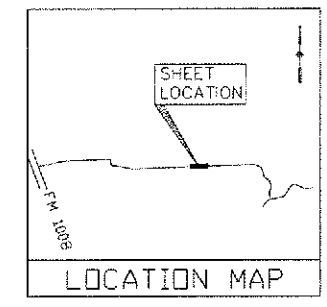


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PUMP STATION ACCESS ROAD



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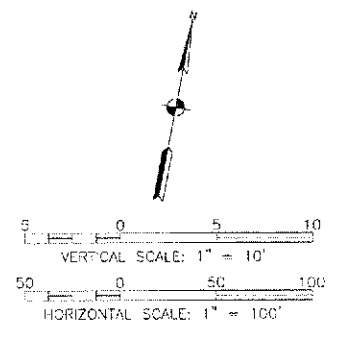
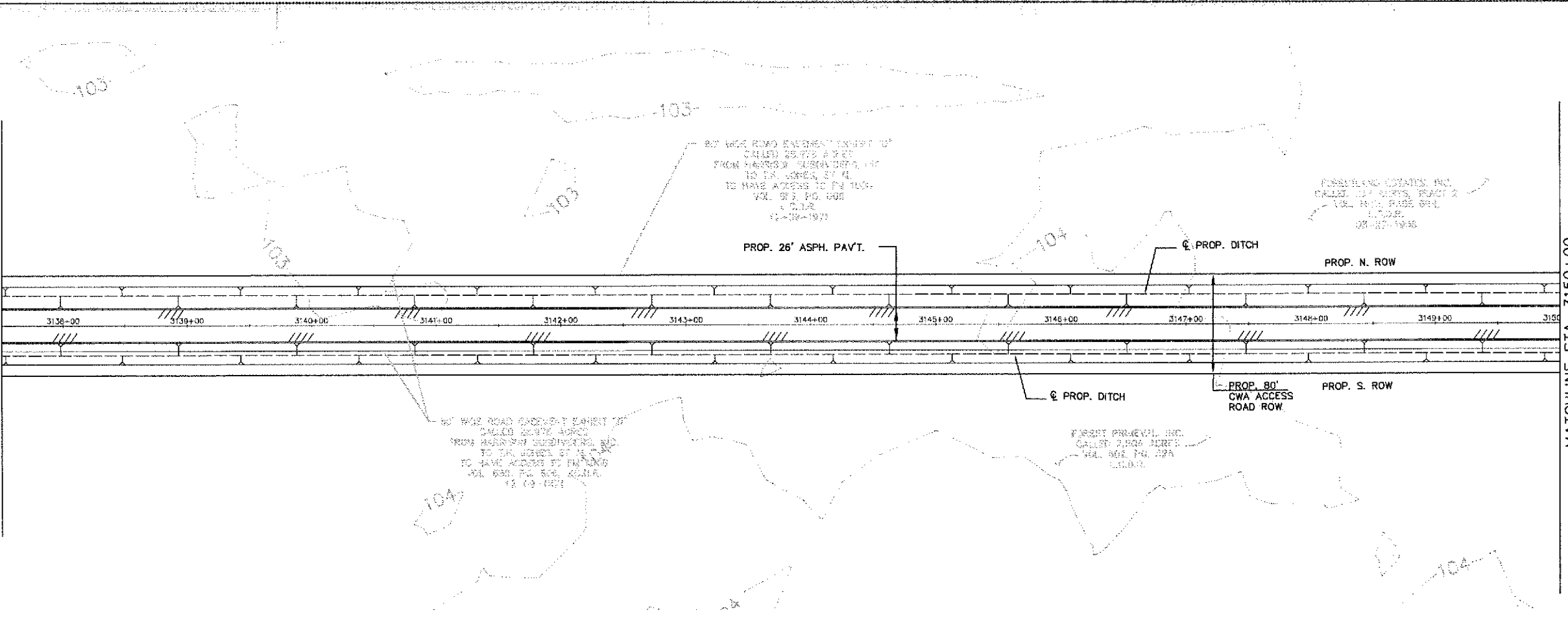
KEVIN R. KRAHN, P.E.
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<small>AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 101 WEST HOUSTON, TEXAS 77057-1058 WWW.AECOM.COM 713.780.4100 713.780.0838 fax</small>	
SURVEYED BY: FB NO.	
COASTAL WATER AUTHORITY LUCIE BAYOU INTERBASIN TRANSFER PROJECT	
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DRAWING SCALE AS SHOWN	
SHEET NO. 165 OF 245	

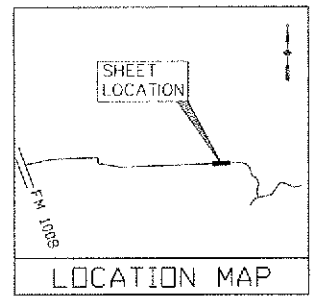
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MATCHLINE STA. 3137+50

MATCHLINE STA. 3150+00



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5127 HOUSTON, SUITE 100 WEST
HOUSTON, TEXAS 77057-1557
WWW.AECOM.COM
TSPS REG. NO. 2-2382

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

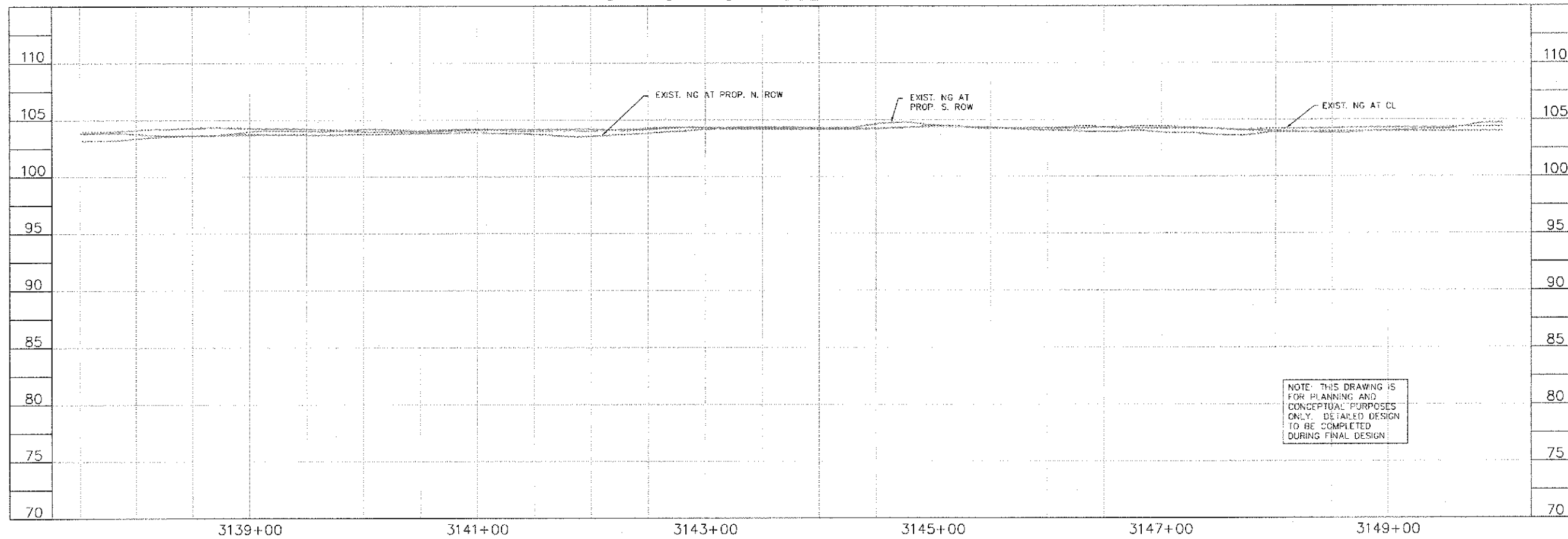
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FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD PLAN &
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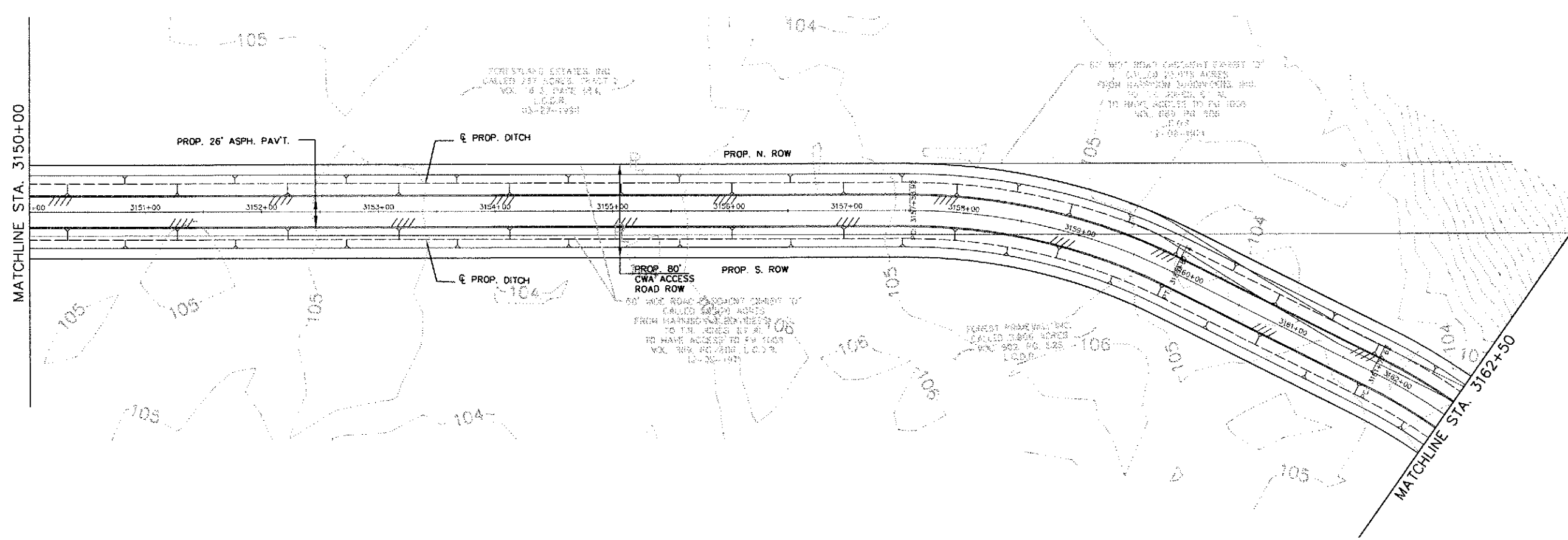
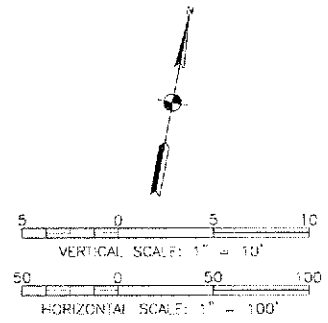
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SHEET NO.	166 of 245

PUMP STATION ACCESS ROAD

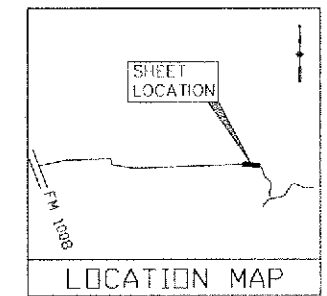


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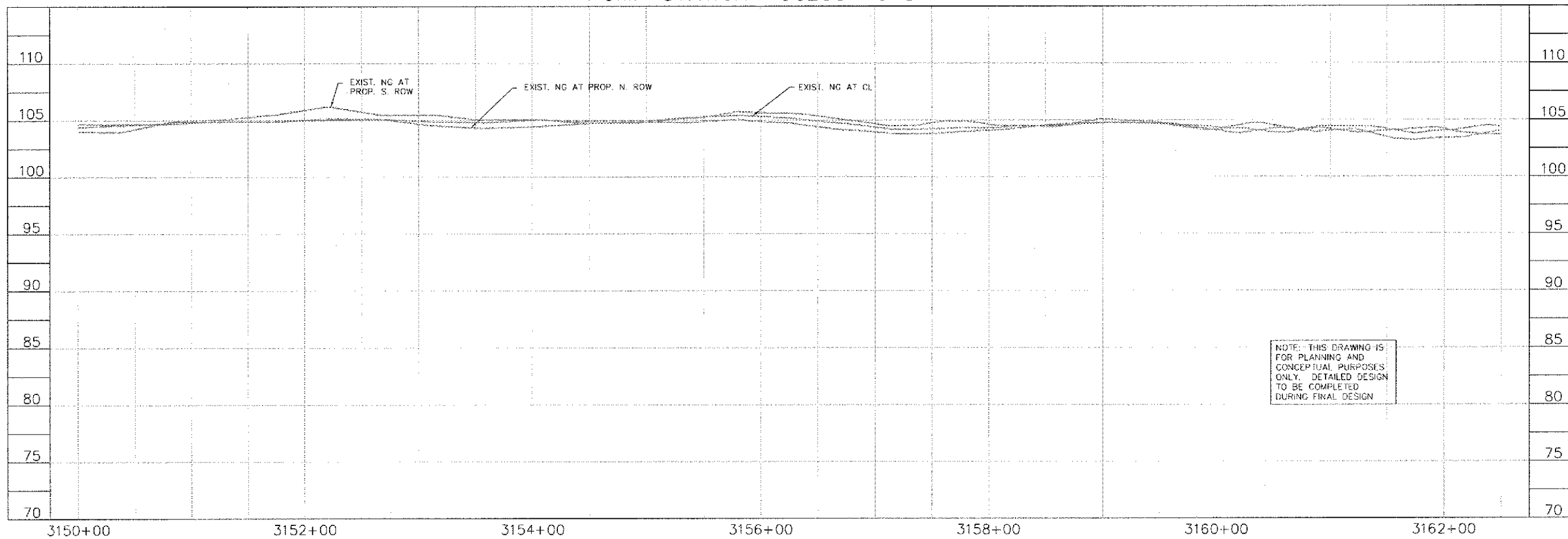
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AECOM
AECOM TECHNICAL SERVICES, INC.
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WWW.AECOM.COM
100% REG. NO. F-3580

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

SURVEYED BY:
FB NO.

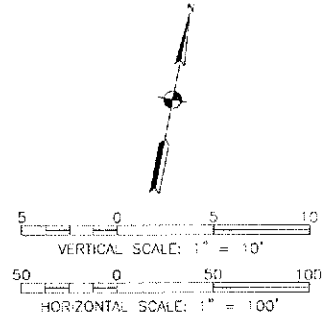
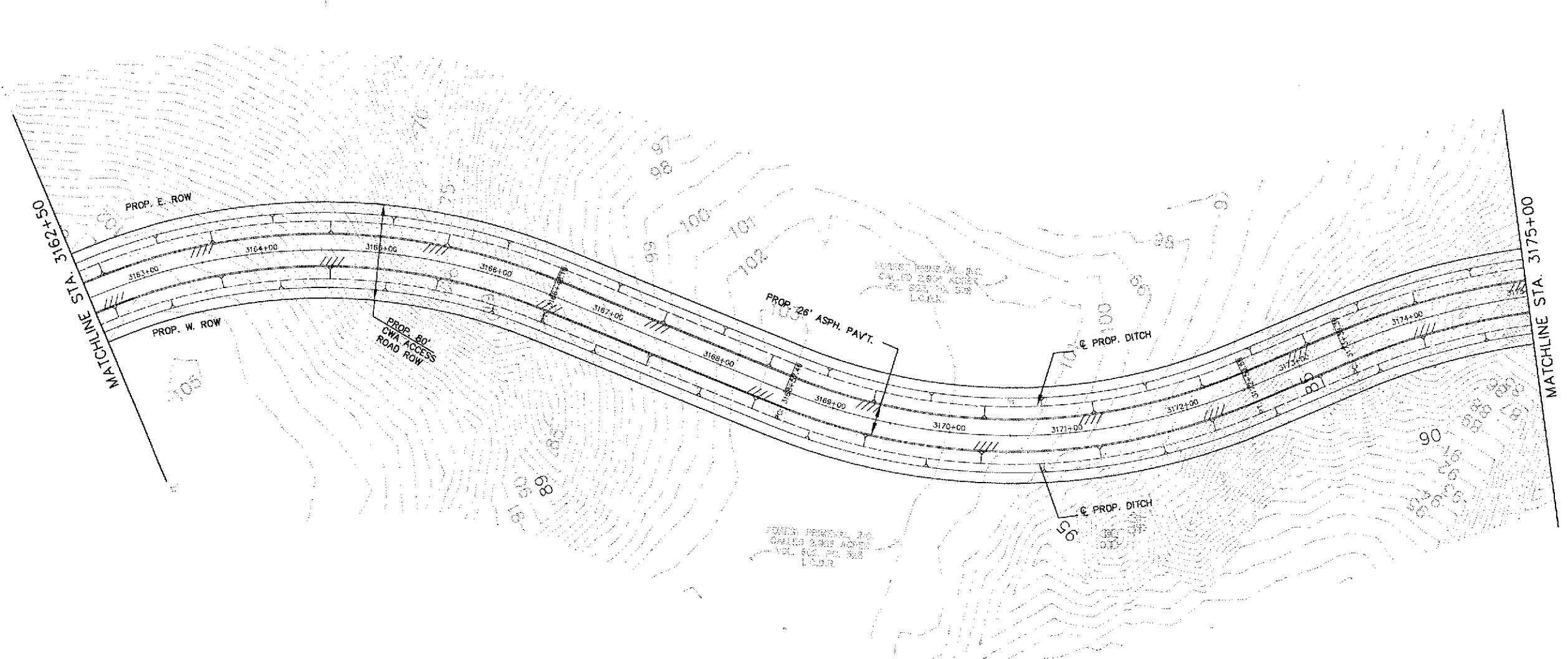
COASTAL WATER AUTHORITY

LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD PLAN &
PROFILE STA 3150+00
TO STA 3162+50

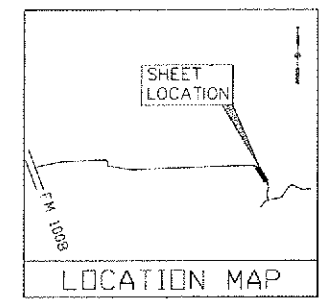
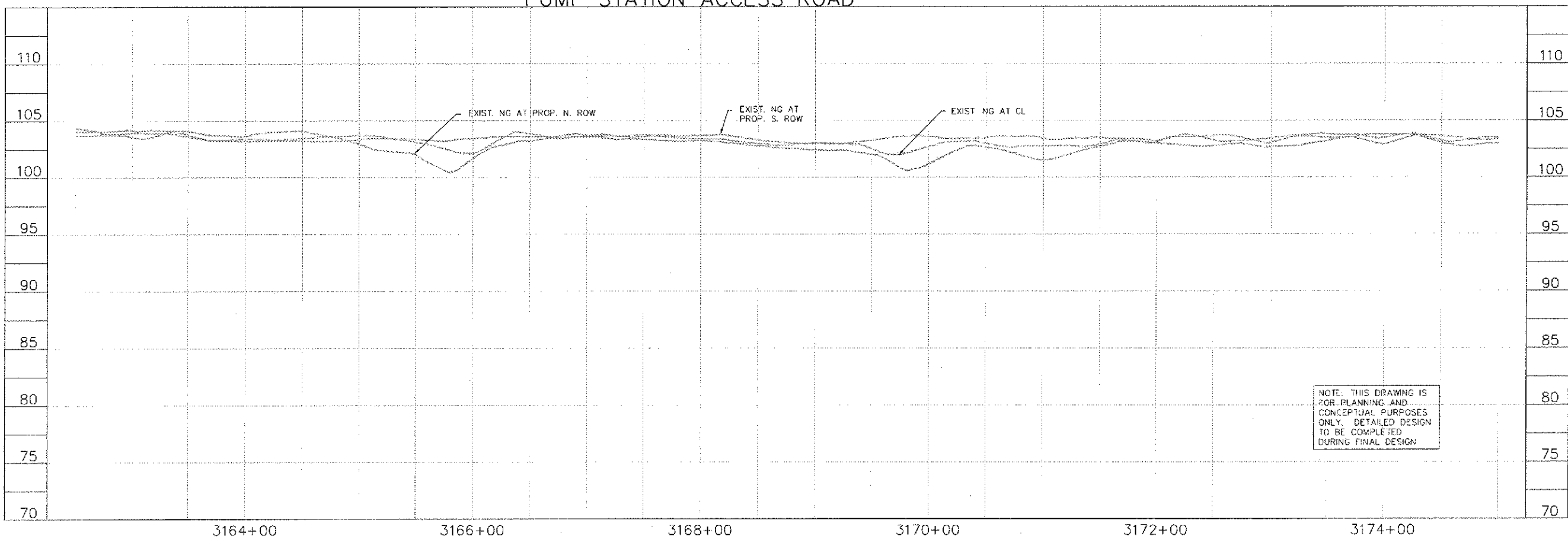
DRAWING SCALE	AS SHOWN
SHEET NO.	167 of 245

LAST MODIFIED: Jan 27, 2011 - 5:08pm BY USER: ThompsonE
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NOTE: SURVEY FIELD NOTES SHOWN FOR REFERENCE PURPOSES ONLY. THE COASTAL WATER AUTHORITY IS THE UNDERLYING FEE OWNER.

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5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

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LUCIE BAYOU INTERBASIN TRANSFER PROJECT

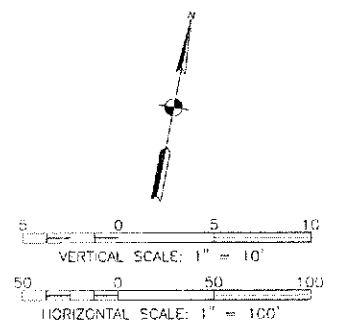
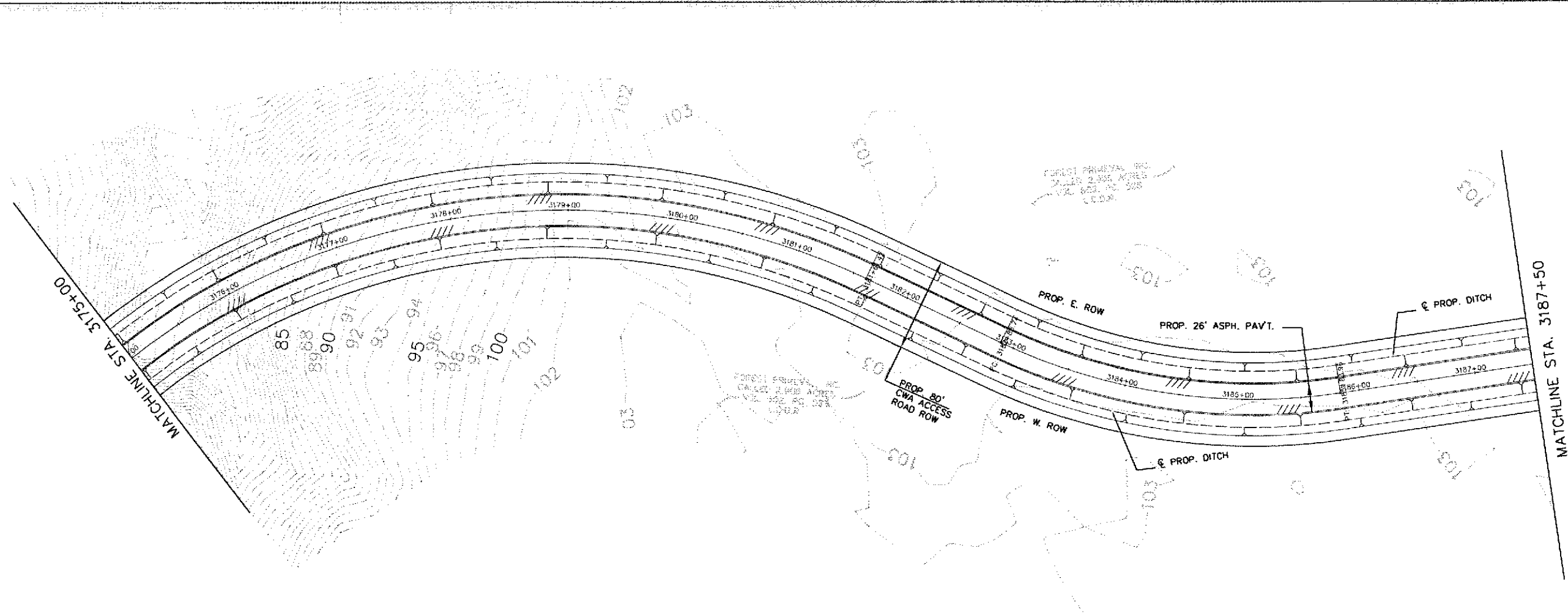
ACCESS ROAD PLAN &
PROFILE STA 3162+50
TO STA 3175+00

NOTE: THIS DRAWING IS FOR PLANNING AND CONCEPTUAL PURPOSES ONLY. DETAILED DESIGN TO BE COMPLETED DURING FINAL DESIGN

DRAWING SCALE
AS SHOWN

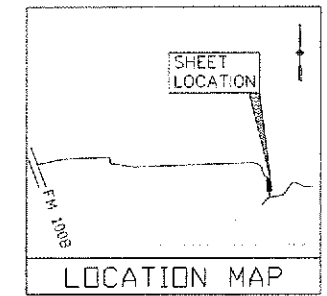
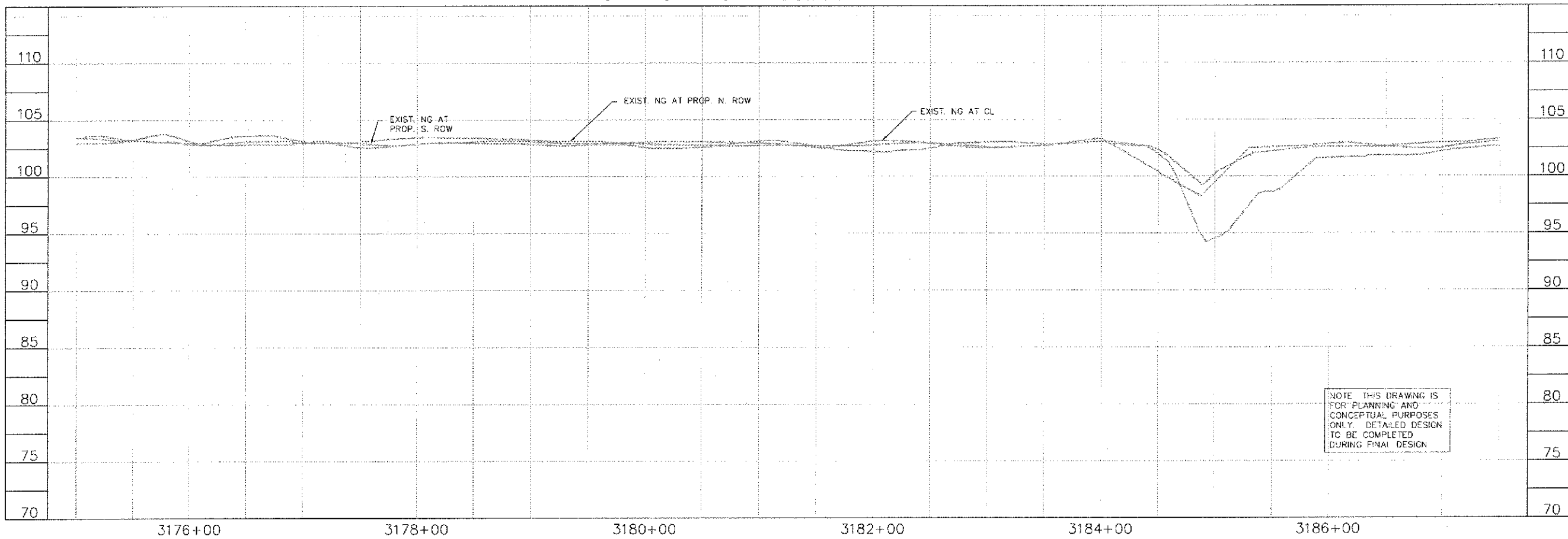
SHEET NO. 168 OF 249

LAST MODIFIED: Jan 27, 2011 5:08pm BY USER: ThompsonB
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HOUSTON, TEXAS 77057-1599
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100% REC. INC. P-15840

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5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

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LUCE BAYOU INTERBASIN TRANSFER PROJECT

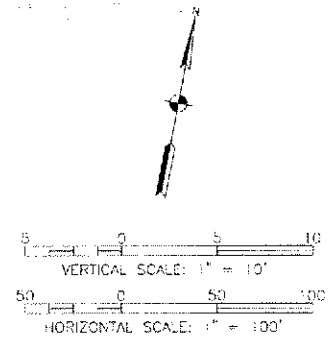
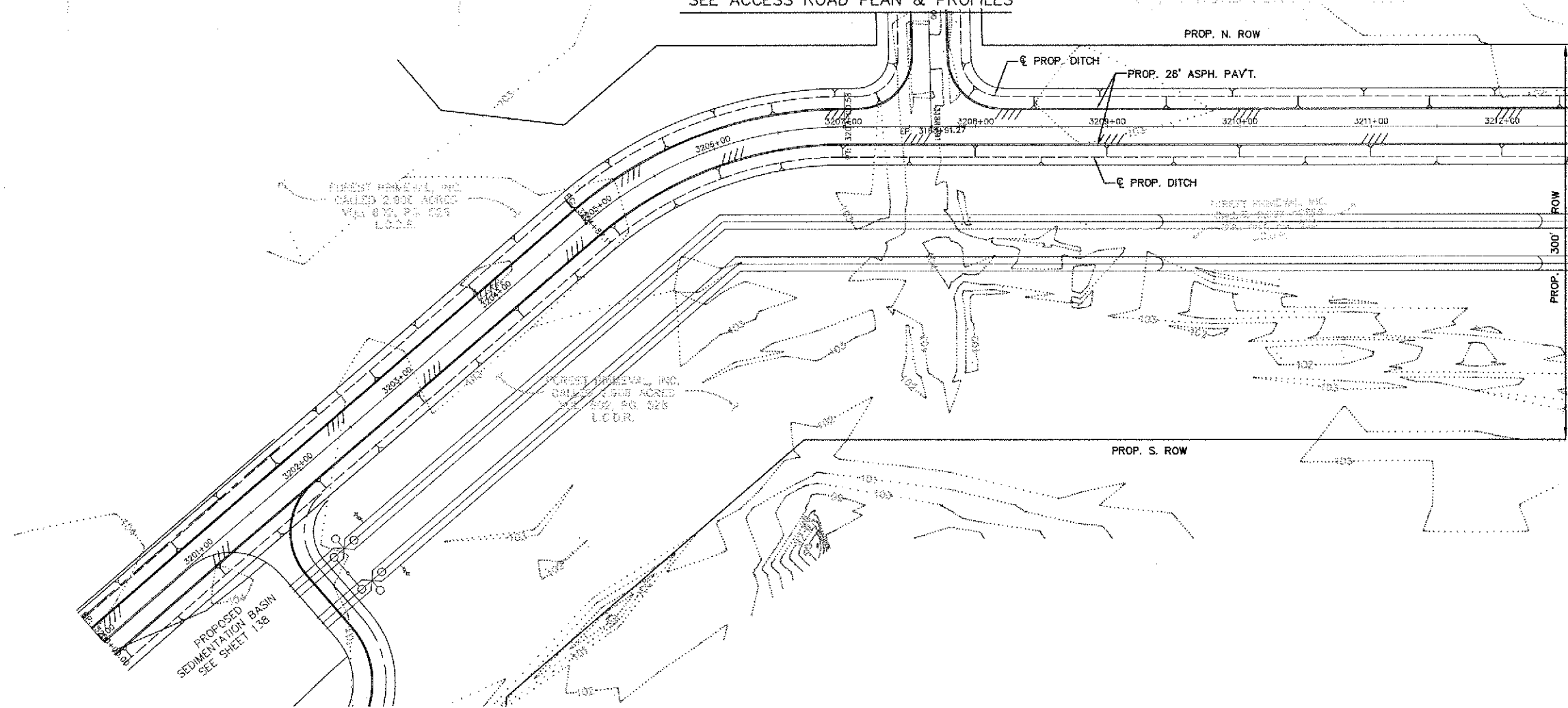
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PROFILE STA 3175+00
TO STA 3187+50

NOTE THIS DRAWING IS FOR PLANNING AND CONCEPTUAL PURPOSES ONLY. DETAILED DESIGN TO BE COMPLETED DURING FINAL DESIGN

DRAWING SCALE	AS SHOWN
SHEET NO.	169 of 295

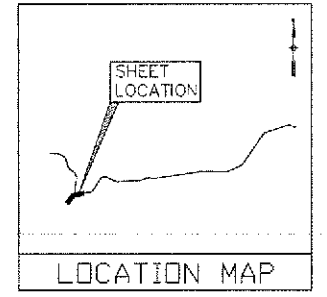
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SEE ACCESS ROAD PLAN & PROFILES

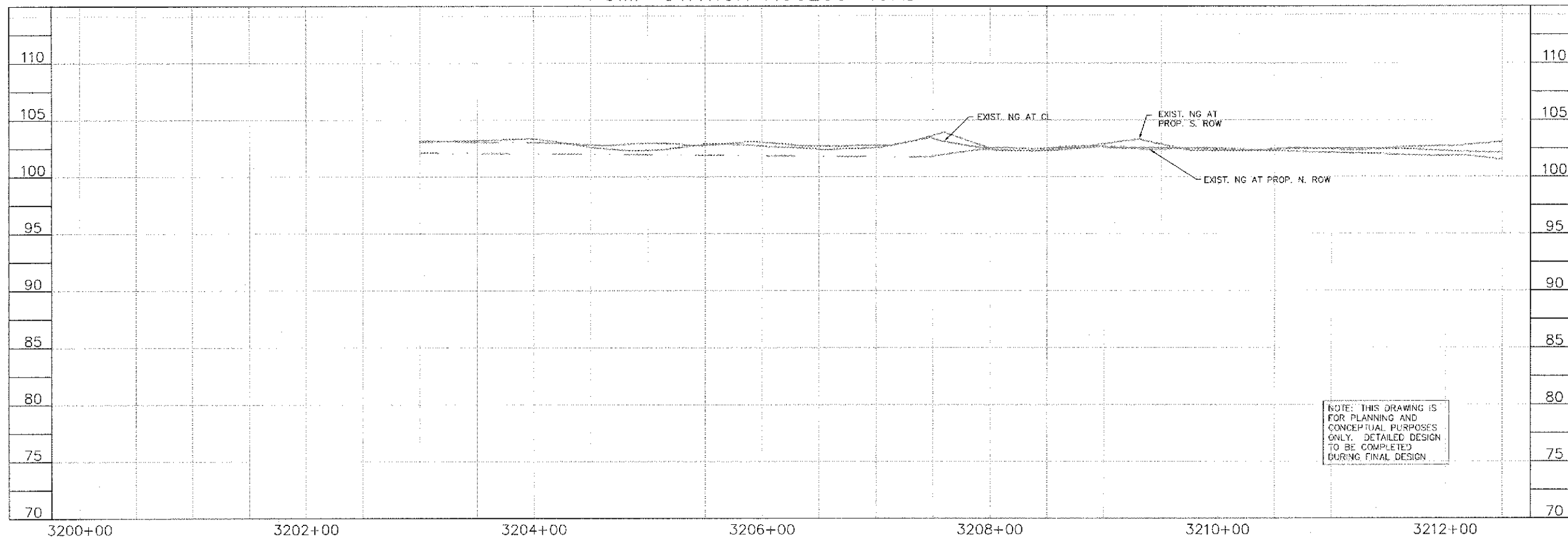


NOTE: SURVEY FIELD NOTES SHOWN FOR REFERENCE PURPOSES ONLY. THE COASTAL WATER AUTHORITY IS THE UNDERLYING FEE OWNER.

NOTE: LOCATION, SPACING, AND SIZES OF WATERLINE VALVES AND OTHER APPURTENANCES TO BE REVISED FOLLOWING FUTURE INVESTIGATION AND TRANSIENT ANALYSIS



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AECOM TECHNICAL SERVICES, INC.
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HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

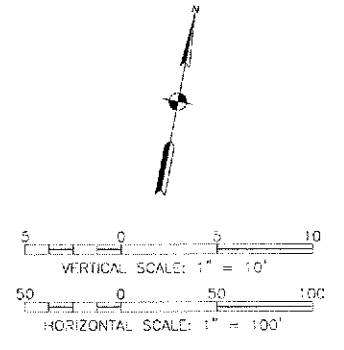
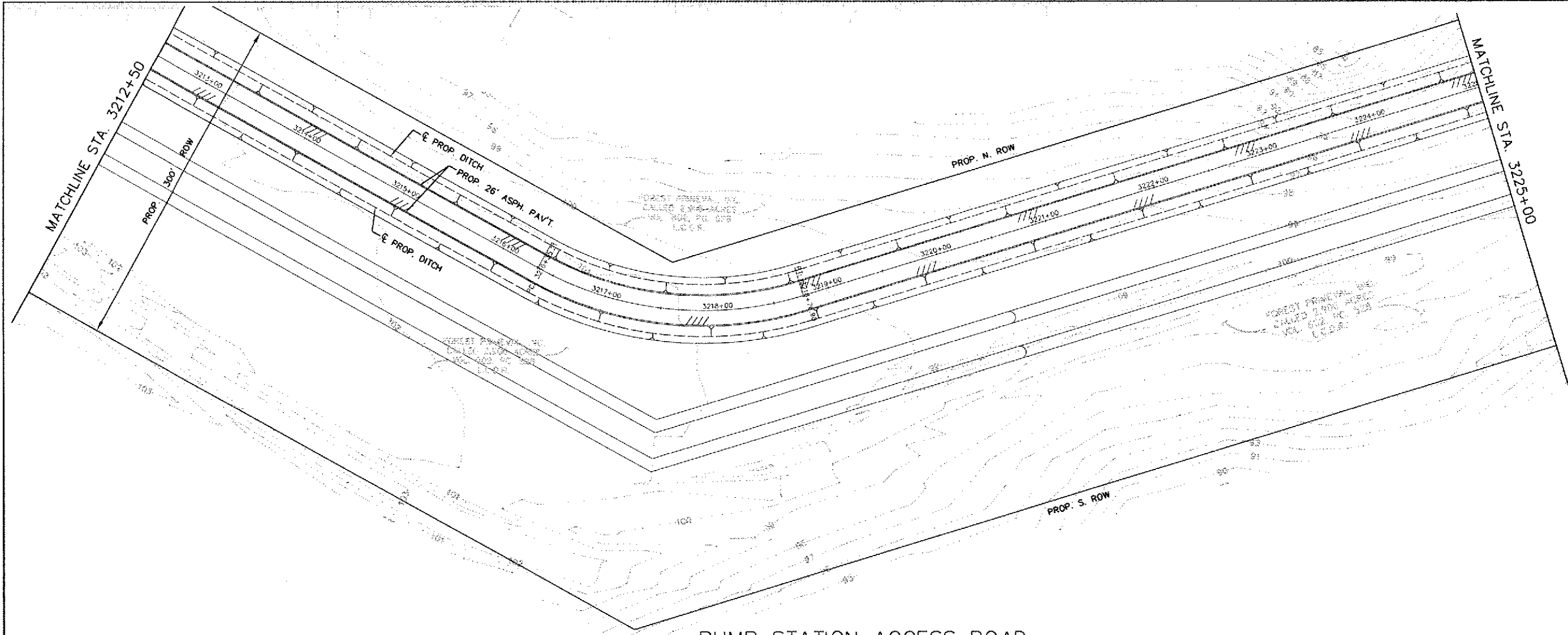


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COASTAL WATER AUTHORITY
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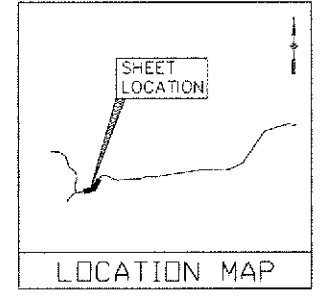
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PROFILE STA 3200+00
TO STA 3212+50

DRAWING SCALE
AS SHOWN

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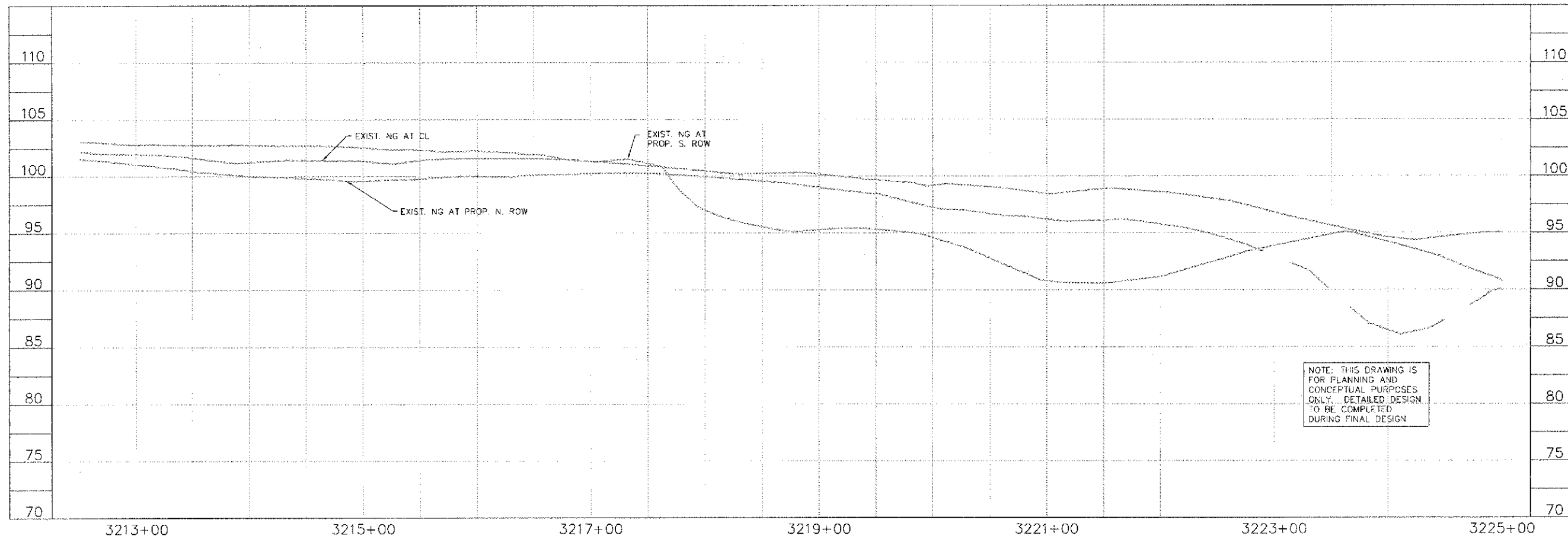


NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS



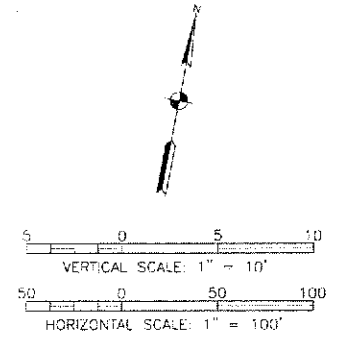
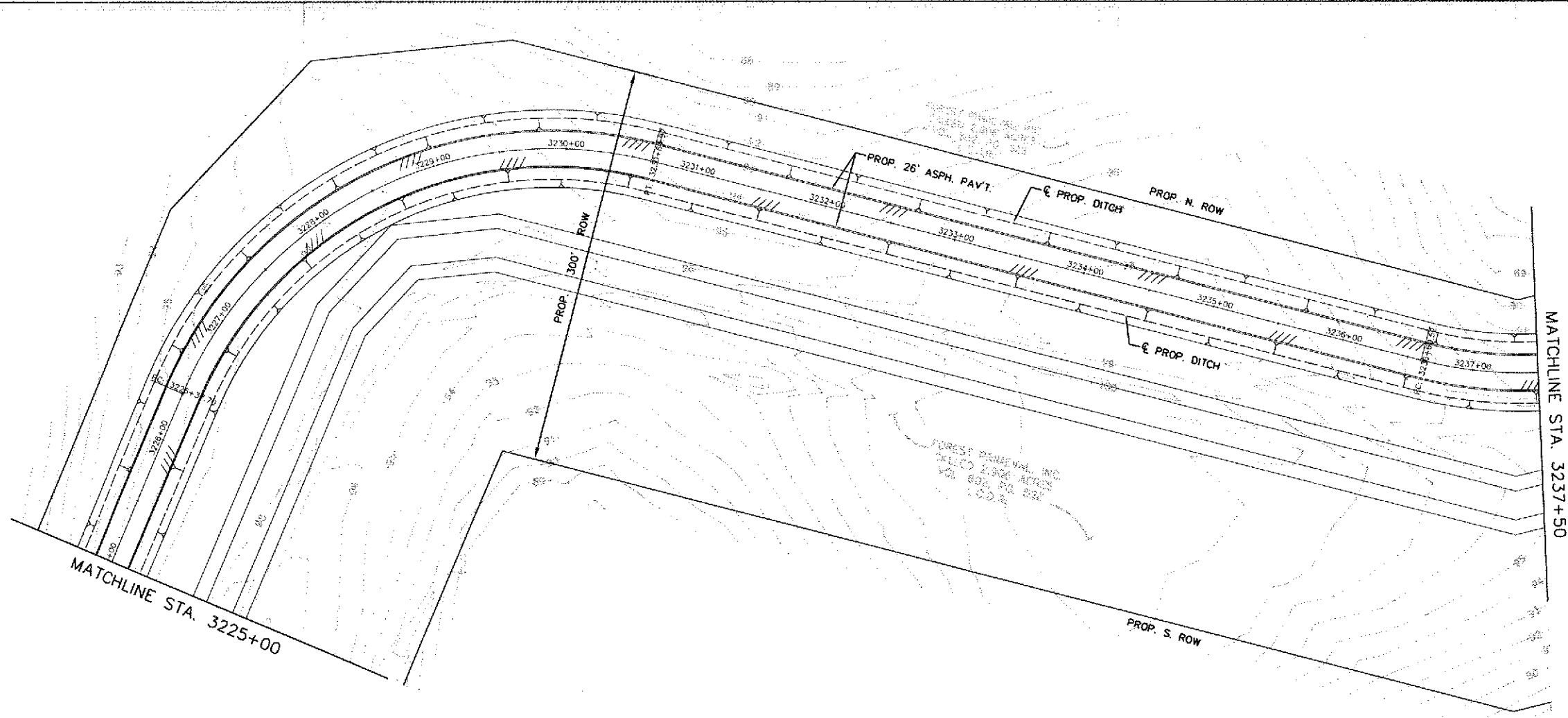
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PUMP STATION ACCESS ROAD

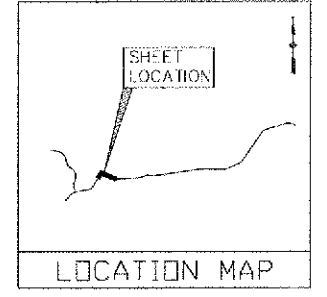


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SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT		
ACCESS ROAD PLAN & PROFILE STA 3212+50 TO STA 3225+00		
DRAWING SCALE AS SHOWN		
SHEET NO. 171 of 245		

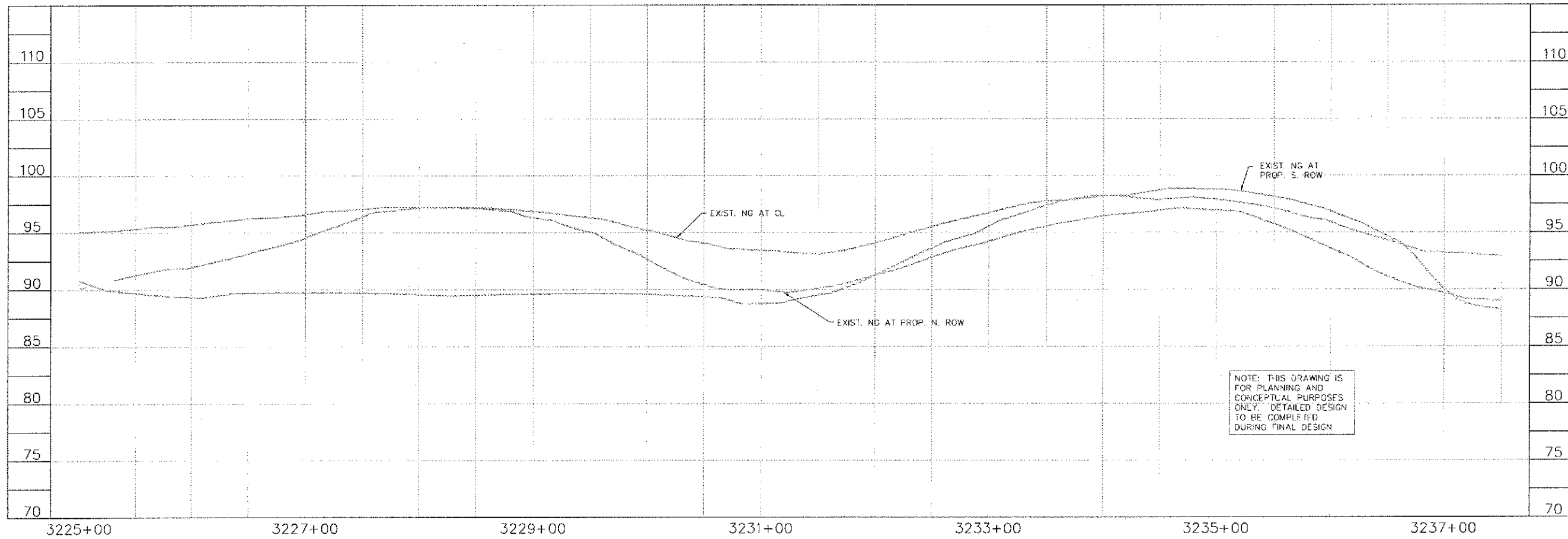
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NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS



PUMP STATION ACCESS ROAD



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713.780.0838 fax.

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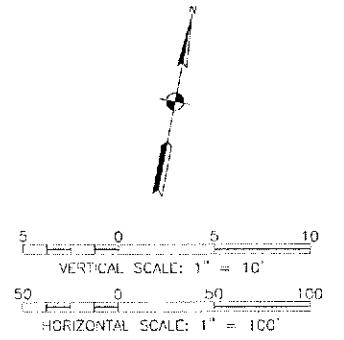
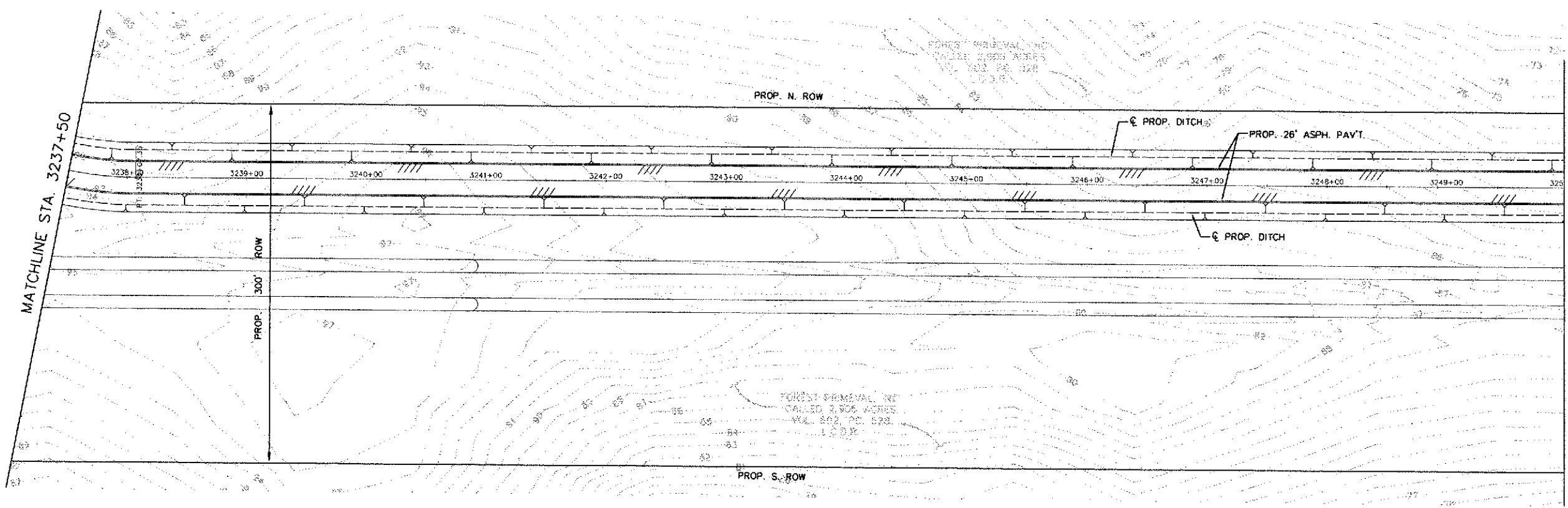
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PROFILE STA 3225+00
TO STA 3237+50

DRAWING SCALE
AS SHOWN

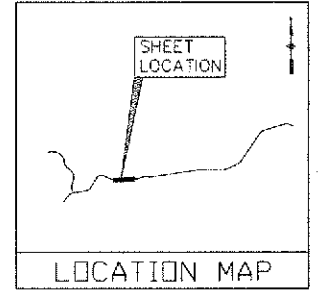
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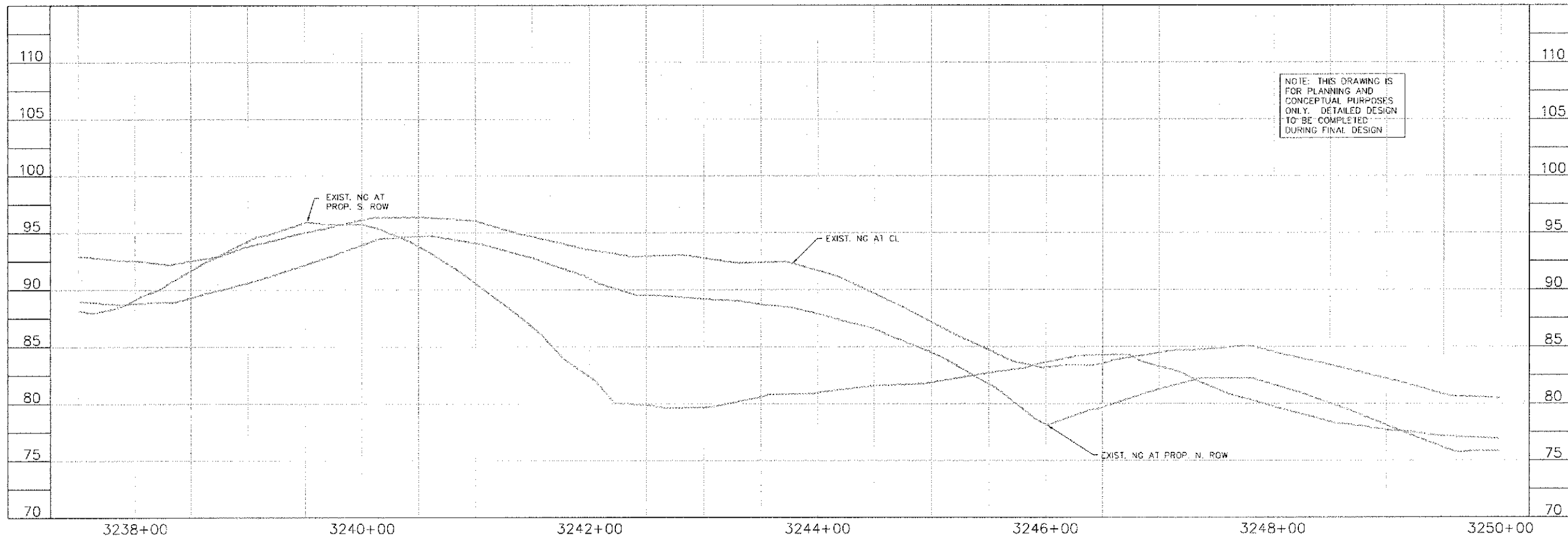
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NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS



PUMP STATION ACCESS ROAD



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 AECOM TECHNICAL SERVICES, INC.
 5707 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax

CWA

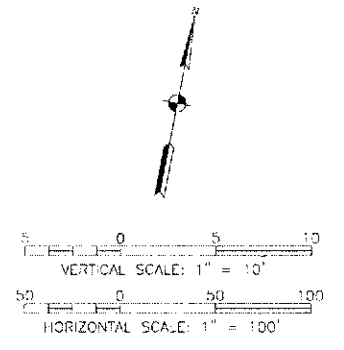
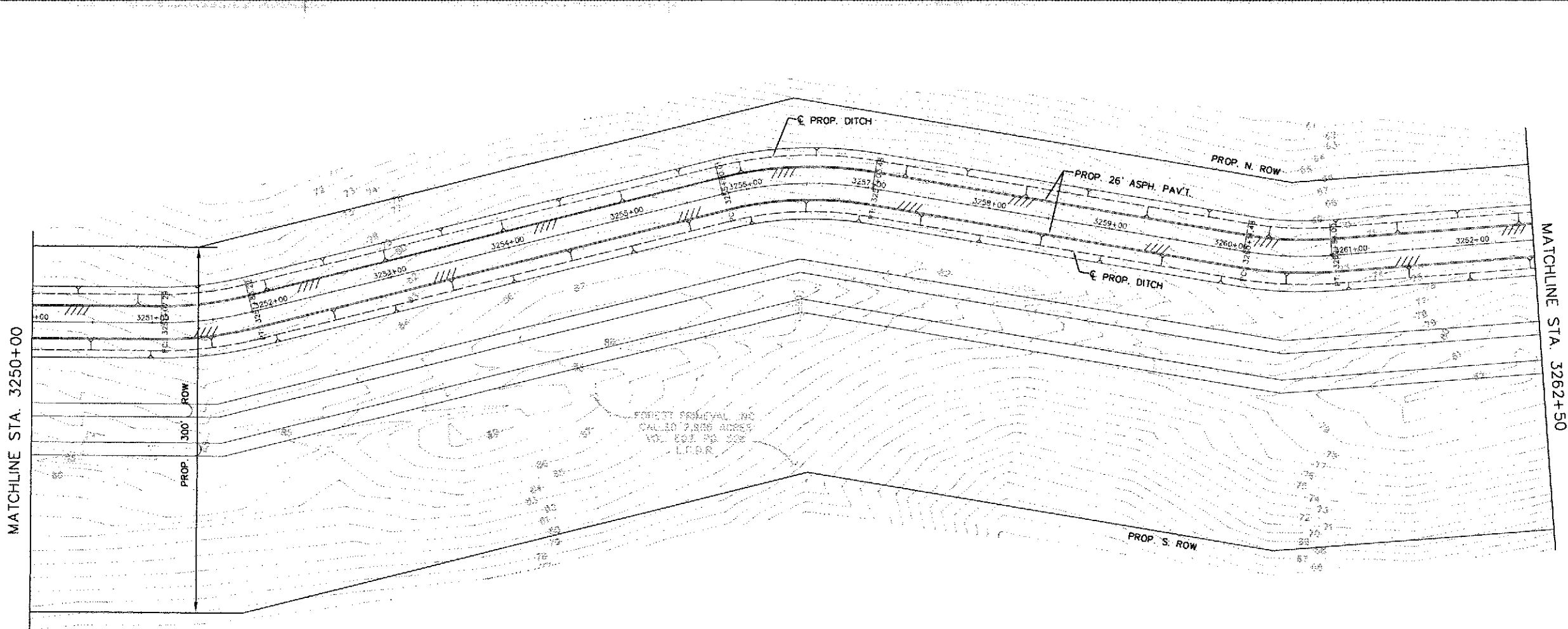
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 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

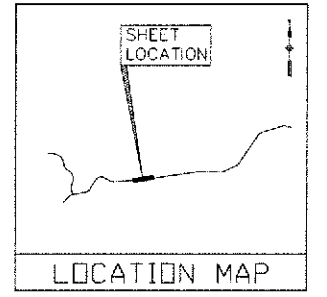
ACCESS ROAD PLAN &
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 TO STA 3250+00

DRAWING SCALE
 AS SHOWN

SHEET NO. 173 OF 245

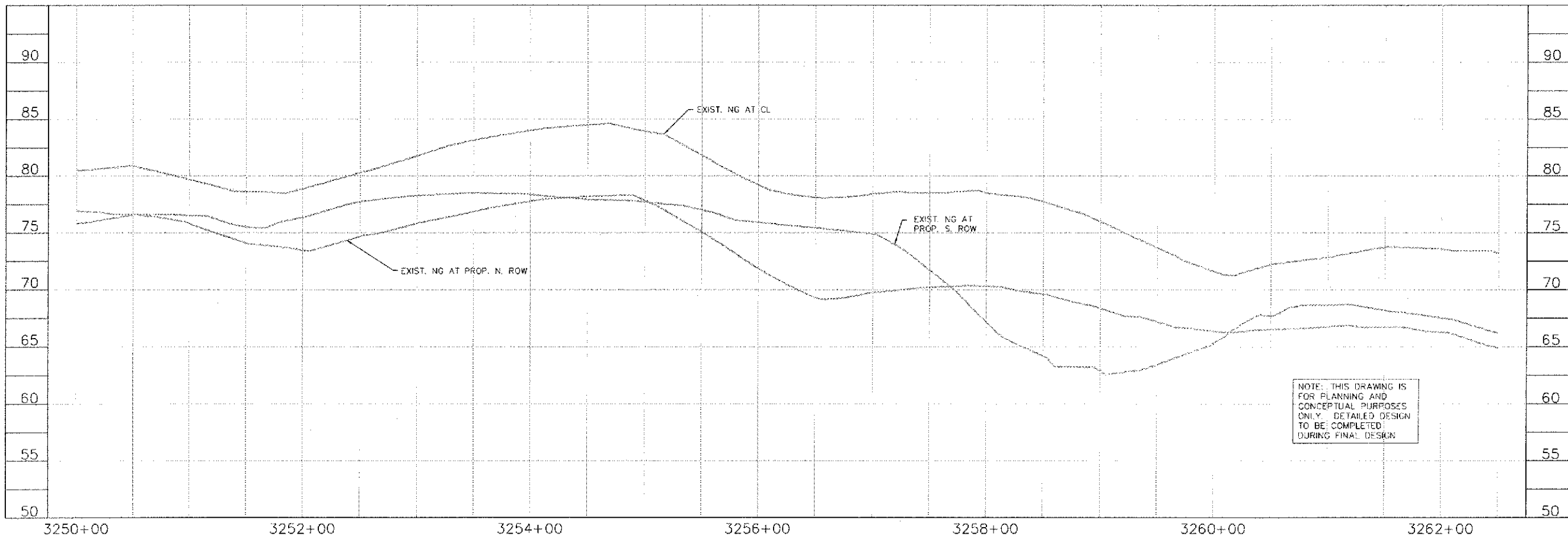


NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS



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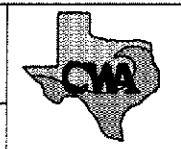
PUMP STATION ACCESS ROAD



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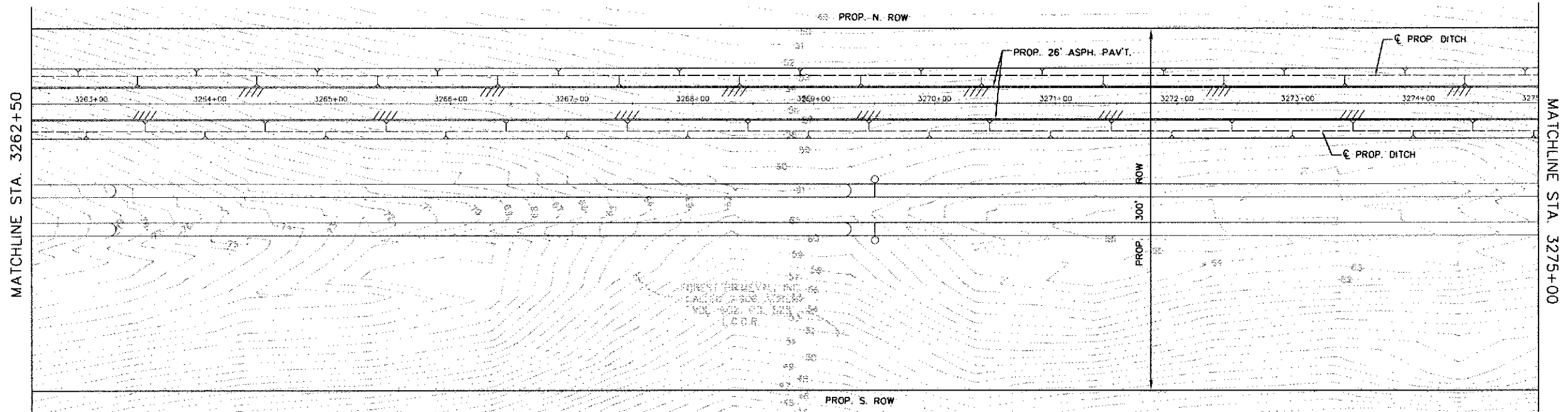
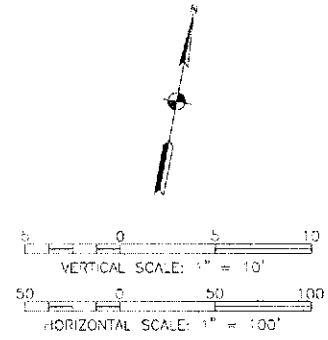
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LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD PLAN &
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TO STA 3262+50

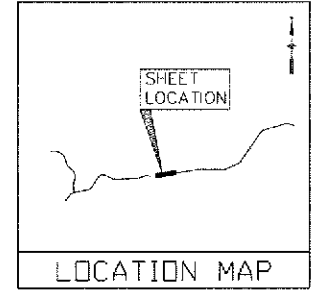
DRAWING SCALE
AS SHOWN

SHEET NO. 17 OF 245

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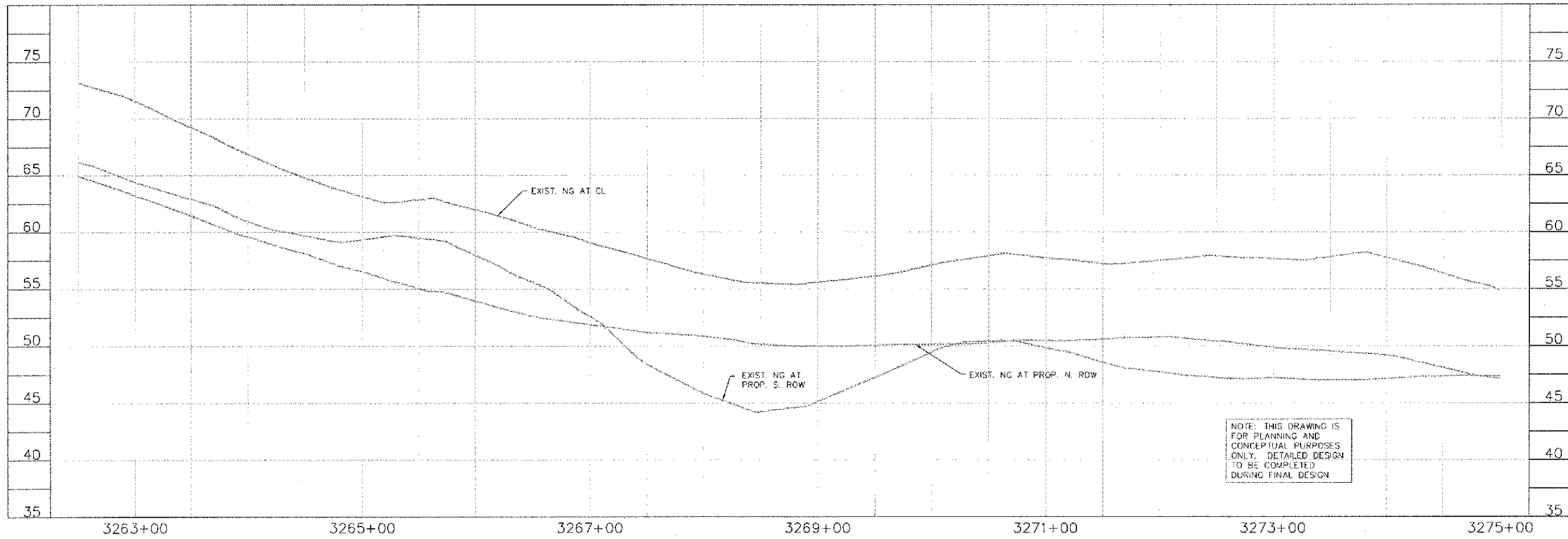


NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS



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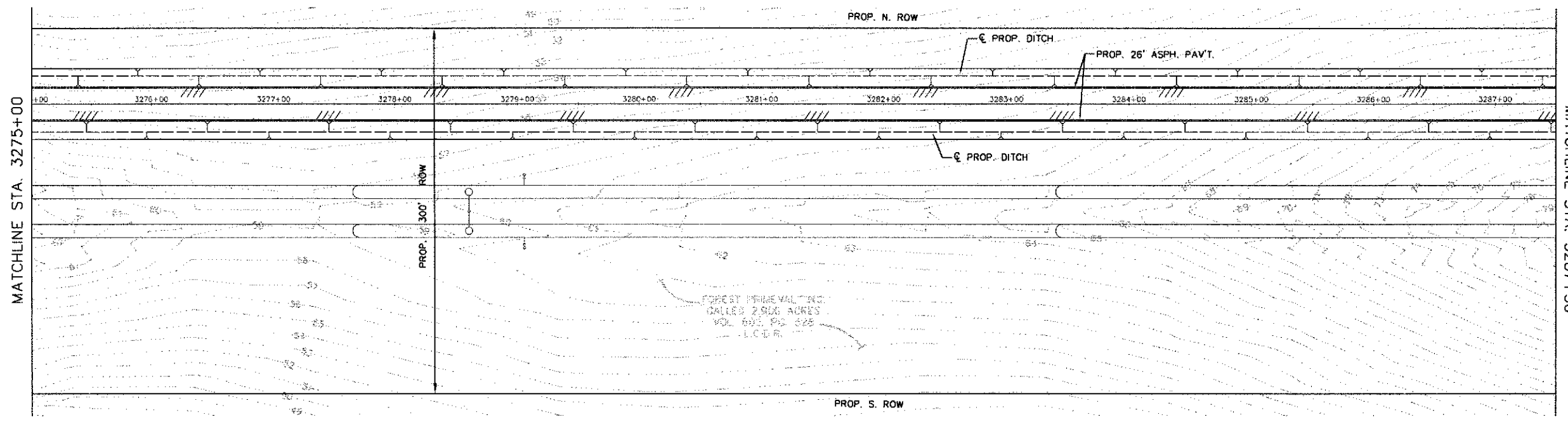
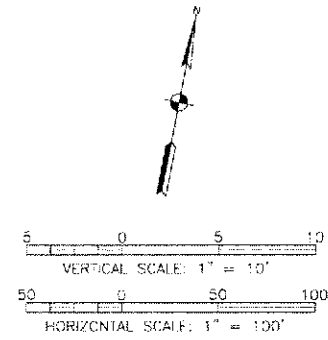
PUMP STATION ACCESS ROAD



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DURING FINAL DESIGN

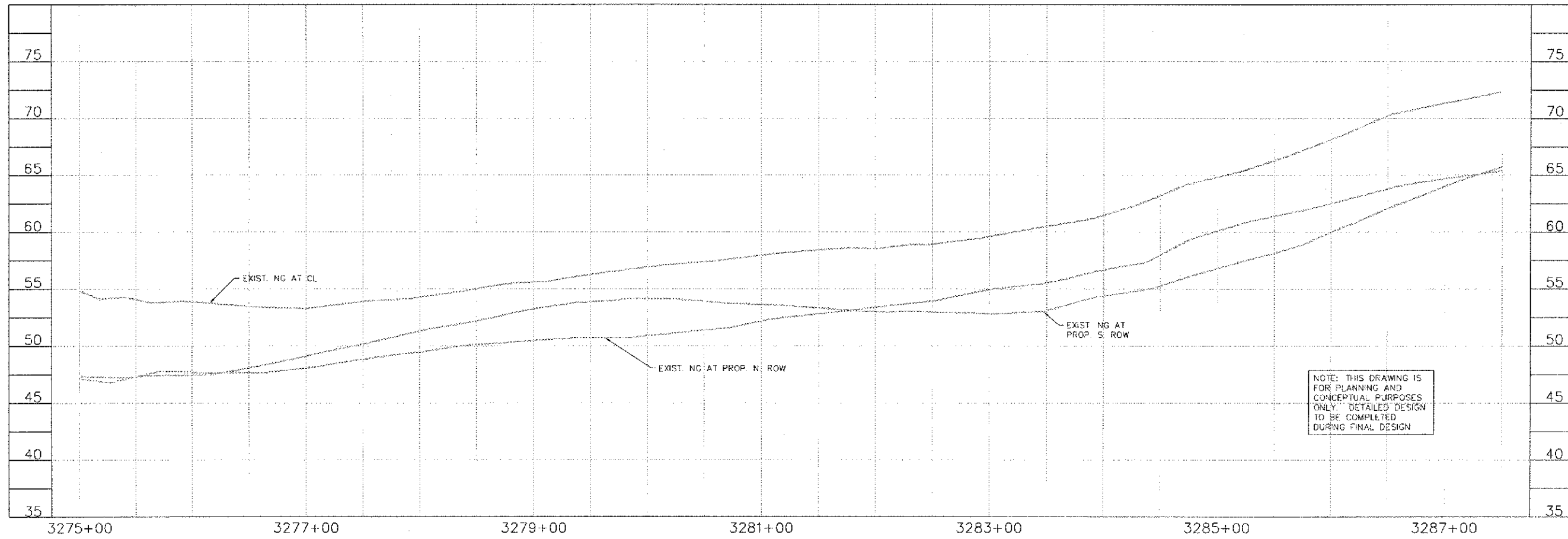
<small>AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057-1399 WWW.AECOM.COM TYPE E.C. NO. F-1330</small>	
<small>AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.</small>	
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COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT	
ACCESS ROAD PLAN & PROFILE STA 3262+50 TO STA 3275+00	
DRAWING SCALE AS SHOWN	
SHEET NO. 175 of 245	

LAST MODIFIED: Jan 27, 2011 - 5:11pm BY USER: thompsonb
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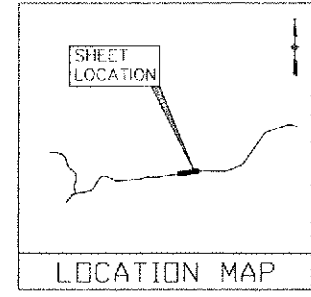


NOTE: LOCATION, SPACING, AND SIZES OF WATERLINE VALVES AND OTHER APPURTENANCES TO BE REVISED FOLLOWING FUTURE INVESTIGATION AND TRANSIENT ANALYSIS

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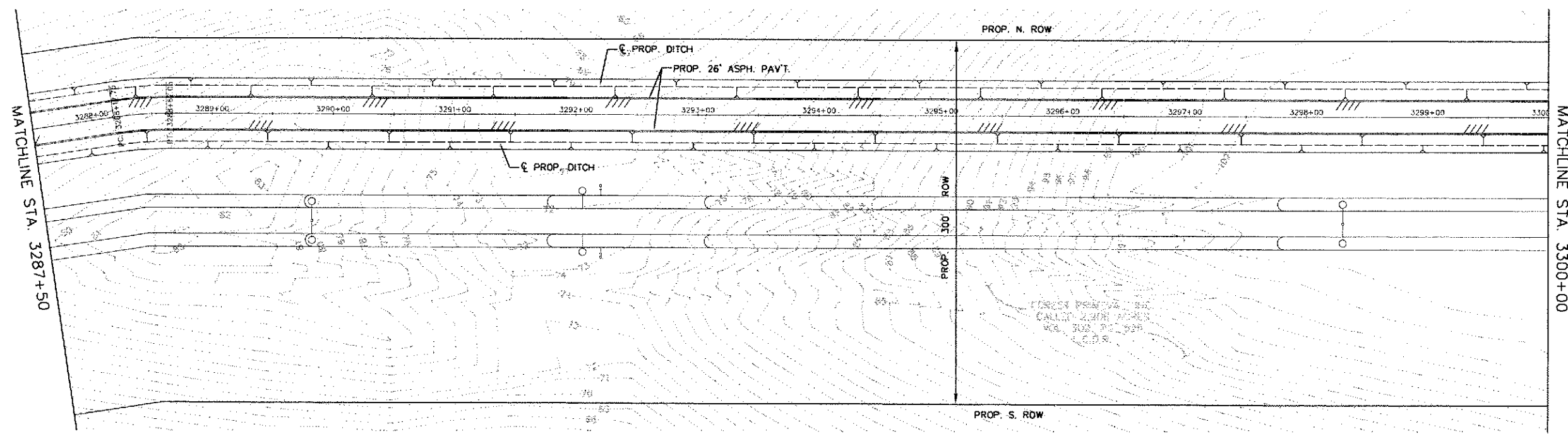
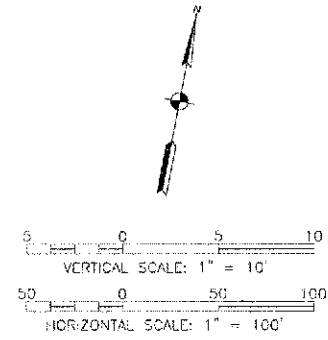


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COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

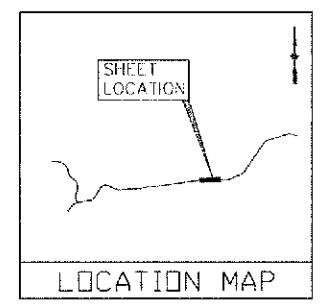
ACCESS ROAD PLAN & PROFILE STA 3275+00 TO STA 3287+50

DRAWING SCALE	AS SHOWN
SHEET NO. 176 of 205	

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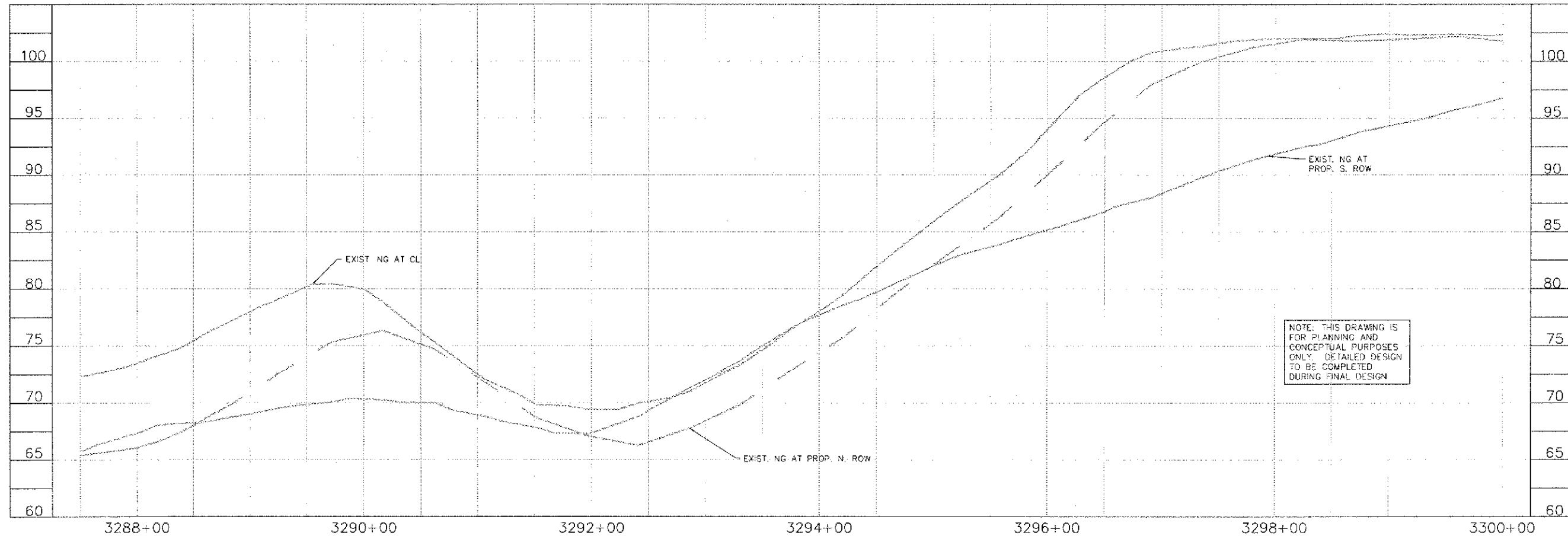


NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS



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5757 WOODWAY, SUITE 101 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

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SURVEYED BY:
FB NO.

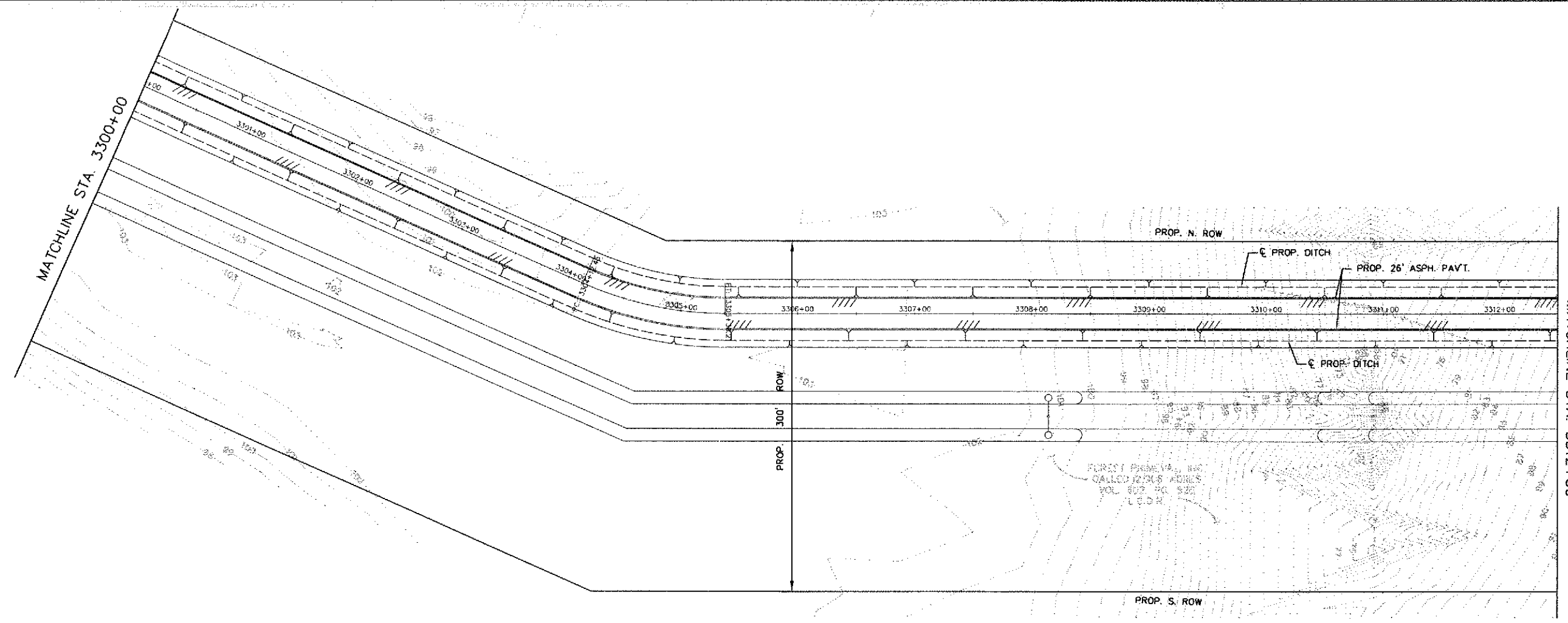
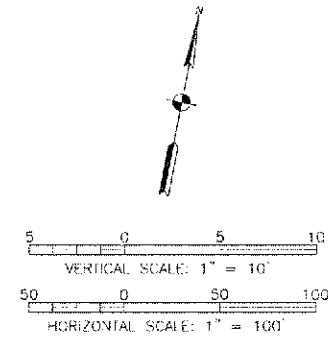
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD PLAN &
PROFILE STA 3287+50
TO STA 3300+00

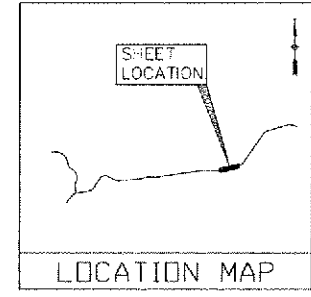
DRAWING SCALE
AS SHOWN

SHEET NO. 177 of 245

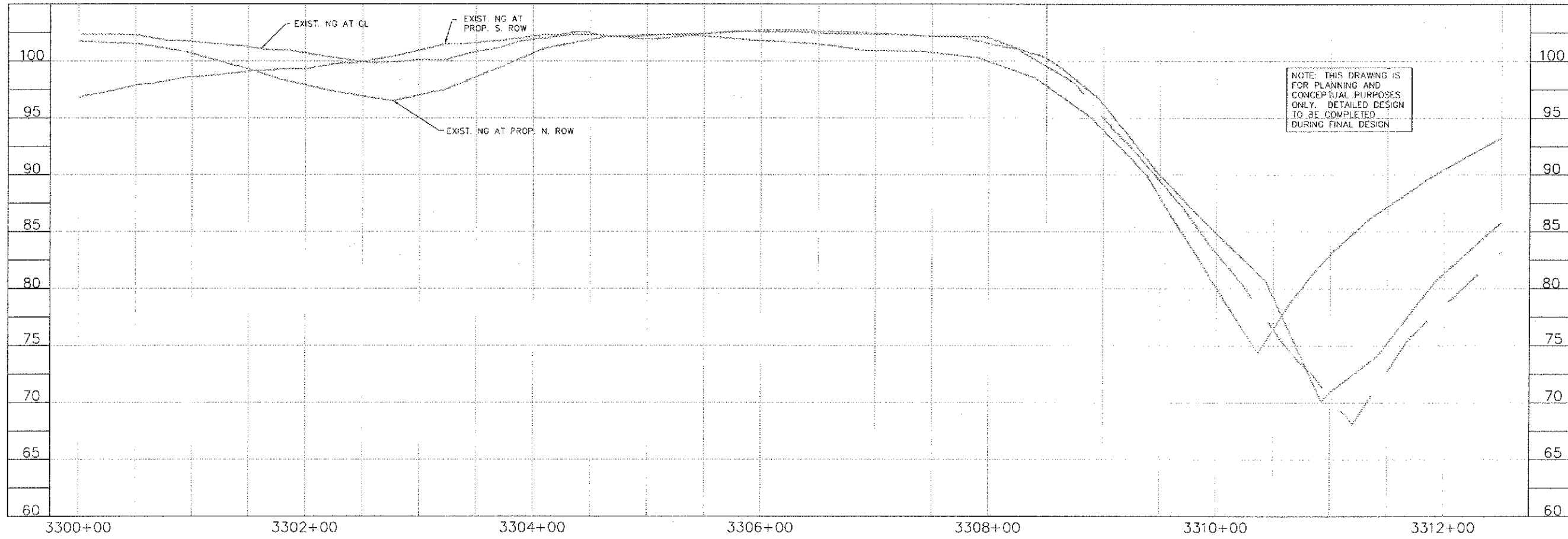
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Dwg. Name: 402-P386.dwg



NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS



PUMP STATION ACCESS ROAD

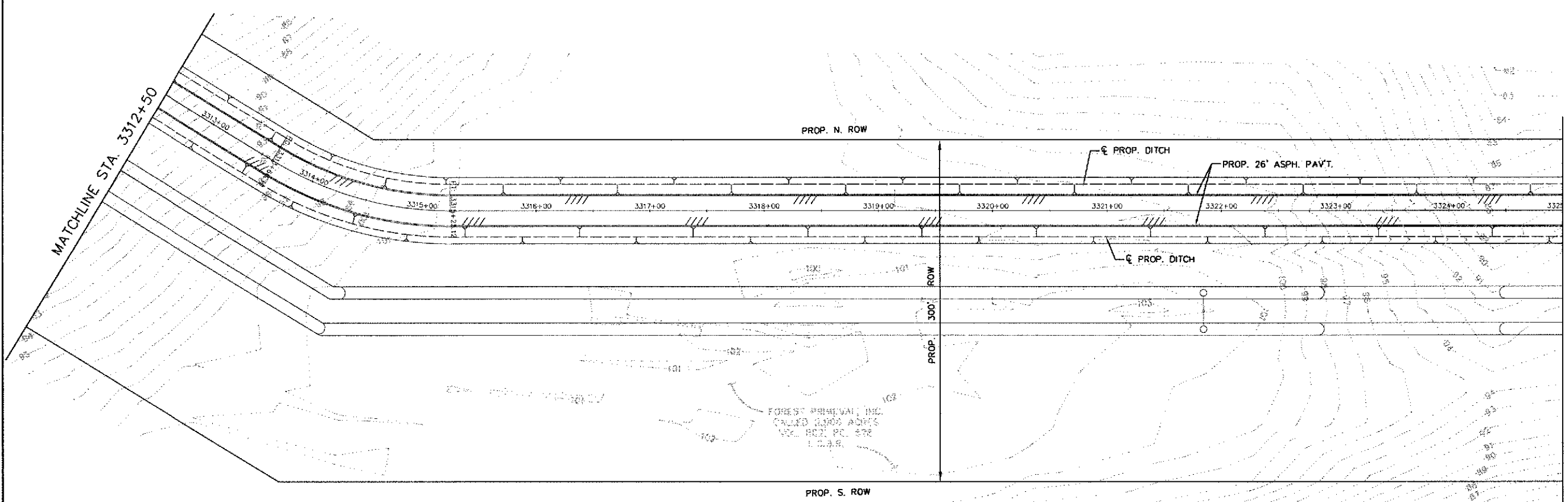
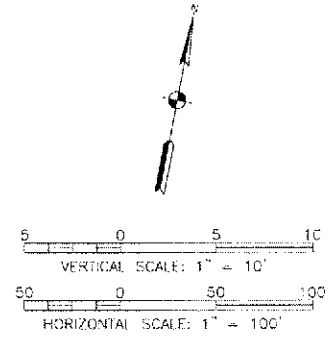


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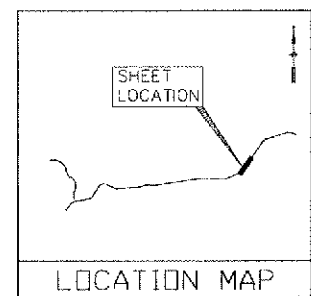
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NOT FOR CONSTRUCTION PURPOSES

<small>AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.</small>	
SURVEYED BY: FB NO.	
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT	
ACCESS ROAD PLAN & PROFILE STA 3300+00 TO STA 3312+50	
DRAWING SCALE AS SHOWN	
SHEET NO. 120 OF 245	

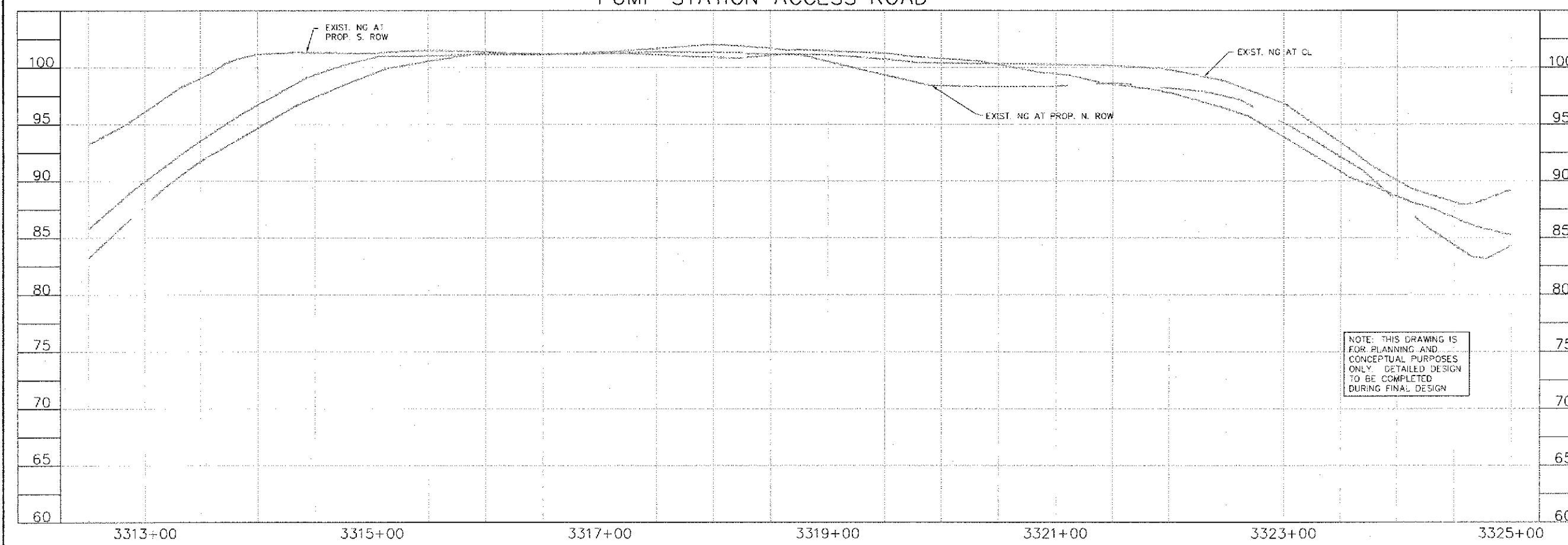
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NOTE:
LOCATION, SPACING, AND SIZES OF
WATERLINE VALVES AND OTHER
APPURTENANCES TO BE REVISED
FOLLOWING FUTURE INVESTIGATION
AND TRANSIENT ANALYSIS




PUMP STATION ACCESS ROAD



KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
3121 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057-1599
WWW.AECOM.COM
TSP# REC# NO. 4-3586

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5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



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COASTAL WATER AUTHORITY

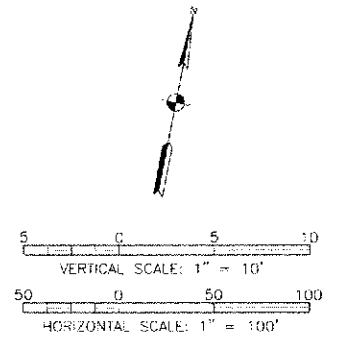
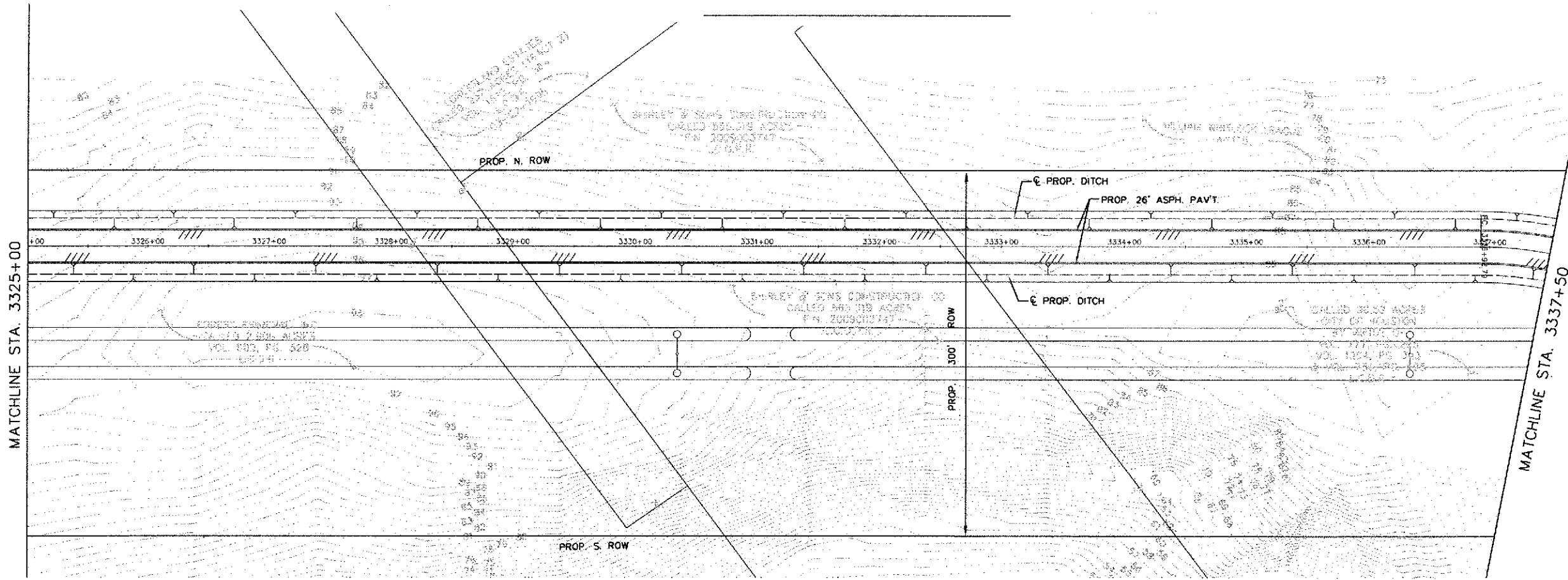
LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD PLAN &
PROFILE STA 3312+50
TO STA 3325+00

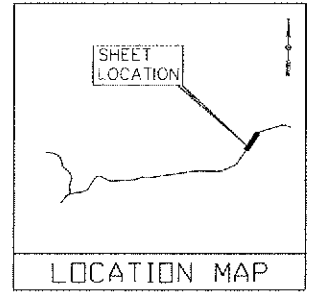
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SHEET NO. 174 OF 245	

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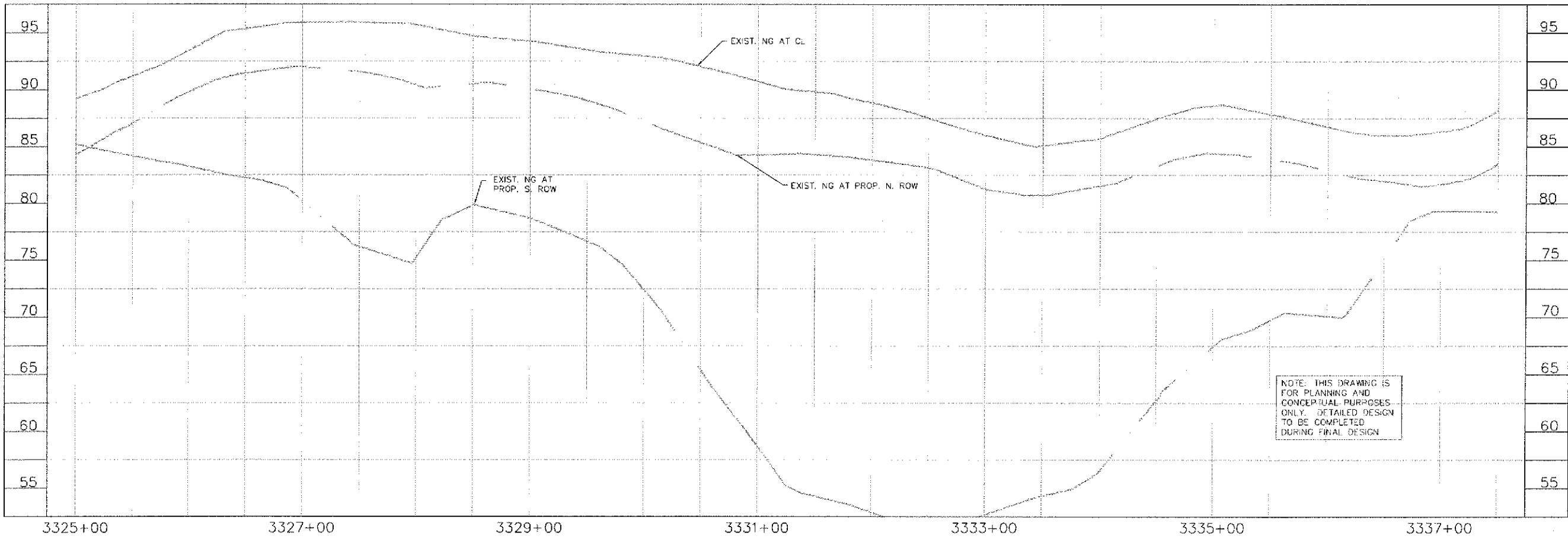


NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS



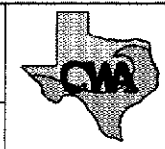
KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

PUMP STATION ACCESS ROAD



AECOM
 AECOM TECHNICAL SERVICES, INC.
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 HOUSTON, TEXAS 77057-1500
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 TYPE REC. NO. F-3183

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
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 713.780.0838 fax.



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 LUCE BAYOU INTERBASIN TRANSFER PROJECT

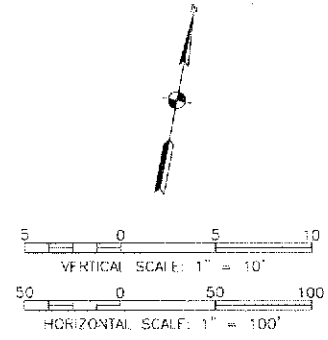
ACCESS ROAD PLAN &
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 TO STA 3337+50

DRAWING SCALE
 AS SHOWN

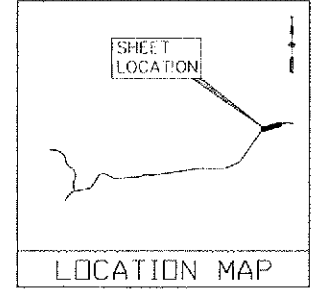
SHEET NO. 80 OF 295

CALLED 26' ASPH. DRIVE
 CITY OF HOUSTON
 BY MAPLE OF
 NO. 777, PG. 265
 VOL. 1204, PG. 244
 & NO. 783, PG. 230
 LOCAL

CALLED 26' ASPH. DRIVE
 CITY OF HOUSTON
 BY MAPLE OF
 NO. 777, PG. 265
 VOL. 1204, PG. 244
 & NO. 783, PG. 230
 LOCAL



NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

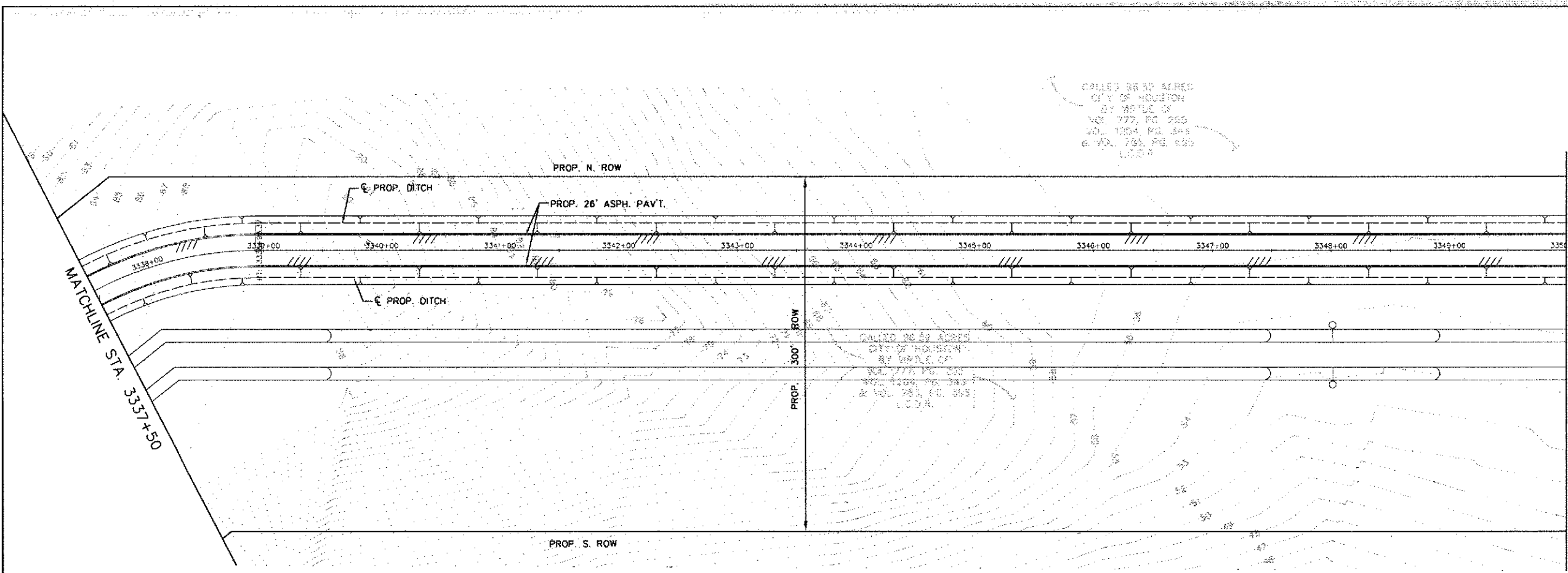
AECOM
AECOM TECHNICAL SERVICES, INC.
 2157 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057-1989
 WWW.AECOM.COM
 TYPE REG. NO. F-2340

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax

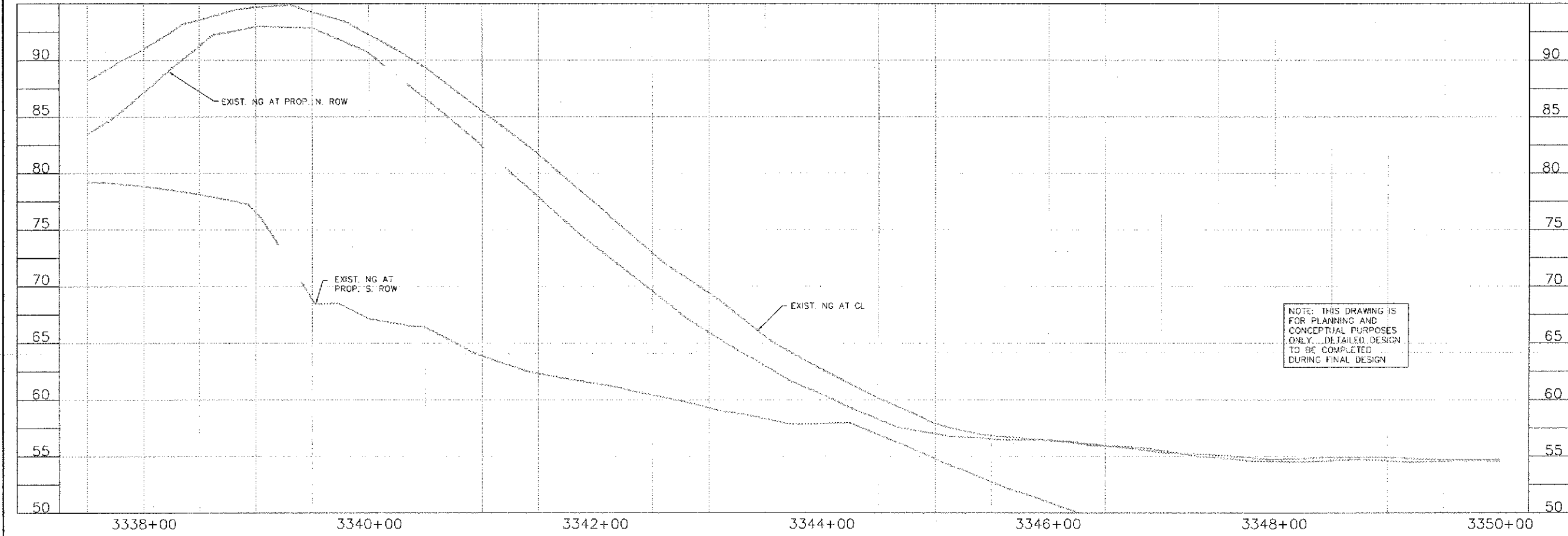
SURVEYED BY:
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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD PLAN &
 PROFILE STA 3337+50
 TO STA 3350+00

DRAWING SCALE	AS SHOWN
SHEET NO. 181 OF 248	

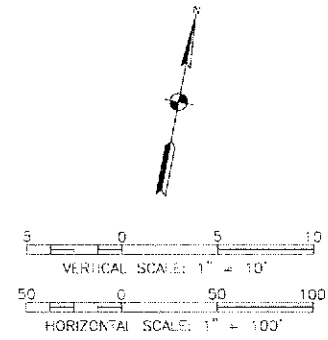
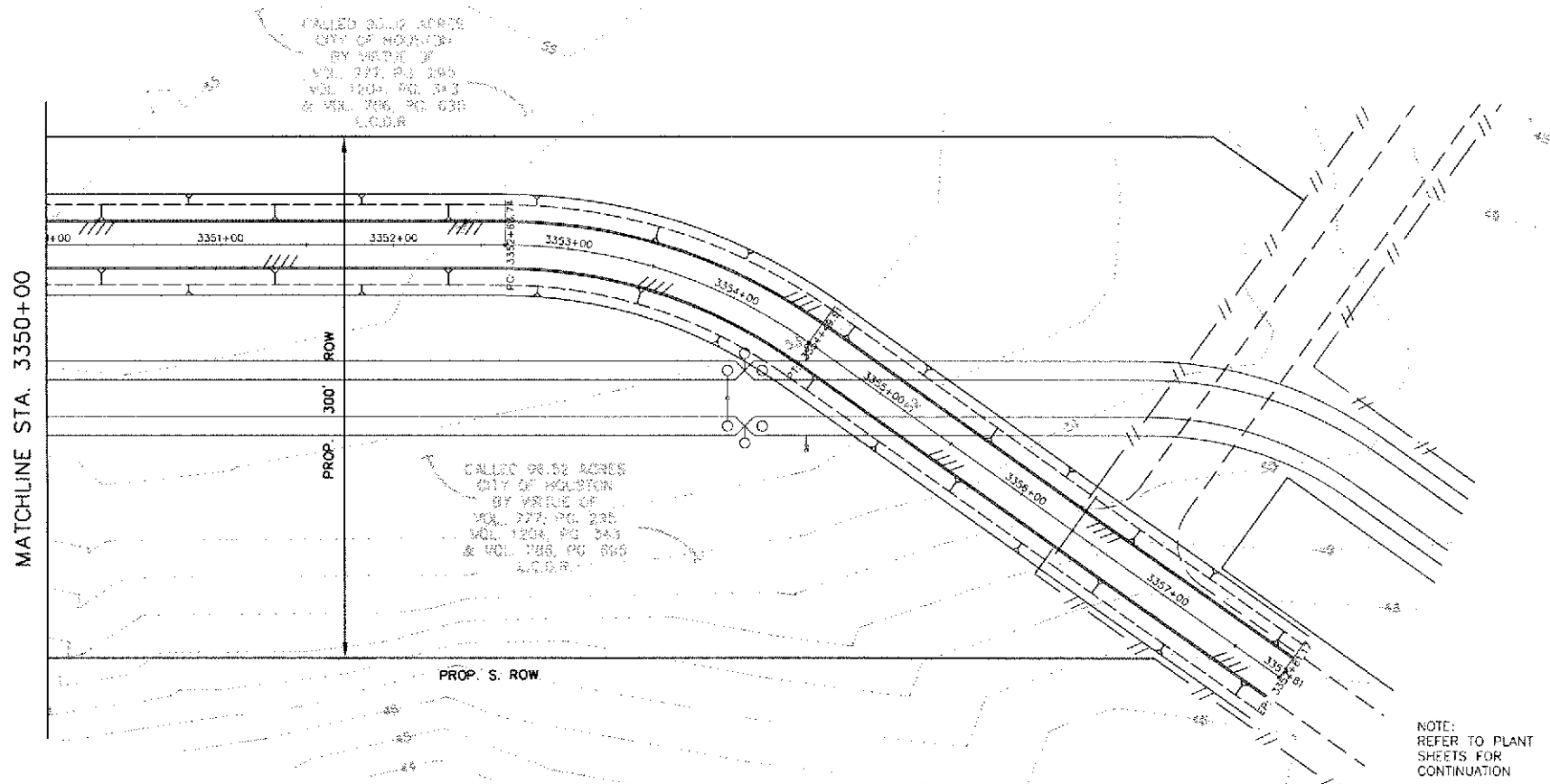


PUMP STATION ACCESS ROAD

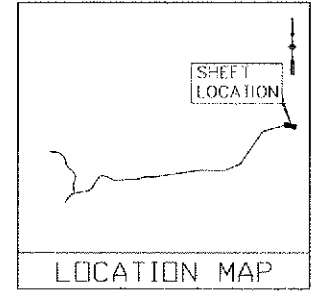


NOTE: THIS DRAWING IS
 FOR PLANNING AND
 CONCEPTUAL PURPOSES
 ONLY. DETAILED DESIGN
 TO BE COMPLETED
 DURING FINAL DESIGN

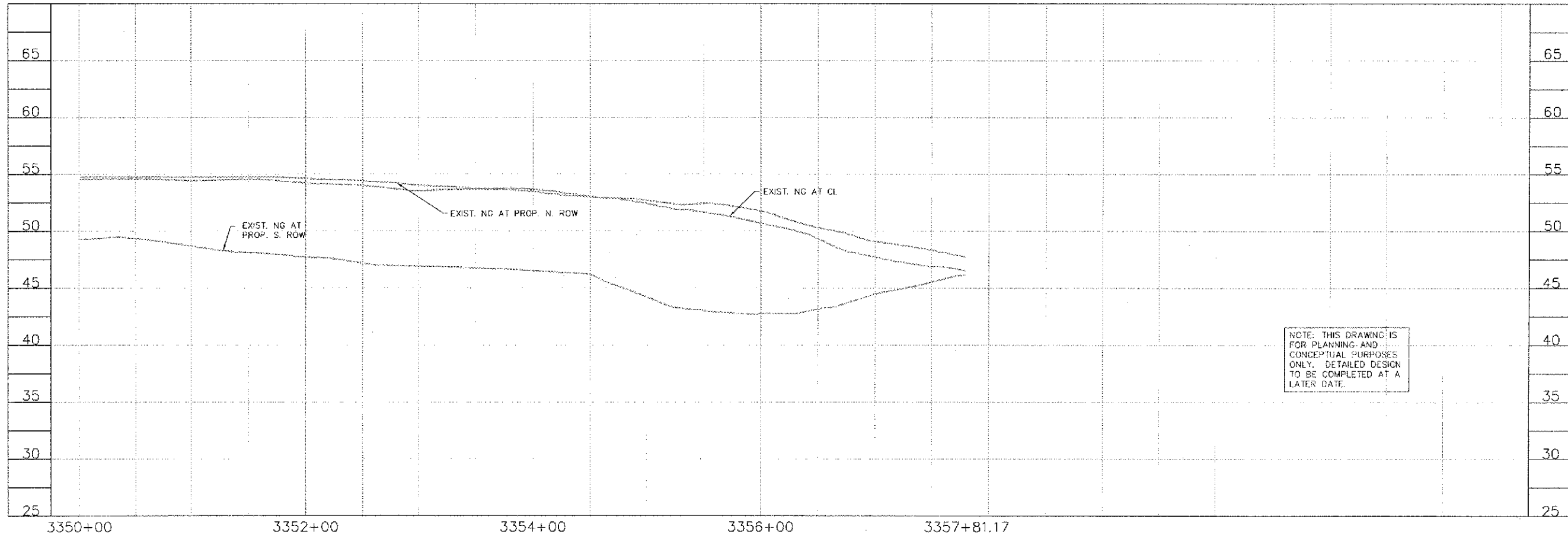
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NOTE:
 LOCATION, SPACING, AND SIZES OF
 WATERLINE VALVES AND OTHER
 APPURTENANCES TO BE REVISED
 FOLLOWING FUTURE INVESTIGATION
 AND TRANSIENT ANALYSIS



PUMP STATION ACCESS ROAD



KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION No. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057
 WWW.AECOM.COM
 1998 REG. NO. 7-2580

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 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
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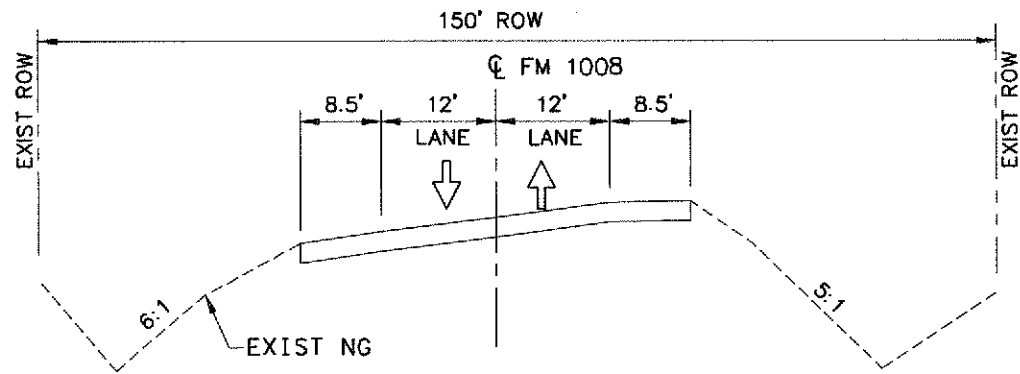
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD PLAN &
 PROFILE STA 3350+00
 TO STA 3357+81

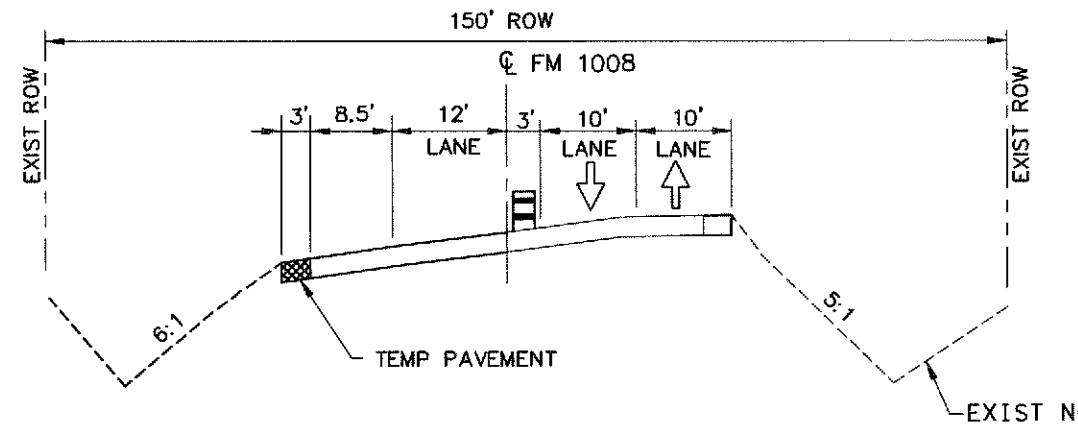
DRAWING SCALE
 AS SHOWN

SHEET NO. 187 OF 245

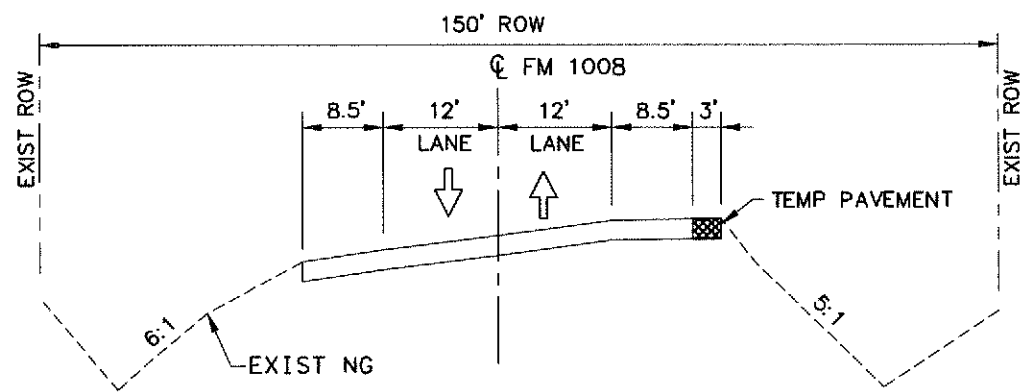
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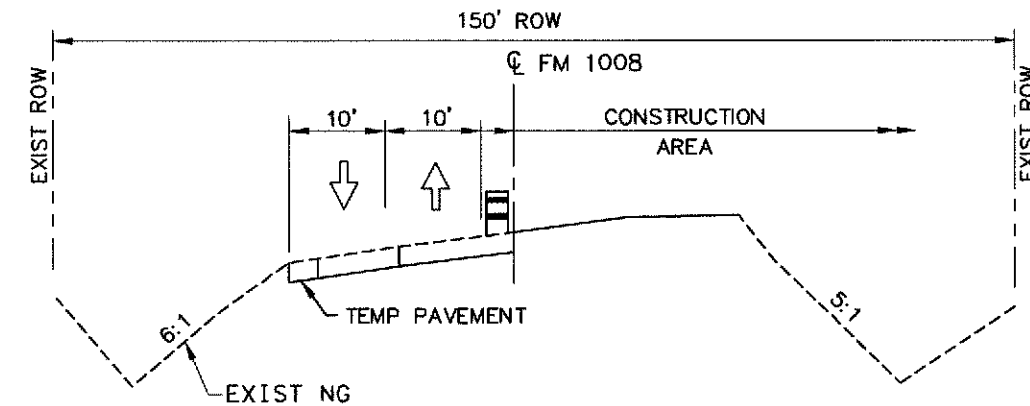
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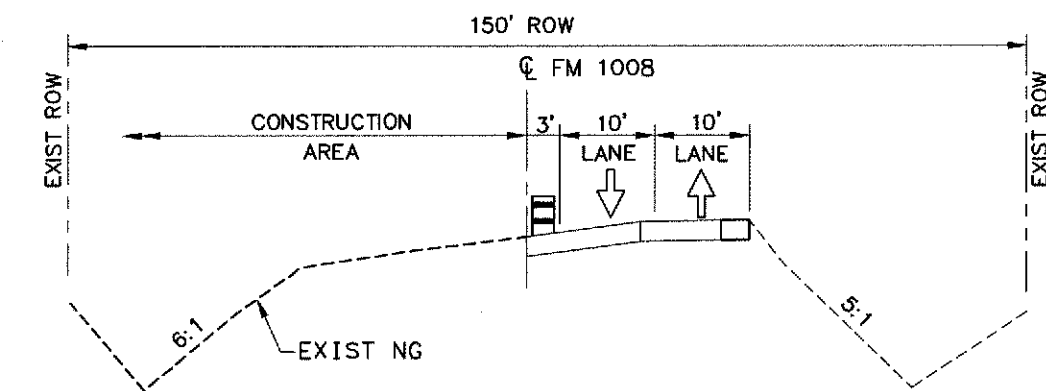
SECTION C-C
NTS



SECTION A-A
NTS






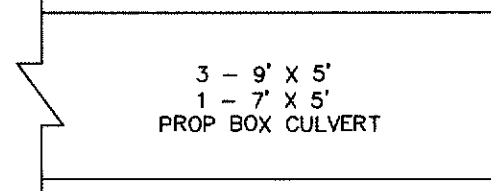
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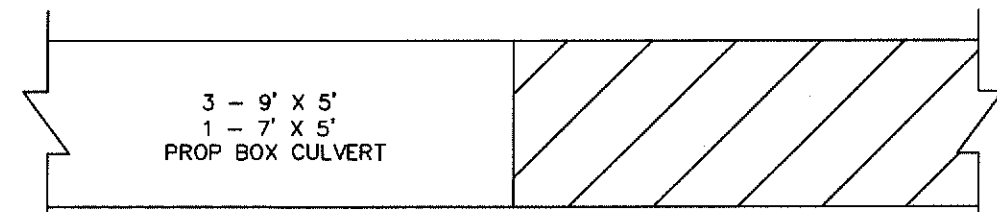
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LEGEND

-  DIRECTION TRAFFIC FLOW
-  PROP CONSTRUCTION
-  CONSTRUCTION OF TEMP PAVEMENT



3 - 9' X 5'
1 - 7' X 5'
PROP BOX CULVERT



3 - 9' X 5'
1 - 7' X 5'
PROP BOX CULVERT

PRELIMINARY
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J. A. GELACIO
56190
Date: MARCH 22, 2010

FNTECH
Civil Engineers, Inc.
F-6932

AECOM
AECOM USA GROUP, INC.
5757 WOODWAY, SUITE 200, WEST HOUSTON, TEXAS 77057-1499
713.780.4100 tel. 713.780.0838 fax

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LUCE BAYOU INTERBASIN TRANSFER PROJECT

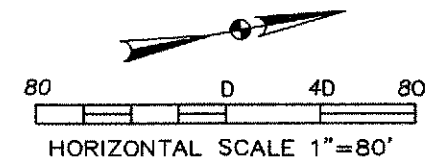
PROP CANAL AT FM 2100
TRAFFIC CONTROL TYPICAL SECTIONS

SHEET 1 OF 16

DRAWING SCALE
AS SHOWN

SHEET NO. 183 of 245

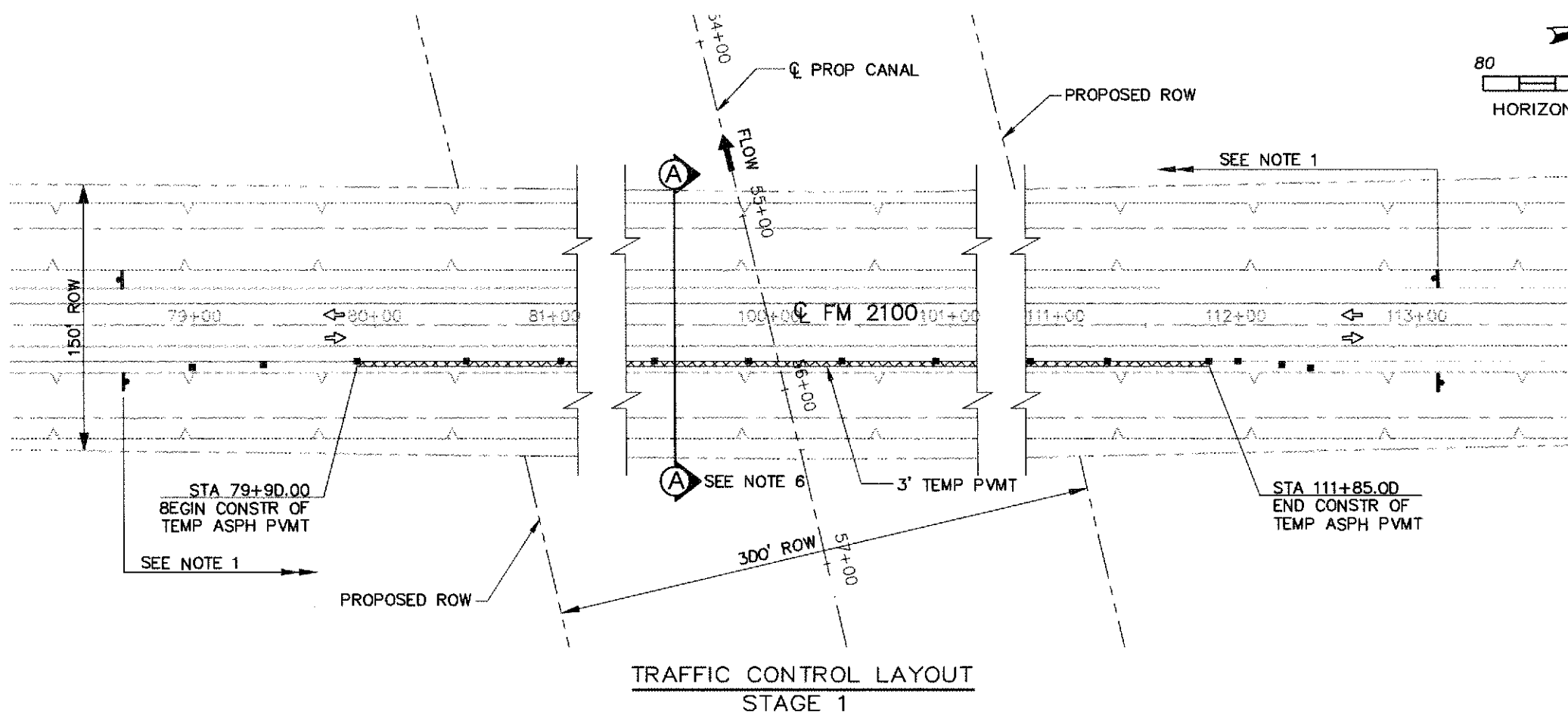
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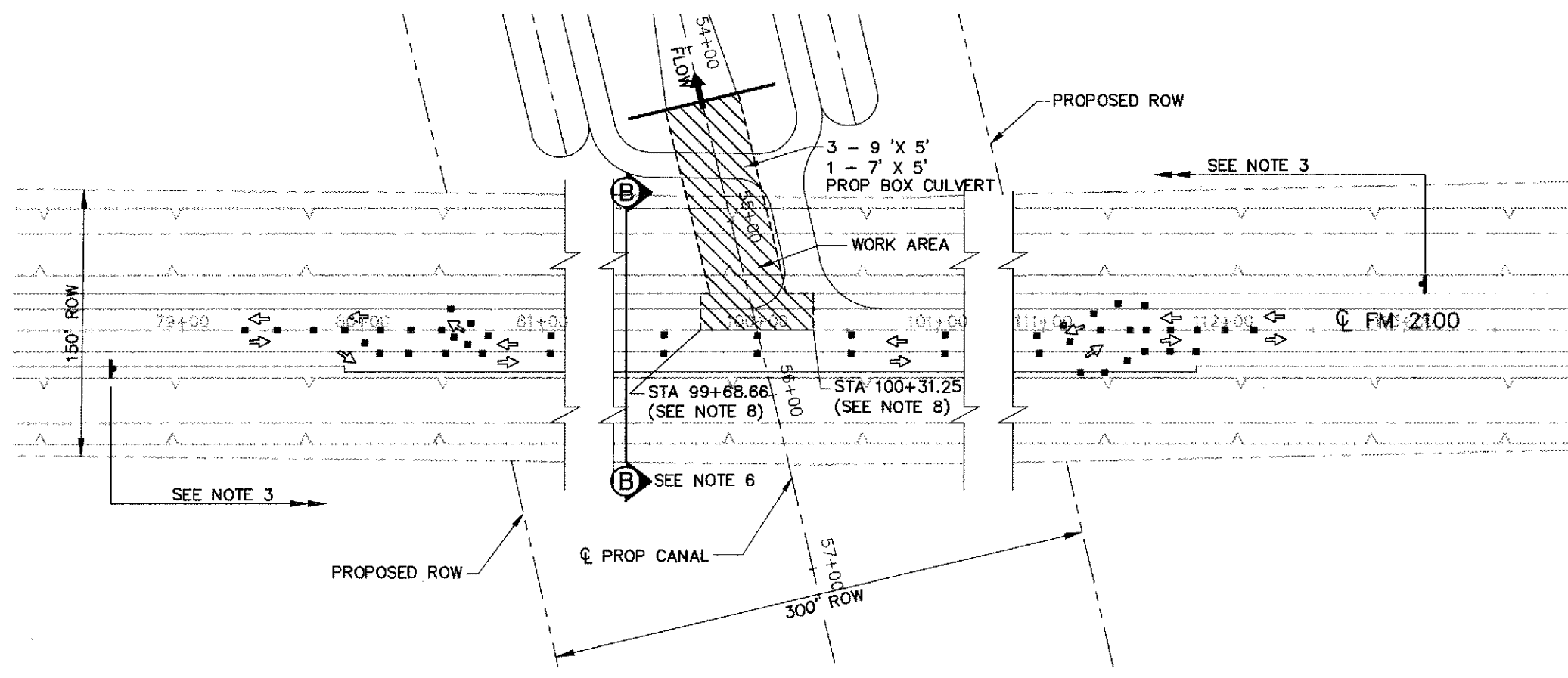
- LEGEND**
- ← TRAFFIC FLOW
 - CHANNELIZING DEVICE
 - ⊥ SIGN
 - ▨ WORK AREA
 - ▩ TEMPORARY PAVEMENT

NOTE:

1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
4. ANY CONFLICTING SIGNS SHALL BE COVERED AS DIRECTED BY ENGINEER.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
6. SEE SHEET 01, "PROP CANAL AT FM 2100 TRAFFIC CONTROL TYPICAL SECTIONS" FOR SECTION A-A AND 8-8 DETAILS.
7. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF ϕ OF PROP CANAL AND ϕ OF FM 2100 AS THE REFERENCE POINT.
8. LIMITS OF CUT AND RESTORE PVMT



**TRAFFIC CONTROL LAYOUT
STAGE 1**

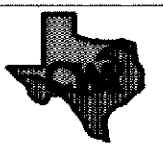


**TRAFFIC CONTROL LAYOUT
STAGE 2**

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J. A. GELACIO
56190
Date: MARCH 22, 2010



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HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

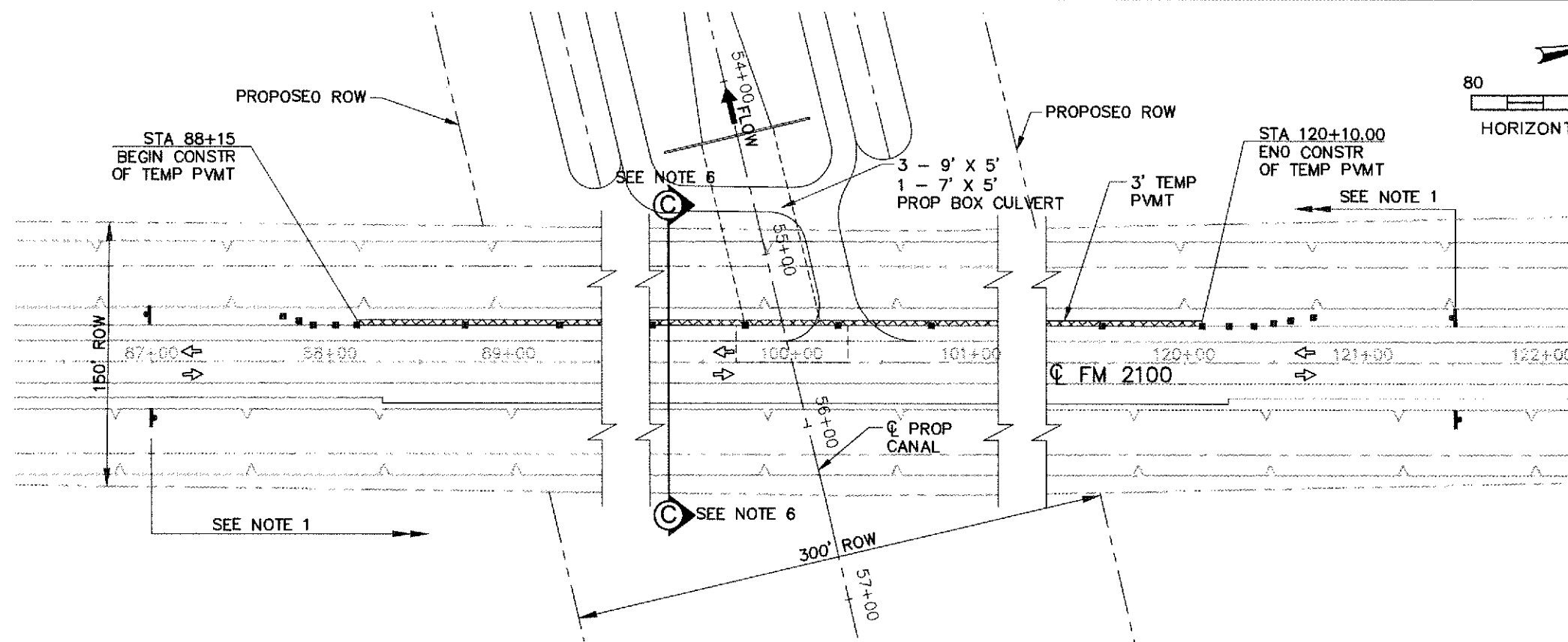


SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT
**TRAFFIC CONTROL LAYOUT
FM 2100
PHASE I
STAGE 1 & STAGE 2**
SHEET 2 OF 16

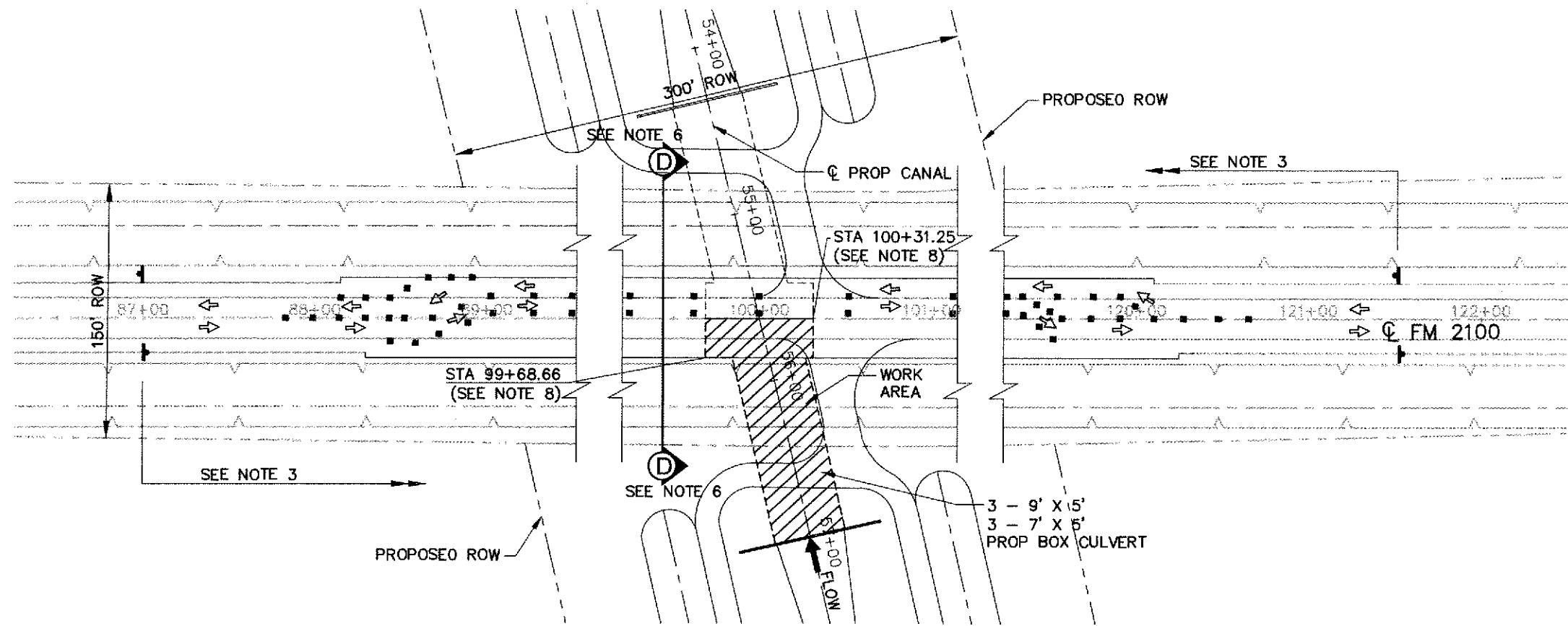
DRAWING SCALE
AS SHOWN
SHEET NO. 164 OF 295

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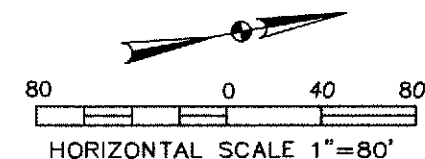
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TRAFFIC CONTROL LAYOUT
STAGE 1



TRAFFIC CONTROL LAYOUT
STAGE 2



- LEGEND**
- ← TRAFFIC FLOW
 - CHANNELIZING DEVICE
 - ⊥ SIGN
 - ▨ WORK AREA
 - ▩ TEMPORARY PAVEMENT

- NOTE:**
1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANOARO FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98" STANOARO FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 4. ANY CONFLICTING SIGNS SHALL BE COVEREO AS OIRECTED BY ENGINEER.
 5. CONTRACTOR TO MAINTAIN ACCESS TO ALL AOJACENT ORIVEWAYS.
 6. SEE SHEET 01, "PROP CANAL AT FM 2100 TRAFFIC CONTROL TYPICAL SECTIONS" FOR SECTION C-C AND O-O DETAILS.
 7. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL OISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF C OF PROP CANAL AND C OF FM 2100 AS THE REFERENCE POINT.
 8. LIMITS OF CUT AND RESTORE PVMT

PRELIMINARY
 Document Incomplete: not intended for permit, bidding or construction.
 J. A. GELACIO
 56190
 Date: MARCH 22, 2010

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 CIVIL ENGINEERS, INC.
 F-6932

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AECOM USA GROUP, INC.
 5757 WOODWAY BLVD
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax

SURVEYED BY:
 FB NO.

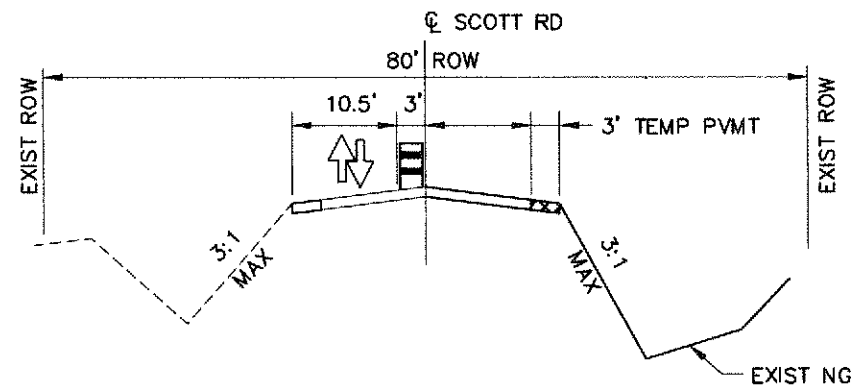
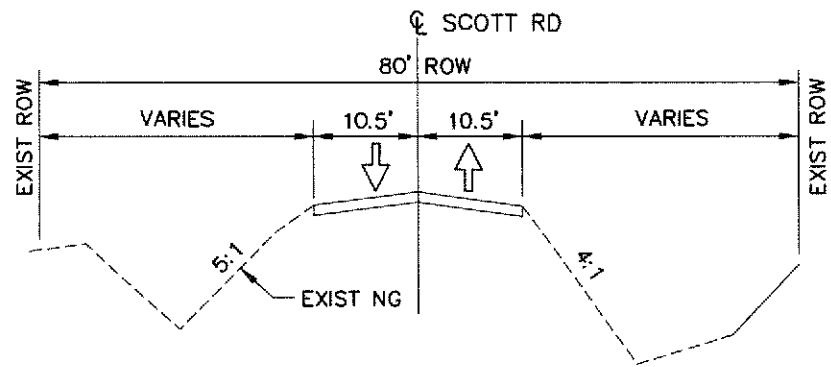
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

TRAFFIC CONTROL LAYOUT
 FM 2100
 PHASE II
 STAGE 1 & STAGE 2

SHEET 3 OF 16

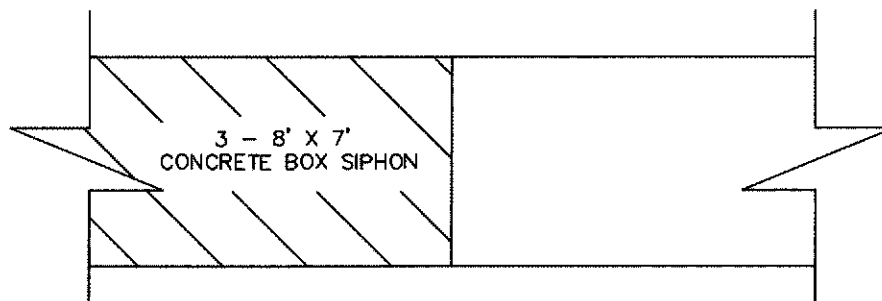
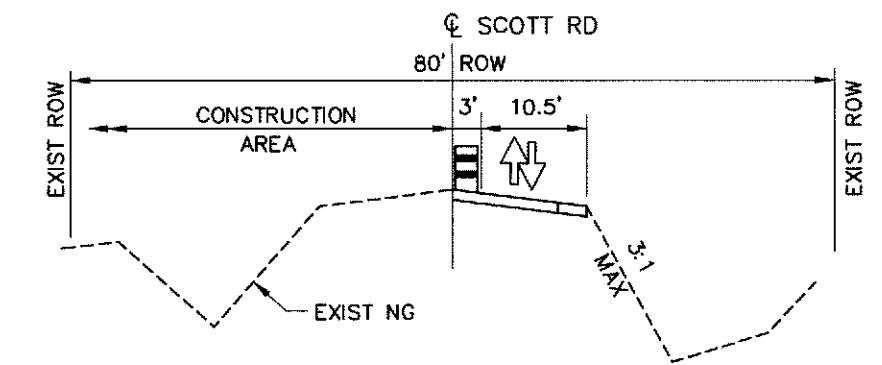
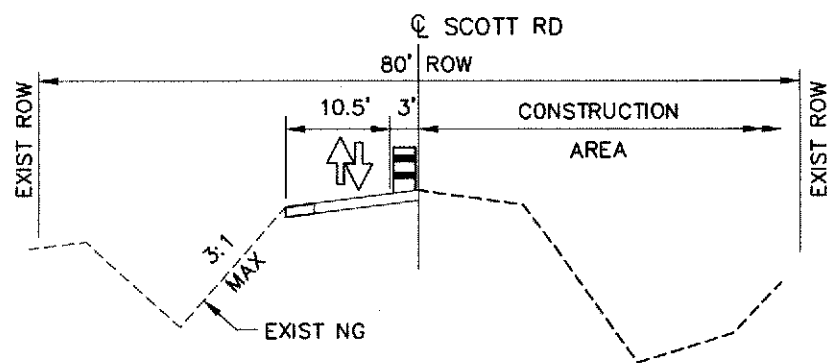
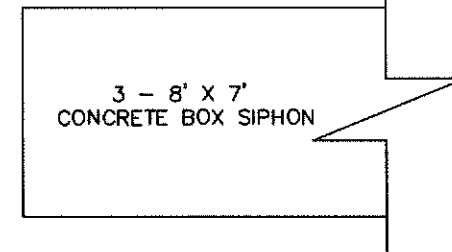
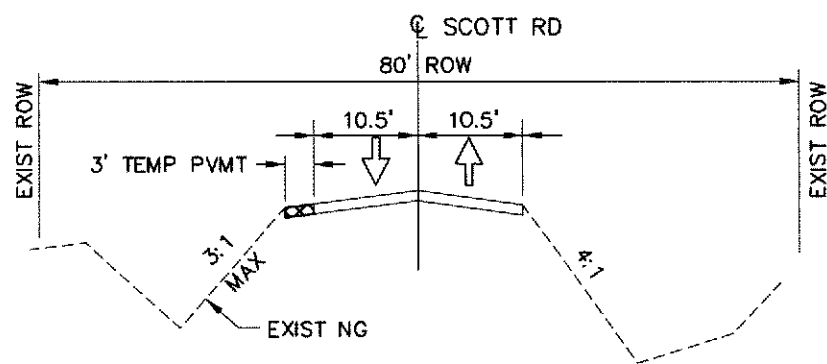
DRAWING SCALE
 AS SHOWN

SHEET NO. 185 OF 245



LEGEND

- TRAFFIC FLOW
- PROP CONSTRUCTION
- CONSTRUCTION OF TEMP PVMT



PRELIMINARY
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J. A. GELACIO
56190
Date: MARCH 22, 2010



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AECOM USA GROUP, INC.
5757 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057-1500
713.780.4100 tel.
713.780.0838 fax.



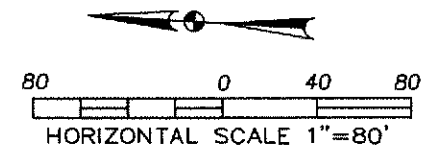
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT

PROP CANAL AT SCOTT RD
TRAFFIC CONTROL TYPICAL
SECTIONS

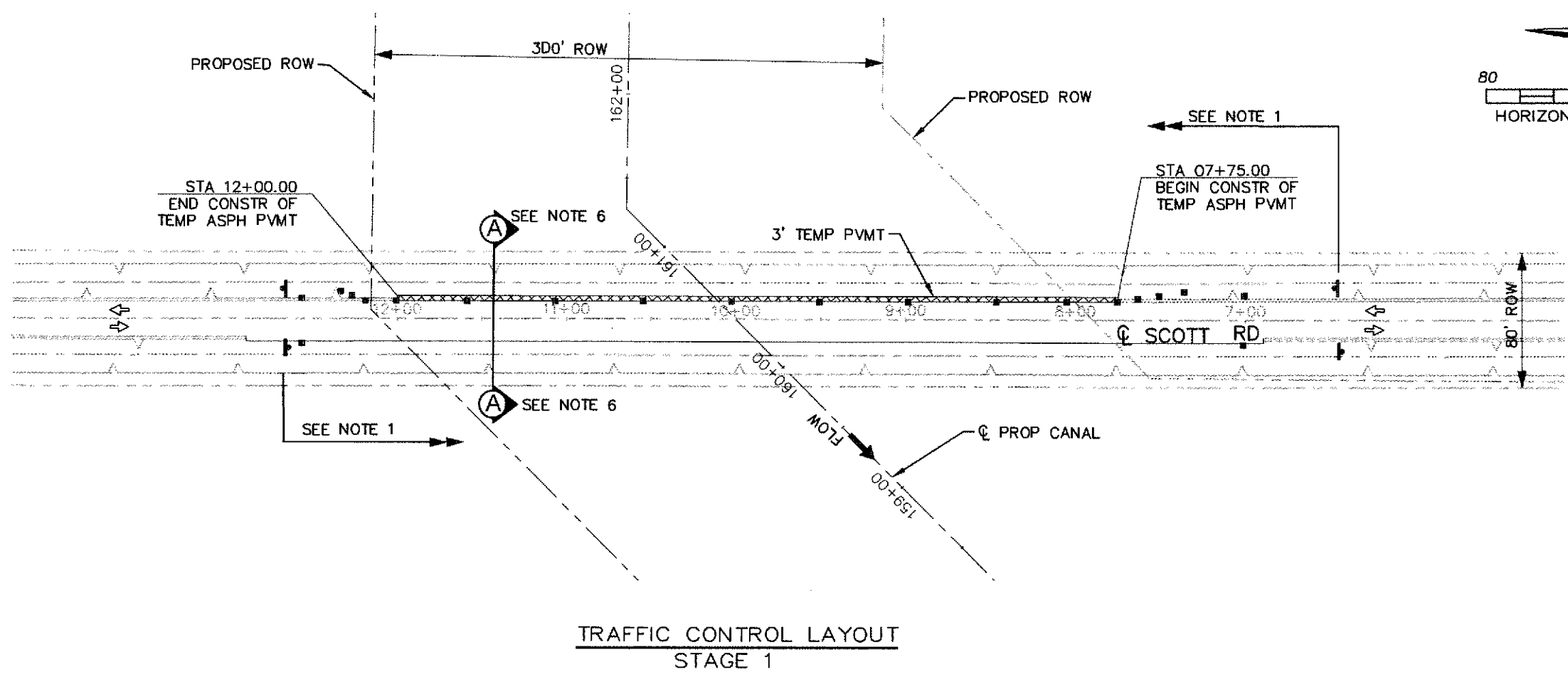
SHEET 4 OF 16

DRAWING SCALE
AS SHOWN
SHEET NO. 186 OF 245

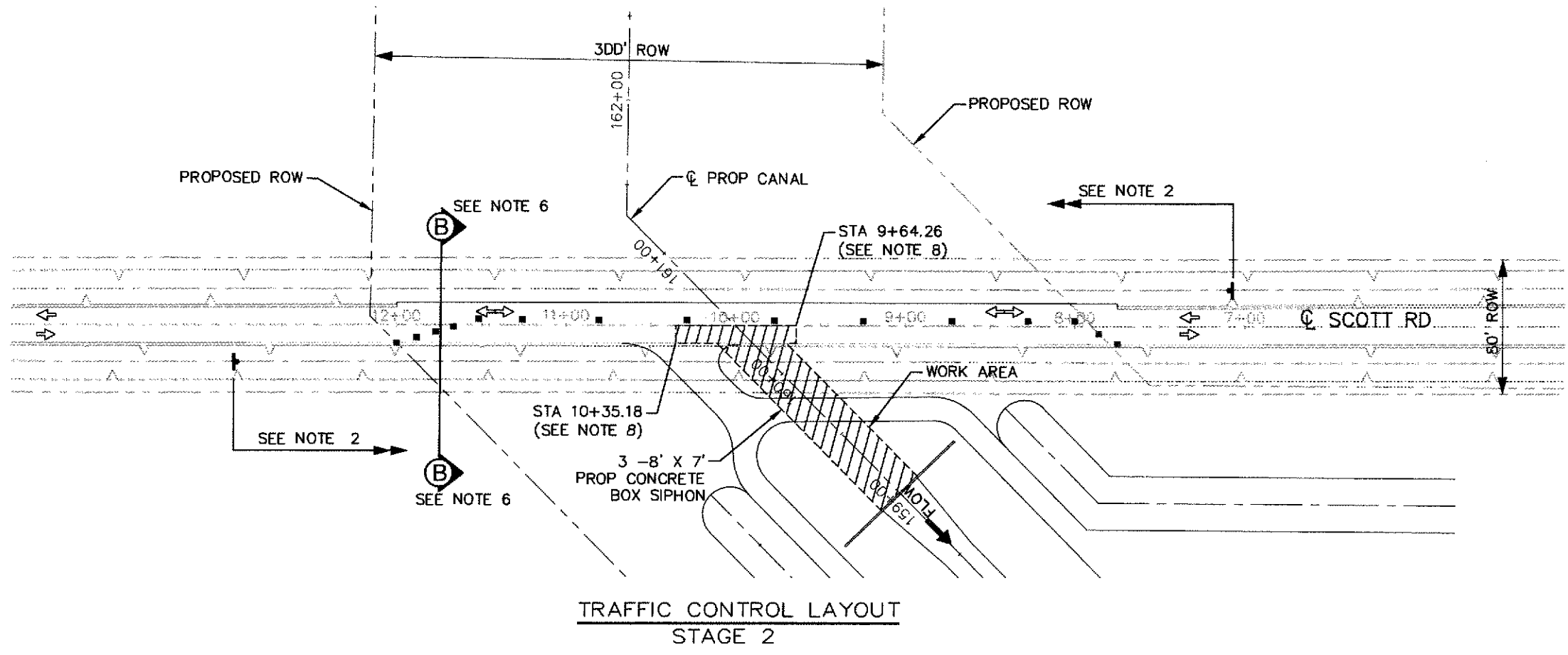
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 DWG. LOCATION: N:\9745-08-001\dwg\TOP
 DWG. NAME: TOP_SCOTT RD_Cross Sections.dwg



- ### LEGEND
- TRAFFIC FLOW
 - CHANNELIZING DEVICE
 - SIGN
 - WORK AREA
 - TEMPORARY PAVEMENT



- NOTE:
1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 4. ANY CONFLICTING SIGNS SHALL BE COVERED AS DIRECTED BY ENGINEER.
 5. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
 6. SEE SHEET 04, "PROP CANAL AT SCOTT RD TRAFFIC CONTROL TYPICAL SECTIONS" FOR SECTION A-A AND B-B DETAILS.
 7. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF C OF PROP CANAL AND C OF SCOTT RD AS THE REFERENCE POINT.
 8. LIMITS OF CUT AND RESTORE PVMT



PRELIMINARY
Document incomplete: not intended for permit, bidding or construction.
J. A. GELACIO
56190
Date: MARCH 22, 2010

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CIVIL ENGINEERS, INC.
F-6932

AECOM
AECOM USA GROUP, INC.
5757 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax

SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

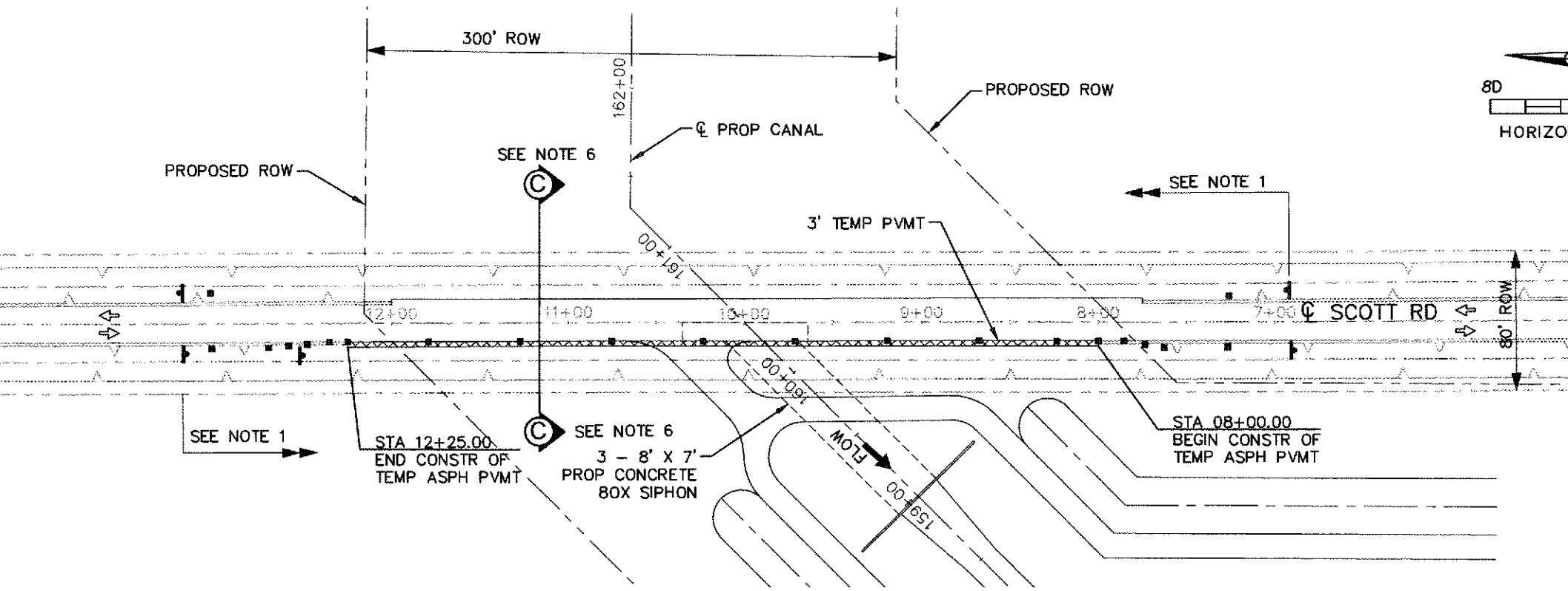
TRAFFIC CONTROL LAYOUT
AT SCOTT RD
PHASE I
STAGE 1 & STAGE 2

SHEET 5 OF 16

DRAWING SCALE
AS SHOWN

SHEET NO. 167 OF 245

LAST MODIFIED: Mar 30, 2010 - 4:11pm BY USER: mmlia
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 DWG. NAME: TCP_SCOTT_RD_P1.dwg

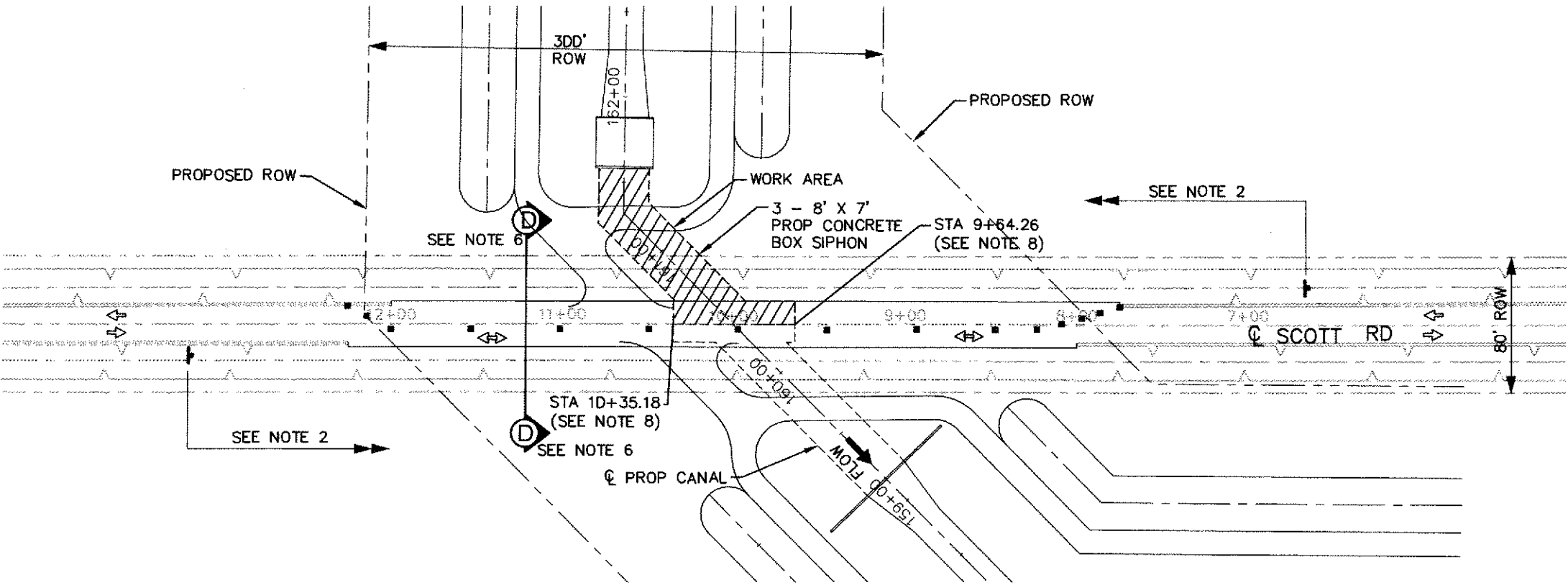


TRAFFIC CONTROL LAYOUT
STAGE 1

LEGEND

- ↔ TRAFFIC FLOW
- CHANNELIZING DEVICE
- ↑ SIGN
- ▨ WORK AREA
- ▩ TEMPORARY PAVEMENT

- NOTE:
- SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 - SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 - SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 - ANY CONFLICTING SIGNS SHALL BE COVERED AS DIRECTED BY ENGINEER.
 - CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
 - SEE SHEET D4, "PROP CANAL AT SCOTT RD TRAFFIC CONTROL TYPICAL SECTIONS" FOR SECTION A-A AND B-B DETAILS.
 - CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF C OF PROP CANAL AND C OF SCOTT RD AS THE REFERENCE POINT.
 - LIMITS OF CUT AND RESTORE PVMT



TRAFFIC CONTROL LAYOUT
STAGE 2

PRELIMINARY
Document incomplete; not intended for permit, bidding or construction.

J. A. CELACIO
56190
Date: MARCH 22, 2010

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713.780.0838 Fax

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COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

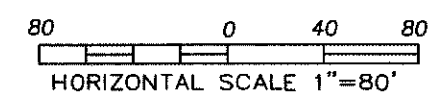
TRAFFIC CONTROL LAYOUT
AT SCOTT RD
PHASE II
STAGE 1 & STAGE 2

SHEET 6 OF 16

DRAWING SCALE
AS SHOWN

SHEET NO. 108-245

LAST MODIFIED: Mar 30, 2010 - 4:12pm
BY USER: rmallo
DWG. LOCATION: N:\5745-09-001\dwg\TCP\DWG. NAME: TCP_SCOTT_RD_P12.dwg

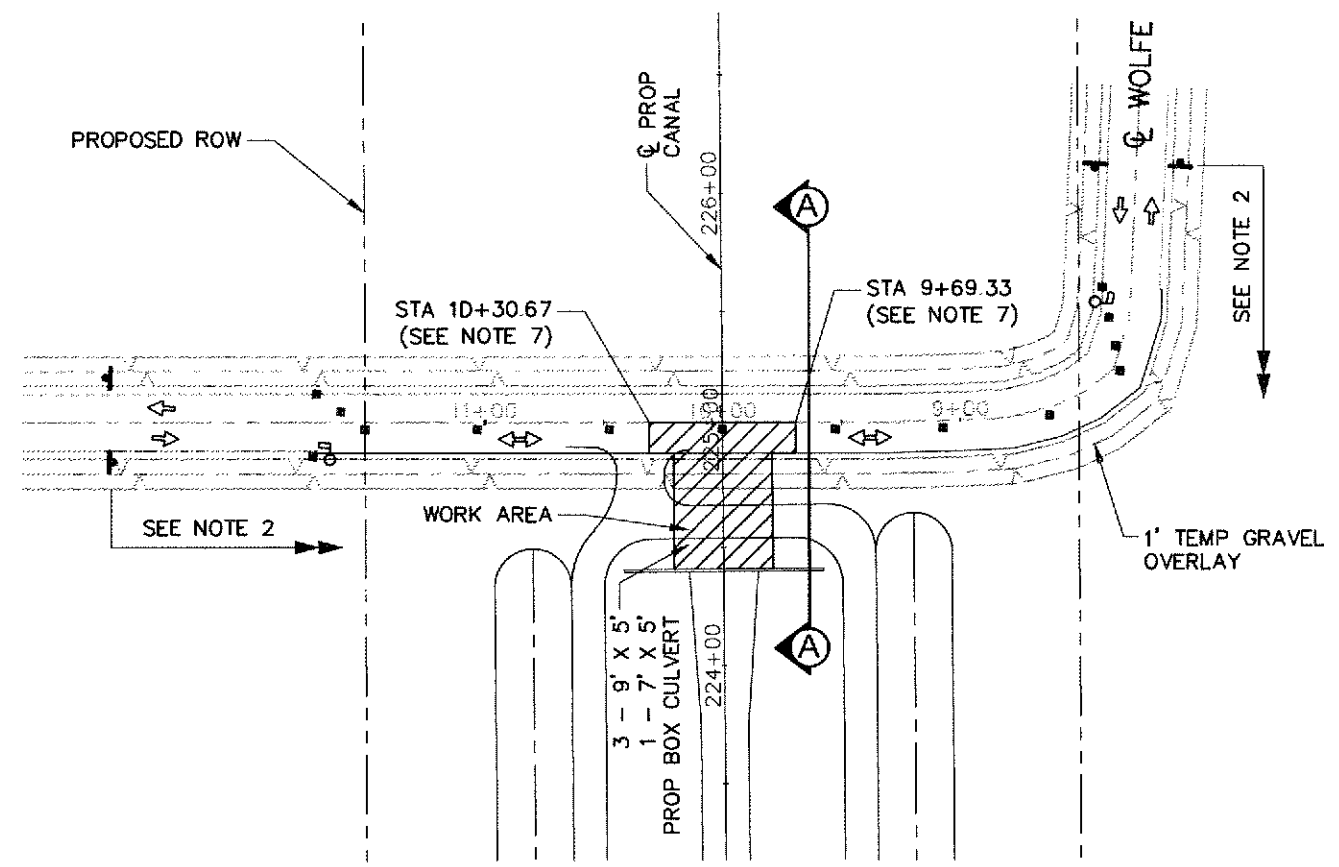


LEGEND

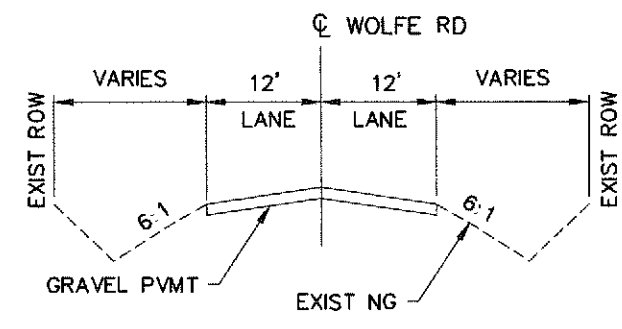
- TRAFFIC FLOW
- CHANNELIZING DEVICE
- SIGN
- WORK AREA
- TEMPORARY PAVEMENT

NOTE:

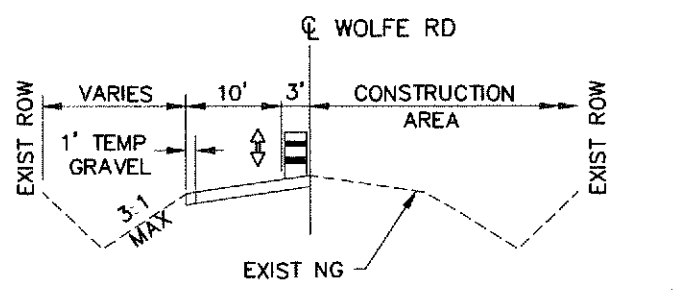
1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98B" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
4. ANY CONFLICTING SIGNS SHALL BE COVERED AS DIRECTED BY ENGINEER.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
6. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF C OF PROP CANAL AND C OF WOLFE RD AS THE REFERENCE POINT.
7. LIMITS OF CUT AND RESTORE PVMT



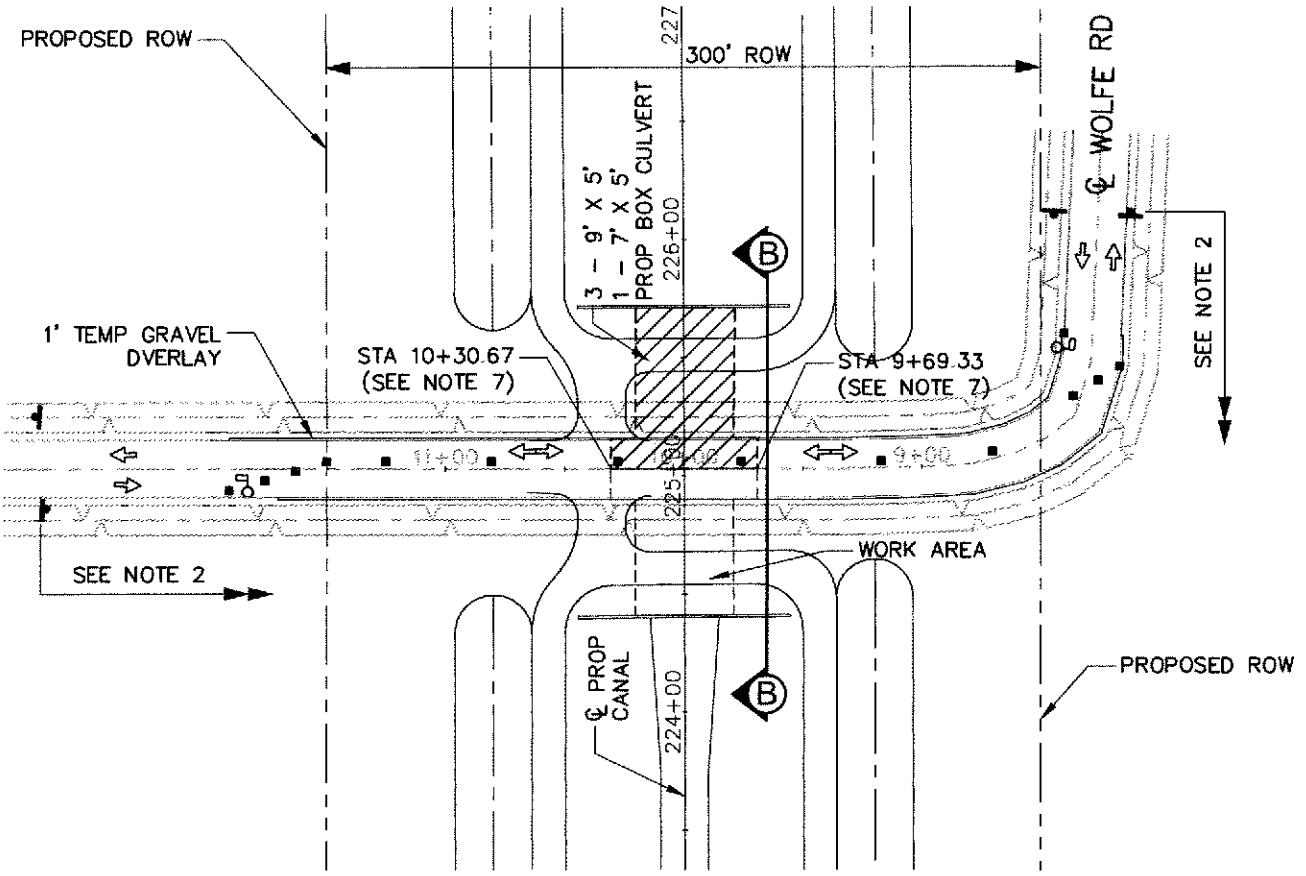
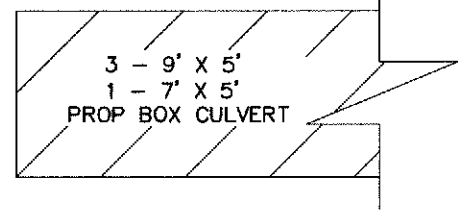
**TRAFFIC CONTROL LAYOUT
PHASE 1**



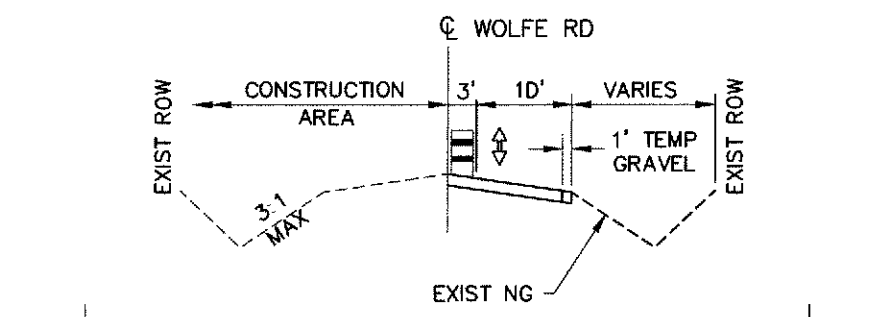
**EXIST. TYP SECTION
NTS**



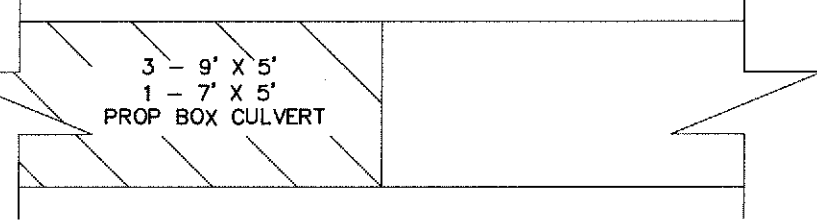
**SECTION A-A
NTS**



**TRAFFIC CONTROL LAYOUT
PHASE 2**



**SECTION B-B
NTS**



LAST MODIFIED: Mar 30, 2010 - 4:13pm BY USER: rmallo
 DWG. LOCATION: N:\5745-08-001\dwg\TCP\DWG. NAME: TCP_WOLFE_RD_P1.dwg

PRELIMINARY
 Document Incomplete: not intended
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J. A. GELACIO
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 Date: MARCH 22, 2010

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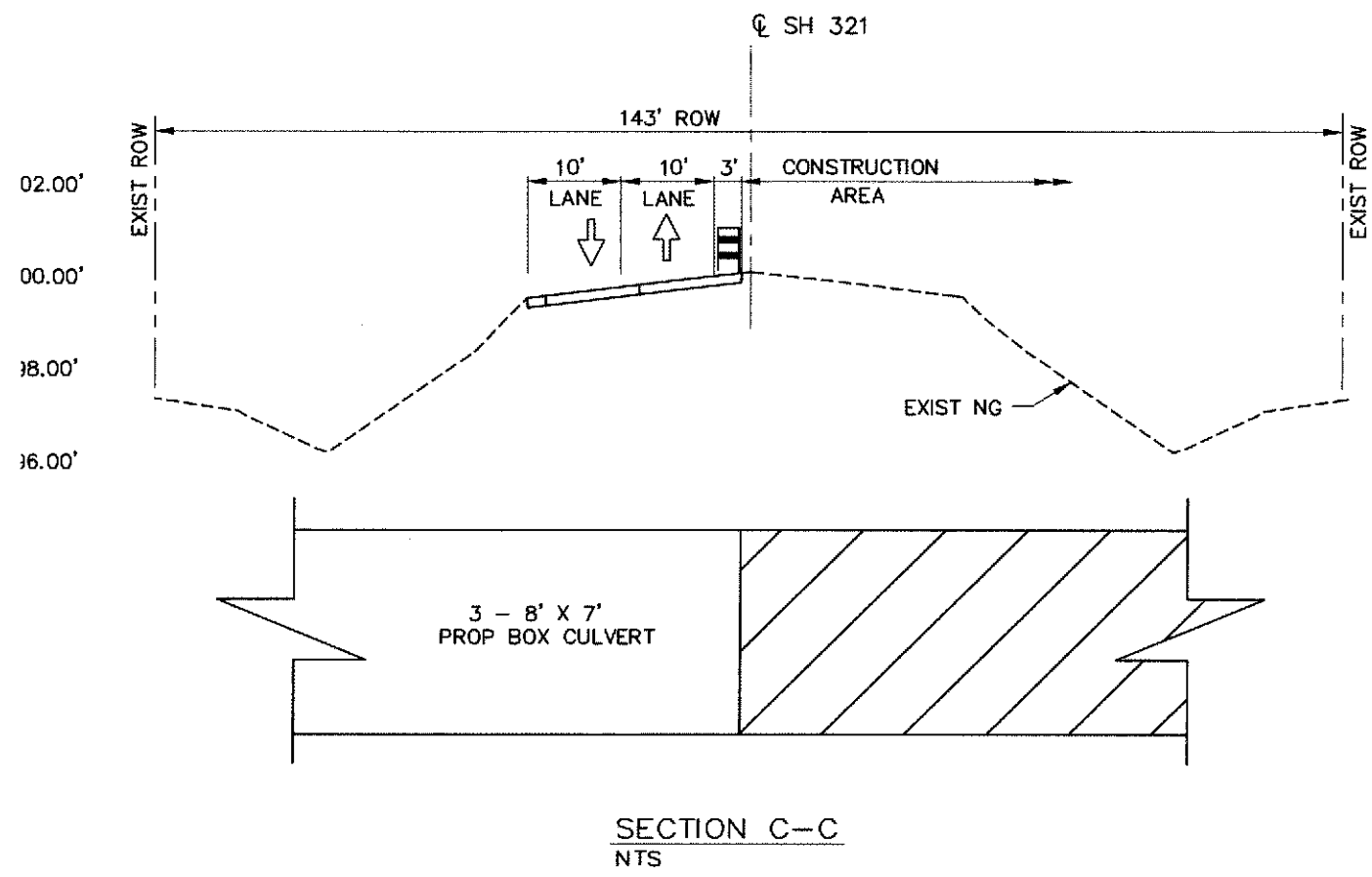
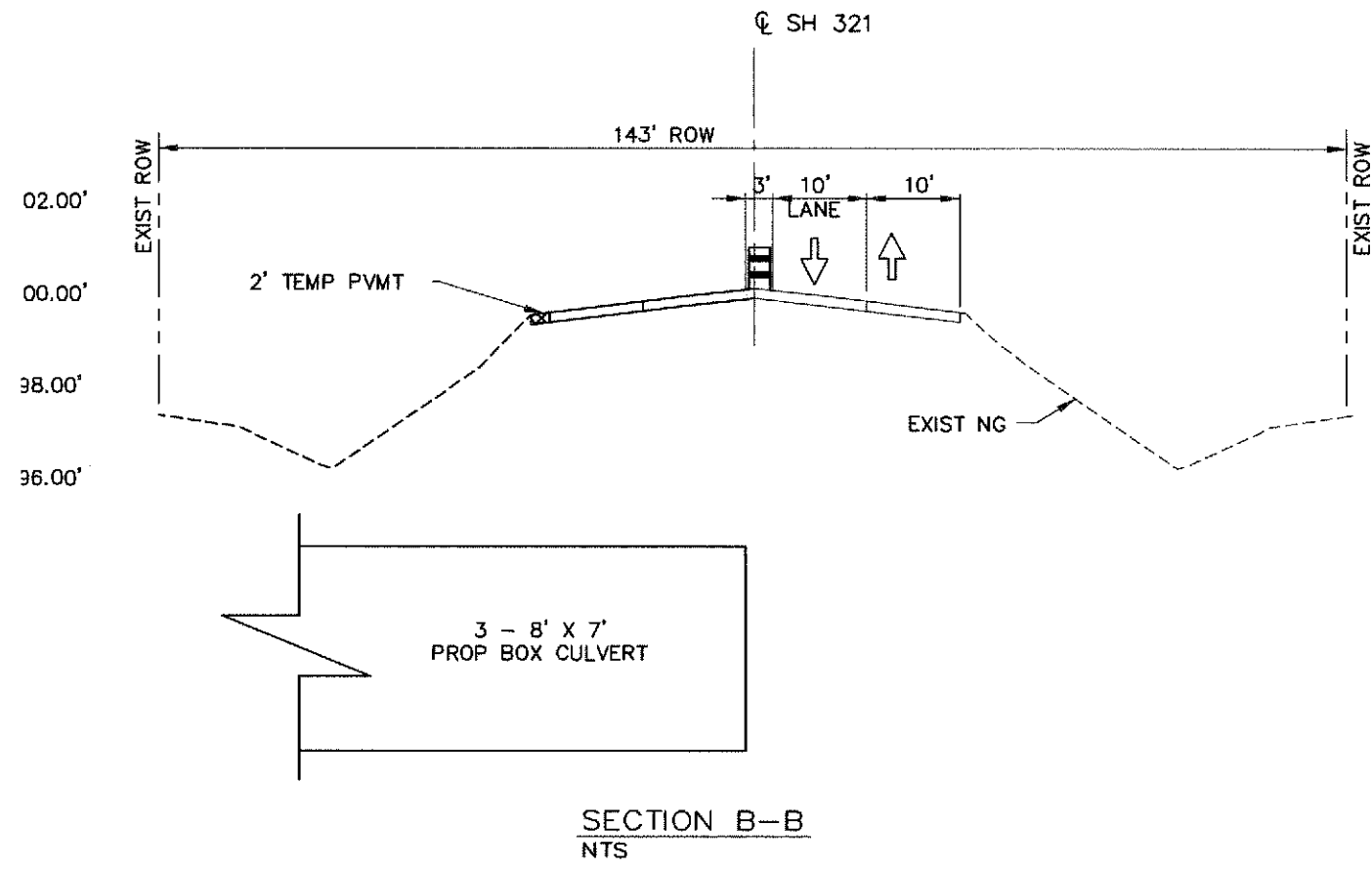
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

**TRAFFIC CONTROL LAYOUT
 AND TYPICAL SECTIONS
 AT WOLFE RD**




SHEET 7 OF 16

DRAWING SCALE
 AS SHOWN

SHEET NO. 189 OF 245



LEGEND

-  TRAFFIC FLOW
-  PROP CONSTRUCTION
-  CONSTRUCTION OF TEMP PVMT

PRELIMINARY
Document Incomplete: not intended for permit, bidding or construction.
J. A. GELACIO
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Date: MARCH 3, 2010

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713.780.0838 fax.

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FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

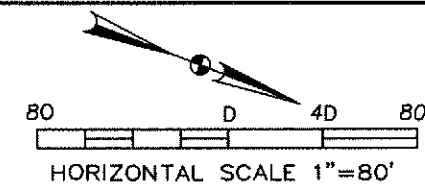
PROP CANAL AT SH 321
TRAFFIC CONTROL TYPICAL SECTIONS

SHEET 8 OF 16

DRAWING SCALE
AS SHOWN

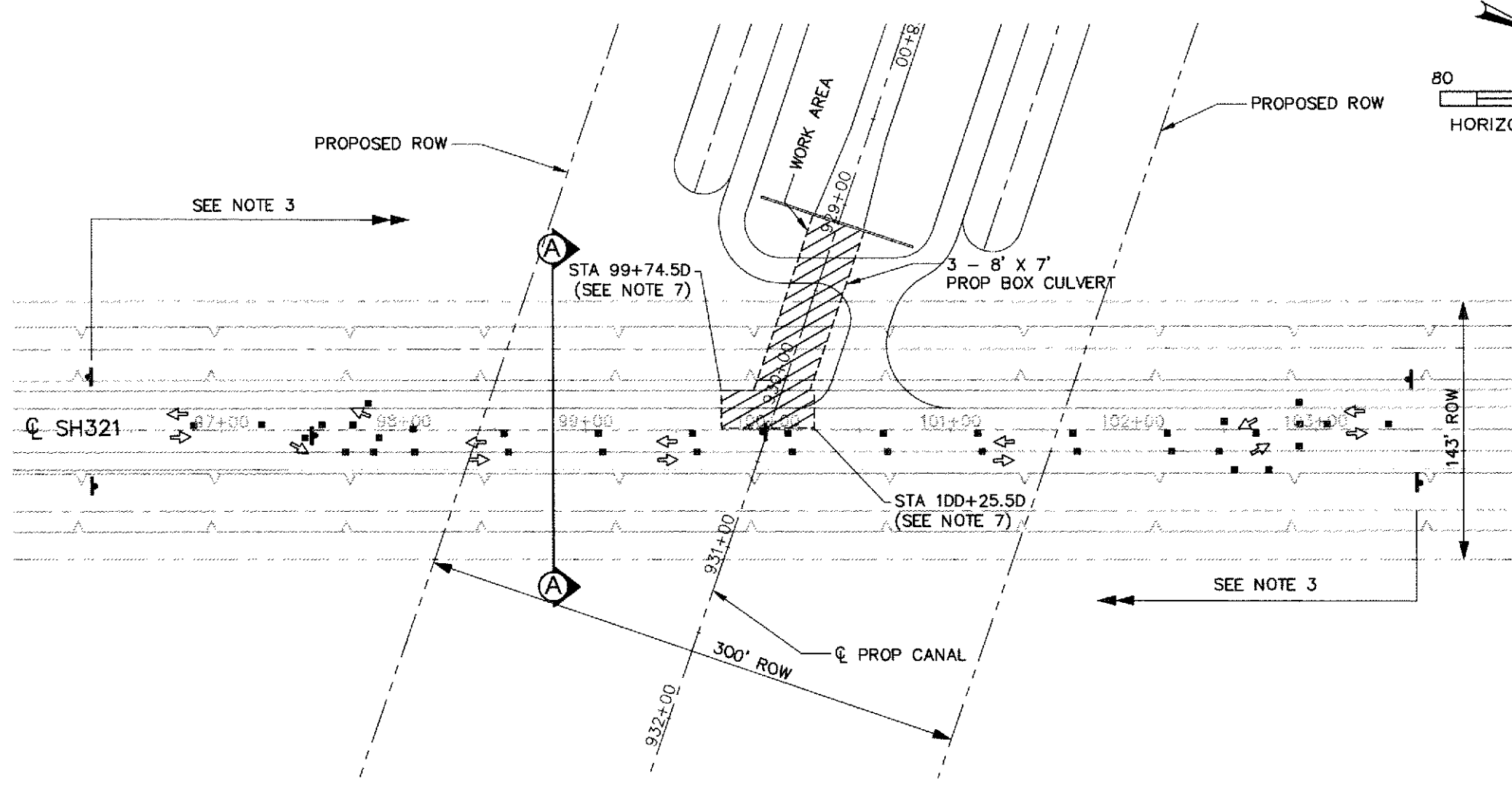
SHEET NO. 190 OF 245

LAST MODIFIED: Mar 30, 2010 - 4:14pm BY USER: rmdallo
DWG. LOCATION: N:\9745-09-001\dwg\TOP\DWG. NAME: TOP_SH321_Cross Sections.dwg



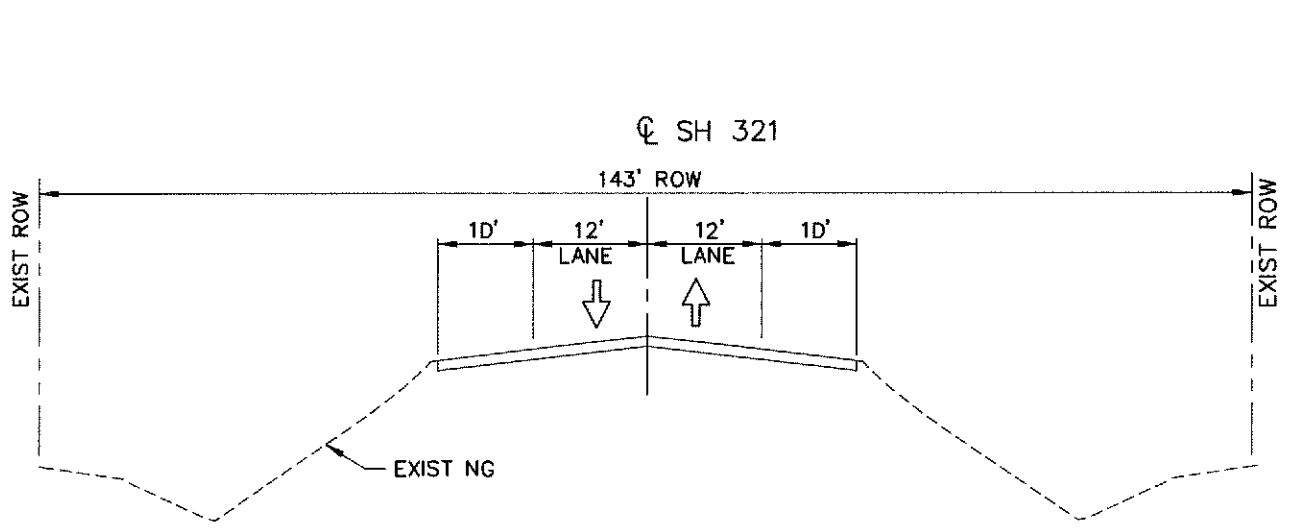
LEGEND

	TRAFFIC FLOW
	CHANNELIZING DEVICE
	SIGN
	WDRK AREA
	TEMPORARY PAVEMENT

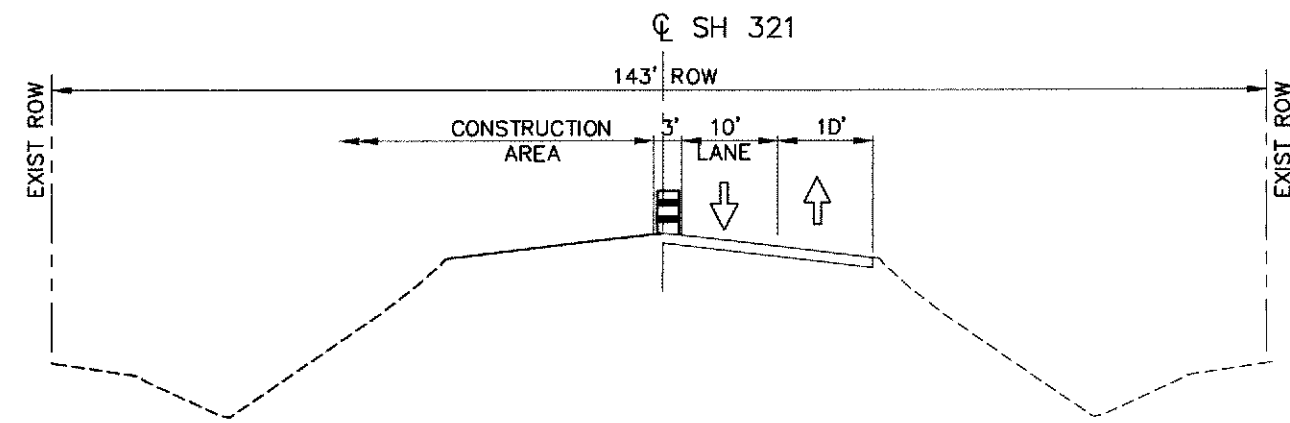


- NOTE:**
1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 4. ANY CONFLICTING SIGNS SHALL BE COVERED AS DIRECTED BY ENGINEER.
 5. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
 6. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF C/L OF PROP CANAL AND C/L OF SH 321 AS THE REFERENCE POINT.
 7. LIMITS OF CUT AND RESTORE PVMT

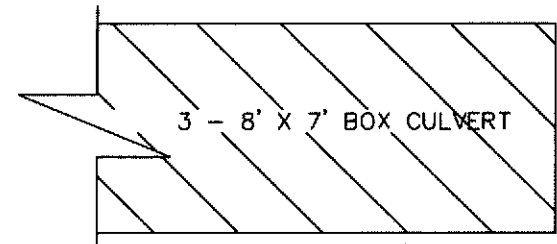
**TRAFFIC CONTROL LAYOUT
PHASE 1**



**EXIST. TYP SECTION
NTS**



**SECTION A-A
NTS**



PRELIMINARY
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J. A. GELACIO
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Date: MARCH 22, 2010

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LUCE BAYOU INTERBASIN TRANSFER PROJECT

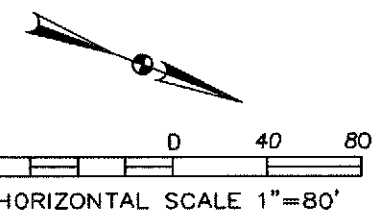
TRAFFIC CONTROL LAYOUT AND TYPICAL SECTIONS AT SH 321 PHASE I

SHEET 9 OF 16

DRAWING SCALE AS SHOWN

SHEET NO. 191 OF 245

LAST MODIFIED: Mar 30, 2010 - 4:16pm BY USER: mmatia
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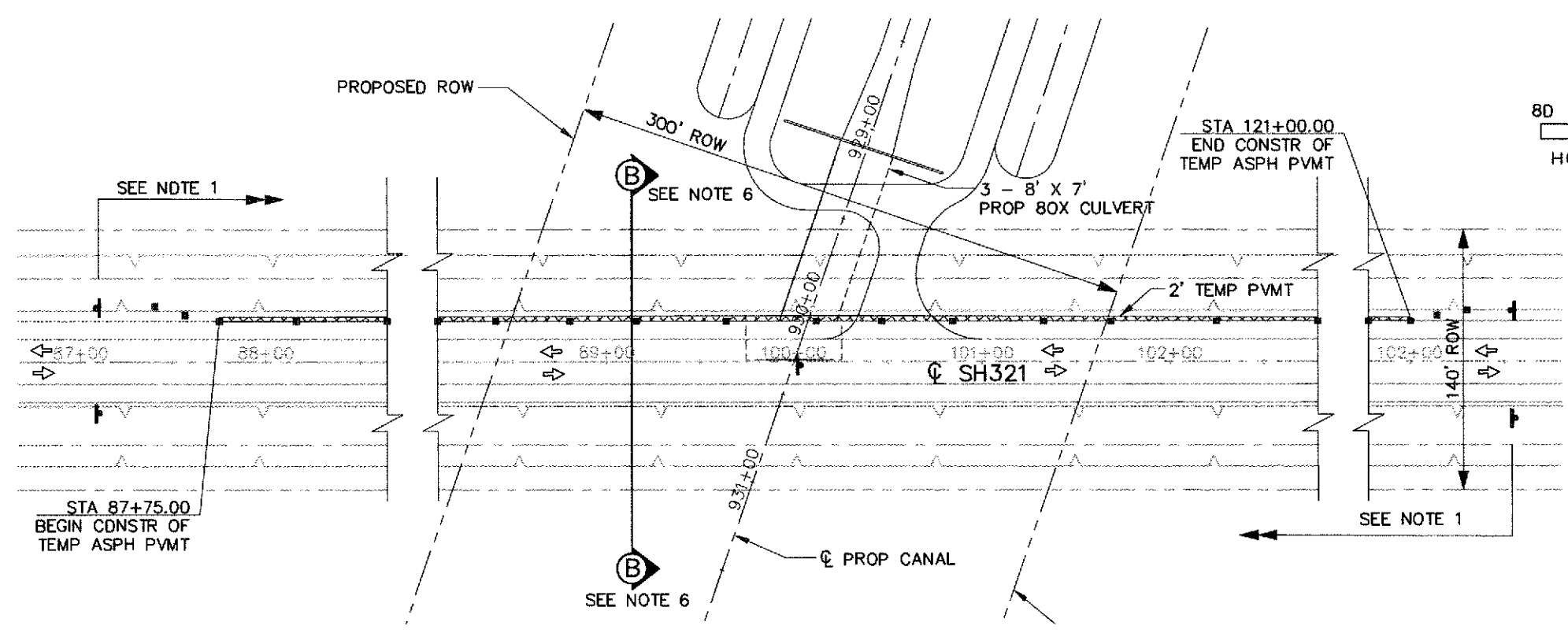


LEGEND

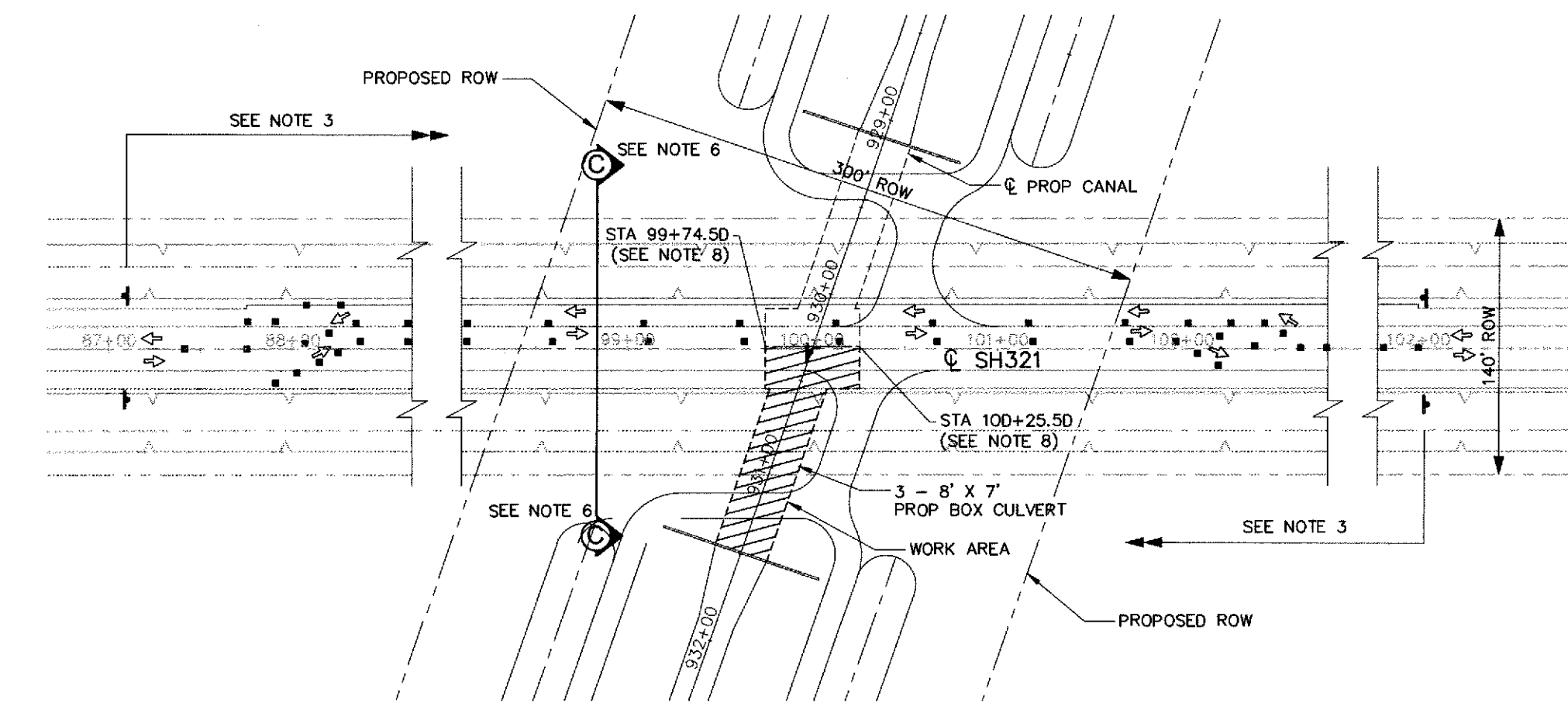
	TRAFFIC FLOW
	CHANNELIZING DEVICE
	SIGN
	WORK AREA
	TEMPORARY PAVEMENT

NOTE:

1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
4. ANY CONFLICTING SIGNS SHALL BE COVERED AS DIRECTED BY ENGINEER.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
6. SEE SHEET 8, "PROP CANAL AT SH 321 TRAFFIC CONTROL TYPICAL SECTIONS" FOR SECTION B-B AND C-C DETAILS.
7. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF ϕ OF PROP CANAL AND ϕ OF SH 321 AS THE REFERENCE POINT.
8. LIMITS OF CUT AND RESTORE PVMT



**TRAFFIC CONTROL LAYOUT
STAGE 1**



**TRAFFIC CONTROL LAYOUT
STAGE 2**

PRELIMINARY
Document incomplete; not intended
for permit, bidding or construction.

J. A. GELACIO
56190
Date: MARCH 22, 2010

FNTECH
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AECOM USA GROUP, INC.
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713.780.0838 fax.

SURVEYED BY:
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COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

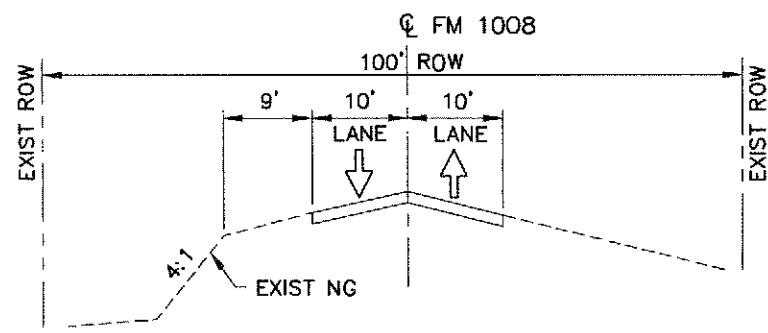
**TRAFFIC CONTROL LAYOUT
SH 321
PHASE II
STAGE 1 & STAGE 2**

SHEET 10 OF 16

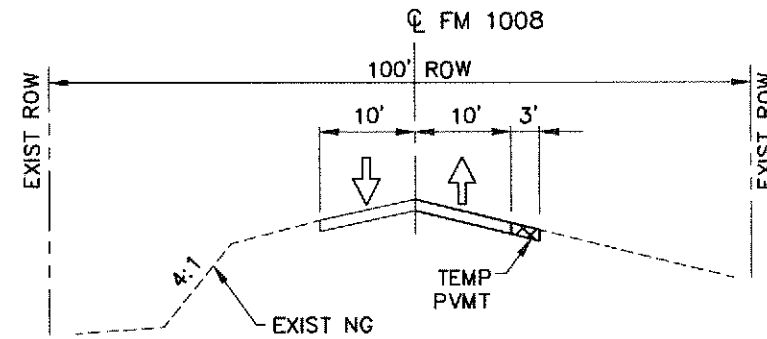
DRAWING SCALE
AS SHOWN

SHEET NO. 192 OF 245

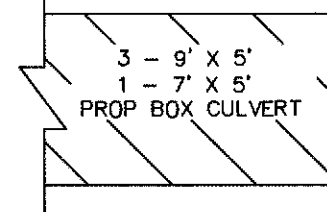
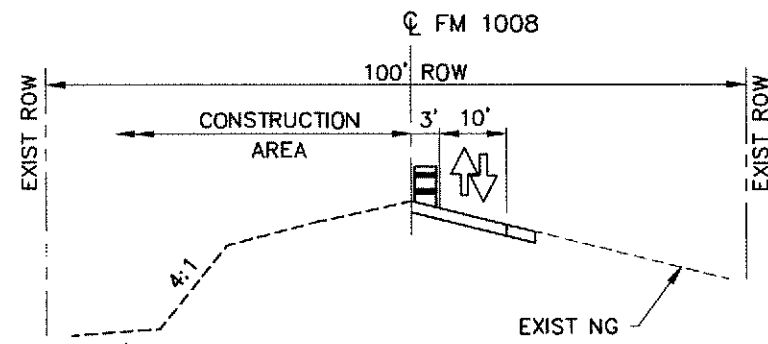
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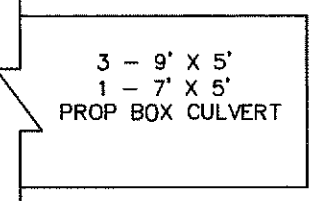
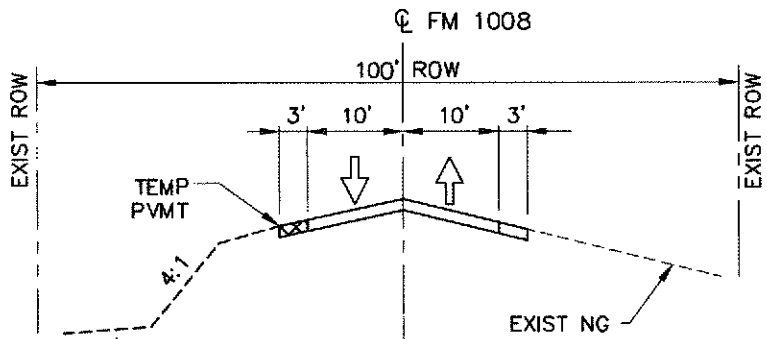
EXIST. TYP SECTION
NTS



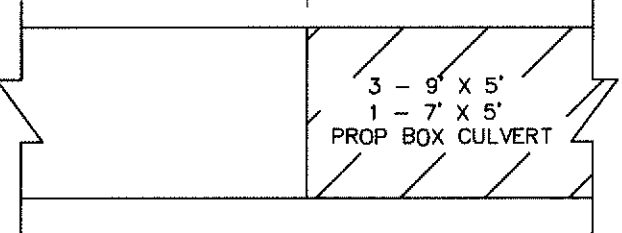
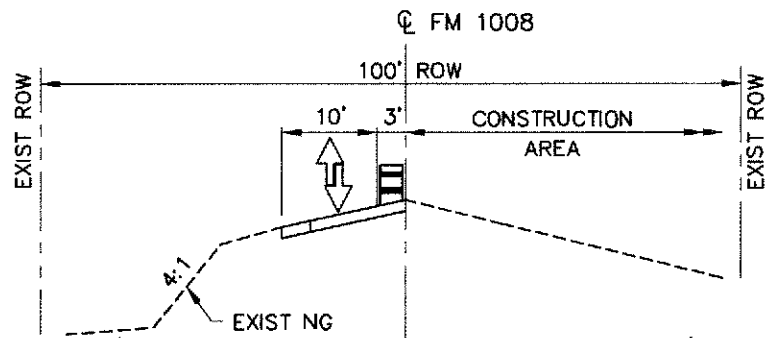
SECTION A-A
NTS



SECTION B-B
NTS



SECTION C-C
NTS



SECTION D-D
NTS

LEGEND

- ← DIRECTION TRAFFIC FLOW
- ▨ PROP CONSTRUCTION
- ▩ CONSTRUCTION OF TEMP PVMT

PRELIMINARY
Document incomplete: not intended
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J. A. GELACIO
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Date: MARCH 22, 2010



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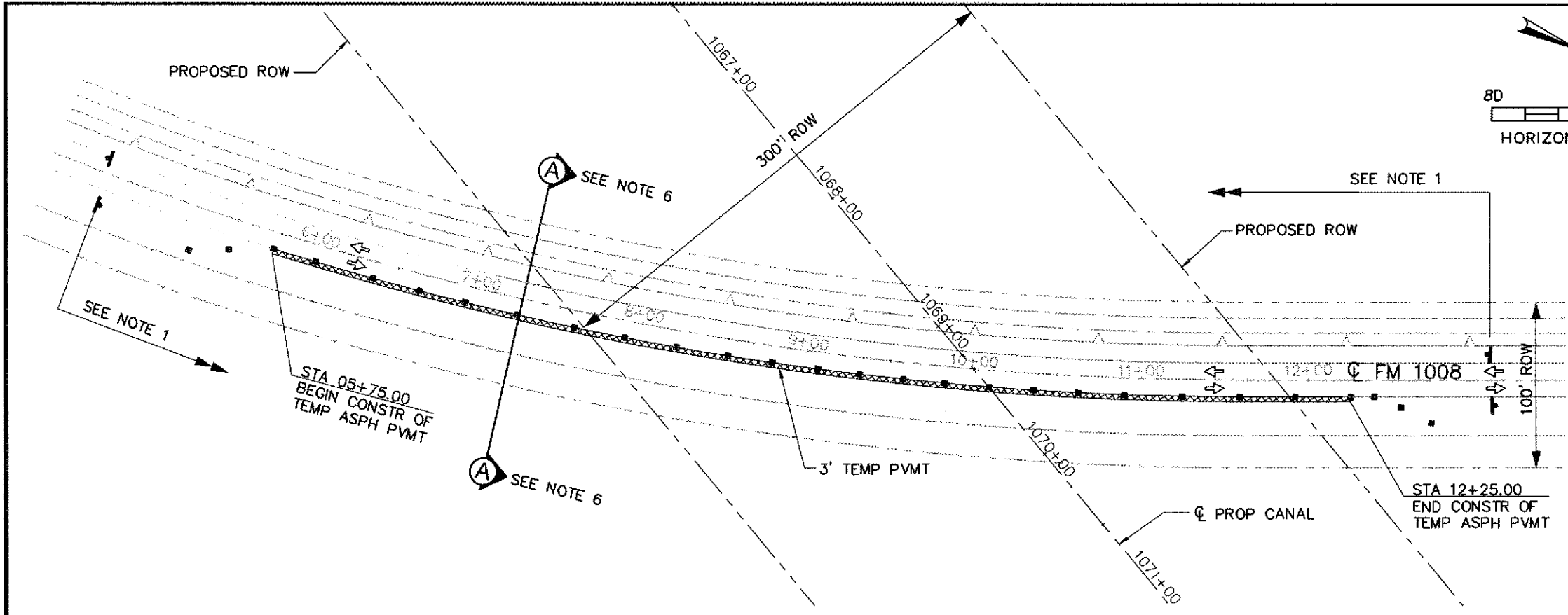
PROP CANAL AT FM 1008
TRAFFIC CONTROL TYPICAL
SECTIONS

SHEET 11 OF 16

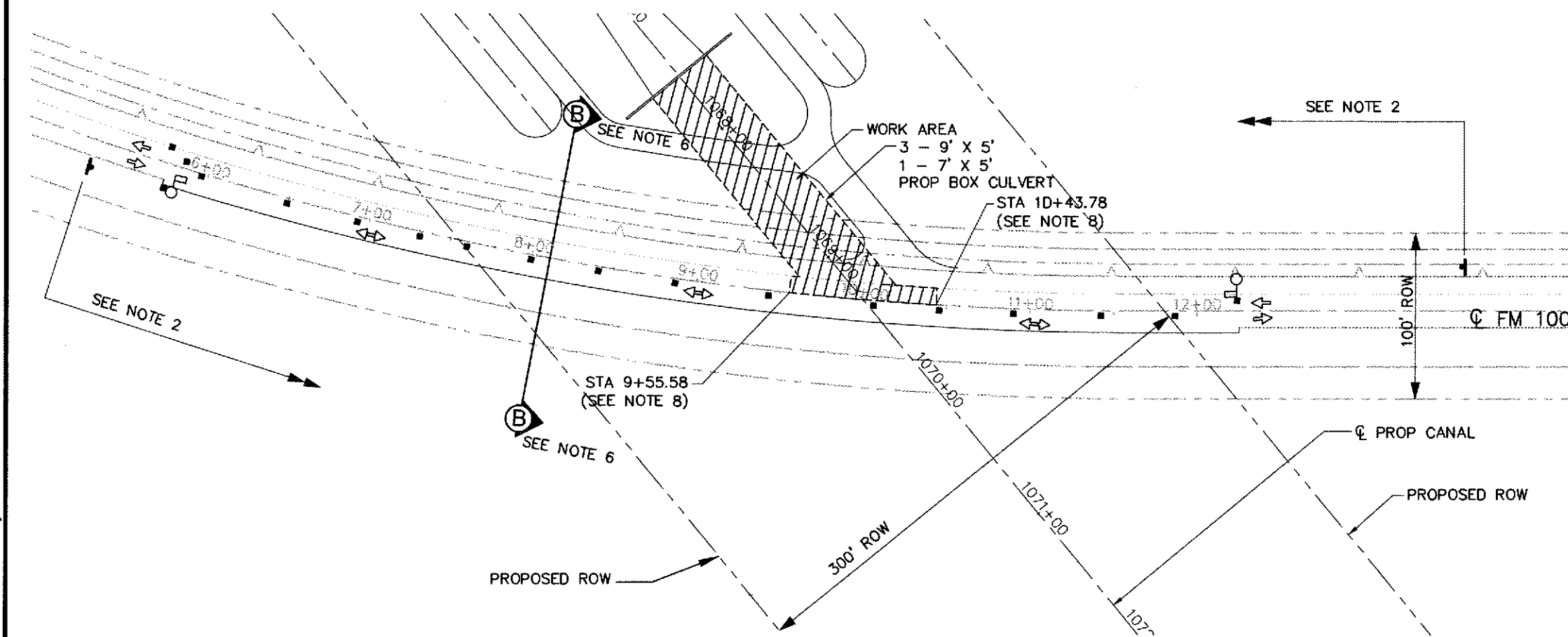
DRAWING SCALE
AS SHOWN

SHEET NO. 193 OF 245

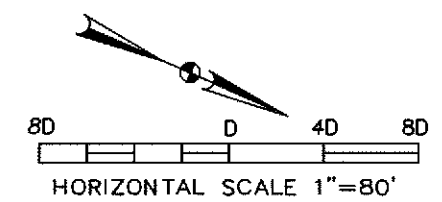
LAST MODIFIED: Mar 30, 2010 - 4:29pm BY USER: rmdella
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TRAFFIC CONTROL LAYOUT
STAGE 1



TRAFFIC CONTROL LAYOUT
STAGE 2



LEGEND

	TRAFFIC FLOW
	CHANNELIZING DEVICE
	SIGN
	WORK AREA
	TEMPORARY PAVEMENT

- NOTE:**
1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98" STANOARO FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 4. ANY CONFLICTING SIGNS SHALL BE COVEREO AS DIRECTEO BY ENGINEER.
 5. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
 6. SEE SHEET 11, "PROP CANAL AT FM 1008 TRAFFIC CONTROL TYPICAL SECTIONS" FOR SECTION A-A AND B-B DETAILS.
 7. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED ANO TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF ϕ OF PROP CANAL ANO ϕ OF FM 1008 AS THE REFERENCE POINT.
 8. LIMITS OF CUT AND RESTORE PVMT

PRELIMINARY
Document incomplete: not intended
for permit, bidding or construction.
J. A. GELACIO
56190
Date: MARCH 22, 2010

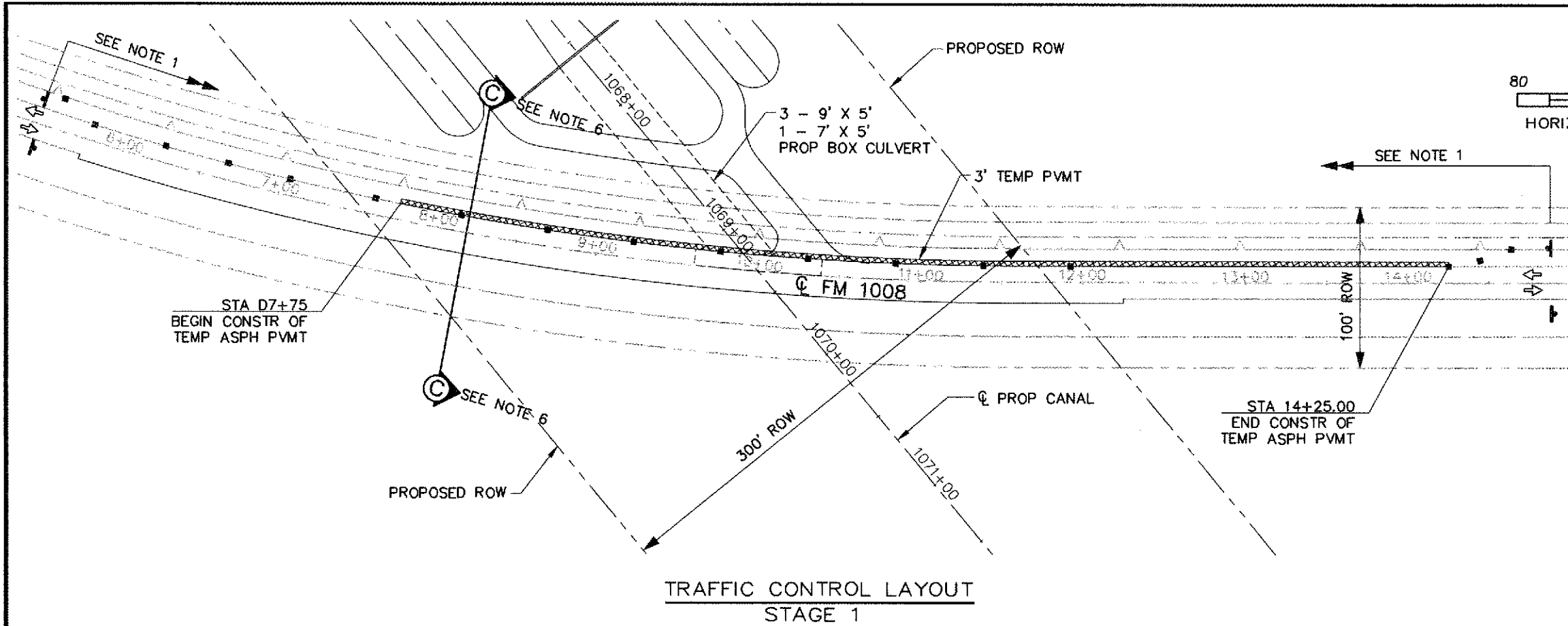


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FB NO.

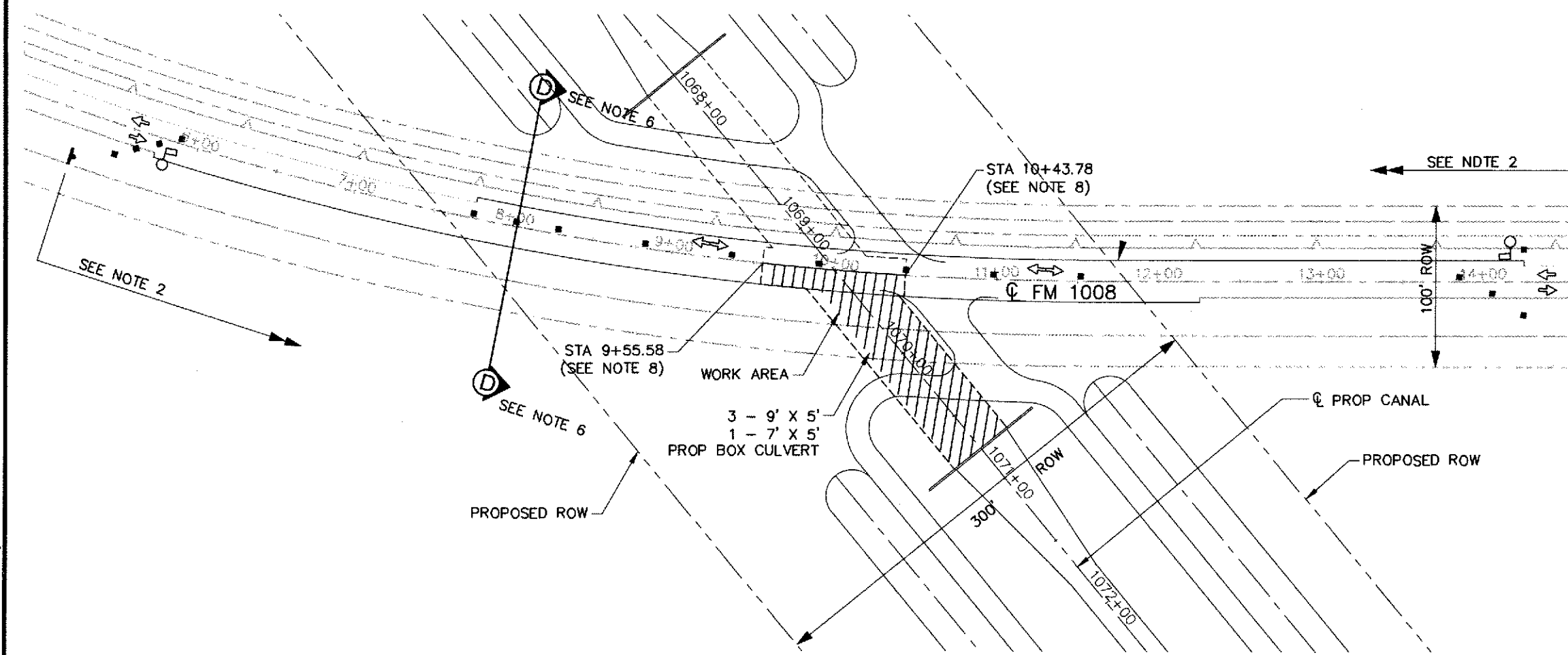
COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT
TRAFFIC CONTROL LAYOUT
FM 1008
PHASE I
STAGE 1 & STAGE 2
SHEET 12 OF 16

DRAWING SCALE
AS SHOWN
SHEET NO. 194 OF 245

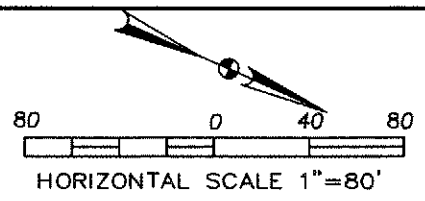
LAST MODIFIED: Mar 30, 2010 - 4:30pm BY USER: rmallo
DWG. LOCATION: N:\9746-09-001\dwg\TCP\
DWG. NAME: TCP_FM1008_P1.dwg



TRAFFIC CONTROL LAYOUT
STAGE 1



TRAFFIC CONTROL LAYOUT
STAGE 2



- LEGEND**
- ← TRAFFIC FLOW
 - CHANNELIZING DEVICE
 - ⊥ SIGN
 - ▨ WORK AREA
 - ▩ TEMPORARY PAVEMENT

- NOTE:**
1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 4. ANY CONFLICTING SIGNS SHALL BE COVERED AS DIRECTED BY ENGINEER.
 5. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
 6. SEE SHEET 11, "PROP CANAL AT FM 1008 TRAFFIC CONTROL TYPICAL SECTIONS" FOR SECTION C-C AND D-D DETAILS.
 7. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF CL OF PROP CANAL AND CL OF FM 1008 AS THE REFERENCE POINT.
 8. LIMITS OF CUT AND RESTORE PVT

PRELIMINARY
Document incomplete: not intended for permit, bidding or construction.

J. A. GELACIO
56190
Date: MARCH 22, 2010

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713.780.0838 fax.

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LUCE BAYOU INTERBASIN TRANSFER PROJECT

TRAFFIC CONTROL LAYOUT
FM 1008
PHASE II
STAGE 1 & STAGE 2

SHEET 13 OF 16

DRAWING SCALE
AS SHOWN

SHEET NO. 195 OF 295

LAST MODIFIED: Mar 30, 2010 - 4:32pm BY USER: rmallo
 DWG. LOCATION: N:\9745-09-001\dwg\TCP\
 DWG. NAME: TCP_FM1008_P12.dwg

LEGEND



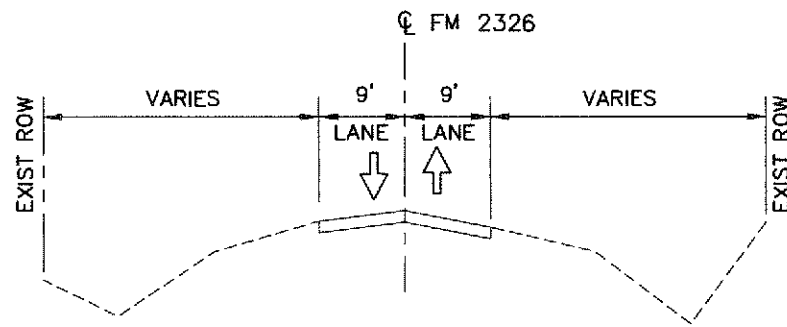
TRAFFIC FLOW



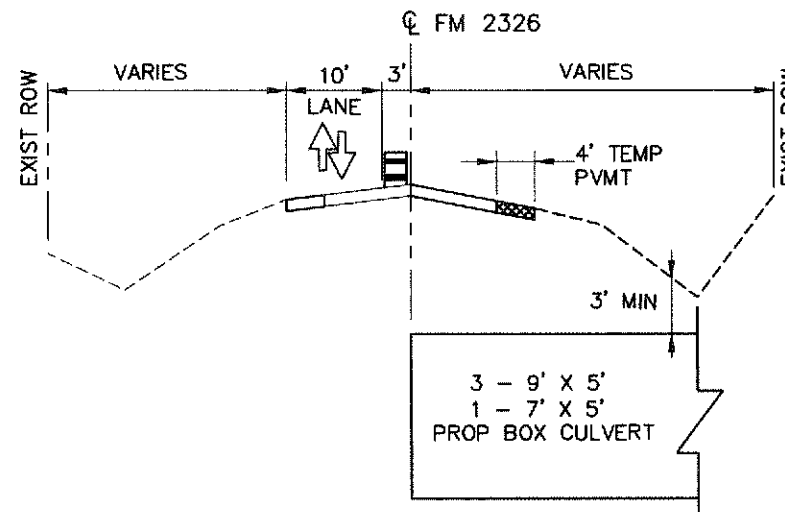
PROP CONSTRUCTION



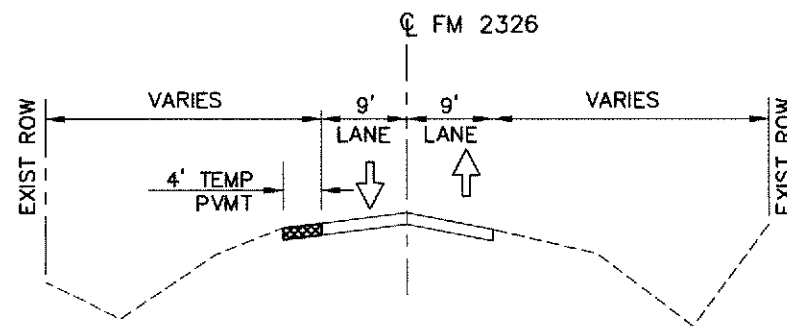
CONSTRUCTION OF TEMP PVMT



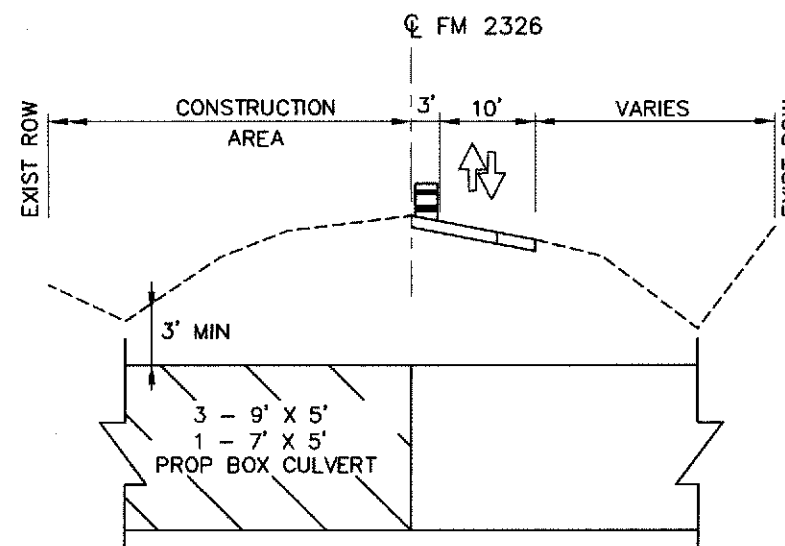
EXIST. TYP SECTION
NTS



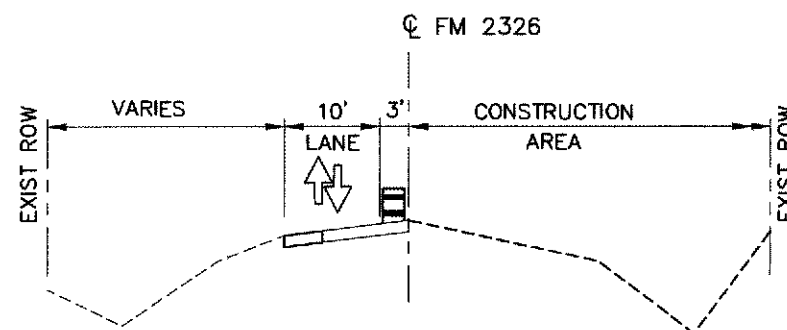
SECTION C-C
NTS



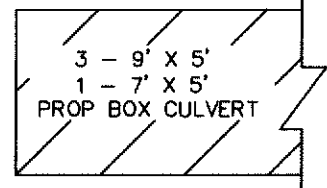
SECTION A-A
NTS



SECTION D-D
NTS



SECTION B-B
NTS



PRELIMINARY
Document Incomplete: not intended
for permit, bidding or construction.
J. A. GELACIO
56190
Date: MARCH 22, 2010



AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.



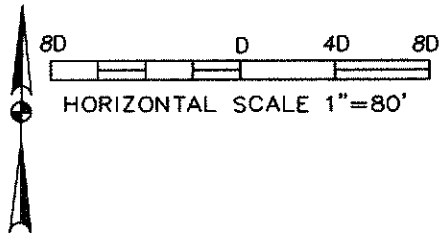
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

PROP CANAL AT CR 2326
TRAFFIC CONTROL TYPICAL
SECTIONS

SHEET 14 OF 16

DRAWING SCALE	
AS SHOWN	
SHEET NO. 146 OF 245	

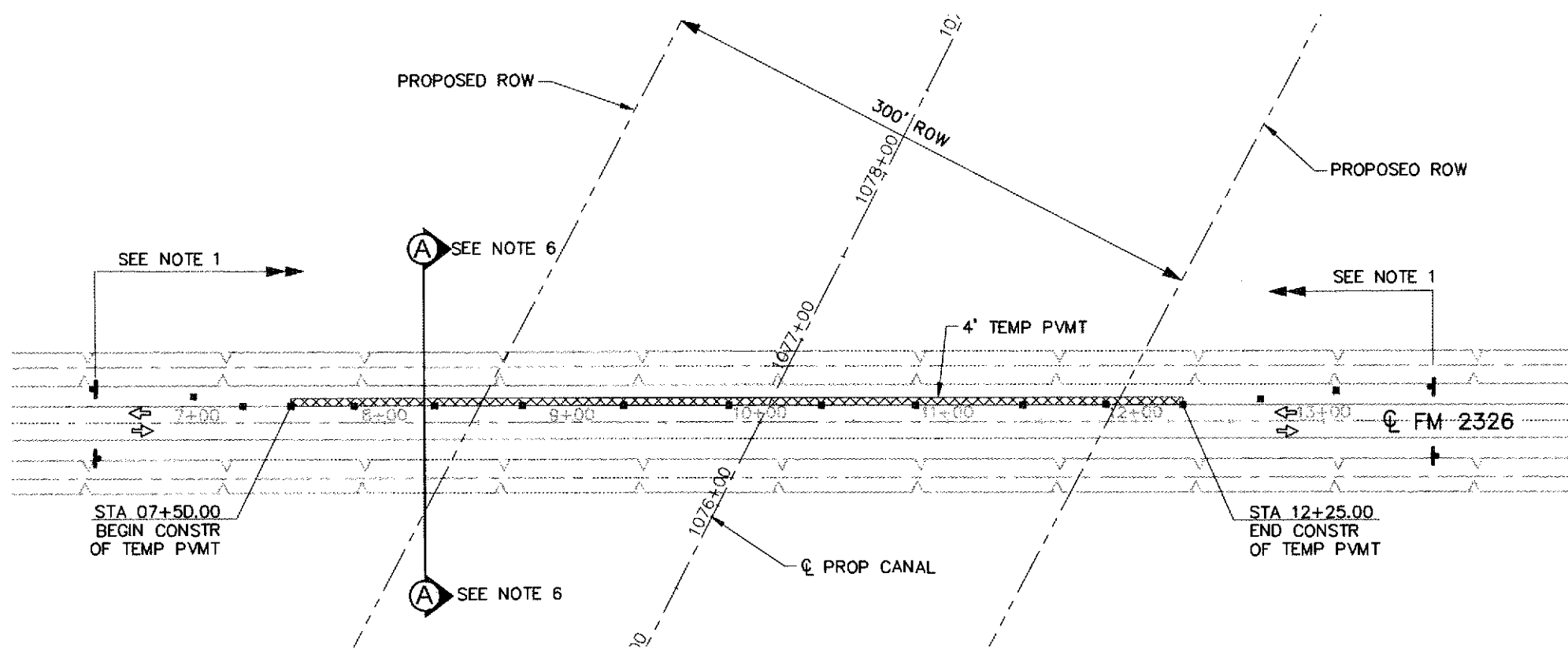
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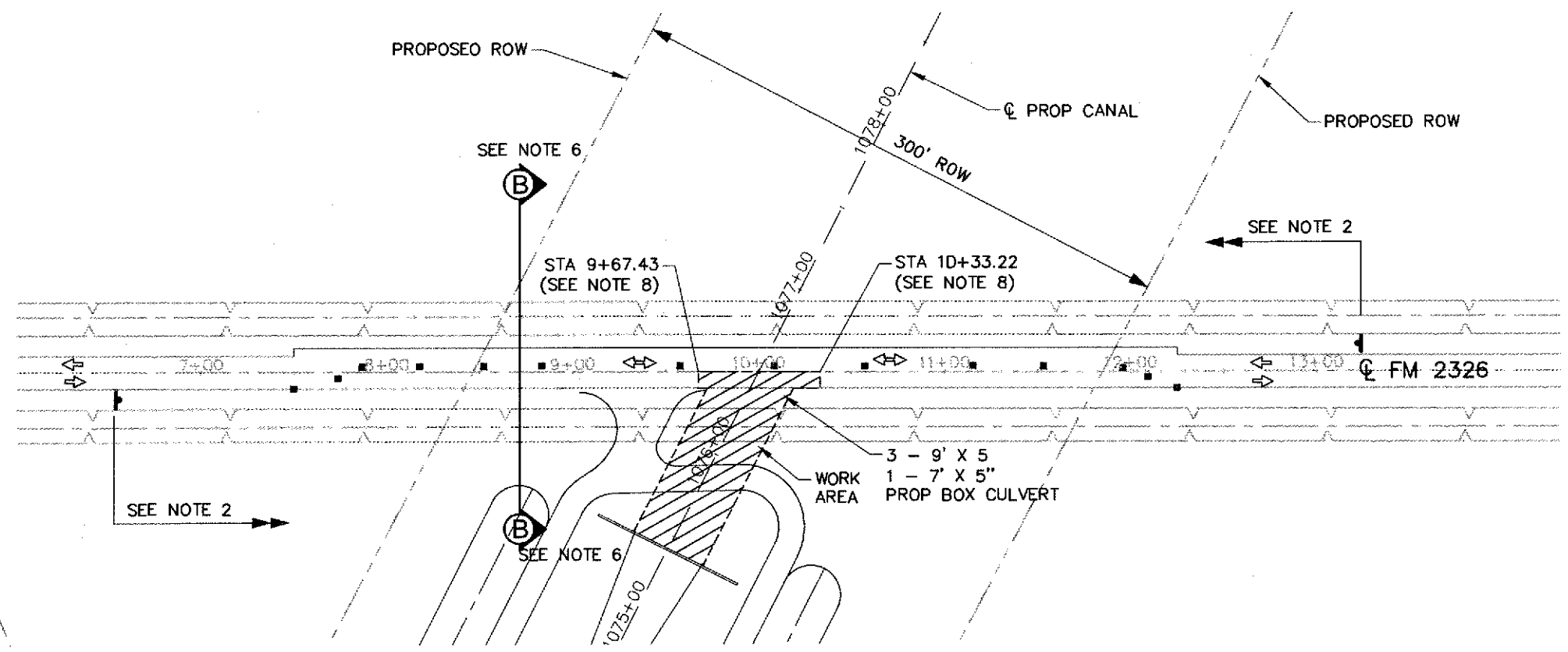
- LEGEND**
- ← TRAFFIC FLOW
 - CHANNELIZING DEVICE
 - ⊣ SIGN
 - ▨ WORK AREA
 - ▩ TEMPORARY PAVEMENT

NOTE:

1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-98" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-98" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
4. ANY CONFLICTING SIGNS SHALL BE COVERED AS DIRECTED BY ENGINEER.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
6. SEE SHEET 14, "PROP CANAL AT CR 2326 TRAFFIC CONTROL TYPICAL SECTIONS" FOR SECTION A-A AND B-B DETAILS.
7. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF C OF PROP CANAL AND C OF CR 2326 AS THE REFERENCE POINT.
8. LIMITS OF CUT AND RESTORE PVMT



**TRAFFIC CONTROL LAYOUT
STAGE 1**



**TRAFFIC CONTROL LAYOUT
STAGE 2**

PRELIMINARY
Document incomplete: not intended for permit, bidding or construction.
J. A. GELACIO
56190
Date: MARCH 22, 2010

AECOM
AECOM USA GROUP, INC.
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

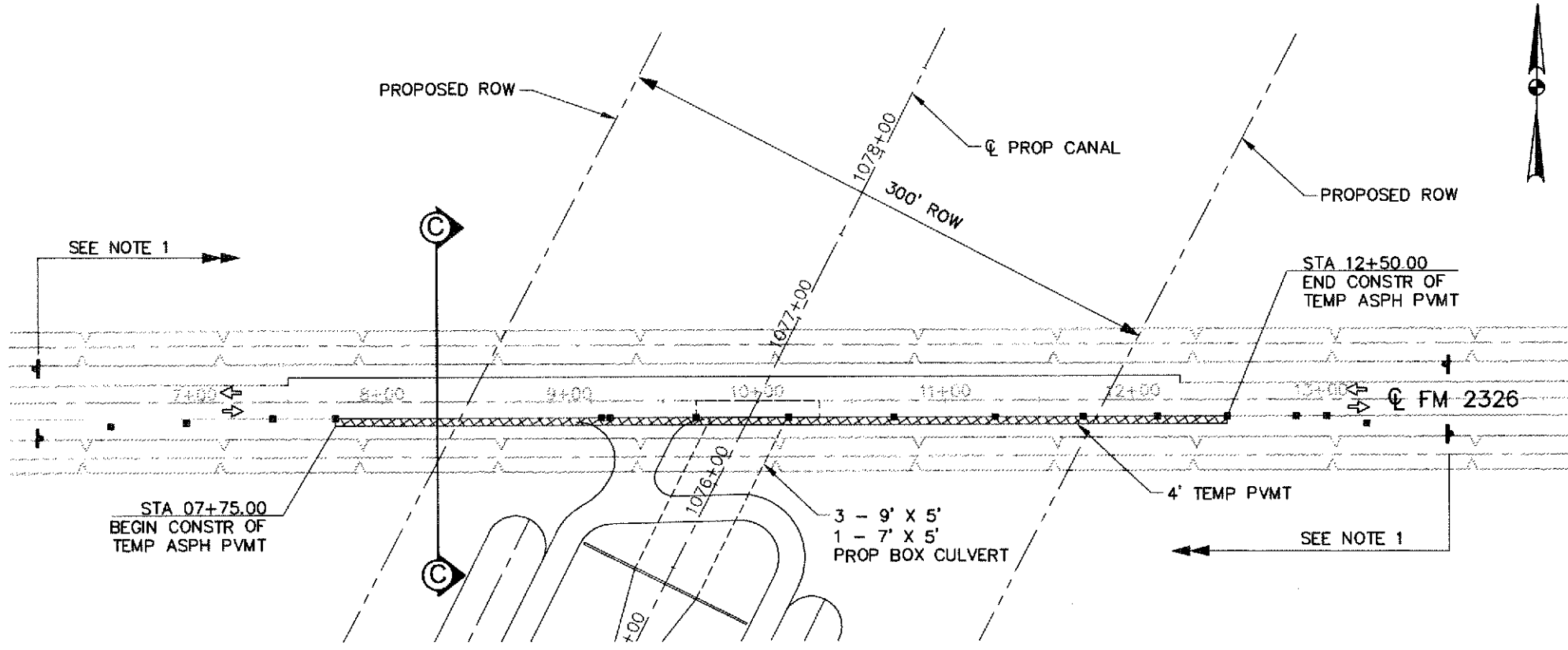
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT
TRAFFIC CONTROL LAYOUT
CR 2326
PHASE I
STAGE 1 & STAGE 2

SHEET 15 OF 16

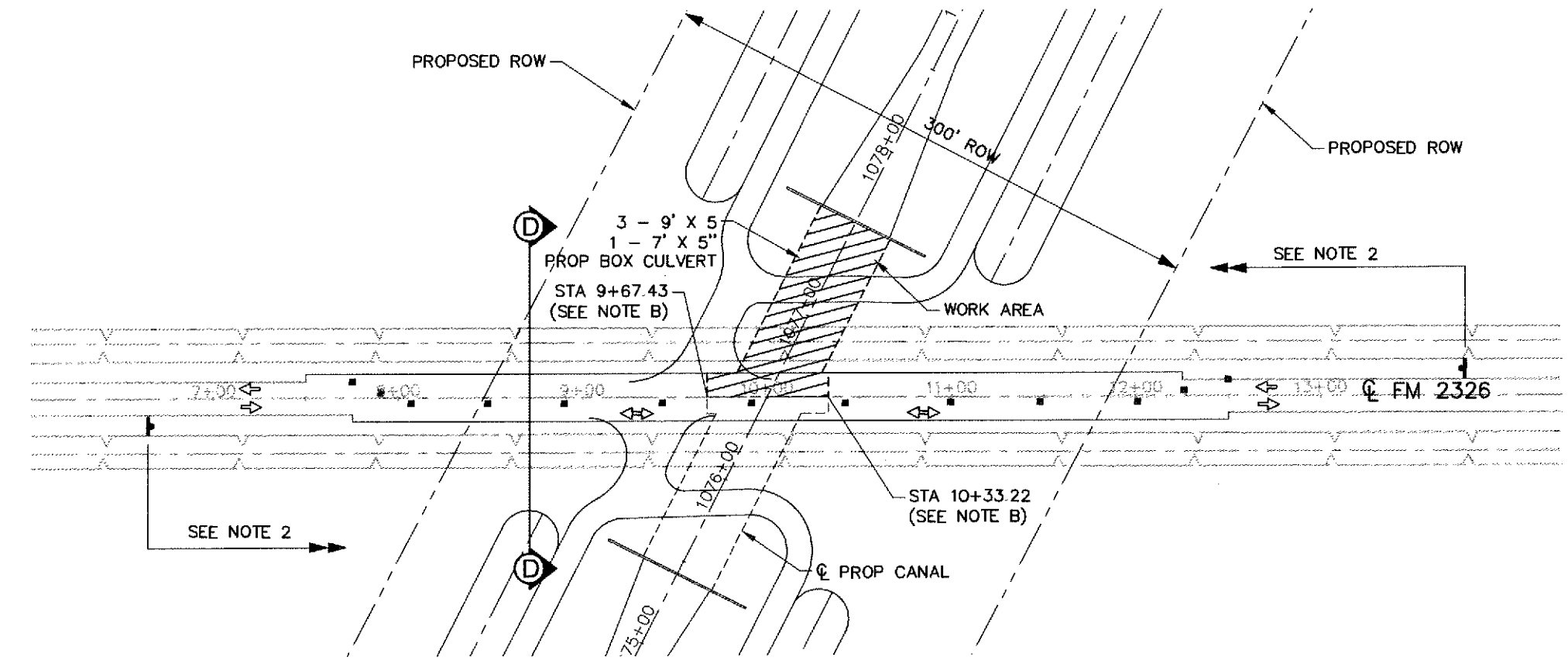
DRAWING SCALE
AS SHOWN

SHEET NO. 197 OF 245

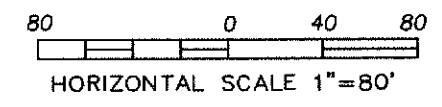
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 DWG. NAME: TCP_FM2326_P1.dwg



TRAFFIC CONTROL LAYOUT
STAGE 1



TRAFFIC CONTROL LAYOUT
STAGE 2



LEGEND

- ← TRAFFIC FLOW
- DRUM
- ▼ SIGN
- ▨ WORK AREA
- ▩ TEMPORARY PAVEMENT

- NOTE:
1. SEE TRAFFIC CONTROL PLAN "TCP (1-1)-9B" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 2. SEE TRAFFIC CONTROL PLAN "TCP (1-2)-9B" STANDARD FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 3. SEE TRAFFIC CONTROL PLAN "TCP (1-3)-9B" FOR ADDITIONAL SIGNING, TAPERS, SPACING & LOCATION, CHANNELIZATION DEVICES, STRIPING, TABLES AND ADDITIONAL NOTES.
 4. ANY CONFLICTING SIGNS SHALL BE COVERED AS DIRECTED BY ENGINEER.
 5. CONTRACTOR TO MAINTAIN ACCESS TO ALL ADJACENT DRIVEWAYS.
 6. SEE SHEET 14, "PROP CANAL AT CR 2326 TRAFFIC CONTROL TYPICAL SECTIONS" FOR SECTION C-C AND D-D DETAILS.
 7. CONTRACTOR MAY ESTABLISH STATIONING AS SHOWN IN PLANS OR MAY FIELD MEASURE ALL DISTANCES NECESSARY TO ESTABLISH TEMP PVMT NEEDED AND TO LOCATE TRAFFIC CONTROL SIGNS USING THE INTERSECTION OF CL OF PROP CANAL AND CL OF CR 2326 AS THE REFERENCE POINT.
 8. LIMITS OF CUT AND RESTORE PVMT

PRELIMINARY
Document incomplete: not intended
for permit, bidding or construction.

J. A. GELACIO
56190
Date: MARCH 22, 2010

FNTECH
CIVIL ENGINEERS, INC.
F-6932

AECOM
AECOM USA GROUP, INC.
5757 WOODWAY, SUITE 100 WEST
HOUSTON, TEXAS 77057-1880
WWW.AECOM.COM
TIME REG. NO. 7-5282

AECOM
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax.

SURVEYED BY:
FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

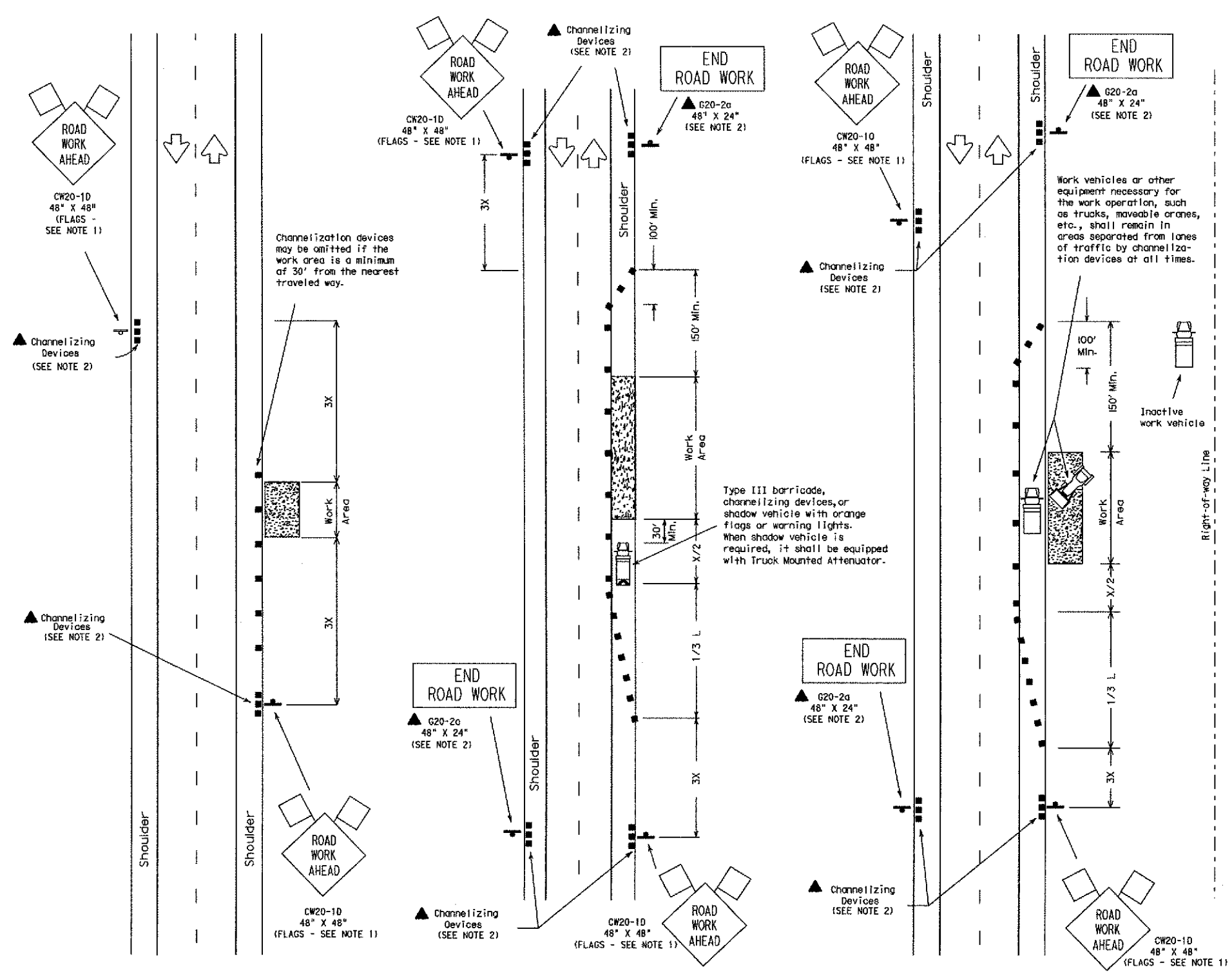
TRAFFIC CONTROL LAYOUT
CR 2326
PHASE II
STAGE 1 & STAGE 2

SHEET 16 OF 16

DRAWING SCALE
AS SHOWN

SHEET NO. 118 OF 245

LAST MODIFIED: Mar 30, 2010 - 4:45pm BY USER: mmlia
DWG. LOCATION: N:\5745-09-001\dwg\TCP\
DWG. NAME: TCP_FM2326_P12.dwg



- LEGEND**
- Type III Barricade
 - Channelizing Devices
 - Flag
 - Heavy Work Vehicle
 - Truck Mounted Attenuator
 - Trailer Mounted Flashing Arrow Panel
 - Portable Changeable Message Sign
 - Flagger
 - Sign Post

Posted Speed*	Formula	Minimum Desirable Taper Lengths**			Suggested Maximum Spacing of Device		Minimum Sign Spacing X Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
30	L = WS ² / 60	150'	165'	180'	30'	60' - 75'	120'
35		205'	225'	245'	35'	70' - 90'	160'
40		265'	295'	320'	40'	80' - 100'	240'
45	L = WS	450'	495'	540'	45'	90' - 110'	320'
50		500'	550'	600'	50'	100' - 125'	400'
55	L = WS	550'	605'	660'	55'	110' - 140'	500'
60		600'	660'	720'	60'	120' - 150'	* 600'
65		650'	715'	780'	65'	130' - 165'	* 700'
70		700'	770'	840'	70'	140' - 175'	* 800'

* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L = Length of Taper (FT.) W = Width of Offset (FT.) S = Posted Speed (MPH)

TYPICAL USAGE:

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

- GENERAL NOTES:**
- Unless otherwise stated in the plans, flags attached to signs are **REQUIRED**.
 - All traffic control devices illustrated are **REQUIRED**, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
 - On high speed facilities advance warning signs should be installed approximately 3X from the work area or from the beginning of a lane or shoulder taper. On low speed facilities the advance warning signs should be placed based on the "X" minimum distance.
 - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
 Traffic Operations Division - TE
 Texas Department of Transportation
 125 East 11th Street
 Austin, Texas 78701-2483
 Phone (512) 416-3335
 Fax (512) 416-3161
 E-mail TRF-STANDARD@mailgw.dot.state.tx.us

The requirement for shadow vehicles will be listed in the project GENERAL NOTES, Item 502, Barricades, Signs and Traffic Handling.

PRELIMINARY
 Document Incomplete: not intended for permit, bidding or construction.
 J. A. GELACIO
 56190
 Date: FEB 16, 2010



AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

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 COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PROP CANAL
 TRAFFIC CONTROL
 TCP (1-1)-98

DRAWING SCALE
 AS SHOWN
 SHEET NO. 199 OF 245

The requirement for shadow vehicles will be listed in the project GENERAL NOTES, Item 502, Barricades, Signs and Traffic Handling.

- LEGEND
- Type III Barricade
 - Channelizing Devices
 - Flag
 - Heavy Work Vehicle
 - Truck Mounted Attenuator
 - Trailer Mounted Flashing Arrow Panel
 - Portable Changeable Message Sign
 - Flagger
 - Sign Post

Posted Speed (MPH)	Formula	Minimum Desirable Taper Lengths (ft.)			Suggested Maximum Spacing of Device		Minimum Sign Spacing X Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60' - 75'	120'
35		205'	225'	245'	35'	70' - 90'	160'
40		265'	295'	320'	40'	80' - 100'	240'
45		450'	495'	540'	45'	90' - 110'	320'
50	L=WS	500'	550'	600'	50'	100' - 125'	400'
55		550'	605'	660'	55'	110' - 140'	500'
60		600'	660'	720'	60'	120' - 150'	* 600'
65		650'	715'	780'	65'	130' - 165'	* 700'
70		700'	770'	840'	70'	140' - 175'	* 800'

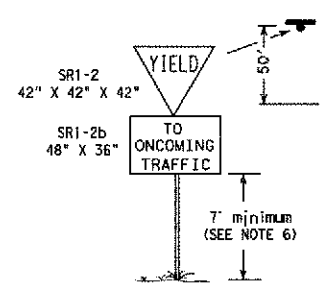
* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L=Length of Taper (FT.) W=Width of Offset (FT.) S=Posted Speed (MPH)

TYPICAL USAGE:				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

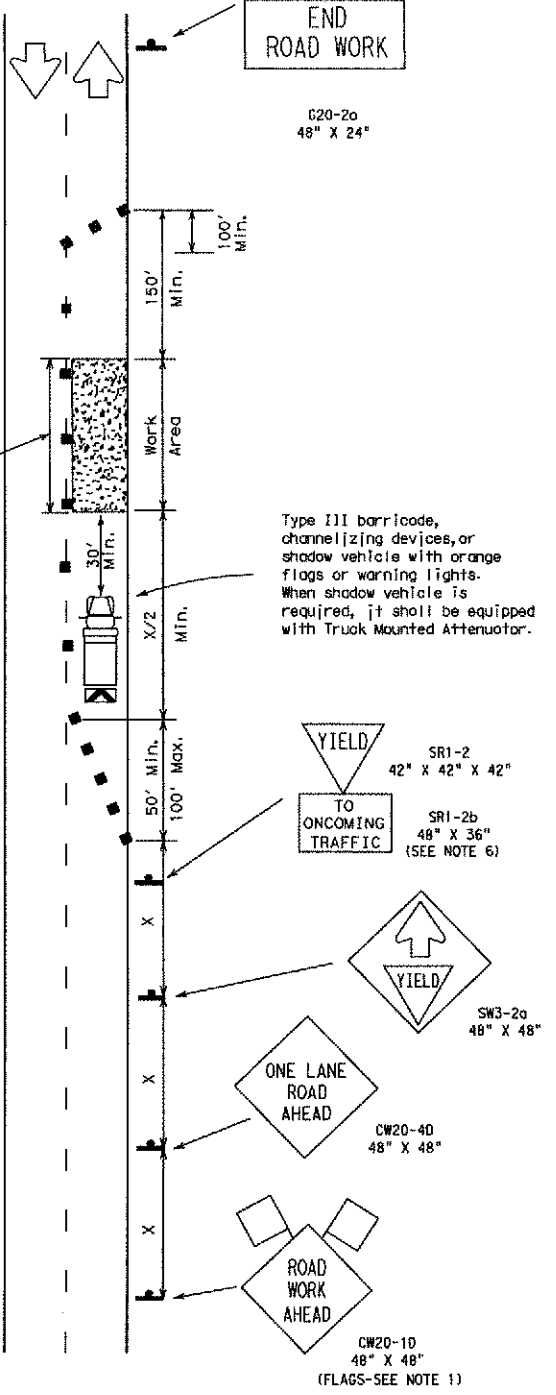
- GENERAL NOTES:
- Flags attached to signs are **REQUIRED**.
 - All traffic control devices illustrated are **REQUIRED**, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
 - The BE PREPARED TO STOP sign may be installed after the ONE LANE ROAD AHEAD sign, but proper sign spacing shall be maintained.
 - ROAD WORK AHEAD sign may be repeated if the visibility of the work zone is less than 1500'.
TCP(1-2a)
 - YIELD sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work zones should be no longer than one half city block. In rural areas on roadways with less than 4000 ADT, work areas should be no longer than 400'.
TCP(1-2b)
 - YIELD TO ONCOMING TRAFFIC sign shall be placed on a support at a 7' minimum mounting height.
 - Flaggers should use two-way radios or other methods of communication to control traffic.
 - Length of work area should be based on the ability of flaggers to communicate.
 - Distance along curve of work area should be adequate length for motorists to identify and react to flagger signals.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:
 Standards Engineer
 Traffic Operations Division - TE
 Texas Department of Transportation
 125 East 11th Street
 Austin, Texas 78701-2483
 Phone (512) 416-3535
 Fax (512) 416-3181
 E-mail TRF-STANDARD@mail.tgw.dot.state.tx.us

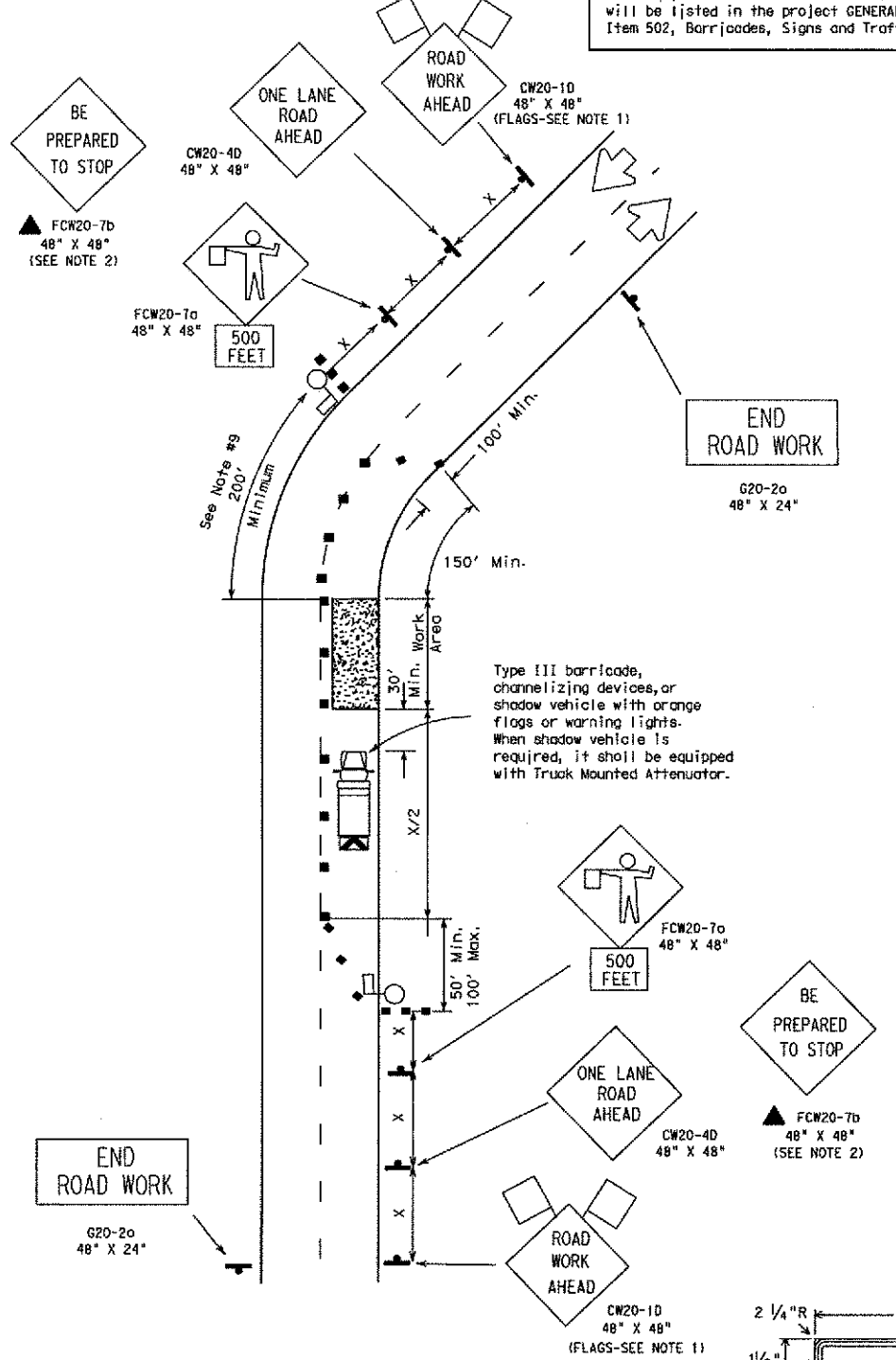
Warning Sign Sequence in Opposite Direction Same as Below



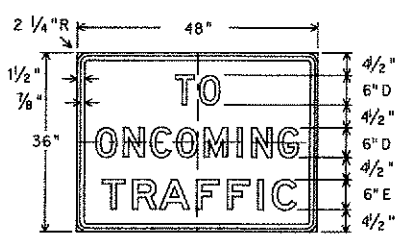
Channelizing devices separate work area from traveled way.



TCP (1-2a)
 One Lane Closed
 Adequate Field of View

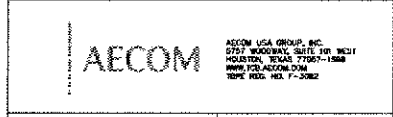


TCP (1-2b)
 One Lane Closed
 Inadequate Field of View



SR1-2b Letters - Black
 48" x 36" Background - White
 Reflective

PRELIMINARY
 Document Incomplete: not intended for permit, bidding or construction.
 J. A. GELACIO
 56190
 Date: FEB 16, 2010



AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

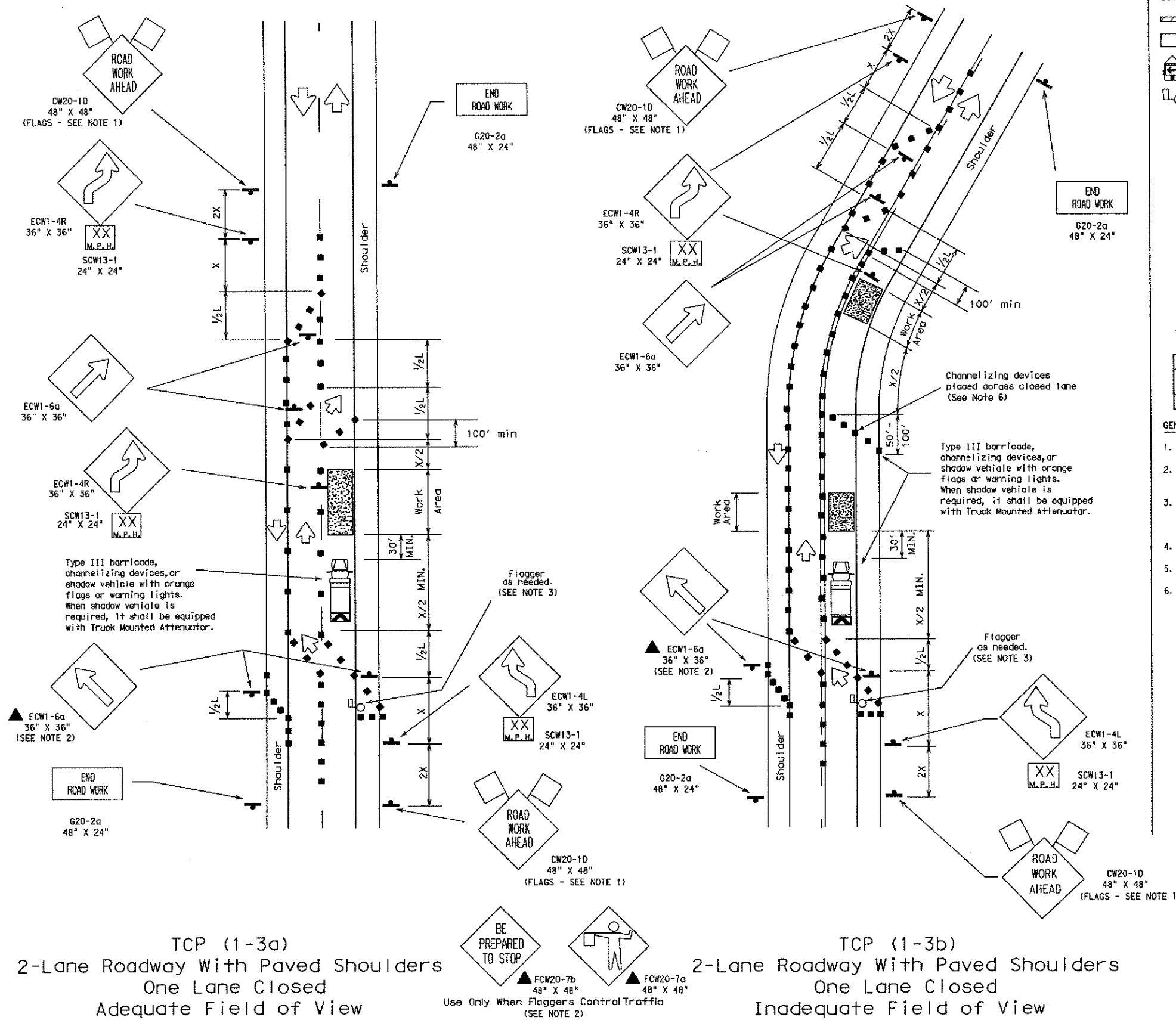
SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PROP CANAL
 TRAFFIC CONTROL
 TCP (1-2)-98

DRAWING SCALE
 AS SHOWN

SHEET NO. 206 OF 245



LEGEND

- Type III Barricade
- Channelizing Devices
- Flag
- Heavy Work Vehicle
- Truck Mounted Attenuator
- Trailer Mounted Flashing Arrow Panel
- Portable Changeable Message Sign
- Flagger
- Sign Post

Posted Speed \times	Formula	Minimum Desirable Taper Lengths $\times \%$			Suggested Maximum Spacing of Device		Minimum Sign Spacing \times Distance
		10' Offset	12' Offset	15' Offset	On a Taper	On a Tangent	
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60' - 75'	120'
35		205'	225'	245'	35'	70' - 90'	160'
40		265'	295'	320'	40'	80' - 100'	240'
45	$L = WS$	450'	495'	540'	45'	90' - 110'	320'
50		500'	550'	600'	50'	100' - 125'	400'
55		550'	605'	660'	55'	110' - 140'	500'
60		600'	660'	720'	60'	120' - 150'	\times 600'
65		650'	715'	780'	65'	130' - 165'	\times 700'
70	700'	770'	840'	70'	140' - 175'	\times 800'	

\times Conventional Roads Only
 $\times \times$ Taper lengths have been rounded off.
 L = Length of Taper (FT.) W = Width of Offset (FT.) S = Posted Speed (MPH)

TYPICAL USAGE:

	MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY

- GENERAL NOTES:**
- Unless otherwise stated in the plans, flags attached to signs are **REQUIRED**.
 - All traffic control devices illustrated are **REQUIRED**, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
 - Flagger control should **NOT** be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers should be positioned at end of traffic queues unless 24" x 24" STOP/SLOW paddle is used.
 - DO NOT PASS, PASS WITH CARE, and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD sign.
 - ROAD WORK AHEAD sign may be repeated if the visibility of the work zone is less than 1500'.
 - When the work zone is made up of several work areas, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500' to 1000' in urban areas and every 1/4 to 1/2 mile in rural areas.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:
 Standards Engineer
 Traffic Operations Division - TE
 Texas Department of Transportation
 125 East 11th Street
 Austin, Texas 78701-2483
 Phone (512) 416-3335
 Fax (512) 416-3161
 E-mail TRF-STANDARD@tdd.txdot.state.tx.us

The requirement for shadow vehicles will be listed in the project GENERAL NOTES, Item 502, Barricades, Signs and Traffic Handling.

PRELIMINARY
 Document Incomplete: not intended for permit, bidding or construction.
 J. A. GELACIO
 56190
 Date: FEB 16, 2010

ENTECH CIVIL ENGINEERS, INC.
 F-6932

AECOM
 AECOM USA GROUP, INC.
 5757 WOODWAY, SUITE 700 WEST HOUSTON, TEXAS 77057
 713.780.4100 tel. 713.780.0838 fax

HOUSTON, TEXAS
CWA

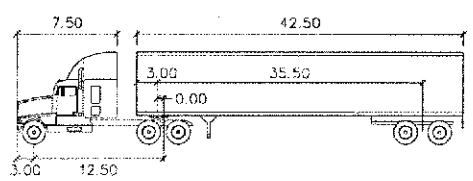
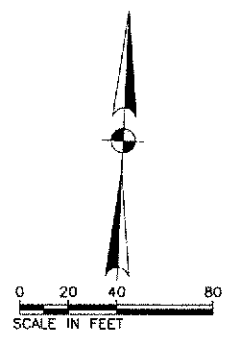
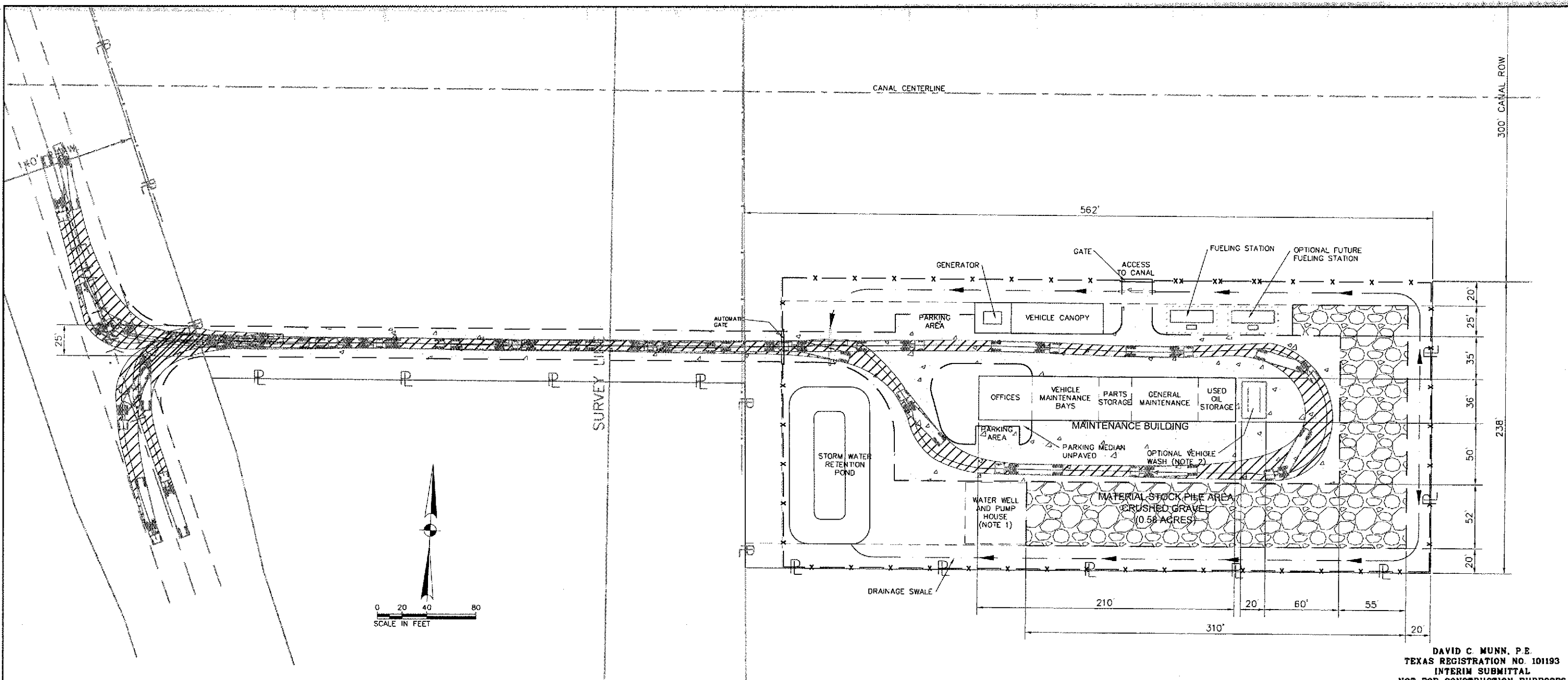
SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PROP CANAL TRAFFIC CONTROL
 TCP (1-3)-98

DRAWING SCALE
 AS SHOWN

SHEET NO. 201 OF 245

LAST MODIFIED: Jan 24, 2011 11:11am BY USER: ThompsonB
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 DWG NAME: NewMantSite.dwg



WB-50			
feet			
Tractor Width	: 8.00	Lock to Lock Time	: 6.00
Trailer Width	: 8.50	Steering Angle	: 17.73
Tractor Track	: 8.00	Articulating Angle	: 70.30
Trailer Track	: 8.50		

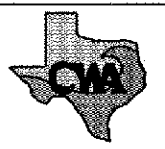
NOTES:

1. WATER WELL PUMP FACILITY MAY BE NECESSARY IF POTABLE WATER IS NOT AVAILABLE.
2. VEHICLE WASH MAY NOT BE FEASIBLE IF SANITARY SEWER CONNECTION IS NOT AVAILABLE.
3. TOTAL AREA: 3.96 ACRES.

DAVID C. MUNN, P.E.
 TEXAS REGISTRATION NO. 101193
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES



AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel
 713.780.0838 fax



SURVEYED BY:
 FB NO:

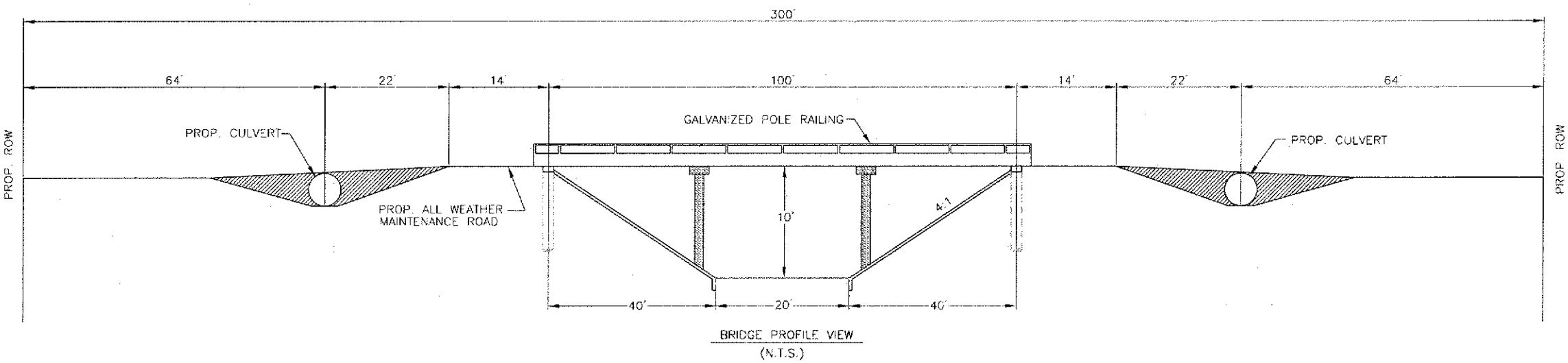
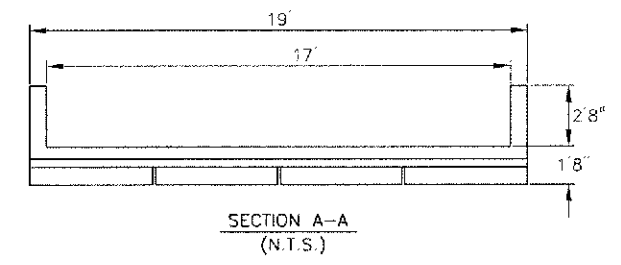
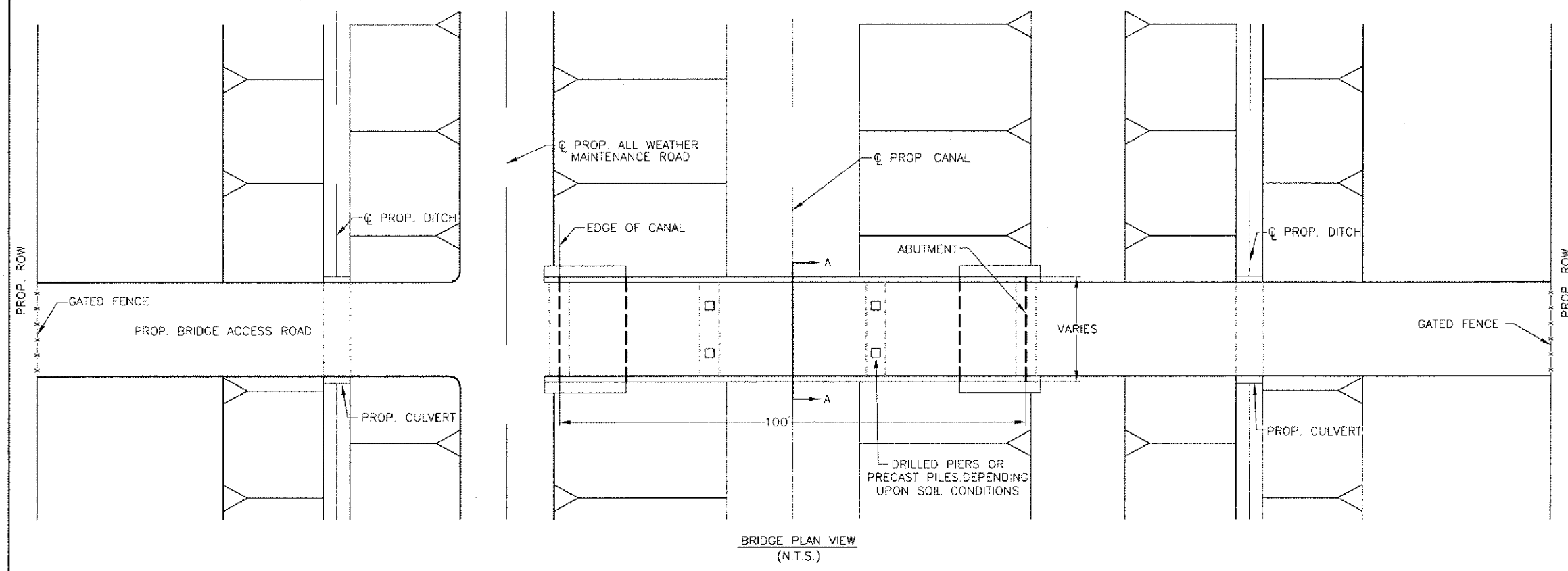
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL MAINTENANCE FACILITY
 CONCEPTUAL LAYOUT



DRAWING SCALE	AS SHOWN
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EXHIBIT: SHEET NO. 202 OF 295

- NOTES:
1. THIS DRAWING IS FOR CONCEPTUAL USE ONLY AND IS SUBJECT TO CHANGE.
 2. IT IS NOT INTENDED FOR DESIGN AND IS ONLY PRELIMINARY IN NATURE.
 3. OTHER BRIDGE PLAN AND SIPHONS MAY VARY FROM THIS GENERAL DESIGN AND MAY BE WIDER TO MEET SPECIFIC REQUIREMENTS AT A PARTICULAR LOCATION.

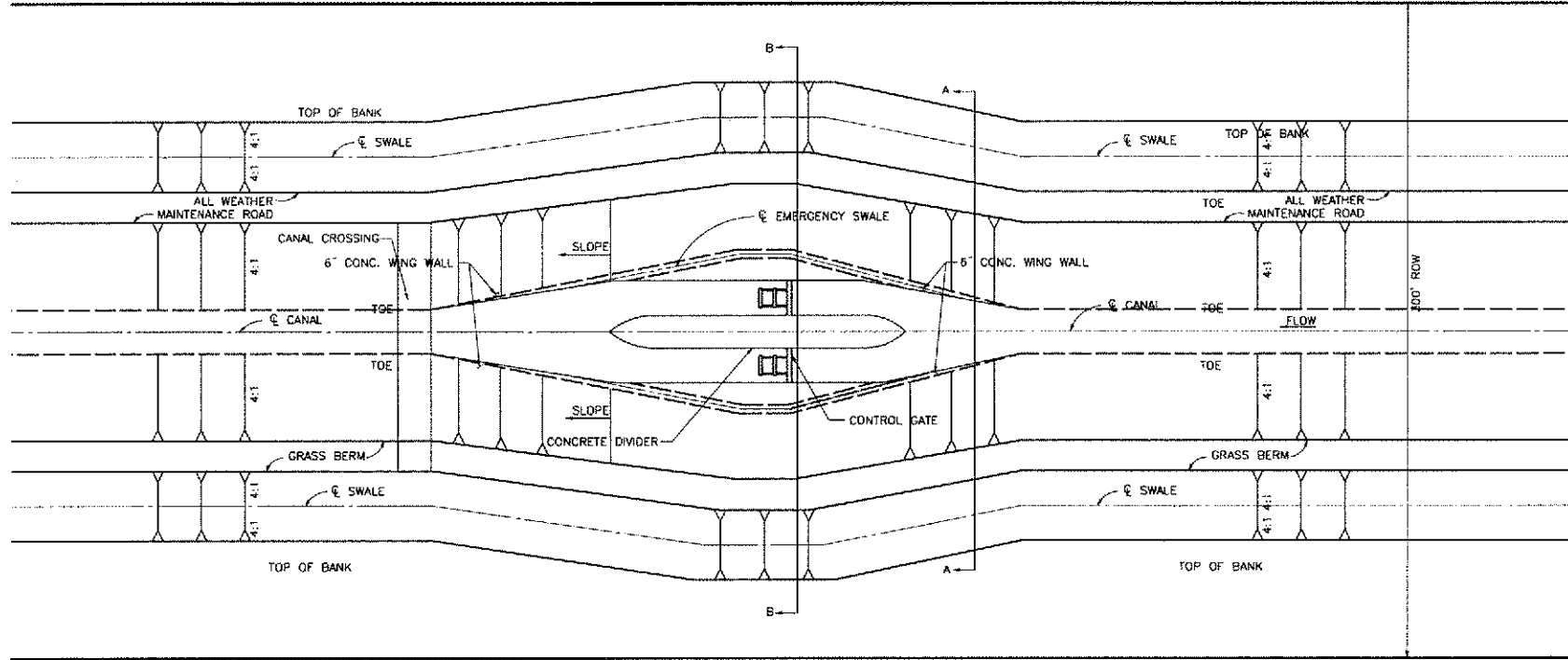


WALLY R. BURNS, P.E.
TEXAS REGISTRATION NO. 44162
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

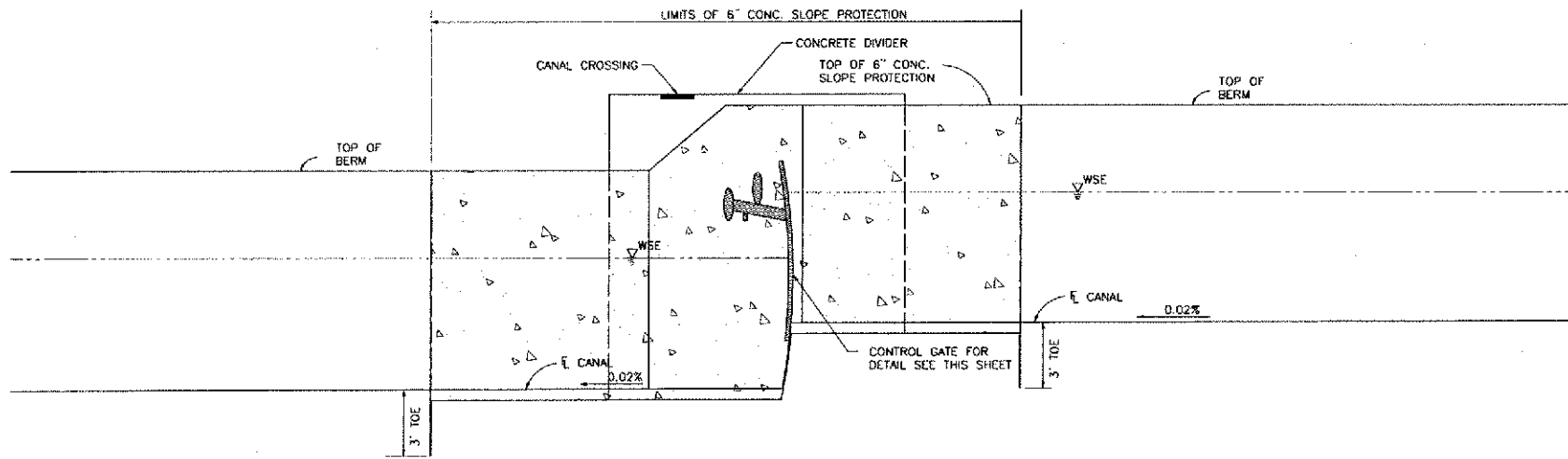
 <small>AECOM TECHNICAL SERVICES, INC. 5101 WOODWAY, SUITE 200 WEST HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax</small>		
AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.		
SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT		
CONCEPTUAL BRIDGE DETAIL		
DRAWING SCALE AS SHOWN		
SHEET NO. 20 of 20		

LAST MODIFIED: Jun 28, 2011 - 7:01am BY USER: ThompsonB
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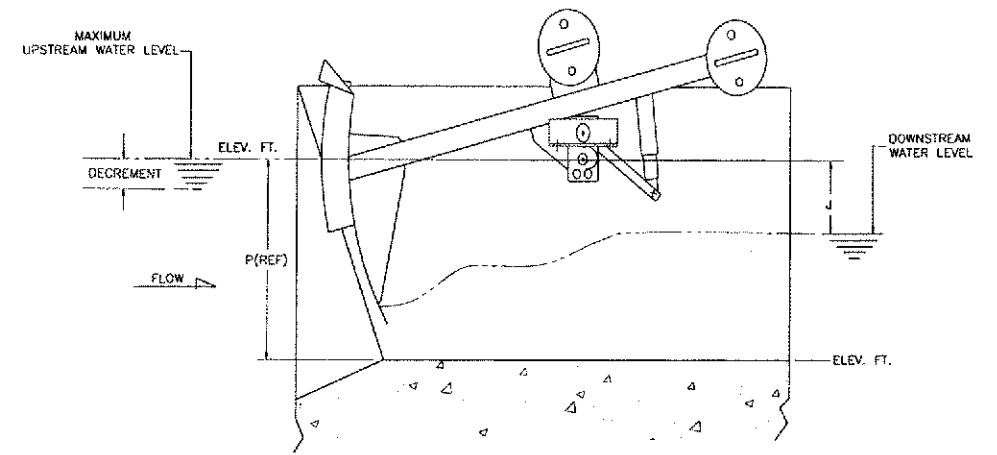
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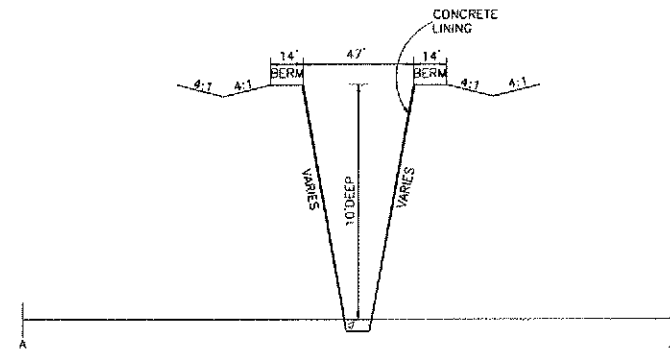
PLAN VIEW
SCALE: N.T.S.



PROFILE VIEW
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CONTROL GATE DETAIL
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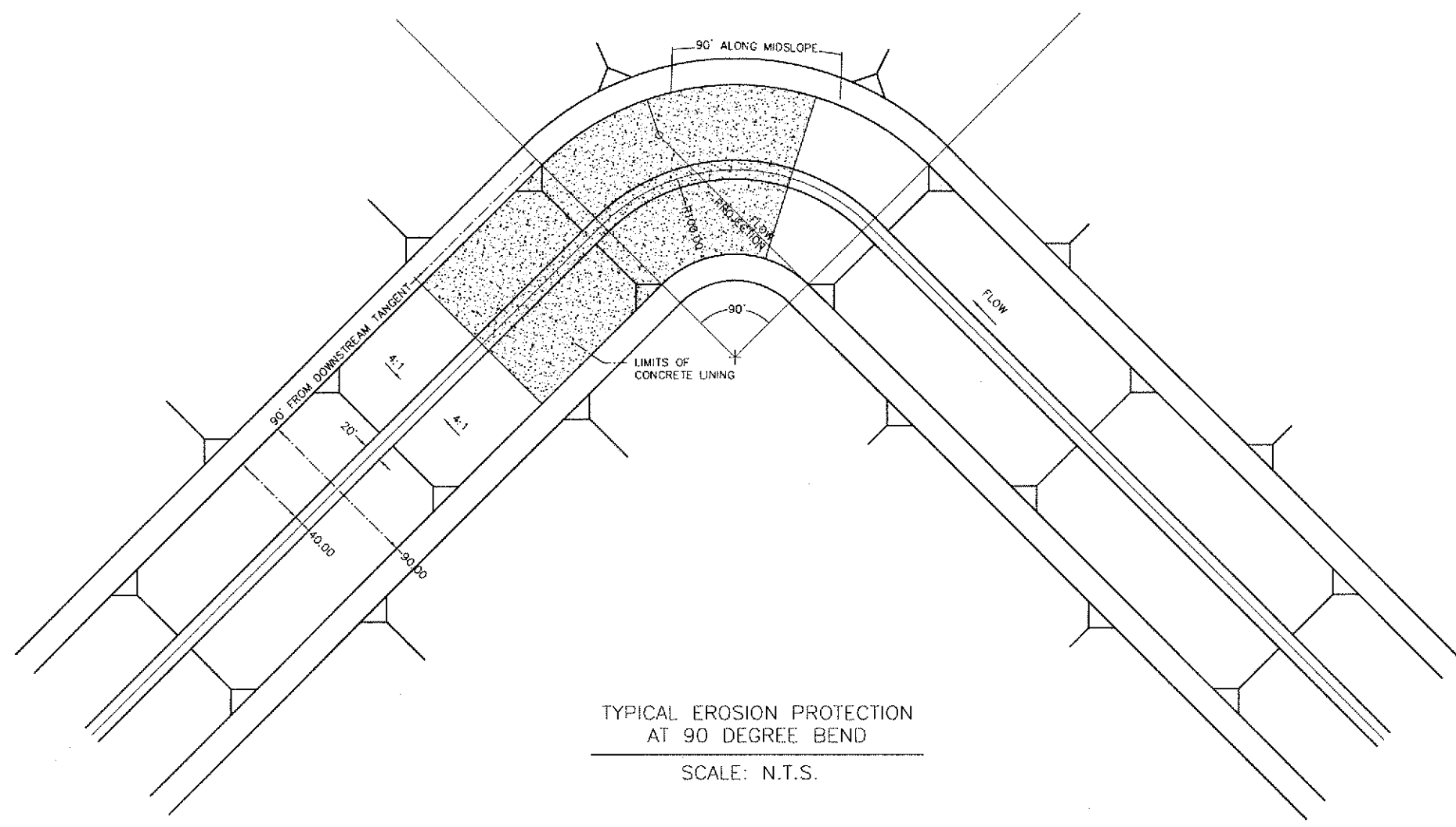


CROSS SECTIONAL VIEW
SCALE: N.T.S.

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 TEXAS REGISTRATION NO. 91031
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AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0638 fax	
SURVEYED BY: FB NO.	
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT	
WATER CONTROL STRUCTURE DETAIL	
DRAWING SCALE AS SHOWN	
SHEET NO. 204 OF 295	

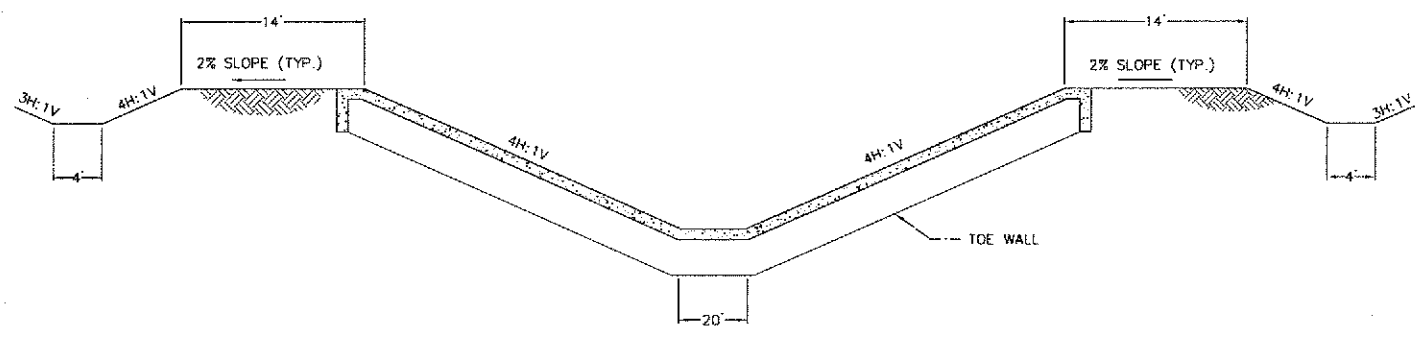
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TYPICAL EROSION PROTECTION
 AT 90 DEGREE BEND
 SCALE: N.T.S.

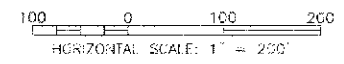
- NOTES:
- DESIGN IS BASED ON ASSUMPTIONS. MODIFICATIONS WILL BE MADE AS DETAILED GEOTECHNICAL INFORMATION BECOMES AVAILABLE DURING FINAL DESIGN.
- ASSUMPTIONS:
- WSEL IN CANAL HELD CONSTANT.
 - THIS DETAIL IS A MODIFIED VERSION OF HARRIS COUNTY FLOOD CONTROL DISTRICT'S TYPICAL CONCRETE-LINED TRAPEZOIDAL CHANNEL SECTION. IT HAS BEEN ALTERED TO REFLECT PROJECT SPECIFIC INFORMATION.
 - A VELOCITY OF 4 FEET PER SECOND IN THE CANAL WAS ASSUMED BASED ON INFORMATION OBTAINED FROM EM 110-2-1801, PLATE B-33. PLATE B-33 INDICATES APPROXIMATELY A 1.4 TO 1.5 INCREASE IN AVERAGE VELOCITY THROUGH A 90-DEGREE BEND. CONSERVATIVELY A FACTOR OF 2.0 WAS USED.

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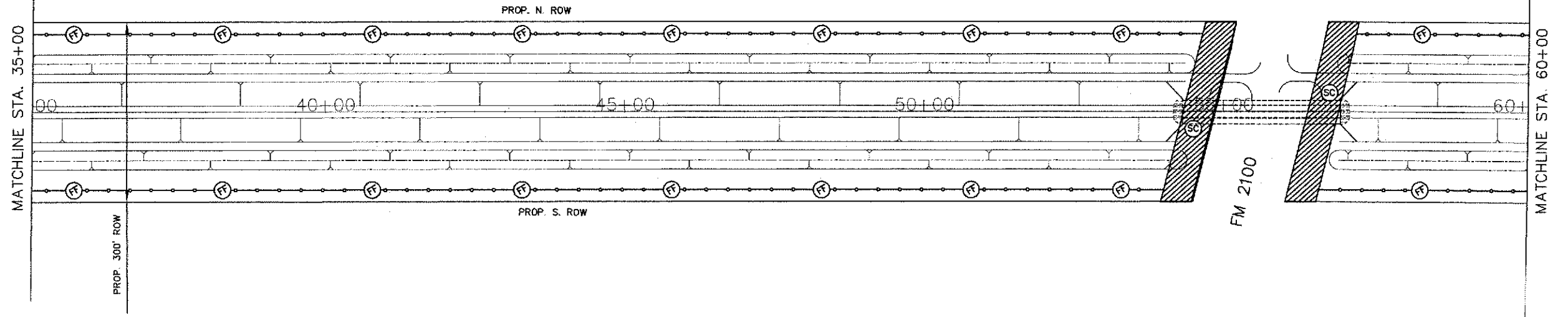
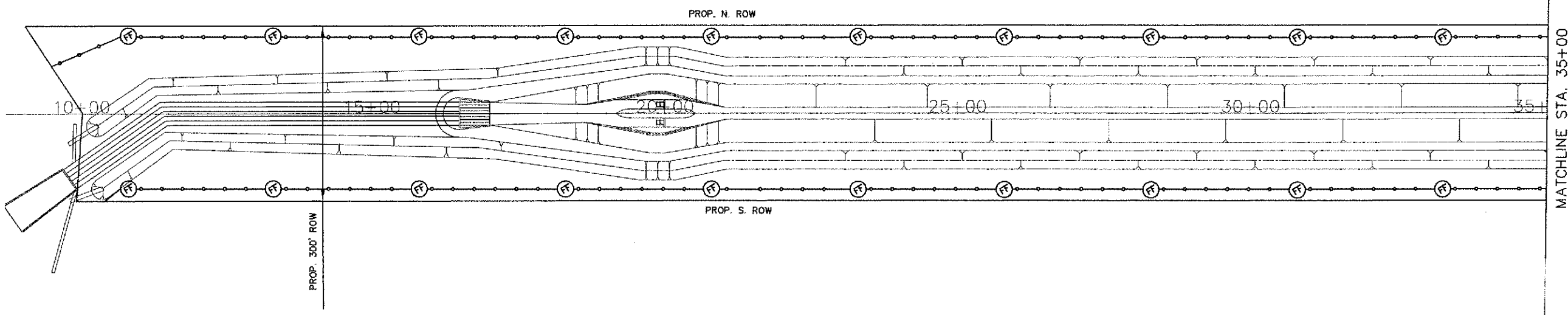
TYPICAL CONCRETE-LINED
 CHANNEL SECTION
 SCALE: N.T.S.

 <small>AECOM TECHNICAL SERVICES, INC. 3157 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057-1599 WWW.AECOM.COM TOLL FREE: 800.777.4380</small>		
<small>AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.</small>		
<small>SURVEYED BY: FB NO.</small>		
COASTAL WATER AUTHORITY <small>LUCE BAYOU INTERBASIN TRANSFER PROJECT</small>		
TYPICAL EROSION PROTECTION AT 90 DEGREE BEND		
<small>DRAWING SCALE AS SHOWN</small>		
<small>SHEET NO. 205 OF 205</small>		

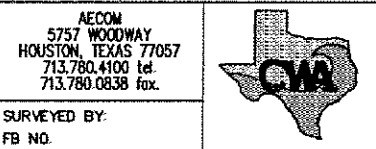


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- FILTER FABRIC FENCE
- STABILIZED CONSTRUCTION ACCESS
- STABILIZED CONSTRUCTION ZONE



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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

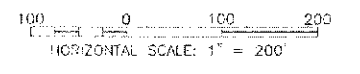
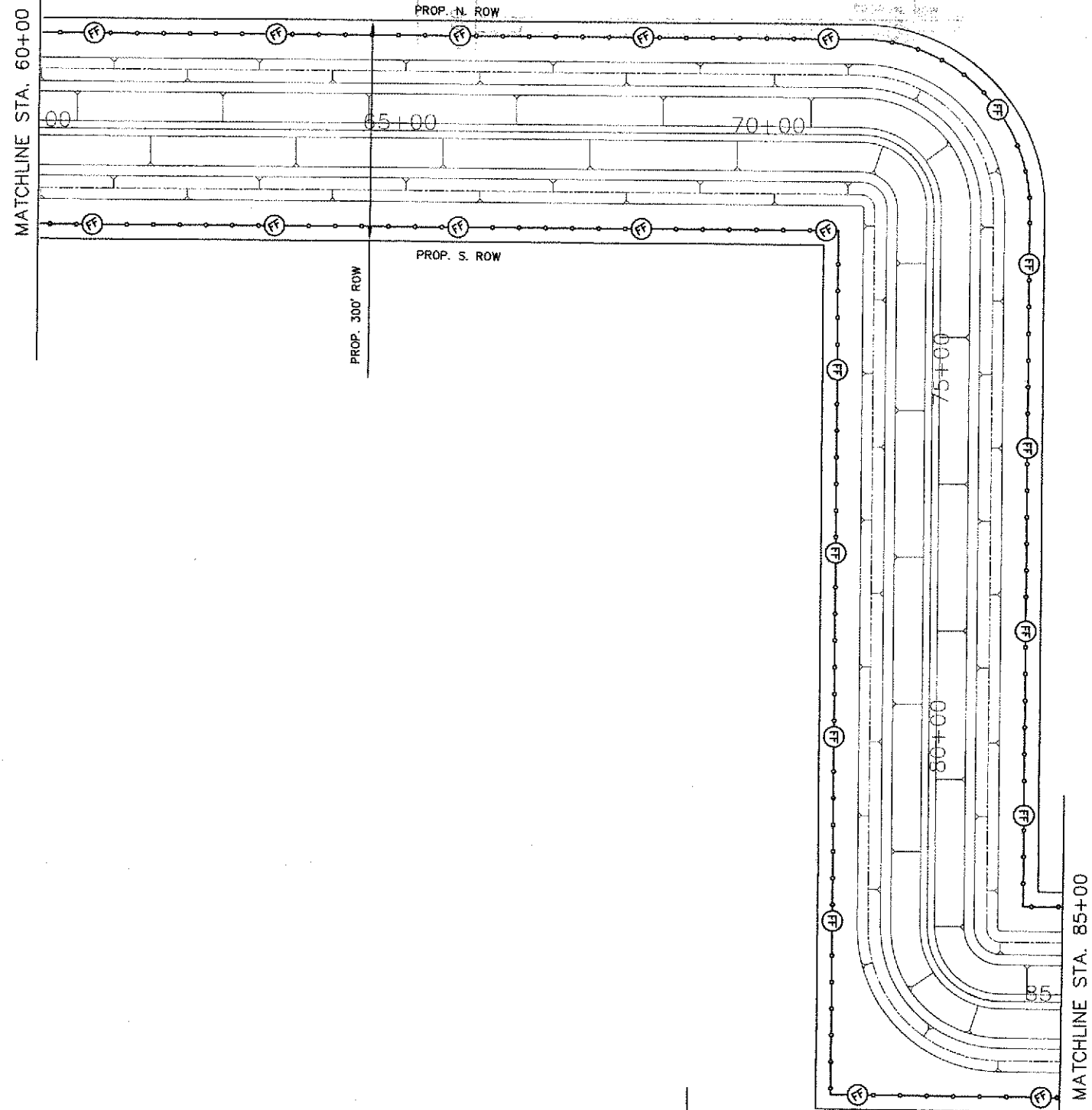
STORM WATER
 POLLUTION PREVENTION
 PLAN - CANAL
 (SHEET 1 OF 25)

DRAWING SCALE
 AS SHOWN

SHEET NO. 206 of 219

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LAST MODIFIED: Jan 27, 2011 5:19pm BY USER: ThompsonB
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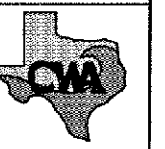
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 713.780.4100 tel.
 713.780.0838 fax.

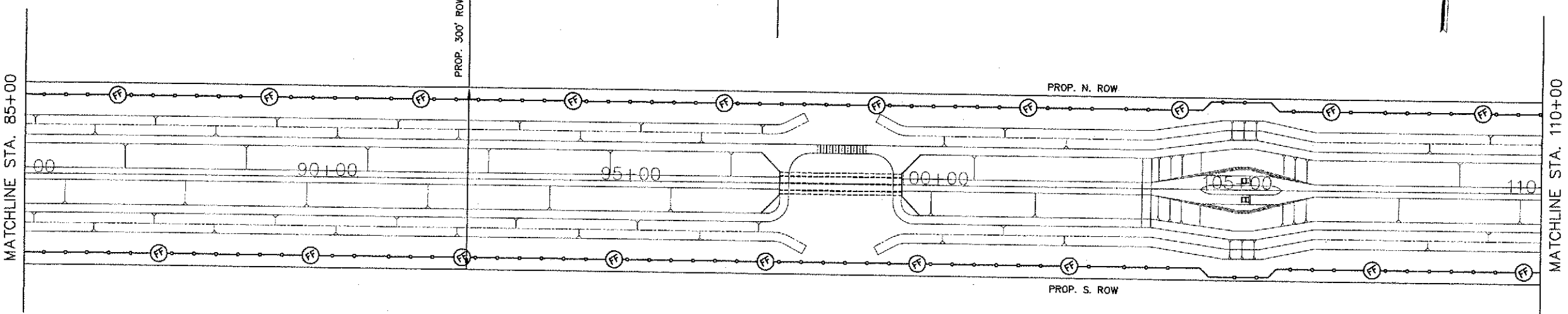


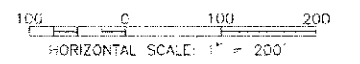
SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

STORM WATER
 POLLUTION PREVENTION
 PLAN - CANAL
 (SHEET 2 OF 25)

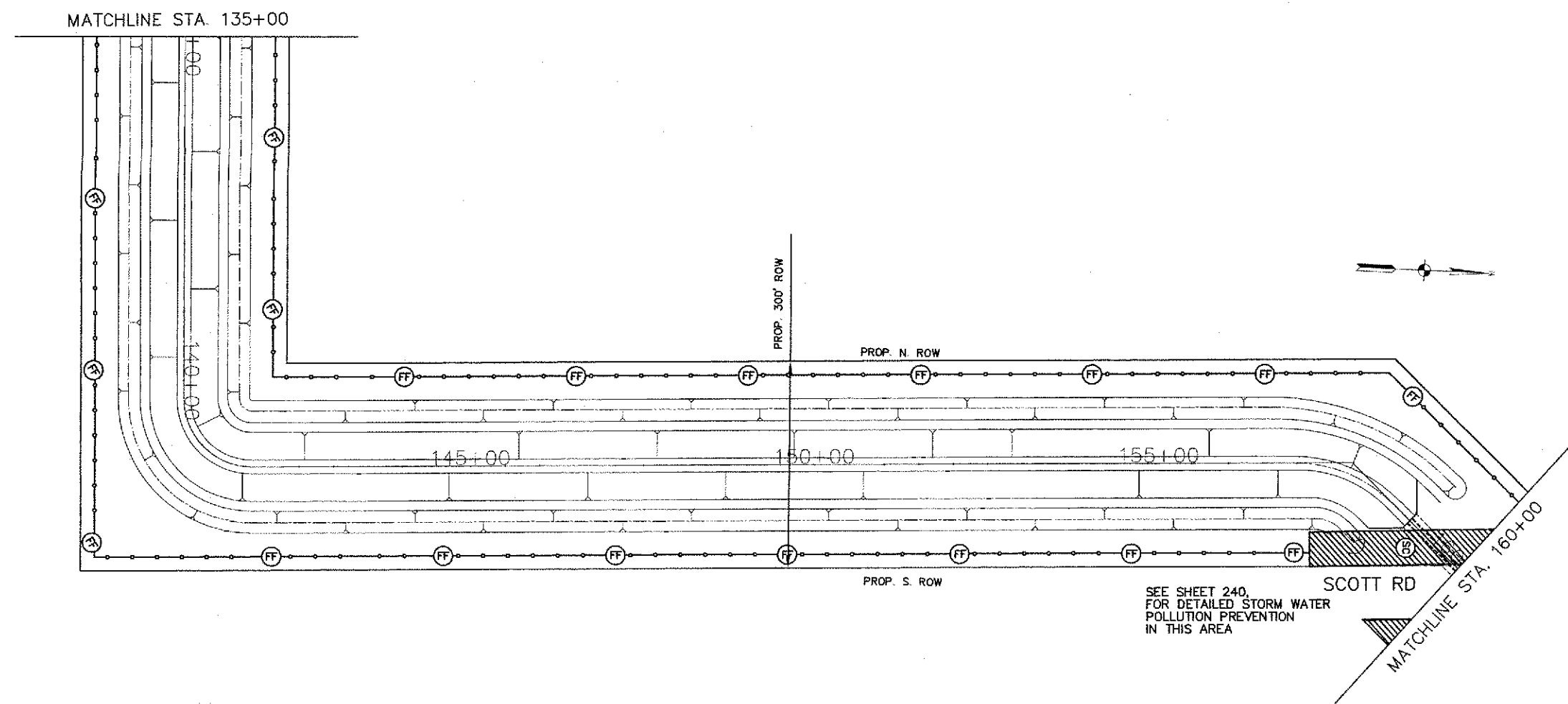
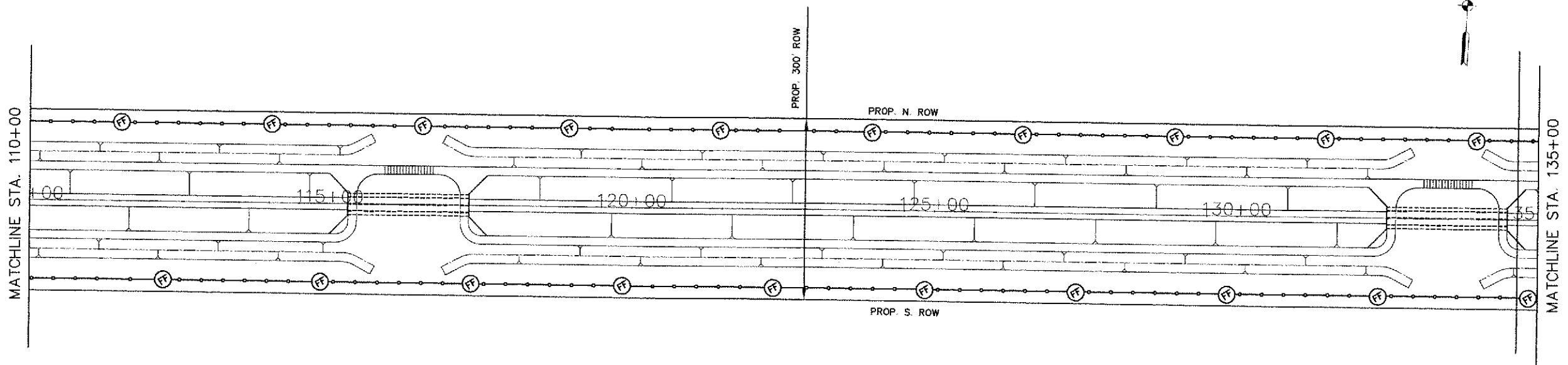
DRAWING SCALE	AS SHOWN
SHEET NO.	207 OF 246





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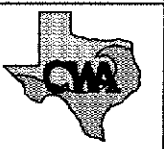
- FILTER FABRIC FENCE
- STABILIZED CONSTRUCTION ACCESS
- STABILIZED CONSTRUCTION ZONE



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 713.780.4100 Tel.
 713.780.0838 Fax

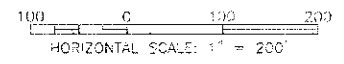


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 FB NO.
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STORM WATER
 POLLUTION PREVENTION
 PLAN - CANAL
 (SHEET 3 OF 25)

DRAWING SCALE	AS SHOWN
SHEET NO.	208 OF 246

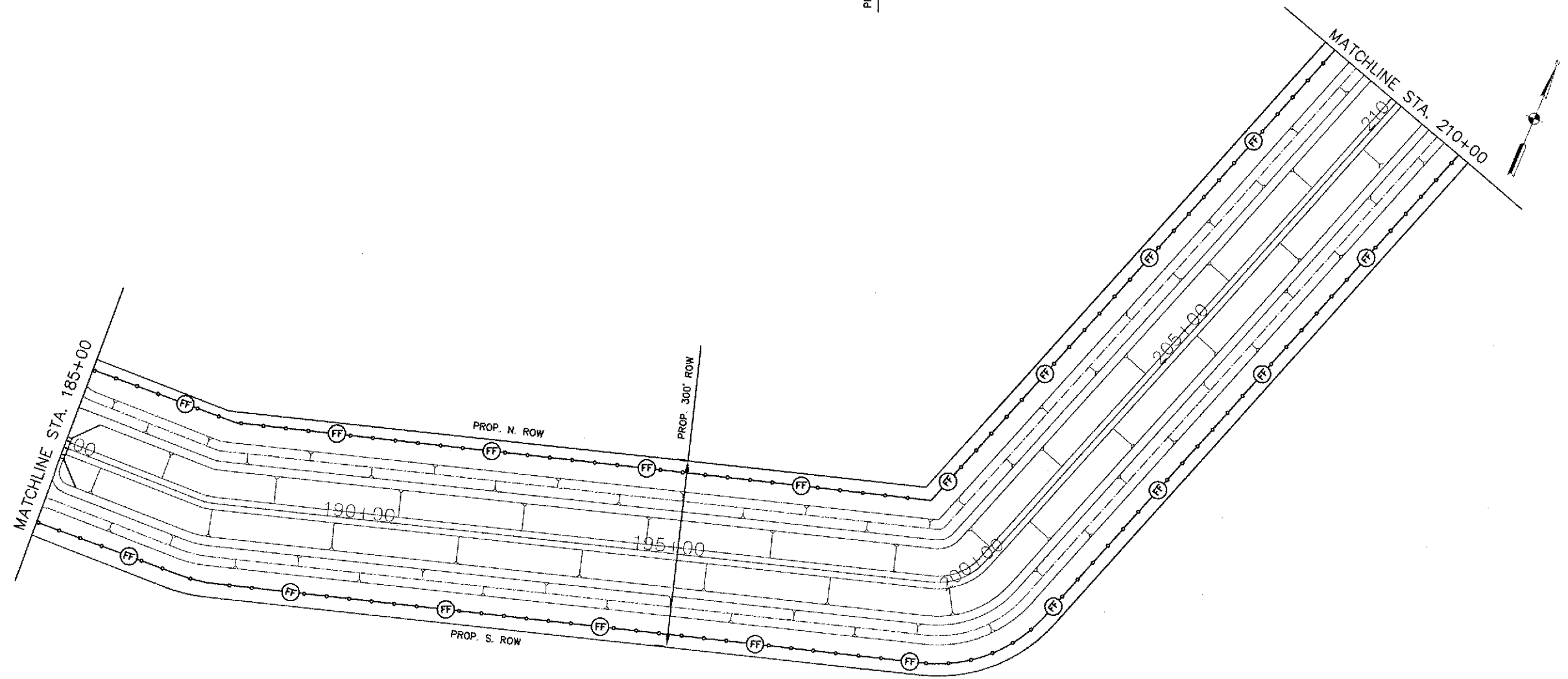
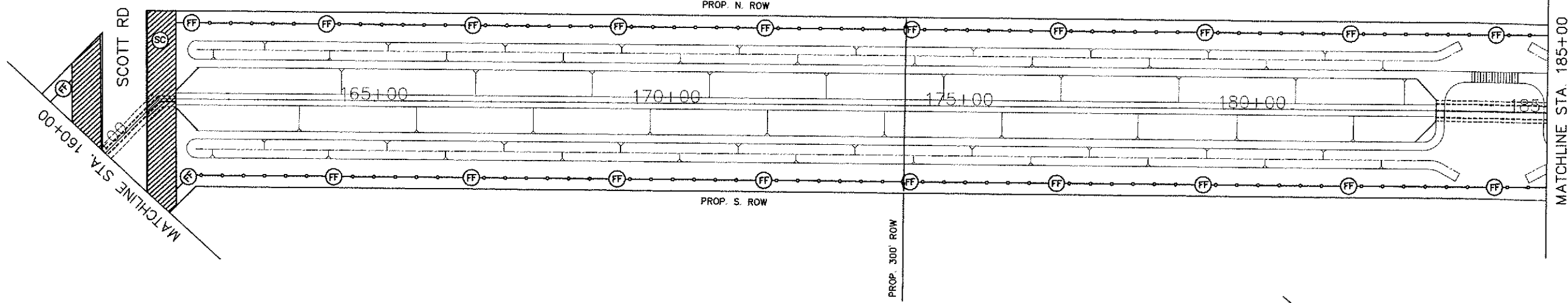
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LEGEND

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- STABILIZED CONSTRUCTION ZONE

SEE SHEET 240,
FOR DETAILED STORM WATER
POLLUTION PREVENTION
IN THIS AREA



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713.780.4100 tel.
713.780.0838 fax.



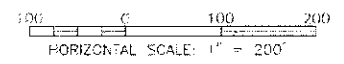
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FB NO.

COASTAL WATER AUTHORITY
LUCE BAYOU INTERBASIN TRANSFER PROJECT

STORM WATER
POLLUTION PREVENTION
PLAN - CANAL
(SHEET 4 OF 25)

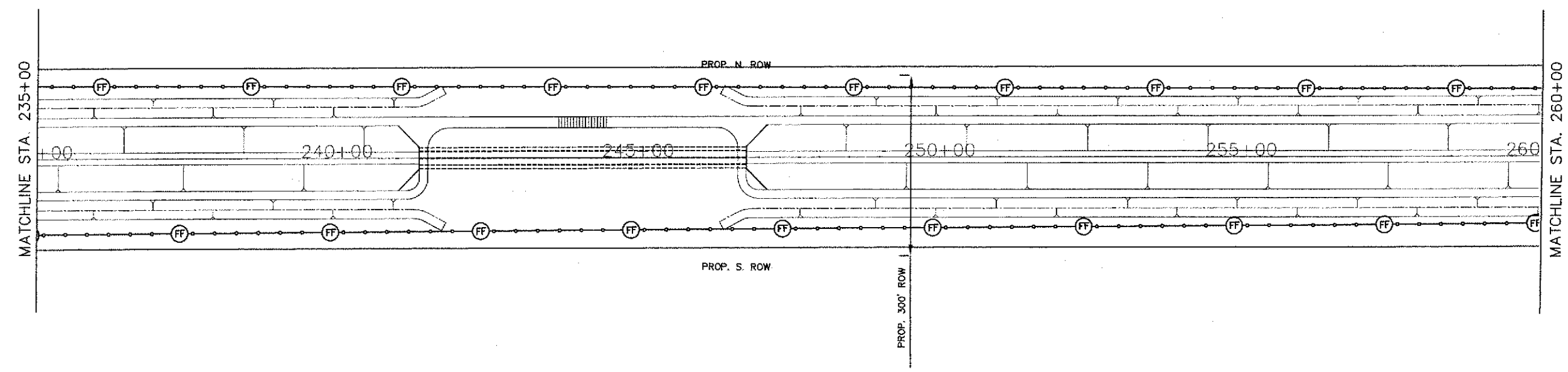
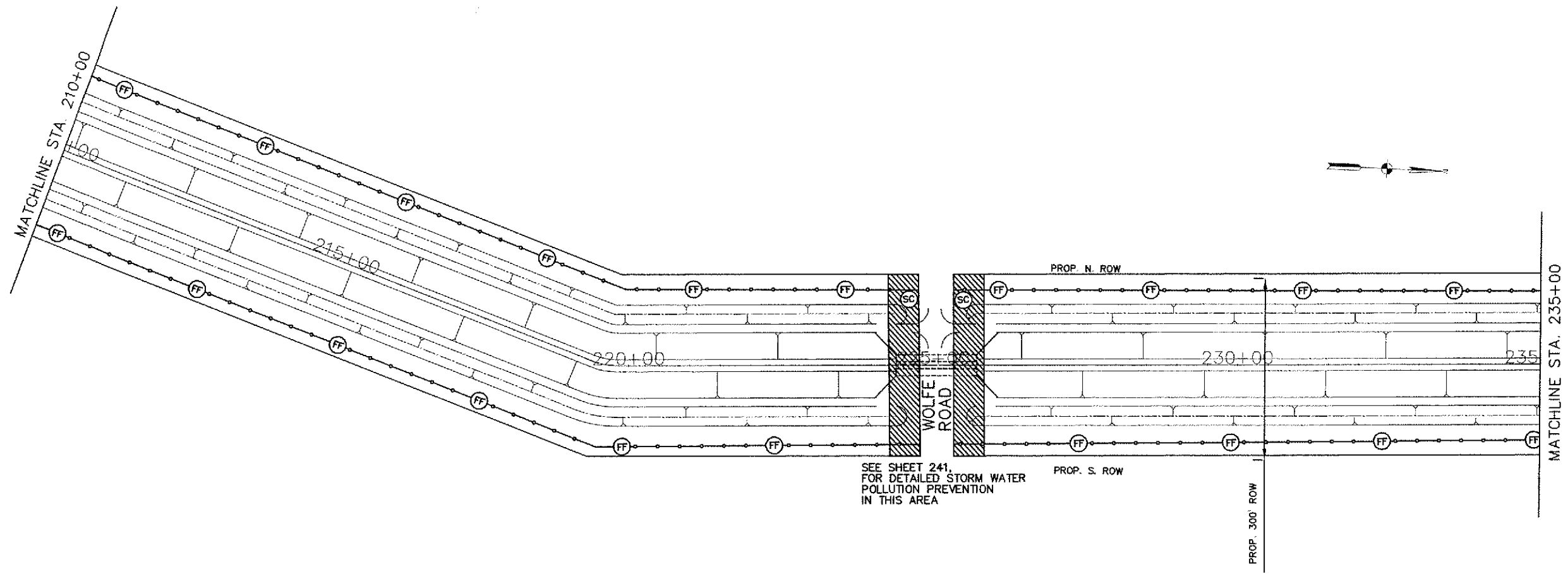
DRAWING SCALE	AS SHOWN
SHEET NO	209 OF 245

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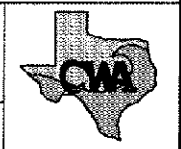
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- STABILIZED CONSTRUCTION ZONE



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 713.780.0838 fax.



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STORM WATER
 POLLUTION PREVENTION
 PLAN - CANAL
 (SHEET 5 OF 25)

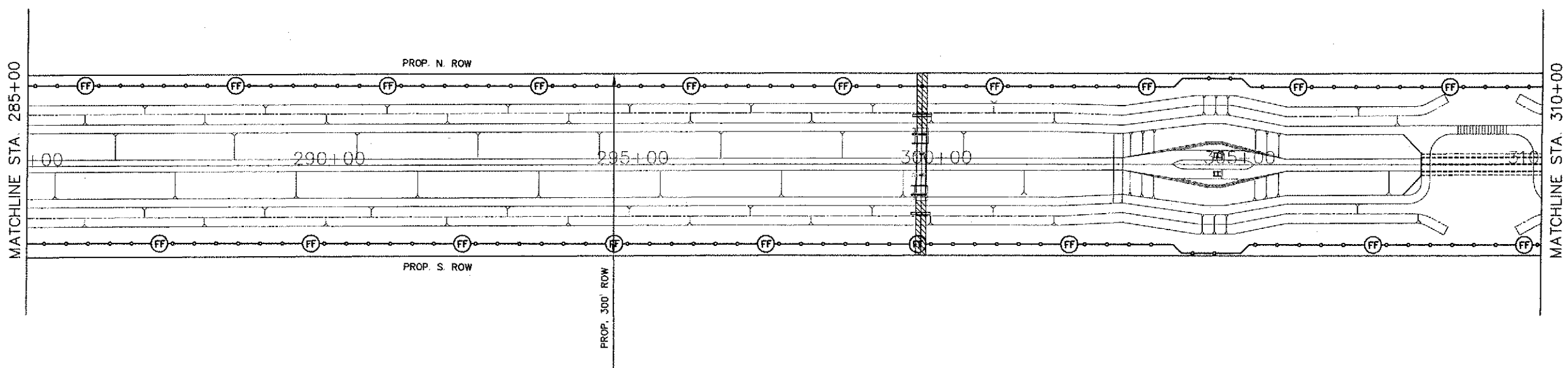
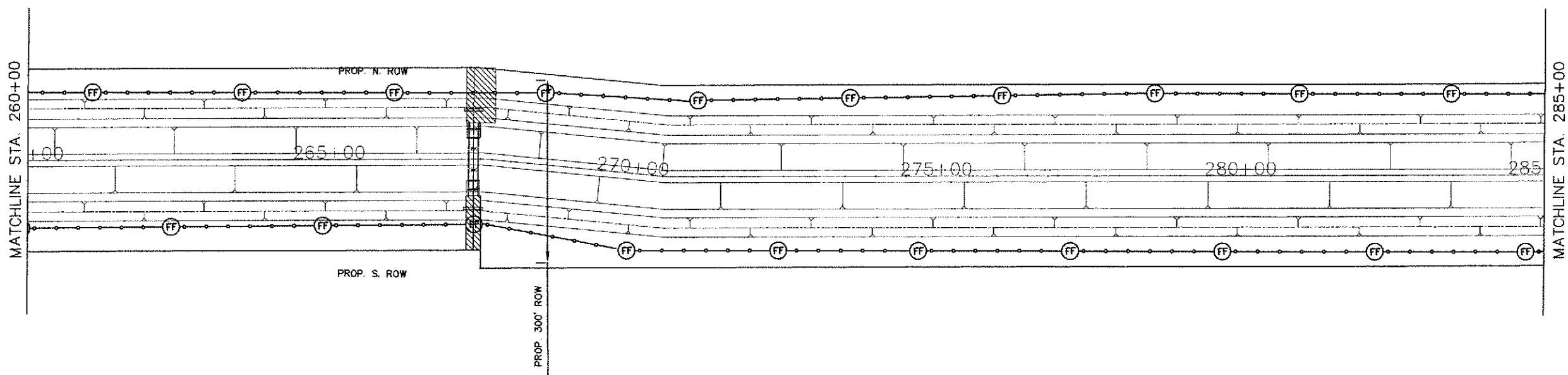
DRAWING SCALE	AS SHOWN
SHEET NO.	110 OF 245

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100 0 100 200
 HORIZONTAL SCALE: 1" = 200'

LEGEND

- ⊙ FF ⊙ FILTER FABRIC FENCE
- ⊙ SC ⊙ STABILIZED CONSTRUCTION ACCESS



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 WWW.AECOM.COM TEL: 713-851-1000
 TX REG. NO. F-3980

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 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



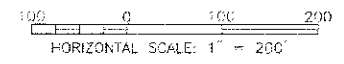
SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

STORM WATER
 POLLUTION PREVENTION
 PLAN - CANAL
 (SHEET 6 OF 25)

DRAWING SCALE
 AS SHOWN

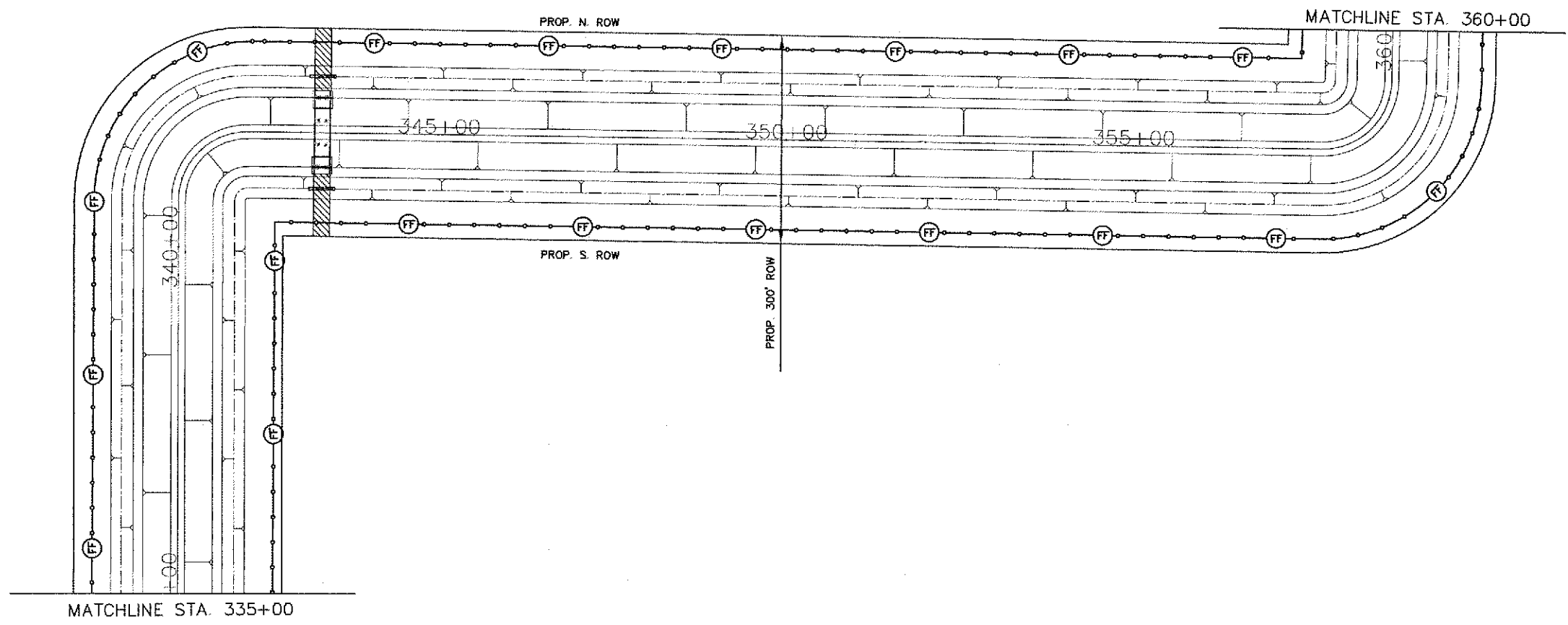
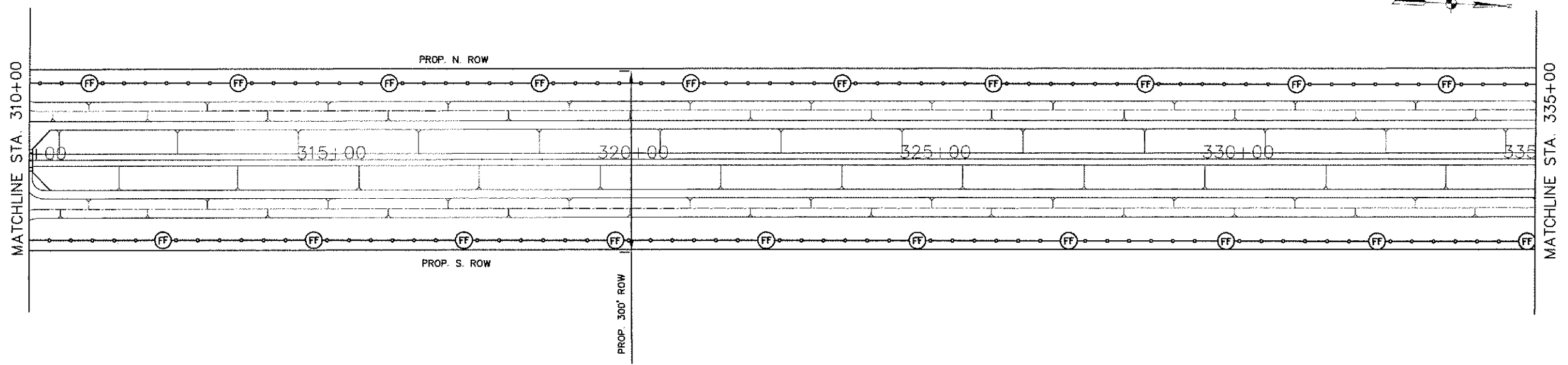
SHEET NO. 211 of 295

LAST MODIFIED: Jan 27, 2011 - 5:20pm BY USER: ThompsonB
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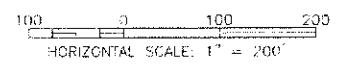
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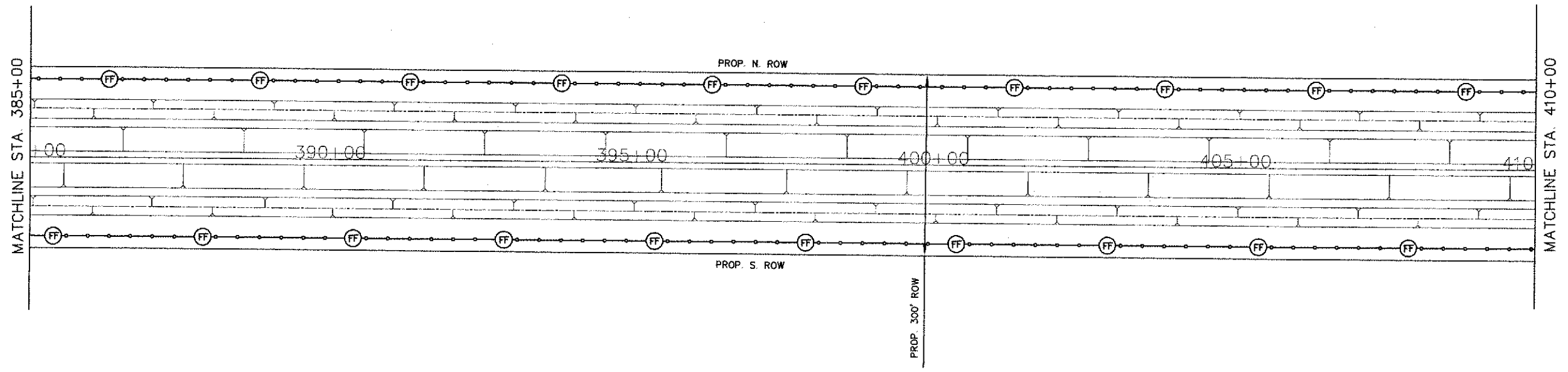
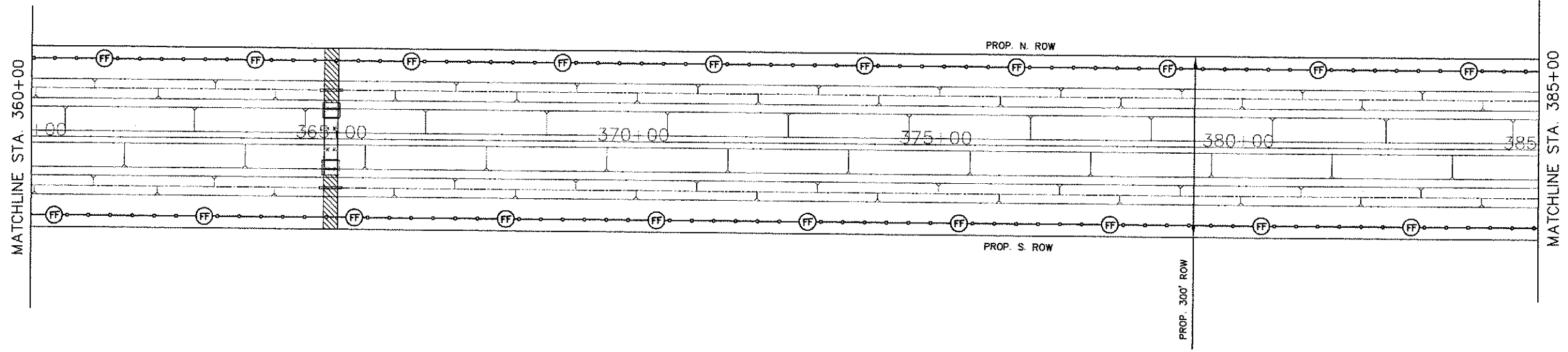
AECOM		AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057 WWW.AECOM.COM TOPS REG. NO. F-15500
AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.		
SURVEYED BY: FB NO.		
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LUCE BAYOU INTERBASIN TRANSFER PROJECT		
STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 7 OF 25)		
DRAWING SCALE AS SHOWN		
SHEET NO. 212 OF 295		

LAST MODIFIED: Jan 27, 2011, 4:52:00pm BY USER: ThompasoB
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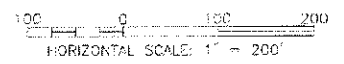
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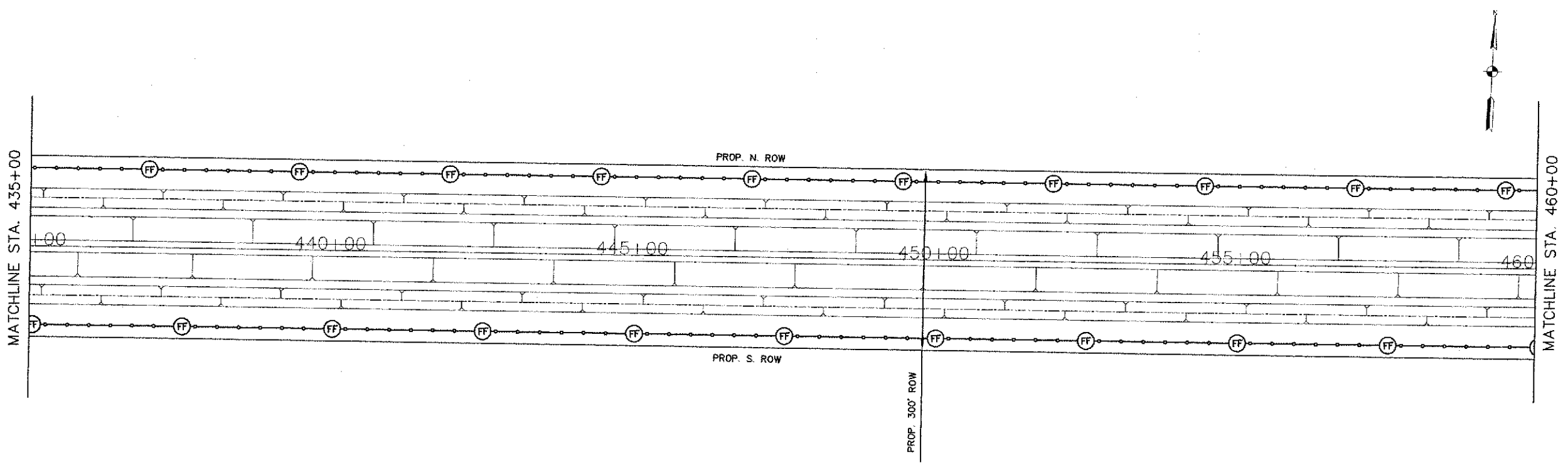
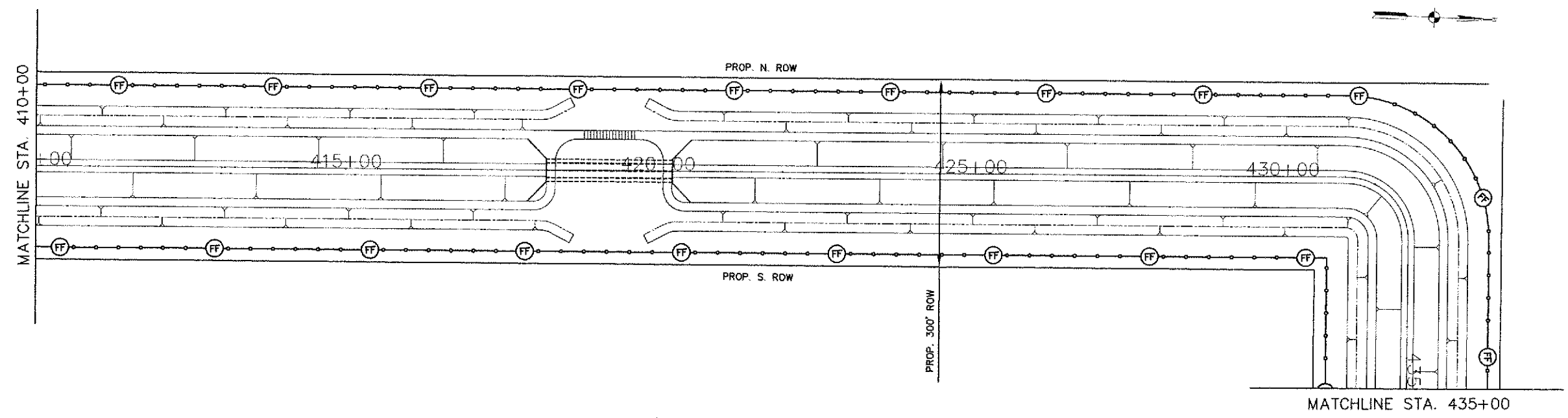
AECOM		AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 101 WEST HOUSTON, TEXAS 77057 WWW.AECOM.COM F-3550
AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.		
SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY LUCIE BAYOU INTERBASIN TRANSFER PROJECT		
STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 8 OF 25)		
DRAWING SCALE AS SHOWN		
SHEET NO. 213 OF 248		

LAST MODIFIED: Jan 27, 2011 - 5:20pm BY USER: ThompsonBI
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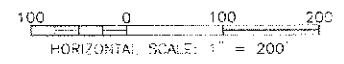
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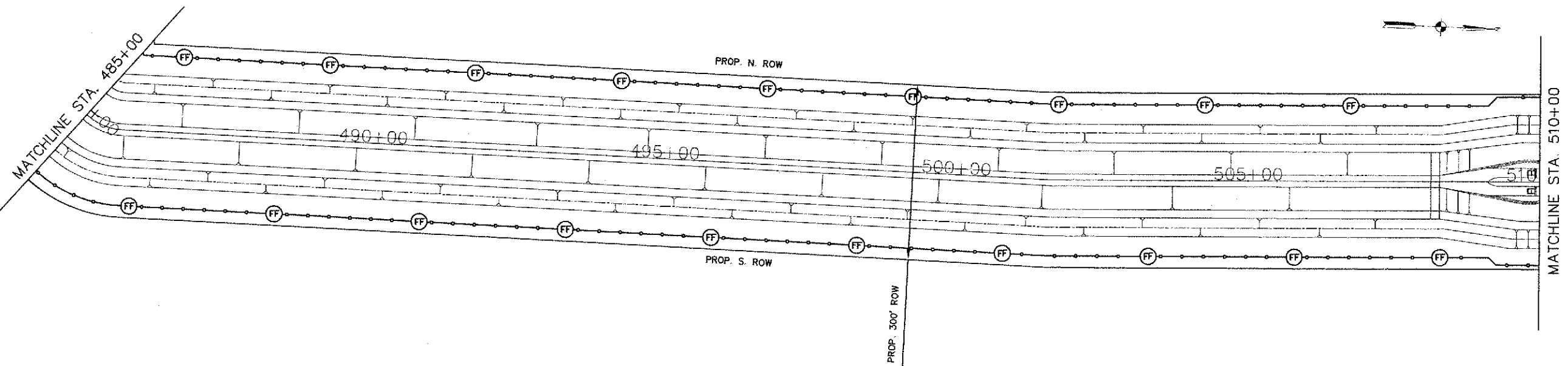
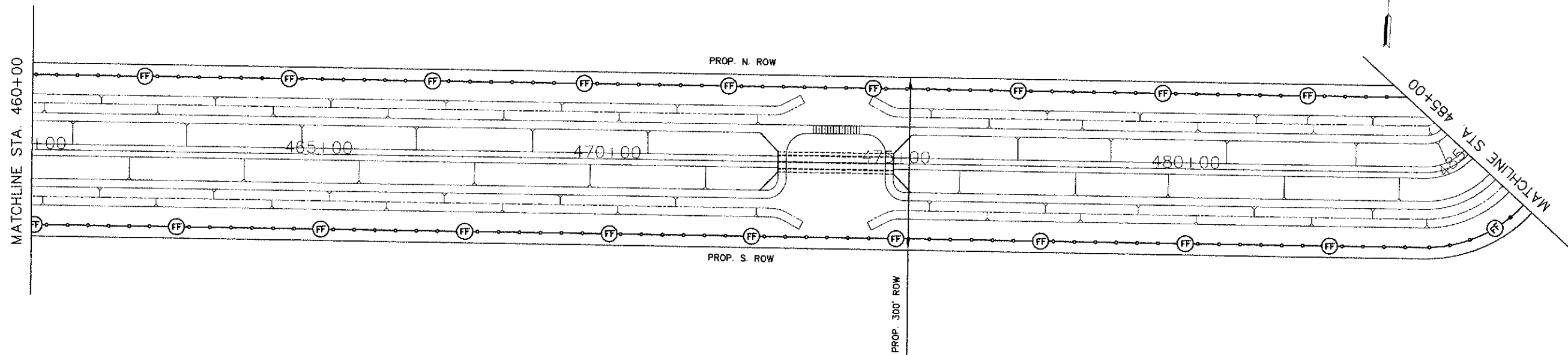
AECOM		AECOM TECHNICAL SERVICES, INC. 8701 WOODWAY, SUITE 101 WEST HOUSTON, TEXAS 77057-1800 WWW.AECOM.COM TEL: 713.780.1000 FAX: 713.780.1000
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SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY		
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STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 9 OF 25)		
DRAWING SCALE AS SHOWN		
SHEET NO. 14 OF 245		

LAST MODIFIED: Jan 27, 2011 5:21pm BY USER: ThompsonB
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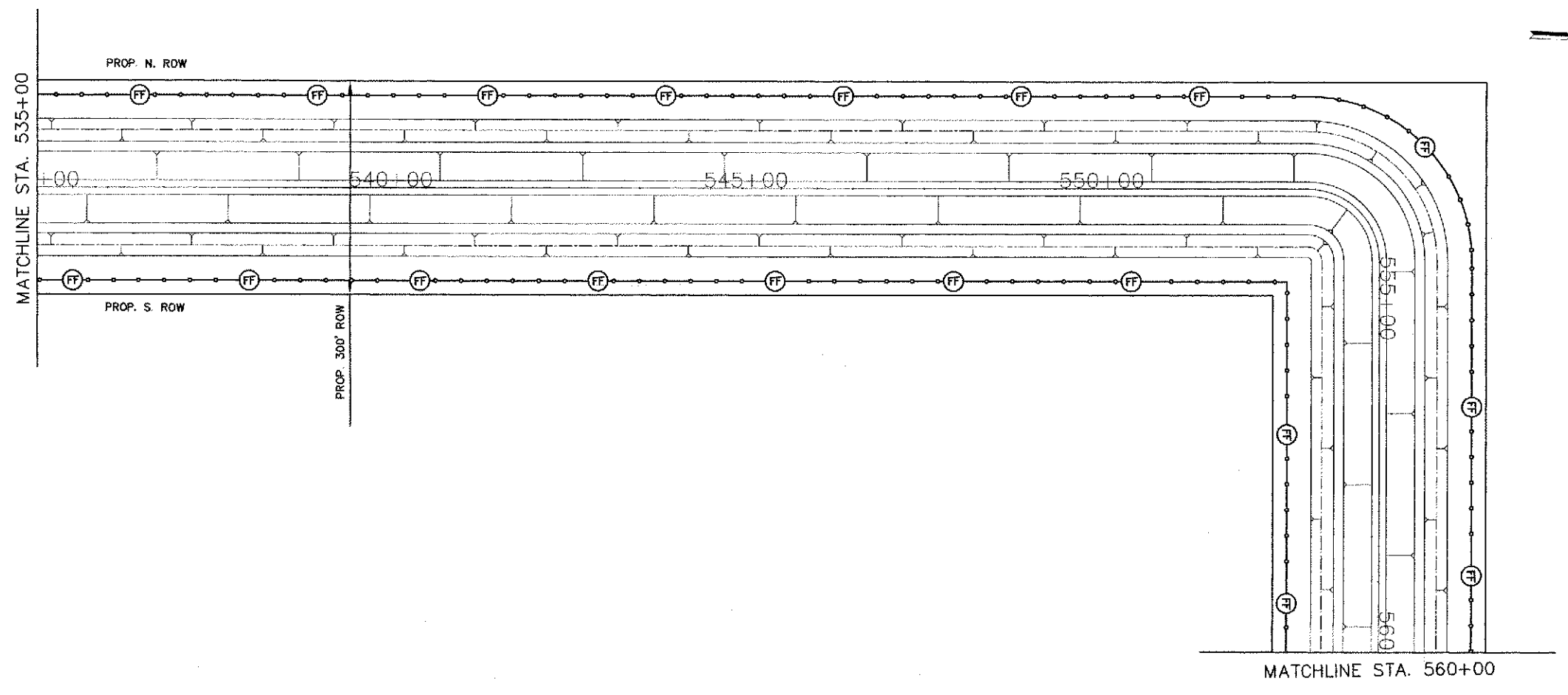
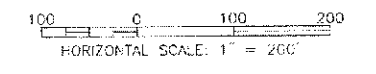
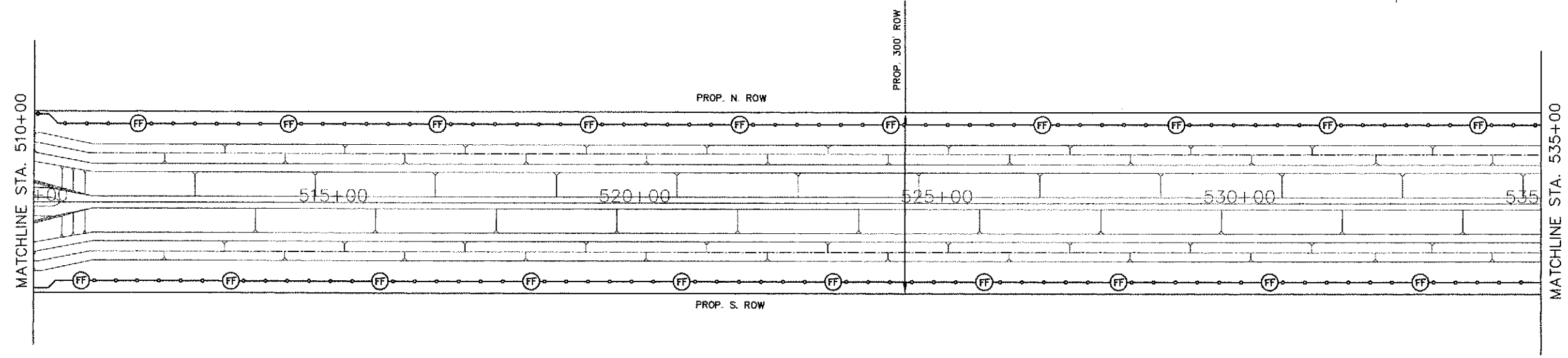


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<small>SURVEYED BY: FB NO.</small>		
COASTAL WATER AUTHORITY <small>LUCE BAYOU INTERBASIN TRANSFER PROJECT</small>		
STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 10 OF 25)		
<small>DRAWING SCALE AS SHOWN</small>		
SHEET NO. 215 OF 245		

LAST MODIFIED: JUN 27, 2011 - 5:21 PM BY USER: ThompsonB
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LAST MODIFIED: Jan 27, 2011, 5:21pm BY USER: ThompsonB
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 HOUSTON, TEXAS 77057
 WWW.AECOM.COM
 1.800.441.4333

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



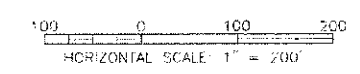
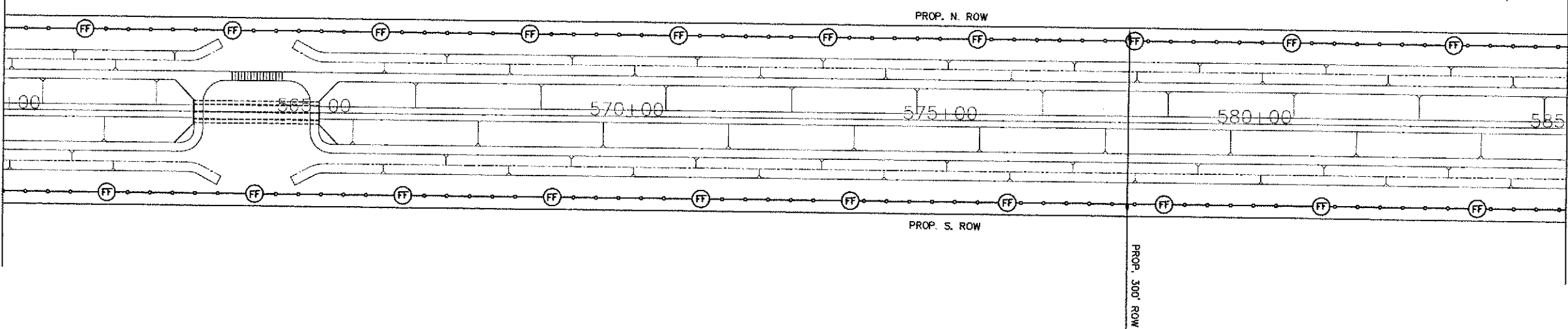
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 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

STORM WATER
 POLLUTION PREVENTION
 PLAN - CANAL
 (SHEET 11 OF 25)

DRAWING SCALE	AS SHOWN
SHEET NO.	216 OF 215

LAST MODIFIED: Jan 27, 2011 - 5:21pm BY USLR: ThompsonBI
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MATCHLINE STA. 560+00



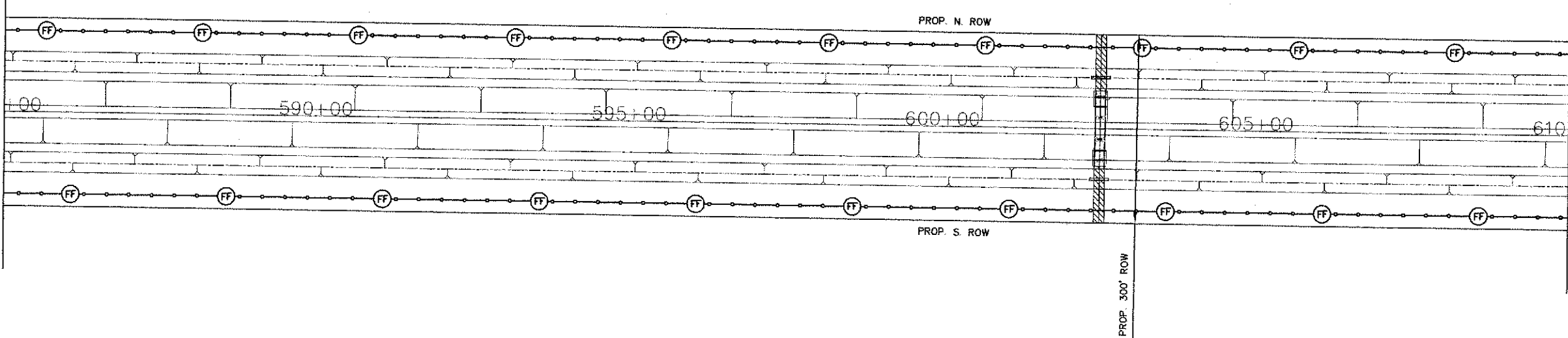
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- FILTER FABRIC FENCE
- STABILIZED CONSTRUCTION ACCESS

MATCHLINE STA. 585+00

PROP. 300' ROW

MATCHLINE STA. 585+00

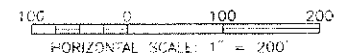


MATCHLINE STA. 610+00

PROP. 300' ROW

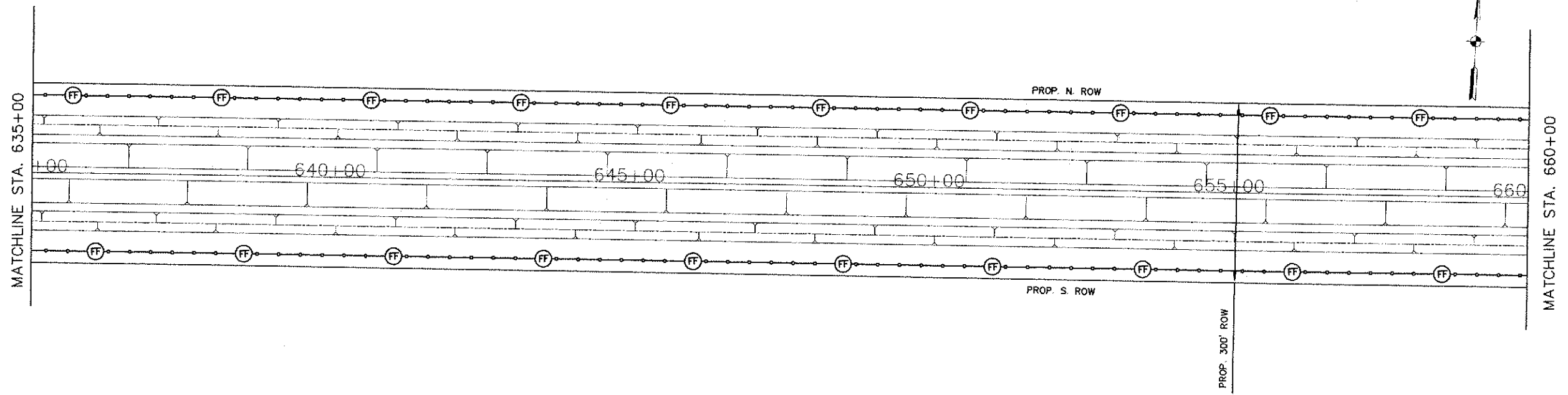
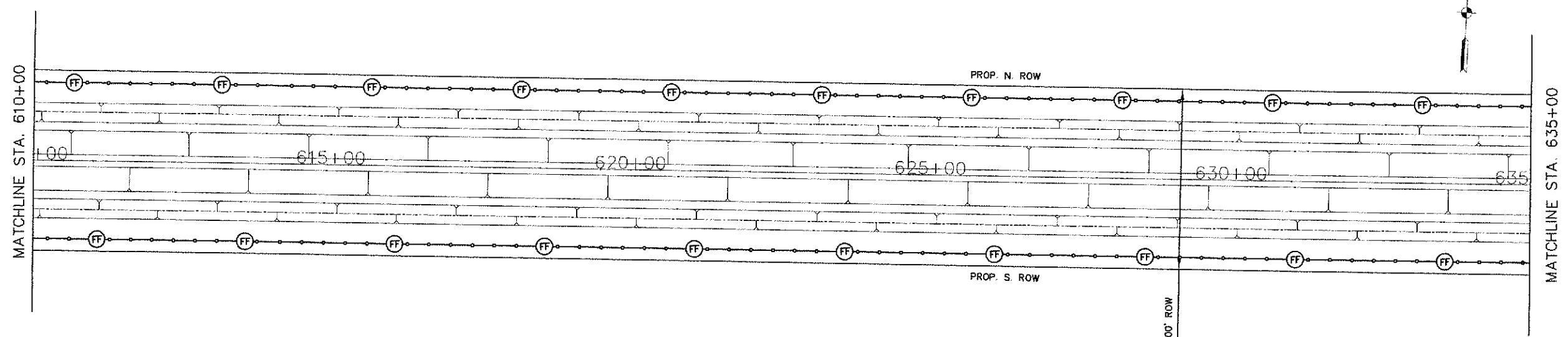
KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

		<small>AECOM TECHNICAL SERVICES, INC. 5157 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057-1599 WWW.AECOM.COM TSP REG. NO. F-3540</small>
<small>AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.</small>		
<small>SURVEYED BY: FB NO.</small>		
COASTAL WATER AUTHORITY <small>LUCE BAYOU INTERBASIN TRANSFER PROJECT</small>		
STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 12 OF 25)		
<small>DRAWING SCALE AS SHOWN</small>		
<small>SHEET NO. 217 OF 245</small>		



LEGEND

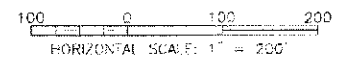
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- STABILIZED CONSTRUCTION ACCESS



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 TEXAS REGISTRATION NO. 91031
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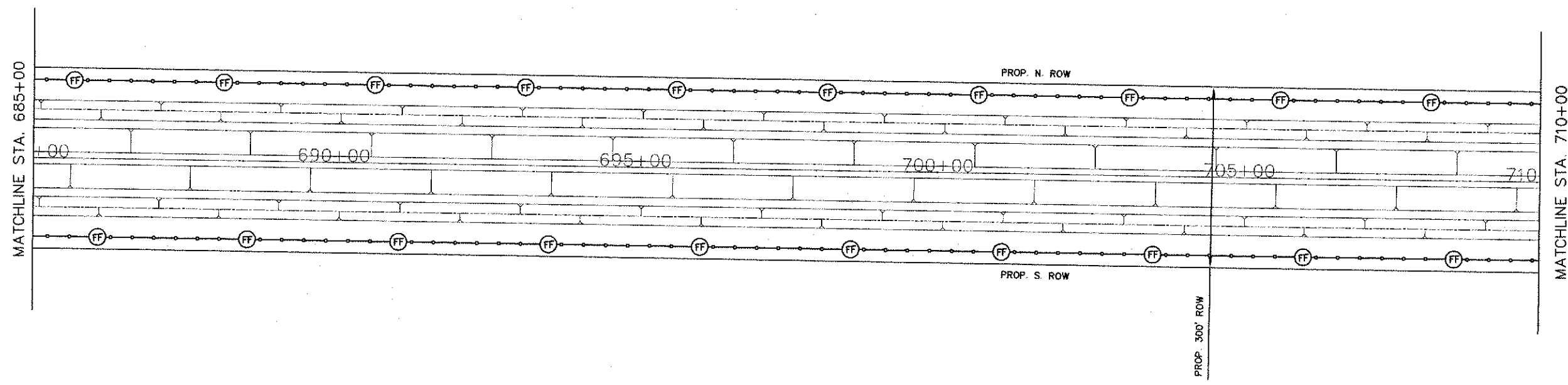
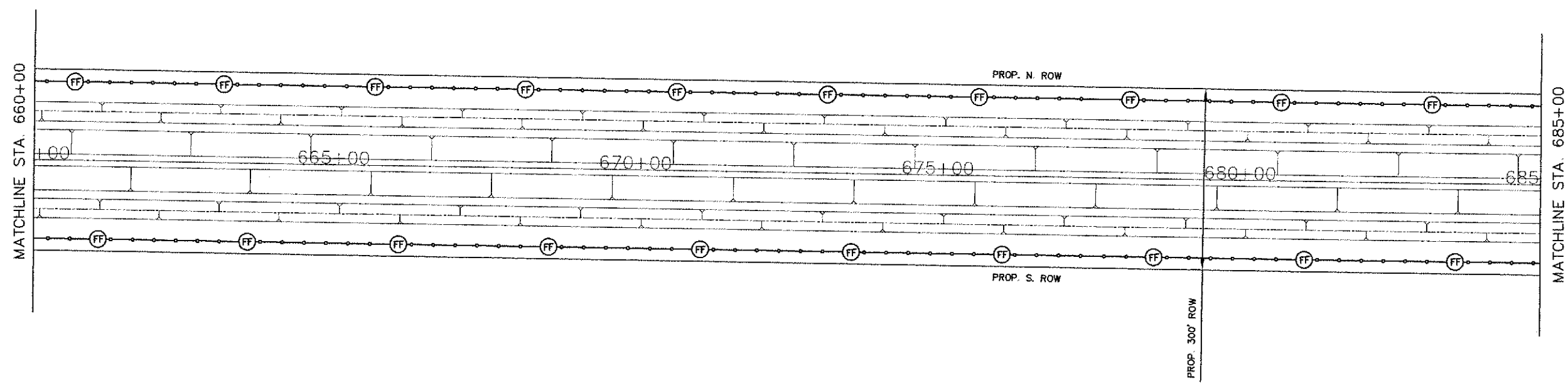
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AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.		
SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY LUCIE BAYOU INTERBASIN TRANSFER PROJECT		
STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 13 OF 25)		
DRAWING SCALE AS SHOWN		
SHEET NO. 218 OF 245		

LAST MODIFIED: Jan 27, 2011 - 5:22pm
 BY USER: ThompsonB
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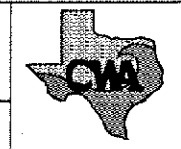
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 TEXAS REGISTRATION NO. 91031
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AECOM
AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY
 HOUSTON, TEXAS 77067
 713.780.4100 tel.
 713.780.0838 fax
 WWW.AECOM.COM
 TOLL FREE: 1-800-875-5500

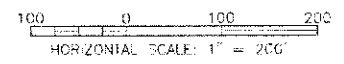


SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

STORM WATER
 POLLUTION PREVENTION
 PLAN - CANAL
 (SHEET 14 OF 25)

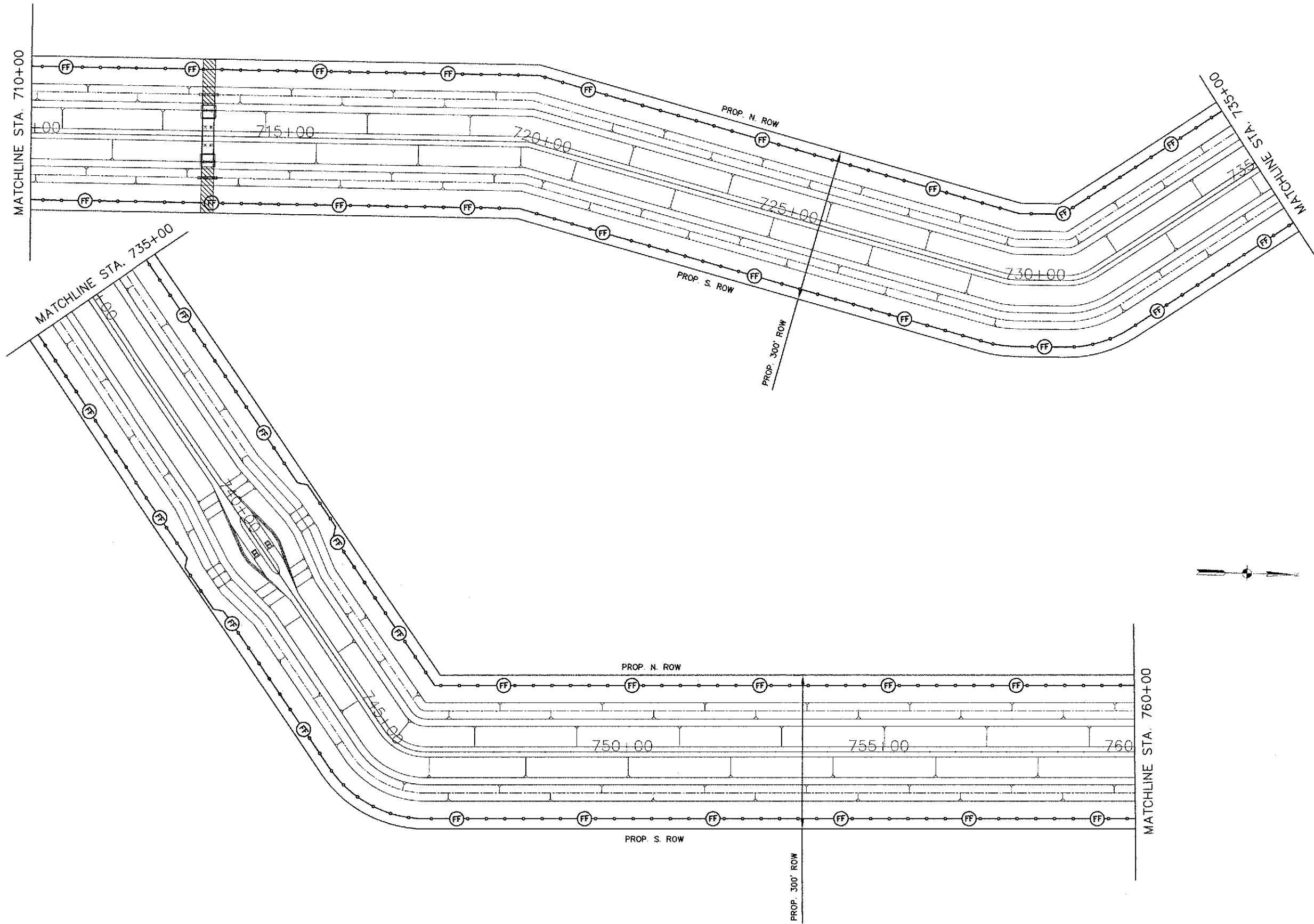
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SHEET NO.	219 of 245

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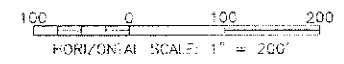
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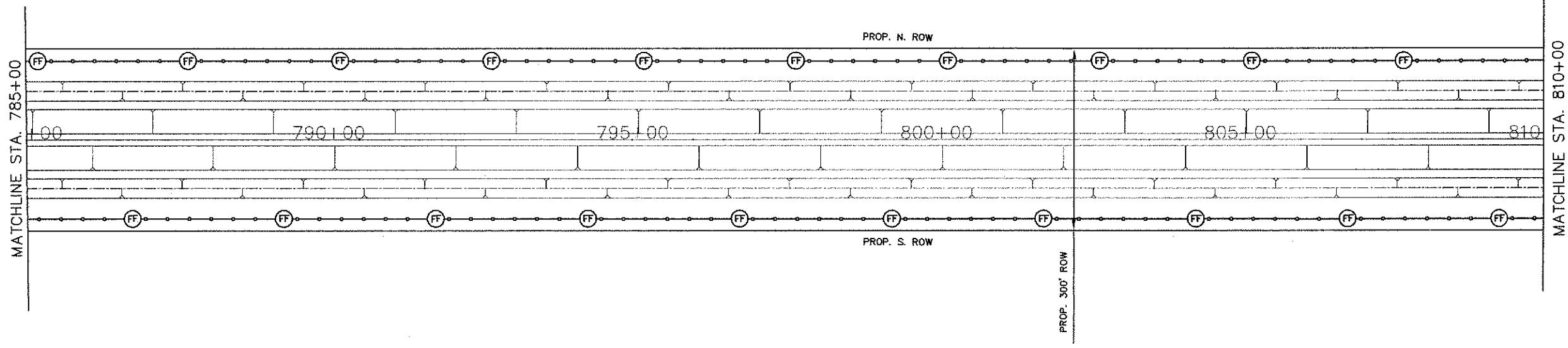
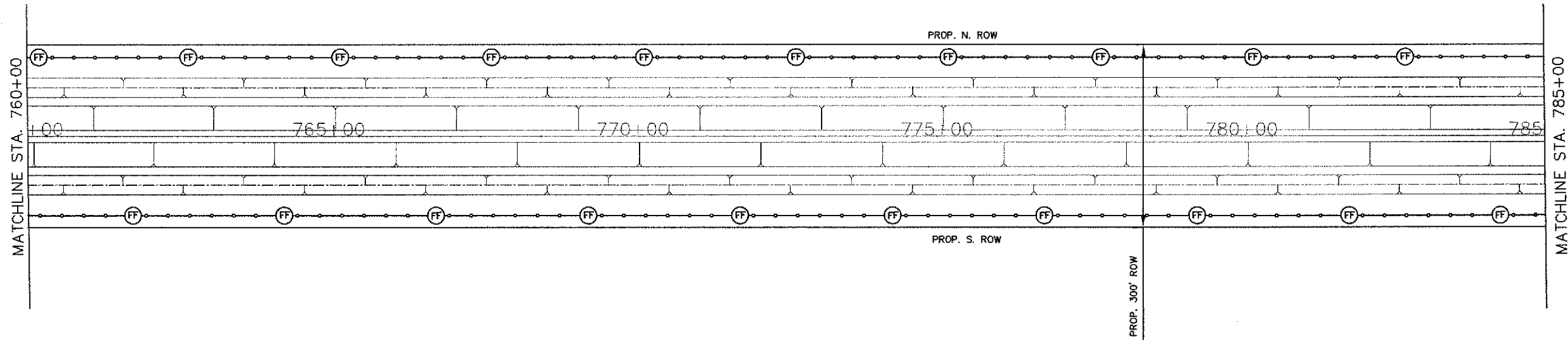
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AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.		
SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY		
LUCIE BAYOU INTERBASIN TRANSFER PROJECT		
STORM WATER POLLUTION PREVENTION PLAN - CANAL (SHEET 15 OF 25)		
DRAWING SCALE AS SHOWN		
SHEET NO. 15 OF 25		

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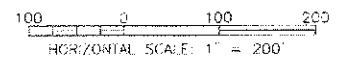
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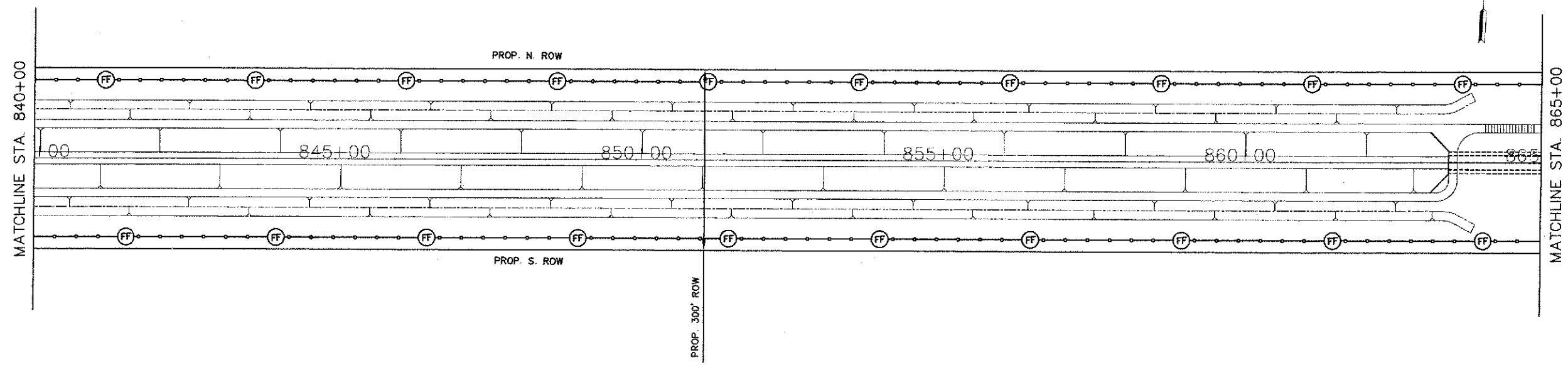
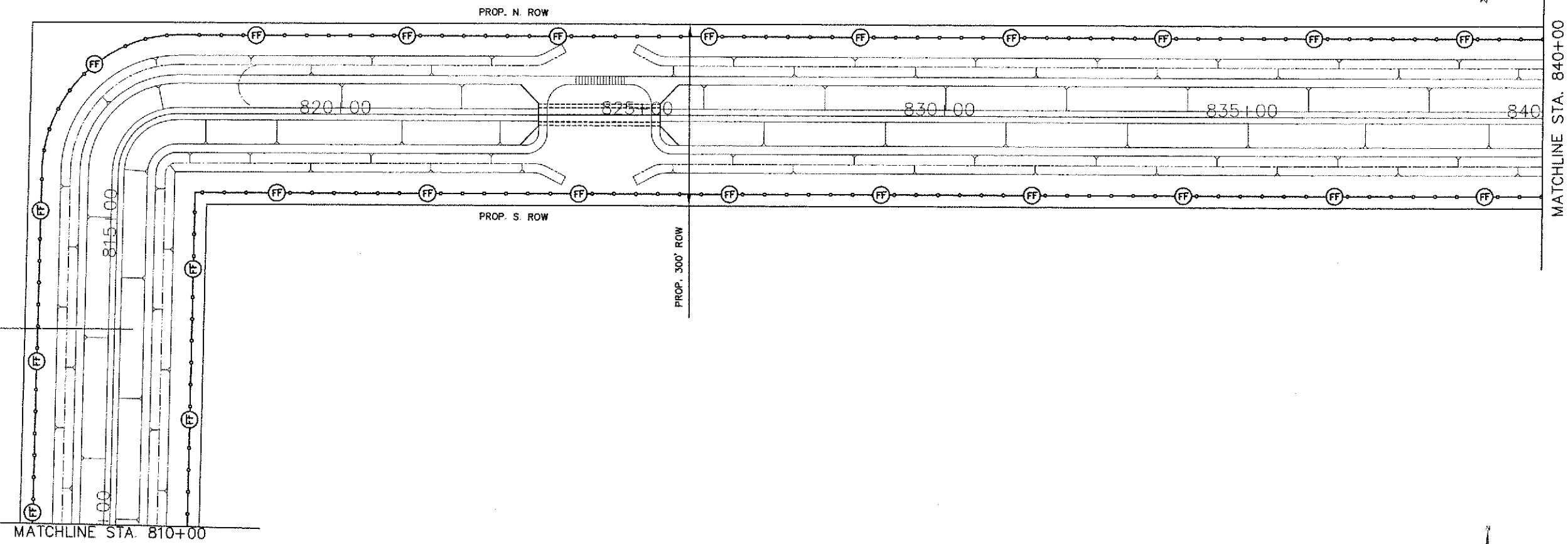
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AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.		
SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT		
CANAL STORM WATER POLLUTION PREVENTION PLAN (SHEET 16 OF 25)		
DRAWING SCALE AS SHOWN		
SHEET NO. 22 OF 245		

LAST MODIFIED: Jan. 27, 2011 - 5:23pm BY USER: ThompsonRBI
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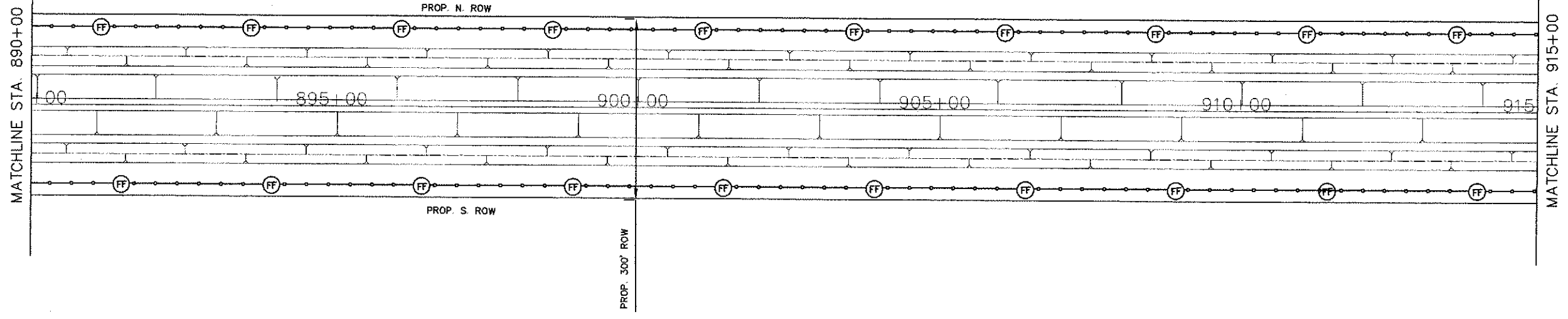
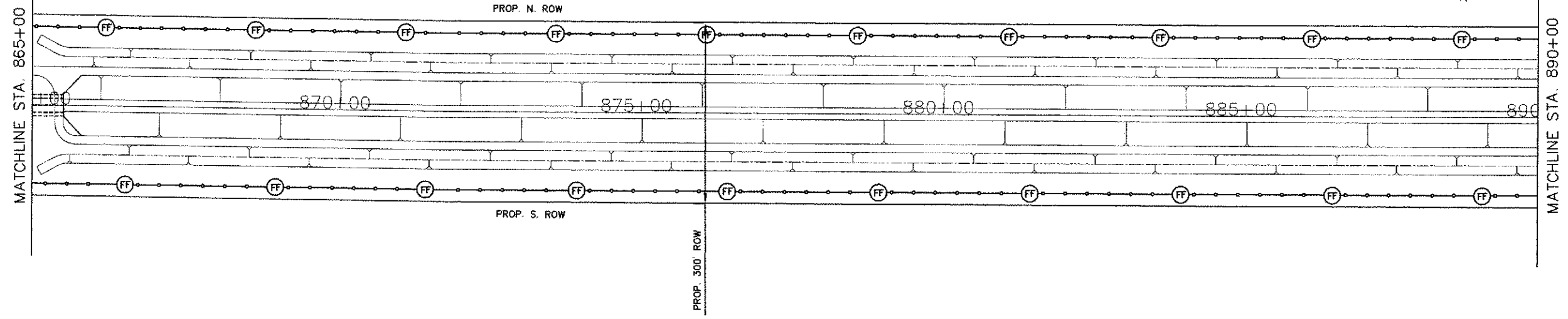
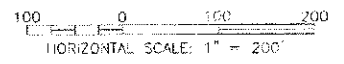
SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL
 STORM WATER POLLUTION
 PREVENTION PLAN
 (SHEET 17 OF 25)

DRAWING SCALE
 AS SHOWN

SHEET NO. 222 OF 245

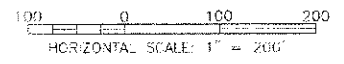
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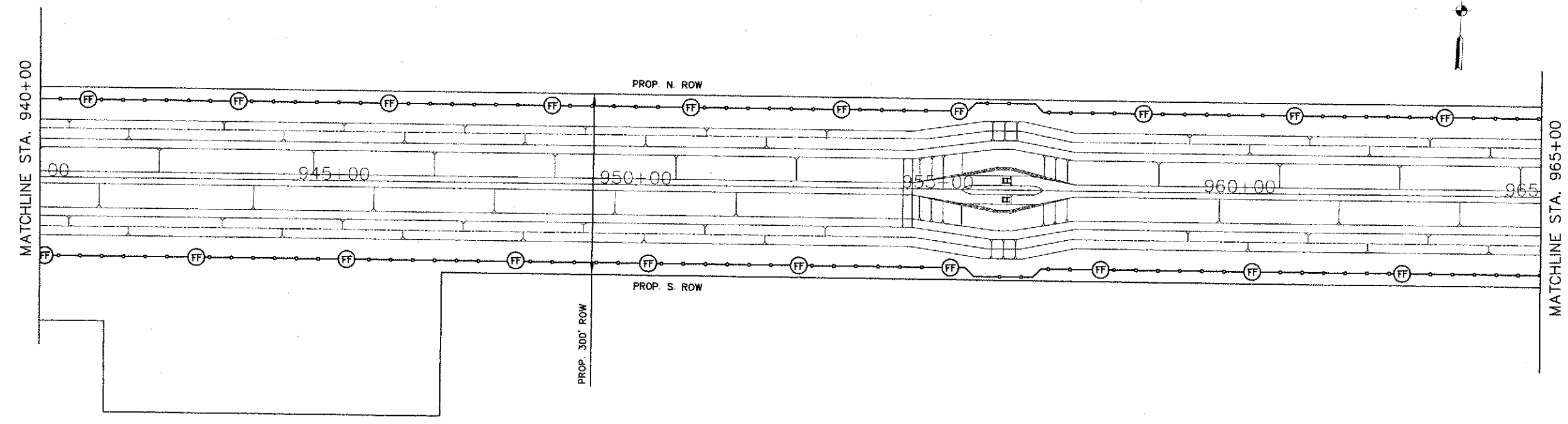
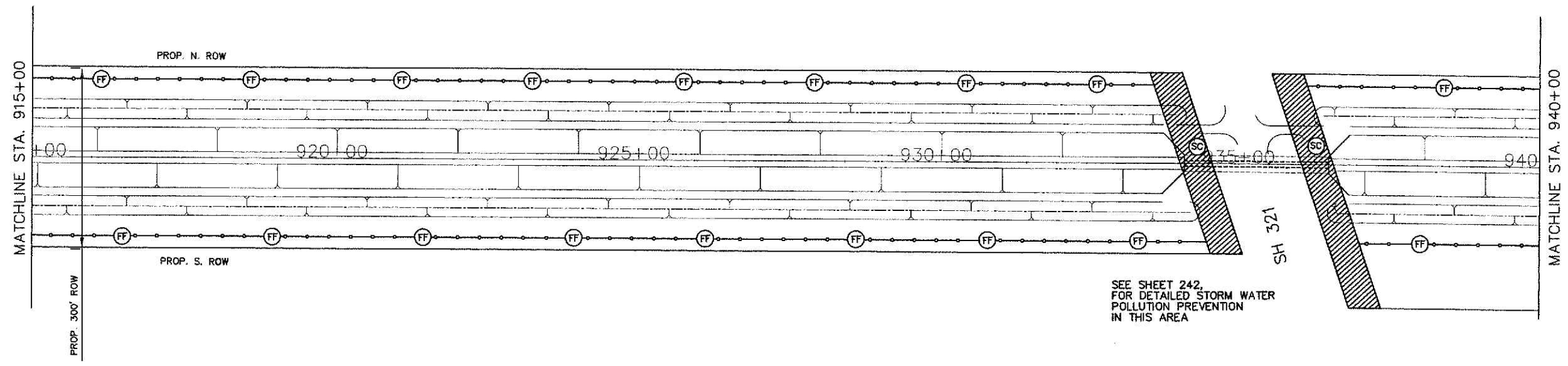
AECOM		AECOM TECHNICAL SERVICES, INC. 6107 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057-1999 WWW.AECOM.COM TSP# REG. NO. F-3580
AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.		
SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY LUCIE BAYOU INTERBASIN TRANSFER PROJECT		
CANAL STORM WATER POLLUTION PREVENTION PLAN (SHEET 18 OF 25)		
DRAWING SCALE AS SHOWN		
SHEET NO. 213 OF 295		

LAST MODIFIED: Jan 27, 2011 - 5:24pm BY USER: ThompsonB
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- FILTER FABRIC FENCE
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- STABILIZED CONSTRUCTION ZONE



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AECOM AECOM TECHNICAL SERVICES, INC.
 5757 WOODWAY, SUITE 160 WEST
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax
 WWW.AECOM.COM
 TSP REG. NO. P-3580

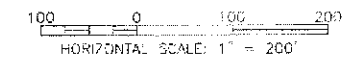


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 FBI NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL
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 PREVENTION PLAN
 (SHEET 19 OF 25)

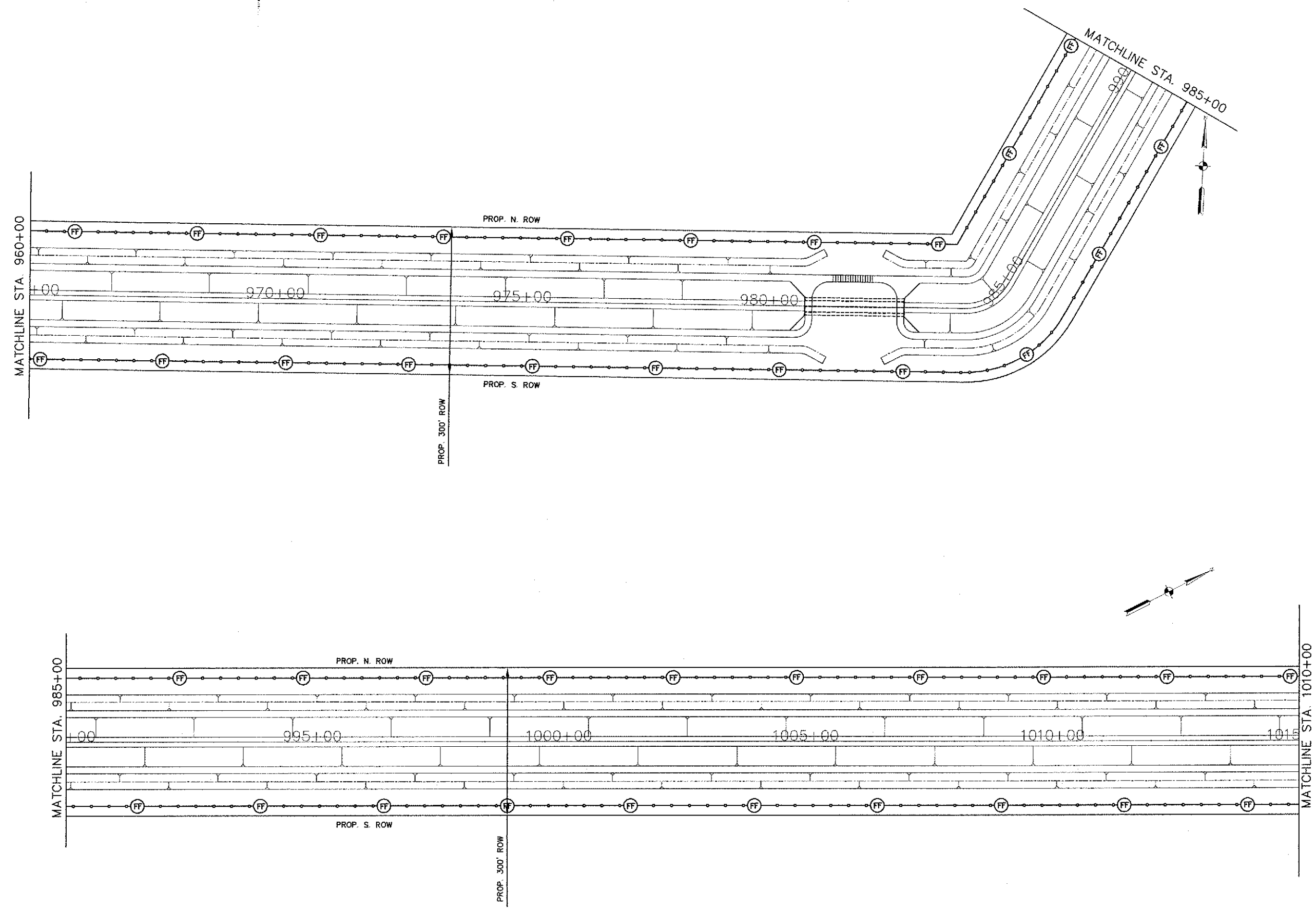
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SHEET NO. 24 OF 25	

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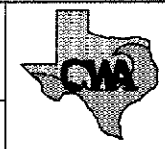
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AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



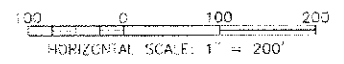
SURVEYED BY:
 FB NO.

COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL
 STORM WATER POLLUTION
 PREVENTION PLAN
 (SHEET 20 OF 25)

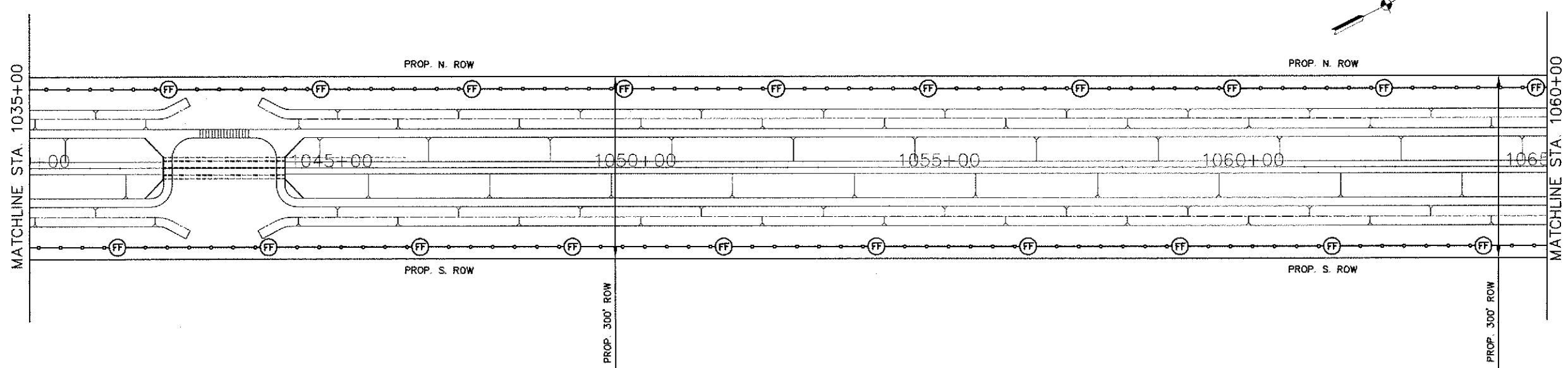
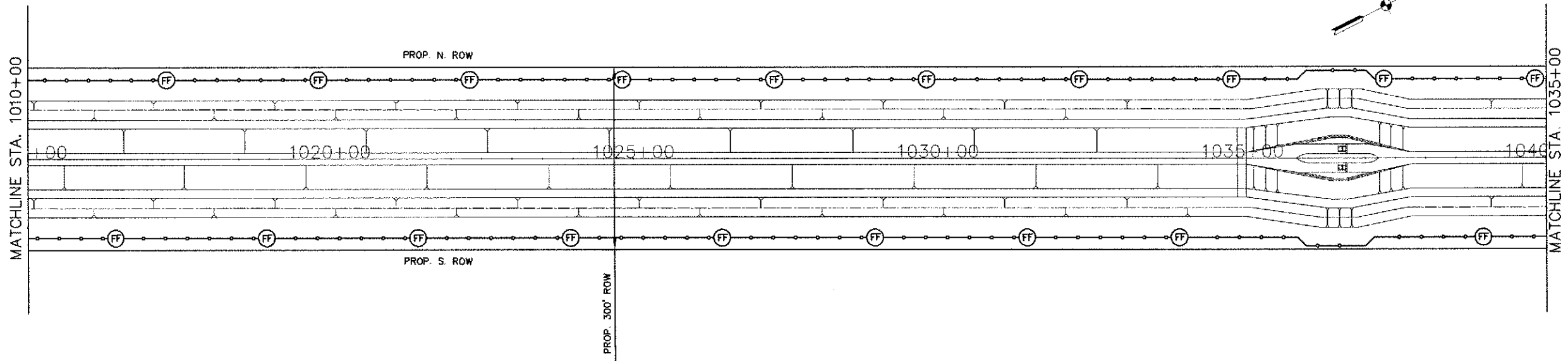
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SHEET NO. 225	OF 295

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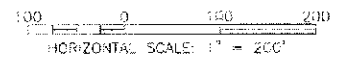
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 TEXAS REGISTRATION NO. 91031
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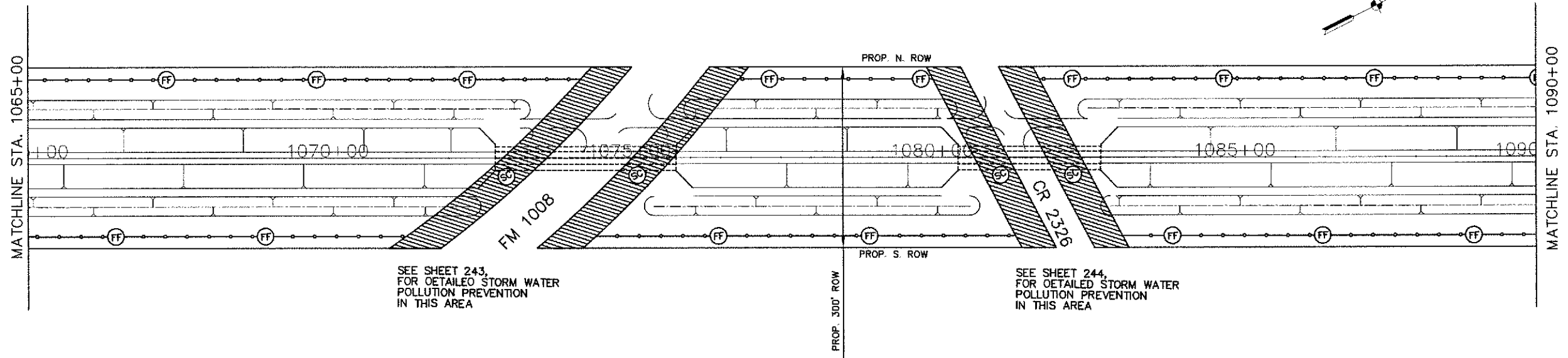
AECOM	AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 100 WEST HOUSTON, TEXAS 77057-1558 WWW.AECOM.COM TYPE REG. NO. P-3580
AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.	
SURVEYED BY: FB NO.	
COASTAL WATER AUTHORITY	
LUCE BAYOU INTERBASIN TRANSFER PROJECT	
CANAL STORM WATER POLLUTION PREVENTION PLAN (SHEET 21 OF 25)	
DRAWING SCALE	
AS SHOWN	
SHEET NO. 226 of 245	

LAST MODIFIED: Jun 27, 2011 5:25pm
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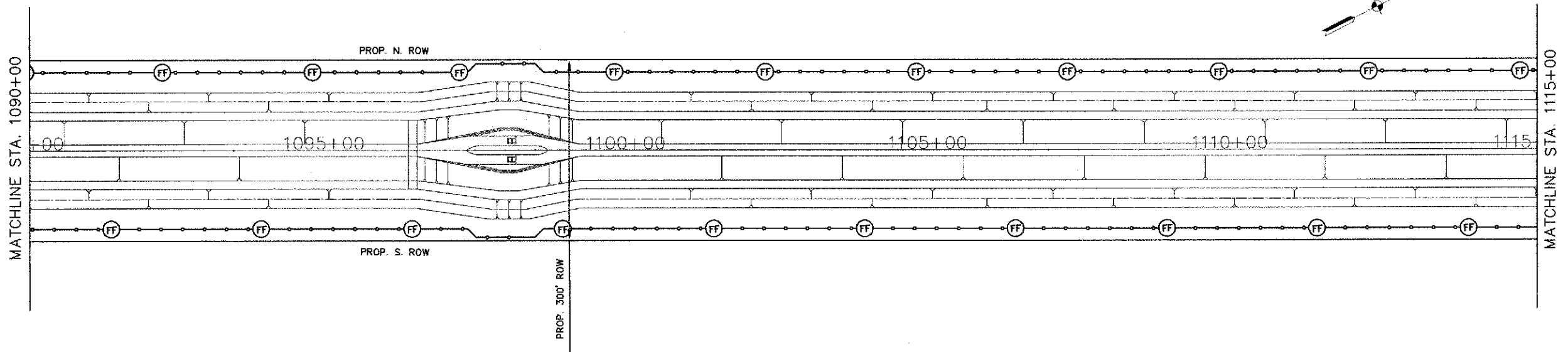
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- STABILIZED CONSTRUCTION ZONE



SEE SHEET 243,
FOR DETAILED STORM WATER
POLLUTION PREVENTION
IN THIS AREA

SEE SHEET 244,
FOR DETAILED STORM WATER
POLLUTION PREVENTION
IN THIS AREA

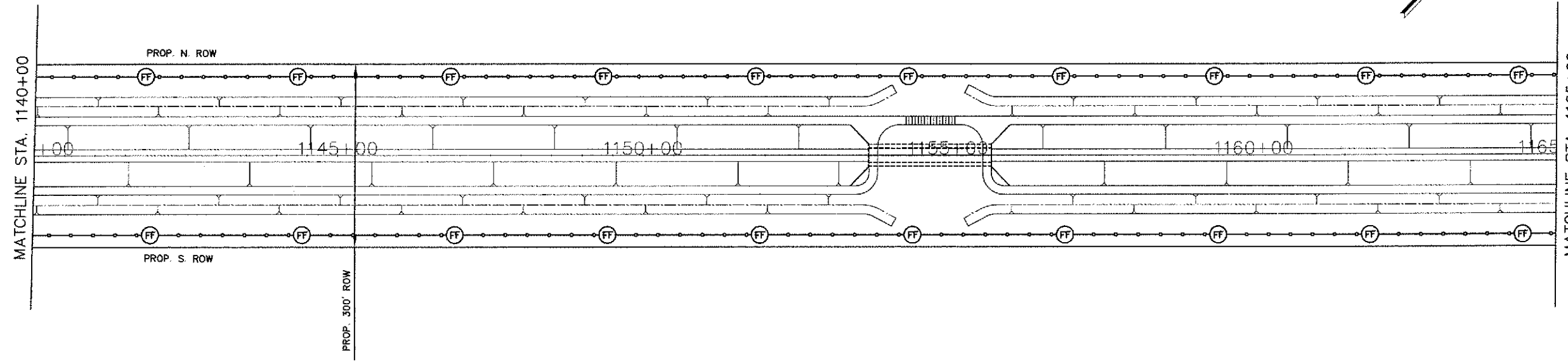
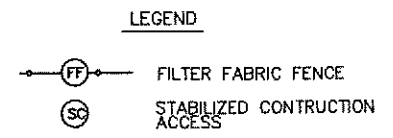
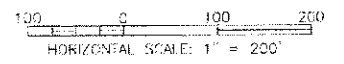
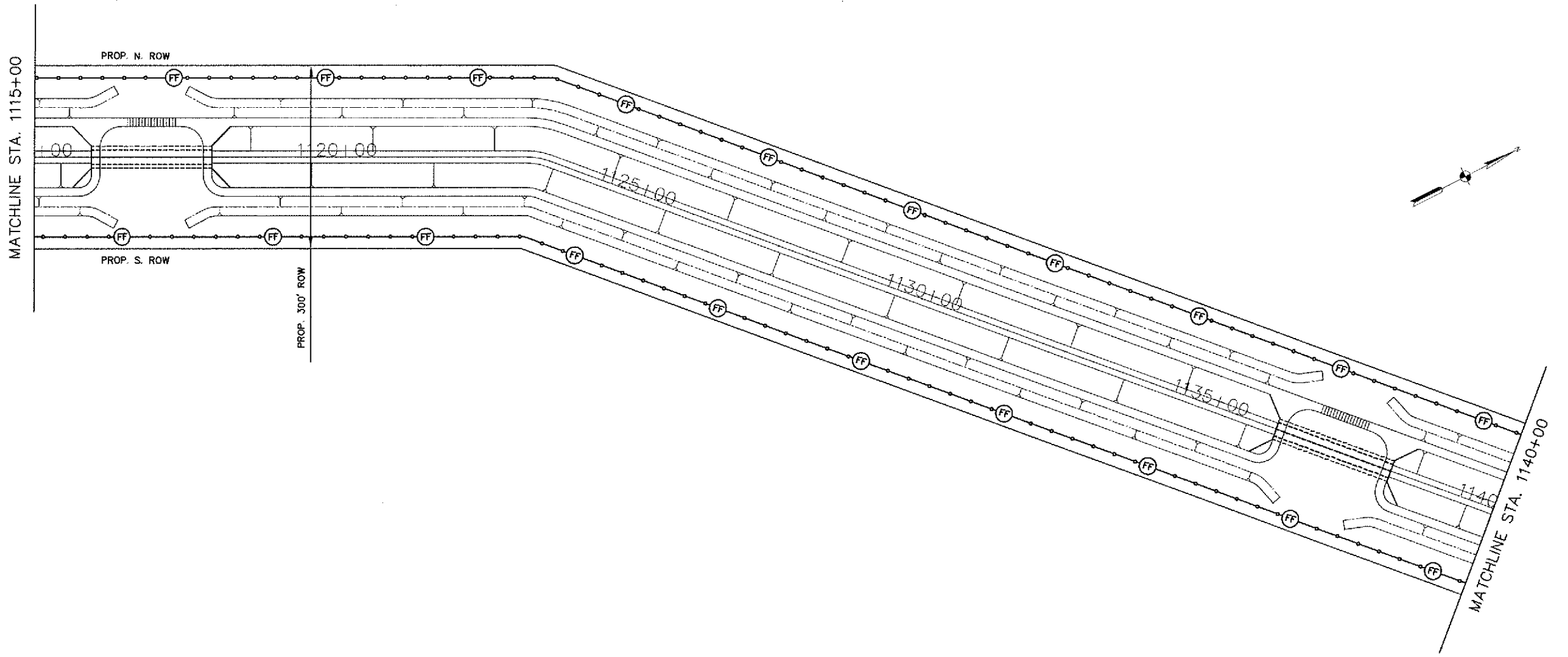


KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

AECOM		AECOM TECHNICAL SERVICES, INC. 8157 HOUSTON 30116 HOUSTON, TEXAS 77057-1599 WWW.AECOM.COM TWP REG. NO. P-5580
AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.		
SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY LUCIE BAYOU INTERBASIN TRANSFER PROJECT		
CANAL STORM WATER POLLUTION PREVENTION PLAN (SHEET 22 OF 25)		
DRAWING SCALE AS SHOWN		
SHEET NO. 217 OF 245		

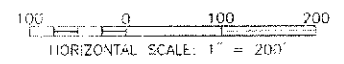
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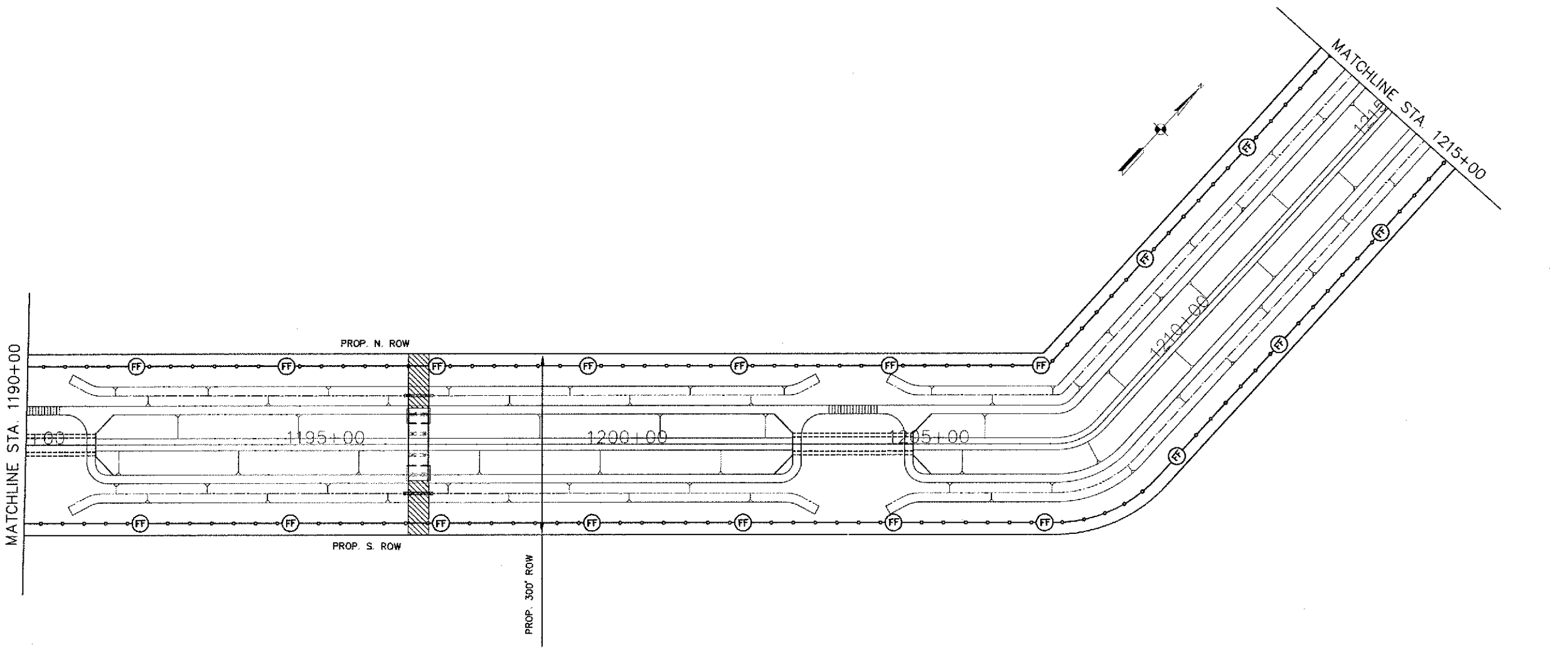
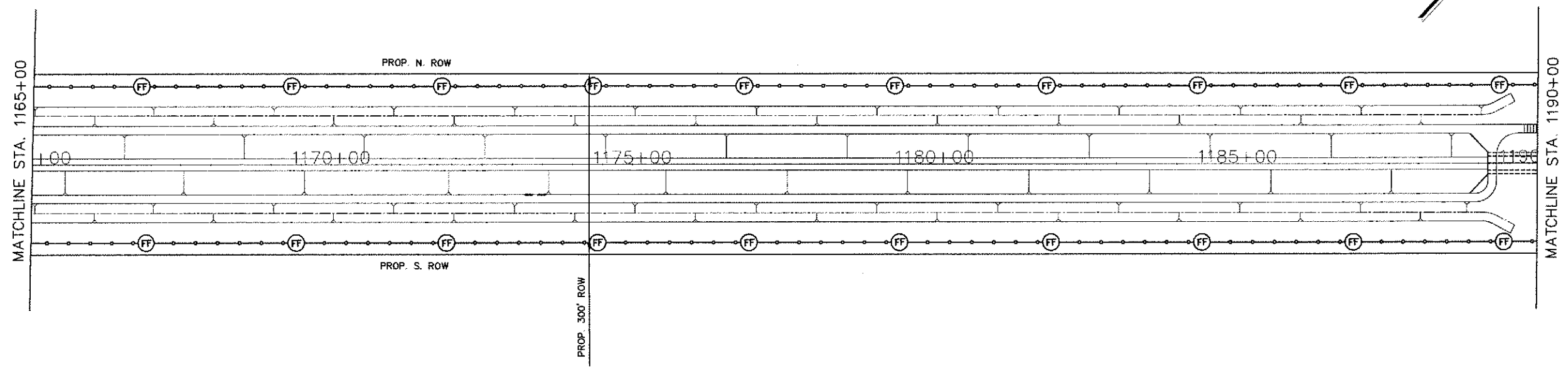
KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

AECOM	AECOM TECHNICAL SERVICES, INC. 5707 WOODWAY, SUITE 101 WEST HOUSTON, TEXAS 77057-1999 WWW.AECOM.COM TYPE: REG. NO. P-5880
AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.	
SURVEYED BY: FB NO.	
COASTAL WATER AUTHORITY	
LUCE BAYOU INTERBASIN TRANSFER PROJECT	
CANAL STORM WATER POLLUTION PREVENTION PLAN (SHEET 23 OF 25)	
DRAWING SCALE	
AS SHOWN	
SHEET NO. 23 OF 25	

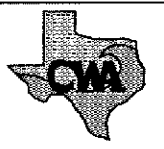


LEGEND

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 INTERIM SUBMITTAL
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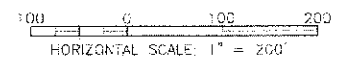
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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

CANAL
 STORM WATER POLLUTION
 PREVENTION PLAN
 (SHEET 24 OF 25)

DRAWING SCALE
 AS SHOWN

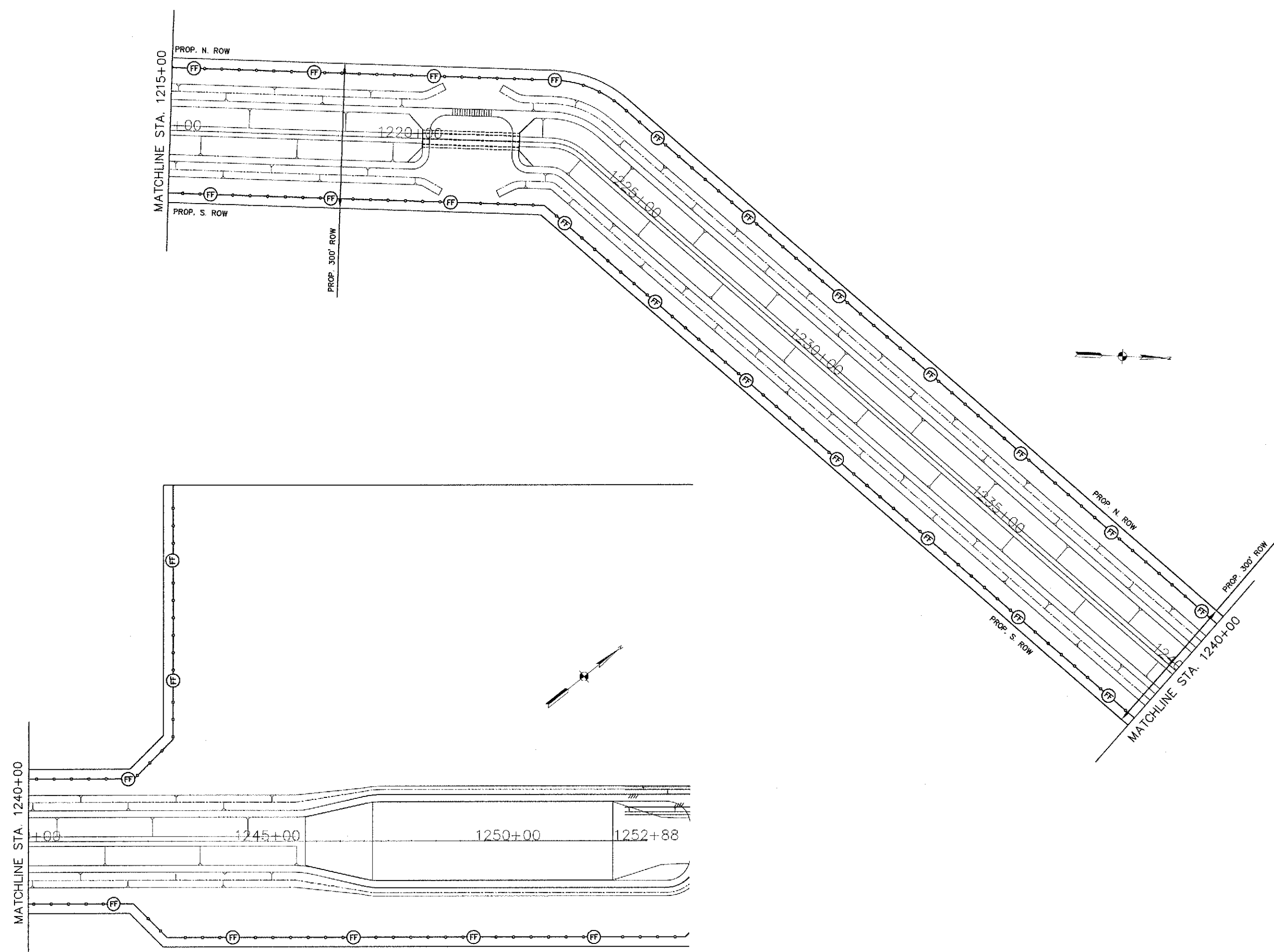
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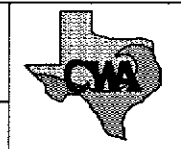
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 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

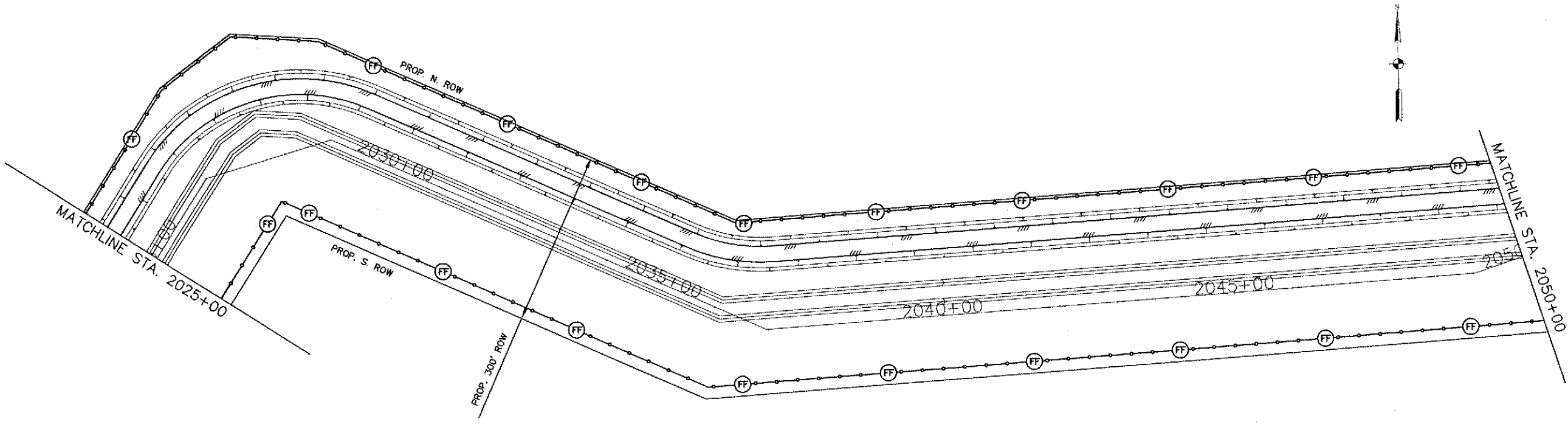
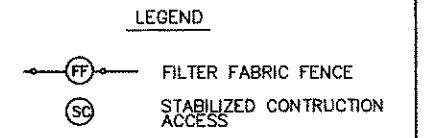
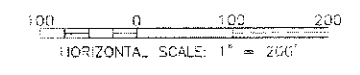
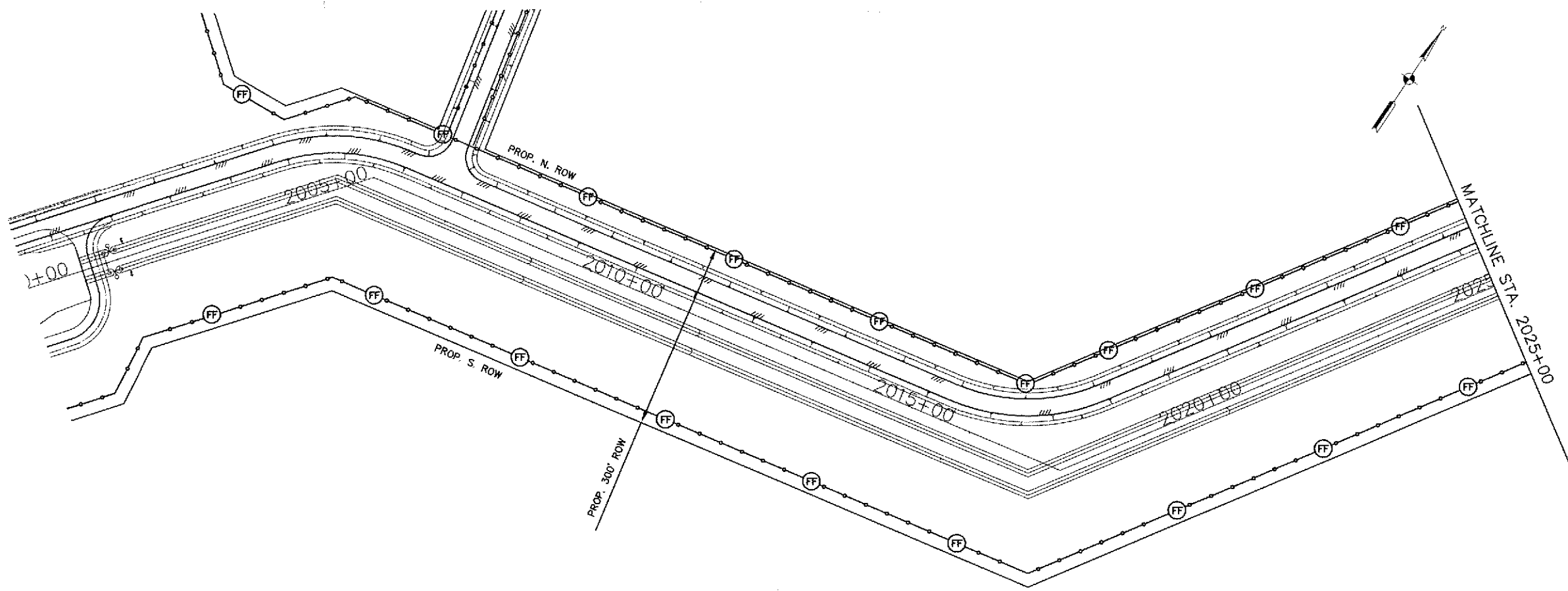
CANAL
 STORM WATER POLLUTION
 PREVENTION PLAN
 (SHEET 25 OF 25)

DRAWING SCALE
 AS SHOWN



SHEET NO. 23 OF 24

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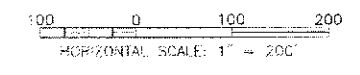
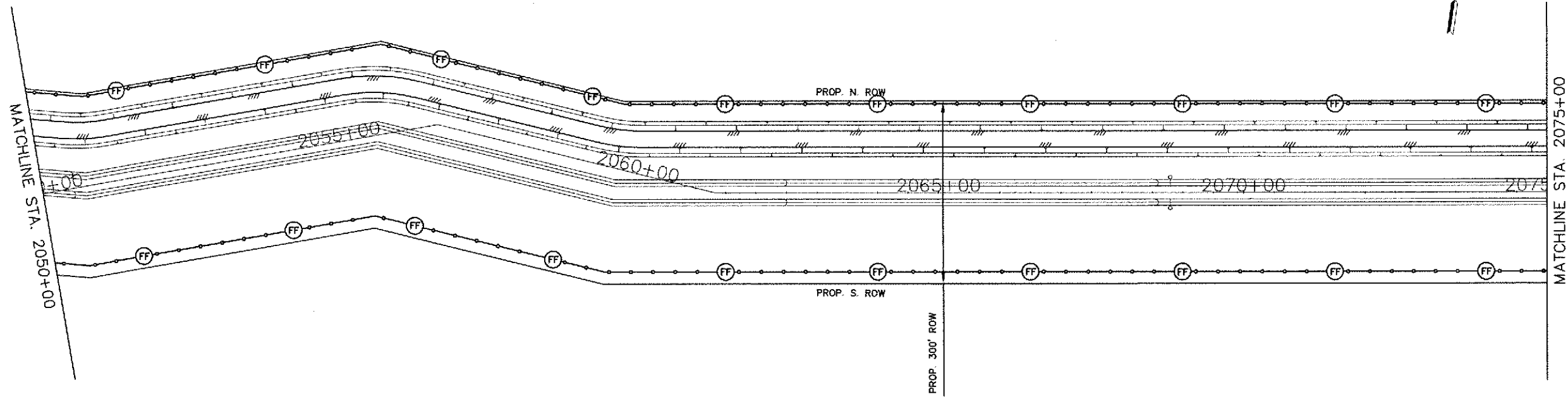
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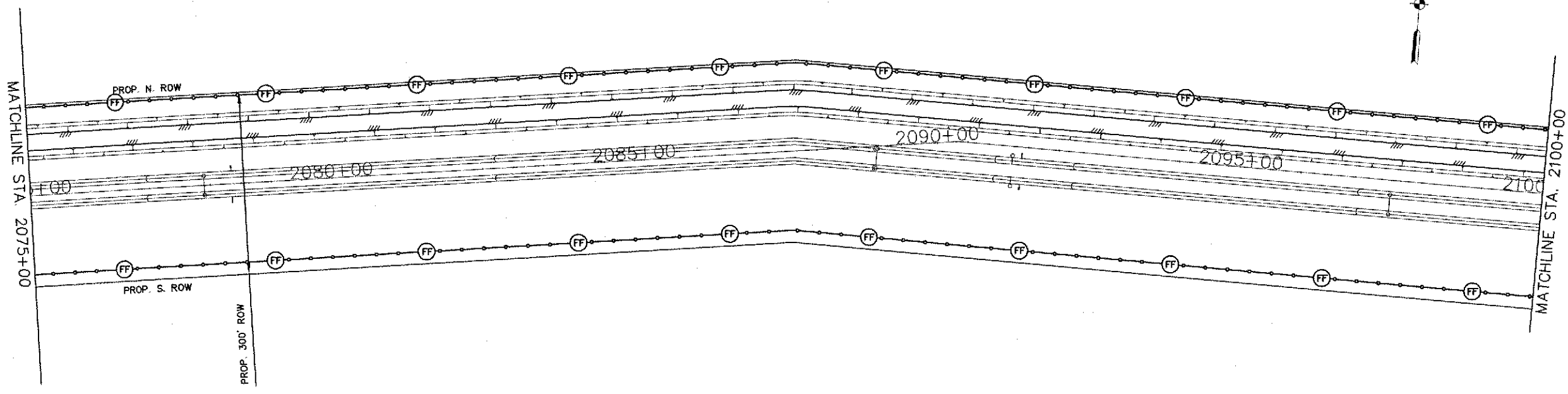
KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

 <small>AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax. WWW.AECOM.COM TSPS REG. NO. F-5580</small>		
SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY LUCE BAYOU INTERBASIN TRANSFER PROJECT		
PIPELINE STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 4)		
DRAWING SCALE		
AS SHOWN		
SHEET NO. 271 OF 295		



LAST MODIFIED: Jan 27, 2011 - 5:25:07 PM
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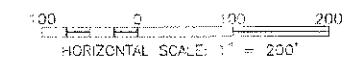
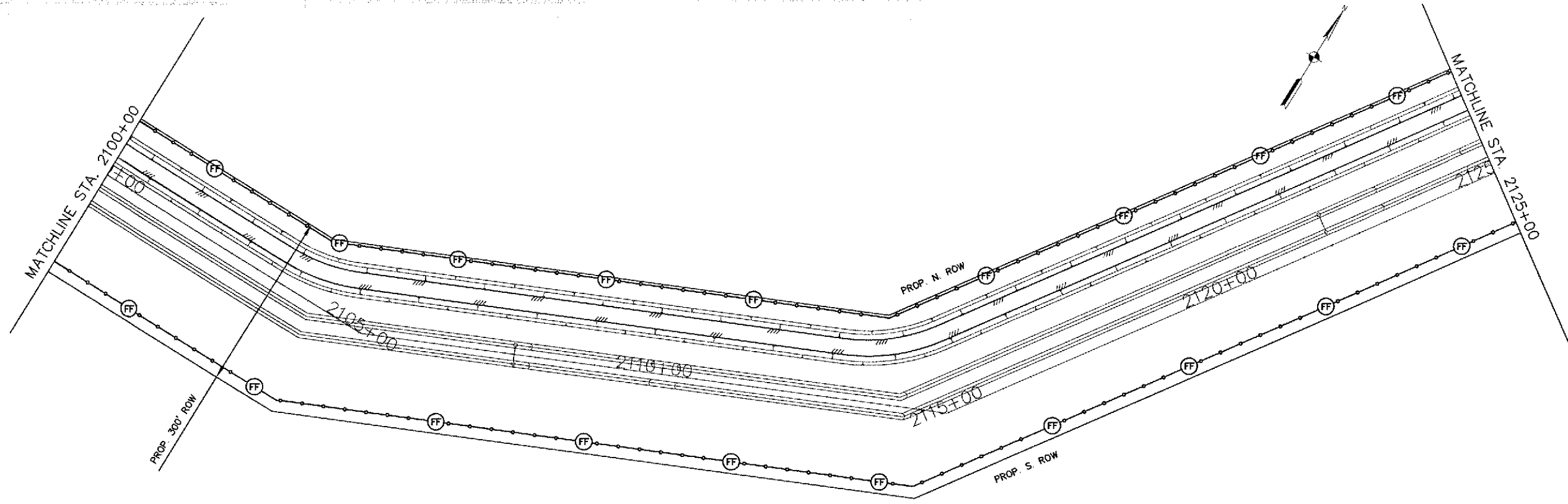
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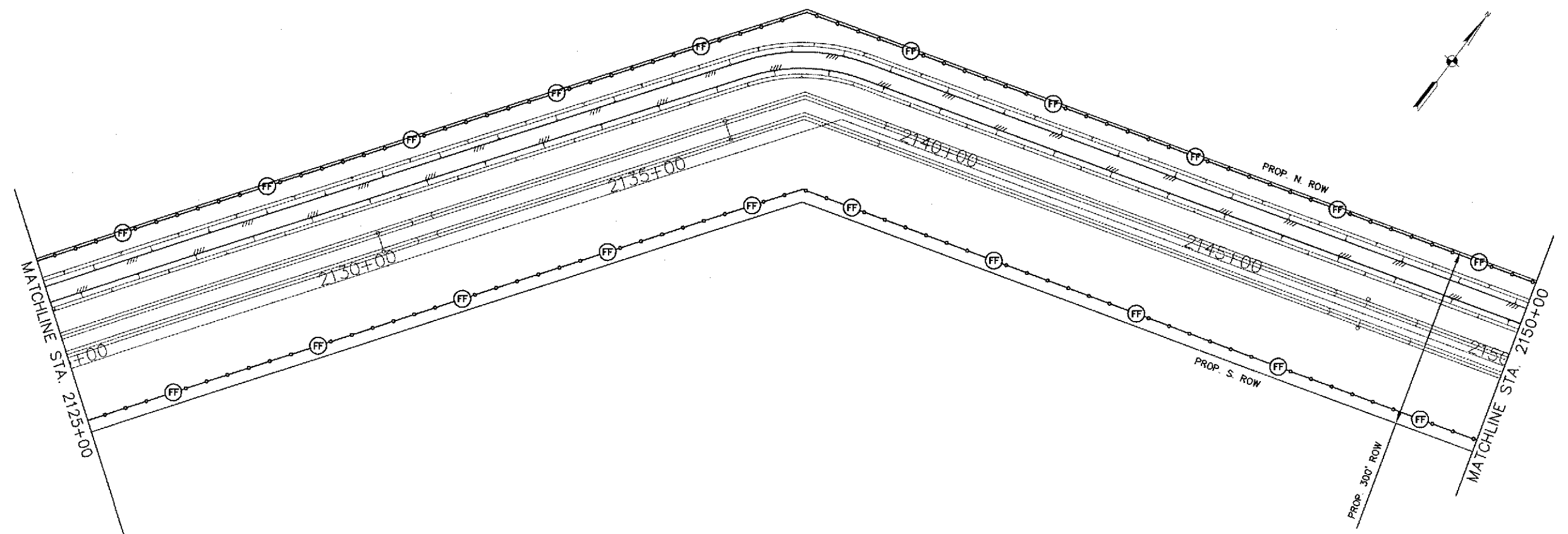
KEVIN R. KRAHN, P.E.
 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
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		<small>AECOM TECHNICAL SERVICES, INC. 5757 WOODWAY, SUITE 101 WEST HOUSTON, TEXAS 77057-1504 713.780.4100 Tel. 713.780.0838 fax. WWW.AECOM.COM TSP# 0001, INC. # 5580</small>	
<small>AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 Tel. 713.780.0838 fax.</small>			
<small>SURVEYED BY: FB NO.</small>			
COASTAL WATER AUTHORITY <small>LUCE BAYOU INTERBASIN TRANSFER PROJECT</small>			
PIPELINE STORM WATER POLLUTION PREVENTION PLAN (SHEET 2 OF 4)			
<small>DRAWING SCALE AS SHOWN</small>			
<small>SHEET NO. 232 of 245</small>			

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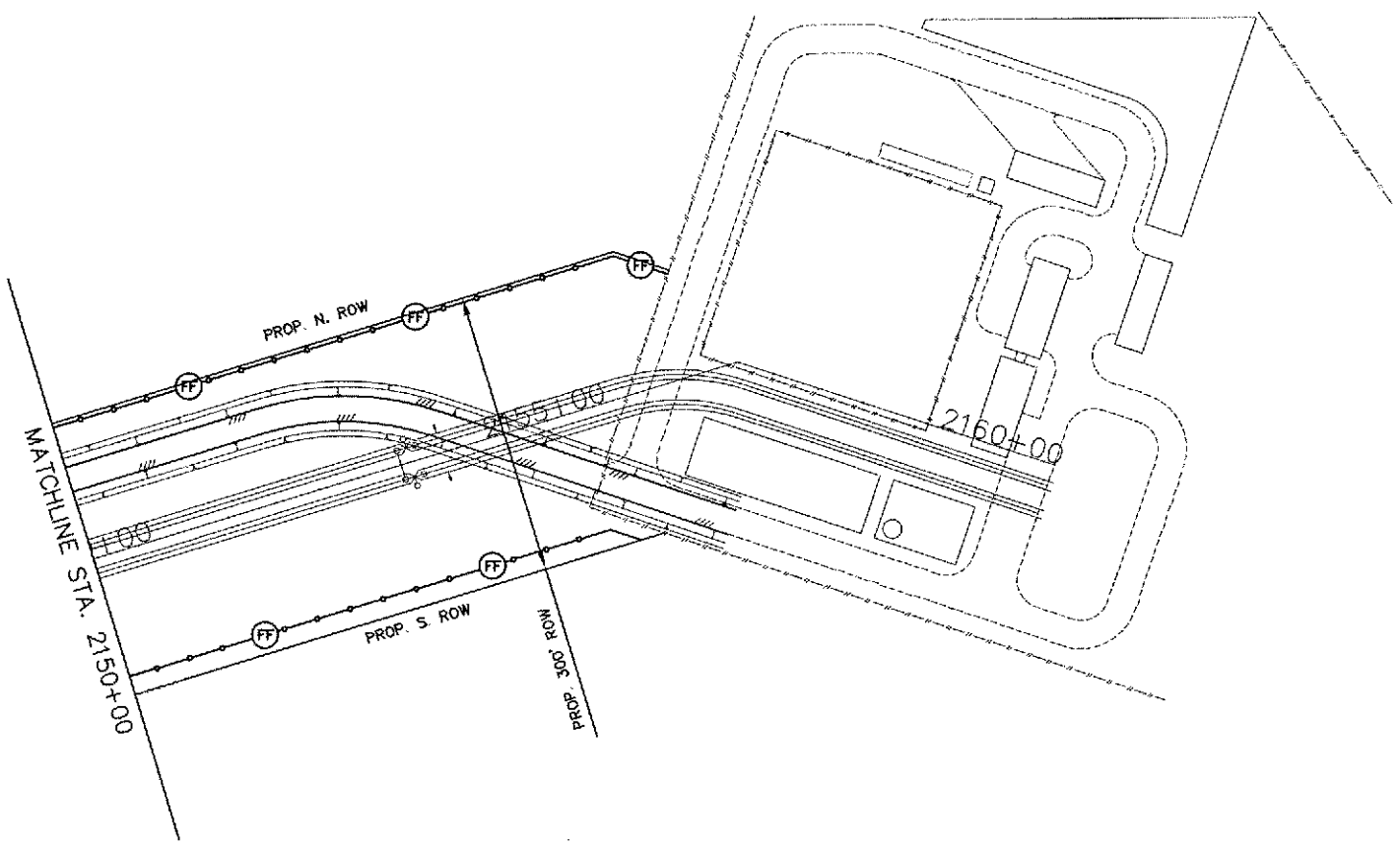
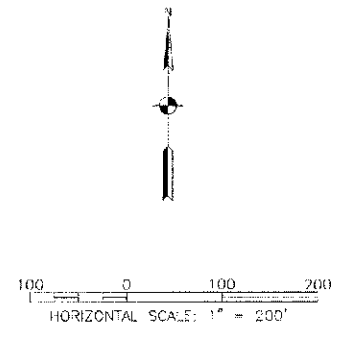


- LEGEND**
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AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.			
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COASTAL WATER AUTHORITY			
LUCE BAYOU INTERBASIN TRANSFER PROJECT			
PIPELINE STORM WATER POLLUTION PREVENTION PLAN (SHEET 3 OF 4)			
DRAWING SCALE			
AS SHOWN			
SHEET NO. 233		OF 245	



- LEGEND**
- FILTER FABRIC FENCE
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AECOM TECHNICAL SERVICES, INC.
 5157 WOODWAY, SUITE 101 WEST
 HOUSTON, TEXAS 77057-1539
 WWW.AECOM.COM
 713.780.8350

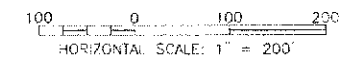
AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.

SURVEYED BY:
 FB NO.
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

PIPELINE
 STORM WATER POLLUTION
 PREVENTION PLAN
 (SHEET 4 OF 4)

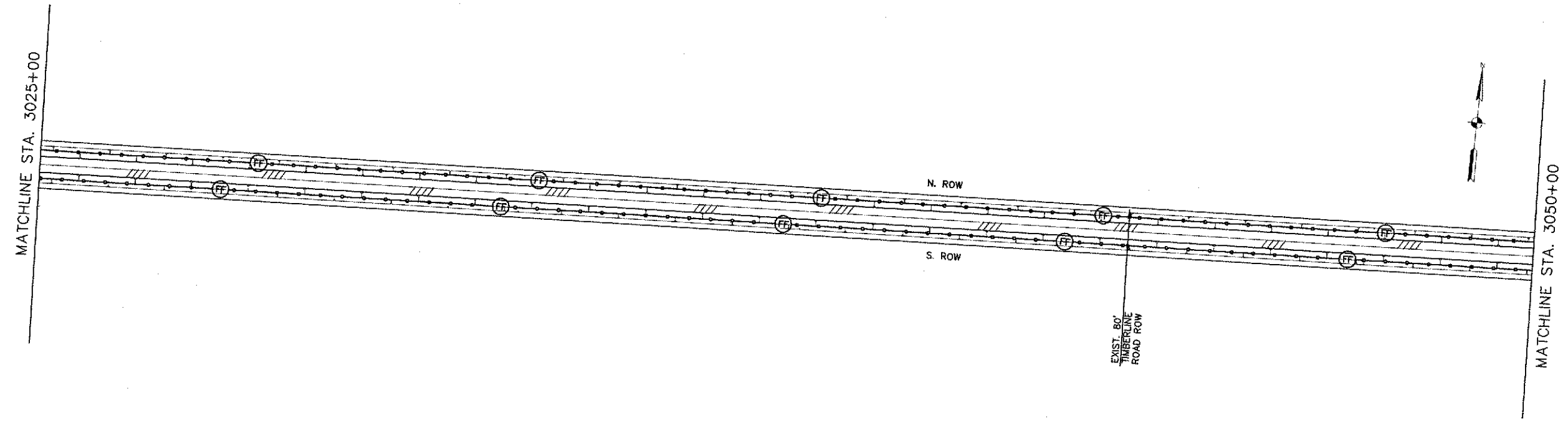
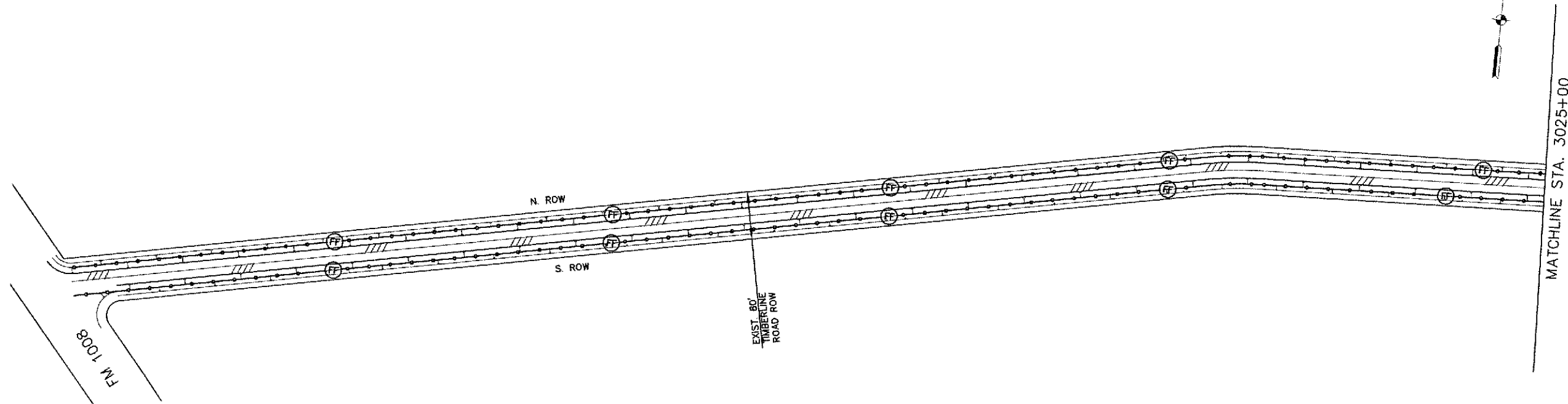
DRAWING SCALE	
AS SHOWN	
SHEET NO. 239 of 245	

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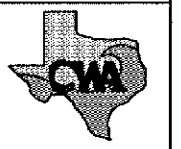


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 5757 WOODWAY
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 713.780.0838 fax

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 FB NO.

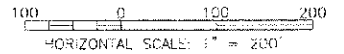


COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD
 STORM WATER POLLUTION
 PREVENTION PLAN
 (SHEET 1 OF 4)

DRAWING SCALE	
AS SHOWN	
SHEET NO. 235 OF 245	

LAST MODIFIED: Jan 27, 2011 5:27pm BY USER: ThompsonR
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- FILTER FABRIC FENCE
- STABILIZED CONSTRUCTION ACCESS

MATCHLINE STA. 3050+00

MATCHLINE STA. 3075+00

MATCHLINE STA. 3075+00

MATCHLINE STA. 3100+00

PROP. N. ROW

PROP. S. ROW

PROP. 80' ROW

PROP. N. ROW

PROP. S. ROW

PROP. 80' ROW

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 TEXAS REGISTRATION NO. 91031
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AECOM
AECOM TECHNICAL SERVICES, INC.
 5128 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057
 WWW.AECOM.COM TEL: 713.780.4100 FAX: 713.780.0838

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



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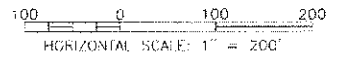
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD
 STORM WATER POLLUTION
 PREVENTION PLAN
 (SHEET 2 OF 4)

DRAWING SCALE
 AS SHOWN

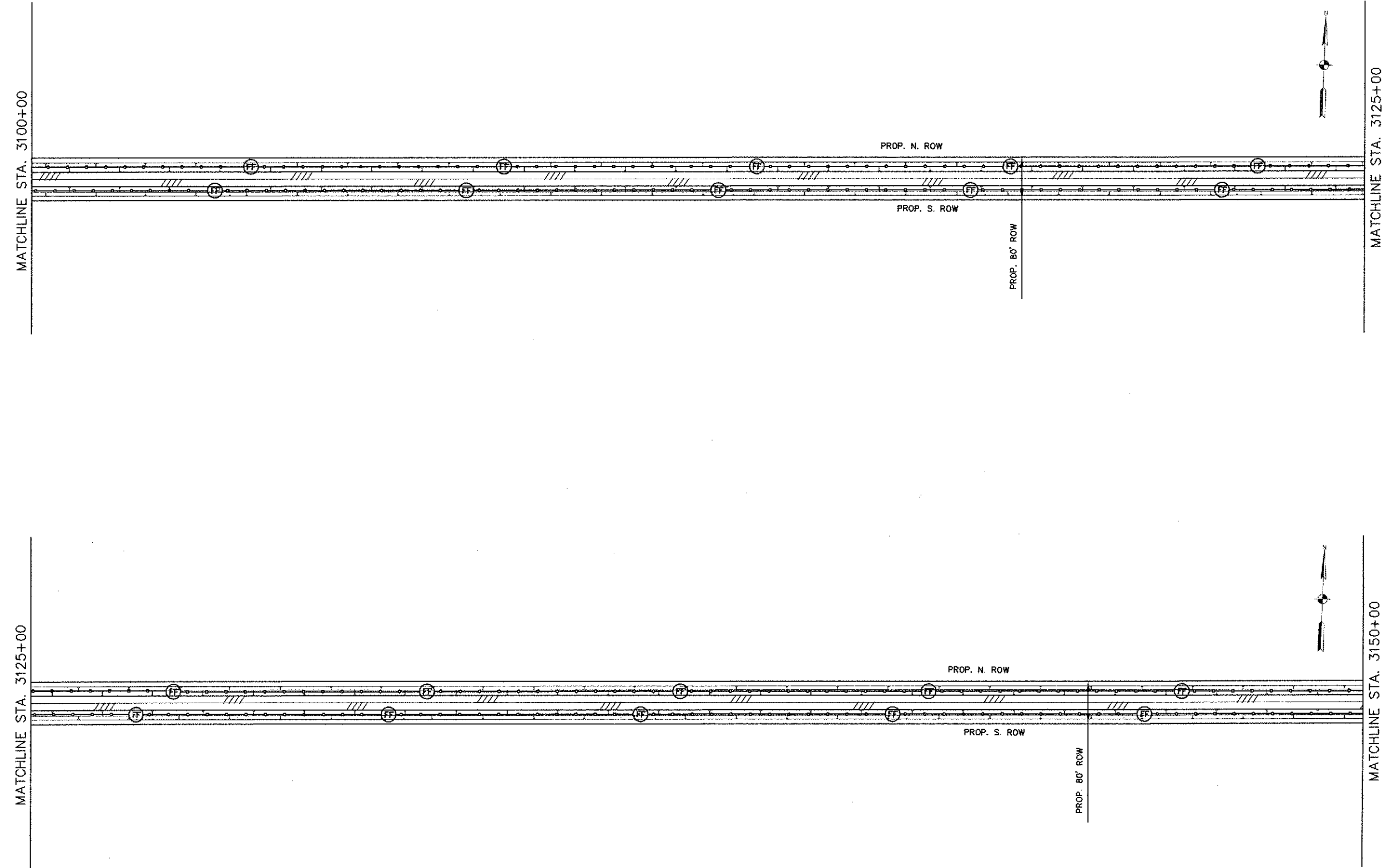
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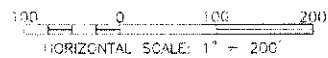
- FILTER FABRIC FENCE
- STABILIZED CONSTRUCTION ACCESS



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 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

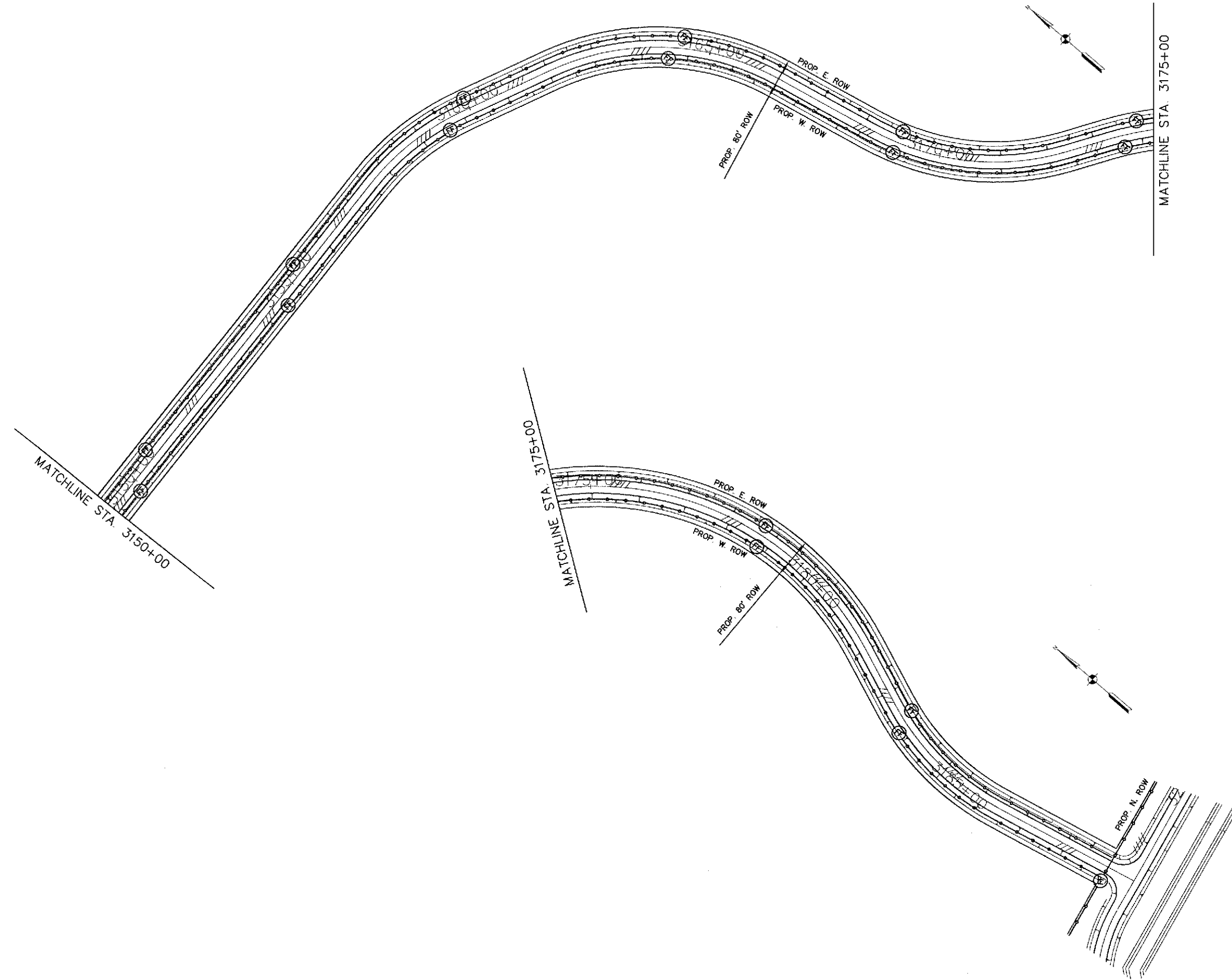
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AECOM 5757 WOODWAY HOUSTON, TEXAS 77057 713.780.4100 tel. 713.780.0838 fax.		
SURVEYED BY: FB NO.		
COASTAL WATER AUTHORITY		
LUCE BAYOU INTERBASIN TRANSFER PROJECT		
ACCESS ROAD STORM WATER POLLUTION PREVENTION PLAN (SHEET 3 OF 4)		
DRAWING SCALE		
AS SHOWN		
SHEET NO. 231		OF 245

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LEGEND

- ⊖ FF ⊖ FILTER FABRIC FENCE
- ⊖ SC ⊖ STABILIZED CONSTRUCTION ACCESS



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 TEXAS REGISTRATION NO. 91031
 INTERIM SUBMITTAL
 NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
 5737 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057-1999
 WWW.AECOM.COM
 TYPE REG. NO. P-3580

AECOM
 5757 WOODWAY
 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



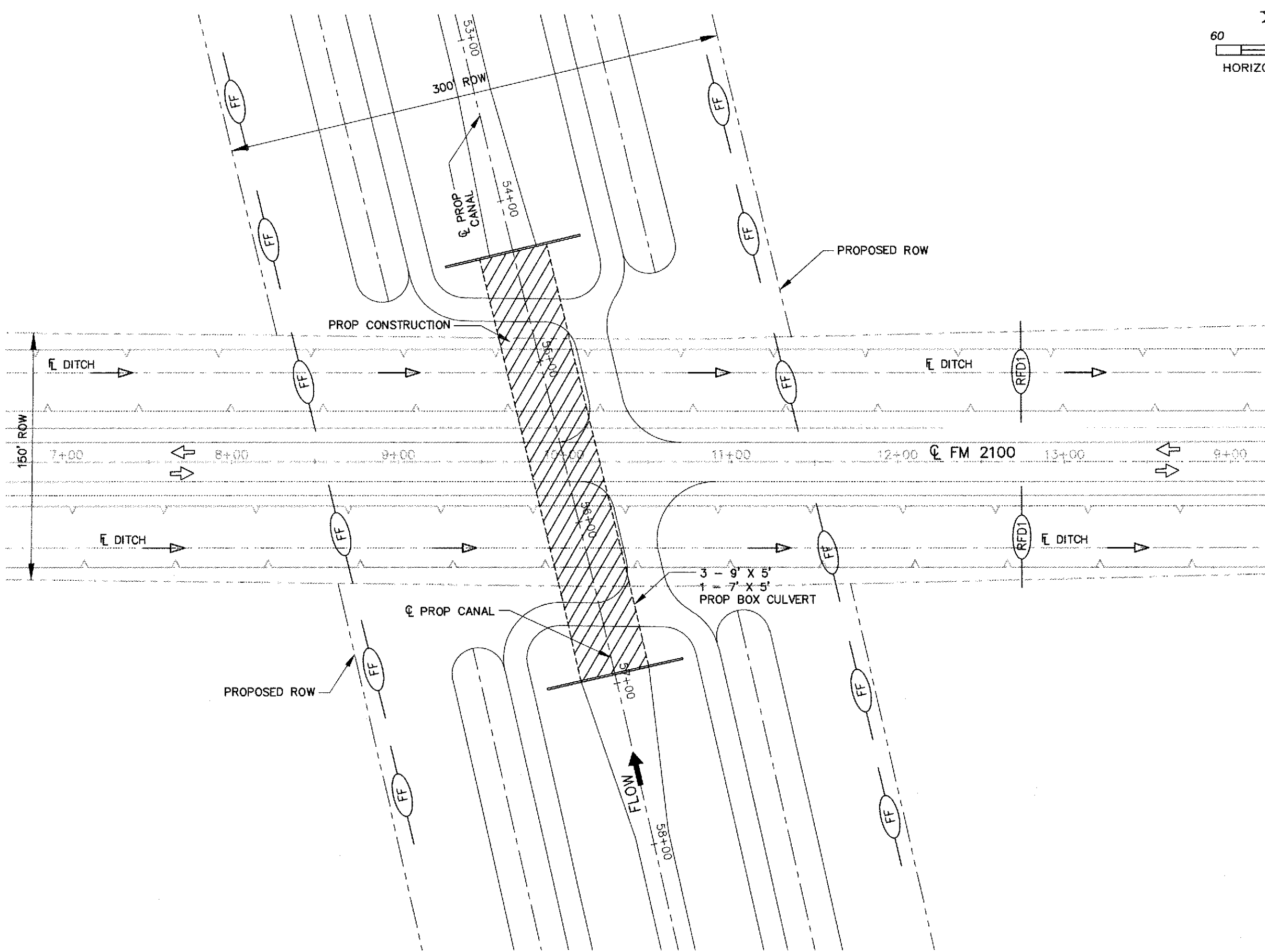
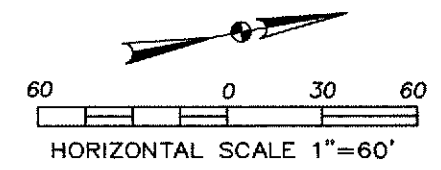
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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

ACCESS ROAD
 STORM WATER POLLUTION
 PREVENTION PLAN
 (SHEET 4 OF 4)

DRAWING SCALE	
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SHEET NO. 293 of 245	

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- LEGEND**
- TRAFFIC FLOW
 - PROP CONSTRUCTION
 - FILTER FABRIC FENCE
 - ROCK FILTER DAM
 - DITCH FLOW

PRELIMINARY
 Document incomplete: not intended for permit, bidding or construction.
 J. A. GELACIO
 56190
 Date: MARCH 3, 2010



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AECOM USA GROUP, INC.
 8727 WOODWAY, SUITE 100 WEST
 HOUSTON, TEXAS 77057-1888
 PHONE: 713.780.4100
 SPE REG. NO. F-3066

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 HOUSTON, TEXAS 77057
 713.780.4100 tel.
 713.780.0838 fax.



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 COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

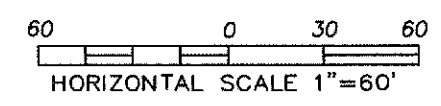
SWPPP LAYOUT
 FM 2100

SHEET 1 OF 6






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SHEET NO. 239 OF 245	

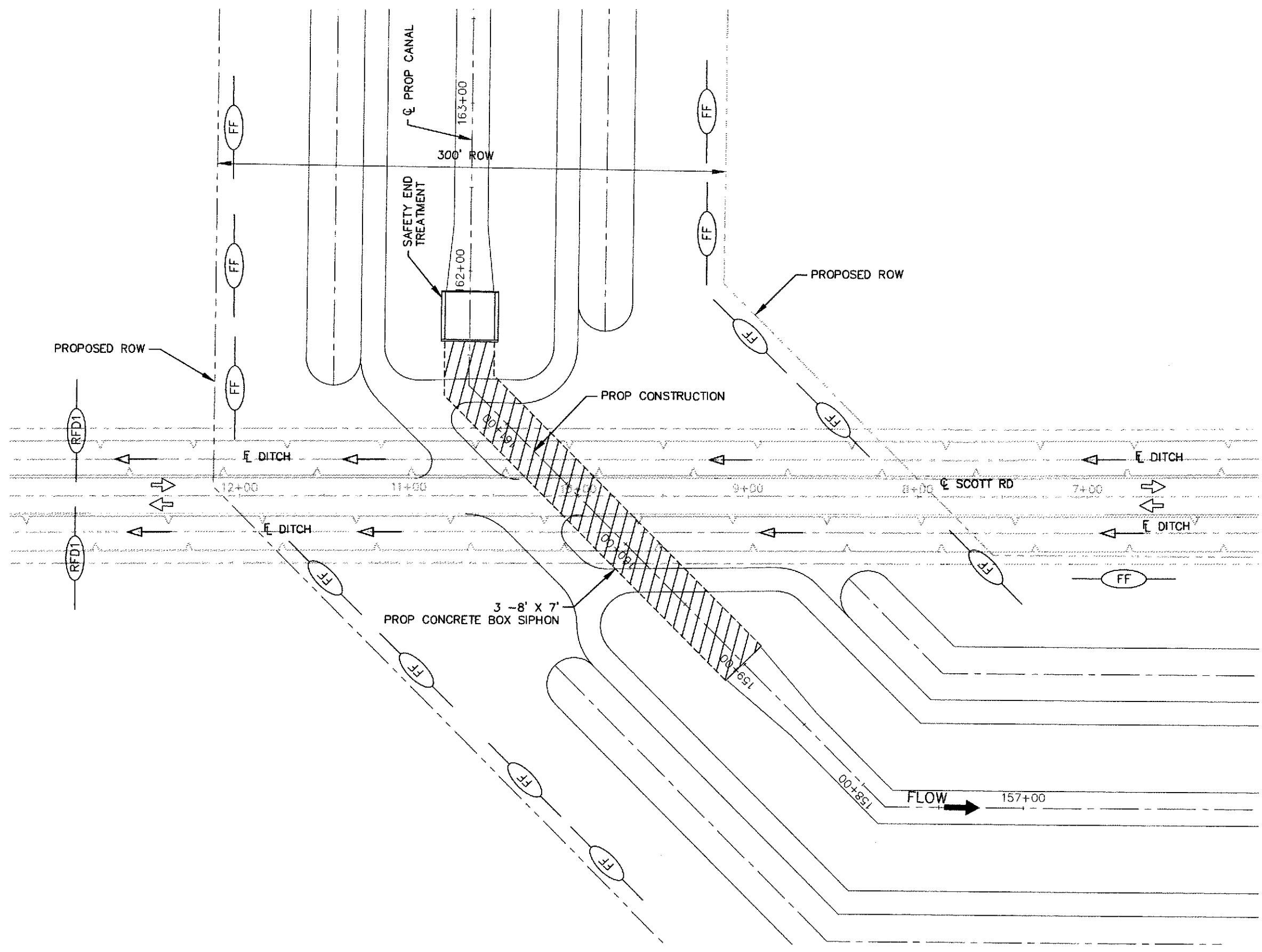
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SWPPP PLAN



LEGEND

-  TRAFFIC FLOW
-  PROP CONSTRUCTION
-  FILTER FABRIC FENCE
-  ROCK FILTER DAM
-  DITCH FLOW



SWPPP PLAN

PRELIMINARY
 Document incomplete: not intended
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J. A. GELACTO
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 Date: MARCH 3, 2010



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 713.780.4100 tel.
 713.780.0838 fax.



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 COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

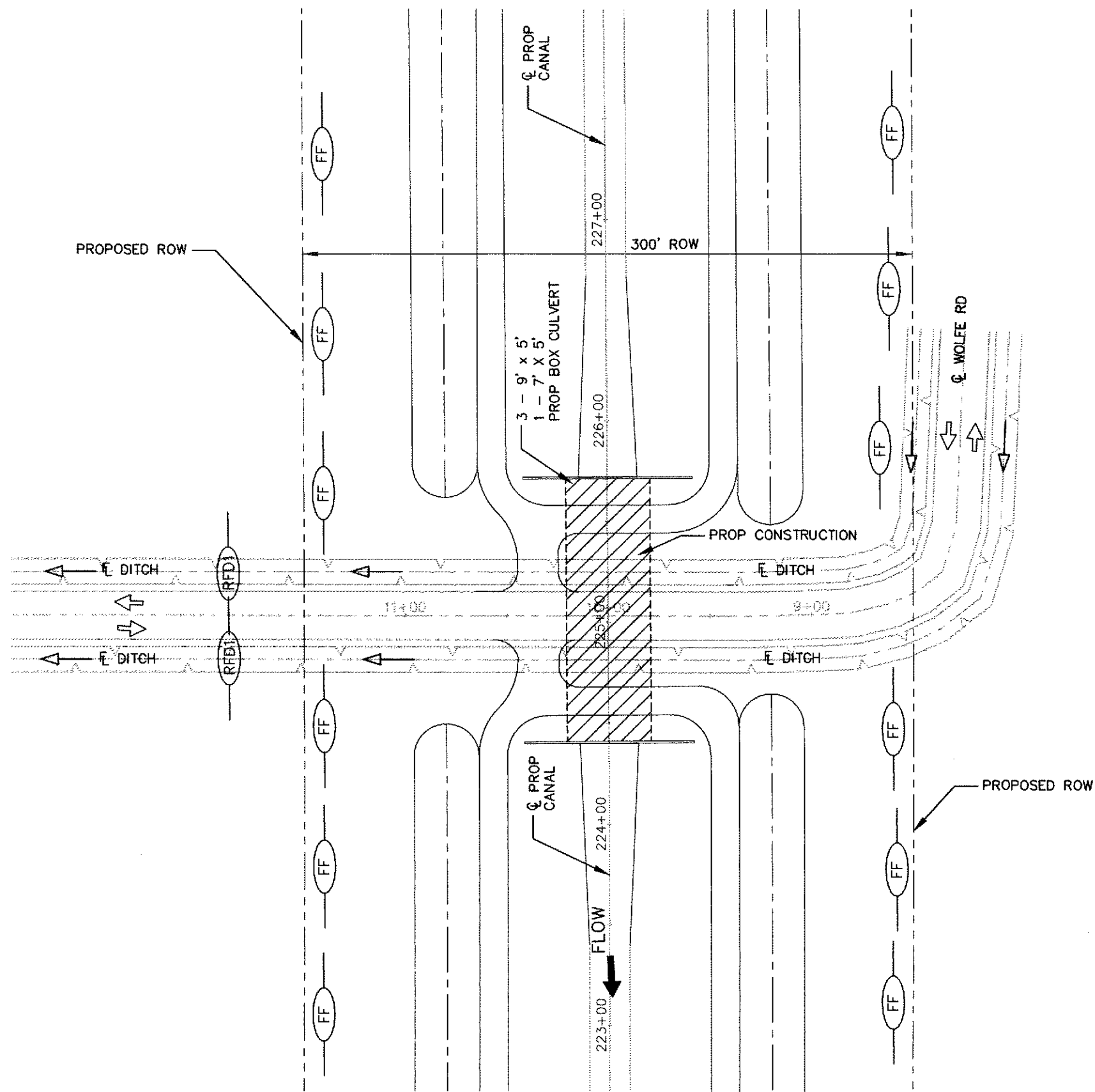
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 SCOTT RD

SHEET 2 OF 6

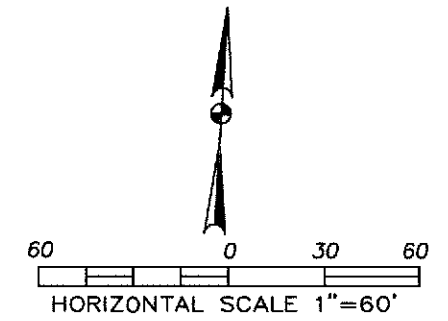
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SWPPP PLAN



LEGEND

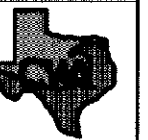
- TRAFFIC FLOW
- PROP CONSTRUCTION
- FILTER FABRIC FENCE
- ROCK FILTER DAM
- DITCH FLOW

PRELIMINARY
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J. A. GELACIO
 56190
 Date: MARCH 3, 2010



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 713.780.0838 fax



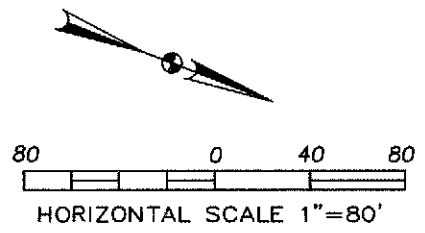
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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

SWPPP LAYOUT
 WOLFE RD

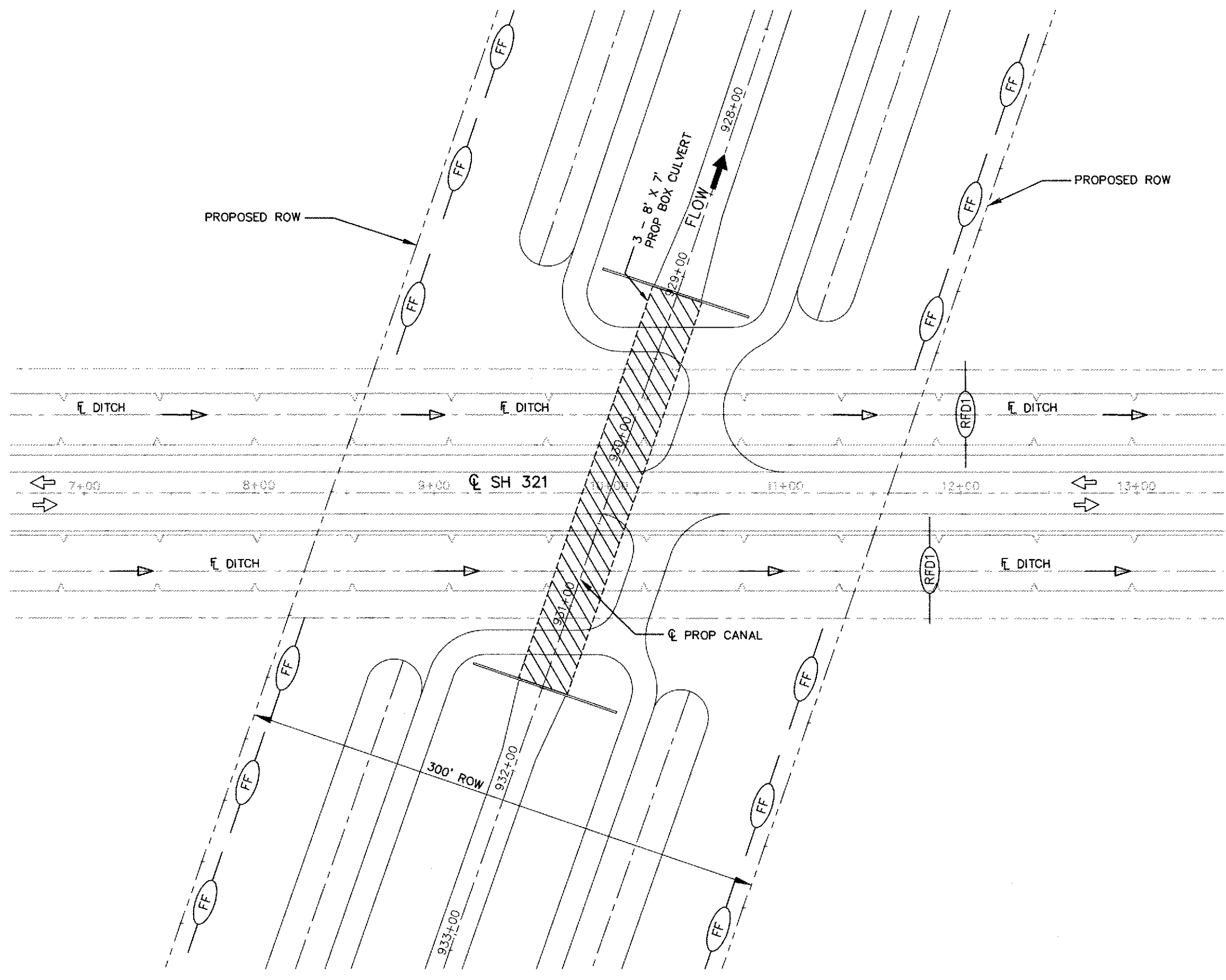
SHEET 3 OF 6

DRAWING SCALE	AS SHOWN
SHEET NO.	246 OF 245



LEGEND

- ← TRAFFIC FLOW
- PROP CONSTRUCTION
- (FF)— FILTER FABRIC FENCE
- (RFD1)— ROCK FILTER DAM
- DITCH FLOW



SWPPP PLAN

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 Date: MARCH 3, 2010



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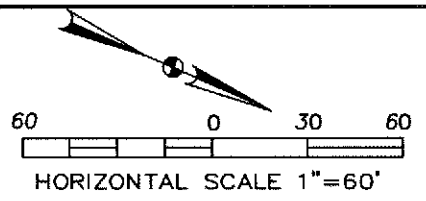
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 LUCE BAYOU INTERBASIN TRANSFER PROJECT

**SWPPP LAYOUT
 SH 321**






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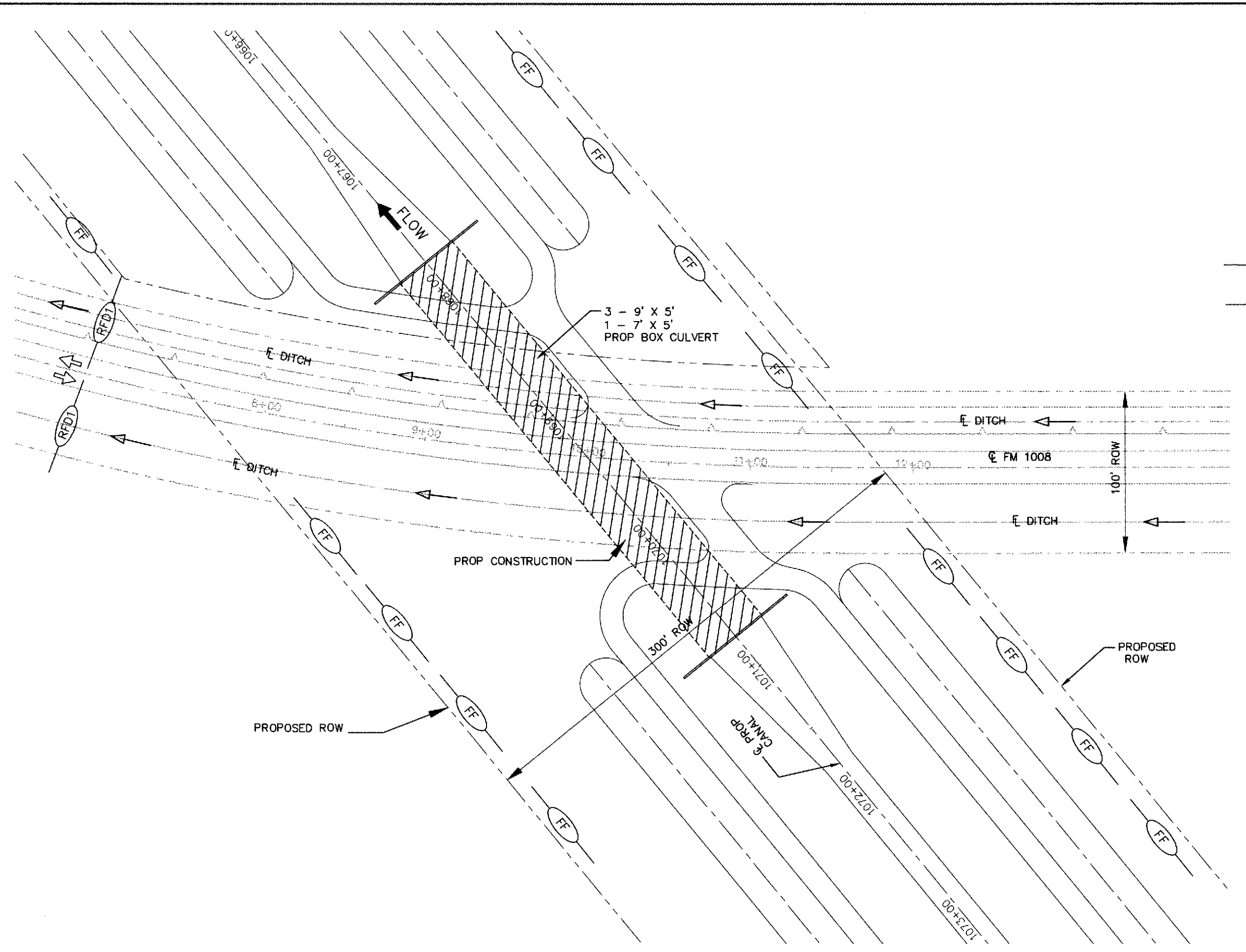
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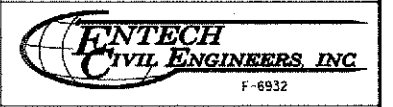
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-  TRAFFIC FLOW
-  PROP CONSTRUCTION
-  FILTER FABRIC FENCE
-  ROCK FILTER OAM
-  DITCH FLOW



SWPPP PLAN

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 Date: MARCH 3, 2010



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COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

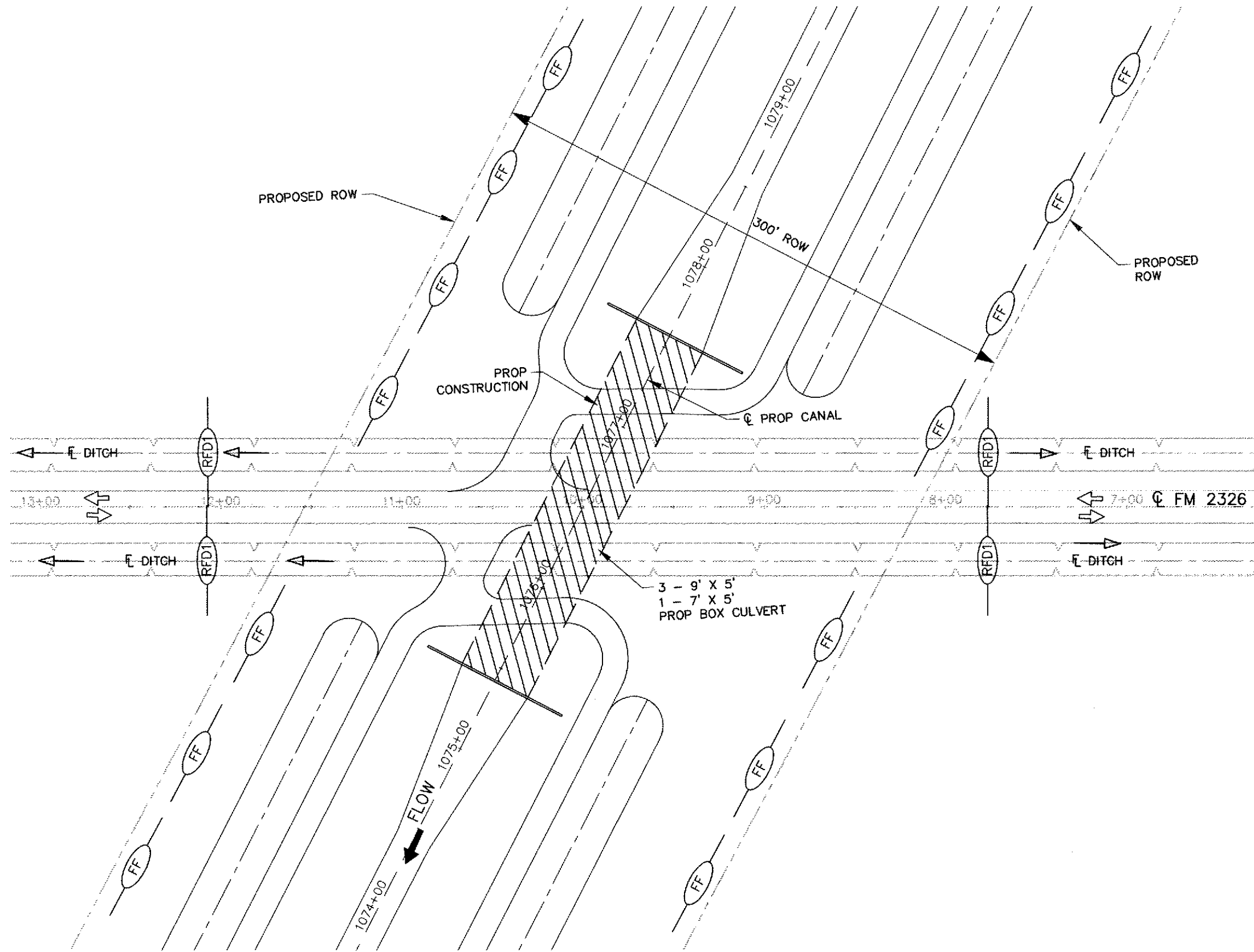
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SHEET 5 OF 6

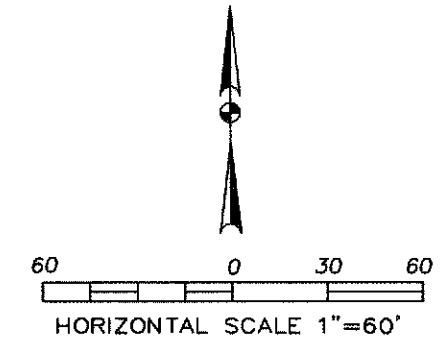
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
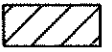



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SWPPP PLAN



LEGEND

-  TRAFFIC FLOW
-  PROP CONSTRUCTION
-  FILTER FABRIC FENCE
-  ROCK FILTER DAM
-  DITCH FLOW

PRELIMINARY
 Document incomplete: not intended
 for permit, bidding or construction.
 J. A. GELACIO
 56190
 Date: MARCH 3, 2010



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 FB NO.

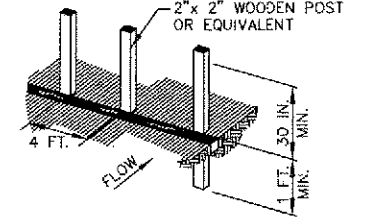
COASTAL WATER AUTHORITY
 LUCE BAYOU INTERBASIN TRANSFER PROJECT

SWPPP LAYOUT
 CR 2326

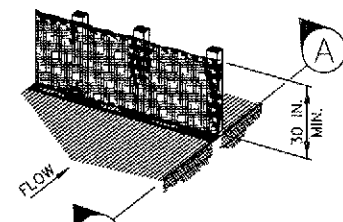
SHEET 6 OF 6

DRAWING SCALE	
AS SHOWN	
SHEET NO. 244-245	

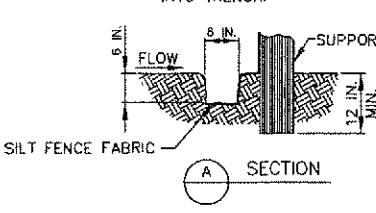
1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE A 6" X 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.



2. ATTACH FILTER FABRIC TO POSTS AND INSTALL IT INTO THE TRENCH. BACKFILL THE TRENCH AND COMPACT THE EXCAVATED SOIL.



EXTEND SILT FENCE FABRIC INTO TRENCH.



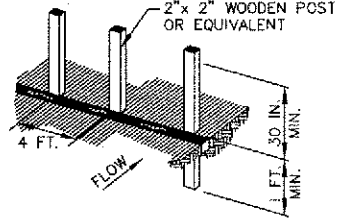
FF SYMBOL

CONSTRUCTION NOTES:

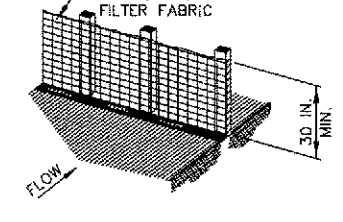
1. SET POSTS AT 4-FOOT MAXIMUM SPACING. IF FACTORY PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED. SPACING OF POST MAY BE INCREASED TO 8 FEET MAXIMUM.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT THE POST, FOLD TOGETHER, AND ATTACH TO THE POSTS.
3. REMOVE SEDIMENT DEPOSITS WHEN SILT DEPTH REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE.

1 FILTER FABRIC FENCE

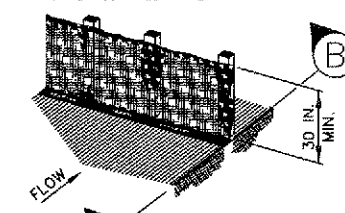
1. SET POSTS AT REQUIRED SPACING AND DEPTH. EXCAVATE A 6" X 6" TRENCH UPSLOPE ALONG THE LINE OF POSTS.



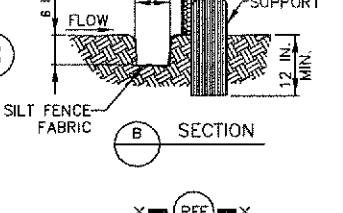
2. SECURE MESH FENCING TO POSTS



2. ATTACH FILTER FABRIC TO POSTS AND INSTALL IT INTO THE TRENCH. BACKFILL THE TRENCH AND COMPACT THE EXCAVATED SOIL.



EXTEND SILT FENCE FABRIC INTO TRENCH.

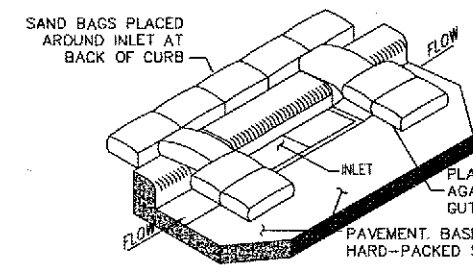


RFF SYMBOL

CONSTRUCTION NOTES:

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
2. SECURELY FASTEN FILTER FABRIC FENCE TO MESH.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT THE POST, FOLD TOGETHER, AND ATTACH TO THE POSTS.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT DEPTH REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE.

2 REINFORCED FILTER FABRIC FENCE

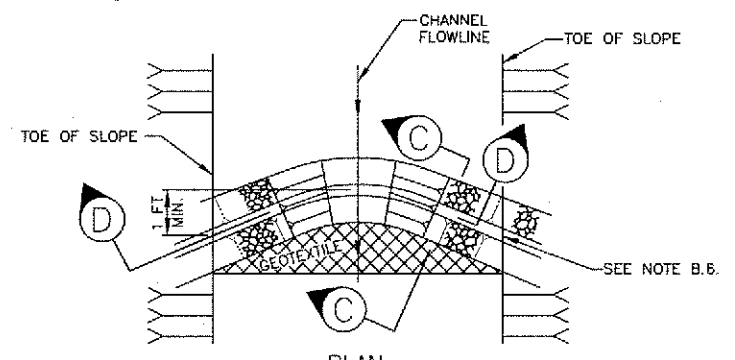


IPB2 SYMBOL

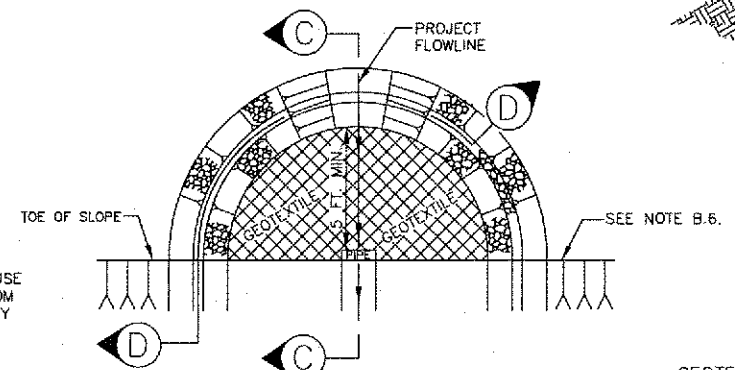
CONSTRUCTION NOTES:

1. BAGS OR WATTLES CAN BE USED FOR THIS APPLICATION
2. PROVIDE WOVEN OR UNWOVEN GEOTEXTILE FILTER FABRIC FOR BAGS.
3. PROVIDE COARSE SAND AND AGGREGATE MIX FOR FILL MATERIAL FOR BAGS. USE ONLY PARTICLES CONSISTING OF CLEAN, HARD, DURABLE MATERIALS FREE FROM ADHERENT COATINGS, SALT, ALKALI, DIRT, CLAY, LOAM, SHALE, SOFT OR FLAXY MATERIALS, OR ORGANIC AND INJURIOUS MATTER.
4. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.

5 INLET PROTECTION BARRIERS FOR STAGE II INLETS



IN-CHANNEL FILTER DAM



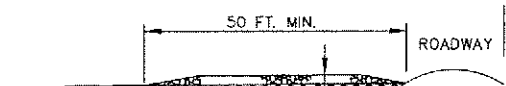
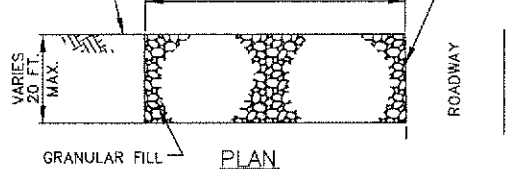
FILTER DAM AT DETENTION BASIN OUTFALL PIPE

GEOTEXTILE NOTES:

MIN. AOS	SIEVE NO.	120 MIN
MAX. AOS	SIEVE NO.	50 MAX
WEIGHT	OZ/SY	4 OZ. MIN

6 FILTER DAM

PROVIDE APPROPRIATE TRANSITION BETWEEN STABILIZED CONSTRUCTION ACCESS AND EDGE OF ROADWAY.



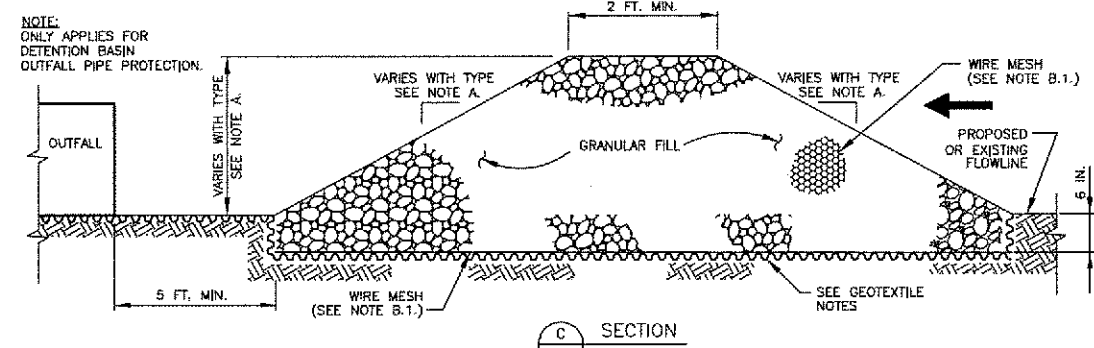
PROFILE

SCA SYMBOL

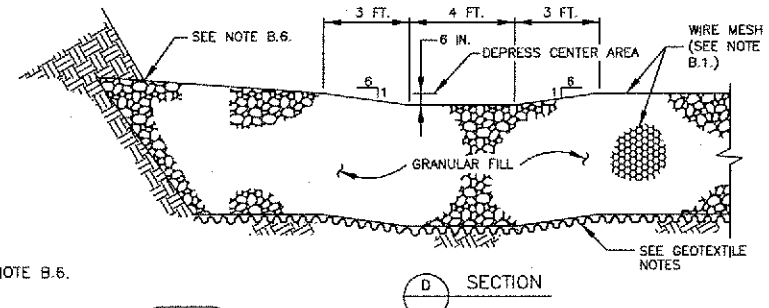
CONSTRUCTION NOTES:

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS GREATER.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION ACCESS WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.

3 STABILIZED CONSTRUCTION ACCESS



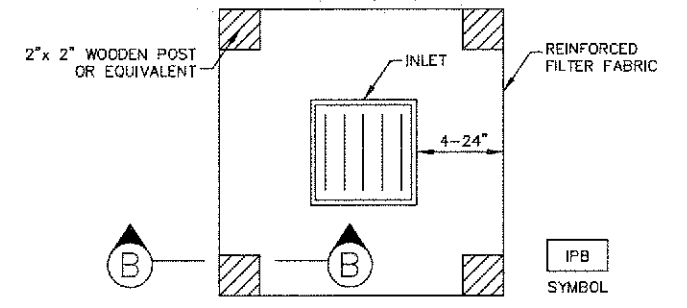
C SECTION



D SECTION

- B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.
1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1-INCH DIAMETER HEXAGONAL OPENINGS.
 2. GRANULAR FILL
 - a. PLACE ON MESH TO HEIGHT AND SLOPES SHOWN ON PLANS.
 - b. 3-5 INCHES FOR ROCK FILTER DAM TYPES 1, 2, AND 4
 - c. 4-8 INCHES FOR ROCK FILTER DAM TYPE 3.
 3. WIRE MESH: FOLD AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURE TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
 4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
 5. EMBED ONE FOOT MINIMUM INTO SLOPE AND AT SLOPE RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA.

4 INLET PROTECTION BARRIER

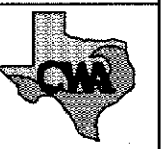


CONSTRUCTION NOTES:

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2. SECURELY FASTEN FILTER FABRIC FENCE TO MESH.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT THE POST, FOLD TOGETHER, AND ATTACH TO THE POSTS.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT DEPTH REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE.

KEVIN R. KRAHN, P.E.
TEXAS REGISTRATION NO. 91031
INTERIM SUBMITTAL
NOT FOR CONSTRUCTION PURPOSES

AECOM
AECOM TECHNICAL SERVICES, INC.
5757 WOODWAY
HOUSTON, TEXAS 77057
713.780.4100 tel.
713.780.0838 fax



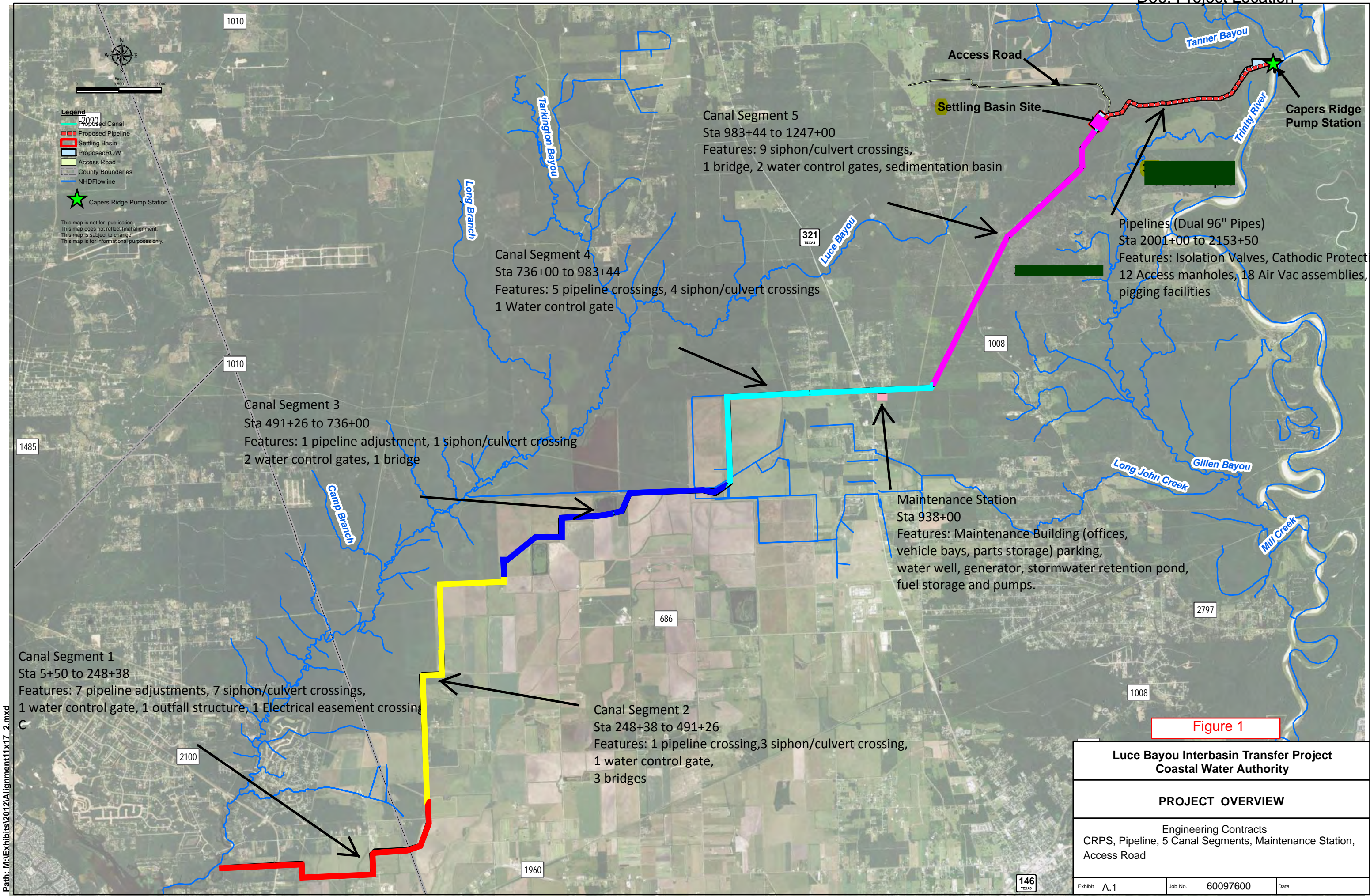
SURVEYED BY:
FB NO.
COASTAL WATER AUTHORITY
LUCIE BAYOU INTERBASIN TRANSFER PROJECT

STORM WATER POLLUTION PREVENTION PLAN DETAILS

DRAWING SCALE
AS SHOWN

SHEET NO. 245 OF 245

LAST MODIFIED: Jan. 24, 2011 - 9:22am
 BY USER: Thompson, B.
 PLOT LOCATION: C:\Work Order 6\A.D. ENGINEERING NOTES & CALCULATIONS\4.3 Civil Notes and Calculations\Cood\PIV2 Sheets
 DWG. NAME: smp020101.dwg



Luce Bayou Interbasin Transfer Project Coastal Water Authority		
PROJECT OVERVIEW		
Engineering Contracts CRPS, Pipeline, 5 Canal Segments, Maintenance Station, Access Road		
Exhibit A.1	Job No. 60097600	Date

Path: M:\Exhibits\2012\Alignment11x17_2.mxd

Census Tracts - Applicant Service Area

Harris County

Census Tract 5328
Census Tract 5321
Census Tract 5319
Census Tract 5332
Census Tract 5318
Census Tract 5334
Census Tract 5331
Census Tract 5315
Census Tract 5314
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Census Tract 5309
Census Tract 5317
Census Tract 5311
Census Tract 5302
Census Tract 5310
Census Tract 5306
Census Tract 5539
Census Tract 5529
Census Tract 5528
Census Tract 5542
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Census Tract 5507
Census Tract 5512
Census Tract 5514
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Census Tract 2509
Census Tract 2510
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Census Tract 2512
Census Tract 2513
Census Tract 2520
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Census Tract 5330
Census Tract 5335
Census Tract 5336
Census Tract 5501
Census Tract 2501
Census Tract 2506
Census Tract 2516
Census Tract 2517

Liberty County

Census Tract 7008
Census Tract 7011
Census Tract 7009
Census Tract 7002
Census Tract 7014
Census Tract 7012
Census Tract 7001
Census Tract 7004
Census Tract 7003
Census Tract 7005
Census Tract 7013
Census Tract 7006
Census Tract 7010
Census Tract 7007

Chambers County

Census Tract 9900
Census Tract 7101
Census Tract 7105
Census Tract 7103
Census Tract 7102
Census Tract 7106
Census Tract 7104.01

Census Tracts - Applicant Service Area

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Census Tract 5510
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Census Tract 5215

Census Tracts - Applicant Service Area

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Census Tracts - Applicant Service Area

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Census Tract 4548
Census Tract 4549

Census Tracts - Applicant Service Area

Census Tract 3137
Census Tract 3138
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Census Tracts - Applicant Service Area

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Census Tracts - Applicant Service Area

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Census Tracts - Applicant Service Area

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Census Tracts - Applicant Service Area

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Census Tract 2518

Census Tracts - Applicant Service Area

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Census Tract 4314.01
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Census Tracts - Applicant Service Area

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Census Tract 2313

Census Tracts - Applicant Service Area

Census Tract 2314
Census Tract 2315
Census Tract 2316
Census Tract 2325
Census Tract 3338
Census Tract 3401
Census Tract 3404
Census Tract 3405
Census Tract 3406
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Census Tract 3409
Census Tract 3410
Census Tract 3411
Census Tract 3414
Census Tract 3416
Census Tract 3417
Census Tract 3420.01
Census Tract 3403.01
Census Tract 3340.02
Census Tract 3340.01
Census Tract 3332.01
Census Tract 3316.01
Census Tract 3303.01
Census Tract 3303.02
Census Tract 2514.01
Census Tract 2504.01
Census Tract 4223.02
Census Tract 4224.02
Census Tract 4227.01
Census Tract 4227.02
Census Tract 4214.02
Census Tract 4214.01
Census Tract 4214.03
Census Tract 4320.01
Census Tract 4327.01
Census Tract 4327.02
Census Tract 4212.01
Census Tract 4328.01
Census Tract 4212.02
Census Tract 4221
Census Tract 4222
Census Tract 4225
Census Tract 4226
Census Tract 4228
Census Tract 4229
Census Tract 4230

Census Tracts - Applicant Service Area

Census Tract 4231
Census Tract 4235
Census Tract 4236
Census Tract 2326
Census Tract 2328
Census Tract 2329
Census Tract 2332
Census Tract 2333
Census Tract 2334
Census Tract 3418
Census Tract 3229
Census Tract 3230
Census Tract 3231
Census Tract 3232
Census Tract 3233
Census Tract 3234
Census Tract 3235
Census Tract 2411.02
Census Tract 2411.01
Census Tract 2408.01
Census Tract 2337.02
Census Tract 2331.03
Census Tract 2327.01
Census Tract 4211.02
Census Tract 4132.01
Census Tract 4318.01
Census Tract 4318.02
Census Tract 4115.01
Census Tract 4115.02
Census Tract 4104.01
Census Tract 4104.02
Census Tract 4107.01
Census Tract 4107.02
Census Tract 3433.02
Census Tract 4306
Census Tract 4307
Census Tract 4308
Census Tract 4309
Census Tract 4310
Census Tract 4322
Census Tract 4323
Census Tract 4324
Census Tract 4325
Census Tract 2335
Census Tract 2336
Census Tract 2521
Census Tract 2522

Census Tracts - Applicant Service Area

Census Tract 2524
Census Tract 2525
Census Tract 3236
Census Tract 3239
Census Tract 3240
Census Tract 3301
Census Tract 3308
Census Tract 3311
Census Tract 3312
Census Tract 3313
Census Tract 3314
Census Tract 2230.01
Census Tract 5554.02
Census Tract 5555.01
Census Tract 5555.02
Census Tract 5557.01
Census Tract 5557.02
Census Tract 5554.01
Census Tract 5548.01
Census Tract 5548.02
Census Tract 5538.02
Census Tract 3412.01
Census Tract 3508.01
Census Tract 3412.02
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Census Tract 3508.02
Census Tract 3506.01
Census Tract 3506.02
Census Tract 3403.02
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Census Tract 2543
Census Tract 3143
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Census Tract 3504
Census Tract 3505
Census Tract 3507

Census Tracts - Applicant Service Area

Census Tract 4101
Census Tract 4102
Census Tract 4103
Census Tract 4105
Census Tract 4106
Census Tract 4108
Census Tract 5541.01
Census Tract 5541.02
Census Tract 5540.02
Census Tract 5543.01
Census Tract 5545.02
Census Tract 5543.02
Census Tract 3413.01
Census Tract 3415.02
Census Tract 3415.01
Census Tract 3433.01
Census Tract 3340.03
Census Tract 3339.01
Census Tract 3339.02
Census Tract 3302
Census Tract 3304
Census Tract 3305
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Census Tract 3309
Census Tract 3315
Census Tract 4123
Census Tract 2101
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Census Tract 2107
Census Tract 2108
Census Tract 2109
Census Tract 3109
Census Tract 4109
Census Tract 4110
Census Tract 4111
Census Tract 4112
Census Tract 4113
Census Tract 4114
Census Tract 4116
Census Tract 4117
Census Tract 4118
Census Tract 4119
Census Tract 5521.02
Census Tract 5521.03

Census Tracts - Applicant Service Area

Census Tract 5520.01
Census Tract 5521.01
Census Tract 5520.02
Census Tract 3316.02
Census Tract 3303.03
Census Tract 3420.02
Census Tract 3402.03
Census Tract 3402.02
Census Tract 3402.01
Census Tract 3237.02
Census Tract 4125
Census Tract 4129
Census Tract 4130
Census Tract 4131
Census Tract 4511
Census Tract 4512
Census Tract 4513
Census Tract 4515
Census Tract 4517
Census Tract 3110
Census Tract 3111
Census Tract 3112
Census Tract 3113
Census Tract 3114
Census Tract 3115
Census Tract 3116
Census Tract 3117
Census Tract 4120
Census Tract 4121
Census Tract 4122
Census Tract 4124
Census Tract 4126
Census Tract 4127
Census Tract 4128
Census Tract 4210
Census Tract 4215
Census Tract 4301
Census Tract 4302
Census Tract 5523.02
Census Tract 5526.02
Census Tract 5530.01
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Census Tract 5553.02
Census Tract 5553.03
Census Tract 5430.01
Census Tract 5430.03
Census Tract 5421.02

Census Tracts - Applicant Service Area

Census Tract 3214.02
Census Tract 3214.01
Census Tract 3332.02
Census Tract 3206.01
Census Tract 3206.02
Census Tract 4132.02
Census Tract 3140.01
Census Tract 3140.02
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Census Tract 3121
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Census Tract 4303
Census Tract 4304
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Census Tract 4316
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Census Tract 4319
Census Tract 4321

**2016 Regional Water Plan
Population Projections for 2020-2070
Region H**

WUG Name	2020	2030	2040	2050	2060	2070
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	50,418	55,097	58,372	61,420	64,232	67,191
HOUSTON	2,248,414	2,428,680	2,606,077	2,783,630	2,965,639	3,154,863
NORTH FORT BEND WATER AUTHORITY	287,894	395,561	479,793	528,659	554,726	568,049
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	731,265	780,933	821,599	856,170	886,651	914,489
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	566,711	594,545	634,673	675,542	689,757	702,172
Total	3,884,702	4,254,816	4,600,514	4,905,421	5,161,005	5,406,764

**2016 Regional Water Plan
Demand Projections for 2020-2070 (acre-ft/year)
Region H**

WUG Name	2020	2030	2040	2050	2060	2070
CENTRAL HARRIS COUNTY REGIONAL WATER AUTHORITY	4,789	5,082	5,288	5,507	5,738	5,998
HOUSTON	455,481	481,416	508,493	538,710	572,904	609,210
NORTH FORT BEND WATER AUTHORITY	64,243	87,484	105,812	116,422	122,082	124,983
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	123,598	129,683	134,863	139,655	144,379	148,850
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	72,527	74,651	78,715	83,215	84,804	86,284
Total	720,638	778,316	833,171	883,509	929,907	975,325

PROJECT BUDGET - Coastal Water Authority								
Uses	WIF L080045 (2009)	WIF L090102 (2010)	SP L1000087 (2013)	Board Participation (Future)	Low Interest Loan (Future)	Total TWDB Cost	Other Funds	Total Cost
Construction								
Construction	\$0	\$0	\$19,282,000	\$261,905,413	\$23,060,000	\$304,247,413	\$0	\$304,247,413
Subtotal Construction	\$0	\$0	\$19,282,000	\$261,905,413	\$23,060,000	\$304,247,413	\$0	\$304,247,413
Basic Engineering Fees								
Planning +	\$6,339,461	\$0	\$0	\$0	\$0	\$6,339,461	\$0	\$6,339,461
Design	\$11,500,000	\$1,500,000	\$5,000,000	\$0	\$0	\$18,000,000	\$0	\$18,000,000
Construction Engineering	\$0	\$0	\$1,905,000	\$2,365,000	\$0	\$4,270,000	\$0	\$4,270,000
Basic Engineering Other **	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Basic Engineering Fees	\$17,839,461	\$1,500,000	\$6,905,000	\$2,365,000	\$0	\$28,609,461	\$0	\$28,609,461
Special Services								
Application	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Environmental	\$4,925,330	\$0	\$2,156,222	\$0	\$0	\$7,081,552	\$0	\$7,081,552
Water Conservation Plan	\$75,200	\$0	\$0	\$0	\$0	\$75,200	\$0	\$75,200
I/I Studies/Sewer Evaluation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Surveying	\$916,165	\$200,000	\$0	\$0	\$0	\$1,116,165	\$0	\$1,116,165
Geotechnical	\$255,805	\$0	\$0	\$0	\$0	\$255,805	\$0	\$255,805
Testing	\$0	\$0	\$0	\$2,500,000	\$0	\$2,500,000	\$0	\$2,500,000
Permits	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Inspection	\$0	\$0	\$0	\$9,082,587	\$0	\$9,082,587	\$0	\$9,082,587
O&M Manual	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Management (by engineer)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pilot Testing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Distribution Modeling	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Special Services Other **Environmental Mitigation	\$400,000	\$100,000	\$0	\$0	\$0	\$500,000	\$0	\$500,000
Special Services Other **Environmental/ROW Legal Services	\$500,000	\$2,000,000	\$0	\$0	\$0	\$2,500,000	\$0	\$2,500,000
Subtotal Special Services	\$7,072,500	\$2,300,000	\$2,156,222	\$11,582,587	\$0	\$23,111,309	\$0	\$23,111,309
Other								
Administration	\$1,267,804	\$0	\$0	\$0	\$0	\$1,267,804	\$0	\$1,267,804
Land/Easements Acquisition	\$0	\$0	\$0	\$0	\$0	\$0	\$20,000,000	\$20,000,000
Water Rights Purchase (If Applicable)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capacity Buy-In (If Applicable)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Legal Expenses	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other **	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Other Services	\$1,267,804	\$0	\$0	\$0	\$0	\$1,267,804	\$20,000,000	\$21,267,804
Fiscal Services								
Financial Advisor	\$150,000	\$48,000	\$65,000	\$516,200	\$116,400	\$895,600	\$0	\$895,600
Bond Counsel	\$140,000	\$60,000	\$75,000	\$339,800	\$76,600	\$691,400	\$0	\$691,400
Issuance Cost	\$10,000	\$15,000	\$0	\$31,000	\$7,000	\$63,000	\$0	\$63,000
Bond Insurance/Surety	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fiscal/Legal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capitalized Interest	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bond Reserve Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Loan Origination Fee	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other ** Financial Analysis ROW; Appraisal/Negotiation Services	\$211,254	\$0	\$0	\$0	\$0	\$211,254	\$0	\$211,254
	\$500,000	\$1,000,000	\$0	\$0	\$0	\$1,500,000	\$0	\$1,500,000
Subtotal Fiscal Services	\$1,011,254	\$1,123,000	\$140,000	\$887,000	\$200,000	\$3,361,254	\$0	\$3,361,254
Contingency								
Contingency	\$808,981	\$192,000	\$270,778	\$0	\$0	\$1,271,759	\$0	\$1,271,759
Subtotal Contingency	\$808,981	\$192,000	\$270,778	\$0	\$0	\$1,271,759	\$0	\$1,271,759
TOTAL COSTS	\$28,000,000	\$5,115,000	\$28,754,000	\$276,740,000	\$23,260,000	\$361,869,000	\$20,000,000	\$381,869,000

Other ** description must be entered

+ For Planning applications under the EDAP Program, please break down Planning costs as follows:

Category A								0
Category B								0
Category C								0
Category D								0
Total Planning Costs				0	0		0	0

D61. Project Information Form

WRD-253d
05/18/2010

Texas Water Development Board Water Project Information							
A. Project Name		B. Project No.		C. County		D. Regional Planning Group (A-P)	
E. Program(s)		F. Loan <input type="checkbox"/> / Grant <input type="checkbox"/> Amount:		G. Loan Term:			
H. Water Project Description: (Multiphase project, new or expansion; plant, well, storage, pump station, distribution system, etc)							
Attach map of service area affected by Project or other documentation.							
I. Is an Inter Basin Transfer potentially involved? Yes <input type="checkbox"/> No <input type="checkbox"/>				J. Is project located in a Groundwater District (If yes, identify District by name)? Yes <input type="checkbox"/> No <input type="checkbox"/>			
K. Projected Population from application for at least a 20 year period. Attach justification and list service area populations if different from Planning Area.	Year	Reference Year	2010	2020	2030	2040	
	Population Projection						
Project Design Year				Design Population			
L. Is the proposed project included in a current Regional Water Plan? Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know <input type="checkbox"/> (If Yes, please specify on what page in the Regional Water Plan - Regional Water Plan Page Number: _____)							
M. What type of water source is associated directly with the proposed project? Surface Water <input type="checkbox"/> Groundwater <input type="checkbox"/> Reuse <input type="checkbox"/>							
N. Will the project increase the volume of water supply? Yes <input type="checkbox"/> No <input type="checkbox"/>							
O. What volume of water is the project anticipated to deliver/ treat per year? _____ Acre-Feet/Year							
P. Current Water Supply Information							
Surface Water Supply Source / Provider Names		Certificate No.		Source County		Annual Volume and Unit	
Groundwater Source Aquifer		Well Field location		Source County		Annual Volume and Unit	
Q. Proposed Water Supply Associated Directly with the Proposed Project							
Surface Water Supply Source / Provider Names		Certificate No.		Source County		Annual Volume and Unit	
Groundwater Source Aquifer		Well Field location:		Source County		Annual Volume and Unit	
R. Consulting Engineer Name			Telephone No.		E-mail address		
S. Applicant Contact Name, Title			Telephone No.		E-mail address		

STATE OF TEXAS

§

COUNTY OF Harris

§

§

**SURFACE WATER
AFFIDAVIT**

Donald Ripley

Before me, the undersigned notary, on this day personally appeared _____, a person whose identity is known to me. After I administered an oath to him/her, upon his/her oath he/she said:

- 1. I am over 18 years of age, of sound mind, and capable of making this affidavit. The facts stated in this affidavit are within my personal knowledge and are true and correct.
- 2. I am an authorized representative of _____, an entity that has filed an application for financial assistance with the Texas Water Development Board for a project that proposes the development of a new surface water supply source.
- 3. Does the applicant possess a Certificate of Adjudication and/or Water Rights Permit(s) issued by the Texas Commission on Environmental Quality or a predecessor agency authorizing the appropriation and use of the surface water needed for the Project?
Yes No

Please attach a copy of the Certificate(s) of Adjudication and Water Rights Permit(s).

Item attached: Yes No

- 4. Does the applicant have the contractual right to use the surface water from an entity that enjoys the right to appropriate and use the surface water needed for the project?
Yes No

Please attach a copy of any draft or executed water supply contract, lease or other legal instrument providing contractual authorization to use the surface water needed for the Project.

Please see Attachment C52 for the contract between the City of Houston and the Coastal Water Authority.

Item attached: Yes No

Please identify the Certificate of Adjudication(s) and Water Rights Permit(s) possessed by the wholesale water provider pursuant to which the contract, lease or other legal instrument has been or will be executed.

Certificate of Adjudications: ^{08-4261A} _____

Item attached: Yes No

Water Rights Permit(s): ^{1970C} _____

Item attached: Yes No

Signed the 1st day of June, 2015.

Donald R Ripley
Name

Executive Director

Title

Sworn to and subscribed before me by Donald Ripley on June 1, 2015.

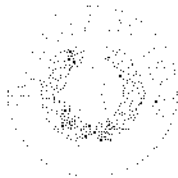
Mary Caballero

Notary Public in and for the State of Texas

My Commission expires: 08-23-2018



Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 4, 2009

TO: All Persons on Mailing List

RE: **TCEQ Docket No. 2009-0912-WR, Application No. 08-4261A to Amend COA No. 08-4261; In the matter of an amendment to a water right by the City of Houston.**

The above-referenced matter is scheduled to be considered by the Texas Commission on Environmental Quality on **September 23, 2009 at 9:30 A.M.** in Room 201S, Building E, 12100 Park 35 Circle, Austin, Texas. The Commission will consider whether notice is required for this application, and if so, what type of notice will be required. The Executive Director's memorandum and recommendation and other documents related to this matter may be found at http://www.tceq.state.tx.us/permitting/water_supply/water_rights/wran.html.

Should you need any additional information, please contact Melissa Chao at the Texas Commission on Environmental Quality, Office of the Chief Clerk, (512) 239-3300.

Sincerely,

A handwritten signature in cursive script, reading "LaDonna Castañuela".

LaDonna Castañuela
Chief Clerk

LDC/mc

**MAILING LIST
CITY OF HOUSTON
TCEQ DOCKET NO. 2009-0912-WR**

FOR THE APPLICANT:

Ed McCarthy
Jackson, Sjoberg, McCarthy & Wilson L.L.P.
711 West 7th Street
Austin, Texas 78701

FOR THE EXECUTIVE DIRECTOR:

Robin Smith, Staff Attorney
Texas Commission on Environmental Quality
Environmental Law Division, MC-173
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Fax: (512) 239-0606

Iliana Delgado, Team Leader
Texas Commission on Environmental Quality
Water Supply Division, MC-160
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Fax: (512) 239-2214

Steve Ramos, Project Manager
Texas Commission on Environmental Quality
Water Supply Division, MC-160
P.O. Box 13087
Austin, Texas 78711-3087
Tel: (512) 239-6538
Fax: (512) 239-2214

FOR PUBLIC INTEREST COUNSEL:

Mr. Blas J. Coy, Jr., Attorney
Texas Commission on Environmental Quality
Public Interest Counsel, MC-103
P.O. Box 13087
Austin, Texas 78711-3087
Tel: (512) 239-6363
Fax: (512) 239-6377

FOR OFFICE OF PUBLIC ASSISTANCE:

Ms. Bridget Bohac, Director
Texas Commission on Environmental Quality
Office of Public Assistance, MC-108
P.O. Box 13087
Austin, Texas 78711-3087
Tel: (512) 239-4000
Fax: (512) 239-4007

FOR ALTERNATIVE DISPUTE
RESOLUTION:

Mr. Kyle Lucas
Texas Commission on Environmental Quality
Alternative Dispute Resolution, MC-222
P.O. Box 13087
Austin, Texas 78711-3087
Tel: (512) 239-4010
Fax: (512) 239-4015

FOR THE CHIEF CLERK:

Ms. LaDonna Castañuela
Texas Commission on Environmental Quality
Office of Chief Clerk, MC-105
P.O. Box 13087
Austin, Texas 78711-3087
Tel: (512) 239-3300
Fax: (512) 239-3311

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
INTEROFFICE MEMORANDUM

TO: Commissioners

THRU: Todd Chenoweth, Director
Water Supply Division

FROM: Kellye Rila, Section Manager
Water Rights Permitting & Availability Section

Robin Smith, Attorney
Environmental Law Division

SUBJECT: City of Houston
Docket # 2009-0912-WR
Application No. 08-4261A to Amend Certificate of Adjudication No. 08-4261
Trinity River, Trinity River Basin,
Harris, Polk, Liberty, Chambers, Trinity, and San Jacinto Counties

DATE: June 24, 2009

CHIEF CLERKS OFFICE

2009 SEP - 3 PM 11: 54

TEXAS
COMMISSION
ON ENVIRONMENTAL
QUALITY

On June 9, 2006 the Texas Supreme Court issued an opinion in the case of *Marshall v Uncertain*.¹ The Court in that opinion considered the Commission's practices regarding notice and hearing for applications to amend a water right under Texas Water Code (TWC) § 11.122(b). The Court held that it could not determine under the record in that case whether notice and a hearing would be required. The Court remanded the case to the Commission.

The Court held that when reviewing the type of notice required for an amendment to a water right, the Commission must determine whether there could be an adverse impact from the application on other water rights or the environment beyond or irrespective of the full use assumption, explained below. The Court also held that the Commission must determine if the application could have an adverse impact on the public interest criteria: beneficial use, public welfare, groundwater effects, consistency with the state and regional water plan, compliance with administrative requirements, and conservation.

The types of amendments that come within the *Marshall* decision are those amendments that do not already have a specific notice requirement in a rule for that type of amendment and that do not change the amount of water to be taken or the diversion rate. These amendments include changes in use, changes in place of use, or non-substantive changes in a water right.

¹ City of Marshall et. al. v. City of Uncertain et. al., No. 03-1111 (Tx. June 9, 2006).

TO: Commissioners
Page 2
June 24, 2009

The purpose of this memo is to discuss the public notice that should be given in the above referenced application by the City of Houston in light of agency rules and the Court's decision in the case of *Marshall*.

Current Authorization and Application for Amendment

The City of Houston (City) currently owns Certificate of Adjudication 08-4261 which authorizes the City, in conjunction with the Trinity River Authority (Owner of Certificate of Adjudication No. 08-4248), to maintain an existing dam and reservoir (Lake Livingston) on the Trinity River, Trinity River Basin, and impound therein not exceed 1,750,000 acre-feet of water.

Certificate of Adjudication No. 08-4261 also authorizes the City to divert and use 444,000 acre-feet of water per year from Lake Livingston for municipal purposes at a diversion rate of 1,700 cfs (765,000 gpm), and to divert and use not to exceed 458,800 acre-feet of water per year from Lake Livingston for industrial purposes at a diversion rate of 775 cfs (348,750 gpm). The time priority of the owner's right is September 23, 1959.

Many special conditions apply which include conditions for releases from Lake Livingston and the subordination of this certificate to numerous other rights in the Trinity River Basin.

The City seeks to amend Certificate of Adjudication No. 08-4261 to add non-consumptive hydroelectric power generation as an additional authorized use for the water rights authorized by Certificate of Adjudication No. 08-4261. The City indicates hydroelectric power generation will only be conducted when water is released from Lake Livingston for another authorized purpose(s) such as water released from Lake Livingston for downstream use, to meet priority calls, or to pass inflows when the conservation storage of Lake Livingston is full.

Rules Related to Notice

The Commission has rules concerning what notice is required for applications to amend a water right in 30 Texas Administrative Code (TAC) § 295.158. There are no rules that specifically provide notice for adding a purpose of use. Under 30 TAC § 295.158(c), no notice is required if no additional consumptive use is contemplated, no increase in diversion rate or period will be granted, and in the judgment of the Commission there is no potential for harming another water right. This application falls under this rule and does not require notice for the reasons set out below.

TO: Commissioners
Page 3
June 24, 2009

Texas Water Code

This application for an amendment to an existing water right is governed by TWC § 11.122. TWC § 11.122(a) requires a water right holder, except as discussed above, to obtain a water right amendment if the holder is going to change the purpose of use or "otherwise alter a water right."

TWC § 11.122(b) sets out the scope of the Commission's authority in reviewing applications to amend a water right. Staff notes that, in the application, the City is not asking for either an increase in the amount of water authorized for diversion or an increase in the rate of diversion. With that understanding of the application, it then becomes a duty of the Commission to approve the application "*if the requested change will not cause adverse impact on other water right holders or the environment on the stream of greater magnitude than under circumstances in which the permit . . . that is sought to be amended was fully exercised according to its terms and conditions as they existed before the requested amendment,*" and the application must meet, "*all other applicable requirements,*" of Chapter 11 of the TWC. The clause that requires the Commission to compare the requested amendment to the existing water right as if the existing water right was fully exercised is often referred to as the "full use assumption."

Adverse Impact on Water Right Holders and the Environment

Under the *City of Marshall* opinion, the Commission must evaluate whether an amendment can adversely impair other water rights or the environment beyond the full use assumption. Under the full use assumption, the addition of hydroelectric use can have no greater impact on other water right holders or the environment than the impacts to those interests under the existing certificate because the City is merely seeking to add a non-consumptive purpose of use to Certificate of Adjudication No. 08-4261 and the current special conditions in the certificate will still apply. Adding hydroelectric use would not change the amount water released or the amount of diversion authorized by the Certificate. Both before and after the amendment the amount of water diverted or released will be the same. Because there is no specific pattern of use in the certificates, the full use assumption requires the Commission to consider the existing certificate and the proposed amended certificate as potentially exercised under all lawful patterns of use.

It makes no difference to other water right holders or the environment, whether the City is adding hydroelectric use to their rights in Lake Livingston. The effect on streamflow, and therefore water available for downstream water right holders or the downstream aquatic environment, will be the same: hydroelectric use is non-consumptive and no additional diversions or releases will be made. Therefore with the full use assumption, the proposed amendment will not cause adverse impact to other water right holders or the environment.

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Concerning whether there are impacts to water rights or the environment beyond the full use assumption, the Executive Director believes that there are none for adding a purpose of use. This amendment is to add hydroelectric use to the water authorized by the certificate, and does not change a non-consumptive use to a consumptive use. In fact, the application would add a non-consumptive use.

Unless the existing permit requires a specific pattern of use, the Executive Director does not believe that this is a proper factor to consider because patterns of use change due to weather, time of use, and needs of the applicant, and it cannot be specifically determined ahead of time how an applicant will use its water.

Another issue is whether the Executive Director should consider if the applicant is using all of the water authorized in the existing water right. The Executive Director does not believe that this is a proper factor to consider because it would discourage conservation and future water planning.

Other Applicable Requirements

Under TWC § 11.122(b), the proposed amendment must also satisfy all other applicable requirements of TWC Chapter 11. The Supreme Court in the *Marshall* case itemized those other requirements. We turn now to a consideration of the requested amendments and those other requirements that the Supreme Court has told us are applicable.

Administrative Requirements

Staff has reviewed the application and has found that it meets all administrative requirements of the Texas Water Code Chapter 11. Notice fees have not been requested or paid. Therefore, this application has not been declared administratively complete. In the event the Commission recommends that notice is required, appropriate notice fees will be requested at that time and upon payment of notice fees the application will be declared administratively complete and accepted for filing with the Chief Clerk.

Beneficial Use

Proposed appropriations of state water must be for a beneficial use. Beneficial use is defined in TWC § 11.002(4) as "the use of the amount of water which is economically necessary for a purpose authorized by this chapter, when reasonable intelligence and reasonable diligence are used in applying the water to that purpose and shall include conserved water." The applicant has asked that hydroelectric use be added as an authorized use in their certificate. Hydroelectric use

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is recognized as a beneficial use by TWC § 11.023(a)(4). The City will only use water for this purpose when it is released for another purpose to efficiently use its water.

Concerning whether an applicant should only be allowed to change the use for water that is being used, the Executive Director acknowledges that due to the nature of this application the additional use is being limited to water that is already being used, as requested by the applicant. However, in general, the Executive Director believes that limiting the change or additional use to the amount of water currently being used is inappropriate. The fact that the applicant may not be using all of their appropriated water does not mean that there has not been or will not be a beneficial use of the water. In addition, this factor would discourage conservation and future water planning. The cancellation statutes, TWC §§ 11.171 - 11.186, provide that the Commission, in determining whether non-use is justified, will consider whether the purpose of use is consistent with the approved regional water plan. Also, TWC § 11.173(b)(3) exempts from cancellation a water right that was obtained to meet demonstrated long-term public water supply or electric generation needs as evidenced by a water management plan and is consistent with projections of future water needs contained in the state water plan.

We will consider whether the use is non-wasteful under "Avoidance of Waste and Achievement of Water Conservation" below.

Protection of Public Welfare

A proposed appropriation of state water must not be detrimental to the public welfare. No definition of "detriment to public welfare" is provided in the law. Therefore, the Commission has wide discretion in determining benefits or detriments to the public welfare. The City seeks to add hydroelectric use to their existing certificate. This type of multi-use certificate is authorized by TWC § 11.023(e). A multi-use certificate in this situation would allow the City to more efficiently and effectively utilize their existing water supply. The City states that the amendment to Certificate of Adjudication No. 08-4261 to add hydroelectric generation as an additional use will not be detrimental to the public welfare. In fact, the proposed amendment will actually benefit the public welfare by allowing the City to more efficiently and effectively utilize the existing water supply. There are no specific facts that would indicate that this use is not in the public welfare.

The Executive Director does not believe that an applicant should only be allowed to amend the purpose of use for the water that is being used. The Executive Director believes that limiting the change or additional use to the amount of water currently being used is inappropriate for the reasons stated above.

Another issue is whether the applicant should show that the additional use is as beneficial as some other use of the water. The Executive Director believes that this is inappropriate because

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TWC §11.024 of the Texas Water Code, which provides for a preference of use, only applies when there are two pending applications for the same water.² Also, a law that required the Texas Commission on Environmental Quality (TCEQ) to give preference to municipal use was repealed several years ago. If the TCEQ is to weigh uses in granting permits, and deny permits that it does not think are the best use of the water, this would be a major change in TCEQ policy.

The Executive Director's opinion is that there is no detriment to the public welfare by granting this application.

Groundwater Effects

A proposed appropriation of state water must consider effects of the proposed permit on groundwater or groundwater recharge. The Commission's Water Availability Model (WAM) is used to evaluate the availability of unappropriated water for new appropriations and takes into account both contributions to river flow caused by groundwater coming to the surface in the river (springs) and decreases in river flow caused by the river flowing over recharge features and losing surface water to groundwater recharge. The WAM contains channel loss factors that account for the gain or loss of river flow. These channel loss factors were developed by the expert engineering contractors hired by the Commission to develop the WAMs.

The Trinity WAM includes the segment of the Trinity River (Lake Livingston) where the diversions under this permit occur. The Trinity WAM includes channel loss factors, however there are no channel losses associated with the Trinity River at the permitted diversion point.

Concerning use of the Texas Water Development Board Groundwater Availability Models (GAMs) and information from the University of Texas Bureau of Economic Geology to assess groundwater impact, predictive simulations using the GAMs do not account for streamflow changes associated with permitted surface water withdrawals or return flows. GAMs were not originally designed to address groundwater-surface water interactions and there are issues with using these models for that purpose.³ The GAMs are regional in nature and are not able to simulate groundwater-surface water interaction in detail.⁴ Both the WAMs and the GAMs have

² Although there are no cases directly in point on this issue, *see*, *City of San Antonio v. Texas Water Commission*, 407 S.W.2d 752, 764 (Tex. 1966) (discussing preferences of use in the context of competing water rights). *See also*, Tex. Water Code § 11.147(c)(6), which provides that a factor for determining beneficial inflow requirements in an application is "the declarations as to preferences for competing uses of water as found in TWC § 11.024." (<http://web2.westlaw.com/find/default.wl?tf=-1&rs=WLW8.11&ifn=NotSet&fn=top&sv=Split&tc=-1&docname=TXWAS11.024&ordoc=1034726&findtype=L&db=1000186&vr=2.0&rp=%2ffind%2fdefault.wl&mt=Texas>)

³ Bureau of Economic Geology. 2005. Groundwater-Surface Water Interactions in Texas. August 2005.

⁴ Mace, R., Austin, B. Angle, E. and R. Batchelder. 2007. Surface Water and Groundwater Together Again. Paper presented at State Bar of Texas 8th Annual Changing Face of Water Rights in Texas. San Antonio, Texas.

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issues related to quantifying groundwater-surface water interaction; however, the WAMs were developed as a tool for surface water permitting.

The Bureau of Economic Geology provides information about aquifer recharge rates.⁵ In general, these rates, where quantified, are applicable to aquifers or portions of aquifers. As such, they do not provide sufficient detail to determine interaction between surface and groundwater at discrete points. The application is located in the Lower Trinity Groundwater Conservation District (LTGCD).⁶ The Region H Water Planning Group 2006 Regional Water Plan does not indicate issues with groundwater or groundwater recharge directly related to the application.⁷

The amount of water diverted and released by the owner will be the same whether that water is drawn from the Trinity River (Lake Livingston) for the existing or proposed use. Thus, the diversion and release of the full authorized volume of water for the existing uses, municipal and industrial, will have no greater effect on groundwater resources or groundwater recharge than the non-consumptive use of water for hydroelectric power generation. Therefore, the Executive Director concludes that there is no potential groundwater issue involved with this application.

Consistency with Regional and State Plans

Water right applications are only granted if the application addresses a water supply need in a manner that is consistent with the state water plan and the relevant regional water plan, unless the Commission determines that conditions warrant a waiver of this requirement. The purpose of the state and regional water plans is to assess the likely future use of water and to develop strategies for meeting water supply shortfalls. The state and regional water plans generally do not address every possible change in individual water rights. According to the approved regional water plan, hydroelectric generation is important to the economy in the area. Therefore, the Executive Director concludes that because of this statement in the regional water plan and because the state and regional water plans are not designed to cover this specific type of amendment, the requested amendment is consistent with the relevant regional water plan and the state water plan.—If the Commission determines that the amendment is not consistent with the relevant regional water plan and the state water plan, the Executive Director believes that it would warrant a waiver of the consistency requirement.

⁵ Scanlon, B., Dutton, A. and M. Sophocleous. 2002. Groundwater Recharge in Texas. Water Research Fund Grant Contract No. 2000-483-340

⁶ http://www.twdb.state.tx.us/mapping/maps/pdf/gcd_only_8x11.pdf

⁷ 2006 Regional Water Plan. Prepared as joint venture by Kellogg Brown & Root and Truner Collie & Braden for the Region H Water Planning Group for the Texas Water Development Board. December 2005.

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In addition, the applicant states the proposed amendment will not affect issues involving water supply. The City's water rights will still be available to meet demand projections found in the state and regional water plans just as they were prior to this proposed amendment.

Avoidance of Waste and Achievement of Water Conservation

The Commission has adopted rules to specify the type of water conservation plans that will be required for amendments to existing water rights in 30 TAC § 295.9(4). The City is not increasing the amount of the appropriation. The City is adding hydroelectric use to make more efficient use of the water already authorized. The City has submitted a water conservation plan covering all of their current uses. The plan has been reviewed and declared administratively sufficient. Staff finds that the applicant can achieve water conservation and avoid waste.

Conclusion

This application seeks an amendment to add hydroelectric use to existing municipal and industrial uses. The application does not seek an increase in either the amount of water diverted, or the rate of diversion. Under the full use assumption, the amendment will not have an adverse impact on other water right holders or the environment, and there are no negative impacts to other water rights or the environment beyond the full use assumption. The application does not raise any issues of beneficial use, detriment to the public welfare, groundwater effects, consistency with the state and regional water plans, compliance with administrative requirements, or avoidance of waste and achievement of water conservation. Commission rules, statutes, and case law allow this application to be processed without notice. Therefore, the Executive Director recommends that no notice be issued for this application.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
INTEROFFICE MEMORANDUM

TO: Chief Clerk DATE: June 24, 2009

THRU: Iliana Delgado, Team Leader
Water Rights Permitting Team

FROM: Esteban (Steve) Ramos, Project Manager
Water Rights Permitting Team

SUBJECT: City of Houston
Docket 2009-0912-WR
ADJ 4261
Application No. 08-4261A to Amend Certificate of Adjudication No. 08-4261
Trinity River, Trinity River Basin,
Harris, Polk, Liberty, Chambers, Trinity, and San Jacinto Counties

Below is the caption for this application:

Consideration of the notice required for the application of the City of Houston to amend its Certificate of Adjudication No. 08-4261 to add non-consumptive hydroelectric power generation as an additional authorized use. Hydroelectric power generation will only be conducted when water is released from Lake Livingston for another authorized purpose(s). Certificate of Adjudication No. 08-4261 currently authorizes the City of Houston in conjunction with the Trinity River Authority (Owner of Certificate of Adjudication No. 08-4248) to maintain an existing dam and reservoir (Lake Livingston) on the Trinity River, Trinity River Basin, and impound therein not exceed 1,750,000 acre-feet of water. Certificate of Adjudication No. 08-4261 also authorizes the City to divert and use 444,000 acre-feet of water per year from the Trinity River (Lake Livingston) for municipal purposes, and to divert and use not to exceed 458,800 acre-feet of water per year from the Trinity River (Lake Livingston) for industrial purposes. Executive Director has prepared a memorandum recommending that no notice be required. (Steve Ramos, Robin Smith)

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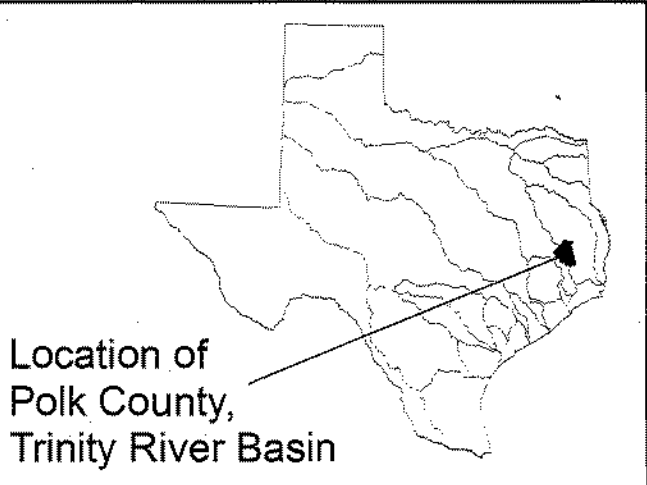
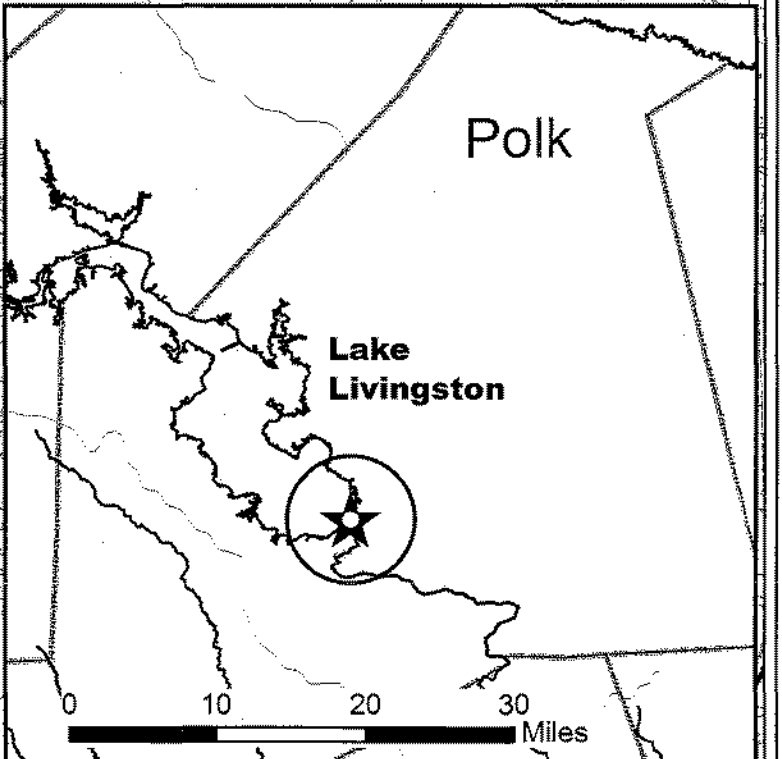
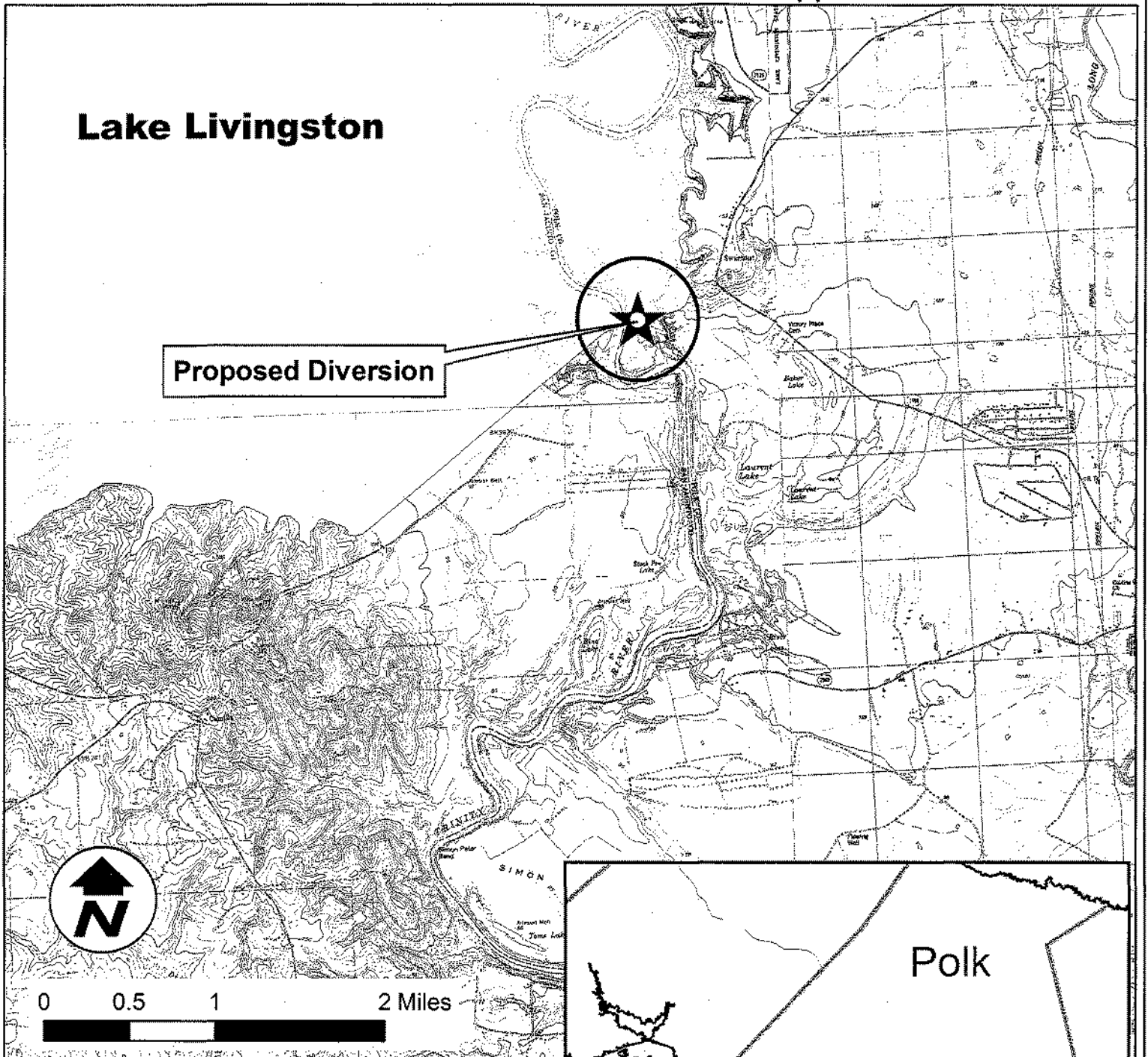
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Lake Livingston

Proposed Diversion



Location of
Polk County,
Trinity River Basin

CERTIFICATE OF ADJUDICATION

CERTIFICATE OF ADJUDICATION: 08-4261 OWNER: City of Houston
Water Division Dept.
of Public Works
P. O. Box 1562
Houston, Texas 77002

COUNTIES: Harris, Polk, Liberty, PRIORITY DATE: December 30, 1913,
Chambers, Trinity and San and September 23,
Jacinto 1959

WATERCOURSE: Old River, tributary of BASIN: Trinity River
the Trinity River and
the Trinity River

WHEREAS, by final decree of the 344th Judicial District Court of Chambers County, in Cause No. 344-10865, In Re: The Adjudication of Water Rights in the Lower Trinity River Segment of the Trinity River Basin and the western portion of the Neches-Trinity Coastal Basin dated October 30, 1985 a right was recognized under Certified Filing 71ABCD, Permit 1970C, Permit 1974A and Permit 2521 to appropriate waters of the State of Texas as set forth below;

NOW, THEREFORE, this certificate of adjudication to appropriate waters of the State of Texas in the Trinity River Basin is issued to the City of Houston, subject to the following terms and conditions:

1. IMPOUNDMENT

- A. Owner, in conjunction with the Trinity River Authority of Texas under Certificate of Adjudication 08-4248, is authorized to maintain an existing dam and reservoir (Lake Livingston) on the Trinity River and impound therein not to exceed 1,750,000 acre-feet of water. The east end of the dam is located in the Thomas Bradley Survey, Abstract 98, Polk County, Texas.
- B. Owner, in conjunction with the Trinity River Authority of Texas under Certificate of Adjudication 08-4248, is authorized to complete construction of a dam and reservoir (Lake Wallisville) on the Trinity River and impound therein not to exceed 51,600 acre-feet of water. Station 0 + 00 on the centerline of dam bears S 32°29'54"W, 13,906.24 feet from the northwest corner of the S. Burney Grant, Abstract 7, Chambers County, Texas.
- C. Owner is authorized to maintain an existing 4700 acre-foot capacity off-channel reservoir (Lynchburg Reservoir). The levee creating said reservoir is located in the Nathaniel Lynch Grant, Abstract 44, Harris County.
- D. Owner is authorized to temporarily store water diverted from the Trinity River, in Lake Houston located on the San Jacinto River in the San Jacinto River Basin.

2. USE

- A. Owner is authorized to divert and use not to exceed 444,000 acre-feet of water per annum from the Trinity River (Lake Livingston) and 10,000 acre-feet of water from the Trinity River (Lake Wallisville-when completed) for municipal purposes.
- B. Owner is also authorized to divert and use not to exceed 458,800 acre-feet of water per annum from the Trinity River (Lake Livingston), 28,000 acre-feet of water per annum from the Trinity River (Lake Wallisville-when completed) and 31,600 acre-feet of water per annum directly from the Trinity River for industrial purposes.
- C. Owner is authorized to divert and use 13,400 acre-feet of water per annum from the Trinity River and Old River to irrigate a maximum of 9350 acres of land within Chambers and Liberty Counties.

Certificate of Adjudication 08-4261

- D. Owner is authorized to divert and use water authorized under this certificate and stored in Lake Houston and Lynchburg Reservoir for municipal and industrial purposes only.
- E. Owner is authorized to use the water impounded in the aforesaid on-channel reservoirs for recreation purposes.

3. DIVERSION

- A. Location and rate:
 - (1) At a point on the Trinity River in the John A. Williams Grant, Abstract 119, Liberty County, Texas, at a maximum rate of not to exceed 1700 cfs (765,000 gpm).
 - (2) At a point on the Trinity River in the Theodore Dorsett Grant, Abstract 27, Liberty County, Texas, at a maximum rate of not to exceed 775 cfs (348,750 gpm).
 - (3) At a point on the Old River in the Henry Griffith Grant, Abstract 12, Chambers County, Texas, at a maximum rate of 288 cfs (129,600 gpm).
 - (4) At a point on the Trinity River in the B.B.B. & C. RR Co. Survey, Abstract 58, Chambers County, Texas, at a unspecified rate.
- B. Maximum combined rate: 3400 cfs (1,530,000 gpm) upon completion of Lake Wallisville Dam.

4. PRIORITY

- A. The time priority of owner's right is December 30, 1913 to divert and use 31,600 acre-feet of water per annum for industrial purposes; 13,400 acre-feet of water per annum for irrigation purposes at a diversion rate of 288 cfs (129,600 gpm) at diversion point No. 3.
- B. The time priority of owner's right is September 23, 1959 to divert and use 444,000 acre-feet of water per annum for municipal purposes and 458,800 acre-feet of water per annum for industrial purposes at a diversion rate of 1700 cfs (765,000 gpm) at diversion point No. 1 and 775 cfs (348,750 gpm) at diversion point No. 2.
- C. Upon completion of Lake Wallisville Dam and Reservoir the time priority of owner's right is September 23, 1959 to divert the remaining 10,000 acre-feet of water per annum for municipal purposes; the remaining 28,000 acre-feet of water for industrial purpose and the maximum combined diversion rate of 3400 cfs (1,530,000 gpm).

5. SPECIAL CONDITIONS

- A. Owners shall maintain a sluiceway in the aforesaid Lake Livingston Dam at a bottom elevation of not more than seventy (70) feet above mean sea level, having an opening of not less than ninety-six (96) inches in diameter and equipped with a regulating gate for the purpose of allowing the free passage through the dam at all times of those waters to which lower users are lawfully entitled. Whenever the Commission finds that the owners are storing any waters to which downstream appropriators or lawful diverters are entitled, the owners shall release same to said appropriators or lawful diverters on the order of the Texas Water Commission.
- B. Owners are authorized and required to operate the Lake Livingston dam and reservoir described in this certificate of adjudication in conjunction with the Lake Wallisville dam and reservoir which are required to be constructed on the Trinity River in Chambers County, Texas. The total water available

Certificate of Adjudication 08-4261

from both projects shall be divided between the owners so that the City shall receive seventy per cent (70%) and the Authority shall receive thirty per cent (30%) thereof and that the specific quantities for each shall, if necessary, be adjusted so as to divide the total available water between the owners in such proportions.

- C. Owner shall install and maintain a metering instrument at each diversion point which will automatically record the total amount of water diverted. Owner shall make determinations of water surface elevations in Lake Livingston Reservoir by means of recording gauges set to U. S. Coast and Geodetic Survey datum, each of which shall be protected by a well house designed for such purposes and the Commission shall be furnished complete records of such determinations. Owners shall relocate, or cause to be relocated, all existing stream flow stations which may be inundated or impaired by the reservoir and establish, or cause to be established, such other recording stream flow stations as the Commission may deem necessary to record inflows into the reservoir. Owner shall maintain daily records of waters released through the reservoir authorized herein for downstream use. All stream flow stations shall be set to the same datum described above and the Commission shall be furnished complete records of the data herein required to be kept. The metering instruments, the gauges for well houses, and the stream flow stations and the installation, design and operation thereof shall be subject to approval of the Commission.
- D. Owner is authorized to use the bed and banks of the Trinity River, below the aforesaid dams (Lake Livingston and Lake Wallisville), to convey and deliver water to be appropriated hereunder to downstream diversion points.
- E. Owner is authorized to use all of the water diverted from the Trinity River Basin in the San Jacinto River Basin, the Trinity-San Jacinto, the San Jacinto-Brazos, and the western portion of the Neches-Trinity Coastal Basins, excluding Bolivar Peninsula.
- F. Owner is authorized to convey the water diverted from the Trinity River at Diversion Point No. 1 authorized herein by pipeline, canal and the bed and banks of Luce Bayou, for temporary storage in Lake Houston located on the San Jacinto River in the San Jacinto River Basin.
- G. Owner's use of the bed and banks of Luce Bayou as authorized herein shall not interfere with any rights held under Certificate of Adjudication 10-3979 in the San Jacinto River Basin issued by the Commission. Any plans and specifications in connection with such use shall make all necessary and specific provisions for the protection of the on-channel reservoir, the off-channel reservoir and the pumping facilities authorized by such certificate of adjudication and all other rights in connection therewith.
- H. Owner's right is subordinate to any claim on waters of the Trinity River Basin imported into and/or originating in and above Lake Lewisville Reservoir, Grapevine Reservoir, Lake Worth Reservoir, and Lake Ray Hubbard Reservoir, and shall not constitute any limitation upon the granting of permits by the Commission for the impoundment and use of waters above the said four named reservoirs.
- I. This certificate is further subordinate to any claim on waters imported and/or originating in the Trinity River Basin above Lake Livingston reservoir authorized herein, that could be impounded by: 1) existing reservoirs; 2) by reservoirs for which permits have been granted or certificates of adjudication issued and the construction of such reservoirs is

Certificate of Adjudication 08-4251

incomplete; 3) by reservoirs for which applications are now pending before the Commission; or 4) by the following proposed reservoirs as shown in the Master Plan Report of the Trinity River Authority of Texas dated April 18, 1958, but only to the extent necessary to insure a dependable yield from each such proposed reservoir as shown opposite the respective names, to-wit:

<u>Reservoir Name</u>	<u>Dependable Yield (MGD)*</u>
Big Fossil	0.5
Tehuacana	61.0
Tennessee Colony	362.0
Upper Keechi	13.6
Lower Keechi	20.5
Big Elkhart	11.0
Little Elkhart	6.2
Hurricane Bayou	15.6
Bedias	95.5
Nelson	14.6
Harmon	7.4
Gail	16.6
Mustang	13.2
Caney	13.5
Long King	18.5

*Million Gallons per Day

It is the intent herein that this certificate of adjudication shall not constitute a prior claim against upstream flows necessary to produce dependable yields in the aggregate amount from future reservoirs hereinabove listed. Except for the Tennessee Colony Reservoir, nothing herein shall prohibit the construction of future reservoirs at different locations, of different dimensions, or the combination of reservoirs as substitutes for the above-listed future reservoirs; provided, however, that such modifications in dimensions, locations or the combination of reservoirs shall not diminish the dependable yield of the reservoir authorized herein in excess of the diminution which would be occasioned by the construction of such reservoirs with the respective dependable yields as hereinabove listed. Tennessee Colony Reservoir may be modified as to location and dimension provided that any such modification shall likewise not further diminish the dependable yield of the reservoir authorized herein.

- J. This certificate of adjudication is specifically subordinate to the present and future use and reuse and consumptive use of any return flows from waters impounded in each of the existing and above described proposed reservoirs and the return flows from water imported into the river basin, for municipal and industrial purposes within the Trinity River Basin above Lake Livingston notwithstanding the re-entry of such return flows into a public stream they may nevertheless be used again, diverted and routed through such treatment facilities as may be considered necessary for their purification, under authority of permits heretofore or hereafter issued by the Texas Water Commission for such purposes in the upstream watershed. This certificate is also subordinate to the present and future use and reuse for navigation purposes of the return flows from the metropolitan areas of Dallas and Fort Worth in their natural flowing state and by impoundment in pools created by locks and appurtenances within the river and navigation channels; and further, such return flows shall be allowed to pass through the reservoir authorized herein to the extent necessary to provide navigation below said reservoir and the rights hereby acquired shall be subordinate to such uses.

Certificate of Adjudication 08-4261

- K. Owner may divert water from Diversion Point No. 1 not to exceed 902,800 acre-feet of water per annum. Owner may divert from Diversion Point No. 2 up to 450,000 acre-feet of water per annum, provided that the total amount diverted at both diversion points must not exceed a total of 902,800 acre-feet of water per annum.
- L. Owner may not exercise the right to divert and use that portion of the water authorized herein which is to be diverted from Lake Wallisville for any purposes until construction of the aforesaid reservoir is complete and owner applies for and is granted a diversion point or points and a rate of diversion from said reservoir.
- M. Construction of the Wallisville dam, reservoir and related facilities authorized or required by this certificate of adjudication shall be in accordance with plans approved by the Texas Water Commission and shall be started and completed within the time limits established by the Commission.
- N. Owner shall maintain a suitable outlet in the aforesaid dams authorized herein to allow the free passage of water that owner is not entitled to divert or impound.
- O. Owner shall make no diversions of water from the diversion points, downstream of the Lake Wallisville dam, except to the extent that water for such diversions is released from the aforesaid reservoir.

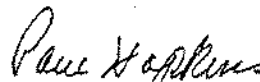
The locations of pertinent features related to this certificate are shown on Pages 16, 18, 20 and 21 of the Lower Trinity River Segment Certificates of Adjudication Maps, copies of which are located in the offices of the Texas Water Commission, Austin, Texas and the Harris, Polk, Liberty, Chambers, Trinity and San Jacinto County Clerks.

This certificate of adjudication is issued subject to all terms, conditions and provisions in the final decree of the 344th Judicial District Court of Chambers County, Texas, in Cause No. 344-10865, In Re: The Adjudication of Water Rights in the Lower Trinity River Segment of the Trinity River Basin and the western portion of the Neches-Trinity Coastal Basin dated October 30, 1985 and supersedes all rights of the owner asserted in that cause.

This certificate of adjudication is issued subject to senior and superior water rights in the Trinity River Basin.

This certificate of adjudication is issued subject to the Rules of the Texas Water Commission and its continuing right of supervision of State water resources consistent with the public policy of the State as set forth in the Texas Water Code.

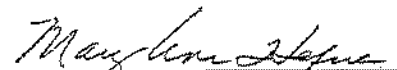
TEXAS WATER COMMISSION


Paul Hopkins, Chairman

DATE ISSUED:

JUN 9 1986

ATTEST:


Mary Ann Refner, Chief Clerk



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AMENDMENT TO A
CERTIFICATE OF ADJUDICATION

CERTIFICATE NO. 08-4261B

TYPE § 11.122

Owner: City of Houston

Address: 611 Walker
Houston, Texas
77002

Filed: April 29, 2009

Granted: **MAY 05 2009**Purposes: Municipal, Agricultural,
Industrial, and RecreationCounties: Harris, Polk, Liberty,
Chambers, Trinity,
and San Jacinto

Watercourse: Trinity River

Watershed: Trinity River Basin

WHEREAS, Certificate of Adjudication No. 08-4261 authorizes the City of Houston to maintain multiple dams and reservoirs on the Trinity River, Trinity River Basin, and an off channel reservoir for recreation purposes. Certificate of Adjudication No. 08-4261 also authorizes the City of Houston divert and use water from three points on the Trinity River, and one point on the Old River for municipal, agricultural and industrial purposes at a maximum combined diversion rate of 3,400 cfs (1,530,000 gpm). Multiple Special Conditions apply; and

WHEREAS, the City of Houston has a concurrent pending application, designated as application No 08-4261A; and

WHEREAS, the Owner requests a correction to Certificate of Adjudication No. 08-4261 to include a fifth diversion point which was inadvertently omitted during the drafting of the Certificate, but was included in the Final Determination and the Final Judgement of the City's adjudication of it's water right; and

WHEREAS, pursuant to 30 Texas Administrative Code § 50.145, the Executive Director, on his own motion or at the request of a permittee, may make a nonsubstantive correction to a permit without formal amendment and public notice procedures to correct a clerical error and to describe more accurately the point of diversion; and

WHEREAS, the Texas Commission on Environmental Quality finds that jurisdiction over the application is established; and

WHEREAS, no requests for a contested case hearing were received for this application; and

WHEREAS, the Commission has complied with the requirements of the Texas Water Code and rules of the Texas Commission on Environmental Quality in issuing this amendment;

NOW, THEREFORE, this amendment to Certificate of Adjudication No. 08-4261 designated Certificate of Adjudication No. 08-4261B, is issued to the City of Houston, subject to the following conditions:

1. DIVERSION

- a) In addition to the previous authorization, Owner is now authorized to divert water from a point on the Trinity River which bears S 48° 19' W, 1109 feet from the northeast corner of the William Whitlock Survey, Abstract No 118, in Liberty County, Texas.
- b) In addition to the previous authorization, Owner is authorized to divert the water from the new diversion point at a maximum rate of 775.0 cfs (348,750 gpm), and a combined maximum diversion rate of 3400.0 cfs (1,530,000 gpm) for all points authorized by the Certificate.

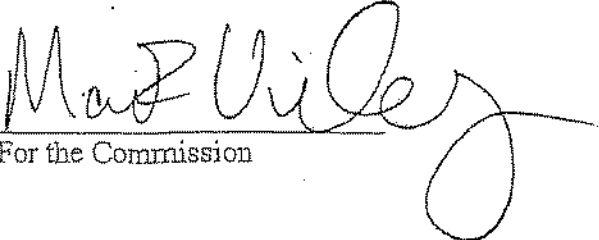
This amendment is issued subject to all terms, conditions and provisions contained in Certificate of Adjudication No. 08-4261, except as specifically amended herein.

This amendment is issued subject to all superior and senior water rights in the Trinity River Basin.

Owner agrees to be bound by the terms, conditions and provisions contained herein and such agreement is a condition precedent to the granting of this amendment.

All other matters requested in the application which are not specifically granted by this amendment are denied.

This amendment is issued subject to the Rules of the Texas Commission on Environmental Quality and to the right of continuing supervision of State water resources exercised by the Commission.


For the Commission

Date issued: MAY 05 2009



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

P.O. Box 13088, MC-160

Austin, Texas 78711-3088

Telephone No. (512) 239-4691 FAX (512) 239-4770

APPLICATION FOR AMENDMENT TO A WATER RIGHT

REQUIRING MAILED AND PUBLISHED NOTICE

NOT REQUIRING MAILED AND PUBLISHED NOTICE

Reference Texas Administrative Code § 295.158(b) or (c)

Notice: This form will not be processed until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ are paid in accordance with the Delinquent Fee and Penalty Protocol.

Customer Reference Number (if issued): CN600128995

Note: If you do not have a Customer Reference Number, complete Section II of the Core Data Form (TCEQ-10400) and submit it with this application.

1. Name: City of Houston c/o Michael S. Marcotte, P.E., D.WRE, BCEE, Director of Public Works & Engineering
Address: 611 Walker, 25th Floor
Houston, TX 77002
Email Address: Fax: (713) 837-0435

2. Applicant owes fees or penalties? NO

If yes, provide the amount and the nature of the fee or penalty as well as any identifying number:

3. [] Permit No. [X] Certificate of Adjudication No. 08-4261

Stream: Trinity River Watershed: Trinity River Basin
Reservoir (present condition, if one exists): Good
County: Trinity

4. Proposed Changes To Water Right Authorizations:

Add additional use for the purpose of hydroelectric power generation - see attached supplemental statement for additional information.

(ATTACH ADDITIONAL PAGE AS NECESSARY, ATTACH MAP/PLAT DEPICTING PROJECT LOCATION, DIVERSION POINT, PLACE OF USE AND OTHER PERTINENT DATA)

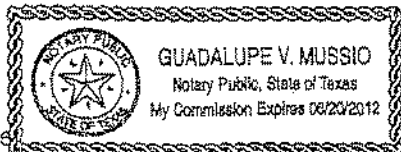
5. I understand the Agency may require additional information in regard to the requested amendment before considering this application.

6. I have partially submitted the required fees herewith. Please calculate any additional required fees and notify us of the amount.

City of Houston

By: [Signature]
Michael Marcotte, P.E., D.WRE, BCEE,
Director of Public Works & Engineering

Subscribed and sworn to me as being true and correct before me this 6th day of February, 2009.



[Signature]
Notary Public, State of Texas

**SUPPLEMENTAL STATEMENT IN SUPPORT OF THE CITY OF HOUSTON'S
APPLICATION TO AMEND CERTIFICATE OF ADJUDICATION 08-4261**

I. OWNER

City of Houston is a municipal corporation, body politic and Home Rule City created and operating pursuant to the Constitution and applicable general laws of the State of Texas. As evidenced by Certificate of Adjudication No. 08-4261, Houston owns the right to store and beneficially use water stored in Lake Livingston Dam and Reservoir on the Trinity River, which was constructed and is operated in cooperation with the Trinity River Authority pursuant to a contract dated September 2, 1964.

II. BACKGROUND

Certificate of Adjudication 08-4261 authorizes Houston, in conjunction with the Trinity River Authority¹ to maintain an existing dam and reservoir (Lake Livingston) on the Trinity River Basin, and impound therein not to exceed 1,750,000 acre-feet of water. Certificate of Adjudication 08-4261 authorizes Houston to divert and use, not to exceed, 898,800 acre-feet of water to use for domestic, municipal, industrial, and agricultural purposes. A copy of Certificate of Adjudication No. 08-4261 is attached hereto as Appendix 1. The Trinity River Authority's rights in Lake Livingston are evidenced by Certificate of Adjudication No. 08-4248.

III. CHANGE PROPOSED

Houston seeks to add non-consumptive hydroelectric power generation as an additional authorized use of the water rights authorized by Certificate of Adjudication No. 08-4261. Hydroelectric power generation will only be conducted when water is released from Lake Livingston for another authorized purpose(s) (e.g., water released from Lake Livingston for downstream use, to meet priority calls, or to pass inflows when the conservation storage of Lake Livingston is full).

IV. REASON FOR CHANGE

Houston and the Trinity River Authority have negotiated a memorandum of understanding with East Texas Electric Cooperative ("ETEC") to generate renewable hydroelectric power at Livingston Dam (the "ETEC MOU"). A copy of the ETEC MOU is attached hereto as Appendix 2.

V. NOTICE

This amendment application is filed pursuant to Section 11.122(b), Texas Water Code. For the reasons set forth below, notwithstanding the Texas Supreme Court's decision in *City of Uncertain v. City of Marshall*, 206 SW3d 97 (Tex. 2006), no notice is required for this amendment. The changes contemplated by this Application, when granted, will not have any

¹ The Trinity River Authority is filing a complimentary application to amend Certificate of Adjudication No. 08-4248 to seek authorization to use the waters released from Lake Livingston for hydroelectric power purposes.

increased impact on downstream water right holders or the environment greater than the existing impact of currently authorized operations under Certificate of Adjudication 08-4261, as it exists prior to this amendment. Moreover, there are no public welfare issues associated with this amendment, nor is there any requirement for this type of amendment to be considered in the applicable water plans. The proposed amendment will not have any effect on groundwater resources as the generation of hydroelectric power will be wholly ancillary to existing releases from Lake Livingston. Finally, Houston has an approved water conservation and drought management plan, a copy of which is attached hereto as Appendix 3. The City's analysis of the *Marshall* decision is discussed in greater detail below.

On June 9, 2006, the Texas Supreme Court ruled on the issue of whether notice and an opportunity for hearing are required when a proposed water right amendment filed pursuant to Section 11.122(b), Texas Water Code, requests to add or change purposes of use, but does not seek to increase the amount of water diverted or the rate at which such water is diverted. See *Marshall, supra*. Although the *Marshall* Court did conclude that the "full-use assumption" was intended to limit the TCEQ's evaluation, the Court found that TCEQ, when issuing a water right amendment, cannot limit its evaluation to whether the requested change adversely impacts other water right holders or the environment. The Court concluded that TCEQ must also assess several "limited public interest criteria" in determining whether to issue notice on an application to amend a water right filed under Section 11.122(b). Such criteria include those found in Texas Water Code, Section 11.134(b) that are not 1) specifically identified in Section 11.122(b) (*i.e.*, ". . . that the requested change does not adversely impact other water rights holders or the on-stream environment any more than would full use of the permitted right"), or 2) those criteria that are inapplicable to the proposed water right amendment.

For a water right amendment that does not seek to increase the amount or rate of diversion, the *Marshall* Court concluded that the "other applicable requirements" of Chapter 11 to which Section 11.122(b) refers include: 1) whether the application conforms with the agency's administrative requirements; 2) whether the amendment is intended for a beneficial use; 3) whether the amendment is not detrimental to the public welfare; 4) the effects, if any, of the application on groundwater or groundwater recharge; 5) whether the amendment is consistent with the state water plan and regional water plan; and, 6) whether the applicant has provided evidence that reasonable diligence will be used to avoid waste and achieve water conservation. In its decision, the *Marshall* Court indicated that TCEQ should be able to determine "from the face of a proposed amendment" whether these criteria are met or "are not implicated by a particular amendment application," in which event a contested case hearing is not necessary.

The Court did not require TCEQ to issue notice or provide an opportunity for a contested case hearing if, in its review of an application, the agency could determine "from the face of a proposed amendment" that such criteria had been met or were not implicated by the amendment. For the reasons set forth below, including the full-use assumption, the City believes that the Commission can issue the City's proposed amendment to authorize hydroelectric power as a purpose of use to Certificate of Adjudication No. 08-4261 without notice pursuant to TCEQ regulations at 30 TAC § 295.158(c) and in compliance with the direction of the Supreme Court in *Marshall*. The information set forth below supports this conclusion:

A. Applicant Information

Name of Applicant The City of Houston
Address: 611 Walker, 25th Floor
Houston, Texas 77002
Principal Contact: Michael Marcotte, P.E., D.WRE, BCEE, Director of Public
Works & Engineering
Telephone: (713) 837-0448
Fax: (713) 837-0435

B. Administrative Requirements and Fees

This Application, including the attachments hereto, provides relevant information to address the pertinent requirements of Texas law, including by way of example administrative requirements of 30 TAC § 295, Subchapter A and the requirements of Texas Water Code Chapter 11, necessary to amend the Certificate pursuant to Section 11.122(b), Texas Water Code.

In accordance with 30 TAC § 295.131 and subsequent rules relating to fees, the City is enclosing Check No. 6433 payable to TCEQ in the amount of \$125.00 in payment of the application fee and preliminary estimated recording fees. The City requests TCEQ to determine any additional information or fees that may be required. Upon receipt of such determination, the City will forward such additional information and fees to the Commission, as may be requested.

C. Beneficial Use

Section 11.134(b)(3)(A), Texas Water Code, requires that proposed appropriations of water be intended for a beneficial use. The "beneficial use" of water is defined in Section 11.002(4), Texas Water Code, and 30 TAC § 297.1(8), as the use of water "which is economically necessary for a purpose authorized by [Chapter 11 of the Texas Water Code]." The use of water for hydroelectric power generation purposes is identified in both Section 11.023(a)(4) and 11.024(4), Texas Water Code, as a purpose for which water may be diverted and beneficially used. Hydropower use is defined in 30 TAC § 297.1(23) as "the use of water for hydroelectric and hydromechanical power and for other mechanical devices of like nature."

The City intends for its hydroelectric power generation use of the existing water authorized by Certificate of Adjudication No. 08-4261 to be secondary and, in fact, purely an incidental by-product to its existing authorized diversions and releases for municipal, industrial and irrigation purposes. Specifically, hydroelectric power generation use will only occur when the City releases water from Lake Livingston for its existing downstream uses or to meet other requirements of the terms and conditions of the Certificate and/or Texas law. The City does not anticipate modifying its schedule for releases and/or its downstream usage patterns either to accommodate or facilitate the requested hydroelectric power generation use.

By utilizing its existing water rights to facilitate hydroelectric power generation the City is assisting in the creation of a beneficial renewable energy source and receiving some compensation capable of being used to offset the City's overall operations costs at no additional cost to its customers or taxpayers. The City's proposed amendment will simply enhance the City's ability to make more efficient non-consumptive beneficial use of the water authorized for

diversion under Certificate of Adjudication No. 08-4261. Thus, for both economic and conservation purposes, it is beneficial and necessary for the City to secure the requested hydroelectric power generation use authorization.

D. Public Welfare

As discussed above, the proposed amendment will enhance the City's ability to continue to provide water for beneficial use purposes, as defined under the Texas Water Code. Such action is consistent with the City's intent to protect the public welfare, and will certainly not be detrimental to the public welfare, as is addressed by Texas Water Code Section 11.134(b)(3)(C). The proposed amendment will benefit the public welfare by improving the City's ability to more effectively and efficiently utilize its existing water supplies to address multiple demands for water, including non-consumptive use of water to create a renewable, lower cost energy source with less environmental impacts to other natural resources, *i.e.*, our air supply in a region of the state already under a State Improvement Plan ("SIP") for air attainment, as well as generate revenues to off-set customer costs.

The non-consumptive use of non-potable water to generate electricity as a renewable energy source at no cost to the City's water ratepayers and, in fact, at a profit provides a benefit to the public. Additionally, the City's proposed amendment will not result in environmental impacts, as water will continue to be diverted and utilized within the confines of Certificate of Adjudication No. 08-4261's existing amount, diversion point, rate of diversion, and pattern of diversions. The City's proposed addition of hydroelectric power generation use authorization under its existing water right will not result in the diversion or consumption of any additional water supplies, but will allow the City to maximize the efficient beneficial use of its existing water supplies. As discussed, by this amendment the City is not seeking to increase either its authorized amount of diversions or the rate at which water will be diverted. Thus, based upon the above-outlined reasons, the proposed amendment is not detrimental to the public welfare.

E. Effects on Groundwater or Groundwater Recharge

There is no significant connection, if any, between groundwater resources or groundwater recharge and the City's diversion of water for currently authorized purposes from Lake Livingston. Simply adding a non-consumptive hydroelectric power generation purpose of use to the City's existing water right, without changing the volume of water proposed to be diverted, the location, or the rate at which water is diverted from Lake Livingston, will have no effect on groundwater resources or groundwater recharge to any greater degree than would the City's existing use of water. Water will continue to be released in the same volumes and usage patterns to meet the City's existing needs as it historically has been. The only change to Certificate of Adjudication No. 08-4261 is the addition of the beneficial non-consumptive use of the water for hydroelectric power generation as water is released from the dam. Thus, groundwater resources and groundwater recharge are not implicated by this particular amendment Application.

F. Consistency with State and Regional Water Plans

The City's proposed amendment to add an additional non-consumptive use to its existing authorization is consistent with applicable water plans. The purpose of this amendment is to enable the City to enhance its efficient use of the state water authorized by Certificate of Adjudication No. 08-4261. The City's amended water right will continue to be available to meet

the demand projections found in the State and Regional Water Plans just as it was prior to granting the amendment.

G. Water Conservation, Drought Contingency and Avoidance of Waste

The City's water conservation and drought contingency plans have been reviewed and revised by its consulting engineers and such revised plans were formally amended by the City. These plans include provisions that allow the City to enforce conservation of supplies on customers, thereby reducing the consumption of water, and the loss or waste of water, so that a water supply is made available for future or alternative uses. The City's drought contingency plan is applicable to all consumptive users. As noted above, the request to add a non-consumptive use of the City's existing water rights enhances the beneficial use, as well as conservation of those water rights. There is no need for the City to amend its plan to specifically address the addition of the proposed non-consumptive hydroelectric power generation use, which will be ancillary and secondary to the existing ongoing uses.

As defined in both 30 TAC § 295.9 and Texas Water Code § 11.002(8), "conservation" means those practices that will "reduce the consumption of water, reduce the loss or waste of water, *improve the efficiency in the use of water*, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses." [Emphasis added]. The City has an acute awareness of the need to conserve its water supplies. By amending Certificate of Adjudication No. 08-4261 to allow for non-consumptive hydroelectric power generation purposes in addition to industrial and municipal purposes, the City is more efficiently and effectively utilizing its water supplies. Such efficiency, along with the City's water conservation and drought contingency plans, will allow the City to address its water supply needs in a manner that will allow it to avoid waste and achieve water conservation.

H. Impacts on Other Water Rights Holders or the On-Stream Environment

1. The Full-Use Assumption

The City's proposed amendment to add a non-consumptive beneficial purpose of use *e.g.*, hydroelectric power generation, to Certificate of Adjudication No. 08-4261 will not have an impact on other water right holders or the on-stream environment on the Trinity River. Unless provided otherwise in a water right, there is no restriction against full consumption of water properly authorized for diversion by the state. The City is currently authorized to divert and fully consume up to 898,800 acre-feet of water per annum pursuant to Certificate of Adjudication No. 08-4261, and pursuant to Texas Water Code § 11.046(c), which provides that water authorized for diversion can be "beneficially used and reused" without limit. While TCEQ has issued some water rights that require a certain percentage of return flows to the basin of origin, or an express limitation on consumption, the City's Certificate of Adjudication No. 08-4261 contains no such restriction.

In this instance, the proposed additional beneficial non-consumptive use of the water for hydroelectric power generation incident to releases from Lake Livingston for existing authorized beneficial uses will not result in the consumption of the water. Accordingly, the City's use of a portion of its 898,800 acre-feet of water rights for hydroelectric power generation purposes will not cause an adverse impact on other water rights holders or the on-stream environment because of the non-consumptive nature of the use. Even assuming that hydroelectric power generation

was a consumptive beneficial use, the impact of such use would not be of a greater magnitude than if the City fully exercised its rights as currently authorized in Certificate of Adjudication No. 08-4261. By employing the Water Code's "full use assumption," there is no circumstance under which either downstream water rights or the environment will be harmed by the City's proposed non-consumptive use amendment.

The City does not seek to move or add a diversion point, increase the rate at which it diverts water, alter the patterns of its usage, or increase the amount of water the City is currently authorized to divert and fully consume in order to use the water for the proposed hydroelectric power generation purposes. The City merely seeks to add a non-consumptive purpose of use to Certificate of Adjudication No. 08-4261 so that the City will have the ability to provide ETEC the opportunity to produce a renewable, environmentally friendly energy resource. Accordingly, there will be no adverse impact.

2. Impacts "Beyond or Irrespective" of the Full-Use Assumption

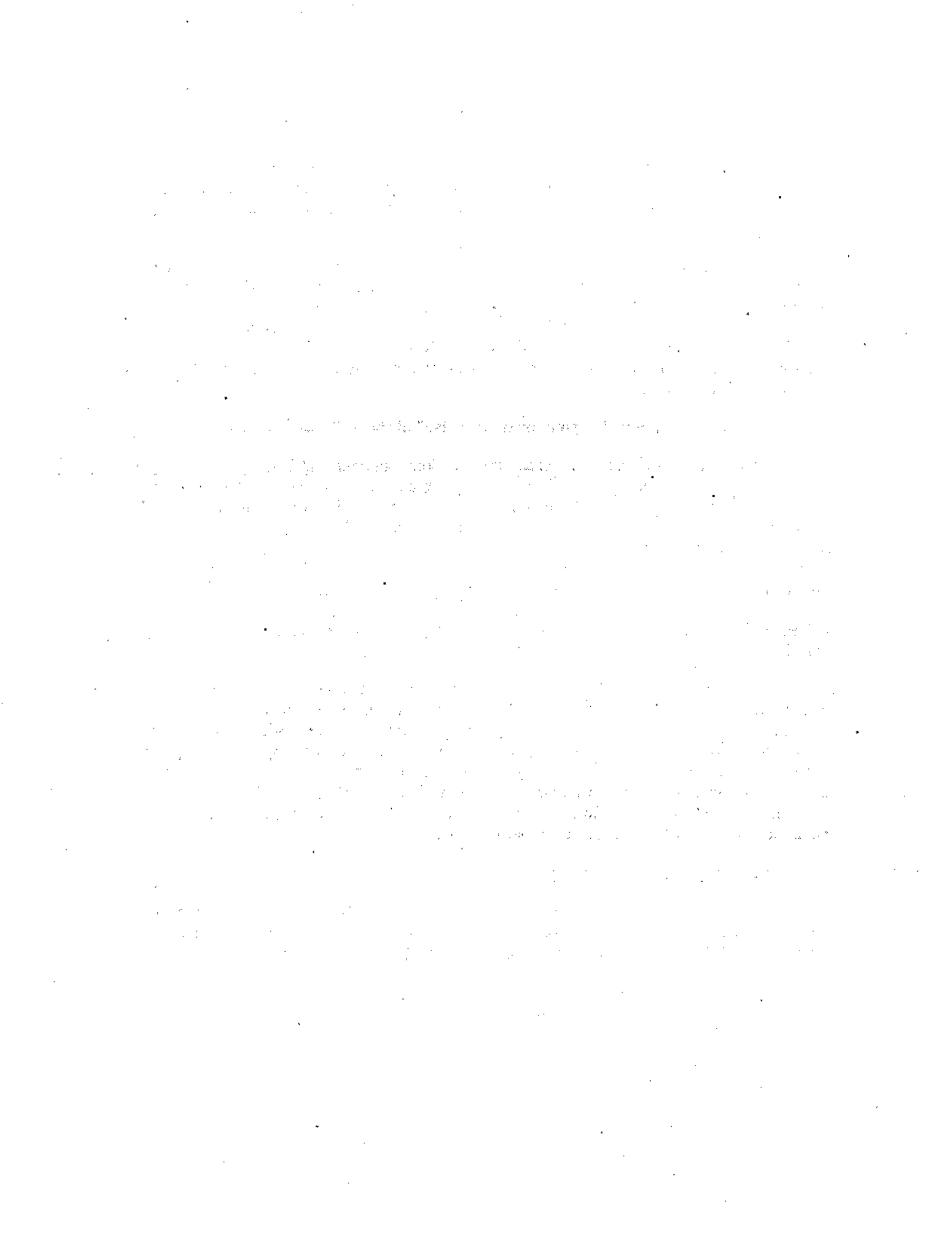
In its *Marshall* decision, the Texas Supreme Court suggests that TCEQ must evaluate whether a proposed amendment will affect other water-rights holders or the on-stream environment "beyond or irrespective" of the full-use assumption. The Court provides that such an affect may occur with applications seeking to move the point of diversion "upstream above a senior right holder," or seeking to change the purpose of use from a "nonconsumptive use to a consumptive one." The City's Application seeks neither of these types of amendments and, in light of the absence of a change in a diversion point and the non-consumptive nature of the proposed additional use, the amendment on its face will not affect or impact other water right holders or the environment even as much as the legislatively mandated full-use assumption right would.

The City's water right currently includes an authorization to divert, without any limitation or condition on consumption, up to 898,800 acre-feet of water per annum under a municipal purpose of use authorization. The City's proposed amendment seeks only to add (not to change) a non-consumptive hydroelectric power purpose of use. The addition of a hydroelectric power generation purpose of use does not in any way alter the amount of water the City is already authorized to consume under its water right. Again, with its Application, the City merely seeks the ability to enhance the efficient beneficial use of its water supply within the current parameters of Certificate of Adjudication No. 08-4261.

IV. Additional Information

To the extent additional information regarding the City's proposed amendment to Certificate of Adjudication No. 08-4261 is required, please contact the City's water rights attorney, Ed McCarthy. Mr. McCarthy can be reached in Austin, Texas at the following:

Edmond R. McCarthy, Jr.
Jackson, Sjoberg, McCarthy & Wilson, LLP
711 W. 7th Street
Austin, Texas 78701
Tel: (512) 225-5606
Fax: (512) 225-5565
emccarthy@jacksonsjoberg.com



Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 7, 2009

Edmond R. McCarthy, Jr
Jackson, Sjoberg, McCarthy & Wilson, LLP
711 W. 7th Street
Austin, Texas 78701-3503

CERTIFIED MAIL

RE: City of Houston
ADJ 4261
CN600128995, RN105645519
Application No. 08-4261A to Amend Certificate of Adjudication No. 08-4261
TWC §11.122
Old River, Tributary of the Trinity River, Trinity River Basin,
Harris, Polk, Liberty, Chambers, Trinity, and San Jacinto Counties

Dear Mr. McCarthy:

This acknowledges receipt, on February 12, 2009, of the referenced application and fees in the amount of \$125.00 (receipt No. R918015 enclosed).

The Commission is reviewing notice requirements for water right amendment applications pursuant to Texas Water Code (TWC) §11.122(b). On Friday, January 18, 2008, the Commission decided that in order to determine if an amendment application requires notice, staff must consider how an application addresses the relevant public interest criteria described in TWC §11.134 and outlined by the Texas Supreme Court in the case of *Marshall v. Uncertain* as well as how the proposed amendment will or will not impact water right holders or the environment beyond and irrespective of the fact that the water right can be used to its full authorized amount.

Therefore, staff is requesting responses to Items 1-7 below. In lieu of providing responses, the applicant may agree to the issuance of published notice and mailed notice to the water right holders of recorder in the Trinity River Basin.

Staff acknowledges that the applicant addressed or partially addressed Items 1-7 in the application submitted. Please confirm whether the applicant chooses to supplement its previous response

If you elect to proceed without agreeing to published and mailed notice, additional information is required.

1. Confirm whether this application meets the administrative requirements for an amendment to a water use permit pursuant to TWC Chapter 11 and Title 30 Texas Administrative Code (TAC) §§

- 281, 295, and 297. An amendment application should include, but is not limited to, a sworn application, maps, completed conservation plan, fees, etc.
2. Discuss how the proposed amendment is a beneficial use of the water right as defined in TWC §11.002 and listed in TWC §11.023. Identify the specific proposed use of the water (e.g., road construction, hydrostatic testing, etc.) for which the amendment is requested.
 3. Explain how the proposed amendment is not detrimental to the public welfare. Consider any public welfare matters you think might be relevant to a decision on the application. Examples could include concerns related to the well-being of humans and the environment.
 4. Discuss the effects, if any, of the proposed amendment on groundwater or groundwater recharge.
 5. Describe how the proposed amendment addresses a water supply need in a manner that is consistent with the state water plan or the applicable approved regional water plan for any area in which the proposed appropriation is located or, in the alternative, describe conditions that warrant a waiver of this requirement. The state and regional water plans are available for download at this website: http://www.twdb.state.tx.us/RWPG/planning_page.asp.
 6. Provide evidence that reasonable diligence will be used to avoid waste and achieve water conservation as defined in TWC §11.002. Examples of evidence could include, but are not limited to, a water conservation plan or, if required, a drought contingency plan, meeting the requirements of 30 TAC §288.
 7. Explain how the proposed amendment will or will not impact water right holders or the environment beyond and irrespective of the fact that the water right can be used to its full authorized amount.

The responses will be reviewed by the Executive Director's staff to make a determination of the application's notice requirement. The staff-recommended notice determination may then be set on Commissioner's Agenda for consideration. In lieu of responding to Items 1-7 above, the applicant may agree to published notice and mailed notice to the water right holders of record in the Trinity River Basin.

If you elect to proceed with published notice and mailed notice, please remit fees in the amount of \$451.86 described below.

Filing Fee	\$ 100.00
Recording Fee	\$ 1.25
<u>Notice Fee (Trinity River Basin)*</u>	<u>\$ 475.64</u>
TOTAL FEES DUE	\$ 576.89
FEES PAID	\$ 125.00
BALANCE DUE	\$ 451.86

City of Houston
Application 08-4261A
April 7, 2009
Page 3 of 3

(*If you elect not to proceed with published notice and mailed notice and have provide a response to items 1-7 listed above, no additional fees are required)

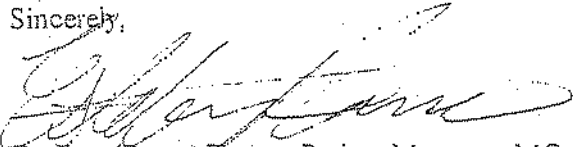
In addition to the information and fees requested above the following information is required before the application can be declared administratively complete.

8. Verify that the application is requesting to add hydroelectric power generation to 892,800 acre-feet authorized under Certificate of Adjudication 08-4261. Page 2 of the application states that the water right authorizes the City of Houston to divert and use 898,800 acre-feet for domestic, municipal, industrial, and agricultural purposes.
9. Submit documentation evidencing that Michael Marcotte has the authority to sign for the City of Houston pursuant to Title 30 Texas Administrative Code (TAC) §295.14 (copy enclosed).
10. Confirm that the applicant is only requesting to add hydroelectric to the water released from Lake Livingston.

Please provide the requested information and fees is applicable by **May 7, 2009**, or the application may be returned pursuant to 30 TAC §281.18.

If you have any questions concerning this matter, please contact me at (512) 239-6538 or by e-mail at sramos@tceq.state.tx.us.

Sincerely,



Esteban (Steve) Ramos, Project Manager, MC-160
Water Rights Permitting Team
Water Rights Permitting & Availability Section

Enclosures



LAW OFFICES OF

JACKSON, SJOBERG, MCCARTHY & WILSON, L.L.P.

711 WEST 7TH STREET
AUSTIN, TEXAS 78701-2785

(512) 472-7600
FAX (512) 225-5565

DAVID E. JACKSON*
JOHN MATTHEW SJOBERG*
EDMOND R. MCCARTHY, JR.
ROBERT WILSON

SHERIDAN L. GILKERSON
ELIZABETH A. TOWNSEND†
OF COUNSEL

†LICENSED IN TEXAS AND
TENNESSEE

*BOARD CERTIFIED IN OIL,
GAS AND MINERAL LAW
TEXAS BOARD OF LEGAL SPECIALIZATION

May 7, 2009

Mr. Steve Ramos (MC-160)
Application Manager
Water Rights Permitting Team
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Via E-mail & Regular Mail

Re: City of Houston
ADJ 4261
CN600128995, RN105645519
Application No. 08-4261A to Amend Certificate of Adjudication No. 08-4261
TWC § 11.122
Old River, Tributary of the Trinity River, Trinity River Basin,
Harris, Polk, Liberty, Chambers, Trinity, and San Jacinto Counties

Dear Steve:

I am writing in response to your letter of April 7, 2009, requesting additional information in support of the above-referenced Application. For the sake of clarity, I have grouped your questions into two groups: (i) questions related to the Commission's analysis of whether "notice" should be published pursuant to the *Marshall* decision, and (ii) other information the Commission wants to review as part of the processing of the Application. Accordingly, your questions, as grouped, are restated below and individually answered.

I. Marshall Questions

The answers to the seven *Marshall* questions are intended to supplement the information already provided to the Commission as part of the City's amendment application in connection with the *Marshall* issues:

1. Confirm whether this application meets the administrative requirements for an amendment to a water use permit pursuant to TWC Chapter 11 and Title 30 Texas Administrative Code (TAC) §§ 281, 295, and 297. An amendment application should include, but is not limited to, a sworn application, maps, completed conservation plan, fees, etc.

Response: The Applicant believes that the Application, as filed and supplemented herein, meets the applicable administrative requirements set forth above for an amendment to a water use permit pursuant to Chapter 11 of the Texas Water Code and Title 30 of the Texas Administrative Code (TAC) §§ 281, 295, and 297, which includes a sworn application, resolution, maps, conservation plan, and fees.

2. Discuss how the proposed amendment is a beneficial use of the water right as defined in TWC §11.002 and listed in TWC §11.023. Identify the specific proposed use of the water (e.g., road construction, hydrostatic testing, etc.) for which the amendment is requested.

Response: Certificate of Adjudication No. 08-4261, as amended, authorizes City to divert and use amounts of water as specified therein for domestic, municipal, industrial, and agricultural purposes. The City seeks to add hydroelectric generation as an additional use of Certificate of Adjudication No. 08-4261, as amended. "Hydropower use" is defined as "[t]he use of water for hydroelectric and hydromechanical power for other mechanical devices of like nature." 30 Tex. Admin. Code §297.1(23) (2008) (Tex Comm'n on Envtl. Quality, Water Rights, Substantive).

The Texas Water Code requires that TCEQ grant an application only if the proposed appropriation "is intended for a beneficial use." TEX. WATER CODE § 11.134(b)(3)(A) (Vernon 2008). "Beneficial use" of water is defined as "use of the amount of water which is economically necessary for a purpose authorized" by Chapter 11 of the Texas Water Code. TEX. WATER CODE §11.002(4) (Vernon 2008). Use of water for hydroelectric power has been recognized as a beneficial use. See TEX. WATER CODE §11.024(4) (Vernon 2008).

3. Explain how the proposed amendment is not detrimental to the public welfare. Consider any public welfare matters you think might be relevant to a decision on the application. Examples could include concerns related to the well-being of humans and the environment.

Response: The Texas Water Code requires that TCEQ grant an application only if the proposed appropriation "is not detrimental to the public welfare." TEX. WATER CODE §11.134(b)(3)(C) (Vernon 2008). The City's amendment to Certificate of Adjudication No. 08-4261 to add hydroelectric generation as an additional use will not be detrimental to the public welfare. In fact, the proposed amendment will actually benefit the public welfare by allowing the City to more efficiently and effectively utilize the existing water supply. This addition of a new non-consumptive use for this water will create a renewable, beneficial, lower cost energy source with less environmental impacts to other natural resources. A renewable energy source achieved through a non-consumptive use of non-potable water is beneficial to the public welfare. There will be no changes to the existing amount, diversion point, rate of diversion, and pattern of diversions in Certificate

of Adjudication No. 08-4261, as amended; therefore, the proposed amendment will not result in environmental impacts that will be detrimental to the public welfare.

4. Discuss the effects, if any, of the proposed amendment on groundwater or groundwater recharge.

Response: The proposed amendment will not change the volume of water released, the diversion point, the rate of diversion, or usage patterns in Certificate of Adjudication No. 08-4261, as amended; therefore, the proposed amendment will have no effect on groundwater or groundwater recharge. Adding hydroelectric power, a non-consumptive use, as a purpose of use to the City's water right will have no effect on groundwater resources or groundwater recharge to any greater degree than would the City's existing use of water. Groundwater resources and groundwater recharge are not affected by this amendment application.

5. Describe how the proposed amendment addresses a water supply need in a manner that is consistent with the state water plan or the applicable approved regional water plan for any area in which the proposed appropriation is located or, in the alternative, describe conditions that warrant a waiver of this requirement. The state and regional water plans are available for download at this website: http://www.twdb.state.tx.us/RWPG/planning_page.asp.

Response: The City's proposed amendment is consistent with the applicable state and regional water plans. This amendment will enable the City to more efficiency and effectively use the state water authorized by Certificate of Adjudication No. 08-4261, as amended. The proposed amendment will not affect issues involving water supply. The City's water right will still be available to meet demand projections found in the state and regional water plans just as it was prior to this proposed amendment.

6. Provide evidence that reasonable diligence will be used to avoid waste and achieve water conservation as defined in TWC §11.002. Examples of evidence could include, but are not limited to, a water conservation plan or, if required, a drought contingency plan, meeting the requirements of 30 TAC §288.

Response: The City will continue to use reasonable diligence to avoid waste and achieve water conservation if this proposed amendment is granted. "Conservation" is defined as "the development of water resources" and "those practices, techniques, and technologies that will...improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses." TEX. WATER CODE § 11.002(8) (Vernon 2008). This amendment to Certificate of Adjudication No. 08-4261 will add hydroelectric generation as an additional use, allowing the City to make more efficient use of the water already authorized under Certificate of Adjudication No.

08-4261, as amended. This increased efficiency, along with the City's current water conservation and drought contingency plans, will allow the City to address its water supply needs in a way that avoids waste and achieves water conservation.

The City's current water conservation and drought contingency plans include provisions that allow the City to enforce conservation measures on customers, thereby reducing the consumption of water, and the loss or waste of water, so that a water supply is made available for future or alternative uses. The City's water conservation and drought contingency plan have been submitted as a part of this amendment application. There is no need for the City to amend its plan because hydroelectric power use is a non-consumptive use; the City's drought contingency plan is applicable to all consumptive uses, and was recently updated and adopted. Additionally, as noted above, this hydroelectric power use enhances the beneficial use of the City's existing water right, as well as conservation of those water rights.

7. Explain how the proposed amendment will or will not impact water right holders or the environment beyond and irrespective of the fact that the water right can be used to its full authorized amount.

Response: This application does not seek to increase either the amount or rate of water that can be diverted pursuant to the Certificate as amended, nor does it seek to improve the priority of the water right. Accordingly, the City's proposed amendment to add hydroelectric generation as an additional use to Certificate of Adjudication No. 08-4261, as amended, will not have an impact on other water right holders or the on-stream environment on the Trinity River. Approving hydroelectric generation as an additional use to the City's water right will not result in the consumption of water; therefore, this will not cause an adverse impact on other water right holders or the on-stream environment. By this amendment, the City does not seek to move the point of diversion "upstream above senior right holder," or change the purpose of use from a "non-consumptive use to a consumptive one," as discussed in the *City of Marshall v. City of Uncertain* decision. The City merely seeks to add a non-consumptive purpose of use to Certificate of Adjudication No. 08-4261, as amended. This will only enhance the efficient use of the water supply within the current parameters of Certificate of Adjudication No. 08-4261, as amended.

II. Additional Questions:

1. If the applicant elects to proceed with published and mailed notice, please remit fees in the amount of \$451.86, described below:

Filing Fee	\$ 100.00
Recording Fee	\$ 1.25
<u>Notice Fee (Trinity River Basin)*</u>	\$ 475.64
TOTAL FEES DUE	\$ 576.89
FEES PAID	\$ 125.00
BALANCE DUE	\$ 451.86*

* If you elect not to proceed with published notice and mailed notice and have provided a response to items 1-7 listed above, no additional fees are required).

Response: Pending the Commission's analysis to the responses set forth above to the "Marshall Questions" and a ruling on whether notice is required, the Applicant has elected not to remit that portion of the additional fees related to such notice.

2. Verify that the application is requesting to add hydroelectric power generation to 892,800 acre-feet authorized under Certificate of Adjudication 08-4261. Page 2 of the application states that the water right authorizes the City of Houston to divert and use 898,800 acre-feet for domestic, municipal, industrial, and agricultural purposes.

Response: The City intends to use all of the water currently authorized for appropriation from Lake Livingston released through the Livingston Dam pursuant to its Certificate of Adjudication No. 08-4261 for the additional non-consumptive purpose of hydroelectric generation at the time it is released from the Livingston Dam.

3. Submit documentation evidencing that Michael Marcotte has the authority to sign for the City of Houston pursuant to Title 30 Texas Administrative Code (TAC) §295.14 (copy enclosed).

Response: Appended hereto as Attachment "A" is a copy of the City Public Works & Engineering Department's ("PWE") request for Council Action to authorize the Director of PWE to execute water rights applications on behalf of the City pursuant to 30 TAC §295.14. As evidenced by the copy of the January 8, 2009, City Council Agenda appended hereto as Attachment "B," this matter was Item No. 3 on the Consent Agenda and was passed pursuant to Motion No. 2009-0026.

4. Confirm that the applicant is only requesting to add hydroelectric to the water released from Lake Livingston.

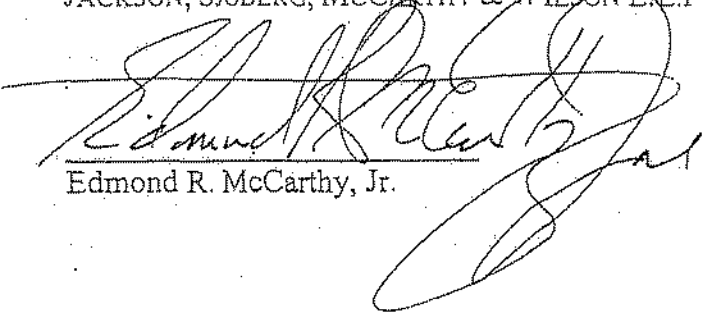
Response: The City is only requesting to add hydroelectric to the water released from Lake Livingston.

May 7, 2009
Page 6

Please let me know if you have any questions about the information provided herein, or need any additional information in order to determine the Application to be Administratively Complete. Thanks for your assistance. Best wishes.

Sincerely,

JACKSON, SJOBERG, MCCARTHY & WILSON L.L.P.



Edmond R. McCarthy, Jr.

ERM/tn
Enclosures

cc: City of Houston
Attn: Jun Chang, Interim Deputy Director, PWE

STATE OF TEXAS

§
§
§

COUNTY OF Harris

SITE CERTIFICATE

Donald Ripley

Before me, the undersigned notary, on this day personally appeared _____, a person whose identify is known to me or who has presented to me a satisfactory proof of identity. After I administered an oath, this person swore to the following:

Donald Ripley

- (1) My name is _____. I am over 18 years of age and I am of sound mind, and capable of swearing to the facts contained in this Site Certificate. The facts stated in this certificate are within my personal knowledge and are true and correct.
Coastal Water Authority
- (2) I am an authorized representative of _____, an entity that has filed an application for financial assistance with the Texas Water Development Board for a (water) (wastewater) project.

LEGAL CERTIFICATION – OWNERSHIP INTEREST

This is to certify that Coastal Water Authority
(Legal Name of Applicant, i.e., City, District, etc.)

has acquired or is in the process of acquiring the necessary real property interest, as evidenced by fee simple purchase or fully executed earnest money contracts, firm option agreements to purchase the subject property or the initiation of eminent domain procedures, that such acquisition will guarantee access and egress and such interest will contain the necessary easements, rights of way or unrestricted use as is required for the project being financed by the Texas Water Development Board. The legal description is referenced below:

See Attachments

(Location and Description of Property Interests acquired for Project)

Any deeds or other instruments required to be recorded to protect the title(s) held by Coastal Water Authority

(Legal Name of Applicant)

have been recorded or filed for the record in the County deed records or other required location.

LEGAL CERTIFICATION – LEASE/CONTRACT

In the alternative, I certify that _____
(Legal Name of Applicant, i.e., City, District, etc.)

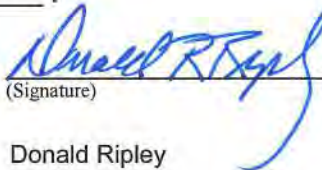
has executed a written lease or other contractual agreement to use the property needed for this (water) (wastewater) project that extends through _____, the life of the Texas Water Development Board loan or grant that will be used to finance this project, either in whole or in part. A copy of this lease or agreement is attached hereto.

LEGAL CERTIFICATION – PROPERTY EASEMENT

In the alternative, I certify that _____
(Legal Name of Applicant, i.e., City, District, etc.)

has executed an express easement to use the property needed for this (water) (wastewater) project that extends through _____, the life of the Texas Water Development Board loan or grant that will be used to finance this project, either in whole or in part. A copy of the express easement agreement is attached hereto.

EXECUTED this 1st day of June, 2015.



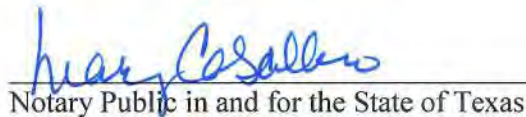
(Signature)

Donald Ripley
(Print Name)

Executive Director
(Title)

Sworn to and subscribed before me by Donald Ripley on June 1, 2015.





Notary Public in and for the State of Texas

My Commission expires: 08-23-2018

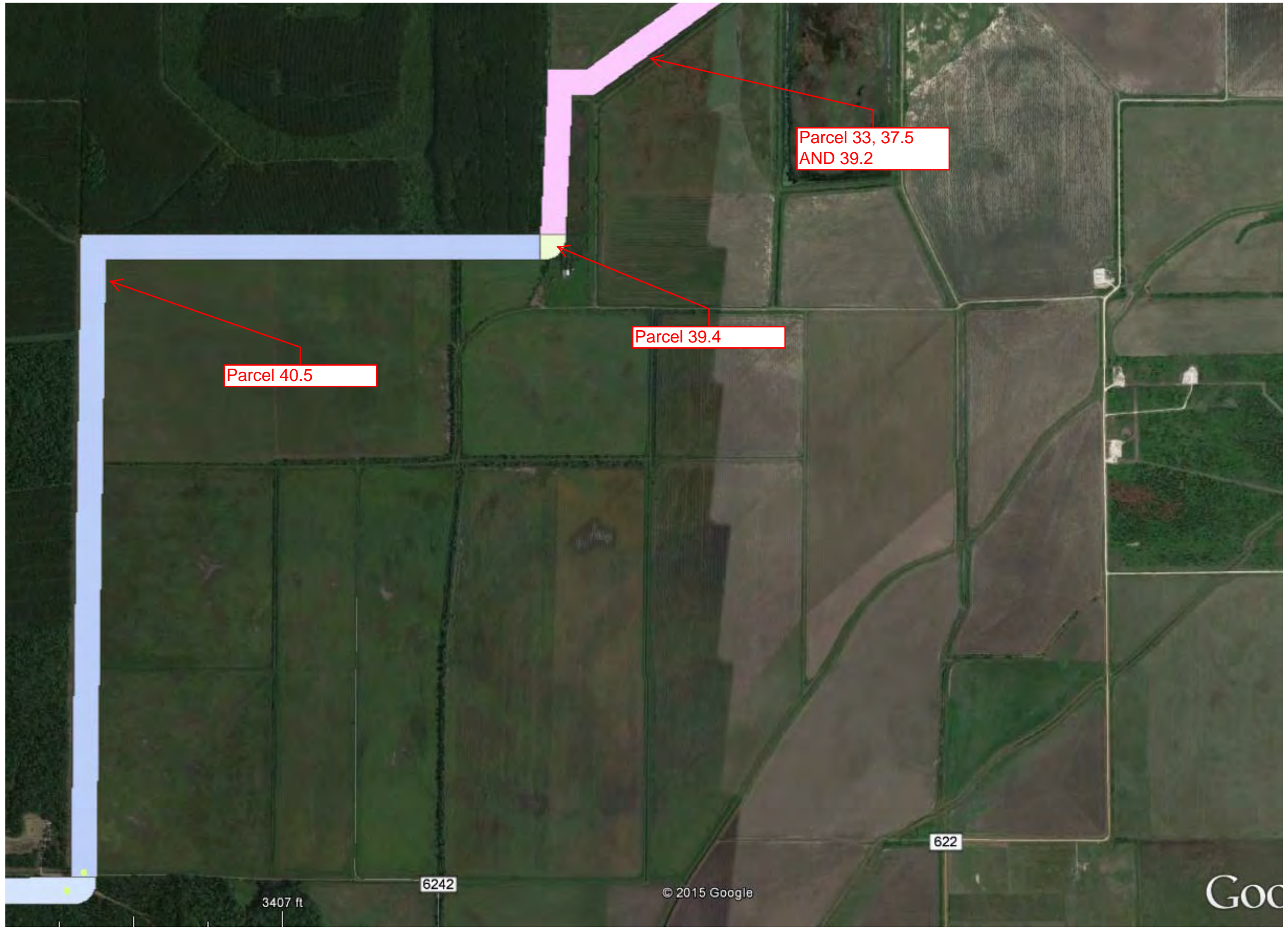
Parcel ID	Property Seller	Acres Acquired	Date Acquired
1	CITY OF HOUSTON	90.52	3/15/10
2	SHIRLEY & SONS CONSTRUCTION COMPANY, INC.	19.35	4/30/10
3	FORESTLAND ESTATES INC.	841.80	1/6/10
3.25	DAVID C. HARRISON & KAREN JEAN HARRISON (Pro Forma)	2.99	3/31/11
3.5	David Curtis Harrison, Walter D. Harrison, Jr., Margaret Loreen Mullinn Harrison, Forestland Estates, Inc., Mustang Pipeline Company, Chevron U.S.A., Inc., and Panola Pipeline Company, L.L.C.	72.51	1/6/10
4	FOREST PRIMEVAL INC., Forestland Estates, Inc., and Shirley & Sons Construction Co. Inc..	1,175.40	1/15/10
4.5	CAPERS RIDGE RANCES, LLC, Forestland Estates, Inc., Forest Primeval, Inc., Shirley & Sons Construction Co., Inc., Georgie A. Philp, and David R. Barta.	1,048.10	1/6/10
6	FLOYD H. PAGE, GAIL C. PAGE, Sam Houston Electric Cooperative Inc., Big Thicket Timberlands, L.P., Valley Oak Investments, L.P., Catherine B. Taylor, Helen Buchanan Davis and Hannah Davis Cutshall Co-Independent Executrices of the Estate of Wirt Davis, Deceased, Camilla R. Blaffer (aka Camilla B. Mallard) Co- Trustee of the Camilla B. Mallard Trust and Texas Gulf Bank, N.A. Co-Trustee fo the Camilla B. Mallard Trust, Bessemer Trust Company Co-Trustee for the Joan B. Johnson Trust and John B. Johnson Co-Trustee fo the Joan B. Johnson Trust, The Estate of Charles W. Hair, Jr., and Sam Houston Electric.	35.03	8/18/11
7 & 8	BIG THICKET TIMBERLANDS LP, VALLEY OAK INVESTMENTS LP, CATHERINE B. TAYLOR, HELEN BUCHANAN DAVIS & HANNAH DAVIS CUTSHALL CO-INDEPENDENT EXECUTRICES OF THE ESTATE OF WIRT DAVIS II, DECEASED, CAMILLA R. BLAFFER (ALSO KNOWN AS CAMILLA MALLARD) CO-TRUSTEE OF THE CAMILLA B. MALLARD TRUST AND TEXAS GULF BANK NA, CO-TRUSTEE OF THE CAMILLA B. MALLARD TRUST, AND BESSEMER TRUST COMPANY CO-TRUSTEE FOR THE JOAN B. JOHNSON TRUST AND JOAN B. JOHNSON CO-TRUSTEE OF THE JOAN B. JOHNSON TRUST, FLOYD H. PAGE, GAIL C. PAGE, HOWARD D. CROFT, H&W CONSTRUCTION INC. AND PDB PROPERTIES LTD.	80.00	9/28/11
9	JOE A. ROLKE, MARSHALL M. ROLKE, HARRY RANDOLPH GRIMES, ROSA W. ROLKE, INDIVIDUALLY AND AS SUCCESSOR TRUSTEE OF THE RANDOLPH ALBERT ROLKE AND ROSA W. ROLKE TRUST, KATHRYN U. ROLKE (AKA KATHRYN U. BROWN), ROSEMARY E. KASPRZAK, RANDOLPH J. ROLKE, JOHN M. ROLKE AND ANN A. WARNKE	6.20	12/31/09
10	CORE VALUE LLC	30.09	6/22/11
11	AUCOIN CARL EDWIN JR, Liberty County Tax Assessor-Collector, and Dayton Independent School District.	0.18	6/1/10
12 & 13	PURA VIDA TIMERLANDS LLC	27.63	1/26/10
14	WHEAT HOLDINGS LTD, KATHRYN CHACHERE FRY, NELDA F. ZBRANEK, FELICIA ANN ZBRANEK, ZEB D. ZBRANEK & ZACHARY M. ZBRANEK	16.18	6/1/10
15 & 16	CARL DENNIS DURDIN, INDIVIDUALLY, AND AS INDEPENDENT EXECUTOR OF THE ESTATE OF MADELYN A. DURDIN, DECEASED, & AS AGENT AND ATTORNEY IN FACT FOR EDWARD MAURICE DURDIN, DENNIS WARREN DURDIN, LENA MAURINE TUCKER, BONNIE KAYLEE GRIFFIN, AN& CONNIE SUE TOUCHSTONE (ESTATE OF MADELYN A. DURDIN)	4.44	2/12/10
17, 19, 20, 21, 22	RONNIE PONDER & TONI G. PONDER	47.96	7/20/10
23.2	STILSON PROPERTIES INC.	34.44	5/5/10
23.2A	STILSON PROPERTIES INC.	49.17	4/28/11
23.4 & 25.4	RICELAND PROPERTIES LLC	9.97	8/15/12
25.2 & 25.6	DOLORES J. JOHNSON, AMANDA M. EPPLE, AMY L. STERLING, BARBARA E. FLURRY, FORD FLURRY, JONI G. HAWKES, THE ESTATE OF FLOYD REIDLAND, DECEASED, EDITH REIDLAND GRANTHAM, COURTNEY G. BOULLION, GENEVA PATAIN REIDLAND, DAVID ARNELDER REIDLAND III, TRUSTEE FOR THE LISA MAURI REIDLAND TRUST, THE ELAINA TRACI REIDLAND TRUST, THE DAVID ARNELDER REIDLAND III TRUST AND THE KARI LANETTE REIDLAND QUINN TRUST	50.67	8/18/11
25.4	STEVEN P. FLYNN, JENNIFER FLYNN BROUSSARD, JANE GRANTHAM NASH, BILLIE GRANTHAM SKREHOT, & SUSAN GRANTHAM PELTIER	0.69	2/1/13

Parcel ID	Property Seller	Acres Acquired	Date Acquired
27	DAVID ARNELDER REIDLAND III, TRUSTEE FOR THE LISA MAURI REIDLAND TRUST, THE ELAINA TRACI REIDLAND TRUST, THE DAVID ARNELDER REIDLAND III TRUST, & THE KARI LANETTE REIDLAND QUINNN TRUST	5.64	3/26/2010
27B	DAVID ARNELDER REIDLAND III, TRUSTEE FOR THE LISA MAURI REIDLAND TRUST, THE ELAINA TRACI REIDLAND TRUST, THE DAVID ARNELDER REIDLAND III TRUST, & THE KARI LANETTE REIDLAND QUINNN TRUST	10.06	12/17/2012?
28, 29, 30, 31, 32	ENA STOESSER, INDIVIDUALLY & AS INDEPENDENT EXECUTRIX OF THE ESTATE OF EMIL JACK STOESSER, DECEASED	14.89	12/11/12
33, 37.5, 39.2, 39.6, 39.8, 40.5	STOESSER FARMS INC	165.91	12/12/12
39.4	Frank M. Rembert, III, Ann Marie Rembert, David J. Rembert, Sheila R. Parker, Dale Williford as Trustee fo the George Kirkpatrick Jr. Living Trust, Leila Katherine Kirkpatrick Newsom, L.D. fussel, Unknown Heirs of Maude Bender Schwartz, deceased, Unknown Heirs of Winnifred Bender Reid, Deceased, Charles Henry Reid as possible heir, Devisee, and/or Representative of Mildred Bender Reid, deceased, Unknown heirs of Vera Fussell Elder, deceased, Harold Boyd, Jr., as possible Heir, Devisee and/or Rep. of Vera Fussell Elder, deceased, Unknown Heirs of Maxine Boyd, deceased harold Boyd,Jr. as possible heir, Devisee, and/or Rep. of Maxine Boyd, deceased, Unknown heirs of Elsie Fussell Grissett, deceased, Ann Crisp as possible heir, Devisee, and/or Rep. of Elsie gussell Grissett, deceased unknown heirs of Mae Fussell Brooks, deceased Patty Moreau as possible heir, Devisee and/or Rep.	1.74	1/6/14
40 & 41	J T TIMBERLAND PROPERTIES LLC	11.72	5/20/11
42	NED HOLMES	30.97	12/21/12
43.1 & 43.3	Wolf Trot Properties LLC (A&B)	46.41	1/24/13
43.2	JOSEPH E. BLOODWORTH & JANICE BLOODWORTH (Pro Forma)	2.33	1/24/13
43.4 & 43.5	Mark Haddock joined herein pro forma by his spouse, Suzanne Haddock	1.23	1/24/13
44	CEDARWOOD PROPERTIES, Farm Credit Bank of Texas, and Enterprise Products Partners, L.P..	17.56	6/1/10
44.5	ROY A. SEABERG, JR., CURTIS A. SEABERG, KENNETH R. SEABERG, RAMPART CAPITAL CORPORATION, & HELENA CHEMICAL CO.	0.48	10/28/10
45 & 46	WALTER E. MCGINNIS, INDIVIDUALLY & AS CUSTODIAN FOR LAUREN MCGINNIS UNDER THE UNIFORM GIFT TO MINORS ACT, & JOINED BY SPOUSE JILL MCGINNIS & LAUREN MCGINNIS	8.59	3/1/10
46.5	RICELAND PROPERTIES LLC	1.52	5/25/10
48 & 49	WILLIAM THOMAS VENABLES	15.76	3/19/10
50 & 51	TEXAS LAND FUND NO. 6 LP, SUNOCO PIPELINE LP, RICELAND PROPERTIES, LLC, HARRIS COUNTY FLOOD CONTROL DISTRICT, MUSTANG PIPELINE COMPANY, CHAPARRAL PIPELINE COMPANY LLC, & KINDER MORGAN TEXAS PIPELINE LLC	71.88	11/21/11
52	ED AND GENEVA GILBREATH CORP., SECURITY OIL COMPANY, HARRIS COUNTY FLOOD	22.87	1/11/12
53 & 54	WOODLAND SHORES PARTNERS LLP	8.05	8/19/10
Totals		4,080.94	

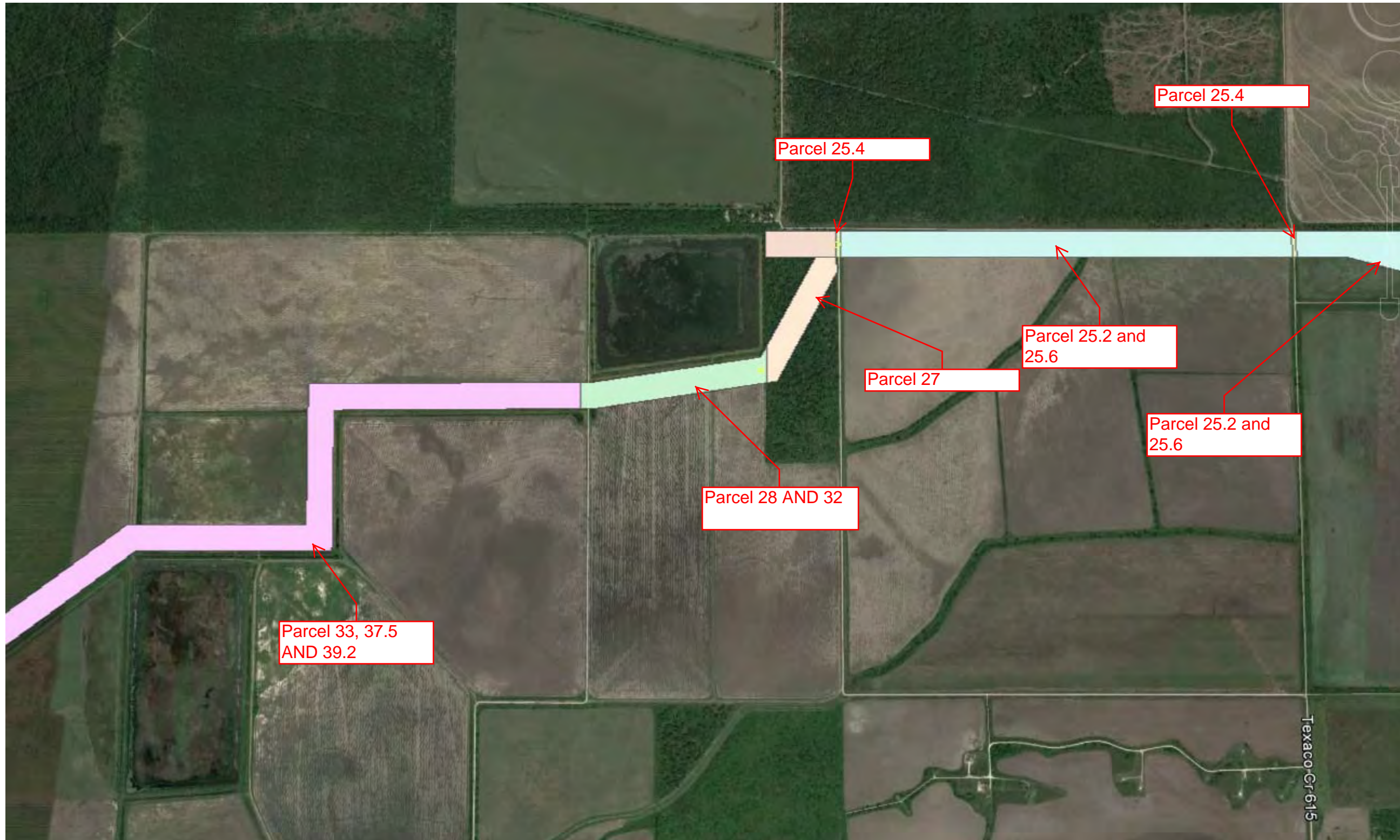
LUCE BAYOU INTERBASIN TRANSFER PROJECT
PARCEL NUMBERING



LUCE BAYOU INTERBASIN TRANSFER PROJECT
PARCEL NUMBERING



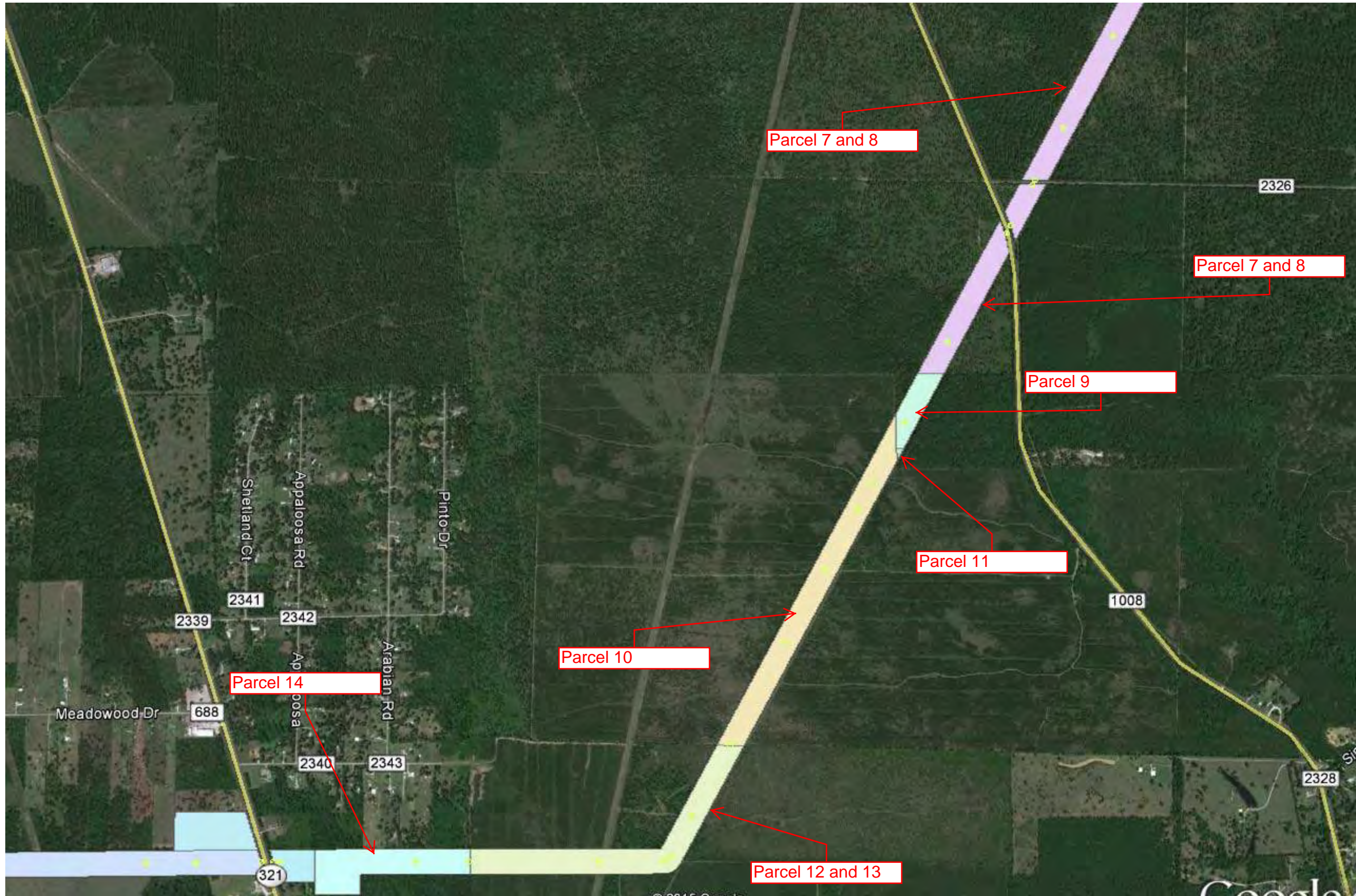
LUCE BAYOU INTERBASIN TRANSFER PROJECT
PARCEL NUMBERING



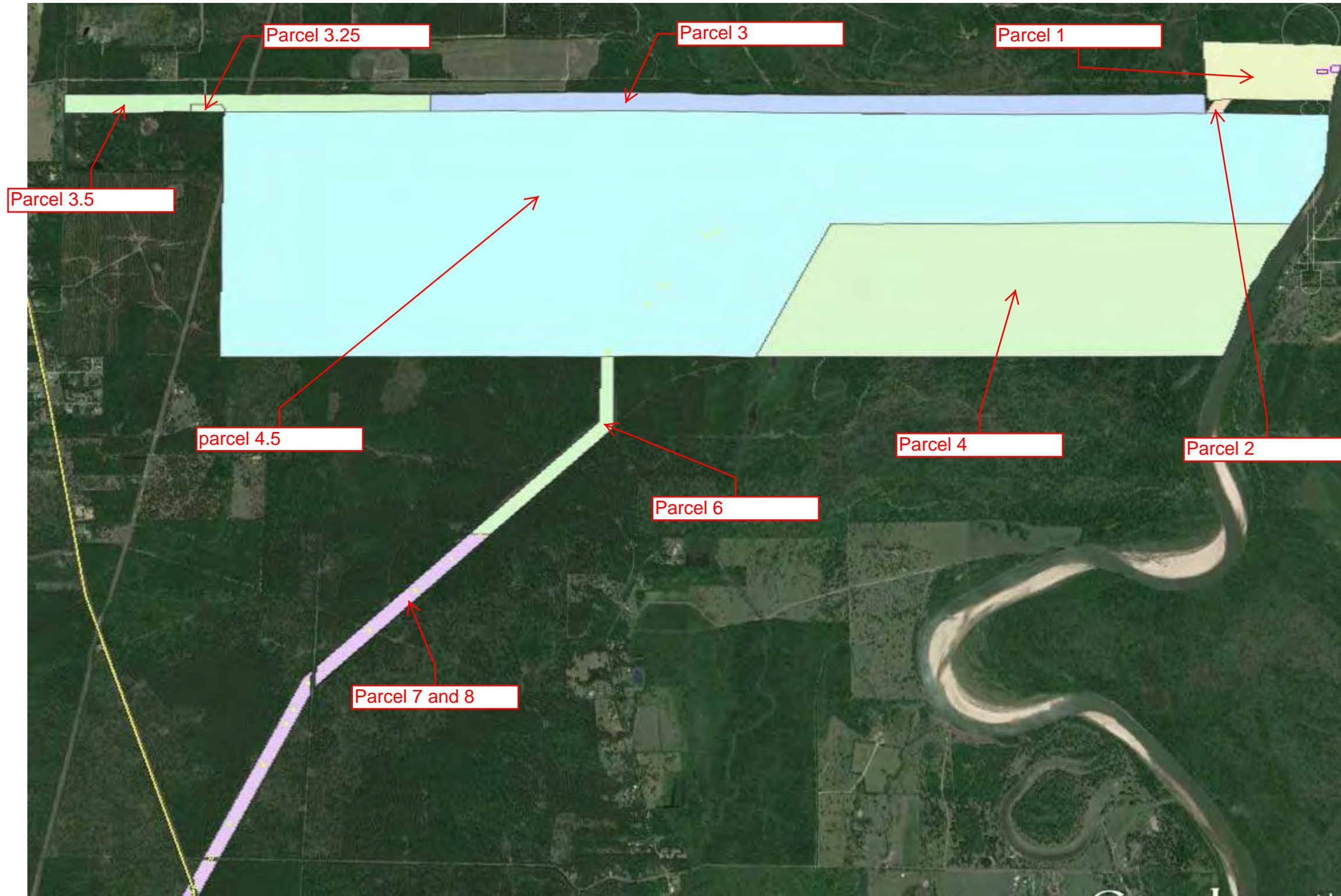
LUCE BAYOU INTERBASIN TRANSFER PROJECT
PARCEL NUMBERING



LUCE BAYOU INTERBASIN TRANSFER PROJECT
PARCEL NUMBERING



LUCE BAYOU INTERBASIN TRANSFER PROJECT
PARCEL NUMBERING





DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON TX 77553-1229

February 4, 2014

REPLY TO
ATTENTION OF:

Policy Analysis Section

SUBJECT: Permit Application – SWG-2009-00188

Coastal Water Authority
1801 Main Street, Suite 800
Houston, Texas 77002-8119

Gentlemen:

Enclosed for your review and signature are two copies of an initial proffered permit for activities conducted in waters of the United States, including wetlands.

If you decline the terms and special conditions of this initial proffered permit, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. To initiate the appeal process regarding the terms and special conditions of the permit, you must return the unsigned permit and write a letter to the District Engineer explaining your objections to the permit.

If you accept the initial proffered permit, sign and date both copies in the spaces provided and mail to the District Engineer at the above address. Within ten days, both original copies of the accepted permit should be returned to us for approval. Once countersigned, one copy of the signed permit will be returned to you. The permit is not valid until signed by us.

A detailed description of the appeal process can be found at: <http://www.usace.army.mil/CECW/Documents/cecwo/reg/materials/33cfr331.pdf>. We are ready to assist you in whatever way possible. If you have any questions, please call Mr. Jayson Hudson at 409-766-3108.

Sincerely,

A handwritten signature in blue ink, appearing to read "Casey Cutler".

Casey Cutler
Chief, Policy Analysis Section

Enclosures



DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON TX 77553-1229

February 4, 2014

REPLY TO
ATTENTION OF:

Policy Analysis Section

SUBJECT: Permit Application – SWG-2009-00188

Coastal Water Authority
1801 Main Street, Suite 800
Houston, Texas 77002-8119

Gentlemen:

The above numbered permit has been approved and a signed copy is enclosed for your retention.

Also enclosed are ENG Form 4336, and a copy of "Notice to Permittee" which provides important information for permit administration. You should notify the District Engineer, in writing, upon completion of the authorized work. To assist us in improving our service to you, please complete the survey found at <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,

A handwritten signature in blue ink, appearing to read "Casey Cutler".

Casey Cutler
Chief, Policy Analysis Section

Enclosures

Copies Furnished w/ encl:

Commander (dpb), Eighth Coast Guard District, Hale Boggs Federal Building, 501 Magazine Street, New Orleans, Louisiana 70130-3396

Director, National Ocean Service, Coast & Geo. Sur., Mapping & Charting Branch, Source Data Unit, Attn: N/CG2211, Station 7317, SSMC3, 1315 East-West Highway, Silver Spring, Maryland 20910-3233

U.S. Environmental Protection Agency, 1445 Ross Avenue, Suite 1200, Dallas, Texas 75202-2750

NOTICE TO PERMITTEES

Department of the Army Permits for Work in Navigable Waters require attention to administration and policies which are often misunderstood or disregarded. To avoid possible misinterpretations and to expedite procedures, permit post-authorization requirements and pertinent information are outlined as follows:

1. Permits remain in effect until revoked, relinquished, or the structures are removed. An extension of time for completion of structures or work may be granted provided that a public notice is issued and that evidence is furnished of the bona fide intention of the permittee to complete the work within a reasonable time. If work or structures are not completed within the time provided in the permit, it is the permittee's responsibility to request an extension of time at least 4 months before the expiration date.
2. Maintenance of authorized completed structures may be done at any time without extending the completion period. It is, however, required that the District Commander be notified prior to commencement of maintenance.
3. SPECIAL REGULATIONS GOVERN MAINTENANCE WORK INVOLVING DREDGING OR FILL. This maintenance is not authorized by the original permit and specific prior approval is required before such work is commenced in navigable waters. Your request for authorization should be submitted in time for public notice requirements and coordination with other agencies.
4. If ownership of structures or work covered by a permit is transferred, the District Commander must be notified immediately. The notification will provide information so that permit responsibilities can be changed to the new owner or assignee.
5. Permittees are reminded that the Area Engineer must be notified as soon as possible of the time for commencement of construction or work, and immediately upon completion. If pipelines across Federal project channels are covered by the permit, the Area Engineer should be informed of the date the pipelines are to be placed in time for him to arrange for an inspector to be present.
6. All material changes in location or plans must be submitted promptly to the District Commander for approval before construction is begun.
7. Permits should not be considered as an approval of design features of any structure authorized or an implication that such structure is adequate for the purpose intended.

DISTRICT COMMANDER
GALVESTON DISTRICT
CORPS OF ENGINEERS

DEPARTMENT OF THE ARMY PERMIT

Permittee Coastal Water Authority

Permit No. SWG-2009-00188

Issuing Office Galveston District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To construct a 26.5-mile conveyance structure that includes a raw water pump station located in the Trinity River, subsurface pipeline and surface canal, sedimentation basin, and associated berms, access roads, drainage ditches, perimeter fencing, and an outfall structure, into Luce Bayou just above its confluence with Lake Houston. The project will be conducted in accordance with the attached plans, in 37 sheets.

Project Location: The project site is located starting on the Trinity River approximately 6 miles east of the intersection of Farm-to-Market (FM) 1008 and County Road 2317 in eastern Liberty County, with the corridor extending southwestward from the Trinity River to a discharge point near the confluence of Luce Bayou with Lake Houston, approximately 1-mile south of the bridge crossing of FM 2100 and Luce Bayou, in Harris County, Texas.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on 31 December 2019. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The Applicant understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
2. When structures or work authorized by this permit are determined by the District Engineer to have become abandoned, obstructive to navigation or cease to be used for the purpose for which they were permitted, such structures or other work must be removed, the area cleared of all obstructions, and written notice given to the Chief of Compliance, Galveston/District Regulatory Branch, within 30 days of completion.
3. Prior to construction or the commencement of work within the boundary of site 41LB42, the permittee shall: (1) sign and adhere to the terms and conditions of the Memorandum of Agreement Regarding the Resolution of Adverse Effects to Site 41LB42 and Tribal and Archeological Monitoring of Project Work on Capers Ridge, Liberty County, Texas (MOA), including all attachments to the MOA; (2) shall conduct data recovery on site 41LB42 as described in the statement of work titled "Data Recovery Plan for Investigations at 41LB42, Liberty County, Texas" dated December 6, 2013, and prepared by Moore Archeological Consulting, Inc. (Attachment 1 of the MOA); (3) the data recovery effort shall be considered complete upon written confirmation from the Corps; and (4) have a Tribal Monitor present during all data recovery efforts and adhere to the terms and conditions of the Monitoring Plan (Attachment 2 of the MOA).
4. During construction and preconstruction activities on the landform referred to as Capers Ridge, the permittee shall have a Tribal Monitor and an Archeological Monitor present and shall adhere to the terms and conditions of the Monitoring Plan (Attachment 2 of the MOA).
5. Should burials or human remains be encountered during data recovery, preconstruction activities, or construction, the permittee shall adhere to the terms and conditions of the Reburial Plan (Attachment 4 of the MOA).
6. Prior to start of work in waters of the United States, including wetlands, the permittee will transfer ownership of the 2,979-acre tract identified in the attached *Luce Bayou Interbasin Transfer Project Final Mitigation Plan Permit Application No. SWG-2009-00188* to the U.S. Fish and Wildlife Service's Trinity River National Wildlife Refuge with receipt of transfer of ownership provided to the Chief of the Compliance, U.S. Army Corps of Engineers, Galveston District.
7. The permittee agrees to immediately implement the commitments in the attached *Coastal Water Authority Zebra Mussel Response Plan: Luce Bayou Interbasin Transfer Project*. The permittee will provide copies of the plan's monitoring reports annually to the Chief of the Compliance, U.S. Army Corps of Engineers, Galveston District. The permittee will provide notification of a confirmed occurrence of zebra mussels in any location that triggers a change in risk level to the Chief of the Compliance, U.S. Army Corps of Engineers, Galveston District within 1 month of encountering.

Further Information:

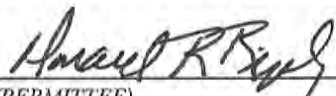
1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.
 - e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
- a. You fail to comply with the terms and conditions of this permit.
 - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
 - c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

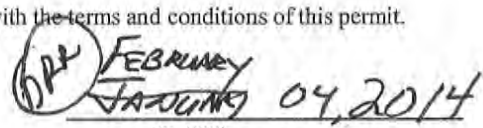
Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

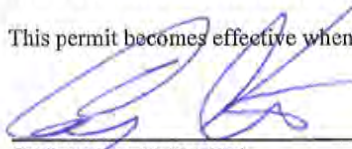


 (PERMITTEE)
MR. DON RIPLEY
EXECUTIVE DIRECTOR
COASTAL WATER AUTHORITY



 (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.



 (DISTRICT ENGINEER)
CASEY CUTLER, CHIEF
POLICY ANALYSIS SECTION
FOR COLONEL RICHARD P. PANSELL



 (DATE)

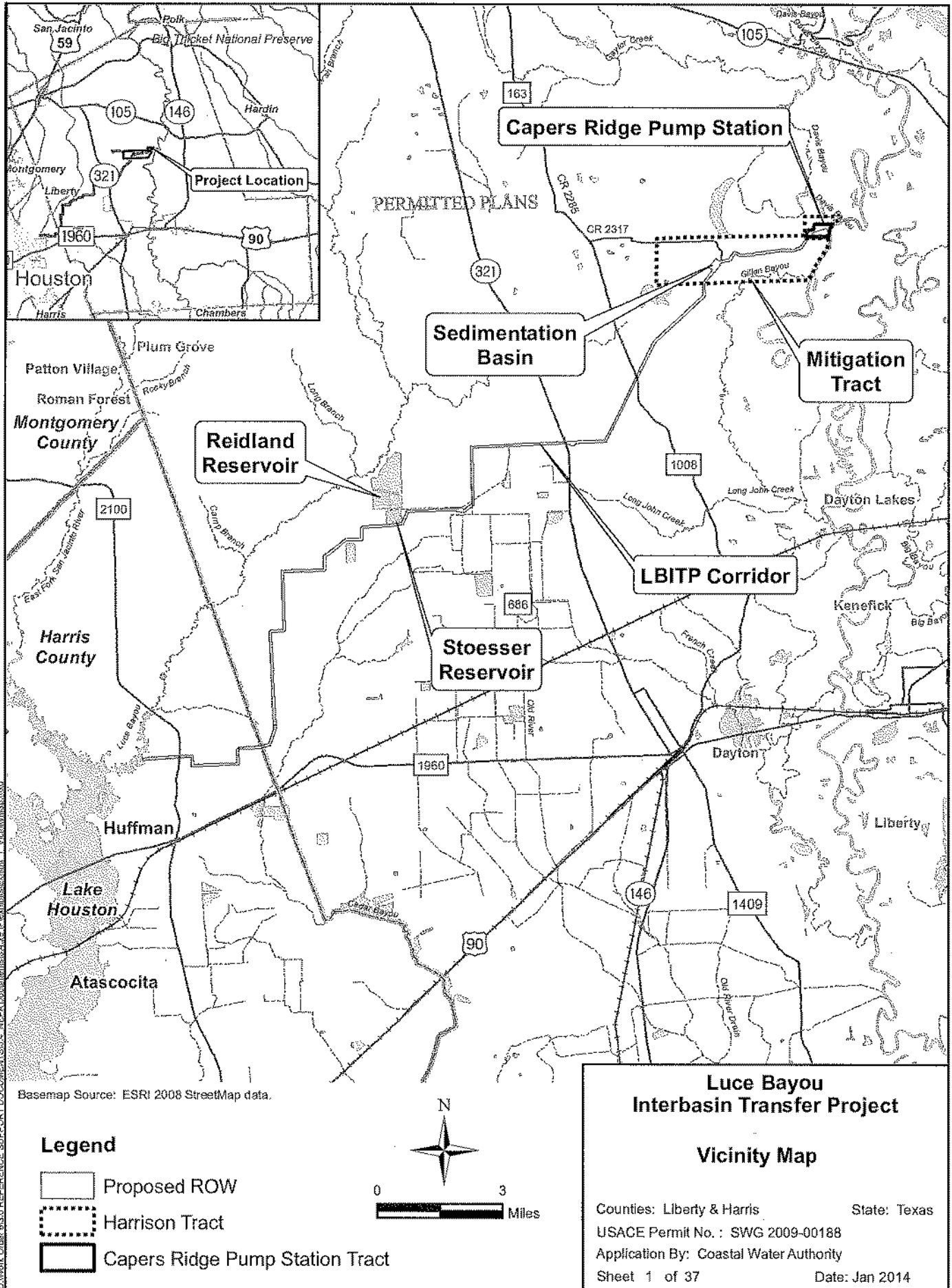
When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEEEE -- Typed/Printed Name)

(DATE)




(TRANSFEEEE - Signature)

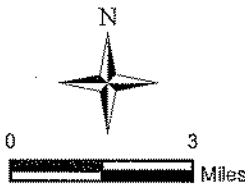
(Mailing Address)



Basemap Source: ESRI 2008 StreetMap data.

Legend

-  Proposed ROW
-  Harrison Tract
-  Capers Ridge Pump Station Tract

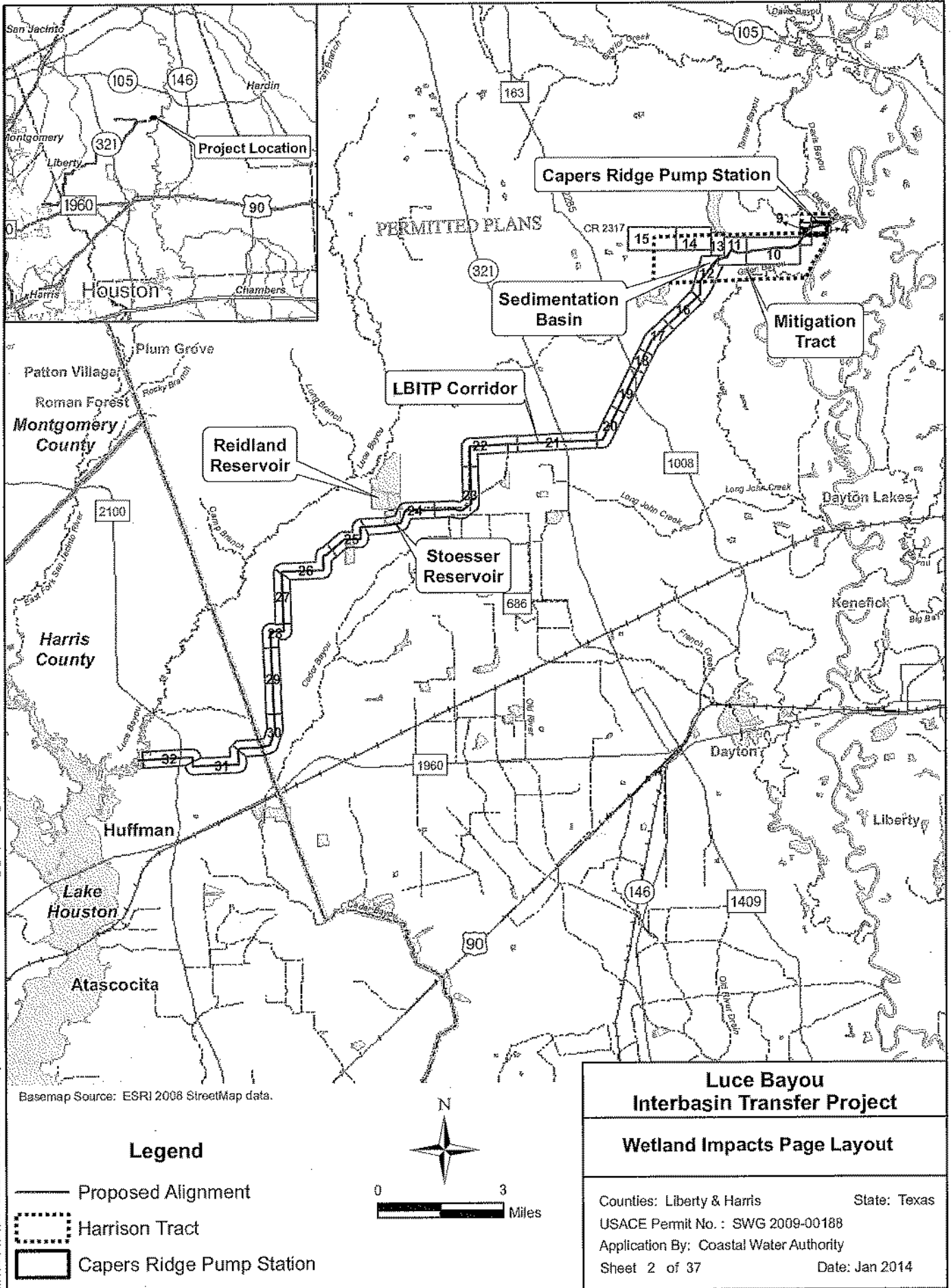


Luce Bayou Interbasin Transfer Project

Vicinity Map




Counties: Liberty & Harris State: Texas
 USACE Permit No. : SWG 2009-00188
 Application By: Coastal Water Authority
 Sheet 1 of 37 Date: Jan 2014

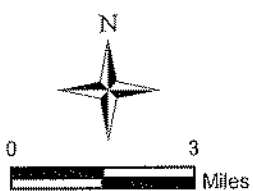
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Basemap Source: ESRI 2008 StreetMap data.

- Legend**
-  Proposed Alignment
 -  Harrison Tract
 -  Capers Ridge Pump Station



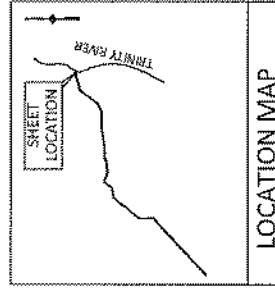
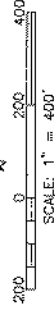
Luce Bayou Interbasin Transfer Project	
Wetland Impacts Page Layout	
Counties: Liberty & Harris	State: Texas
USACE Permit No. : SWG 2009-00188	
Application By: Coastal Water Authority	
Sheet 2 of 37	Date: Jan 2014

PERMITTED PLANS

PUMP STATION SEE DETAIL
ON SHEET 6 OF 44

PUMP STATION RIP RAP SEE DETAIL
ON SHEET 7 AND 8 OF 44

PIPELINE CONTIGUES



CAPERS RIDGE PUMP
STATION TRACT

LUCE BAYOU INTERBASIN
TRANSFER PROJECT

PROJECT PLANVIEW

COUNTY: HARRIS AND LIBERTY

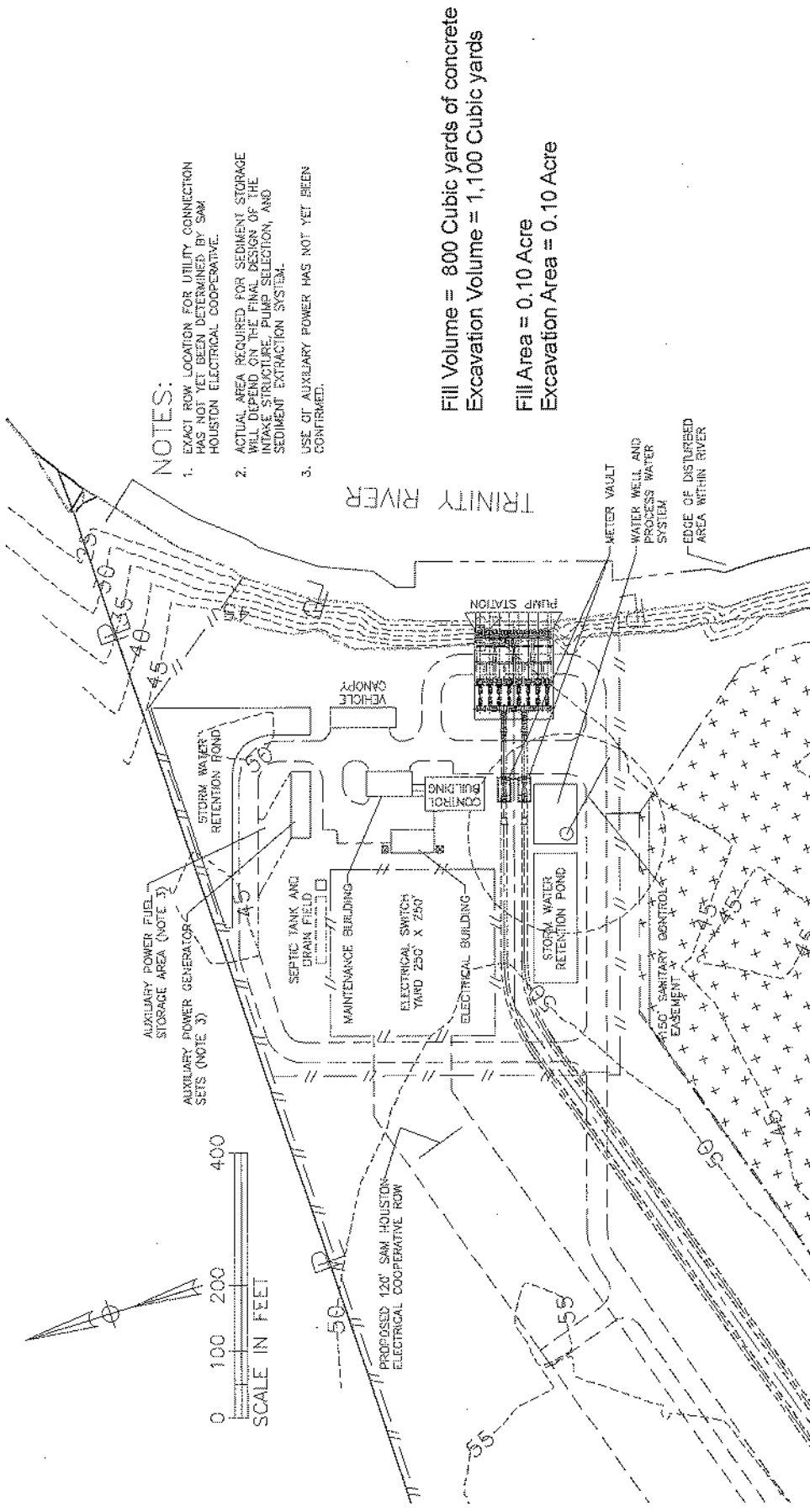
USAGE PERMIT No.: SWG 2009-00188

APPLICATION BY: COASTAL WATER AUTHORITY

SHEET NO. 3 OF 37

DATE: JANUARY 2014

PERMITTED PLANS



NOTES:

1. EXACT ROW LOCATION FOR UTILITY CONNECTION HAS NOT YET BEEN DETERMINED BY SAM HOUSTON ELECTRICAL COOPERATIVE.
2. ACTUAL AREA REQUIRED FOR SEDIMENT STORAGE WILL BE DETERMINED AFTER FINAL DESIGN OF THE WEIR, STRUCTURE, PUMP SELECTION, AND SEDIMENT EXTRACTION SYSTEM.
3. USE OF AUXILIARY POWER HAS NOT YET BEEN CONFIRMED.

Fill Volume = 800 Cubic yards of concrete
 Excavation Volume = 1,100 Cubic yards
 Fill Area = 0.10 Acre
 Excavation Area = 0.10 Acre

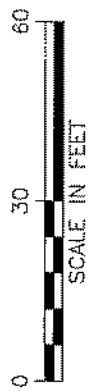
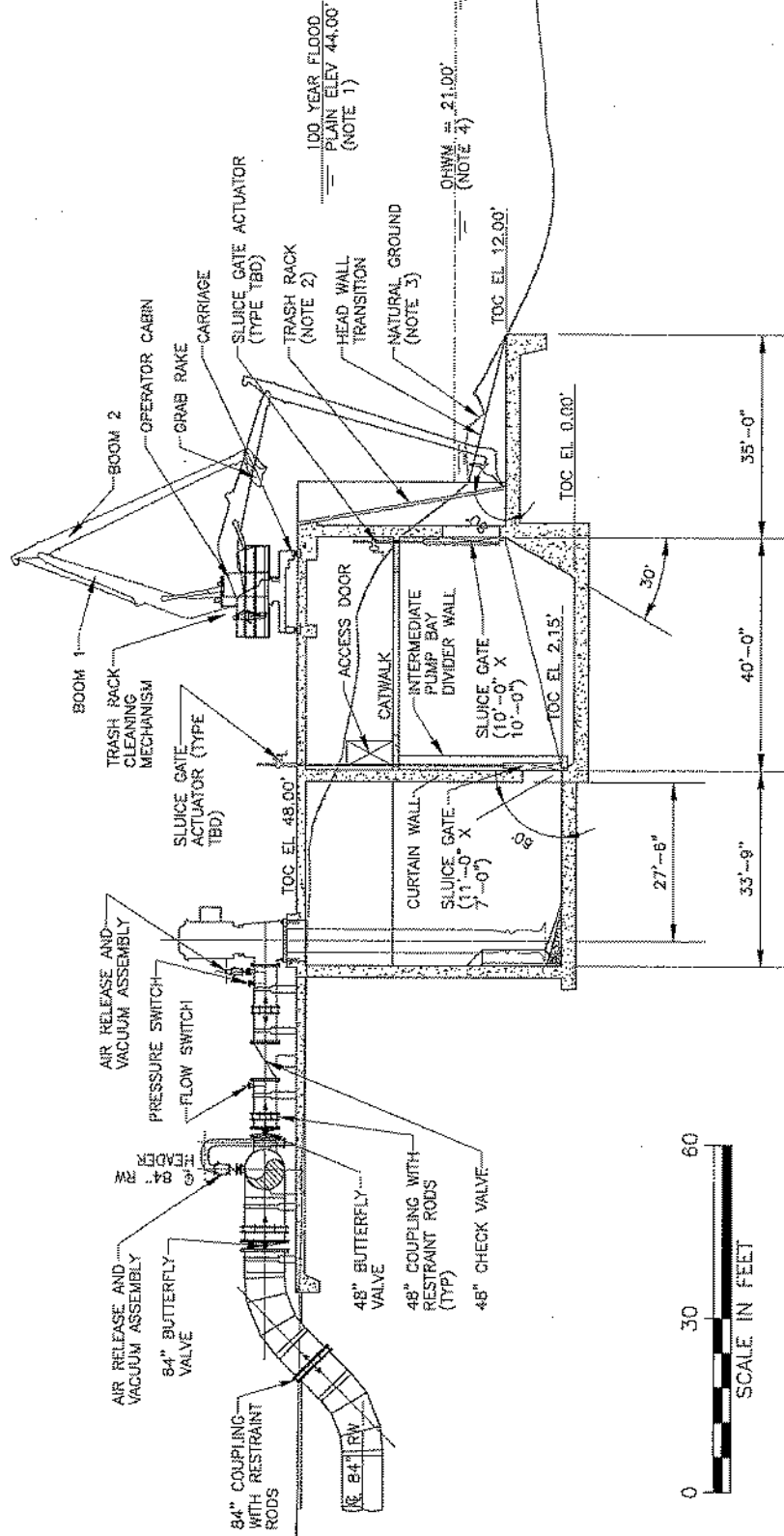
Luce Bayou Interbasin Transfer Project
Caper's Ridge Pump Station
Site Plan

Countries: Liberty & Harris State: Texas
 USAGE Permit No.: SWG 2009-00188
 Application By: Coastal Water Authority
 Sheet 4 of 37 Date: Jan 2014

LEGEND:

	UNDISTURBED AREA		PROPERTY LINE
	PROPOSED STRUCTURE		PROPOSED FENCE
	PROPOSED PLANT PAVING		EXISTING CONTOUR
	PROPOSED PIPELINE		

PERMITTED PLANS



Fill Volume = 800 Cubic yards of concrete
 Excavation Volume = 1,100 Cubic yards
 Fill Area = 0.10 Acre
 Excavation Area = 0.10 Acre

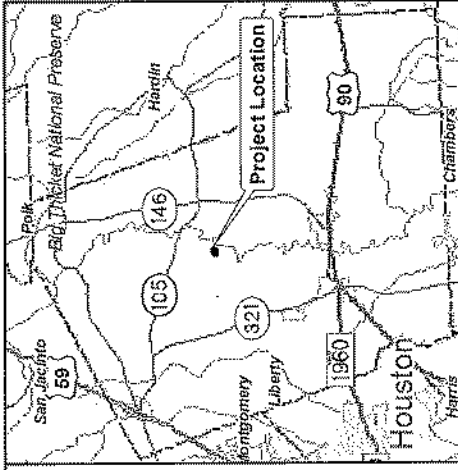
NOTES:

- 100 YEAR FLOOD PLAIN ELEVATION AS SHOWN BASED ON FIRM PANEL 48291C0325C, EFFECTIVE DATE: MAY 2, 2008, REFERENCED TO NAGVD 88, 2001 ADJUSTMENT.
- PRELIMINARY TRASH RACK DESIGN CONSIST OF 1/2" WIDE BARS SPACED 2-INCHES APART (OUTSIDE EDGE TO OUTSIDE EDGE). DEPTH AND HORIZONTAL BRACING TO BE DETERMINED LATER.
- NATURAL GROUND ELEVATION SHOWN AT CENTERLINE OF PUMP STATION. REFERENCED TO NAGVD 88, 2001 ADJUSTMENT.
- OHWM = ORDINARY HIGH WATER MARK.
- TOC = TOP OF CONCRETE.

Luce Bayou
 Interbasin Transfer Project
 Caper's Ridge Pump Station
 Cross Section

Counties: Liberty & Harris State: Texas
 USACE Permit No.: SWG 2009-00188
 Application By: Coastal Water Authority
 Sheet 5 of 37 Date: Jan 2014

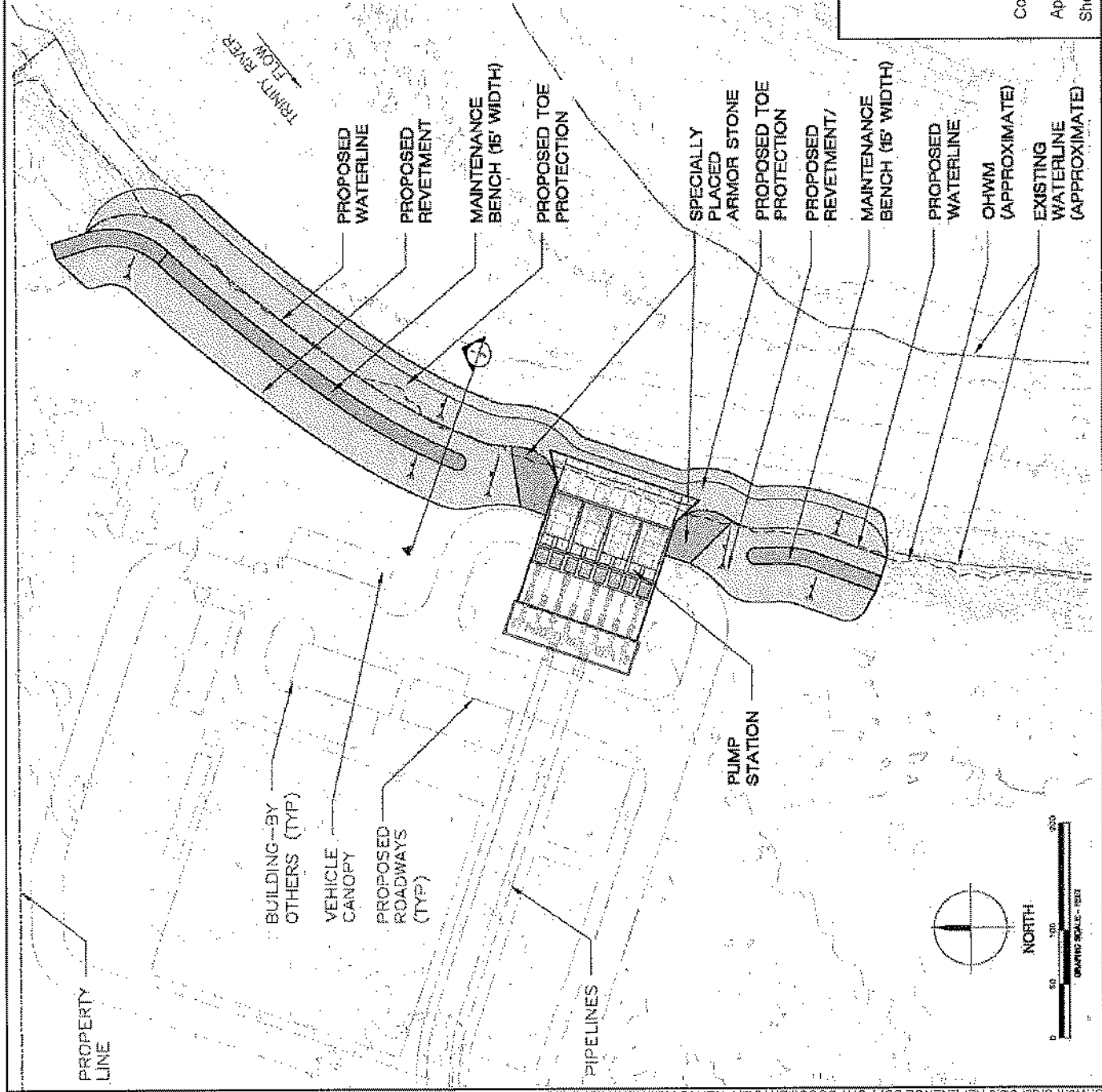
PERMITTED PLANS



Fill Volume = 7,600 Cubic yards of riprap
 Excavation Volume = 6,000 Cubic yards
 Fill Area = 1.57 Acres
 Excavation Area = 1.57 Acres

Luce Bayou
Interbasin Transfer Project
Capers Ridge Pump Station
Slope Protection Alternative
Plan View

Countries: Liberty & Harris State: Texas
 Application By: Coastal Water Authority
 Sheet 6 of 37 Date: Jan 2014



PERMITTED PLANS

CAPER'S RIDGE PUMP STATION
TRACT CONTINUES

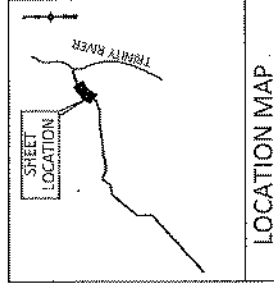
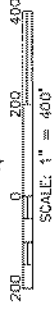
ACCESS ROAD

CENTER LINE OF
108" WATER LINE

M. ROW

S. ROW

MATCHLINE 2215900



LOCATION MAP

LUCE BAYOU INTERBASIN
TRANSFER PROJECT

PROJECT PLANVIEW

COUNTY: HARRIS AND LIBERTY

USAGE PERMIT No.: SWG 2009-00188

APPLICATION BY: COASTAL WATER AUTHORITY

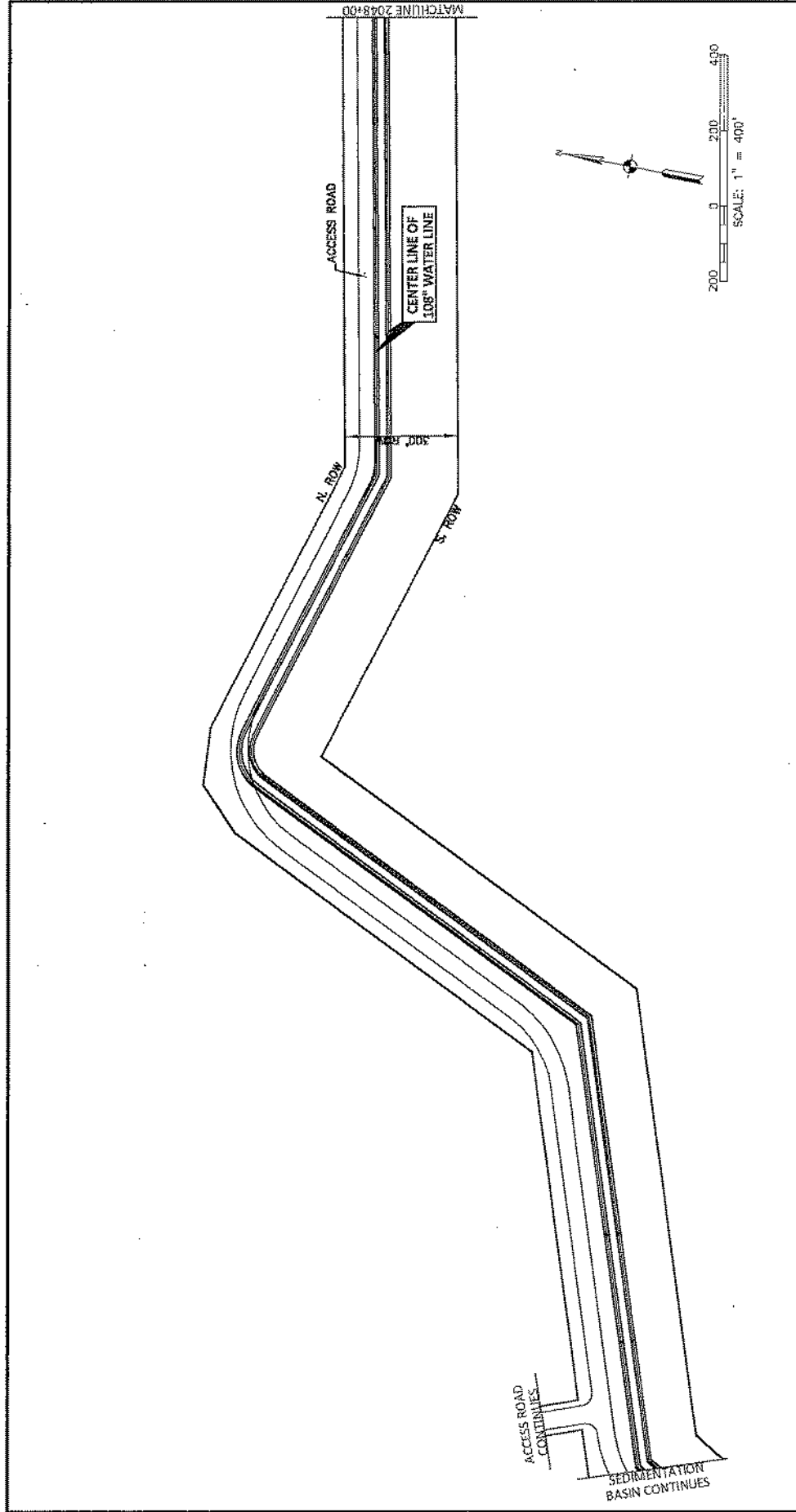
SHEET NO. 8 OF 37

DATE: JANUARY 2014

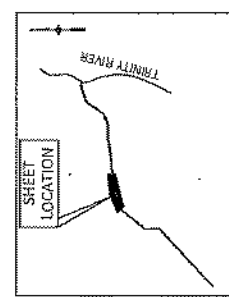
PIPELINE PLANVIEW

LAST MODIFIED: 01/29/2014 - 08:00am BY: USER: hmcgovern
PROJECT LOCATION: H:\PROJECTS\2009\Permit\SWG-2009-00188\Drawings\DWG-2009-00188-08.dwg
DRAWN: hmcgovern
CHECKED: hmcgovern
DATE: 01/29/2014 08:00am

PERMITTED PLANS



PIPELINE PLANVIEW

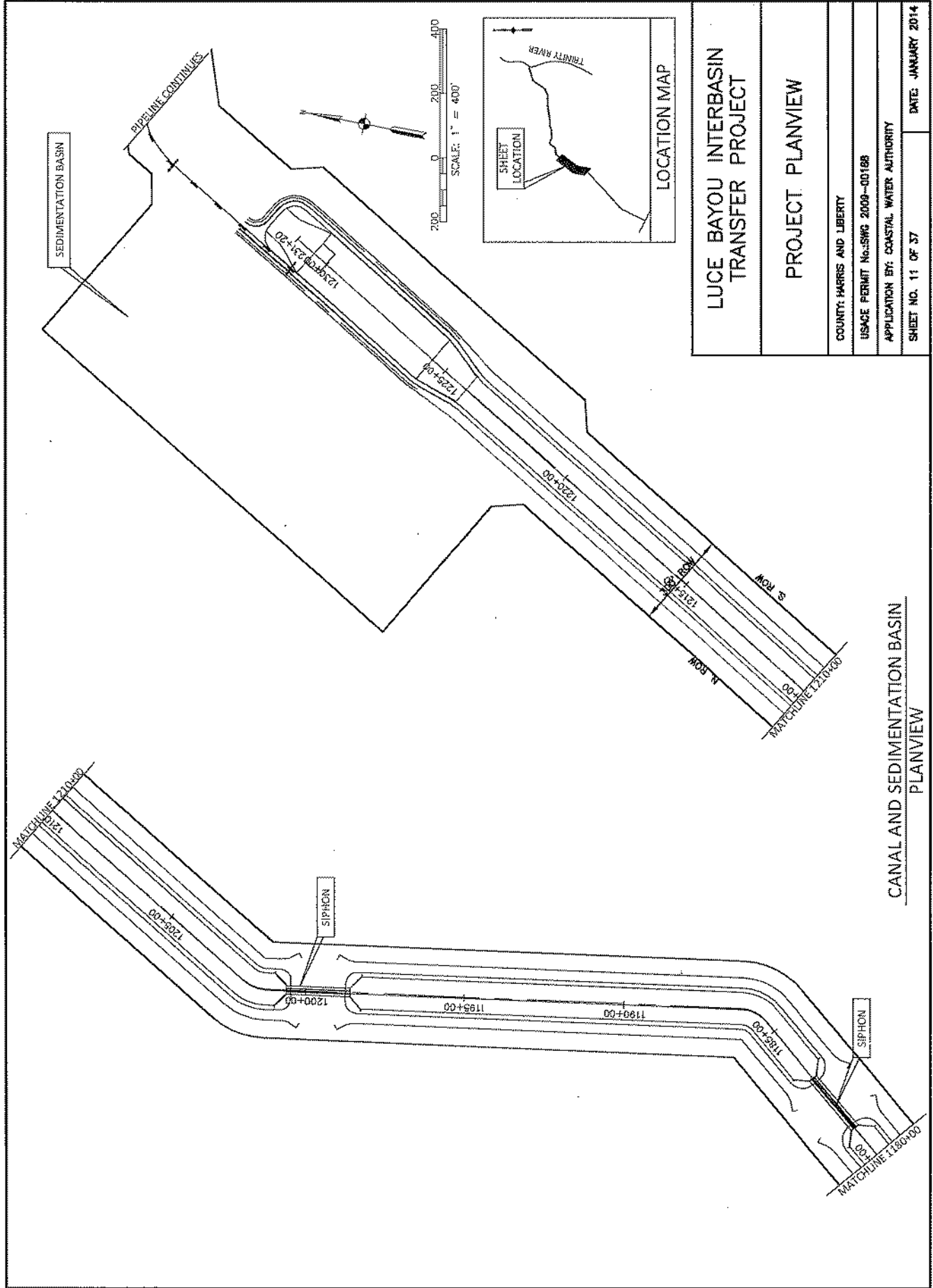


LOCATION MAP

LUCE BAYOU INTERBASIN TRANSFER PROJECT	
PROJECT PLANVIEW	
COUNTY: HARRIS AND LIBERTY	
USAGE PERMIT No-SWG 2009-00188	
APPLICATION BY: COASTAL WATER AUTHORITY	
SHEET NO. 10 OF 37	DATE: JANUARY 2014

DATE: 01/20/14 09:28 AM
 PROJECT: SWG-2009-00188 - LUCE BAYOU INTERBASIN WATER TRANSFER PROJECT
 DRAWING: SWG-2009-00188-10 - PIPELINE PLANVIEW
 SCALE: 1" = 400'
 SHEET NO. 10 OF 37

PERMITTED PLANS

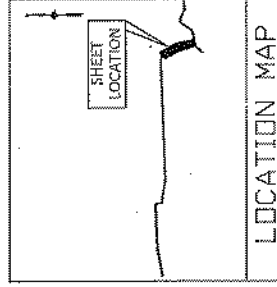
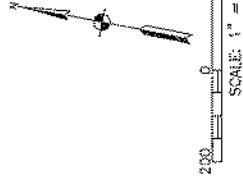
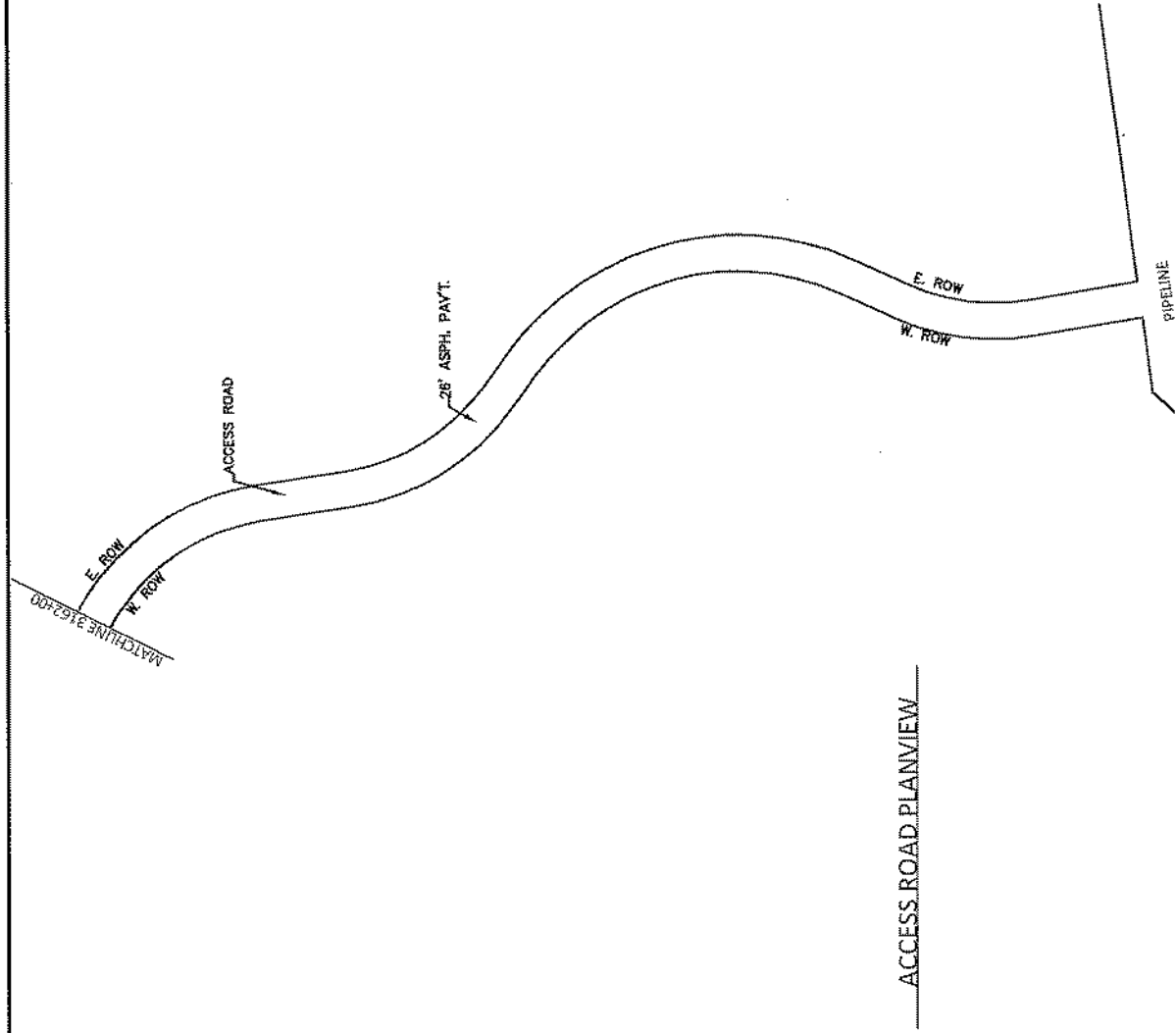


CANAL AND SEDIMENTATION BASIN
PLANVIEW

LUCE BAYOU INTERBASIN TRANSFER PROJECT	
PROJECT PLANVIEW	
COUNTY: HARRIS AND LIBERTY	
USAGE PERMIT No. SWG 2009-00188	
APPLICATION BY: COASTAL WATER AUTHORITY	
SHEET NO. 11 OF 37	DATE: JANUARY 2014

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 DWG TITLE: Luce Bayou Interbasin Transfer Project - Canal and Sedimentation Basin Planview

PERMITTED PLANS



LUCE BAYOU INTERBASIN
TRANSFER PROJECT

PROJECT PLANVIEW

COUNTY: HARRIS AND LIBERTY

USACE PERMIT No: SWG 2009-00188

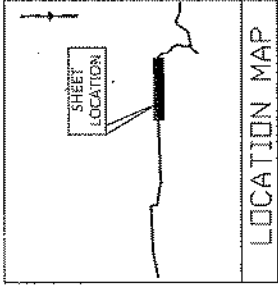
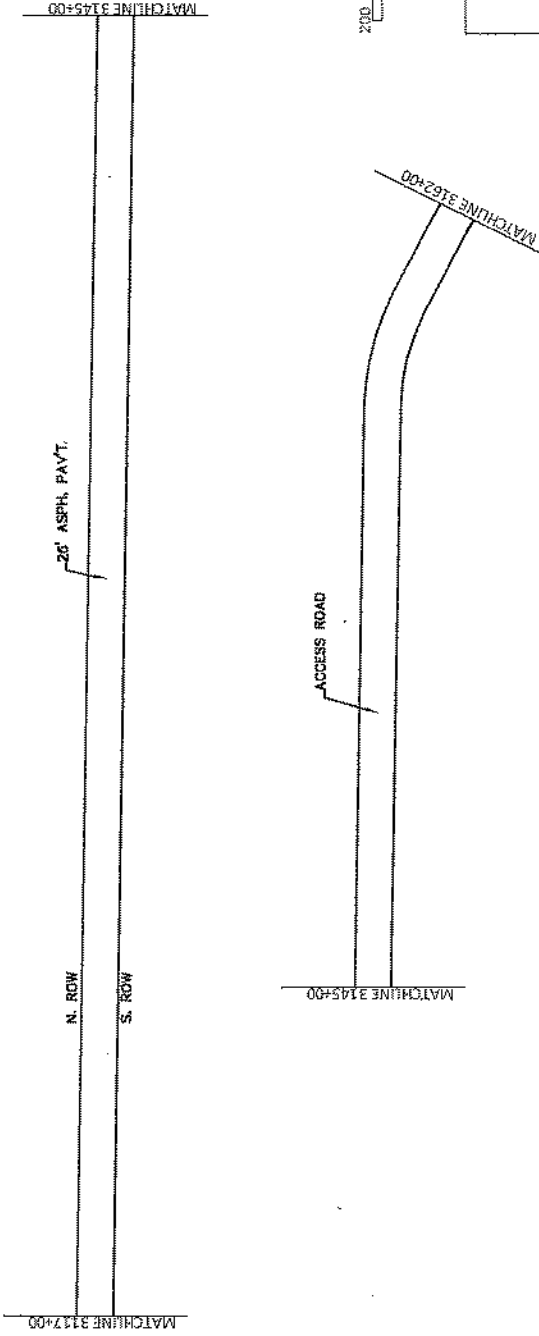
APPLICATION BY: COASTAL WATER AUTHORITY

SHEET NO. 12 OF 37

DATE: JANUARY 2014

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 DWG NAME: 12-Access Road.dwg
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 DWG TITLE: 12-Access Road.dwg

PERMITTED PLANS



ACCESS ROAD PLANVIEW

LUCE BAYOU INTERBASIN
TRANSFER PROJECT

PROJECT PLANVIEW

COUNTY: HARRIS AND LIBERTY

USAGE PERMIT No.: SWG 2009-00188

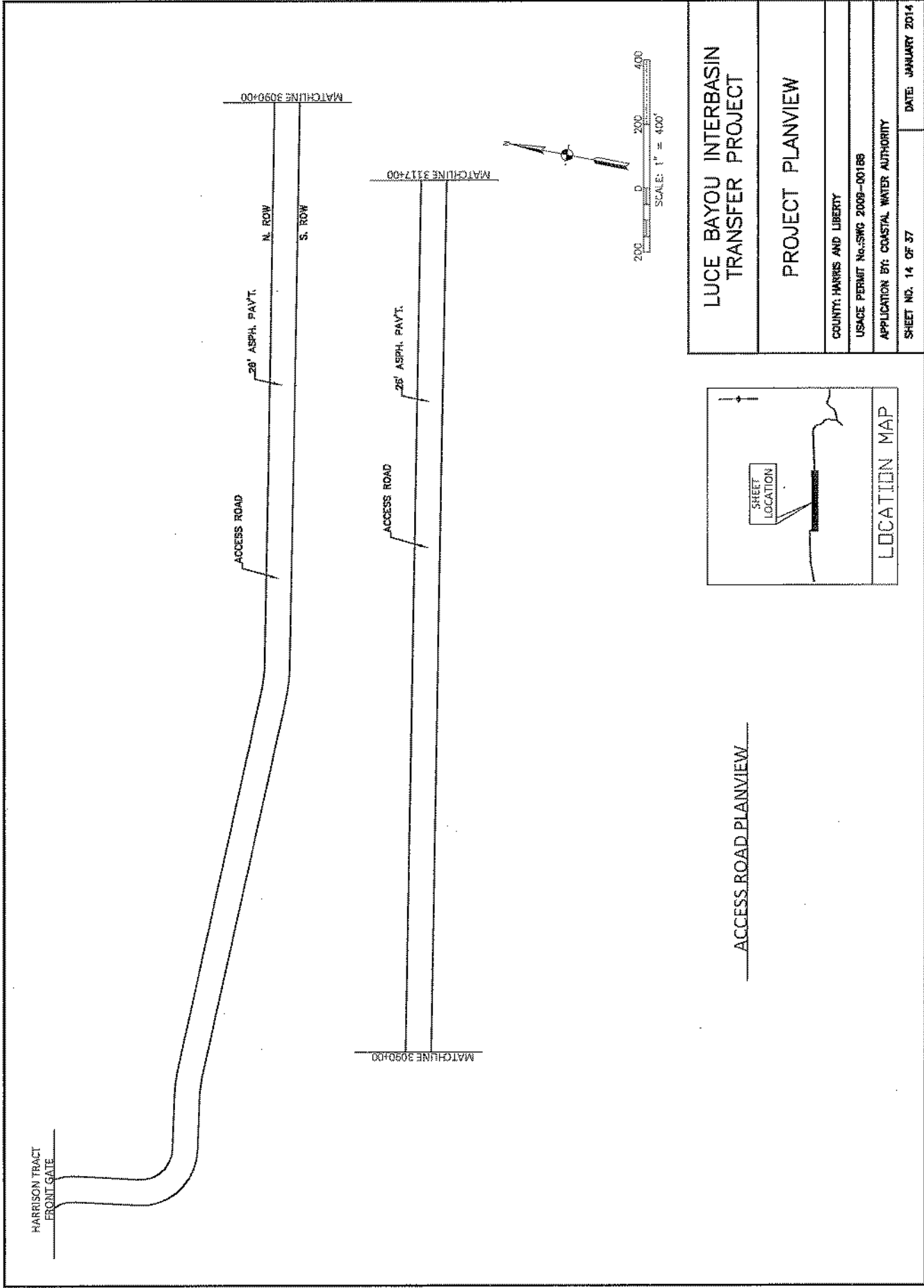
APPLICATION BY: COASTAL WATER AUTHORITY

SHEET NO. 13 OF 37

DATE: JANUARY 2014

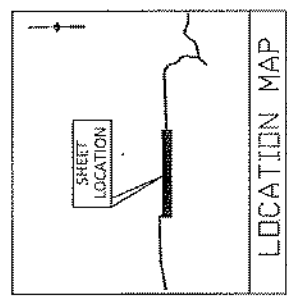
LAST MODIFIED: JUN 20, 2014 -- 8:58am BY: USACE, BIRMINGHAM
 SWG LOCATION: PLR102027, Lumberton, White Oak, 642 ENGINEERING NOTES & CALCULATIONS, A3 Civil Review and Construction/Coordination/Construction
 SWG NAME: Environmental Permit - 642016, 01, 14, 10 - Access Roadway

PERMITTED PLANS



LAST MODIFIED: 04/29/2014 09:45:00 AM BY: [REDACTED]
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ACCESS ROAD PLANVIEW



LUCE BAYOU INTERBASIN TRANSFER PROJECT

PROJECT PLANVIEW

COUNTY: HARRIS AND LIBERTY

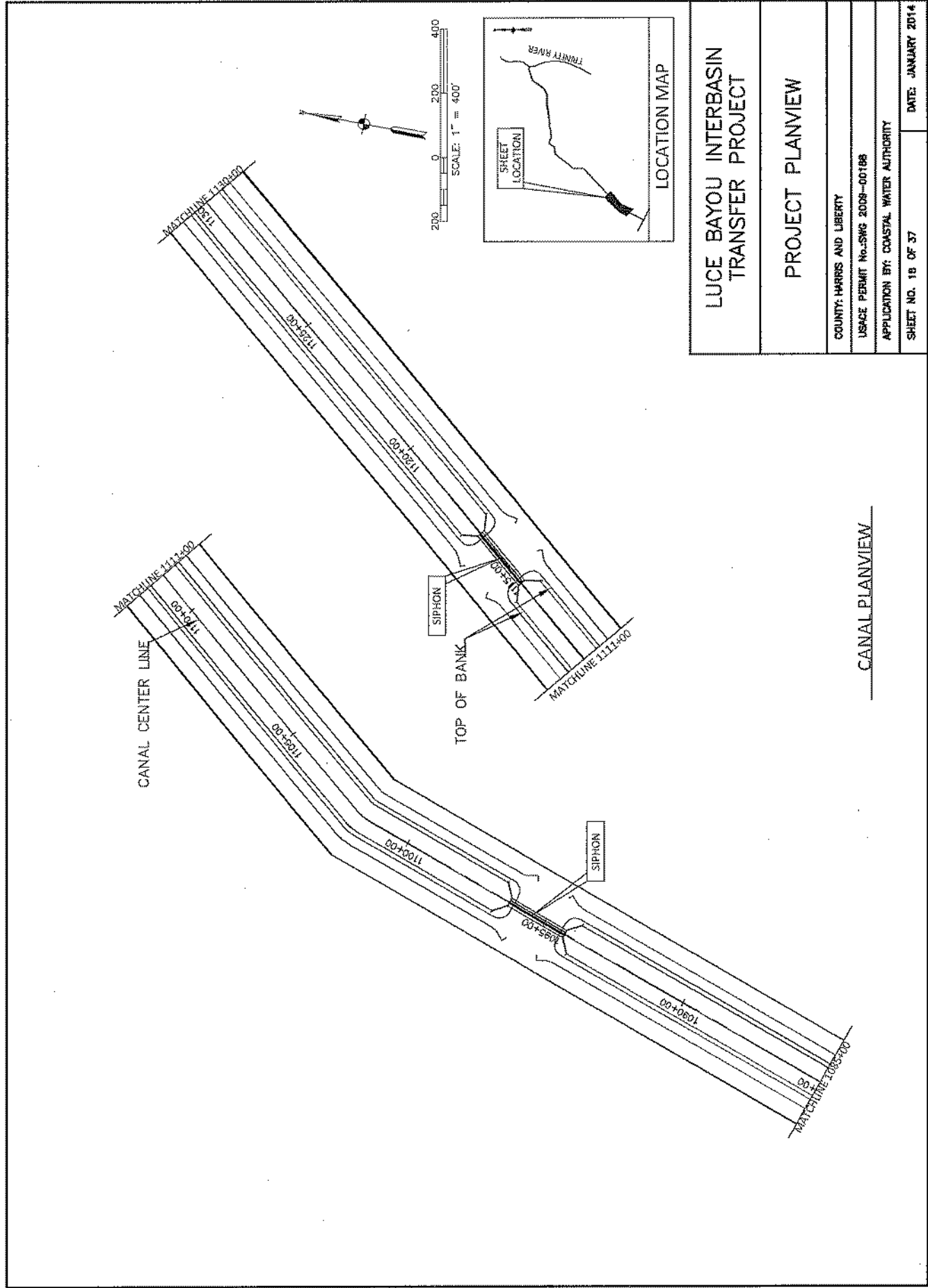
USACE PERMIT No.: SWG-2009-00188

APPLICATION BY: COASTAL WATER AUTHORITY

SHEET NO. 14 OF 37

DATE: JANUARY 2014

PERMITTED PLANS



LUCE BAYOU INTERBASIN
TRANSFER PROJECT

PROJECT PLANVIEW

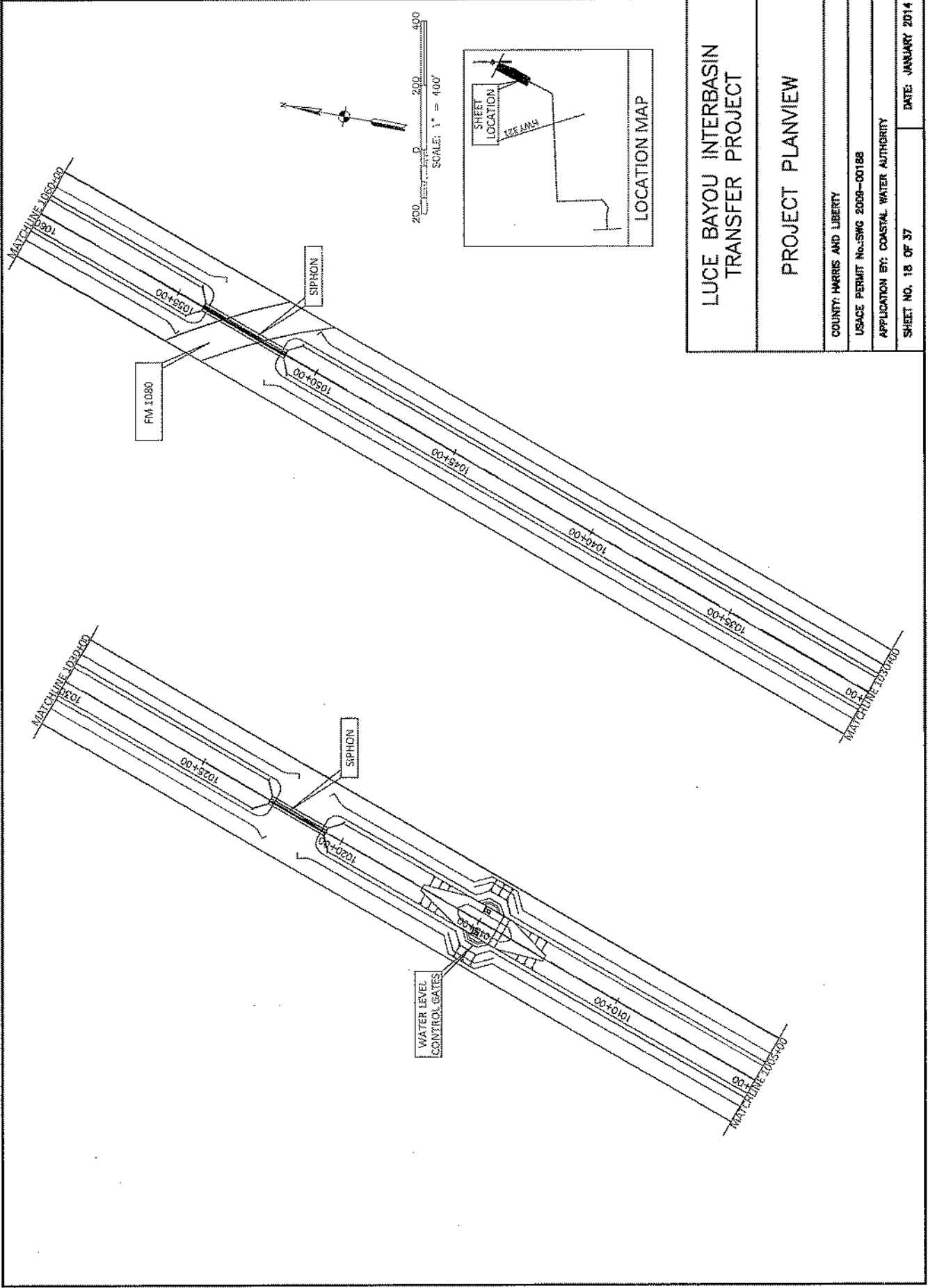
COUNTY: HARRIS AND LIBERTY
 USAGE PERMIT NO.: SWG 2009-00188
 APPLICATION BY: COASTAL WATER AUTHORITY
 SHEET NO. 16 OF 37

DATE: JANUARY 2014

CANAL PLANVIEW

LAST MODIFIED: 01/29/2014 - 09:27 AM BY: JERRY R. BROWN
 PROJECT: LUCE BAYOU INTERBASIN TRANSFER PROJECT
 SHEET: 16 OF 37
 TITLE: PERMITTED PLANS
 DRAWN BY: JERRY R. BROWN
 CHECKED BY: JERRY R. BROWN
 APPROVED BY: JERRY R. BROWN
 DATE: 01/29/2014

PERMITTED PLANS

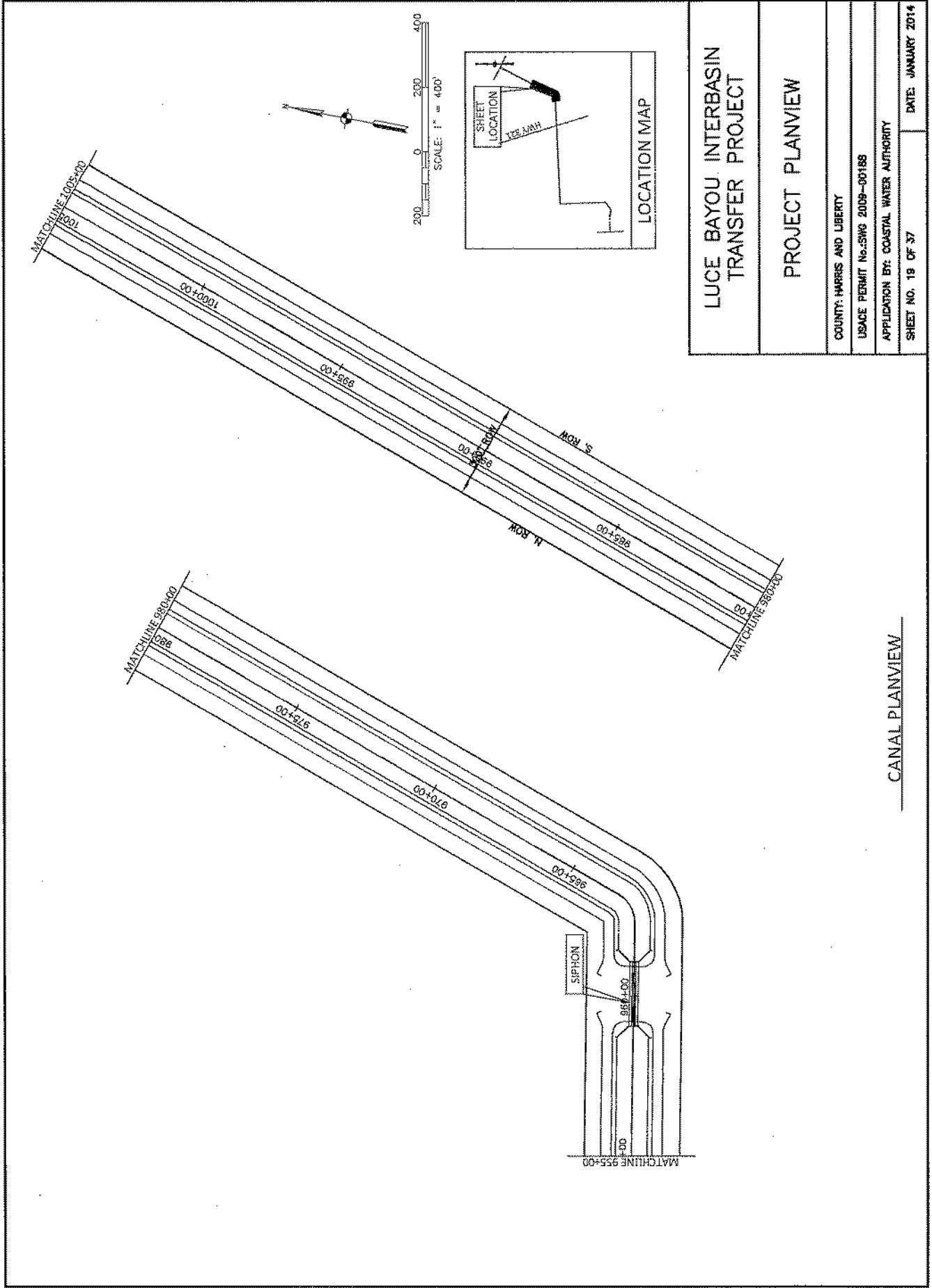


LUCE BAYOU INTERBASIN TRANSFER PROJECT	
PROJECT PLANVIEW	
COUNTY HARRIS AND LIBERTY	
USACE PERMIT No.: SWG 2009-00188	
APPLICATION BY: COASTAL WATER AUTHORITY	
SHEET NO. 18 OF 37	DATE: JANUARY 2014

CANAL PLANVIEW

DATE: 01/20/2014 10:23:00 AM. PROJECT: SWG 2009-00188. SHEET: 18 OF 37. DRAWN BY: J. W. BROWN. CHECKED BY: J. W. BROWN. APPROVED BY: J. W. BROWN. PROJECT: SWG 2009-00188. SHEET: 18 OF 37. DRAWN BY: J. W. BROWN. CHECKED BY: J. W. BROWN. APPROVED BY: J. W. BROWN.

PERMITTED PLANS

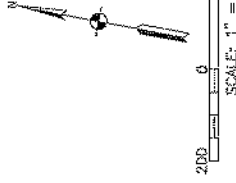
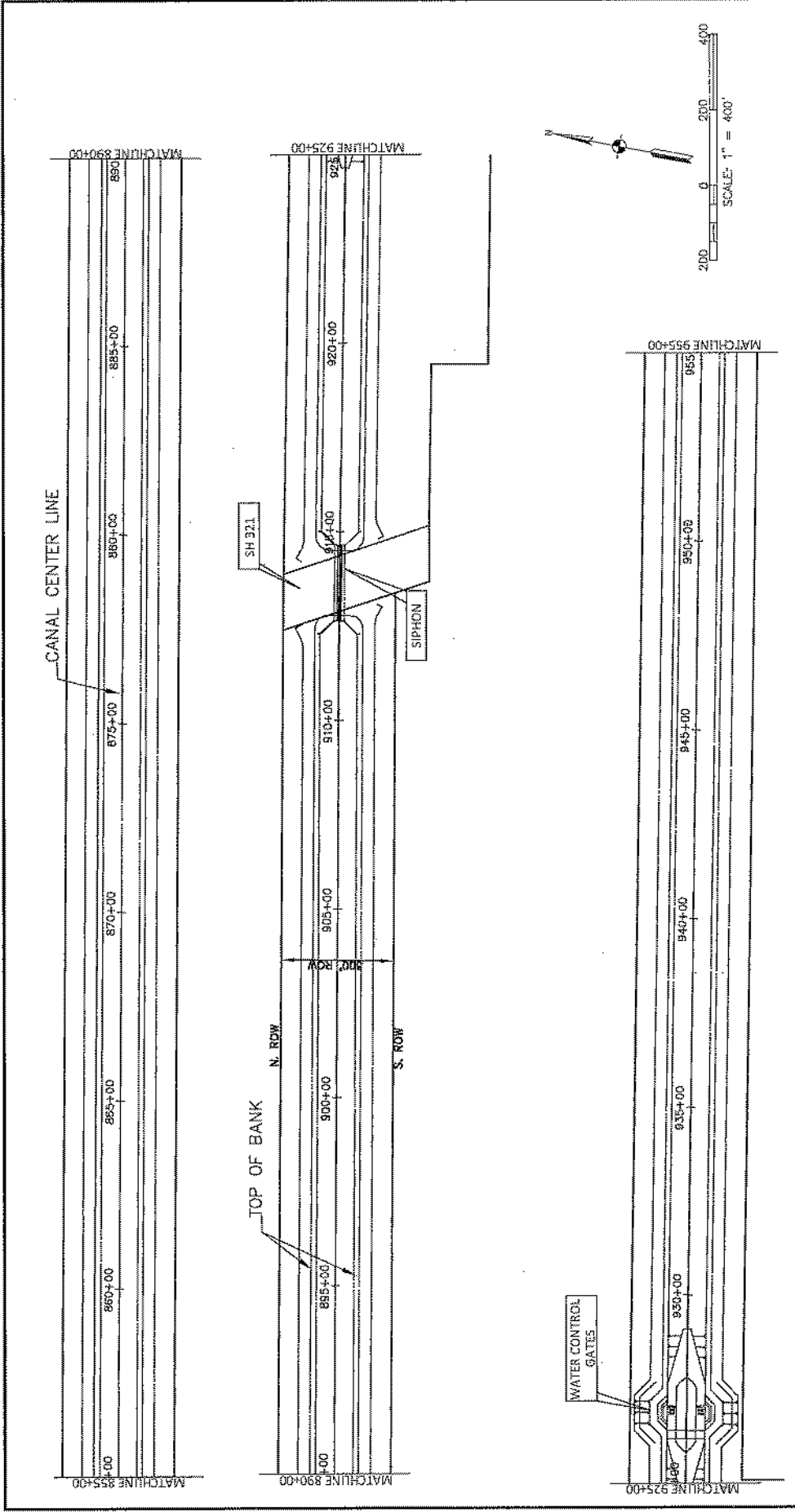


CANAL PLANVIEW

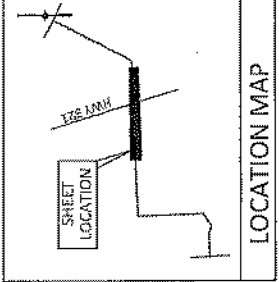
LUCE BAYOU INTERBASIN TRANSFER PROJECT	
PROJECT PLANVIEW	
COUNTY: HARRIS AND LIBERTY	
USACE PERMIT No.: SWG 2009-00188	
APPLICATION BY: COASTAL WATER AUTHORITY	
SHEET NO. 19 OF 37	DATE: JANUARY 2014

DATE REVISION: Jan 20, 2014 -- Action: BY USACE (WATER) PERMIT NO. SWG 2009-00188
 PROJECT LOCATION: Project Location: Luce Bayou Interbasin Transfer Project, Harris and Liberty Counties, Texas
 PROJECT NAME: Luce Bayou Interbasin Transfer Project
 DRAWING TITLE: CANAL PLANVIEW
 DRAWING NUMBER: SWG-2009-00188-19
 DRAWING SCALE: 1" = 400'
 DRAWING DATE: 1/15/14
 DRAWING BY: J. W. [Name]
 CHECKED BY: [Name]
 APPROVED BY: [Name]

PERMITTED PLANS



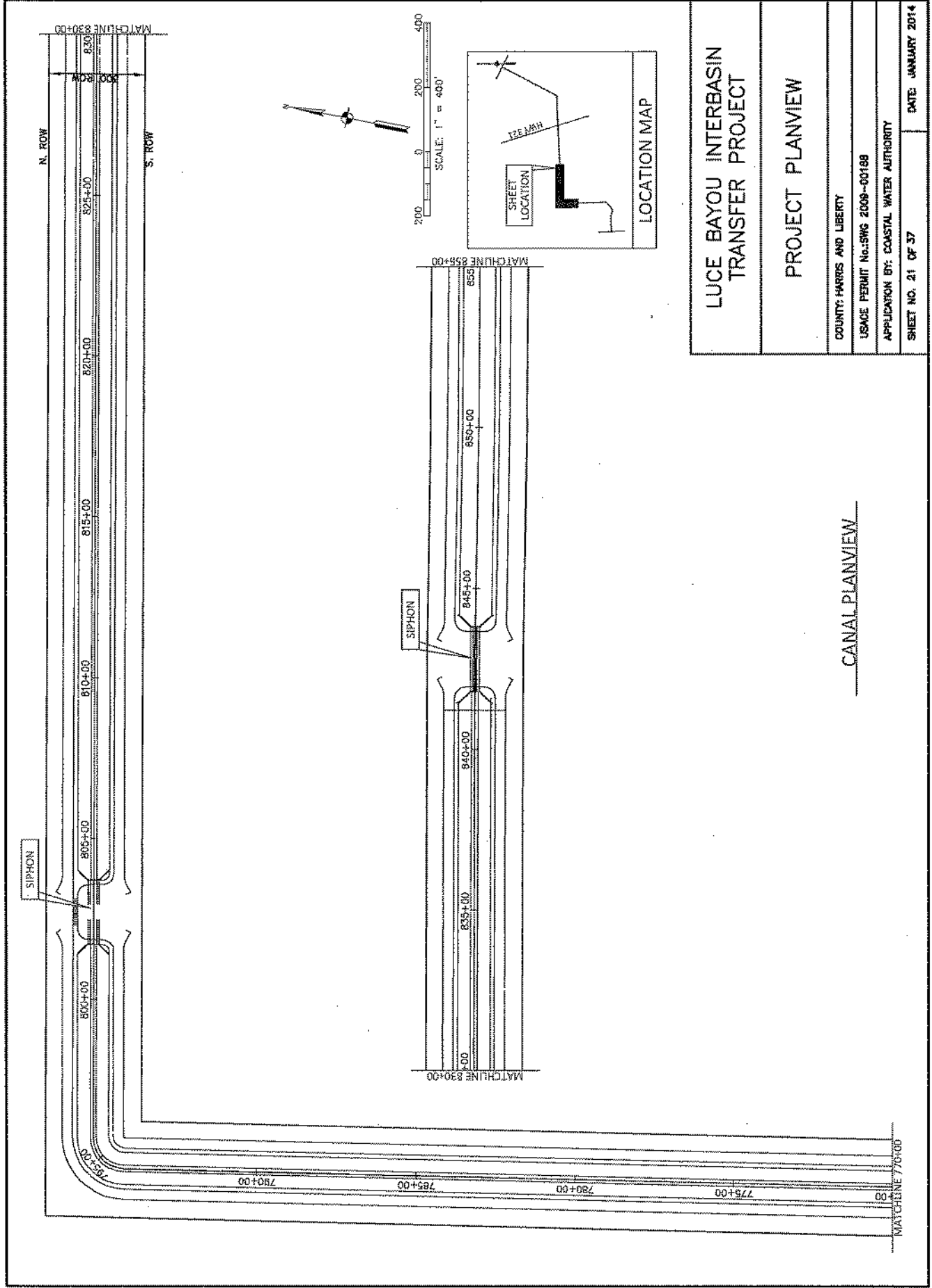
LUCE BAYOU INTERBASIN TRANSFER PROJECT	
PROJECT PLANVIEW	
COUNTY: HARRIS AND LIBERTY	
USAGE PERMIT No.: SWG 2009-00188	
APPLICATION BY: COASTAL WATER AUTHORITY	
SHEET NO. 20 OF 37	DATE: JANUARY 2014



CANAL PLANVIEW

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 PROJECT: LUCE BAYOU INTERBASIN TRANSFER PROJECT
 SHEET: 20 OF 37
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PERMITTED PLANS

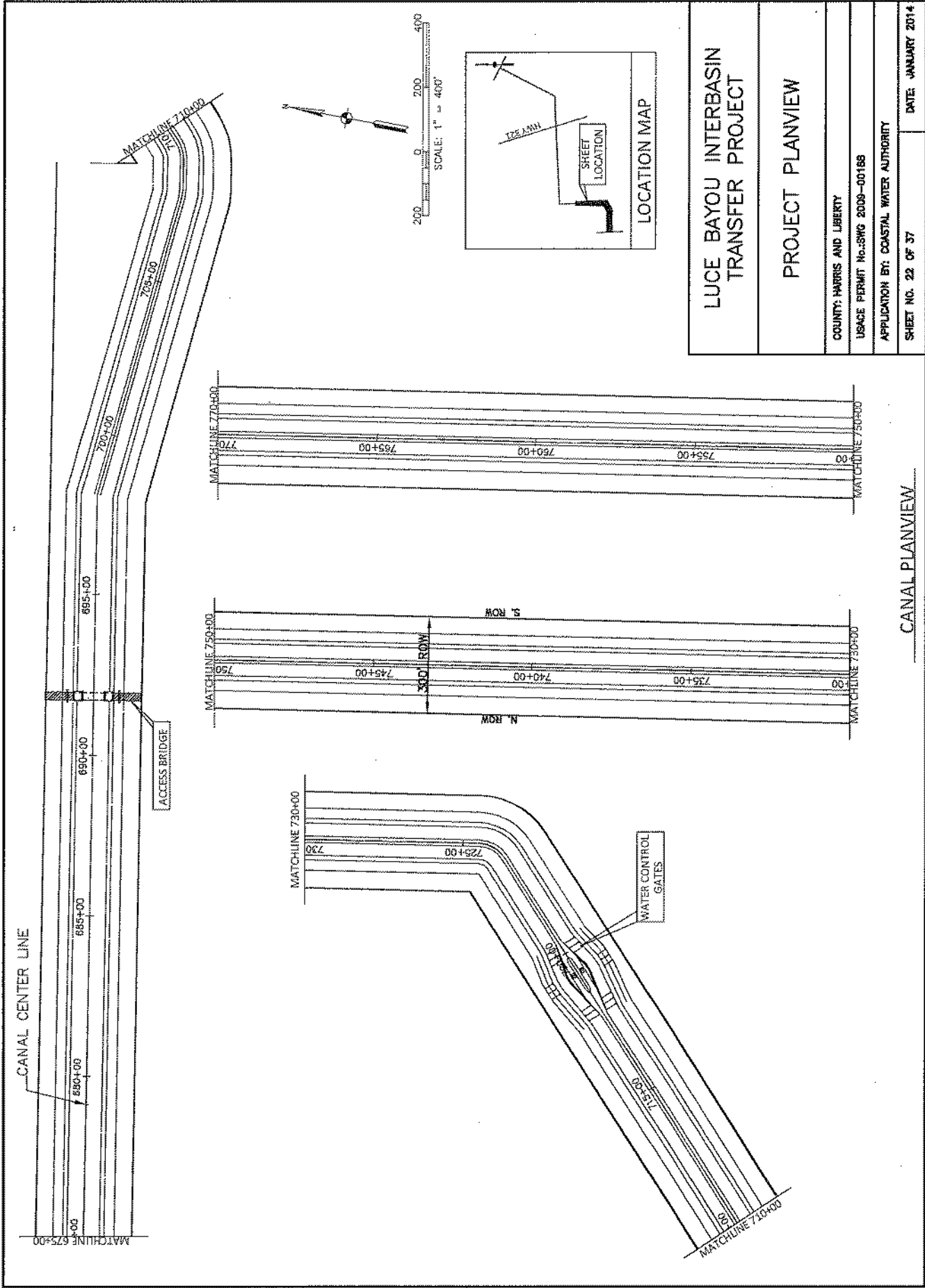


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 SHEET: 21 OF 37

LUCE BAYOU INTERBASIN TRANSFER PROJECT	
PROJECT PLANVIEW	
COUNTY: HARRIS AND LIBERTY	
USACE PERMIT No.: SWG 2009-00188	
APPLICATION BY: COASTAL WATER AUTHORITY	
SHEET NO. 21 OF 37	DATE: JANUARY 2014

CANAL PLANVIEW

PERMITTED PLANS



LUCE BAYOU INTERBASIN
TRANSFER PROJECT

PROJECT PLANVIEW

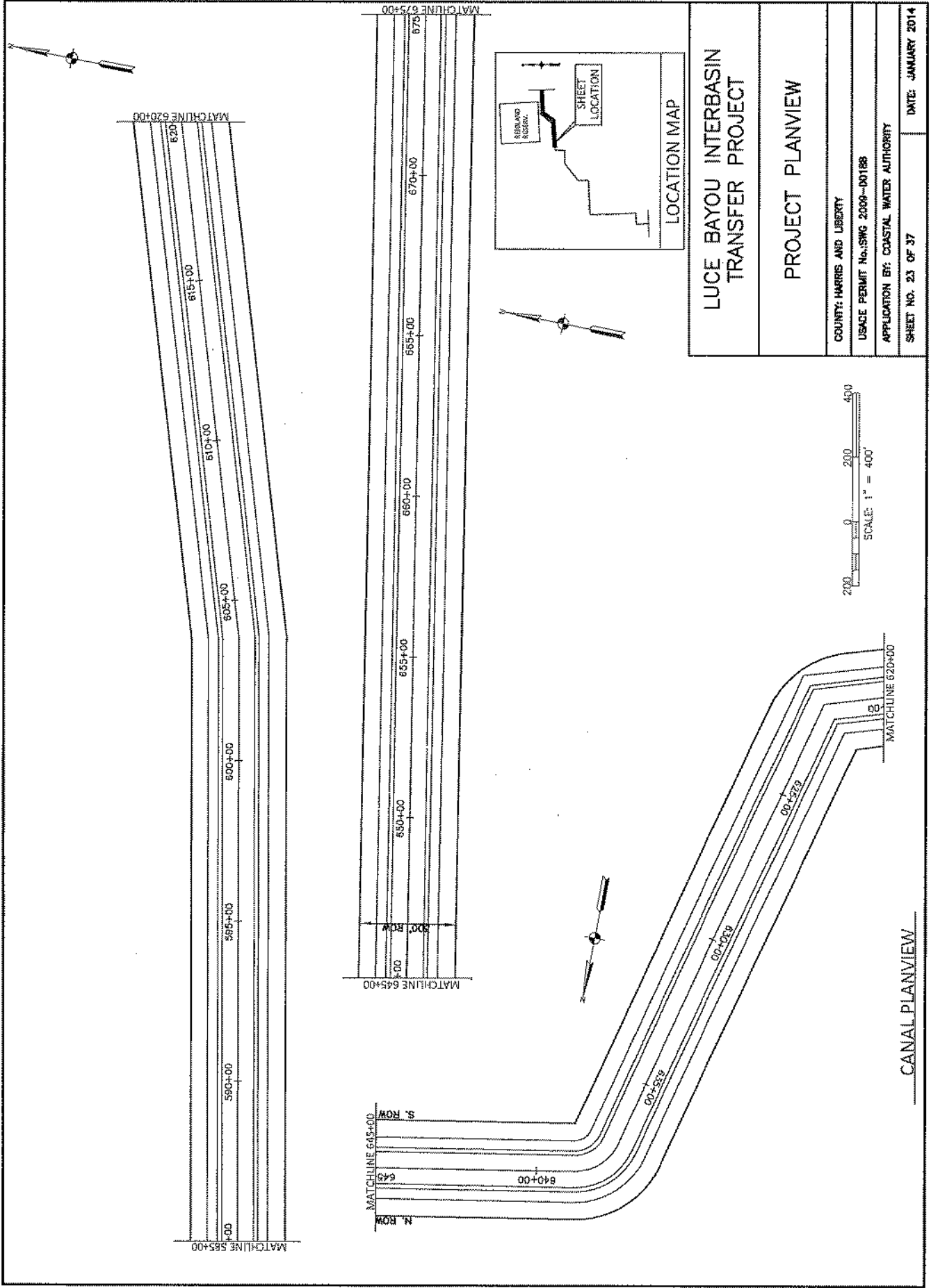
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 APPLICATION BY: COASTAL WATER AUTHORITY

SHEET NO. 22 OF 37 DATE: JANUARY 2014

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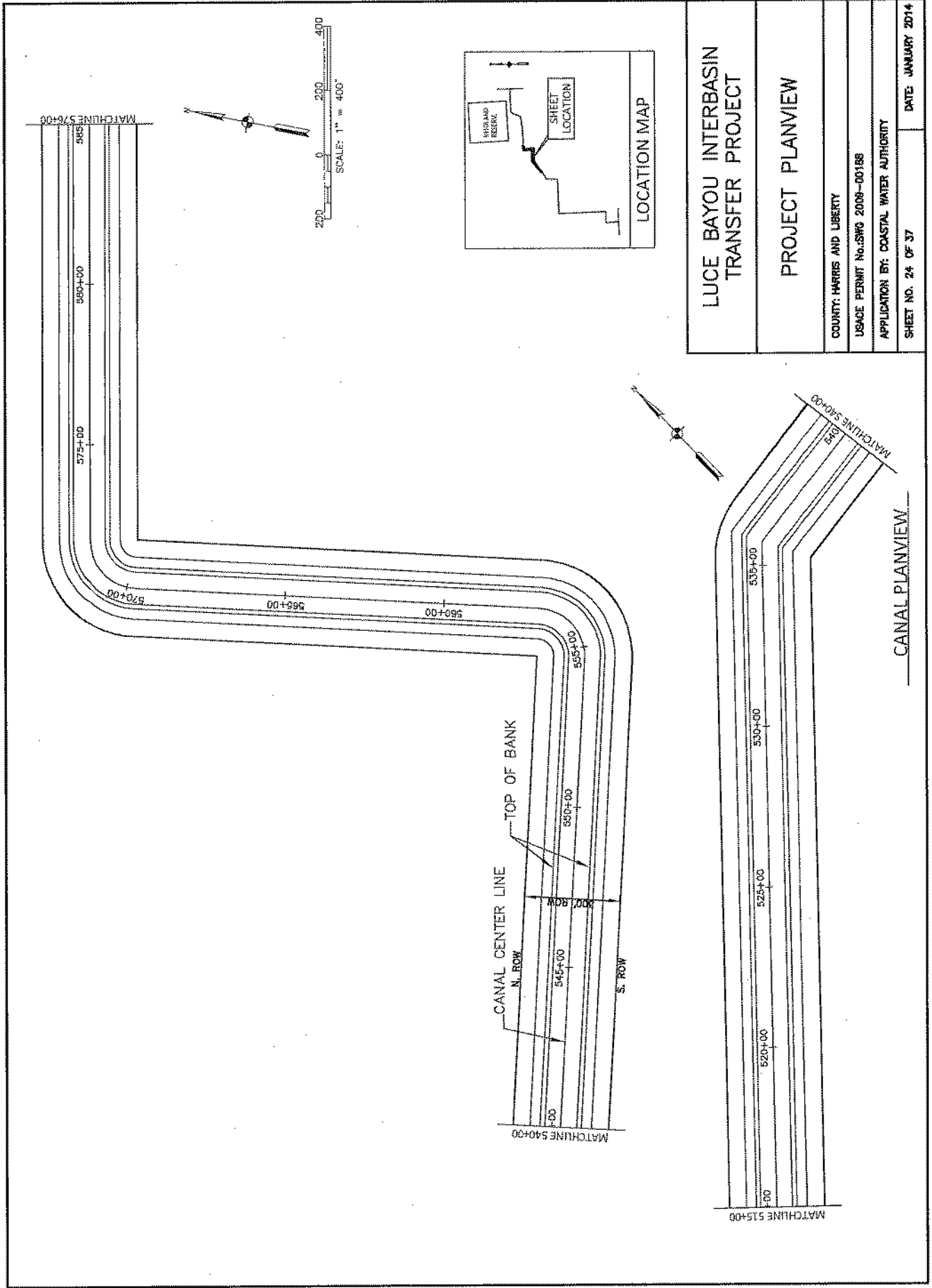
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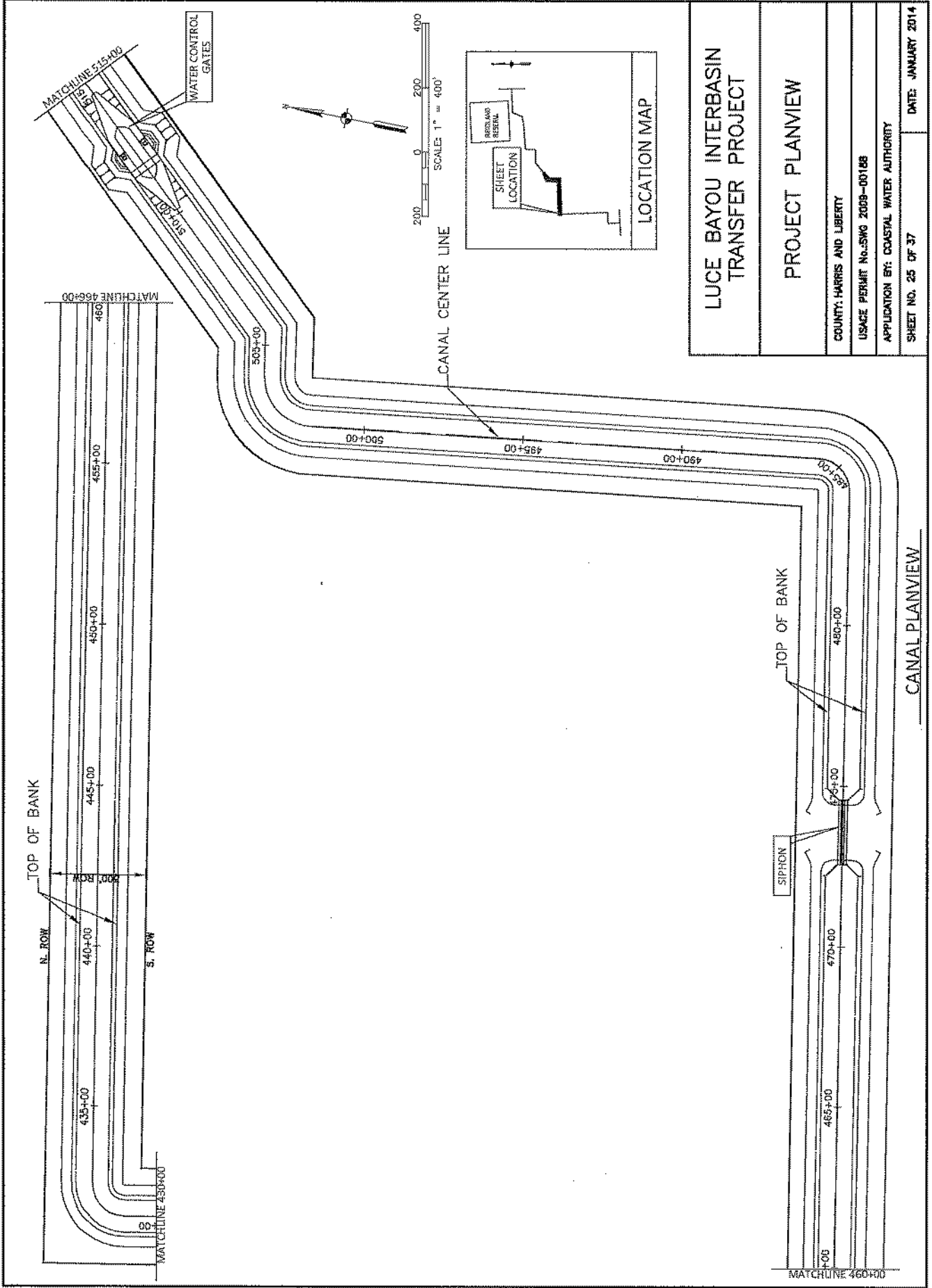
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<p>LUCE BAYOU INTERBASIN TRANSFER PROJECT</p>	
<p>PROJECT PLANVIEW</p>	
<p>COUNTY: HARRIS AND LIBERTY</p>	<p>USACE PERMIT No. SWG 2008-00188</p>
<p>APPLICATION BY: COASTAL WATER AUTHORITY</p>	
<p>SHEET NO. 24 OF 37</p>	<p>DATE: JANUARY 2014</p>

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 SHEET: 24 OF 37
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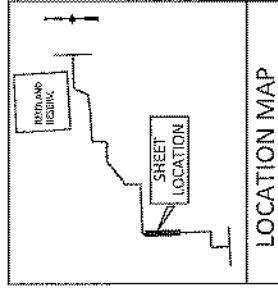
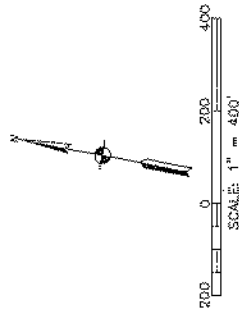
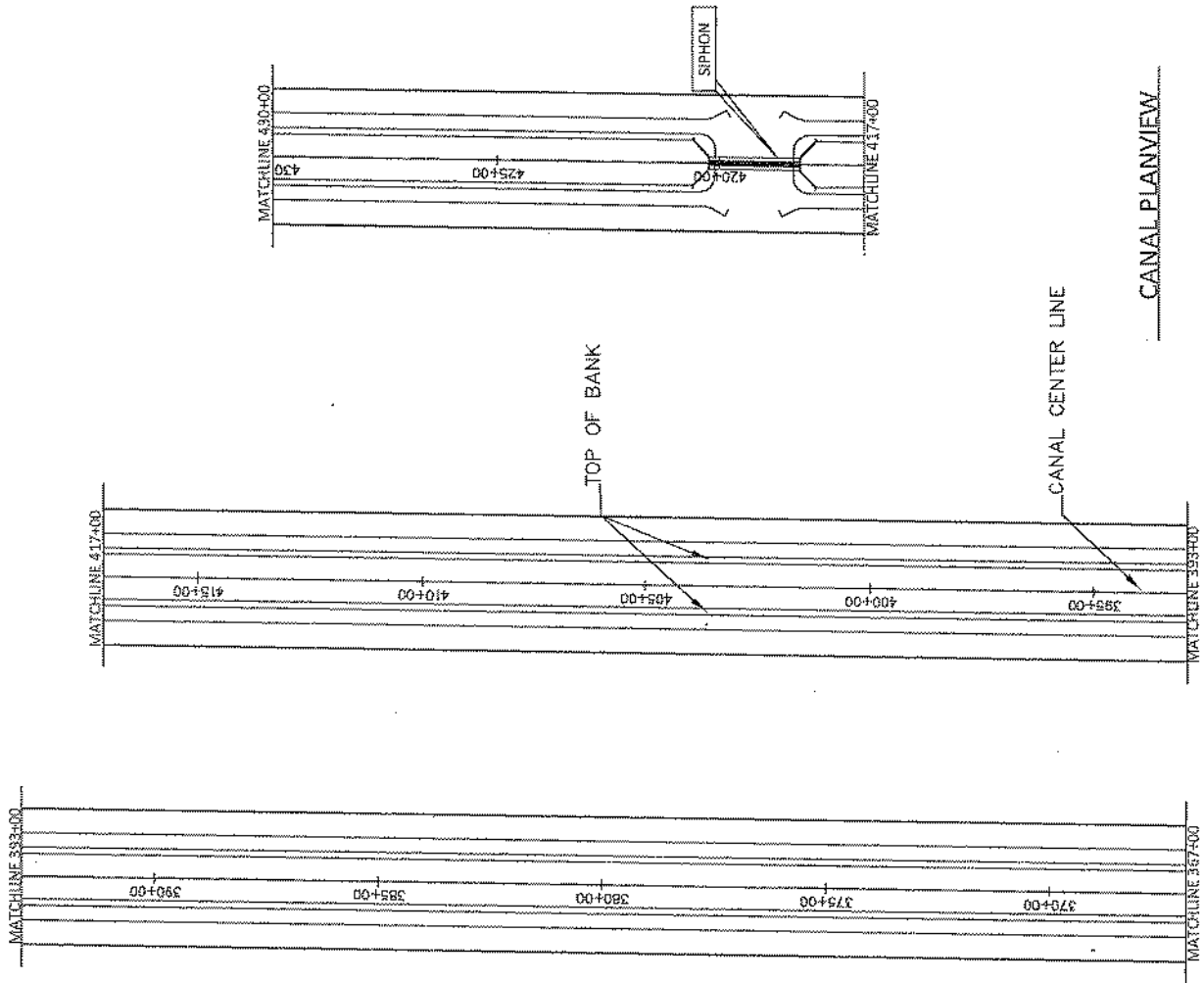


LUCE BAYOU INTERBASIN TRANSFER PROJECT	
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COUNTY: HARRIS AND LIBERTY	
USACE PERMIT No. SWG 2009-00188	
APPLICATION BY: COASTAL WATER AUTHORITY	
SHEET NO. 25 OF 37	DATE: JANUARY 2014

CANAL PLANVIEW

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 SHEET: 25 OF 37 - CANAL PLANVIEW
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PERMITTED PLANS



LUCE BAYOU INTERBASIN
TRANSFER PROJECT

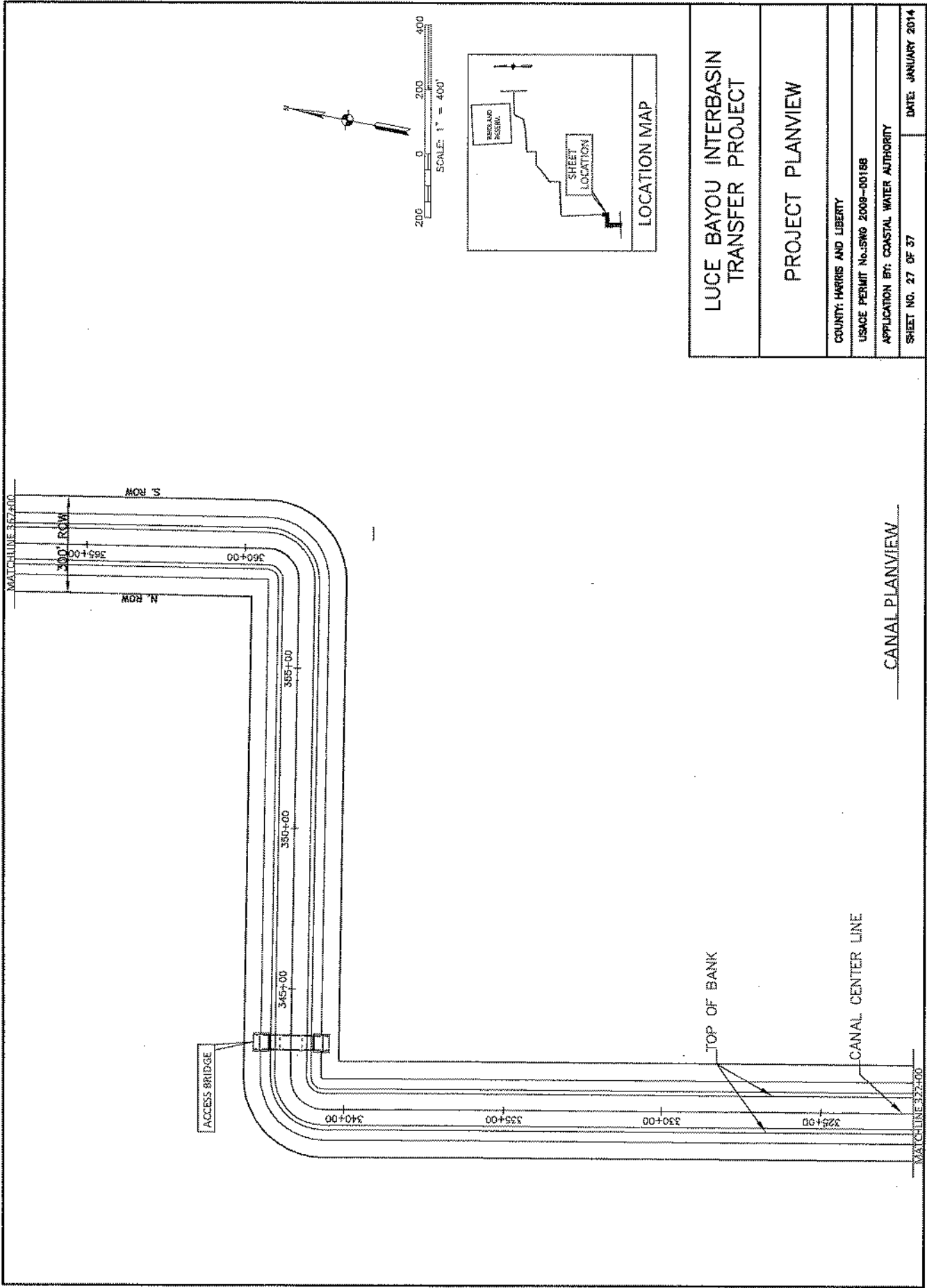
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SHEET NO. 26 OF 37

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PERMITTED PLANS



CANAL PLANVIEW

LUCE BAYOU INTERBASIN
TRANSFER PROJECT

PROJECT PLANVIEW

COUNTY: HARRIS AND LIBERTY

USACE PERMIT No. SWG 2008-00188

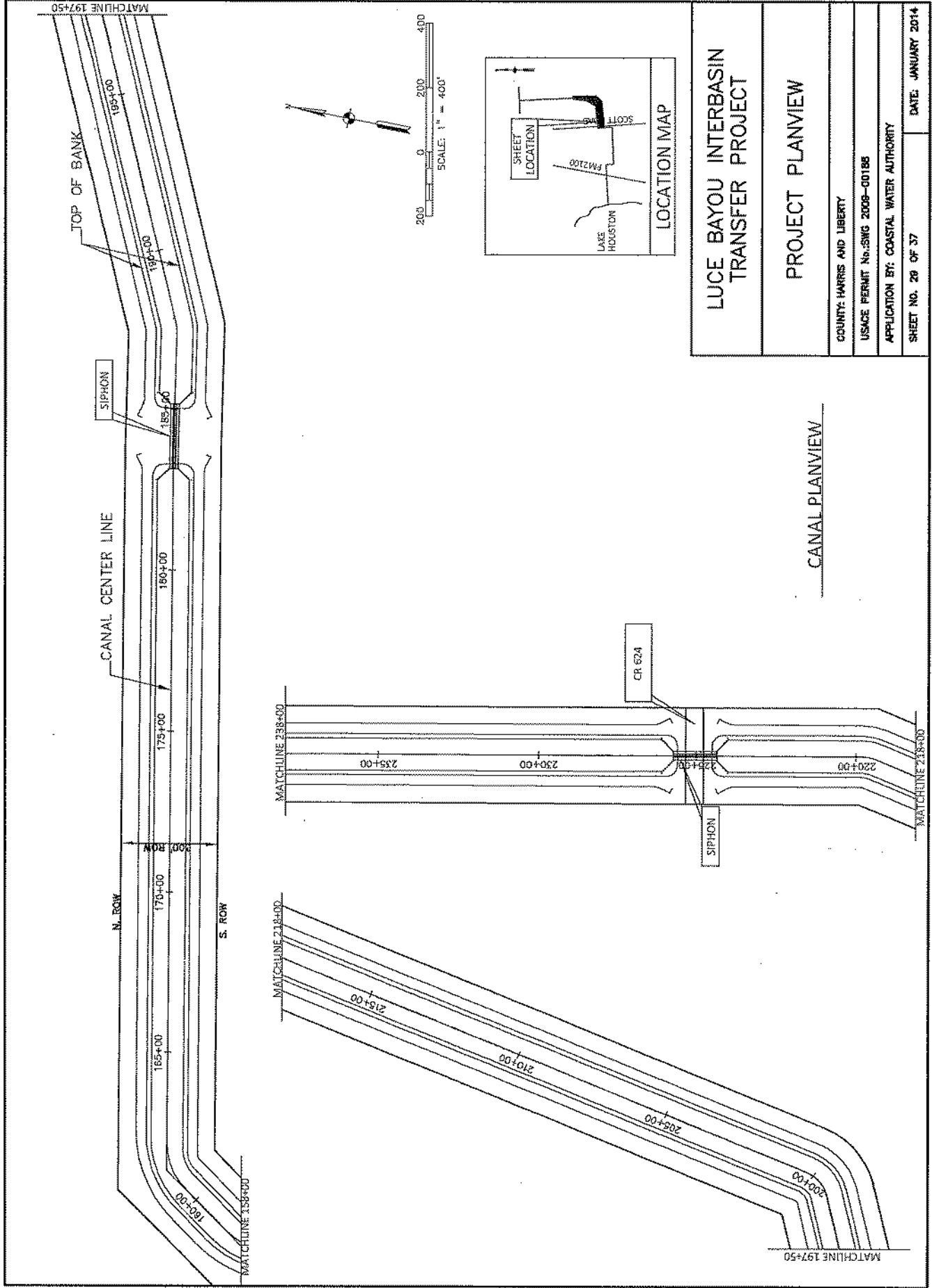
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SHEET NO. 27 OF 37

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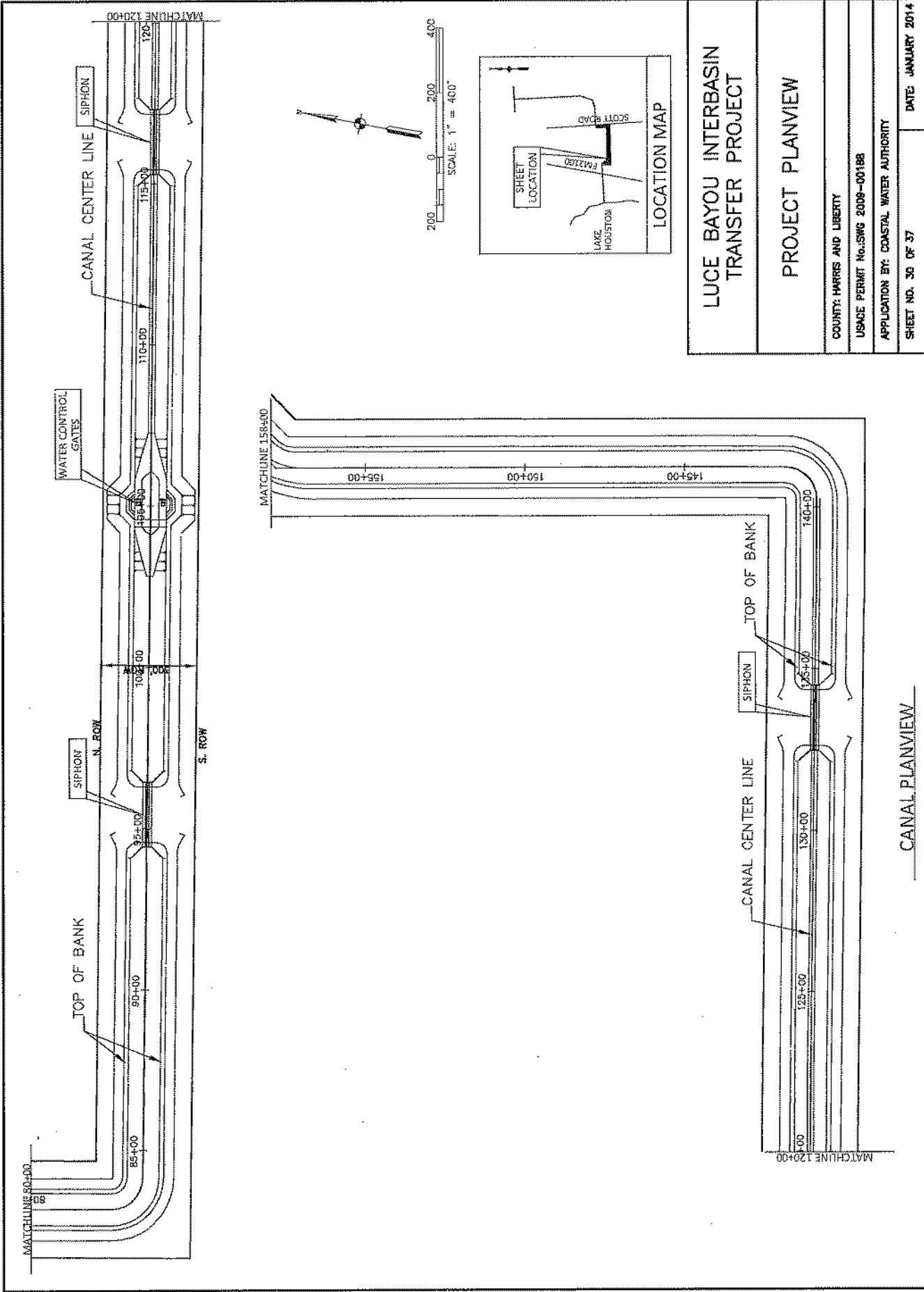
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LUCE BAYOU INTERBASIN TRANSFER PROJECT	
PROJECT PLANVIEW	
COUNTY: HARRIS AND LIBERTY	
USACE PERMIT No.: SWG 2009-00188	
APPLICATION BY: COASTAL WATER AUTHORITY	
SHEET NO. 29 OF 37	DATE: JANUARY 2014

PERMITTED PLANS



LUCE BAYOU INTERBASIN
TRANSFER PROJECT

PROJECT PLANVIEW

COUNTY: HARRIS AND LIBERTY

USAGE PERMIT No.: SWG 2009-00188

APPLICATION BY: COASTAL WATER AUTHORITY

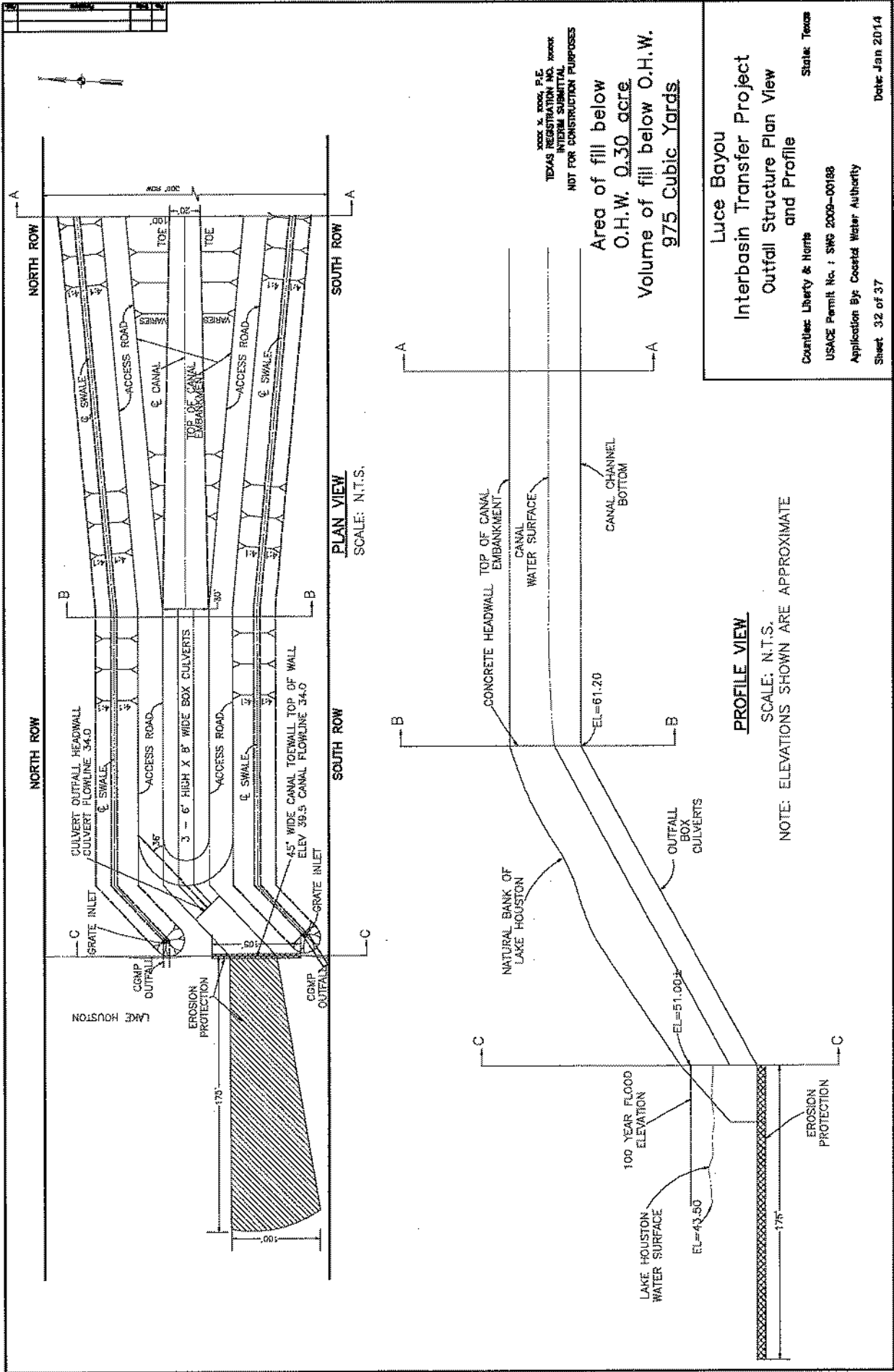
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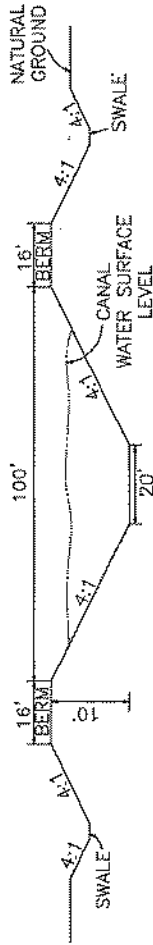
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DRAWN: J. HARRIS
CHECKED: J. HARRIS
SCALE: 1" = 400'

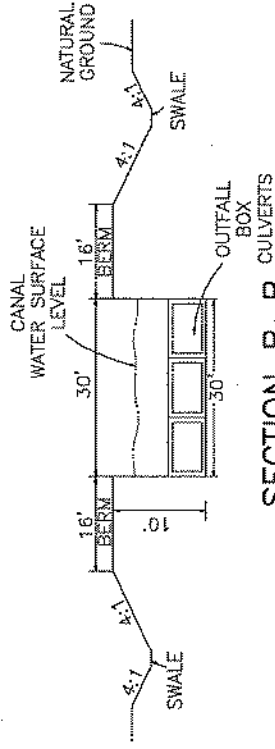
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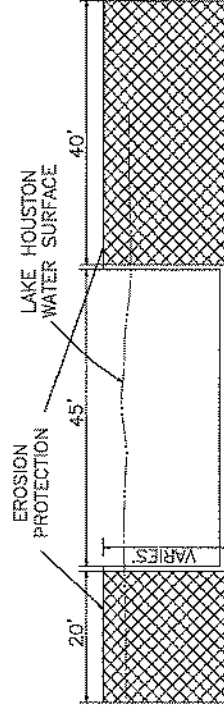
PERMITTED PLANS



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SECTION B-B
SCALE: N.T.S.



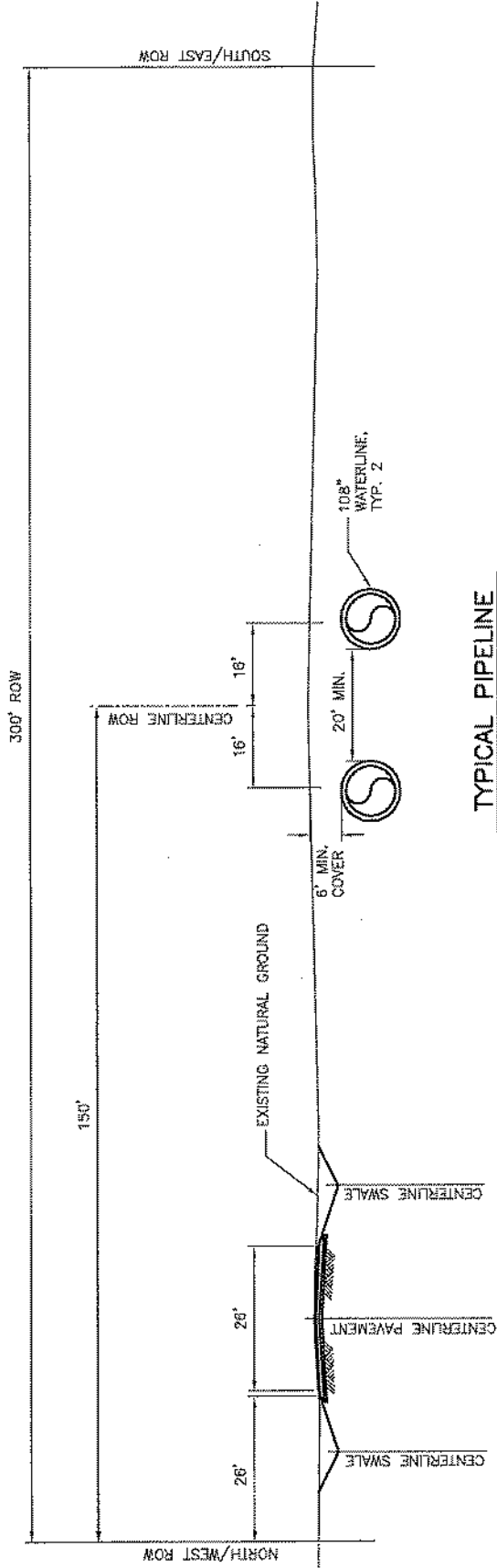
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MOSE E. WOOD, P.E.
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NOT FOR CONSTRUCTION PURPOSES

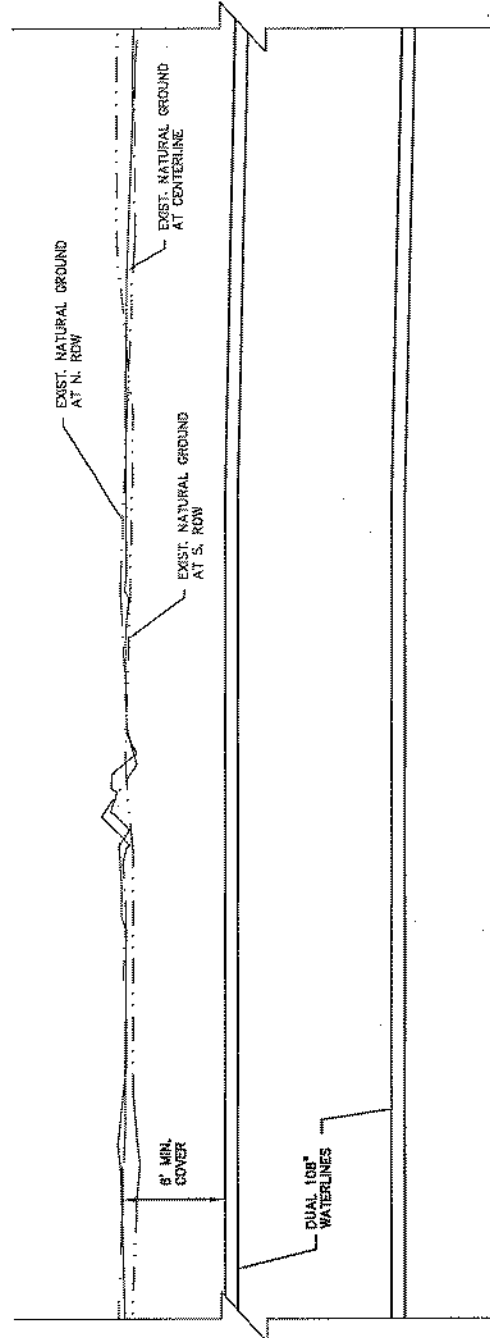
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Volume of fill below O.H.W. 975 Cubic Yards

Luce Bayou
Interbasin Transfer Project
Outfall Structure Plan View
and Profile

Counties: Liberty & Harris State: Texas
USACE Permit No.: SWG 2009-00188
Application By: Coastal Water Authority
Sheet 33 of 37 Date: Jan 2014



TYPICAL PIPELINE SECTION

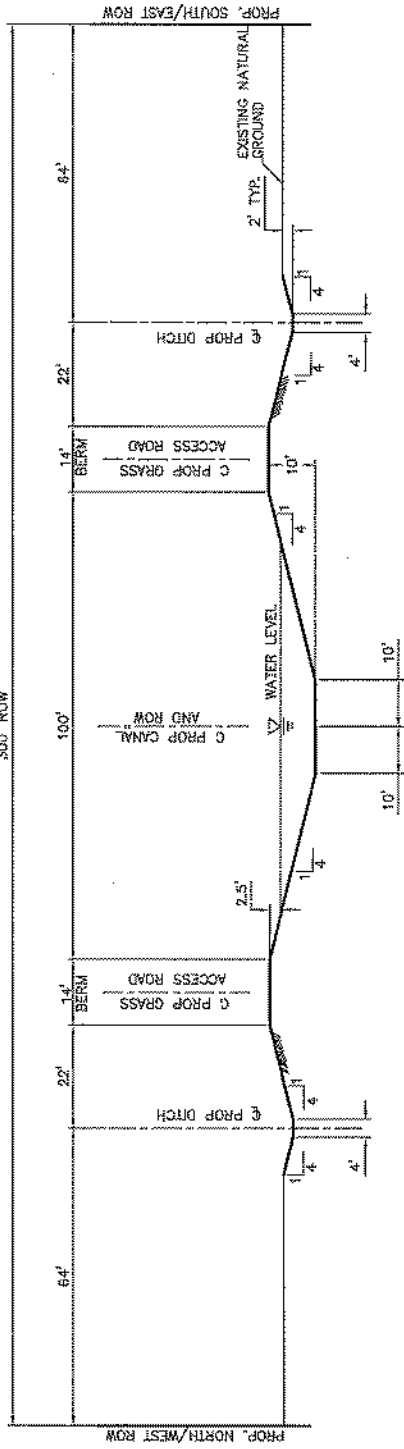


TYPICAL PIPELINE PROFILE

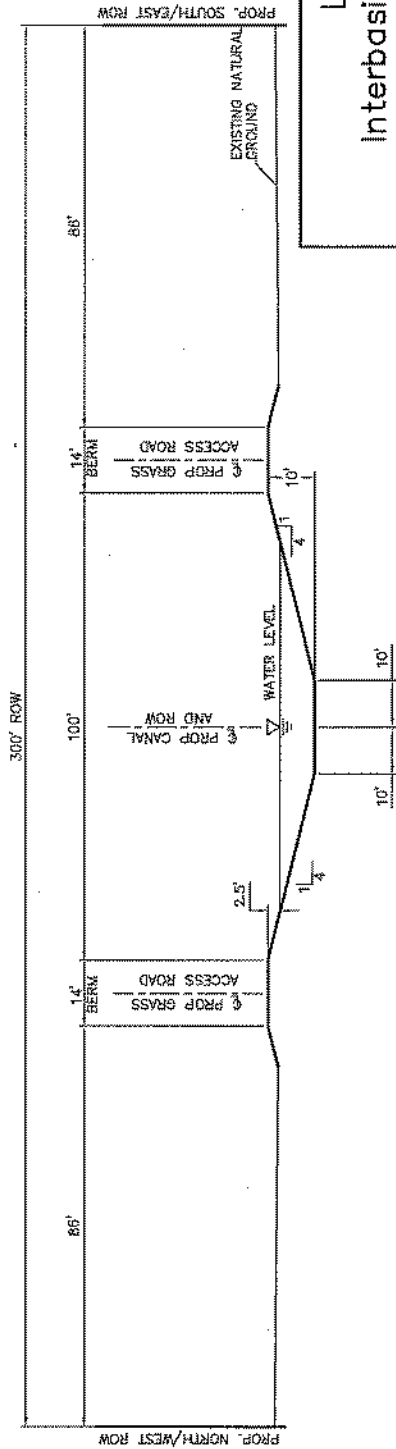
Luce Bayou
 Interbasin Transfer Project
 Typical Pipeline Section
 and Profile

Countries: Liberty & Harris
 USACE Permit No. : SWG 2009-00188
 Application By: Coastal Water Authority

State: Texas
 Sheet 34 of 37
 Date: Jan 2014



TYPICAL CANAL CROSS SECTION



TYPICAL CANAL CROSS SECTION

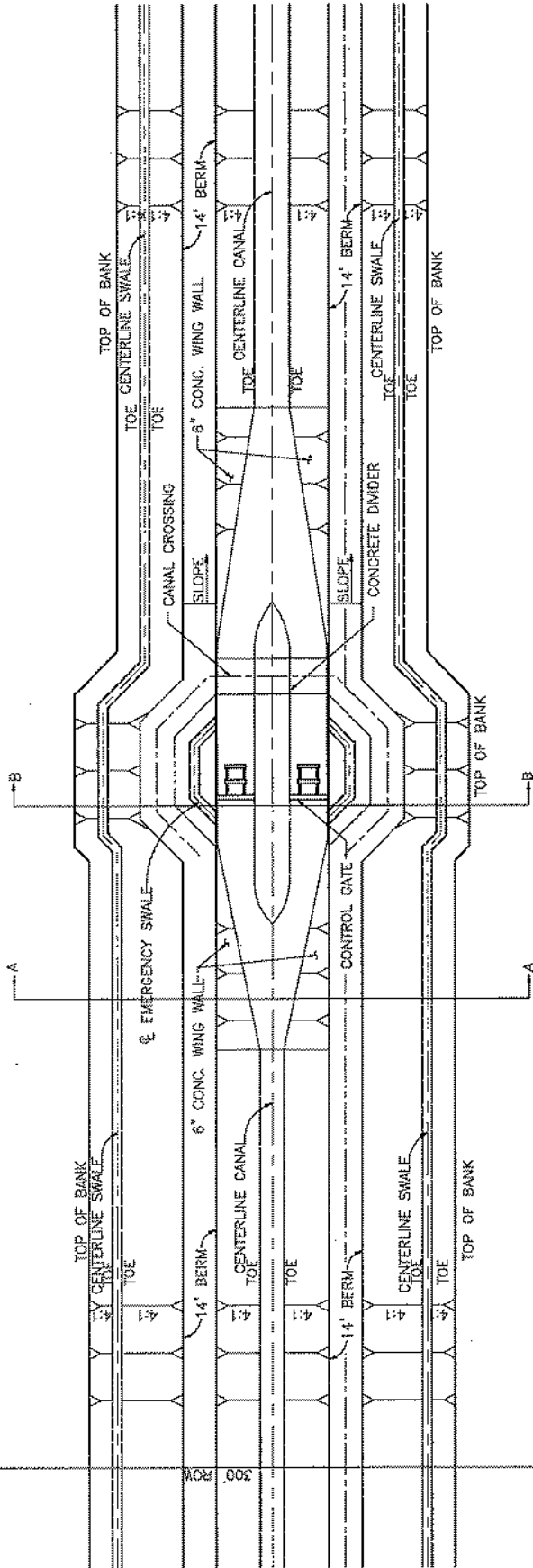
Luce Bayou
Interbasin Transfer Project
Typical Canal Cross Section

Counties: Liberty & Harris
State: Texas
USACE Permit No. : SWG 2009-00188
Application By: Coastal Water Authority

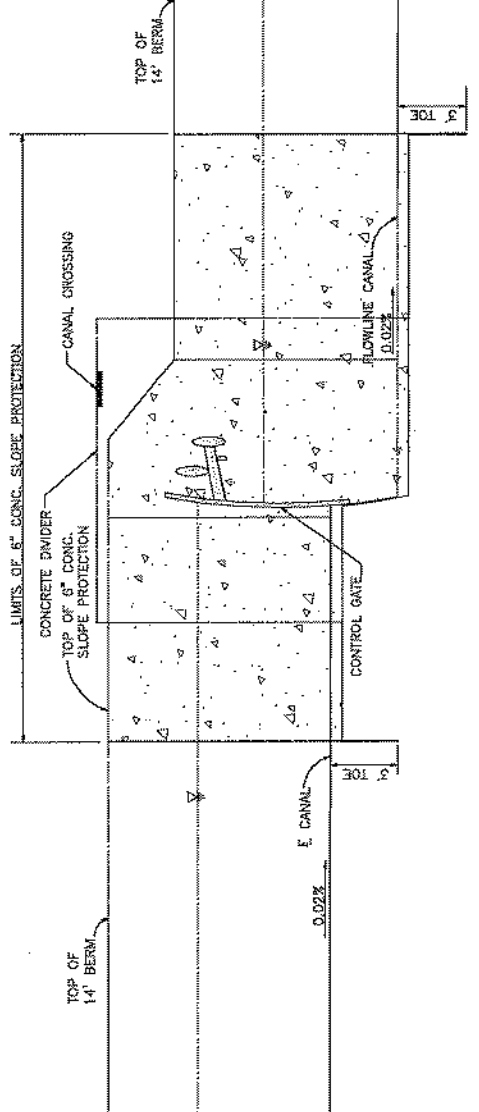
Date: Jan 2014

Sheet 35 of 37

DATE: November 14, 2013
BY: [Signature]
PROJECT: Luce Bayou Interbasin Transfer Project
DRAWING: Typical Canal Cross Section
SCALE: As Shown
REVISIONS: None



PLAN VIEW



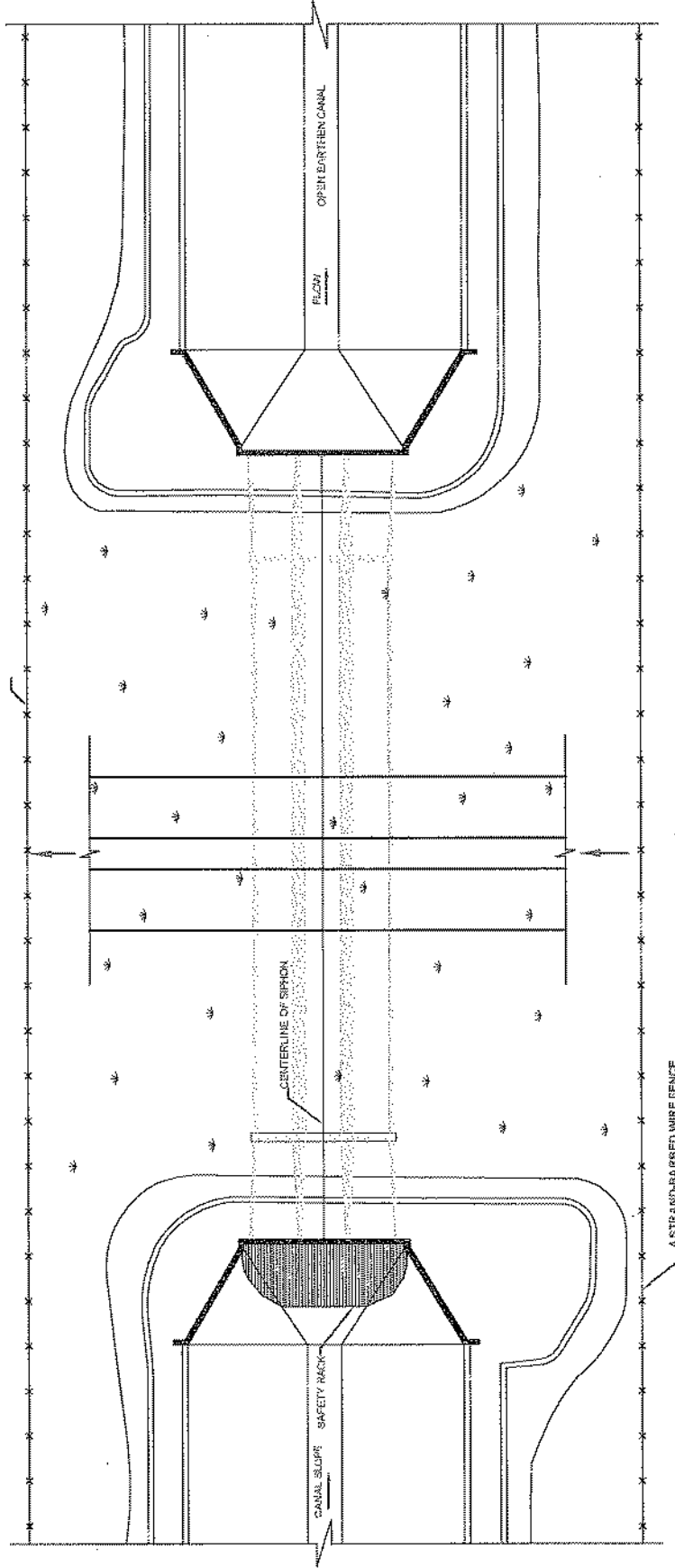
PROFILE VIEW

Luce Bayou Interbasin Transfer Project Water Level Control Gate Plan and Profile View

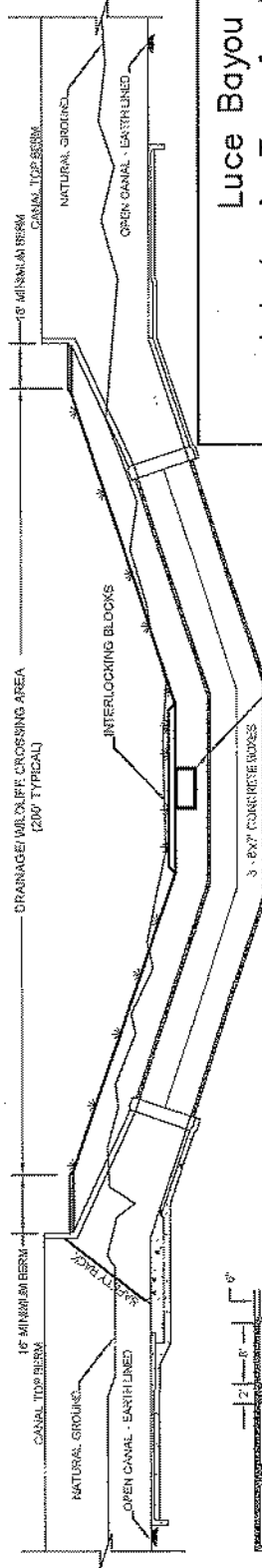
Counties: Liberty & Harris State: Texas
 USACE Permit No.: SWG 2009-00188
 Application By: Coastal Water Authority
 Sheet 36 of 37

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 BY: [Name] [Title]
 THIS DOCUMENT IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE
 PERMIT NO. SWG 2009-00188
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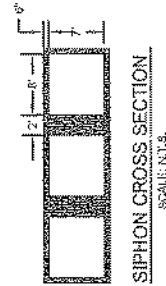
PERMITTED PLANS



PLAN VIEW
SCALE: N.T.S.



PROFILE VIEW
SCALE: N.T.S.



Luce Bayou
Interbasin Transfer Project
Typical Drainage/Wildlife Crossing Area

State: Texas

Counties: Liberty & Harris

USACE Permit No. : SWG 2009-001688

Application By: Coastal Water Authority

Sheet 37 of 37

Date: Jan 2014

LAST MODIFIED: Mar 22, 2010 - 8:07am BY USER: gregoryj
DRAWN: LUCASIAN DESIGN GROUP & ASSOCIATES, INC. (LDAI) PROJECT NO. 09-001688
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Luce Bayou Interbasin Transfer Project (LBITP)**PERMITTED PLANS****Final Mitigation Plan****Permit Application No. SWG-2009-01888****Avoidance and Minimization**

A critical goal for LBITP's planning and preliminary design process was to avoid and minimize adverse impacts to the natural environment. Due to LBITP's scale and size (approximately 26.5 miles long and encompassing approximately 1,050 acres), impacts to all environmental resources could not be avoided. Project alignment planning and detailed alternatives analyses were performed in an effort to minimize impacts to the natural environment, including aquatic resources. After identifying the preferred alternative in 2007, the LBITP corridor alignment was further refined to minimize adverse environmental impacts by establishing the project corridor through already disturbed areas, along parcel boundaries, outside the flood hazard zone, and outside forested areas as much as possible. The corridor was aligned, where possible, along upland ridges and through topographic breaks between watersheds. The proposed Capers Ridge Pump Station (CRPS) footprint was designed to minimize impacts to aquatic resources, as proposed construction activities would completely avoid approximately 42.4 acres of the 90.7-acre CRPS property. The entrance road to CRPS was routed along existing roads to the extent practicable to minimize environmental effects associated with CRPS access. Some additional ROW would be needed to achieve the required roadway geometry, but the additional ROW would involve less acreage than constructing a roadway through currently undisturbed areas.

Objectives

The Applicant, Coastal Water Authority, proposes preservation of an approximately 2,979-acre predominately forested tract adjacent to the Trinity River in LBITP's far northeastern portion as compensatory mitigation for unavoidable impacts to aquatic resources. Compensatory mitigation through preservation of the proposed mitigation property would include preserving approximately 1,132 acres of aquatic resources including forested, scrub-shrub, and emergent wetlands, Gillen Bayou, and surface drainage features, in addition to approximately 1,847 acres of predominately forested upland resources.

Donation of the mitigation tract to the U.S. Fish and Wildlife Service (USFWS) Trinity River National Wildlife Refuge (TRNWR) would ensure long-term management, sustainability, and site protection of aquatic resources within the Trinity River watershed. The mitigation site is within the established Lower Trinity River Floodplain Habitat Stewardship Program (LTRFHSP) acquisition boundary for the Trinity River National Wildlife Refuge (TRNWR) that was proposed and adopted by the U.S. Fish and Wildlife Service (USFWS) in 1999. The USFWS promotes active stewardship of important remnant habitats of approximately 105,000 acres in eight designated Focus Areas in the lower Trinity River floodplain. These Focus Areas are identified to become part of the USFWS NWR system and would be included as part of the TRNWR.

Site Selection

The land parcel within the USFWS TRNWR Capers Ridge Focus Area 5 is the proposed site for compensatory mitigation for unavoidable impacts to wetlands and other aquatic resources. Capers Ridge is identified in Focus Area 5 in the LTRFHSP, and has been identified as a first priority acquisition area by the USFWS. An Environmental Assessment was developed to assess and understand the purpose and need, alternatives, and the environmental impacts associated with establishing the LTRFHSP along the floodplain of the Lower Trinity River. LTRFHSP's goals include conserving migratory birds, protecting scarce and vulnerable wetlands types, and maintaining natural biological diversity. These

PERMITTED PLANS

goals have been met by acquiring and managing floodplain and bottomland forested areas along the Trinity River and preserving them as part of the TRNWR.

The proposed LBITP compensatory mitigation site is part of Focus Area 5, which encompasses approximately 20,000 acres of land within the Trinity River floodplain described by the USFWS. Focus Area 5 was deemed critical for conserving migratory birds, protecting scarce and vulnerable wetland types, and maintaining natural biological diversity in the lower Trinity River flood hazard zone or floodplain. The primary habitats in the area include all bottomland forest types (broad leaf, narrow leaf and needle leaf deciduous), marshes, oxbows and shallow bayous. The unique ridge trending east-west through Focus Area 5 contains a moderate amount of pine and mixed hardwood forest resources that may be seasonally to temporarily flooded, and a moderate amount is classified as important, scarce and vulnerable wetlands. Natural resource values for the proposed area are threatened by wholesale and selective timber production, sand and gravel mining, planned residential development, and oil and gas exploration and production. The habitat quality was described as moderate to high for Focus Area 5.

The compensatory mitigation plan was developed through an analytical process designed to support the sustainability or improvement of aquatic resources in the watershed where the majority of the impacts are proposed to occur. This process involved the consideration of different watershed needs, and how the location and type of compensatory mitigation could address those needs. The compensatory mitigation site is in proximity to the Luce Bayou, San Jacinto River, and Trinity River watersheds, and within comparable Hydrologic Unit Code (HUC) zones. The proposed compensatory mitigation site would benefit the Trinity River watershed and offset losses of aquatic resource functions and services caused by this and other activities in the watershed, including historic and potential aquatic resource conditions, past and projected aquatic resource impacts, and impacts to terrestrial connections between aquatic resources.

The 2008 Final Rule establishes a compensatory mitigation requirement hierarchy that includes permittee-responsible mitigation as an option. The proposed LBITP permittee-responsible compensatory mitigation plan includes property acquisition by the Applicant, a delineation of aquatic resources on the mitigation site, preservation of forested, scrub-shrub, and emergent wetlands, Gillen Bayou, surface drainage features, upland forests, and former pasturelands, and ultimately transferring the mitigation property to the TRNWR for long-term protection and management. Based on the 2008 Final Rule, preservation of the mitigation site may be used to provide compensatory mitigation since the following criteria have been met.

- Preserved resources provide important physical, chemical, or biological functions for the watershed.
- Preserved resources contribute significantly to the ecological sustainability of the watershed.
- Preservation is appropriate and practicable.
- Resources are under threat of destruction or adverse modification.
- Preserved property would be permanently protected through an appropriate real estate or legal instrument such as, in this case, transfer of ownership to the TRNWR.

Site Protection Instrument

As directed by the Corps, the Applicant has conducted studies of the mitigation property acceptable to the Corps of Engineers and the USFWS. By letter dated July 25, 2013, the USFWS indicated that they would accept the donation of the mitigation property, including the approximately 200-acre area previously logged, subject to their real estate acquisition requirements which are in the final stages of completion. After the proposed mitigation property is accepted as a donated property by the TRNWR, it would be managed in accordance with the TRNWR Comprehensive Conservation Plan (CCP).

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Baseline Information

The proposed compensatory mitigation property is a tract of land encompassing approximately 3,135 acres located in the northeastern portion of the LBITP. The majority of the mitigation property is forested; however, areas in the southeastern and far western portions of the site have been cleared and used as pasture. The proposed LBITP facilities would be constructed on approximately 156 acres of the property, leaving approximately 2,979 acres to be preserved. Aquatic resources identified within the 2,979 acres of the mitigation site to be preserved include approximately 1,083.88 acres of forested wetlands, 0.97 acres of scrub-shrub wetlands, 20.20 acres of emergent wetlands, 1.82 acres of excavated ponds, and 24.89 acres of streams and surface drainage features. Collectively, these aquatic resources total approximately 1,131.76 acres (see FEIS Table 6-1, Figure 6-1, and Figure 6-2 (4 sheets)) and would be sufficient compensatory mitigation for unavoidable impacts to approximately 364.76 acres of jurisdictional wetlands and waters of the U.S. for the preferred alternative. These approximately 364.76 acres of unavoidable impacts include approximately 359.19 acres of wetlands, 3.53 acres of surface drainage features, and 2.04 acres of open water, including 1.67 acres at the Trinity River at the proposed Capers Ridge Pump Station and 0.30 acres at the Luce Bayou discharge point at Lake Houston.

The Corps determined that 796.52 acres of the aquatic resources identified on the mitigation property are jurisdictional waters of the U.S.; 0.02 acres of which would be impacted by construction of the proposed LBITP facilities. The remaining 796.50 acres of jurisdictional waters would be preserved. An additional 335.26 acres of non-jurisdictional waters of the U.S. on the mitigation site would also be preserved. Upland areas on the mitigation site to be preserved collectively total approximately 1,847.2 acres and are composed primarily of forested uplands, with some open pasture and roads/trails.

Changes to the landscape that have occurred in the past on the compensatory mitigation site include constructing unimproved roadways, clearing an area along the Trinity River floodplain and within pastureland along Gillen Bayou, drainage improvements, timber harvesting activities, hunting, oil and gas exploration and cattle grazing. Prior to acquisition of the tract, parts of the tract were threatened with imminent residential land development and clearing of timber resources by the previous property owner.

Determination of Credits

The 2008 Final Rule establishes methods that identify the acceptable level of wetland mitigation credits for unavoidable impacts to aquatic resources based on the function and value of the impacted natural resources. The type and quality of the replacement wetlands proposed as compensatory mitigation for unavoidable LBITP impacts have been determined by a functional assessment. A wetland evaluation based on implementing two different models was conducted for the LBITP mitigation site (see FEIS Appendix D). These models analyzed and compared the functions and services of the proposed LBITP mitigation site wetlands that would be preserved to those wetlands that would be impacted by LBITP construction. The evaluation helps establish a comparative measure to assess the quality of the wetlands proposed to be preserved and subsequently conveyed to the USFWS against the wetlands anticipated to be unavoidably impacted by the LBITP.

WET 2.0

The WET 2.0 method was used to evaluate the relative value of the wetland areas within the identified LBITP mitigation site compared with those that would be impacted by construction within the LBITP alignment. Typical wetlands within the identified mitigation site and along the LBITP alignment were each evaluated using the WET 2.0 method, with the results compared one to another. The regional priority for each function/value assessment was determined using the values established for the Greens Bayou Wetlands Mitigation Bank. While these values may not accurately reflect the regional priorities for the LBITP area or those of the LBITP mitigation site, they provided a baseline from which the relative wetland area values was compared and evaluated.

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**Table 6-1:
Aquatic Resources and Type within Mitigation Site**

Aquatic Resource Type	Acres
Forested Wetlands	1,083.88
Scrub-Shrub Wetlands	0.97
Emergent Wetlands	20.20
Ponds	1.82
Streams and Surface Drainage Features	24.89
Total Aquatic Resources	1,131.76
<hr/>	
Upland Resources	1,847.24

**Figure 6-1:
Mitigation Area Wetlands Site Map**

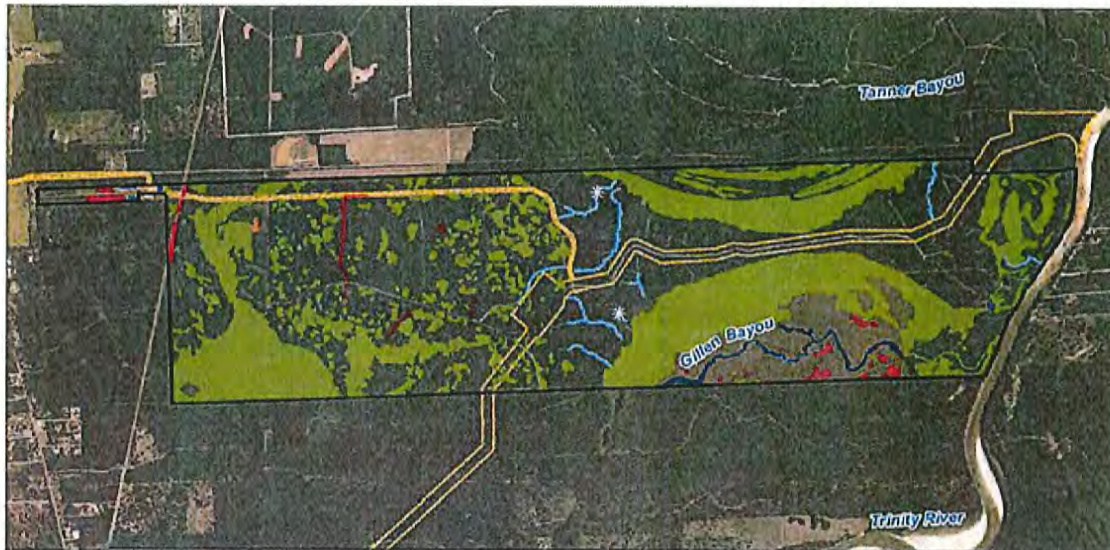


Image Source: USGS NAIP state based image service
http://gis.apfo.usda.gov/arcgis/services/NAIP/Texas_2012_1m_NC

- Legend**
- | | |
|-------------------|-------------------------------------|
| Harrison Tract | Harrison Tract Wetlands Type |
| Project Footprint | Emergent Wetlands (PEM) |
| Pond | Forested Wetlands (PFD) |
| Drainage | Scrub-Shrub Wetlands (PSS) |
| Spring | Excavated Ponds (PUB) |
| | Gillen Bayou (R2) |
| | Surface Hydrologic Conveyance (R4) |



Figure 6-1: Figure 6-1 – Mitigation Area Wetlands Site Map - Overall
 Luce Bayou Interbasin Transfer Project
 P:\0181737_LuceBayou\Work Order 8.000 Progress Submittal and Delimitation\Exhibits\FIS\Section 6\Figure 6-1 - Mitigation Area Wetlands Site Map.mxd

PERMITTED PLANS

6-12

Figure 6-3:
Mitigation Area Wetlands Site Map

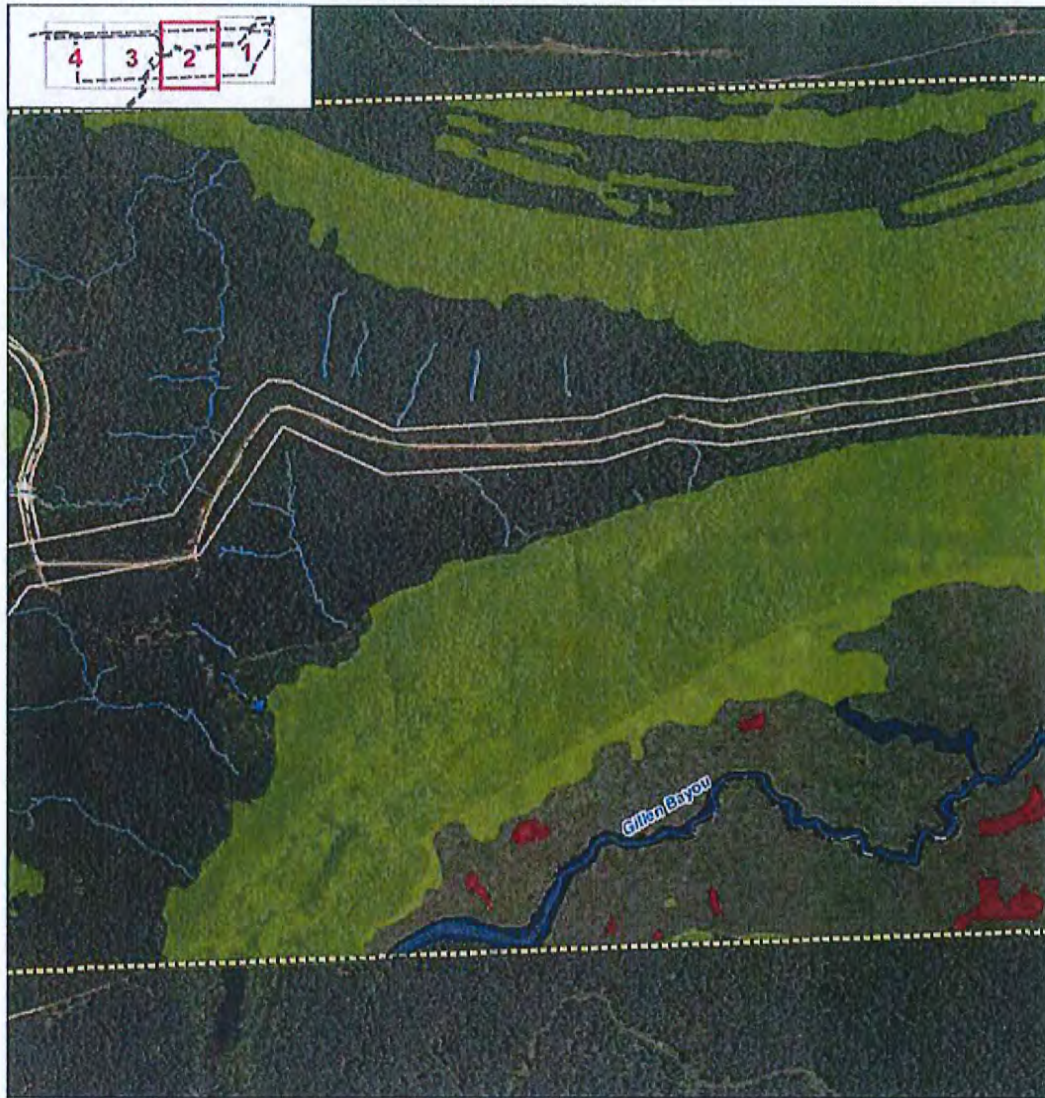


Image Source: USDA NAIP state based image service
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Legend

- | | |
|-------------------|-------------------------------------|
| Harrison Tract | Harrison Tract Wetlands Type |
| Project Footprint | Emergent Wetlands (PEM) |
| Pond | Forested Wetlands (PFO) |
| Drainages | Scrub-Shrub Wetlands (PSS) |
| | Excavated Ponds (PUB) |
| | Gillen Bayou (R3) |
| | Surface Hydrologic Conveyance (R4) |



Figure 6-2 : Mitigation Area Wetlands Site Map-Detailed Sheet 2

Luce Bayou Interbasin Transfer Project

P:\60163737_LuceBayou\Work Order 8.500 Progress Submittal and Deliverables\Exhibit FEIS\Section 9\Figure 6-2 - Mitigation Area Wetlands Site Map.mxd

Location Map



Image Source: USDA NAIP state based image service
http://gis.apfo.usda.gov/arcgis/services/NAIP/Texas_2012_1m_NC

Legend

- | | |
|-------------------|------------------------------------|
| Mitigation Site | Wetlands |
| Project Footprint | Emergent Wetlands (PEM) |
| Pond | Forested Wetlands (PFO) |
| Drainages | Scrub-Shrub Wetlands (PSS) |
| | Excavated Ponds (PUB) |
| | Gillen Bayou (R3) |
| | Surface Hydrologic Conveyance (R4) |

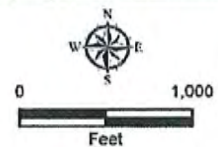


Figure 6-2: Mitigation Area Wetlands Site Map-Detailed Sheet 3

Luce Bayou Interbasin Transfer Project



Image Source: USDA NAIP state based image service
http://gis.apfo.usda.gov/arcgis/services/NAIP/Texas_2012_1m_NC

Legend

- | | |
|-------------------|------------------------------------|
| Mitigation Site | Wetlands |
| Project Footprint | Emergent Wetlands (PEM) |
| Pond | Forested Wetlands (PFO) |
| Drainages | Scrub-Shrub Wetlands (PSS) |
| | Excavated Ponds (PUB) |
| | Gillen Bayou (R3) |
| | Surface Hydrologic Conveyance (R4) |

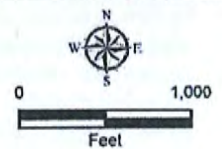


Figure 6-2: Mitigation Area Wetlands Site Map-Detailed Sheet 4

Luce Bayou Interbasin Transfer Project

PERMITTED PLANS

The Quality Point Scores (QPS) for each wetland area were calculated by dividing the sum of the total scores for Social Significance and Effectiveness derived from the WET 2.0 method by the sum of the maximum possible score for the wetlands, given their regional priorities. Wetland credits were calculated by multiplying the QPS by the impact acreage. About 365 acres of aquatic resources would be impacted by LBITP construction activities. As determined through wetlands impact verification and through the method approved by the Corps, the identified LBITP mitigation site would contain approximately 1,132 acres of aquatic resources that would be preserved. **Table 6-2** and **Table 6-3** summarize the QPS and calculated wetland credits for the proposed LBITP alignment and the identified LBITP mitigation site.

**Table 6-2
Proposed Alignment Wetlands QPS and Wetland Credits
Using WET 2.0 Method**

Function Value	Actual Score	Max. Score	QPS (Actual Score/ Maximum Score)	Proposed Impacts (Acres)	Wetland Credits (Potential Impact Acreage x QPS)
Social Significance	49	63	-	-	-
Effectiveness	42	78	-	-	-
TOTAL	91	141	0.645	203.1	130.99

**Table 6-3
Proposed Mitigation Site Aquatic Resources QPS
and Wetland Credits Using WET 2.0 Method**

Function Value	Actual Score	Max. Score	QPS (Actual Score/ Maximum Score)	Acreage	Wetland Credits (Potential Impact Acreage x QPS)
Social Significance	53	63	-	-	-
Effectiveness	42	78	-	-	-
TOTAL	95	141	0.674	1,223.79	824.83

Interim Hydrogeomorphic Model (HGM)

The LBITP mitigation site includes large forested wetland areas with valuable timber that could be harvested. Some emergent wetlands are in a pasture used to graze cattle and were routinely mowed by the previous owner. Vegetation control was managed by using herbicides. Preserving and removing the threat from timber harvesting and cattle grazing would protect vegetative and natural resources. Removing the cattle would reduce soil disturbance, pollutants, and impacts to vegetation. Ceasing mowing and herbicide application would remove the ongoing impact to vegetation and provide opportunities for habitat restoration. The Interim HGM for riverine systems was used to demonstrate the value in preserving the LBITP mitigation site.

To assess the function and value for the wetlands present within the proposed LBITP mitigation site, HGM used data collected for each wetland type identified in the project area (herbaceous, scrub/shrub and forested). The model results were averaged together to provide a typical assessment for each wetland type. The functional capacity index (FCI) coefficient calculated for the average results was multiplied by the acreage for each wetland type within the mitigation site to calculate the functional capacity units (FCUs) for each existing wetland habitat onsite. Wetland types and their associated

PERMITTED PLANS

acreages in the proposed LBITP mitigation site used in these modeling efforts are summarized in Table 6-1.

After the FCUs were established for the existing wetland habitats, the Interim HGM models for the same wetland areas were used to calculate impacts associated with lack of aquatic habitat preservation which would occur through timber harvesting or forestry activities. The FCUs from this hypothetical scenario were subtracted from the original FCUs to calculate the potential benefit from preserving the proposed LBITP mitigation site. The specific analysis results by wetland type can be found in Tables 6-4 through Tables 6-6:

**Table 6-4
Herbaceous Wetlands Interim HGM Analysis**

Item	FCI Existing	FCU Existing	FCI Impacted	FCU Impacted	Benefit (FCU)	Benefit (FCI)
Storage	0.76	65.36	0.74	63.64	1.72	0.02
Maintenance	0.50	43.00	0.45	38.70	4.30	0.05
Removal	0.65	55.90	0.63	54.18	1.72	0.02

**Table 6-5
Scrub/Shrub Wetlands Interim HGM Analysis**

Item	FCI Existing	FCU Existing	FCI Impacted	FCU Impacted	Benefit (FCU)	Benefit (FCI)
Storage	0.65	52.65	0.32	25.92	26.73	0.33
Maintenance	0.83	67.23	0.15	12.15	55.08	0.68
Removal	0.65	52.65	0.52	42.12	10.53	0.13

**Table 6-6
Forested Wetlands Interim HGM Analysis**

Item	FCI Existing	FCU Existing	FCI Impacted	FCU Impacted	Benefit (FCU)	Benefit (FCI)
Storage	0.87	900.45	0.55	569.25	331.20	0.32
Maintenance	0.74	765.90	0.13	134.55	631.35	0.61
Removal	0.91	941.85	0.68	703.80	238.05	0.23

The WET 2.0 method results suggest the relative importance of the wetlands on the proposed LBITP mitigation site compared to those within the project alignment. There is a direct correlation between credits and wetland functions and services. Wetlands available for preservation on the proposed LBITP mitigation site were found to contain more than 6.3 times more credits than those wetlands unavoidably impacted along the LBITP alignment. The difference in the QPS between the wetlands within the LBITP alignment (0.64) and those within proposed LBITP mitigation site (0.67) suggest an increased Social Significance and Effectiveness for the proposed LBITP mitigation site wetlands. This demonstrates the proposed LBITP mitigation site wetlands exhibit higher functions and services than those wetlands located along the proposed LBITP alignment.

The Interim HGM analysis was used to show the importance of preserving the wetlands on the proposed mitigation site. Analyses were conducted assuming that timber harvesting activities and cattle grazing

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would continue to impact wetlands on the mitigation site if not preserved. Greater "lift" for each wetland type and function was associated with the existing conditions on the proposed mitigation site than the value associated with potential wetland impacts due to the inherent threat of clearing of the Trinity River floodplain (pastureland along Gillen Bayou), timber harvesting activities, existing cattle grazing, herbicide and pesticide application, drainage improvements, and threat of future residential development. This evaluation demonstrates the relative importance of the wetlands present at the proposed mitigation site. Preservation of these wetlands would provide high ecological functions and services to the surrounding ecosystem.

In summary, the results from both wetland assessment evaluation models and methodologies indicate that wetlands within the proposed mitigation site are of higher quality and exhibit a greater Social and Ecological Significance than those that would be impacted by the construction of the LBITP. While the results of each method cannot be directly compared one to another, each individual result contributes to an understanding that wetlands to be preserved on the proposed mitigation site are of greater value than those that would be impacted within the LBITP footprint.

Vegetation Study

Approximately 200 acres of hardwoods were selectively harvested on the mitigation site by the previous property owner in late September and early October 2009, primarily in the southwestern area. Impacts to the mitigation site included minor surface disturbances, woody debris piles from logging machinery, and changes in tree canopy cover for these logged areas. Vegetative response in these impacted areas has been monitored since the logging has occurred. Complete revegetation has occurred in areas impacted by the selective logging, most notably within the herbaceous layer. The vegetation emergence from existing seed banks has been exceptional and has resulted in a lower invasive species (Chinese tallow (*Triadica sebifera*), emergence than previously expected, especially in wetter areas.

In response to concerns identified by the TPWD, the Corps directed the Applicant on the use of an approved habitat evaluation process to quantify the function and value of the 200-acre area of the proposed mitigation tract that was logged by the previous property owner. The stated concern from TPWD is that 200 acre of forested habitat on the mitigation tract was harvested, converting forested wetland habitat to emergent wetland habitat. However, based on the habitat evaluation studies conducted (see **FEIS Appendix O**), of the 42 assessment areas surveyed by Crouch Environmental Services Inc., three out of 42 sample areas did not exhibit woody vegetated habitat with greater than 3 inches diameter at breast height (DBH). From this data, it can be extrapolated that 7 percent of the 200 acre area that was selectively harvested was completely cleared. Clear cutting on the mitigation property occurred in the staging areas, while all other tree removal occurred in the form of selective harvesting. The field investigation results support the conclusion that the selectively harvested areas on the mitigation property remain forested habitat dominated by native hardwoods. The vegetation assessment areas occur in a mix of upland and wetland habitats. Of the 167 trees with greater than 3 inches DBH that were identified and enumerated on the sample plots, 91 percent are native species. The most abundant species identified during the vegetation assessment were willow oak, laurel oak and southern red oak. Of the sample plots assessed, three of 42 plots sampled did not contain tree species with greater than 3 inches DBH. Of these, two plot areas are dominated by Chinese tallow (*Triadica sebifera*) saplings, while no Chinese tallow (*Triadica sebifera*) trees or saplings were observed within the other sample plot area. A total of ten of the 42 sample plot areas assessed contained Chinese tallow (*Triadica sebifera*) trees with greater than 3 inches DBH.

Based on the field surveys, forested wetland areas that have been subject to selective harvesting are still dominated by native woody vegetation and there is no evidence that these areas have lost their ecological value or habitat functioning as a forested ecosystem. The findings of these investigations show that there is a change to wetland vegetative habitat in the area that was previously logged by the property owner but the area is still predominantly native forested habitat.

PERMITTED PLANS

Stream Assessment and Mitigation

The Applicant conducted a Stream Condition Assessment to assess potential impacts associated with the LBITP, as well as the compensation credit value provided by the potential mitigation site. The stream condition assessment was conducted in accordance with the Corps of Engineers' Galveston District Interim Stream Condition Assessment (iGSCA) Standard Operating Procedures (SOP) issued in July 2011, to determine if ecological functions and values lost by construction of the proposed project would be offset by the proposed compensatory mitigation, which is the preservation of approximately 2,979 acres of property (Harrison Tract) and donation to the USFWS TRNWR. The proposed project would impact approximately 65 linear feet of Luce Bayou at the proposed discharge structure. Mitigation proposed to compensate for these impacts includes the preservation of riparian buffer surrounding approximately 12,100 linear feet of Gillen Bayou within the bounds of the compensatory mitigation property.

Site assessments to meet the iGSCA standards for the assessment of stream condition were conducted on February 1 and 5, 2013 (see **FEIS Appendix V**). Two vegetative communities (forested uplands and fringe wetland/aquatic vegetation) are located in the vicinity of the proposed impacts. A forested uplands community is adjacent to Luce Bayou in the area of the proposed outlet structure. This community is dominated by loblolly pine (*Pinus taeda*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), eastern redcedar (*Juniperus virginiana*), sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), yaupon (*Ilex vomitoria*), American holly (*Ilex opaca*), American hornbeam (*Carpinus caroliniana*), and southern magnolia (*Magnolia grandiflora*). Fringe wetland/aquatic vegetation along the bank of Luce Bayou includes water hyacinth (*Eichhornia crassipes*), common duckweed (*Lemna minor*), common lamprush (*Juncus effusus*), and bald cypress (*Taxodium distichum*).

Within the Harrison Tract, Gillen Bayou is an intermittent stream and first-order tributary to the Trinity River. The stream originates within a parallel depression less than 300 feet from the Trinity River and initially flows west, away from the river. The stretch of Gillen Bayou present within the Harrison Tract is 12,100 linear feet in length. After exiting the Harrison Tract, Gillen Bayou turns south and runs for approximately 8 miles, meeting other tributary branches before finally emptying into the Trinity River.

Three vegetative communities occur within the assessed buffer along Gillen Bayou. Forested uplands adjacent to Gillen Bayou include species such as sweetgum (*Liquidambar styraciflua*), willow oak (*Quercus phellos*), greenbrier (*Smilax rotundifolia*), slender woodoats (*Chasmanthium laxum*), Chinese tallow (*Triadica sebifera*), and giant cane (*Arundinaria gigantea*). Forested wetland vegetation was present throughout the stream channel. Dominant species within this environment include bald cypress (*Taxodium distichum*), overcup oak (*Quercus lyrata*), willow oak (*Quercus phellos*), red maple (*Acer rubrum*), Chinese tallow (*Triadica sebifera*), common lamprush (*Juncus effusus*), and giant cane (*Arundinaria gigantea*). Areas of standing water and saturated soil within the streambed contain common duckweed (*Lemna minor*) and common lamprush (*Juncus effusus*). Herbaceous uplands are present along nearly all of Gillen Bayou west of SAR GB-18. Dominant species include common ragweed (*Ambrosia artemisiifolia*), Virginia pepperweed (*Lepidium virginicum*), bahiagrass (*Paspalum notatum*), Brazilian vervain (*Verbena litoralis*), and southern dewberry (*Rubus trivialis*).

Based on the results of field surveys, data collection, and analysis, the proposed alterations to the existing stream channels located on the impact site would require 1,269 credits to mitigate for the proposed permanent impacts. Preservation of Gillen Bayou and its 200-foot riparian buffer zone will generate 1,736 compensation credits. The primary credit zone will generate 1,131 credits, and the secondary credit zone will generate 605 credits. Based on the assumptions of this analysis, the preservation of Gillen Bayou will provide a surplus of 467 compensation credits to mitigate for impacts to Luce Bayou from the proposed construction of the LBITP (see **FEIS Appendix V**). No additional mitigation would therefore be required for potential stream impacts caused by the LBITP.

PERMITTED PLANS

Mitigation Work Plan

A boundary survey showing the geographic boundaries of the approximately 3,135- acre mitigation property, including the approximately 156 acres of the proposed LBITP ROW, was included in the Approved Jurisdictional Determination (AJD). As part of the Final Mitigation Plan, the applicant will submit a final boundary survey of the approximately 2,979-acre mitigation property that will be preserved and donated to TRNWR for long-term protection and management. The Applicant has not proposed any work on the proposed mitigation site.

As directed by the Corps, the Applicant conducted studies of the mitigation property acceptable to the Corps of Engineers and USFWS. By letter dated July 25, 2013, the USFWS indicated that they would accept the donation of the mitigation property, including the approximately 200-acre area previously logged, subject to their real estate acquisition requirements which are in the final stages of completion.

Maintenance Plan

The approximately 2,979-acre mitigation site would be maintained and managed in accordance with the TRNWR Comprehensive Conservation Plan (CCP) after it is accepted as a donated property by the USFWS TRNWR. The TRNWR CCP provides a 15-year plan for broad management direction on conserving wildlife and their habitats and identifying wildlife-dependent recreational opportunities available to the public.

Performance Standards

Preservation of the aquatic resources on the approximately 2,979-acre mitigation site and donation to USFWS TRNWR would achieve the objectives of the compensatory mitigation plan by ensuring long-term management, sustainability, and site protection of aquatic resources within the Trinity River watershed. The Applicant has not proposed ecologically-based performance standards since no mitigation work is proposed.

Monitoring Requirements

The Applicant has not proposed any monitoring requirements since no mitigation work is proposed for preservation of the approximately 2,979-acre mitigation site and site protection by donation to the TRNWR.

Long-term Management Plan

The approximately 2,979-acre mitigation site would be managed in accordance with the TRNWR Comprehensive Conservation Plan (CCP) after it is accepted as a donated property by the USFWS TRNWR. The TRNWR CCP provides a 15-year plan for broad management direction on conserving wildlife and their habitats and identifying wildlife-dependent recreational opportunities available to the public.

Adaptive Management Plan

The approximately 2,979-acre mitigation site would be maintained and managed in accordance with the TRNWR Comprehensive Conservation Plan (CCP) after it is accepted as a donated property by the USFWS TRNWR. The TRNWR CCP provides a 15-year plan for broad management direction on conserving wildlife and their habitats and identifying wildlife-dependent recreational opportunities available to the public.

PERMITTED PLANS**Financial Assurances**

The Applicant, Coastal Water Authority, acquired the proposed mitigation property at a cost of approximately \$7 million and provided funding for the environmental studies conducted for proposed preservation of the mitigation site including the AJD, Habitat Evaluation Procedure (HEP), WET 2.0, Interim HGM, Stream Assessment, and Vegetation Study, as well as development and implementation of the Mitigation Plan, acquisition of the surface/gravel mineral interests, and donation of the property to the USFWS. The Applicant will continue to fund efforts to complete acquisition of the remaining surface/gravel mineral interests to meet USFWS donation requirements for inclusion in the TRNWR. The Applicant will fulfill its financial obligations for successful implementation of the Final Mitigation Plan upon final donation of the mitigation site to the USFWS TRNWR.

Coastal Water Authority Zebra Mussel Response Plan

Luce Bayou Interbasin Transfer Project

Prepared for
Coastal Water Authority



A handwritten signature in cursive script that reads "Tom Ray".

March 5, 2013

Lockwood, Andrews & Newnam, Inc.
TBPE Reg #2614



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1.0 Introduction

The Coastal Water Authority (CWA) applied for a Section 404 Individual Permit for the Luce Bayou Interbasin Transfer Project (LBITP) to the United States Army Corps of Engineers (USACE), Galveston District (Permit Application No., SWG-2009-00188). The USACE Galveston District notified CWA on November 28, 2010 that an Environmental Impact Statement (EIS), was required for the proposed LBITP. On April 28, 2012, the Galveston District notified CWA of the requirement to prepare a draft Zebra Mussel Monitoring and Control Plan for inclusion in the EIS.

This conceptual plan has been prepared in response to the April 28 letter from USACE. The CWA is providing this "CWA Zebra Mussel Response Plan" (CWA Response Plan) to address the comments received from the USACE Galveston District. Based on those discussions, the CWA has developed a plan, with specific commitments, to respond to the risk of zebra mussel¹

That CWA is making an initial 'response commitment' and will commit to future actions, as described in the Response Plan, based on and gauged to the risk of Zebra Mussel infestation.

(ZM) infestation in the vicinity of the Luce Bayou Interbasin Transfer Project diversion facilities (LBITP diversion). The previously submitted Assessment Report discussed the ZM issues in general terms—identifying potential impacts, risks, and various control methods. However, the initial report did not identify the responses or the actions, which CWA would undertake if the risk of ZM infestation of LBITP increased over time. This CWA Response Plan identifies the actions that CWA will undertake in response to the potential risk of ZM infestation at the LBITP facilities. The responses are gauged in both the type of actions and the timing of those actions to the level or degree of risk. As discussed in more detail below, the level of risk is measured based on the location of the actual occurrence of ZM in the Trinity River basin. The location of ZM occurrence in proximity to the LBITP is the primary measure; as occurrence of ZM progresses downstream toward the LBITP the risk of potential infestation increases. The CWA Response Plan identifies geographical areas or zones and assigns a level of risk to each based on the proximity to the LBITP. Each level of risk has a corresponding set of responses.

As an introduction, the following guidelines were considered in preparation of the CWA Response Plan:

- According to leading ZM experts, ZM will eventually move downstream in the Trinity River basin from the current infestation areas in north Texas, but there is no definition to how far or how fast;
- Based on the history of ZM invasion in the United States, the gradual but continued movement from the source in the Great Lakes area, and the ineffectiveness of efforts² to halt that invasion, it can be concluded that the invasion of ZM in the waters of Texas and the Trinity River basin cannot be "prevented"; however, well-tested, proven methods exist for detection and control,

¹ In using the term "Zebra Mussel", both zebra mussel and quagga mussels are implied and should be considered included. The initial threat in the Trinity River basin is zebra mussels but quagga mussels could also appear and become a problem. For purposes of the CWA response plan, the response is identical for the presence of either zebra mussels or quagga mussels.

² These "efforts" would include the lack of a natural barrier due to physical and chemical water properties needed for ZM survival. The ZM high reproduction rates and other factors lead to its strong adaptation to the new water environments.

allowing water management agencies the opportunity to be prepared with effective and timely responses to mitigate the impacts of ZM occurrence.

- CWA responses should be sequential, each response should support and build on previous efforts;
- ZM establishment in Lake Livingston is a critical factor in the risk assessment and for this reason it serves as the demarcation between the moderate and high risk zones;
- Monitoring of ZM occurrence in Lake Houston prior to Luce Bayou diversion is important in identifying a non-Trinity basin vector (pathway) of infestation;
- Appropriate CWA responses are initiated, gauged and implemented based on the risk of infestation;
- The CWA responses recognize that the ZM risk is both the potential biofouling of the LBITP facilities and the potential vector or pathway for ZM infestation downstream; and,
- Actual observed and confirmed³ occurrence of ZM regardless of stage—adult, juvenile, or veliger—is the primary measure used to trigger actions as opposed to habitat conditions, DNA testing or other surrogates.

1.1 Organization of Report

The CWA Response Plan is organized into several sections:

- **Overview Section** – provides pertinent background as well as reviews the concern and potential for infestation, measures of risk, etc.
- **Tiered-Commitment Response Plan** – discusses the rationale for a tiered approach that gauges the commitment for a response action⁴ to the level of ZM risk.
- **CWA Response Plan** – presents the CWA response plan including a discussion of the levels of risk assigned, CWA response commitments at each level of risk, and the description of “triggers” or thresholds that will be used and monitored.
- **Facility Vulnerability Assessment** – discusses this Level One commitment whereby CWA will perform an assessment of the vulnerability of the LBITP diversion to infestation and establishment of ZM.
- **Defined Terms** – clarifies the use of certain terms pertinent to the CWA Response Plan discussion.

³ Confirmed occurrence is considered, for purposes of the CWA Response Plan, the presence of ZM confirmed by USGS field personnel or other authorities, including the TPWD, USACE, US Fish & Wildlife Service personnel.

⁴ The term “response” does not imply a delayed reactive mode at the expense of appropriate proactive measures, but refers to the fact that ZM confirmed occurrence has entered a risk zone.

- **Appendices** – includes related information such as potential ZM control methods that are options for further evaluation.

1.2 Background Information

The primary function of the LBITP is to transfer Trinity River water to Lake Houston. This additional water supply is needed to meet water demands in the Harris, Galveston and Fort Bend areas as these areas convert from groundwater to surface water. **Figure 1-1** shows the preliminary configuration and components of the LBITP.

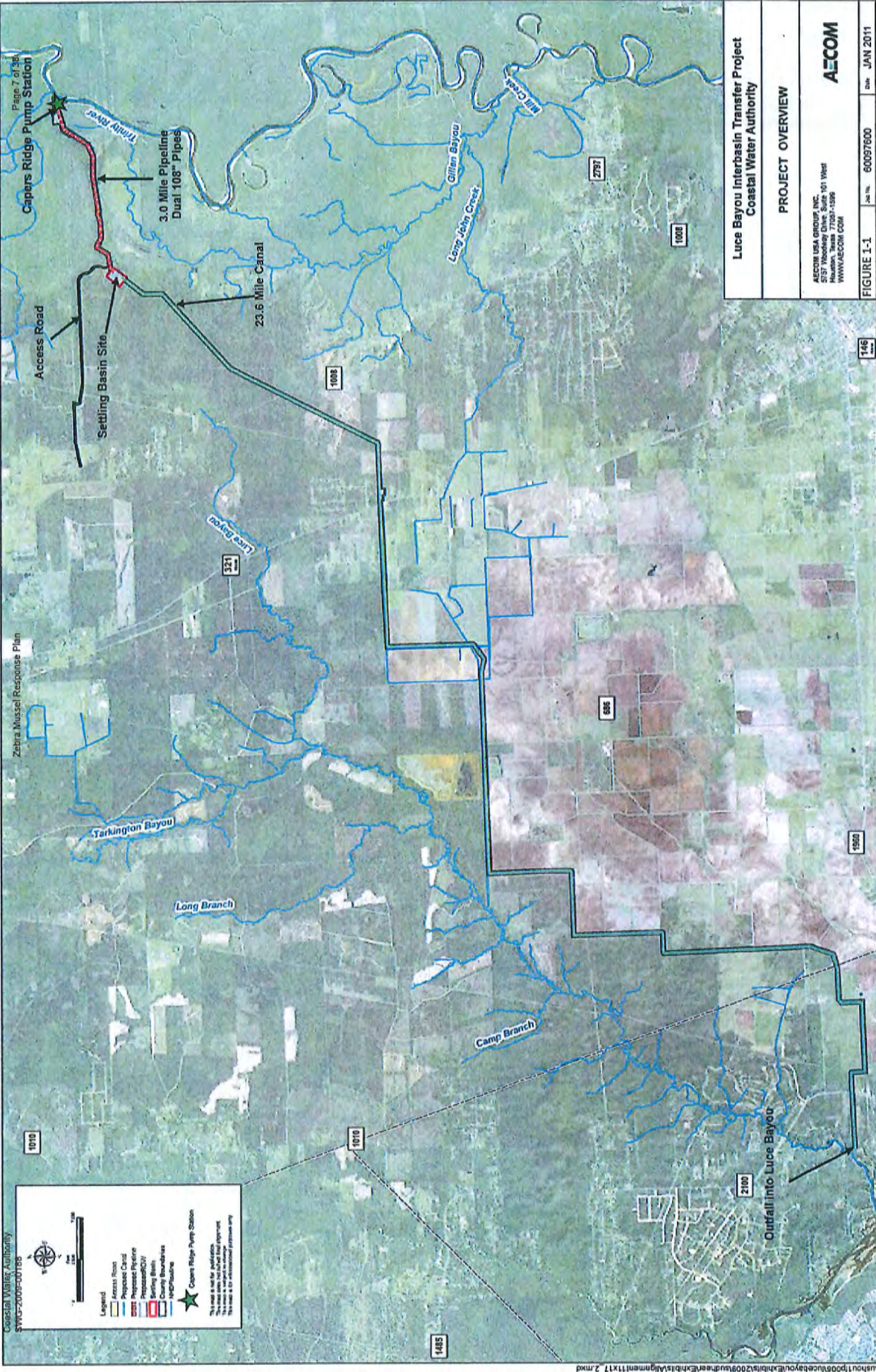
In support of the Section 404 permitting effort, CWA has submitted a Preliminary Engineering Report (PER) for the LBITP dated January 2011 to provide the USACE Galveston District with the basic design features. As stated in the PER, the recommended concept for this interbasin transfer project includes a raw water intake structure and pump station, nearly three miles of pipeline, a sedimentation basin, and approximately 23.6 miles of canal. **Figure 1-2**, also taken from the PER shows the location of primary operating elements of the transfer. The Capers Ridge Pump Station proposed as part of the LBITP will be located on the Trinity River approximately 38 river miles south of Lake Livingston. The water conveyance pipeline will extend west-southwest approximately three miles to the watershed divide between the Trinity River and San Jacinto River (Lake Houston) watersheds. The canal will outfall into the lower reaches of Luce Bayou, which flows into the northeastern headwaters of Lake Houston.

The City of Houston (City) is a participating sponsor for the Guidance Manual project and provides CWA regular updates. Additionally, CWA is cooperating with the project through the provision of information on CWA's existing systems requested by Alan Plummer and Associates, Inc. (APAI), the primary author of the Zebra Mussel Resource Document, Trinity River Basin, Texas. The report, which is referenced in discussions below, is in final draft and should be available for publication and distribution in mid 2013.

1.3 Requirement for a Response Plan

Comments received from the USACE and others on the Assessment Report suggested that the CWA response plan should identify actions that will be taken to protect the LBITP facilities and prevent those facilities from being hampered by ZM biofouling or allowing the LBITP to become a vector or pathway for ZM to move into un-infested waters, particularly Lake Houston. In reaction to the need for an effective response plan, CWA recommended, and the USACE Galveston District has accepted as reasonable, a response plan based on a tiered-commitment approach that gauges the type and timing of the response to the ZM risk. The CWA Response Plan recognizes the following important drivers for preparation of an appropriate ZM response plan:

- ZM risk at the LBITP depends on the downstream movement of ZM from the upper Trinity River basin over a timeframe that is unknown and impossible to predict.



Coastal Water Authority
 SWS-2009-00188

Legend

- Access Road
- Proposed Canal
- Proposed Pipeline
- Proposed Pipeline
- Proposed Pipeline
- Settling Basin
- County Boundaries
- Watercourse
- Capers Ridge Pump Station

This map is for informational purposes only. It is not intended to be used for legal or regulatory purposes. The information on this map is not intended to be used for any purpose other than that for which it was prepared. This map is not a contract and does not constitute an offer of any service. It is provided for informational purposes only.

Zebra Mussel Response Plan

Page 7 of 38
 Capers Ridge Pump Station

Access Road
 Settling Basin Site

3.0 Mile Pipeline
 Dual 108" Pipes

23.6 Mile Canal

Tarkington Bayou

Long Branch

Camp Branch

Gilliam Bayou

Mill Creek

1010

1010

2100

1485

1008

886

1950

2797

1008

146

Luce Bayou Interbasin Transfer Project
 Coastal Water Authority

PROJECT OVERVIEW

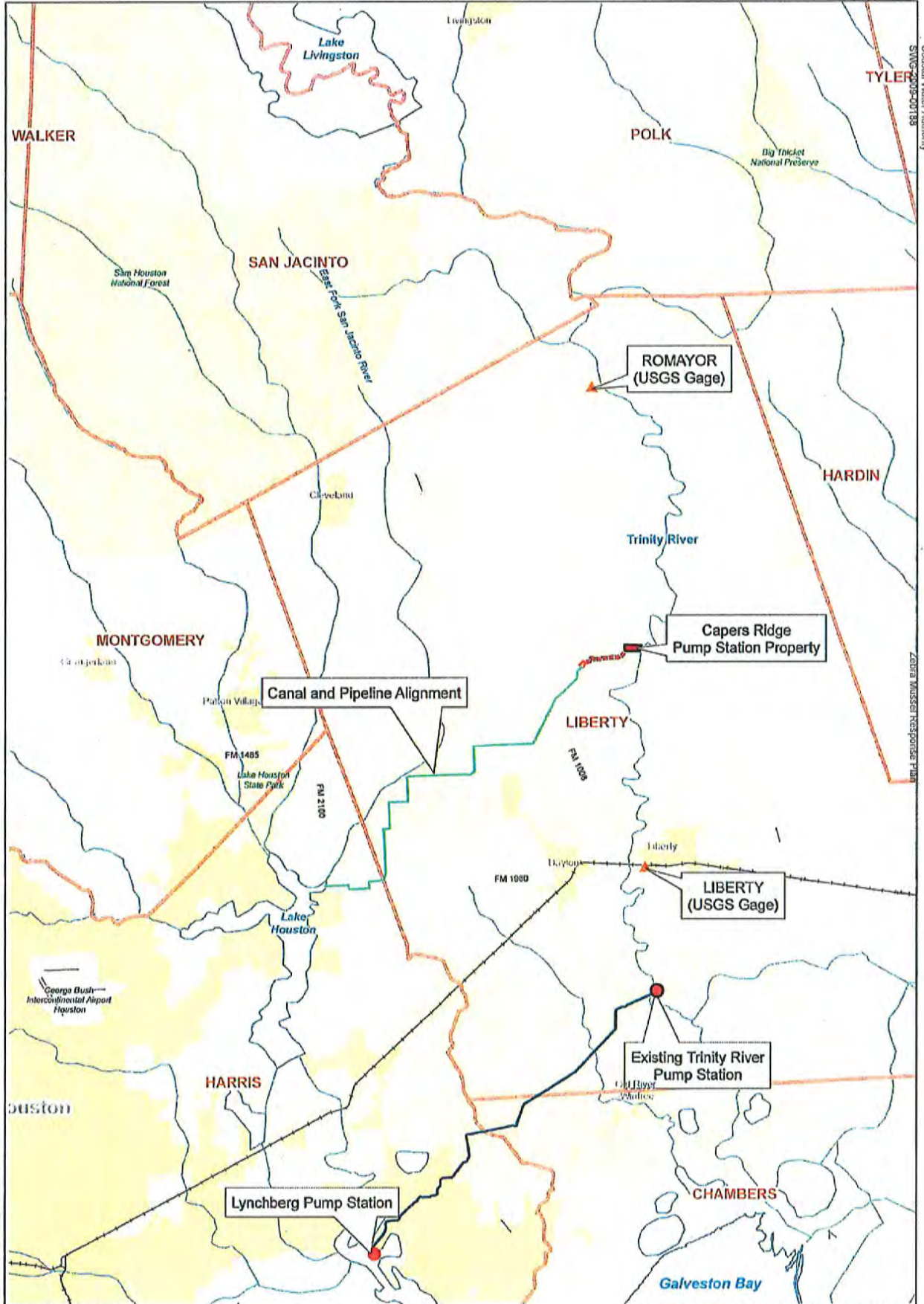
AECOM USA GROUP, INC.
 2527 Woodway Drive, Suite 101 West
 Houston, Texas 77057-1596
 WWW.AECOM.COM

AECOM

FIGURE 1-1

Job No. 60097600

Date JAN 2011



Source - ESRI (2002)



- Legend**
- Proposed Canal
 - - - - Proposed Pipeline
 - Existing Canal
 - ▲ USGS Gage
 - County Boundary

Luce Bayou Interbasin Transfer Project	
Coastal Water Authority	
Preliminary Operations Plan - Overview	
<small>AECOM USA Group, Inc. 5757 Woodway Drive, Suite 101W Houston, Texas 77057-1599 www.aecom.com TSP# Reg. No. F-3082</small>	
AECOM	
FIGURE 1-2	JAN 60097600 JAN 2011

I:\houston\008\lucubayou\ER\houston\009\weather\Exhibits\Project_Overview.mxd

Figure 1-2

- ZM risk is assigned to the actual, confirmed occurrence of ZM as the primary measure, other factors such as habitat suitability and inoculation factors (e.g., boat trailering and water recreation) are secondary⁵. As discussed in Section 3.0, the CWA Response Plan makes certain conservative assumptions regarding habitat suitability and inoculation modes⁶. Based on recent studies evaluating the physical-chemical conditions that support ZM growth and reproduction, the habitat suitability conditions, it can be assumed that the waters of the lower Trinity River and the San Jacinto River will support ZM establishment. There is no reliance given to physical or chemical characteristics of the downstream waterways providing a barrier to the movement of ZM. The inoculation of ZM into the lower Trinity River and San Jacinto River basins due to boat traffic is not predictable.
- If ZM occurrence is confirmed in the Trinity River, the risk to the LBITP facilities is assigned by the CWA Response Plan based on the proximity of that occurrence to the LBITP diversion. If ZM occurrence is confirmed in the San Jacinto River prior to operation of the LBITP, including Lake Houston, the mode of ZM cannot be the LBITP (Section 2.0 below provides a description of the tiered-commitment response plan).

1.4 History of ZM in Trinity River Basin

A complete discussion of the occurrence of ZM in Texas and specifically the introduction of ZM into the Trinity River basin is provided in Section 1.2 of the Assessment Report. However, certain points of this history are relevant to the development of the response plan. Importantly, the recognition that ZM have invaded the upper Trinity basin reservoirs and, based on actual occurrence, can be shown to have moved from one upstream reservoir (Lake Ray Roberts) to the headwaters of the immediate downstream reservoir (Lake Lewisville). USGS sampling confirmed the presence of ZM in the Elm Fork reach below Lake Ray Roberts. This confirms, based on occurrence that the river is a direct pathway (mode) for ZM to move downstream, probably in the veliger life-stage.

Since the preparation and submittal of the Assessment Report in August 2012, there have been no new reports of ZM occurrence in Trinity River basin. However, the spawning season relates to warm weather typically beginning in April or May timeframe and lasting through the mild summer season. A second spawning can occur in late summer and early fall when temperatures moderate. As discussed below, the seasonal spawning monitored by the USGS will be an important gauge used in the CWA Response Plan.

⁵ "Secondary" indicators provide a measure of potentiality of ZM occurrence or conditions supporting or promoting occurrence; these are recognized and monitored in the CWA Response Plan, but are not, by themselves, triggers for implementing response actions or elevating the ZM risk level.

⁶ "Inoculation" refers to the modes and rates of ZM introduction to a non-infested water (Bartell, 2007); inoculation can result from recreational boating or upstream water-releases that introduce ZM to non-infested waters. The ability of ZM once introduced to a non-infested water to establish a population and result in infestation depends on many factors and is difficult to predict.

1.5 ZM Monitoring and Special Studies

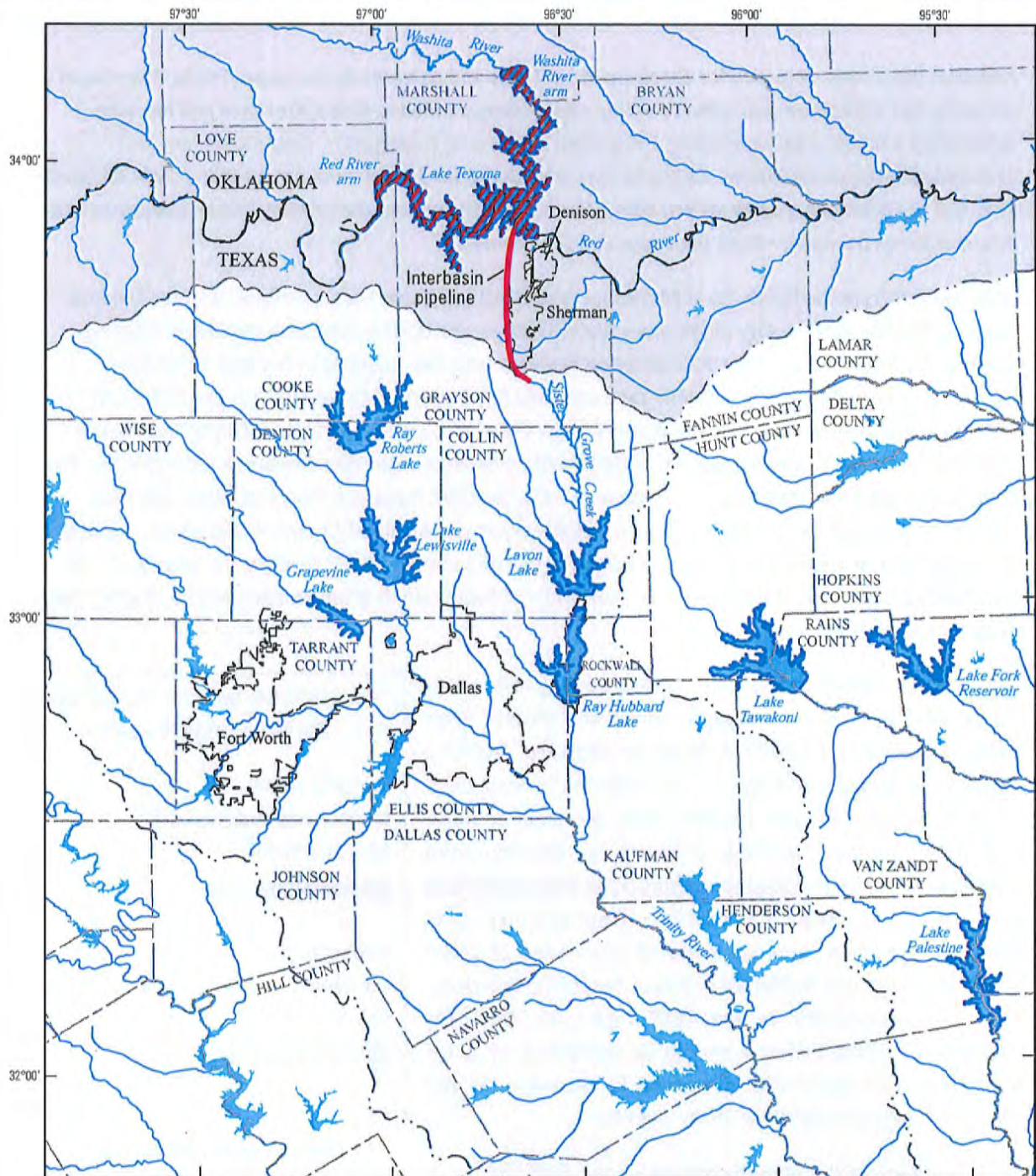
ZM monitoring in the upper Trinity River basin is important to the CWA Response Plan not only because it establishes the initial ZM risk level, Level 1 as discussed below, but also because of the insight on the progression (travel time) for ZM to move downstream in the basin.

1.5.1 USGS Monitoring

For purposes of this Response Plan, the USGS monitoring for ZM in the upper Trinity River basin is the primary source for data and information on occurrence. This reliance on the USGS ZM monitoring program is based on the agency's proficiency and experience in monitoring, its objective to provide early detection of ZM occurrence and its use of several methods or approaches to assess occurrence, distribution, and densities in the north Texas waters. The USGS program is established and ongoing. Figure 1-3 shows the reservoirs included in the USGS ZM Monitoring Program in the upper basin. Discussions with USGS personnel were useful not only for understanding the monitoring program and its protocols but also to establish contact information that CWA personnel can use to implement actions identified in the Response Program. The USGS ZM monitoring program uses four methods to assess ZM occurrence, distribution, and densities:

- SCUBA diving – divers search for juvenile and adult ZM to determine the occurrence and densities on water intake structures, boat ramps and other structures;
- Water-sample collection and laboratory analyses – Plankton tow nets are used to monitor for the occurrence of veligers at areas conducive to "typical zebra mussel dispersal patterns", for example, near boat ramps and water intakes;
- Artificial Substrates – Hardboard tiles are deployed where ZM introduction is likely to occur, near boat ramps and water infrastructure, and are routinely inspected by USGS field personnel for the settlement of ZM; and,
- Water-quality sampling – Water quality parameters critical to the survival, growth and reproduction of ZM are monitored using discrete sampling and water-quality data sondes.







With respect to the CWA Response Program, the USGS efforts to not only monitor for occurrence but also to identify distribution and densities are important. As discussed in Section 3.0, the CWA Response Program bases "ZM Risk" on the actual, confirmed occurrence and the proximity of that occurrence to the LBITP. Detection of occurrence is a primary factor, but the density and distribution are also critical factors in anticipating the potential for downstream movement. As the densities of ZM increase in a reservoir, the likelihood of downstream movement and occurrence increases. Lake Texoma and Lake Mead are examples. The vectors, boat traffic and water-releases, for potential movement also increase as concentrations increase. The CWA Response Plan's risk assessment will consider density and distribution. A complete description of the USGS North Texas ZM monitoring program is provided in the Appendix.



Base from U.S. Geological Survey digital data, 1:24,000
 Universal Transverse Mercator projection
 Zone 14, North American Datum of 1983

Watersheds from Texas Water Development Board, 2002

EXPLANATION

-  Lake with known reproducing zebra mussel population
-  Lake with ongoing investigation
-  Other lake
-  Red River Basin
-  Trinity River Basin
-  Approximate location of interbasin pipeline

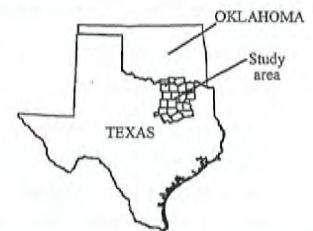


FIGURE 1-3 Study area for the U.S. Geological Survey Zebra Mussel Monitoring Program in north Texas.

Although the history of record for ZM sampling in Texas and particularly the upper Trinity River basin is currently less than three years, the sampling effort corresponded to first occurrence and has now established a baseline for monitoring ZM establishment and, importantly, their movement and inoculation in the upper Trinity. Of the factors considered for ZM risk assessment in the CWA Response Plan, the USGS sampling program provides occurrence information, the primary factor, but also related information on transport—both pathways and timeframes.

With support from the North Texas Municipal Water District, Dallas Water Utilities, Greater Texoma Water Authority, and the City of Sherman Water Utilities, the USGS established the ZM monitoring program for North Texas. The USGS sampling began in Lake Ray Hubbard in October 2010, Lake Lewisville in June 2011, and Grapevine Lake and Lake Ray Roberts in October 2011. The USGS is in discussion with the Tarrant Regional Water District (TRWD) to include additional Trinity River basin reservoirs⁷, including Lake Bridgeport, Eagle Mountain Reservoir and Lake Benbrook located in the West Fork watershed of the upper basin. With respect to the CWA Response Plan, the TRWD will likely include its reservoirs in mid-basin--Cedar Creek Reservoir and Richland-Chambers Reservoir. According to TRWD staff communications⁸, the sampling may be done by the TRWD field personnel rather than USGS, but in either case having the West Fork and mid-basin sampling information will be of great value in assessing risk thresholds.

Dallas Water Utilities also supports USGS sampling of its water supply reservoirs in the adjacent Sabine and Neches River basins. Sampling at Lake Fork Reservoir and Lake Tawakoni began in November 2011 and at Lake Palestine in April 2012. To date no positive ZM samples have occurred in these reservoirs. Sampling at these reservoirs can provide useful information on the potential for vectors other than movement from the upper Trinity River basin. Geographically, Lake Palestine is located approximately 35 miles west of Cedar Creek Reservoir and Richland-Chambers Reservoir; therefore, based on accessibility to the DFW metroplex area, ZM occurrence in Lake Palestine should be monitored to gauge the potential for boat traffic as a vector to introduce ZM into the central region ("middle") Trinity River basin.

It is important to the implementation of the CWA Response Plan to have established contacts with the USGS personnel managing the ZM monitoring effort. The adjacent box shows the primary contacts for the North Texas ZM Monitoring Program and the USGS in Texas. In preparation of this response plan, these USGS staff members have been very helpful. Contacts should also be

**Key USGS Contacts for North Texas
ZM Monitoring Program:**

Timothy Raines
North Texas Program Office Chief
817/263-9545
thraines@usgs.gov

Robert Joseph
Director, Texas Water Science Center
512/927-3502
rjoseph@usgs.gov

Michael Turco
Gulf Coast Program Office
936/271-5399
mjturco@usgs.gov

⁷ As the USGS adds additional reservoirs or other agencies begin monitoring other reservoirs in the upper Trinity River basin these sampling results will be included in the CWA Response Plan. Coordination with TRWD and other agencies' monitoring personnel will be added as well.

⁸ Personal communication, Environmental Services Division staff, February 2013

continued or established as needed with the personnel at other agencies who either manage or are the primary contacts regarding ZM information for Texas:

- North Texas Municipal Water District,
- Dallas Water Utilities,
- Trinity River Authority,
- Tarrant Regional Water District,
- Texas Parks and Wildlife Department,
- USACE Galveston and Fort Worth Districts,
- US Fish and Wildlife Service

1.5.2 Other Pertinent Trinity River Basin and Lower Basin Studies

There are an increasing number of special studies and targeted or short-term monitoring efforts that were important in developing the CWA Response Plan. The following two were most useful.

Zebra Mussel Resource Document, Trinity River Basin, Texas

As stated in the preface of this report, "This *Zebra Mussel Resource Document* was prepared at the direction of the Fort Worth District, U.S. Army Corps of Engineers, under authority of Section 22 of the Water Resources Development Act (WRDA) of 1974 (Public Law 93-251), as amended. Section 22 authorizes the Secretary of the Army, acting through the Chief of Engineers, to assist the states in preparing comprehensive plans for the development, utilization, and conservation of water and related resources of drainage basins, watersheds, or ecosystems located within the boundaries of such states. The non-federal sponsor of this project was the Trinity River Authority of Texas, supported by the City of Dallas, City of Houston, North Texas Municipal Water District, and Tarrant Regional Water District. These entities contributed a total of fifty percent of the project cost. This document is a resource to help assess risks, assure early detection, and prepare effectively for the threat of zebra mussel infestation. It is not intended for regulatory purposes."

The CWA Assessment Report referenced the North Texas Zebra Mussel Resource Document and provided a description of its purpose and contents. The final draft version of this USACE-supported and locally sponsored document is currently being reviewed by several agencies familiar with ZM related issues in Texas. It is anticipated that the final version will be ready for publication later in the first quarter of 2013. The City of Houston was one of the local sponsors participating in review and progress meetings and providing comments on the draft as well as contributing monetary support.

Section 3-2 below discusses the consideration of the habitat suitability from this report.

Studies Lead by Robert F. McMahon, Ph.D.

Dr. McMahon is recognized as a leading expert on *Dreissenid* mussels. He has led a number of investigations, monitoring efforts, and studies in north Texas pertaining to the occurrence and risk of ZM establishment. A recent report prepared by Dr. McMahon was particularly pertinent and useful in the preparation of the CWA Response Plan. The report entitled, "Risk Analyses for Establishment of

Dreissenid Mussels at Selected Stations in the Watersheds of the San Jacinto and Lower Trinity Rivers,” dated January 10, 2012 provided important habitat suitability information and provided several important observations incorporated into the CWA Response Plan, as follows:

- Based on pertinent water chemistry parameters, the stations in the lower Trinity River basin were assigned a moderate to high risk for “establishment of a sustainably reproducing zebra mussel population”;
- In the San Jacinto watershed, in tributaries to Lake Houston, most stations exhibited high risk (one station was assigned a moderate risk); and
- The stations located at the existing CWA Trinity River diversion and along the CWA canal were all assigned “moderate” risk.

The findings from this report led to the conclusion that waters of both lower Trinity River and San Jacinto River could support ZM establishment. For the CWA Response Plan this meant the occurrence of ZM in Lake Houston or San Jacinto River watershed would indicate that a source and vector other than LBITP has resulted in the ZM inoculation. This is discussed and maps of monitoring locations relative to the LBITP are provided in Section 3.2 below.

LBITP Preliminary Engineering Report, Volumes I and II

A Preliminary Engineering Report (PER), dated January 2011, was prepared by AECOM for CWA. The PER “...establishes all of the basic design aspects of all major components of the LBITP.” It was submitted to the USACE Galveston District in support of the Clean Water Act Section 404 Permit Application for the LBITP. The report provides a project overview; discussion of the project capacity and preliminary operations plan; and, basic design information on the pump station facilities, including raw water pumps, raw water intake, trash rack and the pre-pump sediment extraction, and the conveyance system, including the pipeline segments, sedimentation basin, and canal. Project drainage, hydrology and hydraulics are also addressed.

In terms of the CWA Response Plan, the PER will be used to prepare the Facility Vulnerability Assessment scheduled as a Level One response commitment.

1.6 Pathways and Potential for ZM Infestation of the lower Trinity River

The occurrence of ZM in the upper Trinity River basin has raised legitimate concerns that ZM will move downstream and into the water bodies of the lower Trinity River basin. As stated previously the McMahon study (McMahon, 2012) shows, based on the analysis of physical-chemical water samples, that both the lower Trinity and San Jacinto River basins have suitable habitat at a majority of sampling sites in the two basins. With regard to the suitability for ZM establishment, the report identified most sites as either at “high risk” or “moderate risk.” Based on these findings, which are supported by the *Zebra Mussel Resource Document* (USACE, 2013), it can be assumed that the Trinity River and many of its tributaries are suitable for the spawning and establishment of ZM. Stated conversely, the water chemistry or characteristics will not be a detriment or deterrent to ZM. However, as previously discussed, it is the inoculation of ZM into the non-infested Trinity River waters that cannot be predicted.

Even though the water habitat is accepted as suitable does not mean that a response to ZM is suitable. Implementation of ZM response actions are therefore based on actual, confirmed ZM occurrence.

1.6.1 Pathways

Recognizing the pervasive suitability of water habitat in the Trinity River basin, two primary vectors or pathways for downstream ZM establish are important:

- 1) A water-borne mode where veliger forms can readily be carried downstream with river flow; and,
- 2) Direct inoculation of ZM carried on boats or water vessels through direct contact with lower Trinity River basin waters.

The recent USGS sampling has shown that ZM can and are moving from the upstream reservoir into the downstream waterways. Since boating is limited below Lake Ray Roberts, it can be assumed that the occurrence of ZM below the reservoir corresponds to the release or spill of stored water (this would include seepage through the dam). Therefore, depending on how well established ZM are in the reservoir, the potential for this type of water-release, water-borne mode of transfer should increase during flood events requiring reservoir spills. This potential would also be related to water releases from the conservation pool to satisfy downstream water rights ("pass through") or for water supply contract demands. The timing of these water-release transfers corresponding to viable spawning conditions should be monitored.

1.6.2 Potential for Downstream ZM Establishment

After the occurrence of ZM in Lake Ray Roberts, much was reported on the "inevitability" of ZM moving downstream to the lower Trinity, but predicting the timeframe is difficult. These reports were consistent with the Texas Parks and Wildlife Department (TPWD) informed prediction,

"A review of environmental and water quality data from the Trinity River basin suggests that conditions throughout the basin are favorable for zebra mussel establishment. While population expansion may be limited during the hottest part of the year, environmental conditions are suitable for colonization and expansion for most of the year, every year. Therefore, infestation of the Trinity River basin downstream of Lake Lavon is likely to continue." (TPWD, 2010)

However, even though downstream progression of ZM is anticipated, there are no sure means of predicting those movements. In the 2010 report, TPWD also stated that "The lack of reliable predictive models for the eventual range of zebra mussels makes it impossible to know how widely they will spread in Texas." (*ibid*)

On the one hand, the ZM specialists anticipate ZM moving downstream, eventually to the lower Trinity Basin, but on the other, these experts recognize that it is impossible to know the timing. The CWA risk-based, tiered response plan is a sound resolution of this dilemma. The response is based on the actual occurrence and the proximity of that or those occurrences to the LBITP diversion in the lower basin.

Proximity of occurrence is identified within or related to designated reaches of the Trinity River basin, referred as zones in the CWA Response Plan.

1.7 Existing Public Outreach Program

Since boats operating on infested waters are a recognized source and mode of transport, and since inoculation associated with this mode is difficult or impossible to predict, outreach to boaters and other water recreationalists on infested waters are warranted. Informed on the proper precautions to prevent the spread of ZM should be provided.

1.7.1 Texas Parks and Wildlife Department Public Outreach Program

Although public education and outreach cannot be expected to “prevent” the spread of ZM, effective programs can delay the spread and have significant benefit as a result. The CWA Response Plan recognizes the currently ongoing Public Outreach program being managed by the Texas Parks and Wildlife Department and information on the TPWD North Texas ZM Outreach is provided in the Appendix. The TPWD has targeted the Public Outreach to those reservoirs and waterways of North Texas that are either infested or are at risk due to proximity to other infested waters. The CWA agrees with TPWD in targeting public education to the areas at risk. Based on survey of other State programs, the TPWD Public Outreach is one of the best in the nation.

1.7.2 City of Houston Support of TPWD Public Outreach

The City of Houston supports the TPWD Outreach Program in North Texas. The City, which is a participating sponsor, has contributed funding to the program. In terms of Public Outreach and addressing the boating and water recreation vector, the CWA Response Plan supports the TPWD program. This support, through the City of Houston’s contribution, is recognized as part of the Level 1 effort (see Figure 3-1).

1.8 Lake Livingston as a Marker of ZM Risk

Of particular concern is the eventual inoculation and establishment of ZM in Lake Livingston. The infested waters of the upper Trinity River basin can serve as a continuing source of veligers to the lower basin waterways. The physical connection via the Trinity River is an obvious pathway of concern. As has been observed in north Texas reservoirs, recreational boating and water vessels provide additional means to move adult ZM from infested waters to un-infested waters. Clearly, transport by this means to Lake Livingston is not restricted to marginally infested waters of the upper Trinity River basin but can come from any infested water, such as Lake Texoma or even infested waters in other states.

2.0 Tiered Commitment Response Plan

This section describes the general principles and advantages of a tiered-commitment approach. If properly implemented, this approach provides efficiency—that is targeted actions properly gauged, in time, kind and degree, to respond to actual ZM occurrence as the measure of ZM risk of establishment at the LBITP facilities.

The tiered-commitment approach was considered applicable to the LBTP and the ZM situation in the Trinity River basin. However, the tiered-commitment approach can also be recommended independently of its application to the Trinity River basin based on the advantages of matching response action to presumed risk level. As mentioned above, in the Trinity River basin it will be impossible to predict the timeframe, location and intensity of the potential ZM invasion. This is true of all other watersheds with ZM infestation in the headwater area. Using river segments or zones to define the proximity of ZM occurrence as measures of ZM risk, "tiered" response actions can be identified. Stated another way, the ZM risk cannot be predicted, but using proximity of occurrence as a measure of risk, zones or reaches can be defined in the basin to correspond with a level of ZM risk. Each level of risk is then assigned a set or "tier" of appropriate actions. A commitment is made to continue these actions until, if and when, ZM actually occur in a higher risk level zone.

2.1 Discussion of Risk Basis for Tiered Response

The CWA Response Plan is a risk-based approach. Other examples of risk-based models were considered, and where applicable to the Trinity River and the LBTP situation portions of those models were incorporated.

2.1.1 St. Croix Basin and Lower Mississippi Risk Models

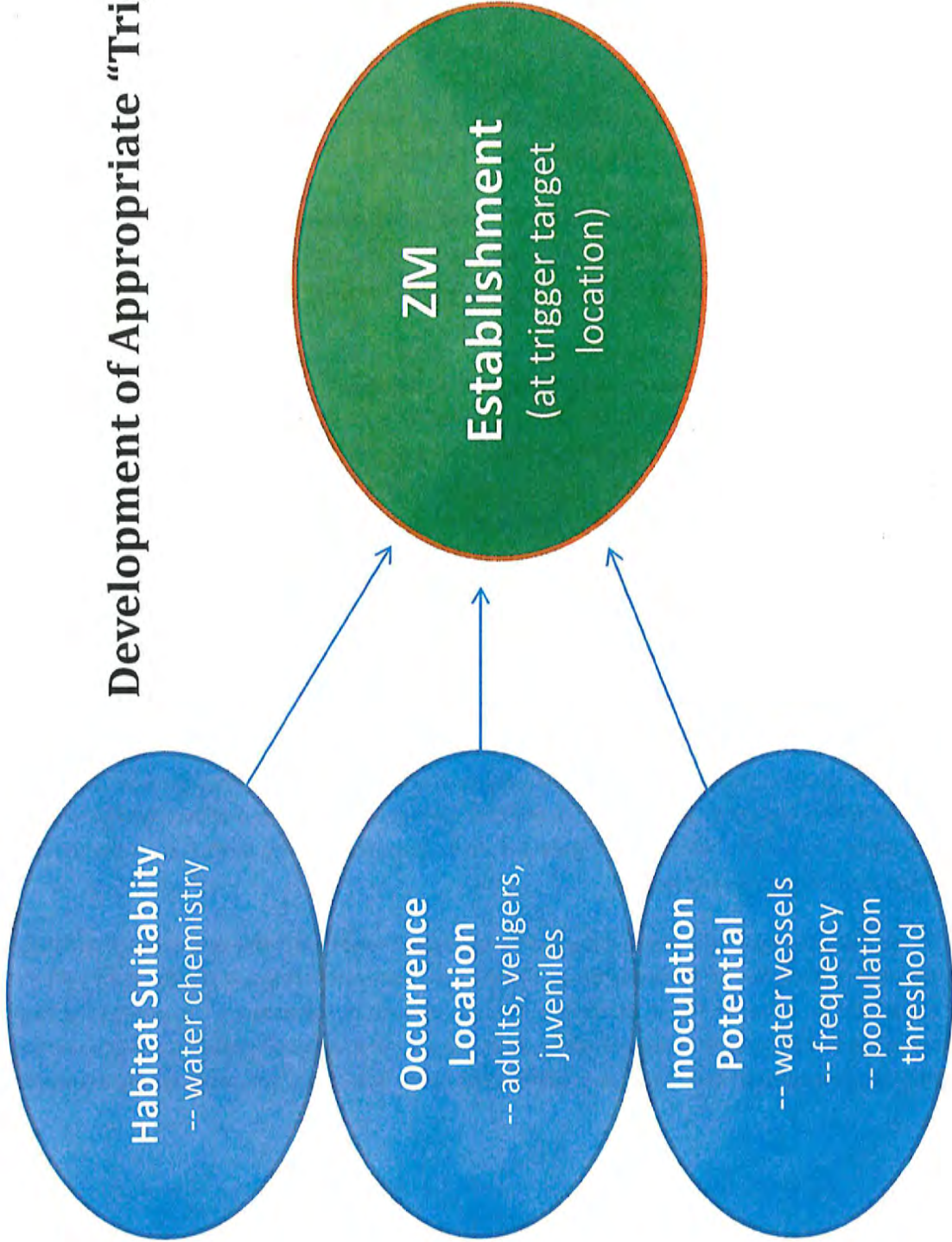
Elaborate risk-assessment models have been proposed for implementing this type of response plan. For example, Bartell et al (2007) proposed a risk-assessment approach for the St. Croix Basin that identified the factors contributing to the likelihood of ZM establishment in non-infested waters. The conceptual risk-based model proposed three contributing factors:

- 1) Habitat Suitability, which is primarily related to the physical and chemical characteristics of the receiving water;
- 2) Location, which is measured as proximity to infested waters; and,
- 3) "Inoculation," which relates to vectors for and timeframes associated with ZM introduction and establishment.

The first two of these factors—the habitat suitability and proximity—are empirical and can be measured with a satisfactory degree of confidence. However, as discussed above, the inoculation factor is difficult or "impossible" to predict. Figure 2-1 shows graphically these three factors that influence ZM establishment in un-infested waters.

Based on available water chemistry data, the Bartell report made extensive and detailed predictions of habitat suitability in the St. Croix and lower Mississippi watersheds. This was not the case with either "location" or "inoculation." Both of these factors are difficult to characterize—to predict the results in terms of ZM establishment. Even though location (i.e., the distance from infested water to non-infested water) can be measured and mapped, modeling this factor in terms of risk could not be accomplished.

Development of Appropriate "Triggers"



The inoculation factor is even more difficult—it cannot be measured or predicted. In the Bartell report, inoculation refers to both the vectors (modes and pathways) and the rate of ZM introduction into non-infested water. As with location, the model could not predict the ZM risk associated with “inoculation” in the St. Croix or lower Mississippi watersheds.

Consideration of the use of these factors in predicting the risk of ZM establishment has led to some valid, simplifying conclusions for the CWA Response Plan.

2.1.2 Risk Considerations Applied to the CWA Response Plan

The CWA Response Plan is risk-based in terms of the commitments to undertake actions in response to ZM occurrence in the Trinity River basin. The ZM risk is twofold:

- 1) For the ZM invasion and establishment in the lower Trinity River basin that leads to biofouling and inhibiting the operation of the LBITP; and,
- 2) For the LBITP becoming a vector whereby ZM invade and establish in ‘downstream’ waterways, including Lake Houston.

The response actions are gauged to the risk or assessment of the risk based on actual occurrence of ZM (i.e., tiered commitments). A risk-based, tiered response approach is reasonable and appropriate for the CWA operation of the LBITP for a number of reasons:

- 1) To recognize that the level of risk of ZM invasion and establishment in the Trinity River basin varies depending on the physical location of ZM occurrence;
- 2) To gauge, in terms of both level of effort and timing, the best available response actions of the actual risk involved; and,
- 3) To provide a geographic-based monitoring system that tracks the occurrence of ZM in the Trinity River basin.

For the purposes of the CWA Response Plan, ZM risk does exist in the Trinity River basin but it cannot be predicted (modeled) in terms of the LBITP location. However, the prerequisites for suitable habitat have been measured throughout the Trinity basin, and it is reasonable to assume that if, and when, introduced, water conditions will be favorable for ZM establishment.

2.2 Components of a Tiered-Commitment Response Approach

The value of the tiered-commitment approach is the implementation of appropriate actions in response to the risk of ZM establishment. To be effective, two important components need to be balanced in response to the ZM risk.

- 1) The pre-implementation commitment to take response actions; and,
- 2) The threshold or triggers that dictate the timing of the response actions.

The response actions are gauged to the level of ZM risk. Risk increases as the proximity to ZM occurrence increases. Given the difficulty in predicting ZM movement (increasing proximity), the challenge is to identify “measureable” levels of ZM risk. The use of geographic distance (proximity) from

actual ZM occurrence is a reasonable tool of measure. Levels of risk can be assigned based on proximity. Proximity can be assessed in reaches or geographical zones.

For each level of risk, a set of appropriate response actions can developed and assigned. The “commitment” is made to implement appropriate action if and when the risk occurs. When the risk level reaches a pre-determined threshold, the implementation of pre-committed response actions are “triggered.”

3.0 CWA Three-Tiered Response Plan

CWA determined that a three-tiered response plan is appropriate for monitoring and responding to the ZM risk for the LBITP facilities. This section lays out the CWA Response Plan in detail providing the following:

- Actual locations of the three reaches or zones of the Trinity River and the ZM risk levels assigned to each zone;
- Response actions assigned to each zone or ZM risk level;
- Threshold or triggers monitored and evaluated by CWA to “trigger” actions under the next, higher level of ZM risk; and,
- Description of the response actions that CWA will undertake as the level of risk increases.

On February 12, 2013, CWA reviewed the concept of a three-tiered response plan with the USACE Galveston District project manager. Based on that review, the USACE project manager’s comments and suggestions were used to develop the final version of the CWA Response Plan. **Figure 3-1** presents the CWA Response Plan in summary and will be referenced throughout this section to describe the components of the plan. **Figure 3-2** shows all three reaches or zones of the Trinity River basin that correspond to the three levels of ZM risk.

3.1 Assumptions based on Previous Studies in the Trinity River Basin

The CWA Response Plan incorporated the following assumptions to simplify and effectively implement a risk-based approach:

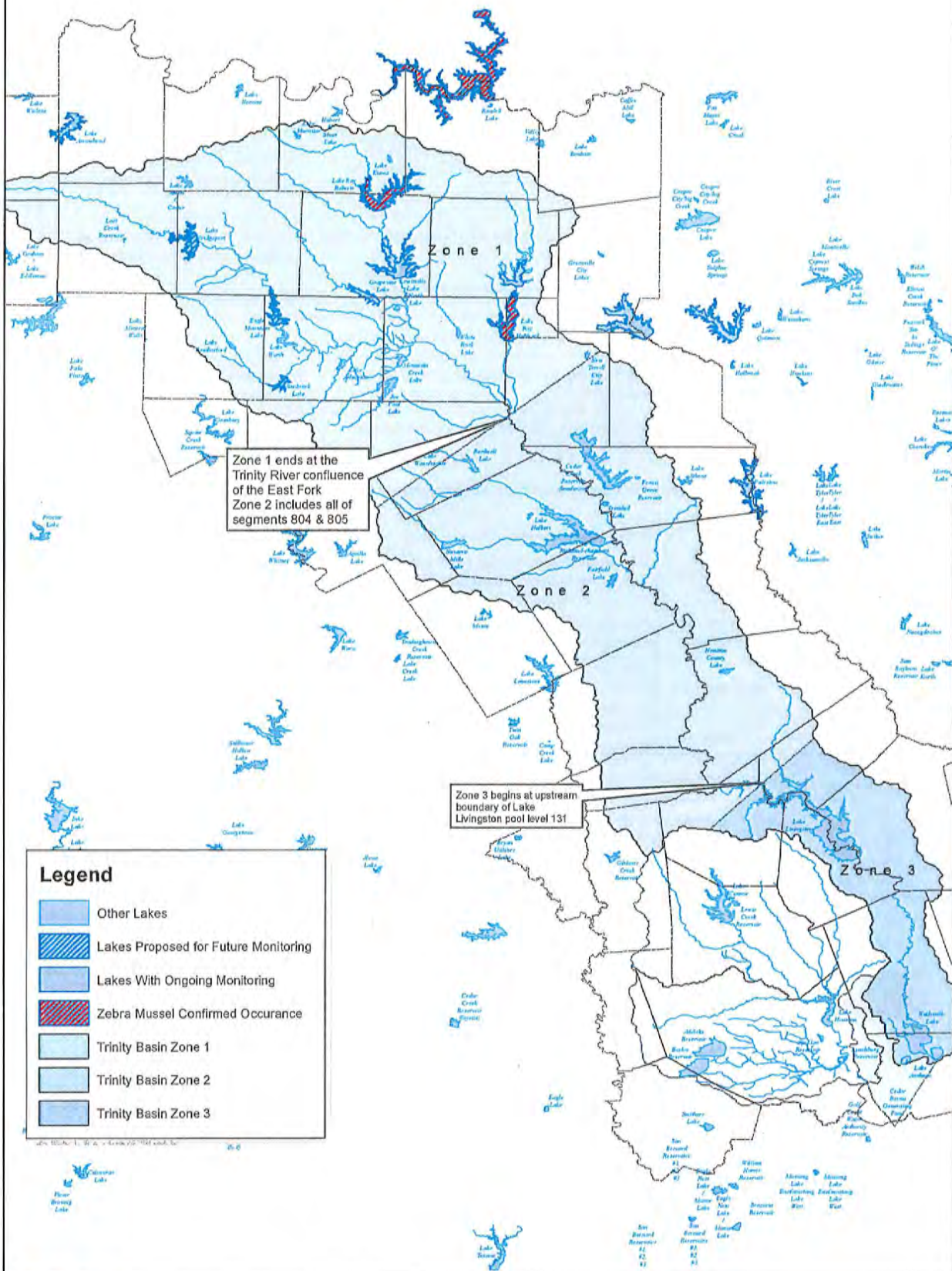
- 1) Based on the habitat suitability information previously conducted in the Trinity River basin (see Sections 1.5 and 1.6, above), the waters of the lower Trinity River basin will be suitable for the establishment of ZM;
- 2) The ability to predict the timing of “inoculation” or the actual transport of ZM from infested waters in the upper Trinity River basin to the lower is not (see Section 1.6); and,
- 3) Proximity of the ZM occurrence to the LBITP is the most reliable and consistent measure of pending ZM risk.

Therefore, actual occurrence of ZM is the criteria used to identify risk level as opposed to habitat suitability or other factors.

FIGURE 3-1

**Three Level Tiered-Commitment
Luce Bayou Zebra Mussel Response Plan**

Level 1		Initial CWA Commitment (in response to comments on ZM report submittal)		<u>NOTES</u>
Commitments	1	Monitoring	ZM occurrence in proximity of diversion and at Lake Houston	Monitoring by others / data collected by others
	2	Basic Vulnerability Assessment	Assess vulnerability of diversion facilities to ZM establishment (based on preliminary engineering information)	CWA cost – To be relevant to be at preliminary engineering phase
	3	Public Outreach	Evaluate and monitor the effectiveness of the TPWD Outreach Program	City of Houston contributed to and helps the TPWD Public Outreach
	4	Trigger	Establish thresholds (trigger) to initiate Level 2 response	CWA to establish threshold
Primary "Triggers"		To be monitored by CWA as thresholds for commitment to Level 2 efforts		
"Trigger" thresholds	1	ZM identified as moving downstream to some point (to be determined) above the Luce Bayou diversion		Secondary monitoring of "habitat" measures to be considered
	2	ZM are not present in Lake Houston* (indication of San Jacinto basin inoculation?)		Secondary monitoring of "inoculation" indicators (boat traffic, other)
Level 2		CWA commitment to actions in response to risk exceeding the Level 1 thresholds		<u>NOTES</u>
Commitments	1	Advanced Monitoring support	CWA commits to support targeted monitoring at Trinity River location and Lake Houston, as needed	CWA cost for any additional or targeted monitoring
	2	Evaluation of Control Methods	Based on preliminary engineering, evaluate interdiction (control) methods	CWA managed effort
	3	Public Outreach	Consider a Lower Trinity basin (L. Livingston) extension of TPWD Public Outreach in consultation with the City of Houston and other agencies affected	CWA coordination with City of Houston and other agencies to consider expanding support
	4	Trigger	Establish thresholds (trigger) to initiate Level 3 response	CWA effort
Primary "Triggers"		To be monitored by CWA as thresholds for commitment to Level 3 efforts		
"Trigger" thresholds	1	Based on on-going monitoring, ZM advancing downstream to a point proximal to the Luce Bayou diversion (TBD)		Secondary monitoring of "habitat" measures to be considered
	2	ZM are not present in Lake Houston* (indication of San Jacinto basin inoculation?)		Secondary monitoring of "inoculation" indicators (boat traffic, other)
	3	Final design, construction (and permitting) of the Luce Bayou diversion is anticipated within a certain period (TBD)		CWA should not commit to final design of ZM controls unless construction is anticipated
Level 3		CWA commitment to actions in response to risk exceeding the Level 2 thresholds		<u>NOTES</u>
Commitments	1	Advanced Monitoring support	Continued support for advanced, targeted monitoring, as needed	CWA cost for any additional or targeted monitoring
	2	Control Methods	Install or incorporate into design plans, preferred control methods	CWA cost for controls to be installed or designed
	3	Public Outreach	Consideration of Lower Trinity basin (L. Livingston) extension of TPWD ZM Public Outreach or if implemented in Level 2 consider need for additional actions	CWA/Houston to support
	3	Operational Manual(s)	Prepare operational manuals for control methods	Include monitoring of effectiveness of controls



There is a related fourth assumption:

- 4) ZM occurrence in the lower San Jacinto River basin or in Lake Houston indicates a ZM vector other than the LBITP.

Given these assumptions, the three tiers or levels of risk were found to be appropriate to the situation in the Trinity River basin. Further, it will be shown that three levels will provide both a timely and ample response gauged to the risk of ZM infestation as it develops over time.

3.2 Habitat Suitability – Pertinent Physical-Chemical Water Factors

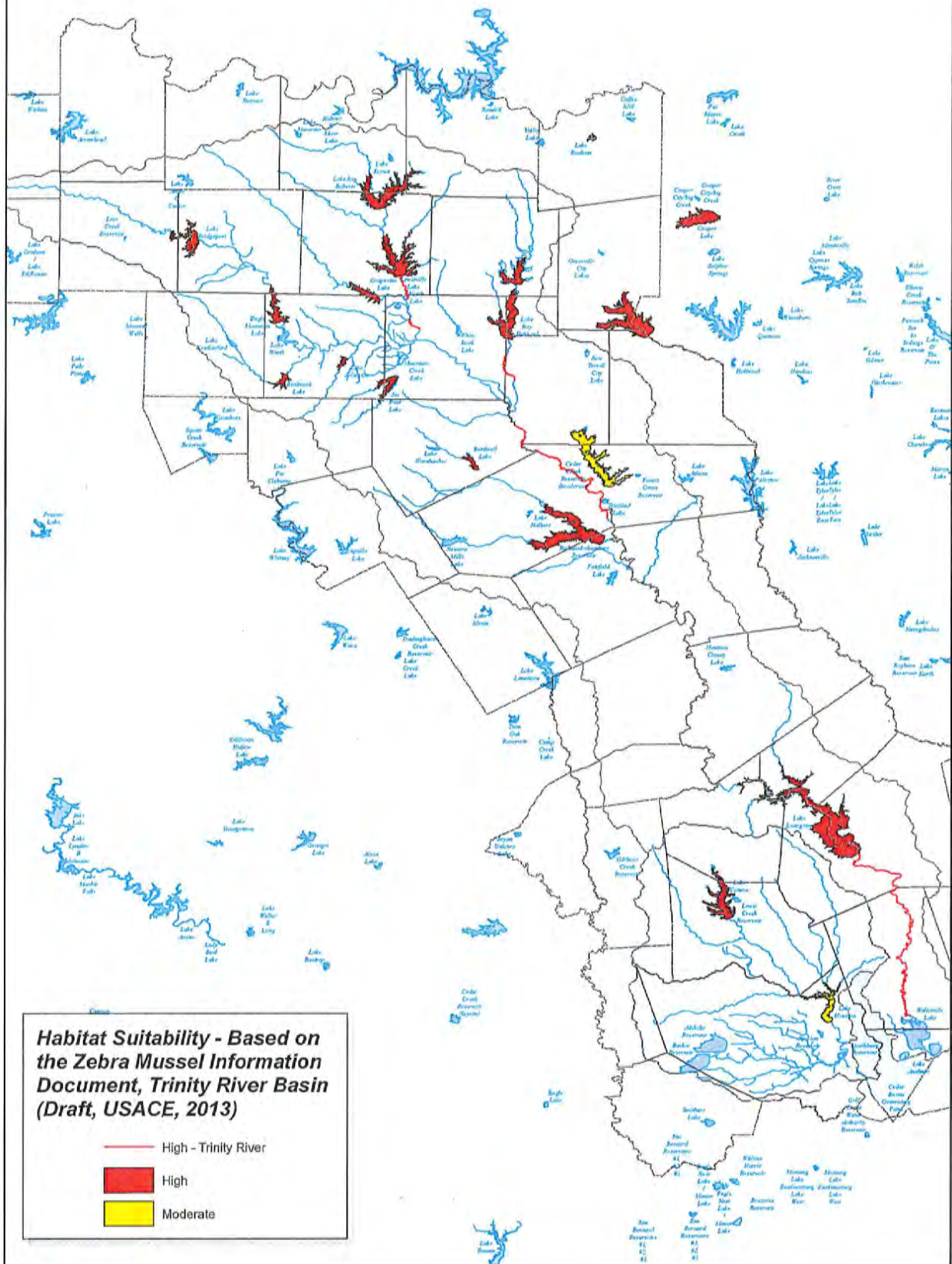
The “habitat suitability” relates to the physical and chemical water characteristics generally considered necessary to support ZM growth, reproduction and sustainability. In Texas, recent studies and reports have examined the habitat suitability in terms of these physical-chemical factors (USACE 2013 [*in draft*] and McMahon 2012). For the Trinity River basin and large portion of north and west Texas, these studies show that the habitat is suitable and most segments have been assigned a “high risk” designation with respect to the habitat suitability for ZM establishment. **Figure 3-3** shows the areas of Texas that the USACE 2013⁹ report found suitable and at “high risk” for ZM establishment. **Figure 3-4** shows the areas in the lower Trinity River and San Jacinto River watershed that Dr. McMahon (McMahon, 2012) identified as moderate or high risk habitat.

3.3 Simplifying the Risk-based Model for Application to the Lower Trinity Response Plan

The conservative conclusion regarding habitat suitability is that if inoculated the entire Trinity River basin, including the lower segments, should be considered suitable for ZM establishment. Since habitat suitability is prevalent in the Trinity River basin (and also recognizing the highly adaptive nature of ZM to new environments), a reasonable assumption can be made, simplifying the tiered-commitment approach: assume that the waters of the lower Trinity River basin are suitable, and ZM introduction in appropriate populations will not be restrained from establishment due to physical-chemical water factors. The monitoring of water chemistry results at strategic stations throughout the Trinity River basin, and in the San Jacinto River basin, should not be ignored, but would be a secondary factor and not a primary threshold or trigger.

A further simplification results from the uncertainty associated with inoculation. The appropriate assumption would be that due to this uncertainty, actual occurrence of ZM should be the measure used. Predicting the potential for boat traffic inoculation or even for water-release inoculation is simply not possible due to the numerous opportunities for transport and combinations of transport modes.

⁹ The final version of this report has not issued by the USACE; therefore, Figure 3-3 is based on draft version; when the report is published, Figure 3-3 can be replaced with the corresponding figure from the report.



Risk Analyses for Establishment of Dreissenid Mussels at Selected Stations
 in the Watersheds of the San Jacinto and Lower Trinity Rivers

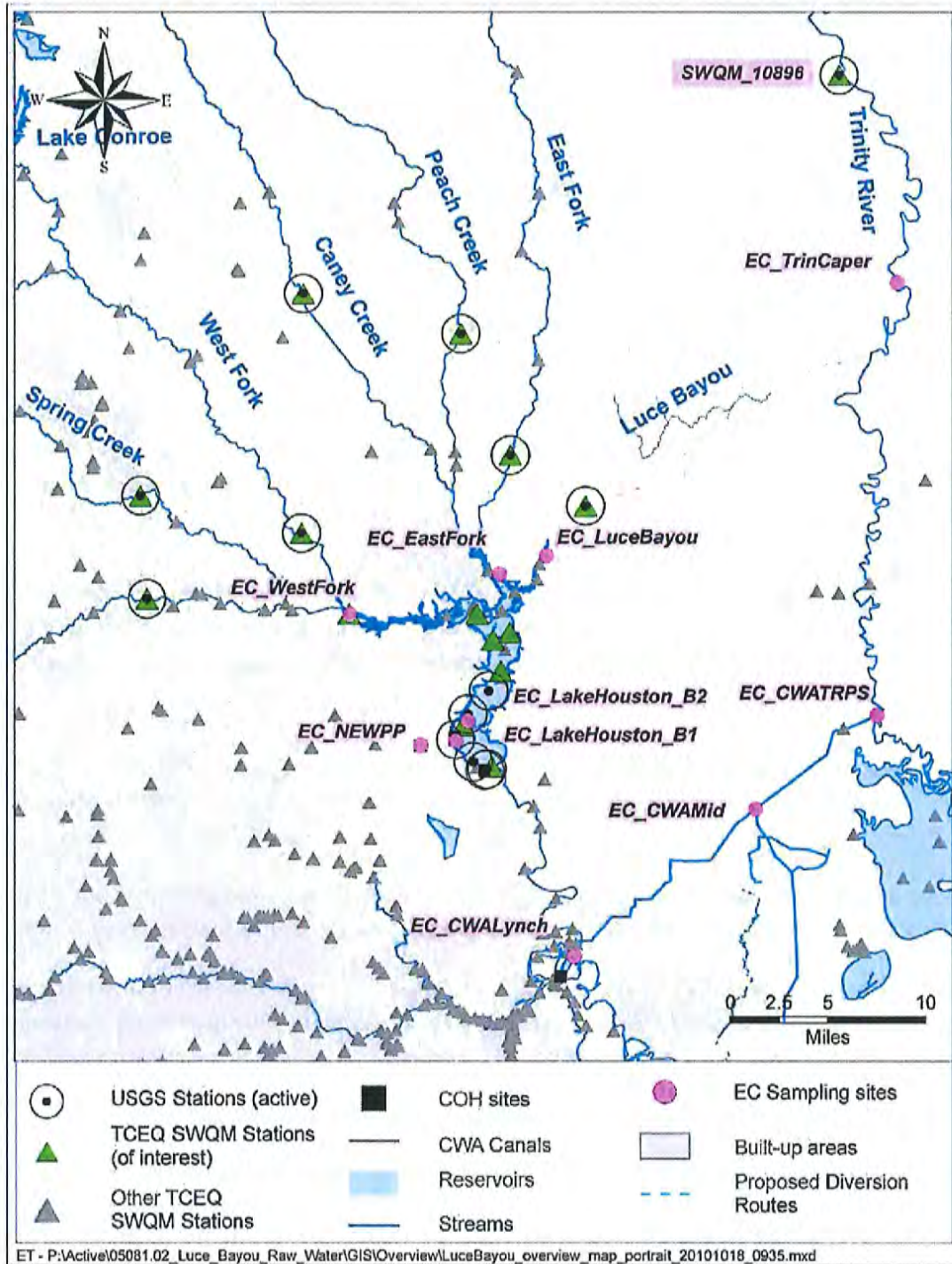


Figure 3-4. Map of sampling stations (highlighted in pink) for which water quality data was examined for the potential for zebra or quagga mussels to develop sustainably reproducing populations (from Espey Consultants, Inc. 2011).

3.4 Overview of the Three Zones and Assigned Risk Levels used in the CWA Response Plan

Considering the ZM situation in the Trinity River basin, three zones or segments were identified and assigned increasing levels of ZM risk based on proximity to the LBITP proposed diversion, as shown in **Figure 3-2**. Three zones were considered to provide an appropriate balance between 1) occurrence associated with ZM risk to the LBITP; and 2) taking proper and timely actions in response. Key to the CWA Response Plan is the prior commitment to take identified actions when ZM occur in a particular zone. The three zone plan can be related straightforwardly to ZM risk; each zone is assigned a low, moderate, or high risk level as the proximity of the zone to the LBITP increases.

As further shown in **Figure 3-2**, the three zones are also geographically reasonable. Each Zone is described in more detail in **Section 3.5** below.

- 1) The lowest risk Zone that corresponds to Level 1 response actions is the upper Trinity basin, including the Dallas-Fort Worth Metroplex area. Zone 1 is the watershed above the confluence of the East Fork of the Trinity River with the main stem. Since ZM occurrence is documented in this zone, the CWA Response Plan, when approved, would take actions assigned to Level 1 risk.
- 2) The moderate risk Zone corresponding to Level 2 risk and response actions, is the watershed area comprising the mid-Trinity River basin. Zone 2 is from the East Fork confluence with the Trinity River downstream to the headwaters of Lake Livingston (measured at normal pool elevation, 131 feet msl).
- 3) The zone assigned the highest risk, Level 3, is the reach including Lake Livingston to the tidally influenced area of the lower Trinity River, including the proposed LBITP diversion location.

Table 3-1 describes the zones geographically and references the Texas Commission on Environmental Quality (TCEQ) Water Quality Stream Segments that are included or partially included in each zone.

In terms of proximity, **Table 3-1** also identifies the functional distance (i.e., the physical connection of Trinity River in river miles) from the proposed LBITP diversion location to the downstream boundary of the two upstream zones:

Level 1 (Upper Trinity zone) – functional distance approximately 366 river miles

Level 2 (Mid-Trinity zone) – functional distance approximately 107 river miles

For Level 2 (Lower Trinity zone), ZM occurrence in Lake Livingston is considered the trigger for high risk response actions.

Table 3-1

Recommended Zones Identified by Geographic Area

Risk Level	Risk description relative to infestation of the LBTP¹	Zone Description	TCEQ Water Quality Segments Included
Level 1	LOW RISK. Relates to Zebra Mussel occurrence confined to upper Trinity River basin	Upper Trinity River basin from headwaters to the confluence of the East Fork and the main stem of the Trinity River	Includes all of Segments 0806 – 0841
Level 2	MODERATE RISK. Relates to Zebra Mussel occurrence in the “middle” Trinity Basin area, above Lake Livingston	“Middle” Trinity River basin from confluence of East Fork and Trinity River downstream to the headwaters of Lake Livingston at elevation 131 feet MSL (see map)	Includes all of Segment 804 from a point immediately upstream of the confluence of the Cedar Creek Reservoir discharge canal in Henderson/Navarro County downstream to include Segment 803, Lake Livingston at normal pool elevation (131 ft MSL)
Level 3	HIGH RISK. Relates to Zebra Mussel occurrence in or below Lake Livingston	“Lower” Trinity River basin from the Lake Livingston Dam downstream to the tidal-influenced area beginning in Liberty County	Includes all of Segments 802 and 803 from Lake Livingston Dam to the confluence with Anahuac Channel in Chambers County to a point 3.1 km (1.9 miles) downstream of US 90 in Liberty County

¹ Luce Bayou Interbasin Transfer Project

3.5 Risk Level Response Actions and “Triggers”

Each level of risk is assigned a set of response actions and a primary “trigger” or threshold. For each level, CWA will implement the assigned response actions as well as monitor the conditions that would trigger the next, higher level of risk. As discussed previously, the response actions are gauged to the risk. The response actions that CWA proposes to undertake at each level of risk are summarized in Figure 3-1. The response actions are noted as “commitments”, which are numbered and categorized. The primary “trigger” for advancing actions to the next level of risk response is the documented occurrence of ZM in that risk zone.

Commitments related to the LBITP facilities for evaluation or design of control methods is dependent on the LBITP project schedule. For these actions to be taken, the LBITP project must have progressed to the point of being in final design or have the final basis of design approved.

3.6 Description of Response by Risk Level

This section describes in detail the actions that will be taken for each level of risk as it is encountered. The primary triggers or threshold monitored at each risk level are also described. Again, **Figure 3-1** provides a summary.

3.6.1 Level 1 Commitment & Thresholds

As shown in **Figure 3-2**, the upper Trinity River basin corresponds to risk Level 1. Since ZM occurrence is established in the upper Trinity, CWA will implement actions assigned to this level. **Figure 3-5** shows Zone 1 in more detail, indicating the reservoirs and waters currently being monitored as part of the USGS North Texas ZM Program. Also shown are the reservoirs that are anticipated to be monitored by the USGS or water management agency or agencies in the future.

Commitments: The Level 1 actions can be categorized and described as follows:

1) Monitoring

CWA will screen data and information relative to ZM occurrence at existing and future monitoring stations throughout the Trinity and San Jacinto River basins. The monitoring and collection of data and information will be done by agencies other than CWA. The primary source will be the USGS North Texas ZM Program but other agencies (e.g., Tarrant Regional Water District) with plans for ZM monitoring in the mid-Trinity River basin reservoirs or from any future special studies in other areas of the basins will be monitored. The actions to be taken will include the following:

- Identify sources of ZM occurrence data and information;
- Establish contact person(s) for each information source;
- Set up data/information record keeping to show location, date and type (life cycle) of occurrence;
- Add data and information as it becomes available from newly established monitoring stations and agencies; and,

- Coordinate with the USACE Galveston District as needed on data/information collected and evaluated.
- 2) Continued support of the *Zebra Mussel Resource Document* review and preparation.
The City of Houston is one of the local sponsors of this USACE project. This document is currently in the final draft version. CWA through the City of Houston will work with the USACE and the other North Texas local sponsors to complete this document.
 - 3) Existing Support for and Monitoring the TPWD Public Outreach Program
As mentioned above, the City of Houston one of the sponsors supporting the TPWD North Texas Public Outreach Program. The City's contribution and support should be recognized as a component of the CWA's response to the existing Level 1 risk. In addition, CWA will monitor the effectiveness of the TPWD Public Outreach campaign. At a higher risk level, when ZM occur in Zone 2, in closer proximity to the LBITP, the CWA will confer with the City of Houston on the possibility of expanding a similar campaign to the lower basin. Review of the effectiveness of TPWD's overall program and of its individual components will be important when this future consideration becomes necessary.
 - 4) LBITP Facility Vulnerability Assessment
A major CWA commitment is the preparation of a Facility Vulnerability Assessment for the LBITP facilities. This assessment will be based on the previously submitted LBITP PER. The assessment will identify LBITP structures and facilities that are potentially vulnerable to ZM biofouling or to allowing the pass-through of ZM to the LBIP canal. The preliminary layout and basic design features of the diversion facilities and conveyance facilities will be used for this assessment. A report on the facility vulnerabilities will be prepared. Based on this report and the identified vulnerable features of the LBIP facilities, the CWA can consider appropriate control methods.

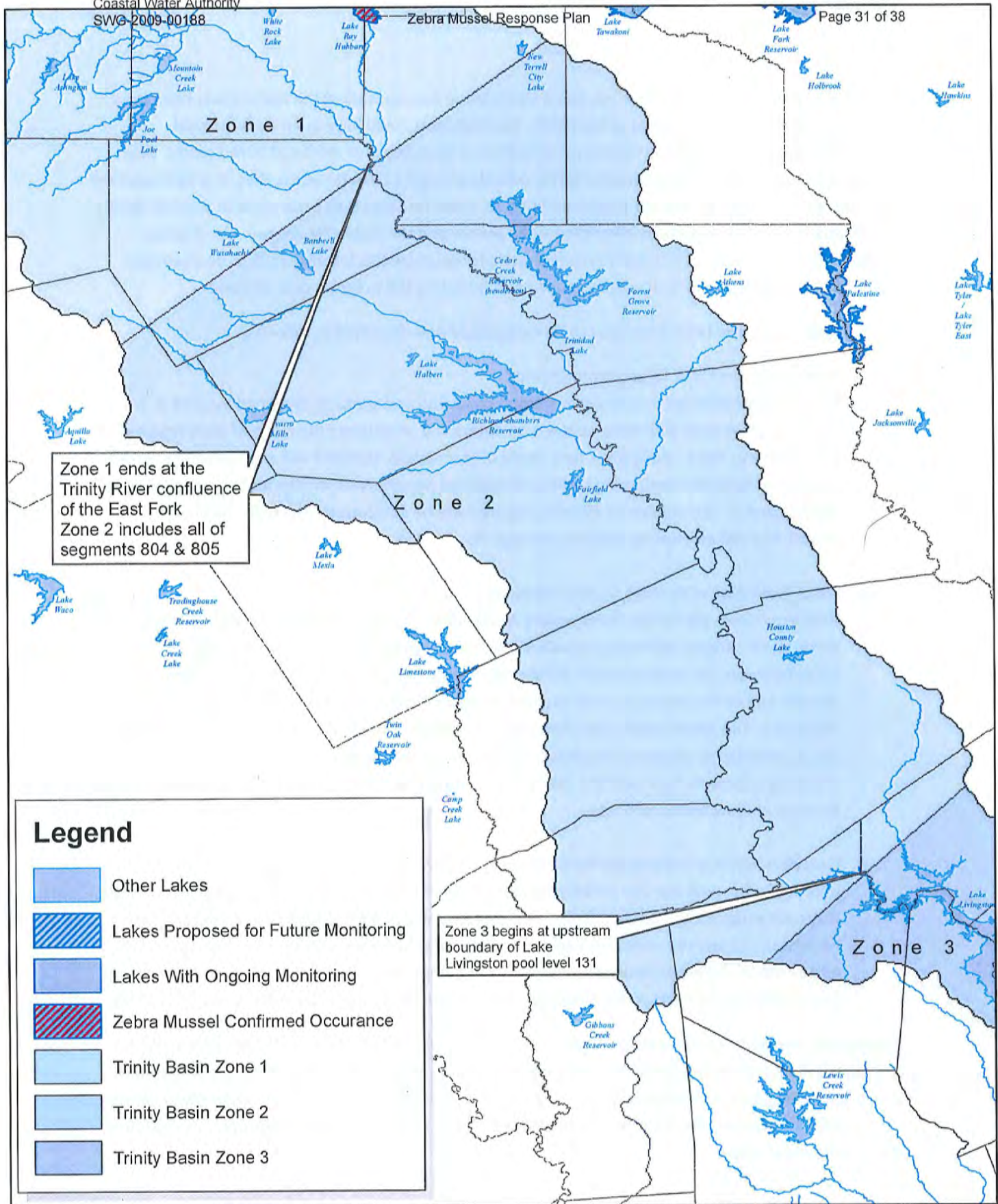
Additional information and discussion of the Facility Vulnerability Assessment is found in Section 4.0 below.

Level 1 actions will begin with the approval of the CWA Response Plan.

Thresholds: The primary threshold or trigger for advancing the ZM risk to Level 2 is the confirmed occurrence of ZM in any location in the mid-Trinity basin designated as Zone 2 on Figure 3-2. The non-occurrence of ZM in Lake Houston or the lower San Jacinto River watershed is coupled with the primary trigger. If ZM were confirmed in Lake Houston or the lower San Jacinto River watershed, it would indicate that another pathway outside of the Trinity River is involved. Should this occur prior to the construction of the LBIP facilities, the LBIP would not be responsible for inoculation and future actions related to the LBIP conveyance system may not be necessary.

3.6.2 Level 2 Commitment & Thresholds

The Level 2 response actions are gauged based on the ZM risk increasing with the proximity of ZM occurrence at any location within Zone 2 as shown on Figure 3-2. Figure 3-6 shows more detail for Zone 2. The downstream boundary for Zone 2 is the headwaters of Lake Livingston at elevation 131 feet msl.



Legend

-  Other Lakes
-  Lakes Proposed for Future Monitoring
-  Lakes With Ongoing Monitoring
-  Zebra Mussel Confirmed Occurrence
-  Trinity Basin Zone 1
-  Trinity Basin Zone 2
-  Trinity Basin Zone 3



Figure 3-6

Level 2 risk recognizes that ZM have advanced significantly downstream of the North Texas reservoirs and pose a more immediate threat to the LBITP. The transport could have been via functional connection of the Trinity River to upstream infestation or from boats or modes of introduction. Even though the mode is not the measureable factor considered in the CWA Response Plan, it is an important consideration. If mode is determined to be related to water-releases then occurrence in the mid-Trinity would indicate that the upstream infestation is the source and the viable ZM are capable of being transported downstream. The Level 2 response actions recognize this increased risk of downstream transport by assigning additional actions gauged at monitoring the progress downstream.

Commitments: The Level 2 actions can be categorized and described as follows:

- 1) **Monitoring and CWA Targeted Monitoring**
CWA will maintain the data and information collection and contacts described in Level 1. In addition, CWA work with these contacts to determine or estimate the mode of inoculation of ZM in Zone 2. For a Trinity River flow mode of inoculation, the CWA will establish and support additional, targeted monitoring stations considered necessary to monitoring the progress of ZM within Zone 2. The number of stations required will be determined in collaboration with established ZM monitoring contacts and experts.
- 2) **LBITP Evaluation of Possible Control Methods**
With input from the Facility Vulnerability Assessment, CWA will evaluate possible ZM control methods to mitigate biofouling of potentially vulnerable facilities, components, and appurtenances. Since the number of ZM controls is large and approaches vary, the idea is to identify and to the extent possible have recommendations for vulnerability-specific control measures. This effort will be completed prior to design of the LBITP, so that control methods can be included or allowance made for them in the design. If the LBITP project schedule calls for the design phase to begin and the ZM risk has not reached Level 2, then CWA will make a decision on how best to proceed.
- 3) **Consideration of a Lower-basin Public Outreach Program**
In consultation with the City of Houston, the CWA will consider the need for supporting a Public Outreach program in the lower basin. The objective would be to educate the public on the hazards of ZM and the measures that can be taken to reduce the potential for transfer of ZM into or out of the lower basin area. CWA, or the City of Houston, or both will consider reaching out to other lower basin water managers, such as the Trinity River Authority, to join the effort.

Thresholds: The primary threshold or trigger for advancing the ZM risk from Level 2 to Level 3, the highest risk level, will be the confirmed occurrence of ZM in Lake Livingston or in the stream segment below Lake Livingston to the existing CWA Trinity River Pump Station. With regard to possible controls for the LBITP Conveyance System, the caveat regarding occurrence of ZM in Lake Houston, as discussed above, would also apply.

3.6.3 Level 3 Commitment & Thresholds

Zone 3 is the highest risk area. **Figure 3-7** shows the zone in more detail. It includes the watershed below the Lake Livingston Dam to the proposed LBITP diversion point. In terms of proximity of ZM occurrence, Level 3 corresponds to a high risk. CWA will consider actions to mitigate the LBITP and existing Trinity River Diversion.

Commitments: The Level 3 actions can be categorized and described as follows:

1) Monitoring

Coordination, data and information collection, including targeted monitoring, established under the responses in Level 1 and Level 2 will continue. CWA will consult with the established collaborators and monitoring agency personnel on the need for additional targeted monitoring below Lake Livingston. If the LBITP has been constructed and is in operation, CWA operating personnel will have access to the Zone 3 monitoring data and will receive alerts if ZM occur below Lake Livingston. It is anticipated that other water managers, particularly the Trinity River Authority, in cooperation with the City of Houston, will actively participate.

2) Control Methods

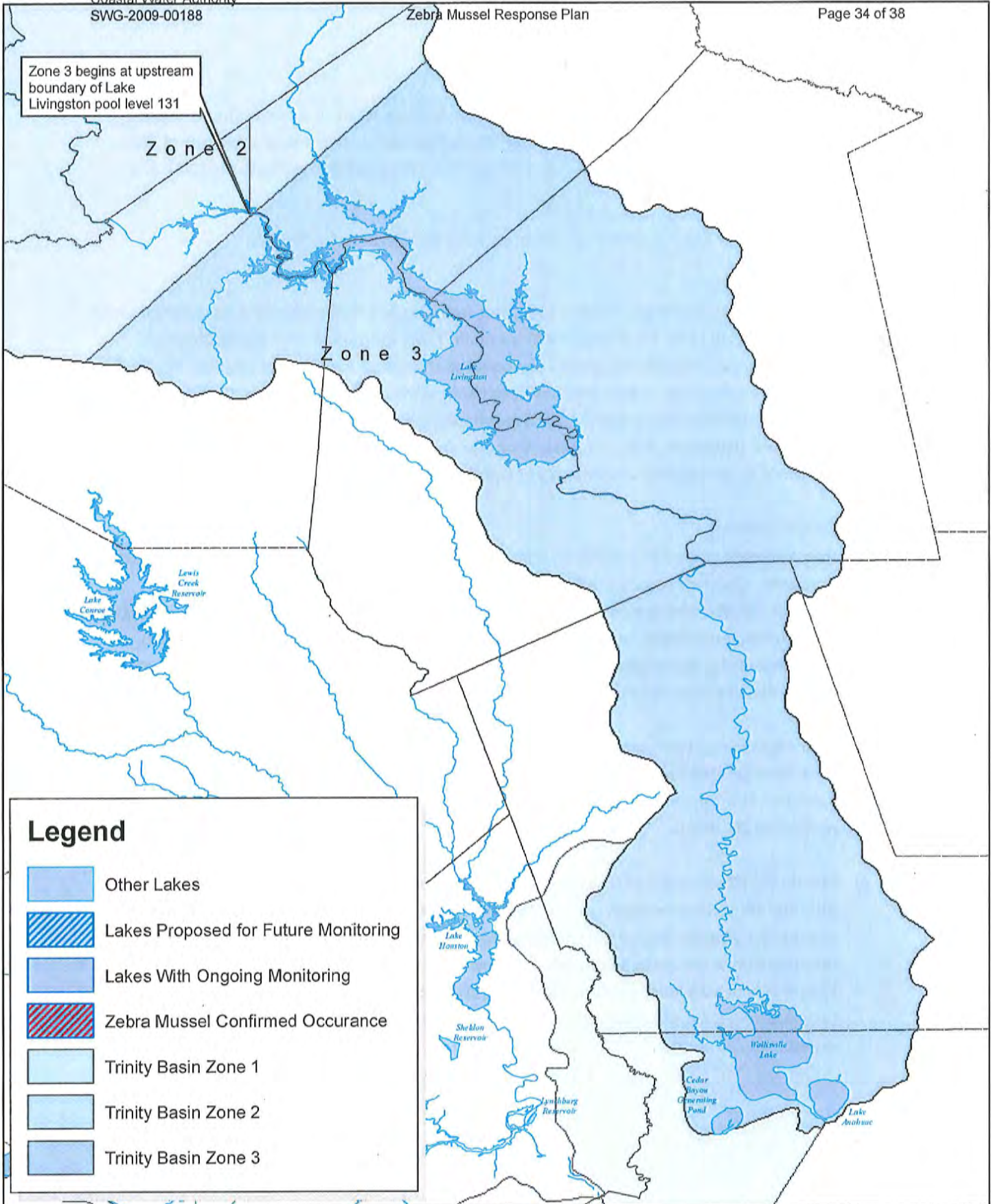
Prior to design of the LBITP facilities, ZM control methods identified in Level 2 actions will be evaluated. CWA will recommend control methods and direct the incorporation of those methods into the final design. The final design will consider, as needed, any delivery or staging areas for implementation or operation of the recommended controls. If the LBITP project schedule calls for design phase to begin and the ZM risk has not reached Level 3, then CWA will make a decision on how best to proceed.

3) Operations Manual and Readiness

CWA will direct the preparation of operation and maintenance manuals for the control methods. This can include consideration of chemical delivery, storage, and safety as well as removal of ZM debris.

4) Monitoring Effectiveness of Installed and Operating ZM Controls

After the ZM control methods are installed and are being operated and maintained, CWA will monitor the effectiveness of the control methods. If there is no confirmed ZM occurrence in Lake Houston or the lower San Jacinto River basin, then monitoring along the LBITP Conveyance system may be needed to confirm that no ZM are being transferred. If ZM have occurred in Lake Houston, CWA will evaluate the need for monitoring in and along the LBITP Conveyance system.



4.0 Facility Vulnerability Assessment

As a CWA committed action to be initiated as part of the Level 1 response actions, a vulnerability assessment will be conducted for the LB IPT proposed facilities. The assessment will evaluate the potential vulnerability of the LB IPT facilities to ZM biofouling. In addition, the potential for ZM to pass-through the diversion and pumping facilities, and reach the water Conveyance System will be evaluated. The vulnerability assessment will be based on the PER. The need for a vulnerability assessment at this initial risk level is based two factors:

- 1) Completing the vulnerability assessment early so that later stages of design can consider and recommend the types and degree of ZM controls needed to mitigate the identified vulnerability; and,
- 2) Considering the McMahon special study (McMahon, 2012) on habitat suitability for lower Trinity River water discussed above, the intake water has a moderate potential risk for ZM establishment.

It should be recognized that the PER anticipates the inclusion of cleaning and sediment control for the pipeline. A pipeline pigging system is recommended for the final design of the project.

4.1 Factors for the LB IPT Vulnerability Assessment

For the LB IPT, the facility vulnerabilities depend on several factors (based on BOR, 2009):

- 1) How the raw water is diverted from the Trinity River into the LB IPT Pump Station facilities;
- 2) The facilities that are preparatory for the water transfer such as the trash racks and cleaning mechanisms, sediment settling basin, and pump bay;
- 3) The routing of all piping, including discharge headers and valves, pipe cleaning or pigging system, and the number, type, and location of isolation and other types of valves; and,
- 4) To the extent described in the PER, the anticipated operation of the various components and systems of the LB IPT.

4.2 Preliminary Nature of the Luce Bayou Diversion

The diversion structure for the LB IPT is described in the PER submitted in support of the Section 404 permit application; however, for a number of reasons, adjustments or changes on the location, design and operation of the diversion structure may still be required. Therefore, the Vulnerability Assessment prepared based on the PER will be preliminary and subject to updates and revisions as CWA makes final decisions on the design and construction.

4.3 Checklist of Potential Control Methods

The Level 1 response will also include a checklist of potential control methods that can be considered to address potentially vulnerable areas. Given the long history of ZM and Quagga mussels invasion in the United States and other countries, substantial information is available on control methods, including details on selection considerations, effectiveness, operational history, and emerging control methods.

The recent history of ZM in Texas includes studies to identify potential control methods given the various types of water infrastructure that could be vulnerable to ZM biofouling. The previously submitted Assessment Report included sections of control method considerations. Another excellent source of information on control methods will be the Zebra Mussel Resource Document, Trinity River Basin, Texas a USACE report sponsored by the Dallas Water Utilities, Trinity River Authority, Tarrant Regional Water District, and the City of Houston. This report is in final draft version and being circulated for final comments. It is anticipated the final version for publication will be available in mid 2013. Chapter 10 of the Zebra Mussel Resource Document includes a description of various control methods. This information should be useful to CWA in its consideration of control methods that may be required for the LB/TP. Upon final publication of the document, Chapter 10 of the report will be added to the Appendix of this report.

4.4 Prerequisite Action based on Pre-Construction and Operation

Based on preliminary engineering information, the LB/TP Vulnerability Assessment will generally be undertaken in the following steps:

1. General criteria for assessing vulnerability for particular components will be developed to include but not be limited to the intake and diversion structure; racks, screens and gates; pumps and appurtenances; piping and flow velocities; instrumentation and related potentially vulnerable facilities; valves; and other components or sub-components as identified in consultation with the LB facility design engineers.
2. Based on the criteria established, an assessment form, or template, will be prepared based on pertinent literature and available vulnerability criteria applicable to water intake and diversion facilities.
3. The assessment will be conducted to evaluate particular components based on the anticipated operation of the LB diversion. It is anticipated that components or related groups of components can be identified as having a high, medium or low level of vulnerability to the establishment of ZM.
4. At the appropriate time in the project development, the findings will be reviewed with the facility design engineering team. Recommendations for avoiding or mitigating vulnerable conditions can be considered for incorporation into the final design.

CWA will begin preparation of the Facility Vulnerability Assessment upon approval of the CWA Response Plan

5.0 Definition of Terms (in context of the CWA Response Plan)

The following pertinent terms are used in CWA Response Plan. The meaning and context are provided for each.

- **ZM Establishment** - successful introduction and persistence of a population of zebra mussels in a given water body beyond one year, resulting in an identified occurrence [also from the CA (CWA?) plan – “Establishment is defined as either the presence of a colony of juvenile/adult mussels and/or presence of veligers in zooplankton samples taken at the site.”
- **ZM Occurrence** – presence of ZM in any life-state (stage?)—veliger, juvenile, or adult—confirmed by USGS or other component sampling agency;
- **Vector** - means by which zebra mussels are transported overland and by water between water bodies.
- **Veliger** - a free-swimming larval stage of mollusks characterized by the presence of a ciliated velum utilized for swimming and feeding.
- **Inoculation** – refers to the modes and rate of zebra mussel introduction to a non-infested water body.
- **Vulnerability** – refers to the potential for zebra mussel establishment provided by a facility component or operation of those components.

Appendix

- *USGS North Texas Zebra Mussel Monitoring Program*
- *Texas Parks & Wildlife Department – North Texas Public Outreach Program*
- *Potential Zebra Mussel Control Methods – Chapter 10, Control Methods, an excerpt from Zebra Mussel Information Document, Trinity River Basin, 2013*

NOTE: At the time of submittal, this Document is still in final draft; however, it is anticipated that the final version will be available within the next two months. All comments have been received on the draft, and those comments are being addressed and incorporated into the final report currently. Chapter 10 listing pertinent ZM control methods will be inserted into this report when the report is available in final version.

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Zak Covar, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 30, 2014

Mr. Jayson M. Hudson
Galveston District CESWG-PE-RE
U.S. Army Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229

Re: USACE Permit Application No. SWG-2009-00188

Dear Mr. Hudson:

This letter is in response to the Record of Decision (ROD) dated January 16, 2014, for the Joint Public Notice dated April 19, 2010, on the Coastal Water Authority's (CWA) proposed Luce Bayou Interbasin Transfer Project. CWA is requesting authorization to construct a 26.5 mile conveyance structure that includes a raw water pump station located in the Trinity River, subsurface pipeline and surface canal, sedimentation basin, and associated berms, access roads, drainage ditches, perimeter fencing, and an outfall structure into Luce Bayou just above the confluence with Lake Houston. The project is located north, northwest, and west of Dayton, Liberty and Harris Counties, Texas.

The proposed project would impact 365 acres of wetlands and 65 linear feet of Luce Bayou. As compensation for unavoidable impacts, the applicant proposes to preserve a 2,979-acre tract along the Trinity River which is comprised of 1,132 acres of high functioning wetlands and 12,100 linear feet of Gillen Bayou, a tributary of the Trinity River. The proposed mitigation would be conveyed to the Trinity National Wildlife Refuge who will manage and protect the site in perpetuity.

The Texas Commission on Environmental Quality (TCEQ) has reviewed the public notice and related application information along with the ROD. On behalf of the Executive Director and based on our evaluation of the information contained in these documents, the TCEQ certifies that there is reasonable assurance that the project will be conducted in a way that will not violate water quality standards. General information regarding this water quality certification, including standard provisions of the certification, is included as an attachment to this letter.

The TCEQ has reviewed this proposed action for consistency with the Texas Coastal Management Program (CMP) goals and policies in accordance with the CMP regulations (Title 31, Texas Administrative Code (TAC), Section (§)505.30) and has determined that the action is consistent with the applicable CMP goals and policies.

Mr. Jayson M. Hudson
U.S. Army Corps of Engineers
USACE Permit Application No. SWG-2009-00188

Page 2

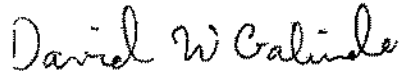
January 30, 2014

This certification was reviewed for consistency with the CMP's development in critical areas policy (31 TAC §501.23) and dredging and dredged material disposal and placement policy (31 TAC §501.25). This certification complies with the CMP goals (31 TAC §501.12(1, 2, 3, 5)) applicable to these policies.

No review of property rights, location of property lines, nor the distinction between public and private ownership has been made, and this certification may not be used in any way with regard to questions of ownership.

If you require additional information or further assistance, please contact Mr. John Trevino, Water Quality Assessment Section, Water Quality Division (MC-150), at (512) 239-4600 or by email at John.Trevino@tceq.texas.gov.

Sincerely,



David W. Galindo
Water Quality Division Director
Texas Commission on Environmental Quality

DWG/JT/evm

Attachment

cc: Ms. Sheri Land, Texas General Land Office, P. O. Box 12873, Austin, Texas 78711-28733

Mr. Jayson M. Hudson
USACE Permit Application Number SWG-2009-00188
Attachment 1 – Dredge and Fill Certification
Page 1 of 3
January 30, 2014

WORK DESCRIPTION: As described in the public notice dated April 19, 2010, and the Record of Decision dated January 16, 2014.

SPECIAL CONDITIONS: None

GENERAL: This certification, issued pursuant to the requirements of Title 30, Texas Administrative Code, Chapter 279, is restricted to the work described in the January 16, 2014, Record of Decision and shall be concurrent with the Corps of Engineers (COE) permit. This certification may be extended to any minor revision of the COE permit when such change(s) would not result in an impact on water quality. The Texas Commission on Environmental Quality (TCEQ) reserves the right to require full joint public notice on a request for minor revision. The applicant is hereby placed on notice that any activity conducted pursuant to the COE permit which results in a violation of the state's surface water quality standards may result in an enforcement proceeding being initiated by the TCEQ or a successor agency.

STANDARD PROVISIONS: These following provisions attach to any permit issued by the COE and shall be followed by the permittee or any employee, agent, contractor, or subcontractor of the permittee during any phase of work authorized by a COE permit.

1. The water quality of wetlands shall be maintained in accordance with all applicable provisions of the Texas Surface Water Quality Standards including the General, Narrative, and Numerical Criteria.
2. The applicant shall not engage in any activity which will cause surface waters to be toxic to man, aquatic life, or terrestrial life.
3. Permittee shall employ measures to control spills of fuels, lubricants, or any other materials to prevent them from entering a watercourse. All spills shall be promptly reported to the TCEQ by calling the State of Texas Environmental Hotline at 1-800-832-8224.
4. Sanitary wastes shall be retained for disposal in some legal manner. Marinas and similar operations which harbor boats equipped with marine sanitation devices shall provide state/federal permitted treatment facilities or pump out facilities for ultimate transfer to a permitted treatment facility. Additionally, marinas shall display signs in appropriate locations advising boat owners that the discharge of sewage from a marine sanitation device to waters in the state is a violation of state and federal law.
5. Materials resulting from the destruction of existing structures shall be removed from the water or areas adjacent to the water and disposed of in some legal manner.

6. A discharge shall not cause substantial and persistent changes from ambient conditions of turbidity or color. The use of silt screens or other appropriate methods is encouraged to confine suspended particulates.
7. The placement of any material in a watercourse or wetlands shall be avoided and placed there only with the approval of the Corps when no other reasonable alternative is available. If work within a wetland is unavoidable, gouging or rutting of the substrate is prohibited. Heavy equipment shall be placed on mats to protect the substrate from gouging and rutting if necessary.
8. Dredged Material Placement: Dredged sediments shall be placed in such a manner as to prevent any sediment runoff onto any adjacent property not owned by the applicant. Liquid runoff from the disposal area shall be retained on-site or shall be filtered and returned to the watercourse from which the dredged materials were removed. Except for material placement authorized by this permit, sediments from the project shall be placed in such a manner as to prevent any sediment runoff into waters in the state, including wetlands.
9. If contaminated spoil that was not anticipated or provided for in the permit application is encountered during dredging, dredging operations shall be immediately terminated and the TCEQ shall be contacted by calling the State of Texas Environmental Hotline at 1-800-832-8224. Dredging activities shall not be resumed until authorized by the Commission.
10. Contaminated water, soil, or any other material shall not be allowed to enter a watercourse. Noncontaminated storm water from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
11. Storm water runoff from construction activities that result in a disturbance of one or more acres, or are a part of a common plan of development that will result in the disturbance of one or more acres, must be controlled and authorized under Texas Pollutant Discharge Elimination System (TPDES) general permit TXR150000. A copy of the general permit, application (notice of intent), and additional information is available at:
http://www.tceq.texas.gov/permitting/stormwater/wq_construction.html or by contacting the TCEQ Storm Water & Pretreatment Team at (512) 239-4671.
12. Upon completion of earthwork operations, all temporary fills shall be removed from the watercourse/wetland, and areas disturbed during construction shall be seeded, ripped, or given some other type of protection to minimize subsequent soil erosion.

Any fill material shall be clean and of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters.

13. Disturbance to vegetation will be limited to only what is absolutely necessary. After construction, all disturbed areas will be revegetated to approximate the pre-disturbance native plant assemblage.
14. Where the control of weeds, insects, and other undesirable species is deemed necessary by the permittee, control methods which are nontoxic to aquatic life or human health shall be employed when the activity is located in or in close proximity to water, including wetlands.
15. Concentrations of taste and odor producing substances shall not interfere with the production of potable water by reasonable water treatment methods, impart unpalatable flavor to food fish including shellfish, result in offensive odors arising from the water, or otherwise interfere with reasonable use of the water in the state.
16. Surface water shall be essentially free of floating debris and suspended solids that are conducive to producing adverse responses in aquatic organisms, putrescible sludge deposits, or sediment layers which adversely affect benthic biota or any lawful uses.
17. Surface waters shall be essentially free of settleable solids conducive to changes in flow characteristics of stream channels or the untimely filling of reservoirs, lakes, and bays.
18. The work of the applicant shall be conducted such that surface waters are maintained in an aesthetically attractive condition and foaming or frothing of a persistent nature is avoided. Surface waters shall be maintained so that oil, grease, or related residue will not produce a visible film of oil or globules of grease on the surface or coat the banks or bottoms of the watercourse.
19. This certification shall not be deemed as fulfilling the applicant's/permittee's responsibility to obtain additional authorization/approval from other local, state, or federal regulatory agencies having special/specific authority to preserve and/or protect resources within the area where the work will occur.

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND
REQUEST FOR APPEAL**

Applicant: Coastal Water Authority		File Number: SWG-2009-00188	Date: 02/04/2014
Attached is:			See Section below
X	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A	
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B	
	PERMIT DENIAL	C	
	APPROVED JURISDICTIONAL DETERMINATION	D	
	PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at

http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Mr. Jayson M. Hudson, Project Manager
CESWG-PE-RB, P.O. Box 1229
Galveston, Texas 77553-1229
Telephone: 409-766-3108; FAX: 409-766-6301

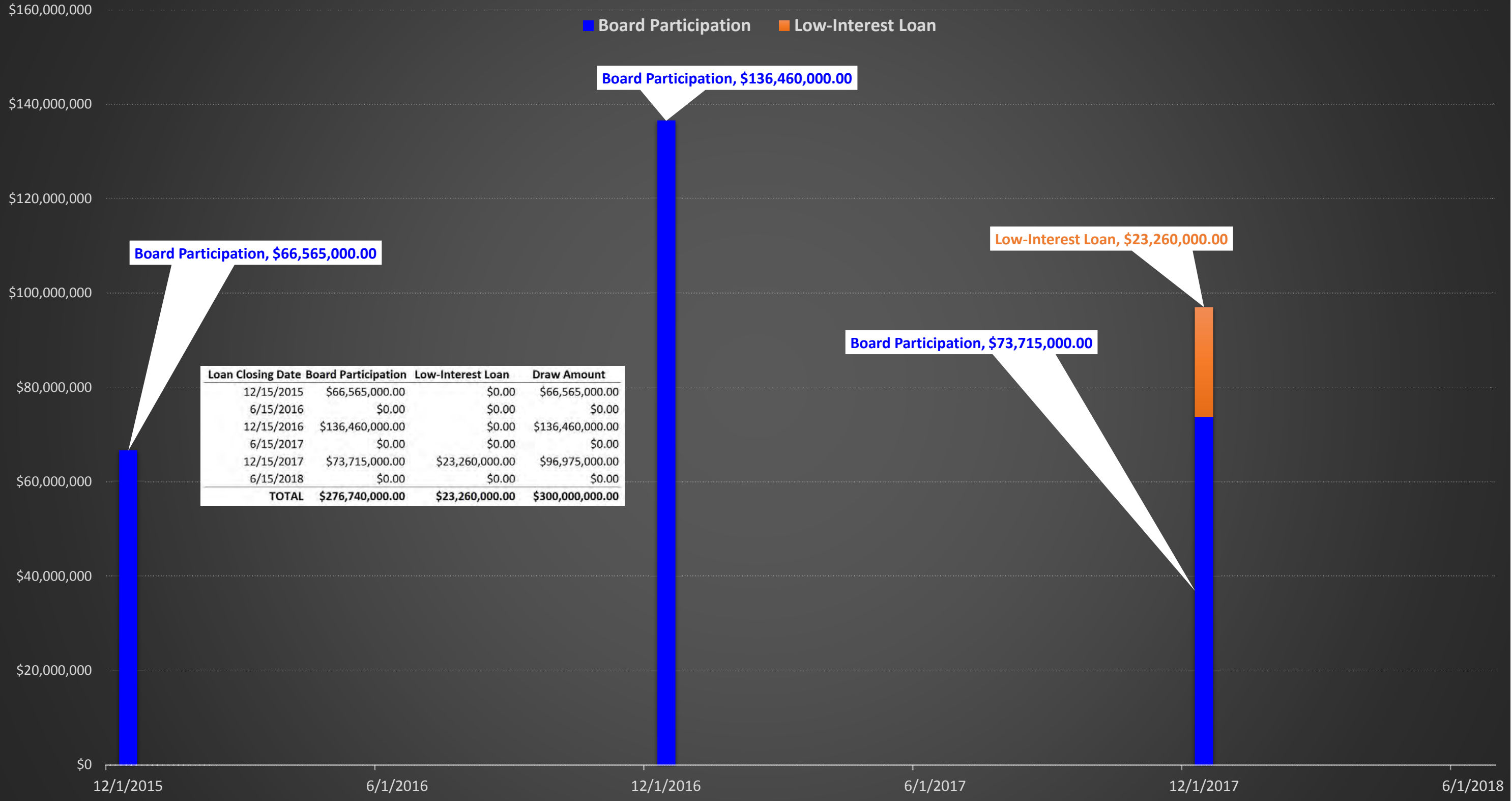
If you only have questions regarding the appeal process you may also contact:

Mr. Elliott Carman
Administrative Appeals Review Officer (CESWD-PDO)
U.S. Army Corps of Engineers
1100 Commerce Street, Suite 831
Dallas, Texas 75242
469-487-7061 (phone)

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:
----------------------------------	-------	-------------------

Luce Bayou Interbasin Transfer Project SWIFT Funding Disbursement Estimation by Fund



ADDITIONAL CORRESPONDENCE FOLLOWING SUBMISSION

Jonathan Marks

From: Jonathan Marks
Sent: Tuesday, June 9, 2015 7:57 AM
To: 'Tammy.Oliver@twdb.texas.gov'
Cc: Don Ripley (dripley@Coastalwaterauthority.org); Warren P. Cash III (trey.cash@firstsw.com); David Miller (dmiller@Coastalwaterauthority.org); 'neil.thomas@nortonrosefulbright.com'; John Baldwin; 'WSI-RWPD-Team6@twdb.texas.gov'; Wayne McConnell (wmccConnell@mjlm.com)
Subject: RE: Notice of Incomplete Application - Coastal Water Authority SWIFT Project No. 51008

Follow Up Flag: Follow up
Flag Status: Flagged

Tammy,

Thank you for speaking with me this morning regarding our responses to your Notice of Incomplete Application. After speaking with Javier Pena, he wanted clarification with respect to the difference between "Funds Provided by City of Houston" and "Contributions Provided by City of Houston" in our Five Year Comparative Statement. The difference is as follows:

- "Funds Provided by City of Houston" are operations and maintenance reimbursements.
- "Contributions Provided by City of Houston" are funds used for debt service on our bonds.

Per a second phone conversation with Javier, he confirmed that our responses were adequate, and that providing the responses via electronic format was also acceptable (no hard copies are necessary). If you would, please confirm this via email for our records.

During this second conversation, Javier also inquired as to the nature of "Service revenues" in our Five Year Comparative Statement. "Service revenues" are revenues associated with all other customers not including the City of Houston or San Jacinto River Authority. These include the Bayport Industrial Complex Distribution System and the Red Bluff Industrial Water Treatment Plant.

It was a pleasure speaking with you and Javier this morning. Thank you both again for your help, and we look forward to your confirmation that no further action is required to proceed with our application.

Jonathan S. Marks, PMP

Project Controls Manager

Coastal Water Authority

1801 Main St., Suite 800

Houston, TX 77002

(713) 658-9020, X122 (Main)

(713) 800-6253 (Direct)

(832) 347-3915 (Cell)

JMarks@CoastalWaterAuthority.org



From: Jonathan Marks

Sent: Tuesday, June 9, 2015 6:40 AM

To: 'Tammy.Oliver@twdb.texas.gov'

Cc: Don Ripley (dripley@Coastalwaterauthority.org); Warren P. Cash III (trey.cash@firstsw.com); David Miller (dmiller@Coastalwaterauthority.org); 'neil.thomas@nortonrosefulbright.com'; John Baldwin; 'WSI-RWPD-Team6@twdb.texas.gov'

Subject: Notice of Incomplete Application - Coastal Water Authority SWIFT Project No. 51008

Good morning Tammy,

I received your email via Trey Cash and Don Ripley yesterday afternoon and would like to respond to your Notice of Incomplete Application for the Coastal Water Authority SWIFT Project No. 51008. Please see our responses in [blue](#) below.

Section C. – Financial

C.46: Please provide five-year comparative statements for Coastal WA.

We have attached this information (“CWA Five Year Comparative Statement (2014-2010).pdf”, 87KB).

C.47: Please include Coastal WA FY 2014 Audited Financial Statements.

We have attached this information (“2014 Final Audited Report.pdf”, 600KB).

Section D. – Project Information

D.54: Please provide a preliminary engineering feasibility report.

Per the attached email (“RE: SWIFT Full Application”, 48KB), we were advised that we did not need to include this in our application as it has been provided to TWDB in the 2013 State Participation application for financial assistance. Should you require this document, please download using the DropBox below as it is too large to email. Please confirm that you were able to download the files (“Final PER(01-28-2011)-Vol I”, and “Final PER(01-28-2011)-Vol II”)successfully.

<https://www.dropbox.com/sh/ul9j8p33n6inbar/AADFKEo07pAlbrd7IDBwnN2a?dl=0>

Section E. - SWIFT Applicants

E.72.a: Please clarify if the Bond Ordinance included under A10 is intended to also be submitted as a draft under this item. If not, please submit a draft Bond Ordinance for this item.

As stated in our application, a Master Agreement for the Board Participation Program is currently being developed by TWDB staff and will be the basis for securing CWA’s loan with the TWDB. This was discussed with Javier Pena (the TWDB Financial Analyst assigned to our application) and Amanda Lavin prior to submitting our application. Should you required a Bond Ordinance while a Master Agreement is being developed, the Bond Ordinance included under A10 may be used. It should be noted however that CWA intends to secure all SWIFT funding via a Master Agreement with TWDB as was done for the 2013 State Participation.

Thank you for bringing these items to our attention, and please confirm that our responses are complete and acceptable. We look forward to hearing back from you.

Jonathan S. Marks, PMP

Project Controls Manager

Coastal Water Authority

1801 Main St., Suite 800

Houston, TX 77002

(713) 658-9020, X122 (Main)

(713) 800-6253 (Direct)

(832) 347-3915 (Cell)

JMarks@CoastalWaterAuthority.org



From: Tammy Oliver [<mailto:Tammy.Oliver@twdb.texas.gov>]

Sent: Monday, June 08, 2015 4:44 PM

To: dripley@coastalwaterauthority.org; Trey Cash; wmccconnell@mjllm.com; dmiller@bcoastalwaterauthority.com; neil.thomas@nortonrosefulbright.com

Cc: WSI-RWPD-Team6

Subject: Notice of Incomplete Application - Coastal Water Authority SWIFT Project No. 51008

Dear Mr. Ripley:

The Coastal Water Authority SWIFT application is has been determined administratively incomplete. The item(s) listed below are missing:

Section C. – Financial

C.46: Please provide five-year comparative statements for Coastal WA.

C.47: Please include Coastal WA FY 2014 Audited Financial Statements.

Section D. – Project Information

D.54: Please provide a preliminary engineering feasibility report.

Section E. - SWIFT Applicants

E.72.a: Please clarify if the Bond Ordinance included under A10 is intended to also be submitted as a draft under this item. If not, please submit a draft Bond Ordinance for this item.

Once we have received the missing information, Texas Water Development Board staff can move forward with processing the application. **The items listed above must be received by 5:00 p.m. on Monday, June 15, 2015.** If the requested information is not submitted by the date listed, the application will be considered withdrawn and will not be processed for consideration.

Requested information should be sent to:

Attention: Tammy V. Oliver
Texas Water Development Board
1700 N. Congress Ave
Austin, TX 78701-3231

or via email at Tammy.oliver@twdb.texas.gov.

TWDB staff looks forward to working with the Costal Water Authority to make this a successful project. Please contact me if you have any questions.

Thank you,

Tammy V. Oliver, Administrative Assistant

Texas Water Development Board

Regional Water Planning & Development

Water Supply & Infrastructure

1700 North Congress Ave.

Austin, Texas 78711 – 3231

Phone (512) 475-3412

Fax (512) 475-2086



Jonathan Marks

From: Jonathan Marks
Sent: Monday, June 15, 2015 4:58 PM
To: 'Mireya Loewe'
Subject: RE: Notice of Incomplete Application - Coastal Water Authority SWIFT Project No. 51008

Follow Up Flag: Follow up
Flag Status: Flagged

Good evening Mireya,

You are correct, CWA does not own any water rights.

Jonathan S. Marks, PMP

Project Controls Manager
Coastal Water Authority
1801 Main St., Suite 800
Houston, TX 77002
(713) 658-9020, X122 (Main)
(713) 800-6253 (Direct)
(832) 347-3915 (Cell)
JMarks@CoastalWaterAuthority.org



From: Mireya Loewe [mailto:Mireya.Loewe@twdb.texas.gov]
Sent: Monday, June 15, 2015 2:18 PM
To: Jonathan Marks
Subject: RE: Notice of Incomplete Application - Coastal Water Authority SWIFT Project No. 51008

Jonathan,

Can you please confirm that CWA does not own any water rights.

Thanks,
Mireya

From: Jonathan Marks [mailto:jmarks@Coastalwaterauthority.org]
Sent: Friday, June 12, 2015 11:40 AM
To: Mireya Loewe
Subject: RE: Notice of Incomplete Application - Coastal Water Authority SWIFT Project No. 51008

Mireya, it was a pleasure speaking with you as well.

Thanks,

Jonathan S. Marks, PMP

Project Controls Manager

Coastal Water Authority

1801 Main St., Suite 800

Houston, TX 77002

(713) 658-9020, X122 (Main)

(713) 800-6253 (Direct)

(832) 347-3915 (Cell)

JMarks@CoastalWaterAuthority.org



From: Mireya Loewe [<mailto:Mireya.Loewe@twdb.texas.gov>]

Sent: Friday, June 12, 2015 10:40 AM

To: Jonathan Marks

Subject: RE: Notice of Incomplete Application - Coastal Water Authority SWIFT Project No. 51008

Jonathan,

It was a pleasure talking to you this morning. Below is my contact information. Please don't hesitate to call with any questions.

Regards,

Mireya

Mireya Loewe ("Me-ray-ah" "Low-eee")
Team Manager, South Region
Regional Water Planning and Development
Texas Water Development Board
P.O. Box 13231
Austin, TX 78711-3231
(512) 475-0590

From: Jonathan Marks [<mailto:jmarks@Coastalwaterauthority.org>]

Sent: Tuesday, June 09, 2015 8:02 AM

To: Tammy Oliver

Cc: Don Ripley; Warren P. Cash III (trey.cash@firstsw.com); David Miller; neil.thomas@nortonrosefulbright.com; John Baldwin; WSI-RWPD-Team6; Wayne McConnell (wmccconnell@mjlm.com)

Subject: RE: Notice of Incomplete Application - Coastal Water Authority SWIFT Project No. 51008

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Jonathan S. Marks, PMP

Project Controls Manager

Coastal Water Authority

1801 Main St., Suite 800

Houston, TX 77002

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(713) 800-6253 (Direct)

(832) 347-3915 (Cell)

JMarks@CoastalWaterAuthority.org



From: Jonathan Marks

Sent: Tuesday, June 9, 2015 6:40 AM

To: 'Tammy.Oliver@twdb.texas.gov'

Cc: Don Ripley (dripley@Coastalwaterauthority.org); Warren P. Cash III (trey.cash@firstsw.com); David Miller (dmiller@Coastalwaterauthority.org); 'neil.thomas@nortonrosefulbright.com'; John Baldwin; 'WSI-RWPD-Team6@twdb.texas.gov'

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<https://www.dropbox.com/sh/ul9j8p33n6inbar/AADFDFKEo07pAlbrd7IDBwnN2a?dl=0>

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Thank you for bringing these items to our attention, and please confirm that our responses are complete and acceptable. We look forward to hearing back from you.

Jonathan S. Marks, PMP

Project Controls Manager

Coastal Water Authority

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Houston, TX 77002

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(713) 800-6253 (Direct)

(832) 347-3915 (Cell)

JMarks@CoastalWaterAuthority.org



From: Tammy Oliver [<mailto:Tammy.Oliver@twdb.texas.gov>]

Sent: Monday, June 08, 2015 4:44 PM

To: dripley@coastalwaterauthority.org; Trey Cash; wmconnell@mjllm.com; dmiller@bcoastalwaterauthority.com; neil.thomas@nortonrosefulbright.com

Cc: WSI-RWPD-Team6

Subject: Notice of Incomplete Application - Coastal Water Authority SWIFT Project No. 51008

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C.47: Please include Coastal WA FY 2014 Audited Financial Statements.

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D.54: Please provide a preliminary engineering feasibility report.

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Once we have received the missing information, Texas Water Development Board staff can move forward with processing the application. **The items listed above must be received by 5:00 p.m. on Monday, June 15, 2015.** If the requested information is not submitted by the date listed, the application will be considered withdrawn and will not be processed for consideration.

Requested information should be sent to:

Attention: Tammy V. Oliver
Texas Water Development Board
1700 N. Congress Ave
Austin, TX 78701-3231

or via email at Tammy.oliver@twdb.texas.gov.

TWDB staff looks forward to working with the Costal Water Authority to make this a successful project. Please contact me if you have any questions.

Thank you,

Tammy V. Oliver, Administrative Assistant
Texas Water Development Board
Regional Water Planning & Development
Water Supply & Infrastructure
1700 North Congress Ave.
Austin, Texas 78711 – 3231
Phone (512) 475-3412
Fax (512) 475-2086



This message has been scanned for malware by Websense. www.websense.com

Click [here](#) to report this email as spam.

Jonathan Marks

From: Jonathan Marks
Sent: Thursday, June 25, 2015 7:30 AM
To: 'Mireya Loewe'
Cc: WSI-RWPD-Team6; Don Ripley; trey.cash@firstsw.com; wmconnell@mjlm.com; David Miller; neil.thomas@nortonrosefulbright.com; John Baldwin
Subject: RE: Notice Of Complete Application - Coastal Water Authority SWIFT Project No. 51008
Attachments: Luce Bayou Model - Coastal Water Authority (2015-06-23 SWIFT Application).pdf; Automatic Rate Adj section from Houston 2015 Remarketing Memorandum (dated 5-19-2015).pdf; Rates section from Houston 2015 Remarketing Memorandum (dated 5-19-2015).pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Mireya,

Below are CWA's responses to your inquiries:

A) Attached (*"Luce Bayou Model - Coastal Water Authority (2015-06-23 SWIFT Application).pdf"*) is a revised PROFORMA including the outstanding "loans" referred to in your email of June 23, 2015:

- CWA Contract Revenue Refunding Bonds Series 2014 - \$38,415,000
- CWA Contract Revenue Refunding Bonds Series 2010 - \$38,900,000

The two Bond Issues are related to the existing Trinity River Water Conveyance System and authorized in the "Project Contract" between the City of Houston and the Coastal Water Authority.

"NOTE:" A separate (second) Project Contract exists between the City of Houston and the Coastal Water Authority related to the planning, design, property acquisition, construction and financing of the "Luce Bayou Interbasin Transfer Contract". This Luce Bayou Project Contract is being utilized in support of the existing three financing transactions with the Texas Water Development Board – (WIF 2009, WIF 2010, State Participation 2013). The Luce Bayou Project Contract will be utilized for the proposed loans from the Texas Water Development Board as outlined in CWA's financial application.

B) Application Item 33: The water and wastewater rates cited are from the City of Houston's financial data. The City's Combined Utility System (CUS) is required by its Bond Ordinance to adjust their water and wastewater rates on an annual basis based upon certain inflation factors. They are also required to do periodic cost of service rate study reviews to address the adequacy of the rate structure to meet their financial obligations, including the various contracts they have entered into with the Coastal Water Authority. The attachments (*"Automatic Rate Adj section from Houston 2015 Remarketing Memorandum (dated 5-19-2015).pdf"*) and (*"Rates section from Houston 2015 Remarketing Memorandum (dated 5-19-2015).pdf"*) are from the City of Houston's financials that refer to water and wastewater rates. The full document is available by clicking [here](#).

C) The two loans discussed in (A) above are included in the City's CUS rate structure and in their annual budgets.

D) The City of Houston has separate contracts with numerous Municipal Utility Districts to provide water and/or wastewater services and they are included in the numbers submitted to question #34.

E) It is anticipated that net position will not be negatively impacted by the increase in future loans related to the Luce Bayou Project. Additional loan repayments will be reimbursed to CWA from the City of Houston per the Luce Bayou

Project Contract. Upon completion of the Construction Phase of the Luce Bayou Project the capital assets on CWA's balances sheet will increase accordingly and that will offset the increase in the outstanding loan balances.

- F) The forecasted increase in the debt service payments based upon securing additional loans with the TWDB will be addressed in the Luce Bayou Project Contract between CWA and the City of Houston's CUS. It is anticipated the City's CUS will provide for the loan repayments that currently exist and those repayments associated with each new loan closing in support of the Luce Bayou Project. The Luce Bayou Project's goal upon completion is to convey water to the City of Houston's Lake Houston so that the City can utilize that water source in their planned expansion of their Northeast Water Purification Facility and deliver and sell it to new customers, thereby generating additional revenues that would pay for the cost of the new water system. The City of Houston also has contracts with the four Regional Water Authorities that will be relying on this new water delivery system to pay an allocated share of the cost of building the Luce Bayou Project and its future Operations and maintenance costs.
- G) In addition to the existing Luce Bayou Project Contract, CWA and City of Houston staff members are developing a new Operating and Maintenance (O&M) Contract for the Luce Bayou System. This new contract will be similar to the existing O&M Contract between the City and CWA on the existing Trinity River Conveyance System. It will be a contract to reimburse CWA for all related O&M expenses on the separate Luce Bayou System. It is anticipated this new O&M Contract will be finalized later this year. The City has contracts with the four Regional Water Authorities that will be utilizing the water delivered through the new Luce Bayou System to share in these costs.
- H) The five-year history of CWA financials is presented in the format that is required by CWA auditors citing the Governmental Accounting Standard Board (GASB) Statement No. 34. This requires operating and non-operating revenue, contribution and expenses to be in the format reflected on CWA's Five-Year Data submittal.

Thank you for your continued support, and feel free to contact us should you need any additional clarification.

Jonathan S. Marks, PMP

Project Controls Manager

Coastal Water Authority

1801 Main St., Suite 800

Houston, TX 77002

(713) 658-9020, X122 (Main)

(713) 800-6253 (Direct)

(832) 347-3915 (Cell)

JMarks@CoastalWaterAuthority.org



From: Mireya Loewe [mailto:Mireya.Loewe@twdb.texas.gov]

Sent: Tuesday, June 23, 2015 3:51 PM

To: Don Ripley; trey.cash@firstsw.com; wmconnell@mjlm.com; David Miller; neil.thomas@nortonrosefulbright.com; John Baldwin; Jonathan Marks

Cc: WSI-RWPD-Team6

Subject: RE: Notice Of Complete Application - Coastal Water Authority SWIFT Project No. 51008

After our technical review of the application, we request you provide us with the following information by no later than this Thursday, June 25, at 5:00 pm:

a) The proforma submitted does not appear to include 2 outstanding loans of \$38,415,000 and \$38,900,000=\$77,315,000. Please submit a new proforma with all outstanding debt included.

b) Application Item 33:

Current water rate is \$28.57 with an average monthly increase per customer of \$0.34 or \$1.27

Current wastewater rate is \$34.63 with average monthly increase of \$0.41 per customer or \$1.54

Please explain the \$1.27 and \$1.54 increases.

Provide what rates for water and wastewater are projected to be through the life of the loan based on the above rate increases.

c) Since the loans mentioned in a) are not included in the Proforma, are the rate increases correct as listed in question b) above?

d) Application item 34: Do the water and wastewater customers listed include the different Municipal Utility Districts?

e) Per the financial information provided, as of 12/31/2014, CWA's Net Position is \$217 million compared to outstanding debt of approximately \$439 million, including the proposed debt. Does CWA's have a plan to improve or address its highly leveraged position?

f) CWA currently receives \$5,333,000 in debt service payment contributions from the City of Houston. Based on the submitted proforma, the debt service payment contributions will increase to as high as \$30,160,000 during the loan period. Does Houston and CWA have a plan to address this significant increase in debt service payment contributions?

g) Houston also provides O&M reimbursements to CWA. During FYE 2014, that amounted to \$22,187,916, with this new project, it is safe to assume that these O&M reimbursements will increase significantly. What are Houston's and CWA's plans to address these expenses?

h) For the past five years, CWA has operated at a net loss. Once depreciation, bond interest expense, and interest expense are added back into revenues, positive revenues are then shown. However, Houston is contributing debt service payments to CWA and these payments are reported in CWA's income statement below the Net Income/Loss line. Please explain why does CWA report interest expense and bond interest expense above the Net Income/Loss line but Houston's contribution below the line?

Please let me know if you have any questions.

Regards,
Mireya

Mireya Loewe ("Me-ray-ah" "Low-eee")
Team Manager, South Region
Regional Water Planning and Development
Texas Water Development Board
P.O. Box 13231
Austin, TX 78711-3231
(512) 475-0590

Click [here](#) to report this email as spam.

Jonathan Marks

From: Jonathan Marks
Sent: Wednesday, July 1, 2015 11:22 AM
To: 'Mireya Loewe'
Cc: Javier A. Pena; Don Ripley (dripley@Coastalwaterauthority.org); John Baldwin; David Miller (dmiller@Coastalwaterauthority.org)
Subject: RE: Notice Of Complete Application - Coastal Water Authority SWIFT Project No. 51008
Attachments: SEALs.pdf
Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Mireya,

Below is our response to regarding the differences in debt service payments referenced in your email:

In 1993, the Coastal Water Authority (with the approval of the City of Houston) issued "Certificate of Participation, Series 1993 A-J" (COP). The proceeds of this issue were used to purchase the Debt Service Contract Payments that existed on all of CWA's outstanding debt that was issued under its then existing Projects Contract with the City of Houston.

The "sale" of an existing "asset" (the Debt Service Contract Payments) generated a certain amount of funds flowing to CWA that have been and are still being used by CWA for certain eligible activities. The sale also legally removed all of the applicable outstanding debt as of June 1993 for CWA Financials. The "sale" did not alter the amount or the obligation of the City of Houston to continue paying those certain debt service payments.

A copy of pages from the "Official Statement" of the COP Series 1993 A-J are attached ("[SEALs.pdf](#)") for your information. Included also is a summary page of the "sold" debt service payments schedule the City of Houston is committed to make. In this summary you will be able to see the approximately \$13.6 million difference you referred to in your email about what is reflected on CWA's 2014 Financial Audit and the City of Houston 2014 Audit Report.

Thank you,

Jonathan S. Marks, PMP

Project Controls Manager

Coastal Water Authority

1801 Main St., Suite 800

Houston, TX 77002

(713) 658-9020, X122 (Main)

(713) 800-6253 (Direct)

(832) 347-3915 (Cell)

JMarks@CoastalWaterAuthority.org



From: Mireya Loewe [mailto:Mireya.Loewe@twdb.texas.gov]
Sent: Tuesday, June 30, 2015 7:06 PM
To: Jonathan Marks; Javier A. Pena
Subject: RE: Notice Of Complete Application - Coastal Water Authority SWIFT Project No. 51008

Jonathan,

We need some clarification please. In CWA's 5-yr comparative statement we received, it says that in 2014, under Operating Rev., Houston provided \$22.187M and, under Contributions Provided by City of Houston, Coastal received \$5.333M (our assumption that this is for debt service). In Houston's 2014 audit, on page 103, under Note 14.C. Coastal Water Authority, it says that Houston paid CWA \$18.9M for debt service and \$22.5M for O&M.

We understand that the two entities' FYs are not the same, but there is still a large difference in the debt service payments being reported. Can you please clarify.

Thanks,
Mireya

From: Jonathan Marks [mailto:jmarks@Coastalwaterauthority.org]
Sent: Thursday, June 25, 2015 7:36 AM
To: Mireya Loewe
Cc: WSI-RWPD-Team6; Don Ripley; trey.cash@firstsw.com; wmccconnell@mjlm.com; David Miller; neil.thomas@nortonrosefulbright.com; John Baldwin
Subject: RE: Notice Of Complete Application - Coastal Water Authority SWIFT Project No. 51008

Good morning Mireya,

Below are CWA's responses to your inquiries:

- A) Attached ("*Luce Bayou Model - Coastal Water Authority (2015-06-23 SWIFT Application).pdf*") is a revised PROFORMA including the outstanding "loans" referred to in your email of June 23, 2015:
- CWA Contract Revenue Refunding Bonds Series 2014 - \$38,415,000
 - CWA Contract Revenue Refunding Bonds Series 2010 - \$38,900,000

The two Bond Issues are related to the existing Trinity River Water Conveyance System and authorized in the "Project Contract" between the City of Houston and the Coastal Water Authority.

"NOTE:" A separate (second) Project Contract exists between the City of Houston and the Coastal Water Authority related to the planning, design, property acquisition, construction and financing of the "Luce Bayou Interbasin Transfer Contract". This Luce Bayou Project Contract is being utilized in support of the existing three financing transactions with the Texas Water Development Board – (WIF 2009, WIF 2010, State Participation 2013). The Luce Bayou Project Contract will be utilized for the proposed loans from the Texas Water Development Board as outlined in CWA's financial application.

- B) Application Item 33: The water and wastewater rates cited are from the City of Houston's financial data. The City's Combined Utility System (CUS) is required by its Bond Ordinance to adjust their water and wastewater rates on an annual basis based upon certain inflation factors. They are also required to do periodic cost of service rate study reviews to address the adequacy of the rate structure to meet their financial obligations, including the various contracts they have entered into with the Coastal Water Authority. The attachments ("*Automatic Rate Adj section from Houston 2015 Remarketing Memorandum (dated 5-19-2015).pdf*") and ("*Rates section from Houston 2015 Remarketing Memorandum (dated 5-19-2015).pdf*") are from the City of Houston's financials that refer to water and wastewater rates. The full document is available by clicking [here](#).

- C) The two loans discussed in (A) above are included in the City's CUS rate structure and in their annual budgets.

- D) The City of Houston has separate contracts with numerous Municipal Utility Districts to provide water and/or wastewater services and they are included in the numbers submitted to question #34.
- E) It is anticipated that net position will not be negatively impacted by the increase in future loans related to the Luce Bayou Project. Additional loan repayments will be reimbursed to CWA from the City of Houston per the Luce Bayou Project Contract. Upon completion of the Construction Phase of the Luce Bayou Project the capital assets on CWA's balances sheet will increase accordingly and that will offset the increase in the outstanding loan balances.
- F) The forecasted increase in the debt service payments based upon securing additional loans with the TWDB will be addressed in the Luce Bayou Project Contract between CWA and the City of Houston's CUS. It is anticipated the City's CUS will provide for the loan repayments that currently exist and those repayments associated with each new loan closing in support of the Luce Bayou Project. The Luce Bayou Project's goal upon completion is to convey water to the City of Houston's Lake Houston so that the City can utilize that water source in their planned expansion of their Northeast Water Purification Facility and deliver and sell it to new customers, thereby generating additional revenues that would pay for the cost of the new water system. The City of Houston also has contracts with the four Regional Water Authorities that will be relying on this new water delivery system to pay an allocated share of the cost of building the Luce Bayou Project and its future Operations and maintenance costs.
- G) In addition to the existing Luce Bayou Project Contract, CWA and City of Houston staff members are developing a new Operating and Maintenance (O&M) Contract for the Luce Bayou System. This new contract will be similar to the existing O&M Contract between the City and CWA on the existing Trinity River Conveyance System. It will be a contract to reimburse CWA for all related O&M expenses on the separate Luce Bayou System. It is anticipated this new O&M Contract will be finalized later this year. The City has contracts with the four Regional Water Authorities that will be utilizing the water delivered through the new Luce Bayou System to share in these costs.
- H) The five-year history of CWA financials is presented in the format that is required by CWA auditors citing the Governmental Accounting Standard Board (GASB) Statement No. 34. This requires operating and non-operating revenue, contribution and expenses to be in the format reflected on CWA's Five-Year Data submittal.

Thank you for your continued support, and feel free to contact us should you need any additional clarification.

Jonathan S. Marks, PMP

Project Controls Manager

Coastal Water Authority

1801 Main St., Suite 800

Houston, TX 77002

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JMarks@CoastalWaterAuthority.org



From: Mireya Loewe [<mailto:Mireya.Loewe@twdb.texas.gov>]

Sent: Tuesday, June 23, 2015 3:51 PM

To: Don Ripley; trey.cash@firstsw.com; wmconnell@mjlm.com; David Miller; neil.thomas@nortonrosefulbright.com; John Baldwin; Jonathan Marks

Cc: WSI-RWPD-Team6

Subject: RE: Notice Of Complete Application - Coastal Water Authority SWIFT Project No. 51008

After our technical review of the application, we request you provide us with the following information by no later than this Thursday, June 25, at 5:00 pm:

a) The proforma submitted does not appear to include 2 outstanding loans of \$38,415,000 and \$38,900,000=\$77,315,000. Please submit a new proforma with all outstanding debt included.

b) Application Item 33:

Current water rate is \$28.57 with an average monthly increase per customer of \$0.34 or \$1.27

Current wastewater rate is \$34.63 with average monthly increase of \$0.41 per customer or \$1.54

Please explain the \$1.27 and \$1.54 increases.

Provide what rates for water and wastewater are projected to be through the life of the loan based on the above rate increases.

c) Since the loans mentioned in a) are not included in the Proforma, are the rate increases correct as listed in question b) above?

d) Application item 34: Do the water and wastewater customers listed include the different Municipal Utility Districts?

e) Per the financial information provided, as of 12/31/2014, CWA's Net Position is \$217 million compared to outstanding debt of approximately \$439 million, including the proposed debt. Does CWA's have a plan to improve or address its highly leveraged position?

f) CWA currently receives \$5,333,000 in debt service payment contributions from the City of Houston. Based on the submitted proforma, the debt service payment contributions will increase to as high as \$30,160,000 during the loan period. Does Houston and CWA have a plan to address this significant increase in debt service payment contributions?

g) Houston also provides O&M reimbursements to CWA. During FYE 2014, that amounted to \$22,187,916, with this new project, it is safe to assume that these O&M reimbursements will increase significantly. What are Houston's and CWA's plans to address these expenses?

h) For the past five years, CWA has operated at a net loss. Once depreciation, bond interest expense, and interest expense are added back into revenues, positive revenues are then shown. However, Houston is contributing debt service payments to CWA and these payments are reported in CWA's income statement below the Net Income/Loss line. Please explain why does CWA report interest expense and bond interest expense above the Net Income/Loss line but Houston's contribution below the line?

Please let me know if you have any questions.

Regards,
Mireya

Mireya Loewe ("Me-ray-ah" "Low-eee")
Team Manager, South Region
Regional Water Planning and Development
Texas Water Development Board
P.O. Box 13231
Austin, TX 78711-3231
(512) 475-0590

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Jonathan Marks

From: Jonathan Marks
Sent: Thursday, July 2, 2015 11:17 AM
To: Javier A. Pena (Javier.Pena@twdb.texas.gov)
Cc: Tina Arias Peterman; 'Trey Cash'; John Baldwin; neil thomas; David Miller (dmiller@Coastalwaterauthority.org); Don Ripley (dripley@Coastalwaterauthority.org)
Subject: RE: Coastal Water Authority

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Javier,

Per your question below regarding the legal name/description for the \$23,260,000 being issued in 2018, CWA would like to use the following name:

“Coastal Water Authority Contract Revenue Bonds, Series 2018”.

Thank you,

Jonathan S. Marks, PMP

Project Controls Manager

Coastal Water Authority

1801 Main St., Suite 800

Houston, TX 77002

(713) 658-9020, X122 (Main)

(713) 800-6253 (Direct)

(832) 347-3915 (Cell)

JMarks@CoastalWaterAuthority.org



From: Trey Cash [mailto:Trey.Cash@firstsw.com]
Sent: Wednesday, July 1, 2015 5:57 PM
To: John Baldwin; Jonathan Marks; neil thomas
Cc: Tina Arias Peterman
Subject: FW: Coastal Water Authority

I think this question may be best addressed by Neil, but I am not sure.

Trey

Sent with Good (www.good.com)

From: Javier Pena <jpena16@austin.rr.com>

Sent: Wednesday, July 1, 2015 5:51:41 PM

To: Trey Cash

Subject: Coastal Water Authority

Good afternoon,

This Javier the TWDB financial analyst working on the above referenced loan request. Please provide the legal name/description for the \$23,260,000 being issued in 2018.

Trying to finish up my draft write up.

Thank you

Javier Pena

Cell 512-576-9599

Work 512-475-0581

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