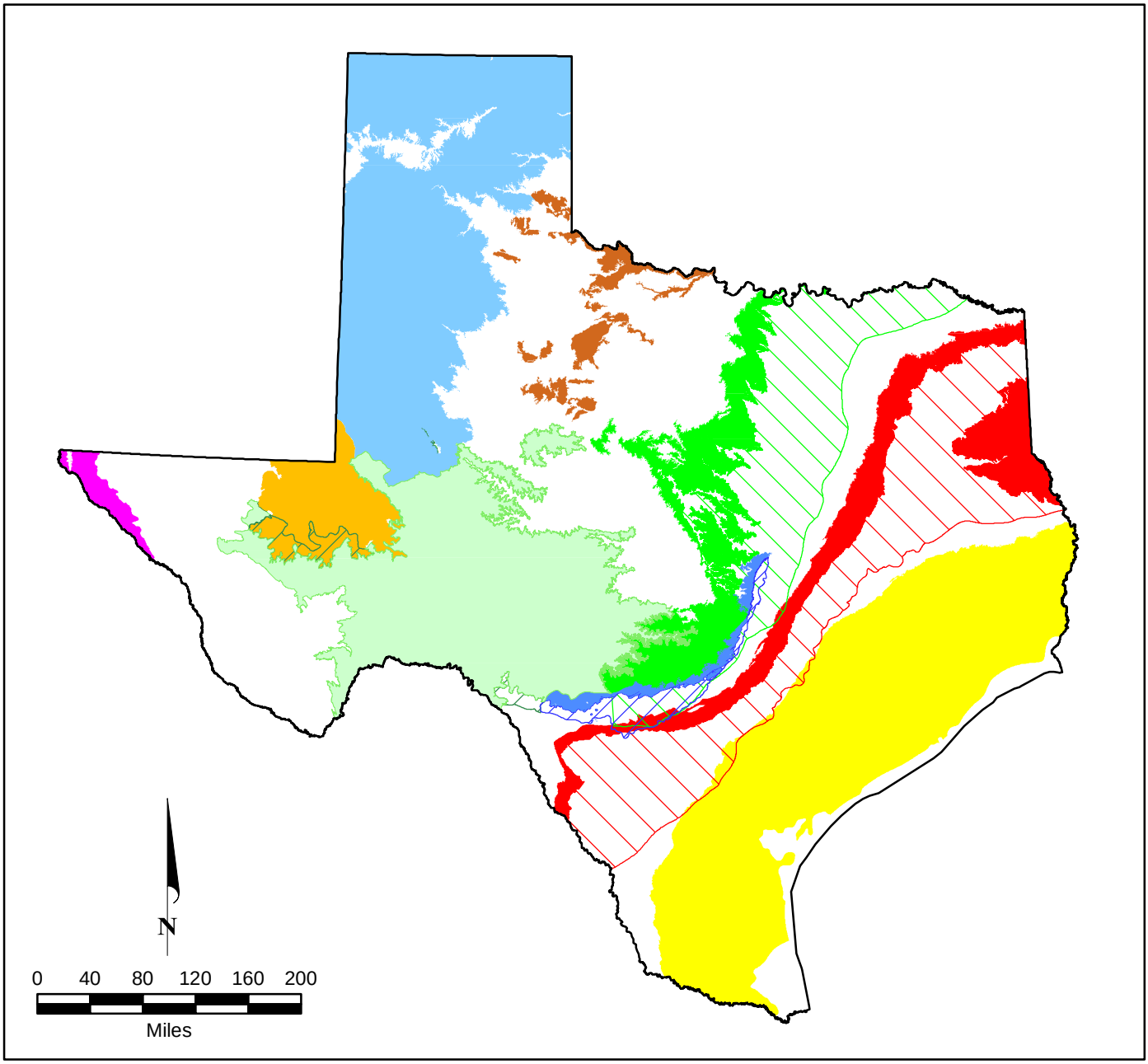

EXPLANATION

- Pecos Valley
- Seymour
- Gulf Coast
- Carrizo - Wilcox (outcrop)
- Carrizo - Wilcox (subcrop)
- Hueco - Mesilla Bolson
- Ogallala
- Edwards - Trinity Plateau (outcrop)
- Edwards - Trinity Plateau (subcrop)
- Edwards BFZ (outcrop)
- Edwards BFZ (subcrop)
- Trinity (outcrop)
- Trinity (subcrop)

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FIGURE 1.0.1. MAJOR AQUIFERS IN TEXAS

1436\REPORT_MAPS\MajorAquifers_State.mxd\18May2016

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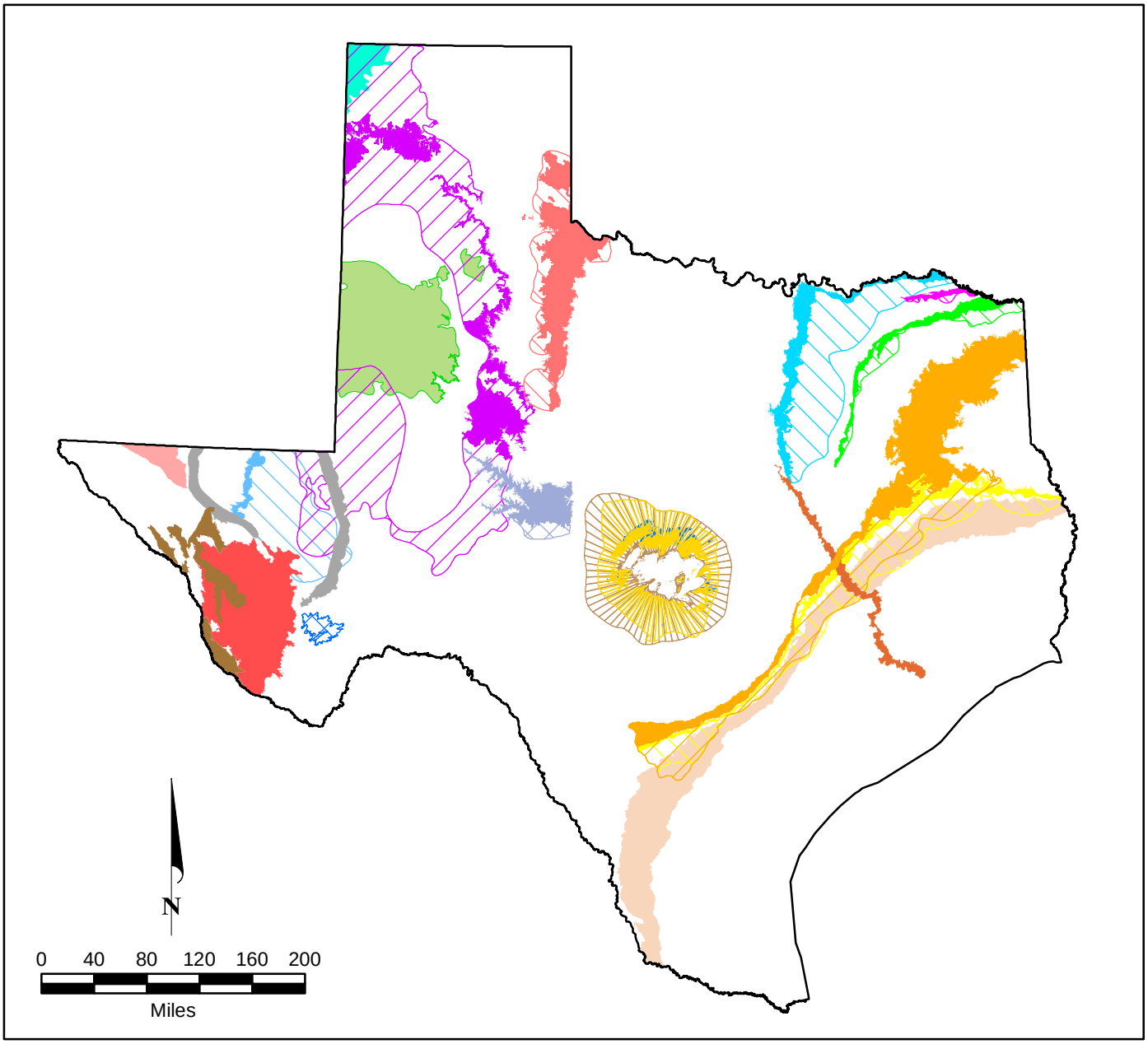

EXPLANATION

- Brazos River Alluvium
- West Texas Bolsons
- Lipan (outcrop)
- Lipan (subcrop)
- Yegua Jackson
- Igneous
- Sparta (outcrop)
- Sparta (subcrop)
- Queen City (outcrop)
- Queen City (subcrop)
- Nacatoch (outcrop)
- Nacatoch (subcrop)
- Blossom (outcrop)
- Blossom (subcrop)
- Woodbine (outcrop)
- Woodbine (subcrop)
- Rita Blanca
- Edwards -Trinity (High Plains)
- Dockum (outcrop)
- Dockum (subcrop)
- Rustler (outcrop)
- Rustler (subcrop)
- Capitan Reef Complex
- Blaine (outcrop)
- Blaine (subcrop)
- Bone Spring - Victorio Peak
- Marble Falls
- Marathon
- Ellenburger - San Saba (outcrop)
- Ellenburger - San Saba (subcrop)
- Hickory (outcrop)
- Hickory (subcrop)

FIGURE 1.0.2. MINOR AQUIFERS IN TEXAS

1436\REPORT_MAPS\MinorAquifers_State.mxd\18May2016

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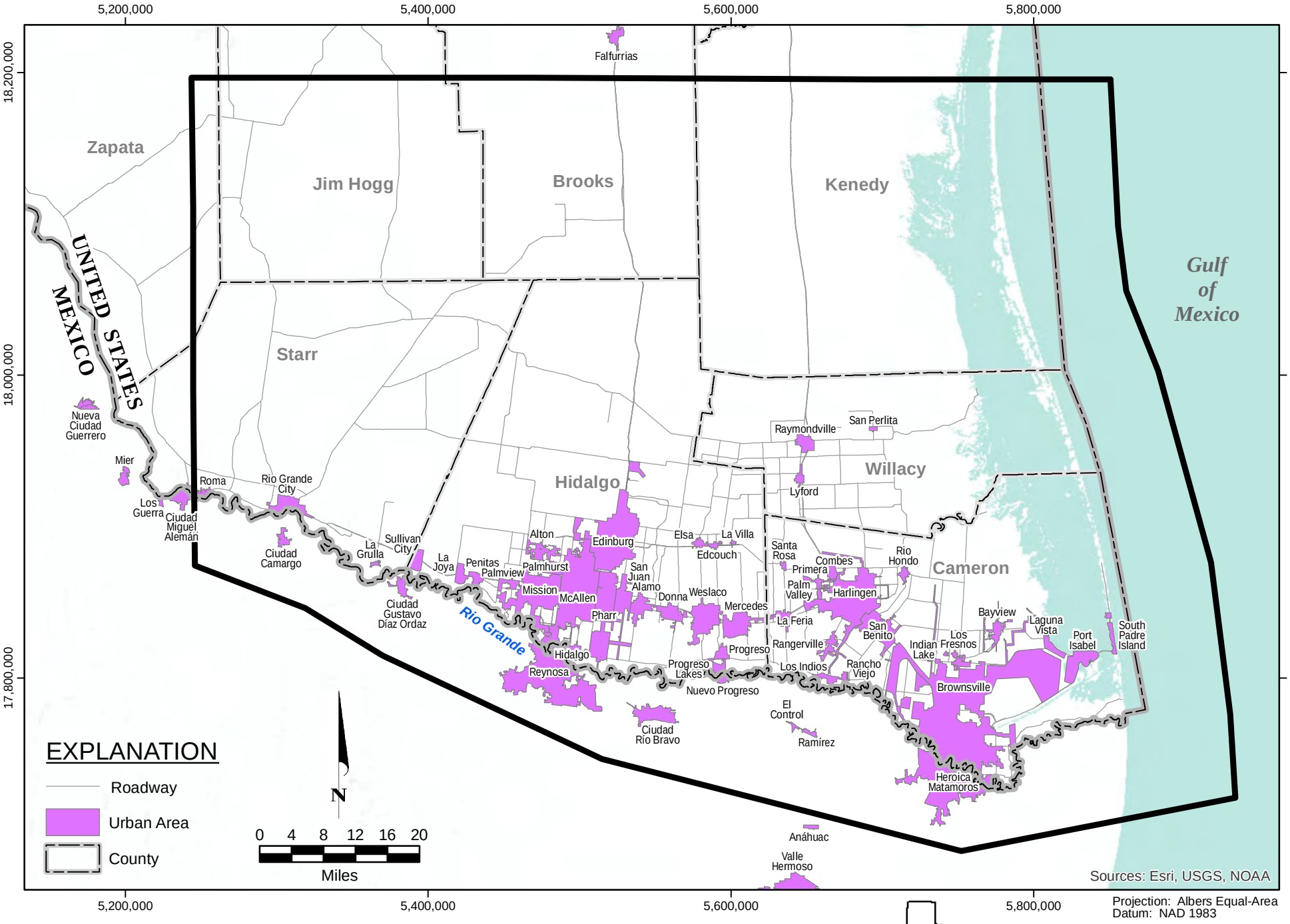

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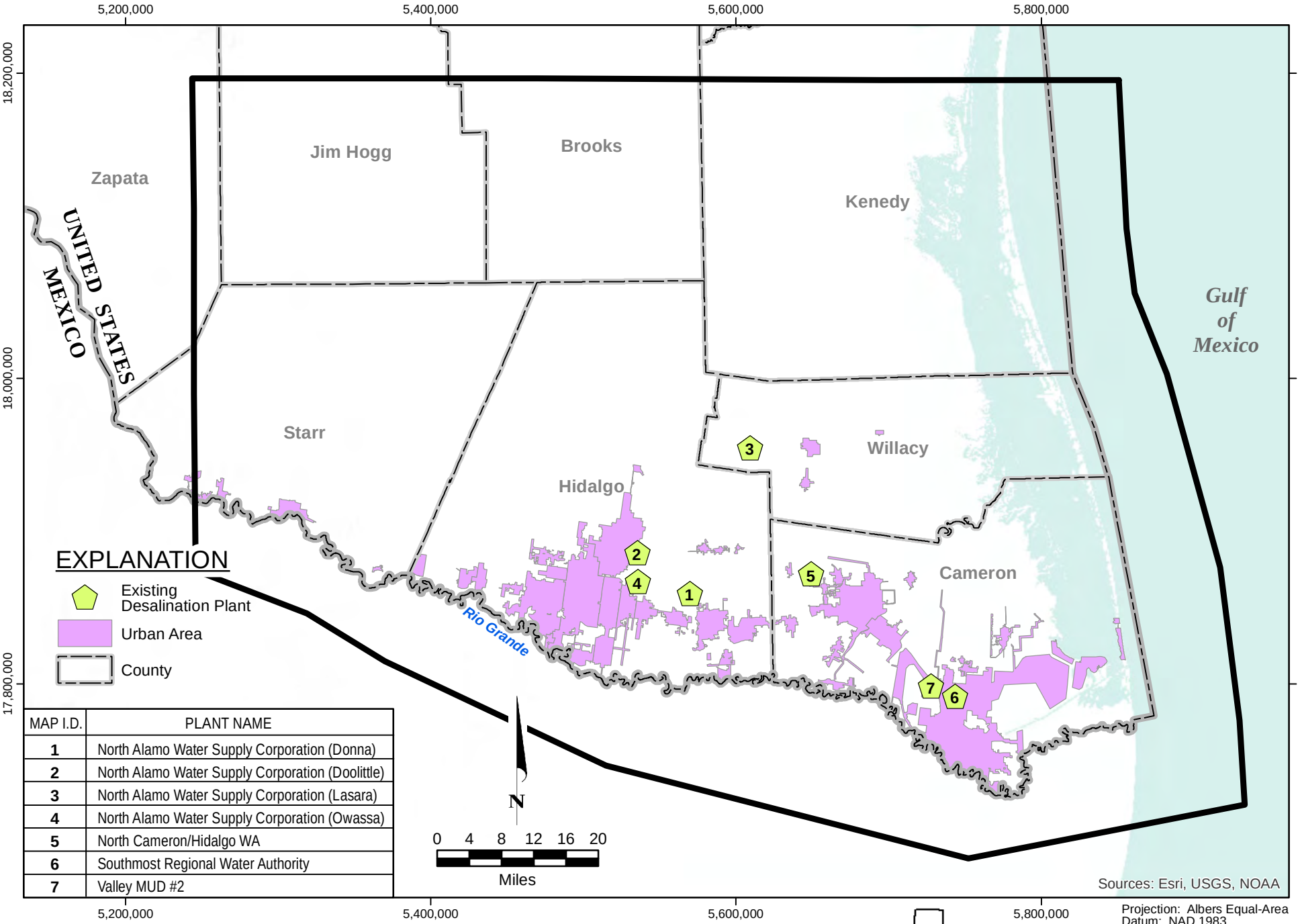
FIGURE 1.0.3. LOWER RIO GRANDE VALLEY STUDY AREA

1436\REPORT_MAPS\StudyAreaMap.mxd\18May2016



MAP I.D.	PLANT NAME
1	North Alamo Water Supply Corporation (Donna)
2	North Alamo Water Supply Corporation (Doolittle)
3	North Alamo Water Supply Corporation (Lasara)
4	North Alamo Water Supply Corporation (Owassa)
5	North Cameron/Hidalgo WA
6	Southmost Regional Water Authority
7	Valley MUD #2

Projection: Albers Equal-Area
Datum: NAD 1983

Source: Meyer and others (2014)

FIGURE 1.0.4. EXISTING BRACKISH GROUNDWATER DESALINATION PLANTS IN LOWER RIO GRANDE VALLEY

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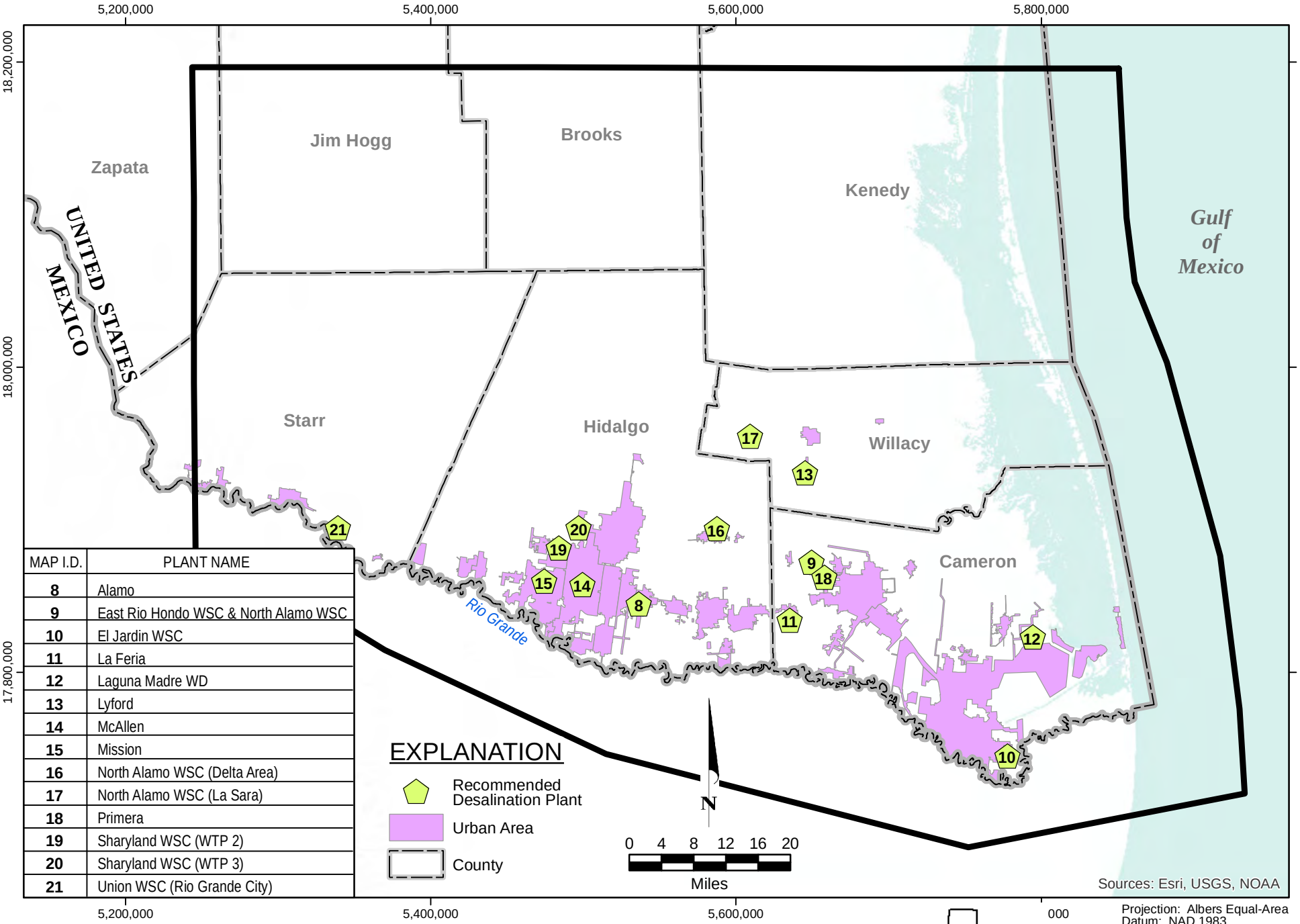
1436\REPORT_MAPS\BGD_Plants_Existing.mxd\24May2016



MAP I.D.	PLANT NAME
8	Alamo
9	East Rio Hondo WSC & North Alamo WSC
10	El Jardin WSC
11	La Feria
12	Laguna Madre WD
13	Lyford
14	McAllen
15	Mission
16	North Alamo WSC (Delta Area)
17	North Alamo WSC (La Sara)
18	Primera
19	Sharyland WSC (WTP 2)
20	Sharyland WSC (WTP 3)
21	Union WSC (Rio Grande City)

Source: Region M 2016 Regional Water Plan

FIGURE 1.0.5. RECOMMENDED BRACKISH GROUNDWATER DESALINATION PLANTS IN LOWER RIO GRANDE VALLEY

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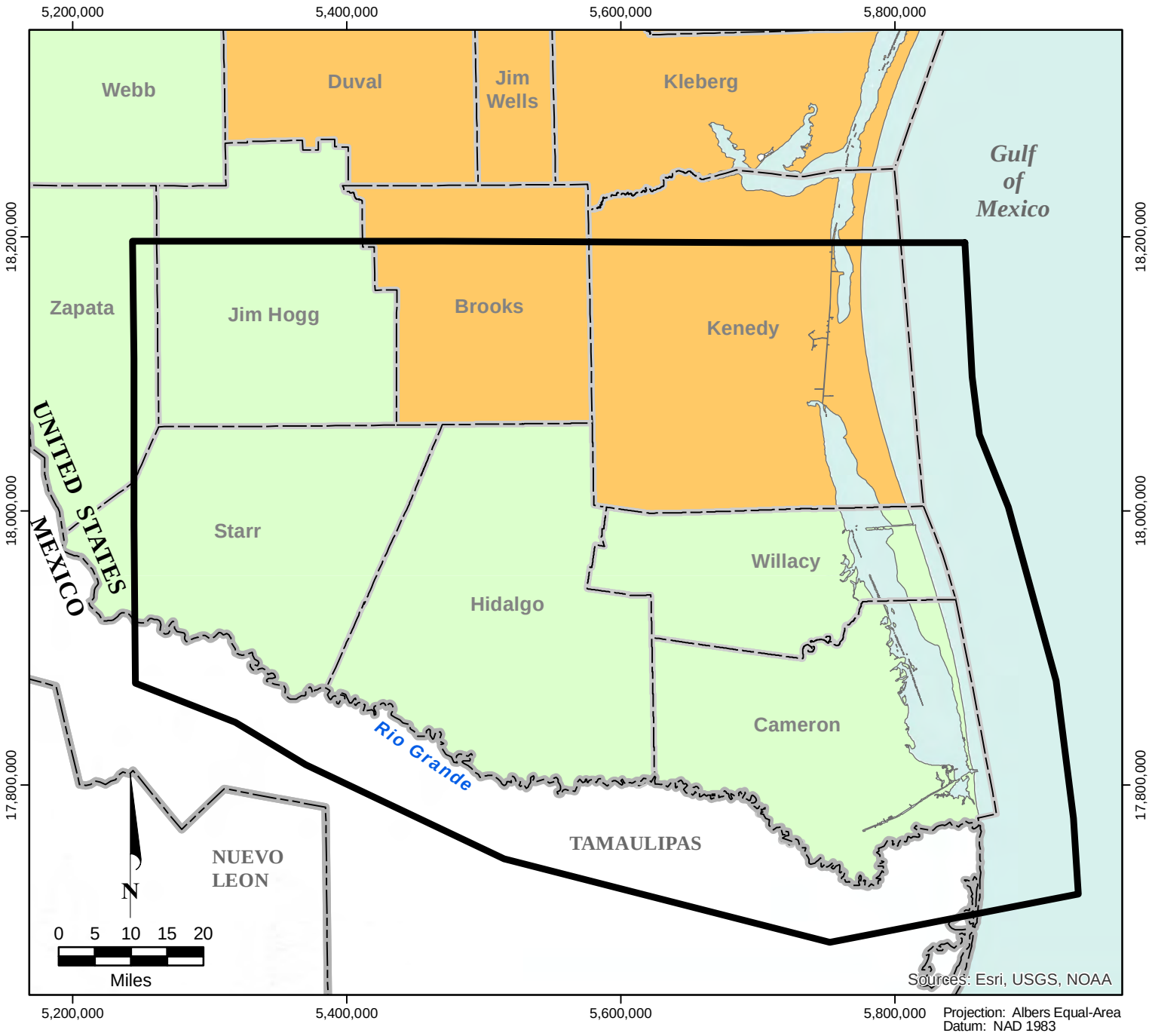
1436\REPORT_MAPS\BGD_Plants_Recommended.mxd\24May2016



EXPLANATION

Study Area

County

Regional Water Planning Area

Source: TWDB (2016)

Region M

Region N

Index Map

FIGURE 2.0.1. REGIONAL WATER PLANNING AREA BOUNDARIES IN LOWER RIO GRANDE VALLEY

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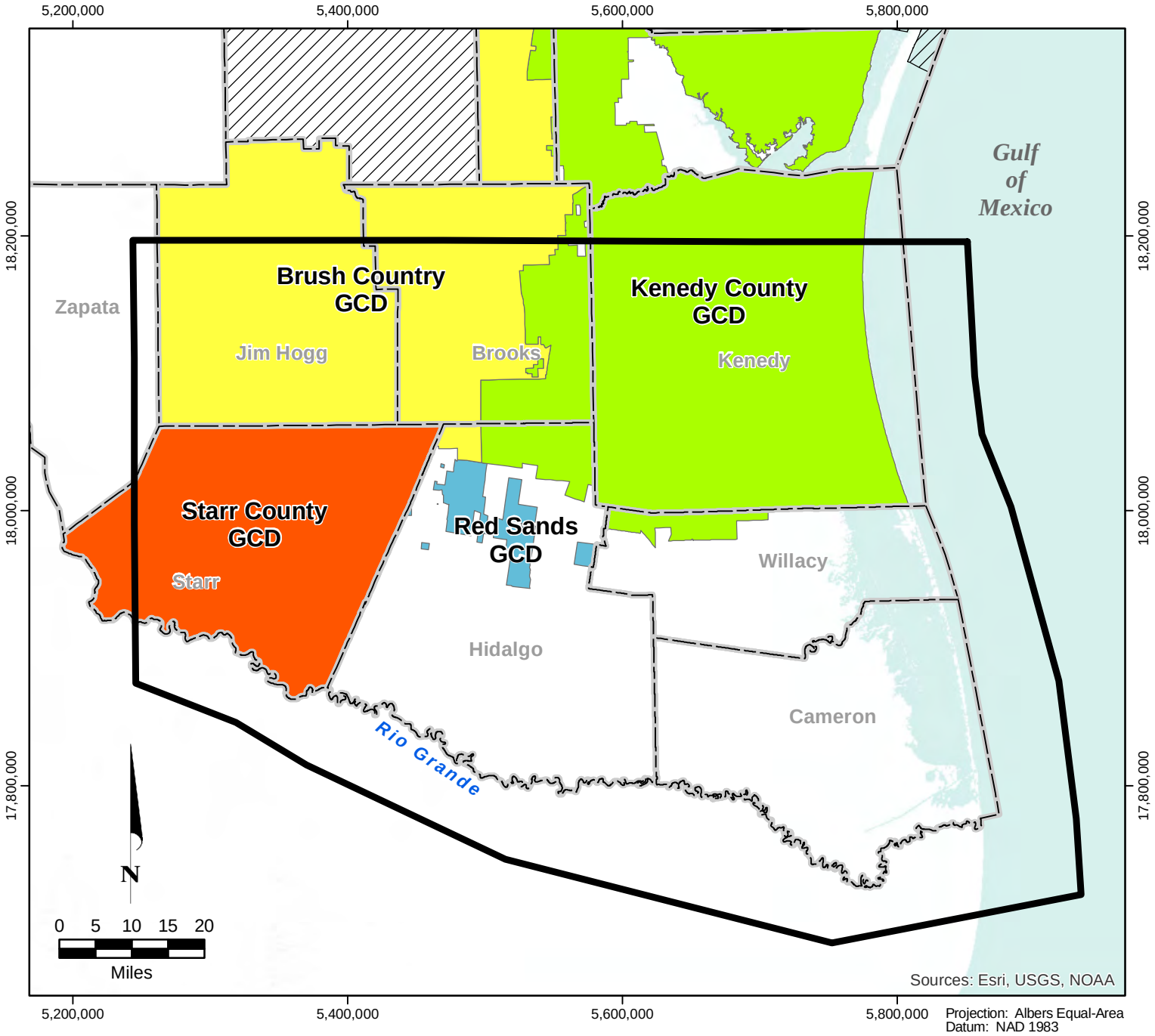
1436\REPORT_MAPS\RWPAs.mxd\18May2016



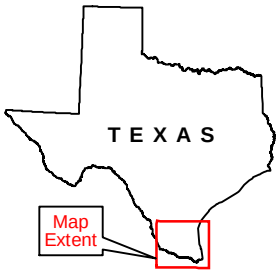
EXPLANATION

- Study Area
- County

Groundwater Conservation District

Source: TWDB, dated August 2014

- Brush Country GCD
- Kenedy County GCD
- Red Sands GCD
- Starr County GCD
- District Outside Study Area



Index Map

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FIGURE 2.0.2. GROUNDWATER CONSERVATION DISTRICT BOUNDARIES IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\AdminAreas.mxd\18May2016

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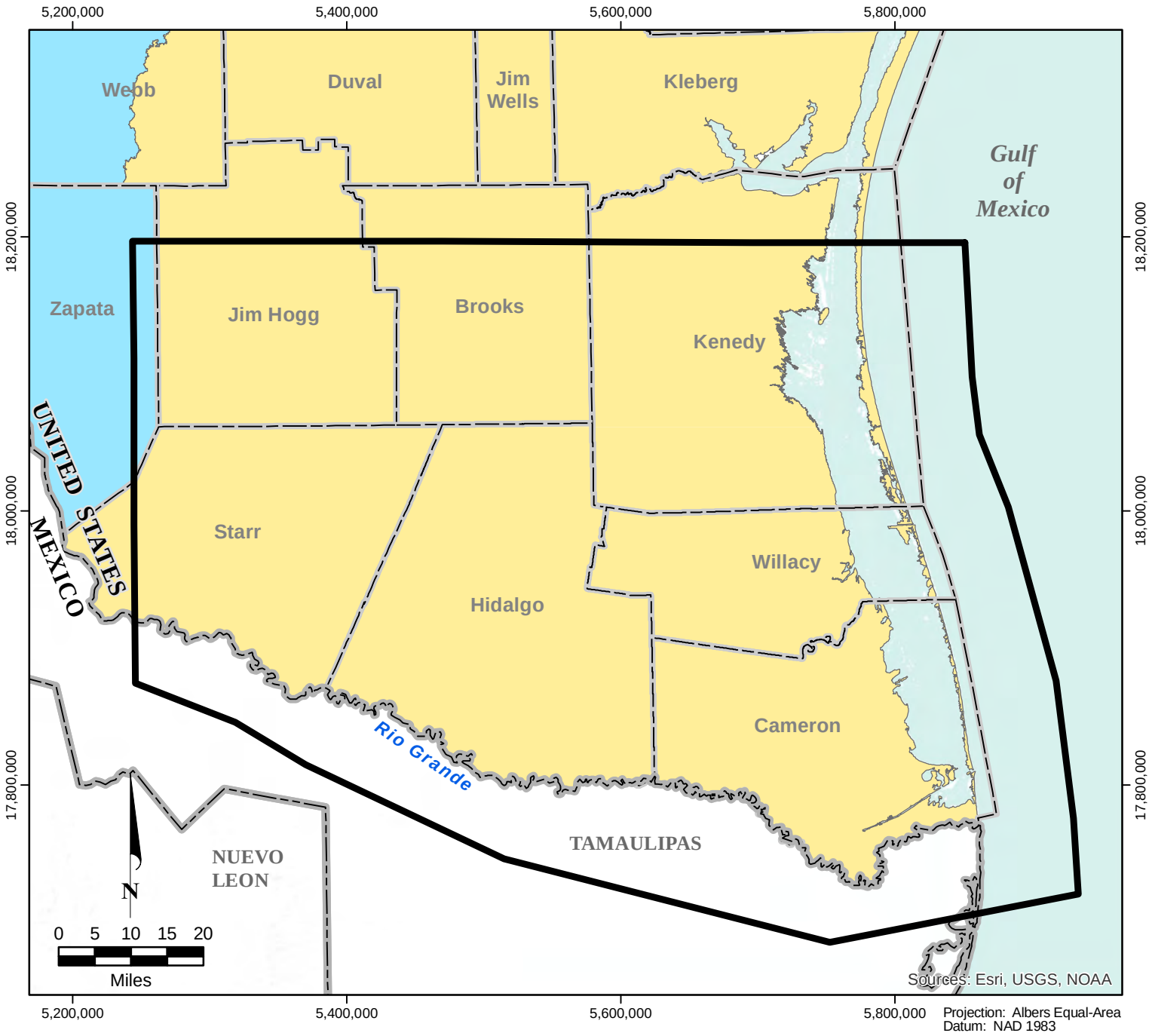

EXPLANATION

Study Area

County

Groundwater Manangement Area (GMA)

Source: TWDB (2016)

GMA 13

GMA 16

Index Map

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FIGURE 2.0.3. GROUNDWATER MANAGEMENT AREA BOUNDARIES IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\GMAs.mxd\10May2016

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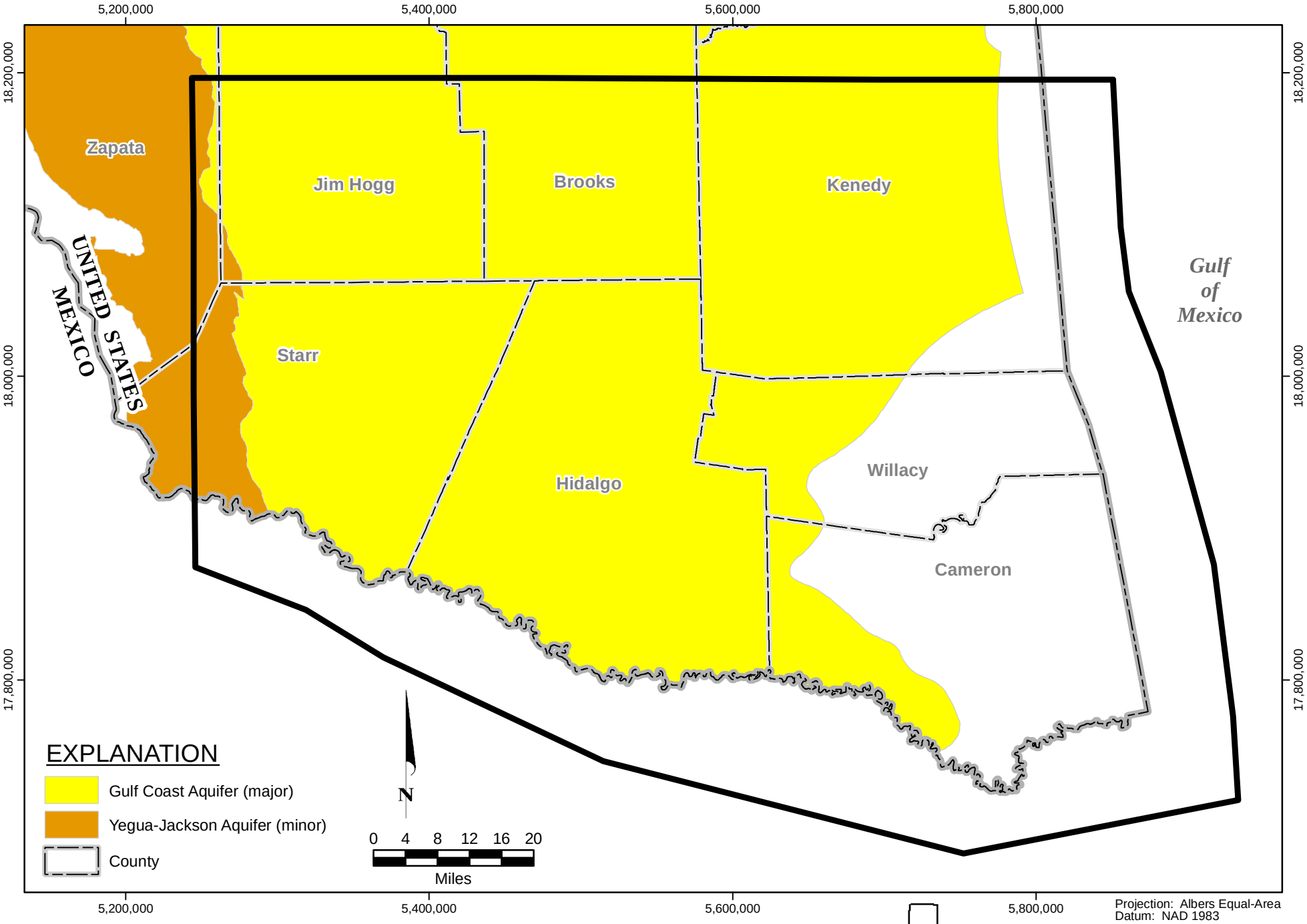

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FIGURE 2.0.4. MAJOR AND MINOR AQUIFERS IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\Aquifers_LRGV.mxd\18May2016

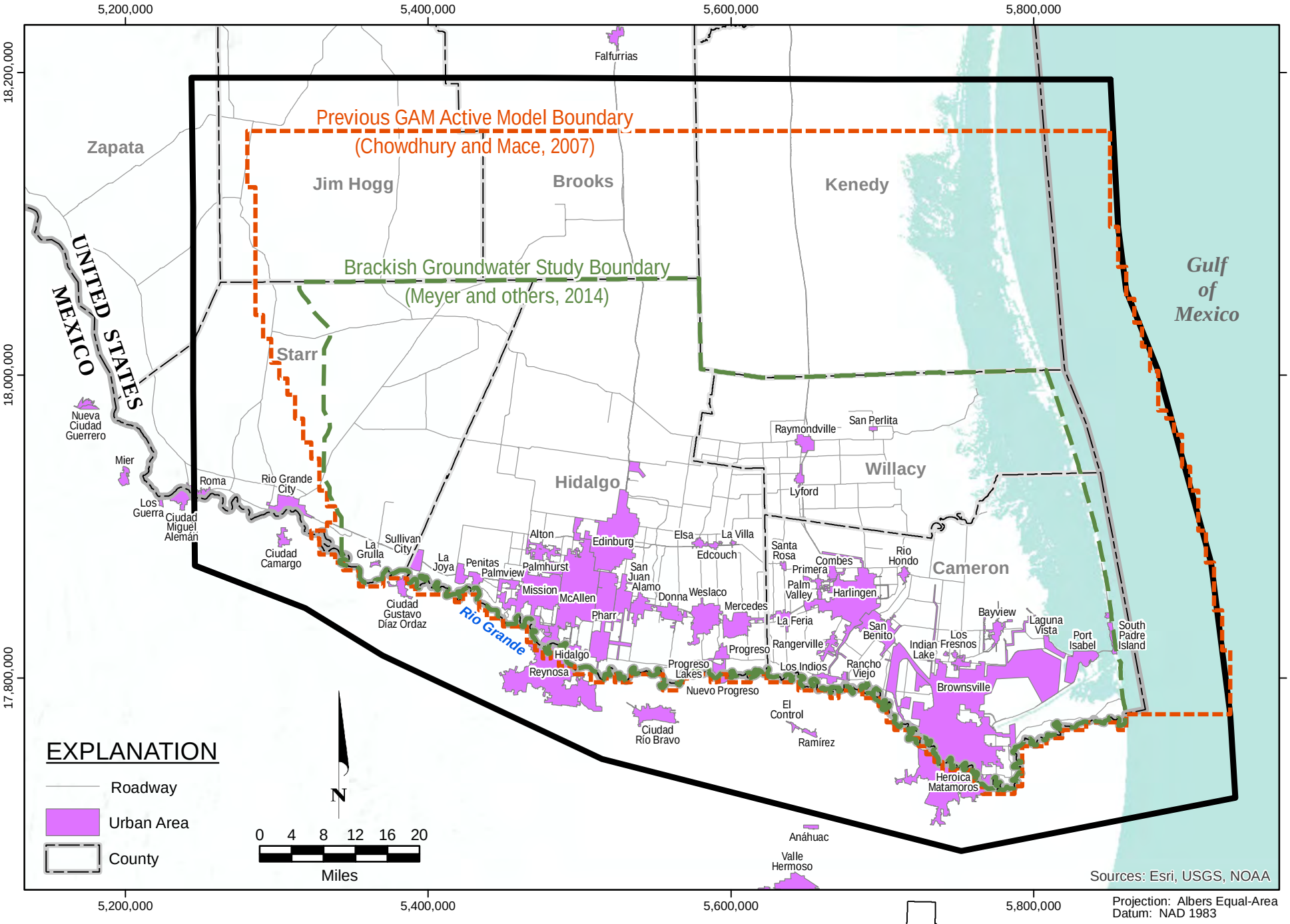

FIGURE 2.0.5. PREVIOUS STUDY BOUNDARIES IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\PreviousStudyAreaMap.mxd\27May2016

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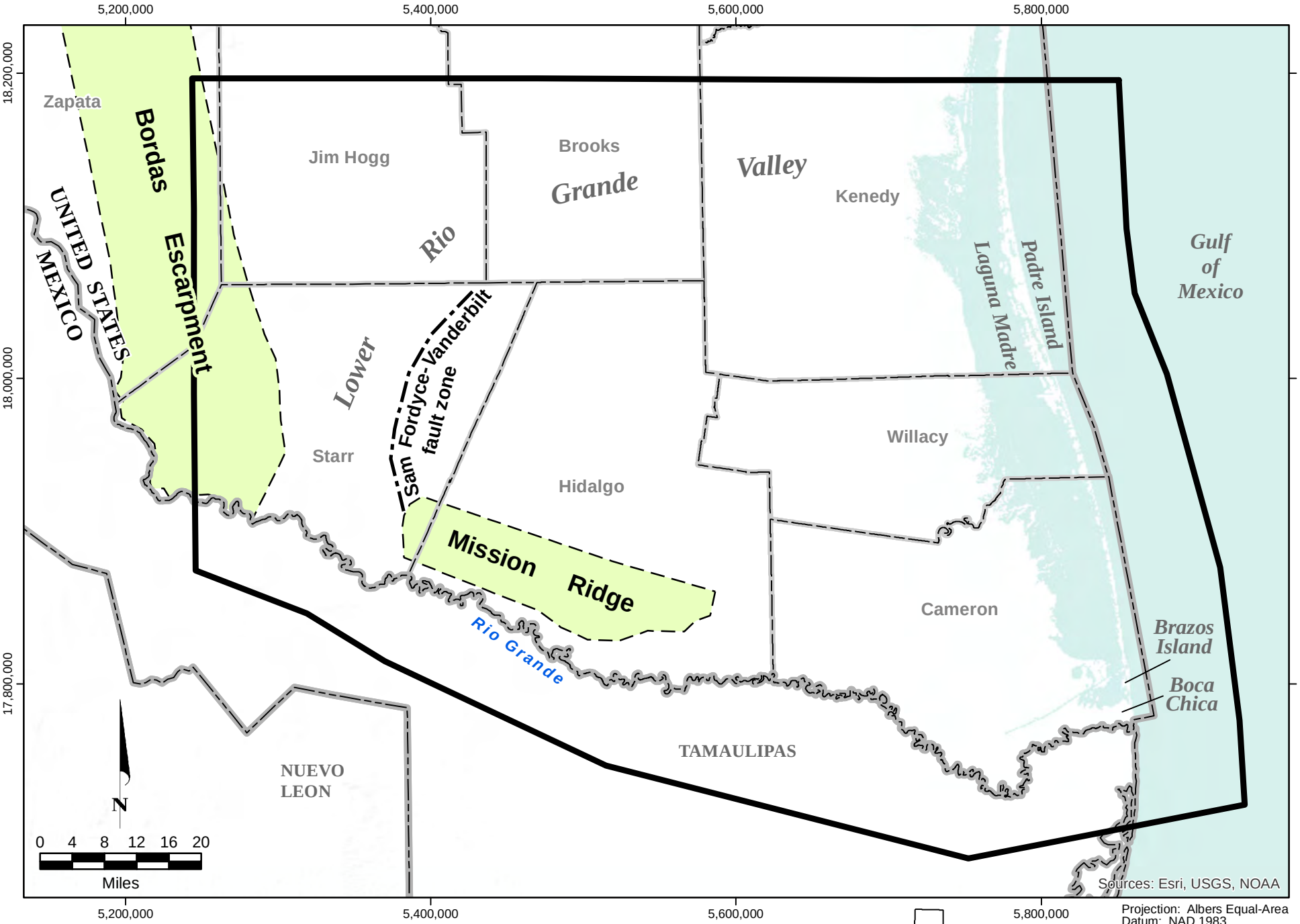

Source: Modified after Chowdhury and Mace (2007), Baker and Dale (1964), and McCoy (1990)

FIGURE 2.1.1. MAJOR PHYSIOGRAPHIC FEATURES IN THE STUDY AREA

1436\REPORT_MAPS\PhysiographicFeatures.mxd\27May2016

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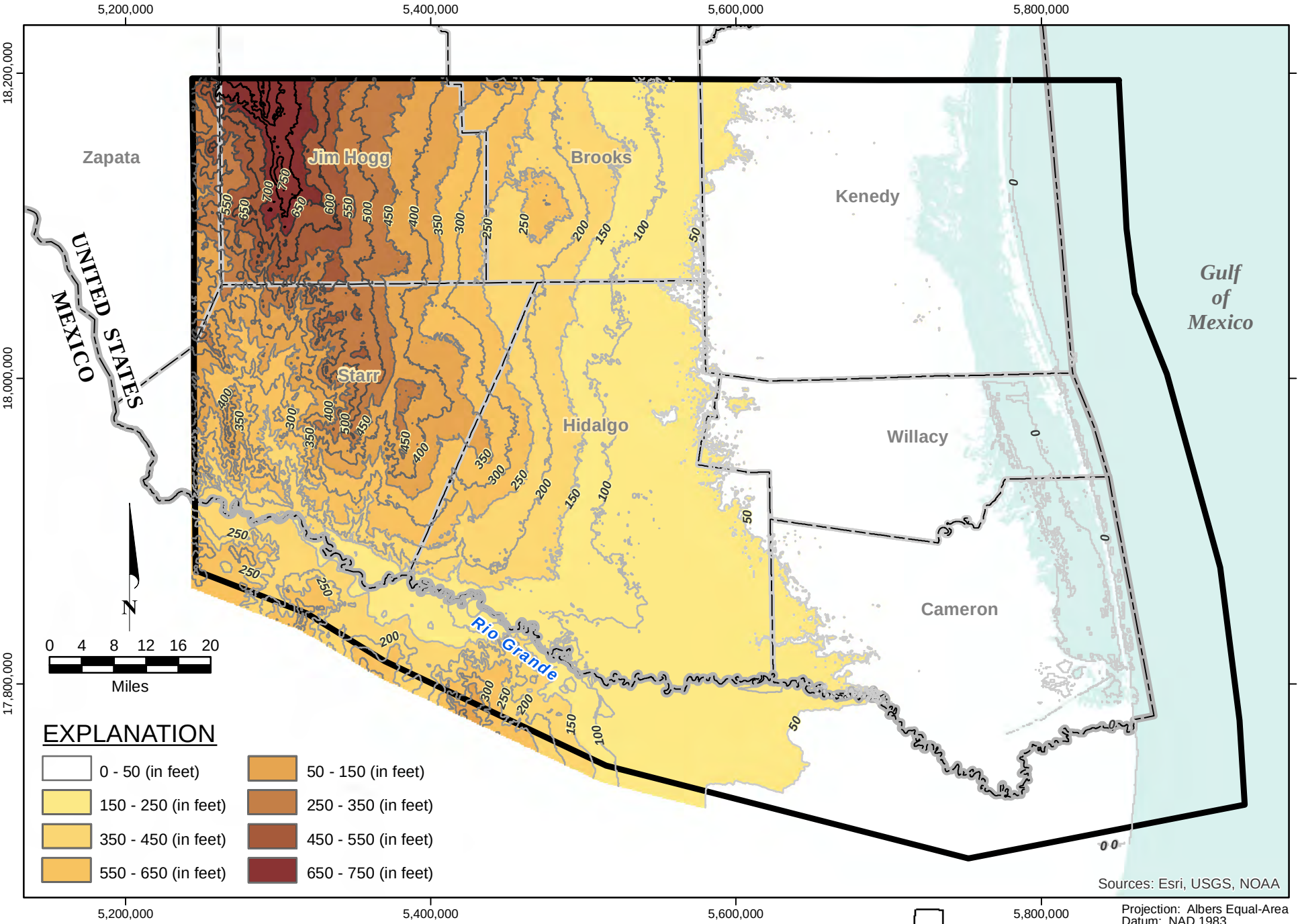

Projection: Albers Equal-Area
Datum: NAD 1983

Source: USGS National Elevation Dataset, 1 arc-second resolution (30 meters)

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FIGURE 2.1.2. LAND SURFACE ELEVATION IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\LandSurface_Elevation.mxd\24May2016

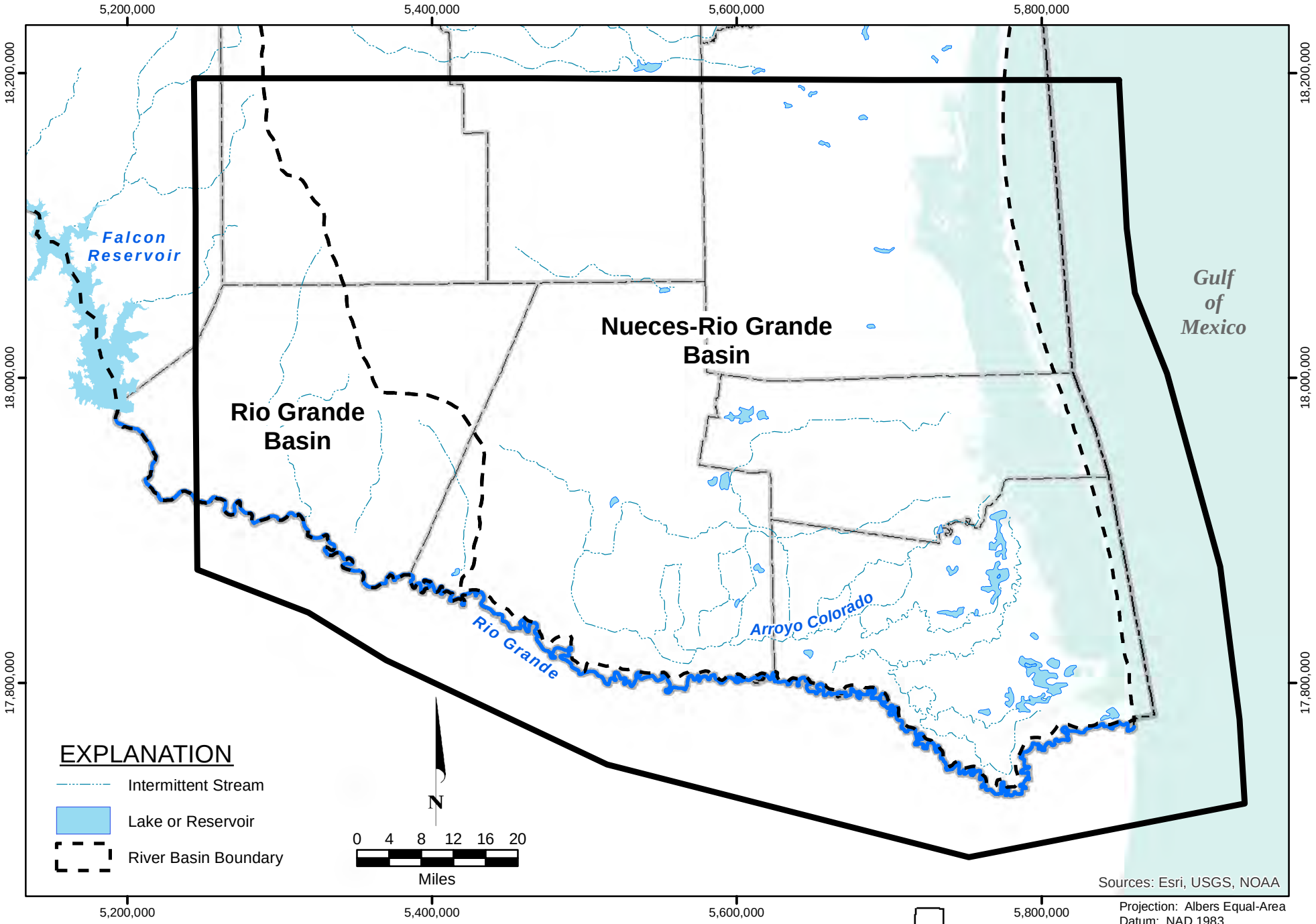

FIGURE 2.1.3. SURFACE WATER FEATURES AND RIVER BASINS IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\SWFeatures.mxd\24May2016

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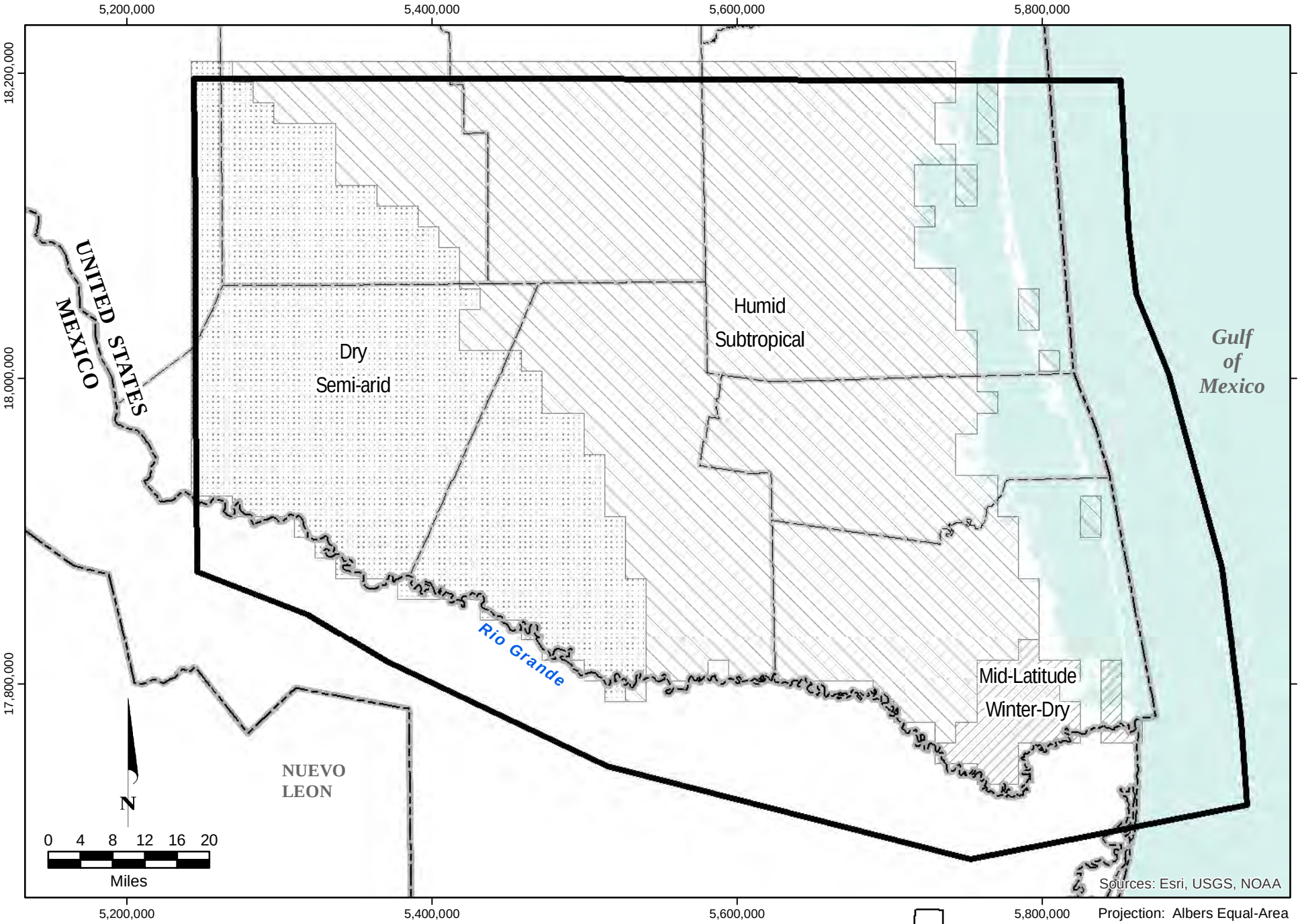

Projection: Albers Equal-Area
Datum: NAD 1983

Source: Koppen Climate Classification System, Idaho Geospatial Data Clearinghouse

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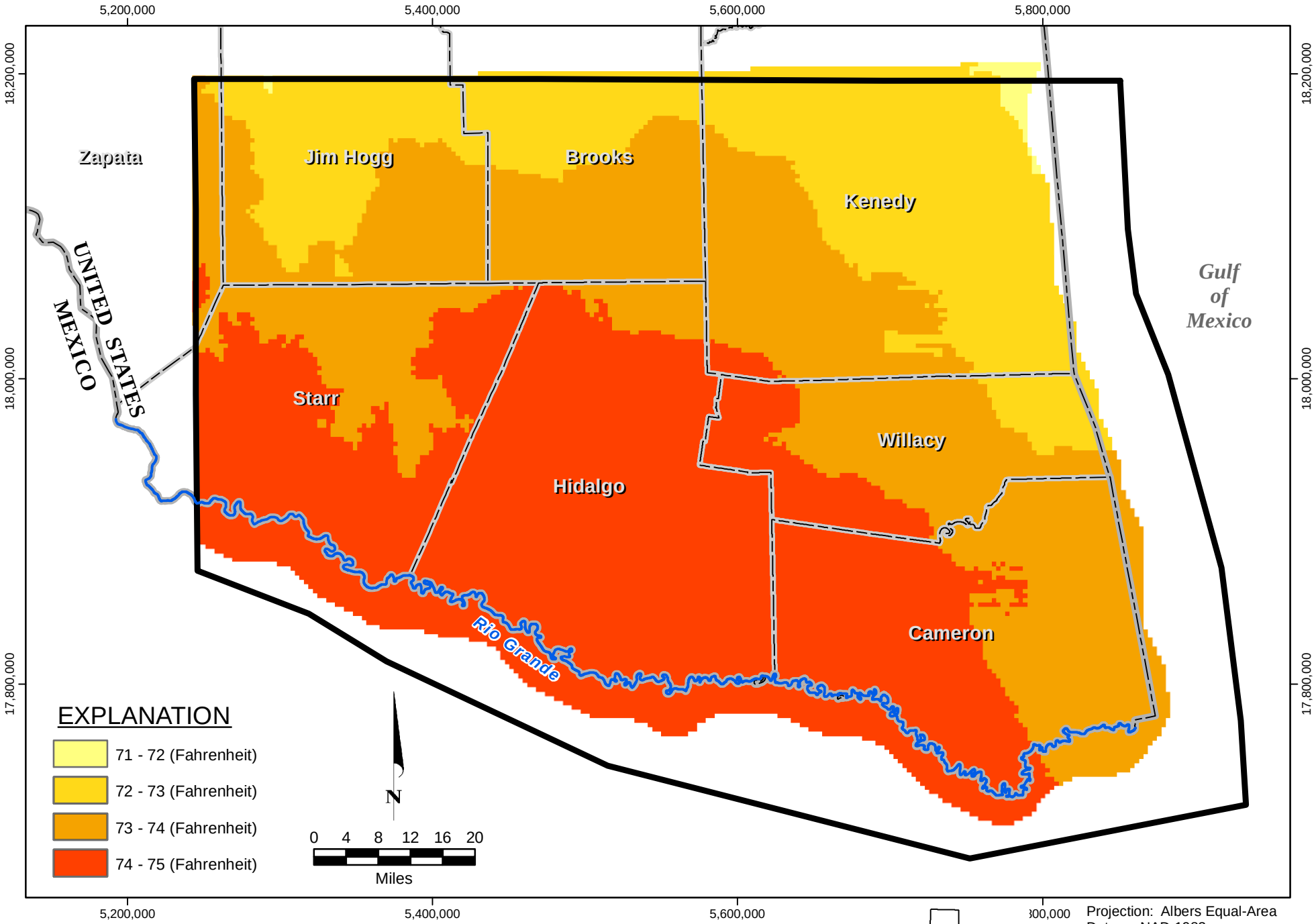
FIGURE 2.1.4. CLIMATE CLASSIFICATIONS FOR LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\Clim_Div.mxd\24May2016



Projection: Albers Equal-Area
Datum: NAD 1983

Source: PRISM Climate Group

FIGURE 2.1.5. AVERAGE ANNUAL TEMPERATURE IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\30_yr_avg_T_F.mxd\27May2016

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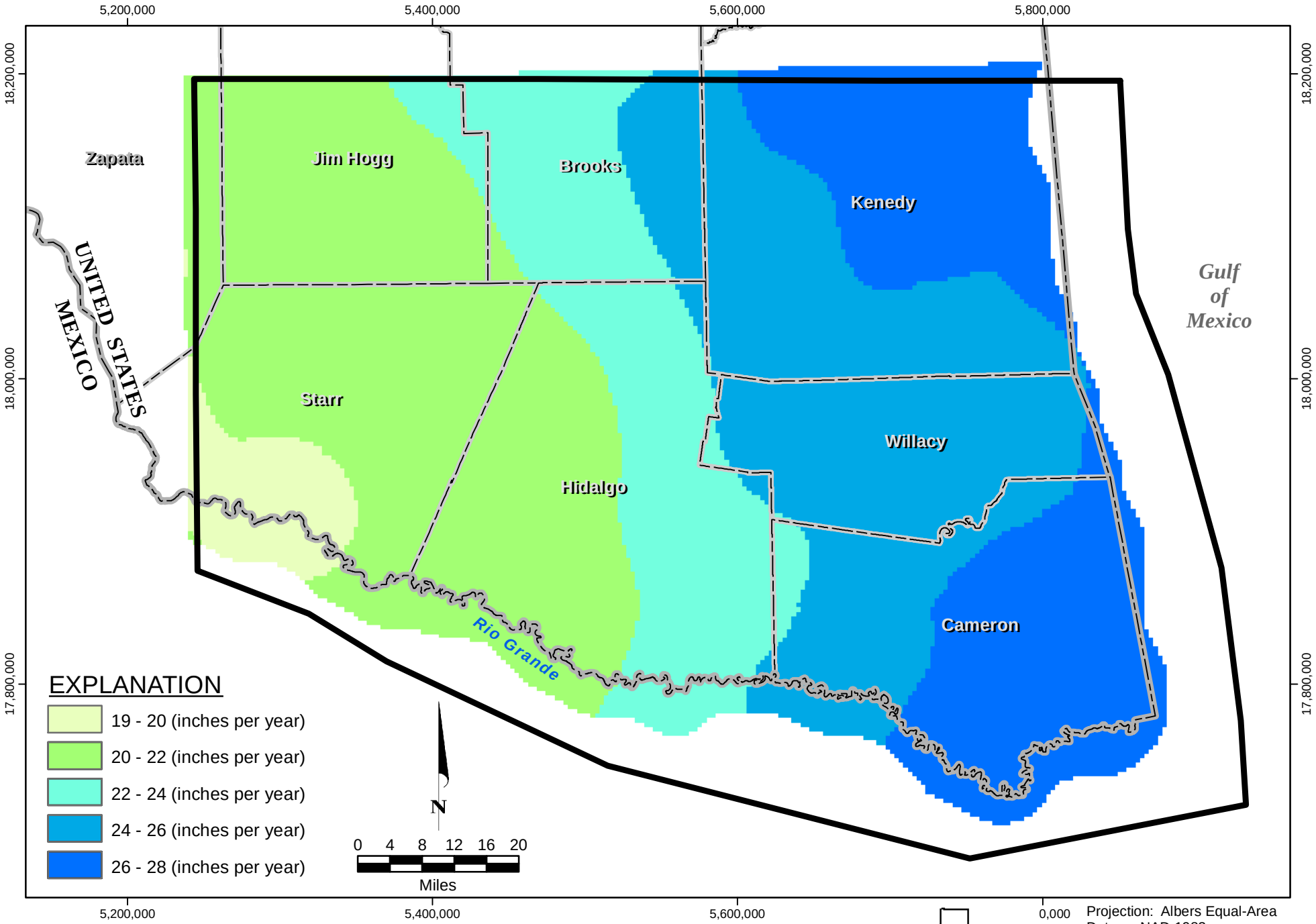

Projection: Albers Equal-Area
Datum: NAD 1983

Source: PRISM Climate Group

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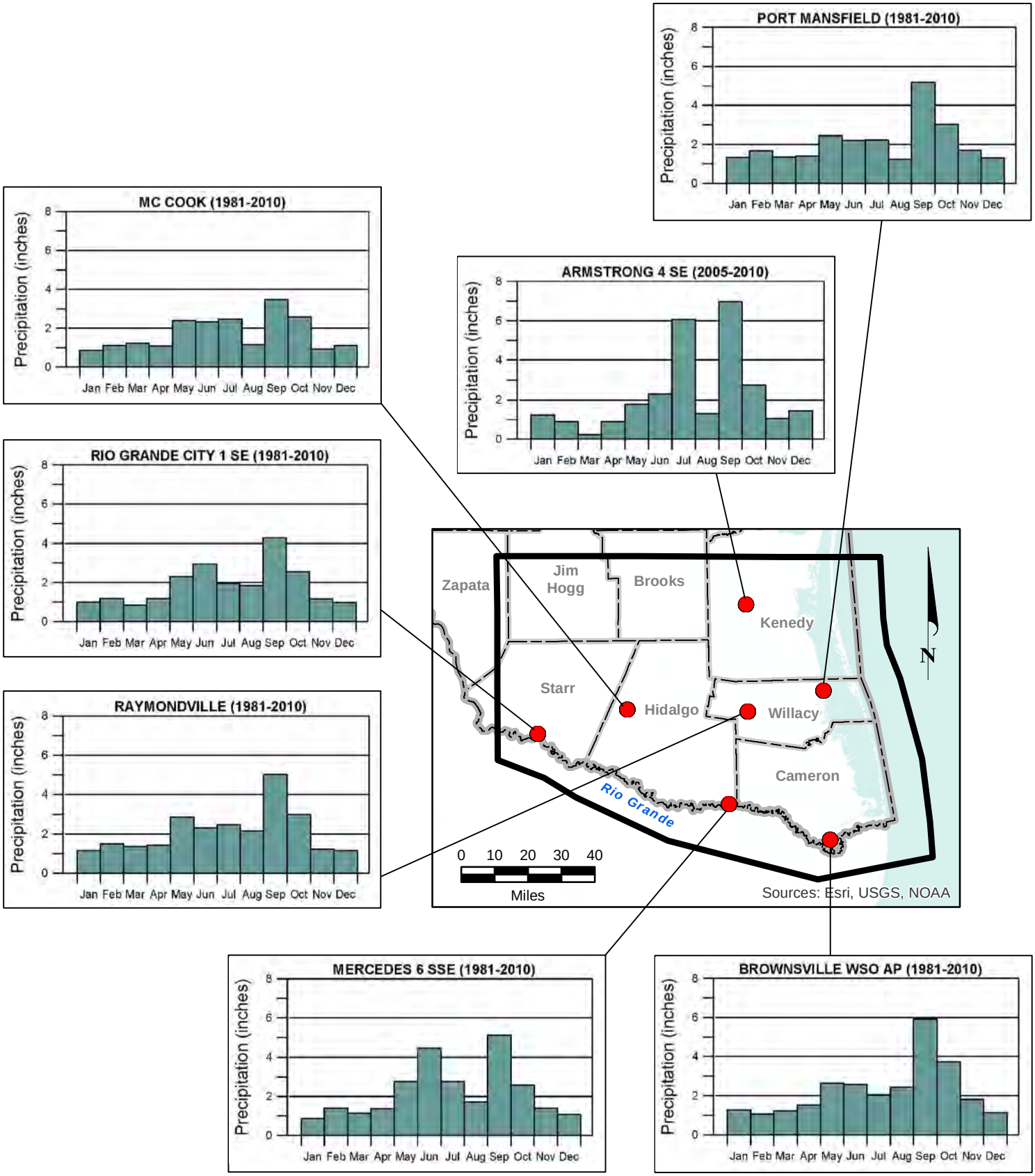
FIGURE 2.1.6. AVERAGE ANNUAL PRECIPITATION IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\30_yr_avg_P.mxd\25May2016



Source: NOAA National Climate Data Center

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FIGURE 2.1.7. AVERAGE MONTHLY PRECIPITATION AT SELECTED RAIN GAGES IN LOWER RIO GRANDE VALLEY

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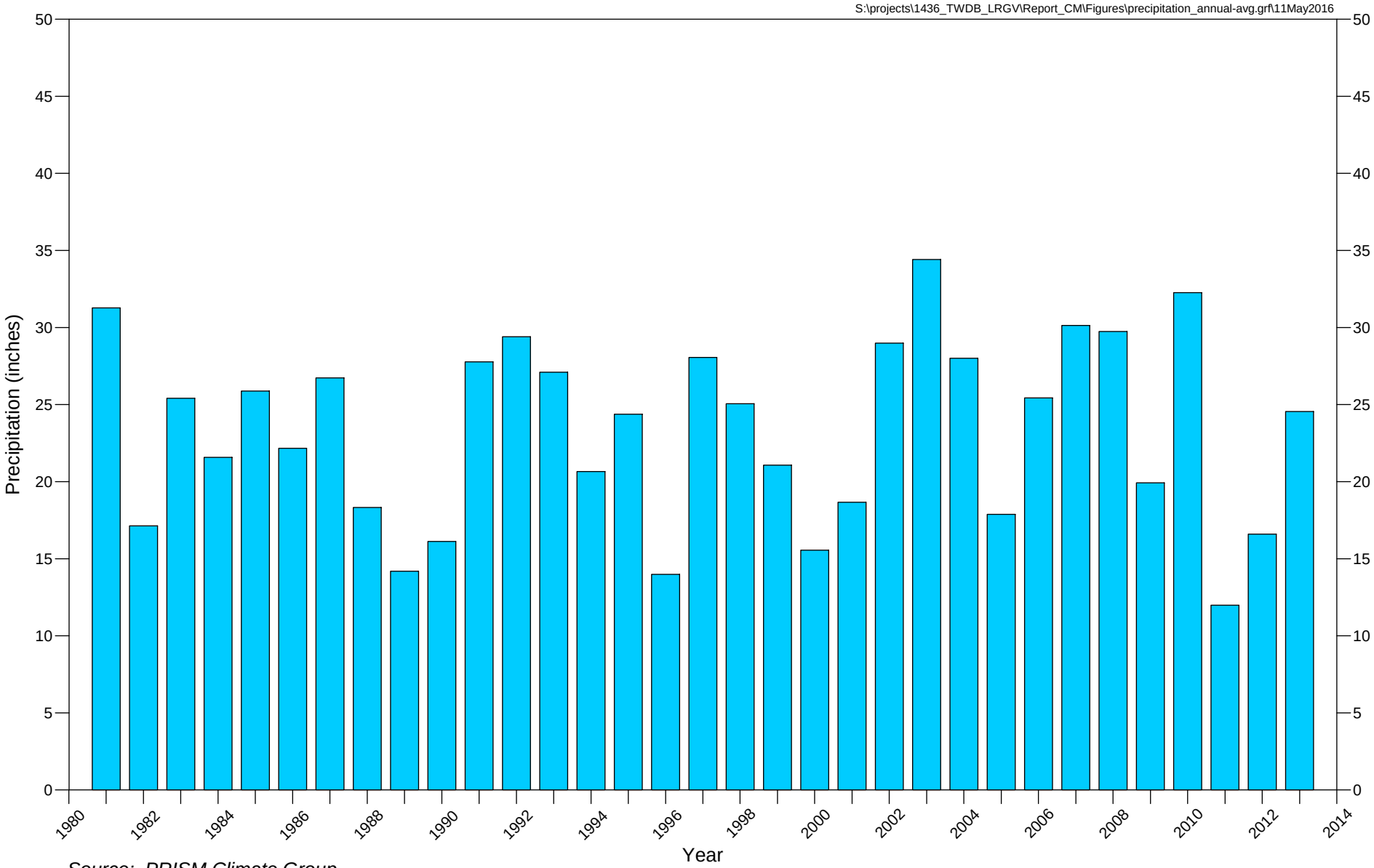
1436\REPORT_MAPS\30_yr_avg_P_Monthly_gage2\10May2016



Source: PRISM Climate Group

FIGURE 2.1.8. ANNUAL PRECIPITATION IN LOWER RIO GRANDE VALLEY

DRAFT

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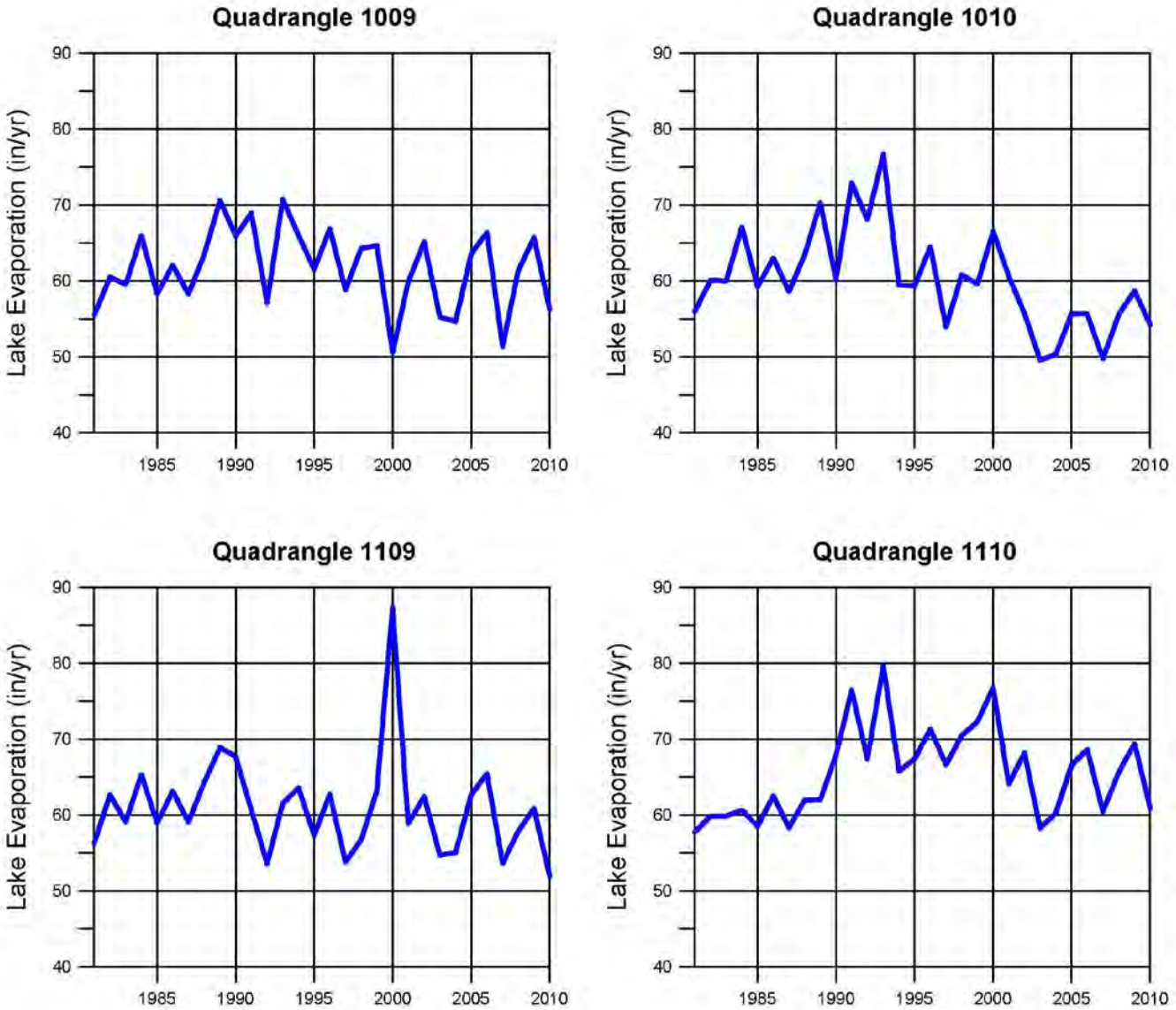

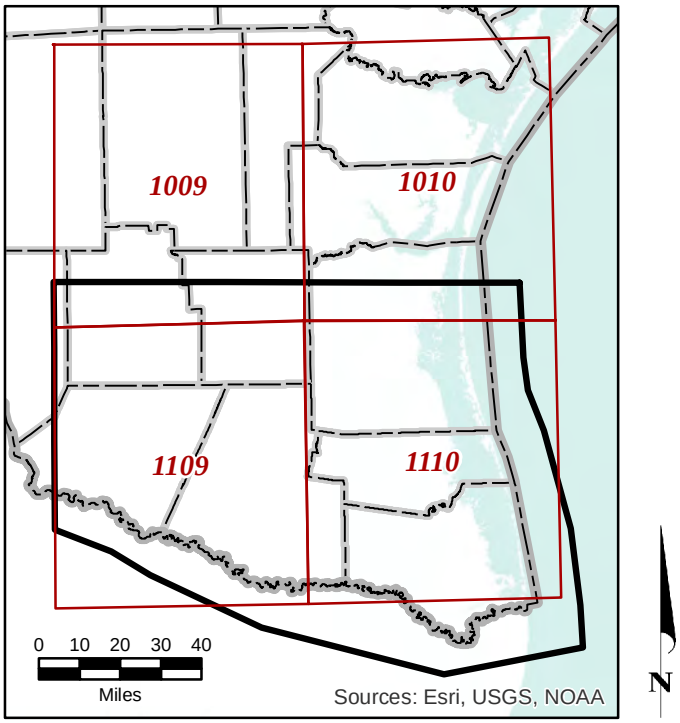

EXPLANATION

1009 TWDB Climate Data Quadrangle

Study Area

County

Source: TWDB (2016b), dated August 2014

FIGURE 2.1.9. AVERAGE ANNUAL NET LAKE EVAPORATION IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\Quad1009-10_1109-10_30yrLAKE\27May2016

DRAFT

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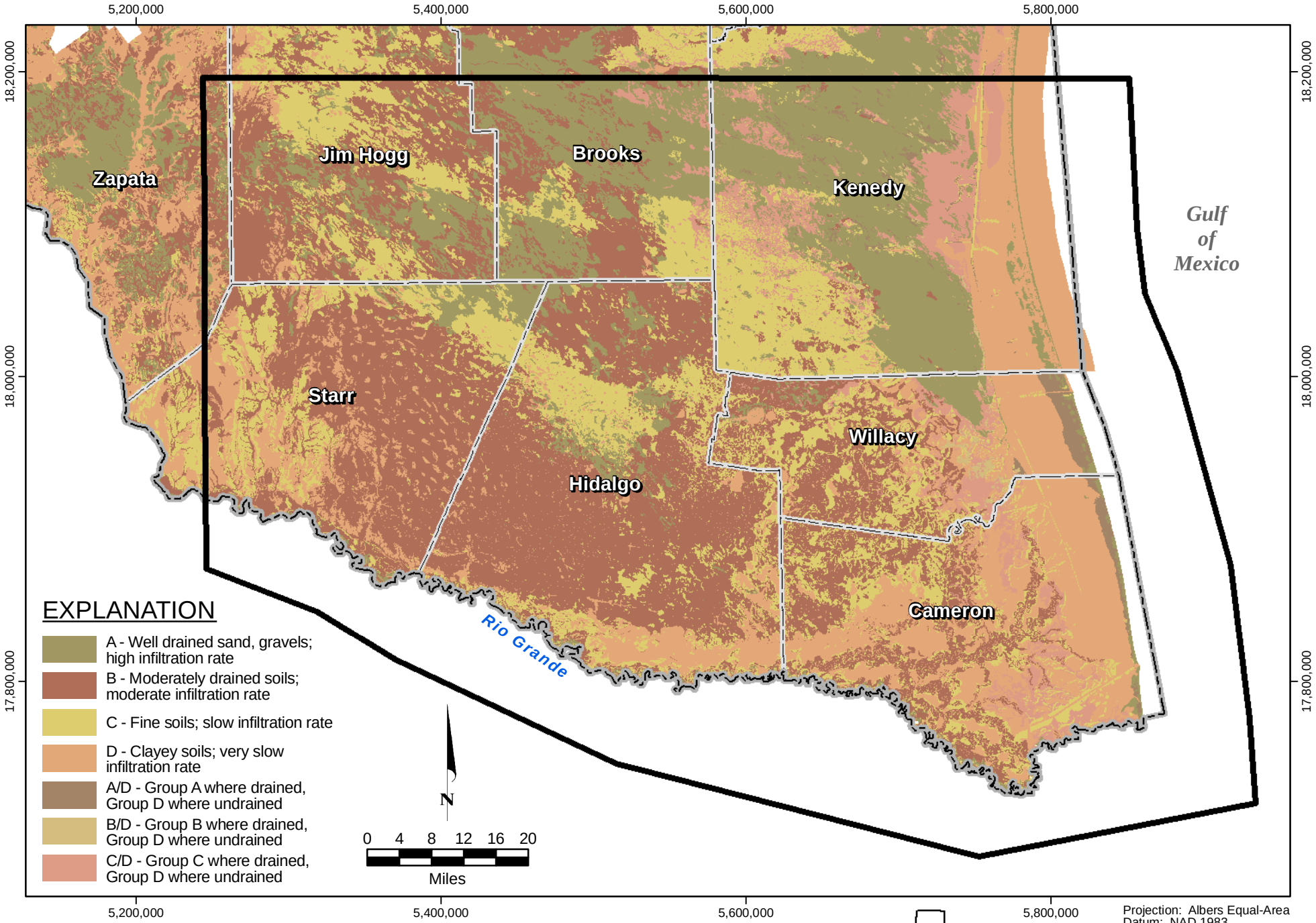

Projection: Albers Equal-Area
Datum: NAD 1983

Source: USDA NRCS Web Soil Survey, SSURGO Soils

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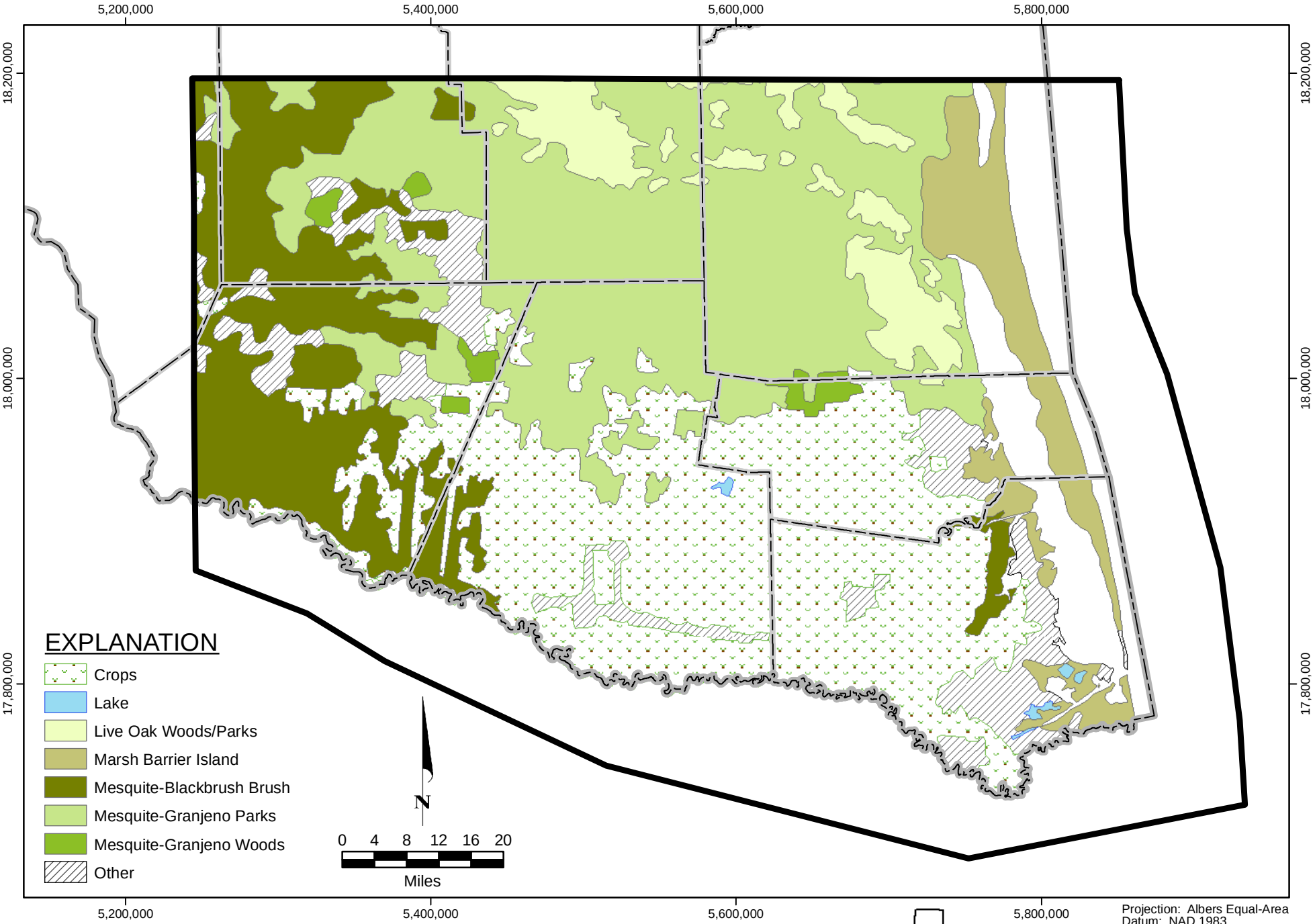
FIGURE 2.2.1. HYDROLOGIC SOIL GROUPS IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\Soils.mxd\24May2016



Projection: Albers Equal-Area
Datum: NAD 1983

Source: Texas Parks & Wildlife Department

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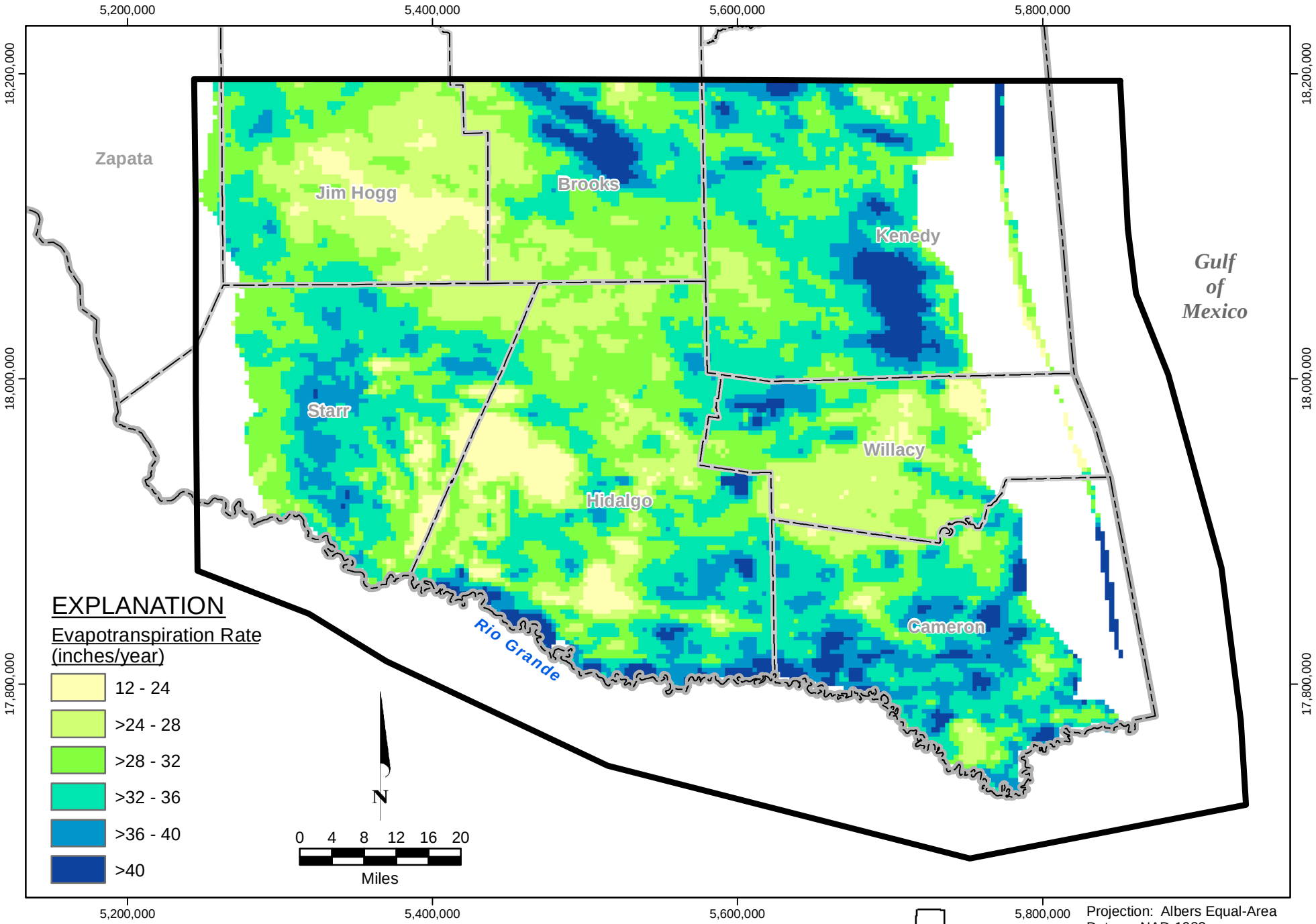
FIGURE 2.2.2. VEGETATION TYPES IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\Veg_Types.mxd\24May2016



Projection: Albers Equal-Area
Datum: NAD 1983

Source: Scanlon and others (2012)

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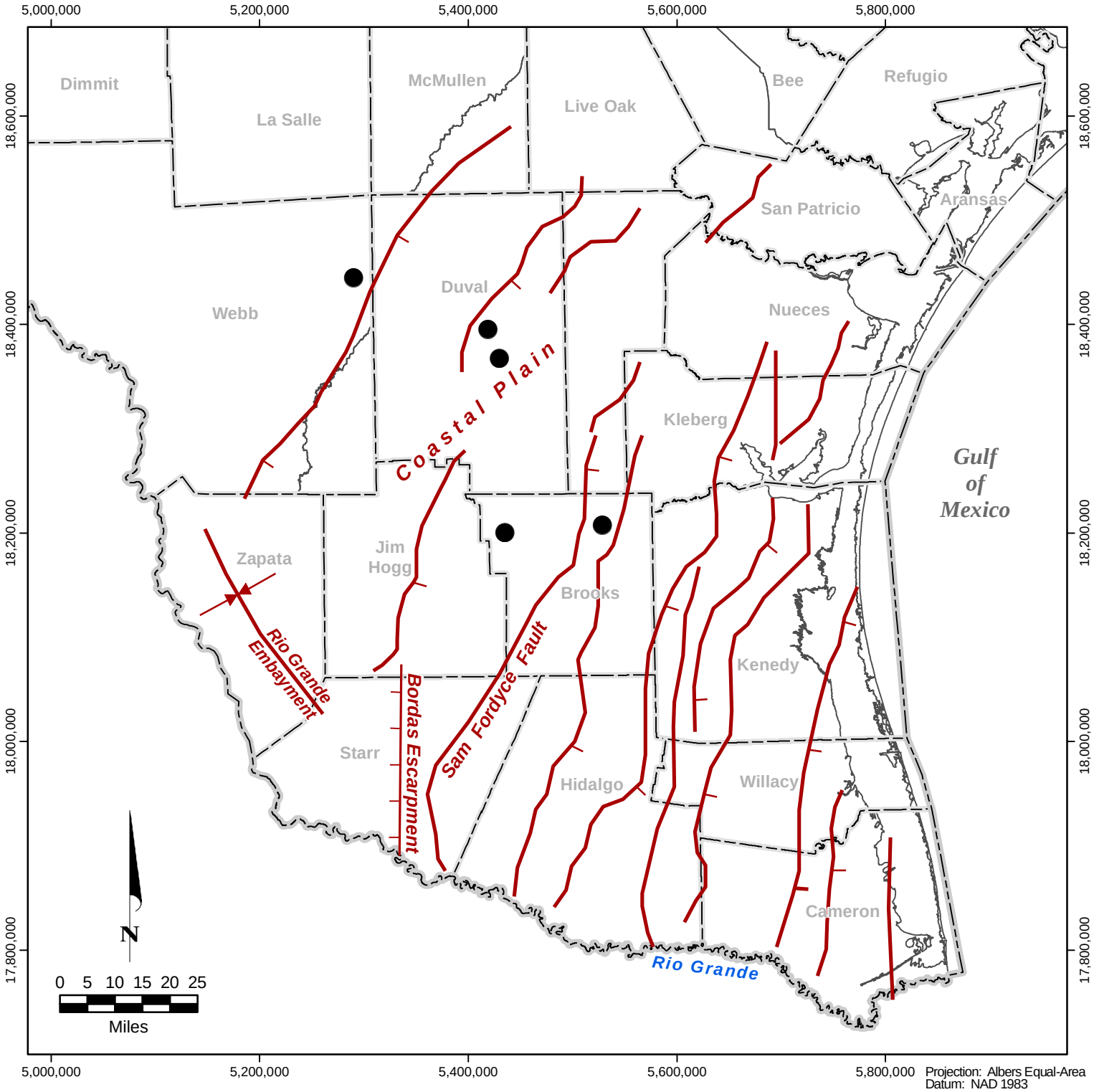
FIGURE 2.2.3. AVERAGE ANNUAL ACTUAL EVAPOTRANSPIRATION IN LOWER RIO GRANDE VALLEY

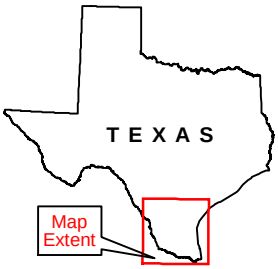
1436\REPORT_MAPS\Evapotrans.mxd\18May2016



Source: Modified from Chowdhury and Mace (2007)

EXPLANATION

- Salt Diapirs
- Normal Fault Indicating Downthrown Side
- County



Index Map

FIGURE 2.3.1. GENERAL STRUCTURAL SETTING OF LOWER RIO GRANDE VALLEY REGION

1436\REPORT_MAPS\GeneralStructuralSetting.mxd\24May2016

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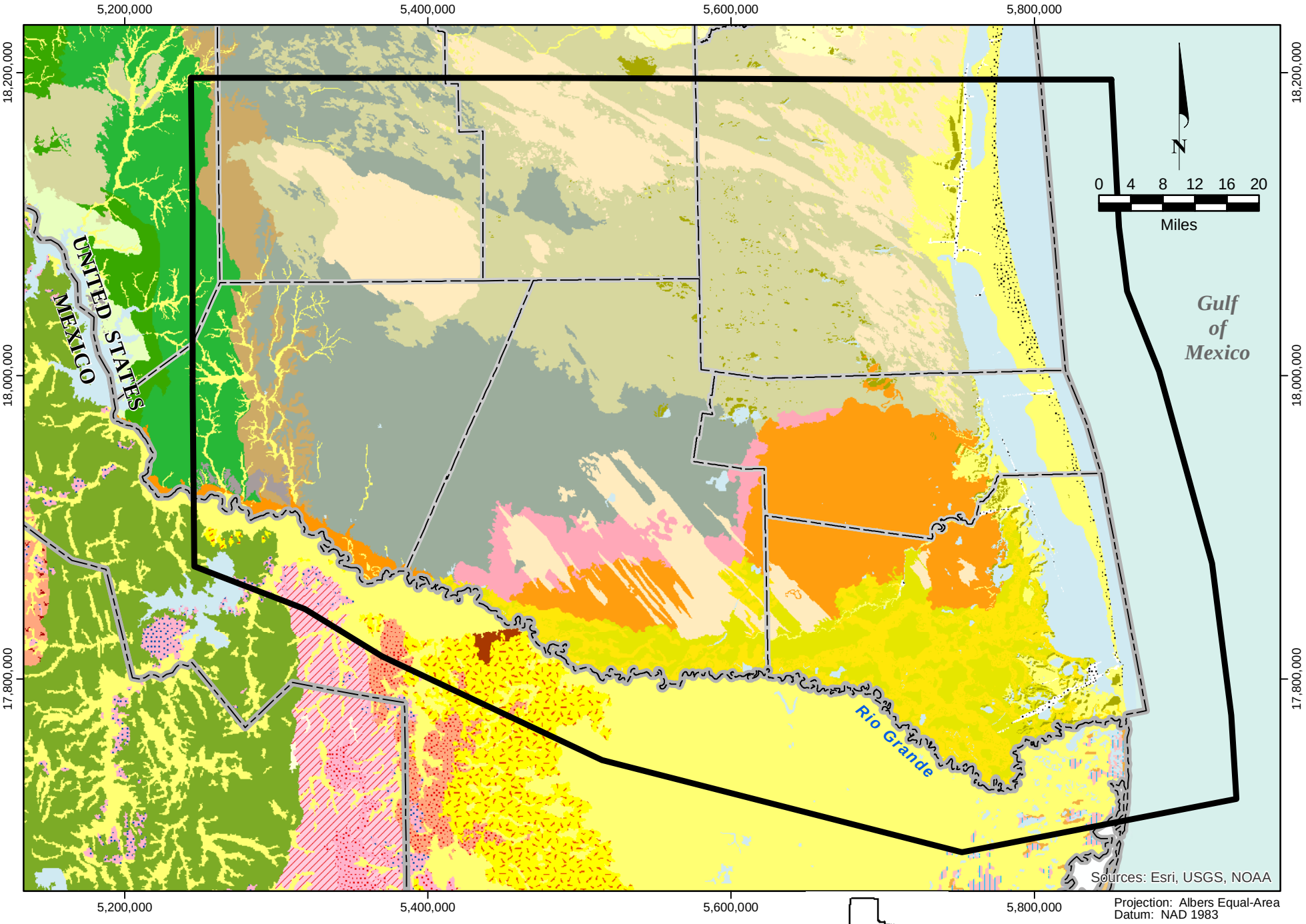

FIGURE 2.3.2a. SURFICIAL GEOLOGY IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\Geology.mxd\24May2016

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EXPLANATION

Study Area

County Boundary

Water

GEOLOGY - United States

(Source: USGS Geologic Database of Texas, v.3.0)

- FS — Modern Fill and Spoil
- Qal — Holocene Alluvium
- Qam — Holocene Muddy Alluvium
- Qas — Holocene Silty and Sandy Alluvium
- Qcd — Holocene Clay and Clay to Sand Dune
- Qsd — Holocene Active Dunes
- Qds — Holocene Stabilized Sand Dune
- Qs — Holocene Sand Sheet
- Qbi — Holocene Barrier Island
- Qsi — Quaternary Sand Sheet Deposits
- Qt — Pleistocene Fluvial Terrace
- Qb — Pleistocene Beaumont Formation
- Ql — Pleistocene Lissie Formation
- T-Qu — Pliocene to Pleistocene Uvalde Gravel
- Pg — Pliocene Goliad Formation
- MOcf — Miocene Catahoula and Frio Formations
- Ej — Eocene Jackson Sandstone and Clay
- El — Eocene Laredo Sandstone
- Ey — Eocene Yegua Clay and Sandstone

GEOLOGY - Mexico

(Source: USGS Open-File Report 2005-1409)

- Qam — Holocene Muddy Flood-Plain Alluvium
- Qas — Holocene Silty-Sandy Flood-Plain Alluvium
- Qa — Quaternary Alluvium
- Qcg — Quaternary Conglomerate
- Qeo — Quaternary Eolian Deposits
- Ql — Quaternary Pleistocene Lissie Formation
- Qla — Quaternary Coastal Lacustrine Deposits
- Qli — Quaternary Littoral Deposits
- Tc — Pliocene Caliche
- Tcg — Pliocene Conglomerate
- Tscg — Pliocene Sandstone and Conglomerate
- Ttr — Pliocene and Miocene Travertine
- Tfo — Miocene Fleming Formation and Oakville Sandstone
- Tsc — Miocene Sandstone and Conglomerate
- Tcv — Miocene and Oligocene Catahoula, Frio, Vicksburg Formations
- Tcgl — Oligocene Conglomerate
- Tjw — Eocene Jackson, Claiborne and Wilcox Groups
- Tla — Eocene Laredo Formation
- Tm — Paleocene Midway Group

FIGURE 2.3.2b. EXPLANATION FOR SURFICIAL GEOLOGY IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\Geology_EXPLANATION.mxd\24May2016

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Epoch and Age (millions of years before present)	Geologic Formation or Group	Hydrogeologic Unit	
Pleistocene (1.8-present)	Beaumont	Chicot Aquifer	Gulf Coast Aquifer
	Lissie		
Pliocene (5.6-1.8)	Willis		
Miocene (23.8-5.6)	Upper Goliad	Evangeline Aquifer	
	Lower Goliad		
	Upper Lagarto		
	Middle Lagarto	Burkeville Aquifer	
	Lower Lagarto	Jasper Aquifer	
	Oakville		
Oligocene	(Upper) Catahoula		

Source: Modified from Young and others (2010)

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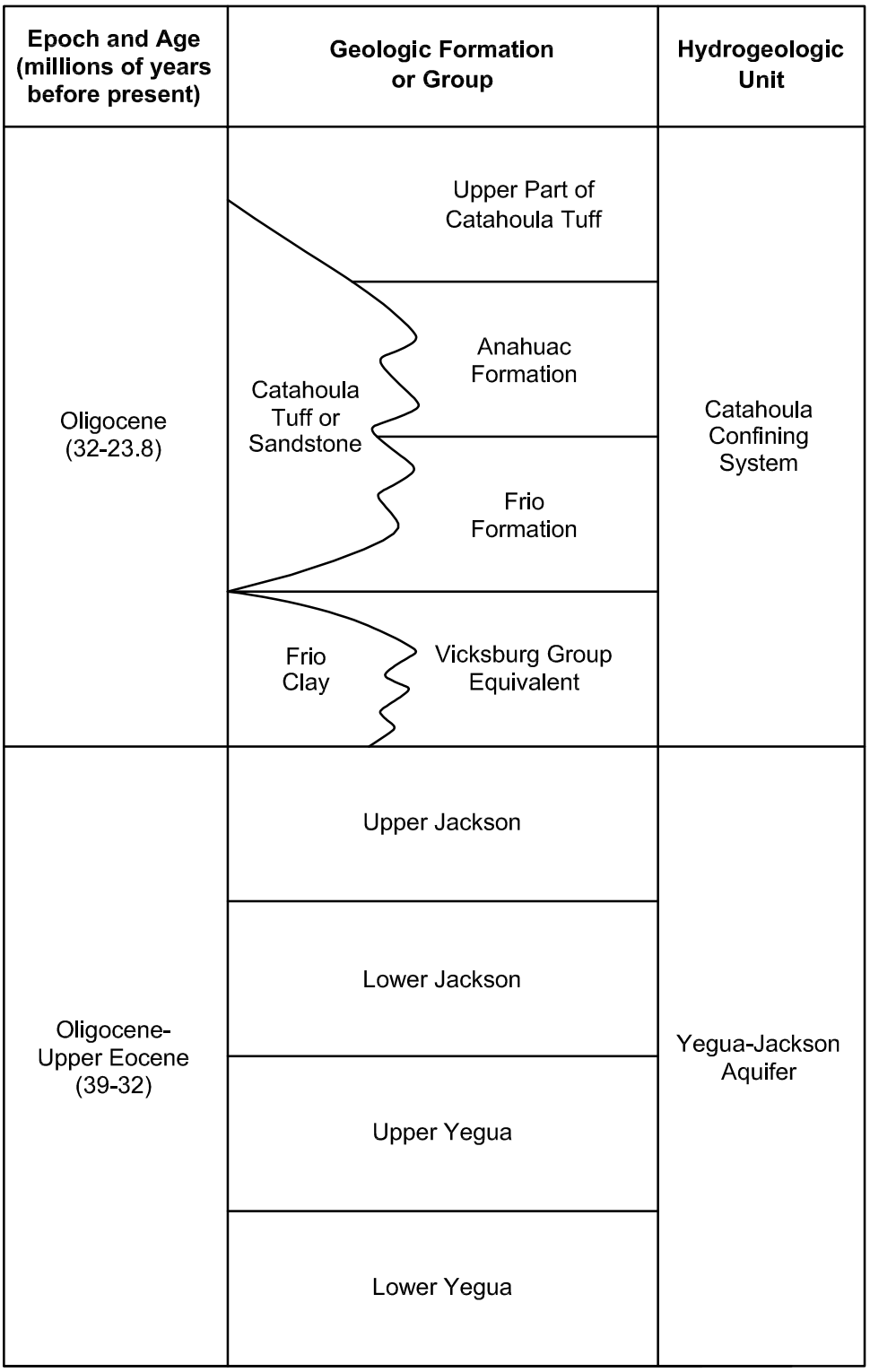
FIGURE 4.1.1. STRATIGRAPHIC COLUMN SHOWING RELATIONSHIP BETWEEN GULF COAST AQUIFER UNITS

Drafting\1436\StratigraphicColumn_GulfCoastAquifers.dwg\31May2016

MONTGOMERY & ASSOCIATES



Source: Knox & others (2007), Deeds & others (2010), & Young & others (2010)

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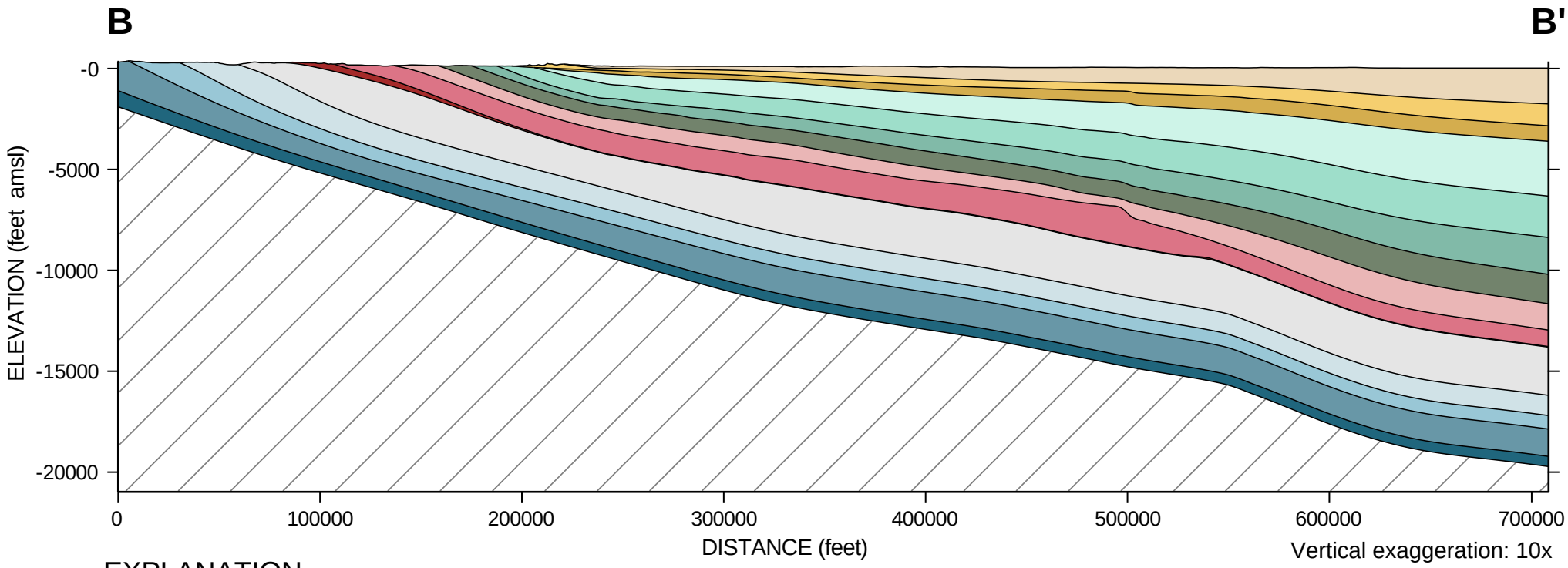
FIGURE 4.1.2. STRATIGRAPHIC COLUMN SHOWING RELATIONSHIPS BETWEEN CATAHOULA CONFINING SYSTEM UNIT AND YEGUA-JACKSON AQUIFER UNIT

Drafting\1436\StratigraphicColumn_Catahoula_YeguaJacksonAquifers.dwg\31May2016

MONTGOMERY & ASSOCIATES



EXPLANATION

Hydrostratigraphic Units

- Beaumont
- Lissie
- Willis
- Upper Goliad
- Lower Goliad
- Upper Lagarto
- Middle Lagarto
- Lower Lagarto
- Oakville
- Upper Catahoula
- Catahoula Confining System
- Upper Jackson
- Lower Jackson
- Upper Yegua
- Lower Yegua
- Units Not Included In Model

FIGURE 4.1.3. CROSS-SECTION OF HYDROSTRATIGRAPHIC UNITS IN LOWER RIO GRANDE VALLEY: SECTION B

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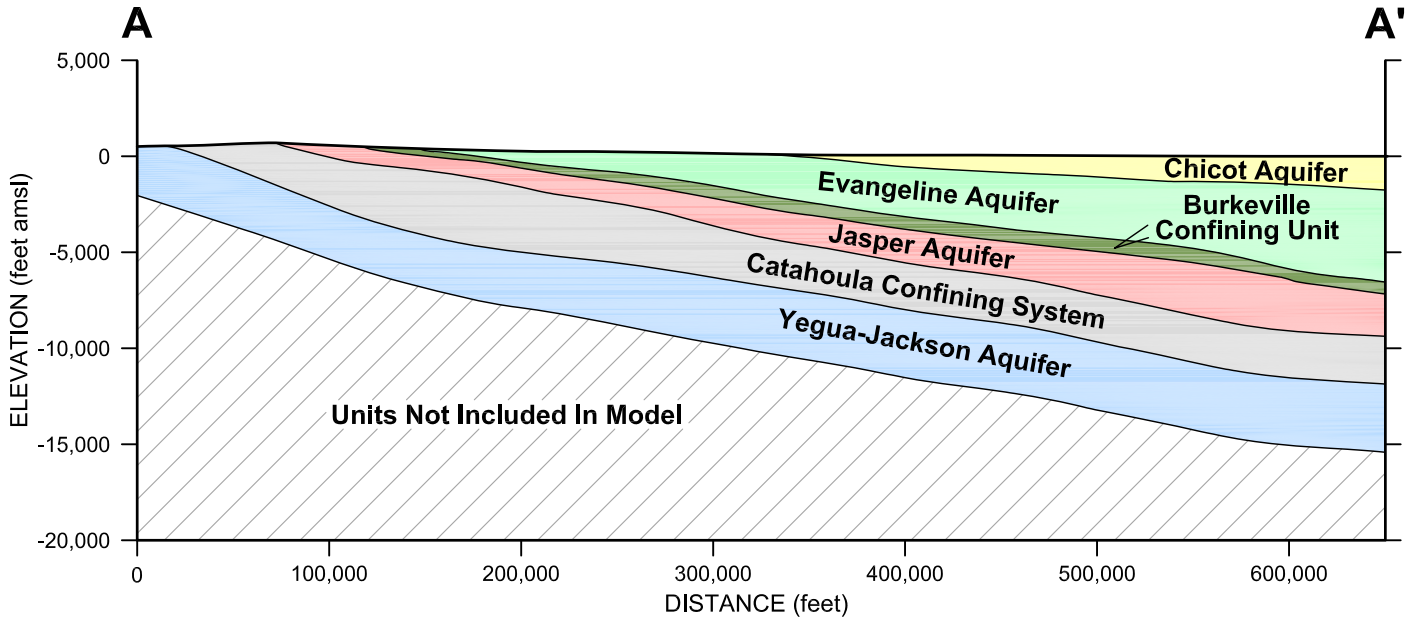
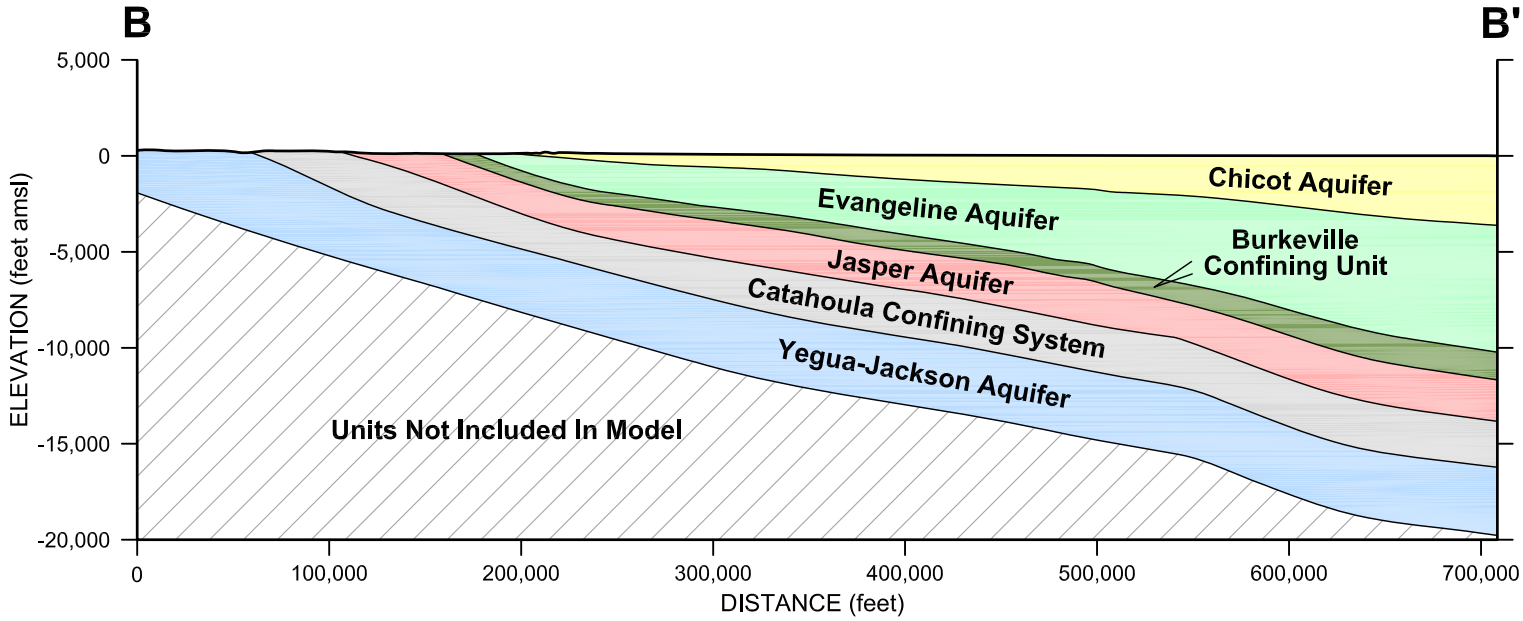
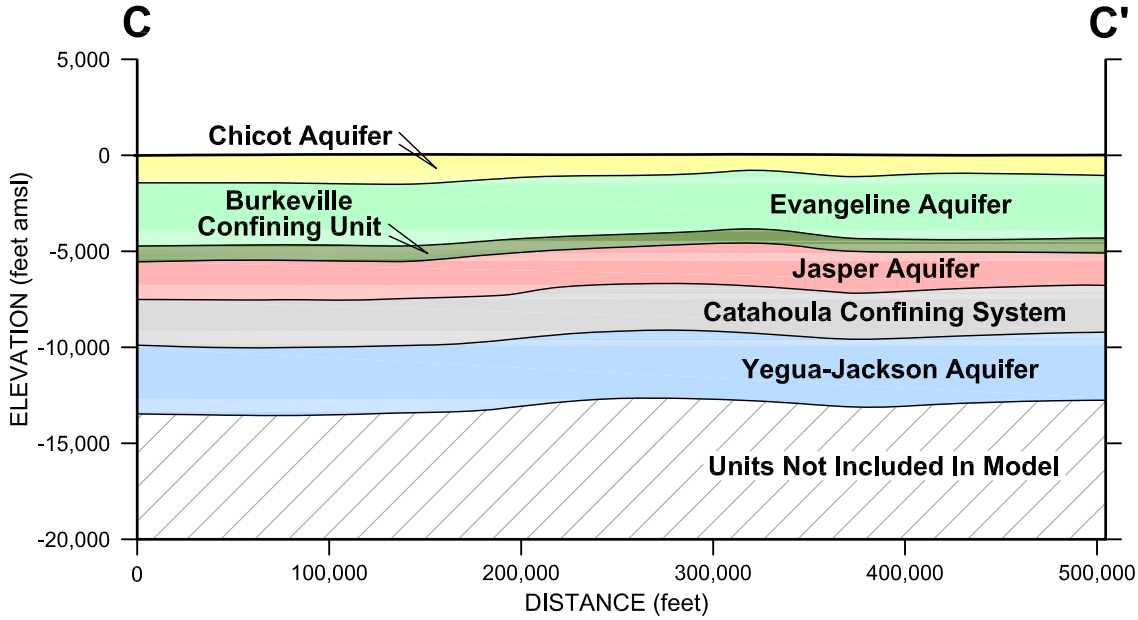
S:\PROJECTS\1436\LEAPFROG\SECTIONSPDFS\1436\SECTIONB_REV\.PDF\27MAY2016







Vertical Exaggeration: 10X

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FIGURE 4.1.4. HYDROGEOLOGIC SECTIONS A, B, AND C

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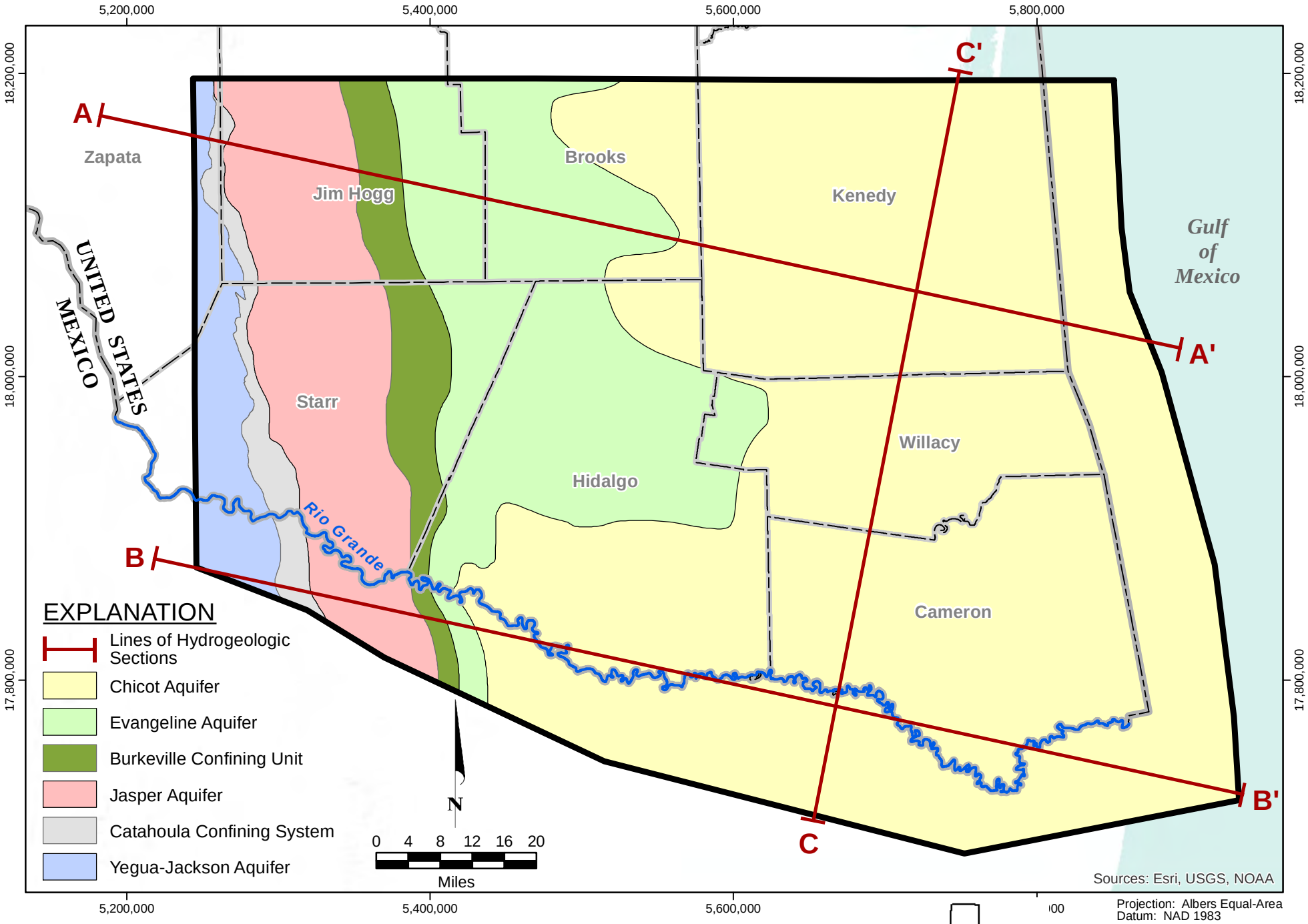

FIGURE 4.1.5. OUTCROPS OF AQUIFERS IN LOWER RIO GRANDE VALLEY STUDY AREA

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1436\REPORT_MAPS\AquiferExtents.mxd\24May2016

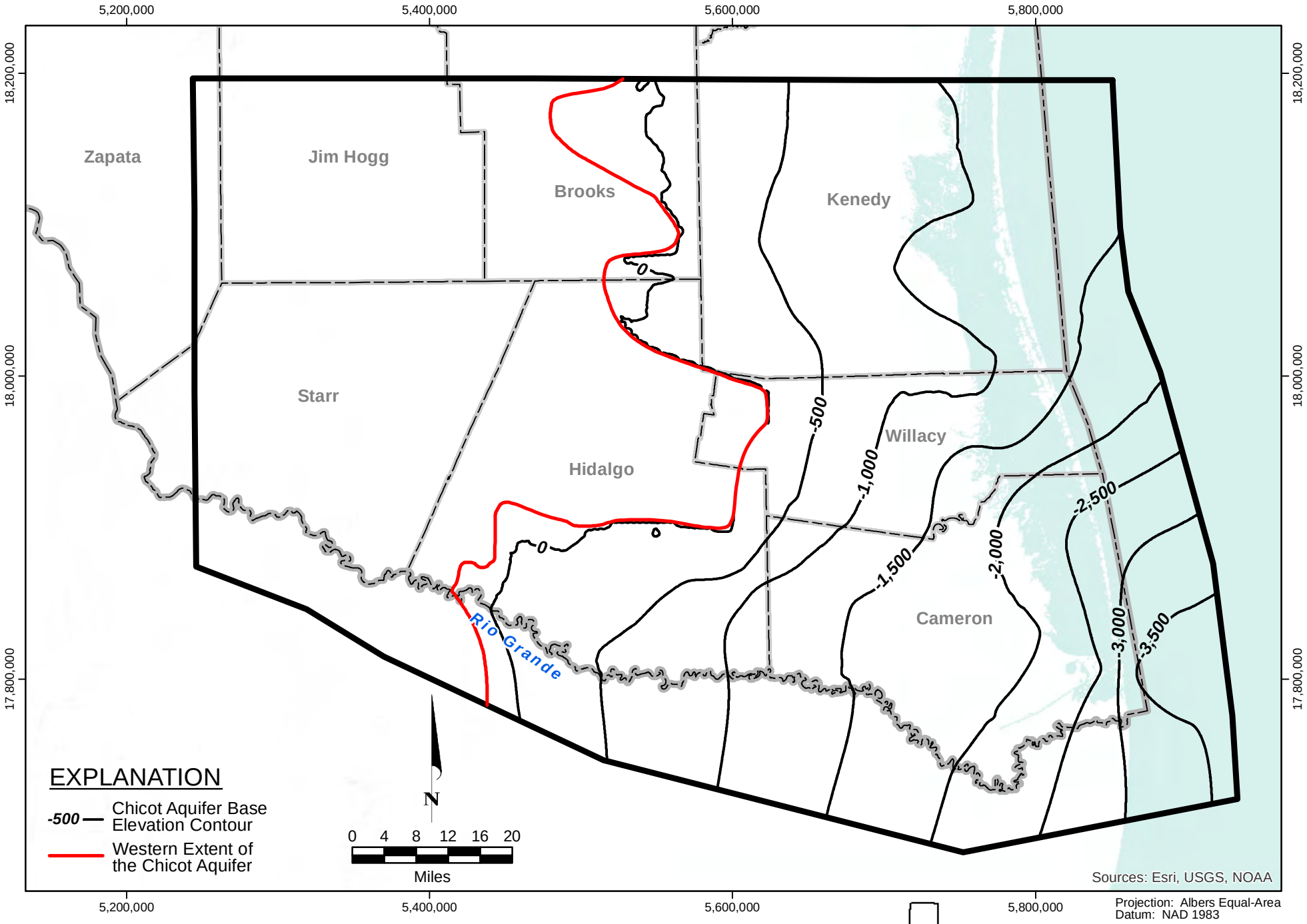

FIGURE 4.1.6. BASE ELEVATION CONTOURS, CHICOT AQUIFER, LOWER RIO GRANDE VALLEY STUDY AREA

1436\REPORT_MAPS\BaseElevationMaps\BaseElevation_Chicot.mxd\25May2016

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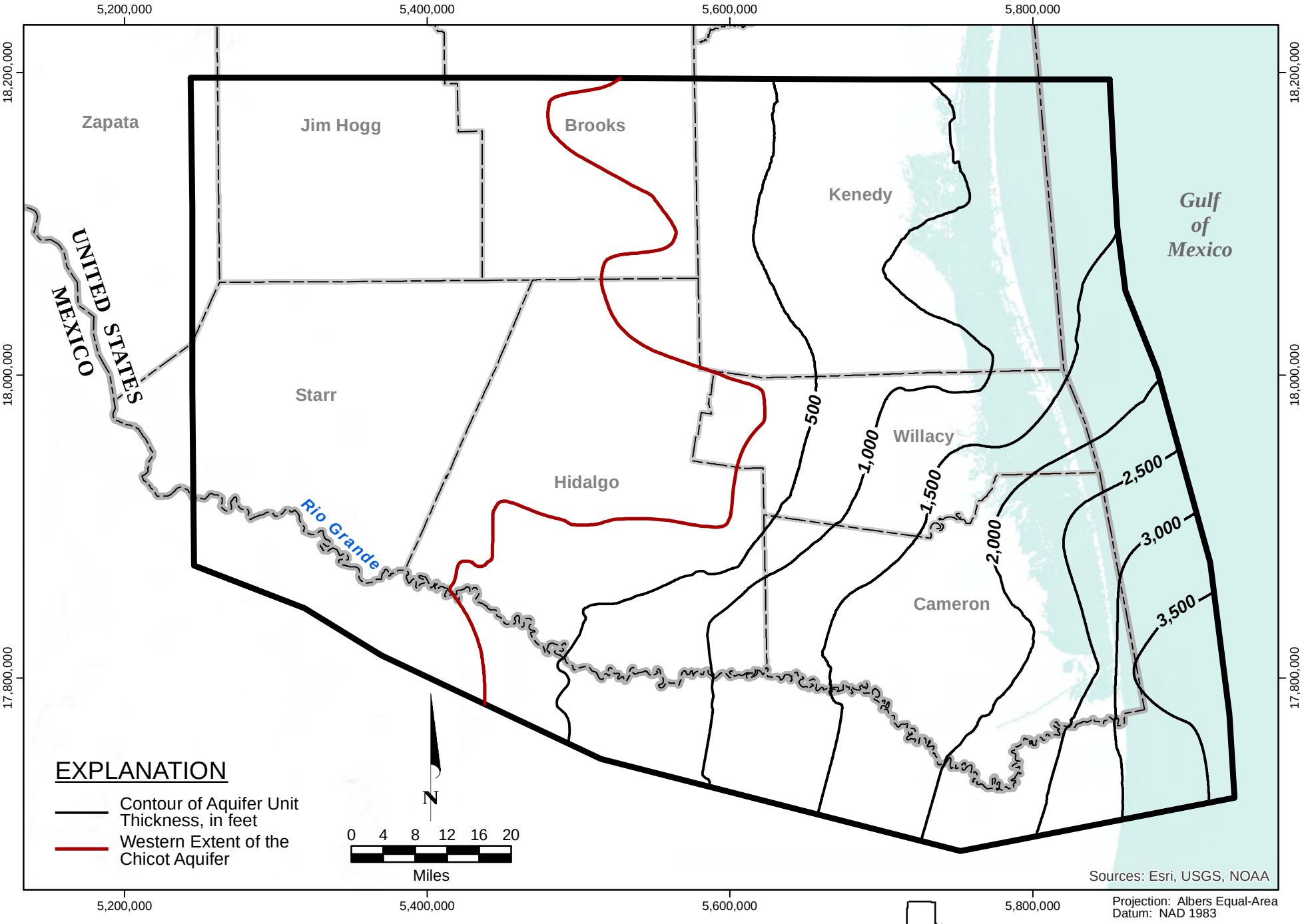

FIGURE 4.1.7. THICKNESS OF THE CHICOT AQUIFER, LOWER RIO GRANDE VALLEY STUDY AREA

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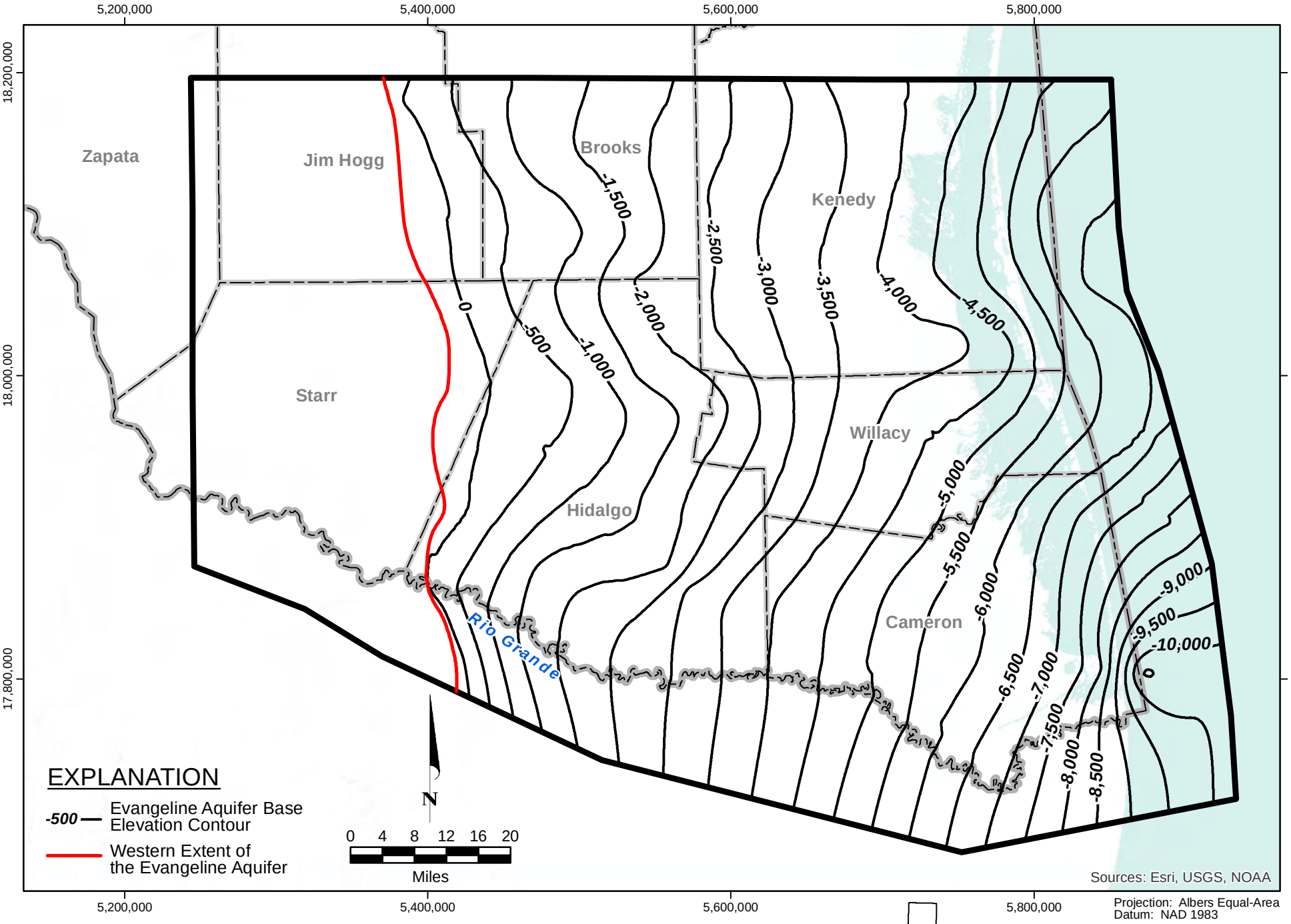
1436\REPORT_MAPS\ThicknessMaps\Thickness_Chicot.mxd\24May2016



Projection: Albers Equal-Area
Datum: NAD 1983

FIGURE 4.1.8. BASE ELEVATION CONTOURS, EVANGELINE AQUIFER, LOWER RIO GRANDE VALLEY STUDY AREA

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1436\REPORT_MAPS\BaseElevationMaps\BaseElevation_Evangeline.mxd\27May2016

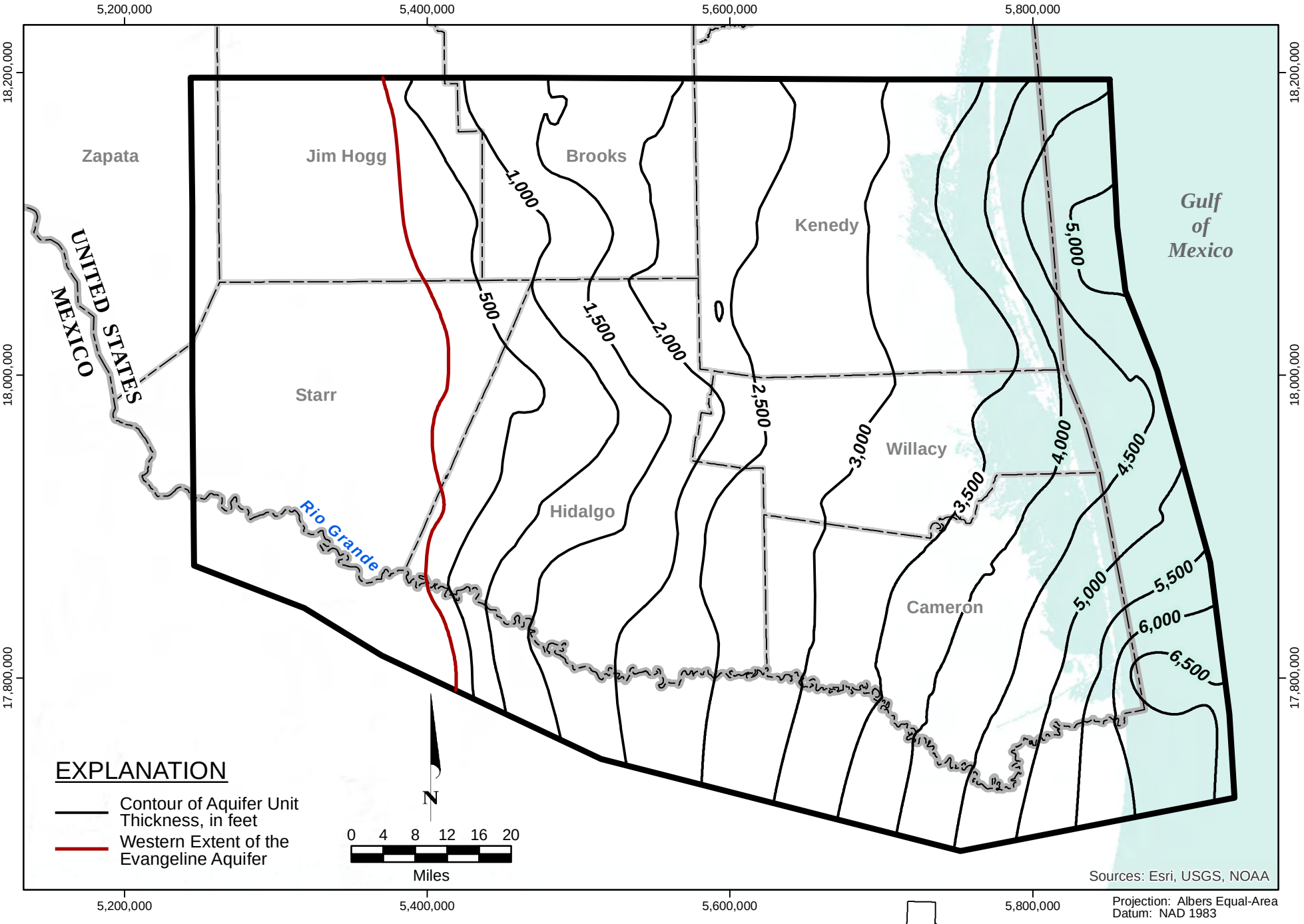

FIGURE 4.1.9. THICKNESS OF THE EVANGELINE AQUIFER, LOWER RIO GRANDE VALLEY STUDY AREA

1436\REPORT_MAPS\ThicknessMaps\Thickness_Evangeline.mxd\27May2016

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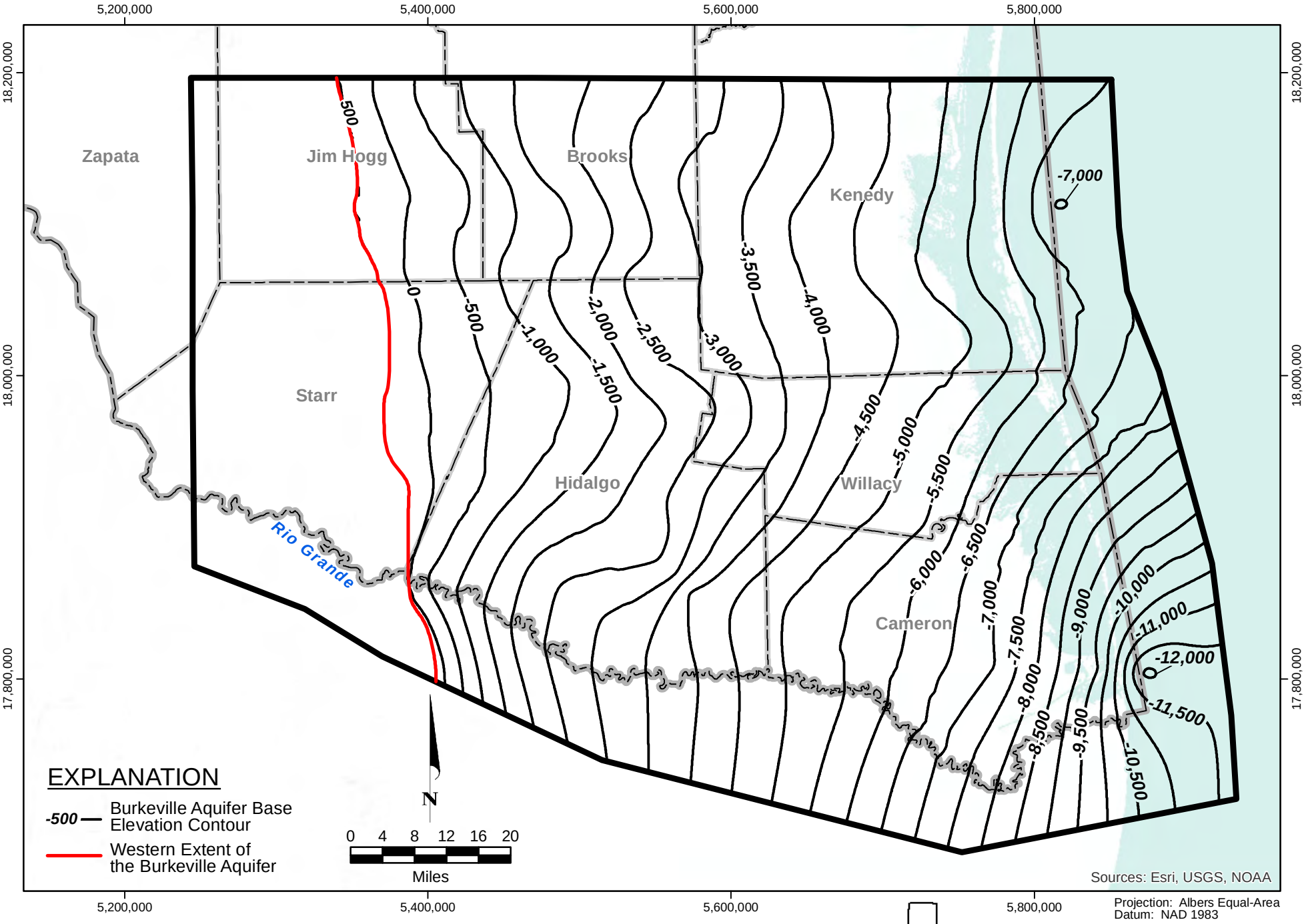

Projection: Albers Equal-Area
Datum: NAD 1983

FIGURE 4.1.10. BASE ELEVATION CONTOURS, BURKEVILLE CONFINING UNIT, LOWER RIO GRANDE VALLEY STUDY AREA

1436\REPORT_MAPS\BaseElevationMaps\BaseElevation_Burkeville.mxd\25May2016

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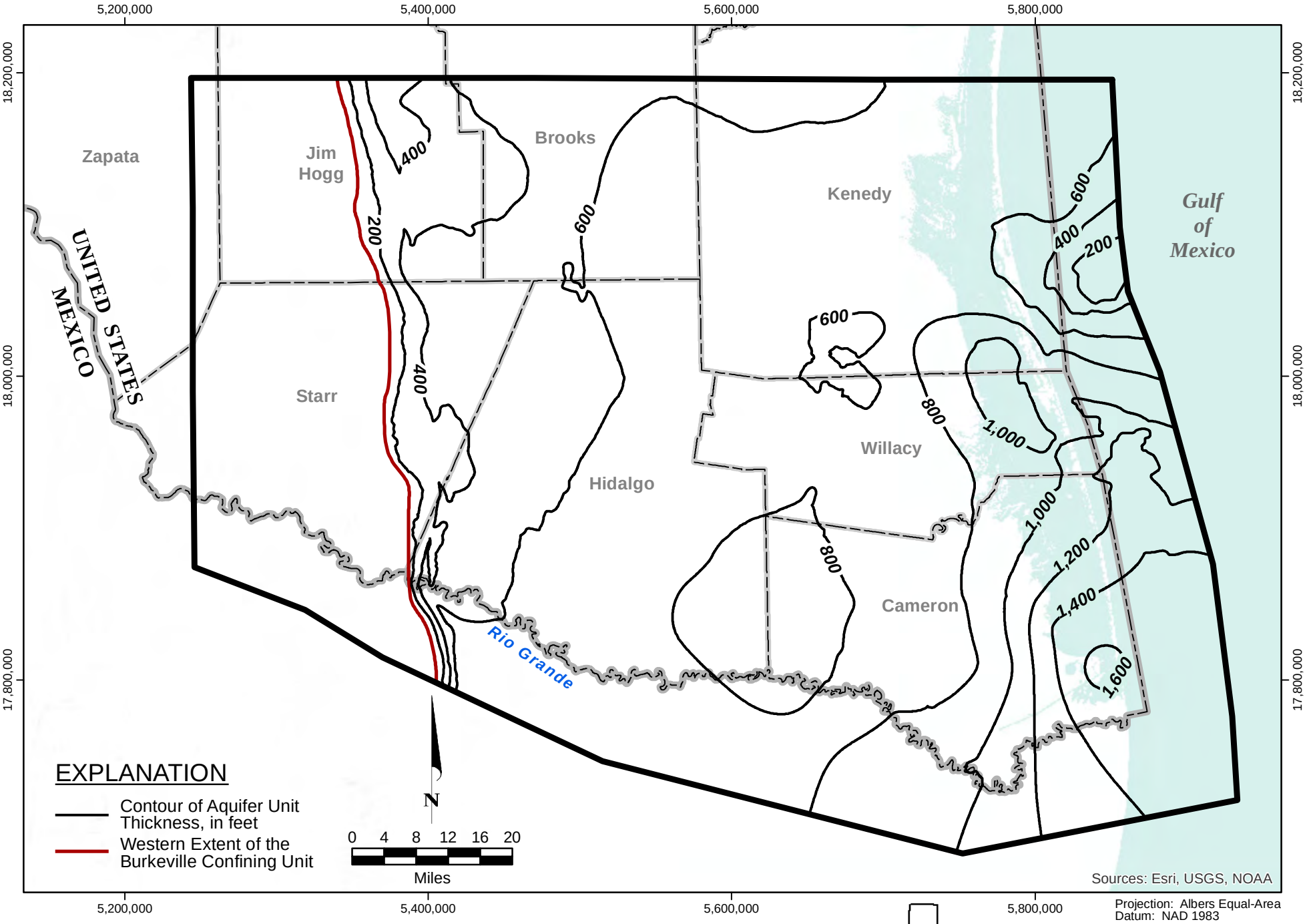

FIGURE 4.1.11. THICKNESS OF THE BURKEVILLE CONFINING UNIT, LOWER RIO GRANDE VALLEY STUDY AREA

1436\REPORT_MAPS\ThicknessMaps\Thickness_Burkeville.mxd\24May2016

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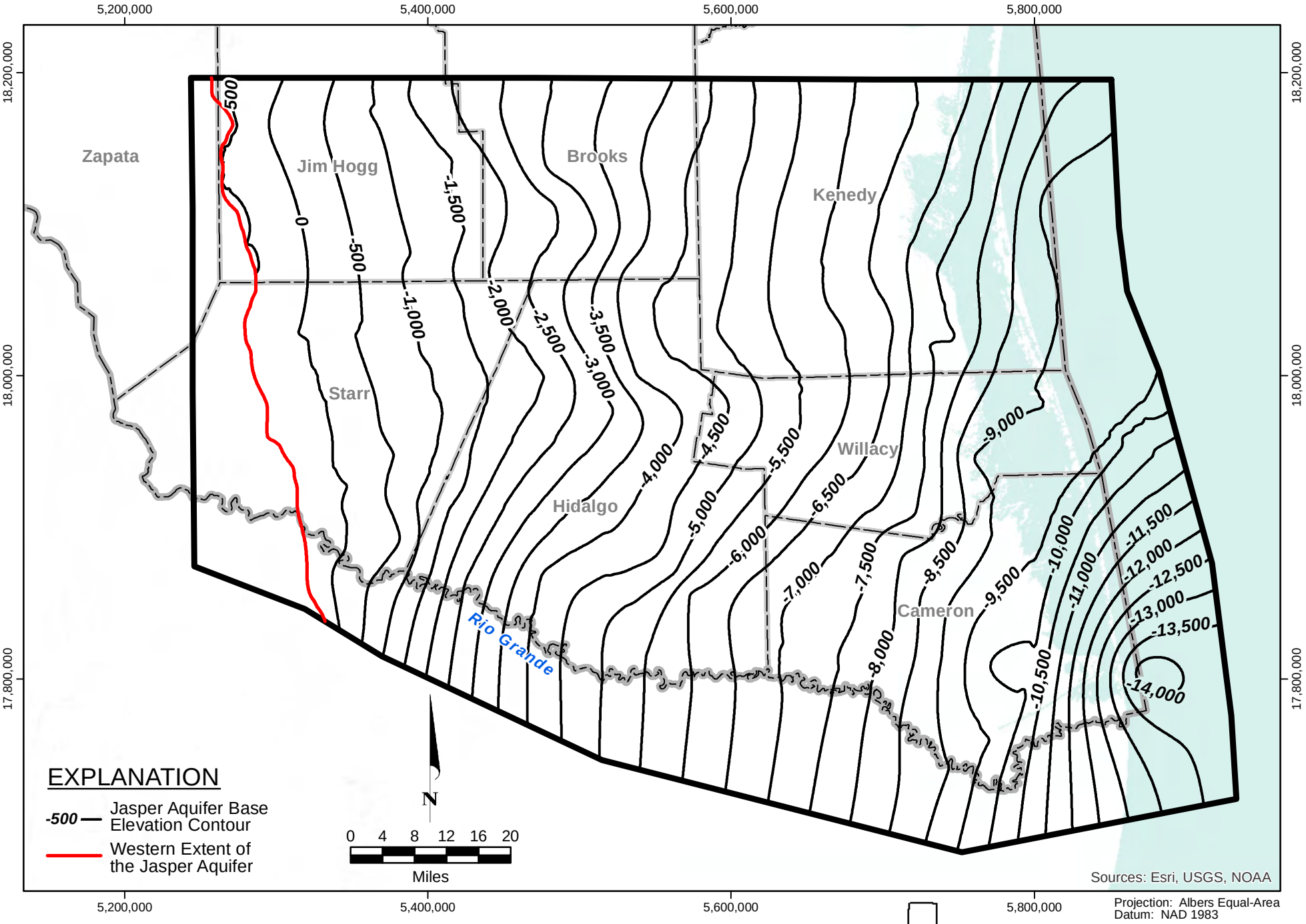

FIGURE 4.1.12. BASE ELEVATION CONTOURS, JASPER AQUIFER, LOWER RIO GRANDE VALLEY STUDY AREA

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1436\REPORT_MAPS\BaseElevationMaps\BaseElevation_Jasper.mxd\25May2016

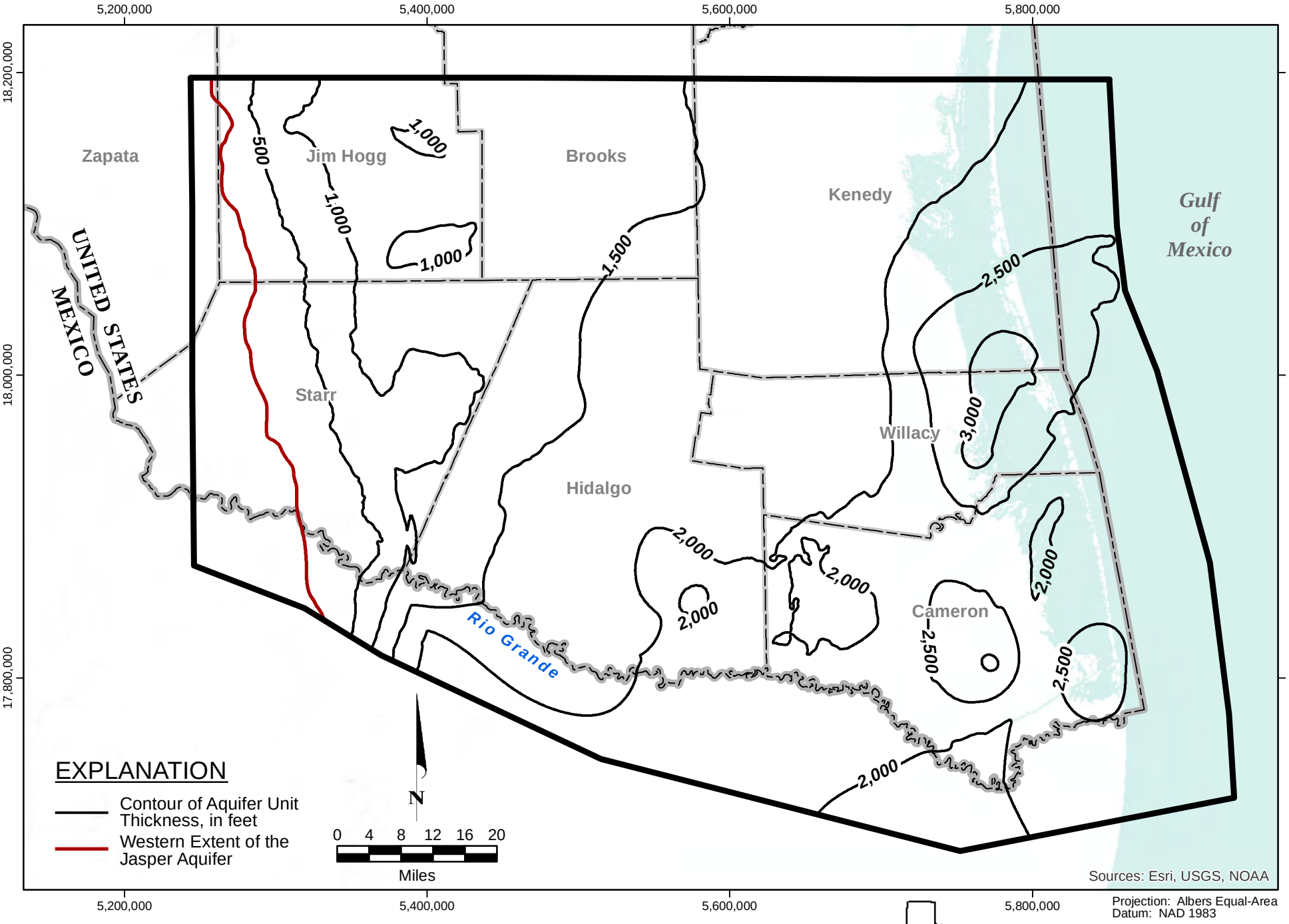

FIGURE 4.1.13. THICKNESS OF THE JASPER AQUIFER, LOWER RIO GRANDE VALLEY STUDY AREA

1436\REPORT_MAPS\ThicknessMaps\Thickness_Jasper\24May2016

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MONTGOMERY & ASSOCIATES

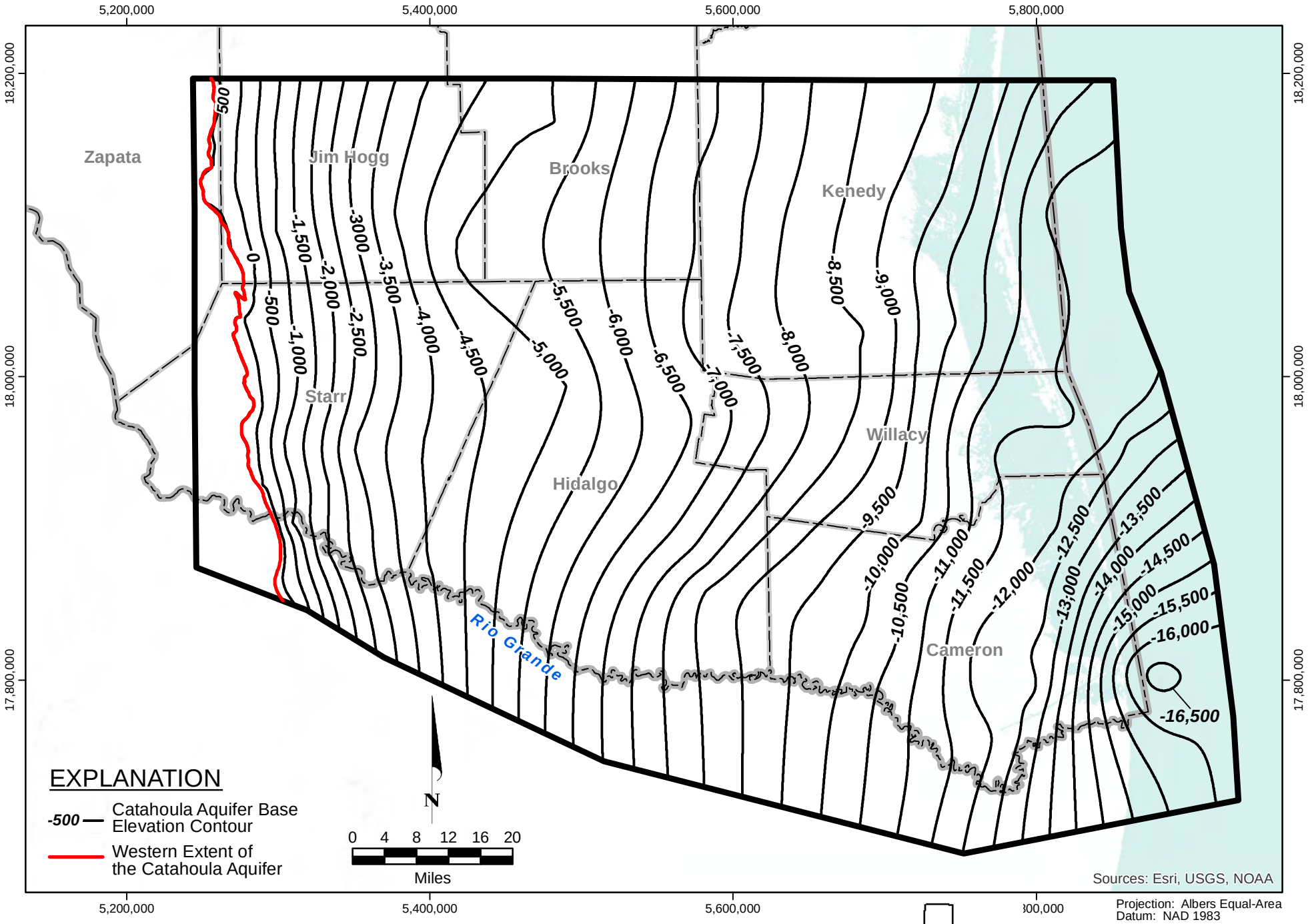

FIGURE 4.1.14. BASE ELEVATION CONTOURS, CATAHOULA CONFINING SYSTEM, LOWER RIO GRANDE VALLEY STUDY AREA

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1436\REPORT_MAPS\BaseElevationMaps\BaseElevation_Catahoula.mxd\25May2016

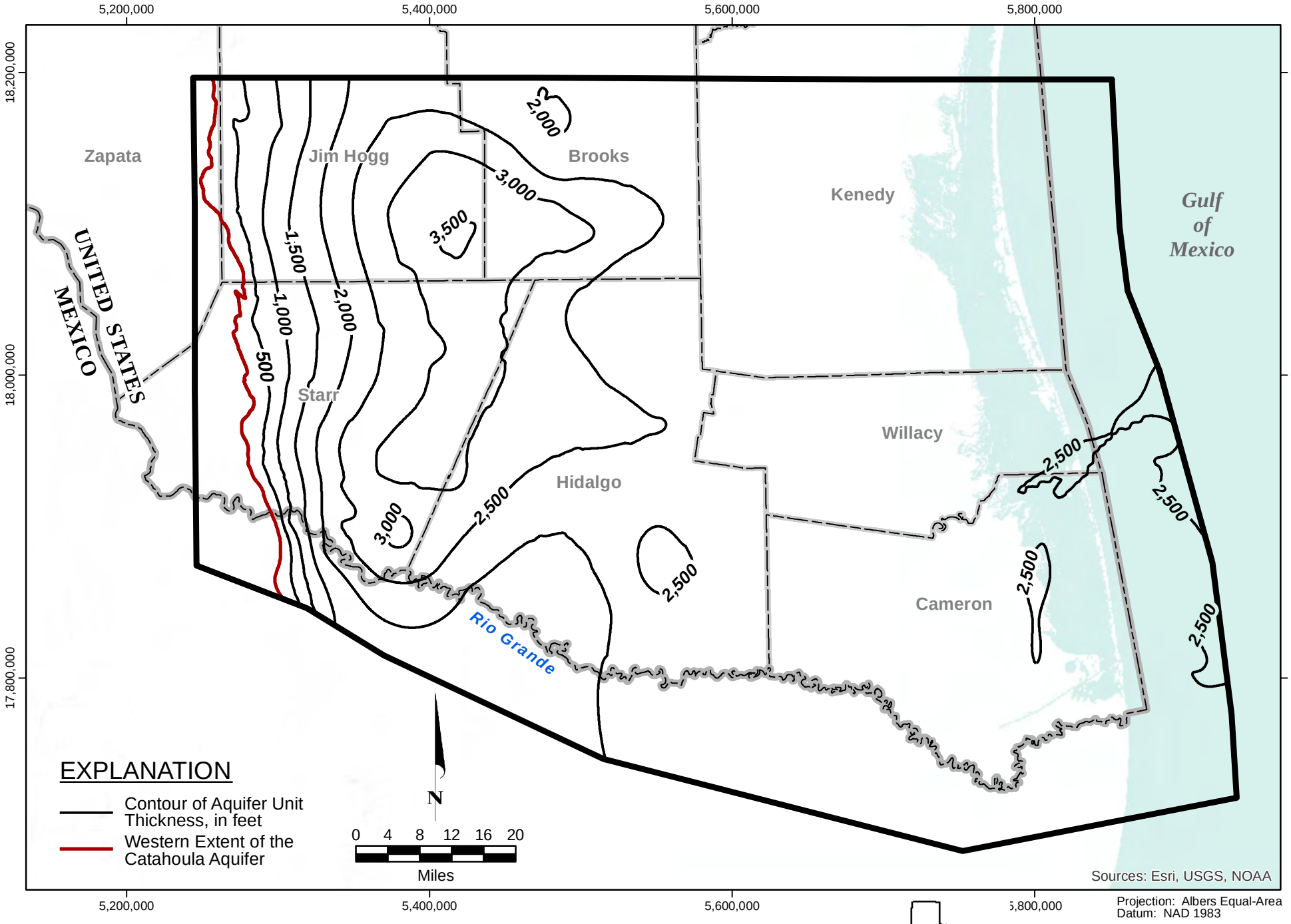

FIGURE 4.1.15. THICKNESS OF THE CATAHOULA CONFINING SYSTEM, LOWER RIO GRANDE VALLEY STUDY AREA

1436\REPORT_MAPS\ThicknessMaps\Thickness_Catahoula\24May2016

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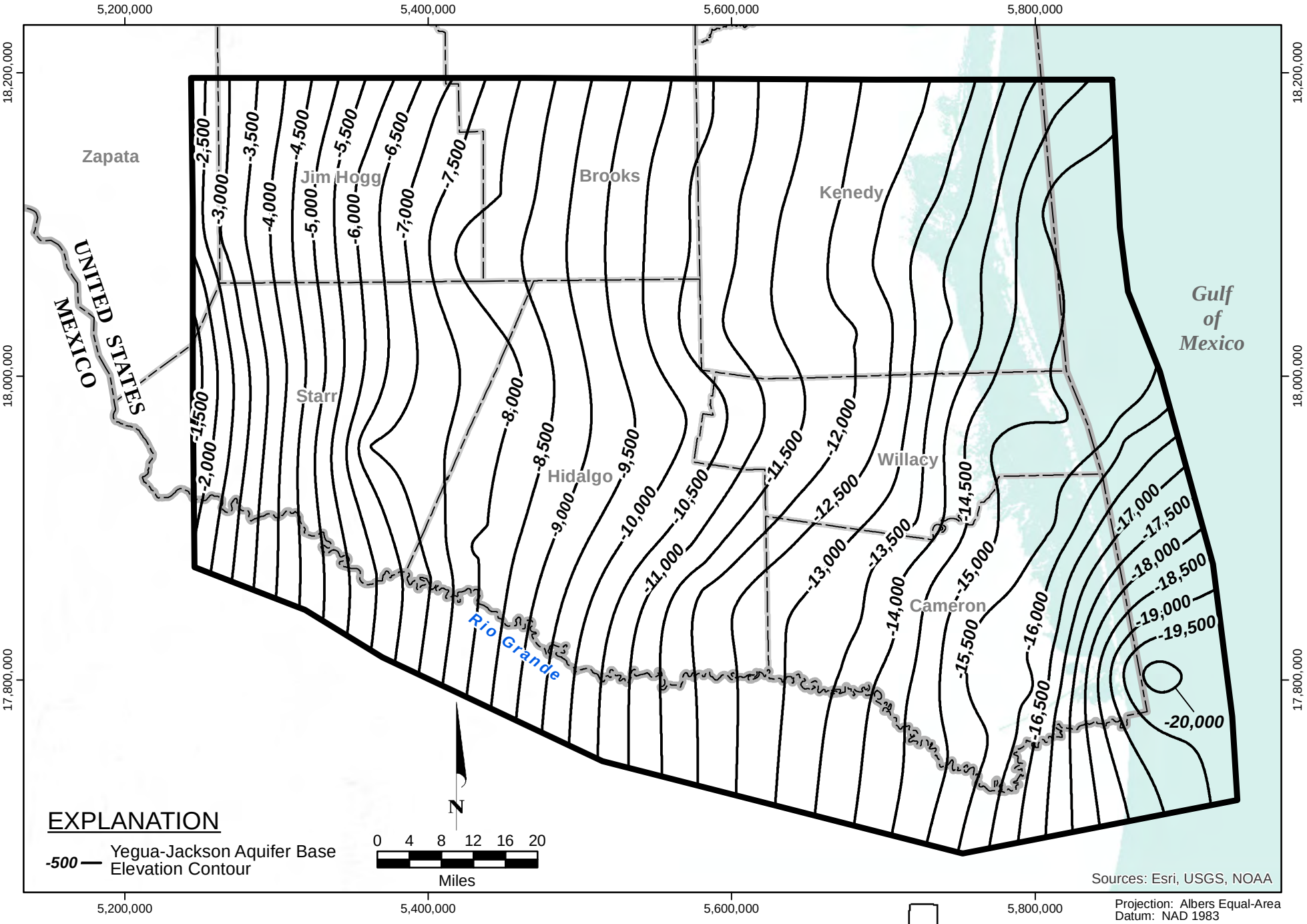

FIGURE 4.1.16. BASE ELEVATION CONTOURS, YEGUA-JACKSON AQUIFER, LOWER RIO GRANDE VALLEY STUDY AREA

1436\REPORT_MAPS\BaseElevationMaps\BaseElevation_YeguaJackson.mxd\24May2016

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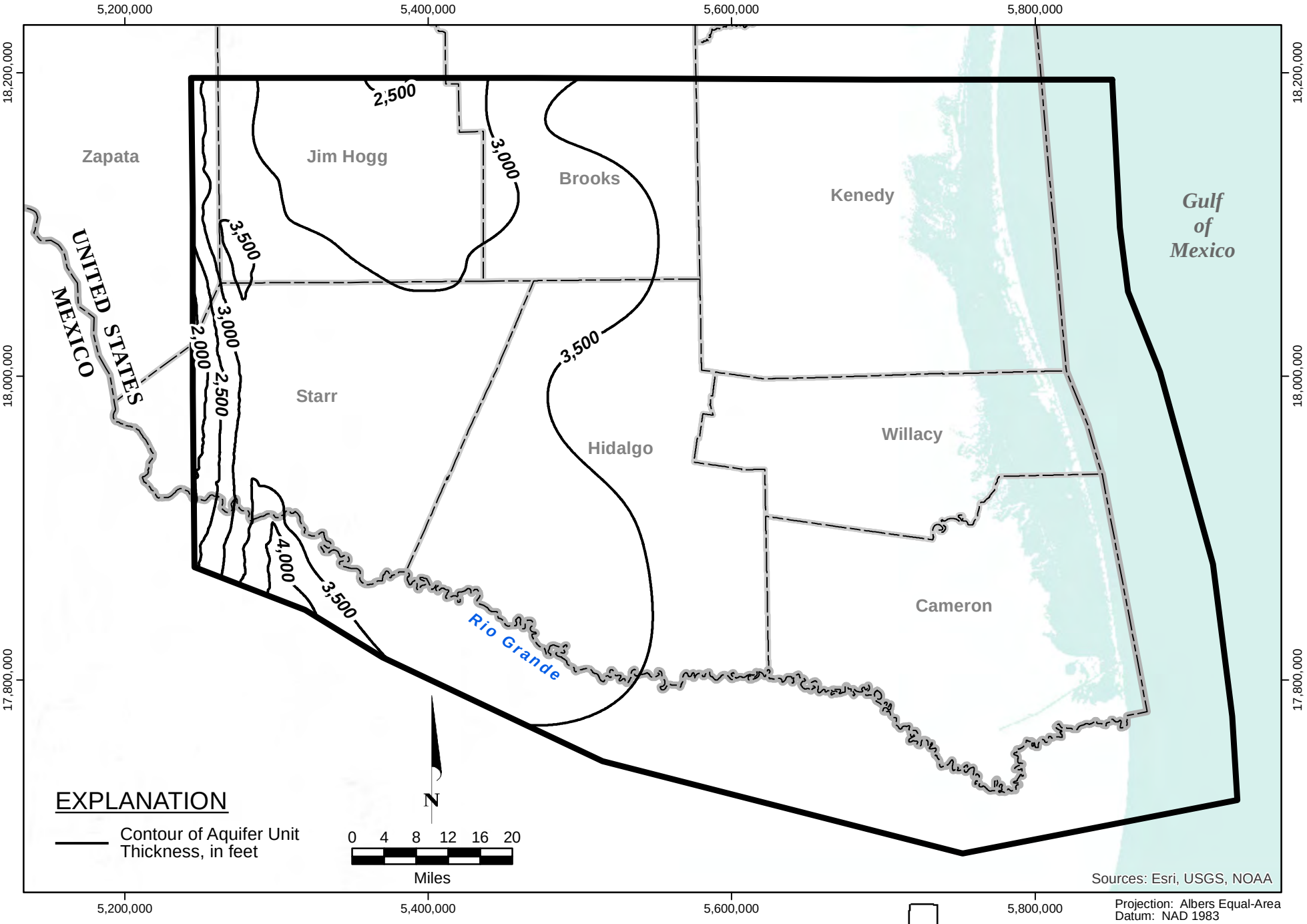

Projection: Albers Equal-Area
Datum: NAD 1983

FIGURE 4.1.17. THICKNESS OF THE YEGUA-JACKSON AQUIFER, LOWER RIO GRANDE VALLEY STUDY AREA

1436\REPORT_MAPS\ThicknessMaps\Thickness_YeguaJackson\24May2016

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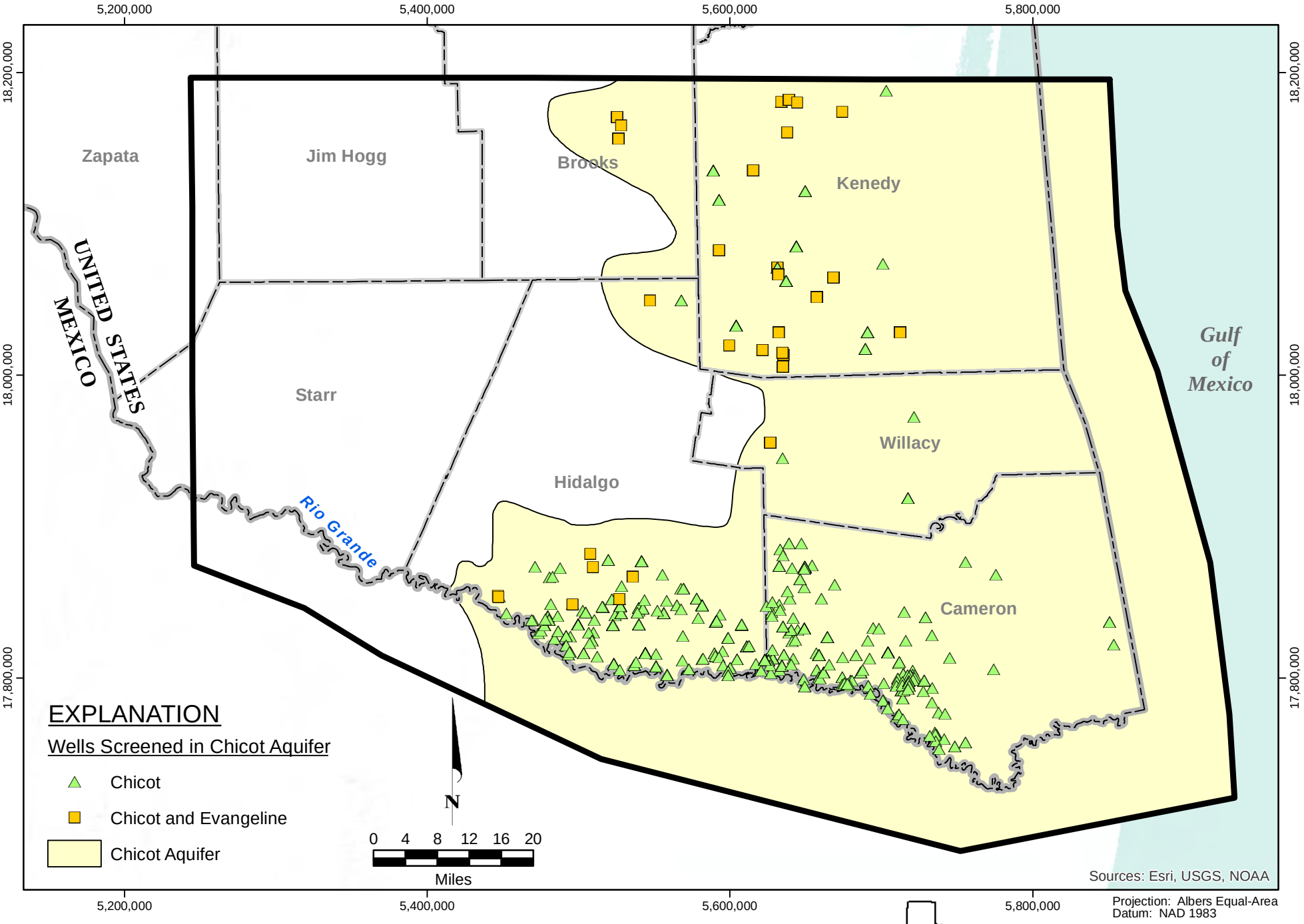

FIGURE 4.2.1. LOCATION OF WELLS WITH GROUNDWATER LEVEL MEASUREMENTS IN CHICOT AQUIFER

1436\REPORT_MAPS\WaterLevelMaps\Chicot\WL_Measurement_Locs_Chicot.mxd\24May2016

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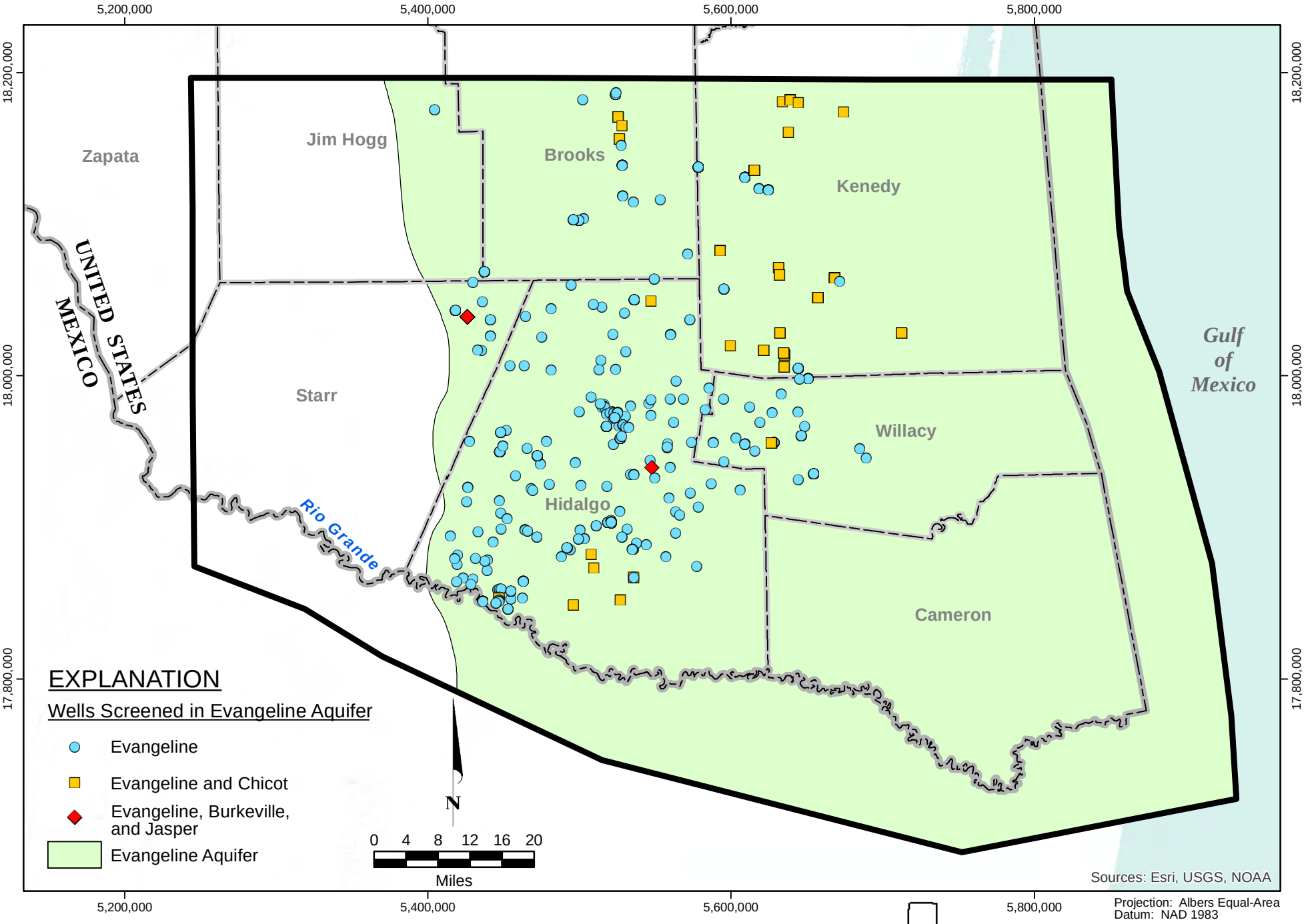

FIGURE 4.2.2. LOCATION OF WELLS WITH GROUNDWATER LEVEL MEASUREMENTS IN EVANGELINE AQUIFER

1436\REPORT_MAPS\WaterLevelMaps\Evangeline\WL_Measurement_Locs_Evangeline.mxd\18May2016

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MONTGOMERY & ASSOCIATES

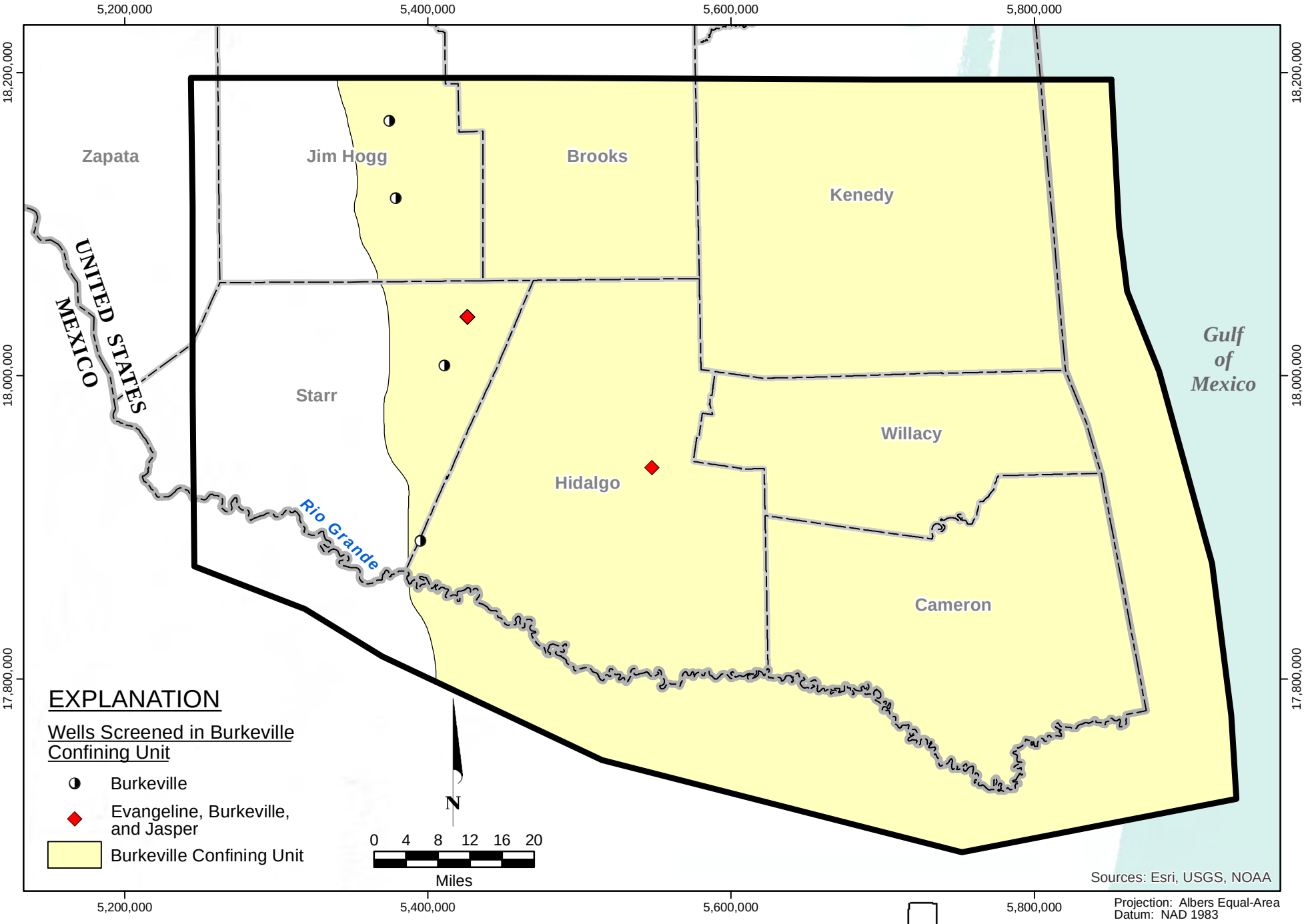

FIGURE 4.2.3. LOCATION OF WELLS WITH GROUNDWATER LEVEL MEASUREMENTS IN BURKEVILLE CONFINING UNIT

1436\REPORT_MAPS\WaterLevelMaps\WL_Measurement_Locs_Burkeville.mxd\18May2016

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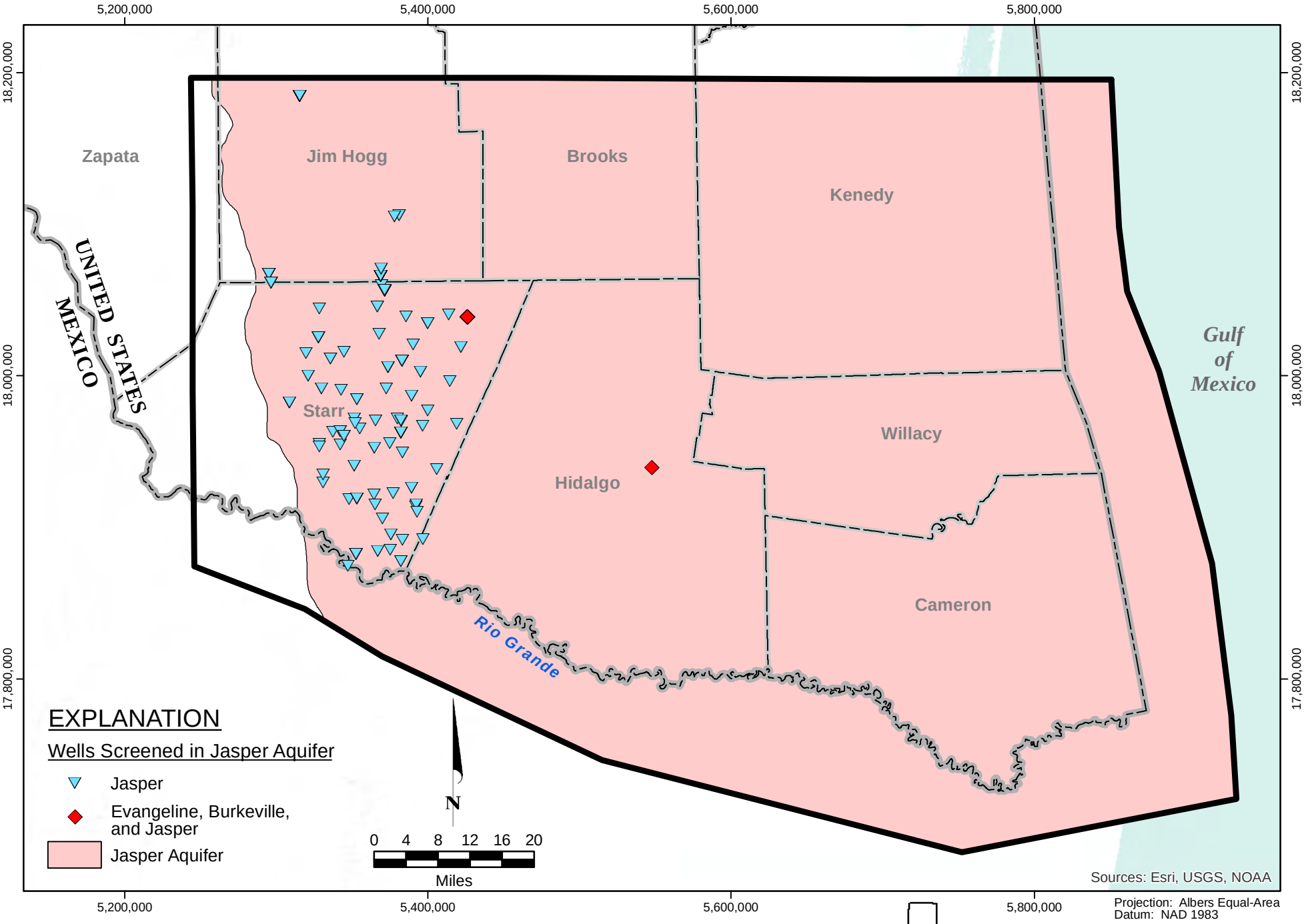

FIGURE 4.2.4. LOCATION OF WELLS WITH GROUNDWATER LEVEL MEASUREMENTS IN JASPER AQUIFER

1436\REPORT_MAPS\WaterLevelMaps\Jasper\WL_Measurement_Locs_Jasper.mxd\18May2016

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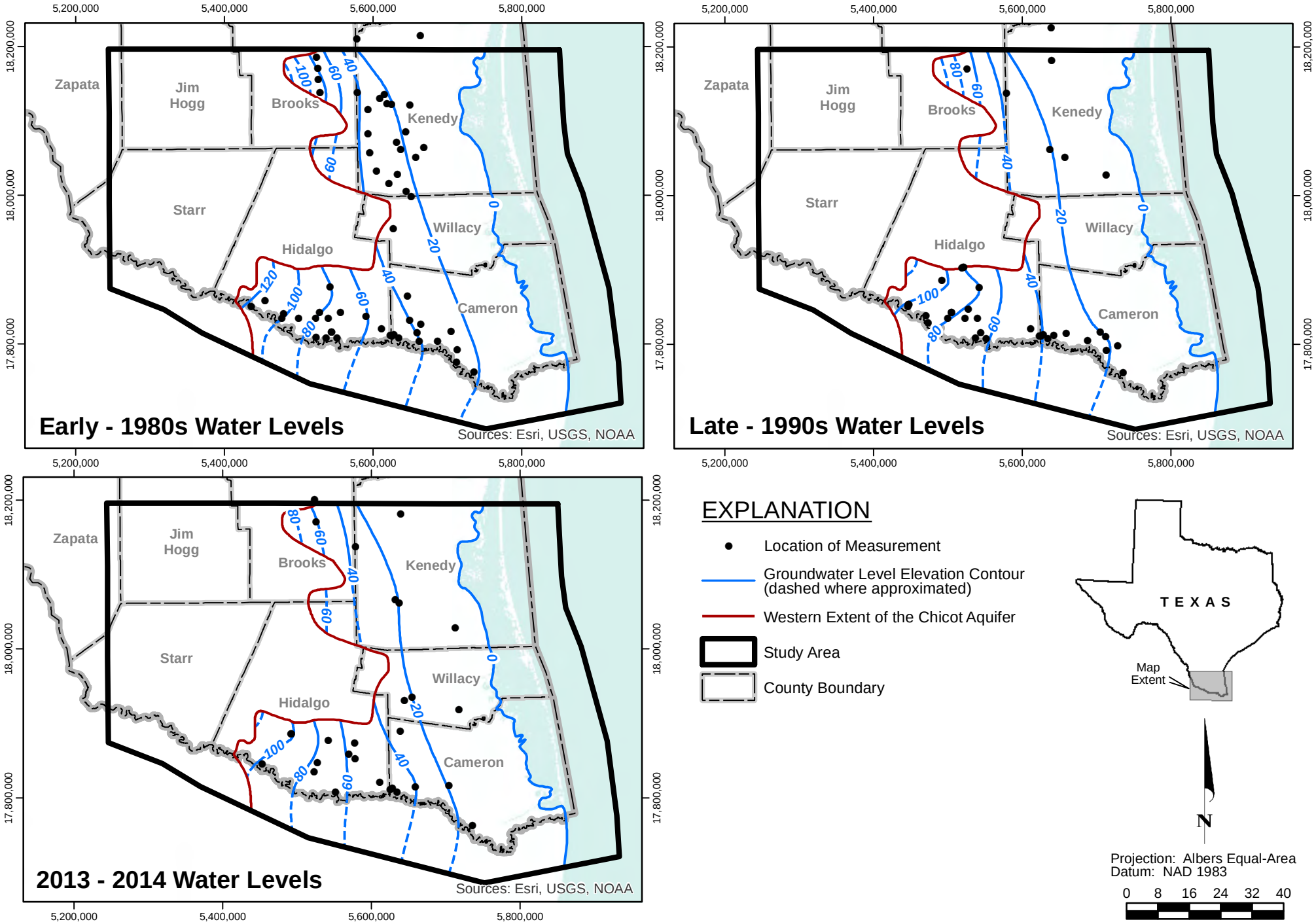

FIGURE 4.2.5. GROUNDWATER LEVEL ELEVATION CONTOURS FOR CHICOT AQUIFER IN LOWER RIO GRANDE VALLEY

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1436\REPORT_MAPS\WaterLevelMaps\Chicot\WL_Chicot_1984_1999_2014.mxd\18May2016

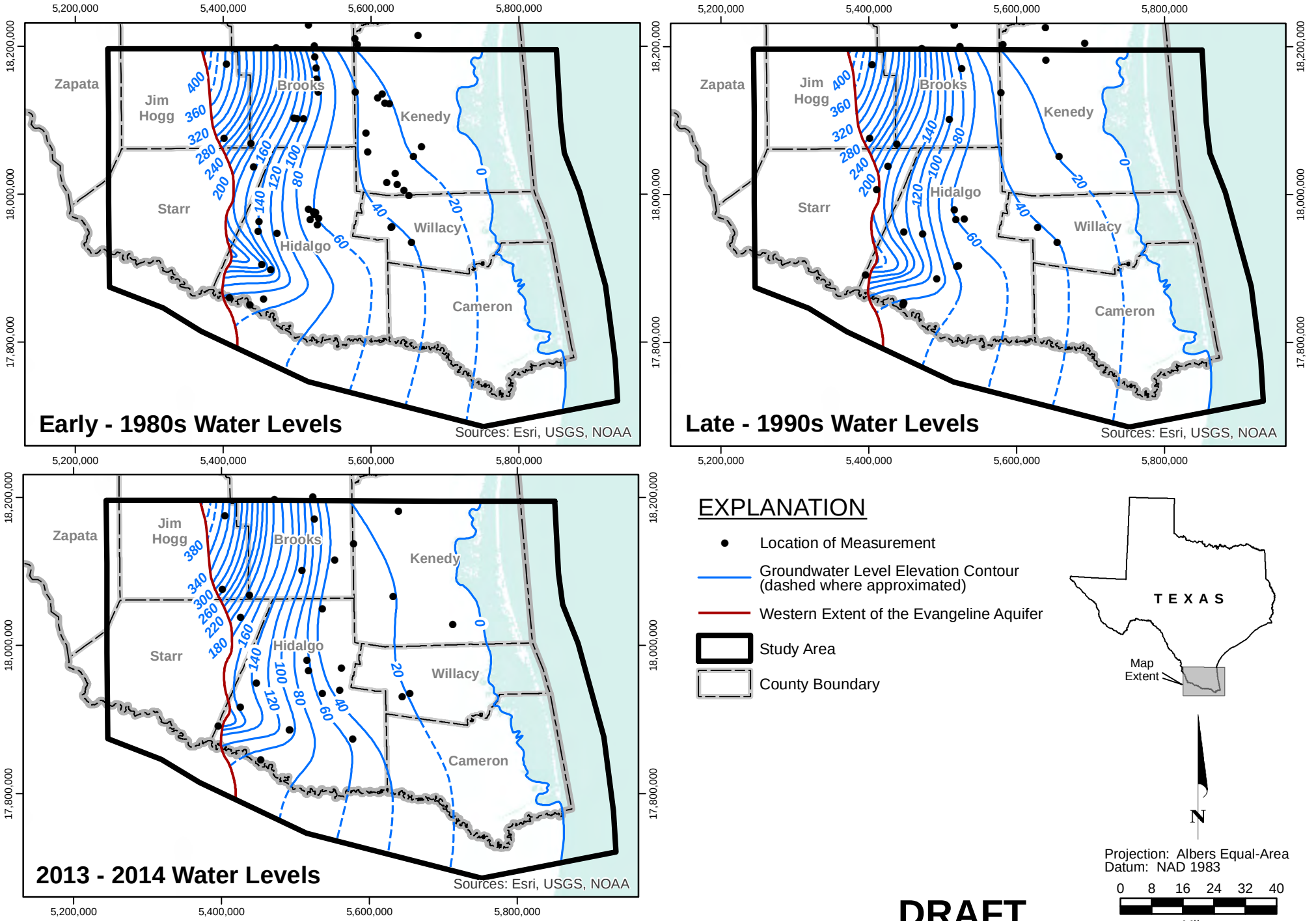

FIGURE 4.2.6. GROUNDWATER LEVEL ELEVATION CONTOURS FOR EVANGELINE AQUIFER IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\WaterLevelMaps\Evangeline\WL_Evangeline_1984_1999_2014.mxd\18May2016

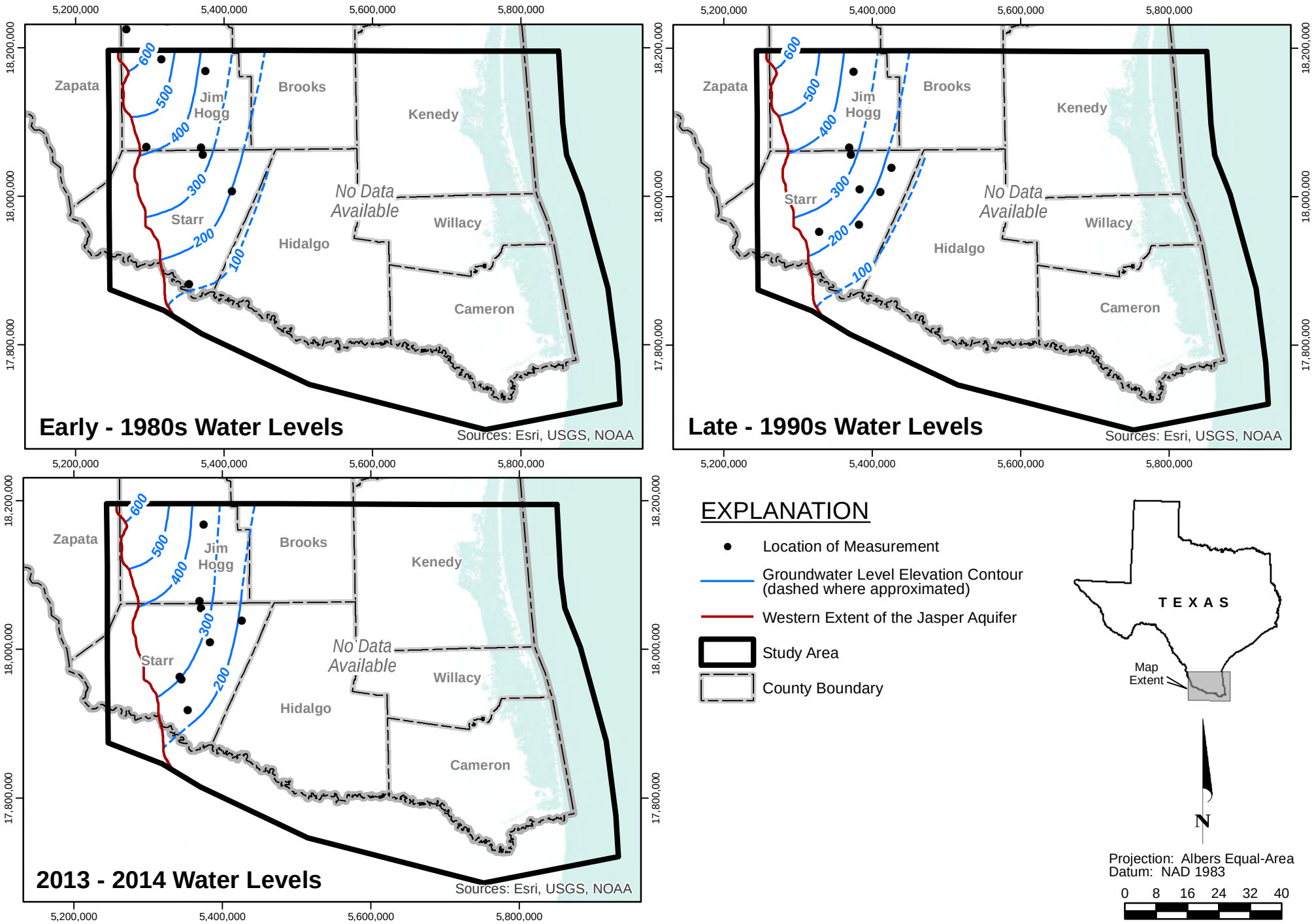

FIGURE 4.2.7. GROUNDWATER LEVEL ELEVATION CONTOURS FOR JASPER AQUIFER IN LOWER RIO GRANDE VALLEY

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1436\REPORT_MAPS\WaterLevelMaps\Jasper\WL_Jasper_1984_1999_2014.mxd\18May2016

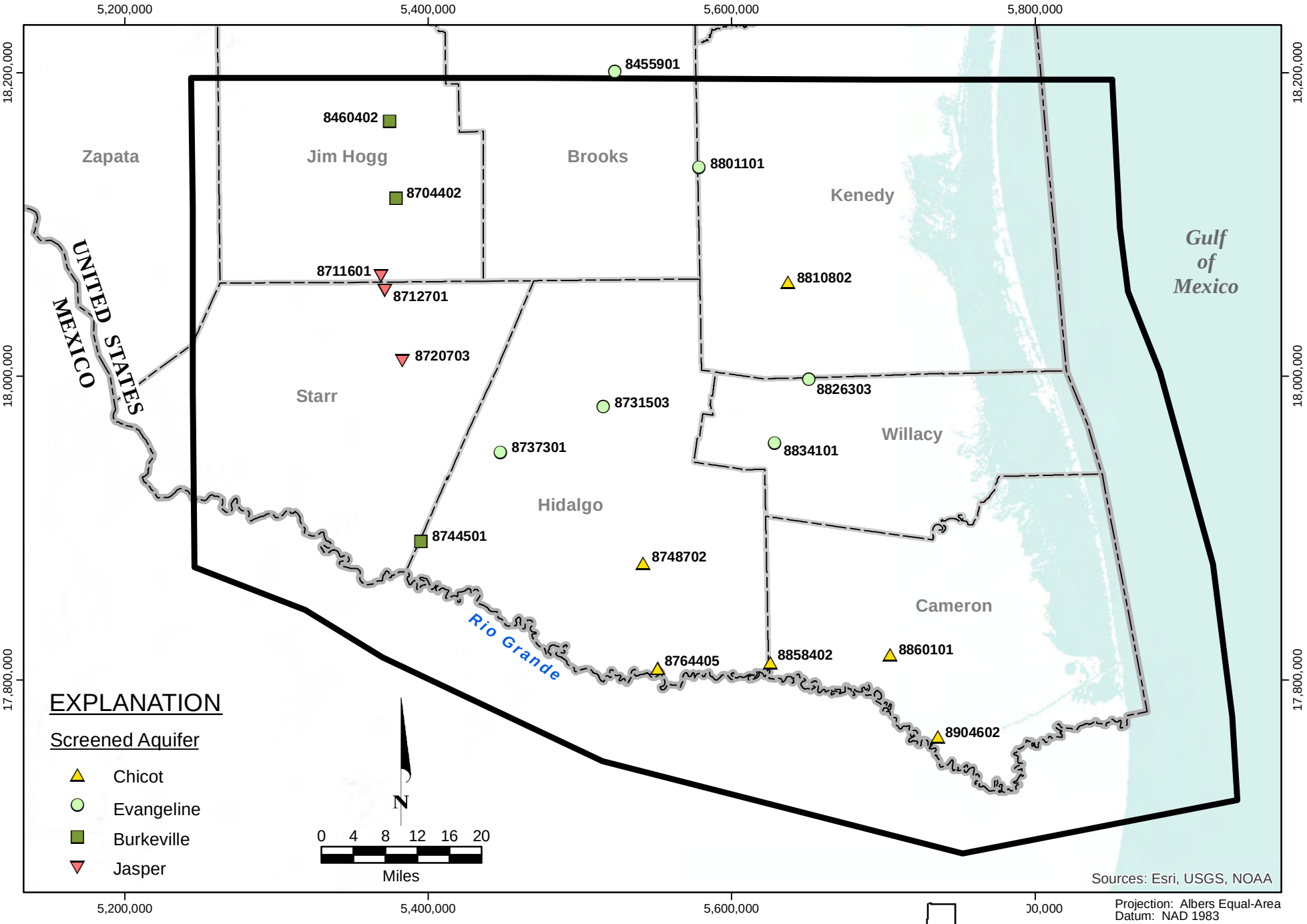

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FIGURE 4.2.8. LOCATIONS OF SELECTED GROUNDWATER LEVEL HYDROGRAPHS

1436\REPORT_MAPS\WaterLevelMaps\WL_Hydrograph_Locs.mxd\24May2016

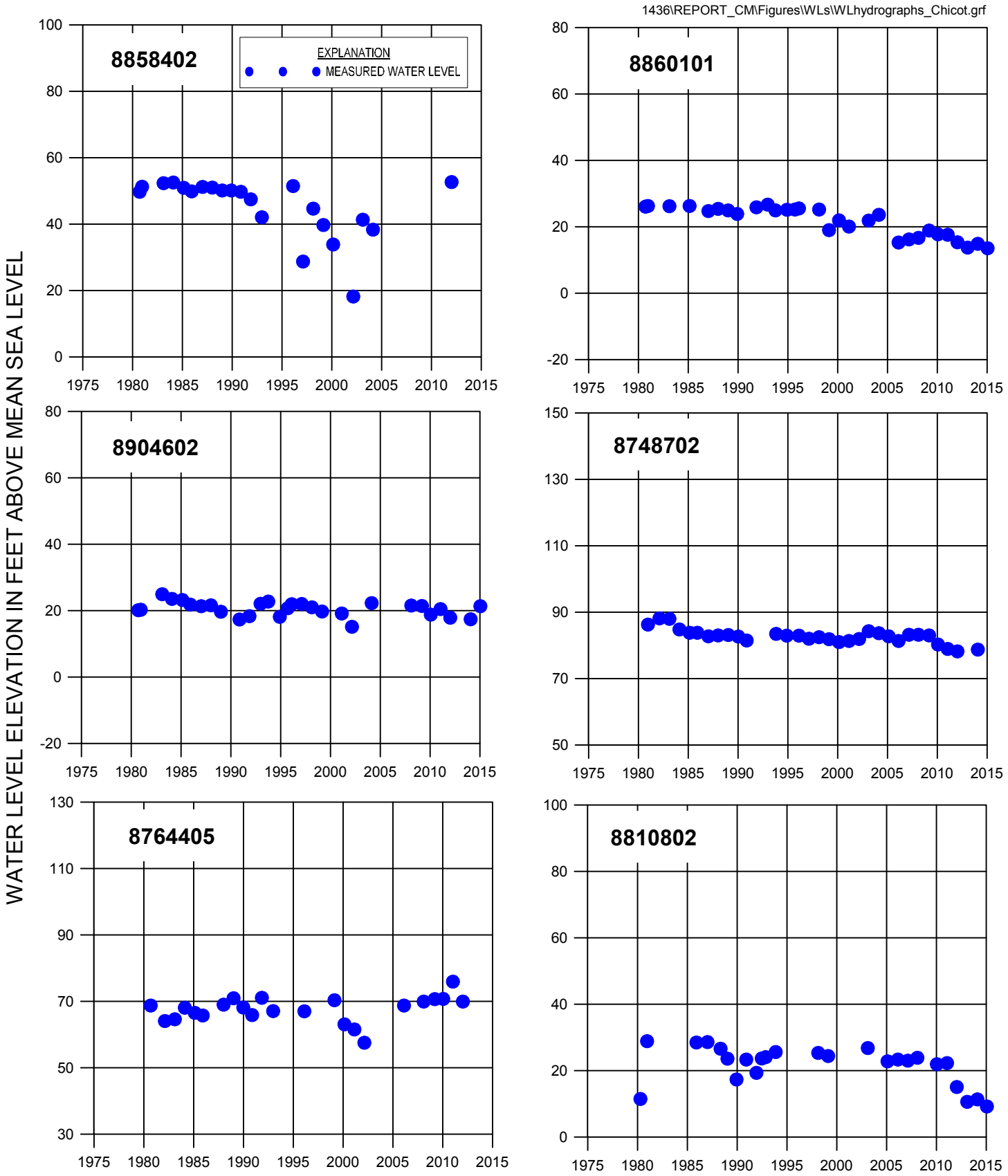

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FIGURE 4.2.9. WATER LEVEL HYDROGRAPHS FOR SELECTED WELLS IN THE CHICOT AQUIFER, LOWER RIO GRANDE VALLEY, TEXAS

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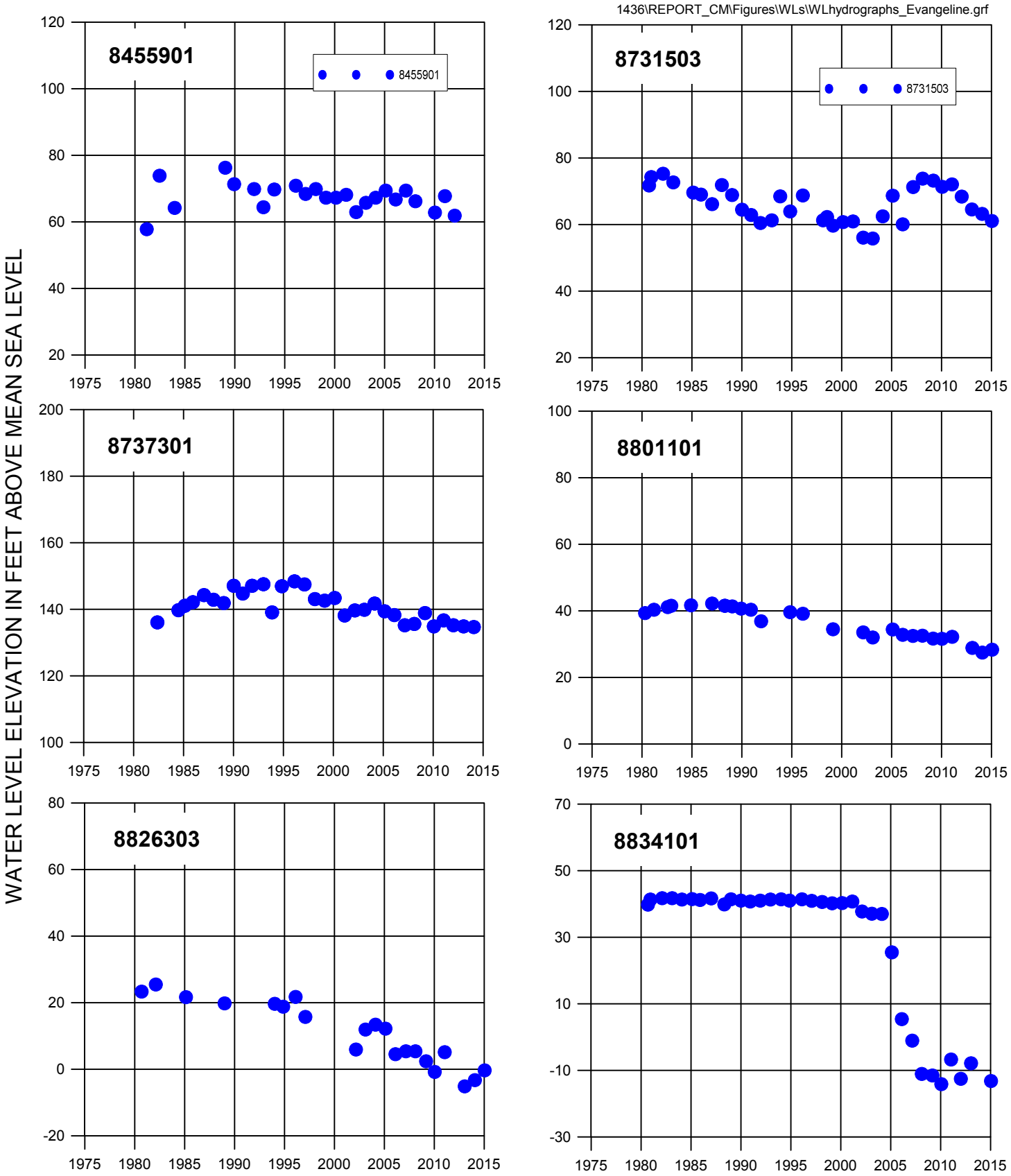

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FIGURE 4.2.10. WATER LEVEL HYDROGRAPHS FOR SELECTED WELLS IN THE EVANGELINE AQUIFER, LOWER RIO GRANDE VALLEY, TEXAS

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1436\REPORT_CM\Figures\WLs\WLhydrographs_Burkeville.grf

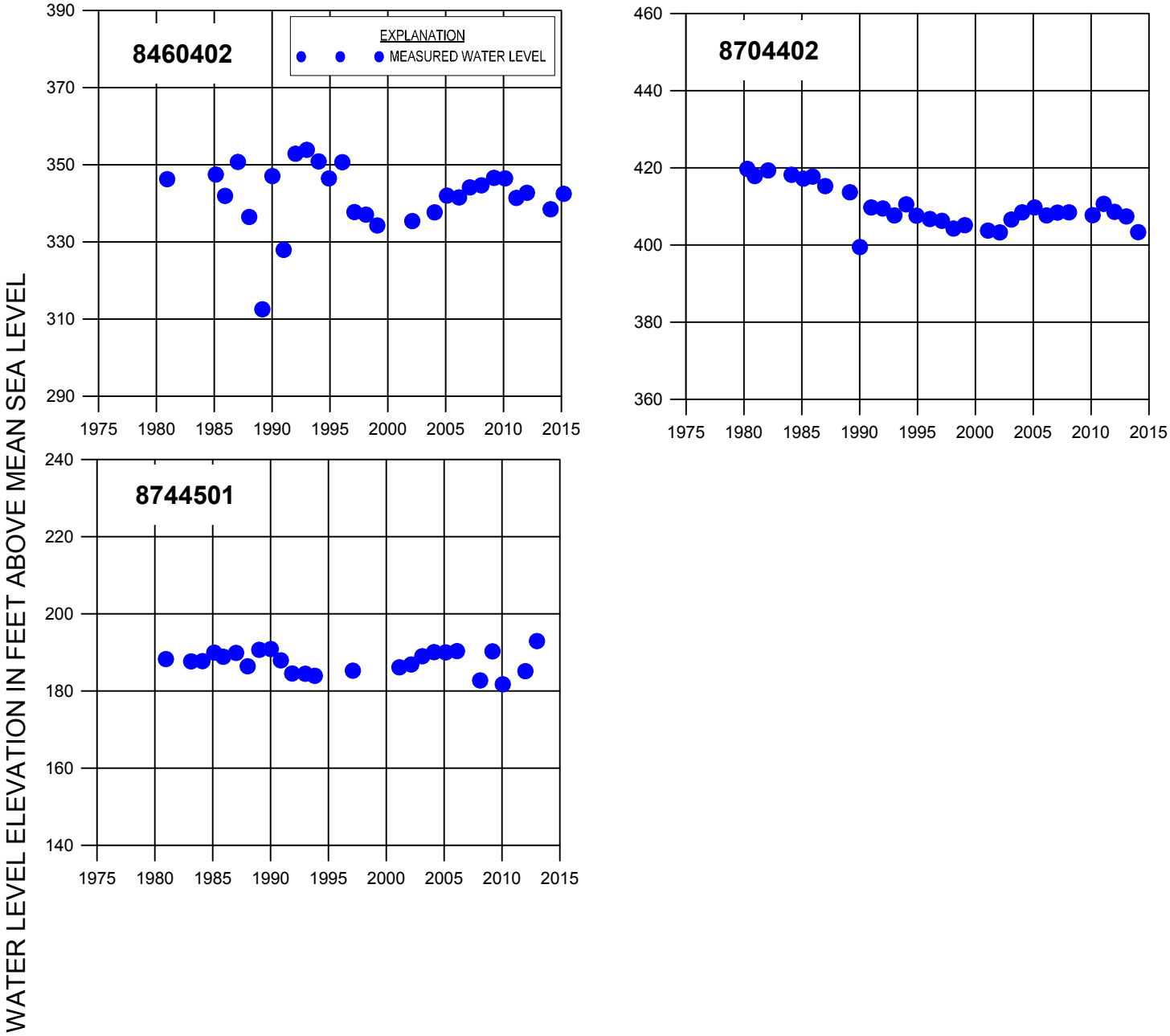

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FIGURE 4.2.11. WATER LEVEL HYDROGRAPHS FOR SELECTED WELLS IN THE BURKEVILLE AQUIFER, LOWER RIO GRANDE VALLEY, TEXAS

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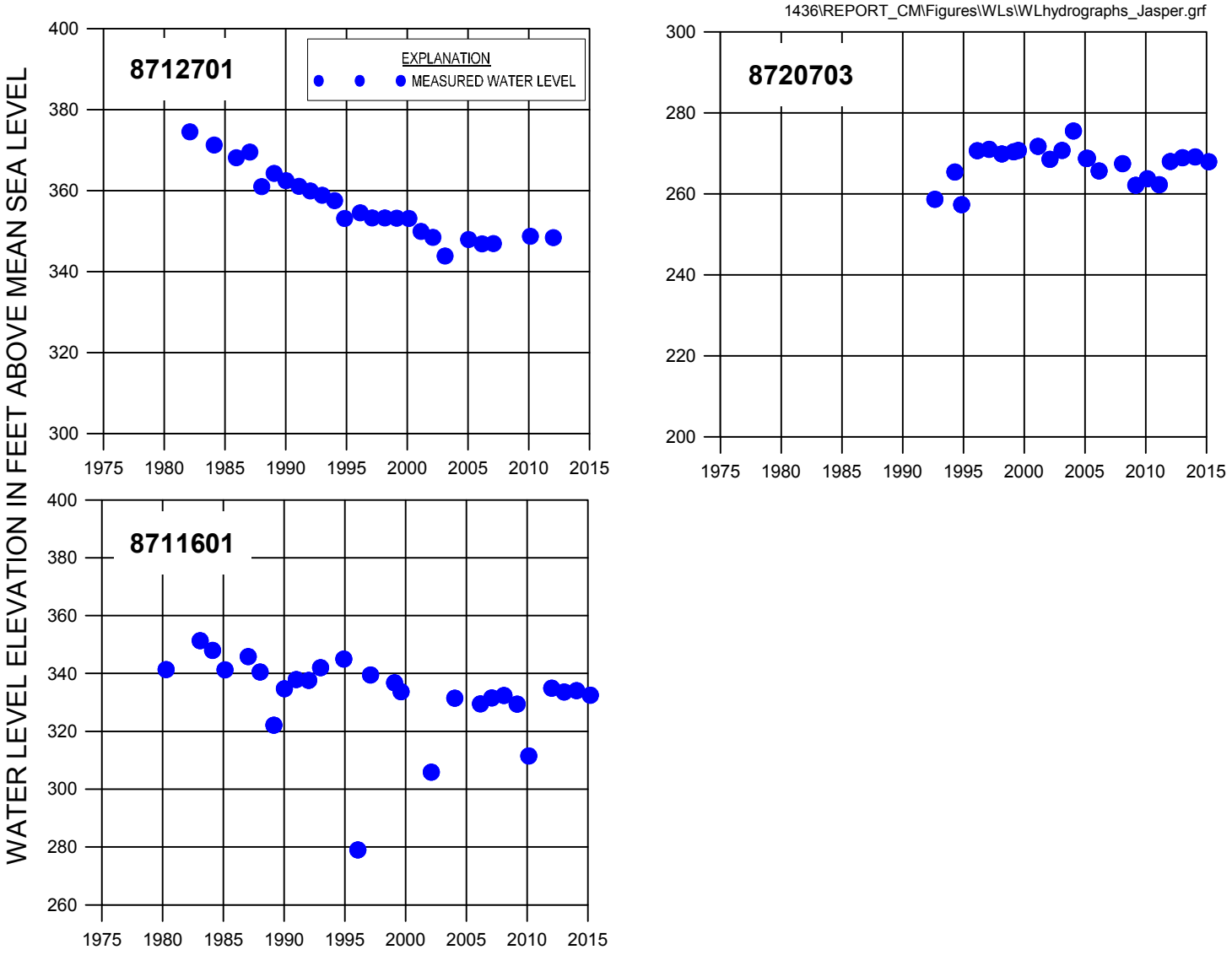

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FIGURE 4.2.12. WATER LEVEL HYDROGRAPHS FOR SELECTED WELLS IN THE JASPER AQUIFER, LOWER RIO GRANDE VALLEY, TEXAS

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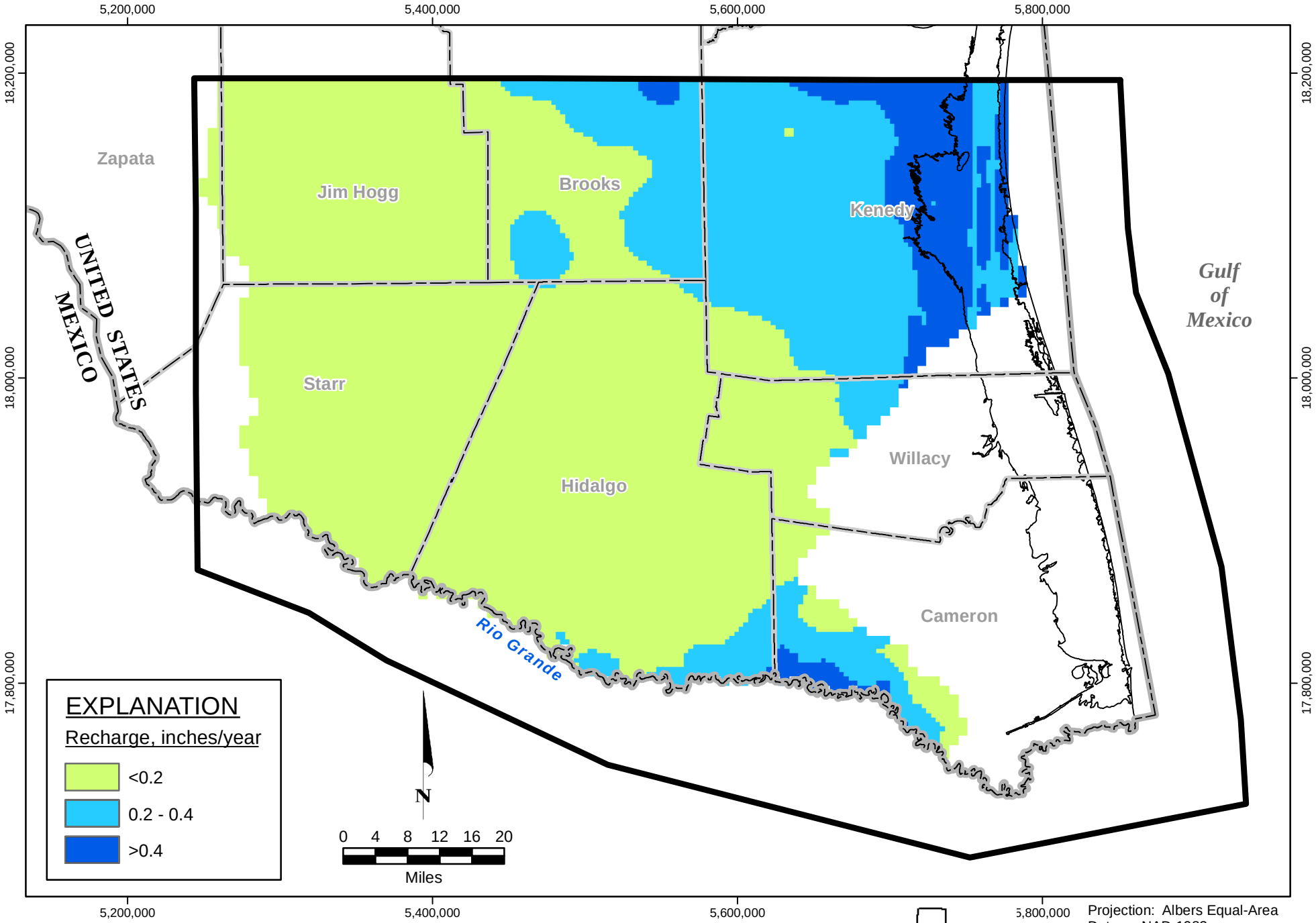

Projection: Albers Equal-Area
Datum: NAD 1983

Source: Scanlon and others (2011) chloride mass balance for Gulf Coast Aquifer system

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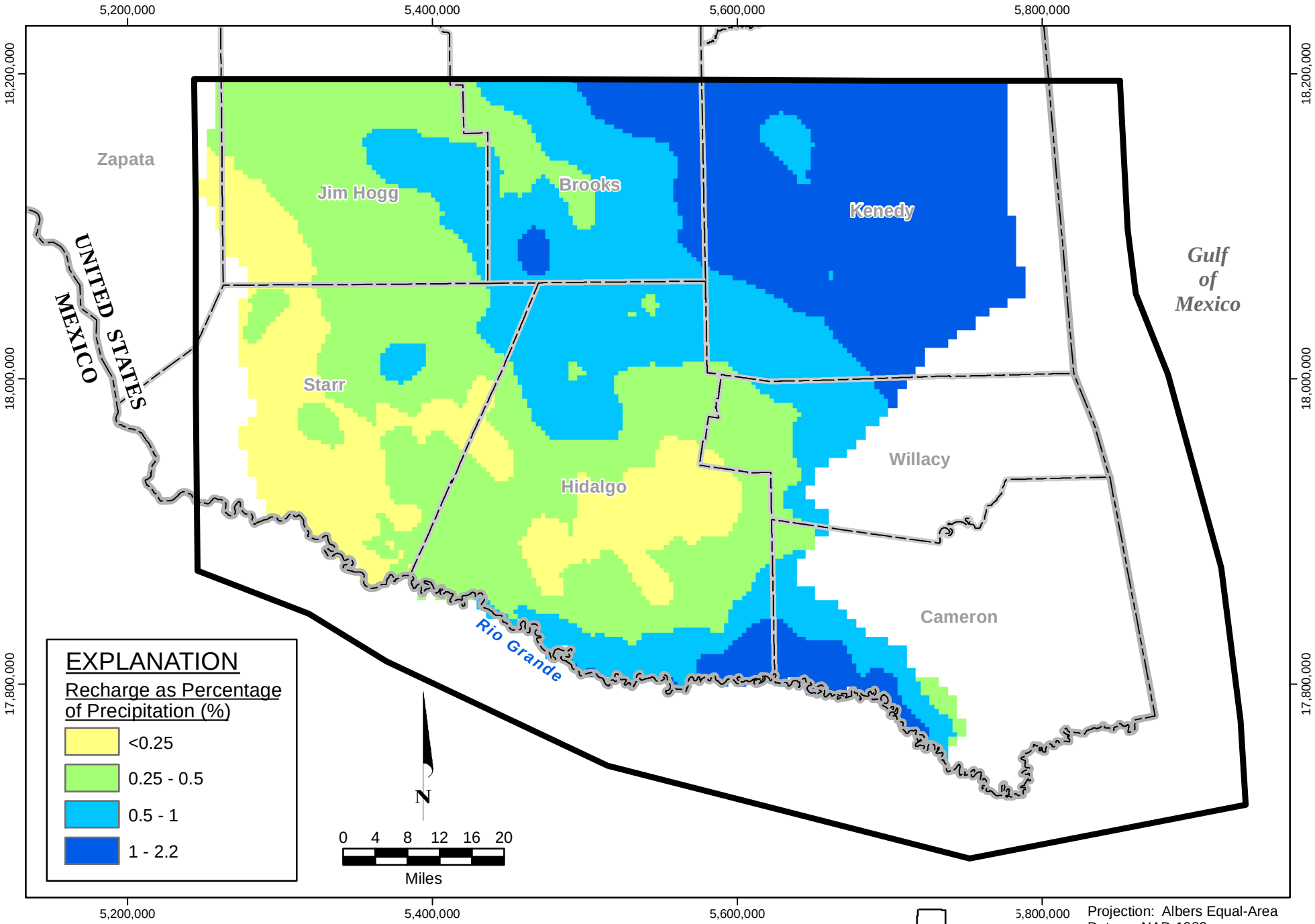
FIGURE 4.3.1. DISTRIBUTION OF AVERAGE ANNUAL RECHARGE IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\Recharge_inches.mxd\24May2016



Projection: Albers Equal-Area
Datum: NAD 1983

Source: Scanlon and others (2011) chloride mass balance for Gulf Coast Aquifer system

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FIGURE 4.3.2. DISTRIBUTION OF RECHARGE AS PERCENTAGE OF ANNUAL PRECIPITATION IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\Recharge_percentrain.mxd\13May2016

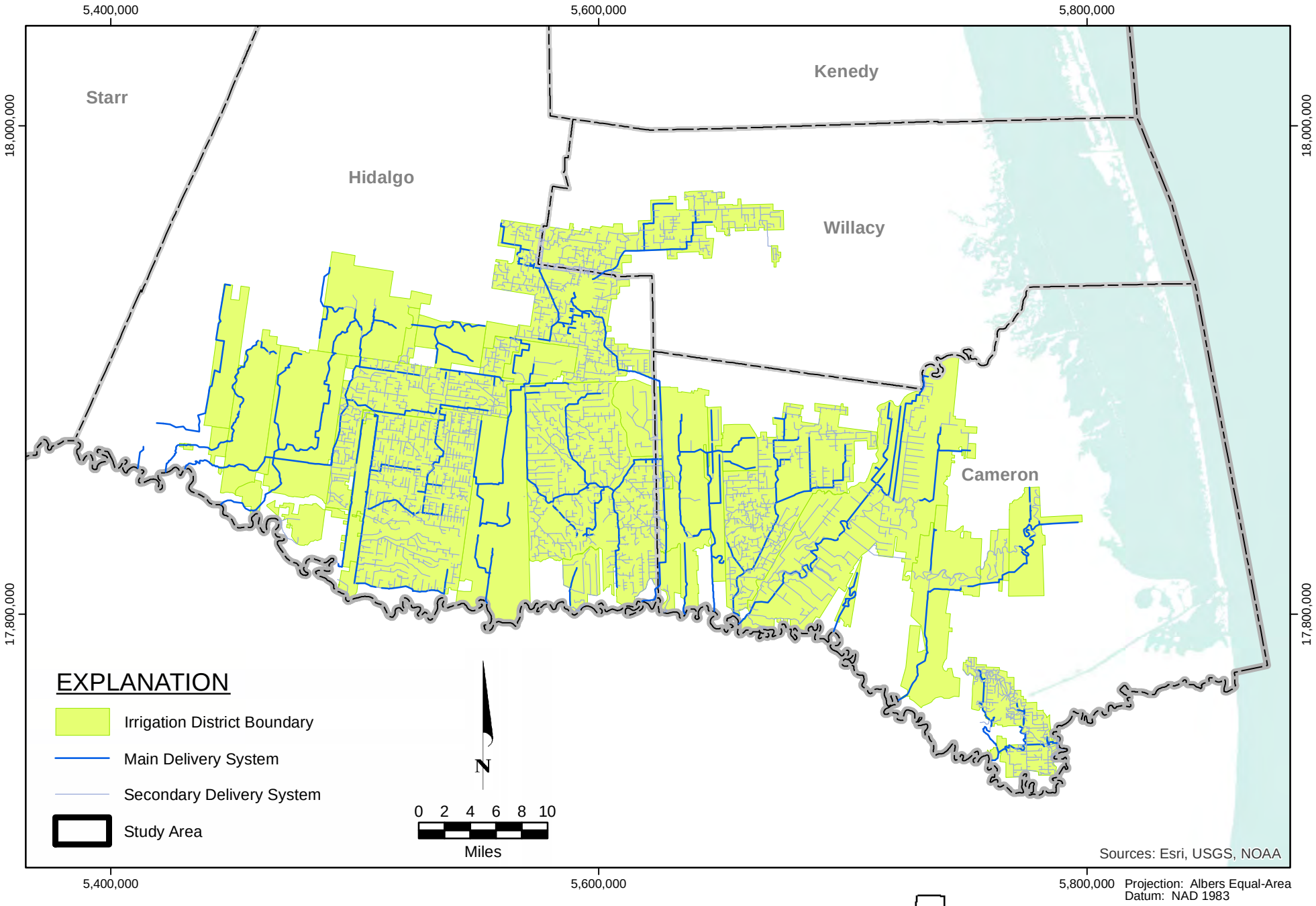

FIGURE 4.3.3. IRRIGATION DISTRICTS AND CANAL NETWORKS IN LOWER RIO GRANDE VALLEY, TEXAS

1436\REPORT_MAPS\IrrigationDistricts.mxd\24May2016

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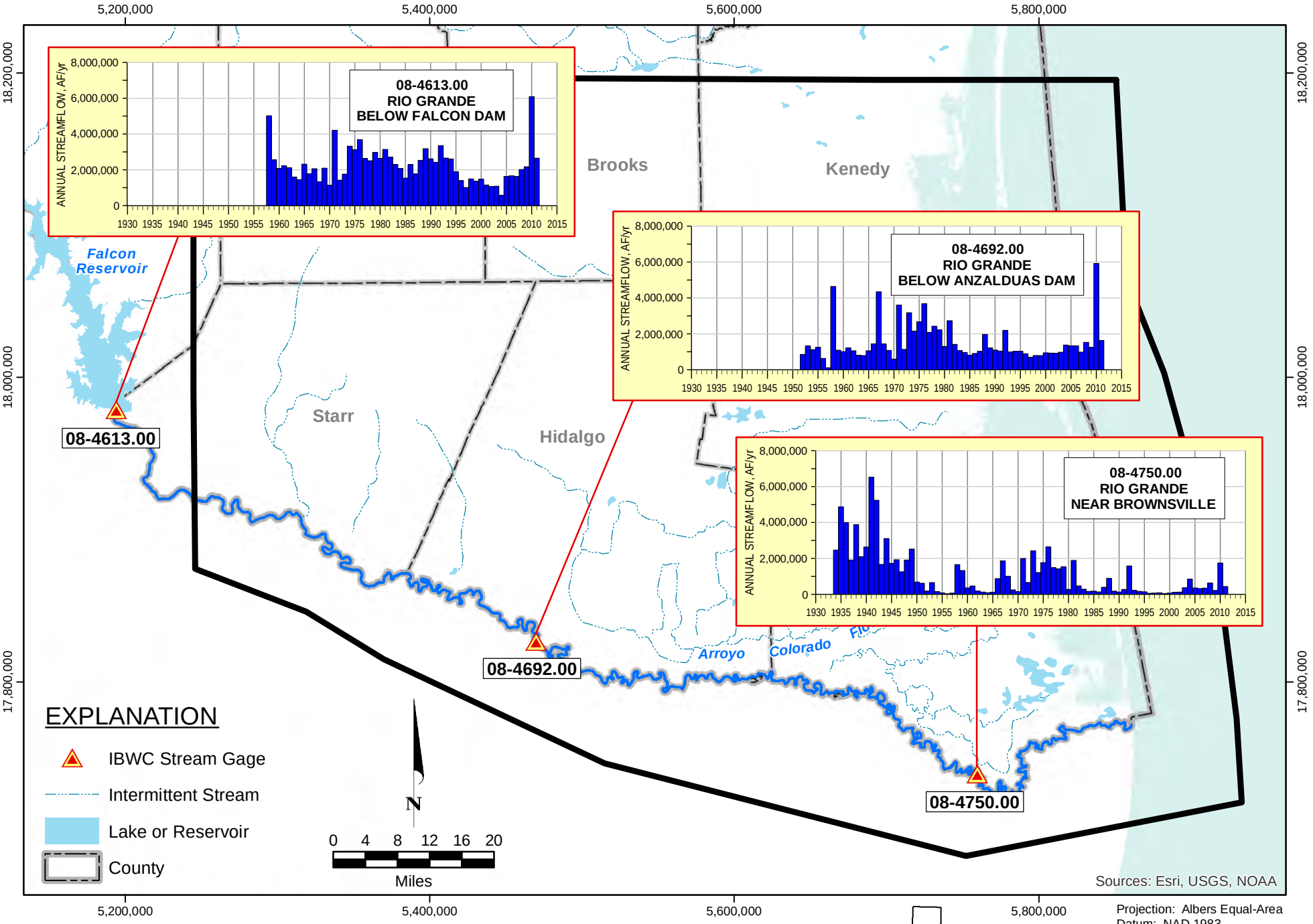

FIGURE 4.4.1. SURFACE WATER FEATURES AND RIVER BASINS IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\StreamHydrographLocs_RG.mxd\25May2016

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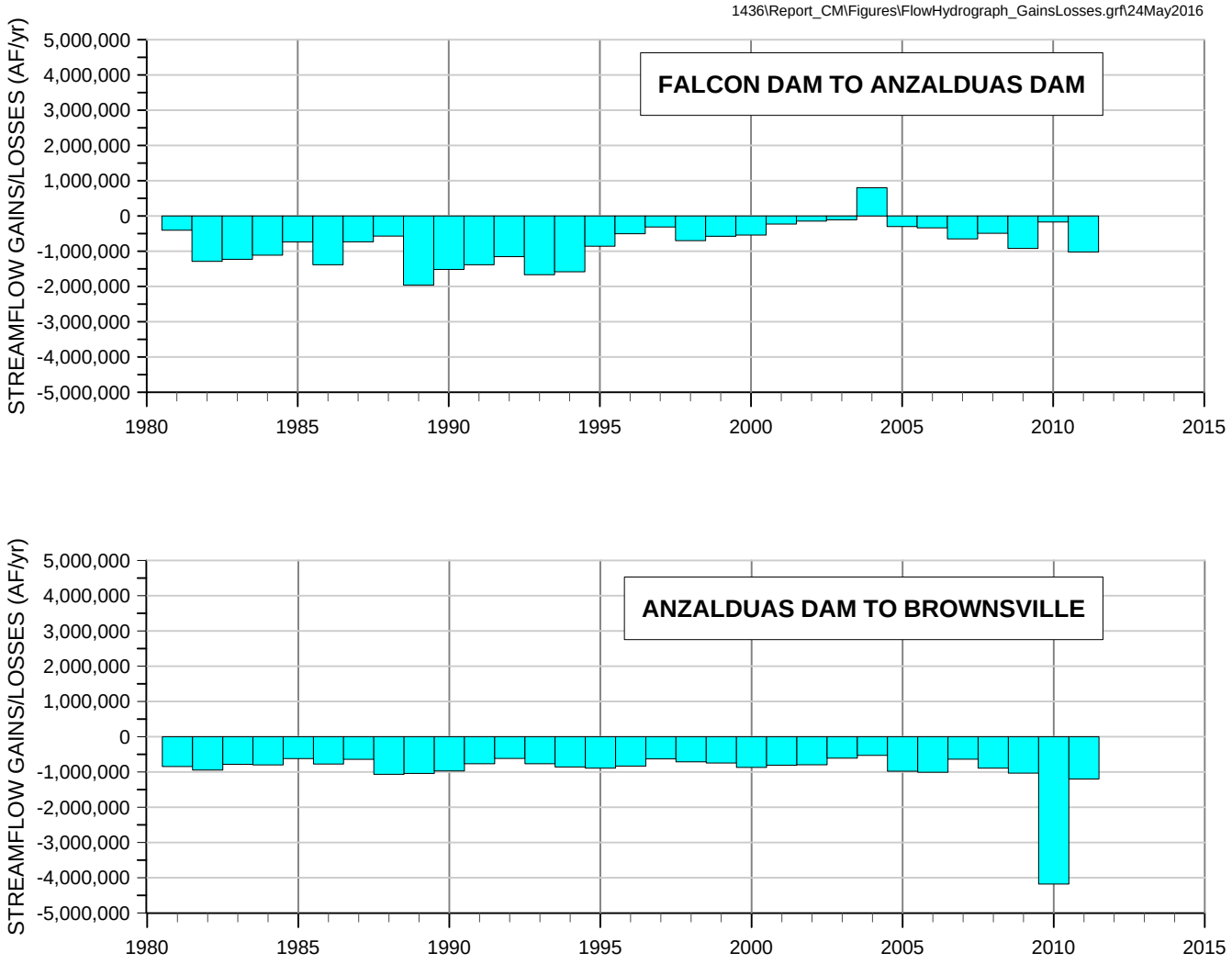

Note: Positive values indicate gains, negative values indicate losses.

FIGURE 4.4.2. ANNUAL STREAMFLOW GAINS OR LOSSES BETWEEN RIO GRANDE GAGES LOWER RIO GRANDE VALLEY, TEXAS

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Source: International Boundary Water Commission

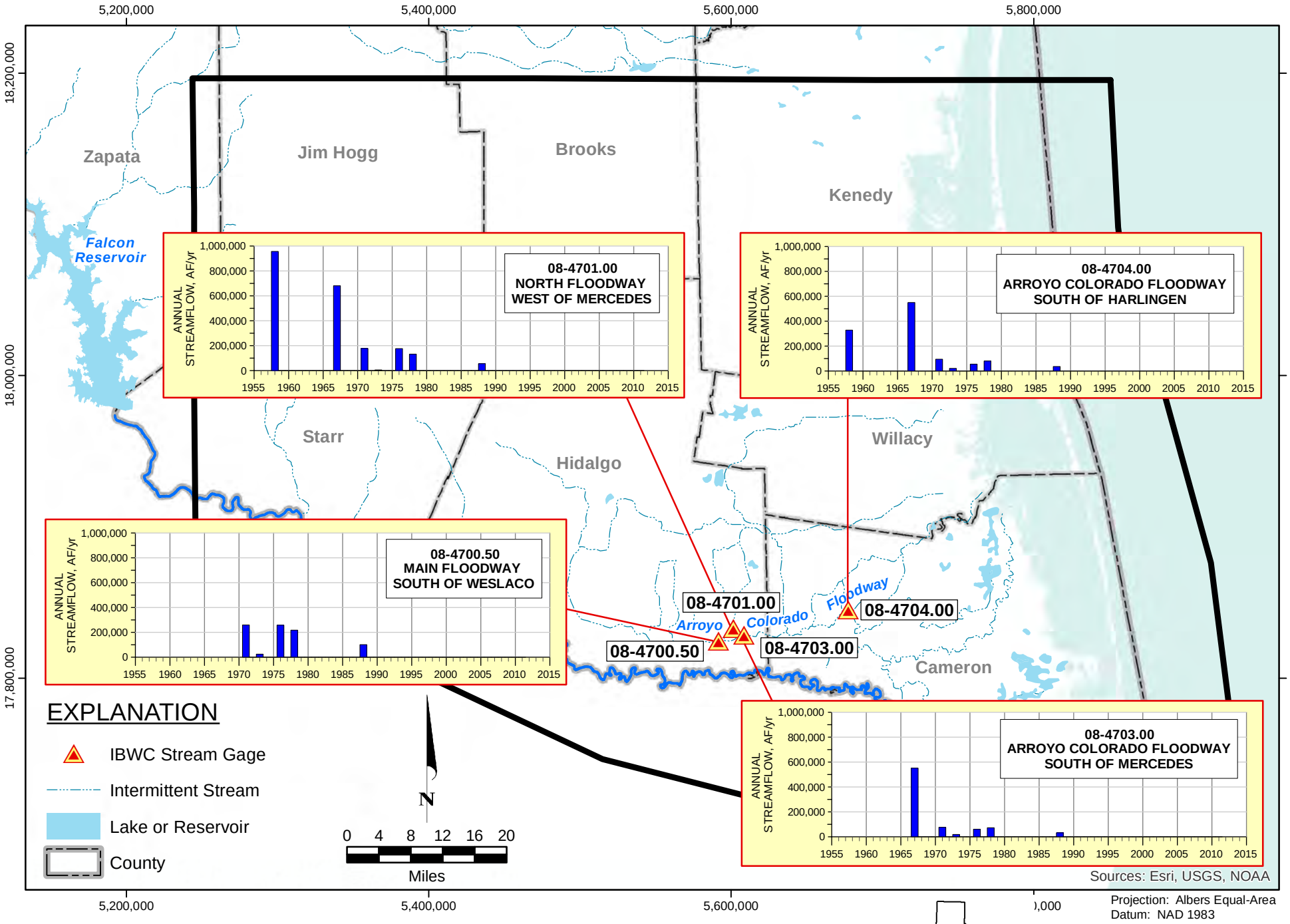

FIGURE 4.4.3. ANNUAL STREAMFLOWS ALONG ARROYO COLORADO FLOODWAY IN LOWER RIO GRANDE VALLEY

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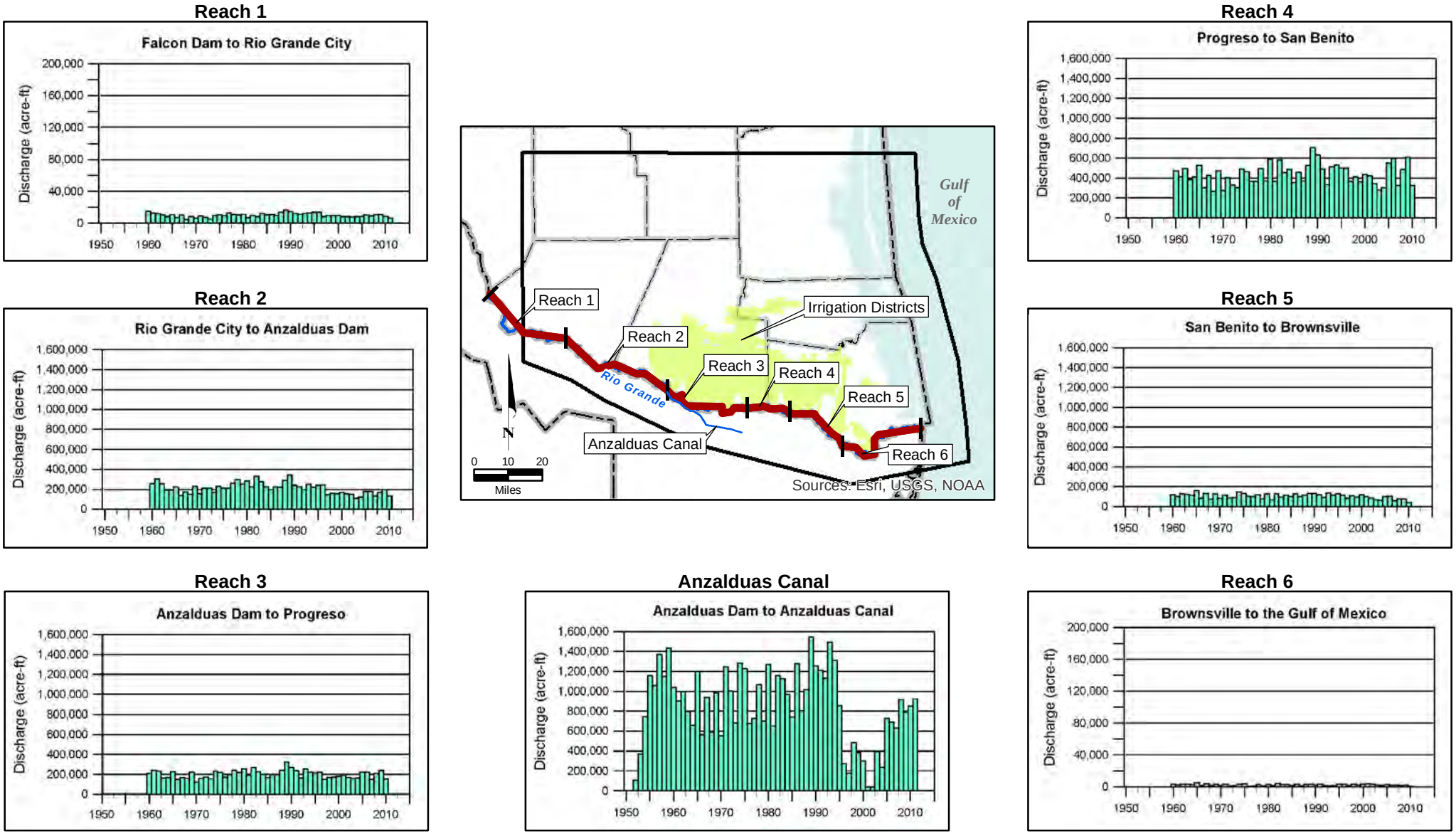
1436\REPORT_MAPS\StreamHydrographLocs_Floodway.mxd\25May2016



Source: IBWC, reported total diversions to U.S. along six specified river reaches, and diversion to one major canal to Mexico.

FIGURE 4.4.4. ANNUAL DIVERSIONS FROM THE RIO GRANDE IN LOWER RIO GRANDE VALLEY

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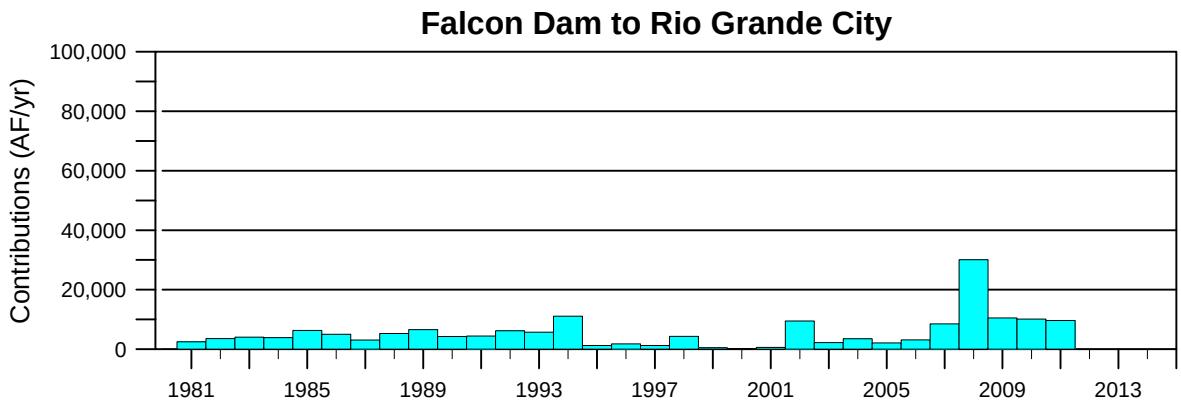
1436\REPORT_MAPS\Diversions_GRAPHS\24May2016

1436\REPORT_CM\Figures\Contributions.grf\24May2016



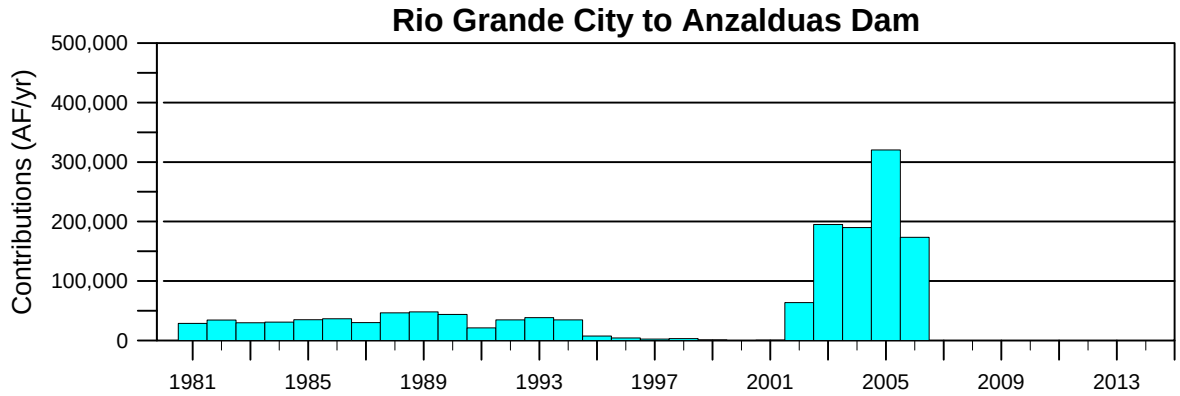


FIGURE 4.4.5. ANNUAL CONTRIBUTIONS TO RIO GRANDE FROM RIO SAN JUAN IRRIGATION DISTRICT IN MEXICO, LOWER RIO GRANDE VALLEY

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Source: International Boundary Water Commission

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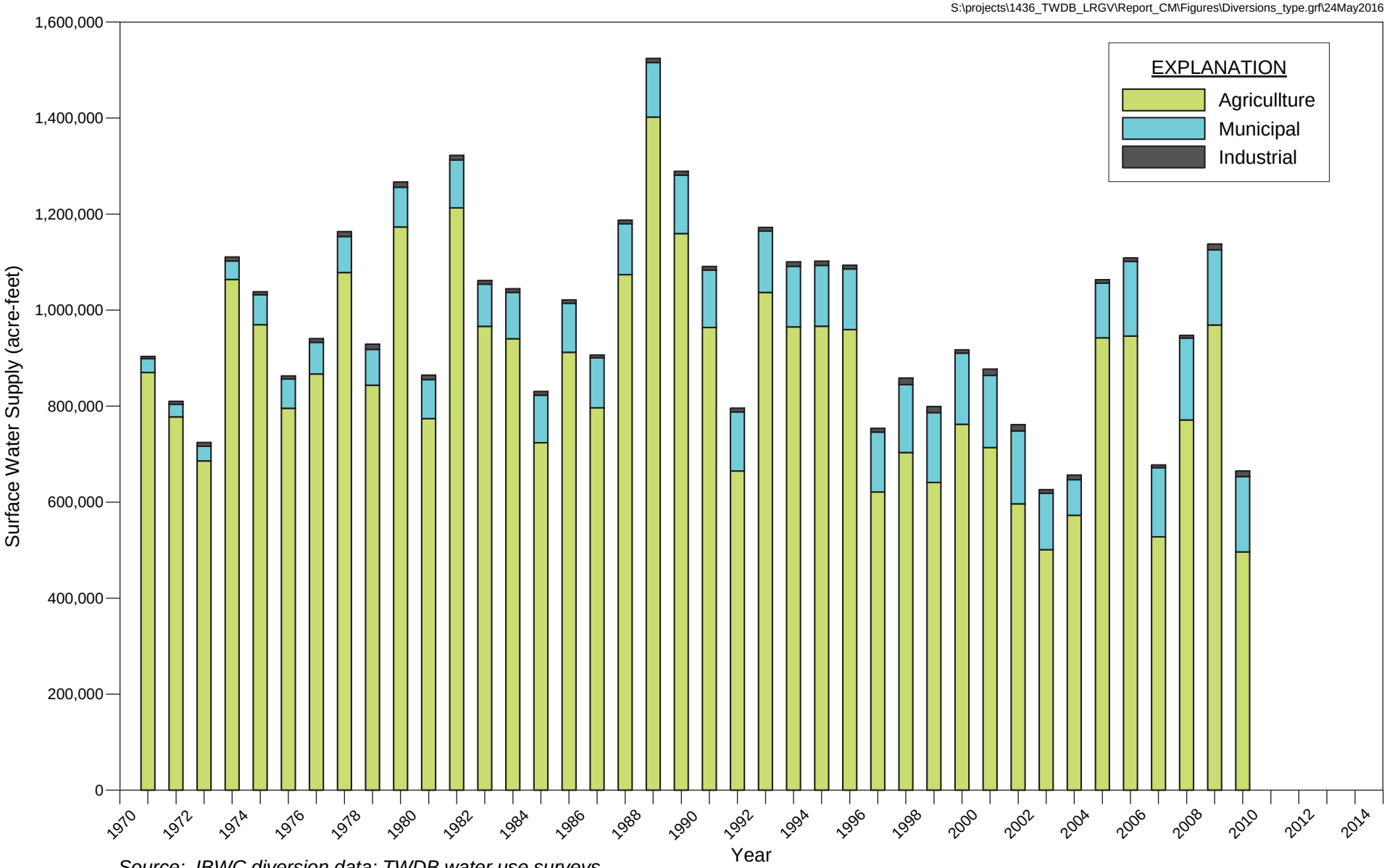

Source: IBWC diversion data; TWDB water use surveys

FIGURE 4.4.6. SURFACE WATER USE IN LOWER RIO GRANDE VALLEY

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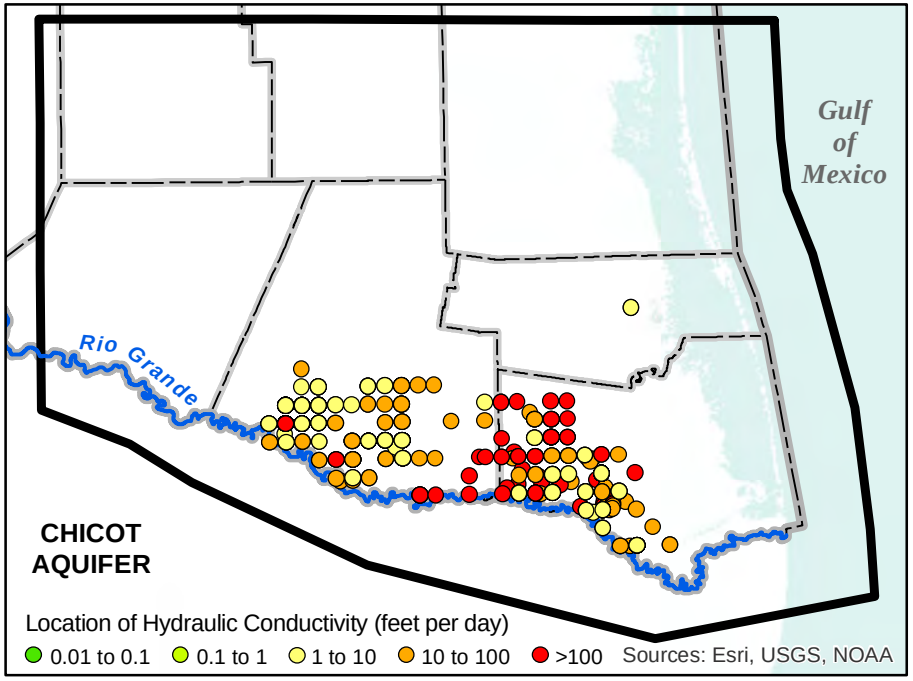

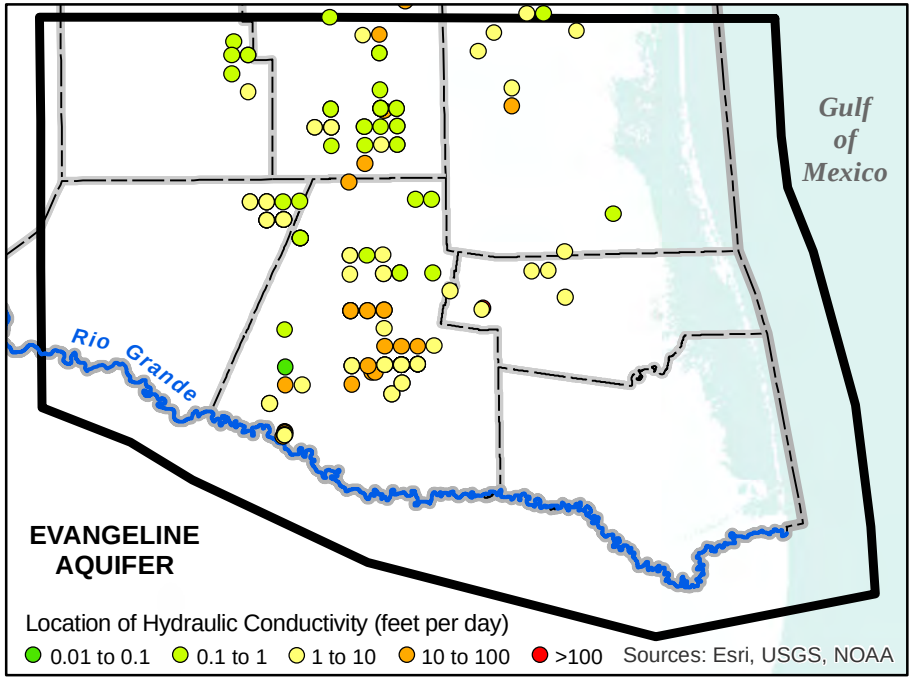

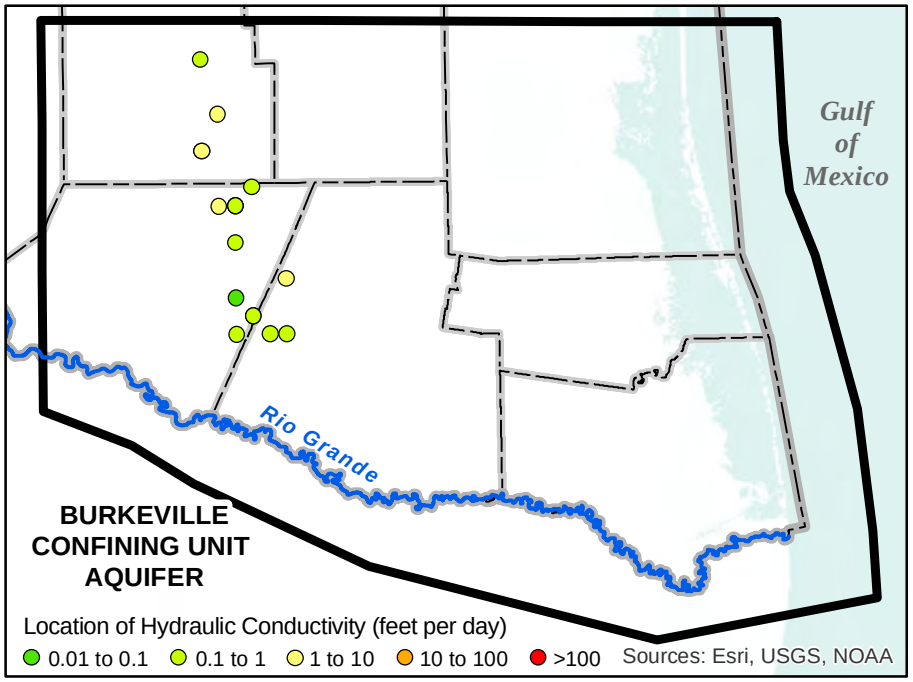

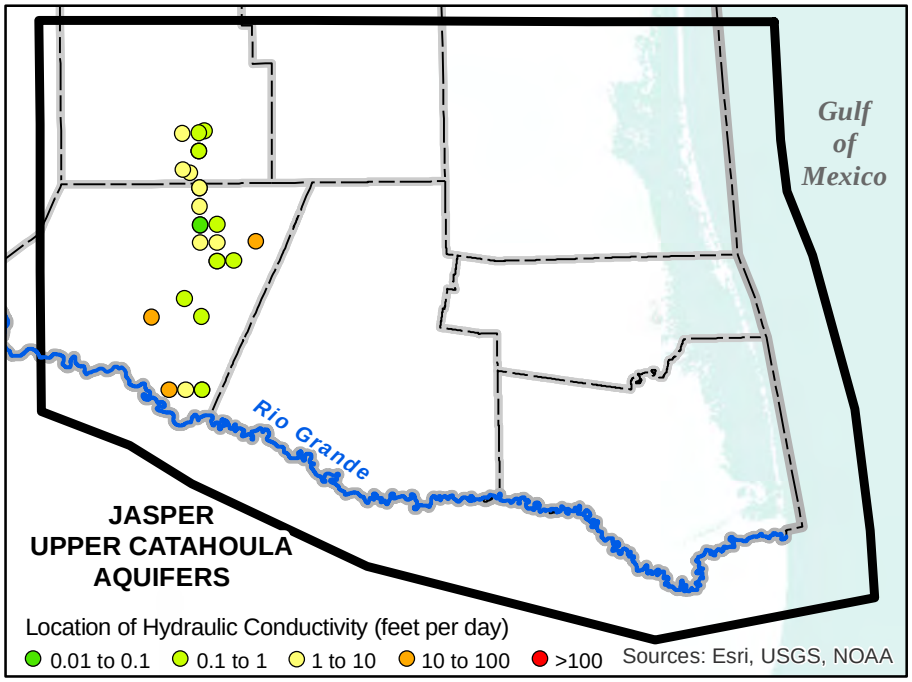

FIGURE 4.5.1. DISTRIBUTION OF ESTIMATED HYDRAULIC CONDUCTIVITY IN GULF COAST AQUIFER UNITS IN LOWER RIO GRANDE VALLEY

N

0 5 10 15 20 25 30
Miles

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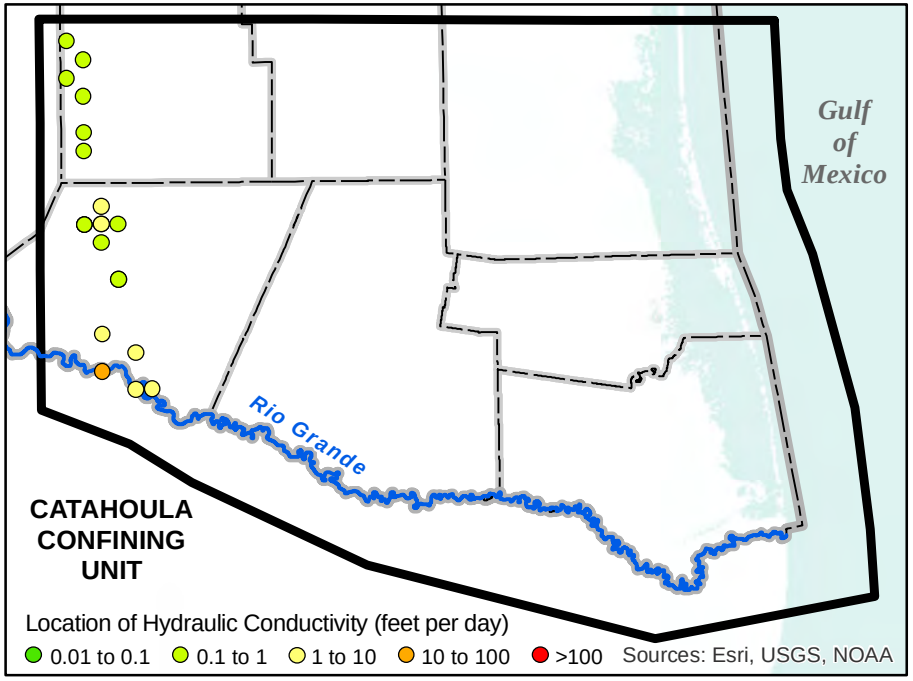
GIS-Tuc\1436\REPORT_MAPS\K_Aquifers_1.mxd\26May2016



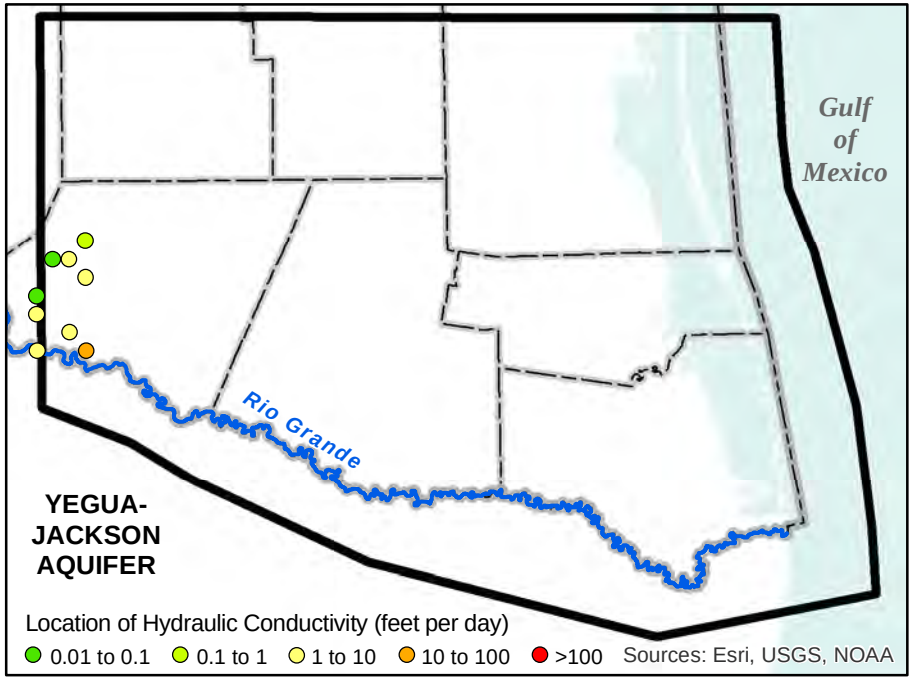


FIGURE 4.5.2. DISTRIBUTION OF ESTIMATED HYDRAULIC CONDUCTIVITY IN CATAHOULA CONFINING SYSTEM AND YEGUA-JACKSON AQUIFER IN LOWER RIO GRANDE VALLEY

N

0 5 10 15 20 25 30
Miles

DRAFT

MONTGOMERY & ASSOCIATES

GIS-Tuc\1436\REPORT_MAPS\K_Aquifers_2.mxd\26May2016

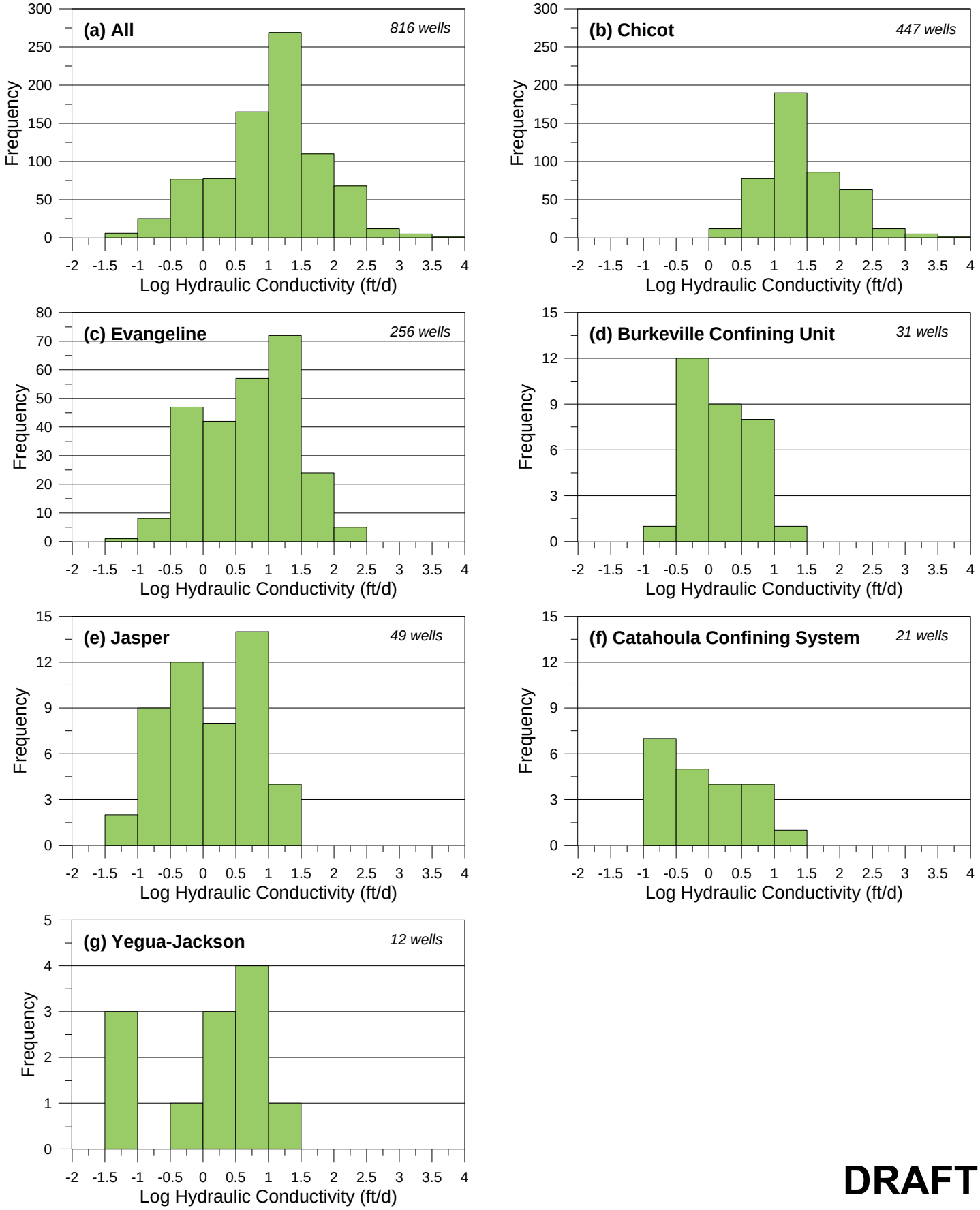


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FIGURE 4.5.3. HISTOGRAMS OF ESTIMATED HYDRAULIC CONDUCTIVITY FOR THE LOWER RIO GRANDE VALLEY HYDROSTRATIGRAPHIC UNITS

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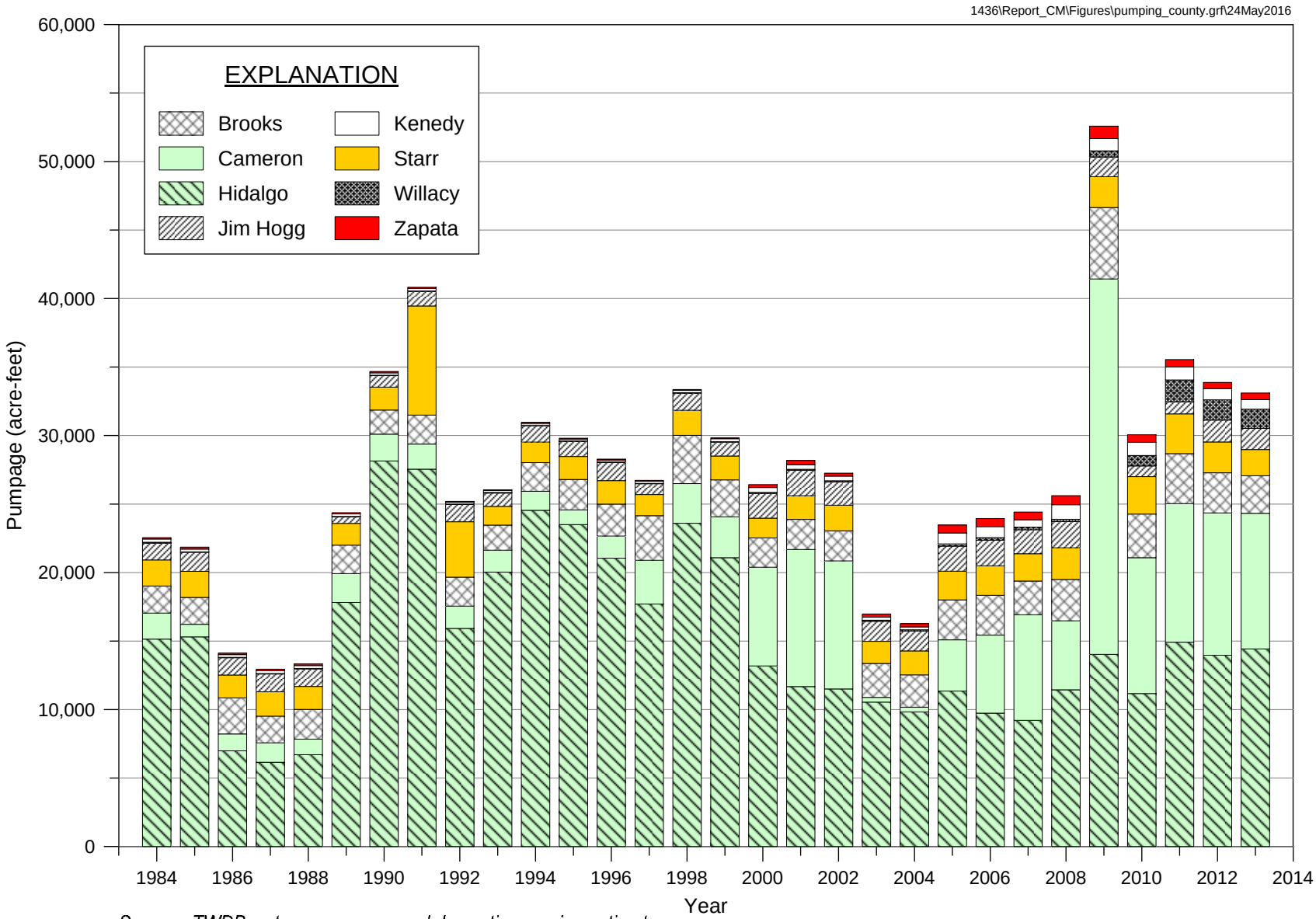

Source: TWDB water use survey, and domestic pumping estimates

FIGURE 4.6.1. ANNUAL GROUNDWATER PUMPING BY COUNTY IN LOWER RIO GRANDE VALLEY: 1984 THROUGH 2013

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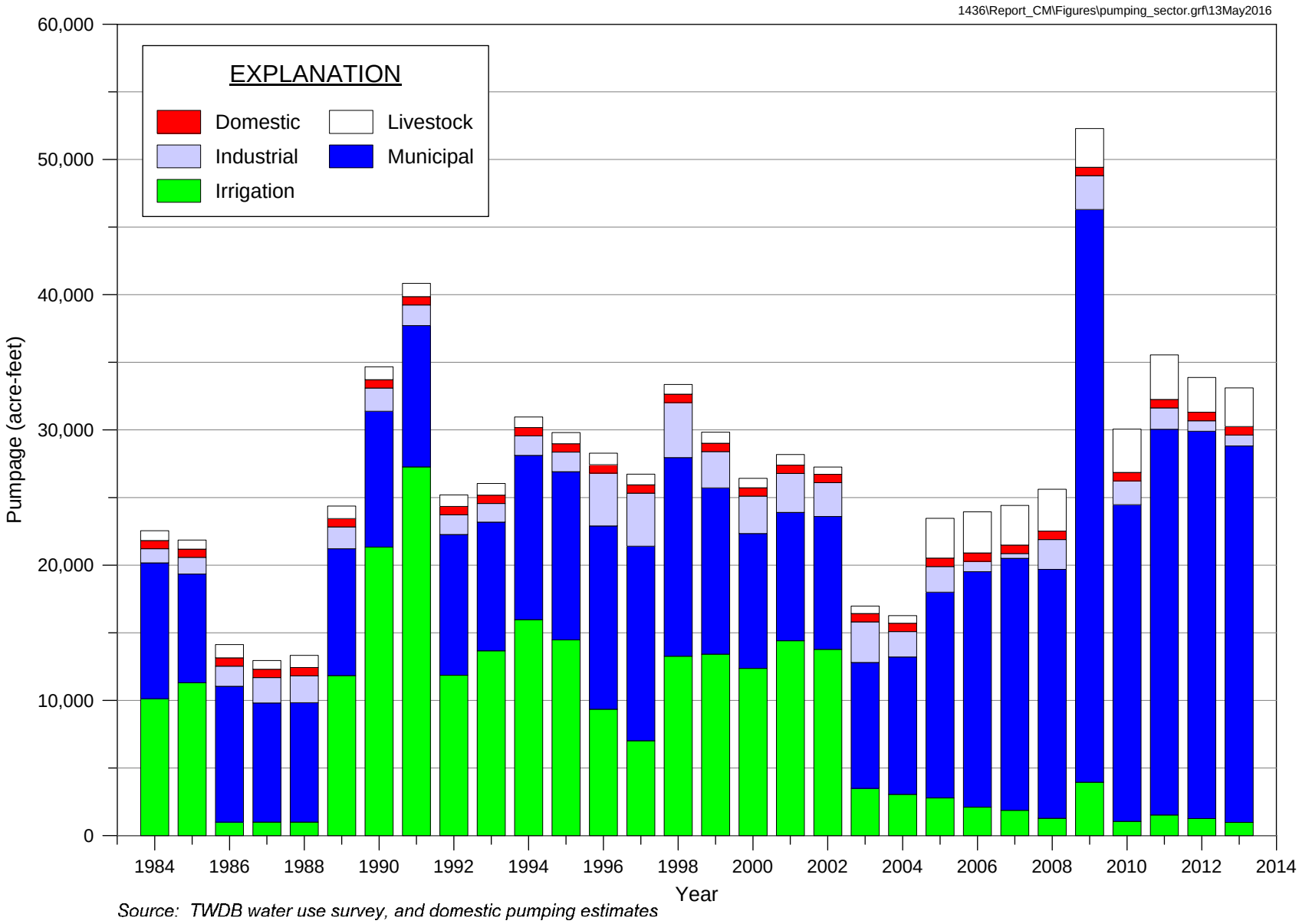

FIGURE 4.6.2. ANNUAL GROUNDWATER PUMPING BY WATER USE SECTOR IN LOWER RIO GRANDE VALLEY: 1984 THROUGH 2013

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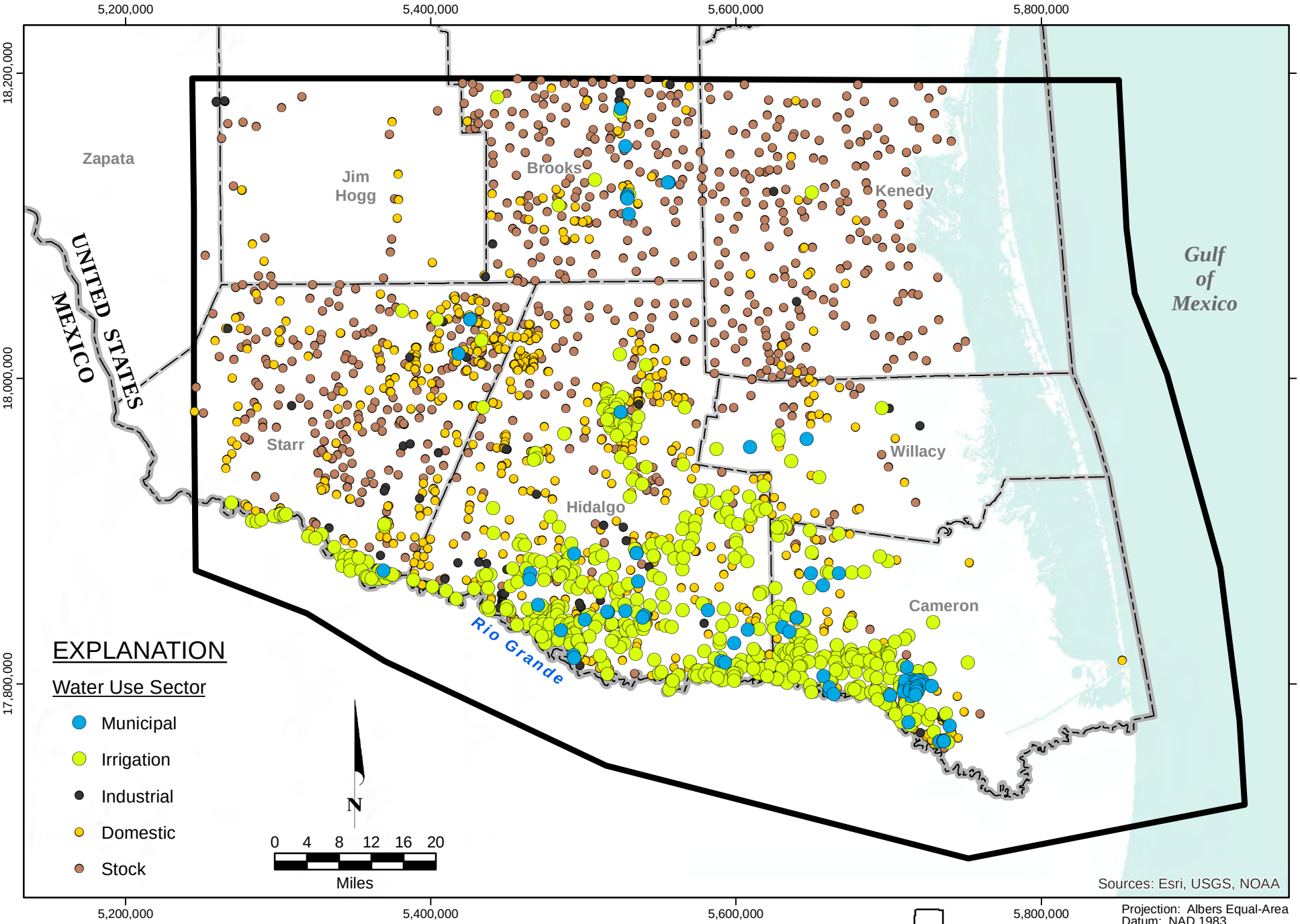

Projection: Albers Equal-Area
Datum: NAD 1983

Source: TWDB Groundwater Database

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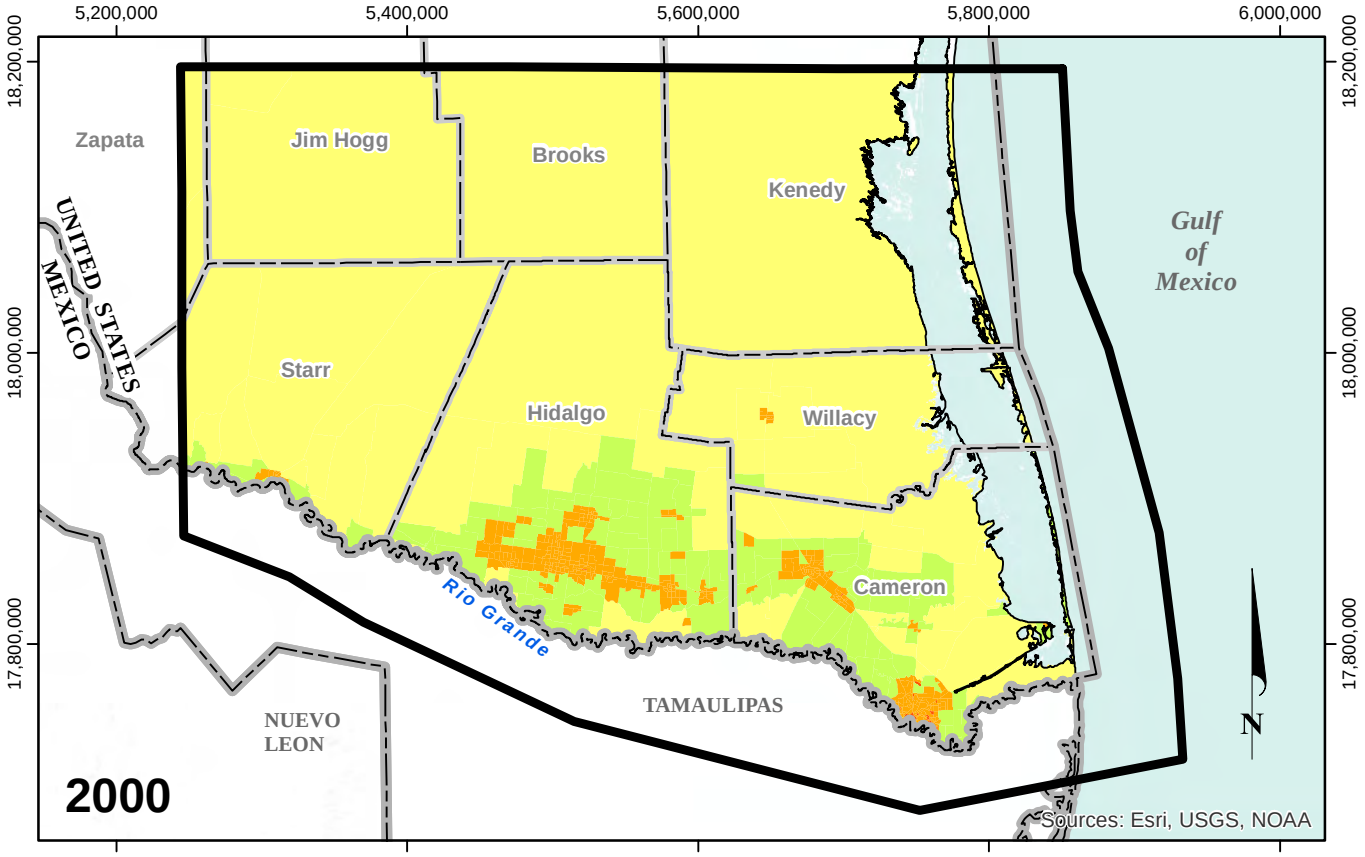
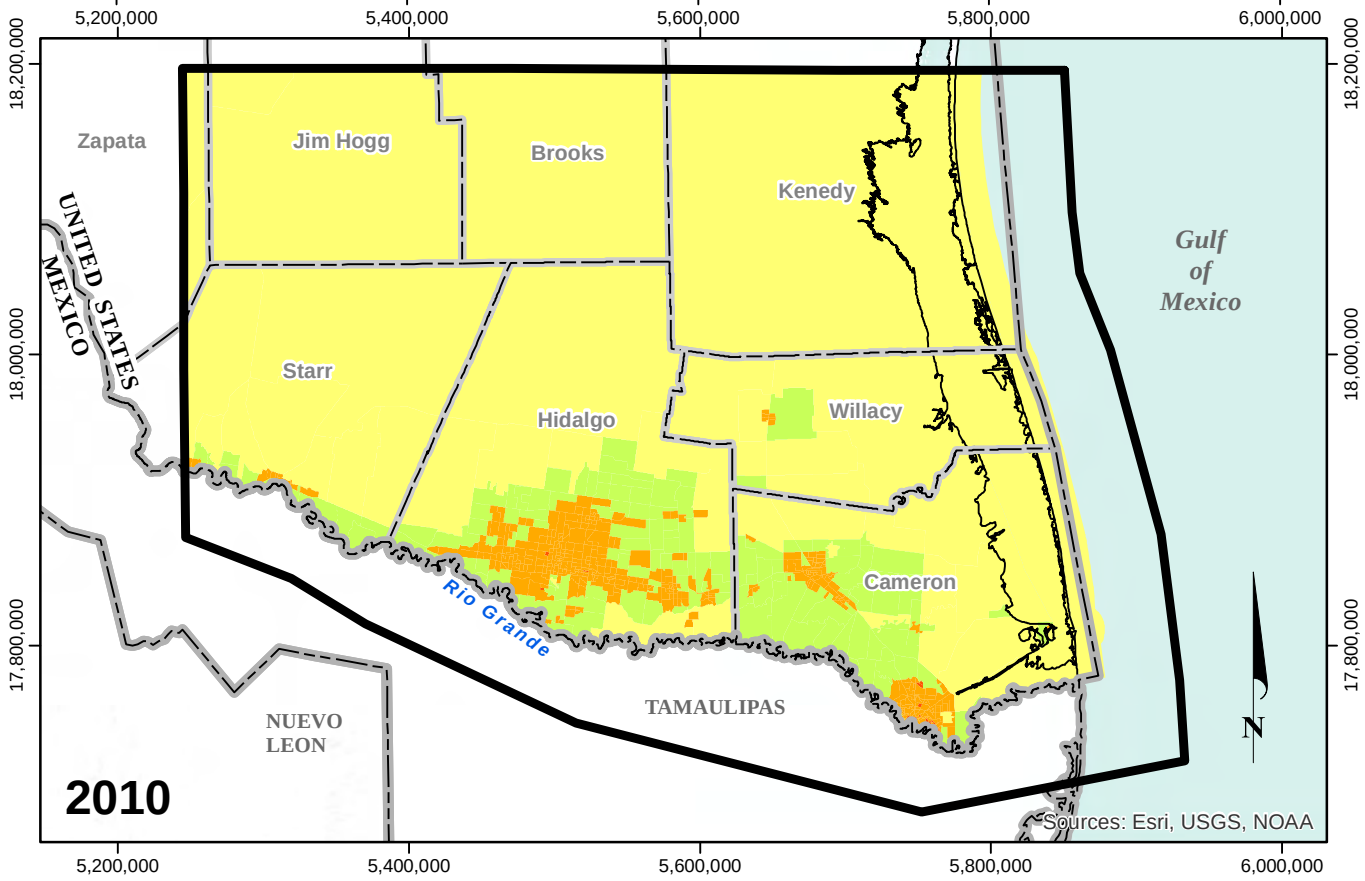
FIGURE 4.6.3. GROUNDWATER WITHDRAWAL WELLS IN LOWER RIO GRANDE VALLEY, TEXAS

1436\REPORT_MAPS\PumpingWells.mxd\24May2016





Source: U.S. Census Bureau, shown for tract block groups

Projection: Albers Equal-Area
Datum: NAD 1983

EXPLANATION

POPULATION, per square mile

- >100
- >100 - 1,000
- >1,000 - 10,000
- >10,000

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0 5 10 15 20 25
Miles

FIGURE 4.6.4. POPULATION DENSITY IN LOWER RIO GRANDE VALLEY, TEXAS

1436\REPORT_MAPS\PopDensity.mxd\18May2016

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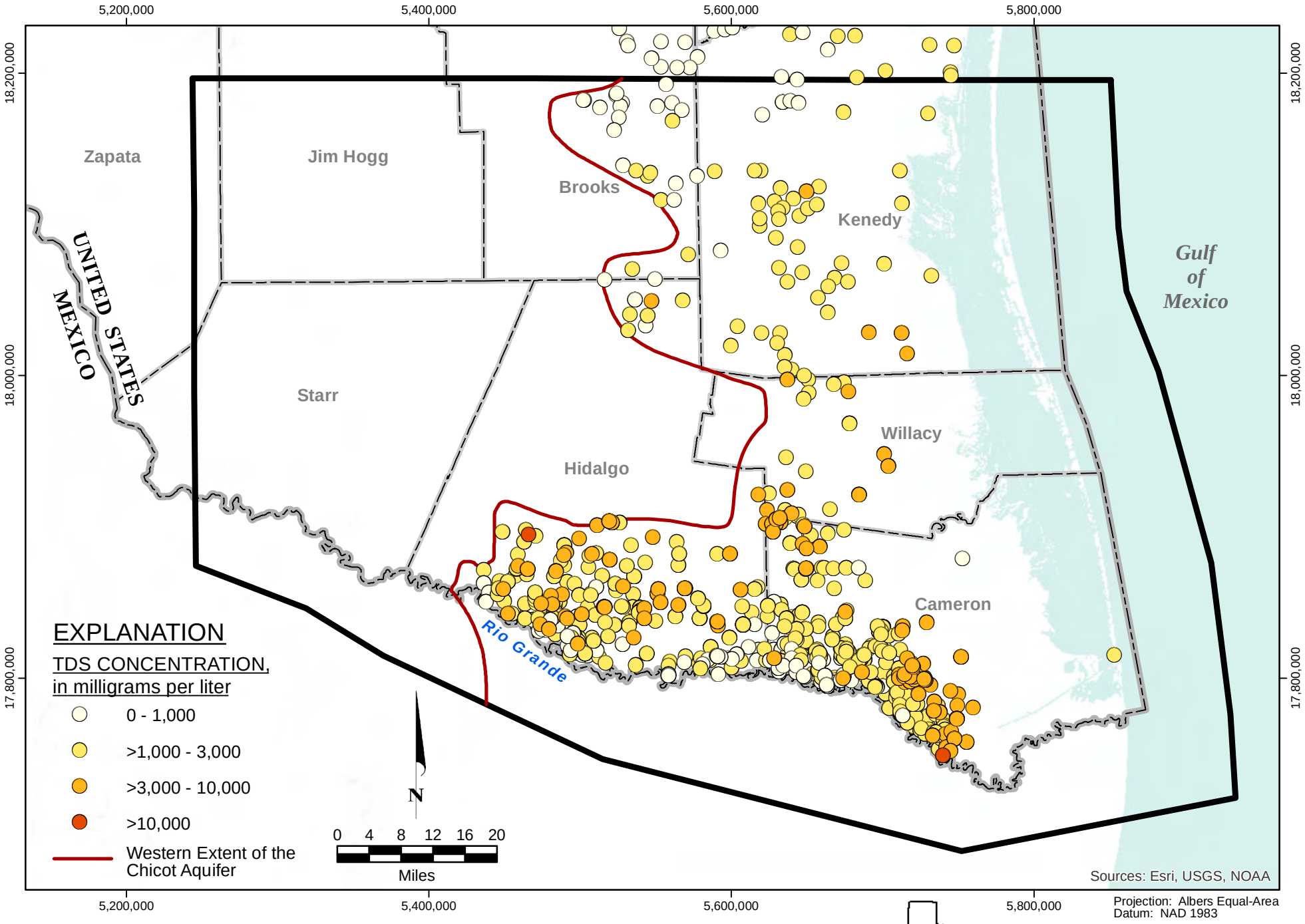

FIGURE 4.7.1. TOTAL DISSOLVED SOLIDS CONCENTRATIONS CHICOT AQUIFER, 1940 - 2014

1436\REPORT_MAPS\TDSmaps\Chicot\TDS_Chicot_2014.mxd\19May2016

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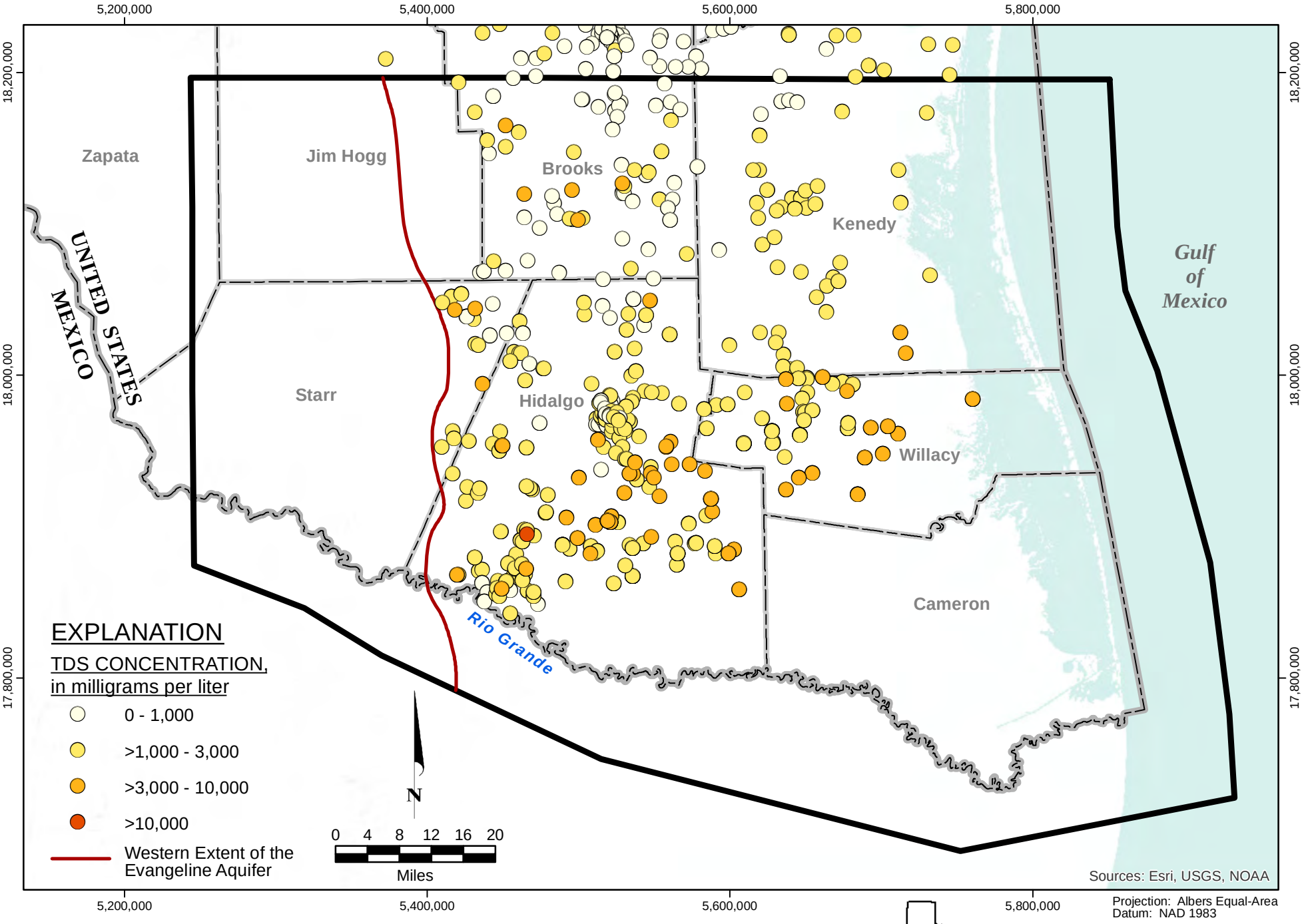

FIGURE 4.7.2. TOTAL DISSOLVED SOLIDS CONCENTRATIONS EVANGELINE AQUIFER, 1940 - 2014

1436\REPORT_MAPS\TDSmaps\Evangeline\TDS_Evangeline_2014.mxd\19May2016

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MONTGOMERY & ASSOCIATES

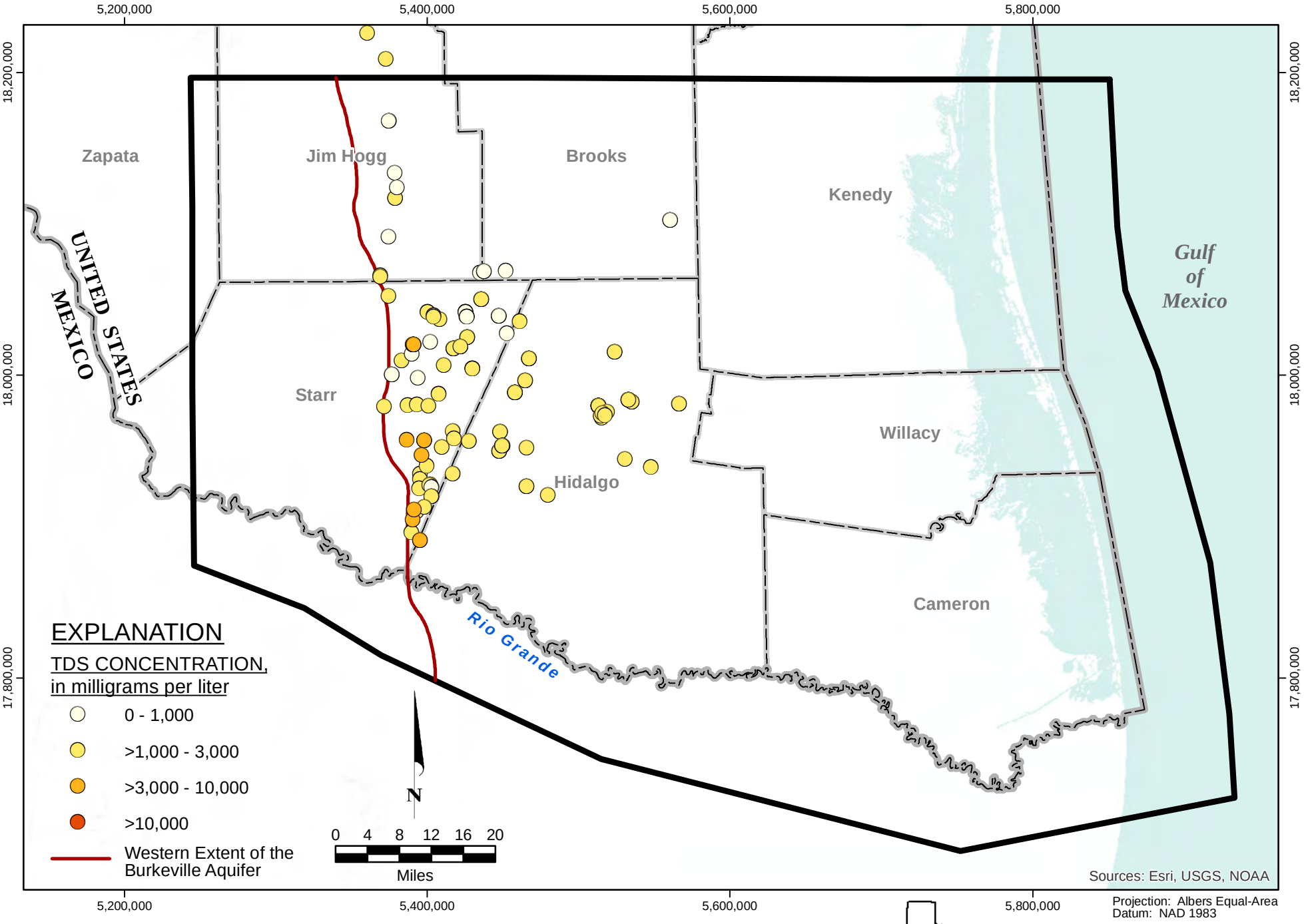

FIGURE 4.7.3. TOTAL DISSOLVED SOLIDS CONCENTRATIONS BURKEVILLE AQUIFER, 1940 - 2014

1436\REPORT_MAPS\TDSmaps\Burkeville\TDS_Burkeville_2014.mxd\19May2016

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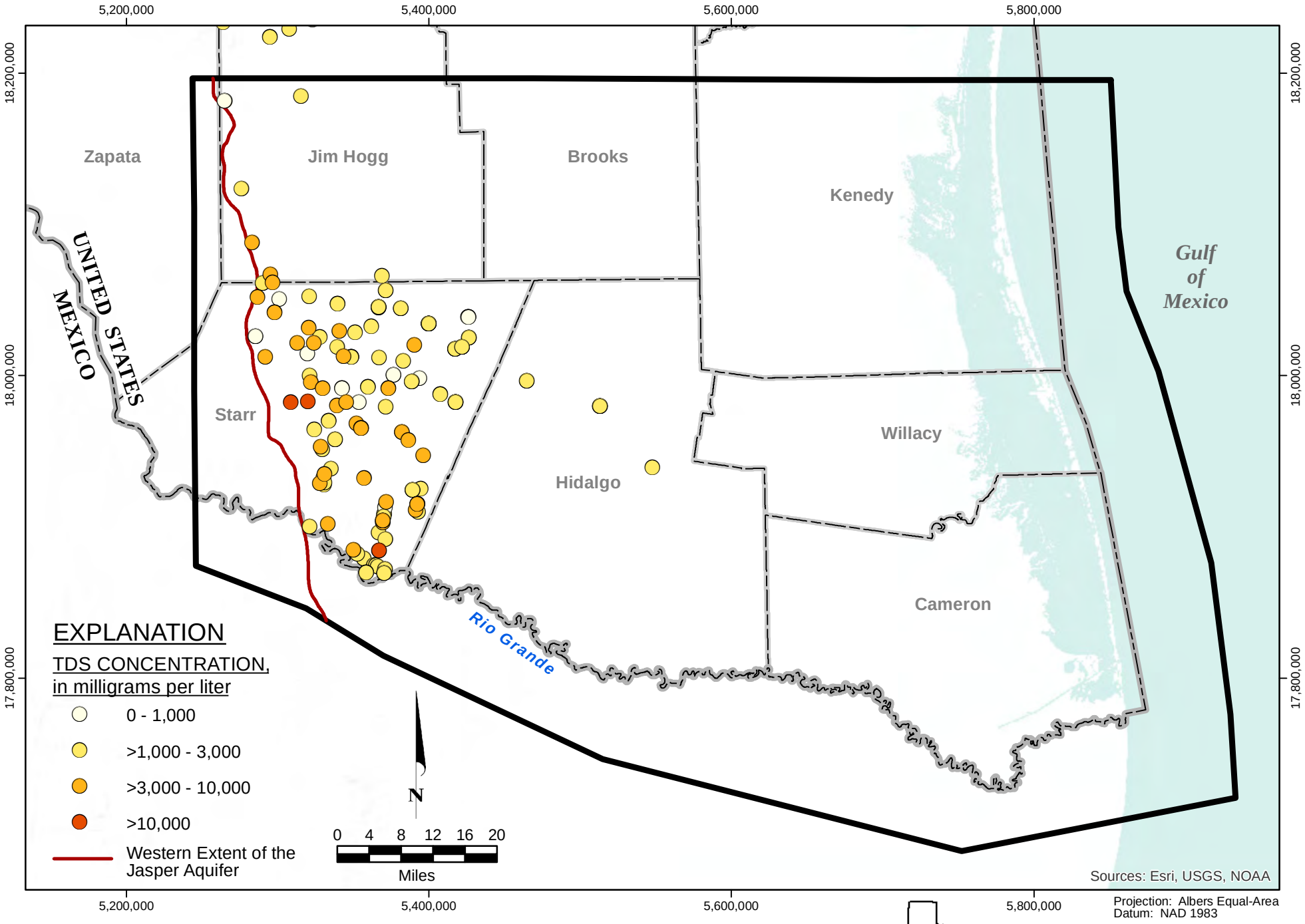

FIGURE 4.7.4. TOTAL DISSOLVED SOLIDS CONCENTRATIONS JASPER AQUIFER, 1940 - 2014

1436\REPORT_MAPS\TDSmaps\Jasper\TDS_Jasper_2014.mxd\19May2016

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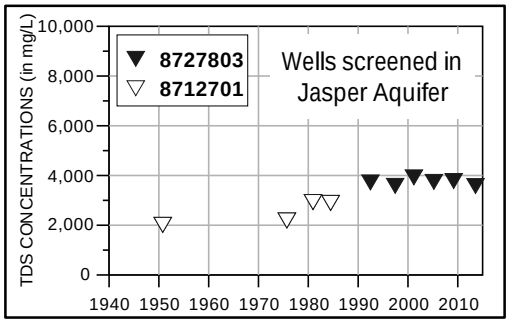
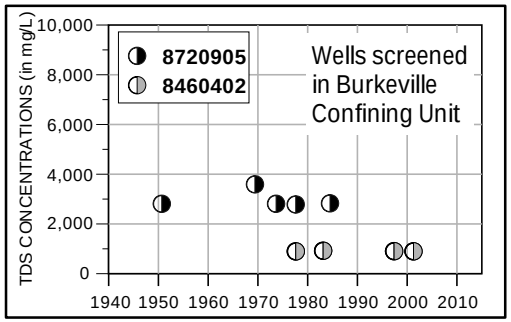
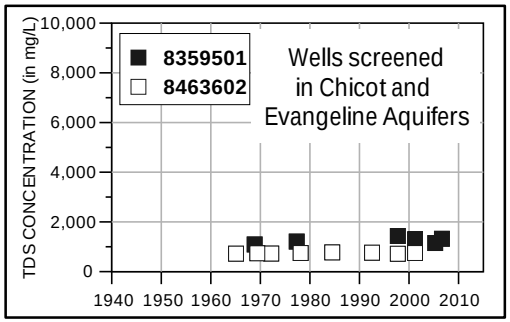
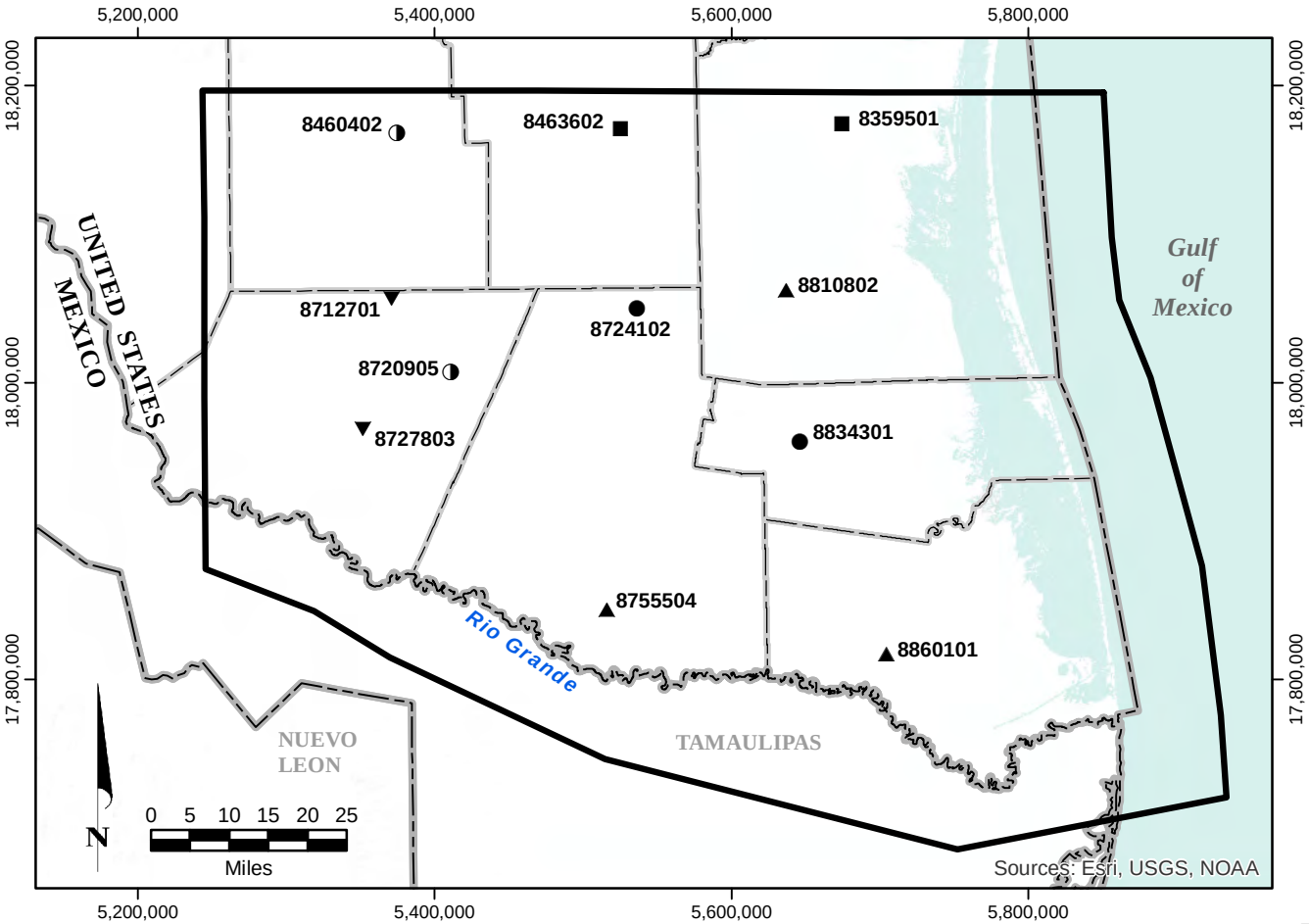
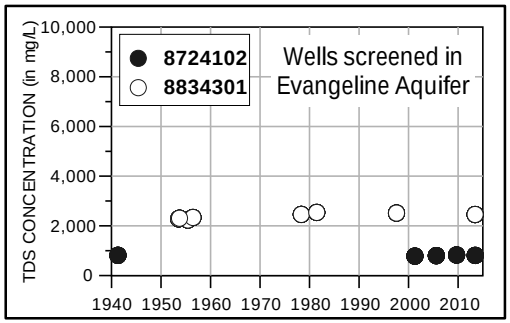
MONTGOMERY & ASSOCIATES

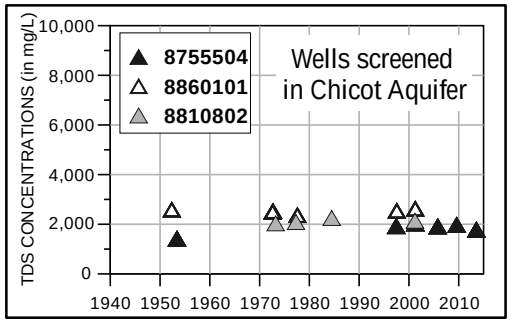












EXPLANATION

Screened Aquifer

- ▲ Chicot
- ◑ Burkeville
- ■ Chicot Evangeline
- ▼ Jasper
- ● Evangeline

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FIGURE 4.7.5. SELECTED TOTAL DISSOLVED SOLIDS HYDROGRAPHS FOR GULF COAST AQUIFER IN LOWER RIO GRANDE VALLEY

1436\REPORT_MAPS\TDSmaps\TDS_Hydrographs.mxd\18May2016

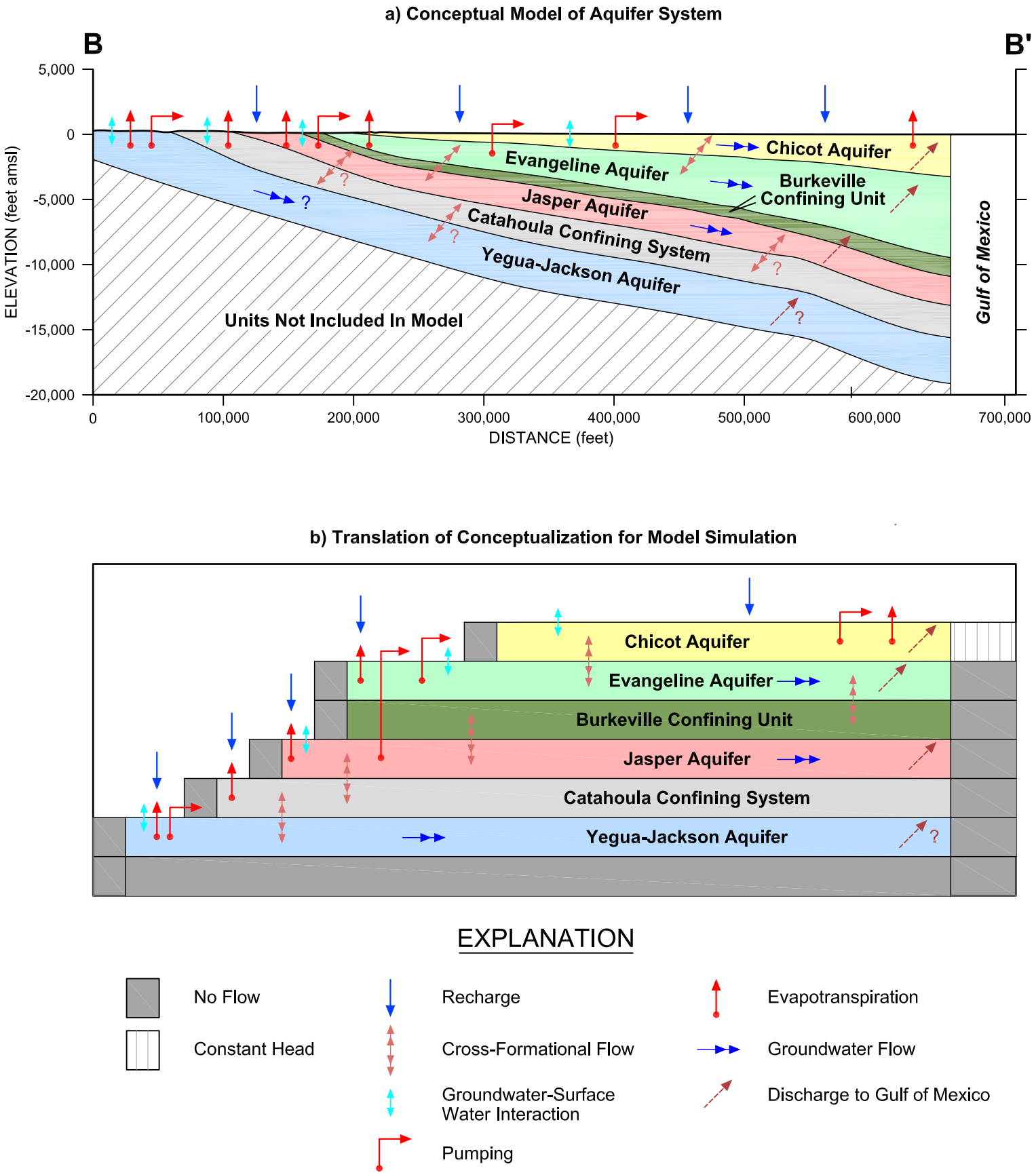

FIGURE 5.1.1. CONCEPTUAL GROUNDWATER SYSTEM FOR LOWER RIO GRANDE VALLEY

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