McGee Bend Regional Wastewater System Planning Report and Recommendations

ANGELINA & NECHES RIVER AUTHORITY

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TABLE OF CONTENTS

I. Introduction

Purpose and Benefits

The southeast area of the Sam Rayburn Reservoir is an attractive recreational area and is expected to grow due to its proximity to the Beaumont and Houston areas. The expected growth and development of this area along with the aging wastewater infrastructure, use of septic tanks for wastewater treatment and the critical need to protect the water quality of Sam Rayburn Reservoir, are the main reasons for this regional wastewater planning study. The development of a regional wastewater system has many inherent benefits, but in the case of the McGee Bend Regional Wastewater system the protection of the water quality of Sam Rayburn Reservoir is an added and very significant one.

Protecting the water quality of the Sam Rayburn Reservoir is important to the current and future development in the area as well as sustaining the reservoir's water supply and other purposes. Since 1992, the reservoir has been consistently listed on the Texas Commission on Environmental Quality (TCEQ) 303(d) list for depressed dissolved oxygen levels and elevated bacteria levels. A potential contributing factor for reported elevated bacteria levels in the reservoir is improper wastewater treatment disposal methods. A properly maintained regional wastewater treatment and collection system, with the opportunity to discharge treated effluent below the dam could minimize these water quality concerns in this portion of the reservoir and increase the development potential for the area. With the McGee Bend Regional System in place, future development can occur without adding the potential of water quality damages associated with continued use of septic tanks and their use as the primary wastewater treatment method.

Project Approach

This planning project evaluated alternative scenarios and recommended an approach to providing wastewater service and the sewerage facilities and utilities needed to achieve a regional treatment system. The probable construction cost opinion for the wastewater system to serve each participant is provided.

The planning study relied not only on available information and data in the area, but also on individual surveys or questionnaires distributed and reviewed with each individual entity participating in the study. The Texas Water Development Board (TWDB) regional planning data, including population projections and anticipated water use for participants in the area, was complimented with input from participants at public meetings. The Angelina & Neches River Authority (ANRA) project management staff scheduled individual participant meetings to review and verify the information and data provided. In some cases, this process took more than one meeting, telephone call, or follow-up effort. These efforts provided a site-specific, participant-based set of data for use throughout the planning project. A copy of the base survey is provided in Appendix A.

ANRA staff provided input on the framework that would provide the most acceptable institutional approach for the regional system. ANRA's understanding of the area based on long-term knowledge of the water and wastewater issues, the growth of the area, and the need for water quality protection of Sam Rayburn Reservoir were significant in the project approach and implementation.

II. Study Area and Potential Regional Participants

A. Study Area

The Study Area for this project is bounded on the west by Sam Rayburn Reservoir, on the east by the US Highway 96 corridor and on the south by Ranch Road (RR) 255. Figure 1 shows the study area boundary. This area is primarily located in Jasper County, with a small portion located in Sabine County. The largest cities in the general vicinity are Lufkin approximately 50 miles to the northwest, Jasper 16 miles south along US 96, and Beaumont 70 miles further south on US 96.

To better define the regional participants, existing and projected wastewater conveyance and treatment needs, individual questionnaires were used to collect pertinent data and information from each potential participant. Each participant filled out a planning study survey defining the limits of their jurisdiction and the number of people currently served in the area.

Each participant provided information on current water and wastewater service as well as their associated facilities. Some plat information was obtained in order to determine the number of household connections. Certificate of Convenience Necessity (CCN) maps and area descriptions were gathered for the districts and developments with registered CCN information. Utility records for existing developments and subdivisions in the Study Area were either hard to locate or did not exist. Proposed future developments are being processed through local government entities and service providers.

Permitting and discharge reporting information was gathered for the existing wastewater treatment facilities in the Study Area. Currently there are three wastewater treatment plants in the Study Area, the Brookeland ISD Wastewater Treatment Plant (WWTP), Rayburn Country Municipal Utility District (MUD) WWTP, and Brookeland Fresh Water Supply District (FWSD) WWTP, serving Forest Hills subdivision and Twin Dikes Park. The rest of the study area is served primarily by septic tanks. No pertinent information was available for individual septic tank operations in the area. ANRA

regulates a portion of the Study Area, encompassing a 2,000 foot zone from the 179 elevation level of the reservoir. Their regulatory role is limited to licensing and inspection of on site sewage facilities within the regulated zone. Currently, ANRA has licensed 296 on site sewage facilities in the study area.

B. Regional Participants

From the study, it was determined that the following service areas and/or political subdivisions could be served by the regional wastewater treatment facilities:

- Brookeland Fresh Water Supply District (FWSD)
- Brookeland Independent School District (BISD)
- City of Browndell
- Rayburn Country Municipal Utility District (MUD)
- U.S. Army Corps of Engineers (USACE)

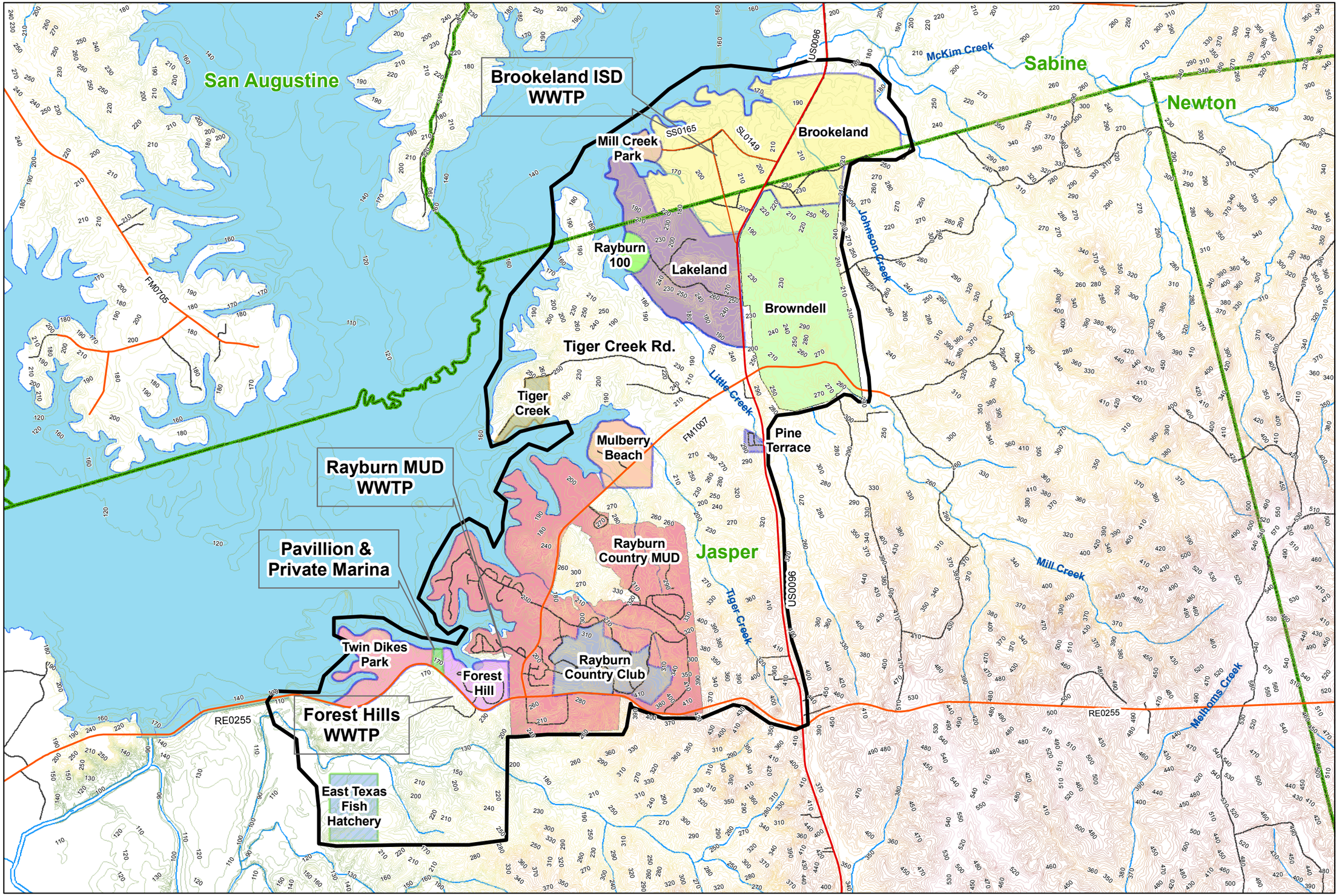
Brookeland FWSD, the City of Browndell and Rayburn Country MUD are the three water and wastewater service providers located in the Study Area. These entities operate and maintain CCN's for water and/or wastewater for their respective service areas. Brookeland FWSD has three separate water supplies, located in the extreme northern and southern portion of the Study Area. The southern service area is certified for both water and wastewater services, while the northern service area is certified for water service only. The City of Browndell maintains a CCN within its corporate limits for the provision of water only. Rayburn Country MUD maintains CCN's for both water and wastewater.

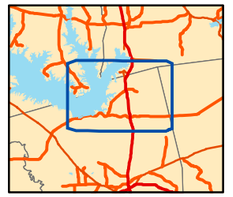
Figure 1 identifies each potential regional participant and its sub-entities in relation to the study area. Each service provider will continue to maintain their respective service areas. In the case of Brookeland FWSD and the City of Browndell, CCN amendments or modifications will be required for the inclusion of wastewater service. Each service provider will continue to provide retail services in their service areas. Each entity will be responsible for the operation and maintenance of any and all proposed collection systems.

The regional entity should employ metering points or points of entry for the purpose of establishing areas of responsibility, determination of wastewater quality, and quantity. Interlocal agreements will need to be established to further outline responsibilities for wholesale wastewater service.

Figure 1. Participants Map

Figure 1. Sam Rayburn Reservoir Regional Participants Map





- Study Area
- County Boundaries
- Brookeland
- East Texas Fish Hatchery
- Forest Hills
- Lakeland
- Mill Creek Park
- Mulberry Beach
- Pavillion and Private Marina
- Pine Terrace
- Rayburn 100
- Rayburn Country Club
- Tiger Creek
- Twin Dikes Park
- Brookeland Water Supply District
- Private Development
- Proposed Developments
- Browndell
- Browndell
- Rayburn Country MUD
- Bodies of Water

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Projection: Lambert Conformal Conic
(Central Texas StatePlane - FIPS 4203)
Units: Feet
Datum: NAD83
Central_Meridian: -100.333333
Standard_Parallel_1: 30.116667
Standard_Parallel_2: 31.883333
Latitude_Of_Origin: 29.666667
False_Easting: 2296583.333333
False_Northing: 9842500.000000

Lockwood, Andrews & Newnam Inc. makes no representations or warranties regarding accuracy or completeness of the information depicted on this map or the data from which it was produced. This map is NOT suitable for survey purposes and does not purport to depict or establish boundaries between land owners or locations of utility infrastructure where survey data is available and field locations have been established.

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Brookeland FWSD

Brookeland FWSD, CCN number 11100, currently serves approximately 3,675 people, 134 sewer connections and 1,225 water customers. Table 1 below shows the areas or subdivisions served by Brookeland FWSD.

Table 1. Brookeland FWSD Customers

Area/Subdivision	Water Service	Wastewater Service
Mulberry Beach	x	
Forest Hills	x	x
Pine Terrace	x	
Lakeland	x	
Mill Creek Park (USACOE)	x	
Twin Dikes Park (USACOE)	x	x
Brookeland	x	
Brookeland ISD	x	x
East Texas Fish Hatchery (TP&W)	agreement for service	agreement for service
Umphrey's Pavilion	x	
Rayburn 100	x	

All the above entities were considered as part of the Study Area. Each entity was evaluated to determine feasibility of connection to a regional wastewater treatment facility. Pine Terrace subdivision was not included in this study due to its location and distance from the wastewater interceptor (to be discussed in later sections), the distance from Sam Rayburn Reservoir, and the low population density of the subdivision. All other areas or subdivisions of Brookeland FWSD were considered for participation in the regional wastewater treatment system.

Additionally, Brookeland FWSD owns and operates the Forest Hills WWTP. This plant is a packaged plant that is currently permitted for 0.05 MGD and discharges into an unnamed tributary of Beef Creek, below the Sam Rayburn Reservoir Dam. The permit will expire in August 2010. Additionally, a renewal of this permit will include increasing the permit to 0.065 MGD.

Brookeland ISD

Brookeland FWSD supplies water to Brookeland ISD. The school is located on east side of State Highway Loop No. 149, approximately 1000 feet south of the intersection of State Highways 149 and 165 in Sabine County. The school district has approximately 350 students and 65 faculty and staff members.

The school district owns and operates the Brookeland ISD WWTP, which is located immediately adjacent to the main entrance on the school property. The WWTP is currently permitted for 0.004 MGD and discharges the treated effluent in a natural drainage ditch, which conveys water to the Sam Rayburn Reservoir. This permit will expire in August 2011. The plant is an extended aeration/activated sludge plant.

City of Browndell

The City of Browndell currently serves approximately 200 people with water service only. Water service is provided by two water wells and is identified by the Public Water System Identification (PWSID) number of 1210048. The water treatment plant is located off of Johnson Street. Browndell currently does not offer sewer service, so the area is served solely by septic tanks or lesser quality treatment methods.

Rayburn Country MUD

Rayburn County MUD, CCN number P0949, is located in the area bounded by US Highway 96, RR 255, and the FM 1007 corridor. Currently the MUD serves approximately 730 water connections and 660 sewer connections. The total number of plated plots in the MUD is 4,266. The MUD has stated that a significant portion of the platted lots within their service area are not developable because of extreme terrain variations or lot size.

The MUD owns and operates the Rayburn Country WWTP. The WWTP is currently permitted for 0.30 MGD and discharges into Alligator Creek, which flows directly to Sam Rayburn Reservoir. The permit will expire in August 2011. The treatment plant is a package treatment activated sludge process.

U.S. Army Corp of Engineers

There are two USACE parks located in the study area, Mill Creek Park and Twin Dikes Park. Mill Creek Park is located adjacent to the Brookeland community. Brookeland FWSD provides the park with water service. Wastewater generated by park visitors is treated on site via septic system. Twin Dikes Park is located just east of the dam. Brookeland FWSD also provides water and wastewater service to the park.

C. New Developments

Information was also collected on potential new developments in the study area, obtained from various sources. These entities were considered as potential participants for the regional wastewater treatment system.

Tiger Creek

Information was gathered on the Tiger Creek Subdivision which is in the process of platting 58 lots with the potential to plat to 182 lots, based upon 0.52 acre lots. The area lies in an uncertified area. At the present time, it is unclear whether the new subdivision will be served by Brookeland FWSD, Rayburn MUD, or secure water service by another method, possibly by on-site water well and sewerage systems.

Fish Hatchery

The Texas Parks and Wildlife is in the process of building a fish hatchery southwest of RR 255 and FM 1007. The current plan for this hatchery would include two full time residences that would require water and wastewater service. Brookeland FWSD has been

in negotiation with the Texas Park and Wildlife (TPW) for provision of these services and has been approved for construction by TCEQ. Process water for the hatchery was not considered for wastewater service for this report.

Youth Camp

The Lake Sam Rayburn Youth Camp Development Corp did not submit any information with regards to development plans.

III. Population and Flow Projections

Estimating population and future development for the study area and regional participants is an important step to determining the viability of a regional wastewater facility. Because of the proximity of the area to Beaumont and Houston and the recreational opportunities the area presents, it is estimated that the area will grow rapidly in the short-term and continue with steady growth over the next 50 years.

The Study Area is primarily composed of full time residential and seasonal residential areas, as well as light commercial business serving the recreation industry. Because the Study Area is primarily composed of residential and seasonal residential areas, it was determined that population data may not actually reflect total potential wastewater flow in the area. Additionally, the participant survey information reported current water meter connections rather than the population served. Based on this information, it was determined that wastewater flow projections should be calculated based upon the number of lots and water connections, not population. This method of calculating wastewater flow is called Living Unit Equivalents or LUEs, which is equivalent to one household or lot.

Data was gathered to help estimate future growth in the area from TWDB data, individual participant surveys and subdivision plat maps. Where available, plat maps of subdivisions were used to estimate the potential number of houses in a development. Rayburn Country MUD, Forest Hills, and the future development of Tiger Creek Estates were the only plat maps available from the participants for the study area.

The plat maps provided both the existing developed area and the area for future build-out. For these subdivisions, the number of platted lots were counted as individual LUE's. The numbers of existing developed plots were determined from the participant survey data relating the number of water meter connections to existing wastewater users. Starting with the existing developed plats or LUEs, projecting the growth in LUEs was determined based on available build-out area. The LUE growth rate was based on a

straight percentage of growth assuming the subdivision would reach full capacity in 2060.

For participant areas without plat maps available, the survey data provided was used to determine the number of existing water connections. Future LUEs were estimated by using a percent in population increase per ten year intervals based on the approved 2006 Region I, Regional Water Plan for Jasper and Sabine Counties. Figures 2 and 3 below show the TWDB Projections.

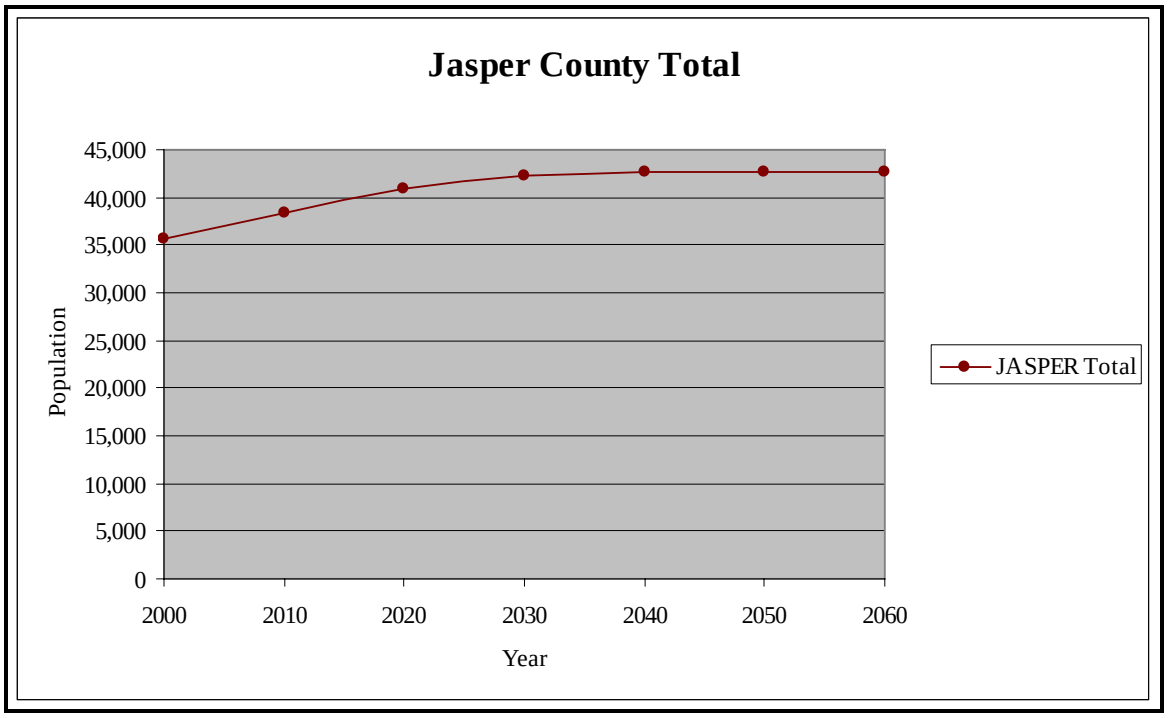

Figure 2. TWDB Jasper County Population Projections

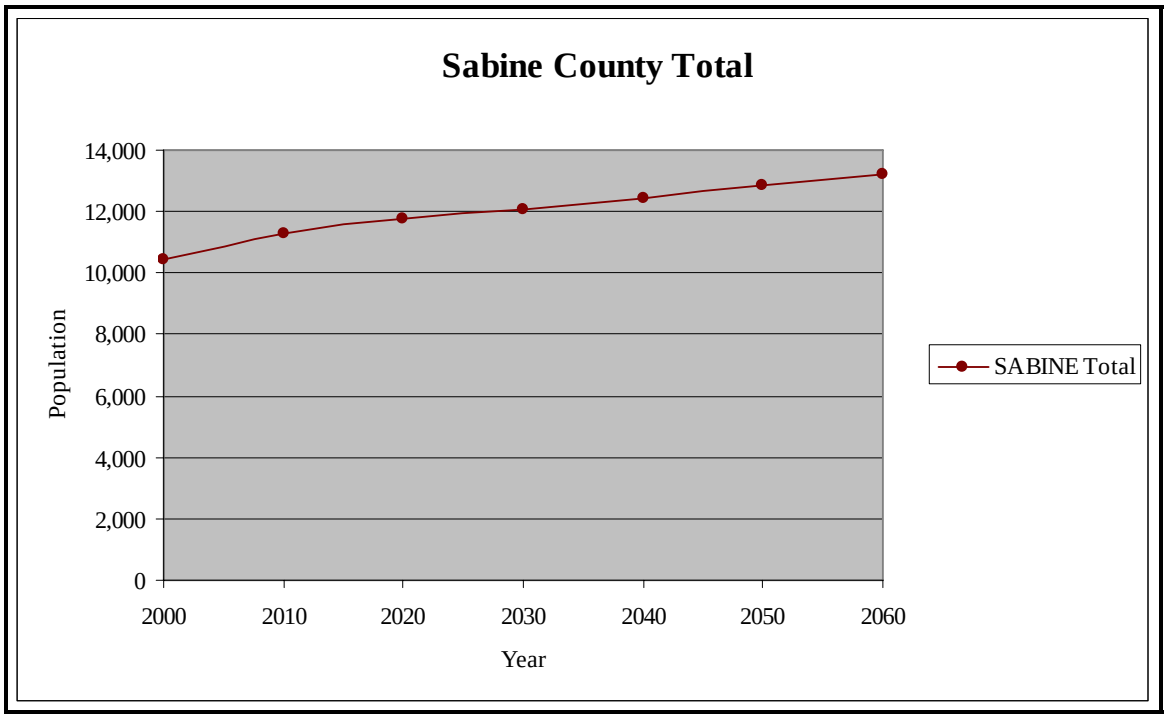

Figure 3. TWDB Sabine County Population Projections

Since the study area is also a recreational area, some of the developed areas are for seasonal or part time use only. For purposes of this study, it was assumed that these residents would be counted as full time residence in order to achieve a more conservative wastewater flow estimate, to account for peak wastewater flows.

Based upon the existing platted developments, it was determined that Rayburn Country MUD would dominate the regional growth in the area. The second highest projected growth would occur among Brookeland FWSD customers.

Figure 4 and Table 2 shows the estimated LUE increase to 2060 for the study area. Wastewater flow projections were calculated by the conversion factor of 245 gallons per day per LUE, which translates to 2.5 people per household with a daily wastewater flow of 100 gpd-capita. Additionally, a peaking factor of 3 was used to estimate wet weather

flow or infiltration and inflow (I&I) in the transmission system. Table 3 shows the estimated wastewater flow for the participants.

Project phases were chosen based on the population projections and appropriate phasing increments shown in Table 3. Phase I or initial construction could begin as soon as 2010, Phase II in 2035, and the Final Phase in 2060. Table 4 shows a summary of these phases.

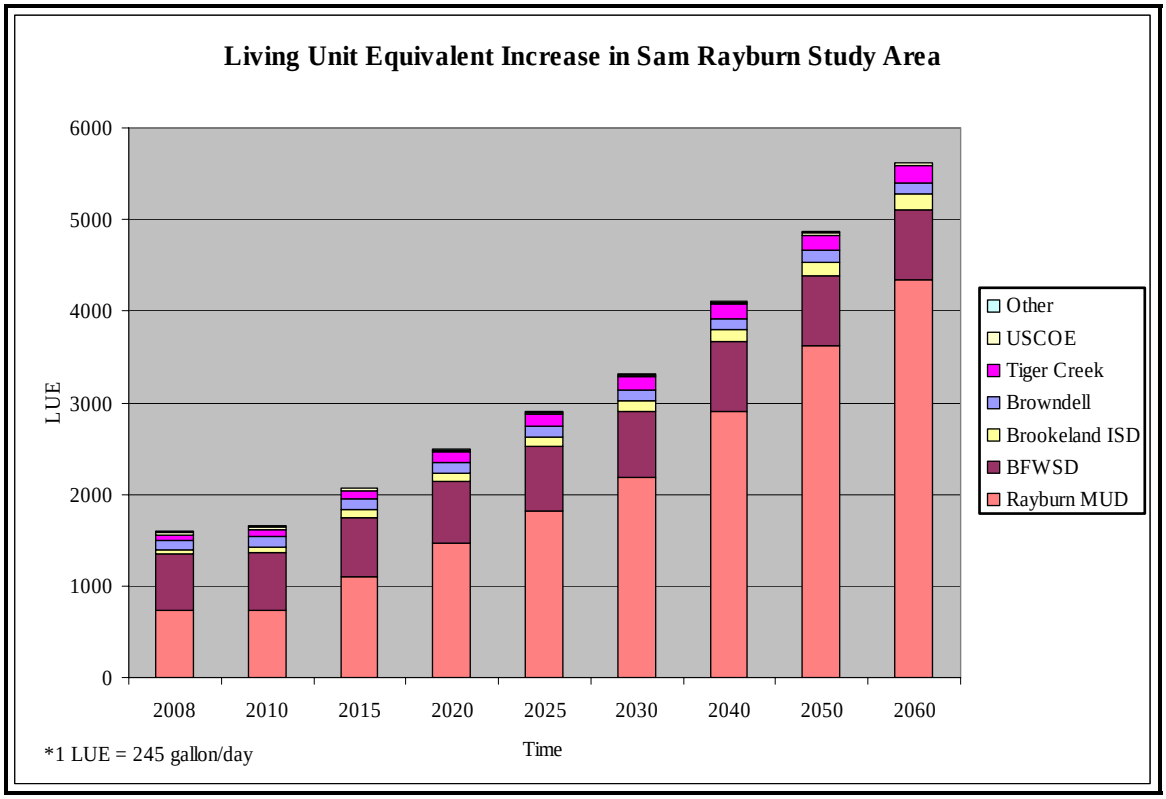

Figure 4. LUE Estimate for Study Area

Table 2. LUE Projections for Study Area

	2008	2010	2015	2020	2025	2030	2040	2050	2060
Browndell	115	117	120	124	126	128	129	129	129
Brookeland (BFWSD)	198	201	207	213	217	220	222	222	222
Lakeland (BFWSD)	154	156	161	166	168	171	173	173	173
Rayburn 100 (BFWSD)	87	88	91	94	95	97	98	98	98
Brookeland ISD	45	67	77	88	99	110	131	153	174
Rayburn MUD	730	741	1100	1460	1819	2179	2898	3617	4336
Mulberry Beach (BFWSD)	35	36	37	38	38	39	39	39	39
Fish Hatchery	4	5	6	6	6	6	6	6	6
Forest Hills (BFWSD)	139	141	156	172	187	202	233	233	233
Tiger Creek	58	74	89	105	120	136	151	167	182
Youth Camp	0	0	0	0	0	0	0	0	0
Millcreek Park (USCOE) Park	13	13	13	13	13	13	13	13	13
Twin Dikes (USCOE) Park	13	13	13	13	13	13	13	13	13
Pavilion, Lake Sam Rayburn	3	3	3	3	3	3	3	3	3
USCOE	26	26	26	26	26	26	26	26	26
BFWSD Total	613	622	652	682	706	730	765	765	765
Total LUEs	**1594**	**1654**	**2073**	**2493**	**2904**	**3316**	**4109**	**4865**	**5621**

Table 3. Disaggregated Wastewater Flow for Regional Participants in MGD

Participant	2008	2010	2015	2020	2025	2030	2040	2050	2060
NEW COLLECTION SYSTEM CONSTRUCTION FLOW ESTIMATES (average annual daily flow unless stipulated)									
Brookeland FWSD									
Brookeland	0.049	0.049	0.051	0.052	0.053	0.054	0.054	0.054	0.054
Lakeland	0.038	0.038	0.039	0.041	0.041	0.042	0.042	0.042	0.042
Rayburn 100	0.021	0.022	0.022	0.023	0.023	0.024	0.024	0.024	0.024
Mulberry Beach	0.009	0.009	0.009	0.009	0.009	0.010	0.010	0.010	0.010
Pavilion Association	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Fish Hatchery	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Browndell	0.028	0.029	0.029	0.030	0.031	0.031	0.032	0.032	0.032
Future Developments									
Fish Hatchery	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Tiger Creek	0.014	0.018	0.022	0.026	0.029	0.033	0.037	0.041	0.045
Youth Camp	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Average Dry Weather Flow	0.161	0.168	0.176	0.184	0.191	0.197	0.203	0.206	0.210
Design Flow (Wet Weather Max 30 day Flow) Factor	20%	20%	22%	25%	27%	30%	30%	30%	30%
Design Flow (Wet Weather Max 30 day Flow)	0.193	0.201	0.215	0.231	0.242	0.257	0.263	0.268	0.273
Peak Flow (2-hour peak) Factor for New System	3	3	3	4	4	4	4	4	4
Peak Flow (2-hour peak) for New System in MGD	0.580	0.603	0.687	0.807	0.970	1.026	1.053	1.073	1.093
EXISTING COLLECTION SYSTEMS FLOW ESTIMATES (all average annual daily flow unless stipulated)									
Brookeland ISD (Brookeland FWSD)	0.011	0.016	0.019	0.022	0.024	0.027	0.032	0.037	0.043
Rayburn Country MUD	0.179	0.181	0.270	0.358	0.446	0.534	0.710	0.886	1.062
USACOE	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
Forest Hills (Brookeland FWSD)	0.034	0.035	0.038	0.042	0.046	0.050	0.057	0.057	0.057
Average Annual Daily Flow	0.230	0.239	0.333	0.428	0.522	0.617	0.806	0.987	1.168
Design Flow (Wet Weather Max 30 day Flow) Factor	35%	35%	35%	30%	30%	30%	30%	30%	30%
Design Flow (Wet Weather Max 30 day Flow)	0.311	0.322	0.450	0.556	0.679	0.802	1.047	1.283	1.519
Peak Flow (2-hour peak) Factor for New System	3	3	3	4	4	4	4	4	4
Peak Flow (2-hour peak) for New System	0.933	0.967	1.439	1.946	2.715	3.206	4.189	5.132	6.075
FLOW ESTIMATES FOR TOTAL SYSTEM									
Average Annual Daily Flow	**0.392**	**0.406**	**0.509**	**0.612**	**0.713**	**0.814**	**1.008**	**1.193**	**1.379**
Design Flow (Wet Weather Max 30 day Flow)	**0.504**	**0.523**	**0.665**	**0.787**	**0.921**	**1.058**	**1.311**	**1.551**	**1.792**
Peak Flow (2-hour peak) for New System)	**1.513**	**1.570**	**2.127**	**2.753**	**3.685**	**4.233**	**5.242**	**6.205**	**7.168**

Phase I - Green
Phase II - Blue
Final Phase - Purple

Based on the disaggregated flow evaluations shown in Table 3, the sizing of the McGee Bend Regional System components was prepared accordingly. For the regional wastewater treatment plant, the following flow capacities are proposed for Phase I and II.

Table 4. Wastewater Treatment Flows

Phase	Average Flow MGD (Permitted)	Design Flow MGD	Peak Flow MGD	Time Period
Phase I (initial construction)	0.5	0.7	2.1	2015
Phase II	0.75	1.2-1.3	5.2	2035
Final Phase	1.5	1.7	7.1	2060

The use of 0.5 MGD average annual flow for Phase I is justified by the nature of the project and the uncertainty of the time that will be required for non-sewered areas to construct collection systems and convey flows to the regional system. The Phase I period could be extended to 2020 on a reasonable basis.

IV. Waste Conveyance and Treatment

The study area is within the watershed of Sam Rayburn Reservoir. A primary goal of the regional system is to ensure treated effluent from the regional wastewater treatment plant is discharged below the drainage area of Sam Rayburn Reservoir. The area south of RR 255 is not included in the Sam Rayburn Reservoir watershed.

There are several alternatives to providing a regional treatment of wastewater for the southeast Sam Rayburn Reservoir area. Below are the options considered and a discussion on each option:

- Satellite Packaged Treatment Plants
- Transmission Main to Jasper
- McGee Bend Regional WWTP and Conveyance System (recommended option)

The recommended option for this study is the McGee Bend Regional WWTP and Conveyance System. This section offers a discussion on the different regional wastewater treatment options for the area and why these options were not further explored as part of the study.

A. Satellite Packaged Plants

One alternate option involves constructing and operating several satellite wastewater treatment packaged plants within the study area participants. Packaged plants are a good option for treating small flows for communities. These types of plants typically have a life cycle of approximately 15 to 20 years and can significantly deteriorate if not properly maintained. In addition, small package treatment plants typically have fewer operational controls, limited capacities and therefore are more susceptible to environmental changes which may have a negative affect on effluent quality discharged from the treatment plant.

In order to operate the satellite plants, personnel and funding would be a requirement. Personnel requirements would increase with several satellite packaged plants, thereby making operation and maintenance cost significantly higher than one treatment regional plant. In addition, due to the terrain of the area satellite packaged plants would discharge treated effluent into the watershed of the Sam Rayburn Reservoir, thereby not meeting the ultimate goal of the study.

Additionally, it was determined that a satellite package plant option for individual communities in area could reduce the potential for the area to receive regional grant money to fund the project.

B. Transmission Main to Jasper

Another option for regional wastewater treatment involves transporting untreated wastewater to the City of Jasper's WWTP instead of the proposed regional wastewater treatment plant. Jasper is approximately 16 miles south from Brookeland along US HWY 96. The terrain along this route is varied and hilly.

This option was not a viable alternative to the regional wastewater treatment plant because the transport distance to Jasper from the study area is too far to be cost effective. In addition to the cost of a transmission main, many lift stations would be required to pump sewage over the terrain. Pumping wastewater over long distances often creates other nuisance related conditions at the receiving units. This would also increase the operation and maintenance cost for the regional system.

Additionally, the City of Jasper would have to upgrade their existing wastewater conveyance and treatment systems in order to accept and treat the additional organic and hydraulic load. This would present require capital improvements to be made to the City of Jasper existing infrastructure and may cause regional confusion with regard to which entities are responsible for which facilities.

C. McGee Bend Regional WWTP and Conveyance System

The McGee Bend Regional Wastewater System will consist of a transmission system, subdivision collection systems, and a wastewater treatment plant.

Transmission Options

The wastewater conveyance system is an essential element in the proposed McGee Bend Regional Wastewater System. There are three primary components in transporting wastewater from each household to the regional wastewater treatment plant:

- Pressured collection sewer
- Gravity sewers and
- Force Mains

The variation in terrain throughout the Study Area, particularly the changes in elevation that occur, requires that all three of these components be applied to satisfactorily provide wastewater conveyance. Gravity sewers are used where the grade allows wastewater to flow by gravity, rather than having to be pumped for a significant distance. A gravity sewer can provide low operations and maintenance costs over the life of the system. Further, by using a gravity system, laterals and service connections can be connected. The cost of gravity sewers depends on the depth of the sewer. Additionally, gravity sewers can have high Infiltration and Inflow entering the system from manholes. In the McGee Bend System, the opportunity for cost-effective gravity sewer was optimized to the degree that the elevation and grade changes would allow.

The proposed McGee Bend System relies on a series of lift stations and force mains where wastewater has to be conveyed against gravity or uphill. A number of the conveyance sections in the system require the use of lift stations and force mains. Even though a forced wastewater system will have lower capital cost based on lower excavation depths for the pipeline and often smaller pipeline diameters, the required lift stations often offset any capital costs with operations and maintenance cost differences.

One disadvantage to the force main system is that tying into the system requires wastewater collection laterals to discharge into the lift station. Tying into a force main is not recommended because it could cause operational hazards and unsafe velocities in the force main. Table 5 shows the criteria used to determine a feasible design for a regional wastewater conveyance system.

Table 5. Wastewater Conveyance Design Criteria

	Criteria	Advantage
Gravity Sewer	• Maximum 30 feet in depth • Minimum slope based on TCEQ • Opportunity for lateral tie-ins	• Cost increases for gravity at depths greater than 30 deep • Reduces depth of sewer • Allow participants to tie-in at gravity sections
Force Main and Lift Stations	• 3 to 6 feet in depth • Opportunity for lateral tie-ins	• Less expensive for excavation • Allow participants to tie-in at lift stations only

Collection Systems

Since most of the residential units are on septic systems, community wastewater collection systems will be required to connect individual household to the transmission main. Collection systems for the Brookeland community, the City of Browndell, Lakeland, Rayburn 100, and Mulberry Beach subdivisions will need to be built for tie-in to the system. Forest Hills subdivision and parts of Rayburn Country MUD already have collection systems in place. The collection systems for each participant can only tie into the transmission main at predetermined points of entry at specific gravity sections of pipe or at a lift station. For the McGee Bend system, no collection systems were tied into a force main directly.

As part of the wastewater collection system, it was determined that a phased approach for the collection could be implemented to correlate with growth in the study area. The phasing set the water quality protection of Sam Rayburn Reservoir as a first priority. The respective collection systems will be owned, operated and maintained by each participant.

The terrain of the study area makes a conventional gravity fed sewer collection system impractical. In many of the subdivisions located in the Study Area, particularly those near the shoreline of the reservoir itself, the frequent elevation changes make the conventional application of gravity sewer cost prohibitive. In many cases, to meet minimum requirements on pipe slope and cover, a gravity collection system may cause parts of the transmission main to be at depths greater than 30-feet, thereby increasing the construction cost of the project.

It was determined that low pressure systems would be a more viable option for sewer collection systems than the conventional gravity alternative. For the existing subdivisions in the study area that are currently using septic tank systems, it is recommended that a grinder pump system be used as the low-pressure system.

The low pressure sewer system contains a grinder pump station at each customer connection. The grinder pump will turn on or off depending on the sewage level in the pump station. In many applications septic tanks can be converted to a grinder pump unit connected to the low pressure sewer system. Table 6 below shows the number of low pressure connections based on LUEs per phase for individual subdivisions.

Table 6. Low Pressure System Connections

Area/Subdivision	Phase I	Phase II
Brookeland	66	147
Mill Creek Park (USACOE)	13	0
Lakeland	77	77
Rayburn 100	88	0
City of Browndell	18	106
Mulberry Beach	0	38

Wastewater Treatment Phasing

The regional wastewater treatment plant will facilitate the treatment of the collected wastewater from the transmission system. The operation and maintenance of the wastewater treatment plant should be conducted through a regional non-participant governmental entity.

In order to meet the project's goal of discharging treated wastewater below the Sam Rayburn Reservoir Dam, the plant will need to be sited below RR 255. The treated wastewater will discharge into a tributary of Beef Creek.

The wastewater treatment plant should be permitted during Phase I for 0.50 MGD average annual daily flow with Phase II permitted for 0.75 MGD, with the long term potential to expand facilities on the plant site to 1.5 MGD. The design flow in the final phase would be 1.5 MGD with a two hour peak of 7.1 MGD. Table 3 shows the phasing design points for the WWTP.

The three design points for the WWTP show the three potential phases for the plant. Cost alternatives were provided for both Phase I and Phase II of the plant. The regional system should be evaluated at the time of Phase II to determine the need and associated cost for the Final Phase. Cost for the Final Phase was not determined in this report because of many unknowns relating to population growth and density in the study area and inability to predict construction costs for 2060.

The plant should be built with the capabilities of treating to high quality effluent and to produce Class A or Class B biosolids. The wastewater treatment plant should be designed in accordance to TCEQ 217 Design Criteria for Sewerage Systems.

General Process Flow Options

The main wastewater treatment plant will be built in two phases to help better appropriate costs over time. The final phase will upgrade the plant and associated costs of any additional or updated processes should be determined during Phase II. The wastewater

treatment plant will be a biological nutrient reactor (BNR) oxidation ditch process. Each unit process should have a parallel process unit in order to create redundancy in the treatment system. The process flow diagram is shown in Figure 5.

Each unit process or operation will depend on the topology of the site. Depending on the terrain of the site there may need to be an influent or effluent lift station to insure that there is enough hydraulic grade to allow for the wastewater to flow through each process by gravity. Typically when designing a wastewater treatment plant the site location is the first step in the design process.

Headworks

The headworks of the wastewater treatment plant utilizes mechanical methods to separate pollutants from the wastewater. Additionally, the headworks separate out particles that can damage more sensitive equipment further downstream in the treatment process.

The wastewater will enter the plant site via Section 4 gravity interceptor. The influent box will spilt the flow into two channels leading into the headworks. Depending on the site used for the wastewater treatment plant the influent box may be a lift station to insure there is enough hydraulic grade to allow wastewater to flow by gravity.

The first treatment component for the wastewater treatment plant is typically a bar screen followed by a fine screen. These treatment devices will screen inorganics and solids out of the wastewater. There should be two screening channels for plant redundancy.

The next process in the headworks is fine screening. Fine screens should be a manual stair screening process to remove fine solids and inorganics. Additionally, two screens should be built for redundancy; however, the second screen could be built in Phase II.

A grit chamber should be built after the fine screening process in the wastewater treatment plant. The grit chamber will remove grease and grit from the flow stream. A

grit chamber is essential in removing many of the odors and odor carrying substances, such as grease. This process should be planned for Phase II development of the wastewater treatment plant, because as the plant increases in capacity there will be a greater need for better odor control processes at the site.

Additionally, as part of the headworks, a solids dewatering auger will be needed to dewater screenings collected from the bar and fine screens. Any waste liquid left over from the auger should be returned to the influent box.

Flow Splitter

A splitter box will spilt the flow between the headworks and the oxidation ditch basins. The effluent from the headworks and the Return Activated Sludge (RAS) line will flow into the influent box. Flow will be spilt via two effluent sharp crested weirs.

Oxidation Ditch

The biological treatment for the McGee Bend WWTP will be provided by an oxidation ditch treatment system. Oxidation ditches are in widespread use through out Texas and the country. These systems are proprietary and can achieve nitrification and de-nitrification by using biological treatment to remove dissolved organics from the wastewater. Depending on the level of treatment required in the discharge permit, brush rotors and/or aerators, can be added to the process at a minimal relative cost. An oxidation ditch will require a large footprint for the basin, so most of the cost for this treatment unit will be based on volume of concrete needed for the basin.

The advantage to using an oxidation ditch for wastewater treatment is that these basins are low in operational and maintenance costs. Additionally, oxidation ditch basins are easy to operate because the biological processes are contained internally inside the basin. A DO probe can be added to the air rotors to vary the speed of the rotor based on the amount of DO in the wastewater. The operating point for these aerators should be

determined during preliminary engineering. The plant will ultimately have two oxidation basins with additional space on the plant site to expand to a third treatment train, for future service on the site. The second treatment basin should be built during Phase II.

Flow Splitter

A splitter box will spilt the flow between the oxidation ditch and the clarifier. The box can allow flexibility in the plant operations by being able to close divert wastewater to other treatment trains. The flow will be spilt via two effluent sharp crested weirs.

Clarifier

The secondary upflow clarifier will follow the oxidation ditch in the treatment process. The Clarifier is responsible for separating organic solids from the waste stream. The secondary clarifier allows particles to settle out depending on detention time in the basin. The solids will settle out in the bottom of the basin and the solids will either return to the oxidation ditch to inoculate the reactor or be sent to solids processing as waste sludge. Clarified liquid will flow over saw tooth weirs around the perimeter of the basin.

There will be two 50-ft diameter clarifiers built during Phase I of the project. Because clarifiers have many mechanical components, it is important to have redundancy in the system for this process unit. In addition, during low flow operations in Phase I of the construction process, one secondary clarifier could be used to bulk solids for the waste activated sludge (WAS) line, until the aerobic digester can be built for Phase II.

RAS/WAS Pumps

There will be two Return Activated Sludge (RAS) pumps and one Waste Activated Sludge (WAS) pump. These pumps will be used to pump sludge from the clarifier to the solids management buildings and to the oxidation ditch flow splitter.

These pumps should be self-priming belt driven Variable Frequency Drive (VFD) pumps. A self-priming pump is needed to insure that 3-inch solids can be passed through the pump. The pumps should be equipped with a VFD to increase or decrease speed of the pump based on the amount of solids collected from the clarifiers. Two RAS pumps will be needed for redundancy and the WAS pumps could have capabilities to pump RAS as well. The operating points for these pumps should be determined during preliminary engineering.

Disinfection

The clarified wastewater from the clarifier is treated effluent must be disinfected before discharged into the receiving stream. Ultraviolet (UV) radiation is a process used to disinfect bacteria by damaging DNA strands. This type of treatment process is utilized often instead chlorination because there are no chemical costs involved. Additionally UV does not leave a residual; therefore residual removal is not required before discharging into receiving stream.

There will be two parallel UV channels. The UV system can either be horizontally mounted systems or vertically mounted. A jib crane will be needed to lift UV units out of the channel for cleaning and bulb replacement. At the end of the disinfection process a flow meter or parshall flume will be utilized to determine discharge flow.

Non Potable Water System

The non potable water system (NPS) will be used through out the plant for various uses. There should be two pumps for the NPS, one to supply enough pressure throughout the plant and one to supply water service to the belt filter press.

Decant Lift Station

The decant lift station will be used to lift dewatered liquids to the headworks of the plant. There should be two pumps for the decant lift station for redundancy. The waste liquid from aerobic digester and belt filter press will be transported to the station.

Solids Management

Solids from the WAS pump will be sent to the solids management building. Solids typically go through thickening before dewatering. Typically an aerobic digester is utilized to process and thicken sludge over several days. Then typically sludge is dewatered through a belt filter press.

During Phase I, the secondary clarifier will be used for solids bulking instead of an aerobic digester. Phase II should include the construction of two dual aerobic digesters, for thickening.

The 1.0 meter belt filter press will be housed inside the solids management building, and will be sized to run during five day weeks. The dewatered sludge will be collected in 2 - 25 cubic yard roll off boxes and sent to a composting facility off-site.

Site Layout and Plant Siting

The wastewater treatment site should be located in an area south of RR 255 and west of FM 1007. The plant should also be located close to the tributary of Beef Creek to insure that treated effluent can be discharged without pumping. Also it is important when selecting a WWTP site, to select land with sloped topology to build the plant processes to allow for gravity flow through the entire plant. Deforestation will be required in order to build the treatment plant.

It is important that the siting of the wastewater treatment plant be in accordance and compliance to TCEQ 309 Subchapter B Location Standards. Environmental and siting

issues need to studied prior to a site selection of a WWTP. Below is a list of location standards followed by TCEQ.

- WWTP unit may not be located in the 100-year flood plain
- WWTP unit may not be located in wetlands.
- WWTP unit may not be located closer than 500-feet from a public water well nor 250-feet from a private well
- WWTP surface impoundment may not be located in areas overlying the recharge zones of major and minor aquifers.
- WWTP must abate and control nuisance of odor prior to construction.
- 150-feet buffer zone around treatment units.

The WWTP site should be located on approximately 10 to 20 acres. The site should have 12-foot wide asphalt access drive to each unit. The site will be fenced in order to keep out intruders. The main plant office/operator building should be 20-feet by 30-feet in dimensions. The dewatering facility will be approximately 30-feet by 40-feet. Figure 6 shows a general site layout of the McGee Bend WWTP.

Figure 5. McGee Bend Wastewater Treatment Process Flow Diagram

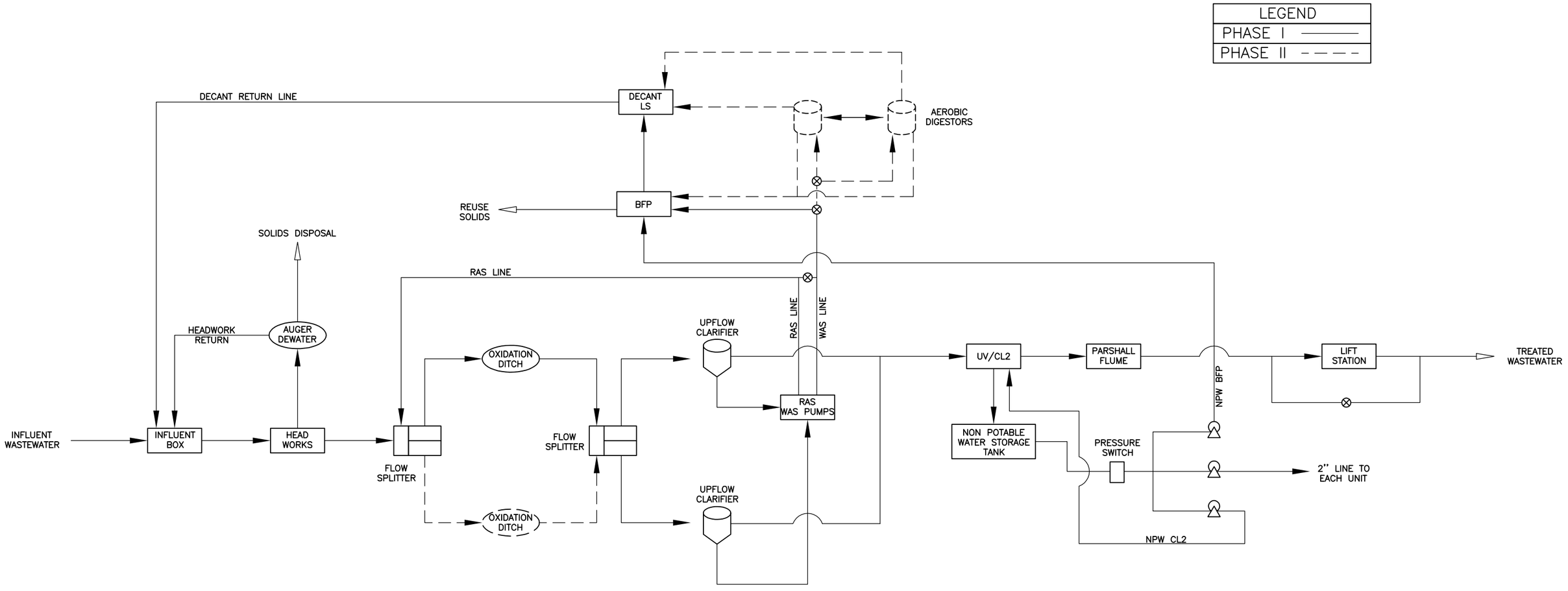

FIGURE 5. MCGEE BEND WWTP PROCESS FLOW DIAGRAM

PROCESS FLOW DIAGRAM
0.5 MGD PLANT
MCGEE BEND WWTP

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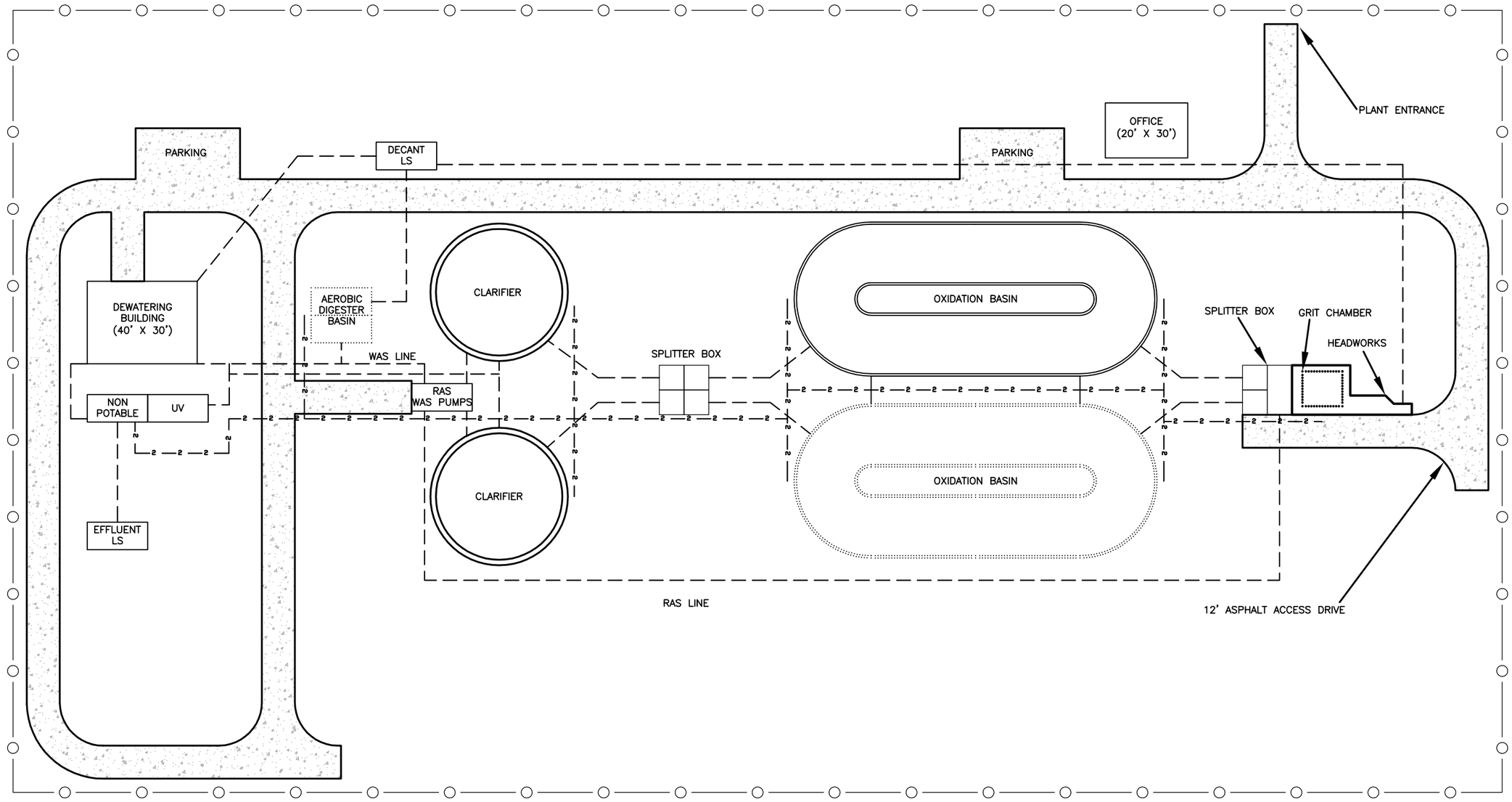
SCALE: 1"=40'



LEGEND

YARD PIPE
2" PIPE
FENCE
PHASE II ROAD

FIGURE 6. SITE LAYOUT
3.54 ACRE WWTP LAYOUT
0.5 MGD PLANT
MCGEE BEND WWTP

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Figure 6. McGee Bend WWTP Site Layout

V. Alignment Issues and Considerations

The transmission and collection system alignments were determined for the McGee Bend Regional Wastewater System. This section addresses the considerations for the selection of these routes.

A. Transmission Routing

The recommended alignment of the main transmission route is shown in Figure 7. This section discusses the evaluation done to provide for this alignment, the benefits that it provides, and the location of lift stations. The transmission main was divided into four segments to discuss the specific features included.

Route Selection

The route of the regional transmission system was chosen to follow US 96 and FM 1007 to a point below RR 255. The route of the transmission system follows the main north-south transportation corridor for the area. The route allows for the possibility to place the transmission system either in the roadway's right of way or in private easements along the roadways. Placing the pipeline within the roadway right-of-way, particularly where Texas Department of Transportation is controlling agency, can be less to much less costly than private easement; however, the drawback comes if the roadway is expanded in the future and the pipeline owner has to move the pipeline. In either case of roadway right-of-way or private easement, the alignment recommended for the McGee Bend main transmission would allow for easier land acquisition from property owners and would reduce the clearing and grubbing construction cost of the pipe line, by placing the line in an area already cleared of trees.

Additionally the route was chosen along the main transportation corridor because this corridor contained most of the development in the area. Service to Pine Terrace was

ruled out because its relative location to the transmission system made its connection to the system unviable. It was further determined that since Pine Terrace was located further inland than the other subdivision, the threat to water quality in Sam Rayburn from septic systems was reduced.

The terrain of the land along the transmission route will make it difficult to install a gravity sewer system along the route. Because the terrain is hilly, the gravity sewer could be too deep to make the project cost effective. Additionally, because of the depth of the gravity sewer, groundwater could be an issue in the design of the system. A combination of gravity and force main was considered in the design of the proposed transmission system.

Main Recommendations

The transmission main would include four lift stations and force main sections, as well as four gravity main sections. These sections are shown in Figure 3. The transmission main is divided into four sections sized to accommodate the wastewater tie-ins for the participants. Gravity and force main sections 1 through 4 were sized to accommodate growth through 2060. The lift stations capacity was sized to accommodate growth through 2020, but could be upgraded to accommodate future growth.

Section 1 will comprise of approximately 800 linear feet (LF) of 8-inch gravity sewer beginning at South Spur 165 and ending at Brookeland ISD WWTP. This section of the transmission main will serve Millcreek Park and areas of the Brookeland community. The gravity portion of this section will terminate around Brookeland ISD at a 0.23 MGD lift station. Brookeland ISD WWTP will tie into the transmission system at the lift station site. The next portion will comprise of approximately 3,250 LF of 6-inch force main along the west side US 96 to a manhole at the beginning of Section 2 of the transmission main.

Section 2 will comprise of approximately 3,180 LF of 8-inch gravity sewer ending at a 0.51 MGD lift station. This lift station will serve, in addition to Section 1, the City of Browndell, Rayburn 100 and Lakeland subdivisions. The lift station will pump wastewater into a 9,600 LF 6-inch force main running along US 96 and along FM 1007. This section of the transmission main will terminate at a manhole south of Tiger Creek Road allowing for the future tie-in of the Tiger Creek Subdivision.

Section 3 will include approximately 2,300 LF of 8-inch gravity sewer terminating at a 0.62 MGD lift station. This lift station will provide service to Mulberry Beach subdivision, in addition to wastewater flow collected from upstream participants. The lift station will pump wastewater into a 19,240 LF 6-inch force main. This portion of the force main will terminate at the Rayburn Country MUD WWTP.

Section 4 will comprise of a 1.84 MGD lift station providing service to all upstream service areas and to Rayburn Country MUD. The lift station will pump wastewater into a 10-inch force main approximately 4,180 LF along FM 1007 and the north side of RR 225. The force main will terminate at a manhole and will continue as a 12-inch gravity main continuing south and west to the proposed WWTP site. The gravity portion of this main will allow for connection of the Brookeland FWSD WWTP and the Pavilion to tie into the transmission main system. This portion of the gravity sewer is approximately 6,850 LF.

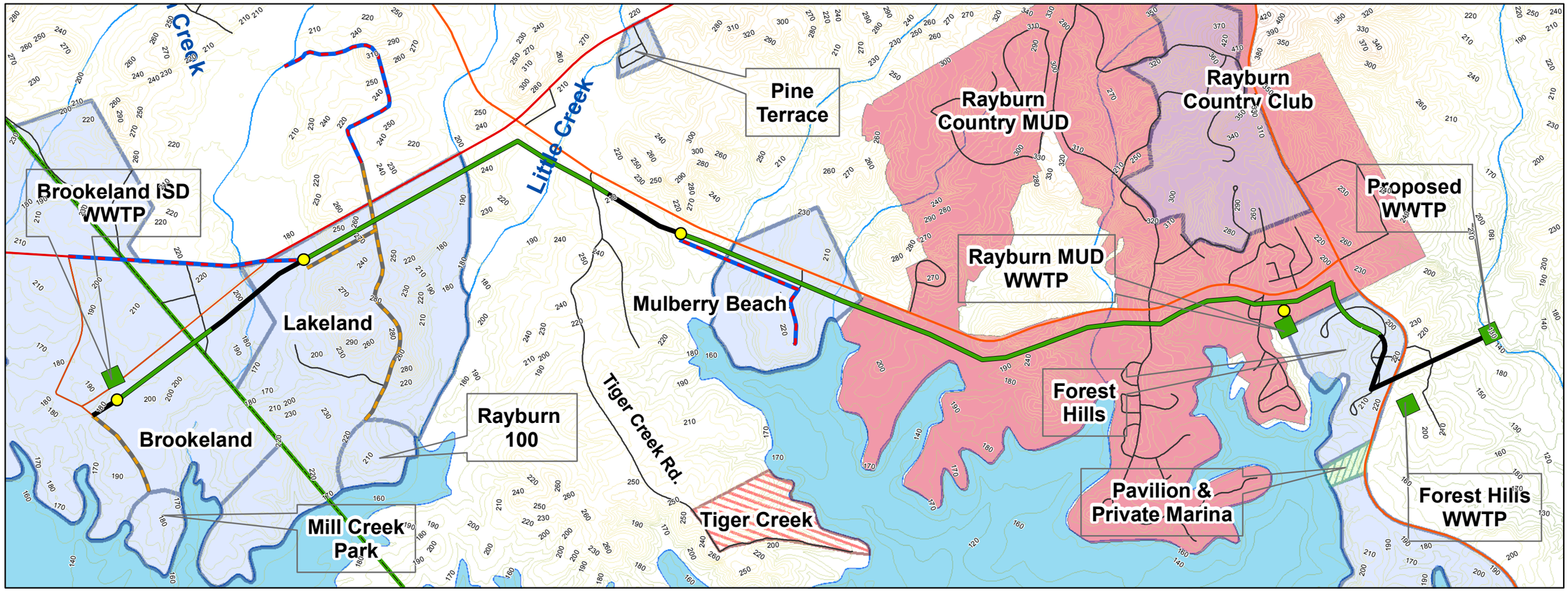
The transmission main will terminate at a site below RR 225 for the proposed WWTP. The gravity mains were sized not to exceed a depth of 30-feet. The force main portions of the wastewater transmission main will be sized for a depth of three feet below grade.

As part of the regional wastewater treatment plan the transmission main should be owned, operated and maintained by a non-participant local governmental entity. Annual operations and maintenance of the transmission main and lift station will require funding and personnel.

Figure 3 shows the profile route of the transmission system and the location of the force main, lift stations and the gravity sewer sections. Additionally this map shows the land terrain along the route of the transmission main and the proposed transmission main profile.

Figure 7. Plan View of Transmission Main

Figure 7. Plan and Profile View of Transmission Main



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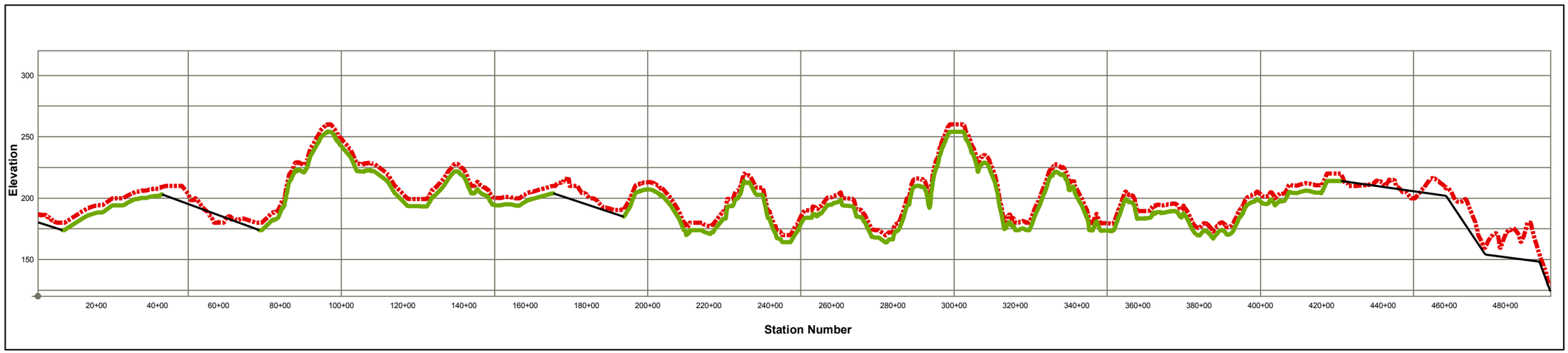

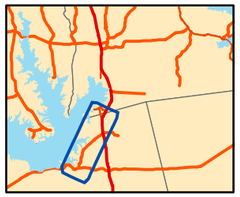

- Sewer Lift Stations
- WWTP
- Sewer Force Main
- Sewer Gravity Line
- LPS - Phase I
- LPS - Phase II
- County Boundaries
- Bodies of Water
- Rivers and Streams
- Existing Grade

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Projection: Lambert Conformal Conic
(Central Texas StatePlane - FIPS 4203)
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N

Metering Stations

Metering stations along the transmission main should be built in order to determine participant wholesale cost for wastewater service. The metering stations should be placed along the transmission main and/or collection systems in order to determine calculate wastewater flow per entry point.

Flow measuring equipment could be placed on either the force main section of the transmission main or along the gravity sections. If flow metering is placed along force main sections a Magnetic meter or Magmeter should be used to determine wastewater flow. Magmeters use electromagnetic field to calculate flow.

A parshall flume or a radar based velocity measurement system should be used to determine the flow in a gravity portion of the transmission main. Generally, calculating flow rate in an open channel or in gravity flow is not as accurate as calculating flow in a closed conduit.

In addition to the flow measuring devices, a data recorder will be required to store flow data on a daily basis. Data recorded and stored will be analyzed to determine participant wholesale rates.

The metering stations should be set up to determine flow rate for each participant. A station should be located to identify flow for the Brookeland community, the City of Browndell, the Lakeland community, and Rayburn Country MUD. The location of these stations should be determined during preliminary engineering.

B. Collection System Routing

The routing of the low pressure collection systems main trunks was dependent on the population density and existing roadway infrastructure. Figure 8 shows the collection system low pressure force main trunks for each participant and phase. The construction phasing will be discussed further in following sections.

Septic Tanks

The following subdivisions or residential areas are currently served by septic tanks. It is proposed that existing septic tank systems be converted to grinder pump stations with effluent pumps. Future development in these areas will be connected to the low-pressure system with grinder pump stations and connected into the regional system.

Brookeland

Currently, the community of Brookeland is using septic systems for wastewater treatment. For the regional treatment facility to be viable to the community, a sewer collection will need to be designed and built to transport the wastewater to the regional transmission main.

From current aerial maps of the area, population density of the community could be studied in order to determine the most viable locations for the low pressure collection system force mains trunks. Most of the density of Brookeland is found along South Spur 165 and US 96.

It was determined that South Spur 165 corridor was more critical to transition immediately to the regional treatment system due to its proximity to the reservoir. Therefore, transitioning this area from septic to low pressure sewer system should occur during Phase I. The low pressure collection trunk will collect 13 LUEs of wastewater from the USACOE Millcreek Park and follow along South Spur 165 connecting individual users to the collection system. The low pressure system will terminate at a

manhole at the beginning of Section 1 of the transmission main. This section will have a total 79 connections during Phase I. More connections in this section can be added during Phase II.

Transitioning the US 96 corridor from septic to sewer service is not as critical as transitioning the South Spur 165 corridor because it is further inland, thereby posing less risk of wastewater contamination to the reservoir. Due to project budgeting, this area of Brookeland could build the low pressure collection system at a later date or during Phase II. The low pressure system could connect into the regional transmission main at the Section 2 lift station.

Phase II of the project is expected to add a total 147 connections to the community of Brookeland. Depending on where the development occurs the connections can be added either to the US 96 corridor or along South Spur 165 corridor.

Lakeland

The Lakeland subdivision extends along Lakeland Road west of US 96. This community is served primary through septic tanks. Additionally, the community of Rayburn 100 should be tied immediately into the collection system due to its proximity to the reservoir and its potential to contaminate the lake via septic overflows.

A low pressure collection trunk extending from the Rayburn 100 community along Lakeland Road should be designed for Phase 1, due to the high density and proximity to the reservoir. The collection line will tie into the transmission main at Section 2 lift station.

The number of connections for the Lakeland community should be 77 during Phase I and 77 during Phase II.

Rayburn 100

Rayburn 100 is located on a peninsula extending into the reservoir. Due to its location in the reservoir, the community should be connected into the collection system during Phase 1. The pressure collection line for this subdivision is expected to follow along Lakeland road and connect into Lakeland's low pressure system. There will be approximately 88 connections for this subdivision.

Browndell

Currently, the City of Browndell is using septic systems for wastewater treatment. For the regional treatment facility to be viable to the community, a sewer collection will need to be designed and built to transport the wastewater to the regional transmission main.

From aerial maps most of the population density for the community is bounded by County Road 211, US 96, Johnson Street, and Circle Drive. It was determined that a low pressure system collection trunk should be constructed along Circle Drive for Phase I, with 18 connections, initially. The collection system could be added to during Phase II to include lower density areas along Circle Drive, with approximately 106 connections.

The low pressure collection trunk will need to cross under US 96 to a connection on the west side of the highway. This connection will connect the communities of Lakeland, Rayburn 100 and Browndell to the same low pressure system. This line would be able to tie-in into the transmission main and Section 2 lift station.

Mulberry Beach

The Mulberry Beach subdivision is located west of US 96 along Mulberry Road. Brookeland FWSD currently supplies water to approximately 35 LUEs. This area uses septic systems to treat domestic wastewater. A low pressure system will need to be

designed and built to collect wastewater in the community and transport it to the transmission main.

The low pressure collection trunk lines could be built along Mulberry Road to collect the wastewater. The low pressure collection system would be able to tie into the transmission main at Section 3 lift station.

Due to the low number of customers in the area and the length of the collection lines, it was determined that this installation of the collection system should be installed in Phase II in order to optimize costs.

Existing Wastewater Collection Systems

The following areas have existing wastewater collection and treatment systems. It is anticipated that these systems would be connected to the McGee Regional system at or near the location of the existing treatment plants.

Forest Hills

The Forest Hills subdivision currently is connected into a sewer collection system. This collection system transports wastewater to the Brookeland FWSD WWTP, located south on RR255. The Brookeland FWSD WWTP could tie into the transmission main directly below RR 225, since at this location the transmission is a gravity sewer system.

Currently, this subdivision is expected to have 139 LUEs. From plat maps it was determined that some lots in this community are considered seasonal lots. In order to determine a conservative estimate on projected flows, each occupied lot was counted as full time residential.

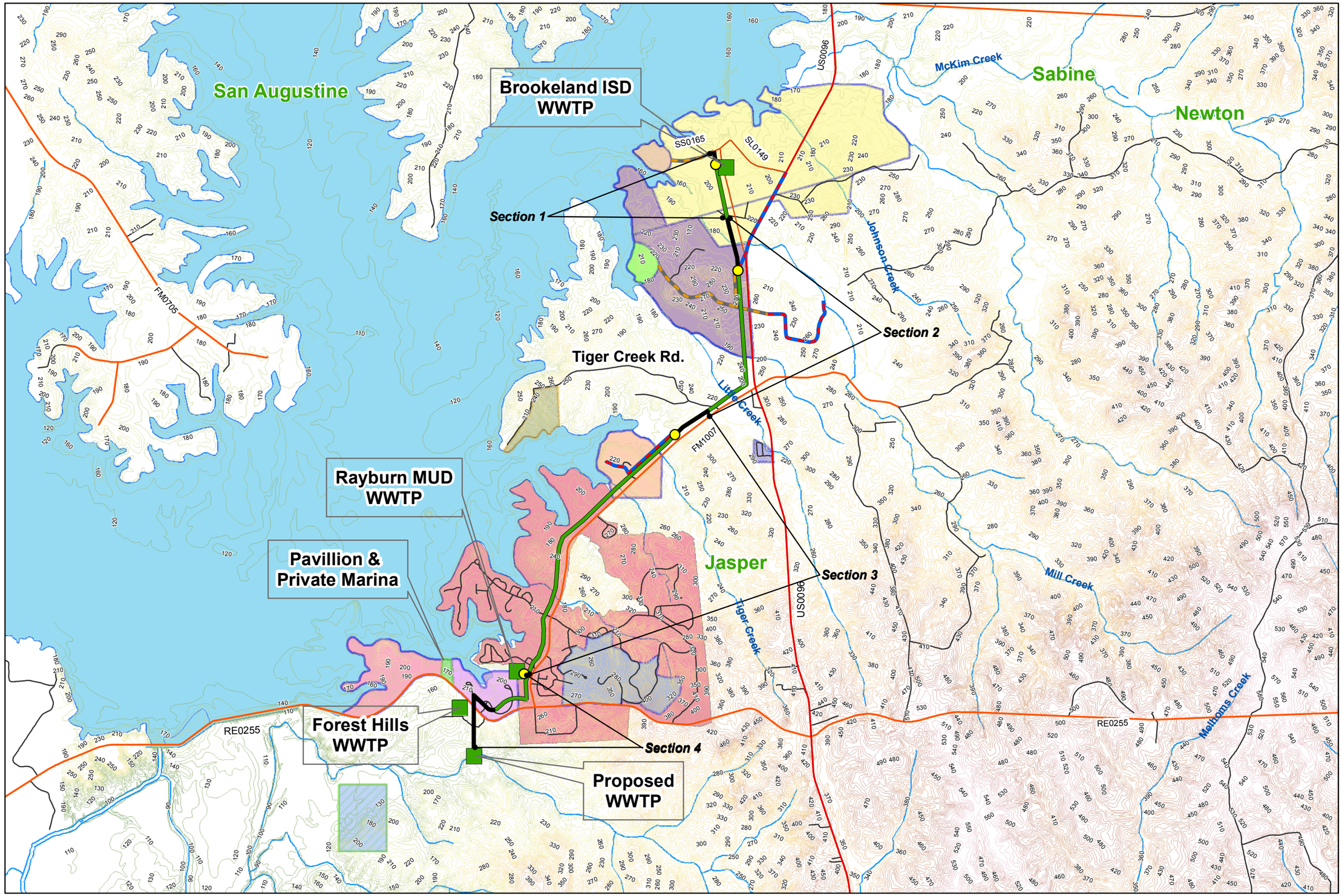
Rayburn Country MUD

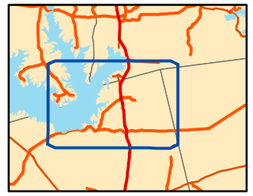
Rayburn Country MUD currently serves the majority of its certificated area with both water and sewer service. However, there are some residents and platted lots within the Rayburn Country CCN that are not currently connected to the wastewater collection system. It is recommended that these areas should be identified and connected to the existing wastewater collection system.

It is anticipated that, the Rayburn Country MUD participants will tie into the proposed transmission main at the existing Rayburn Country MUD WWTP facilities. Since the existing wastewater flows are currently being transported to this area, it would be convenient and cost effective location to tie into the transmission main via a lift station.

Figure 8. Collection Systems

Figure 8. Low Pressure Collection Systems





- Sewer Lift Stations
- WWTP
- Sewer Force Main
- Sewer Gravity Line
- LPS - Phase I
- LPS - Phase II
- County Boundaries
- Brookeland
- East Texas Fish Hatchery
- Forest Hills
- Lakeland
- Mill Creek Park
- Mulberry Beach
- Pavillion and Private Marina
- Pine Terrace
- Rayburn 100
- Rayburn Country Club
- Tiger Creek
- Twin Dikes Park
- Browndell
- Rayburn Country MUD
- Brookeland Water Supply District
- Private Development
- Proposed Developments
- Bodies of Water
- Rivers and Streams

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Projection: Lambert Conformal Conic
(Central Texas StatePlane - FIPS 4203)
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VI. Evaluation of System

The cost and scheduling of a project is important to consider when determining the feasibility of a project. Project phasing is also useful to determine in order to minimize capital cost, while building revenue to fund later phases of the project. This section will review the costs associated with building a regional wastewater treatment facility, the probable phasing options, and the possible funding opportunities available for the participants.

A. Construction Phasing

The construction for the regional wastewater treatment system shall be constructed in two phases. The first phase will include the construction of Phase I of the participant collection systems, the transmission system, and a 0.5 MGD WWTP. The second phase will include collection systems for Brookeland along US 96, extension of the collection system in Browndell, Lakeland, and Mulberry Beach. Additionally, Phase II will include additions to the wastewater treatment plant with increased flow to 0.75 MGD. Table 7 below shows the phasing and timing for this project.

Table 7. Project Phasing Average Daily Flow

Phase I	2008-2015	0.5 MGD
Phase II	2015-2035	0.75 MGD
Final Phase	2035-2060	1.5 MGD

B. Opinion of Probable Construction Costs

The construction costs for the wastewater treatment facilities were divided into three main costs, participant collection systems, transmission main cost, and wastewater treatment plant cost. The construction cost of each item was estimated in 2008 dollars.

The ANRA had a major role in the procurement, review, and updating of the cost estimates shown in the tables below. The cost opinions are based on estimated local area engineering, materials and construction costs. The ANRA staff worked diligently to identify the appropriate local-basis for the cost opinion; these are reflected in the unit costs shown in the tables below. The resulting construction cost estimates are provided for as best-estimates for planning purposes.

Recognizing that the current construction base materials pricing index is extremely volatile and that construction materials are increasing in cost on a daily basis, Table 8 below shows a summary of estimated cost for the overall project based on phase.

Table 8. Overall Project Cost

Phase	Transmission	Collection	Wastewater Treatment	Total Cost
Phase I	$2,327,039	$1,104,379	$3,128,172	**$6,559,590**
Phase II		$1,560,895	$1,271,788	**$2,832,683**

The transmission main cost included the entire length of the transmission system and lift stations. The costs of pipe was broken down into gravity pipe and force main costs, because gravity pipe is typically more expensive than force main cost due to excavation and exact precision in laying the pipe. The total construction cost to the transmission main is $2.3 million dollars. Table 9 shows the itemized cost for the transmission main.

Table 9. Transmission Main Cost*

Item	Quantity	Units	Unit Cost	Cost	Total
Gravity Sewer Line					
Section 1					
8" PVC Gravity Sewer Pipe SDR 35	800	LF	$ 25	$ 20,000	
Manholes	2	EA	$ 2,500	$ 5,000	
Section 2					
8" PVC Gravity Sewer Pipe SDR 35	3,180	LF	$ 25	$ 79,500	
Manholes	7	EA	$ 2,500	$ 17,500	
Section 3					
8" PVC Gravity Sewer Pipe SDR 35	2,300	LF	$ 25	$ 57,500	
Manholes	5	EA	$ 2,500	$ 12,500	
Section 4					
15" PVC Gravity Sewer Pipe SDR 35	6,850	LF	$ 45	$ 308,250	
Manholes	14	EA	$ 2,500	$ 35,000	
					$ 535,250
Lift Station(s)					
Section 1					
6" DI Wastewater Pipe Forced Main	3,250	LF	$ 15	$ 48,750	
Lift Station 0.23 MG	1	EA	$ 110,000	$ 110,000	
Section 2					
6" DI Wastewater Pipe Forced Main	9,600	LF	$ 15	$ 144,000	
Lift Station 0.51 MG	1	EA	$ 130,000	$ 130,000	
Section 3					
6" DI Wastewater Pipe Forced Main	19,240	LF	$ 15	$ 288,600	
Lift Station 0.62 MG	1	EA	$ 150,000	$ 150,000	
Section 4					
10" DI Wastewater Pipe Forced Main	4,180	LF	$ 25	$ 104,500	
Lift Station 1.84 MG	1	EA	$ 175,000	$ 175,000	
					$ 1,150,850
Metering Stations					
Magmeter metering station	4	EA	$ 8,000	$ 32,000	
					$ 32,000
Easement Cost					
Permanent	1	LS	$ 20,000	$ 20,000	
Temporary Construction	1	LS	$ 5,000	$ 5,000	
					$ 25,000
Contingency (15%)					**$ 261,465**
Engineering and Surveying (10%)					**$ 174,310**
Financial Advisor (1.5%)					**$ 26,147**
Construction Management (5%)					**$ 87,155**
Legal Council					**$ 34,862**
Total Cost					**$2,327,039**

*Source of unit cost are local-based as provided by ANRA.

The collection system cost was divided into two separate costs, Phase I and Phase II cost. Phase I costs included a collection system for Millcreek Park, Brookeland, Lakeland, Rayburn 100 and Browndell. Phase II collection system included costs for Brookeland, Browndell, and Mulberry Beach. Phase I cost for the collection system is $1.1 million dollars and Phase II is will cost $1.6 million dollars. Table 10 and 11 show the itemized costs for these systems.

Table 10. Low Pressure Collection System Costs Phase I*

Item	Quantity	Units	Unit Cost	Cost	Total
Brookeland and Mill Creek Park					
2-inch Force Main (LPS)	2992	LF	$ 10	$ 29,920	
WH101-60 Grinder Pump Station	79	EA	$ 1,850	$ 146,150	
Pump/Panel Installation (LPS)	79	EA	$ 500	$ 39,500	
Lateral Kits (LPS)	79	EA	$ -	$ -	
1.25-inch Lateral Pipe (LPS)	2,370	LF	$ 6	$ 14,220	
Air Release Valves (LPS)	1	EA	$ 1,500	$ 1,500	
Air Release Structure Manhole (LPS)	1	EA	$ 2,000	$ 2,000	
					$ 233,290
Lakeland and Rayburn 100					
2-inch Force Main (LPS)	6465	LF	$ 10	$ 64,650	
WH101-60 Grinder Pump Station	165	EA	$ 1,850	$ 305,250	
Pump/Panel Installation (LPS)	165	EA	$ 500	$ 82,500	
Lateral Kits (LPS)	165	EA	$ -	$ -	
1.25-inch Lateral Pipe (LPS)	4,950	LF	$ 6	$ 29,700	
Air Release Valves (LPS)	2	EA	$ 1,500	$ 3,000	
Air Release Structure Manhole (LPS)	2	EA	$ 2,000	$ 4,000	
					$ 489,100
Browndell					
2-inch Force Main (LPS)	1108	LF	$ 10	$ 11,080	
WH101-60 Grinder Pump Station	18	EA	$ 1,850	$ 33,300	
Pump/Panel Installation (LPS)	18	EA	$ 500	$ 9,000	
Lateral Kits (LPS)	18	EA	$ -	$ -	
1.25-inch Lateral Pipe (LPS)	540	LF	$ 6	$ 3,240	
Air Release Valves (LPS)	1	EA	$ 1,500	$ 1,500	
Air Release Structure Manhole (LPS)	1	EA	$ 2,000	$ 2,000	
					$ 60,120
Miscellaneous Cost					
Easement Cost	1	LS	$ 4,000	$ 4,000	
Temporary Construction	1	LS	$ 3,000	$ 3,000	
6-Inch Gravity Line Connection to LS	2516	LF	$ 15	$ 37,740	
					$ 44,740
Contingency (15%)					**$ 124,088**
Engineering and Surveying (10%)					**$ 82,725**
Financial Advisor (1.5%)					**$ 12,409**
Construction Management (5%)					**$ 41,363**
Legal/Bond Council (2%)					**$ 16,545**
Total Cost					**$1,104,379**

* Source of unit cost are local-based as provided by ANRA.

Table 11. Low Pressure Collection System Cost Phase II*

Item	Quantity	Units	Unit Cost	Cost	Total
Brookeland					
2-inch Force Main (LPS)	6193	LF	$ 10	$ 61,930	
WH101-60 Grinder Pump Station	147	EA	$ 1,850	$ 271,950	
Pump/Panel Installation (LPS)	147	EA	$ 500	$ 73,500	
Lateral Kits (LPS)	147	EA	$ -	$ -	
1.25-inch Lateral Pipe (LPS)	4,410	LF	$ 6	$ 26,460	
Air Release Valves (LPS)	1	EA	$ 1,500	$ 1,500	
Air Release Structure Manhole (LPS)	1	EA	$ 2,000	$ 2,000	
					$ 437,340
Lakeland					
WH101-60 Grinder Pump Station	77	EA	$ 1,850	$ 142,450	
Pump/Panel Installation (LPS)	77	EA	$ 500	$ 38,500	
Lateral Kits (LPS)	77	EA	$ -	$ -	
1.25-inch Lateral Pipe (LPS)	2,310	LF	$ 6	$ 13,860	
Air Release Valves (LPS)	2	EA	$ 1,500	$ 3,000	
Air Release Structure Manhole (LPS)	2	EA	$ 2,000	$ 4,000	
					$ 201,810
Browndell					
2-inch Force Main (LPS)	6564	LF	$ 10	$ 65,640	
WH101-60 Grinder Pump Station	106	EA	$ 1,850	$ 196,100	
Pump/Panel Installation (LPS)	106	EA	$ 500	$ 53,000	
Lateral Kits (LPS)	106	EA	$ -	$ -	
1.25-inch Lateral Pipe (LPS)	3,180	LF	$ 6	$ 19,080	
Air Release Valves (LPS)	1	EA	$ 1,500	$ 1,500	
Air Release Structure Manhole (LPS)	1	EA	$ 2,000	$ 2,000	
					$ 337,320
Mulberry Beach					
2-inch Force Main (LPS)	2210	LF	$ 10	$ 22,100	
WH101-60 Grinder Pump	38	EA	$ 1,850	$ 70,300	
Pump/Panel Installation (LPS)	38	EA	$ 500	$ 19,000	
Lateral Kits (LPS)	38	EA	$ -	$ -	
1.25-inch Lateral Pipe (LPS)	1,140	LF	$ 6	$ 6,840	
Air Release Valves (LPS)	2	EA	$ 1,500	$ 3,000	
Air Release Structure Manhole (LPS)	2	EA	$ 2,000	$ 4,000	
					$ 125,240
Miscellaneous Cost					
Easement Cost	1	LS	$ 4,000	$ 4,000	
Temporary Construction	1	LS	$ 2,000	$ 2,000	
6-Inch Gravity Line Connection to LS	4100	LF	$ 15	$ 61,500	
					$ 67,500
Contingency (15%)					**$ 175,382**
Engineering and Surveying (10%)					**$ 116,921**
Financial Advisor (1.5%)					**$ 17,538**
Construction Management (5%)					**$ 58,461**
Legal/Bond Council (2%)					**$ 23,384**
Total Cost					**$1,560,895**

* Source of unit cost are local-based as provided by ANRA

The regional wastewater treatment plant costs were calculated for a 0.5 MGD. The costs of the plant did not include land acquisition of the site location. Table 12 and 13 shows the itemized cost for the treatment plant for Phase I and II. The treatment plant will cost approximately $3.1 million dollars for Phase I and $1.3 million dollars for Phase II.

Table 12. Phase I Wastewater Treatment Plant Cost*

Item	Quantity	Units	Unit Cost	Cost	Total
Influent Headworks					
Manual Bar Screen	1	EA	$ 2,500	$ 2,500	
Fine Screen	1	LS	$ 125,000	$ 125,000	
De-watering Auger	1	EA	$ 25,000	$ 25,000	
					$ 152,500
Aeration Basin					
Oxidation Ditch	500	CY	$ 500	$ 250,000	
Rotors	2	EA	$ 100,000	$ 200,000	
Splitter Box	1	LS	$ 40,000	$ 40,000	
RAS Pumps	3	EA	$ 35,000	$ 105,000	
					$ 595,000
Clarification					
Splitter Box	1	LS	$ 40,000	$ 40,000	
Clarification Equipment	2	EA	$ 230,000	$ 460,000	
					$ 500,000
Disinfection					
Flow Meter Chamber	1	LS	$ 5,000	$ 5,000	
UV Radiation Equipment	1	LS	$ 100,000	$ 100,000	
					$ 105,000
Solids Management					
Belt Filter Press	1	LS	$ 175,000	$ 175,000	
De-watering Building	1,200	SF	$ 50	$ 60,000	
Sludge Disposal: 30 cubic yd roll off boxes	2	EA	$ 5,000	$ 10,000	
					$ 245,000
Influent or Effluent Lift Station	1	LS	$ 175,000	$ 175,000	
					$ 175,000
Operator Building	600	SF	$ 50	$ 30,000	
					$ 30,000
Non Potable Water System	1	LS	$ 35,000	$ 35,000	
					$ 35,000
Piping					
20" PVC Gravity Sewer Pipe SDR 35	2,500	LF	$ 45	$ 112,500	
2" PVC Pipe SDR 35	700	LF	$ 10	$ 7,000	
					$ 119,500
Electrical & Controls	1	LS	$ 250,000	$ 250,000	
					$ 250,000
Miscellaneous					
Storage Building	1	LS	$ 10,000	$ 10,000	
Typ. 8' Chain Link Fence w/ 20' Double Entrance Gate	1,640	LF	$ 30	$ 49,200	
Asphalt Driveway	1,925	SY	$ 40	$ 77,000	
					$ 136,200
Contingency (15%)					**$ 351,480**
Engineering/Survey (10%)					**$ 234,320**
Financial Advisor (1.5%)					**$ 35,148**
Construction Management (5%)					**$ 117,160**
Legal/Bond Council (2%)					**$ 46,864**
Total Cost					**$ 3,128,172**

* Source of unit cost are local-based as provided by ANRA

Table 13. Phase II Wastewater Treatment Plant Cost*

Item	Quantity	Units	Unit Cost	Cost	Total
Influent Headworks					
Manual Bar Screen	1	EA	$ 2,500	$ 2,500	
Fine Screen	1	LS	$ 125,000	$ 125,000	
Influent Grit Chamber	1	LS	$ 75,000	$ 75,000	
					$ 202,500
Aeration Basin					
Oxidation Ditch	500	CY	$ 500	$ 250,000	
Rotors	2	EA	$ 100,000	$ 200,000	
					$ 450,000
Solids Management					
Digester					
Concrete, Site Prep, Misc.	55	CY	$ 500	$ 27,500	
Blower Foundation	1	EA	$ 5,000	$ 5,000	
Blowers	1	EA	$ 45,000	$ 45,000	
Piping for additional holding basin	40	LF	$ 35	$ 1,400	
Telescoping Decant Valve	1	EA	$ 2,500	$ 2,500	
Decant Water Line (8" DIP)	150	LF	$ 35	$ 5,250	
Poly Blend Equipment	1	EA	$ 15,000	$ 15,000	
Valves	4	EA	$ 1,000	$ 4,000	
					$ 105,650
Piping					
20" PVC Gravity Sewer Pipe SDR 35	2,500	LF	$ 45	$ 112,500	
2" PVC Pipe SDR 35	700	LF	$ 10	$ 7,000	
					$ 119,500
Electrical & Controls	1	LS	$ 75,000	$ 75,000	
					$ 75,000
Contingency (15%)					**$ 142,898**
Engineering/Survey (10%)					**$ 95,265**
Financial Advisor (1.5%)					**$ 14,290**
Construction Management (5%)					**$ 47,633**
Legal/Bond Council (2%)					**$ 19,053**
Total Cost					**$ 1,271,788**

* Source of unit cost are local-based as provided by ANRA

C. Funding and Grant Options

Funding of the McGee Bend Regional System will require a concerted effort to identify potential sources of funding to support the revenues pledged by individual participants under the regional agreement establishing the system. In addition to the type of funding assistance, grant or loan or both, the eligibility requirements, amount available payback conditions, availability of funding with respect to construction, and other factors must be considered. The options available to assist in funding the McGee Bend Regional System will include both grant funding from either or both State and Federal sources and long-term, low-interest or deferred interest loans available primarily from the Texas Water Development Board. For regional projects such as McGee Bend, the common sources of funding, by type, that have been applied include the following:

1. Participant supported financing pledged through contracts establishing the regional system
    a. Market rate financing such as tax-exempt bonds
    b. Bank loans such as certificates of obligation
2. State of Texas Funding Sources
    a. Texas Water Development Board
        i. Clean Water State Revolving Fund Program (low-interest loan)
        ii. State Participation Program (deferred payment loan program)
        iii. Economically Distressed Area Program (grant and loan program)
        iv. Rural Water Assistance Fund Program
        v. State Loan Program - TWDB Fund II (loan program)
    b. Texas Department of Agriculture
        i. Texas Capital Fund Program (part of Texas Community Development Program)
        ii. Texas Rural Municipal Finance Program through the Texas Agricultural Finance Authority (loan program)
3. Federal Sources of Funding

a. Texas Community Development Program under Office of Rural Community Affairs (block grant program)
b. EPA State and Tribal Assistance Grant (grant funds authorized under Interior and Environment Appropriations Bill)
c. Section 219(f) or Other Authorization through Water Resources Development Act, U.S. Army Corps of Engineers
d. Co-Bank (loan program for rural communities)

The following is a discussion of the more important or pertinent funding options.

Grant Programs

As identified above, there are a limited number of applicable grant programs currently available. These grants are competitive to highly competitive and all will require local matching funds. For some programs, such as the Texas Community Development Block Grant Program (CDBGP) the amount of funding available is limited relative to the cost of the McGee Bend System; however, the individual participants may be eligible to apply for separate funding to construct collection system and transmission components.

The **Office of Rural Community Affairs** (ORCA) administers the Texas Block Grant program for rural areas. Detailed background information, procedures for applying, and recent awards are available on the ORCA website. The pertinent CDBGP information is provided under Appendix A. The recent ORCA recommended funding for "Restoration of Critical Infrastructure" is shown in Appendix B which was prepared and distributed by ORCA. Importantly, this shows that Jasper County with a high ranking for funding and a recommended funding amount of just over $2,500,000. The total amount requested was $5,000,000. This is positive from the perspective of showing that Jasper County has a high Total Score (for ranking applicants), but it also means that Jasper County has already received significant funding, which may limit opportunity to secure additional funding for the McGee Bend Regional System. As part of the Implementation Plan, discussed later, discussions with the ORCA will be needed to determine the eligibility,

anticipated ranking or priority, and other issues relative to a McGee Bend Regional System funding application.

The other grant funds sources cited, the State and Tribal Assistance Grant (STAG) and Section 219(f) of the Water Resources Development Act (WRDA), are national programs authorized directly by Congress and are therefore highly competitive. In order to be competitive on this scale, the McGee Bend Regional System will have to show special needs and circumstances, and encourage Texas Congressional Members to support its request for funding. In addition, the Section 219(f) program is an authorization only; therefore, two hurdles are required: achieve an appropriate authorization in an upcoming WRDA bill, and achieve funding through the Energy and Water Appropriation bill. Although these two grant opportunities are major challenges, the fact that the U.S. Army Corps of Engineers (COE) has a direct interest in the McGee Bend Regional System could be a determining factor in project funding. First and foremost, the System will protect the future water quality of Sam Rayburn Reservoir (a COE reservoir) by eliminating septic tank discharges and direct discharges from wastewater treatment plants into the Reservoir. Second, the System is available to the COE for providing wastewater service to the COE facilities located on the east side of the Reservoir. Both of these reasons should be sufficient to compel the COE to support the effort. Since this project protects the environment, it could certainly be considered as an "environmental restoration" effort by the COE, making it eligible for direct COE participation.

In the case of either the STAG or 219(f) or other COE direct Congressional funding, the leadership of the Angelina-Neches River Authority will have to actively support an effort to inform the Congressional Members with Districts encompassing the Study Area, specifically Louie Gohmert, District 1 (San Augustine and Sabine Counties), and Kevin Brady, District 8 (Jasper County). Discussions with the Galveston District and perhaps the Southwest Division of the COE are also needed to gain understanding and support for the project. It is critical that the Members understand fully the aspect of water quality protection for Sam Rayburn Reservoir in addition to the economic and other benefits.

The amount of funding available, the conditions, timeframe and other aspects of the 219(f) opportunity vary with the individual project, the Congressional agenda for a new WRDA, willingness of the Congressional Subcommittees to include the project, availability of funding, and other issues. Therefore, at the appropriate time, an Implementation Plan should be prepared to outline the approach for trying to secure federal funding, particularly efforts under the COE and WRDA.

The Economically Distressed Area Program (EDAP) is a special, site-specific eligibility program offering both grants and loans. The projects selected for funding under this program are carefully screened by the TWDB. Funding depends on a number of financial, managerial, and technical factors associated with and ranked for the specific project application. The eligibility requirements with regard to average annual income are set at 75% of State average income. The threshold income is then established each year by the TWDB. For the year 2007, the threshold income is $35,523. Of the communities to be served by the McGee Bend Regional System, it appears that Browndell and Mulberry Beach would be eligible for EDAP funding. At the time of implementation, the opportunities for EDAP funding will be evaluated and considered for application.

State Loan Program

The State of Texas, particularly the Texas Water Development Board (TWDB), provide a number of opportunities for low-interest, long-term loans for water and wastewater infrastructure. For many years, the State Revolving Fund program has provided assistance in the form of low-interest loans for water and wastewater facilities and infrastructure throughout the State. The TWDB staff are veterans at working with communities, and, importantly for the McGee Bend Regional System, with start-up, regional systems. Where the open market may hesitate or impose high interest rates for such new regional systems, the TWDB, based on past performance, will work with the ANRA to structure a financing plan to implement the project.

The TWDB includes programs with enhancements for low-income areas; there is also a program to allow deferral of interest and principle payments. Among the advantages of the TWDB loan programs is the low-interest rate and, for systems that may have marginal market rating, availability of funding at low interest rates. The TWDB provides the following information on the Clean Water SRF interest rates and applicability:

- *Interest rates vary according to the type of financing selected and are locked in at closing*
- *Fixed rate loans offer net long-term interest rates at 0.95% below market rates for those applicants financing the origination charge. For applicants who pay for the origination charge from other sources, the interest rate is 0.70% below market rates.*
- *Short-term, variable rate loans are also available. Variable rates are available during the construction period but must convert to a long-term, fixed rate loan within 90 days of the completion of project construction. The variable interest rates are generally about 2% below the above-described fixed rates, or up to 2.95% below market rates. Borrowers have the option to convert to long-term, fixed rate financing at any time prior to project completion.*
- *Federal funds offer an additional subsidy of 1.0%. Interest rates are up to 1.95% below market rates.*
- *Disadvantaged Communities funds will offer loans to eligible communities with populations under 25,000 at interest rates of 0% and 1%.*

The Disadvantaged Communities criteria are similar to the EDAP criteria. A specific worksheet is used to determine eligibility for Disadvantaged Communities funding. The income threshold level for the FY 2009 applicants is $35,523. As with the EDAP funding, it appears that both Browndell and the Mulberry Beach communities would be eligible under the current criteria.

It is important to note that SRF funding can be used to match local share of federal grants such as the STAG funding.

The State Participation Program (SPP) is designed to help with the upfront, initial debt service costs for start-up projects such as the McGee Bend Regional System. The SPP allows the TWDB to assume "temporary" ownership of a regional project. By doing so, it can allow the regional system that cannot afford to build the "optimal" size project to proceed, then pay-back the TWDB over time as the regional system grows and reaches it optimal service capacity. Under the SPP, the TWDB would acquire ownership interest in the McGee Bend System's transmission and

treatment works. The loan repayments that would have been required, if the assistance had been from a loan, are deferred.

> "*Ultimately, however, the cost of the funding is repaid to the TWDB based upon purchase payments, which allow the TWDB to recover its principal and interest costs and issuance expenses, etc., but on a deferred timetable.*"

The TWDB goal is to optimize the regional system sizing to provide the best fit between life cycle cost and future growth. For a regional wastewater system, the TWDB can fund up to 50% of the project costs, which can include land and easement purchases. The regional entity finances the other 50%, but cannot use other TWDB funds or programs for that purpose. At least 50% of the regional system capacity must serve existing needs.

The following payback schedule is currently being followed by the TWDB:

Table 14. Payback Schedule

Year(s)	Payable Interest
1 & 2	$0 interest payable/$0 principal (interest accrues but deferred as to payment)
3 & 4	@ 20% of accrued int./$0 principal (80% of accrued interest deferred)
5	@ 30% of accrued interest/$0 principal (70% of accrued interest deferred)
6	@ 40% of accrued interest/$0 principal (60% of accrued interest deferred)
7	@ 55% of accrued interest/$0 principal (45% of accrued interest deferred)
8	@ 70% of accrued interest/$0 principal (30% of accrued interest deferred)
9	@ 85% of accrued interest/$0 principal (15% of accrued interest deferred)
10 - 12	@ 100% of accrued interest/$0 principal (No accrued interest deferred)
13 - 19	@ all annual accruing interest plus recovery of equal portions of the previously deferred interest each year
20 - 34	@ all annual accruing interest plus principal.

*A portion of the TWDB's ownership is transferred only when the principal portion of the payment begins.

The SPP provides some attractive opportunities for regional project development and implementation. At the time of implementation, when the sources of funding are defined, the SPP should be seriously considered.

VII. Review of Initial Findings

Public comment was important in the development of this study. The project team including ANRA, LAN and TWDB met with participant entities to discuss the study details. Below is a summary of the public meetings dates. The following public meetings were held at Rayburn Country Club to solicit input from the general public as well as potential participants.

- February 11, 2008 at 5:30 p.m.
- May 5, 2008 at 11:00 a.m.
- July 31, 2008 at 5:30 p.m.

The table below is a summary of public comments gathered throughout the study.

Table 15. Public Comments

Number	Reference	Comment	Reponses
1	Brookland FWSD	Why is the environment better protected by discharging below the dam?	The goal of this project is to improve water quality in the reservoir, because it is on the 303 (d) list.
2	Brookland FWSD	Would be more economically feasible to build in the Rayburn Mud area for the WWTP?	In order to collect all the wastewater in the study area and discharge it below the dam, the plant should be built below RR 225.
3	Rayburn Country MUD	There appears to be no value added from the regional wastewater system for Rayburn Country MUD (the district) or Rayburn Country as a whole, other than providing a point for the District to transfer sewerage into the main line for the regional wastewater system.	The value added to the area and the MUD is increased development to the area by improving water quality in the Sam Rayburn Reservoir. In addition, the regional facility would allow the MUD to eliminate O&M related costs at their

			existing treatment facility and shift their focus to proper operation and maintenance of their 40 year old collection system
4	Rayburn Country MUD	The District has pending mandates from the TCEQ to fix corrosion in the tanks of the sewer plant and repair the weir system. These will have to be addressed in the very near future. As such the District had developed a bond issue, which it intends to place before the voters in the November General Election. This will provide a timely solution to our sewer plant problems and would double our capacity for an estimated $ 1.83 M. Your proposal envisions, a two-phased project at approximately $16.5M, with final figures and a time line to be developed. With 60% of the costs being Rayburn Country's share, that equates to nearly $10.0M for our customers. Further, the District must maintain its own system and would therefore need to keep $15-20 of the present $31/mo. Flat fee for wastewater system maintenance. If this is added to your proposed $41/mo disposal fee you can see that the costs to our customers just about double to $56-61. That is hardly a bargain and would make selling this proposition to the voter impossible.	Estimates for construction of regional solutions identified in the draft report were estimates based on state wide construction activities. Those estimates did not reflect local construction costs and other unknown variables at that stage of planning process. The draft construction estimates have been further refined using construction data from local projects and preliminary quotes for specific equipment types. Detailed design of the recommended regional system will require much greater detail and verification of design points. Detailed design activities were not included in the scope of work for this planning project.
5	Rayburn Country MUD	Part of the system benefit appears that with projected growth the cost would be spread over an increasing tax base. However, your estimates for growth are double what we forecast and the Living Unit Equivalent (LUE) method appears to indicate that every one to the 4336 lots will be occupied. In many instances, homeowners have built on two lots; of my 9 neighbors only tow have built on single lots, four including myself built	The LUEs estimated as part of this study were taken from the plat maps given by Rayburn Country MUD and do reflect the official plat of record for the District. However, it is acknowledged that in reality actual development of these

		on two lots and three have built on three lots. Further, there are many lots that are unbuildable either due to terrain or physical features like ravines or washes or the size of the lot will not accommodate a house after the set backs and easements are considered . Given these considerations and the condition of the roads to access many of the lots in Sections 14-17, the LUE estimates may not be as accurate as you'd like.	lots will differ significantly from the original recorded plat. Further, it must also be acknowledged that the projections contained within this study did not consider multi family residential units, hotels, motels or multi story complex's. All of which add LUE's beyond the scope of the original platted subdivision.

Based on the findings of this report, it is recommend that the region consider building a regional WWTP as outlined in the report, if funding can be provided to this region. It is further recommended that the potential participants and the sponsoring regional entity continue to work together to further refine the actual wastewater treatment needs of the study area based on changing local demands for service and to determine funding alternatives for this project.

A regional WWTP that discharges below the dam could insure better water quality to the study area and participants outlined in the report, while attracting development and growth opportunities while promoting the various recreational aspects of the area. ANRA should be the sponsoring entity for the regional system. The total cost for the system in Phase I is $6,559,590 and $2,832,683 in Phase II.

VIII. Final Report and Addressed Comments

Below is a list of report comments and how they are addressed in the Final Report:

Table 16. TWDB Comments

Number	Reference	Comment	Reponses
1	General TWDB	As stated in the contract (Article III,3.), the report should be organized in the same order as the scope of work. Specifically, section IV of the report should correspond with Task 3 (Develop Regional System Alternatives) if the scope of work by including a discussion of alternatives that were considered by the study. As presented , this section only describes the recommended alternative.	Report is reformatted to reflect the organization outline presented in the scope of work.
2	General TWDB	Include a description of public involvement activities in the report and/or appendices, including required public meetings	Added in Section VII.
3	General TWDB	The draft report should include preliminary recommendation, as stated in the scope of work, Task 6 (Review of Initial Findings and Comments): "Provide draft report section with pertinent findings and recommendation…" Recommendation should include the type of wastewater system selected, service area, cost, impacts, and sponsoring entity (e.g. ANRA; new regional entity created legislatively)	Added to Section VII

APPENDIX A: Survey Data

Angelina & Neches River Authority (ANRA)
Request for Information

The purpose of this request for information is to obtain information on wastewater needs for the southeast Sam Rayburn Dam area. THE PURPOSE IS ONLY INFORMATIONAL—NONE OF THIS INFORMATION WILL BE USED FOR ANY OTHER PURPOSE AND WILL NOT BE PROVIDED TO OTHERS.

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Email: _____

Additional Contact Name: Linda Powell

Bus. Phone: Same Mobile: _____

Email: rayburncountrymud@inu.net

Service Area Information:

Population currently served: _____

Total Water Meters: 730 Active: 705 Inactive: 25

Total Sewer Conn.: 660 Active: 660 Inactive: 0

Service area % developed: Water 17%
Sewer 15%

Do not need per Kelley.

Density of Development: _____houses/acre (average)

Specify area(s) without Sewer Collection:

List of what Kelley wants is attached. 2/6/08

- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____

Billing Information:

No. of Meters billed 689

Additional billings, if any 10 to 15 inactive

Staff Information:

No. of operating staff:

Full time 3 License _____ Years of Service _____

Part-time 1 License _____ Years of Service _____

Administrative staff:

No of Staff 2 License _____ Years of Service _____

Collection System:

Map of Service area: *(show the following if available at the time of site visit)*

- Location of pipelines and size of pipes
- Location of Lift Stations
- Lift station pumps and elevations
- Age of Pipelines, Lift Stations
- Type of Pipe Material
- Areas of Frequent Repairs
- Areas of Upgrade or Replacement

Repair records

- Frequency of repairs (provide records for last year if available)

- Type of repair
- Outside contractor or District/City staff
- Average cost of repair by type

Treatment Plant:

- Type of treatment _____
- Age of plant: _____ years
- Date of current permit _____
- Daily Average Flow NORMAL CONDITIONS _____
- Daily Average Flow WET WEATHER CONDITIONS _____
- Does your collection system have an I&I problem: Yes ____ No ____
- Major repair, upgrades or rehabilitation information

  Type _____ Year _____

  Discuss: _____

  _____

  Type _____ Year _____

  Discuss: _____

  _____

- Plant Expansions
  - Are plant expansions needed in future? YES NO
  - When? _____ Year
  - Estimated cost of expansion $_____
- Peak flow _____ MGD (discuss Infiltration/Inflow issues)

  _____

  _____

Records

- For Review (on site)
  1. Schematic layout or design (as-built) plans
  2. Operational Logs
  3. Flow records

- Submitted with Questionnaire
  1. Copy of current permit
  2. Self Reporting data (DMRs) for past 2 years
  3. Laboratory data for weekly effluent monitoring for past 2 years

- For Duplication purposes
  1. Collection system maps
  2. CCN maps

Note: all records and mapping will be handled with the utmost care and confidentiality, subject to state laws. Mapping and other original documents will be returned to you in a timely fashion.

Other comments/information:

_____

_____

_____

_____

_____

_____

_____

RAYBURN COUNTRY MUNICIPAL UTILITY DISTRICT

NO WATER/NO SEWER

SECTION	LOTS
31	30
32	70
33	RV PARK
34	161
35	133
36	97
37	1
THE COVES	56
38	1

WATER ONLY

SECTION	LOTS	CONNECTIONS
E-5	366	22
E-2	46	10
4		14

WATER & SEWER

SECTION	LOTS	CONECTIONS
1	77	51
2	53	24
3	134	25
5	77	43
6	47	20
7	278	17
7A	42	7
8	24	5
9	131	21
10	128	34
11	133	13
12	134	57
13	140	9
14	379	23

Rayburn Country Municipal Utility District – con't

15	218	7
16	342	11
17	426	10
21	77	19
22	22	10
30	75	23
44	35	23
THE POINT CONDOS	39	15
MH-1	166	134
E-2	46 *	46
MOTEL	1	9
		1
		657

Rayburn Country Municipal Utility District
February 2008

Section	Lots	Water Connection	Sewer Connection	
1	77	51	51	
2	53	24	24	
3	134	25	25	
4	41	14	0	
5	77	43	43	
6	47	20	20	
7	278	17	17	
7A	42	7	7	
8	24	5	5	
9	131	21	21	
10	128	34	34	
11	133	13	13	
12	134	57	57	
13	140	9	9	
14	379	23	23	
15	218	7	7	
16	342	11	11	
17	426	10	10	
21	77	19	19	
22	22	10	10	
30	75	23	23	
31	30	0	0	no water/sewer, all private systems, unknown # of connections
32	70	0	0	no water/sewer, all private systems, unknown # of connections
33	18	0	0	It is now an RV park. Unknown # of spaces, they have their own water well and
34	161	0	0	no water/sewer, all private systems, unknown # of connections
35	133	0	0	no water/sewer, all private systems, unknown # of connections
36	97	0	0	no water/sewer, all private systems, unknown # of connections
37	1	0	0	Owned by one person
39	1	0	0	deplatted early 1990's
41	45	0	0	platted but never developed
43	22	2	2	
44	35	23	23	
E-2	46	19	9	part sewer
E-5	366	22	0	no sewer
MH-1	166	46	46	
Condos	1	134	134	
Motel	1	1	1	
The Coves	56	0	0	Used to be section 38 and 40
The Point	39	15	15	
Total	4266	705	659	
E-3	71	0	0	not part of MUD
E-4	104	0	0	not part of MUD
Total	175	0	0	

Angelina & Neches River Authority (ANRA)
Request for Information

The purpose of this request for information is to obtain information on wastewater needs for the southeast Sam Rayburn Dam area. THE PURPOSE IS ONLY INFORMATIONAL—NONE OF THIS INFORMATION WILL BE USED FOR ANY OTHER PURPOSE AND WILL NOT BE PROVIDED TO OTHERS.

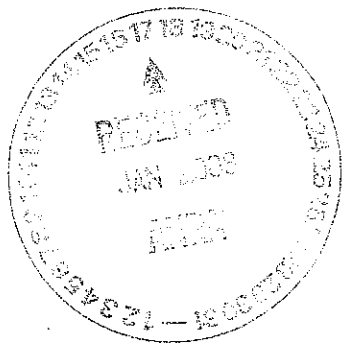
ANRA Contact Information:

Mr. Kelley Holcomb
Planning and Operations Division Manager
Phone: (936) 633-7543
Email: kholcomb@anra.org

Mr. Tom Ray
Water Resources Program Manager
Phone: (254) 753-9585
Email: jtray@lan-inc.com

Mail To:

Kelley Holcomb
Planning & Operations Division Manager
Angelina Neches River Authority
P.O. Box 387
Lufkin, Texas 75902-0387



Contact Information:

Name of Entity: City of Braundell

Mailing Address: PO Box 430
Brookeland, Texas 75931

Primary Contact's Name: Mayor Monica Garrett

Bus. Phone: 409.698.2044 Mobile: -0-

Email: C-braundell@sbcglobal.net

Additional Contact Name: L+L Engineers + Planners c/o Larry

Bus. Phone: 409.383.0000 Mobile: -0-

Email: -0-

Service Area Information:

Population currently served: 200

Total Water Meters: 115 Active: 100 Inactive: 15

Total Sewer Conn.: -0- Active: -0- Inactive: -0-

Service area % developed: -0-

Density of Development: -0- houses/acre (average)

Specify area(s) without Sewer Collection:

* • Area City of Brownell Tall areas No. of meters -0- Location _____
- Area -0- No. of meters -0- Location _____
- Area -0- No. of meters -0- Location _____
- Area -0- No. of meters -0- Location _____
- Area -0- No. of meters -0- Location _____

Billing Information:

No. of Meters billed -0-

Additional billings, if any -0-

Staff Information:

No. of operating staff:

Full time 1 License Yes Years of Service 2

Part-time -0- License -0- Years of Service -0-

Administrative staff:

No of Staff _____ License _____ Years of Service _____

Collection System:

Map of Service area: *(show the following if available at the time of site visit)*

- Location of pipelines and size of pipes

* The City of Brownell does not have, nor offer sewer

- Location of Lift Stations
- Lift station pumps and elevations
- Age of Pipelines, Lift Stations
- Type of Pipe Material
- Areas of Frequent Repairs
- Areas of Upgrade or Replacement

Repair records

- Frequency of repairs (provide records for last year if available)
- Type of repair
- Outside contractor or District/City staff
- Average cost of repair by type

Treatment Plant:

- Type of treatment ~ 0 ~
- Age of plant: ~ 0 ~ years
- Date of current permit ~ 0 ~
- Daily Average Flow NORMAL CONDITIONS ~ 0 ~
- Daily Average Flow WET WEATHER CONDITIONS ~ 0 ~
- Does your collection system have an I&I problem: Yes _____ No _____
- Major repair, upgrades or rehabilitation information

  Type _____ Year _____

  Discuss: _____

  _____

  Type _____ Year _____

  Discuss: _____

  _____

- Plant Expansions
  - Are plant expansions needed in future? YES NO

- When? _____ Year
- Estimated cost of expansion $_____

- Peak flow _____ MGD (discuss Infiltration/Inflow issues)

_____

_____

Records

- For Review (on site)
  1. Schematic layout or design (as-built) plans
  2. Operational Logs
  3. Flow records

- Submitted with Questionnaire
  1. Copy of current permit
  2. Self Reporting data (DMRs) for past 2 years
  3. Laboratory data for weekly effluent monitoring for past 2 years

- For Duplication purposes
  1. Collection system maps
  2. CCN maps

Note: all records and mapping will be handled with the utmost care and confidentiality, subject to state laws. Mapping and other original documents will be returned to you in a timely fashion.

Other comments/information:

_____

_____

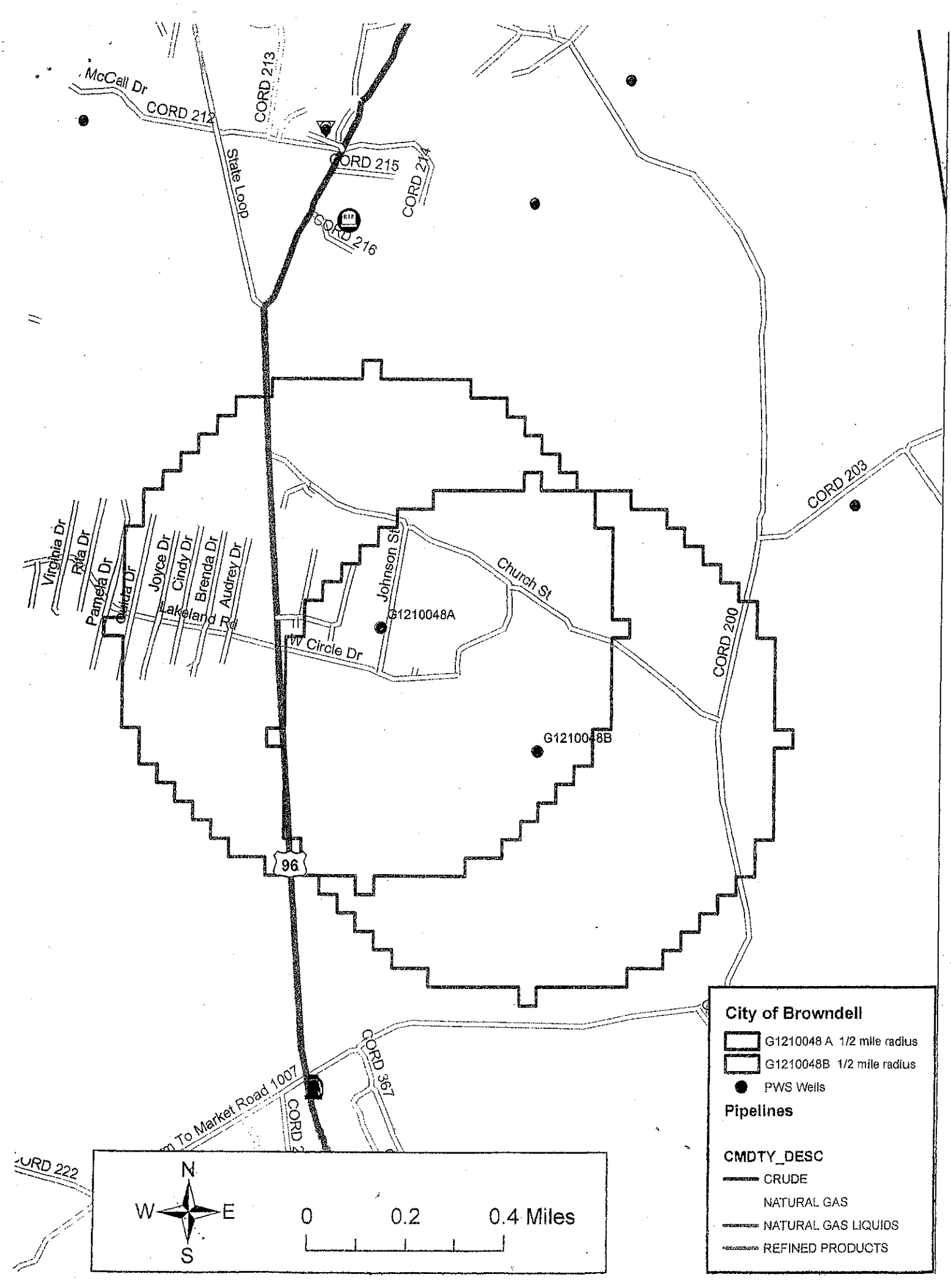
_____

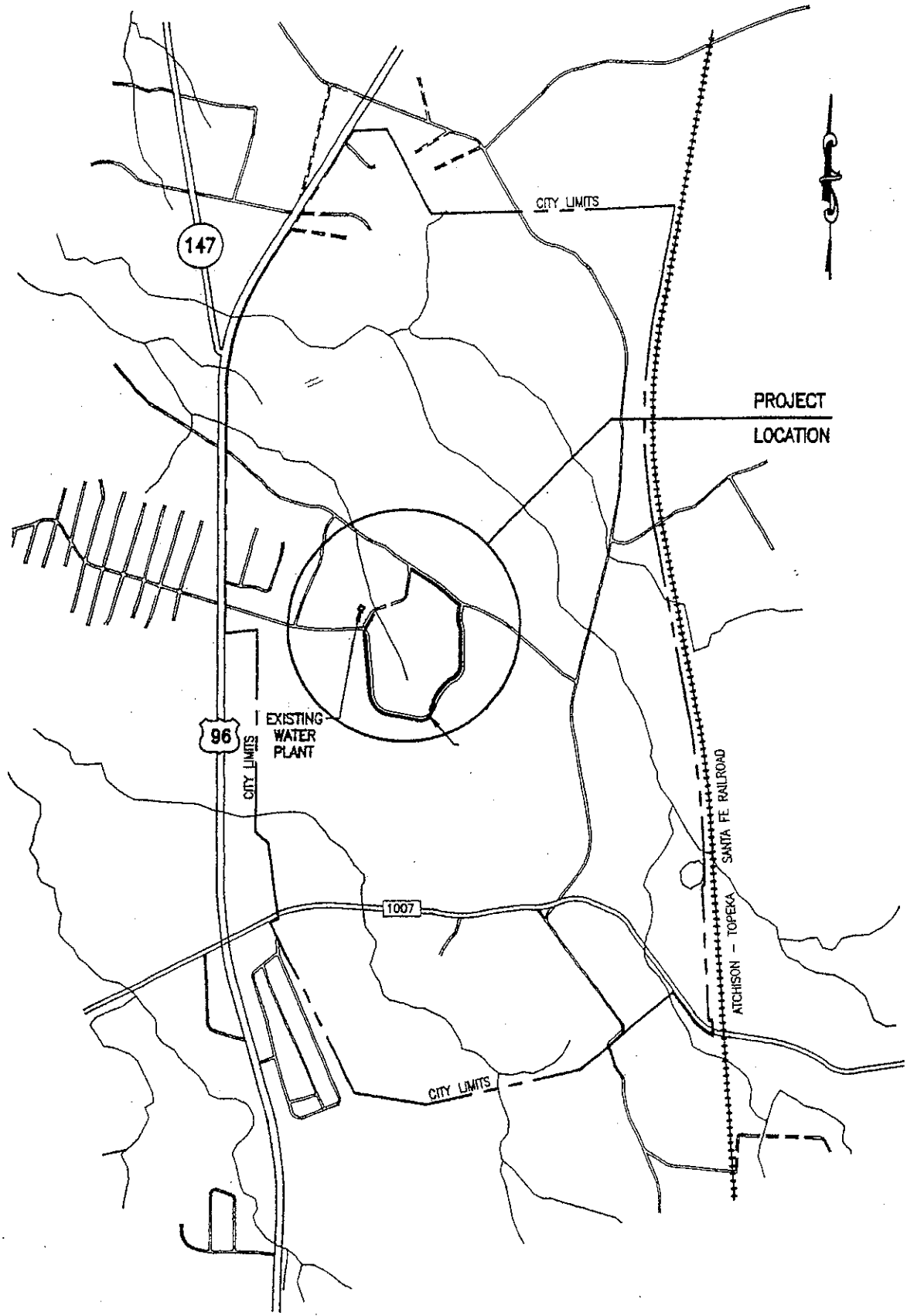
_____

_____

_____

_____


McCall Dr
CORD 212
CORD 213
CORD 215
CORD 214
CORD 216
State Loop
CORD 203
CORD 200
Church St
Johnson St
W Circle Dr
Virginia Dr
Rita Dr
Pamela Dr
Debra Dr
Joyce Dr
Cindy Dr
Brenda Dr
Audrey Dr
Lakeland Dr
G1210048A
G1210048B
96
CORD 367
To Market Road 1007
CORD 222
N
W
E
S
0
0.2
0.4 Miles
City of Browndell
G1210048 A 1/2 mile radius
G1210048B 1/2 mile radius
PWS Wells
Pipelines
CMDTY_DESC
CRUDE
NATURAL GAS
NATURAL GAS LIQUIDS
REFINED PRODUCTS



LOCATION MAP

SCALE: 1" = 2000'

1

Angelina & Neches River Authority (ANRA)
Request for Information

The purpose of this request for information is to obtain information on wastewater needs for the southeast Sam Rayburn Dam area. THE PURPOSE IS ONLY INFORMATIONAL—NONE OF THIS INFORMATION WILL BE USED FOR ANY OTHER PURPOSE AND WILL NOT BE PROVIDED TO OTHERS.

ANRA Contact Information:

Mr. Kelley Holcomb
Planning and Operations Division Manager
Phone: (936) 633-7543
Email: kholcomb@anra.org

Mr. Tom Ray
Water Resources Program Manager
Phone: (254) 753-9585
Email: jtray@lan-inc.com

Mail To:

Kelley Holcomb
Planning & Operations Division Manager
Angelina Neches River Authority
P.O. Box 387
Lufkin, Texas 75902-0387

Contact Information:

Name of Entity: Sam Rayburn Project, U.S. Army Corps of Engineers

Mailing Address: Rt. 3 Box 486

Jasper, Texas 75951

Primary Contact's Name: Edward H. Shirley

Bus. Phone: 409/384-5716 Mobile: _____

Email: Edward.H.Shirley@swf,usace.army.mil

Additional Contact Name: David A. LaRue

Bus. Phone: 409/384-5716 Mobile: _____

Email: _____

Service Area Information:

Population currently served: See Attached Facility sheet

Total Water Meters: 2 Active: 2 Inactive: —

Total Sewer Conn.: 13 Active: 13 Inactive: —

Service area % developed: _____

Density of Development: _____houses/acre (average)

Specify area(s) without Sewer Collection:

- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____

Billing Information:

No. of Meters billed 2 (1 for each park)

Additional billings, if any _____

Staff Information:

No. of operating staff:

Full time _____ License _____ Years of Service _____

Part-time _____ License _____ Years of Service _____

Administrative staff:

No of Staff _____ License _____ Years of Service _____

Collection System:

Map of Service area: *(show the following if available at the time of site visit)*

- Location of pipelines and size of pipes

- Location of Lift Stations
- Lift station pumps and elevations
- Age of Pipelines, Lift Stations
- Type of Pipe Material
- Areas of Frequent Repairs
- Areas of Upgrade or Replacement

Repair records

- Frequency of repairs (provide records for last year if available)
- Type of repair
- Outside contractor or District/City staff
- Average cost of repair by type

Treatment Plant:

- Type of treatment _____
- Age of plant: _____ years
- Date of current permit _____
- Daily Average Flow NORMAL CONDITIONS _____
- Daily Average Flow WET WEATHER CONDITIONS _____
- Does your collection system have an I&I problem: Yes _____ No _____
- Major repair, upgrades or rehabilitation information

  Type _____ Year _____

  Discuss: _____

  _____

  Type _____ Year _____

  Discuss: _____

  _____

- Plant Expansions
  - Are plant expansions needed in future? YES NO

- When? _____ Year
- Estimated cost of expansion $_____

- Peak flow _____ MGD (discuss Infiltration/Inflow issues)

_____

_____

Records

- For Review (on site)
  1. Schematic layout or design (as-built) plans
  2. Operational Logs
  3. Flow records

- Submitted with Questionnaire
  1. Copy of current permit
  2. Self Reporting data (DMRs) for past 2 years
  3. Laboratory data for weekly effluent monitoring for past 2 years

- For Duplication purposes
  1. Collection system maps
  2. CCN maps

Note: all records and mapping will be handled with the utmost care and confidentiality, subject to state laws. Mapping and other original documents will be returned to you in a timely fashion.

Other comments/information:

_____

_____

_____

_____

_____

_____

_____

MILL CREEK (camping) PARK

110 Campsites - 46 closed Dec. - Feb.
3 Attendent Sites
2 Trailer Dump Stations
3 Water-borne Restroom / Shower Buildings
(1 closed Dec. - Feb.

None of these facilities are on any Sewage Treatment System - All waste water is processed through Septic Fields

TWIN DIKES (Camping) Park

46 Campsites (including 3 screened shelters) - 9 on a sewage treatment system.
These 9 sites are open year around; the others closed November - February
1 Trailer dump Station - on treatment system
3 restroom / shower facilities - 2 on treatment system
3 Attendent sites - on treatment system

Closure dates for facilities (winter)
Subject to change.

US Army COE
Mill Creek Park Statistics
FY 2007

Mill Creek Park

Total number of site visits	16,220
Recreation Day	62,662
Total number of visitor hours	1,503,888

Notes:

Site visits are defined as the number of people in a reservation at any length of stay. The site visit is equivalent to the Corps visits.

Recreation Day - defined as the number of visitors times the length of stay for each reservation. The recreation da is equivalent to the Forest Service Day visit.

Visitor Hours - defined as recreation Day times 24 hours

Account Number 737 03-11-2008

U.S. CORPS OF ENGIN.

U.S. CORPS OF ENGIN.
* MILL CRK.PARK

	Usage	Charges		Readdate	Reading	Current Balance
JAN	~~28,400~~	28,400		~~1-21-08~~ 07	196590	Previous Balance
FEB	~~26,300~~	36,000		~~2-20-08~~ 07	199220	Paid This Month
MAR	98,200			3-19-07	96410	Balance
APR	84,700		*	4-17-07	104880	
MAY	108,300			5-18-07	115710	
JUN	191,800			6-21-07	134890	
JUL	174,600			7-19-07	152350	
AUG	135,600			8-16-07	165910	
SEP	102,900			9-17-07	176200	
OCT	80,000		*	10-16-07	184200	
NOV	52,900		*	11-14-07	189490	
DEC	42,600			12-17-07	193750	

Traffic Counters

Park	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	FY Total	Notes
Overlook	11,059	10,847	9,784	5,228	9,429	10,844	7,376	4,773	8,194	5,384	5,110	3,197	**91,225**	
Overlook - PH	2,020	2,235	3,319	1,803	1,310	5,113	2,265	2,130	2,683	1,432	1,787	1,851	**27,948**	
Ebenezer	3,526	2,740	2,556	2,003	1,900	3,714	3,681	6,967	4,587	4,156	4,268	3,197	**43,295**	
Monterey	4,132	4,193	2,980	3,343	2695	34,505	4,492	3,750	4,128	3,973	7,637	6,448	**82,276**	
Hanks Creek	6,479	6,375	16,580	1,494	2,581	9,652	7,561	9,759	14,658	12,354	14,823	8,820	**111,136**	counted good
Marion Ferry	3,154	3,529	6,706		8,763	11,546	10,985	16,505	14,384	14,764	6,831	16,502	**115,669**	Counted high - jnue -28,505, July - counted 34764
Ewing		5,847	7,895		3,593	6,415	6,339	5,868	4,869	3,717	4,438	4,122	**53,103**	counted low - 1068
Etoile	4,023	1,790	7,787		9,879	26,377	12,687	7,506	7,824	4,434	4,856	3,330	**90,493**	
Jackson Hill	17,167	15,651			18,351	21,358	18,632	18,065	13,584	12,698	11,355	8,352	**155,213**	replaced counter 5-2-07, counted high 6-2-07, fixed refle
Rayburn	1,766	2,813	1,966	891	1,243	2,671	2,850	2252	5,960	4,852	3,927	3,349	**34,540**	counted low, 1927
Powell	9,119	7,278		4,875	6,716	5,790	7,787	8,514	5,160	5,632	5,973	5,534	**72,378**	replaced 9-1-07
San Augustine	7,374	4,614	9,598		10,239	33,794	17,284	16,234	5,937	8,438	8,298	16,359	**138,169**	
Mill Creek	17,774	7,345	3,658	5,064	7,980	31,896	25,622	28,192	22,408	24,856	22,381	15,371	**212,547**	
TD East End Crystal	1,484	178	631	141	174	1,471	1,549	2,465	4,654	2657	3259	1720	**20,383**	Low batteries ??? 9-1-07
Twin Dikes	9,634	5,784	4,716	3,656	5,948	11,282	9,541	9,134	15,307	10,448	12,086	11,550	**109,086**	
Twin Dikes Public	11,811	6,528	5,948	41,147	34,696	18,963	18,680	14,178	22,405	13,366	11,831	11,251	**210,787**	
Twin Dikes Marina	6,246	2,954	1,791	2,244	4,158	8,375	8,819	7,895	12,129	8,789	8,622	7,056	**79,078**	
Jasper County Facility		7,130	12,739	17,288	8,092	8,291	13,153	3,094	3,547	2,454	5,767	8,756	**90,311**	
TOTALS	**116,768**	**97,831**	**98,654**	**89,177**	**137,747**	**252,057**	**179,303**	**169,281**	**172,418**	**144,404**	**143,249**	**136,748**	**1,737,637**	
Green Represents an Estimate														

Dec 28

Angelina & Neches River Authority (ANRA)
Request for Information

The purpose of this request for information is to obtain information on wastewater needs for the southeast Sam Rayburn Dam area. THE PURPOSE IS ONLY INFORMATIONAL—NONE OF THIS INFORMATION WILL BE USED FOR ANY OTHER PURPOSE AND WILL NOT BE PROVIDED TO OTHERS.

ANRA Contact Information:

Mr. Kelley Holcomb
Planning and Operations Division Manager
Phone: (936) 633-7543
Email: kholcomb@anra.org

Mr. Tom Ray
Water Resources Program Manager
Phone: (254) 753-9585
Email: jtray@lan-inc.com
cell 254-8550880

Contact Information:

Name of Entity: Brookeland Fresh Water Supply District

Mailing Address: P.O. Box 5350
Sam Rayburn

Primary Contact's Name: Jerry Shands - General Mgr.

Bus. Phone: 409-698-2100 Mobile: _____

Email: bfwsdeexp.net

Additional Contact Name: Dennis Woods - Operational info.

Bus. Phone: 409-698-2100 Mobile: _____

Email: _____

Service Area Information:

Population currently served: 3675

Total Water Meters: 1225 Active: _____ Inactive: _____

Total Sewer Conn.: 134 Active: _____ Inactive: _____

Service area % developed: _____

Density of Development: _____houses/acre (average)

Specify area(s) without Sewer Collection:

- Area Mulberry No. of meters 34 Location Hwy 1007
- Area Brookeland No. of meters 470 Location Brookeland Area
  Lakeland-Pine Terrice-Raysburn 100-Mill creek
- Area _____ No. of meters _____ Location Brookeland Schoo
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____

Billing Information:

No. of Meters billed All

Additional billings, if any _____

Staff Information:

No. of operating staff:

Full time 4 License 3 Years of Service _____

Part-time _____ License _____ Years of Service _____
Contract Meter Reader 1

Administrative staff:

No of Staff 1 full time License _____ Years of Service _____
2 Part time

Collection System:

Map of Service area: *(show the following if available at the time of site visit)*

- Location of pipelines and size of pipes
- Location of Lift Stations
- Lift station pumps and elevations
- Age of Pipelines, Lift Stations
- Type of Pipe Material
- Areas of Frequent Repairs
- Areas of Upgrade or Replacement

Repair records

- Frequency of repairs (provide records for last year if available) Why?

Is Regional System going to do repairs on our system?

Records

- For Review (on site)
  1. Schematic layout or design (as-built) plans Why?
  2. Operational Logs
  3. Flow records submitted
- Submitted with Questionnaire
  1. Copy of current permit
  2. Self Reporting data (DMRs) for past 2 years
  3. Laboratory data for weekly effluent monitoring for past 2 years
- For Duplication purposes
  1. Collection system maps – why do you need collection sys maps?
  2. CCN maps submitted

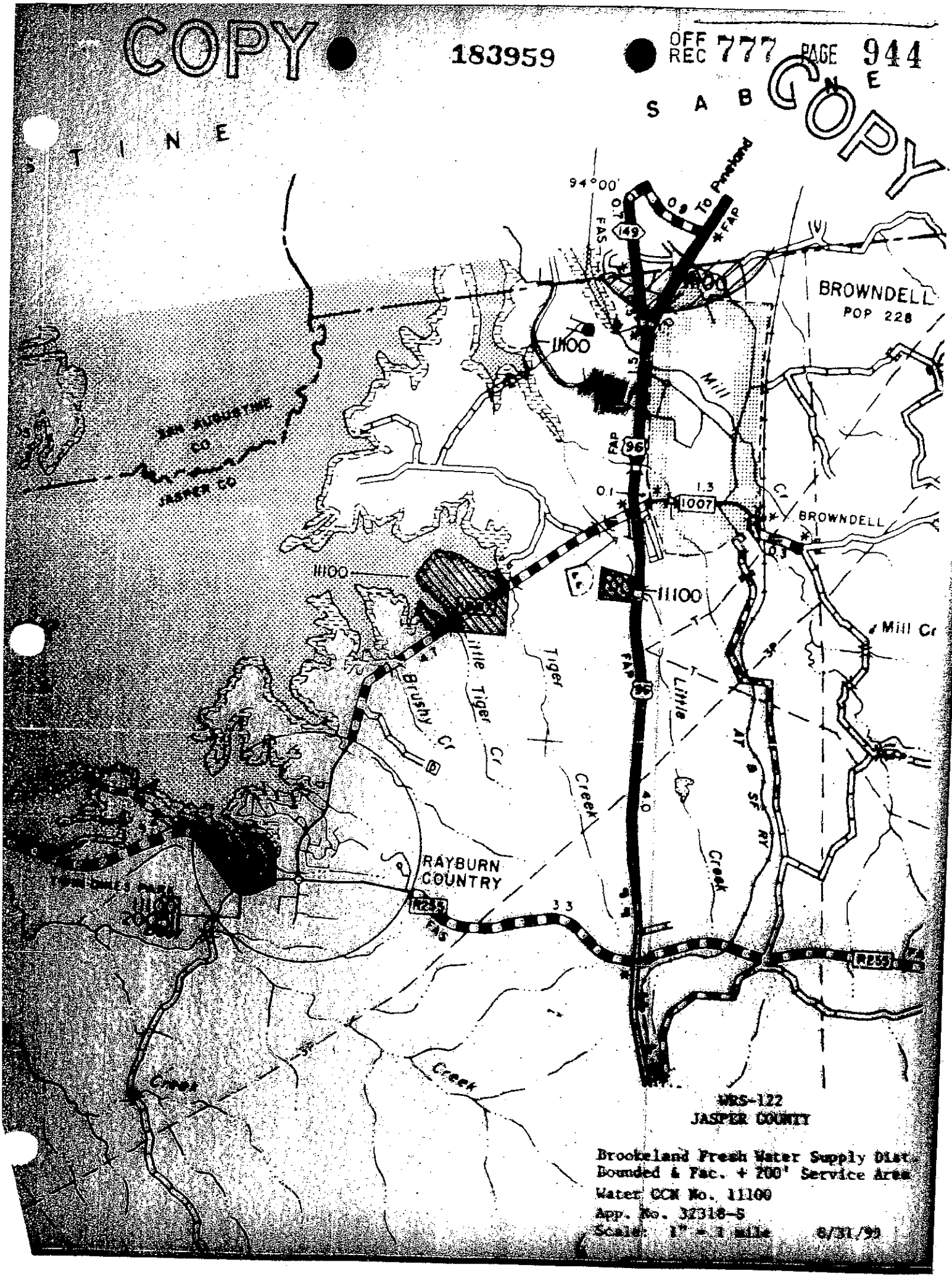
Note: all records and mapping will be handled with the utmost care and confidentiality, subject to state laws. Mapping and other original documents will be returned to you in a timely fashion.

Other comments/information:

I believe the only cost effectively way to have a regional wastewater system is to have one system, not three or four collection systems and one treatment system. More grant money would be available. Brookeland FWSD lost a three million dollar grant because of lack of interest. Community appeared to be against having wastewater system.

183959

OFF REC 777 PAGE 944



WRS-122
JASPER COUNTY

Brookeland Fresh Water Supply Dist.
Bounded & Fac. + 200' Service Area
Water CCN No. 11100
App. No. 32318-S
Scale: 1" = 1 mile 8/31/99

Beginning at the intersection of the western right-of-way of the Golf Coast and Santa Fe Railway and the Jasper / Sabine County Line;

THENCE in a southerly direction with the western right of way of said railroad 2350', more or less, to a point at the intersection of said railroad and the northern boundary line of the City Of Browndell, Texas;

THENCE in a northwesterly direction with the northerly boundary line of said City of Browndell for a distance of 5100 feet, more or less, to point for corner in the east right-of-way line of said U. S. Highway 96.

THENCE in a southerly direction along the east right-of-way line of U.S. Highway 96 for a distance of 3000 feet, more or less to the intersection of Highway 96 and Mill Creek;

THENCE west for a distance of 1700 feet, more or less, to the United States Corp of Engineer Boundary line for Sam Rayburn Reservoir;

THENCE N 37° 11' W for a distance of 2090', more or less, to the Jasper County line;

THENCE northeasterly 9425' along the Jasper County line to the point of beginning.

Beginning at the intersection of U.S. Hwy 96 and F.M. 1007;

THENCE in a southwesterly direction along the centerline of Hwy 1009 1370 feet, more or less, to the intersection of Hwy 1009 and Little Creek

THENCE in a northwesterly direction along the meanders of Little Creek 9200 feet, more or less, to the United States Corp Of Engineers boundary line for the Sam Rayburn Reservoir;

THENCE in a northwesterly direction with the meanders of the Untied States Corp of Engineers boundary line for the Sam Rayburn reservoir a distance of 3670 feet, more or less, to the Jasper and Sabine County line.

THENCE in a northeasterly direction along the county line a distance of 4025', more or less;

THENCE S 37° 11' E for a distance of 2090', more or less,

THENCE east 1700 feet to Highway 96,

THENCE southerly 8550 feet following U.S. Highway 96 to the point of beginning.

Forest Hills -GT

Being a 331.6 acre tract, more or less, located in Jasper County hereby defined as follows:

Beginning at a point in the centerline of Recreational Road 255, said point being 980 feet, more or less, along Recreational Road 255 from the intersection of Recreational Road 255 and F.M. 1007;

THENCE south 1500 feet, more or less,

THENCE northwesterly parallel to the centerline of Recreational Road 255 4850 feet, more or less,

THENCE north 3070 feet, more or less, to the Corp of Engineers boundary line for Sam Rayburn Reservoir;

THENCE southeasterly following the meanders of the Corp of Engineers boundary line for Sam Rayburn Reservoir a distance of 4650 feet, more or less;

THENCE east 1225 feet, more or less,

THENCE south 2365 feet, more or less, to the point of beginning.

Pine Terrace -GT

Beginning at the intersection of the centerline of U.S. 96 and Little Creek;

THENCE south for a distance of 600 feet along the centerline of U.S. 96;

THENCE west 1200 feet, more or less,

THENCE north 1400 feet, more or less;

THENCE S 76° E 1165 feet , more or less, to the centerline of U.S. 96;

THENCE south 500 feet, more or less, along the centerline of U.S. 96 to the point of beginning.

Mulberry Beach -aT

Beginning at the intersection of the centerline of State Hwy 1007 and Tiger Creek;

THENCE south 2400 feet , more or less;

THENCE west 2900 feet , more or less;

THENCE N 33° W to the Corp of Engineers boundary line for the Sam Rayburn Reservoir;

THENCE in a northeasterly direction with the meanders of the United States Corp of Engineers boundary line for the Sam Rayburn Reservoir for 5400 feet, more or less, to a point at the intersection of said boundary line and Tiger Creek;

THENCE following the meanders of Tiger Creek southeasterly for a distance of 2400 feet, more or less, to the point of beginning.

STATE OF TEXAS COUNTY OF JASPER
I HEREBY CERTIFY THAT THIS instrument was filed on the Date and time stamped hereby by me and was duly Recorded in the Official Public Records of Jasper County Texas on

JAN 29 2007

County Clerk
Jasper Co. Texas

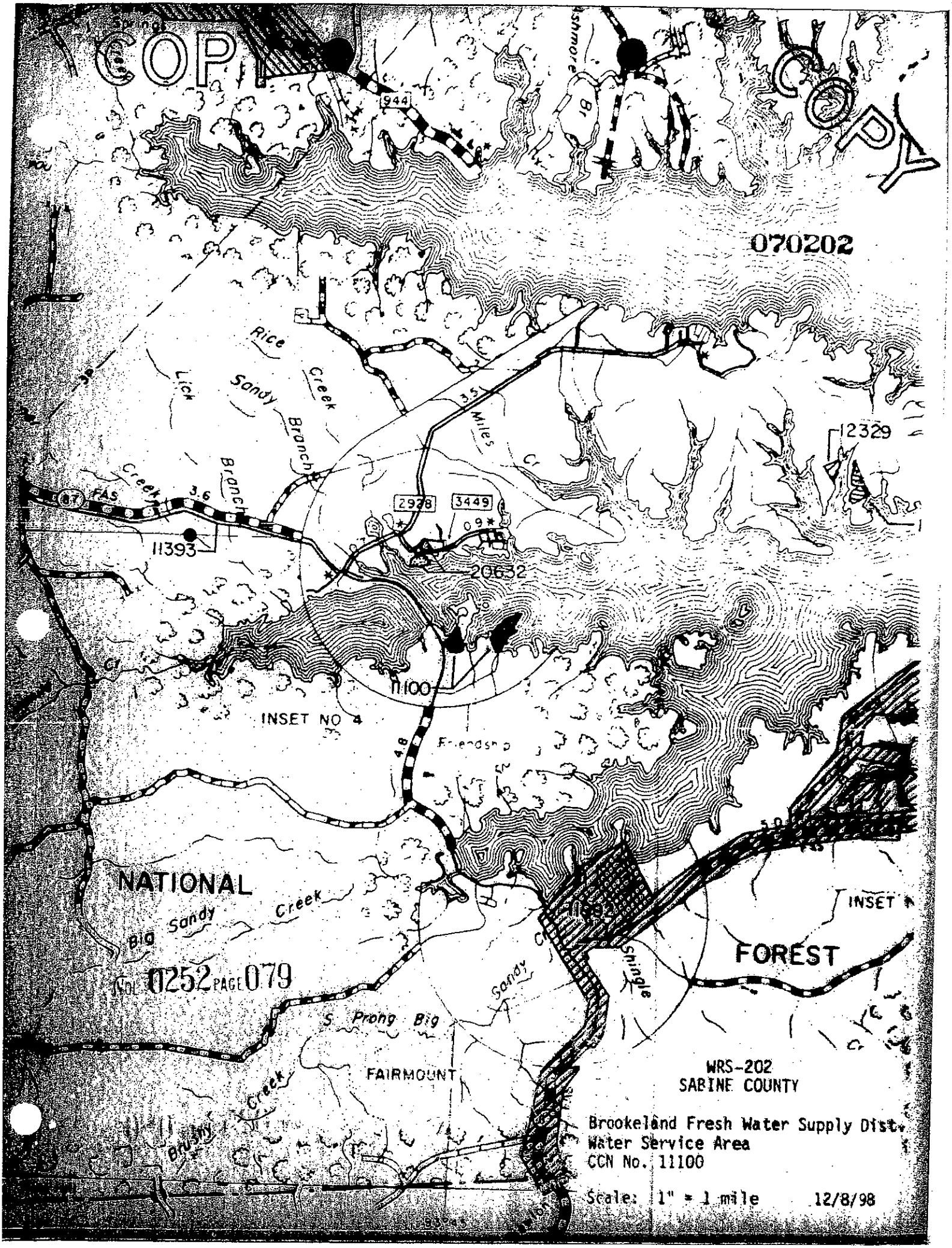
FILED FOR RECORD

2007 JAN 29 P 12:44

DEBBIE NEWMAN
CLERK, COUNTY COURT
JASPER COUNTY, TEXAS
BY: DEPUTY

183959

10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11393
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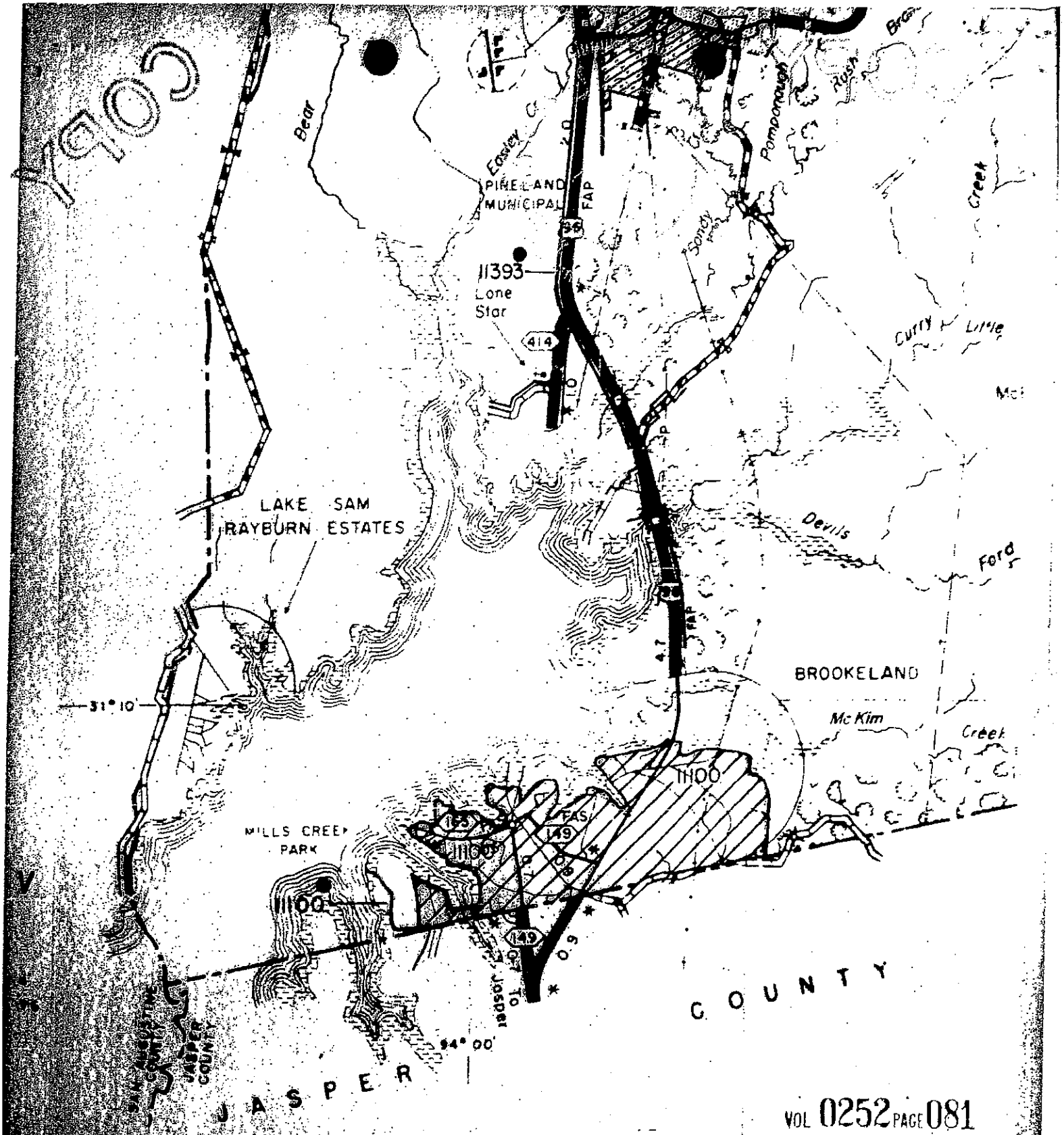
Big
Sandy
Creek
VOL 0252 PAGE 079
S Prong Big
Sandy Cr
Shingle
FAIRMOUNT
Brushy
Creek
WRS-202
SABINE COUNTY
Brookeland Fresh Water Supply Dist.
Water Service Area
CCN No. 11100
Scale: 1" = 1 mile
12/8/98



VOL 0252 PAGE 081

VRS-202
SABINE COUNTY

Brookeland Fresh Water Supply Dist.
Bounded & Fac. + 200' Service Area
CCN No. 11100

Scale: 1" = 1 mile 12/8/98

BROOKELAND FRESH WATER SUPPLY DISTRICT

THE HOGAN CORPORATION

Engineers • Planners • Consultants

Dallas • Austin • Jasper

These general descriptions cover the areas of the Brookeland Fresh Water Supply District , as shown on the attached map and as located by the following:

BROOKELAND (Sabine County) -GT

Being 1,708 acres, more or less, out of the M. Cummings Survey, Abstract No. 11, Donald McDonald League, Abstract No. 36, E. S. Johnston League Abstract No. 26, S. W. Blount, Jr. Survey, Abstract No. 493, Sabine County, Texas, being more particularly described as follows:

Beginning at a point at the intersection of the centerline of U. S. Highway 96 and the centerline of the Jasper/Sabine County line;

Thence west for a distance of 4,635 feet, more or less, to the United States Corp of Engineer boundary line for Sam Rayburn Reservoir;

Thence in a northerly direction with the meanders of the United States Corp of Engineers boundary line for the Sam Rayburn Reservoir for a distance of 13 miles, more less, to a point at the intersection of said boundary line and the west right-of-way line of the Gulf Coast and Santa Fe Railroad, said point being located, along the west right-of-way line of said railroad;

Thence in a southerly direction from the west right-of-way line of said railroad along McKim Creek for a distance of 1,180 feet, more or less, to the intersection of McKim Creek and Clear Branch;

Thence along Clear Branch for a distance of 6,700 feet, more or less, to a point at the intersection of Clear Branch and the Jasper/Sabine County Line;

Thence in a westerly direction along the Jasper/Sabine County Line for a distance of 7,305 feet, more or less, to the place of beginning.

HOLIDAY FOREST (NO)

15.626 acre tract in the Eli Low Survey, A-34, Sabine County, Texas and being part of 21.633 acre tract recorded in Vol. No. 135 Page 7 thru 9, the subject 21.633 acre tract being more particularly described as follows:

Beginning at northeast corner of intersection of U. S. Highway 87 and entrance to Holiday Forest Subdivision;

Thence N 86° 31' E approximately 137 feet;

Thence S 66° 25' E approximately 109 feet;

Thence N 11° 55' W approximately 50 feet;

Thence N 86° 32' E approximately 260 feet;

Thence N 39° 10' E approximately 255 feet;

Thence N 02° 30' W approximately 219 feet;

Thence N 12° 02' 31" W approximately 65 feet;

Thence N 37° 10' E approximately 158 feet;

Thence N 60° 00' E approximately 279 feet;

Thence S 34° 50' E approximately 146 feet;

Thence S 01° 58' E approximately 134 feet;

Thence S 06° 35' W approximately 166 feet;

Thence S 08° 30' W approximately 167 feet;

Thence S 16° 25' E approximately 150 feet;

Thence S 55° 40' E approximately 128 feet;

Thence S 16° 18' E approximately 382 feet;

Thence S 06° 12' W approximately 103 feet;

Thence S 29° 50' W approximately 116 feet;

Thence S 64° 08' W approximately 455 feet;

Thence N 48° 45' W approximately 650 feet;

Thence N 48° 42' W approximately 348 feet;

Thence N 11° 21' W approximately 144 feet to the place of beginning.

LAKELAN (Sabine County)

69.25 acres of land, more or less, out of Abst. 30, Donald McDonald League, Sabine County, Texas, and more particularly described as follows:

Beginning at the southeast corner of East Texas Pulp and Paper Company 94 acre tract, concrete monument S-392 for corner from which a Pine 11" diameter bears N 8° 30' W 26.4 feet and a Pine 17" in diameter bears N 20° 00' W 27.5 feet;

Thence N 12° 06' E with east line of said 94 acre tract, 1,460 feet to concrete monument for corner from which a Hickory 5" in diameter bears N 81° 30' W 7.7 feet and a Post Oak 12" in diameter bears S 75° 00' E 18.2 feet;

Thence with the meanders of McGee Bend (Sam Rayburn) Reservoir Tract No. 1109-2 as follows:

Thence N 74° 00' W 386 feet;

Thence N 17° 25' W 245 feet;

Thence N 26° 49' W 197 feet;

Thence N 31° 34' W 478 feet;

Thence N 47° 35' W 336 feet;

Thence N 26° 04' W 184 feet;

Thence N 65° 54' W 139 feet;

Thence S 79° 40' W 234 feet;

Thence S 62° 35' W 310 feet;

Thence S 43° 24' W 207 feet to concrete monument for corner from which a Red Oak 5" in diameter bears N 15° 00' E 14.9 feet and a Pine 13" in diameter bears N 15° 30' W 9.2 feet;

Thence with the meanders of McGee Bend (Sam Rayburn) Reservoir Tract No. 1109-1 as follows:

Thence S 28° 00' E 317 feet;

Thence S 03° 08' E 268 feet;

Thence S 04° 25' W 344 feet;

Thence S 89° 25' E 551 feet;

Thence S 00° 39' E 495 feet;

Thence S 49° 31' W 506 feet;

Thence S 03° 04' W 227 feet;

Thence S 550° 31' E 529 feet to concrete monument for corner from which a Black Gum 6" in diameter bears S 83° 00' W 16.8 feet and a Pine 8" in diameter bears N 12° 00' W 12.5 feet;

Thence S 78° 14' E with the south line of said 94 acre tract, 902 feet to the place of beginning.

SHAWNEE SHORES

The subject 35.74 acre tract located in Abstract 34, Eli Low League, Sabine County, recorded in Volume 140, being more particularly described as follows:

Beginning at approximately 3,870 feet east of the intersection of U. S. Highway 87 and Point Drive thence S 63° 44' W approximately 239 feet;

Thence N 26° 19' 47" W approximately 869 feet;

Thence S 58° 06' 29" W approximately 260 feet;

Thence S 27° 22' 22" E approximately 45 feet;

Thence S 62° 37' 38" W approximately 300 feet;

Thence N 27° 22' 22" W approximately 322 feet;

Thence N 58° 06' 29" E approximately 746 feet;

Thence S 26° 30' E approximately 96 feet;

Thence N 58° 45' E approximately 289 feet;

Thence N 31° 09' W approximately 237 feet;

Thence N 64° 29' E approximately 83 feet;

Thence S 63° 55' E approximately 154 feet;

Thence N 54° 43' E approximately 222 feet;

Thence N 23° 09' E approximately 226 feet;

Thence N 73° 30' E approximately 324 feet;

Thence N 11° 44' E approximately 115 feet;

Thence S 74° 38' E approximately 162 feet;

Thence N 56° 55' E approximately 146 feet;

Thence N 48° 54' E approximately 280 feet;

Thence N 86° 26' 15" E approximately 153 feet;

Thence S 20° 58' 33" W approximately 250 feet;

Thence S 70° 39' W approximately 167 feet;

Thence S 10° 01' E approximately 182 feet;

Thence S 84° 26' W approximately 226 feet;

Thence S 32° 00' W approximately 158 feet;

Thence S 31° 43' E approximately 330 feet;

Thence S 65° 05' W approximately 141 feet;

Thence S 76° 41' W approximately 200 feet;

Thence N 84° 07' W approximately 119 feet;

Thence S 06° 50' W approximately 68 feet;

Thence S 47° 50' W approximately 105 feet;

Thence S 88° 10' E approximately 125 feet;

Thence S 64° 09' E approximately 157 feet;

Thence S 52° 25' W approximately 120 feet;

Thence S 15° 08' W approximately 136 feet;

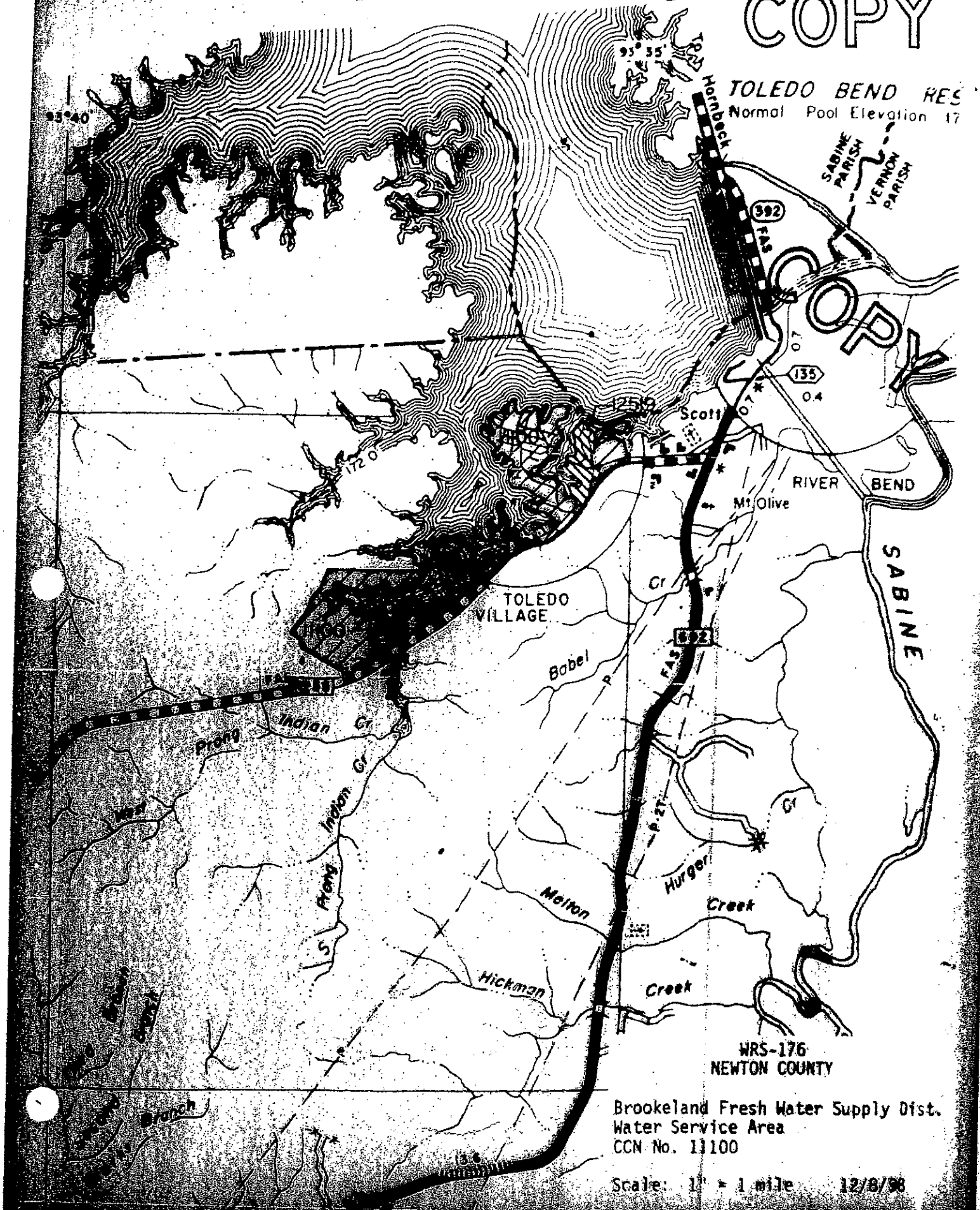
Thence S 40° 35' W approximately 137 feet;

Thence S 17° 10' E approximately 87 feet;

Thence S 59° 17' W approximately 65 feet;

136131

COPY


TOLEDO BEND RES
Normal Pool Elevation 17
93° 35'
93°40'
Hornback
SABINE PARISH
VERNON PARISH
392
FAS
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135
0.4
Scott
RIVER BEND
Mt Olive
SABINE
TOLEDO VILLAGE
Babel
Cr
Indian Cr
Prong
West
Prong
Indian Cr
Melton
Hickman
Creek
Hurger
Creek
WRS-176
NEWTON COUNTY
Brookeland Fresh Water Supply Dist.
Water Service Area
CCN No. 11100
Scale: 1" = 1 mile
12/8/98

VOL 542 PAGE 088

received 2/16/07

Toledo Village

Beginning at a point that bears N 6° 39' W at a distance of 3275 feet, more or less, from the intersection of Recreational Road 255 and F.M. 692, that is along the United States Corp of Engineers boundary line for Toledo Bend Reservoir;

Thence S 35° 42' W a distance of 19500 feet, more or less;

Thence S 87° 24' W a distance of 1840 feet, more or less,

Thence N 44° 33' W a distance of 10150 feet, more or less to the Corp Of Engineers boundary line for Toledo Bend Reservoir;

Thence northwesterly following the Corp of Engineers boundary line for Toledo Bend Reservoir a distance of 19.65 miles, more or less, to the point of beginning.

Filed for record 1ST of FEBRUARY, A.D., 20 07 at 3:54 P.M.

THE STATE OF TEXAS }
COUNTY OF NEWTON } 136131

I hereby certify that this instrument was filed for record as listed above and duly recorded in the OFFICIAL PUBLIC Records of Newton County, Texas, in the Volume and Page as stamped hereon by me.

Mary Cobb

Mary Cobb, County Clerk Newton County, Texas

By: _____, Deputy

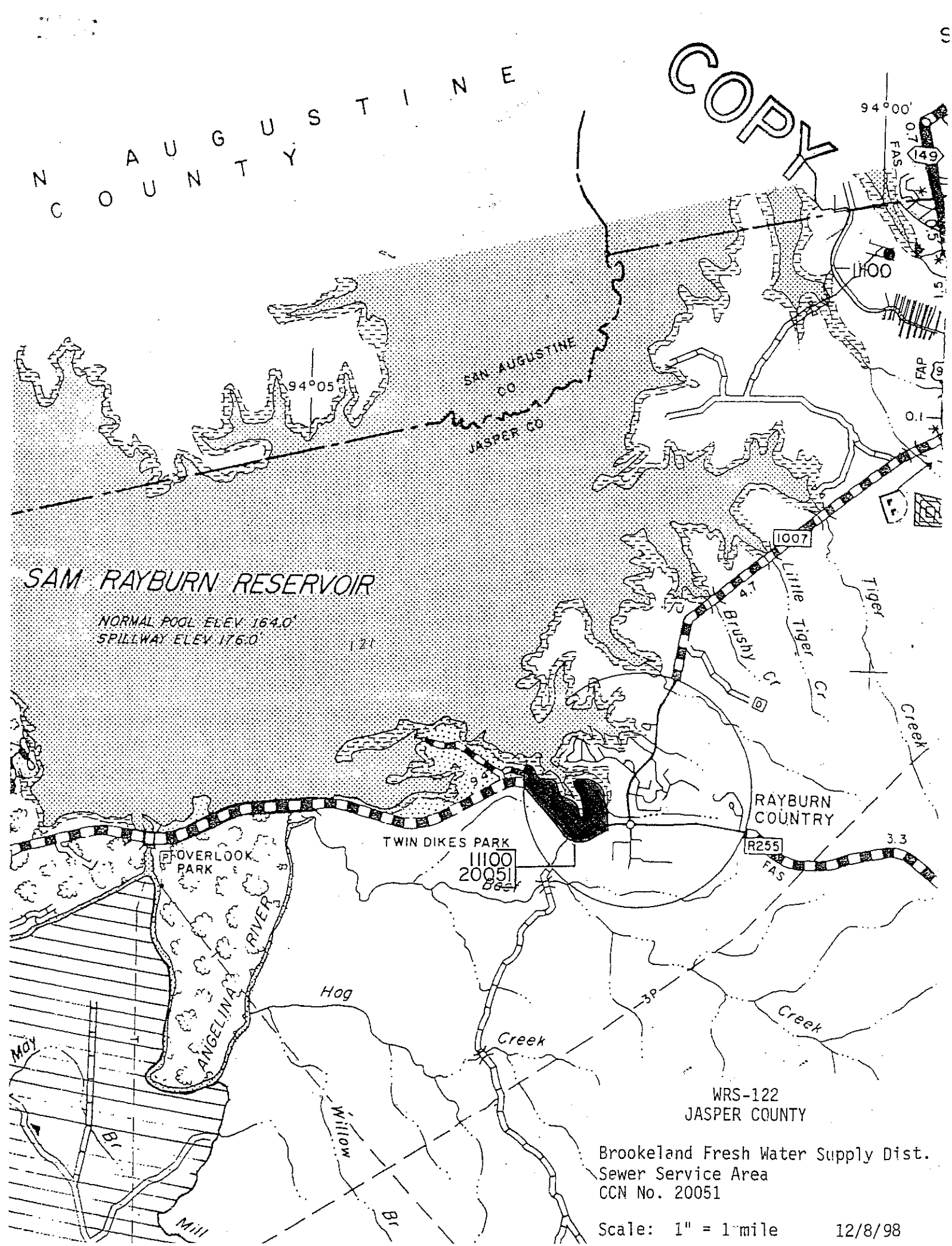
136131

FILED FOR RECORD

2007 FEB -1 PM 3:54

COUNTY CLERK, NEWTON CO., TX

BY Stacey Holmes


COPY
SAN AUGUSTINE COUNTY
94°00'
94°05'
SAN AUGUSTINE CO.
JASPER CO.
SAM RAYBURN RESERVOIR
NORMAL POOL ELEV. 164.0'
SPILLWAY ELEV. 176.0'
121
1100
FAS
149
FAP
1007
Little Tiger Cr
Brushy Cr
Tiger Creek
RAYBURN COUNTRY
R255
3.3
TWIN DIKES PARK
11100
20051
OVERLOOK PARK
ANGELINA RIVER
Hog Creek
3P
Creek
Moy
Br
Mill
Br
WRS-122
JASPER COUNTY
Brookeland Fresh Water Supply Dist.
Sewer Service Area
CCN No. 20051
Scale: 1" = 1 mile
12/8/98

Forest Hills

Being a 331.6 acre tract, more or less, located in Jasper County hereby defined as follows:

Beginning at a point in the centerline of Recreational Road 255, said point being 980 feet, more or less, along Recreational Road 255 from the intersection of Recreational Road 255 and F.M. 1007;

THENCE south 1500 feet, more or less,

THENCE northwesterly parallel to the centerline of Recreational Road 255 4850 feet, more or less,

THENCE north 3070 feet, more or less, to the Corp of Engineers boundary line for Sam Rayburn Reservoir;

THENCE southeasterly following the meanders of the Corp of Engineers boundary line for Sam Rayburn Reservoir a distance of 4650 feet, more or less;

THENCE east 1225 feet, more or less,

THENCE south 2365 feet, more or less, to the point of beginning.

Pine Terrace

Beginning at the intersection of the centerline of U.S. 96 and Little Creek;

THENCE south for a distance of 600 feet along the centerline of U.S. 96;

THENCE west 1200 feet, more or less,

THENCE north 1400 feet, more or less;

THENCE S 76° E 1165 feet , more or less, to the centerline of U.S. 96;

Angelina & Neches River Authority (ANRA)
Requèst for Information

The purpose of this request for information is to obtain information on wastewater needs for the southeast Sam Rayburn Dam area. THE PURPOSE IS ONLY INFORMATIONAL—NONE OF THIS INFORMATION WILL BE USED FOR ANY OTHER PURPOSE AND WILL NOT BE PROVIDED TO OTHERS.

ANRA Contact Information:

Mr. Kelley Holcomb
Planning and Operations Division Manager
Phone: (936) 633-7543
Email: kholcomb@anra.org
Fax :

Mr. Tom Ray
Water Resources Program Manager
Phone: (254) 753-9585
Email: jtray@lan-inc.com
mobile 2548550880

Contact Information:

Name of Entity: Brookeland I.S.D.

Mailing Address: RR 2 BOX 18
Brookeland, Texas 75931

Primary Contact's Name: Lana L. Comeaux

Bus. Phone: 409-698-2677 Mobile: 409-382-5353

Email: lcomeaux@esc5.net

Additional Contact Name: Donna Cooper

Bus. Phone: 409-698-2677 Mobile: 409-383-4451

Email: dcooper@esc5.net

Service Area Information:

Population currently served: 350 kids / 65 employees
School

Total Water Meters: _____ Active: _____ Inactive: _____

Total Sewer Conn.: _____ Active: _____ Inactive: _____

Service area % developed: _____

Density of Development: _____houses/acre (average)

Specify area(s) without Sewer Collection:

- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____
- Area _____ No. of meters _____ Location _____

Billing Information:

No. of Meters billed _____

Additional billings, if any _____

Staff Information:

No. of operating staff:

Full time _____ License _____ Years of Service _____

Part-time _____ License _____ Years of Service _____

Administrative staff:

No of Staff _____ License _____ Years of Service _____

License Contract water + wastewater operating service

Collection System:

Map of Service area: *(show the following if available at the time of site visit)*

- Location of pipelines and size of pipes
- Location of Lift Stations
- Lift station pumps and elevations
- Age of Pipelines, Lift Stations
- Type of Pipe Material
- Areas of Frequent Repairs
- Areas of Upgrade or Replacement

Repair records

- Frequency of repairs (provide records for last year if available)

- Type of repair
- Outside contractor or District/City staff
- Average cost of repair by type

Treatment Plant:

- Type of treatment extended aeration (activated sludge)
- Age of plant: _____ years
- Date of current permit Issued Jan-31-2007- expire August 1, 2011
- Daily Average Flow NORMAL CONDITIONS 0.00148
- Daily Average Flow WET WEATHER CONDITIONS 0.01034
- Does your collection system have an I&I problem: Yes ✓ No ____
- Major repair, upgrades or rehabilitation information

  Type UPGRADES Cl2 Compartment Year 2005

  Discuss: Installed larger chlorine Contact based on Peak Flow, Installed Air diffusers for better DO. in out Fall.

  Type _____ Year _____

  Discuss: _____

- Plant Expansions
  - Are plant expansions needed in future? (YES) NO
  - When? N/A Year
  - Estimated cost of expansion $ N/A
- Peak flow _____ MGD (discuss Infiltration/Inflow issues)

  To Meet student population

Records

- For Review (on site)
  1. Schematic layout or design (as-built) plans
  2. Operational Logs
  3. Flow records

- Submitted with Questionnaire
  1. Copy of current permit
  2. Self Reporting data (DMRs) for past 2 years
  3. Laboratory data for weekly effluent monitoring for past 2 years

- For Duplication purposes
  1. Collection system maps
  2. CCN maps

Note: all records and mapping will be handled with the utmost care and confidentiality, subject to state laws. Mapping and other original documents will be returned to you in a timely fashion.

Other comments/information:

School is service water By Brookeland Fresh water supply District.

Account Number 1787 03-11-2008

PAVILION,LAKE SAM RAYBURN

	Usage	Charges	ReadDate	Reading	Current Balance
JAN	~~3,800~~	10,600	~~1-24-08~~ 07	54300	Previous Balance
FEB	~~6,900~~	103,800	~~2-21-08~~ 07	54990	
MAR	43,700		3-21-07	46940	Balance
APR	10,000		4-20-07	47940	
MAY	10,800		5-21-07	49020	
JUN	5,500		6-22-07	49570	
JUL	8,400		7-23-07	50410	
AUG	8,000		8-22-07	51210	
SEP	5,000		9-20-07	51710	
OCT	10,700		10-19-07	52780	
NOV	8,000		11-19-07	53580	
DEC	3,400		12-19-07	53920	

APPENDIX B: Grant Programs

Texas Community Development Block Grant Program

A complete description of the TCDBGP is available on-line at the Texas Office of Rural Community Affairs website: http://www.orca.state.tx.us/index.php/Community+Development. The following is pertinent information relative to the CDBGP opportunity.

Every year, the US Department of Housing and Urban Development provides federal Community Development Block Grant funds directly to states, which, in turn, provide the funds to small, rural cities with populations less than 50,000, and to counties that have a non-metropolitan population under 200,000 and are not eligible for direct funding from HUD. These small communities are called "non-entitlement" areas because they must apply for CDBG dollars through ORCA. (Larger cities, such as Dallas, Houston and others, receive CDBG monies directly from HUD, and are called "entitlement" areas.)

All projects funded through the CDBG program typically meet the first national objective (benefit low- and moderate-income persons) by benefiting at least 51 percent low- to moderate-income persons, which are defined as those who:

- Earn equal to or less than 80 percent of the area median family income figure (where the area is a metropolitan statistical area or a non-metropolitan county) or
- Earn equal to or less than less than 80 percent of the statewide non-metropolitan median family income figure, as defined under the US Department of Housing and Urban Development Section 8 Housing Assistance Program.
- For income eligibility in your area, please review the most recent Income Limits document.

Some projects funded through the CDBG program may meet the second national objective of aiding in the prevention or elimination of slum or blight while the remainder of CDBG projects will fall under the third national objective. The third national objective includes activities designed to meet community development needs having a particular urgency, which the CDBG Program applies to Disaster Relief and Urgent Need Fund projects.

The agency then makes applications available in accordance with each program's funding cycle. Applications received for competitive funding programs are reviewed and scored using program-specific criteria and processes. These processes may include scoring by Regional Review Committees (see below) and review by the State Review Committees (see below.)

Once awards are made from ORCA's CDBG program, contracts are executed between the agency and the city or county officials, and the grantee begins the implementation of their proposed project. To guide grantees in the implementation of their projects, the grantees follow the 2005 CDBG Implementation Manual. The Manual describes the methods a

CDBG grant recipient uses to administer the CDBG contract, and includes relevant forms. This document covers the post award process.

The Community Development Fund is a competitive grant program for public facility needs such as sewer and water system improvements, street and drainage improvements and housing activities.

- Cities under 50,000 in population and counties that have a non-metropolitan population under 200,000 and are not eligible for direct CDBG funding from HUD.

- The same applications submitted under the Community Development (CD) Fund are considered for funding under the CDS Fund.

- Applications are first considered under the CD Fund until funds under the regional allocation are exhausted.

- Remaining applicants compete for CD and CDS funds. Remaining applicants are selected for funding using the RRC score with additional points awarded by ORCA staff for past performance.

- Sewer and water system improvements

- Street and drainage improvements

Regional Review Committees are authorized to establish a grant maximum for their respective regions between $250,000 and $800,000 for a single jurisdiction application and between $350,000 and $800,000 for a multi-jurisdiction application.

The agency then makes applications available in accordance with each program's funding cycle. Applications received for competitive funding programs are reviewed and scored using program-specific criteria and processes. These processes may include scoring by Regional Review Committees (see below) and review by the State Review Committees (see below.)

Once awards are made from ORCA's CDBG program, contracts are executed between the agency and the city or county officials, and the grantee begins the implementation of their proposed project. To guide grantees in the implementation of their projects, the grantees follow the 2005 CDBG Implementation Manual. The Manual describes the methods a CDBG grant recipient uses to administer the CDBG contract, and includes relevant forms. This document covers the post award process.

APPENDIX C: Public Meeting Notices

ANGELINA & NECHES RIVER AUTHORITY

NOTICE OF PUBLIC MEETING

The Angelina & Neches River Authority will host a public meeting at 5:30 P.M., Monday February 11, 2008, at Rayburn Hall, located in Rayburn Country at 427 Broadmoor, Brookeland, Texas, 75931. The meeting will be held to receive public comments regarding a Regional Wastewater Facilities Planning Study.

In October 2007, the Angelina & Neches River Authority received a matching funds grant from the Texas Water Development Board for the purpose of developing potential regional wastewater treatment solutions for the southeast Sam Rayburn Dam area. Local entities provided matching funds to support these activities.

The regional planning effort is currently underway and encompasses an area from the Brookeland community on US Hwy 96, south to State Hwy 1007, then southward on State Hwy 1007 to RR 255. Entities benefitting from these planning efforts are Brookeland ISD, Brookeland Freshwater Supply District, the City of Browndell and Rayburn Country MUD.

DEBBIE NEWMAN, COUNTY CLERK
JASPER COUNTY, TEXAS

FILED FEB 06 2008

BY Shirla Houston
DEPUTY

KTH
February 5, 2008

Post Office Box 387 / 210 Lufkin Avenue / Lufkin, Texas 75902 / 936-632-7795 / Fax 936-632-2564

Serving the 17 county area of the Angelina & Neches River basins in East Texas

ANRA
Angelina & Neches River Authority

Angelina & Neches River Authority
210 Lufkin Avenue
P.O. Box 387
Lufkin, Texas 75902
936-632-7795
www.anra.org

SIGN IN SHEET

Regional Wastewater Facility Planning Grant
Public Meeting
When: February 11, 2008
Where: Rayburn Country Club

	Entity	Name	Title	Address
11.		Polly L. McMillan		P.O. Box 507; Hillister, TX 77624
12.		Jim Raga		216 Rayburn 100
13.		Roy West		PO Box 5275 25 Lakeshore ~~Silsbee, Rayburn, 75951~~
14.		FRANK VILLWA		102-Rayburn 100 Brookeland TX 75931
15.				
16.				
17.				
18.				
19.				
20.				

ANRA

ANGELINA & NECHES RIVER AUTHORITY

NOTICE OF PUBLIC MEETING

The Angelina & Neches River Authority will host a public meeting at 5:30 P.M., Thursday, July 31, 2008, at Rayburn Hall, located in Rayburn Country at 427 Broadmoor, Brookeland, Texas, 75931. The meeting will be held to receive public comments regarding a Regional Wastewater Facilities Planning Study.

In October 2007, the Angelina & Neches River Authority received a matching funds grant from the Texas Water Development Board for the purpose of developing potential regional wastewater treatment solutions for the southeast Sam Rayburn Dam area. Local entities provided matching funds to support these activities.

The regional planning effort is currently underway and encompasses an area from the Brookeland community on US Hwy 96, south to State Hwy 1007, then southward on State Hwy 1007 to RR 255. Entities benefitting from these planning efforts are Brookeland ISD, Brookeland Freshwater Supply District, the City of Browndell and Rayburn Country MUD. This public Meeting is the 4th and final public meeting to solicit public input regarding regional wastewater facilities for the area.

DEBBIE NEWMAN, COUNTY CLERK
JASPER COUNTY, TEXAS

FILED JUL 16 2008

BY Sheila Hamilton
DEPUTY

KTH
July 16, 2008

Post Office Box 387 / 210 Lufkin Avenue / Lufkin, Texas 75902 / 936-632-7795 / Fax 936-632-2564

Serving the 17 county area of the Angelina & Neches River basins in East Texas

ANRA

Angelina & Neches River Authority

Angelina & Neches River Authority
210 Lufkin Avenue
P.O. Box 387
Lufkin, Texas 75902
936-632-7795
www.anra.org

SIGN IN SHEET

Regional Wastewater Facility Planning Grant
Public Meeting
When: July 31, 2008
Where: Rayburn Hall

	Entity	Name	Title	Address
1.	TWDB	Kathleen Ligon		
2.	Rural WasteWater Systems	Bob HARBUCK	R.S.	196 Walking Horse Ln Diboll TX 75941
3.	BFWSD	Jerry Shands		PO Box 5350 Sam Rayburn 7595
4.	DDS [illegible]	[illegible]		1683 FM 324 [illegible]
5.	H&H Septic	Jeff Hudspeth		5791 [illegible] Hudspeth Rd Zavalla TX
6.	[illegible]			Rt 4 Box ~~497~~ Jasper TX 7595
7.	EEE Enterprises	Thomas Marsh		7474 FM 777 J TX 75951
8.				
9.				
10.				

ANRA

ANGELINA & NECHES RIVER AUTHORITY

NOTICE OF PUBLIC MEETING

The Angelina & Neches River Authority will host a public meeting at 11:00 A.M., Monday May 5, 2008, at Rayburn Hall, located in Rayburn Country at 427 Broadmoor, Brookeland, Texas, 75931. The meeting will be held to receive public comments regarding a Regional Wastewater Facilities Planning Study.

In October 2007, the Angelina & Neches River Authority received a matching funds grant from the Texas Water Development Board for the purpose of developing potential regional wastewater treatment solutions for the southeast Sam Rayburn Dam area. Local entities provided matching funds to support these activities.

The regional planning effort is currently underway and encompasses an area from the Brookeland community on US Hwy 96, south to State Hwy 1007, then southward on State Hwy 1007 to RR 255. Entities benefitting from these planning efforts are Brookeland ISD, Brookeland Freshwater Supply District, the City of Browndell and Rayburn Country MUD.

FILED FOR RECORD

2008 APR 25 P 1:30

DEBBIE NEWMAN
CLERK, COUNTY COURT
JASPER COUNTY, TEXAS

BY: Diane Smith
DEPUTY

KTH
April 21, 2008

Post Office Box 387 / 210 Lufkin Avenue / Lufkin, Texas 75902 / 936-632-7795 / Fax 936-632-2564

Serving the 17 county area of the Angelina & Neches River basins in East Texas

Angelina & Neches River Authority
210 Lufkin Avenue
P.O. Box 387
Lufkin, Texas 75902
936-632-7795
www.anra.org

SIGN IN SHEET

Southeast Sam Rayburn Regional Wastewater Facility Planning Study
Public Meeting
When: May 5, 2008
Where: Rayburn Hall

	Entity	Name	Title	Address
1.	Jasper County	Tom McClung	Consultant	260 Angelina Dr. Brookeland
2.	Sky Ranch Property/Sam Jones		R.E.	P.O. Drawer 5308 Sam Rayburn TX 7595
3.	~~ARE~~ Bosco Industries	Carl Dantzler		802 Capomo, Bridge City TX
4.	Bosco IND.	Bosco Lemoine		411 OLD Hwy 96 Brookeland TX
5.	Bosco Ind.	Trey Pumphrey		PO Box 235 Brookeland TX 75631
6.	Charles Shofner Jr.	Jasper Co.		Rt 7 Box 300 Jasper Tx 7595,
7.	Gary Collins	Jasper CDD #1		32 Brookwood Brookeland TX 7593,
8.				
9.				
10.				