Federal Energy Regulatory Commission
Office of Energy Projects
Washington, DC 20426

Rio Grande LNG Project
Final Environmental Impact Statement
Volume II

Rio Grande LNG, LLC and Rio Bravo Pipeline Company, LLC

April 2019
Docket Nos. CP16-454-000, CP16-455-000
FERC/EIS-0287F

Cooperating Agencies:

U.S. Environmental Protection Agency

U.S. Department of Transportation

U.S. Coast Guard

U.S. Department of Energy

U.S. Army Corps of Engineers

U.S. Fish and Wildlife Service

Federal Aviation Administration

National Park Service

National Oceanic Atmospheric Administration - National Marine Fisheries Service

VOLUME II

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DISTRIBUTION FOR NOTICE OF AVAILABILITY

Federal Government Agencies

Commander (dpw), Attn: LT Collin Sykes, LA
U.S. Department of Transportation, MD
Army Corps of Engineers, Planning and Policy Division, Attn: CECW-P, DC
Bureau of Indian Affairs, DOI, BJ Howerton, VA
Bureau of Indian Affairs, DOI, Terry L McClung, DC
Bureau of Ocean Energy Management, DOI, Dr. Jill Lewandowski, VA
Bureau of Oceans & International Environmental & Scientific Affairs, DOS, Alexander Yuan, DC
Bureau of Safety and Environmental Enforcement, DOI, David Fish, VA
Bureau of U.S. Customs and Border Protection – Gateway Bridge, TX
Bureau of U.S. Customs and Border Protection - Seaport, TX
c/o US Fish & Wildlife Service, United States of America, NM
Conservation and Environmental Program Division, FSA, USDA, Nell Fuller, DC
Council on Environmental Quality, Edward Boling, DC
Environment and Natural Resources Division, DOJ, US Department of Justice, DC
Environmental Protection Agency, Lawrence Starfield, DC
Environmental Protection Agency, Susan E Bromm, DC
EPA Region 6, Lauren Poulos, TX
FAA Commercial Space Transportation - Operations Integration Division, Anna Cushman, DC
FAA Commercial Space Transportation - Operations Integration Division, Ken Gidlow, TX
FAA Commercial Space Transportation - Operations Integration Division, Stacy Zee, DC
Federal Aviation Administration, Chris Shoulders, TX
Federal Bureau of Investigation, TX
Galveston District, Operations Division, U.S. Army Corps of Engineers, Frank Garcia, TX
National Center for Environmental Health, CDC, HHS, Sharunda Buchanan, GA
National Marine Fisheries Service, Michael Tucker, FL
National Marine Fisheries Service, Rusty Swafford, TX
National Park Service, Astrid Liverman, CO
National Park Service, Justin Henderson, CO
National Park Service, Tom Keohan, CO
National Park Service, DOI, Patrick Walsh, CO
Natural Resources Conservation Service, USDA, Andree DuVarney, DC
NOAA Fisheries, Ben Laws, MD
NOAA Fisheries, Jaclyn Daly, MD
NOAA National Marine Fisheries Service, Dept. of Commerce, NOAA National Marine Fisheries Service, MD
NPS Heritage Partnership Program, Mark Spier, TX
Office of Assistant Secretary for Transportation Policy, USDOT, Camille Mittelholtz, DC
Office of Assistant Secretary for Transportation Policy, USDOT, Helen Serassio, DC

Federal Government Agencies (continued)

Office of Environment and Energy, HUD, Danielle Schopp, DC

Office of Environmental Management, DOE, Mark Whitney, DC

Office of Federal Programs, Advisory Council on Historic Preservation, Charlene D Vaughn, DC

Office of NEPA Policy and Compliance, DOE, Brian Costner, DC

Office of Pipeline Safety USDOT PHMSA, Ahuva Battams, DC

Office of Pipeline Safety USDOT PHMSA, Kenneth Y Lee, DC

Office of Pipeline Safety USDOT PHMSA, Melanie Stevens, DC

Palo Alto Battlefield National Historical Park, Rolando L. Garza, TX

Pipeline & Hazardous Materials Safety Administration USDOT, William Schoonover, DC

Pipeline & Hazardous Materials Safety Administration, Office of Pipeline Safety, USDOT, Karen Lynch, DC

Region 2 Division of Realty, U.S. Fish & Wildlife Service, NM

Surface Transportation Board, USDOT, Victoria Rutson, DC

Texas Historical Commission, David Camarena, TX

U.S. Army Corps of Engineers, TX

U.S. Army Corps of Engineers - Galveston District, Denise Sloan, TX

U.S. Army Corps of Engineers - Galveston District, Felicity Dodson, TX

U.S. Army Corps of Engineers, Corpus Christi Regulatory Field Office, Nick Laskowski, TX

U.S. Border Patrol, TX

U.S. Bureau of Land Management, DOI, US Department of Interior, DC

U.S. Coast Guard, TX

U.S. Department of Agriculture, Gateway Bridge, TX

U.S. Department of Agriculture-Natural Resources Conservation Service, Alan Stahnke, TX

U.S. Department of Agriculture-Natural Resources Conservation Service, Shanna Dunn, TX

U.S. Department of Energy, John Anderson, DC

U.S. Department of Health and Human Services, Mr. Everett Bole, CHMM, DC

U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration, Kenneth Lee, DC

U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration, Sentho White, DC

U.S. Environmental Protection Agency - Region 6, Rob Lawrence, TX

U.S. Fish and Wildlife Service, Boyd Bihovde, TX

U.S. Fish and Wildlife Service, Brian Winton, TX

U.S. Fish and Wildlife Service, Dawn Gardiner, TX

U.S. Fish and Wildlife Service, Ernesto Reyes, TX

U.S. Fish and Wildlife Service, Pat Clements, TX

U.S. Fish and Wildlife Service, Robert D. Jess, TX

U.S. Fish and Wildlife Service, Corpus Christi Office of the Texas Coastal Ecological Service, Bruce Kindle, TX

U.S. Immigration & Naturalization Service, Gateway Bridge, TX

U.S. Marshals, TX

US Customs and Border Protection Dept. of Homeland Security, Christopher Oh, DC

Federal Government Agencies (continued)

US Department of Energy, John Anderson, DC

US Geological Survey, Mark Leeper, VA

USDA Forest Service-Ecosystem Management Coordination, Joe Carbone, DC

Wetlands Section EPA Region 6, Maria Martinez, TX

Federal Senators and Representatives

Senate Energy and Natural Resources Committee, Lisa Murkowski, DC

U.S. House of Congress, Bill Shuster, D.C.

U.S. House of Congress, Blake Farenthold, TX

U.S. House of Congress, Filemon Vela, Jr., D.C.

U.S. House of Representatives, Gene Greene, D.C.

U.S. House of Representatives, Jody Arrington, D.C.

U.S. House of Representatives, Kevin Brady, D.C.

U.S. House of Representatives, Mike Conaway, D.C.

U.S. House of Representatives, Pete Olson, D.C.

U.S. Senate, John Cornyn, D.C.

U.S. Senate, Ted Cruz, D.C.

State Government Agencies

Railroad Commission of Texas, Grant Chambless, TX

Railroad Commission of Texas, Kari French, TX

Railroad Commission of Texas, Leslie Savage, P.G., TX

Railroad Commission of Texas, Virginia Beversdorff, TX

Texas Commission on Environmental Quality, Jamie A. Garza, TX

Texas Commission on Environmental Quality, Kate Stinchomb, TX

Texas Commission on Environmental Quality, Susan Clewis, TX

Texas Department of Agriculture, Noxious and Invasive Plants, TX

Texas Department of Transportation, Homer Bizan, TX

Texas Department of Transportation, Robert Isassi, TX

Texas Historical Commission, Casey Hanson, TX

Texas Historical Commission, Mark Wolfe, TX

Texas Parks and Wildlife Department, Coastal Fisheries Division, Willy Cupit, TX

Texas Parks and Wildlife Department, Ecosystem Resources Program, Jackie Robinson, TX

Texas Parks and Wildlife Department, Ecosystem Resources Program, Leslie Koza, TX

Texas Parks and Wildlife Department, Ecosystem Resources Program, Liana Lerma, TX

Texas Parks and Wildlife Division, Rebecca Hensley, TX

State Officials

State of Texas, Carlos H. Cascos, TX

State of Texas, Dan Patrick, TX

State of Texas, Greg Abbott, TX

State Senators and Representatives

Texas House of Representatives, Bryan Cook, TX

Texas House of Representatives, Drew Darby, TX

Texas House of Representatives, Eddie Lucio, III, TX

Texas House of Representatives, René O. Oliveira, TX

Texas House of Representatives, Ryan Guillen, TX

Texas House of Representatives, Speaker Joe Straus, TX

State Senators and Representatives (continued)

Texas Senate, Eddie Lucio, Jr., TX
Texas Senate, Juan Hinojosa, TX
Texas Senate, Troy Fraser, TX

Local Government Agencies

Arroyo Colorado Navigational District, TX
Commissioner Emede Garcia, TX
Commissioner Margie H. Gonzalez, TX
Commissioner Ventura Garcia, Jr., TX
Honorable Judge Pedro "Pete" Trevino, TX
Port of Harlingen, f.k.a. Arroyo Colorado Navigational District, TX
Bayside Marine, Inc., Ruben Fuentes, TX
Cameron County, Alex Dominguez, TX
Cameron County, Dan Sanchez, TX
Cameron County, David A. Garza, TX
Cameron County, David Sanchez, TX
Cameron County, Pete Sepulveda, Jr., TX
Cameron County Sheriff's Office, Omar Lucio, TX
Cameron County, Precinct 1, Sofia C. Benavides, TX
City of Brownsville, Charlie Cabler, TX
City of Brownsville, Deborah Portillo, TX
City of Brownsville, Jessica Tetreau-Kalifa, TX
City of Brownsville, John Villareal, TX
City of Brownsville, Ricardo Longoria, Jr., TX
City of Brownsville, Rose M. Z. Gowen, TX
City of Brownsville, Tony Martinez, TX
City of Kingsville, Alfonso "Al" Rene Garcia, TX
City of Kingsville, Arturo Pecos, TX
City of Kingsville, Courtney Alvarez, TX
City of Kingsville, Dianne Leubert, TX
City of Kingsville, Noel Pena, TX
City of Kingsville, Sam Fugate, TX
City of Laguna Vista, Frank T. Davalos, Jr., TX
City of Laguna Vista, Gary Meschi, TX
City of Laguna Vista, Leti Martinez Keplinger, TX
City of Laguna Vista, Mike Carter, TX
City of Laguna Vista, Richard Hinojosa, TX
City of Laguna Vista, Rolando Vela, TX
City of Laguna Vista, Susie Houston, TX

Local Government Agencies (continued)

City of Laguna Vista, Wanda Reyes-Rice, TX
City of Port Isabel, Edward Meza, TX
City of Port Isabel, Gilberto Hinojosa, TX
City of Port Isabel, Guillermo Torres, TX
City of Port Isabel, Jared Hockema, TX
City of Port Isabel, Joe E. Vega, TX
City of Port Isabel, Juan Jose "JJ" Zamora, TX
City of Port Isabel, Marie de Jesus Garza, TX
City of Port Isabel, Martin C.Cantu, TX
City of Raymondville, Clifton Smith, TX
City of Raymondville, Eleazar Garcia, Jr., TX
City of Raymondville, Eziqueiel D. Cavazos, TX
City of Raymondville, Mary Gutierrez, TX
City of Raymondville, Orland A. Correa, TX
City of Raymondville, Yolanda Alexandre, TX
City of South Padre Island, Alex Avalos, TX
City of South Padre Island, Alita Bagly, TX
City of South Padre Island, Angelique "Nikki" Soto, TX
City of South Padre Island, Barry Patel, TX
City of South Padre Island, Dennis Stahl, TX
City of South Padre Island, Julee LaMure, TX
City of South Padre Island, Randy Smith, TX
City of South Padre Island, Sam Listi, TX
City of South Padre Island, Willam A. DeLibero, TX

Local Government Agencies (continued)

Foreign Trade Zone #62, Tony Rodriguez, TX
Jim Wells County Soil and Water Conservation District, TX
Kenedy County, Allison Staus, TX
Kenedy County, Cindy Gonzales, TX
Kenedy County, Honorable Louis E. "Bud" Turcotte III, TX
Kenedy County, Israel Vela, Jr., TX
Kenedy County, Joe Recio, TX
Kenedy County, Sarita Armstrong Hixon, TX
Kenedy County, Veronica Vela, TX
Kleberg County, David Rosse, TX
Kleberg County, Honorable Jack Pulcher, TX
Kleberg County, Honorable Rudy Madrid, TX
Kleberg County, Joe Hinojosa, TX
Kleberg County, Kira Talip, TX
Kleberg County, Romeo Lomas, TX
Kleberg County, Roy Cantu, TX
Kleberg-Kenedy Soil and Water Conservation District, TX
Laguna Madre Water District, Carlos J. Galvan, Jr., TX
Point Isabel ISD, Dr. Lisa Garcia, TX
Point Isabel ISD, Henry LeVrier, TX
Port Isabel-San Benito Navigation District, Steve Bearden, TX
Port of Brownsville, Ariel Chavez, TX
Port of Brownsville, Beatrice Rosenbaum, TX
Port of Brownsville, Carlos L. Garcia, TX
Port of Brownsville, Carlos R. Masso, TX
Port of Brownsville, Deborah L. Duke, TX
Port of Brownsville, Donna Eymard, TX
Port of Brownsville, Eduardo A. Campirano, TX
Port of Brownsville, Jaime Martinez, TX
Port of Brownsville, Joe Garza, TX
Port of Brownsville, John Reed, TX
Port of Brownsville, John Wood, TX
Port of Brownsville, Margie S. Recio, TX
Port of Brownsville, Michael Davis, TX
Port of Brownsville, Ralph Cowen, TX
Port of Brownsville, Sergio Tito Lopez, TX
Port of Brownsville, Stephen B. Fitzgibbons, TX
Southmost Soil and Water Conservation District, TX
Town of Laguna Vista, Ricardo Morado, TX
Willacy County, Honorable Aurelio "Keter" Guerra, TX
Willacy County, Honorable Bernard W. Ammerman, TX
Willacy County, Honorable Eduardo "Eddy" Gonzales, TX
Willacy County, Honorable Eliberto "Beto" Guerra, TX
Willacy County, Honorable Fred Serrato, TX
Willacy County, Honorable Judge Migdalia Lopez, TX
Willacy County, Honorable Oscar Deluna, TX
Willacy County Commissioner's Office, Roseana Ramirez, TX
Willacy Soil and Water Conservation District, TX

Native American Groups

Alabama-Coushatta Tribe of Texas, Brian Celestine, TX
Apache Tribe of Oklahoma, Lyman Guy, OK
Comanche Nation o f Oklahoma, Jimmy Arterberry, OK
Fort Sill Apache of Oklahoma, Jeff Haozous, OK
Kickapoo Traditional Tribe of Texas, Juan Garza, TX
Kickapoo Tribe of Oklahoma, Gilbert Salazar, OK
Lipan Apache Tribe of Texas, Bernard F. Barcena, Jr., TX

Native American Groups (continued)

Tap Pilam Coahuiltecan Nation - American Indians in Texas at the Spanish Colonial Missions, Ramon Juan Vasquez, TX

Tonkawa Tribe of Oklahoma, Donald L. Patterson, OK

Libraries

Alicia Salinas City of Alice Public Library, TX

Brownsville Public Library - Main Branch, TX

Harlingen Public Library, TX

Port Isabel Library, TX

Reber Memorial Library, TX

Rio Hondo Public Library, TX

Robert J. Kleberg Public Library, TX

Companies and Organizations

A-3 Properties, L.P., TX

Alazan Farms L.P., TX

Armstrong Ranch, TX

Barbara Kay Houston Protection Trust, Attn: Barbara Kay Houston Trustee, TX

Betka Land Partners, LTD, C/O Karen Shales, LA

Bravura Investiments, TX

Brown-Ullrich Valley Family, Texas Limited Partnership, TX

Buejac LLC C/O Moody Bueford, TX

Buena Vista Gin Co., TX

Burns and Mayo Properties, LLC, TX

Cardenas Realty Co, Inc., TX

Cascade Enterprises INC, TX

Cecilia Margarita Dismukes & Monica Patricia Burdette, Co-Trustees of the Exempt Rebecca Zarate Trust, TX

Curtus A. Rhodes Trust, SC

Daniel Benjamin Vaughan GST Exempt Trust, TX

Elliott Roberts Ranches, Inc., TX

Fatty Chem By-Products, Inc, TX

Fausan LTD C/O Fausto Yturria, Jr., TX

FCT Real Estate Holdings, LTD, TX

Fresnos 100 LLC, TX

Fresnos Investments LLC, TX

FWCL LTD, Wendell Johnson, TX

Genevieve Tarlton Dougherty Trust No. 2, for the benefit of Ben F. Vaughan, II, TX

Genevieve Tarlton Dougherty Trust No. 2, for the benefit of Genevieve Vaughan, TX

Heirs, Assigns and Devisees of Isabel Y. Garcia and Francisca Yturria Yturria Land & Cattle Co, TX

Hui-Ying Tsai Chiang C/O Upper Group, Inc, CA

J.A. Garcia, Jr., Trustee of the J.A. Garcia, Jr., Exempt Lifetime Trust, TX

J.S. Bridwell Co {Lajarita Farms}, TX

James Cullen Vaughan GST Exempt Trust c/o Frost Bank, TX

John G. and Marie Stella Kenedy Memorial Foundation, TX

John Turcotte Estate, TX

Julia Alexis Garcia, Trustee of the Julia Alexis Garcia Exempt Lifetime Trust & Julia Alexis Garcia, Trustee of the John Anthony Garcia, Jr., Exempt Lifetime Trust, GA

Keppel AmFELS, Inc., TX

Kevin Dougherty Exempt Subshare Trust, TX

King Ranch INC, TX

King Ranch INC C/O Tracy Janik, TX

Kings Aqua Farms LLC, TX

Kostohryz Fossil Creek Family LP, TX

La Chiquita Investments LLC William Richard Buchholz, TX

Laguna Encantada LP, TX

Lillie M. Tijerina Family Limited Partnership, TX

Lisa Suzanne Mire, Trustee of the Lisa Suzanne Mire Exempt Lifetime Trust, LA

Companies and Organizations (continued)

Lissette Garcia, Trustee of the Lissette Garcia Exempt Lifetime Trust, TX
Lissette Garcia, Trustee of the Lissette Garcia Exempt Lifetime Trust, TX
Llyod Funk Farms INC, TX
Los Fresnos Investments LLC, TX
Louis E. Turcotte, Jr. Estate C/O Joyce Turcotte, TX
M.D. Wheeler LTD, TX
Marco A. Lara Family Trust, TX
Margaret Isabel Garcia Burns, Trustee of the Margaret Isabel Garcia Burns Exempt Lifetime Trust, TX
Mary & Frank Yturria Donated to U.S. of America, TX
Mary Bertha Garcia Mallet, Trustee of the Mary Bertha Garcia Mallet Exempt Lifetime Trust, TX
Mary Bertha Garcia Mallet, Trustee of the Mary Bertha Garcia Mallet Exempt Lifetime Trust, TX
Mary Patricia Dougherty, Trustee of the Mary Patricia Dougherty Trust, TX
Mary Victoria Malacaman, Trustee of the Mary Victoria Newton Exempt Lifetime Trust, LA
Melissa Dougherty Exempt Subshare Trust, TX
MGB Ranch Partnership, LTD, TX
Montalvo Family Revocable Living Trust, TX
Newton, Trustee of the Mary Victoria Newton Exempt Lifetime Trust, LA
OSO Bailando, LTD., TX
Patrick Michael Vaughan GST Exempt Trust, TX
Pembel Investments LP, TX
Pinnel Trust, C/O R. Williams, IL
R M Walsdorf INC, TX
Rachel Catherine Vaughan GST Exempt Trust, TX
Rhodes Brothers, TX
Ricardo Nestor Zarate, Trustee of the Exempt Ricardo Nestor Zarate Trust, TX
Ricky Zarate, Alma Trust, TX
Rio Farms Inc., TX
Rio Grande Prop (Herb Fast Fest EST OF), WA
Rio Grande Properties c/o Neal Talmadge, TX
Rio Grande Properties, C/O Dianna Phelps, TX
Roberts Elliott Ranch INC, TX
Seadrift Pipeline Corp, TX
Sebastian Land Ltd., TX
Selman Land & Livestock LLC, TX
Spanish Bayview Estates LTD, TX
SPI Properties Limited Liability Company, Clayton Brashear, TX
Stella’s Road Association, Inc., TX
Stone Brothers, TX
Swanberg Family Farms, LTD, TX
Sylvia Garcia, Trustee of the John A. Garcia Marital Deduction Trust, TX
Texas Valley Grain, TX
The Leal Trust, TX
Turcotte Ranch LTD c/o Joyce Turcotte, TX
Union Pacific, NE
United Fuel Supply LLC, UT
Wescott Christian Center, CA
Willamar Gin Company INC., TX
Woolam Farms Leasing LLC, TX
Yountville Holdings LLC, TX
Yturria Land & Cattle Company, Real Property, TX
Yturria-Smith Ranch Properties LTD, TX
Zena Stevens Estate, TX
905 / BMW, Inc., April A. Van Sickle, NC
A&T Port Mart Development Co., LLC., Michael K. Tidwell, TX
A.E.M. Assoc Empresarios Mexicanos, Marco Saldivar, TX
ABF Freight Systems Inc., TX

Companies and Organizations (continued)

Admiral Steamship Agency, TX
Adrianita, Inc., Mauricio Chavez, TX
AEP River Operations, IN
AEP Texas, E. Ray Covey, TX
AEP Texas Central Company, Francisco Espinosa c/o John Garcia, TX
Aguilar Brothers, Inc., Josue Aguilar, TX
Alamo Concrete Products, Ltd., Allen Walsh, TX
Alamo Fireworks, Inc., John and/or Michael Girdley, TX
Allied Mineral Products, Inc., Magda Sosa, TX
American Commercial Lines, TX
American Divers, TX
American Diving, TX
American Petroleum Institute, TX
American River Transportation Co., IL
Angelo Inter-Logistics, TX
Anita L. Gray dba Brownsville Sanitary, Michael Perez, TX
Argo ES&H Services, LLC., Barry Chambers, TX
Arroyo Colorado Audubon Group, Debbie Warner, TX
Artiaga, Diana & Jesus, Jesus Artiaga, TX
Austin Star Detonator Co., Ignacio Reyes III, TX
Auto Lineas Sigifredo Garcia Palacios, Sigifredo Garcia Palacios, TX
Auto Lineas Sigifredo Garcia Palacios SA de CV, Sigifredo Garcia Palacios, TX
B & L Freight Service, LLC., Humberto Torres, TX
Bay Bridge Texas, Shailesh “Sam” Vyas, TX
Bay Bridge Texas, LLC., Shaileh "Sam" Vyas, TX
Bayside Marine, Inc., Ruben Fuentes, TX
Bedoli Group, Inc. (All Star Metals), Nikhil Shah, TX
Black Dragon Pirate Ship & Thriller High Speed Boat, TX
Bob's Bay Fishing, TX
Bode's Bay Fishing, TX
Border Financial Services dba A-MEX, Keyla Maradiaga, TX
Bougambilias Construction, LLC., Miguel Cisneros, TX
Boys & Girls Clubs, Alex Verrara, TX
Breakaway Cruises, TX
BRG International Railroad, Norma Torres, TX
Briggs Equipment Rental, Elizabeth Cantu, TX
Brittain International, Inc., Alma Garcia, TX
Brownsville & Rio Grande International Railway, LLC., Alan Simon, CO
Brownsville Gulfside Warehouse, Lee Ostos, TX
Brownsville Gulfside Warehouse, Inc., Bob Ostos, TX
Brownsville International Seafarer Center, Rev. Andreas Lewis, TX
Brownsville Lions Clubs (Downtown & West Chapters), Jose Alvear, TX
Brownsville Mooring, Rick Gomez, TX
Brownsville Port Isabel Shrimp Association, Carlton Reyes, TX
Brownsville Public Utilities Board, John S. Bruciak, TX
Brownsville South Padre Island Board of Realtors, Texas Real Estate Commission, Larry Jokl, TX
Bryant Industrial Services, LLC., Daniel Bryant, TX
Burnell Marine & Supply, Inc., Charles Burnell, TX
C&J Logistical Services, Crispin Flores, TX
C.R. Trucking, LLC., Sergio Garcia, TX

Companies and Organizations (continued)

c/o Estate of Estate of Joseph Lee Ybarra & Juan M Ybarra, Linda Ybarra Ponce, Juan Manuel Ybarra, Jr., Jose Moises & Ybarra, TX

c/o Wells Fargo Bank, Industry Consulting Group, Inc, Josephina Ira Stone Trust, TX

Canal Barge Company Inc., LA

Captain Memo Corp., Manuel Fayett, TX

Castellanos Corp., Marcos Hernandez, TX

Catholic Diocese of Brownsville (RGV), Yolanda Escobar, TX

CCGS Holdings LLC., Mark Schrott, PA

Celtic Marine Corporation, LA

CITGO Petroleum Corporation, Charles Milstead, TX

CITGO Petroleum Corporation, Charles Milstead, TX

Claudia Rodriguez c/o James Key, Claudia Rodriguez, TX

Close Encounters Paintball & Hobbies, Maria Luisa Cortinas, TX

Co-Op Marine Railways, LLC., Raul Garcia, TX

Co-Op Marine Railways, LLC., Raul Garcia, TX

Corrigan Dispatch Company, Harold Averill, TX

Cumberworth Investments, Inc., John Cumberworth, TX

CVC Construction, Inc. dba Welding Works International, Alfredo de la Fuente, TX

Daniel B. Hastings, Inc., Matthew Leyendecker, TX

Danny B Fishing Charters, TX

Deep Six Diving, TX

Deep Southtex Terminal, L.P., David Duncan, OK

DEEP SOUTH-TEX TERMINAL, L.P., Fred Figueroa / David Duncan, TX

Defenders of Wildlife, McCrystie Adams, CO

Defenders of Wildlife, Timothy M. Estep, CO

Dionicio Manuel Lopez dba Port Public Scale, D. Manuel Lopez, TX

Dix Agency Brownsville, LP, Robert A. Ostos, TX

Dix Shipping Company, Lee Ostos, TX

Dolphin Docks, TX

Dolphin Rescue & Sea Life Nature Center, Scarlet Colley, TX

Don E. & Christine Moore / Mark & Patty Barnard, Don E. Moore, TX

Dow Chemical Company, Inc., TX

Dredgeservice, LLC, Charlie Ange, TX

Duro Standard Products Company, LLC., Fermin Mancilla, KY

EDGE Engineering and Science, LLC, Jennifer M. McCoy, TX

EECO Electrical Design and Construction, LLC., Victor Gonzalez, TX

Electro-HI, LLC., Cecilio Cavazos, TX

Elite Packaging Services, LLC., Reynaldo de la Fuente, TX

Entrepure Industries, Inc. dba Avant Premium Water & Ice., Ramiro Gonzalez, TX

ESCO Marine Inc., Richard Jaross/Kris Wood, TX

Falco, Inc., David Eymard, TX

Fel Glo, Inc., Felipe Mendez, TX

Fillette-Green Shipping Services, Scott Roberson, TX

Firebird Bulk Carriers, Inc., Scott Bosard, TX

Foreign Trade Zone Board, DC

Francisco Pena d/b/a Port Machine Shop, Francisco Pena, TX

Friends of Laguna Atascosa National Wildlife Refuge, TX

Companies and Organizations (continued)

Friends of Laguna Atascosa National Wildlife Refuge, Robert Severson, TX
Frost Bank, Patti Ayala, TX
Frost Bank - Trust Real Estate, John G. Kenedy, Jr. Charitable Trust, TX
G&O Shrimp Co., Inc., Gerald Pockrus, TX
G&O Shrimp Co., Inc., Gerald Pockrus, TX
Garcia, Raul dba Garcia Bookeeping, Raul Garcia, TX
Gavito, George Carlos, George Carlos Gavito, TX
General Steamship Corporation, Ltd., Thomas Miller, TX
Gladys Porter Zoo – Kemps Ridley Turtle Conservation, Dr. Patrick Burchfield, TX
Gonzalez Trawlers, Inc., Jorge Gonzalez, Jr., TX
Gonzalez, Jorge c/o Raul Garcia Bookkeeping, Jorge Gonzalez, TX
Gulf Facilities, Ken Schaefer & Nico Schaefer, TX
Gulf Facilities, Inc., Ken Schaefer, TX
Gulf Harbor Shipping, LLC, Gilbert L. Ortega, TX
Gulf Stream Marine, Mark Hoskins, TX
H. Sáenz, Jr. Inc., Beto Saenz, TX
Happytide Charters, TX
Harding Foundation, Glen Harding, TX
Har-Vest, a Texas General Partnership, Har-Vest, TX
Hayden, Thomas A. dba Oceanus Intl., Thomas A. Hayden, TX
Heavy-Duty Equipment, Inc., Lee Ostos, TX
Hodgson, Mark, Les Hodgson, TX
Ingram Barge Line, TN
Inspectorate, TX
Intercoastal Salvage, Inc., Nancy Gaytan, TX
Interlube Corp., Inc., Diana de la Pena, TX
International Income Tax Service, LLC., Elmer J. Shull, TX
International Income Tax Service, LLC., Elmer J. Shull, TX
International Longshoremen No. 2995, Roy de los Santos, TX
International Shipbreaking, Ltd., Robert Berry, TX
Inter-Transfer,-TRIMAC INC., TX
Iron Mike Marine, Inc., Randy Chambers, TX
Iron Mike Marine, Inc., Randy Chambers, TX
Isabella Charters, TX
Island Outfitters, TX
Israel & Yolanda Linarte dba Marine & Industrial Safety, Yolanda Linarte, TX
ISS Marine Services, Inc. dba Inchcape Shipping Services, Glenn Foster, TX
Jacquelyn & Gordon Williams c/o Gordon's Bait & Tackle., Jackie Williams, TX
Jonick Lopez International Transport & Warehouse, Sergio T. Lopez, TX
Jonick-Lopez International Transport, LLC, Sergio T. Lopez, Jr., TX
JTM II, LTD, Marshall Ray, TX
Juan's Electric, Juan Delgadillo, TX
K&L Gates LLP, David L. Wochner, DC
K&L Gates LLP, Jennifer L. Bruneau, DC
KBSB, Poul Bouls, TX
Keep South Padre Island Beautiful Committee, Susan Dalton, TX
Keppel-AmFELS, G.S. Tan, TX
Kirby Inland Corp., TX
Landro, Inc. dba S T Marine, Leonel Alejandro, TX
Lighthouse Docks, Inc, Jack G. Carinhas, Jr., TX
Linda Lou Boat Corporation, Jack M. Waller, TX
Linwood Trawlers, Inc. c/o Raul Garcia, Dolby Linwood, TX

Companies and Organizations (continued)

Loera Customs Brokerage, Minerva Loera, TX
Loma Alta Skeet & Trap, Inc., Scott Vanderpool, TX
Lone Star Chapter of the Sierra Club, Reggie James, TX
Lone Star Charters, TX
Lower Rio Grande Valley Group, Sierra Club, Jim Chapman, TX
Lower Rio Grande Valley Sierra Club, Stefanie Herweck, TX
Luma Trading, Inc., Kenny Schauer, TX
M & M Mooring Company, Mark Clive, TX
M/V Challenge 42, Inc., Raul Cervantes, TX
Magic Valley Concrete, LLC., Rufino Garza, TX
Magic Valley Electric Cooperative, Inc., John W. Herrera, TX
Maquilogistics, Carlos Ruiz, TX
Maria Elena, Inc., Seth A. Sanders, TX
Maria Elena, Inc., Seth A. Sanders, TX
Marine Metal, Omar Perez, TX
Marine Metal, Inc., Omar Perez, TX
Marine Railway, Inc., Greg Londrie, TX
Marine Refrigeration Co., Andrew Jurek, TX
Marine Salvage & Services, Inc., Billy Kenon, TX
Martec Leasing LLC, Ania Mierzejewska, NJ
Martin Gas Marine, TX
Martinez Sylvia dba Taqueria Sylos, Sylvia Martinez, TX
Maverick Terminals, Canevari Castan, TX
Maverick Terminals Brownsville, LLC, Canevari Castan, TX
Mesquite Farm, LLC., Ray Loop, TX
Miss Anid, Inc., Manuel Sanchez c/o Raul Garcia, TX
Monita, Inc. c/o Garcia Bookkeeping, Benjamin Lopez, TX
Monita, Inc. c/o Garcia Bookkeeping, Benjamin Lopez, TX
Moore, Wenn dba Moore Diesel Service, Wenn Moore, TX
Mr. AMIGO Association, Cynthia Garza Galvan, TX
MTZ Group, LLC. dba Allied Trading, Artemio Martinez, TX
National Seafoods, Inc., William E. Kenon, TX
NextDecade Corporation, Komi Hassan, TX
NextDecade Corporation, S. Diane Neal, TX
Norberto Perez, C.P.A., P.C., Norberto Perez, TX
Norberto Perez, C.P.A., P.C., Norberto Perez, TX
NPS Intermountain Regional Office, Christine Whitacre, TX
Nuga Diesel, Inc., Fernando A. Nunez c/o Tanya Nunez, TX
Nustar Logistics, L.P., Carin Hoch, TX
Ocean Port Maintenance, Inc., Jorge Gonzalez, Jr., TX
Ochoa, Marcelino, Marcelino Ochoa, TX
Ochoa, Marcelino, Marcelino Ochoa, TX
Oil Patch Fuel & Supply, Carl Gayman, TX
Oil Patch Fuel & Supply, Inc., Carl Gayman, TX
One Cypress Terminals, Inc., Mike McCann, TX
One Cypress Terminals, Inc., Mike McCann, TX
Optimum Quality Transfers, LLC, Juan A. Turrubiates, TX
Osprey Deep Sea Fishing, TX
Osprey Fishing Trips, Robert Tyler, TX
P.M.I. Services North America, Inc., Darryn Tollefson, TX
Parker & Company, Abel Medina, TX
Parker & Company, David Dubois, TX
Parker & Company, Steve Muschenheim, TX
Parker, Carl or Les, Les Parker, TX

Companies and Organizations (continued)

Parrot Eyes Fishing Charters, TX
Paul Shane dba TLO Logistics, Paul Shane, TX
Pearl South Padre Hotel, Rene Anthony Valdez, TX
Pen III, LLC dba Shallow Water Marine, Ernesto Pena, III, TX
Penmar Systems, Inc., Kay Krapf, PA
Pete Hurley dba Pete's Fleet, Alicia Hurley, TX
Philip T. Cowen, TX
Plitt Leasing Co., Ltd., Walter Plitt III, TX
Pollo's Diesel/Mota's Refrigeration, Ramon Ortega, TX
Port Elevator-Brownsville, Craig Elkins, TX
Port Isabel Chamber of Commerce, TX
Port of Brownsville Public Scale, Inc., TX
Port Restaurant, Luis Ricardo Cortinas, TX
Port Warehouse Properties, L.P., John F. Cowen, TX
Pull-A-Part, LLC, Ross Kogon, GA
Purata Trawlers, Inc., Pedro Purata, TX
Quality Weighing Service, Inc., Bob Ostos, TX
R. Soto Transport Truck, Roberto Soto, TX
R.E.C.L. Inc., President, R.E.C.L., Inc., TX
R.M. Walsdorf, Inc., R.M. Walsdorf, TX
Raba Kistner Consultants, Carlos Ceballos, Jr., TX
Raba Kistner Consultants, Elos Arredondo, Jr., TX
Raul Garcia Bookkeeping, Jorge Gonzalez, TX
Ray Wolf Commercial Diving Incorporated, TX
Razorback LLC dba Diamondback Pipeline, LLC., Kevin Garcia, CO
Rental World, Robert Suarez, NJ
Respeta Tu Playa, Albert L. Scharen, TX
Reyes Marine Industries, Inc., Carlton Reyes, TX
RGV Nature Coalition, Nancy Millar, TX
Rhodes Farms Partnership, R. Dale and Mary Rhodes, TX
Rhodes Farms
Dane & Dale Rhodes, Dane and Dale Rhodes, TX
Ricardo A. Cortinas dba Port Restaurant, Ricardo A. Cortinas, TX
Rio Grande Council, Boys Scouts of America-Laguna, Ernesto Carballo, TX
Roca Construction Co., Ricardo Roca, Sr., TX
Rodco Marine Supply, Inc., Juan Rodriguez, TX
Rodicel, Inc., Rafael Blanco Orquin, TX
Romero, Guillermina, Guillermina Romero, TX
Roser & Cowen Logistical Service, Danny Lopez, TX
Roser & Cowen Logistical Service, Neto Roser, TX
Roser Customs Service, Inc., Rico Roser, TX
RSC Equipment Rental, Chris Lowery, TX
RTW Properties, L.P., Bill Mallory, OK
RTW Properties, LP, Bill Mallory / Fred Figueroa, TX
Schaefer Stevedoring, Ken Schaefer, TX
Sea Breeze Marine, Inc. c/o Raul Garcia, Juan Gaona, TX
Sea Kirk, Inc. d/b/a La Manana, Fred Feurtado, TX
Sea Kirk, Inc. dba La Manana, Fred Fuertado, TX
Sea Ranch Marina, TX
Sea River Maritime (Exxon Shipping), LA
Sea Turtle Inc., Jeff George, TX
Sea Turtle, Inc., Jeffrey A. George, TX
Sea Turtle, Inc., Shane Wilson, TX
Seadrift Pipeline Corp, Jere Dial, TX
Seahorse Transportation, Inc., Mark Haynes, TX

Companies and Organizations (continued)

Shoreline Task Force, Paul Munarriz, TX
Sierra Club, Harry Libarle, CA
Sierra Club, Nathan Matthews, CA
Signet Maritime Corporation, Barry Snyder, TX
Signet Maritime Corporation, Ida Treviño, TX
Snodgrass, Inc., Sam Snodgrass, TX
South Padre Island Chamber of Commerce, TX
South Padre Island Watersports, TX
South Texas Native Coastal Plant Center, T. J. Lassen, TX
Southern Recycling, LLC., Robert Berry, LA
Southern Wave, TX
Southern Wave Sailing Tours, TX
Southwestern Motor Transport, Inc., TX
Span Glass, Kurt Holmes, TX
Spaw Glass, Eric C. Kennedy, TX
SPI Birding & Nature Center, Cristin Howard, TX
SPI Fish Killer Tours, TX
Stampede Energy, LLC., Peter Schmar, TX
Stolt Transportation Services, TX
Subsea 7, Stuart Redpath, TX
Sunbelt Transport, Inc., TX
Surfrider Foundation South Texas Chapter, Robert Nixon, TX
T. Parker Host Gulf, Inc., Randy Tate, TX
T.D. American Limestone Products, LLC, Liliana Treviño, TX
TCS Brokerage, Martha Davila, TX
Tejas Equipment Rental, Esteban Lozano, TX
Terry 2005 Family Partnership, LTD, Peggys Terry or Valerie S Terry, TX
Texas Gold Shrimp Tour, TX
Texas Gulf Trawling, TX
Texas Marine Ventures, Inc., Juanita S. Salazar, TX
Texas Shrimp Association, Andrea Hance, TX
Texas Sportfish, TX
Texas State Technical College, Stella E. Garcia, TX
The Brazos Santiago Pilots, Captain Grant S. Wilson, TX
The Brazos Santiago Pilots, Captain Jonathan P. Willett, TX
The Original Dolphin Watch, TX
The Valley Land Fund, Debralee Rodriguez, TX
TM Cruillas, LLC., Oscar De la Garza, TX
TransMontaigne Operating Company, L.P., Kevin Garcia, TX
Transporte Internacional Lopez Ochoa, SA. de CV., Ruben Lopez, TX
Transpuga, SA de CV, Guadalupe Facundo, TX
Two Fishing Friends, Inc., Emigdio Cruz, TX
Two Fishing Friends, Inc., Emigdio Cruz, TX
U.S. Offshore, Inc., Robert Berry, TX
United Way of Cameron County, Traci Wickett, TX
Valero, James V. Stegall, TX
Valley Crossing Pipeline, LLC, TX
Valley Lubricants, Inc., David Eymard, TX
Valley Proud Environmental Council, Mary Jane Shands, TX
Valley Trucking Company, TX
Venmar Shrimp, Inc., Jose Manuel Aponte, TX
Venmar Shrimp, Inc., Jose Manuel Aponte, TX
Volunteer Barge & Transport, Inc., TN
Vulcan Construction Materials, LP, David Farrar, TX
Wolfe Sandbalsting & Industrial Painting, Don Wolfe, TX
Woodfin Trade Services, Inc., Mike Woodfin, TX

Individuals
A Patterson, TX
A.J. Shewmaker, TX
Aaron Fuller, TX
Abby Findley, TX
Abde Esmaili, TX
Abdulmalik Nathani, TX
Abel Silva, TX
Abigail Burns, TX
Abigail Garza, TX
Adam C, TX
Adam Hudson, TX
Adam Thaler, TX
Adam Zablelski, TX
Adelaido Gonzalez, Sr. ET AL, TX
Adolfo E. Cordova, TX
Adolfo J. Cervera, TX
Adrian Fonceanda, TX
Adrian P. Bernal, TX
Adrian Ruben Correa, TX
Adriana Garcia, TX
Adriana Gonzalez, TX
Adriana Martinez, TX
Adrienne Inglis, TX
Aflen McReynolds, TX
Agustin Molina, TX
Aimee Legrand, TX
Aimee Murua, TX
Al Solis, TX
Al Stlouis, TX
Alan Diaz-Santana, TX
Albert Berman, TX
Albert Gomez, Jr., TX
Albert H. Dean, III C/O Evelyn Dean, TX
Albert Lee & Norine Smith, TX
Aleah Hellman, TX
Aleida Garcia, TX
Alejandro Flores, TX
Alene Edmonds, TX
Alessandria Fernandez, TX
Alex Chau, TX
Alex Herrera, TX
Alex Meza, TX
Alexa Allison, TX
Alexander Clayton, TX
Alexander Grant, TX
Alexander Helou, TX
Alexander Lewis, TX
Alexandra Mitchell, TX
Alexis Bay, TX
Alexis Burt, TX
Alfied Dabrowski, TX
Alfonso Saladaoa, TX
Alfonso Zavala, TX
Alfred Davila, TX
Alfredo Godoy, Jr., TX
Alfredo L. & Merida Garcia, TX
Alfredo L. Mares, TX
Alice Bax, TX
Alice Geraldine Rhodes, TX
Alice Kuchenthal, TX
Alice Nicholson, TX
Alice Nicholson, TX
Alice Wood, TX
Alicia Baldovinos, TX
Alicia lopez, TX
Alison Fletcher, TX
Alison Kirsch, CA
Alix Flores, TX
Allen Olson, MN
Allison Metzger, TX
Allison Vitek, TX
Allison Zborowski, TX
Alma G. Leal, TX
Alma Linda Benavidez, TX
Alyssa Cummings, TX
Alyssa Gonzalez, TX
Alyssa Melton, TX
Amado Chavez, Jr., TX
Amanda Caldwell, TX
Amanda Hollis, TX
Amanda Kay, TX
Amanda Mahfood, TX
Amaya Lee, TX
Amber Manske, TX
Amber Manske, TX

Individuals (continued)
Amber Maske, TX
Amends McNeese, TX
Ami Wisdom, TX
Amparo B de Navarro, TX
Amy Ardington, TX
Amy Dixon, TX
Amy Lagrone, TX
Amy Mullin, TX
Amy Quate, TX
Amy Summerfelt, TX
Ana Damian, TX
Ana Fernandez, TX
Ana Lois-Borzi, TX
Ana Reza, TX
Ana Washington, TX
Anal Lisa Martinez, TX
AnaLisa Crandall, TX
Anatella Cisneros, TX
Andre Hernandez, TX
Andrea Frank, IL
Andrea Gonzalez, TX
Andrea Lopez, TX
Andrea MacRae, TX
Andrea Maxwell, TX
Andrea Riebeling, TX
Andres and Laurel Alvarez, TX
Andres Garcia, TX
Andres Ramos, TX
Andres Sanchez III, TX
Andrew Hardin, TX
Andrew Hernandez, TX
Andrew Lyall, TX
Andrew William Turcotte, TX
Andrew Zwarun, TX
Andrews Fortenberry, TX
Andrienne Inglis, TX
Andy Sheppard, TX
Angela Barrera, TX
Angela Millis, TX
Angela Pardo, TX
Angela Wilkinson, TX
Angelika Altum, TX
Angelika Braxton, TX
Angelika Potempa, TX
Angelita O'Connor, TX
Angely Demobio, TX
Angie Reeves, TX
Anil Prabhakar, TX
Animae Chi, NY
Animae Chi, CA
Anita Cannata Nowell, TX
Anita Faulkner, TX
Anita Pauwels, TX
Anita Ro, TX
Anita Santos, TX
Ann Banks, TX
Ann Breuer, IL
Ann Cistales, TX
Ann Gallaway, TX
Ann J. Paddock, TX
Ann Kaiser, TX
Ann Lange, TX
Ann Loera, TX
Ann Magana, TX
Ann Mathes, TX
Ann Millard, TX
Ann Nau, MD
Ann Sadtler, TX
Ann Towns, TX
Anna George, TX
Anna Gonzalez, TX
Anna Lee Garcia, TX
Anna Obek, TX
Anna Tompkins, TX
Anna Towns, TX
Anna Woods, TX
Annalisa Peace, TX
Anne and John Freas, PA
Anne Caton, TX
Anne Easterling, TX
Anne Jones, TX
Anne L. Ferguson, TX
Anne L. Idsal, TX
Anne L. Idsal, TX
Anne Lindsey, TX

Individuals (continued)
Anne Varljen, TX
Annetta Gower, TX
Annette Christopher, TX
Annette Mcanally, TX
Annie Caton, TX
Annie Winstead, TX
Annmarie Wilson, TX
Anthea Wray, TX
Anthea Wray, TX
Anthony McCradic, TX
Anthony Montapert, CA
Anthony Murray, TX
Anthony Whiting, TX
Antonio Alvarez, Jr., TX
Antonio Bayona, TX
Apocalipsis A. Robinson, TX
April Pafford, TX
Arantza Alvarado, TX
Archana Parushotham, TX
Arely Valerio, TX
Ariana Blanco, TX
Ariana Garcia, TX
Arisa Castillo, TX
Armando C. Arredondo, TX
Armando Chaves, TX
Armando Herrera, TX
Armando Morales, TX
Arnold Haber, TX
Arnoldo & Cruz Del Toro, TX
Arnoldo Becho, TX
Arnoldo Serna, TX
Arnulfo Rodriguez, TX
Arthur C. Smith, TX
Arthur Emshoff, TX
Arthur Payne, TX
Asad Rabber, TX
Ashley Castillo, TX
Ashley Jones, TX
Ashley Nelson, TX
Ashton Moore, TX
Ashvin Bhatt, TX
Asucena Salinas, TX
Athenea Hughes, TX
Audrey Jordan, TX
Audrey Patton, TX
Aurora R. Rojas & Antia R. Cantu, TX
Austin Gray, TX
Ava Blankenship, TX
Ava Germaine Leal, TX
B Baker, TX
B. Elisa Filippene, TX
Barbara & Roby Odom, TX
Barbara Anderson, TX
Barbara Burton, TX
Barbara Burton, TX
Barbara Campbell, TX
Barbara Eckert, TX
Barbara Ehanann, TX
Barbara Elliott, TX
Barbara Fletcher, TX
Barbara Hill, TX
Barbara Kantola, TX
Barbara Martin, TX
Barbara McGaffey, TX
Barbara Mead, TX
Barbara Methvin, TX
Barbara Mojica, TX
Barbara Montoya, TX
Barbara Richert, TX
Barbara Rogers, TX
Barbara Sargent, TX
Barbara Swearingen, TX
Barbara Tomlinson, WA
Barbara Veit, TX
Barbara Whitener, TX
Barry Clar, TX
Barry Phelps, TX
Bea Bee, TX
Becky Chambers, TX
Becky Wharton, TX
Becky Wharton, TX
Belda Gomez, TX
Belen Aguirre, TX
Belen Garcia, TX
Ben Ortiz, TX

Individuals (continued)
Benard Colvin, TX
Benito Chavez Jr, TX
Benito Munoz, Jr., TX
Benjamin and Lu Gomez, TX
Benjamin Liles, TX
Benjamin Matlock, TX
Benjamin Zink, TX
Bennie Scott, TX
Berenice Bissett, TX
Berenice Cedillo, TX
Bernie Johnson, TX
Bertha Janis, TX
Beth Ann Lemm, TN
Beth Ann Sikes, TX
Beth Bowling, TX
Beth Duval, TX
Beth Wernick, TX
Bethany Lara, TX
Betsy Lambert, TX
Bett Mcdugald, TX
Bettie Winsett, TX
Betty Alexander, TX
Betty Chastain, TX
Betty Conley Mann, TX
Betty Orwan, TX
Betty Verbeke, TX
Beverly Knox, TX
Beverly Polan, TX
Beverly Ray, TX
Beverly Soanes, TX
Beverly Veltman, TX
Beverly Walker, TX
Beverly Zweig, MN
Bhavin Sanghavi, TX
Bhuvanesh Bhatt, TX
Bianca Hayes, TX
Bianca Michuda, TX
Bianca Rivas, TX
Bianey Ortega, TX
Bibi Lafleur, TX
Bill Burns, TX
Bill Hoenes, TX
Bill Holt, TX
Bill Lee, TX
Bill Moigenstem, TX
Bill Rogers, TX
Bill Schuler, TX
Bill Wilson, TX
Billie Stapleton, TX
BillieJean Jones, TX
Billy Burnett, TX
Black Schroeder, TX
Blake O'Quinn, TX
Blanca Cardoza, TX
Blevins Calvin, TX
Bob Carver, TX
Bobbie Flowers, NY
Bonnie and Ernie Rodriguez, TX
Bonnie Clements, TX
Bonnie Clements, TX
Bonnie Lynn MacKinnon, TX
Bonnie Mathias, TX
Bonny Gatchel, TX
Boyd Reedy, TX
Brad Hall, TX
Brad McKinney, TX
Brad Watson, TX
Bradford Hindley, TX
Brandon Batton, TX
Brandon Cameron, TX
Brandon Flores, TX
Brandt Mannchen, TX
Brandy Gibbs, TX
Brandye Brown, TX
Brant Kotch, TX
Braun Paul E, TX
Bren Cozad, TX
Brenda C. Hernandez-Barron, TX
Brenda Gutierres, TX
Brenda L. Diaz, TX
Brenda Loveless, TX
Brenda Sears, TX
Brenda Wyrick, TX
Brenna Bales, TX
Brent Bray, TX

Individuals (continued)
Brett Tharp, TX
Brian Abernathy, TX
Brian Boswell, TX
Brian R. & Betty B. Baker, OK
Brian Raising, TX
Brian Schill, TX
Brian Strasters, TX
Briana Schroeder, TX
Briana Schroeder, TX
Brigitte Dalmolin, TX
Britlin Hemingway, TX
Britney Marutan, TX
Britt Harnway, TN
Brittney Collins, TX
Brooke Barajas, TX
Brooke Shannon, TX
Bruan Hilton, TX
Bruce Counley, TX
Bruce Justice, TX
Bruce N. Edwards, Jr., TX
Bruce Ross, TX
Bruce Ross, TX
Bryan and Susan Roberts, TX
Bryan Hilton, TX
Bryan Teague, TX
Bryan Wing, TX
Bud See, TX
Buena Burnett, TX
Byron Pratt, TX
C G, CA
C. Gene & Leora Taubert, TX
Caitlin Mason, TX
Cale Kennamer, TX
Calvin R. Byrd, TX
Cameron Babberney, TX
Cameron Pride, TX
Camilla Figueroa, TX
Camille Converse, TX
Canales Alma Rosa, TX
Candice Moutte, TX
Candyce Eskew, TX
Capri Sims, TX
Carl C. Conley, C/O Clowe, Carla C. Haynes, TX
Carla Lents, TX
Carla Marolt, TX
Carloe Courtney, TX
Carlos F Alonso & Margot Vila, MEXICO
Carlos Galvan, TX
Carlos Garcia, TX
Carlos R. Canas and Nydia D. L. Canas, TX
Carlos Uria, TX
Carly Gilpin, TX
Carly Impoco, TX
Carmen Alamo, TX
Carmen Alvarez, TX
Carmen Cc, TX
Carmen Druke, TX
Carmen L. Garcia, TX
Carol Box, TX
Carol Creech, TX
Carol Fly, TX
Carol Grimm, TX
Carol Jean Wuis, TX
Carol Margos, TX
Carol Nash, TX
Carol Nicks, TX
Carol Pennington, TX
Carol Rausch, TX
Carol Sander, TX
Carol Tate, TX
Carol Thompson, PA
Carolina Casas, TX
Caroline Guajardo, TX
Caroline Hansley, NC
Caroll Duncan Stone & Stuart Reagan Stone, C/O Willamar Gin Company LP, TX
Carolyn Avey, TX
Carolyn Downs, TX
Carolyn Hassis, TX
Carolyn Nieland, TX
Carolyn Render, KS
Carolyn Rich, TX
Carolyn Ridenour, TX

Individuals (continued)

Carolyn Walker, TX
Carolynn Snyder, TX
Carrie Watson, TX
Carrie Weatherly, TX
Carrol Spears, TX
Carroll Dartez, TX
Carter Naomi, TX
Carter Neal, TX
Caryn Perez, TX
Casey Pittman, TX
Cassandra Cosay, TX
Cassidy Mejia, TX
Catalina A Garcia, TX
Catherine Bass, TX
Catherine Davis, TX
Catherine Livingston, TX
Catherine Milbourn, TX
Catherine Oleksiw, TX
Catherine O'Neill, TX
Catherine Pleasants, TX
Catherine Russell, TX
Catherine Van Zanten, TX
Catherine Whiteside, TX
Catherine Willmann, TX
Cathy Carpentier, TX
Cathy Chesser, TX
Cathy Garza, TX
Cathy Harbert, TX
Cathy Hazzard, TX
Cathy Mane, TX
Cathy Matusoff, TX
Cathy Ramsey, TX
Cathy Wallace, TX
Cathy Wisel, TX
Cecelia Bliss, TX
Cecelia DeMello, TX
Cecil O. Braun, TX
Cecilia Dunbar Hernandez, TX
Cecilia Garcia Schulz, TX
Cecilia Zamora, TX
Cecily Runyon Wilson, TX
Celeb Rudolph, TX
Celeste Hagaman, TX
Celestino Alaniz, TX
Celestino Gallegos, TX
Celia Alonso, TX
Celia Garret, TX
Celine Capiccioni, TX
Cemy Ruiz, TX
Cesar Rodriguez, TX
Chad Dunlap, TX
Chad Fuqua, TX
Chandan Talukdar, TX
Charis Fleming, TX
Charlene Williams, TX
Charles & Claudia Morgan, TX
Charles Anderson, TX
Charles Arlington, TX
Charles B Schmidt, TX
Charles Foreman, TX
Charles Franck, TX
Charles Hobbs, TX
Charles Irvine, TX
Charles Kennedy, Sr. and Charles Kennedy, Jr., TX
Charles Lewis, TX
Charles Ochoa, TX
Charles Spencer, TX
Charles Tu, TX
Charles W. Rod, III, TX
Charlotte A. Barker, TX
Charlotte Barker-Stanton, TX
Charlotte Schmidt, TX
Charlotte Wells, WA
Charmaine Berry, TX
Cheri Long, TX
Cherie Ware, TX
Chery L. Pressgrove, TX
Cheryl Cates, TX
Cheryl Kay, TX
Cheryl Morris, TX
Cheryl Smith, TX
Cheryl Tanski, TX
Cheyenne Weaver, TX
Chia Gillory, TX

Individuals (continued)
Chris Clodfelter, TX
Chris Nicolosi, TX
Chris Ruiz, TX
Chris Stubbs, TX
Chris Watenpool, TX
Chrissie Rappolt, NY
Chrissy Daly, TX
Christa Gunn, TX
Christen King, TX
Christian Richer, TX
Christian Rodriguez, TX
Christiana Brinton, TX
Christina Cochran, TX
Christina Evans, TX
Christina Gonzalez, TX
Christina Hartline, TX
Christina Hennigan, TX
Christina Mann, TX
Christina Rivera, TX
Christina Rodriguez, TX
Christina Salazar, TX
Christina Scattergood, TX
Christina Villareal, TX
Christina Williamson, TX
Christine De Angelis, TX
Christine Lockhart, TX
Christine Neef, TX
Christine Rakestraw, TX
Christine Wordlaw, TX
Christopher Basaldu, TX
Christopher Dowling, TX
Christopher Hathaway, TX
Christopher Hathaway, TX
Christopher Hudson, TX
Christopher Huron, TX
Christopher Keller, TX
Christopher Lujan, TX
Christopher Mazza, TX
Christopher Panayi, NY
Christopher Semtner, TX
Christy Bergner, TX
Chuck & Joan McDonald, TX
Chuck Lorenz, TX
Cima Malkhassian, TX
Cinda Pace, TX
Cindy Arellano, TX
Cindy Brittain, TX
Cindy Burzinski, TX
Cindy Crutcher, TX
Cindy McReynolds, TX
Cindy Spoon, TX
Cindy Symington, TX
Cindy Trimm, TX
Cinella Reyes, TX
City of Houston, TX
CJ Vaughn, TX
Claire Bush, TX
Claire Kenney, TX
Claire Lawrence, TX
Claire Morris, TX
Claire Ruffin, TX
Clare Freeman, TX
Clare McCollam, TX
Claud & Sharon Bramblett, TX
Claudia Aldape, TX
Claudia Morgan, TX
Claudia Richner, TX
Claudio Salazar, TX
Clif Jordan, TX
Clinton Chamberlain, TX
Clinton McDowell, TX
Clive O'Donoghue, TX
Clyde McManus, TX
Colby Hardison, TX
Cole Ethridge, TX
Colleen Butterfield, TX
Colleen Dieter, TX
Colleen Lobel, CA
Colleen Mchatton, TX
Collin Mcgrath, TX
Concepcion Combe, et al., TX
Connie Curtis, TX
Connie Leblanc, TX
Connie Mitchell, TX

Individuals (continued)

Constante Cabrales Fray M & Bautista De Constante Carmen, TX
Corliss Crabtree, TX
Corni Weig, TX
Cory Atkinson, TX
Courtney England, TX
Courtney Grigoryev, TX
Courtney Stollon, TX
Courtney Sulak, TX
Craig and Patty Jones, TX
Craig Nazor, TX
Craig Parker, TX
Craig Tatum, TX
Crala Tatum, TX
Cristela Olivarez, TX
Cristela Sifuentez, TX
Cristiana Ginatta, TX
Cristina Garcia, TX
Cristina Martinez, TX
Crystal Mitchell, TX
Curls Orr, TX
Cyndi Rutherford, TX
Cynthia Ann Aragon, TX
Cynthia Curtis, TX
Cynthia Garza, TX
Cynthia Gomez, TX
Cynthia Maguire, TX
Cynthia McFall, TX
Cynthia Meyer, TX
Cynthia Paquette, TX
Cynthia Perez, TX
Cynthia Pizaña, TX
Cynthia Prince, TX
Cynthia Ratliff, TX
Cynthia San Mane, TX
Cynthia Sturlin, TX
Cynthia Taylor, TX
Cynthia Williamson, TX
D Feagin, TX
D Garcia, TX
D Zajac, TX
D. Foster, TX
Daila Yazmin Molina Sanchez and Felipa de Jesus Sanchez, TX
Daina Owen, TX
Daisy Arellano, TX
Dale & Mary Erdman, TX
Dale & Mary Erdmann, TX
Dale Bulla, TX
Dali Suarez, TX
Dalia Hernandez, TX
Dallas Windham, TX
Dan Everly, TX
Dan Harrison, TX
Dan Owings, TX
Dan Roark, TX
Dan Sullivan, TX
Dan Sundberg, TX
Dana Meeks, TX
Dana Spottswood, TX
Dana Yarger, TX
Daniel Cisneros, TX
Daniel Diaz, TX
Daniel Dwyer, TX
Daniel Llanes, TX
Daniel McKeen, TX
Daniel Melendez, TX
Daniel Ponce, TX
Daniel S Griffen, TX
Daniel Summers, TX
Daniel Velez, TX
Daniela Lopez, TX
Danielle Cabrera, TX
Danielle Cole, TX
Danielle Cole, TX
Danielle Ivie, TX
Danielle Lopez, TX
Danielle Mireles, TX
Danise G. Acevedo, TX
Danna Mcvey, TX
Danny Brionis, TX
Danny Davis, TX
Daphne Endress, TX
Darcy Green, TX
Darice Whitten, TX

Individuals (continued)
Darilyn Schlie, TX
Darlene Aksoy, TX
Darren Blais, TX
Darren Huff, TX
Darren Huff, TX
Darryl S. Simon, TX
Darvin Oliver, TX
Dat Lock, TX
Dave and Rita Cross, TX
Dave Byrne, TX
Dave Cortez, TX
Dave Mills, TX
Dave Paris, TX
Dave Rawlins, TX
David & Vicki Shewmaker, TX
David A. Smith, TX
David Altmeyer, TX
David B. Trant, MD, OK
David Bell, TX
David Bigwood, TX
David Bissett, TX
David Broer-LeRoux, TX
David Burkhart, KY
David Burnett, TX
David Campbell, TX
David Carter, TX
David Cooper, TX
David Cottingham, TX
David Councilman, MN
David Danna, TX
David De La Pena, TX
David Derma, TX
David Garcia, TX
David Gonzalez, TX
David H. Woolverton, TX
David Hurd, TX
David Jackson, TX
David Koppel, TX
David Larsen, TX
David Leaverton, TX
David Mason, TX
David Menchaca, TX
David Michalek, TX
David Mulcihy, TX
David Mulcihy, TX
David Newfeld, TX
David O'Keeffe, TX
David Ramirez, TX
David Robledo, TX
David Ruda, TX
David Sanchez, TX
David Stackhouse, TX
David Suissa, TX
David Trevino, TX
David Will, TX
David Zack & Troy D. Shewmaker, TX
David Zambie, TX
David Zambie, TX
Dawn Langerock, TX
Dawn Manning, TX
Dawn Reed, TX
Dawn Unruh, TX
Dawne Meneguzzo, TX
Dean Richardson, TX
Dean Thompson, TX
Deana Phillips, TX
Deanna Bowling, TX
Deanna Pena, TX
Deb Sparshott, TX
Deb Wills, CA
Debbie Beane, CA
Debbie Beehull, TX
Debbie Choi, TX
Debbie Crosby, TX
Debbie Hyde, TX
Debbie McBride, TX
Debbie Rothermel, TX
Deborah Bailey, TX
Deborah Cavazos, TX
Deborah Curtin, TX
Deborah Cushnie, TX
Deborah Goodykoontz, TX
Deborah James, TX
Deborah Krueger, TX
Deborah Lee Duke, TX

Individuals (continued)

Deborah Nicol, Ml
Deborah Pendleton, TX
Deborah Voves, AK
Deborah Williams, TX
Debra Ayala, TX
Debra Bradford, TX
Debra Brigandi, TX
Debra Bruce, TX
Debra Coleman, TX
Debra Francis, TX
Debra Gakeler, KS
Debra Healey, TX
Debra Johnson, FL
Debra K. West, TX
Debra Mccawley, TX
Debra Nugent, TX
Deena Berg, TX
Deidra Leipelt, TX
Deirdre Ohearn, TX
Delaina Foster, TX
Delia Garcia, TX
Delis Gordon, TX
Dell Hood, TX
Delores Parker, TX
Delysia, TX
Denice Hoggatt, TX
Denie English, TX
Denis Tidrick, TX
Denise Bickford, TX
Denise Castiglia, TX
Denise Cottenoir, TX
Denise Garza, TX
Denise Romano, TX
Denisse Meza, TX
Dennis Lanning, TX
Dennis Robinson, TX
Denny Gunnerson, TX
Dense Ibert, TX
Derek Eckert, TX
Derek Luft, TX
Desiree Peña, TX
Desiree Townsend, TX
Devan Fronk, TX
Devi Hopkins, TX
Deyra Pecina, TX
Diamond Flores, TX
Diana and Maria Muzquiz, TX
Diana Clark, TX
Diana Duesterhoeft, TX
Diana Gamez, TX
Diana H. Cortez Castro, TX
Diana L. Cabrera, TX
Diana L. Castro, TX
Diana Vandal, TX
Diana Wheeler, TX
Dianah Anderson, TX
Diandra Prieto, TX
Diane & Michale Wonio, TX
Diane Adams, TX
Diane Blackburn, TX
Diane Friedman, TX
Diane Hendricks, TX
Diane Jacquemotte, TX
Diane Nosnik, TX
Diane Wanja, TX
Dianne Urey, TX
Diego Fernandez, TX
Dillon Olsen, TX
Dinesha Schmidt, TX
Dirk Rogers, TX
Dolly Southwell, TX
Don & Karen Hamlin, TX
Don and Joyce Faulk, TX
Don Brennecke, TX
Don Landry, TX
Don Shafer, TX
Donald Fite, TX
Donald Robinson, TX
Donald Shrier, TX
Donald Smith, NM
Donald Yancey, TX
Donita Lowrey, TX
Donna Biven, TX
Donna Bryant, TX
Donna Cole, TX

Individuals (continued)
Donna Crittenden, TX
Donna Hall, TX
Donna Mae Travis, TX
Donna Mehaffey, TX
Donna Pauler, TX
Donna Read, TX
Donna Rich, TX
Donna Stewart, TX
Donyce Sprecher, TX
Dora Duarte, TX
Dorinda DeGroff, TX
Dorinda Kelley, OR
Dorinda Scott, TX
Doris Soloman, TX
Doris Valdes, TX
Doris Wangler, TX
Dorothea Vender Stoep, TX
Dorothy Lothe, TX
Dorothy Schleicher, TX
Dorothy Srembo, TX
Dot Montgomery, TX
Doug Bagley, TX
Doug Faircloth, TX
Doug Simmer, TX
Douglas Chalmers, TX
Douglas Junkin, TX
Douglas Nichols, TX
Douglas Pettit, TX
Douglas Rives, TX
Doyle Adkins, TX
Doyle Sebesta, TX
Dr. Adrian F. Van Dellen, TX
Dr. Alex Garcia, TX
Dr. Allen Flosi, TX
Dr. Annika Lindqvist, TX
Dr. Arthur Fellows, TX
Dr. Benjamin Liles, TX
Dr. Camas F. Key, TX
Dr. Cecil Jones, TX
Dr. Charles B. Schmidt, TX
Dr. Cheryl Camp; Robert Sardello, CO
Dr. D. Schoech, TX
Dr. Dalmara Bayne, TX
Dr. David Davidson, TX
Dr. Diane Coleman, TX
Dr. Donna Marhoun, TX
Dr. Edward Codina, TX
Dr. Edward Kern, TX
Dr. Emilie Sebesta, NM
Dr. Fred Ponder, TX
Dr. Gregory Martin, TX
Dr. Heather Brandon, TX
Dr. Jackie Lees, TX
Dr. James Klein, TX
Dr. James Lazell, TX
Dr. James Neely, TX
Dr. Jana McCormick, TX
Dr. Jane Reed, TX
Dr. Janet Newman, TX
Dr. John Keller, TX
Dr. Juba Jorgensen, TX
Dr. Judy Lin, TX
Dr. Karen Carr, TX
Dr. Karen Packard, TX
Dr. Kate Kavanagh, TX
Dr. Kellen Mcintyre, TX
Dr. Kenneth Johnson, TX
Dr. Lawrence Cottle, TX
Dr. Lee E Blackwood Est, TX
Dr. Marsha Griffin, TX
Dr. Martin Garcia, TX
Dr. Merci Mcmahon, TX
Dr. Michael Murphy, TX
Dr. Misty Hook, TX
Dr. Nancy Russell, TX
Dr. Pat Smith, TX
Dr. Patricia Martin, TX
Dr. Paul Fitzpatrick, TX
Dr. Ralph Ward, TX
Dr. Ray C. Telfair II, Ph.D., TX
Dr. Robert lnman, TX
Dr. Robert Morgan, TX
Dr. Sarah Bishop Merrill, TX
Dr. Sharon Rabb, TX
Dr. Steven G. Kellman, TX

Individuals (continued)
Dr. Susan Speers, OH
Dr. T. Randall Mock, M.D., Ph.D., TX
Dr. Terrance Robinson, TX
Dr. Terry Stein, TX
Dr. Theron Francis, TX
Dr. Totta Keller, TX
Dr. Vincent Fonseca, TX
Dr. Walter Graham, TX
Dr. William Westermann, TX
Dr. Wrilliam Forbes, TX
Dr. Yvonne Hansen, Ed D, TX
Drs. Mary and Tim Jarvis, TX
Duane Patrick, TX
Dulce morales, TX
Duncan Brown, TX
Dwayne Dassing, TX
E Diana Hawks, TX
E Ingraham, TX
E. Neil Smith, TX
E.J. & John Pederson, TX
Earl Green, TX
Earl Mire, TX
Earl R. Oatman, Jr., ID
Ed Breidenbach, TX
Ed Perry, TX
Edali Hernandez-Toca, TX
Eddie Garza, TX
Edgar & Beatriz Monita, TX
Edgar Pace, TX
Edith E Harp, TX
Edna B Hibbitts, TX
Edna Goette, TX
Edna Ledesma, TX
Eduardo & Sandra Lopez, TX
Eduardo A. Campirano, TX
Eduardo Luna, TX
Edward Grigassy, TX
Edward Hartwell, TX
Edward Kern, TX
Edward Lackey, TX
Edward T. Dicker, TX
Edwin Dissosway, TX
Edy Toledo, TX
Edye Calderon, TX
Efigenia A. Harmon, TX
Eileen Duppstadt, TX
Eileen Hartman, TX
Elaine Byme, TX
Elaine Cohen, TX
Elaine Mars, TX
Elaine Sanchez, TX
Eleanor Mason, TX
Eleanor Raybold, TX
Eleenor Casarez, TX
Elena Cole, TX
Eliabeth Marshall, TX
Elida Pardo, TX
Elieen Welch, TX
Elisa Hirt, TX
Elisabeth Sommer, TX
Elise Johnston, TX
Elissa Blanco, TX
Elizabeth Acevedo, TX
Elizabeth Aranda, TX
Elizabeth Atkinson, TX
Elizabeth Berry, TX
Elizabeth Burnette, TX
Elizabeth Burton, TX
Elizabeth Cantu, TX
Elizabeth D. Bergstrom, TX
Elizabeth Duval, TX
Elizabeth G. Craig, TX
Elizabeth Grimsley, TX
Elizabeth Hart, TX
Elizabeth Hutchison, TX
Elizabeth Leatherman, TX
Elizabeth Limardo, TX
Elizabeth Lopez, TX
Elizabeth ODear, TX
Elizabeth Pearl, TX
Elizabeth Rangel, TX
Elizabeth Rowland, TX
Elizabeth Salazar, TX
Elizabeth Sieve, TX
Elke Gonzalez, TX

Individuals (continued)
Ella Buchanan, TX
Ellen Buchanan, TX
Ellen Ireland, TX
Ellen M. Tyma, TX
Ellen Moore, TX
Ellen Smith, TX
Elliott Bailiff, CA
Elma Arredondo, TX
Eloara Cantu, TX
Eloisa M. Villarreal, TX
Elora Martines, TX
Elsa Cruz Dugas, TX
Eltune Mars, TX
Emelia Fulgencio, TX
Emilio Tamez, TX
Emily Bustos, TX
Emily Garza, TX
Emily Garza, TX
Emily Gross, TX
Emily Hernandez, TX
Emily Houlik-Ritchey, TX
Emily J. Alpert, TX
Emily Le, TX
Emily Northrop, TX
Emily Torres, TX
Emma Campbell, TX
Emma Goode-Deblanc, TX
Emma Squires, TX
Emmy Perez, TX
Enriqueta Cisneros, TX
Eric Borja, TX
Eric Brattin, WA
Eric Bray, TX
Eric Casey, TX
Eric Lopez, TX
Eric Meyer, TX
Erica Castro, TX
Erica Vela, TX
Erika Jimenez, GA
Erika Saenz, TX
Erin Balzrette, TX
Erin Coxart, TX
Erin Quigley, TX
Erin Simmons, TX
Ernesto & Gloria M. Hinojosa, TX
Ernesto Almaguer, TX
Ernesto G & Lilian Garcia, TX
Ernesto Garcia, TX
Ernesto Lopez, TX
Ernesto Maycotte, TX
Esai Torres, TX
Esteban Flores, TX
Esteban Gonzales, TX
Esteban Ortiz, TX
Estella Davila Garcia, TX
Eugene J & Katherine Balon, MI
Eugene Molina, TX
Eugene Q. May, TX
Eunice F. Mouton, LA
Eunice Garza, TX
Eunice Mendoza, TX
Eva Coleman, TX
Eva Tinajero, TX
Eva U. Gonzalez, TX
Evan Odell, TX
Evelyn Adams, TX
Evelyn Adams, TX
Evelyn Heyde, TX
Evelyn L. Merz, TX
Evelyn Palder, TX
Evelyn Sardina, TX
Evi Bourne, TX
Evita Cortez, TX
Ezekiel Rodriguez, SD
F.L. Evans, TX
Fabian Vela, TX
Falcon Jesus, TX
Farideh Farrokhi, TX
Fausto U. Garcia, TX
Federico Ortega, TX
Felipa de Jesus Sanchez, TX
Felipe Mejia, TX
Felix Rosillo, TX
Fernanda Martinez, TX
Fernando Diaz, TX

Individuals (continued)

Fernando Strong & Cynthia Strong, TX
Fidelia Guillen, TX
Fidencio Leal, TX
Fleeta Ishmael, TX
Flor Gracia, TX
Flor Gracia, TX
Flora Cavazos, TX
FM, TX
Fran Wessel, TX
Frances Morgan, TX
Frances Patch, TX
Frances Weller, TX
Francisca Saucedo, TX
Francisco Abrego, TX
Francisco De Alba, TX
Francisco Novero, TX
Francisco P. Hernandez & Sofia Cortes, TX
Frank Blake, TX
Frank Christian, TX
Frank Dufour, TX
Frank Hands, TX
Frank Hernandez, Jr., TX
Frank Hobin, TX
Frank Parker, Jr., TX
Fred Bell, TX
Fred Hinkle, TX
Fred Mebane, TX
Frederick Chase, TX
Frederick S. Kaveggia, et ux., TX
Frederick Stadelbauer, TX
Freya Harris, GA
Frieda Mays, TX
Fuentes Richard Steve & Selene Silva, TX
G B Shelburne, TX
G.L. Gibson, TX
Gabe Kirkpatrick, TX
Gabrialle Martin, TX
Gabriel Hernandez, TX
Gabriel Kirkpatrick, TX
Gabriela Cruz, TX
Gail Anthony, TX
Gail McMullen, CA
Gail Porter, TX
Galonsky, Tally & Galonsky Nurith & Castellano & Tijerina Fam LP, TX
Galtry Lang, TX
Garcia, Schulz Cecilia, TX
Garland Stevenson, TX
Gary and Ellen Snyder, TX
Gary Boerner, TX
Gary Cooper, TX
Gary Drussel, KY
Gary Hild, TX
Gary Putnam, TX
Gary Richards, TX
Gary Shephard, TX
Gary Stephens, TX
Gary Tate, TX
Gary Thomas, TX
Gary W. Coyne et ux., TX
Gayle Goff, TX
Gayle Hood, TX
Gayle Shumate, TX
Gena Sadler, TX
Gene Taylor, TX
General Brant Road, WA
Geneva Chavez, TX
Genevieve Vaughan c/o Frost National Bank, TX
Genieve Guevara-Grimes, TX
Geoffroy Laumet, TX
Geoge Staff, TX
George and Diane McDiarmid, TX
George Duncan, TX
George Holguin, TX
George Hunt, TX
George Mcdill, TX
George Moore, TX
George Staff, TX
George Worthington, TX
Georgia Couch, TX
Georgia Lawrence, TX
Georgine Benno, TX
Geral Gallegos, TX
Gerald St Germaine, TX

Individuals (continued)

Gerardo Chavez, TX
Gerardo Ruiz, TX
Gerton Westerop, TX
Gertrude Carter, TX
Giana Peranio Paz, NC
Gil Pritchett, TX
Gilbert Gonzales, TX
Gilberto & Cynthia Hinojosa, TX
Gilberto C. Jasso, TX
Gilberto Delgado, TX
Gilberto Hinojosa & Cynthia Hinojosa, TX
Gilberto Lopez, TX
Gina Marcum, TX
Gina Obrien, TX
Gina Quinn, TX
Ginger Himelright, TX
Ginger Hughes, TX
Girard Arcand, TX
Gisela Ayala, TX
Giselle Whitwell, TX
Gladys Patterson, TX
Gloria Crenshaw, TX
Gloria G, TX
Gloria Gannaway, TX
Gloria Garcia, TX
Gloria Griffith, TX
Gloria Martinez, TX
Gloria Mozqueda Padilla & Chavez Elisa Padilla, TX
Gloria Reyes, TX
Gloria Silva, TX
Gloria Skillman, TX
Glory Arroyos, TX
Gonzales Family LMTD PRTN, TX
Grace Cagle, TX
Grace Holman, TX
Grace P, TX
Gralin Pritchard, TX
Grant S. Wilson, TX
Greg Allbee, TX
Greg Bard, TX
Greg Grubb, TX
Greg Heiy, TX
Greg Hied, TX
Greg Romero, TX
Greg Sells, TX
Greg Sells, TX
Gregory Joel, TX
Griselda V. and Saul Ibarra, TX
Grover Shade, TX
Guadalupe Torres, TX
Guadalupe Yanez, TX
Guillermo de la Garza, TX
Guillermo Rico, TX
Gumecindo Villanueva, TX
Gus Martin, TX
Gus Martin, TX
Gus Sr Chavarria, TX
Gus Z. Fowler, TX
Gustavo Maldonado, TX
Gwen Cruchon, TX
Gwynne Carosella, TX
H Simrin, TX
H. Guh, TX
H. Javier Lara, TX
H. R Calvin, TX
Hal Trufan, NC
Haley Naylor, TX
Hamp Holcomb, TX
Hank Hammett, TX
Harold Albers, TX
Harold Mosher, TX
Harriet S Horton, TX
Harriett Hogle, TX
Harris Ngwo-Anja, TX
Harrison Ward, TX
Harvella Jones, TX
Hayde Correa, TX
Hayley Hartner, VA
Hazel Gilbert, TX
Heather Graeber, TX
Heather Graeber, TX
Heather Hansen, OH
Heather Ramon, TX
Heather Taque, TX

Individuals (continued)
Heather Vardarsuyu, TX
Hector G. & Maria C. Cantu, TX
Hector Martinez, TX
Hector Medellin, TX
Hector Rene Garcia, TX
Heidi Bollock, TX
Heidi Hampton, TX
Helen Agapie, TX
Helen Anders, TX
Helen Elkins, TX
Helen Snook, TX
Helena Gijsbers van Wijk, TX
Helena Hopson, TX
Henry Jackson, TX
Henry Schmoker, TX
Henry Tillman, TX
Herb Zetley, TX
Herbert Caceres, TX
Herbert Held, TX
Herman Rhein, TX
Hilary Swarts, TX
Hilda Gutierrez, TX
Hilda Ledesma, TX
Hillary Earl, TX
Hillery Earl, TX
Hira Mughal, TX
Holly Gloria Klare, TX
Holly Holmes, TX
Holly Holmes, TX
Holly Howarth, TX
Holly Newman, TX
Holly Riker, TX
Holly Sada, TX
Holly Thiel, TX
Homer & Cesar Rodriguez, TX
Homer & Ina Ruth Tamez, TX
Horace Smith, TX
Howard Cohen, CA
Hsiao-Huei Guh, TX
Hugo Mota, TX
Hunter Lohse, TX
Hunter Wagner, TX
Ida Marie Ortega, TX
Ida Perez, TX
Idell Fowler, TX
Ignacia V. Hinojosa, TX
Ignacio & Dora Galvan Perez, TX
Ilene Dillon-Fink, TX
Ina Ruth Tamez, TX
Ingrid Hansen, TX
Irenie Salazar-Parada, TX
Iris Castillo, TX
Irma Vera, TX
Isabel Garcia Family Limited Partnership, TX
Isabel Garcia Vezzetti, TX
Isabel Garza, TX
Isidro Arreola, TX
Isidro Rodriguez, TX
Isys Chamberlain, TX
Itzitzy Godinez, TX
Ivan Godinez, TX
Ivy Garcia, TX
Ivy Hinson, TX
J E Yee, TX
J Fred Lindner, TX
J Wells, TX
J.A. Garcia, Jr., TX
J.M., TX
J.R. Gimblet, TX
Ja Campbell, TX
Jace Covington, TX
Jack Banun, TX
Jack Bennett, TX
Jack Brown, TX
Jack Ludwig, TX
Jack Mac Phall, TX
Jackie Demarais, TX
Jackie Demarais, TX
Jackie Trevino, TX
Jacky Custerer, TX
Jacob Hendrickson, TX
Jacob Shields, TX
Jacque and John Stoddart, TX
Jacque G, TX

Individuals (continued)
Jacqueline Bollinger, TX
Jacqueline Herbert, TX
Jacqueline Rorno, TX
Jacquelyn Camacho, TX
Jacquelyn Dingley, TX
Jacqui Hamlett, TX
Jacqulyne Romero, TX
Jade Snell, TX
Jaen Lawrence, TX
Jaescemills, TX
Jaime E Caico, TX
Jaime Gonzalez, TX
Jaime Ortiz, TX
Jamaila Saenz, TX
James and Beth Lewis, TX
James Andrew, TX
James Benning, TX
James Blount, NC
James Bruno Taubert, TX
James Bruno Taubert, TX
James C. Winters, TX
James Clifford Winters c/o Faustino Ochoa, TX
James Corbin, TX
James D. Brian, TX
James DeLay, TX
James Flanagan, TX
James Gillim, TX
James Hannon, TX
James Hickey, TX
James Holcomb, TX
James Hollis, TX
James Klein, TX
James Krohmer, KY
James L McCall, TX
James Lockaby, TX
James Lowe, TX
James M. Kitchens, TX
James Matteson, TX
James Milo, TX
James Mulcare, WA
James Oflaherty, TX
James Padier, TX
James Reyes, TX
James Rice, TX
James Smith, TX
James Talbot, TX
James Tillotson, TX
James Trammell, TX
James Volketts, TX
James W. Huie, Trustee, Vivian N Huie Estate Trust, TX
James Wiggins, TX
Jamie Cantu, MEXICO
Jamie Darr-Hall, TX
Jamie Tijerina, TX
Jamie Zak, TX
Jan Adrian, TX
Jan Casner, TX
Jan E Vaughan, TX
Jan Fouche, TX
Jan Gonzalez, TX
Jan Iverson, TX
Jana Harter, TX
Jane Avila, TX
Jane Callahan, TX
Jane Chamberlain, TX
Jane Fuhrman, TX
Jane Jatinen, TX
Jane Leatherman Van Praag, TX
Janell Jenkins, TX
Janene Lindholm, TX
Janet & John Ritter, TX
Janet Burndage, TX
Janet Calme, KY
Janet Delaney, TX
Janet Dougherty, TX
Janet L. Therrian, MI
Janet Landwert, TX
Janet Shuff, TX
Janet Todd, TX
Janette Leggon, TX
Janette Ramos, TX
Janie Martinez, TX
Janis King, NV

Individuals (continued)

Janis Lanagan, TX
Janis Martinez, TX
Jany Maneiro, TX
Janyce McLean, TX
Jaqueline Bollinger, TX
Jared Har, TX
Jason J Walker, TX
Jason Lee, TX
Jason Reinhardt, TX
Jason Salinas, TX
Javad Maher, TX
Javier Gonzalez, TX
Javier Ibarra, TX
Javier Parra, TX
Javier R Garcia, TX
Javier Rene Correa, TX
Javier Rivera, TX
Jay Gilchrist, TX
Jay Kane, TX
Jay Kolenovsky, TX
Jayne Carter, TX
Jazmin Antunez, TX
Jazmin Gonzalez, TX
Jean Camemn, TX
Jean Genevie, TX
Jean Hopkins, TX
Jean Lamberty, TX
Jean Mendoza, IL
Jean Pettit, TX
Jean Rothfusz, TX
Jean Wigle, TX
Jeanette Langford, TX
Jeanne Evans, TX
Jeanne Jordan, TX
Jeanne Kyser, TX
Jeanne Lloyd, TX
Jeanne Rogers, FL
Jeannie Corbitt, TX
Jeannie Smith, TX
Jeannine Gilliand, TX
Jed Mccuistion, TX
Jeff Alhecht, TX
Jeff C. Riviera, TX
Jeff Crunk, TX
Jeff Helton, TX
Jeff Meyerson, TX
Jeff Paul, TX
Jeff Shook, TX
Jeff Tave, TX
Jeffrey D. Oetting, TX
Jeffrey Hartford, TX
Jenee Whitener, TX
Jennielee Dietz, TX
Jennifer Aldridge, TX
Jennifer Anderson, TX
Jennifer Bendio, TX
Jennifer Brezall, TX
Jennifer Favela, TX
Jennifer Golden, TX
Jennifer Herrera, TX
Jennifer Holburn, TX
Jennifer Jones, TX
Jennifer Mendez, TX
Jennifer Mundine, TX
Jennifer Oppenheim, TX
Jennifer Oppenheimer, TX
Jennifer Prevost, TX
Jennifer Ruedas, TX
Jennifer Selmer C/O Algert Tabitha, CA
Jennifer Tischer, TX
Jennifer Yacio, TX
Jeralynn Cos, TX
Jeremy Bennett, TX
Jeri Porter, TX
Jerry Bailey, TX
Jerry Brown, TX
Jerry Christiansen, TX
Jerry Lobdill, TX
Jerry Mylius, TX
Jerry Perez, TX
Jesenia Zurita, TX
Jess Saucedo, TX
Jesse Manciaz, TX
Jesse Mathis, TX
Jesse Pizana, Jr., TX

Individuals (continued)
Jesse Saenz, TX
Jessica Aguilar, TX
Jessica DeZelle, TX
Jessica Garcia, TX
Jessica Martinez, TX
Jessica Suarez, TX
Jessica Taylor, TX
Jessica Turner, TX
Jessie Schell, TX
Jessika Fazquez, TX
Jesus Castillo, TX
Jesus Flores, TX
Jesus Gloria, Jr. and Amanela Minez, TX
Jesus Hernandez, TX
Jesus Olivares, TX
Jesus Pantel, TX
JF Margos, TX
Jill Balley, TX
Jill Butts, TX
Jill Mooney, TX
Jill Velez, TX
Jill Wallace, TX
Jillian Brooks, TX
Jim Anderson, TX
Jim Crosby, TX
Jim Graham, TX
Jim Hill, TX
Jim McElroy, TX
Jim Mckee, TX
Jim McQueen, TX
Jim Tucker, TX
JK Williams, TX
Jo York, TX
Joan & Shen Goetz, TX
Joan Allison, TX
Joan Bonnington, TX
Joan Ciarocco, TX
Joan Johnson, TX
Joan Mayfield, TX
Joan Quenan, TX
Joan Walker, NC
Joan Walker, CA
Joanna Delgado, TX
Joanne Crummond, TX
Joanne Day, TX
Joanne Groshardt, TX
Joanne Johnson, TX
Joaquin Eflinger, TX
JoDee Nelson, TX
Jody Miller, TX
Joe A. Zayos, TX
Joe and Karen Lansdale, TX
Joe H. Rodriguez, TX
Joe Mihm, TX
Joe Moreno, TX
Joe Muscara, TX
Joe Rogers, TX
Joe Tompkins, TX
Joel Melton, TX
Joel Perkins, TX
Joel Perkins, TX
Joel Perkins, TX
Johanna and Jose Raul Jaramillo, TX
John Atlas, TX
John Barnes, TX
John Blackwell, TX
John Boyd, TX
John Browning, TX
John Browning, TX
John Carpenter, TX
John Clark, TX
John Clary, TX
John Cunningham, TX
John Edwards, TX
John Faulk, TX
John Guest, TX
John Haller, TX
John Hanson, TX
John Hawthorne, TX
John Helms, TX
John Hirschi, TX
John Joseph, TX
John Langston, TX
John Lewis, TX
John Madrid, TX

Individuals (continued)
John Moszyk, MO
John Pasqua, CA
John Paul Bujnoch, TX
John Petrarca, TX
John Propespier, TX
John R Huff Jr, TX
John Rath, TX
John Rooney, TX
John Taylor de La Garza, TX
John Thaxter, TX
John Whitright, TX
John Willis, TX
John Wilson, TX
John Yarber, TX
John Young, TX
John Zeigler, TX
John-Michael Torres, TX
Johnny Whitright, TX
Joliet Vallejo, TX
Jon Downs, TX
Jon Gross, TX
Jon Mullin, TX
Jon Pitt, TX
Jonathan Head, TX
Jonathan Todd Fernandes, CA
Joni S. Montover, TX
Jordan Arendas, TX
Jorge & Idelma Violeta Cantu, TX
Jorge Gamez, TX
Jorge Garcia, TX
Jorge Gutierrez, TX
Jorge Roses, TX
Jose & Jeronimo Rodriguez, TX
Jose & Maria Elma Torres, TX
Jose & Olga Padilla, TX
Jose A. Quezada, TX
Jose Alfonso Joya, TX
Jose Antonio Valle Hernandez, TX
Jose Art Chapa, TX
Jose Castreusn, TX
Jose De Souza, TX
Jose Gamboa, TX
Jose Garcia, TX
Jose Hernandez, TX
Jose J Aza, TX
Jose Jaramillo et ux., TX
Jose Luis Garcia, TX
Jose Luis Muñoz, TX
Jose M. Barreda, TX
Jose Peña, TX
Jose R. Agustin et ux., NJ
Jose R. Roche, TX
Jose Reyna Sanchez, TX
Jose Rodríguez, TX
Jose Rosales, TX
Joseph Bogoned, TX
Joseph Bogorad, TX
Joseph Durrance, TX
Joseph Moon, Jr., TX
Joseph Patton, TX
Joseph Paukman, NY
Joseph Petty, TX
Joseph Reynolds, TX
Joseph Shurgot, TX
Joseph Vanblargan, TX
Josette A. Cruz, TX
Josette Cruz, TX
Josh Ballenso, TX
Josh Blaine, TX
Joshua Herring, TX
Joshua Seff, TX
Joshua Self, TX
Joshua Torres, TX
Joshua Wallis, TX
Josie Avalos, TX
Josue Davila, TX
Joy Clark, TX
Joy McMillin, TX
Joy Morgan, TX
Joy Perry, TX
Joyce Alvarado, TX
Joyce Dixon, TX
Joyce Hamilton, TX
Joyce Morris, TX
Joyce Mynier Turcotte, TX

Individuals (continued)
Joyce Sema, TX
Juan B. Mancias, TX
Juan Carlos Garcia, TX
Juan Castillo, TX
Juan De Dios Garcia, TX
Juan J. & Juanita B. Yanez, TX
Juan Jaime Flores, TX
Juan Jr .& Irene Cantu, TX
Juan Morlock, TX
Juan Quinonez, TX
Juan Rodriguez, TX
Juan Santillan, TX
Juan Tejeda, TX
Juana Alicia Ruiz, TX
Juana M Garcia De Herrera, TX
Juanita Arminta Guajardo, TX
Juanita Kohlhauff, TX
Juanita Stringfield, TX
Juanito Avalos, TX
Judi Bass, TX
Judi Hayes, TX
Judith Emerson, TX
Judith Freer, TX
Judith Holmes, TX
Judith Lauter Phd, TX
Judith Nickerson, TX
Judith Rogers, TX
Judith Stueve, TX
Judith Wilson, TX
Judy Amstutz, TX
Judy Bryce, TX
Judy Childers, WI
Judy Greenwood, TX
Judy Katherine Jones, TX
Judy King, TX
Judy Mayo, TX
Judy McEnany, TX
Judy Perkins, TX
Judy R. Funk, TX
Judy Sneed, TX
Judy Whetzel, TX
Judy Williams, TX
Juli Kring, TX
Juli Kring, TX
Julia Landress, TX
Julia Strawn, TX
Julia Verhoy, TX
Julia Woodward-Parker, TX
Juliana Mujica, TX
Julianne Apodaca, NM
Julie Blanford, TX
Julie Buchanan, TX
Julie Burciaga, TX
Julie Bush, TX
Julie Edelstein-Best, TX
Julie Jones, TX
Julie Norris, TX
Julie Sears, TX
Julie Soleil, TX
Julie Torrey, TX
Juliet Reardon, TX
Julio Lopez, TX
Julio Sanchez, Jr., TX
June Adler, TX
June Mills, CA
Justin Andrews, TX
Justin Bautista, TX
Justin Bosler, TX
Justin Neufeld, TX
K Fisher, TX
K Taylor, TX
K Ward, TX
K. Scott, TX
Kacy Mora, TX
Kaila Montgomery, TX
Kaileen Reynolds, TX
Kaitlyn Cravens, TX
Kalli Doubleday, TX
Kambra Allen, TX
Kara Graul, TX
Kara Page, TX
Karal Batton, TX
Karen Anderson, TX
Karen Boward, TX
Karen Browning, TX

Individuals (continued)
Karen Cowen, TX
Karen D. Fossom, TX
Karen Dampeer, TX
Karen Grosse-Ramirez, TX
Karen Hill, TX
Karen Holleschau, TX
Karen Jolly, TX
Karen Kawszan, TX
Karen Lang-Ferrell, TX
Karen Lansdale, TX
Karen Lehr, TX
Karen Mayer, CA
Karen Naumann, TX
Karen Norton, TX
Karen Norton, TX
Karen Pfeiffer, TX
Karen Richard, TX
Karen Ricks, TX
Karen Sandall, TX
Karen Scott, TX
Karen Sprague, TX
Karen Sterling, TX
Karen Sullivan, TX
Karil Scalise, TX
Karin Marsh, TX
Karina Espino, TX
Karina Gonzalez, TX
Karina Guerrero, TX
Karl Brooks, TX
Karl Johnson, TX
Karl Kaufmann, TX
Karole Moyed, TX
Karon Harrison, TX
Karsten T and W Barclay Idsal, TX
Karsten T Idsal, TX
Karyn Olschesky, TX
Kat Carlson, TX
Kat Gualy, TX
Kat Perez Feuerbacher, TX
Kate Bremer, TX
Kate Macneil, TX
Kate Wasserman, TX
Katharine Sommerfield, TX
Katherine Alejo, TX
Katherine Armstrong Love, TX
Katherine Bond, TX
Katherine Cervone, TX
Katherine Feuerbacher, TX
Katherine Hanley, TX
Katherine Okulewicz, TX
Katherine Sayles, TX
Katherine White, TX
Kathleen Alexander, TX
Kathleen Bryson, TX
Kathleen Campbell, TX
Kathleen Hackett, TX
Kathleen Jaudzemis, TX
Kathleen Landfield, TX
Kathleen Mireault, MA
Kathleen Robertson, TX
Kathleen Younghans, TX
Kathryn Blaire Craddock, TX
Kathryn Burns, TX
Kathryn Cain, TX
Kathryn Davidson, TX
Kathryn Johnson, TX
Kathryn Martinez Tijerina, TX
Kathryn Runnells, TX
Kathryn Samec, TX
Kathy Bassert-Webb, TX
Kathy Farr, TX
Kathy Goodwin, TX
Kathy Mcpherson, TX
Kathy Newman, TX
Kathy Okulewicz, TX
Kathy Pinckney, TX
Kathy Rinehart, TX
Kathy Spera, TX
Kathy Watt, TX
Katie Drackert, TX
Katie Irani, TX
Katie Neinast, TX
Katira Tejeda, TX
Katira Telecast, TX
Katlin Collins, TX

Individuals (continued)
Katrin McManis, TX
Katrina Cameron, TX
Katy Youker, TX
Kay Baughman, TX
Kay Dahle, TX
Kay Faile, TX
Kay Foster, TX
Kay Long, TX
Kay Mcbrayer, TX
Kay Mcbrayer, TX
Kay Rolfes, TX
Kaye Mccall, TX
Kaylah Hilliard, TX
Kayley Stanfield, TX
Keely Gililland, TX
Keena Miller, TX
Keith Euler, TX
Keith Godwin, TX
Keith Hailey, TX
Keith Musgrove, TX
Keith Teeter, TX
Kelli Jay, TX
Kelli Reid, TX
Kelly Besecke, TX
Kelly Epstein, TX
Kelly Epstein, TX
Kelly Hobbs, TX
Kelsey Lira, TX
Ken Berry, TX
Ken Box, TX
Ken Dancak, TX
Ken Dixon, TX
Ken Hughes, TX
Ken Larsen, TX
Ken Mueller, TX
Ken Odell, TX
Ken O'dell, TX
Ken Orgera, TX
Kenneth Elder, TX
Kenneth Hillard, TX
Kenneth Reynolds, TX
Kenneth Walter, TX
Kent And Karol Middleton, TX
Kent Rylander, TX
Kent Smither, TX
Kenton Lindley, TX
Keri Branch, TX
Kerry Lemon, TX
Kethsaly Salinas, TX
Kevin Emmons, TX
Kevin Hammeke, TX
Kevin Hartley, TX
Kevin Horton, TX
Kevin Misak, TX
Kevin Rivas, TX
Kevin Rosa, TX
Kevin Smith, TX
Kevin Thompson, TX
Khy Chapman, TX
Kim Allen, TX
Kim Bacon, TX
Kim Bigley, TX
Kim Fry, TX
Kim Garcia, TX
Kim Limberg, TX
Kim Malthesen, TX
Kim Monroe, TX
Kim Sanders George, TX
Kim Sturling, TX
Kimber Kaushik, TX
Kimberly Allen, TX
Kimberly and Robert Walsdorf, TX
Kimberly Hawke, TX
Kimberly Wagner, TX
Kimberly Wiley, NY
Kimberly Willis, TX
Kin and Linda Rosevelt, TX
Kinney Evitt, TX
Kirk & Xochitl Jackson, TX
Klementyna Bryte, TX
Kodie Nagy-Montgomery, TX
KPSB, LLC, TX
Kristal Fuller, TX
Kristeena Banda, TX
Kristen Brown, TX

Individuals (continued)
Kristen Pierce, TX
Kristen Schroder, TX
Kristi Collins, TX
Kristi Michener, TX
Kristin Anthony, TX
Kristin Wellman, TX
Kristina Lamons, TX
Kristina Williams, TX
Krystal Ybarra, TX
Ksusha Pachurova, TX
Kurt Steinman, TX
Kwin Armitze, TX
Kylara Hunter, TX
Kyle Hawkins, TX
Kyle Jeffries, TX
L M, TX
L. Fielder, TX
Laila Sabet, TX
Lalie Burns, TX
Lamar Smith Life Estate Trustee, TX
Lance Kirkpatrick, TX
Lang Violet D, TX
Lani & Dale Crawford, TX
Lannie Tucker, TX
Lany Burgoon, TX
Larisa Manescu, TX
Larise Boughner, TX
Larry & Norma Wheelock, TX
Larry D Spencer, TX
Larry DeFrance, TX
Larry Hollmann, TX
Larry Wetmore, TX
Laura Aranda, TX
Laura Baguio, TX
Laura Cartwright, TX
Laura Codina, TX
Laura Gamez, TX
Laura Hendrix, TX
Laura Jobe, TX
Laura Mordecai, TX
Laura Munroe, TX
Laura S. Sanchez, TX
Laura Sander, TX
Laura Snider, TX
Laura St. Clair, TX
Laura Stclair, TX
Laura Villarreal, TX
Laurel Piersol, TX
Laurel Power, TX
Laurel Steinberg, TX
Lauren Bohart, TX
Lauren Danford, TX
Lauren Fenenbock, TX
Lauren Fleming, TX
Lauren Heiy, TX
Lauren Latigo, TX
Lauren Mangini, TX
Laurey Mouledous, TX
Laurie Carpenter, TX
Laurie Howell, TX
Laurie Marshall, TX
Laurie Piper, TX
Laurie Ward, TX
Laurie Winnette, TX
Laverne C. & Barbara May, TX
LaVina Ju Meyer, TX
Lavinia Morales, TX
Lawrence Galvan, TX
Lawrence Nitishin, TX
Lawrence Smith, TX
Laylee Farajollahi, TX
Leads Dietz, TX
Leah Andemon, WA
Leah Huddleston, TX
Leah Mackay, TX
Leal Rodolfo, TX
LeAnne Clanton, TX
Lee And Sue Scarbomugh, TX
Lee Hutchings, TX
Lee Hutchings, TX
Lee Loe, TX
Leeann Chastain, TX
LeeAnne Clanton, TX
Leigh Ann Wallace, TX
Leilani Castillo, TX

Individuals (continued)
Lelia Vaughan, TX
Lenore Reeves, IL
Leona Coen, TX
Leona Diener, TX
Leonel Becerra, TX
Leonor Pacheco, TX
Leonor Smith Zacarias, TX
Leopoldo Soto Jr, TX
Leroyce Mead, TX
Leroyce Mead, TX
Lesa Tyson, TX
Leslie Botts, TX
Leslie Butterworth, TX
Leslie Currens, TX
Leslie Hines, TX
Leslie Ockerman, TX
Leslie Pagan, TX
Leslie Smith, TX
Leslie Smith, TX
Leslie Wilder, TX
Lessie Spindle, TX
Lesta Frank, TX
Leta Wall, TX
Leticia Hernandez, TX
Leticia Seolt, TX
Leticia Serna, TX
Lettie Perez, TX
Libby Baltrusch, TX
Lida Jenney, TX
Lilia Pena, TX
Lilli Johnson, TX
Lillian Quintanilla, TX
Lillie Tijerina, TX
Linda Allen, TX
Linda Bae, TX
Linda Bailey, TX
Linda Berger, TX
Linda Bethke, TX
Linda Bingaman, TX
Linda Braune, TX
Linda C Kennedy, TX
Linda Cain, TX
Linda Carr, TX
Linda Charlton, TX
Linda Chenault, TX
Linda Christian, TX
Linda Cox, TX
Linda Crew, TX
Linda Day, TX
Linda Diaz, TX
Linda Fielder, TX
Linda Garcia, TX
Linda Hadovsky, TX
Linda Hahus, TX
Linda Hanratty, TX
Linda Jones, TX
Linda Jones, TX
Linda Kobler, TX
Linda Konicek, TX
Linda Moore, TX
Linda Reynolds, TX
Linda Rudolf, TX
Linda Schubert, TX
Linda Steward, TX
Lindsey Clepper, TX
Lindsey Densing, TX
Lindsey McMahan, TX
Lindsey Simmer, TX
Ling Zhu, TX
Lisa Adam, TX
Lisa Andrus, TX
Lisa Barrett, TX
Lisa Canorro, TX
Lisa Fisher, TX
Lisa Goetz, TX
Lisa Hughes, TX
Lisa Hughes, TX
Lisa Johnson, TX
Lisa Lucko-Powell, TX
Lisa Martinez, TX
Lisa Mazzola, FL
Lisa Millsap, TX
Lisa Neste, NC
Lisa Peters, TX
Lisa Roof, TX

Individuals (continued)
Lisa Silguero, TX
Lisa Sliguero, TX
Lisa Stevenson, TX
Lisa Stone, TX
Lisa Tsokos, TX
Liz Field, MA
Liz Lafour, TX
Liz Sieve, TX
Lizeth Marquez, TX
Lizeth Romero, TX
Lois E. Curry, FL
Lois Looney Kochie, TX
Lois Savage, FL
Lois Van-Englehoven, TX
Loisann Sciarriflo, TX
Longoria Daniel, TX
Lonnie Reyes, TX
Lorelei O'Malley, TX
Lorelei Stierlen, TX
Lorenz Steininger, VA
Loretta Allen, TX
Lori Janick, TX
Lori Peniche, TX
Lori Williams, TX
Lorna Hears, TX
Lorraine DeHaas, TX
Lorraine Moore, TX
Lorraine P. & Dennis L. Woolam, TX
Lorraine Staup, TX
Lou Woo, TX
Louanne Ladson, OH
Louanne Lasdon, OH
Louis Cumings, TX
Louis Ingram, TX
Louise Larsen, TX
Lourdes Martinez, TX
Loyd Cortez, TX
Luanne Vela, TX
Luce Crim, TX
Lucia Banuelos & Luis P. Banuelos & Alma G. Reynolds & Esperanza Carpenter, TX
Lucinda Wierenga, TX
Lucinda Windsor, TX
Lucy Braun, TX
Lucy Foster, TX
Luis A. Guitran, TX
Luis Gonzales, TX
Luis Perez, TX
Luis Soria, TX
Luis T Gonzalez & Evelia I Pinales, TX
Luis Zepeda, TX
Lupe Ramos, TX
Lupita Betamal, TX
Lydia E. Caballero, TX
Lydia Grotti, TX
Lydia Guerra, TX
Lydia Guerre, TX
Lyn Roberts, TX
Lynda Frazier, TX
Lynda Walker, TX
Lynn Bassford, TX
Lynn Brown, TX
Lynn Buehler, TX
Lynn Rich, TX
Lynn Vincentnathan, TX
Lynne and Jim Skripka, MI
Lynsey Holland, TX
M Delgado, TX
M Hoard, TX
M. Huepers, TX
M. Wilkinson, TX
M. Willmann, TX
M.J. Tamez, TX
Mabel Casagrand, TX
Mabel Hockaday, TX
Madalynn Carey, TX
Maile Worrell, TX
Mallory Draper, TX
Malva McIntosh, TX
Mamie Bondy, TX
Mansol Alejos, TX
Manuel Sanchez, TX
Marce Walsh, TX
Marcia Curry, TX

Individuals (continued)
Marcie M. Russell, TX
Marco Amzaldua, TX
Marco Antonio Mota, TX
Marco Lopez, TX
Marcos Estrada, TX
Marcos Kauffman, TX
Marcos Munoz, TX
Marcos Narvaez, TX
Marcus Henning, TX
Mare Lionetti, TX
Margaret F. Trahan, TX
Margaret Fung, TX
Margaret Little, TX
Margaret Parkhill, TX
Margaret Schulenberg, TX
Margaret Shulenberg, TX
Margaret Tatum, TX
Margaret Walden, TX
Margaret Zoch, TX
Margarita Espinoza, TX
Margery Race, TX
Margie Recio, TX
Margot Moczygemba, TX
Marguerite Foster, TX
Maria Anna Esparza, TX
Maria Antonia Gentry, TX
Maria Corina Garcia, GA
Maria Cruz & Alvaro Morin Gonzalez, TX
Maria Del Carmen Perez, TX
Maria Ester H. Garza & Irma H Infante & Maria J H Benavides & Belinda H Rios, TX
Maria G. Alvarez, TX
Maria Gostisha, TX
Maria L. Garza, TX
Maria L. Torres, TX
Maria Lee Semelsberger, GA
Maria Ortegon, TX
Maria S Tovar, TX
Maria Sophia Vassilakidis, TX
Maria Tobin, TX
Maria Williams, TX
Maria Williamson, TX
Marian Henderson, TX
Mariana Pruneda, TX
Marianne & Stefan Vogt, TX
Marianne Herrmann, TX
Marianne Poythress, TX
Marie Bernache, TX
Marie L. Bowen, TX
Marie Livingston, MN
Marie Norell, TX
Marie Sophia Vassilakidis, TX
Marie Travis, TX
Marie Van Dijk, TX
Marilyn Abbott, TX
Marilyn Endres, TX
Marilyn Flores, TX
Marilyn Lara, TX
Marilyn Lorenz, TX
Marilyn Otken, TX
Marilyn Parker, TX
Marilyn Patton, TX
Marilyn Wayte, TX
Marin Penkwitz, TX
Marina Garcia, TX
Marinda Van Dalen, TX
Mario Coltz, TX
Mario Cuevas, TX
Mario Scrida, TX
Marion Dick, TX
Marisela Maua, TX
Marisol Cervantes, TX
Marisol Cristine Cervantes, TX
Marisol Gutierrez, TX
Marissa Jennings, TX
Maritza Rodriguez, TX
Mariu Suarez, TX
Marj Sears, TX
Marjorie E. C. Rhodes c/o Gaye C. Butcher, TX
Marjorie Kessler, TX
Mark & Nghi Pham Kroll, TX
Mark Blandford, TX
Mark Blandford, TX
Mark Craig, TX

Individuals (continued)
Mark Goodman, TX
Mark J Kaswan, TX
Mark Klugiewicz, TX
Mark Mckim, TX
Mark Mckim, TX
Mark Pride, TX
Mark Roberts, TX
Mark Russell, TX
Mark Spenser, TX
Mark Triggs, TX
Mark Waits, TX
Mark Witte, TX
Marla Brandt, TX
Marla Hanks, TX
Marla Reyna-Gomez, TX
Marley Whistler, TX
Marlon Mejia, TX
Marta Diaz, TX
Marta Hubbard, TX
Martha A. Martinez, TX
Martha Burford, TX
Martha Cervenka, TX
Martha Doty, TX
Martha Eberle, TX
Martha Gorak, TX
Martha Leos, TX
Martha Lyons, NV
Martha N. Martinez, TX
Martha Zinn, TX
Martin Enrique Garcia, II, TX
Martin Olguin, TX
Martin Penkwitz, TX
Martin Pesaresi, TX
Martin Wimmer, TX
Marty Anderson, TX
Marty Jones, TX
Mary Adam, TX
Mary Alvarez, TX
Mary and Sammy Blount, TX
Mary Buinger, TX
Mary C. Grimaldo, TX
Mary Cato, TX
Mary D Cartwright, TX
Mary F. Gonzalez, TX
Mary Franklin, TX
Mary Gianakos, TX
Mary Grimes, TX
Mary H. Rhodes, TX
Mary Heifner, TX
Mary Helen Flores, TX
Mary Holguin, TX
Mary Jane Zamarripa, TX
Mary Jo DeLavan, TX
Mary Jo Zappone, TX
Mary Jozwiak, TX
Mary Jozwiak, TX
Mary K Bruner, TX
Mary K Bruner, TX
Mary Kurtnick, TX
Mary L Gonzalez, TX
Mary Louise Long, TX
Mary Martin, TX
Mary McDonald, TX
Mary McGowen, TX
Mary Merzbacher, TX
Mary Miller, TX
Mary Monroe, TX
Mary Morgan, TX
Mary Morris, TX
Mary Parke, TX
Mary Payton, TX
Mary Schmidt, TX
Mary Schultz, TX
Mary Sparks, TX
Mary Sue Rose, TX
Mary Tegtmeier, TX
Mary Tupper, TX
Mary Volz, TX
Mary Wantland, TX
Mary Weaver, TX
Mary Welch, TX
Mary Wilcox, TX
Mary Williamson, TX
Mary Young, TX
Maryam Khaledi, TX

Individuals (continued)
Maryrose Cimino, TX
Matt Brewer, TX
Matt Cearley, TX
Matt Colburn, TX
Matt Gauna, TX
Matt Helton, TX
Matt Lykken, TX
Matt Morgan, TX
Matt Rivas, TX
Matt Tolentino, TX
Matthew Andrade, TX
Matthew Atterberry, TX
Matthew Holder, TX
Matthew Johnson, TX
Matthew Kresha, TX
Matthew Mason, TX
Matthew Sustaita, TX
Matthew Taylor, TX
Maumen Mayfield, TX
Maureen Farr, TX
Maureen Saval, TX
Maureen Theroux, TX
Maureen Theroux, TX
Mauri Williams, TX
Mauro C. Alvarez, TX
Mavis Belisle, TX
Mavis Knight, TX
Max Anderson, TX
Max Anderson, TX
Max Dreyer, Jr. C/O Pat Hallmark, TX
Maximillian Gutierrez, TX
May A Martinez, TX
Meagan Cohen, TX
Megan Chilcutt, TX
Megan O'Connell, TX
Mel Jordan, TX
Mel Templet, TX
Mel Torres, TX
Melanee Siebert, TX
Melanic Gibson, TX
Melanie Anne Persson, TX
Melanie Baldi, TX
Melanie Demartinis, TX
Melanie Gibson, TX
Melanie Sinclair, TX
Melinda Fritsch, TX
Melinda Schmidt, TX
Melissa Alvarado, TX
Melissa Cardenas, TX
Melissa Morgan, TX
Melissa Noriega, TX
Melissa Rodriguez, TX
Melissa Russo, TX
Melissa Russo, TX
Melodie Palmer, TX
Meredith Green, TX
Meredith Mcguire, TX
Merideth Green, TX
Merideth Henkel-Green, TX
Merit Dubois, TX
Michael & Jeanne Galvin, TX
Michael & John Scaief, TX
Michael & John Scaif, TX
Michael Amaka, TX
Michael and Linda Montgomery, TX
Michael Baguio, TX
Michael Barton, TX
Michael Brown, TX
Michael Buescher, TX
Michael Carr, TX
Michael Cateona, TX
Michael Chavez, TX
Michael Collard, TX
Michael Daniels, TX
Michael Dubrick, TX
Michael Earney, TX
Michael Friedman, NY
Michael Garcia, TX
Michael Harrison, TX
Michael Hart, TX
Michael Herzog, TX
Michael Homer, TX
Michael Honel, TX
Michael Jones, TX
Michael Jones, TX

Individuals (continued)
Michael Jordan, TX
Michael Kavanaugh, TX
Michael Macias, TX
Michael Mager, TX
Michael Marshall, TX
Michael McMurtrey, TX
Michael Monahan, TX
Michael Murphy, TX
Michael Neal, FL
Michael Orloff, TX
Michael Peterson, TX
Michael R. Watt, TX
Michael Revord, TX
Michael Russell, TX
Michael Smith, TX
Michael Spradlin, TX
Michael Sularz, TX
Michael Walsh, TX
Michaela Dunaway, TX
Michelle Hospod, TX
Michelle J. Zamarron, TX
Michelle Jiminez, TX
Michelle Marchbank, OK
Michelle Rutan, TX
Michelle Tellez, TX
Mickey Meyers, TX
Mickey Reves, TX
Miguel Hernandez, TX
Miguel Meza, TX
Miguel Sorren, TX
Mike & Kathy Landry, TX
Mike Alejandro Garcia, TX
Mike Anderson, NJ
Mike Carpenter, TX
Mike Johnson, TX
Mile Capetran, TX
Millard Scott, TX
Miller Jerry, TX
Milton Watson, TX
Miquel A. Garcia, TX
Miriam Espino, TX
Misti O'Quinn, TX
Mitchell Harl Thomas, TX
Mitcheol Mead, TX
Mitlon Hickman, TX
Mitzi Jones, TX
Mitzi Perkins, TX
Moises & Ana Bertha Aguilar, TX
Mollie Warren, TX
Molly Neeley, TX
Monica Arsate, TX
Monica Drake, TX
Monica Kindervater and Earl Shadle, TX
Monica Kuretza, TX
Monica Lee Luna, TX
Monica M. Mark, TX
Monica Ochoa, MN
Monika Brown, TX
Monique Mcintyre, TX
Montez McCrary-Holland, TX
Morris Sandal, TX
Morris Sander, TX
Mrs. Ramon Davila, Sr., TX
Muenchow Marcus, TX
Muhammad Jawad, TX
Muriel J. Collier, C/O Susan Collier Miller, TX
Myra Newfeld, TX
Myra Paredes, TX
Myrthala Gonzalez, TX
N. Woodard, TX
Nadia Prado, TX
Nadia Senter, TX
Nadia Traietti, TX
Nadine Prescott, TX
Nagender Kaushik, TX
Nancy Baise, TX
Nancy Cook, TX
Nancy Ewart, TX
Nancy Fortner, TX
Nancy Fullerton, TX
Nancy Jones, TX
Nancy Lauritsen, TX
Nancy Lillie, IN
Nancy Mcgrath, TX

Individuals (continued)
Nancy Mcvean, TX
Nancy O'Neal, TX
Nancy Palazzolo, TX
Nancy Rosenberg, TX
Nancy Ross, TX
Nancy Wilson, TX
Nannette L. Garcia, TX
Naomi Dove, TX
Natalie Martens, CA
Natalie Rundle, TX
Natalie Van Leekwijck, OR
Natasha Tucket, TX
Nathan E. Root & John Kliewer, KS
Nathan Farenkopf, TX
Nathan Gilbert, TX
Nathaniel Watkins, TX
Nayeli Zenteno, TX
Neal Baron, TX
Neal Baron, TX
Neal F. Runnels, TX
Neal Howerton, TX
Neal Stucki, TX
Neal Wilkins, TX
Neala Johnson, TX
Ned Sheets, TX
Neil Angelo, TX
Neil Mcqueen, TX
Neil Quarles, TX
Nelda Reid, TX
Nelda Salinas, TX
Nelda Ursula Montalvo, TX
Nelda Villacana, TX
Nelie Edens, TX
Nettie Standiford, TX
Netzahualcoyolt Rivas & Luna Ju Gonzalez, TX
Nghi Pham Kroll, TX
Nicholaus Salinas, TX
Nick Delossantos, TX
Nick Kiger, TX
Nick Noy, TX
Nicole Clustrom, TX
Nicole Creek, TX
Nicole Ekstrom, TX
Nicole Groote, TX
Nicole Portillo, TX
Nicolette Immel, TX
Nicosia Patricia A, NJ
Niki Lee, TX
Nina Garcia, TX
Ninfa Aleman, TX
Nisar Ahmed, TX
Niyi Vinson, TX
NM Hoover, TX
Noe Acevedo, TX
Noe Villareal Jr, TX
Noelda Rodriguez, TX
Noelle Meisser, TX
Noemi Blanco, TX
Nohemi Gonzalez, TX
Nonya Cox, TX
Nora Hdz, TX
Nora Rela, TX
Norberto P. & Lucila B. Alvior, TX
Noreen James, TX
Norma De Anda, TX
Norma Moore, TX
Norma Raymond, TX
Norma Saenz, TX
Norma Vela, TX
Norman Negrete, TX
Norman Williams, TX
Octavio Loera, TX
Odilia Jimenez, TX
Odilia Leal-McBride, TX
Odilon & Maria Guadalupe Amador, TX
Olivia Vale, TX
Olka Forster, TX
Oluwadare Michael Ayodele, TX
Omar Elizondo, TX
Oralia Rivera, TX
Oralia Rodriguez, TX
Orlando Lopez, TX
Oscar Garcia, TX
Otila Delgado, TX

Individuals (continued)
Otilia Castro, TX
Ovi Atkinson & Arnulfo Atkinson, TX
P. S. Allison, TX
Pam Evans, TX
Pam Sohan, TX
Pam Sonnen, TX
Pam Wetzels, TX
Pam Zeller, TX
Pamela Berg, TX
Pamela Davison, TX
Pamela Evans, TX
Pamela Hardwick, TX
Pamela Jackson, TX
Pamela Kurner, TX
Pamela Lienhard, TX
Pamela Miller, TX
Pamela Phillips, TX
Pamela Phillips, TX
Pamela Saez, TX
Pamela Turlak, TX
Pamela Vise, TX
Parnelle Wallis, TX
Pat Ballard, TX
Pat Bliss, TX
Pat Glynn, TX
Pat Johnson, TX
Pat Lane, TX
Pat Perry, TX
Pat Roberson, TX
Pat Suarez, TX
Pat Vassilakidis, TX
Patrice Johnson, TX
Patricia Beltran, TX
Patricia Bennett, TX
Patricia Berzon, TX
Patricia Bocanegra, TX
Patricia Brooks, TX
Patricia E. Gonzales, TX
Patricia Ellis, TX
Patricia Flynn-Williams, TX
Patricia Frick, TX
Patricia Ganger, MI
Patricia Gonzales, TX
Patricia Jones, TX
Patricia Jones, TX
Patricia Kelcher, TX
Patricia Lareau, TX
Patricia Matthews, TX
Patricia Murdock, TX
Patricia Notaro, TX
Patricia Okruhilk, TX
Patricia Pasztor, TX
Patricia Patteson, TX
Patricia Schon, TX
Patricia Seitz, TX
Patricia Spencer, TX
Patricia Stella, TX
Patricia Thomson, TX
Patricia Younger, TX
Patrick Anderson, TX
Patrick Boot, TX
Patrick De La Garza Und Senkel, TX
Patrick Garcia, TX
Patrick Purdy, TX
Patrick Vacek, TX
Patsy Gross, TX
Patti Edelman, TX
Patti Iles, TX
Patty Garcia, TX
Patty Millspaugh, TX
Paul Bae, TX
Paul Brown, TX
Paul Cardwell, TX
Paul Durr, TX
Paul Fleeman, TX
Paul Jakubik, TX
Paula Fontaine, TX
Paula Harrington, TX
Paula Hunt, TX
Paula J. Knoll, TX
Paula Osuna, TX
Paula Sigler, TX
Paula Wyche, TX
Pauline Moore, TX
Payten Maness, TX

Individuals (continued)
Pearl Fry, TX
Pedro Cantu, TX
Pedro Casares, TX
Pedro D. Lara, TX
Peggy Brod, TX
Peggy Cope, TX
Peggy Lamb, TX
Penny Green, TX
Penny Whitaker, TX
Percy Dadabhoy, TX
Perez Mario Presno et ux., Jalisco, MEXICO
Perez Tomas, Jr., TX
Pete Torres, TX
Peter Hancock, TX
Peter S. Pauley, FL
Peter Stuart, TX
Phil Nelson, TX
Phil Shephard, TX
Phillip Ceballos, TX
Phillip Scott, TX
Phillip Shelp, TX
Phillip Shephard, TX
Phillip Shephard, TX
Phyllis Burks, TX
Phyllis Hall, TX
Pippa Brooks, TX
Prasanna Nirgudkar, TX
Preciosa Johnson, TX
Priscilla Jackert, TX
Priscilla Rodriguez, TX
Quinta Wilkinson, TX
R Buxton, TX
R L, TX
R. B., CA
Rachel McLish, CA
Rachel Stark, TX
Rachel Stroud, TX
Rafael Martinez, TX
Rafael Pardo, TX
Rafael Salazar III, TX
Rafaela Moreno, TX
Ralph Tobin, TX
Ralph Underwood, TX
Ralph Ward, TX
Ramadevi Sundaresan, TX
Ramiro Cuevas, TX
Ramiz Layaud-Boulat, TX
Ramon Mendez, TX
Randall Brady, TX
Randolph Willoby, TX
Randy Lopez, TX
Randy Roy, TX
Randy Thomas, TX
Ranjana Bhandari, TX
Ranjana Pallana, TX
Raquel Estevez, TX
Raul Alonso, Jr., TX
Raul Arevalo, TX
Raul Bustiflos, TX
Raul Gard, TX
Raul Rodriguez, TX
Raul Rodriguez, TX
Ray C. Telfair II, Ph.D., TX
Ray C. Telfair II, Phd, TX
Ray Recce, TX
Ray Reece, TX
Ray Rose, TX
Ray Swiatkowski, TX
Rayford L. Pointer, Jr., AK
Raymond Dodam, TX
Reagan S. and Carrol D. Stone, TX
Reann Handy, TX
Rebecca Boatman, TX
Rebecca Folge, TX
Rebecca Hall, TX
Rebecca M Bilokur-Tobias, TX
Rebecca Marshall, TX
Rebecca McCuistion, TX
Rebecca Merrill, TX
Rebecca Miller, TX
Rebecca Pollinzi, TX
Rebecca Rodriguez, TX
Rebecca Rodriguez, TX
Rebecca Sharp, TX

Individuals (continued)
Rebecca Sims, TX
Rebecca Trammell, TX
Rebecca Wren, TX
Rebekah Gomez Hererra, TX
Recio Jesus, TX
Reece Chesson, TX
Refuel Zavala, TX
Regina Stanley, TX
Regina Weber, TX
Remmic Lewis, TX
Renae DeLucia, TX
Rene & Noemi Gonzalez, TX
Rene Garza, TX
Rene Vanya, TX
Renee Standley, TX
Rette Browning, TX
Rev. Luis Ignacio Gameros M Div, TX
Reynalda Valle, TX
Rhiannan Bates, TX
Rhonda Bresnehan, TX
Rhonda ferrone, TX
Rhonda Harris, TX
Rhonda Reichel, TX
Ricardo & Maria R. Banuelos, TX
Ricardo A. Guerra, TX
Ricardo Jr. & Patricia Chapa, TX
Ricardo L. Olivarez, TX
Ricardo Rojas, TX
Rich Cruz, TX
Rich Saxon, TX
Richard Ahlers, TX
Richard Atkinson, NY
Richard Aulenbacher, TX
Richard B Griffin, VA
Richard Bachman, TX
Richard Buck, TX
Richard Caldwell, TX
Richard Cook, TX
Richard Harvey, TX
Richard Harvey, TX
Richard Knox, TX
Richard Lago, TX
Richard Lothe, TX
Richard Lucio, TX
Richard Maddern, TX
Richard Madole, TX
Richard Powe, TX
Richard Ramos, TX
Richard Richter, TX
Richard Schlenk, TX
Richard Slawinski, TX
Richard Turcotte, TX
Richard Walsh, TX
Richard Wayne, TX
Rick Boykin, TX
Rick Cruz, TX
Rick Dolphin, TX
Rick Ferchaud, TX
Rick Fowler, TX
Rick Gonyo, TX
Rick Gordon, TX
Rick Lindsey, TX
Rick Pearson, TX
Rick Provencio, TX
Rick Riddle, TX
Rick Willing, TX
Ricky Alexander, TX
Rima Anabtawl, TX
Rio Hondo Implement Co INC, TX
Rios Silvestre, TX
Rita Everist, TX
Rita Harrington, TX
Rita Kniery, TX
Rita Zamora, TX
Rizwana Ashraf, TX
Roan Gomez, TX
Rob Chavez, TX
Rob Youker, TX
Robb Ivey, TX
Robert & Leticia Kirkconnell, TX
Robert A. McBee, TX
Robert and Frieda Ferguson, TX
Robert Beverly, TX
Robert Bills, TX
Robert Branson, TX

Individuals (continued)
Robert Brunson, TX
Robert Delgado, TX
Robert Delp, TX
Robert Dowling, NY
Robert Fusinato, TX
Robert Garcia Jr, TX
Robert Gardner, TX
Robert Gilliland, TX
Robert Krone, TX
Robert L. Hunter, TX
Robert Lane Sims, TX
Robert Long, TX
Robert Lyons, TX
Robert Mick, TX
Robert Owen, TX
Robert Paredes, TX
Robert Perry, TX
Robert Rogers, TX
Robert Romero, TX
Robert Sanders, GA
Roberto & Constantina Gonzalez, TX
Roberto Alvarado, TX
Roberto Reyes, TX
Roberto Rodriguez, TX
Robin Brownell, TX
Robin Kendrick-Yates, TX
Robin Mains, TX
Robin Ramson, TX
Robin Sherwin, TX
Robyn Padgett, TX
Rochelle Brackman, TX
Rocio Hernandez, TX
Rock Morris, TX
Rodolfo Flores, TX
Rodolfo Garcia, TX
Rodolfo Rivera, TX
Roel Cantu, TX
Rogelio Sendejo, Jr., TX
Rogelio Solis, TX
Rogelio Villegas, TX
Roger Knudson, TX
Roger Mathre, TX
Roger Newmann, TX
Roger P. & Ramona J. Washburn, KS
Roland Creswell, TX
Rolando Gonzalez, TX
Rolando Gurzu, TX
Romina Bres, TX
Ron & Kellie Leclair, CA
Ron Barbosa, TX
Ron Duke, TX
Ron Marshall, TX
Ron Rather, SD
Ron Unger, TX
Ron Young, TX
Rona Neuneker, TX
Ronald Barron, TX
Ronald Parry, TX
Ronald Pierce, TX
Ronald Shenberger, TX
Ronald Smith, TX
Ronnie Weiss, TX
RosaLinda B. Flores, TX
Rosalinda Gonzales, TX
Rosario Martinez, TX
Rose Bowden, TX
Rose Maria Cruz Escobar, TX
Rose Mouton Yore, MI
Rose Ouderkirk, TX
Rose Townsend, TX
Rosemary Carson, TX
Rosie Khan, TX
Rossana Bogorad, TX
Rossana Torio, TX
Roxana Gonzalez, TX
Roxanne Carrion, TX
Roxanne Feldpausch, TX
Roxanne M. Ray, TX
Roxanne Seibert, TX
Roy Alex Gomez, TX
Roy Hill, TX
Roy Rainwater, TX
Royce Boon, TX
Ruben Ochoa, TX
Ruben Vasquez, TX

Individuals (continued)
Rudy and Barbara Stippec, TX
Russell Barros, TX
Russell Maxwell, TX
Ruth Ann Mahoney, TX
Ruth Escalera, TX
Ruth Heino, TX
Ruth Keitz, TX
Ruth Rogers, ME
Ruth Winkler, TX
Ryan Bonavea, TX
Ryan Garcia, TX
Ryan Guillen, TX
Ryan Hochstatter, TX
Ryan Sciulli, TX
Ryan W, TX
S Carter, TX
S E Williams, TX
S. Reagan Stone & Carroll D. Stone, TX
Sabine Williams, TX
Sabrina Eckles, TX
Sally Blixt, TX
Sally Blixt, TX
Sally H McPherson & Nancy Holmes, TX
Sally H McPherson & Nancy Holmes, NC
Sally Jacques, TX
Sally Mcafee, TX
Sally McCoy, TX
Sally Simpson, TX
Sam Dibrell, TX
Sam Manatt, III & Hilda Manatt, TX
Sam Stamport, TX
Sam You, TX
Saman Azeez, TX
Samantha Beiermann, TX
Samantha Ceballos, TX
Samantha Garcia, TX
Samantha Reyes, TX
Samara Kvapil, TX
Samuel Boazman, TX
Samuel Hensley, TX
Samuel Skidmore, TX
Samuela Walker, TX
Sandi Hebley, TX
Sandra Barreda, TX
Sandra Bieri, TX
Sandra Boylston, FL
Sandra Breakfield, TX
Sandra Burson, TX
Sandra Byrd, TX
Sandra Calhoun, TX
Sandra Castillo, TX
Sandra Chapman Burson, TX
Sandra Cole, TX
Sandra Descher, TX
Sandra Fults, TX
Sandra Gianna Solis, TX
Sandra Gonzalez, TX
Sandra Heggen, TX
Sandra Lane, TX
Sandra Lynn, TX
Sandra Montesinos, TX
Sandra Raef, TX
Sandra Sargeant, TX
Sandra Sparks, TX
Sandra Stevenson, TX
Sandra Stofan, TX
Sandra Streb, TX
Sandra Ura, TX
Sandra Uribe, VA
Sandra Vallejo, TX
Sandra Velasquez, TX
Sandra Woodall, TX
Sandy Dwarka, NJ
Sandy Phitlips, TX
Sandy Ransom, TX
Sandy Sanderson, TX
Sandy York, TX
Santiago Gomez, TX
Santollo Jesus, TX
Santos Delgado, TX
Sara Gilath, TX
Sara Moreno, TX
Sara Neuder, TX
Sara Straube, TX
Sarah Andersen, TX

Individuals (continued)
Sarah Bijoy, TX
Sarah Boban, TX
Sarah Cunningham, TX
Sarah Desousa, TX
Sarah Fickling, TX
Sarah Funk, TX
Sarah Gilath, TX
Sarah Jeffords, NY
Sarah Kennedy, TX
Sarah McGovern, CA
Sarah Svadlenka, TX
Sarahi Calvo, TX
Sarai Flores, TX
Saralie Palmer, TX
Saul Del Angel, TX
Saul Guerra, TX
Saul Sanchez, TX
Savannah Brunnemann, TX
Savannah Garcia, TX
Scarlett Bacon, TX
Scott Day, TX
Scott Eustis, LA
Scott Nichol, TX
Scott S Baker, TX
Scott Walker, TX
Sean and Debora Oneil, TX
Sean Byme, TX
Sean Oneil, TX
Segio Trevino, TX
Seon Kim, TX
Seralluna Sanchez, TX
Sergio A. Salinas, TX
Sergio Contreras, TX
Sergio Cordova, TX
Sergio Gonzalez Rangel, TX
Sergio Trevino, TX
Serina Cartagena, TX
Sevana Valero, TX
Severa Krausse, TX
Severo Rey, TX
Shaida Libhart, TX
Shamn Hohl, TX
Shane Goetz, TX
Shane Johnson, TX
Shane Welch, TX
Shanna Bradfod, TX
Shannon Grounds, TX
Shannon Johnson, TX
Shannon Sullivan, TX
Shannon Taylor, TX
Shara Funari, TX
Sharman Petri, TX
Sharon Alexander, TX
Sharon Bailey, TX
Sharon Bramblett, TX
Sharon Daly, TX
Sharon Frank, TX
Sharon Gillespie, TX
Sharon Haywood, TX
Sharon Hohl, TX
Sharon Matz, NY
Sharon Reynolds, TX
Sharon Schafer, TX
Sharon Spalding, TX
Sharron Stewart, TX
Sharyn Hights, TX
Sharynn Regnier, TX
Shaw Richard B, TX
Shawn Troxell, TX
Shawn Weedman, TX
Sheila Chaflins, TX
Sheila Gill, TX
Sheila Rosart, TX
Sheila Simpson, TX
Sheilla Johnson, TX
Shelley Dunham, TX
Shelley Garcia, TX
Shelley Wehberg, TX
Shelly Shivers, TX
Sherilyn Coldwell, TX
Sherri Clark, TX
Sherry Andresen, TX
Sherry Blackshear, TX
Sherry Dana, TX
Sherry Lucas, TX

Individuals (continued)
Sherry Outlaw, TX
Sherry Sasser, TX
Sheyla Mendoza, TX
Shirin Zarrinnam, TX
Shirley Blanco, TX
Shirley Garcia, TX
Shirley Webb, TX
Shirline Harris, TX
Shonna Davis, TX
Sid Totten, TX
Siena Wimberly, TX
Sierra Club, TX
Sierra King, TX
Silvia Abare, TX
Silvia Garza, TX
Silvia Otivarcs, TX
Simcha Aliyah, TX
Simone Traverse, TX
Sissi Yado, TX
Sofia Puga, TX
Sondra de Zambrano, TX
Sonia Datray, TX
Sonia Martin, TX
Sonora Hudson, TX
Sophia Vassilakidis, TX
Sosa Santa Monica Magana, TX
Stacey Schodek, TX
Staci Robinson, TX
Stan Sterba, TX
Stanley W & Nadean V Schmidt, OR
Stefanie Martinez, TX
Stella Denise Gallegos, TX
Stella Lin, TX
Stella Mull, TX
Stephan Laurent-Faesi, TX
Stephanie Betts, TX
Stephanie Doyle, TX
Stephanie Ertel, TX
Stephanie Kaplan, TX
Stephanie Kaufman, TX
Stephanie Lara, TX
Stephanie Levinson, TX
Stephanie Lopez, TX
Stephanie Rhodes, ME
Stephanie Wagner, TX
Stephen Bates, TX
Stephen Been, TX
Stephen Brown, TX
Stephen Burke, TX
Stephen Clark, TX
Stephen Cloyd, TX
Stephen Courim, TX
Stephen Englander, TX
Stephen G. Reeves, TX
Stephen Holler, TX
Stephen Jones, TX
Stephen Lancaster, TX
Stephen Leach, TX
Stephen Locke, TX
Stephen Maynard, TX
Stephen Stoker, TX
Stephen Stoker, TX
Stephen Tarlton Dougherty, TX
Steve and Rachel Alvarez-Jett, TX
Steve Chelewski, TX
Steve Davidson, TX
Steve Gerson, TX
Steve Holtz, TX
Steve Lininger, TX
Steve Sivley, TX
Steve Wilder, TX
Steven C. Roberts, AK
Steven Fletcher, CT
Steven G. Kellman, TX
Steven Roy, TX
Stewart Ball, TX
Struan Mcardle, TX
Stuart Crane, TX
Suchita Toshniwal, TX
Sue and Gilbert Cardona, TX
Sue Burrison and Richard Robinson, TX
Sue Lamoreaux, TX
Sue Liu, TX
Sue White, TX
Sue Wolfe, TX

Individuals (continued)
Sumeet Batra, TX
Summer Wilboum, TX
Sunshyne Hendrix, TX
Susan Allen, TX
Susan and John Teague, TX
Susan and Larry Holtzman, TX
Susan Bagley, TX
Susan Beever, TX
Susan Burt, TX
Susan Bussa, TX
Susan Cannon, TX
Susan Cooper, TX
Susan Geery, TX
Susan Greene, TX
Susan Higginbotham, TX
Susan Hradsky, TX
Susan Hradsky, TX
Susan Lefler, TX
Susan Lefler, TX
Susan Lippman, TX
Susan Lovett, TX
Susan Marone, TX
Susan Marone, TX
Susan Mason, TX
Susan McKinley, TX
Susan Muzny, TX
Susan Myers, TX
Susan Nichols, TX
Susan Nichols, TX
Susan Sands Cleary, TX
Susan Swolinski, TX
Susan Thorn, TX
Susan White, TX
Susan Williams, TX
Susana Dunlap, TX
Susie Way, TX
Suzanne Batchelor, TX
Suzanne Bush, TX
Suzanne James, TX
Suzanne M. Osborne, TX
Suzanne McAnna, TX
Suzanne Murray, TX
Suzanne Villarreal, TX
Suzette Kimball, TX
Suzette Konzem, TX
Suzy Eide, TX
Sylvia Duncan, TX
Sylvia Nolan, TX
Sylvia Pena, TX
Sylvia V. MsClanahan, TX
T Logan, TX
T Young, TX
Tabitha Reynolds, TX
Talman Satterfield, TX
Tamalyn Arnold, TX
Tamar Dick, PA
Tamara Houston, TX
Tamara Morillas, TX
Tamela Shafer, TX
Tami Palacky, VA
Tammi Stewart, TX
Tammie Leidner, TX
Tammy Scott, TX
Tania Smith, TX
Tanya Finney, TX
Tanya Kasper, TX
Tanya Nannette Scott, TX
Tanya Nevarov, TX
Tara Usrey, TX
Tatiana Canales, TX
Tawanna Barnes, TX
Tawnya Luke, TX
Taylor Belshaw, TX
Taylor Surratt, TX
Taylor Youngblood, TX
Teddy Arriola, TX
Teofilo Aviles Jr., TX
Teralyn Siller, TX
Teran Hughes, TX
Teran Hughes, TX
Terence Garret, TX
Teresa Cardwell, TX
Teresa French, TX
Teresa Kruse, TX
Teresa Lovino, TN

Individuals (continued)

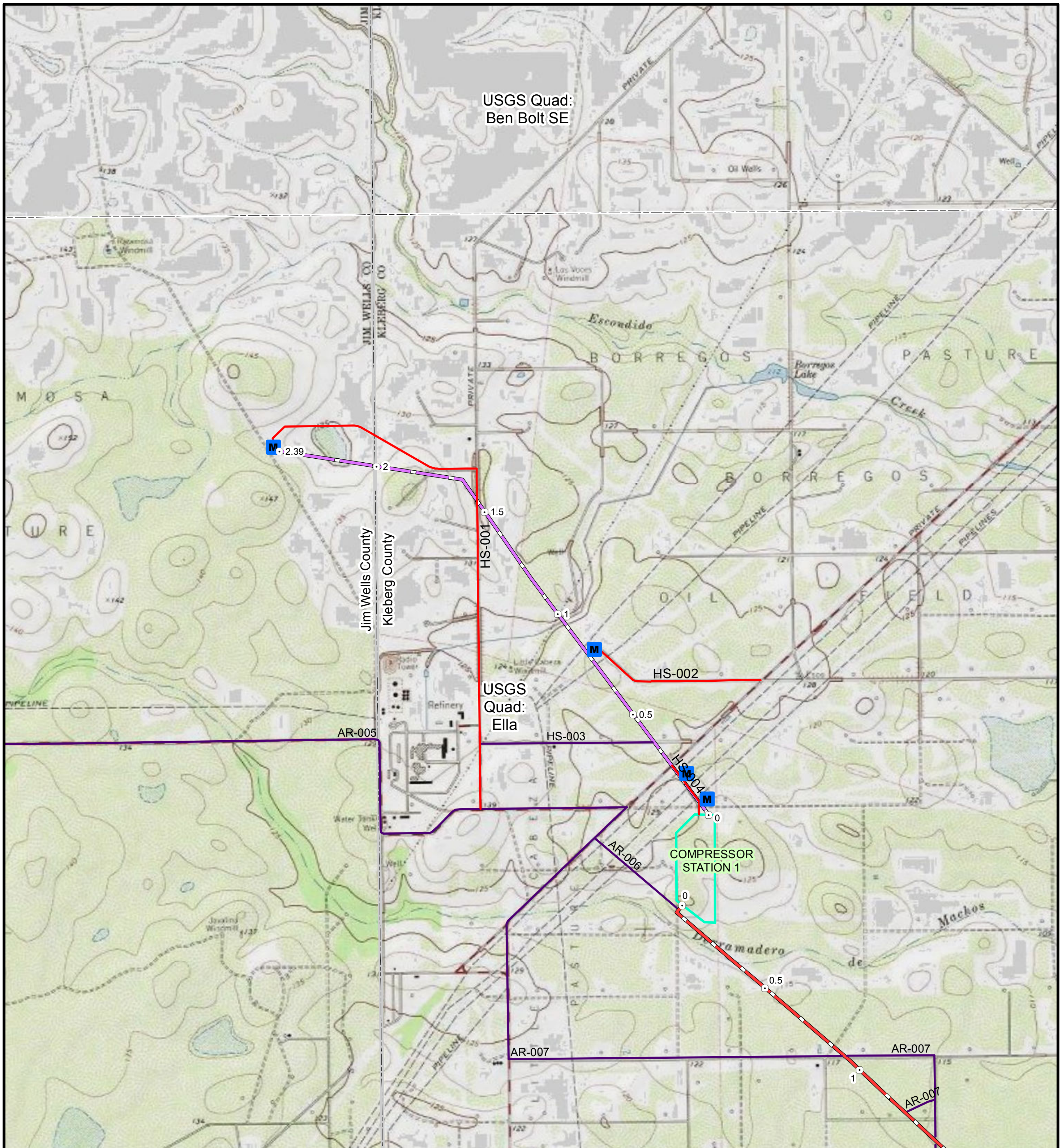
Teresa Matlock, TX
Teresa Nunez, TX
Teresa Nuñez, TX
Teresa Pietersen, TX
Teresa Saldivar, TX
Teresa Sariol, TX
Teresa Stoever, TX
Terrance Behner, TX
Terri Blevins, TX
Terri Mc Clung, TX
Terri Rose, TX
Terri Tristan, TX
Terrie Williams, TX
Terry Banda, TX
Terry Burns, TX
Terry Burton, TX
Terry Cline, TX
Terry Copen, TX
Terry Hill, TX
Terry Kosobud, TX
Terry McNeal, TX
Terry Peck, TX
Terry Rohrbach, TX
Terry Stein, TX
Tessa Mccloud, TX
Thad Clarksoles, TX
Thad Soles, TX
Thalia Gonzalez Garcia, TX
Thanh Tran, TX
Theodore Brazeau, TX
Theresa Collings, TX
Theresa L. Rudolph, TX
Theresa Martinez, TX
Theresa Weathers, TX
Therese Baldado, TX
Therese Davis, TX
Thinh Ngo, TX
Thomas A. Guaraldi, TX
Thomas and Lisa Smith, TX
Thomas Blackwell, TX
Thomas Garcia, TX
Thomas Griffin, VA
Thomas Hill, TX
Thomas J. Calme, KY
Thomas Joe Tonnyre, TX
Thomas Mora, TX
Thomas Neinast, TX
Thomas Nicolazzo, TX
Thomas Nieland, TX
Thomas Page, TX
Thomas R. Verhoy, MI
Thor Quick, TX
Tia Bostater, TX
Tiandre Butler, TX
Tiffany Vanderslice, TX
Tim Barr, TX
Tim Duda, TX
Tim Duds, TX
Tim Maschal, TX
Tim Milam, TX
Tim Speece, TX
Timothy Alonzo, TX
Timothy Dean Hubert, TX
Timothy Hissam, TX
Tina Garza, TX
Tina Kerstetter-Kennedy, TX
Tina Theriaque, TX
Todd Hahn, TX
Todd Hanby, TX
Todd Teulon, TX
Tom Ballard, TX
Tom Clayton, TX
Tom Davis, NM
Tom Nieland, TX
Tom Peace, CO
Tom Rust, TX
Tomas G. Martinez, TX
Tomas Sanchez & Lopez Reyna, TX
Tomas Stamp; Petra Camacho, TX
Tommie Denson, TX
Tommy J Saenz, TX
Toni Gonzales, TX
Toni Hill, TX
Toni Miles, TX
Tonie Hernandez, TX

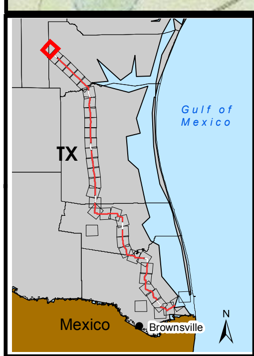
Individuals (continued)
Tony Alicamatt, TX
Torrence Sophronia Martin, NC
Tracey Bonner, TX
Tracey Kunkler, TX
Tracy Briney, TX
Tracy Brophy, TX
Tracy Brown, TX
Tracy Mcmillan, TX
Tracy Musgrove, TX
Tracy Simmons, TX
Tracy Zadwick, TX
Treasa Antony, TX
Tresa Colston, TX
Trevor Robinson, TX
Tria Shaffer, TX
Trigg Wright III, TX
Trish Merrill, TX
Trish Merrill, TX
Troy Mullens, TX
Troy Williams, TX
Turney Maurer, TX
Tyler Ferguson, TX
Tyler Miloy, TX
Tyler Sandoval, TX
U Sakoglu, TX
Uvaldo Vela, TX
Val Brumby, TX
Val Mora, TX
Valenia Gonzalez, TX
Valeriana Flores, TX
Valerie Hernandez, TX
Vanessa Cavazos, TX
Vanessa Ortega, TX
Vanessa Sternick, TX
Vanessa Vigañas, TX
Varena Okwumabua, TX
Vargas Emmanuel B, TX
Vashti Petty, TX
Vasquez Ruben Rosas, TX
Vejoya Viren, TX
Vella Garcia, TX
Vendell Gombarcik, TX
Vera Balog, TX
Vern Crocker & Thersea Crocker, TX
Veronica Hernandez, TX
Veronica Morrison, TX
Veronica Perez, TX
Veronica Rosales, TX
Veva Lane, TX
Vicki Davis, TX
Vicki Matcek, TX
Vicki Wright, TX
Vickie Hime, TX
Vicky Baker, IA
Vicky Sanders, TX
Victor Hugo Valdez, TX
Victor Wong, TX
Victoria Bermea, TX
Victoria Godwin, TX
Victoria Gonzalez, TX
Victoria Guerra, TX
Victoria Hart, TX
Victoria Mathew, TX
Victoria Peyser, DE
Victoria Randall, TX
Victoria Ricks, TX
Victoria Salazar, TX
Vikki Hallen, TX
Vincent Buddy Vasquez, TX
Viola Galvan, TX
Virgil E. & Carolyn Swanberg, TX
Virgina Downing, TX
Virginia Aguilar, TX
Virginia Griffith, TX
Virginia Jevric, TX
Virginia Lee Heath, TX
Vivian Johnson, TX
W Wright, TX
W. Barclay Idsal, CO
Walsdorf Robert M & Kimberly B, TX
Walter B. Birdwell, TX
Walter Breymann, TX
Walter Tashnick, TX
Wanda Kirkpatrick, TX
Wanda Sturrock, TX

Individuals (continued)
Wanda Wintin, TX
Waters Jaime Wayland & Brenda Elizabeth Water, TX
Waters Ronald Earl & Waters Geraldine, TX
Wayne Harrison, TX
Wayne Langley, TX
Weldon Lewis, TX
Wenceslao Gana, TX
Wendy Barker, TX
Wendy Dee, TX
Wendy Hauptmann, TX
Wendy Hendrix, TX
Wesley Monroe, AZ
Wesley Moore, TX
Whitney Ward, TX
Wileen Clark, VA
Will Foster, TX
Will Sage, TX
William Heath, TX
William Armstrong, TX
William Armstrong, TX
William Ashbery, TX
William B. Beay, TX
William B. McKinney, TX
William Cook, TX
William David Marsh and Nancy Kay Marsh, TX
William Forbes, TX
William Forbes, TX
William Hewes, CA
William Hoenes, TX
William J. Mulcahey, TX
William Larowe, TX
William Legett, TX
William Maina, TX
William Michael, TX
William Oscar, TX
William Romfh, TX
William Strong, TX
William Tarbox, TX
William Wildfong, TX
Willie D. Johnson, TX
Willis Gravelle, TX
Willis H. Coleman, Jr., TX
Willy Cupit, TX
Winified Burkett, TX
Winn Adams, WA
Winnie J Tate Morgan, TX
Xandra Leal, TX
Ybarra David Allen, TX
Ybarra Maria Ester C/O Jaramillo Leticia, TX
Yesenia Herrera, TX
Yesenia Vidaurri, TX
Yolanda Birdwell, TX
Yolanda Garrett, TX
Yolanda Garza-Birtlwell, TX
Yolanda Torres, TX
Yolizbeth Cocano, TX
Yung Marc, TX
Yvette Bonilla - Leach, TX
Yvonne Duker, TX
Yvonne Hansen, TX
Yvonne Ray, TX
Yvonne Zepeda, TX
Zach Myones, TX
Zeb Hanley, TX
Zeilha Garcia, TX
Zeoma Olszewski, TX
Zulma Gregory, TX
Bravo Motor Carriers, Luis Garza, Jr., TX
Gulf Stream Marine, Mark Hoskins, TX

APPENDIX B

TOPOGRAPHIC MAP OF THE RIO GRANDE LNG PROJECT





Legend

- Milepost
- Meter Station
- Mainline Valve
- Interconnect Booster and Meter Station
- Contractor Yard
- Storage Yard
- Compressor Station
- Proposed Header System
- Proposed Rio Bravo Pipeline
- Permanent Access Road
- Temporary Access Road
- Proposed LNG Terminal Boundary (Facility Footprint)
- LNG Terminal Site (Leased Parcel)
- County Boundary
- USGS 7.5 min. quadrangle

0 0.25 0.5
Miles

N

Scale: 1:35,000

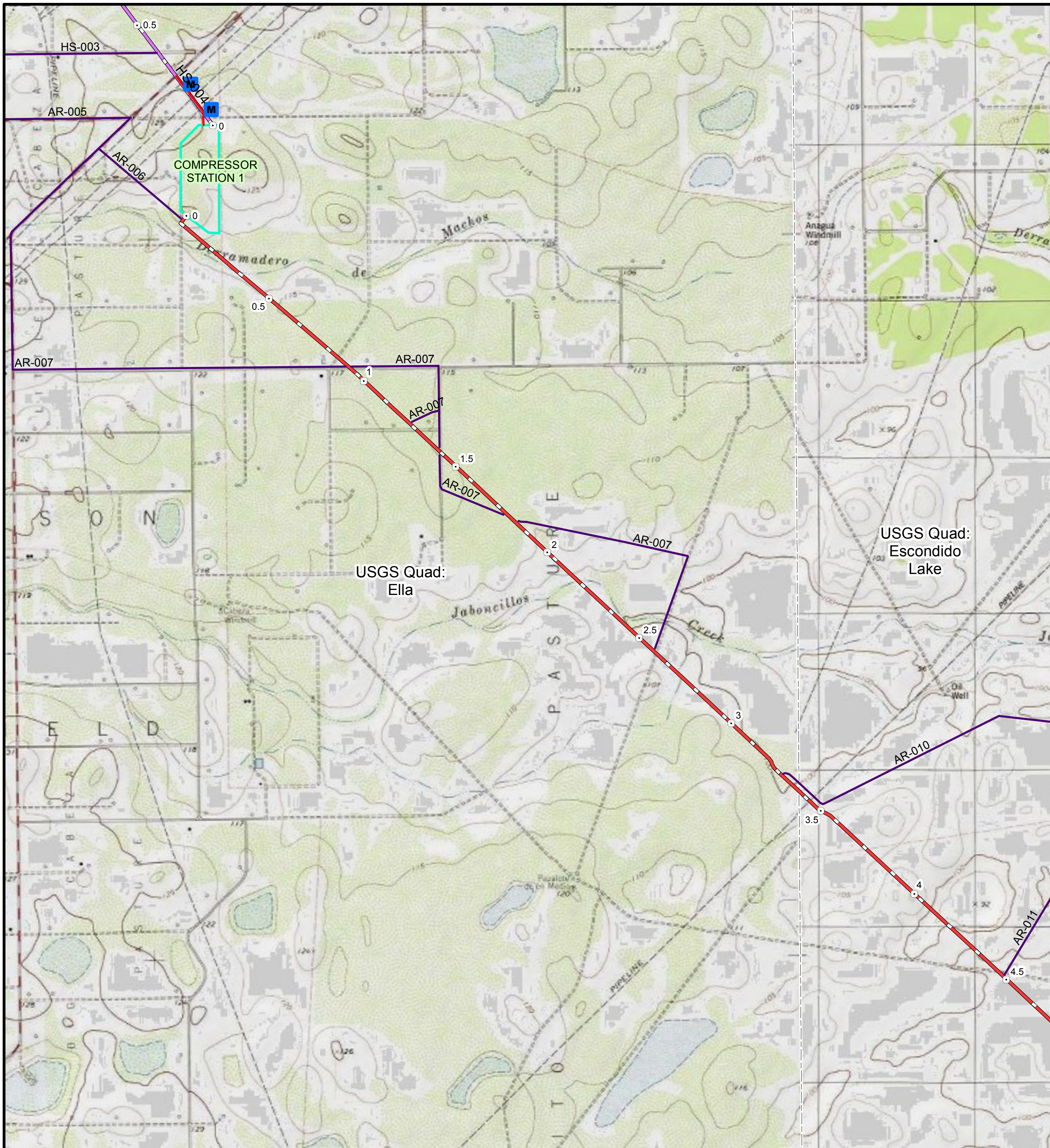
Service Layer Credits:

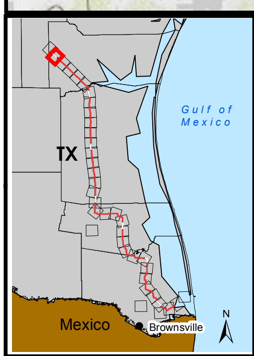
Rev Date: 3/29/2019

Rio Grande LNG Project

Topographic Map

Appendix B





Legend

	Milepost		Proposed Header System
M	Meter Station		Proposed Rio Bravo Pipeline
V	Mainline Valve		Permanent Access Road
	Interconnect Booster and Meter Station		Temporary Access Road
	Contractor Yard		Proposed LNG Terminal Boundary (Facility Footprint)
	Storage Yard		LNG Terminal Site (Leased Parcel)
	Compressor Station		County Boundary
			USGS 7.5 min. quadrangle

0 0.25 0.5
Miles

N

Scale: 1:35,000

Service Layer Credits:
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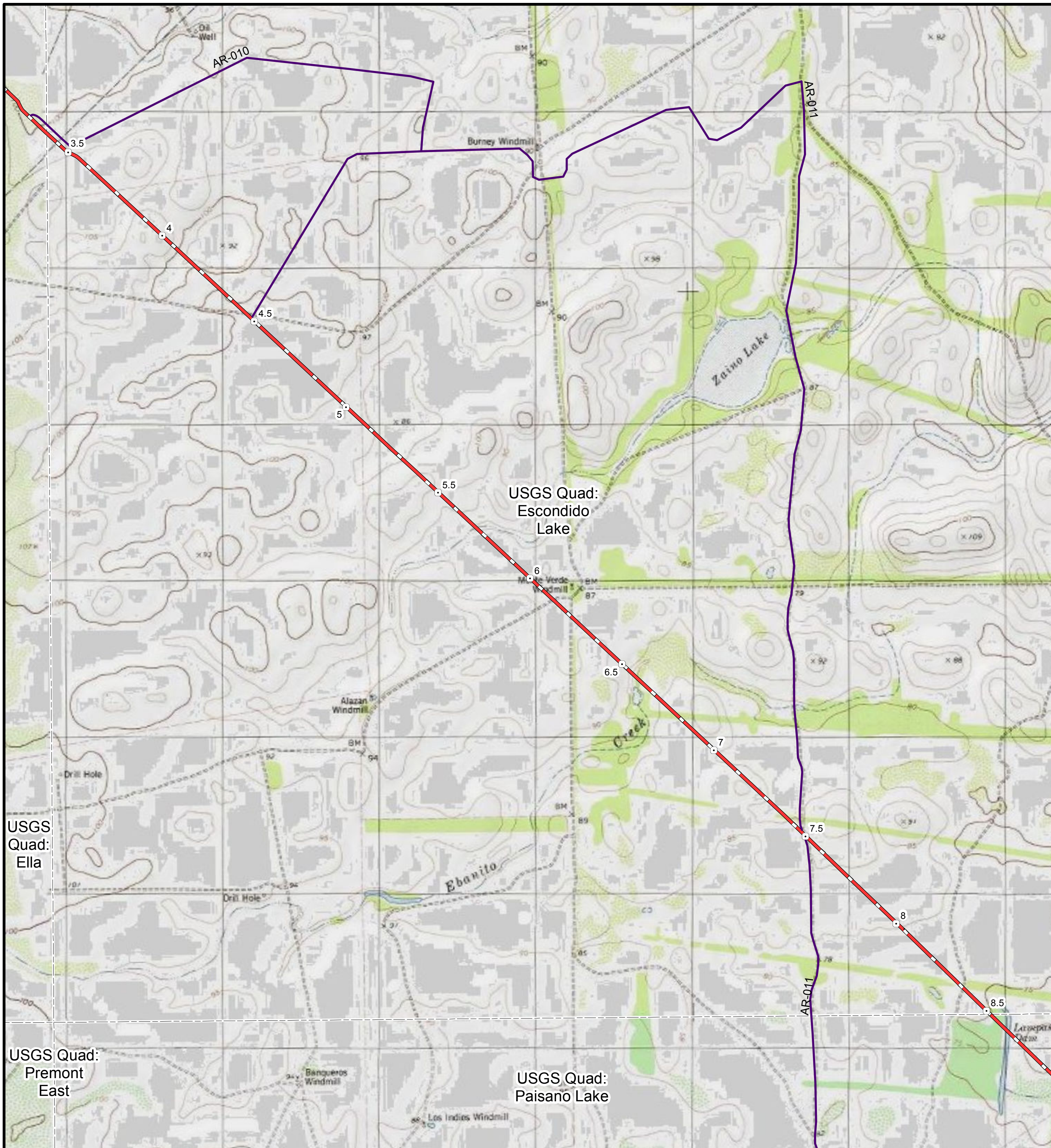
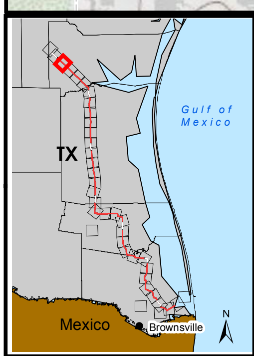
Rev Date: 3/29/2019

Rio Grande LNG Project

Topographic Map

Appendix B





Legend

- Milepost
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- Mainline Valve
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- Storage Yard
- Compressor Station
- Proposed Header System
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- USGS 7.5 min. quadrangle

0 0.25 0.5
Miles

N

Scale: 1:35,000

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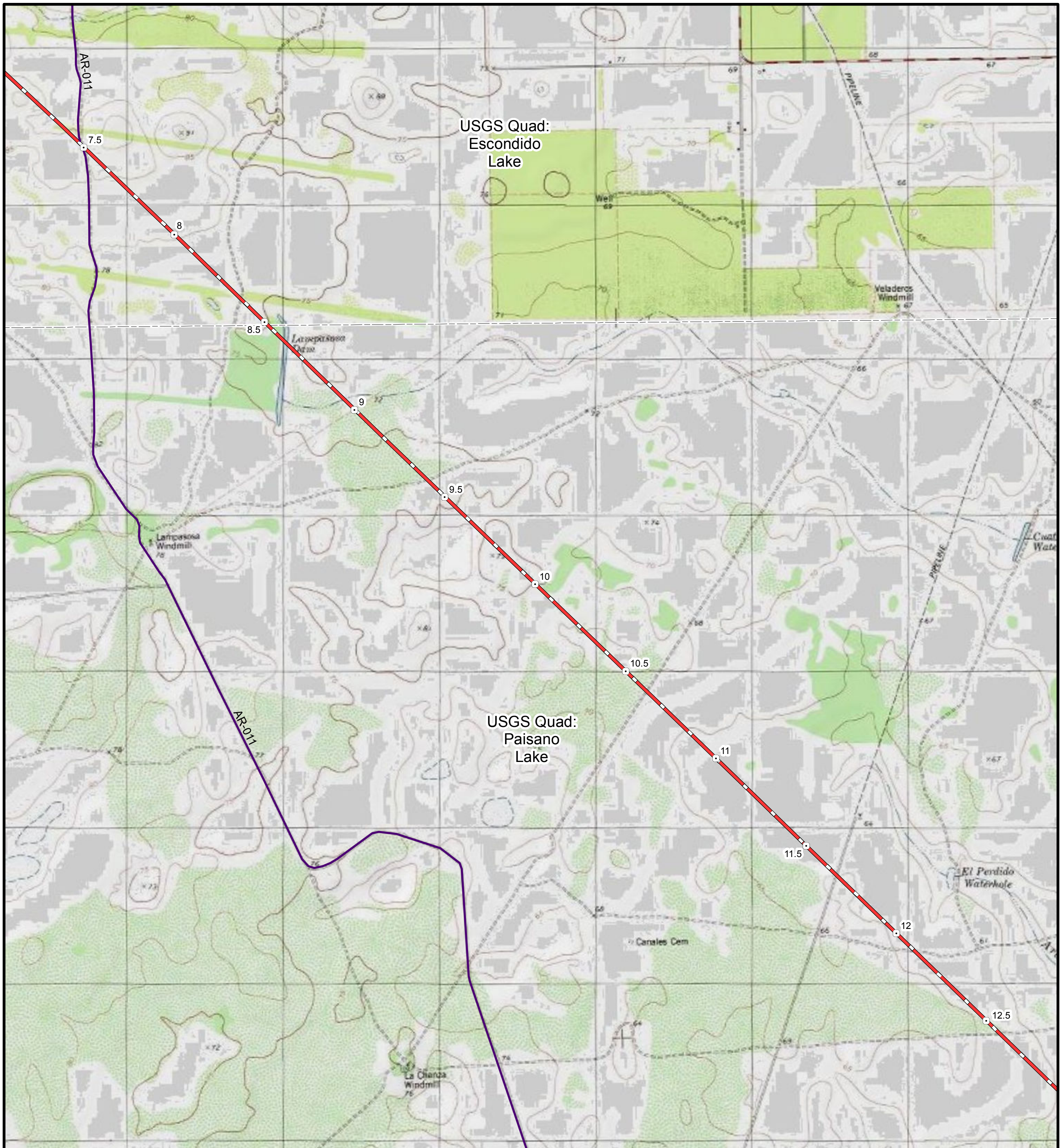
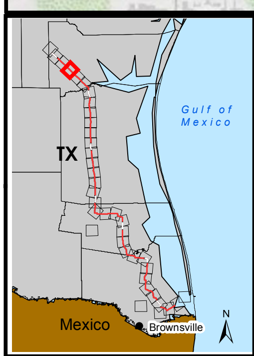
Appendix B





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Rio Grande LNG Project

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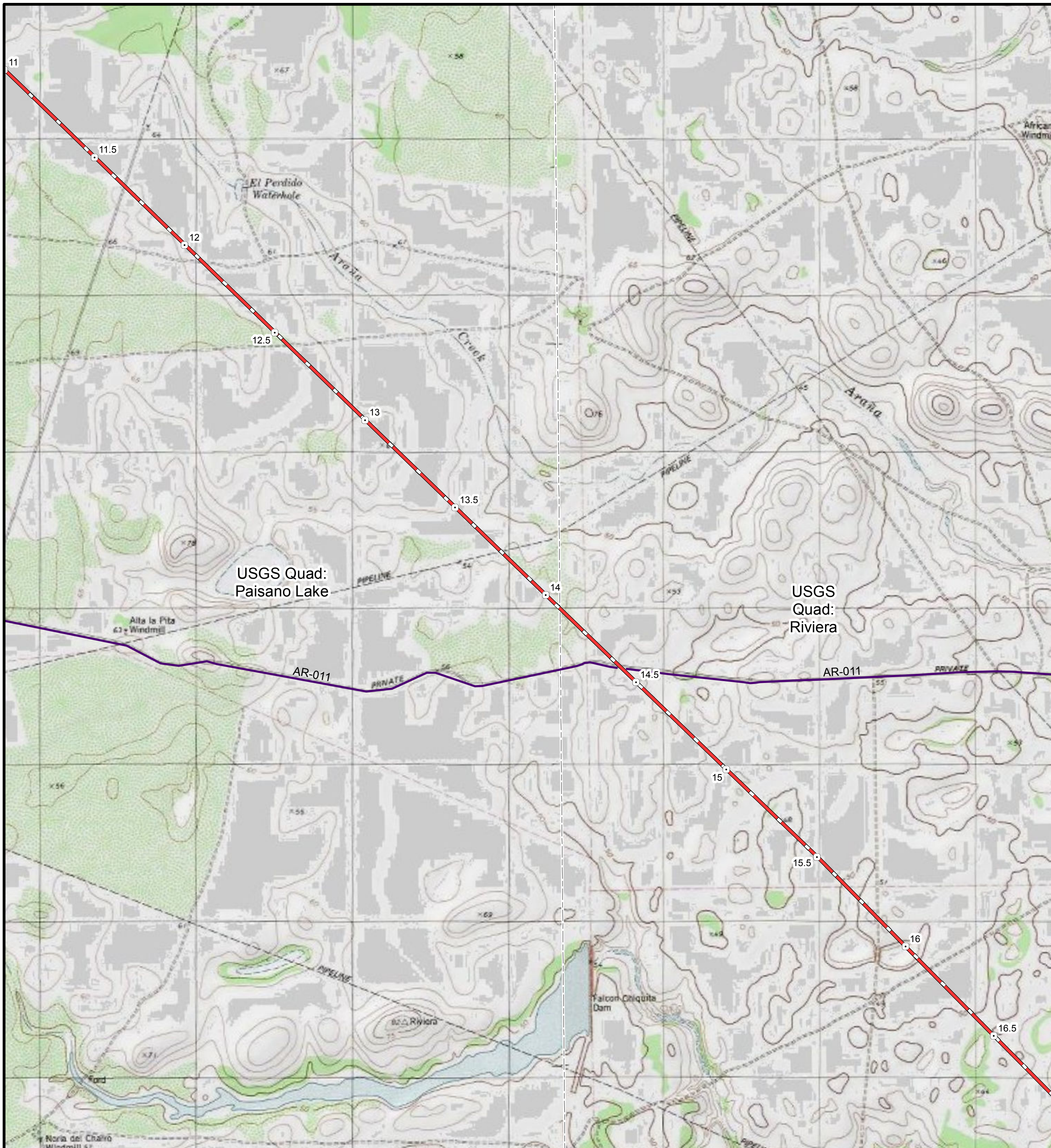

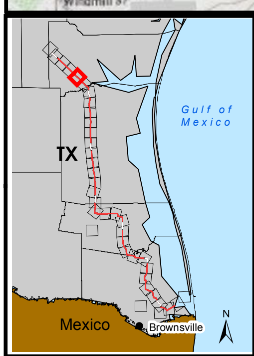

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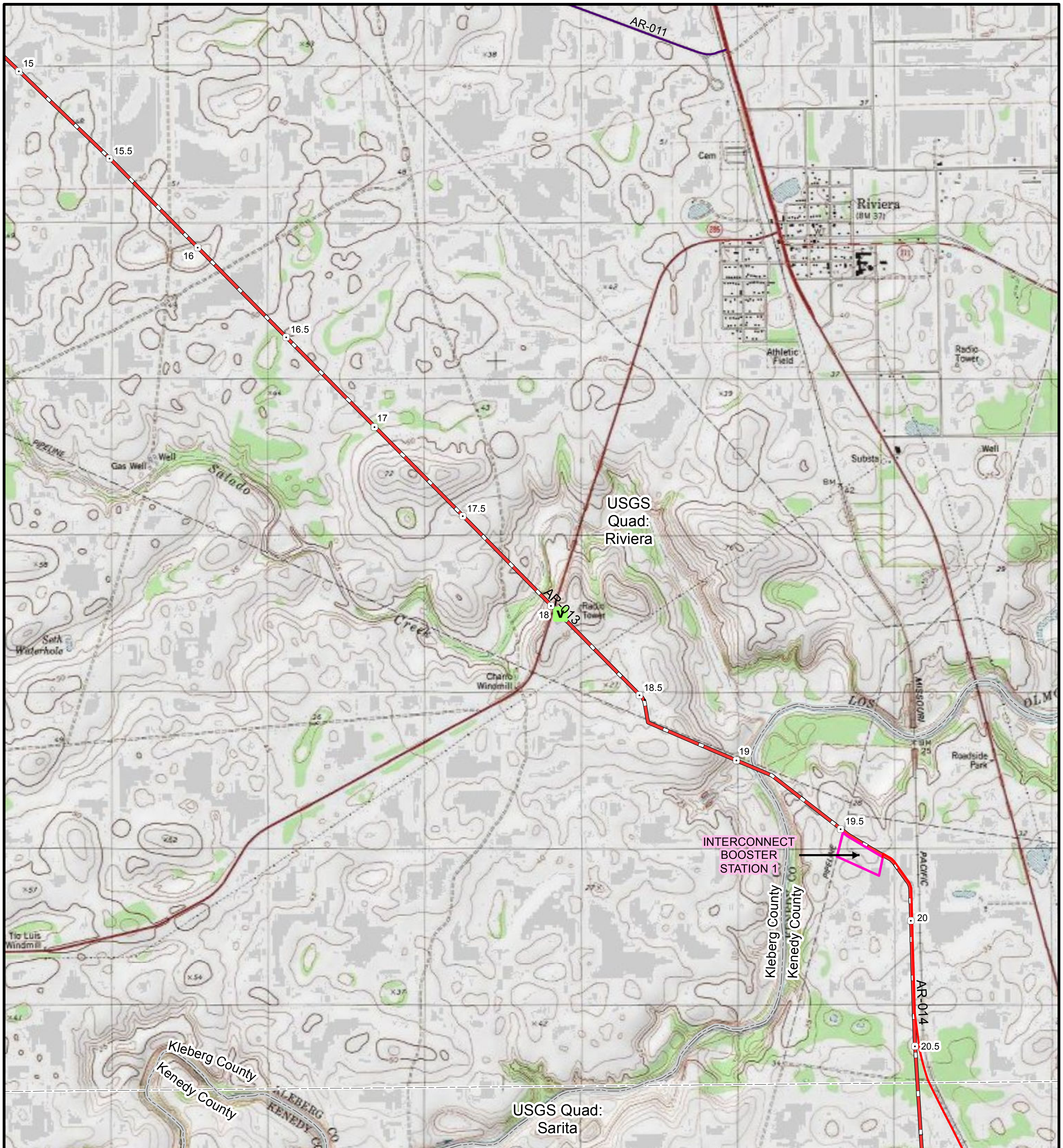

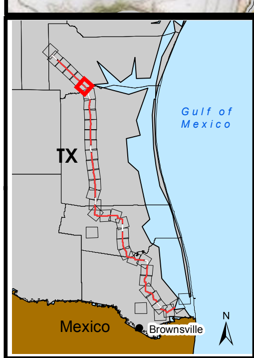

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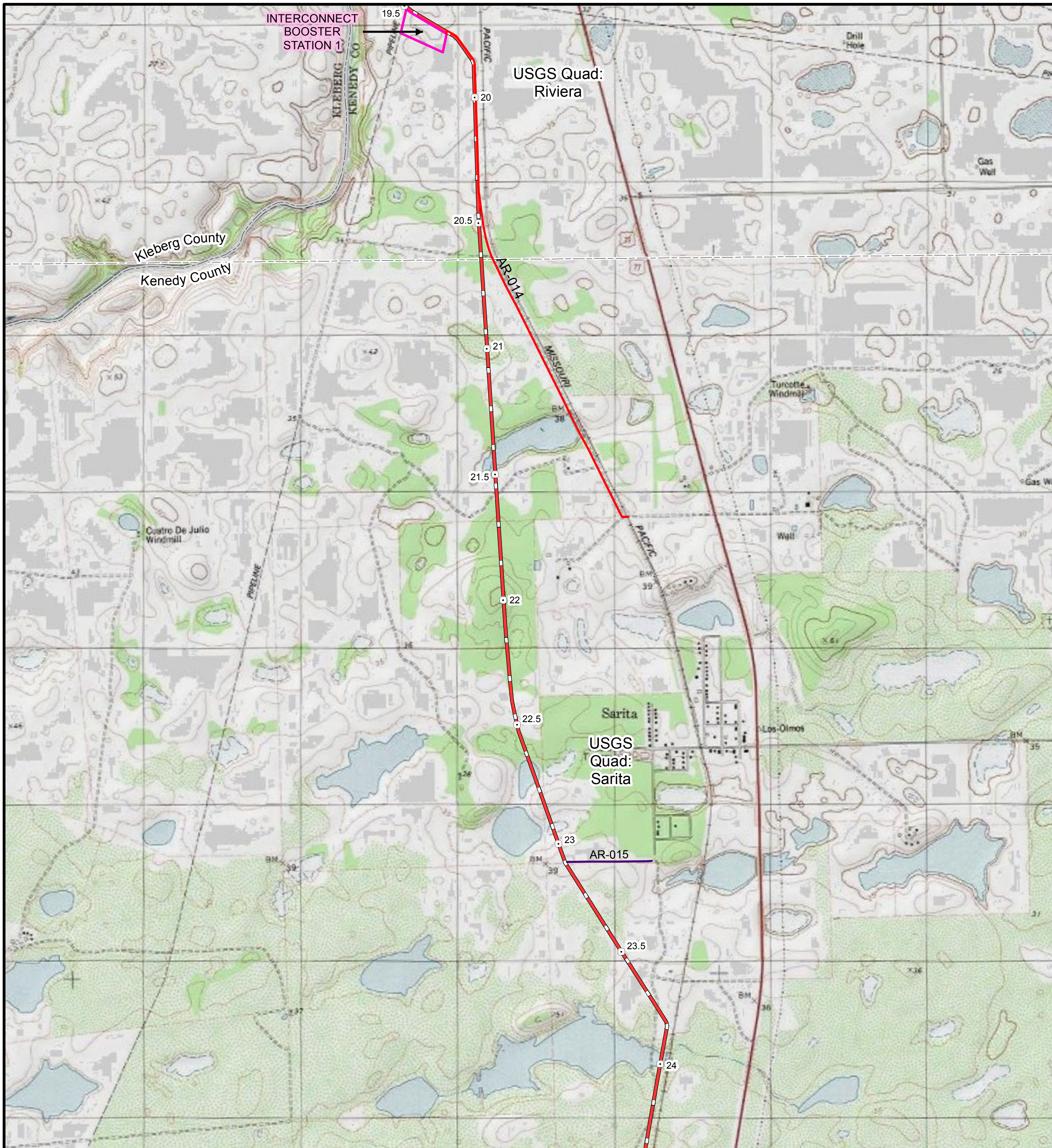

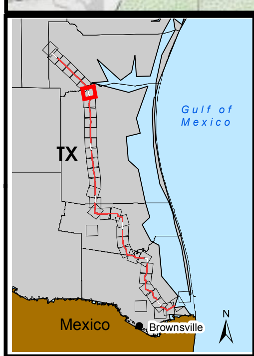

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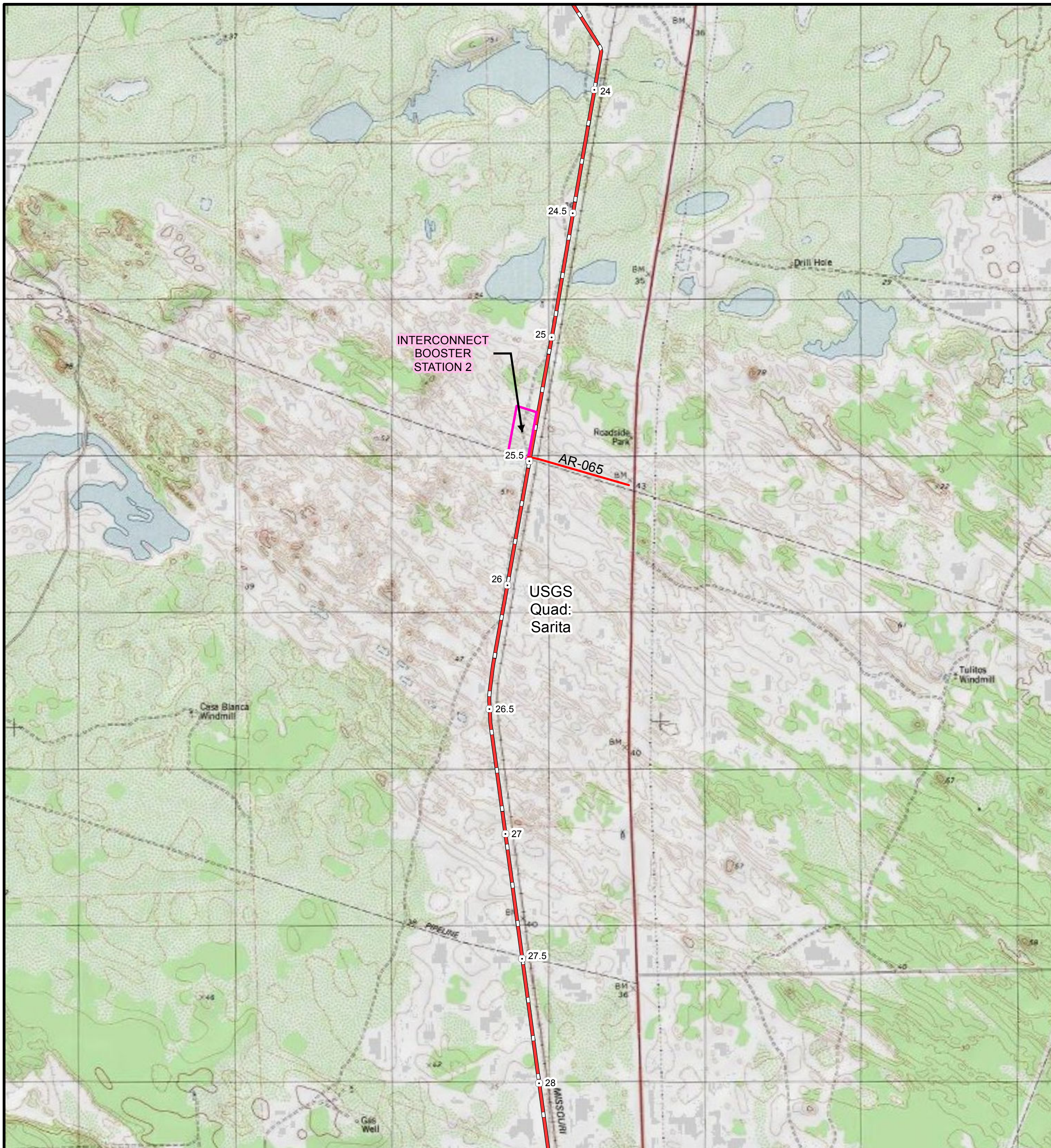

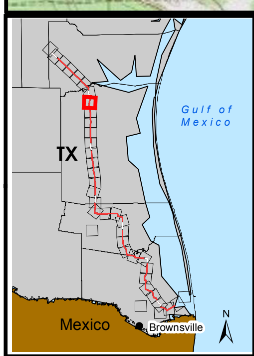

Legend

Milepost	Proposed Header System
Meter Station	Proposed Rio Bravo Pipeline
Mainline Valve	Permanent Access Road
Interconnect Booster and Meter Station	Temporary Access Road
Contractor Yard	Proposed LNG Terminal Boundary (Facility Footprint)
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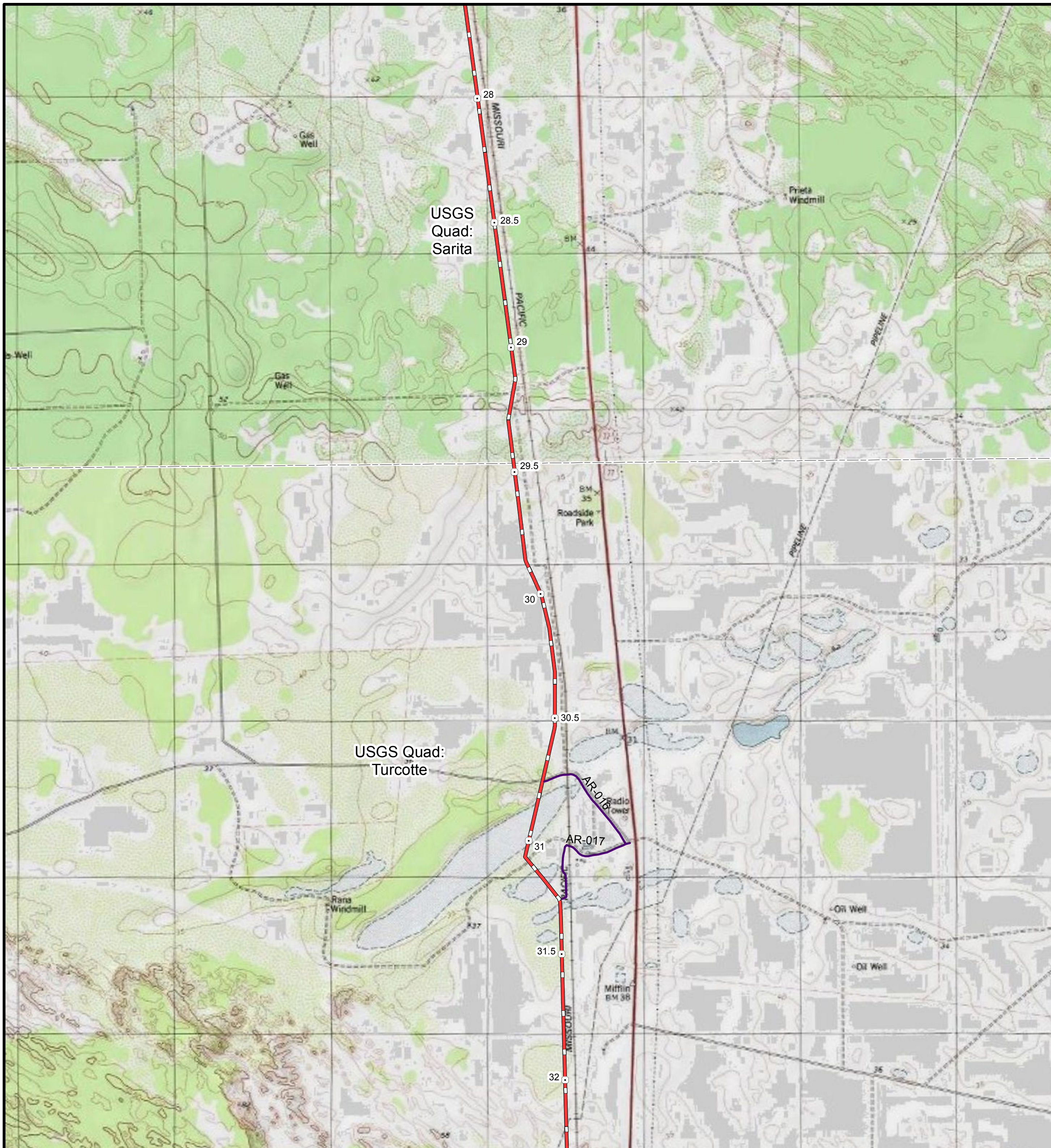

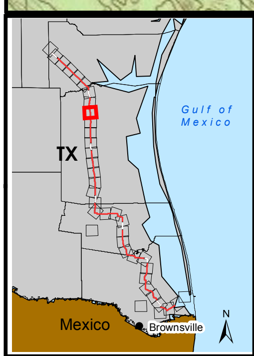

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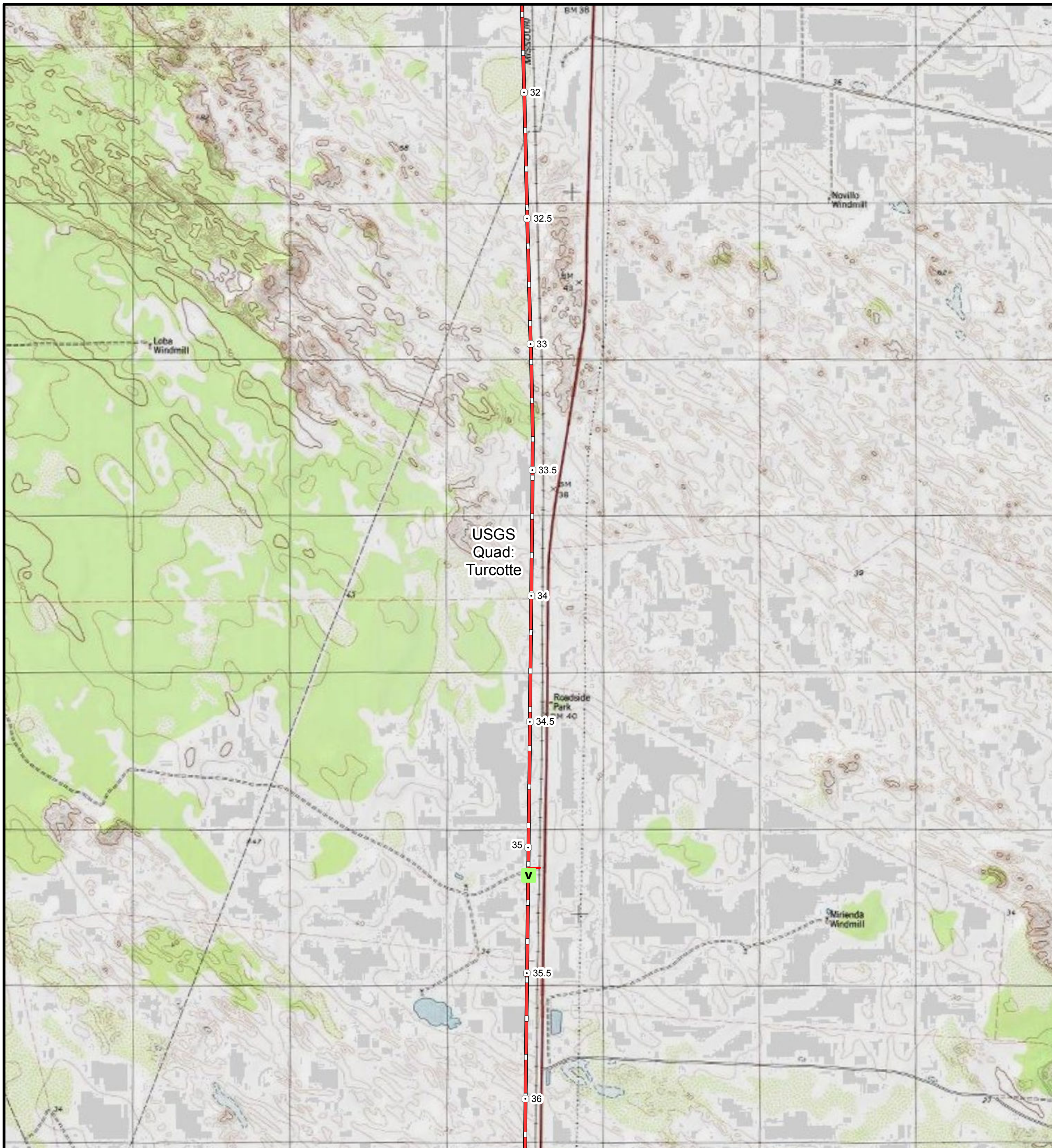

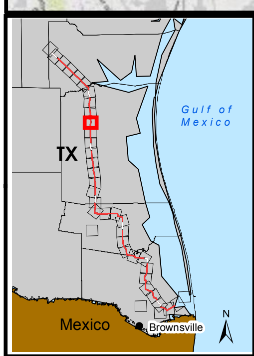

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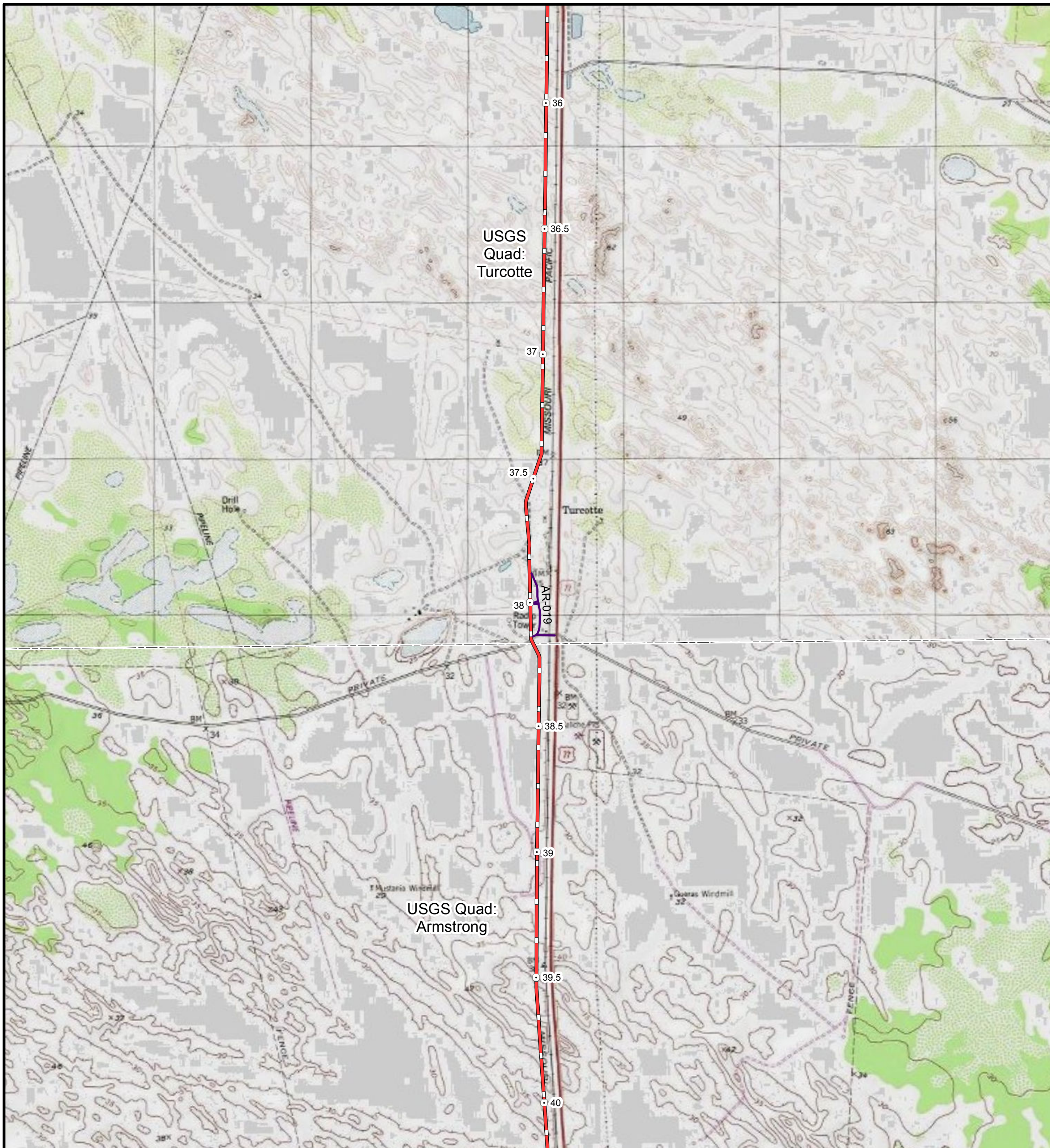

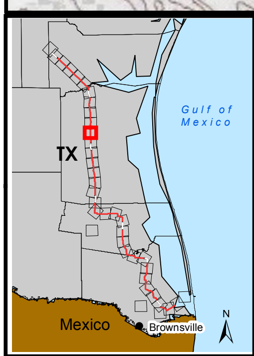

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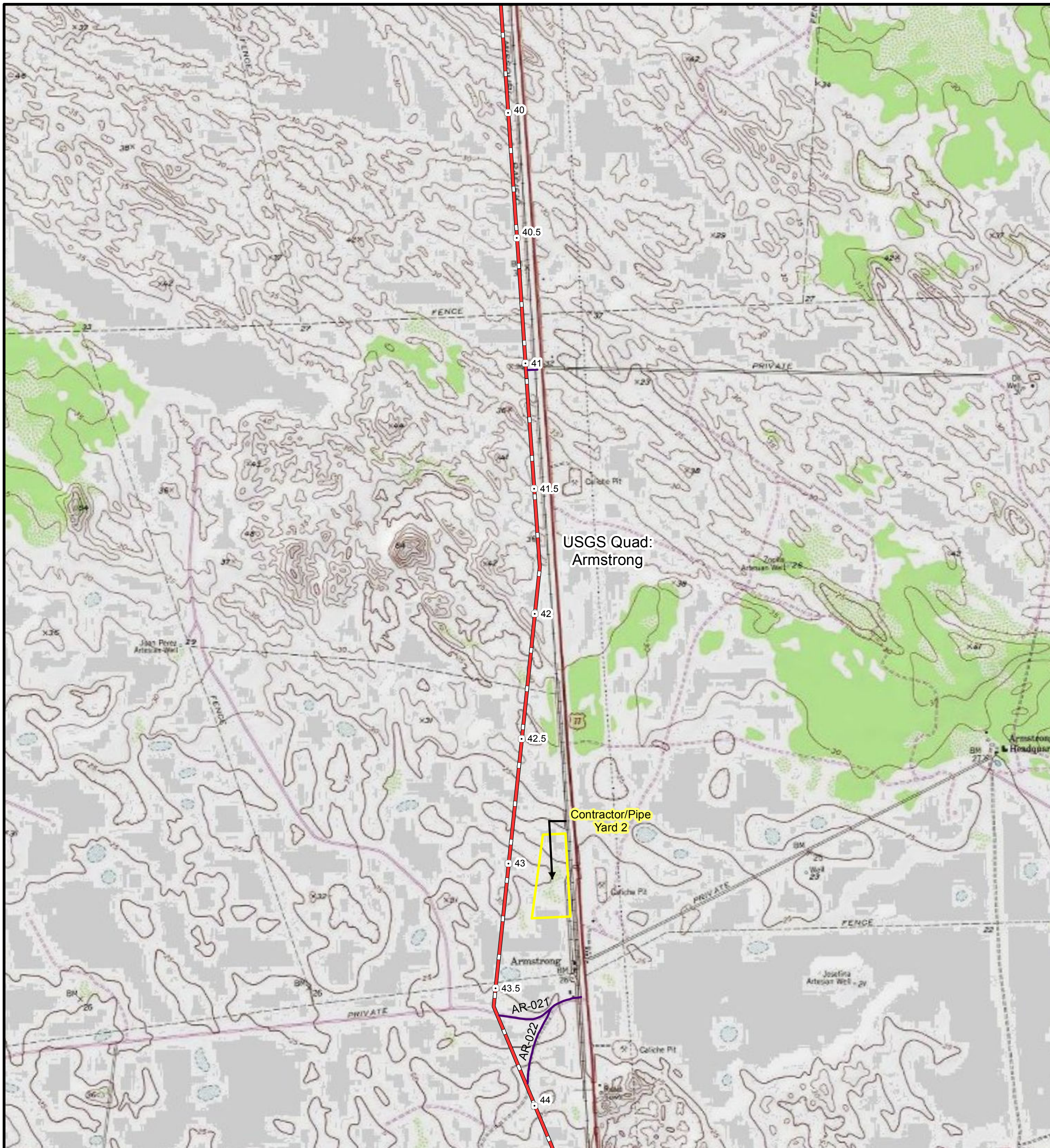

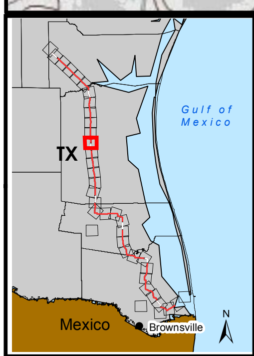

Legend

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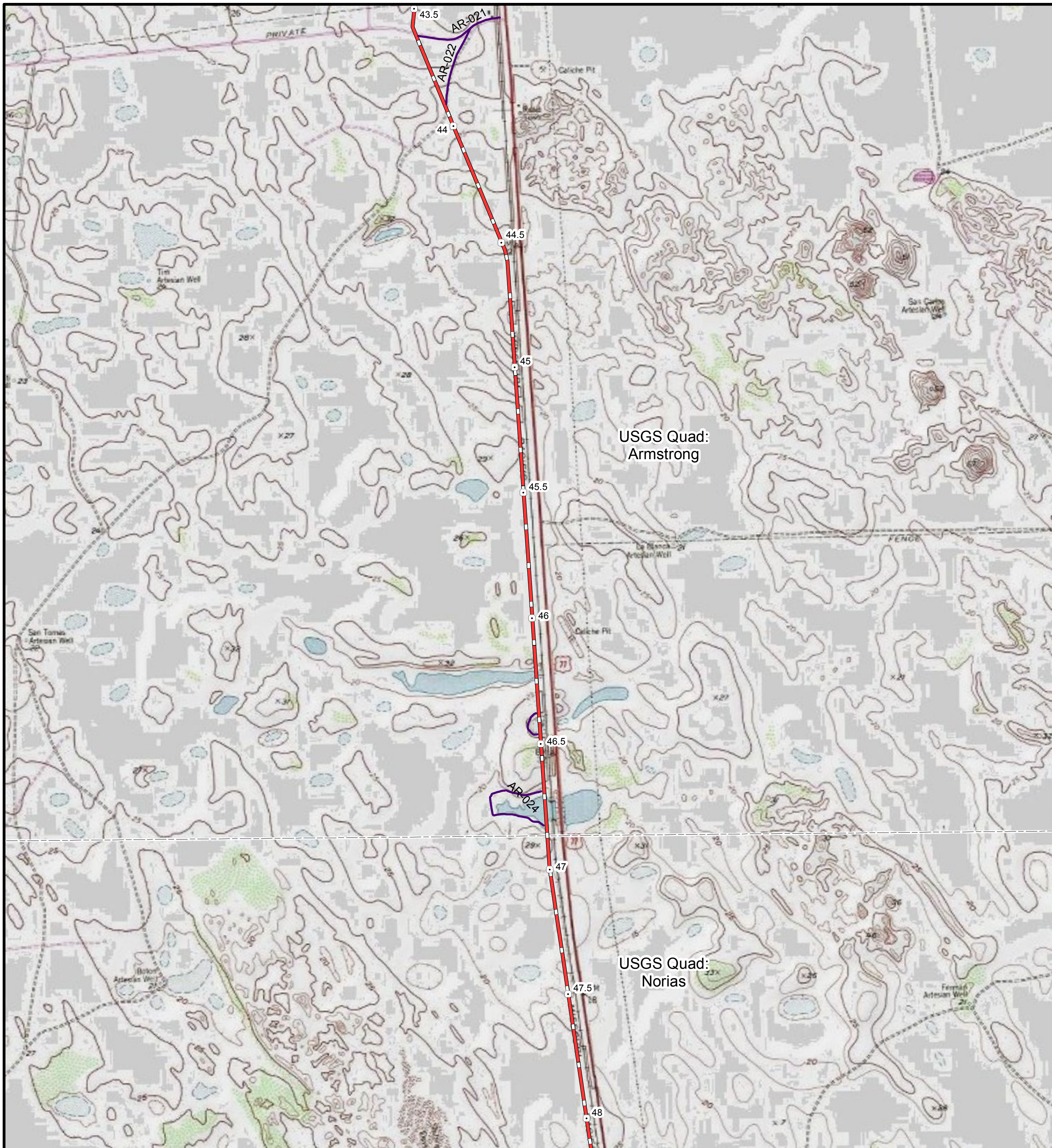

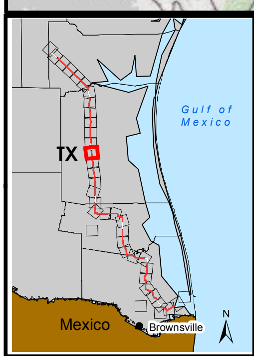

Legend

	Milepost		Proposed Header System
M	Meter Station		Proposed Rio Bravo Pipeline
V	Mainline Valve		Permanent Access Road
	Interconnect Booster and Meter Station		Temporary Access Road
	Contractor Yard		Proposed LNG Terminal Boundary (Facility Footprint)
	Storage Yard		LNG Terminal Site (Leased Parcel)
	Compressor Station		County Boundary
			USGS 7.5 min. quadrangle

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Miles

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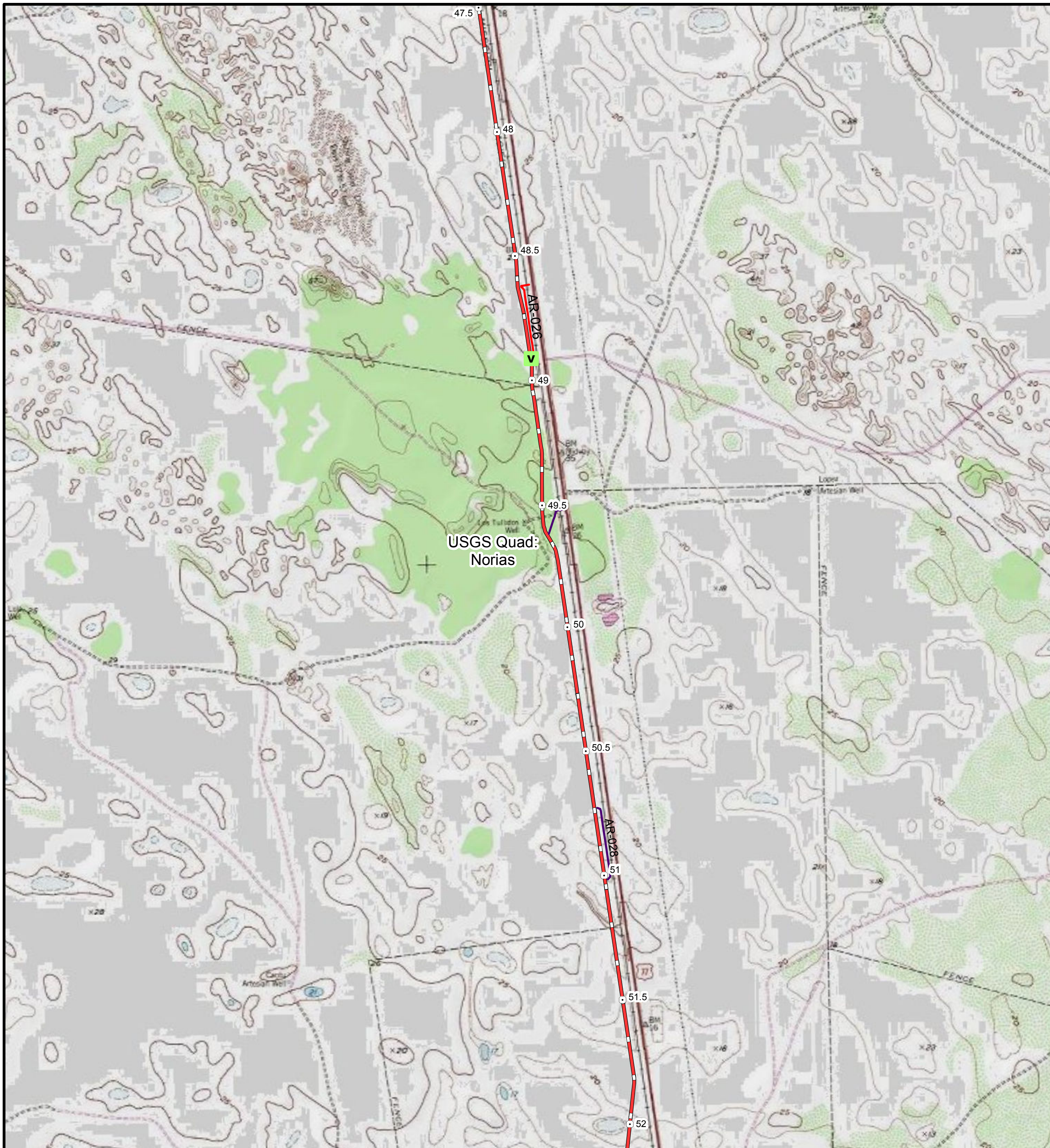

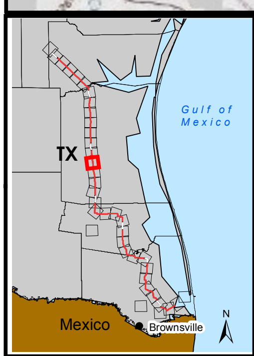

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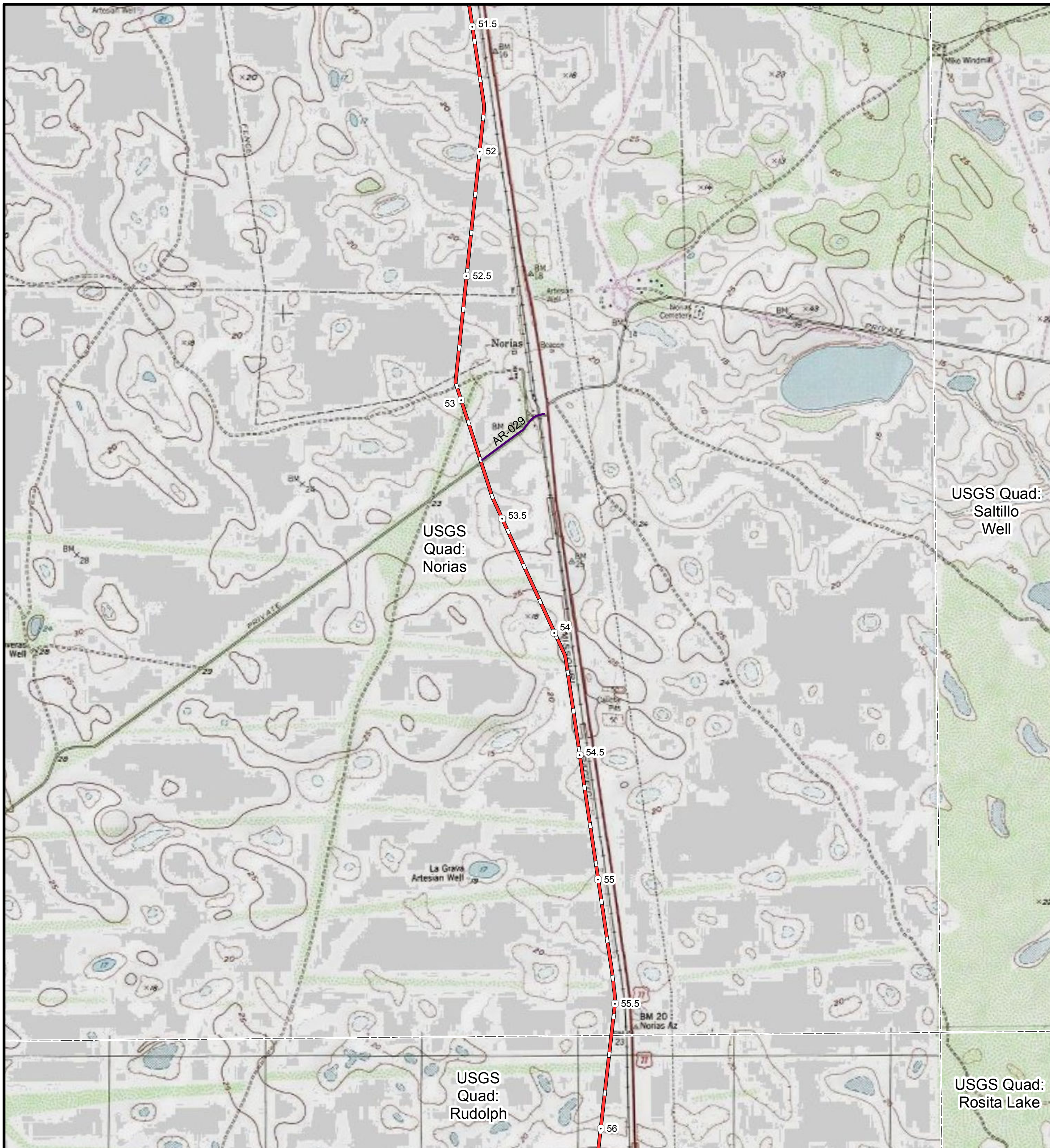

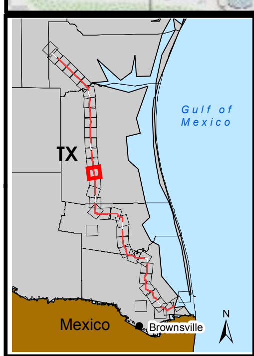

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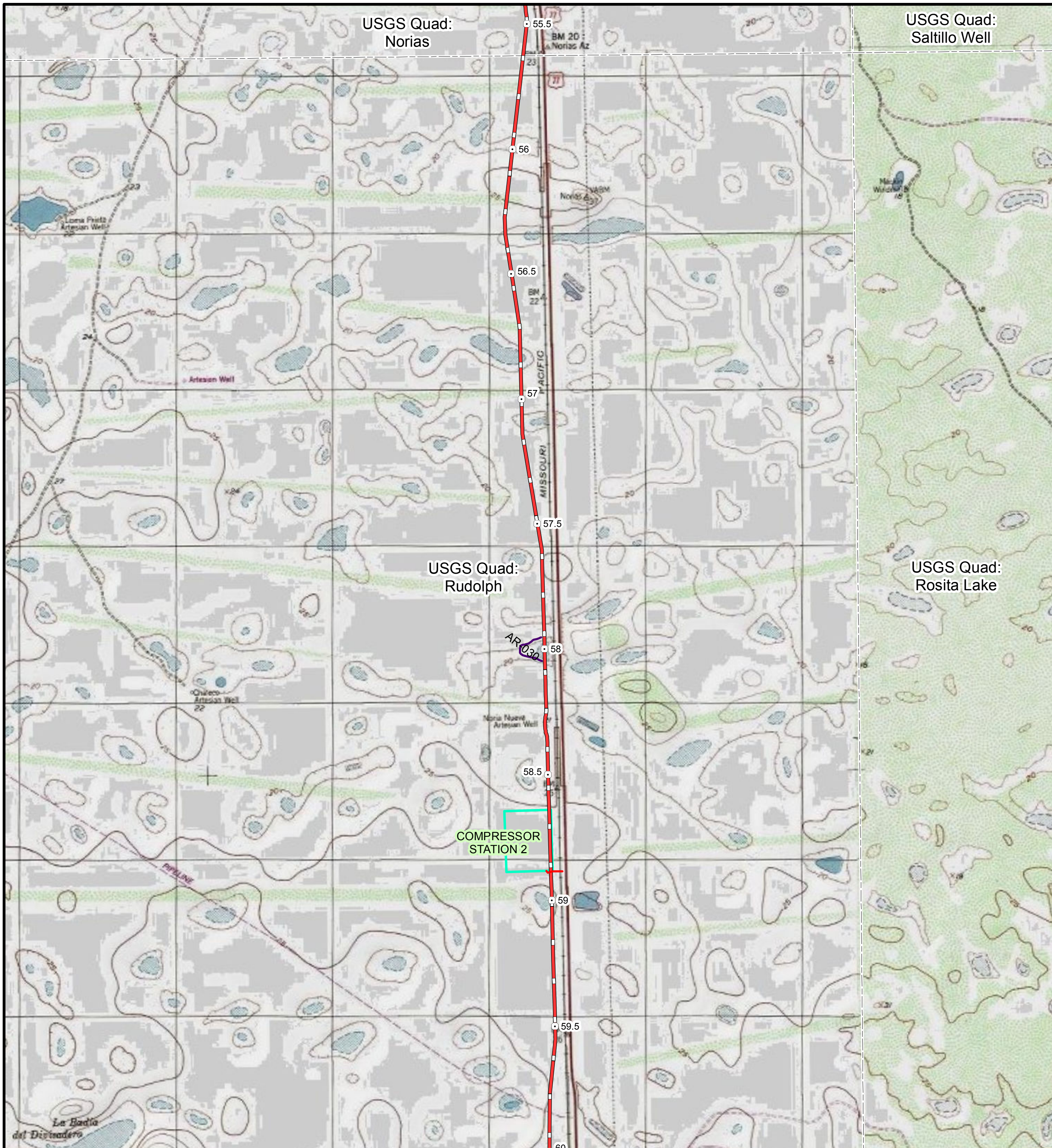

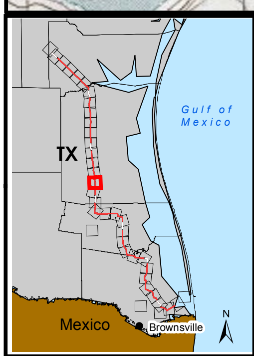

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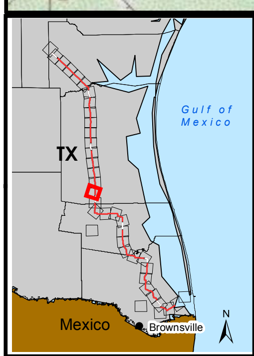

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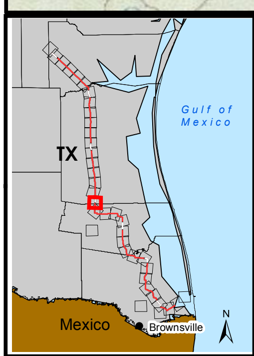

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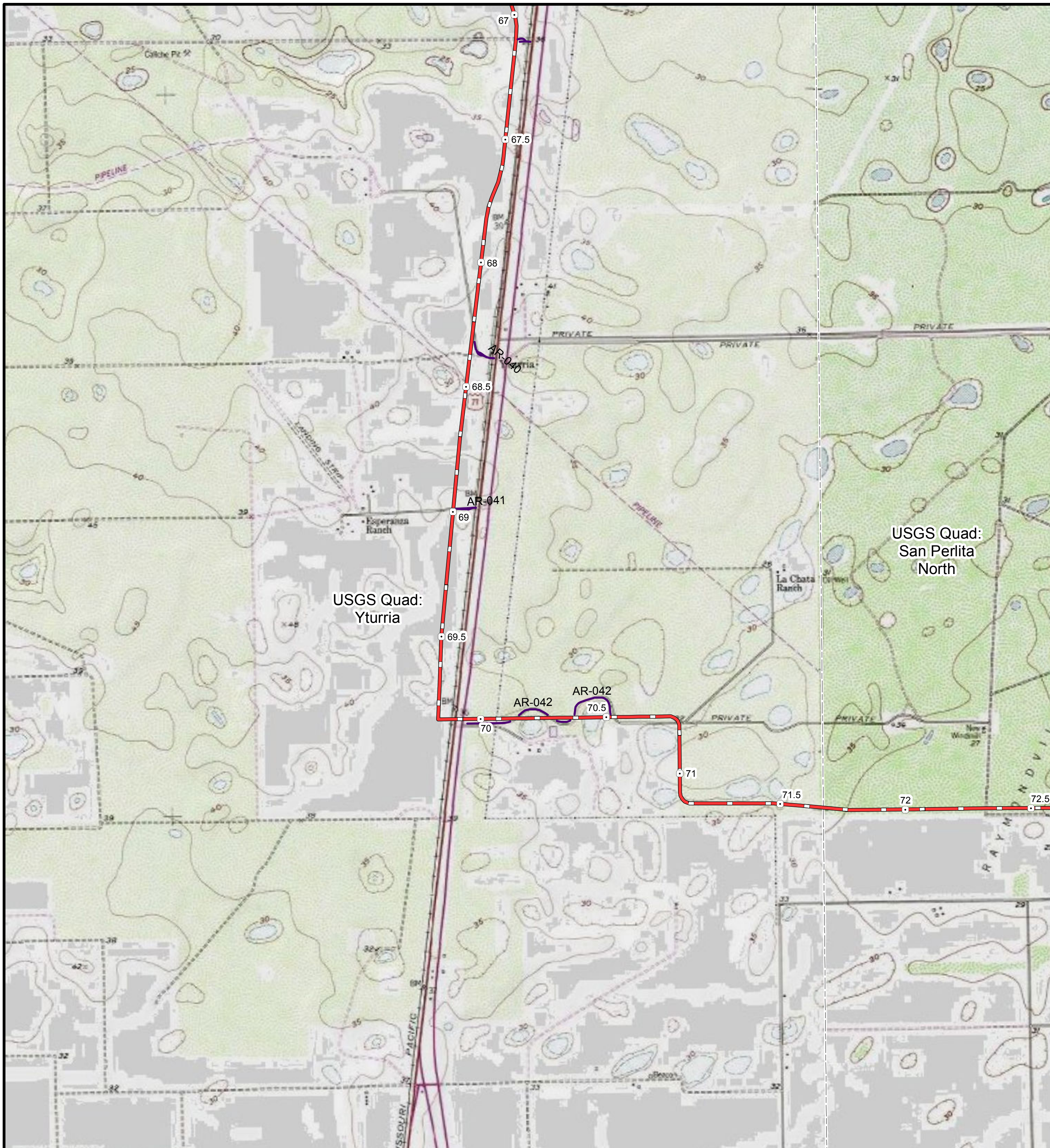

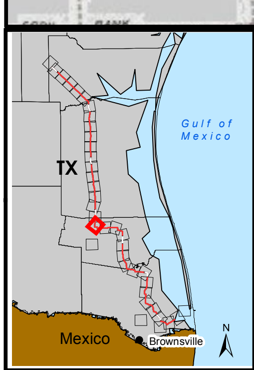

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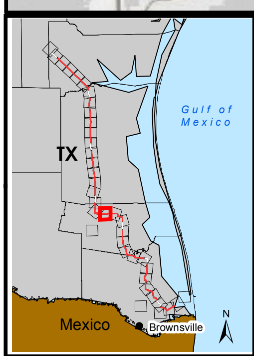

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Mainline Valve	Permanent Access Road
Interconnect Booster and Meter Station	Temporary Access Road
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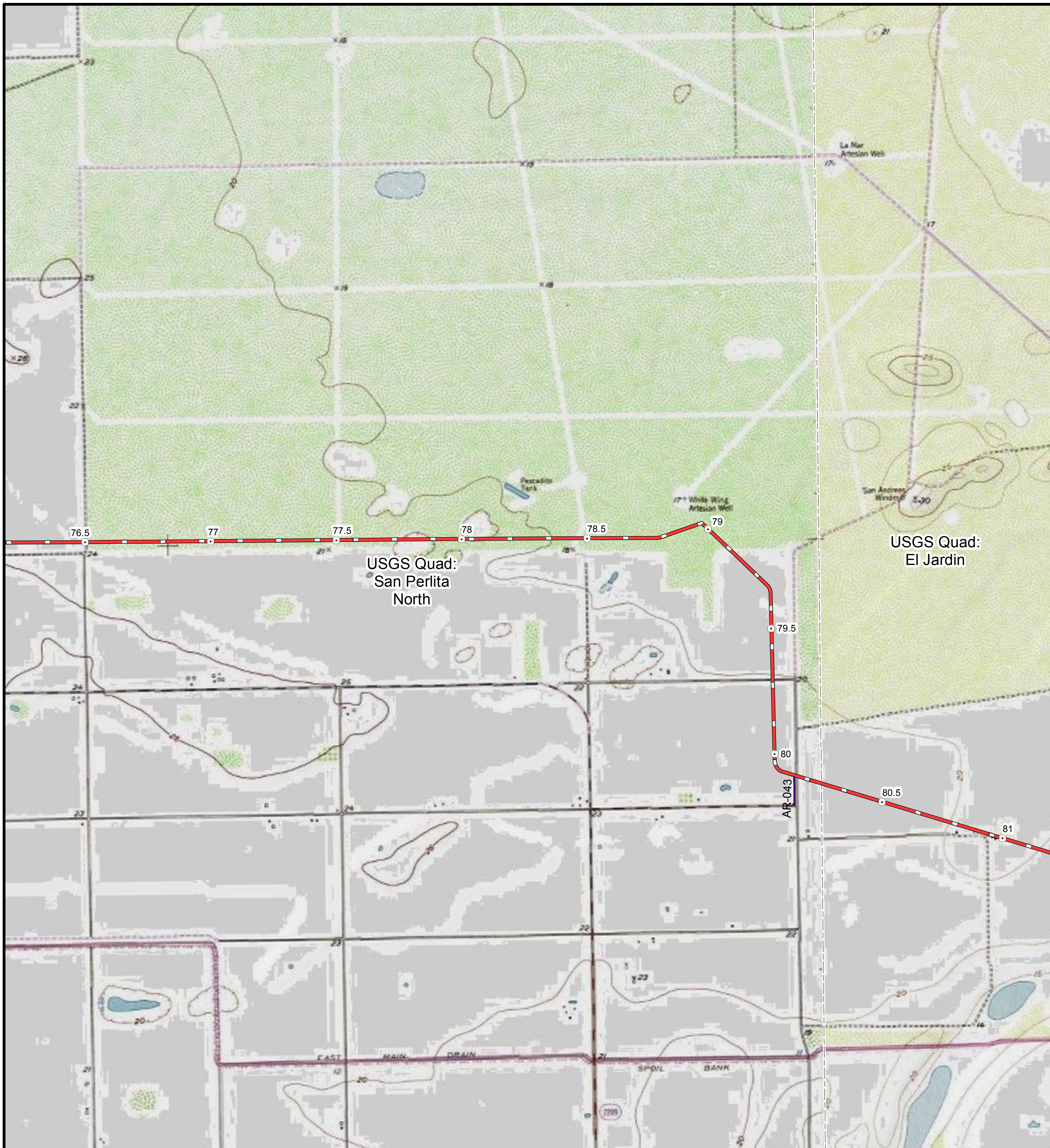

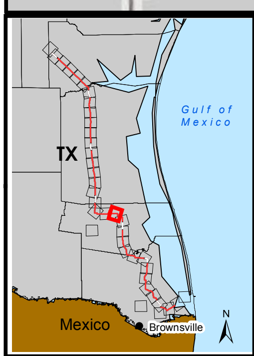

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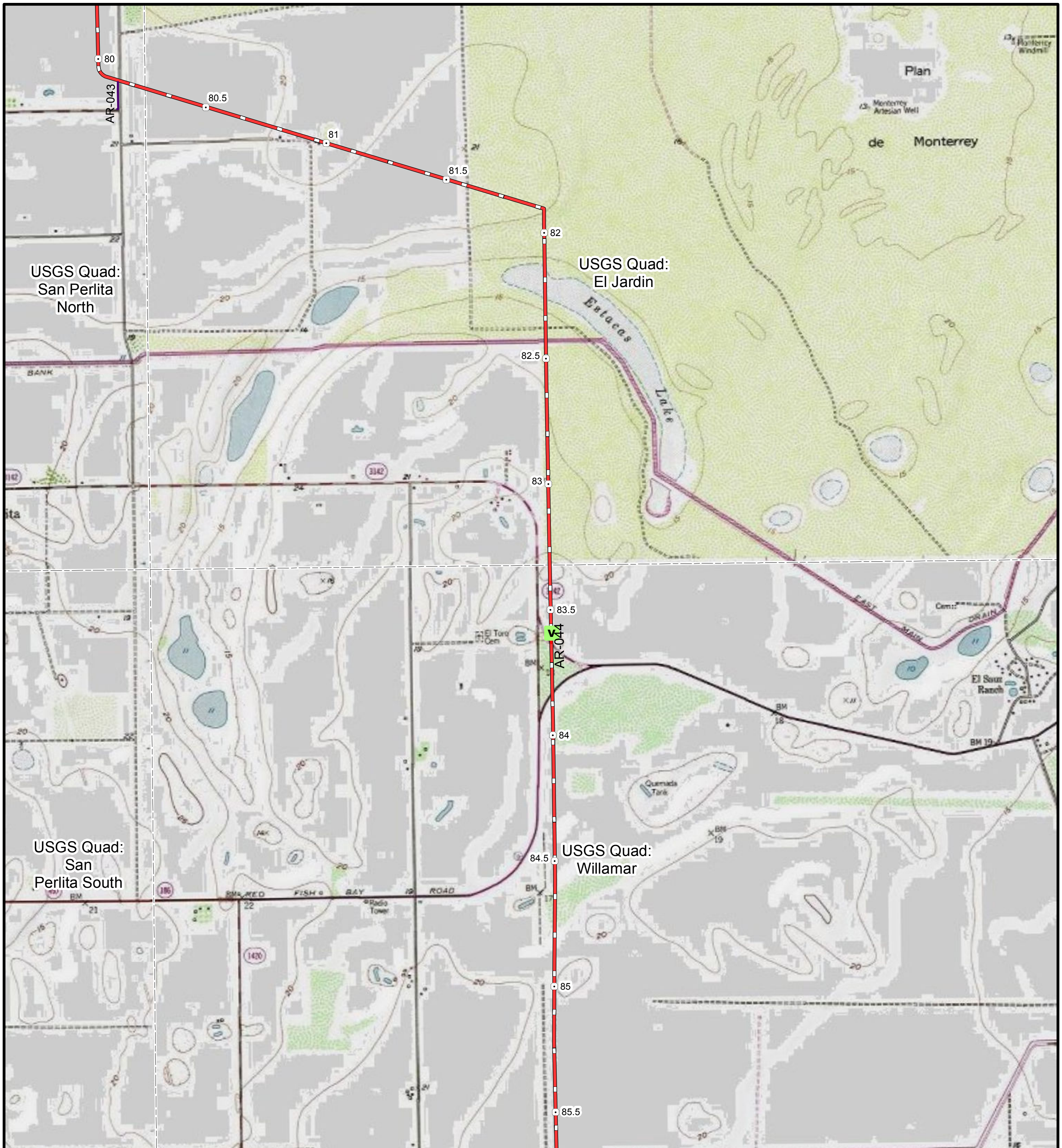

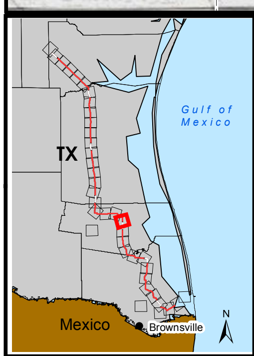

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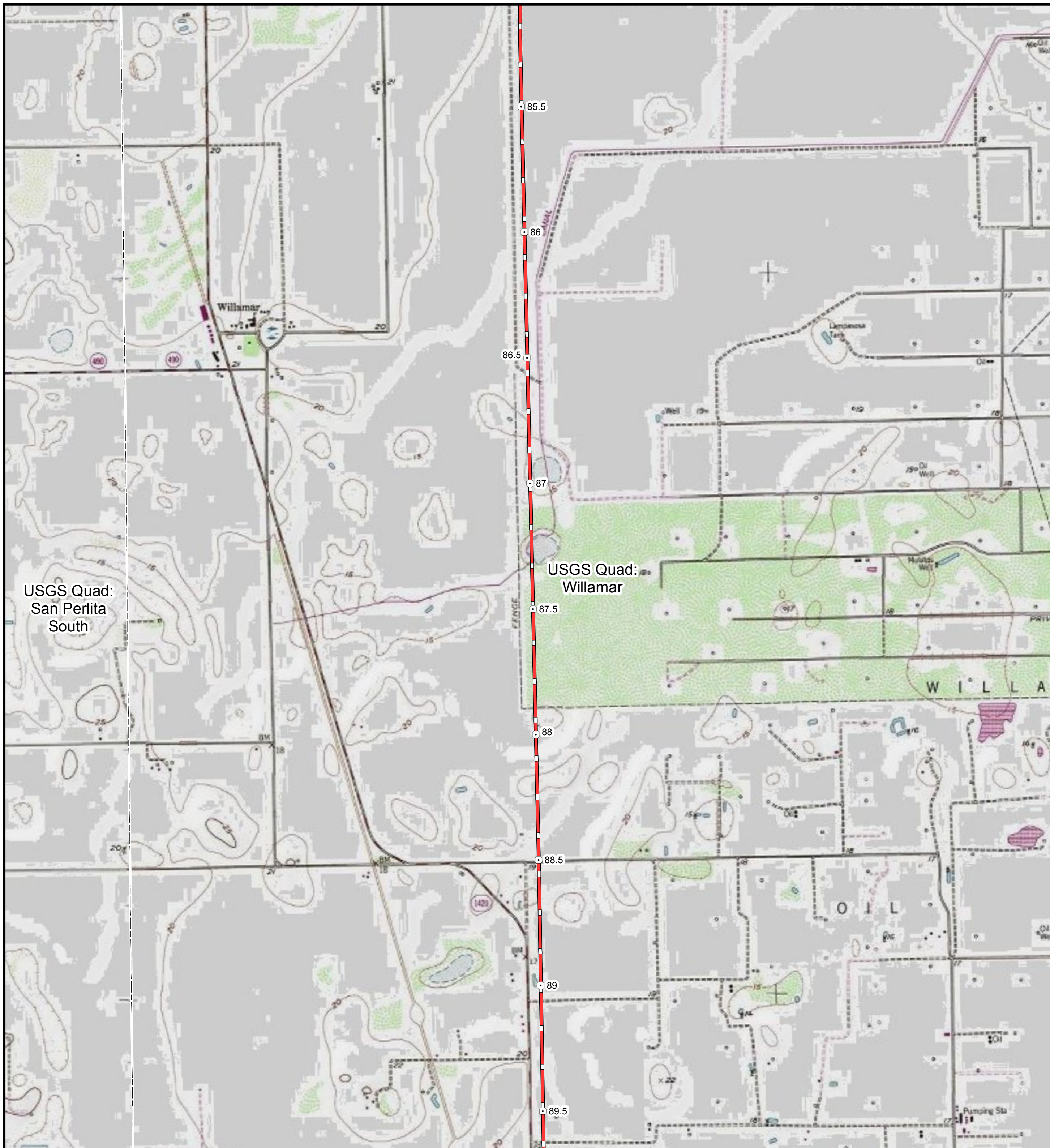

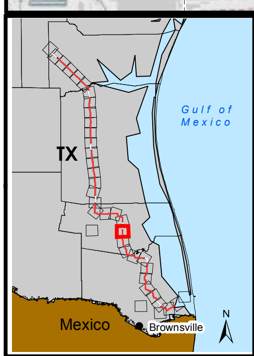

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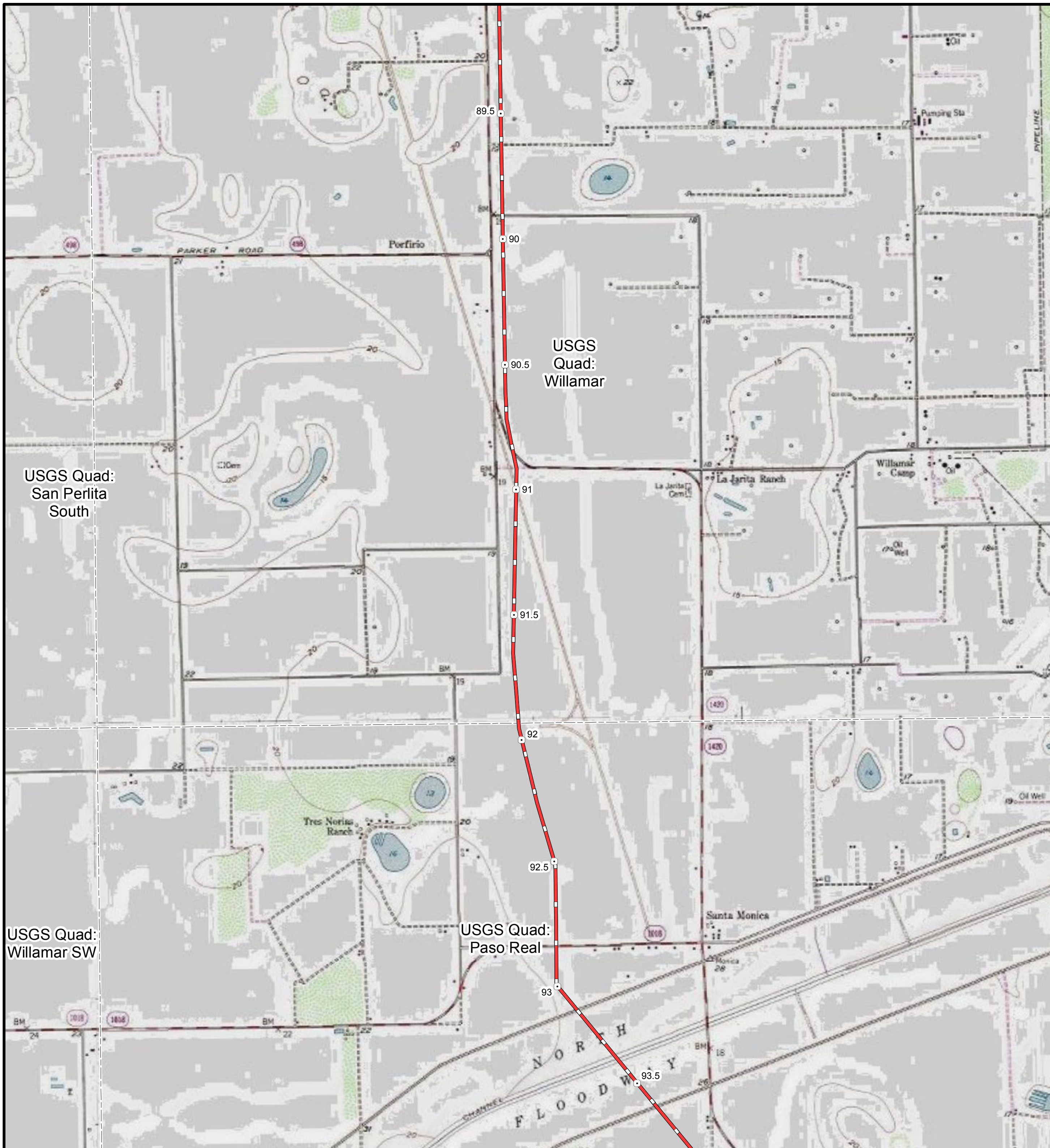

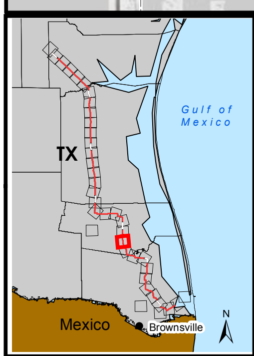

Legend

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- LNG Terminal Site (Leased Parcel)
- County Boundary
- USGS 7.5 min. quadrangle

0 0.25 0.5
Miles

N

Scale: 1:35,000

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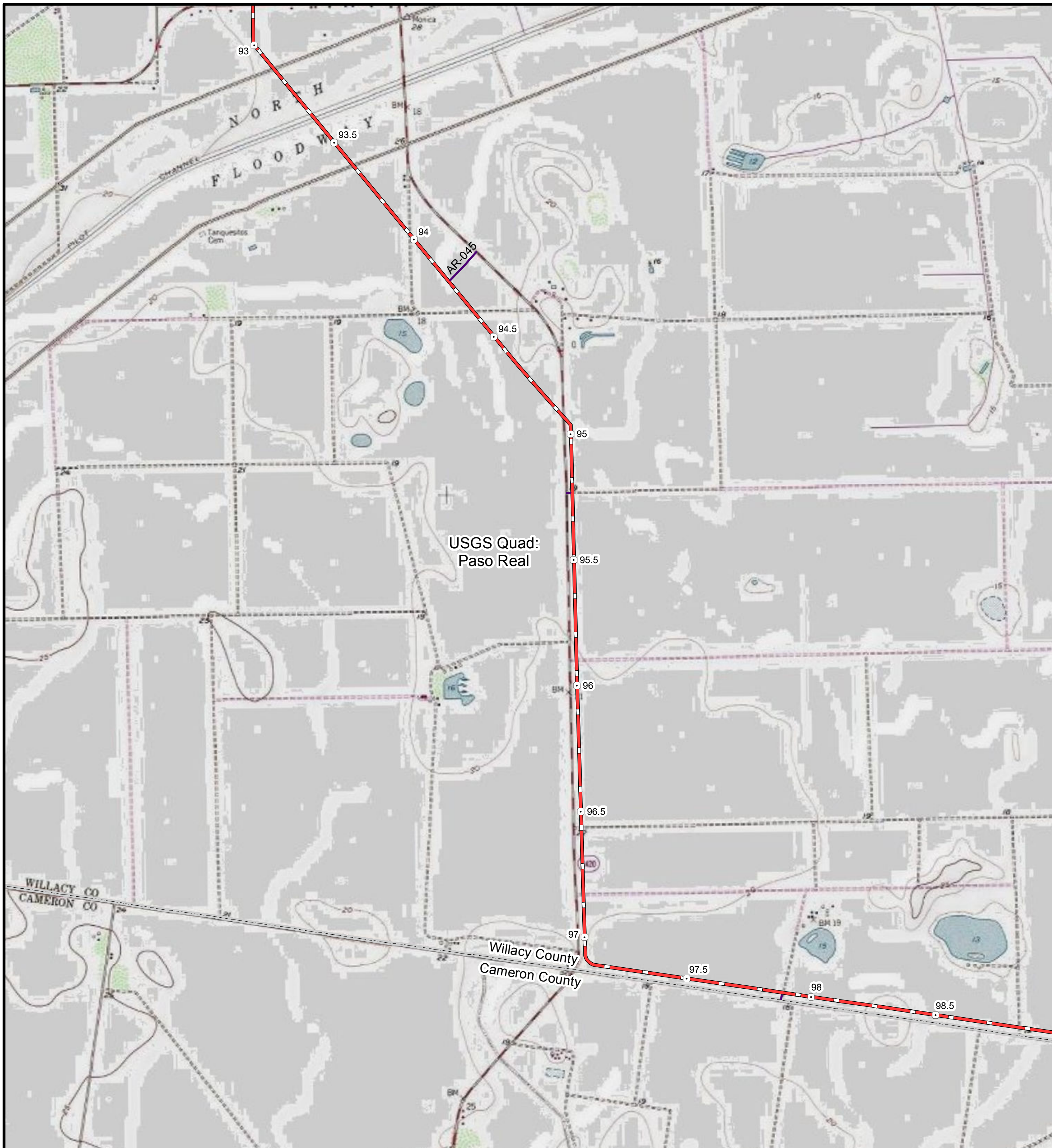

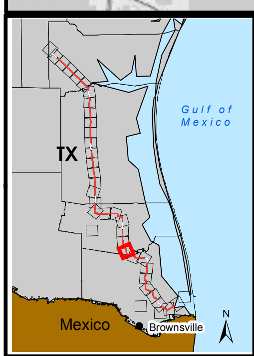

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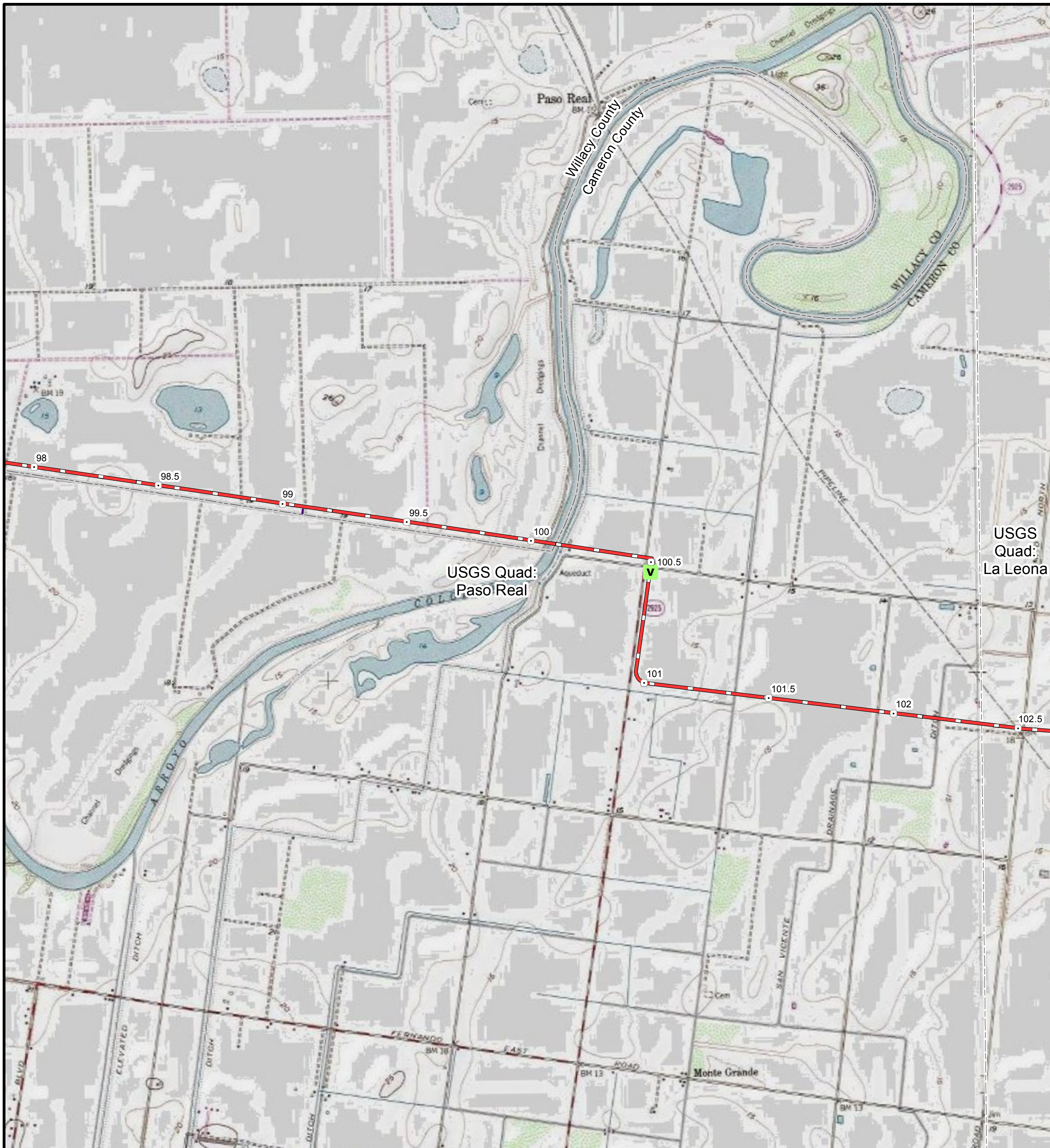

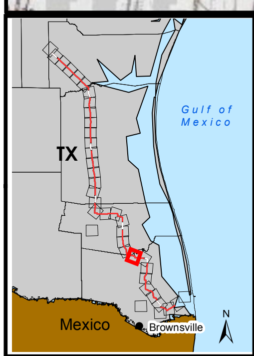

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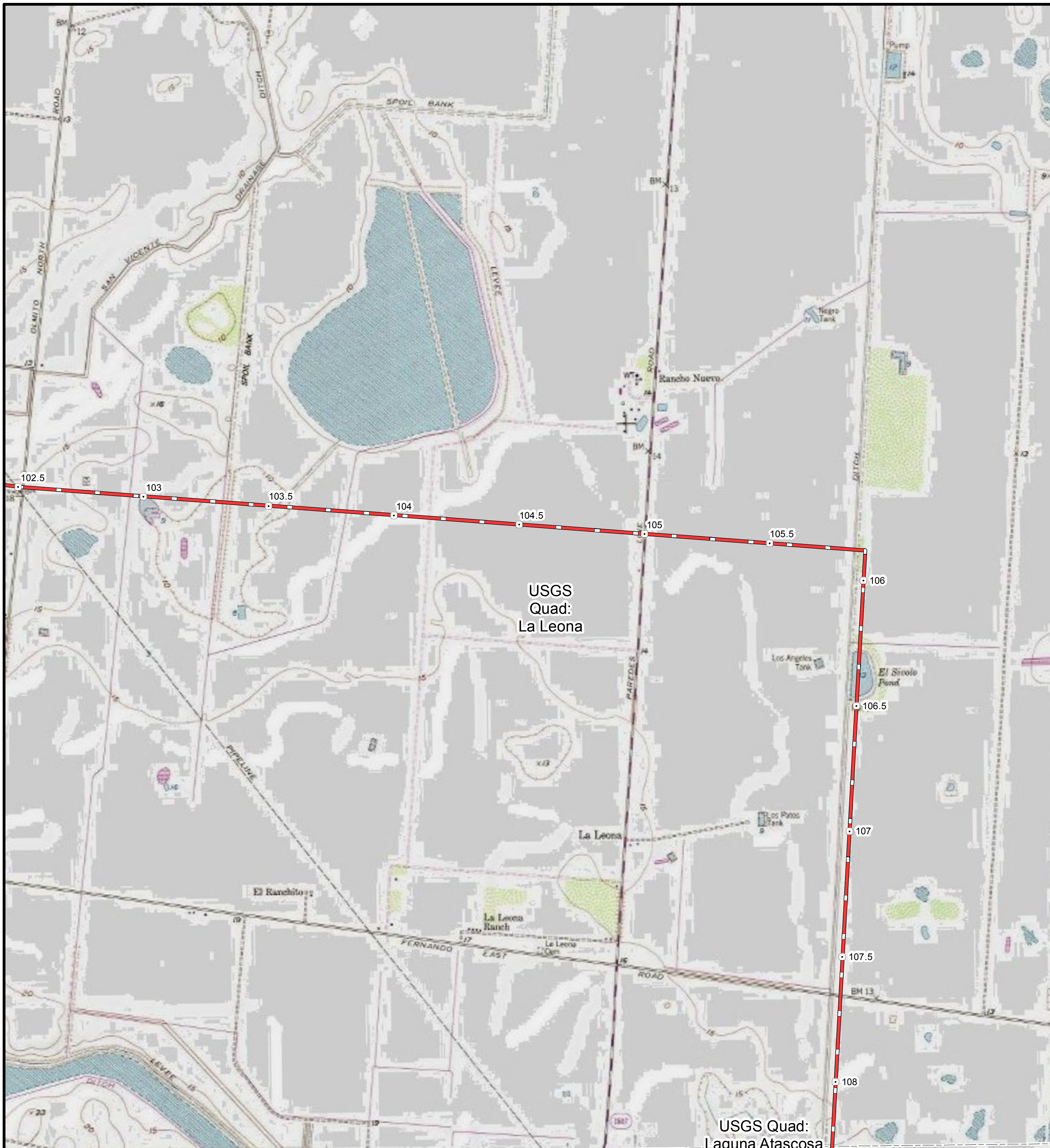

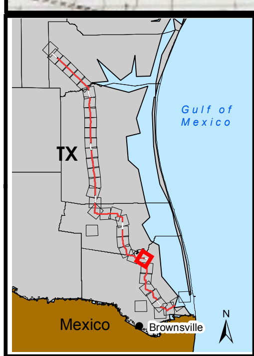

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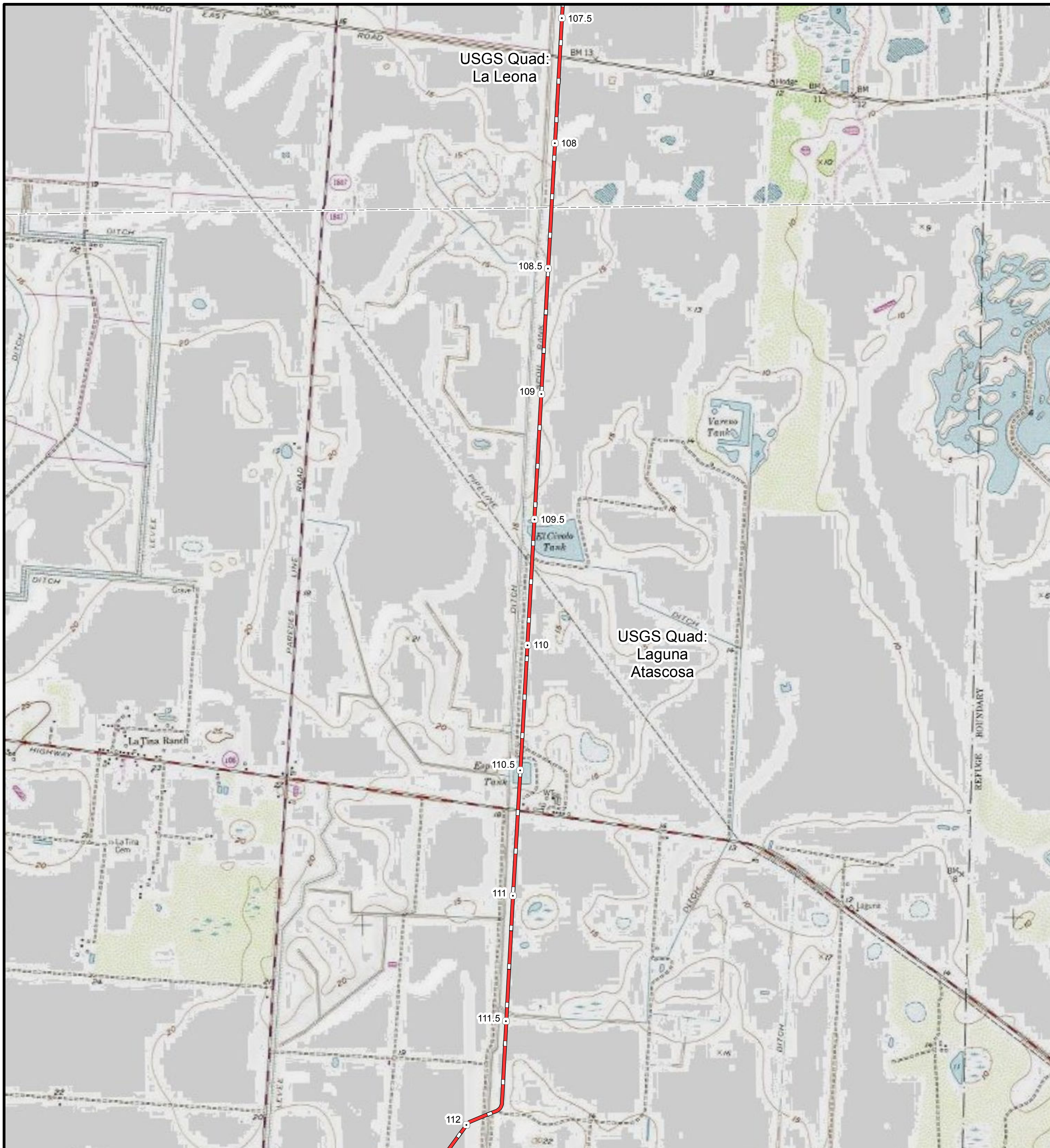

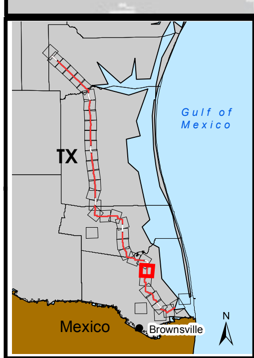

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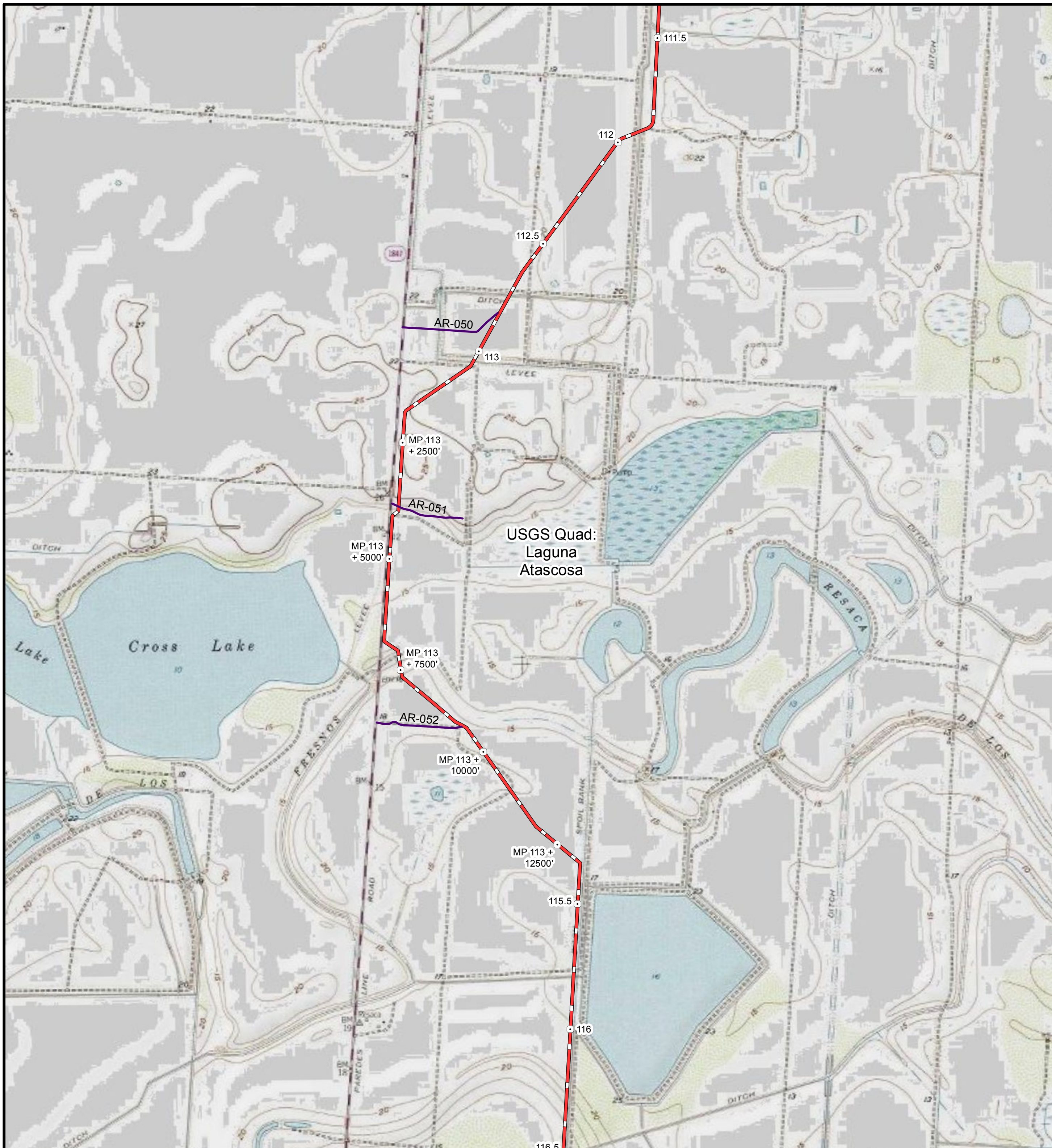

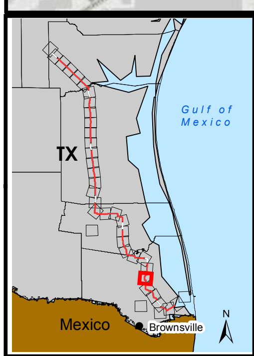

Legend

Milepost	Proposed Header System
Meter Station	Proposed Rio Bravo Pipeline
Mainline Valve	Permanent Access Road
Interconnect Booster and Meter Station	Temporary Access Road
Contractor Yard	Proposed LNG Terminal Boundary (Facility Footprint)
Storage Yard	LNG Terminal Site (Leased Parcel)
Compressor Station	County Boundary
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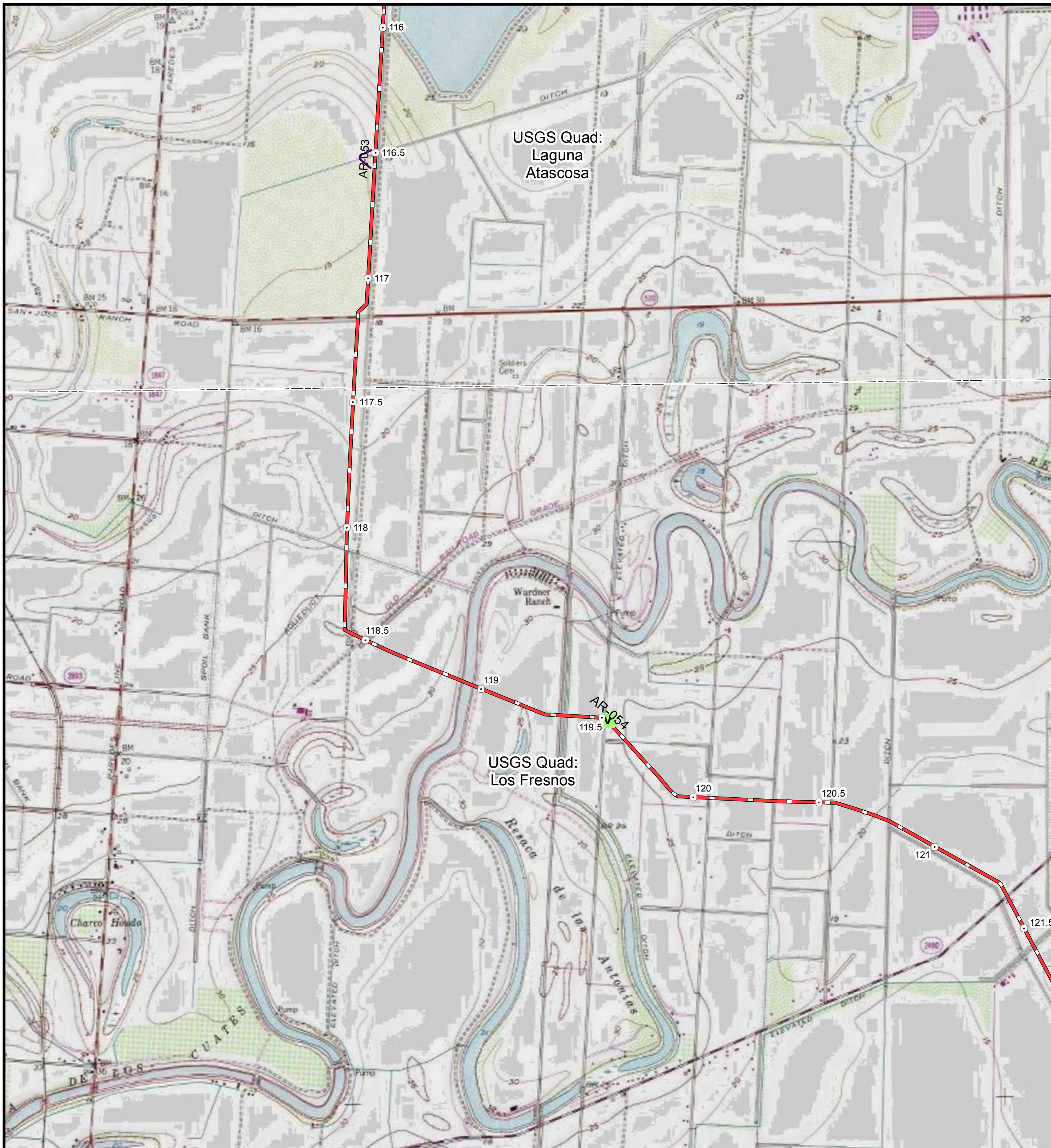

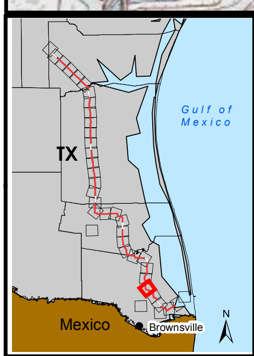

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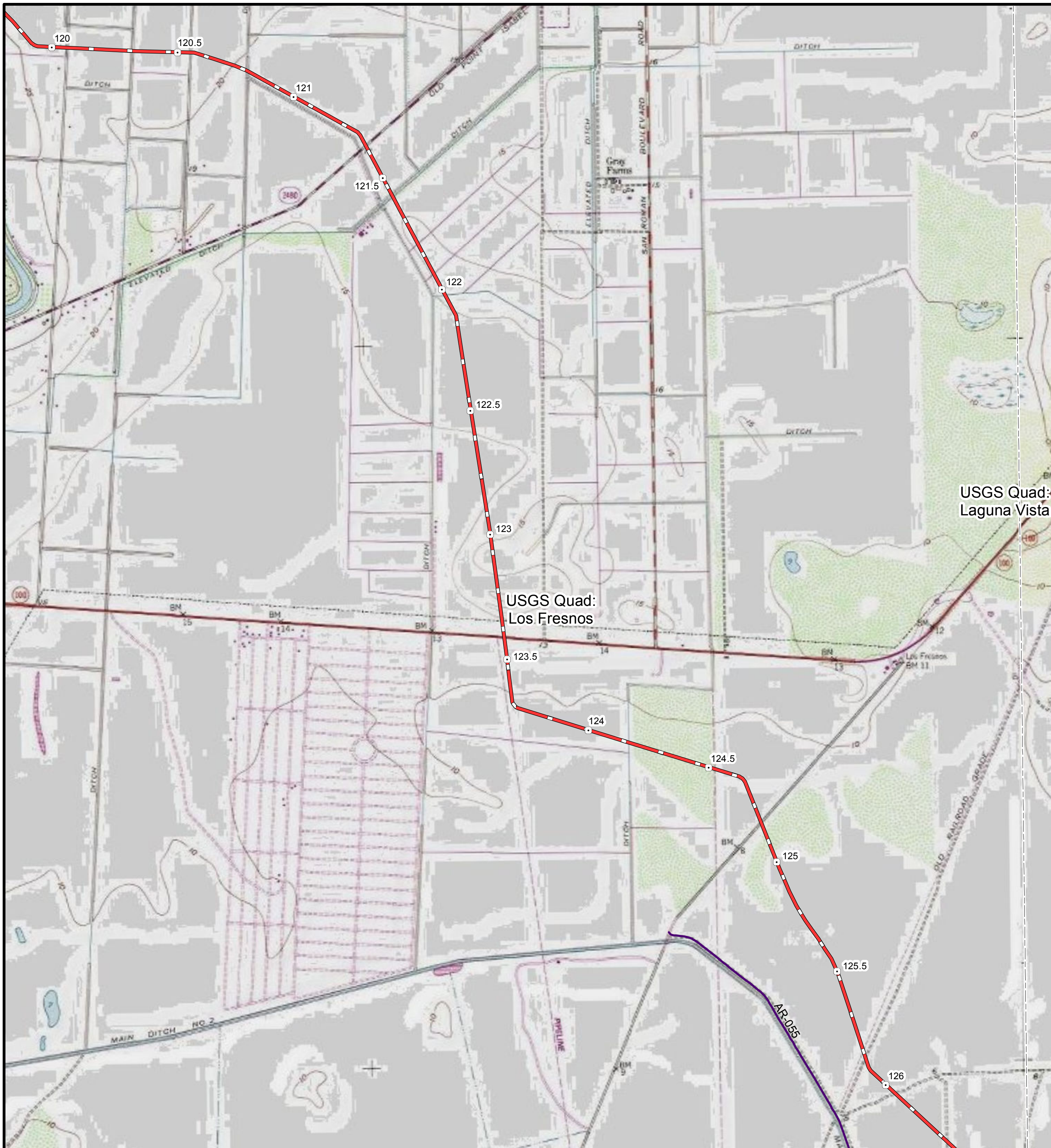

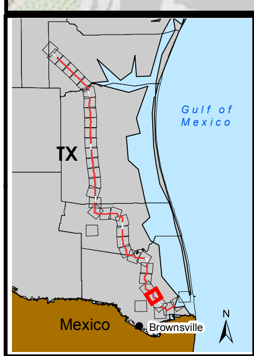

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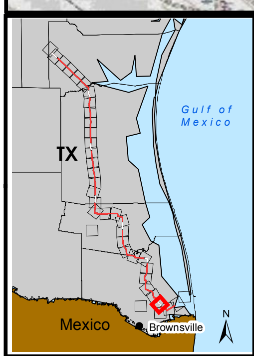

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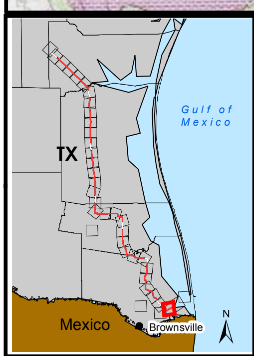

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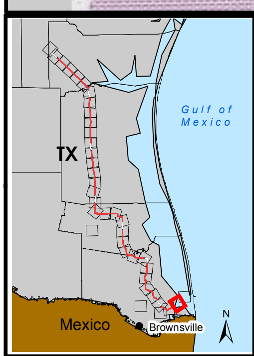

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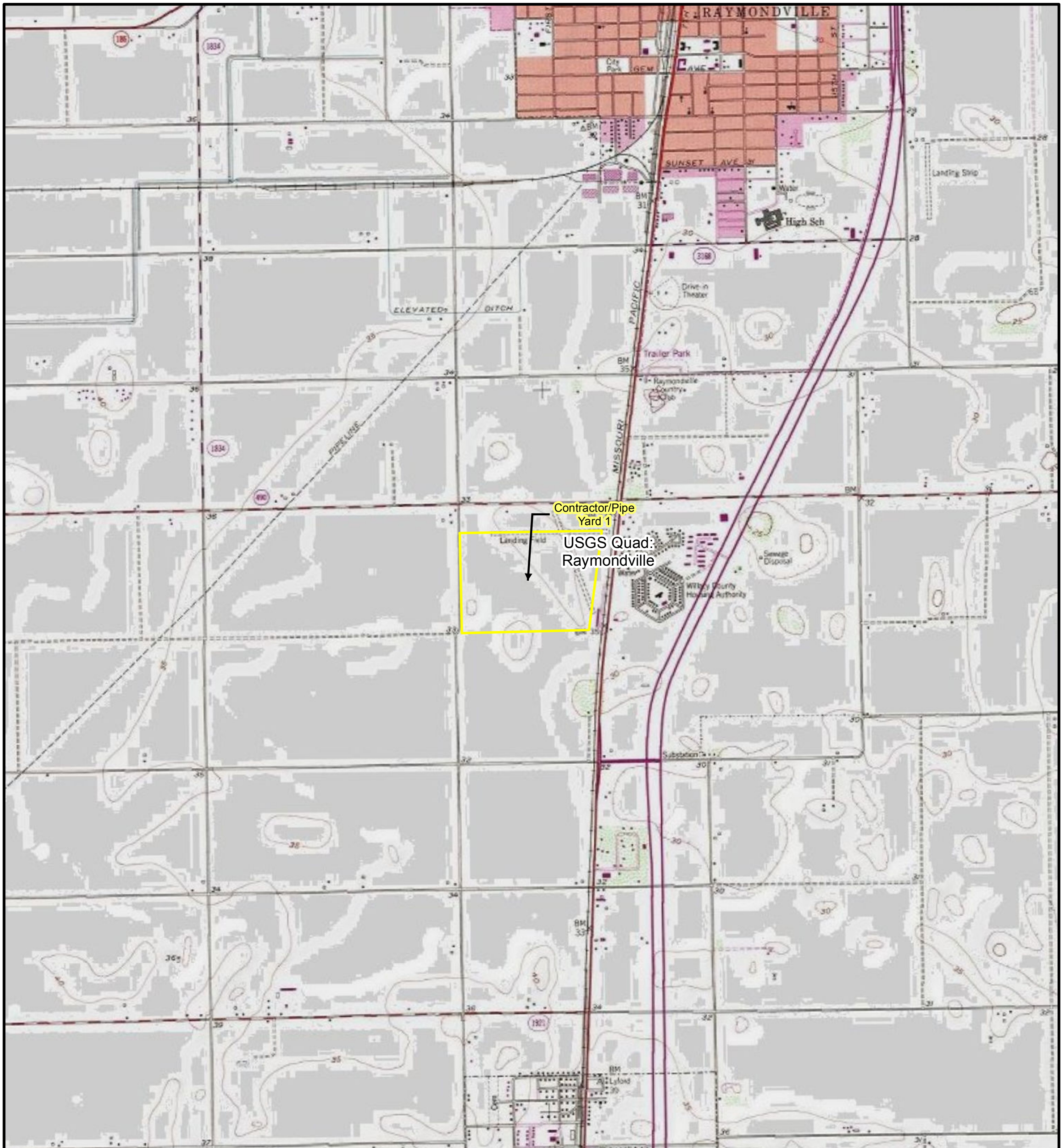

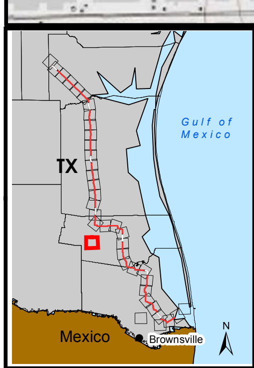

Legend

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Meter Station	Proposed Rio Bravo Pipeline
Mainline Valve	Permanent Access Road
Interconnect Booster and Meter Station	Temporary Access Road
Contractor Yard	Proposed LNG Terminal Boundary (Facility Footprint)
Storage Yard	LNG Terminal Site (Leased Parcel)
Compressor Station	County Boundary
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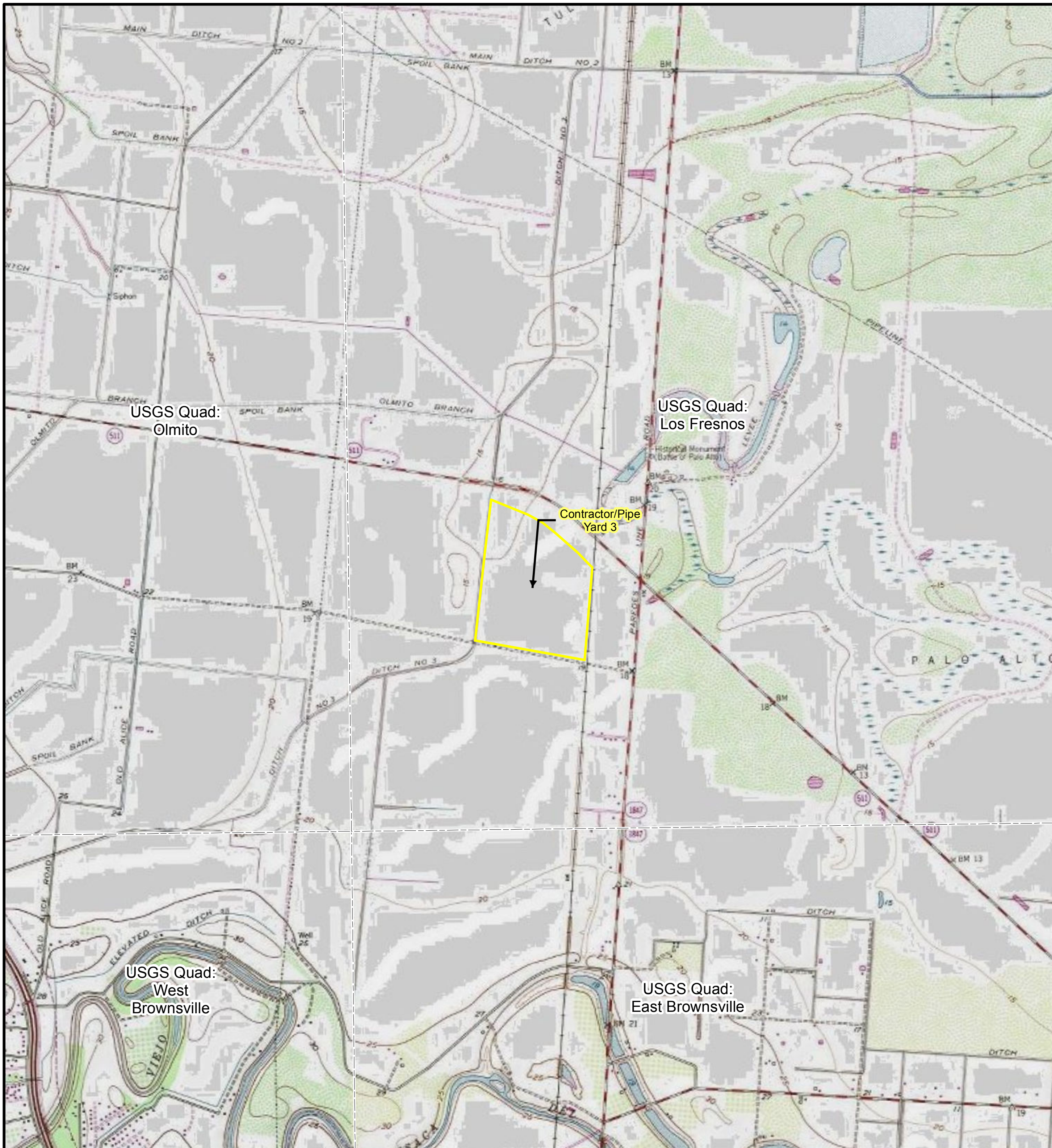

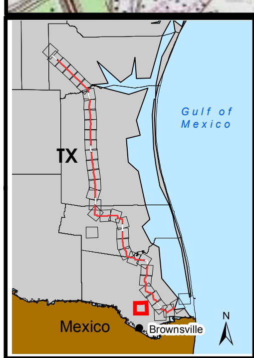

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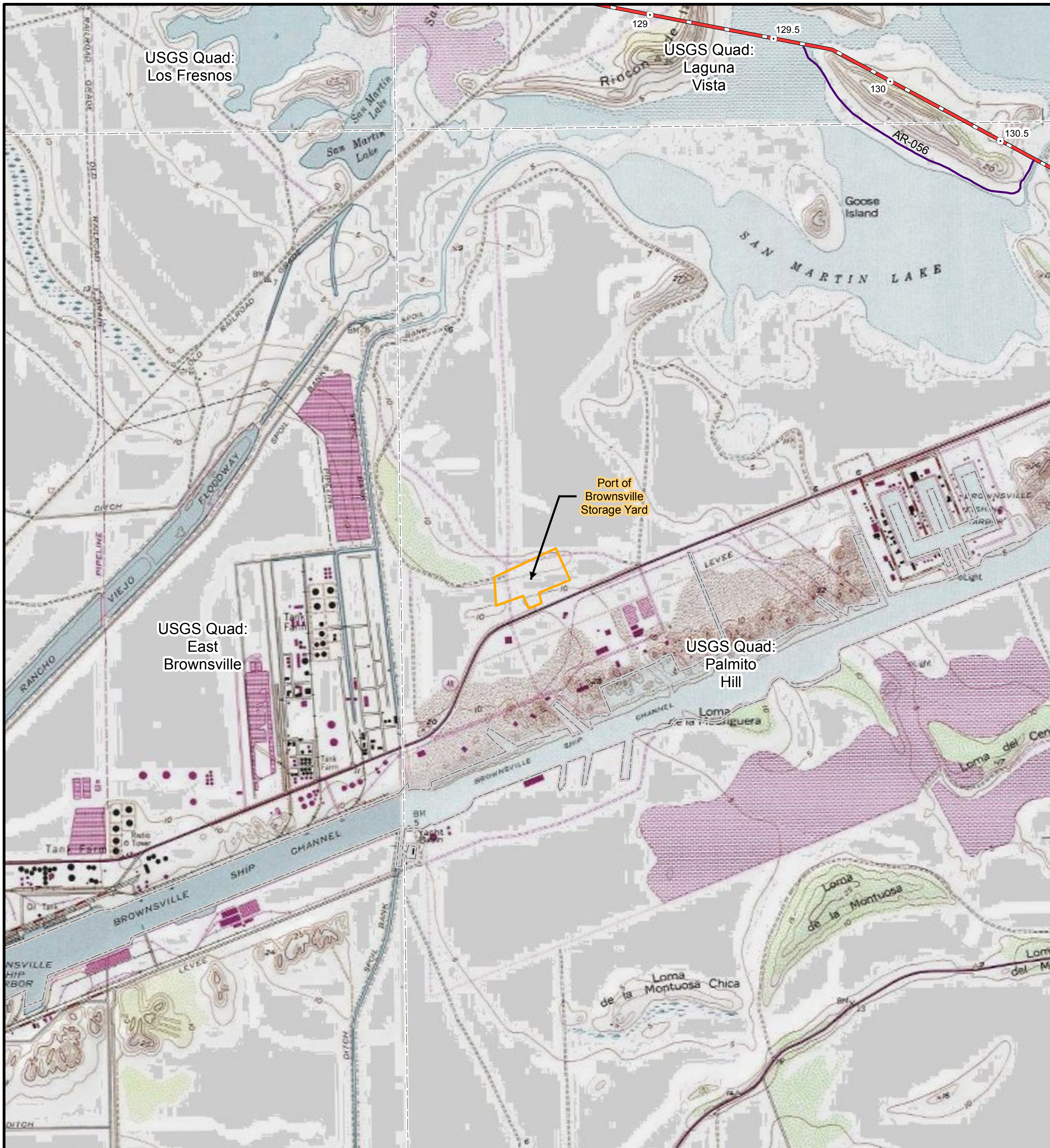

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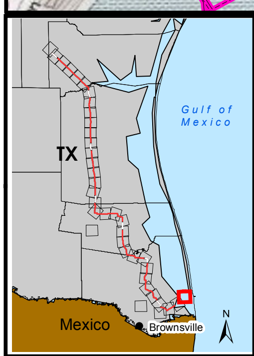

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APPENDIX C

PERMANENT AND TEMPORARY ACCESS ROADS FOR THE RIO BRAVO PIPELINE SYSTEM

Appendix C Permanent and Temporary Access Roads for the Rio Bravo Pipeline System										
Access Road	**Access Road ID**	**Nearest MP**	**Permanent / Temporary**	**Existing / New**	**Current Land Use**	**Length (miles)**	**Modification Required**	**Final Width (feet)**	**Impacts (acres)[a]**	
									Con	**Op**
Jim Wells County										
Access to Header System (HS) including Metering Site HS-4 from unnamed King Ranch Road	HS-001[b]	HS-2.4	Permanent	Existing Dirt / Gravel Road	Barren, Upland Shrub / Forested Land	0.4	None	20	1.1	1.1
Access to unnamed King Ranch Road off U.S. Highway 281	AR-005[b]	0.0	Temporary	Existing Paved Road	Industrial / Commercial	3.0	None	20	7.4	0.0
Kleberg County										
Access to Header System including Metering Site HS-4 from unnamed King Ranch Roads	HS-001[b]	N/A	Permanent	Existing Dirt / Gravel Road	Barren, Industrial / Commercial, Open Land, Open Water	1.8	None[c]	20	4.3	4.3
Access to Metering Site HS-3 from unnamed King Ranch Road	HS-002	HS-0.8	Permanent	Existing Dirt / Gravel Road	Barren, Open Land, Upland Shrub / Forested Land	0.7	None	20	1.6	1.6
Access to pipeline ROW from unnamed King Ranch Road	HS-003	HS-0.4	Temporary	Existing Paved Road	Industrial / Commercial, Open Land	0.7	None	20	1.6	0.0
Access to Compressor Station 1 from unnamed King Ranch Road	HS-004	N/A	Permanent	New	Open Land, Upland Shrub / Forested Land	0.2	Graded and Gravel	20	0.1	0.1
Access to unnamed King Ranch Roads off U.S. Highway 281	AR-005[b]	0.0	Temporary	Existing Paved Road	Industrial / Commercial, Open Land	1.4	None	20	3.4	0.0

Appendix C (continued) Permanent and Temporary Access Roads for the Rio Bravo Pipeline System										
Access Road	**Access Road ID**	**Nearest MP**	**Permanent / Temporary**	**Existing / New**	**Current Land Use**	**Length (miles)**	**Modification Required**	**Final Width (feet)**	**Impacts (acres)[a]**	
									Con	**Op**
Kleberg County (continued)										
Access to pipeline ROW from unnamed King Ranch Road	AR-006	0.1	Temporary	Existing Dirt / Gravel Road	Barren, Forested Wetland, Industrial / Commercial	0.4	None	12	0.6	0.0
Access to pipeline ROW from unnamed King Ranch Road	AR-007	N/A	Temporary	Existing Dirt / Gravel Road	Industrial / Commercial, Open Land	2.9	None	20	7.0	0.0
Access to pipeline ROW from unnamed King Ranch Road	AR-008	N/A	Temporary	Existing Dirt / Gravel Road	Open Land, Upland Shrub / Forested Land	0.1	None	20	0.3	0.0
Access to pipeline ROW from unnamed King Ranch Road	AR-009	N/A	Temporary	Existing Dirt / Gravel Road	Open Land, Open Water, Upland Shrub / Forested Land	1.8	None[d]	20	4.4	0.0
Access to pipeline ROW from unnamed King Ranch Road	AR-010	N/A	Temporary	Existing Dirt / Gravel Road	Open Land, Upland Shrub / Forested Land	2.0	None	20	4.9	0.0
Access off TX Highway 141 through unnamed King Ranch Roads	AR-011	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	2.9	None	20	7.0	0.0
Access off TX Highway 141 through unnamed King Ranch Roads	AR-012	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	14.9	None	20	36.4	0.0
Access to Mainline Valve Site 1 from U.S. Highway 285	AR-013	18.0	Permanent	New	Open Land, Upland Shrub / Forested Land	<0.1	Graded and Gravel	20	0.0[e]	0.0[e]

Appendix C (continued)
Permanent and Temporary Access Roads for the Rio Bravo Pipeline System

Access Road	Access Road ID	Nearest MP	Permanent / Temporary	Existing / New	Current Land Use	Length (miles)	Modification Required	Final Width (feet)	Impacts (acres)[a]	
									Con	Op
Kenedy County										
Access to Metering Site 2 and Interconnect Booster Station 1 from W Chandler Rd	AR-014	N/A	Permanent	New and Existing Dirt / Gravel Road	Industrial / Commercial, Open Land, Upland Shrub / Forested Land	2.1	Grade and Gravel the new portion of the access road	20	3.4	3.4
Access off U.S. Highway 77 through Sarita	AR-015	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	0.3	None	20	0.8	0.0
Access to Interconnect Booster Station 2/Metering Site 3 from U.S. Highway 77	AR-065	N/A	Permanent	Existing Two Track Road	Industrial / Commercial, Open Land	0.4	None	20	1.0	1.0
Access to pipeline ROW from U.S. Highway 77	AR-016	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	0.5	None	20	1.1	0.0
Access to pipeline ROW from U.S. Highway 77	AR-017	N/A	Temporary	Existing Paved Road and Dirt / Gravel Road	Industrial / Commercial, Open Land	0.5	None	20	1.2	0.0
Access to Mainline Valve Site 2 from U.S. Highway 77	AR-018	N/A	Permanent	New and Existing Dirt / Gravel Road	Open Land	0.1	Grade and Gravel the new portion of the access road	20	0.1	0.1

Appendix C (continued) Permanent and Temporary Access Roads for the Rio Bravo Pipeline System										
Access Road	**Access Road ID**	**Nearest MP**	**Permanent / Temporary**	**Existing / New**	**Current Land Use**	**Length (miles)**	**Modification Required**	**Final Width (feet)**	**Impacts (acres)[a]**	
									Con	**Op**
Kenedy County (continued)										
Access to pipeline ROW from U.S. Highway 77	AR-019	N/A	Temporary	Existing Dirt / Gravel Road	Industrial / Commercial, Open Land	0.4	None	20	0.9	0.0
Access to pipeline ROW from U.S. Highway 77	AR-020	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	<0.1	None	20	0.1	0.0
Access to pipeline ROW from U.S. Highway 77	AR-021	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	0.3	None	20	0.9	0.0
Access to pipeline ROW from U.S. Highway 77	AR-022	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	0.3	None	20	0.8	0.0
Avoidance of WW-T04- 025 and WW-TDS-154	AR-023	46.4 & 46.5	Temporary	Existing Dirt / Gravel Road	Open Land	0.1	None	12	0.2	0.0
Avoidance of farm pond (HY-T04-001)	AR-024	N/A	Temporary	Existing Dirt / Gravel Road	Open Land, Open Water	0.5	None[d]	12	0.7	0.0
Access to Mainline Valve Site 3 from U.S. Highway 77	AR-026	N/A	Permanent	Existing Dirt / Gravel Road	Open Land, Upland Shrub / Forested Land	0.3	None	20	0.8	0.8

Appendix C (continued) Permanent and Temporary Access Roads for the Rio Bravo Pipeline System										
Access Road	**Access Road ID**	**Nearest MP**	**Permanent / Temporary**	**Existing / New**	**Current Land Use**	**Length (miles)**	**Modification Required**	**Final Width (feet)**	**Impacts (acres)[a]**	
									Con	**Op**
Kenedy County (continued)										
Access to pipeline ROW from U.S. Highway 77	AR-027	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	0.1	None	20	0.3	0.0
Avoidance of WW-TDS- 030 and WW-TDS-029	AR-028	50.7 & 51.0	Temporary	Existing Dirt / Gravel Road	Open Land	0.3	None	20	0.7	0.0
Access to pipeline ROW from U.S. Highway 77	AR-029	N/A	Temporary	Existing Paved Road	Barren, Open Land	0.3	None	20	0.8	0.0
Avoidance of farm pond (HY-TDS-106)	AR-030	N/A	Temporary	Existing Two Track Road	Barren, Open Land, Emergent Wetlands	0.2	None	12	0.3	0.0
Access to Compressor Station 2 from U.S. Highway 77	AR-031	N/A	Permanent	Existing Dirt / Gravel Road	Open Land	0.1	None	20	0.1	0.1
Access to pipeline ROW from U.S. Highway 77	AR-032	N/A	Temporary	Existing Dirt / Gravel Road	Industrial / Commercial, Open Land	0.1	None	20	0.1	0.0
Access to pipeline ROW from U.S. Highway 77	AR-033	N/A	Temporary	Existing Dirt / Gravel Road	Barren, Open Land	0.1	None	20	0.2	0.0
Access to pipeline ROW from U.S. Highway 77	AR-034	N/A	Temporary	Existing Dirt / Gravel Road	Industrial / Commercial, Open Land	<0.1	None	20	0.1	0.0

Appendix C (continued) Permanent and Temporary Access Roads for the Rio Bravo Pipeline System										
Access Road	**Access Road ID**	**Nearest MP**	**Permanent / Temporary**	**Existing / New**	**Current Land Use**	**Length (miles)**	**Modification Required**	**Final Width (feet)**	**Impacts (acres)[a]**	
									Con	**Op**
Kenedy County (continued)										
Access to pipeline ROW from U.S. Highway 77	AR-035	N/A	Temporary	Existing Dirt / Gravel Road	Industrial / Commercial, Upland Shrub / Forested Land	0.1	None	20	0.1	0.0
Access to pipeline ROW from U.S. Highway 77	AR-036	N/A	Temporary	Existing Paved Road	Industrial / Commercial	0.1	None	20	0.1	0.0
Access to pipeline ROW from U.S. Highway 77	AR-037	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	0.1	None	20	0.1	0.0
Access to pipeline ROW from U.S. Highway 77	AR-038	N/A	Temporary	Existing Paved Road	Industrial / Commercial, Open Land	0.4	None	20	0.9	0.0
Willacy County										
Access to pipeline ROW from U.S. Highway 77	AR-039	67.1	Temporary	Existing Dirt / Gravel Road	Open Land, Upland Shrub / Forested Land	0.1	None	12	0.1	0.0
Access to pipeline ROW from U.S. Highway 77	AR-040	N/A	Temporary	Existing Dirt / Gravel Road	Open Land, Barren	0.2	None	20	0.4	0.0
Access to pipeline ROW from U.S. Highway 77 via County Road 4100	AR-041	N/A	Temporary	Existing Paved Road	Barren, Open Land	0.1	None	20	0.3	0.0

Appendix C (continued) Permanent and Temporary Access Roads for the Rio Bravo Pipeline System										
Access Road	Access Road ID	Nearest MP	Permanent / Temporary	Existing / New	Current Land Use	Length (miles)	Modification Required	Final Width (feet)	Impacts (acres)[a]	
									Con	Op
Willacy County (continued)										
Access to pipeline ROW from U.S. Highway 77	AR-042	N/A	Temporary	Existing Two Track Road	Open Land	0.6	None	12	0.8	0.0
Access to pipeline ROW from County Road 3695 via County Road 445	AR-043	N/A	Temporary	Existing Dirt / Gravel Road	Open Land, Agricultural Land	0.1	None	20	0.3	0.0
Access to Mainline Valve Site 4 from County Road 3142	AR-044	83.6	Permanent	New	Agricultural Land	<0.1	Grade and Gravel	20	0.0[e]	0.0[e]
Access to pipeline ROW from County Road 1420	AR-045	N/A	Temporary	Existing Dirt / Gravel Road	Agricultural Land	0.2	None	20	0.4	0.0
Access to pipeline ROW from County Road 1420	AR-046	N/A	Temporary	Existing Dirt / Gravel Road	Industrial / Commercial	<0.1	None	20	<0.1	0.0
Access to pipeline ROW from County Line Rd	AR-047	N/A	Temporary	Existing Dirt / Gravel Road	Agricultural Land	<0.1	None	12	<0.1	0.0
Access to pipeline ROW from County Line Rd	AR-048	N/A	Temporary	Existing Two Track Road	Agricultural Land, Open Water	<0.1	None[d]	12	<0.1	0.0
Cameron County										
Access to Mainline Valve Site 5 from Johnson Rd	AR-049	100.5	Permanent	New	Agricultural Land	<0.1	Grade and Gravel	20	0.0[e]	0.0[e]

Appendix C (continued)
Permanent and Temporary Access Roads for the Rio Bravo Pipeline System

Access Road	Access Road ID	Nearest MP	Permanent / Temporary	Existing / New	Current Land Use	Length (miles)	Modification Required	Final Width (feet)	Impacts (acres)[a]	
									Con	Op
Cameron County (continued)										
Access to pipeline ROW from County Road 1847	AR-050	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	0.4	None	20	1.0	0.0
Access to pipeline ROW from County Road 1847	AR-051	N/A	Temporary	Existing Dirt / Gravel Road	Open Land	<0.1	None	12	<0.1	0.0
Access to pipeline ROW from County Road 1847	AR-052	N/A	Temporary	Existing Dirt / Gravel Road	Open Land, Upland Shrub / Forested Land	0.3	None	20	0.8	0.0
Avoidance of stream (SS-T05-003)	AR-053	N/A	Temporary	Existing Two Track Road	Barren, Open Land, Upland Shrub / Forested Land	0.1	None[c]	12	0.2	0.0
Access to Mainline Valve Site 6 from Tract 43 Rd	AR-054	119.5	Permanent	New	Agricultural Land	<0.1	Grade and Gravel	20	0.0[e]	0.0[e]
Access to pipeline ROW from Old Port Isabel Rd	AR-055	N/A	Temporary	Existing Two Track Road	Emergent Wetlands	4.2	None	12	6.1	0.0
Access to pipeline ROW on Port Property	AR-056	N/A	Temporary	Existing Two Track Road	Emergent Wetlands	1.2	None	12	1.8	0.0
Access to pipeline ROW off U.S. Highway 48	AR-057	N/A	Temporary	Existing Two Track Road	Barren, Upland Shrub / Forested Land	0.2	None	12	0.3	0.0

Appendix C (continued) Permanent and Temporary Access Roads for the Rio Bravo Pipeline System										
Access Road	**Access Road ID**	**Nearest MP**	**Permanent / Temporary**	**Existing / New**	**Current Land Use**	**Length (miles)**	**Modification Required**	**Final Width (feet)**	**Impacts (acres)[a]**	
									Con	**Op**
Cameron County (continued)										
Access to pipeline ROW off U.S. Highway 48	AR-058	132.5	Temporary	Existing Dirt / Gravel Road	Barren, Emergent Wetlands	0.1	None	12	0.1	0.0
Access to pipeline ROW off U.S. Highway 48	AR-059	132.7	Temporary	Existing Dirt / Gravel Road	Barren	<0.1	None	12	<0.1	0.0
Access to pipeline ROW off U.S. Highway 48	AR-060	134.1	Temporary	Existing Dirt / Gravel Road	Industrial / Commercial, Open Land, Emergent Wetlands	0.1	None	12	0.1	0.0
Access to pipeline ROW off U.S. Highway 48	AR-061	134.7	Temporary	Existing Two Track Road	Barren, Upland Shrub / Forested Land, Emergent Wetlands	<0.1	None	12	0.1	0.0
Access to pipeline ROW off U.S. Highway 48	AR-062	135.2	Temporary	Existing Two Track Road	Barren, Emergent Wetlands	<0.1	None	12	0.1	0.0
Access to pipeline ROW off U.S. Highway 48	AR-063	135.3	Temporary	Existing Two Track Road	Upland Shrub / Forested Land, Emergent Wetlands	<0.1	None	12	0.1	0.0
Access to pipeline ROW off U.S. Highway 48	AR-064	135.4	Temporary	Existing Two Track Road	Emergent Wetlands	<0.1	None	12	0.1	0.0

Appendix C (continued)
Permanent and Temporary Access Roads for the Rio Bravo Pipeline System

Access Road	Access Road ID	Nearest MP	Permanent / Temporary	Existing / New	Current Land Use	Length (miles)	Modification Required	Final Width (feet)	Impacts (acres)[a]	
									Con	Op

[a] Impact calculations for access roads do not include those portion of the access road that overlap the permanent ROW.
[b] The access road is in both Jim Wells and Kleberg Counties.
[c] The access road would cross a waterbody via an existing culvert.
[d] The access road would cross a waterbody via a temporary culvert or equipment mats, which would be removed following construction.
[e] This access road runs directly in the pipeline centerline, no additional impacts would occur.

APPENDIX D

RIO GRANDE LNG PROJECT PROJECT-SPECIFIC UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN

CP16-454-000

CP16-455-000

Rio Grande LNG Project
Rio Bravo Pipeline Project

Resource Report 1: General Project Description

Appendix 1.L (part A)
Project-Specific Upland Erosion Control, Revegetation, and Maintenance Plan
Revision 4

December 2017

Prepared for:

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List of Appendices

Abbreviations and Acronyms

ATWS	additional temporary work space
BSC	Brownsville Ship Channel
Director	Director of the Office of Energy Projects
FERC	Federal Energy Regulatory Commission
LNG	liquefied natural gas
Pipeline System	the pipeline and all associated facilities owned by Rio Bravo Pipeline Company, LLC
Project	Terminal and Pipeline System
Project-Specific Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Project-Specific Procedures	Project-Specific Wetland and Waterbody Construction and Mitigation Procedures
RB Pipeline	Rio Bravo Pipeline Company, LLC
RG Developers	Rio Grande LNG, LLC, and Rio Bravo Pipeline Company, LLC
RGLNG	Rio Grande LNG, LLC
ROW	right-of-way
Secretary	Secretary of FERC
Terminal	RGLNG's natural gas liquefaction facility and LNG export terminal

1 Applicability

A. Rio Grande LNG, LLC (RGLNG) proposes to construct a natural gas liquefaction facility and liquefied natural gas (LNG) export terminal (Terminal) in Cameron County, Texas, along the north embankment of the Brownsville Ship Channel (BSC). In concert with the Terminal, Rio Bravo Pipeline Company, LLC (RB Pipeline) proposes to construct an associated pipeline system (Pipeline System) within the State of Texas running between multiple interconnects at the Agua Dulce Hub[1] and the Terminal site. RGLNG and RB Pipeline are hereinafter referred to collectively as the "RG Developers," and the Terminal and Pipeline System are hereinafter referred to collectively as the "Project."

B. The intent of this Upland Erosion Control, Revegetation, and Maintenance Plan (Project-Specific Plan) is to identify baseline mitigation measures for minimizing erosion and enhancing revegetation for the Project. The Terminal portion of the Project will have six liquefaction trains, four LNG tanks, two marine jetties for ocean-going LNG vessels, and one turning basin. The Pipeline System will include two parallel 42-inch-diameter pipelines running between the Agua Dulce Market Area and the Terminal (a distance of approximately 135.5 pipeline miles), a 2.4-mile Header System, three compressor stations, two interconnect booster stations, associated metering sites, mainline valve sites, access roads, and temporary contractor/pipe yards.

The RG Developers will specify in their application for a new Federal Energy Regulatory Commission (FERC) authorization and in prior notice and advance notice filings, any individual measures in this Project-Specific Plan they consider unnecessary, technically infeasible, or unsuitable due to local conditions, and will fully describe any alternative measures they will use. The RG Developers will also explain how the alternative measures will achieve a comparable level of mitigation. This Project-Specific Plan is based on the FERC Upland Erosion Control, Revegetation, and Maintenance Plan (FERC 2013). Deviations from FERC's plan proposed by the RG Developers to reflect site-specific conditions are **bolded** in the text.

Based on the existing climatic conditions in the Project area, construction will be possible on a year-round basis. As such, this Project-Specific Plan omits discussions regarding measures necessary to "winterize" an active right-of-way (ROW) due to weather conditions, which may preclude

[1] The Agua Dulce Hub is located in Nueces County, Texas, and includes connections for the following pipelines: Houston Pipe Line Company Pipeline, Gulf South Pipeline, Kinder Morgan Texas Pipelines, Natural Gas Pipeline Co. of America, Transcontinental Gas Pipeline, Tennessee Gas Pipeline, TransTexas Gas, and EPGT Texas Pipeline. Based on the proposed Pipeline System interconnects being relatively close to the Agua Dulce Hub, it is expected that pricing indicators for the Pipeline System feed natural gas will be comparable to those at the Agua Dulce Hub. The proposed Pipeline System interconnect locations will hereafter be collectively referred to as the "Agua Dulce Market Area."

construction for an extended period. Additionally, based on existing conditions, little if any rock will be encountered during construction and the RG Developers do not anticipate the need for blasting as part of the construction for either the Terminal or the Pipeline System.

Once the Project is authorized, the RG Developers will request further changes as variances to the measures in this Project-Specific Plan. The Director of the Office of Energy Projects (Director) will consider approval of variances upon the RG Developers' written request, if the Director agrees that a variance:

1. Provides equal or better environmental protection;
2. Is necessary because a portion of this Project-Specific Plan is infeasible or unworkable based on Project-specific conditions; or
3. Is specifically required in writing by another federal, state, or Native American land management agency for the portion of the Project on its land or under its jurisdiction.

Project-related impacts on wetland and waterbody systems are addressed in the Project-Specific Wetland and Waterbody Construction and Mitigation Procedures (Project-Specific Procedures).

2 Supervision and Inspection

2.1 Environmental Inspection

1. The RG Developers will assign, at a minimum, one Environmental Inspector for the Terminal and one Environmental Inspector for each pipeline construction spread during construction and restoration (as defined in Section 5).
2. Environmental Inspectors will work in conjunction with all other activity inspectors.
3. Environmental Inspectors will have the authority to stop activities that violate the environmental conditions of FERC's Order, stipulations of other environmental permits or approvals, or landowner easement agreements, and to order appropriate corrective action.

2.2 Responsibilities of Environmental Inspectors

At a minimum, the Environmental Inspectors will be responsible for:

1. Inspecting construction activities for compliance with the requirements of the Project-Specific Plan and Procedures, the environmental conditions of FERC's Order, the mitigation

measures (as approved and/or modified by the Order), other environmental permits and approvals, and environmental requirements in landowner easement agreements;

2. Identifying, documenting, and overseeing corrective actions, as necessary, to bring an activity back into compliance;
3. Verifying that the limits of authorized construction work areas and locations of access roads are visibly marked before clearing and maintained throughout construction;
4. Verifying the location of signs and highly visible flagging that mark the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;
5. Identifying erosion/sediment control and soil stabilization needs in all areas;
6. Ensuring that the design of slope breakers/diversion terraces/water bars will not cause erosion or direct water into sensitive environmental resource areas, including cultural resource sites, wetlands, waterbodies, and sensitive species habitats;
7. Verifying that dewatering activities are properly located and monitored to ensure no deposition of sand, silt, and/or sediment into sensitive environmental resource areas; stopping dewatering activities if such deposition is occurring and ensuring the design of the discharge is changed to prevent reoccurrence; and verifying that dewatering structures are removed after completion of dewatering activities;
8. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and to determine the need for corrective action;
9. Advising the Chief Construction Inspector when environmental conditions (such as wet weather) make it advisable to restrict or delay construction activities to avoid topsoil mixing or excessive compaction;
10. Ensuring restoration of contours and topsoil;
11. Verifying that the soils imported for agricultural or residential use are certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;
12. Ensuring that erosion control devices are properly installed to prevent sediment flow into sensitive environmental resource areas (e.g., wetlands, waterbodies, cultural resource sites, and sensitive species habitats) and onto roads, and determining the need for additional erosion control devices;
13. Inspecting and ensuring the maintenance of temporary erosion control measures at least:
    a. On a daily basis in areas of active construction or equipment operation,

   b. A minimum of once a week in areas with no construction or equipment operation, and

   c. Within 24 hours of each 0.5 inch of rainfall;

14. Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification, or as soon as conditions allow if compliance with this time frame would result in greater environmental impacts;

15. Keeping records of compliance with the environmental conditions of FERC's Order, the mitigation measures in the Project's application submitted to FERC, and other federal or state environmental permits during active construction and restoration;

16. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase; and

17. Verifying that locations for any disposal of excess construction materials for beneficial reuse comply with the requirements noted in Section 3.5, below.

3 Pre-construction Planning

Before initiating construction, the RG Developers will take the following steps:

3.1 Construction Work Areas

1. Identify all construction work areas (e.g., construction ROW, additional temporary workspace (ATWS) areas, pipe storage and contractor yards, borrow and disposal areas, access roads) that would be needed for safe construction. The RG Developers will ensure that appropriate cultural resources and biological surveys are conducted, as determined necessary by the appropriate federal and state agencies.

2. The RG Developers will expand any required cultural resources and endangered species surveys in anticipation of the need for activities outside of authorized work areas.

3. Plan construction sequencing to limit the amount and duration of open trench sections, as necessary, to prevent excessive erosion or sediment flow into sensitive environmental resource areas.

3.2 Drain Tile and Irrigation Systems

1. At present, no drain tile or irrigation systems are present at the Terminal and no drain tile or irrigation systems have been identified along the Pipeline System.
2. During the course of easement negotiations, RB Pipeline will attempt to locate existing drain tiles and irrigation systems and future drain tile systems that are likely to be installed within three years of the authorized construction.
3. If identified, the construction and repair/replacement of drain tile areas and irrigation systems will be performed in accordance with RB Pipelines' construction contract documents, drawings, specifications, and/or landowner requirements.

3.3 Grazing Deferment

No grazing occurs on the Terminal site. RB Pipeline will evaluate the feasibility of obtaining grazing-deferment plans along the Pipeline System with willing landowners and/or grazing permittees to minimize disturbance of revegetation efforts by grazing.

3.4 Road Crossings and Access Points

The RG Developers' construction contractor will ensure safe and accessible conditions at all roadway crossings and access points during construction and restoration.

3.5 Disposal Planning

The RG Developers will identify locations for the regular collection, containment, and disposal of excess construction materials and debris (e.g., timber, slash, mats, garbage, and drill cuttings and fluids) throughout the construction process. Disposal of materials is subject to compliance with all applicable federal, state, and local laws and permit requirements.

3.6 Agency Coordination

The RG Developers will coordinate with the appropriate local, state, and federal agencies, as outlined in this Project-Specific Plan and/or as required by FERC Order. As appropriate, the RG Developers will:

1. Obtain written recommendations from the local soil conservation authorities or land managers regarding permanent erosion control and revegetation specifications;

2. Develop specific procedures in coordination with the appropriate agencies to prevent the introduction or spread of invasive species, noxious weeds, and soil pests resulting from construction and restoration activities; and

3. Develop specific procedures in coordination with the appropriate agencies and landowners, as necessary, to allow for livestock and wildlife movement and protection during construction.

3.7 Spill Prevention and Response Procedures

RGLNG will develop a Spill Prevention and Response Procedures document for the Terminal and RB Pipeline will develop a Spill Prevention and Response Procedures document for the Pipeline System, as specified in Section 4.A of the Project-Specific Procedures. A copy of each document will be filed with the Secretary of FERC (Secretary) prior to construction and made available in the field on each construction spread.

3.8 Residential Construction

The closest residence to the Terminal is over 2 miles for the site. The current alignment of the Pipeline System indicates that two residences are currently located within 50 feet of existing roads that will be used as temporary access roads. RB Pipeline will implement speed restrictions and ensure that access roads are adequately watered to minimize dust generation in proximity to these homes. If subsequent route alternatives are developed that result in additional residences being located within 50 feet of construction workspaces, RB Pipeline will develop site-specific residential construction plans in conjunction with FERC and individual landowners.

4 Installation

4.1 Approved Areas of Disturbance

1. RGLNG will limit Project-related ground disturbance to the Terminal site, Haul Road and Port Isabel dredge pile, approved storage yards and/or parking areas, approved disposal areas, and other areas approved in FERC's Order

2. RB Pipeline will limit Project-related ground disturbance to the construction ROW, extra workspace areas, ATWS areas, pipe storage yards, borrow and disposal areas, access roads, and other areas approved in FERC's Order. The RG Developers will obtain the Director's

approval for any Project-related ground-disturbing activities outside these areas. This requirement does not apply to activities needed to comply with the Project-Specific Plan and Procedures (e.g., slope breakers, energy-dissipating devices, dewatering structures, drain tile system repairs) or minor field realignments and workspace shifts per landowner needs or requirements that do not affect other landowners or sensitive environmental resource areas. All construction or restoration activities outside of authorized areas are subject to all applicable survey and permit requirements and landowner easement agreements.

3. The pipeline construction ROW widths in upland locations for this Project will include the following:

   a. Both Pipeline 1 and Pipeline 2 will be constructed within the same nominal 125-foot ROW (see Appendix A for the typical ROW configuration);

   b. The Header System between MP HS-0.0 and MP HS-0.8 will be constructed with a nominal ROW width of 125 feet to accommodate two pipelines. The remainder of the Header System will be constructed within a nominal ROW width of 100 feet as only a single pipeline is proposed;

   c. RB Pipeline will establish an operational ROW of 75 feet following construction of Pipeline 1. No additional permanent ROW will be proposed for Pipeline 2.

   d. RB Pipeline will establish an operational ROW of 75 feet on the Header System between MP HS-0.0 and MP HS-0.8. RB Pipeline will establish an operational ROW of 50 feet for the remainder of the Header System.

The expanded construction ROW width is necessary to allow for both safe and efficient construction of the pipelines. Due to the size of the pipelines and the size of the equipment necessary to install the larger pipelines, RB Pipeline believes that the increased ROW width is justified.

Because Pipeline 2 will be installed approximately 18 months following the installation of Pipeline 1, RB Pipeline is proposing to establish and maintain easement agreements for the 75-foot operational ROW to avoid the need for multiple easement negotiations with landowners.

RB Pipeline is proposing extra workspaces and ATWS areas outside of the nominal construction ROWs to ensure safe and efficient construction where required by site-specific conditions. Additionally, RB Pipeline may elect to use extra workspace and ATWS areas in limited non-wetland or non-forested areas for truck turn-arounds if no reasonable alternative access exists.

Project use of extra workspace and ATWS areas outside of authorized work areas is subject to landowner or land management agency approval and compliance with all applicable survey and permit requirements. The RG Developers will request variances (per Section 1.B) for these additional areas and will report the requested and approved variances in their weekly construction reports to FERC. The RG Developers will include the following information in the reports:

a. The location of each additional area, by milepost, and reference to previously filed alignment sheets showing the additional areas;

b. Identification of the filing at FERC containing evidence that the additional areas were previously surveyed; and

c. A statement that landowner approval has been obtained and is available in Project files.

4.2 Topsoil Segregation

1. Construction at the Terminal site will result in the long-term modification of site conditions required to establish proposed site grade elevations. RGLNG is not proposing topsoil segregation.

2. Unless the landowner or land management agency specifically approves otherwise, RB Pipeline will reasonably prevent mixing topsoil with subsoil by stripping topsoil from the trench and subsoil storage area (ditch plus spoil side method) in:

   a. Cultivated or rotated croplands and managed pastures; and

   b. Other areas, at the landowner's or land managing agency's request.

3. Where topsoil segregation is required, RB Pipeline will reasonably:

   a. Segregate at least 12 inches of topsoil in deep soils (more than 12 inches of topsoil); and

   b. Make every effort to segregate the entire topsoil layer in soils with less than 12 inches of topsoil.

4. RB Pipeline will reasonably maintain separation of salvaged topsoil and subsoil throughout all construction activities.

5. Segregated topsoil will not be used for padding the pipe, constructing temporary slope

breakers or trench plugs, improving or maintaining roads, or as a fill material.

6. RB Pipeline will reasonably stabilize topsoil piles and minimize loss due to wind and water erosion with use of sediment barriers, mulch, temporary seeding, tackifiers, or functional equivalents, where necessary.

4.3 Drain Tiles

1. As previously indicated, no drain tile is present at the Terminal Site and RB Pipeline has not identified, to date, any drain tile as being potentially impacted. During easement negotiations, RB Pipeline will verify any extent of drain tiles along the Pipeline System.
2. If identified, RB Pipeline will mark locations of drain tiles damaged during construction.
3. RB Pipeline will probe all drainage tile systems within the area of disturbance to check for damage.
4. If drain tiles are damaged during Project construction, damaged drain tiles will be repaired to their original, or better, condition. Landowners may request the use of qualified specialists for testing and repairs.
5. RB Pipeline will not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree.
6. In areas where drain tiles exist or are planned, RB Pipeline will ensure that the depth of cover over the pipeline is sufficient to avoid interference with drain tile systems. If drain tiles are identified, RB pipeline will install Pipeline 2 to at least the same depth of cover as Pipeline 1.

4.4 Irrigation

No irrigation systems occur at the Terminal site and to date, RB Pipeline has identified no irrigation systems to be traversed by the Pipeline System. If affected, RB Pipeline will reasonably maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.

4.5 Road Crossings and Access Points

1. The RG Developers' contractors will maintain safe and accessible conditions at all road crossings and access points during construction.
2. If crushed stone access pads are used in residential or agricultural areas, stone will be placed on synthetic fabric to facilitate removal.

3. The use of tracked equipment on public roadways will be minimized, and any soil or gravel spilled or tracked onto roadways will be removed daily or more frequently, as necessary to maintain safe road conditions.

4. Any damages to roadway surfaces, shoulders, and bar ditches will be repaired.

4.6 Temporary Erosion Control

The RG Developers will install temporary erosion controls immediately after initial disturbance of the soil. Temporary erosion controls will be maintained throughout construction (on a daily basis) and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete. RGLNG will establish appropriate erosion control (sediment barriers) around the perimeter of disturbance areas at the Terminal site to minimize offsite migration of excavated/disturbed soils into adjacent undisturbed areas and into the BSC. RB Pipeline may use a combination of temporary slope breakers, trench plugs, sediment barriers and mulching to provide temporary erosion control.

4.6.1 Temporary Slope Breakers

1. Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction ROW for Pipelines 1 and 2, and the Header System. Temporary slope breakers may be constructed of materials such as soil, silt fence, stake hay or straw bales, or sand bags. RB Pipeline notes that topography across the Project area is minimal and, as such, slope breakers will be used on a limited and site-specific basis.

2. RB Pipeline will install temporary slope breakers on all disturbed areas, as necessary to avoid excessive erosion. Temporary slope breakers will be installed on slopes greater than 5% where the base of the slope is less than 50 feet from a waterbody, wetland, and road crossing at the following spacing (closer spacing shall be used, if necessary):

Slope %	Spacing (feet)
5-15	300
15-30	200
>30	100

3. Direct the outfall of each temporary slope breaker to a stable, well-vegetated area or construct an energy-dissipating device at the end of the slope breaker and off the construction ROW.

4. Position the outfall of each temporary slope breaker to prevent sediment into wetlands, waterbodies, or other sensitive environmental resource areas.

4.6.2 Temporary Trench Plugs

Temporary trench plugs are intended to segment a continuous open trench along Pipelines 1 and 2 or the Header System prior to backfill.

1. Temporary trench plugs may consist of unexcavated portions of the trench, sandbags, or some functional equivalent.
2. Temporary trench plugs will be positioned, as necessary, to reduce trenchline erosion and minimize the volume and velocity of trench water flow at the base of slopes.

4.6.3 Sediment Barriers

Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments beyond approved workspaces or into sensitive resources.

1. Sediment barriers will be constructed with materials such as silt fences, staked hay or straw bales, compacted earth (e.g., drivable berms across travel ways), sand bags, or other appropriate materials.
2. RGLNG will establish sediment barriers around the perimeter of Terminal site disturbance.
3. At a minimum, RB Pipeline will install and maintain temporary sediment barriers across the entire construction ROW at the base of slopes greater than 5% where the base of the slope is less than 50 feet from a waterbody, wetland, or road crossing until revegetation is successful, as defined in this Project-Specific Plan. Adequate room will be left between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.
4. Sediment barriers will be installed where wetlands or waterbodies are adjacent to and downslope of construction work areas. Such barriers will be installed along the edge of these areas, as necessary, to prevent sediment flow into the wetland or waterbody.

4.6.4 Mulch

1. RB Pipeline will install mulch all slopes (except in cultivated cropland), concurrent with or immediately after seeding, where needed to stabilize the soil surface and to reduce wind and water erosion. Mulch will be uniformly spread over the area to cover at least 75% of the ground surface at a rate of 2 tons/acre of straw or its equivalent, unless the local soil conservation authority, landowner, or land management agency approves otherwise in writing.
2. Mulch will consist of weed-free straw or hay, wood fiber hydromulch, erosion control fabric,

or some functional equivalent.

3. All sloped disturbed upland areas (except cultivated cropland) will be mulched prior to seeding if:

    a. Final grading and installation of permanent erosion control measures will not be completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas), as noted in Section 5.1; or

    b. Construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions.

4. If mulching occurs before seeding, mulch application will be increased on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre of straw equivalent.

5. If wood chips are used as mulch, not more than 1 ton/acre will be applied, and the equivalent of 11 pounds/acre of available nitrogen (at least 50% of which is slow release) will be added.

6. The Environmental Inspectors will ensure that mulch is adequately anchored to minimize loss due to wind and water.

7. When anchoring with liquid mulch binders, RB Pipeline will use rates recommended by the manufacturer. RB Pipeline will not use liquid mulch binders within 100 feet of wetlands or waterbodies, except where the product is certified environmentally non-toxic by the appropriate state or federal agency or an independent standards-setting organization.

8. RB Pipeline will not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat, unless the product is specifically designed to minimize harm to wildlife. Erosion control fabric will be anchored with staples or other appropriate devices.

5 Restoration

5.1 Cleanup

1. Clean-up operations at the Terminal will be phased in accordance with Project stages. As specific aspects of the Terminal are completed, clean-up will establish final grade and restore areas that are outside facility footprints. As necessary, RGLNG will import clean topsoil and reseed areas that will be maintained in a herbaceous state during operations.

2. Cleanup operations for the Pipeline System will begin immediately following backfill

operations, with final grading, topsoil replacement, and installation of permanent erosion control structures completed within 20 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, temporary erosion controls (e.g., temporary slope breakers, sediment barriers, and mulch) will be maintained until conditions allow cleanup to be completed.

3. RB Pipeline may elect to leave a temporary travel lane open to allow access by construction traffic if the temporary erosion control structures are installed, as specified in Section 4.6, and inspected and maintained, as specified in Section 2. When access is no longer required, the travel lane will be removed and the ROW will be restored.

4. Although minimal amounts of rock are expected during construction of the Pipeline System, rock in excess of 4 inches will be removed from at least the top 12 inches of soil in all cultivated or rotated cropland, managed pastures, hayfields, and residential areas, and at the landowner's request for other areas. The size, density, and distribution of rock on the construction work area shall be similar to adjacent areas not disturbed by construction. The landowner or land management agency may approve other provisions in writing.

5. The construction ROW will be graded to restore pre-construction contours as closely as practicable and to leave the soil in the proper condition for planting.

6. Construction debris will be removed from all construction work areas unless the landowner or land management agency approves leaving materials onsite for beneficial reuse, stabilization, or habitat restoration.

7. Temporary sediment barriers will be removed when replaced by permanent erosion control measures or when revegetation is successful.

5.2 Permanent Erosion Control Devices

The establishment of the perimeter level will serve to contain runoff at the terminal site. RGLNG intends to utilize horticultural planting where feasible to reduce visual impacts and for controlling erosion and managing runoff. Currently, RGLNG plans to vegetate the Terminal's northern levee with grass. Similar landscaping will also be utilized, when feasible, in some of the open space areas associated with the operational offices and parking areas in the northeast portion of the Terminal, as well as the open space surrounding ponds 3 through 5 along the southern edge of the Terminal.

RGLNG will integrate shoreline protection along the length of the facilities as protection measures from erosion and scour. Embankments will be established with stable slopes and further protected with rip-rap.

RB Pipeline notes that topography across the Pipeline System is low and, as such, permanent erosion control devices, including trench breakers and/or slope breakers will be used on a limited and site-specific basis.

5.2.1 Trench Breakers (if applicable)

1. Trench breakers are intended to slow the flow of subsurface water. Trench breakers may be made of materials such as sand bags or polyurethane foam. Topsoil will not be used in trench breakers.
2. A RB Pipeline engineer or similarly qualified professional will determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as, and upslope of, permanent slope breakers.
3. In agricultural fields and residential areas where slope breakers are not typically required, trench breakers will be installed at the same spacing as if permanent slope breakers were required.
4. At a minimum, trench breakers will be installed at the base of slopes greater than 5% where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland. Trench beakers will be installed as wetland boundaries, as specified in the Project-Specific Plan and Procedures, but will not be installed within a wetland.

5.2.2 Permanent Slope Breakers (if required)

1. Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction ROW, and prevent sediment deposition into sensitive resources. Permanent slope breakers will be constructed of soil or some functional equivalent.
2. Permanent slope breakers will be constructed and maintained using spacing recommendations obtained from the local soil conservation authorities or the land managing agency.

   In the absence of written recommendations, the following spacing will be used unless closer spacing is necessary to avoid excessive erosion on the construction ROW:

Slope %	Spacing (feet)
5-15	300
15-30	200
>30	100

3. Slope breakers will be constructed to divert surface flow to a stable area without causing

water to pool or erode behind the breaker. In the absence of a stable area, appropriated energy-dissipating devices will be constructed at the end of the breaker.

4. As necessary, slope breakers will extend slightly (up to 4 feet) beyond the construction ROW to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction ROW, they will be subject to compliance with all applicable survey requirements.

5.3 Soil Compaction Mitigation

Soil Compaction is actually necessary at the Terminal site to create a suitable foundation for proposed facilities. With the end result being permanent facilities, RGLNG is proposing no mitigation for soil compaction. The following mitigation for potential soil compaction along the Pipeline System will be implemented.

1. RB Pipeline will test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. RB Pipeline will also conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate pre-construction conditions. The Environmental Inspectors will use penetrometers or other appropriate devices to conduct tests.
2. In areas where agricultural grounds have been severely compacted, RB Pipeline will plow with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, RB Pipeline will plow the subsoil before replacing the segregated topsoil. If subsequent construction and cleanup activities result in further compaction, the RG Developers will provide additional tilling.
3. RB Pipeline will provide appropriate soil compaction mitigation in severely compacted residential areas.

5.4 Revegetation

Revegetation of the Terminal site will occur in a staged manner as specific aspects of the Terminal are completed. RGLNG intends to utilize horticultural planting where feasible to reduce visual impacts and for controlling erosion and managing runoff. Currently, RGLNG plans to vegetate the Terminal’s northern levee with grass. Similar landscaping will also be utilized, when feasible, in some of the open space areas associated with the operational offices and parking areas in the northeast portion of the Terminal, as well as the open space surrounding ponds 3 through 5 along the southern edge of the Terminal.

The intent of revegetation for the Pipeline System is to promote the reestablishment of native vegetation (except at permanent above ground facilities) in accordance with the following:

1. General

   a. RB Pipeline will ensure successful revegetation of soils temporarily disturbed by Pipeline System-related activities, except as noted below.

   b. All turf, ornamental shrubs, and specialized landscaping will be restored in accordance with the landowner's request by personnel familiar with local horticultural and turf-establishment practices, or the landowner will be compensated.

2. Soil Additives

   Fertilizer and soil pH modifiers will be added in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner. Recommended soil pH modifier and fertilizer will be incorporated into the top 2 inches of soil as soon as practicable after application.

3. Seeding Requirements

   a. A seedbed will be prepared in disturbed areas to a depth of 3 to 4 inches using appropriate equipment to provide a firm seedbed. If the restoration contractor elects to use hydroseeding, the contractor will ensure that restored areas are adequately prepared to facilitate lodging and germination of seed.

   b. Disturbed areas will be seeded in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or the request of the landowner or land management agency. RB Pipeline does not propose seeding in cultivated croplands unless requested to do so by the landowner.

   c. Seeding of permanent vegetation will be performed within the recommended seeding dates. If seeding cannot be performed within those dates, appropriate temporary erosion control measures, as discussed in Section 4.6, will be used, and seeding of permanent vegetation will be conducted at the beginning of the next recommended seeding season. Dormant seeding or temporary seeding of annual species may also be used, if necessary, to establish cover, as approved by the Environmental Inspector. Lawns may be seeded on a schedule established with the landowner.

   d. In the absence of written recommendations from the local soil conservation authorities, all disturbed soils will be seeded within six working days of final grading, weather and soil conditions permitting

e. Seeding rates will be based on pure live seed and will be seeded within 12 months of seed testing.

f. Legume seed will be treated with an inoculant specific to the species, using the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydro).

g. In the absence of written recommendations from the local soil conservation authorities, landowner, or land management agency to the contrary, a seed drill equipped with a culti-packer will be used for seed application.

h. RB Pipeline may elect to use broadcast seeding or hydroseeding in lieu of drilling application. If this method of application is elected, seed will be applied at double the recommended seeding rates. Where seed is broadcast, the seedbed will be firmed with a culti-packer or roller after seeding. If site conditions exist that may limit the effectiveness of this equipment, RB Pipeline may elect other alternatives (e.g., use of a chain drag) to lightly cover seed after application, as approved by the Environmental Inspector.

6 Off-road Vehicle Control

RGLNG will operate the Terminal as a limited-access facility. Fencing and additional security measures will be implemented to prevent unauthorized access.

RB Pipeline will offer to install and maintain measures to control unauthorized vehicle access to the ROW for the Pipeline System to each owner or land manager. These measures may include:

A. Signs;

B. Fences with locking gates; and/or

C. Slash and vegetative barriers, pipe barriers, or a line denoting a barrier across the ROW.

7 Post-construction Activities and Reporting

7.1 Monitoring and Maintenance

1. The RG Developers will conduct follow-up inspections of all disturbed areas, as necessary, to determine the success of revegetation and address landowner concerns. At a minimum, the RG Developers will conduct inspections after the first and second growing seasons.

2. Revegetation in non-agricultural areas shall be considered successful if, upon visual survey, the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation shall be considered successful when the visual survey shows that crop growth and vigor are similar to adjacent undisturbed portions of the same field, unless the easement agreement specifies otherwise.

3. The RG Developers will continue revegetation efforts until revegetation is successful.

4. RB Pipeline will monitor and correct problems with drainage and irrigation systems resulting from the Pipeline System's construction in agricultural areas until restoration is successful.

5. Restoration will be considered successful when the ROW surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless otherwise approved by the landowner or land managing agency, per Section 5.1), revegetation is successful, and proper drainage has been restored.

6. RB Pipeline will provide routine vegetation mowing or clearing over the full width of the permanent ROW in uplands. Mowing or clearing will not be conducted more frequently than every three years. However, to facilitate periodic corrosion/leak surveys, RB Pipeline proposes to annually maintain a corridor not exceeding 10 feet in width centered on each pipeline to maintain the 10-foot corridor in an herbaceous state. In no case will RB Pipeline provide routine vegetation mowing or clearing during the migratory bird nesting season (between March 1 and August 31) of any year unless specifically approved in writing by the U.S. Fish and Wildlife Service.

7. In the event that construction of Pipeline 2 is significantly delayed, RB Pipeline would reduce the width of maintained ROW to 50 feet centered over Pipeline 1.

8. RB Pipeline will implement measures noted in Section 6 to control unauthorized off-road vehicle use, in cooperation with the landowner, throughout the life of the Project. Signs,

gates, and permanent access roads will be maintained, as necessary.

7.2 Reporting

1. The RG Developers will maintain records that identify, by milepost:
   a. Method of application, application rate, and type of fertilizer, ph-modifying agent, seed, and mulch used;
   b. Acreage treated;
   c. Dates of backfilling and seeding;
   d. Names of landowners requesting special seeding treatment and a description of the follow-up actions;
   e. The location of any subsurface drainage repairs or improvements made during restoration; and
   f. Any problem areas and how the problems were addressed.
2. The RG Developers will file quarterly activity reports that with the Secretary to document the results of required follow-up inspections, as noted in Section 7.1, including any problem areas identified by the landowner. Corrective actions will continue for at least two years following construction.

Appendix A: Upland ROW Construction Typicals

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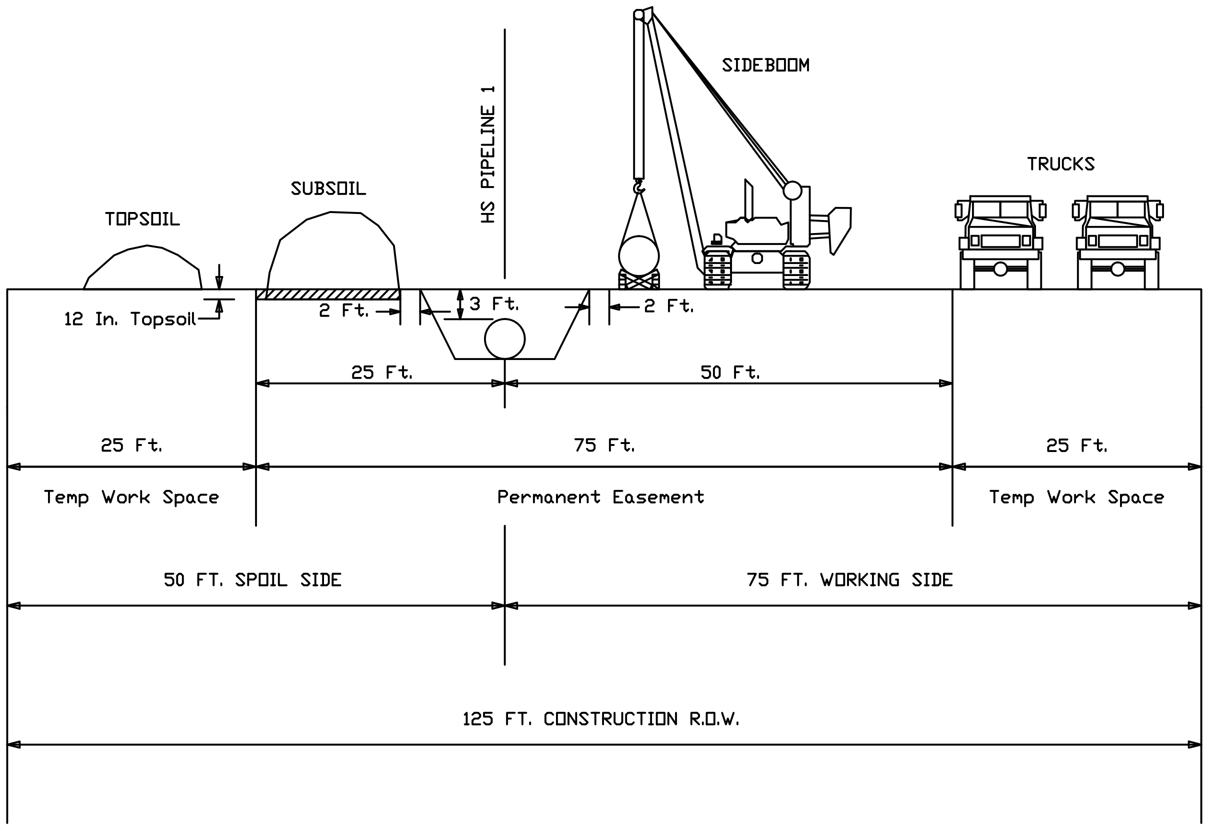

SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
50'	75'	125'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN ALL CULTIVATED OR ROTATED CROPLANDS AND MANAGE PASTURES AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

HEADER SYSTEM
TYPICAL UPLAND CONSTRUCTION P1
DUAL PIPELINES

TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-001	0
SCALE: N.T.S.	APP.: JEA		

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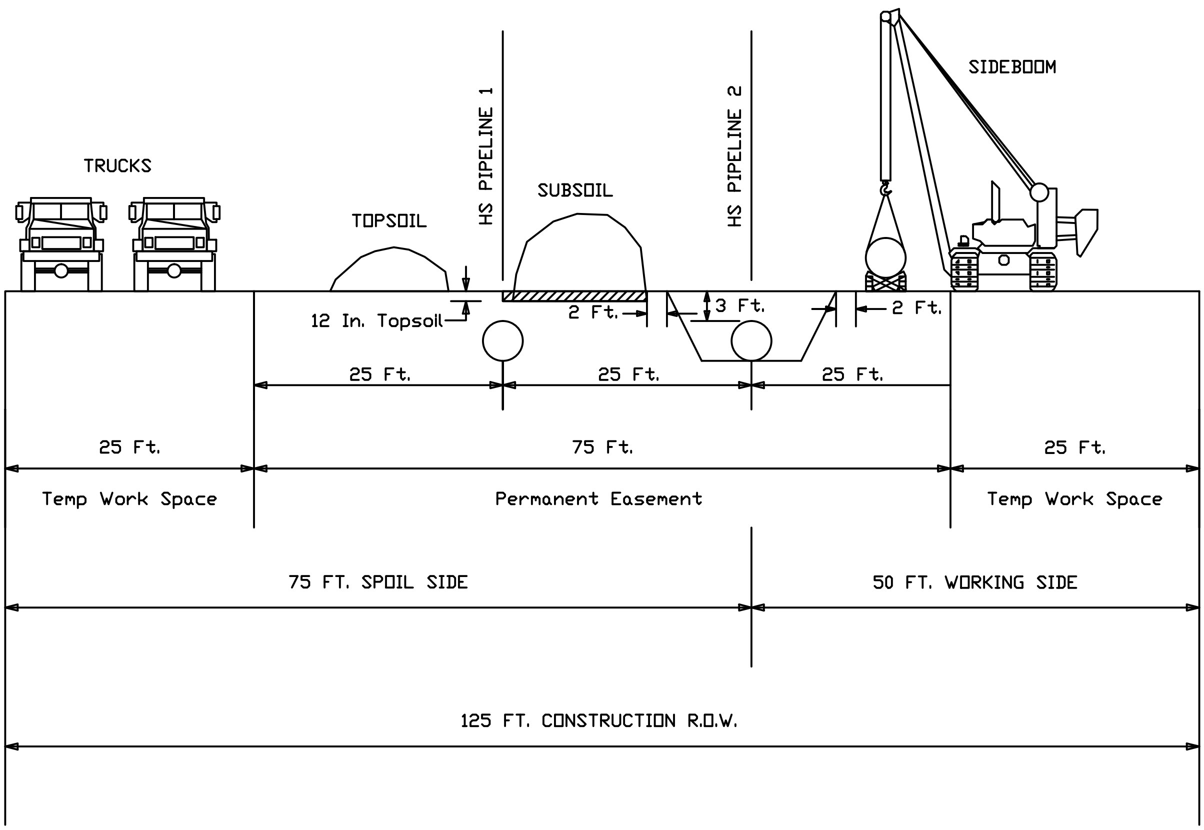

SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
75'	50'	125'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN ALL CULTIVATED OR ROTATED CROPLANDS AND MANAGE PASTURES AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

HEADER SYSTEM
TYPICAL UPLAND CONSTRUCTION P2
DUAL PIPELINES
TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-002	0
SCALE: N.T.S.	APP.: JEA		

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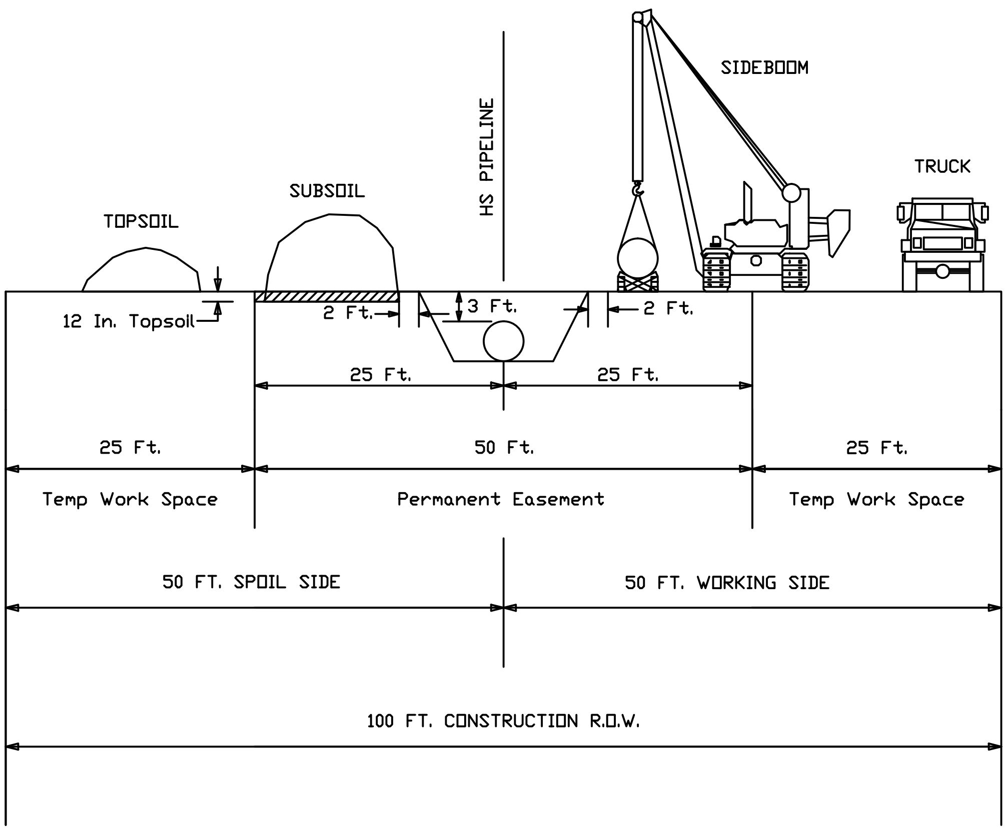

SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
50'	50'	100'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

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REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

HEADER SYSTEM
TYPICAL UPLAND CONSTRUCTION
NO PARALLEL FEATURE (SINGLE LINE)

TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-003	0
SCALE: N.T.S.	APP.: JEA		

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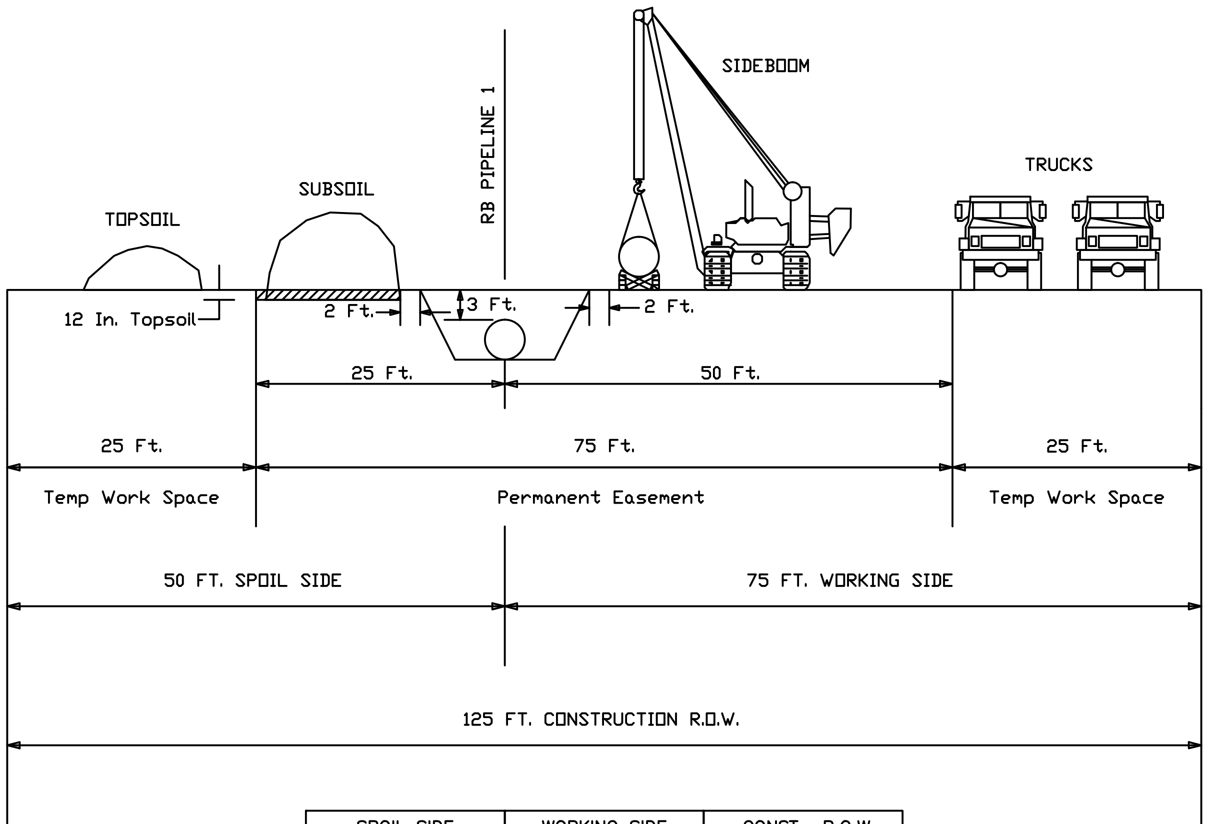

SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
50'	75'	125'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN ALL CULTIVATED OR ROTATED CROPLANDS AND MANAGE PASTURES AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL UPLAND CONSTRUCTION P1

TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
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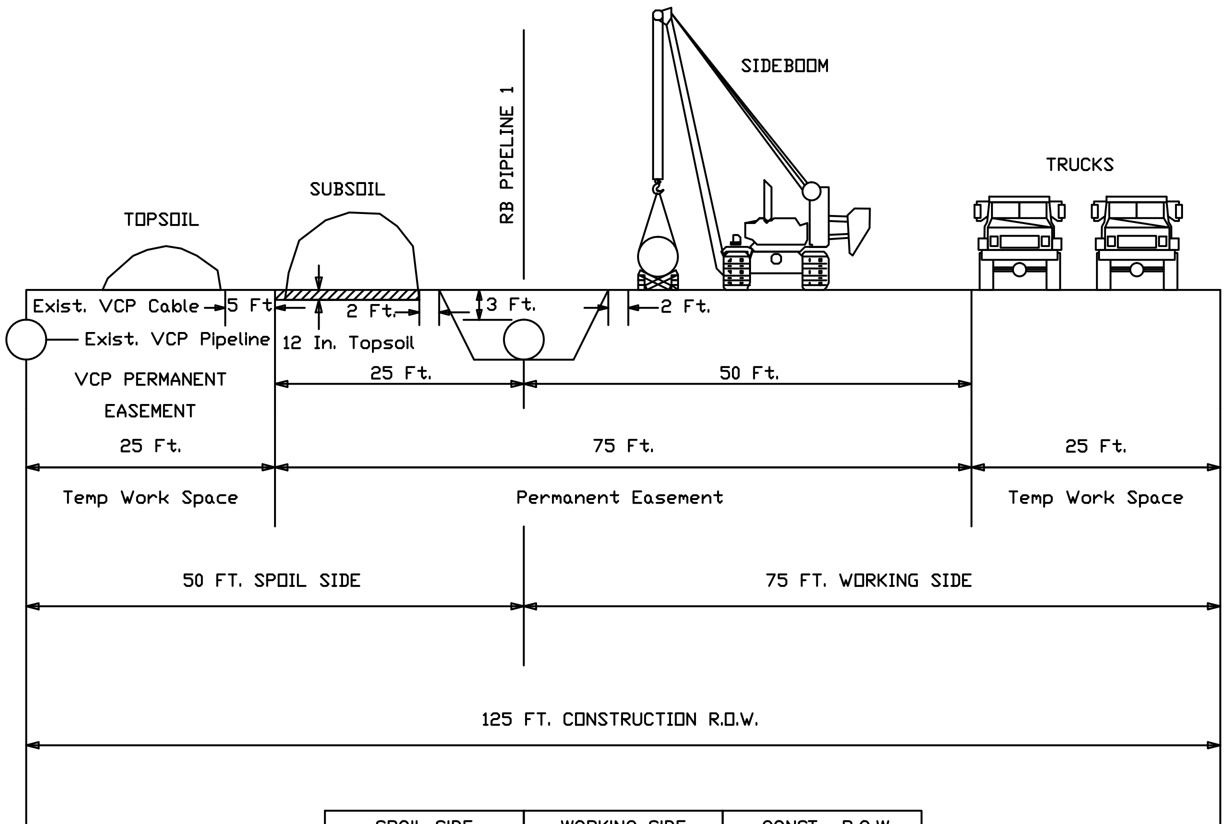

SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
50'	75'	125'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN ALL CULTIVATED OR ROTATED CROPLANDS AND MANAGE PASTURES AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.
3. NO EXCAVATION WITHIN EXISTING PIPELINE PERMANENT EASEMENT.
4. NO EQUIPMENT DIRECTLY ABOVE EXISTING PIPELINE WITH OUT PADDING/MATTING AND APPROVAL OF OWNER AUTHORITY.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL UPLAND CONSTRUCTION P1
ADJACENT TO VALLEY CROSSING PIPELINE

TEXAS

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CHECKED BY: JRK	DATE: 10/13/17	108642-99-005	0
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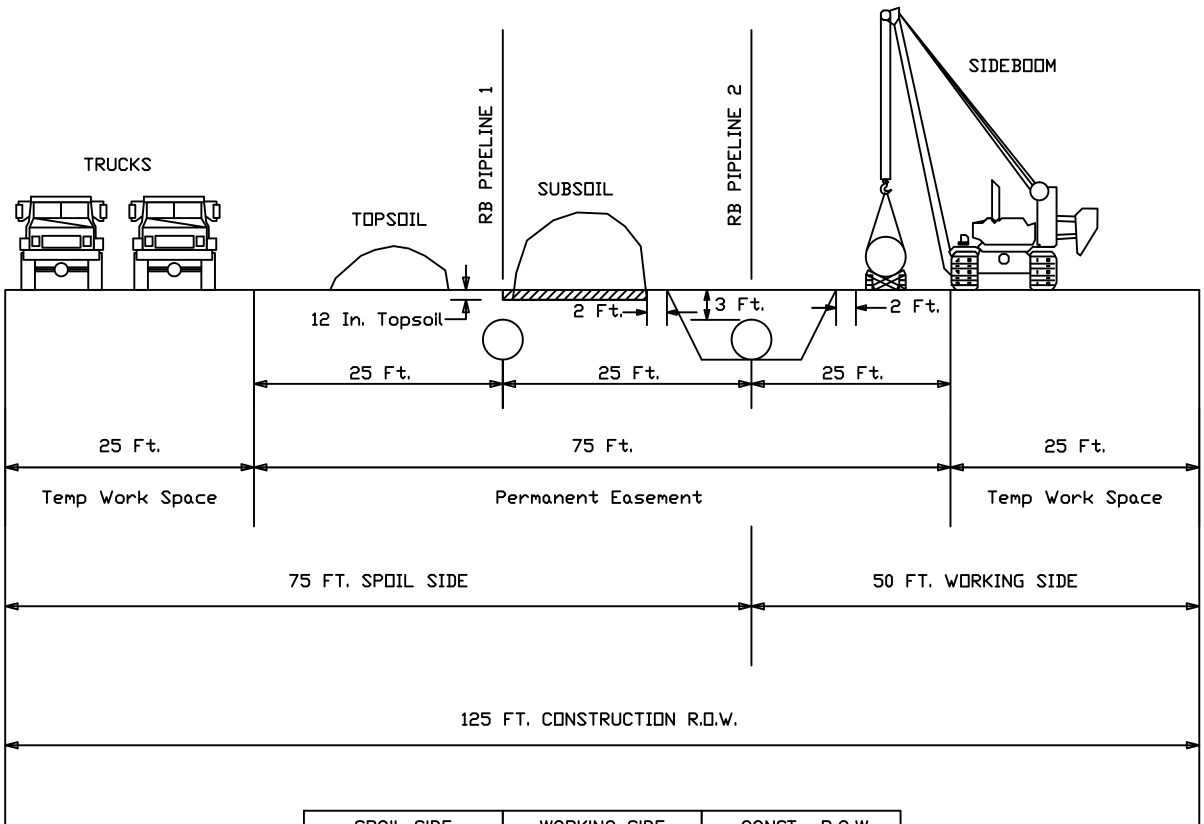

SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
75'	50'	125'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN ALL CULTIVATED OR ROTATED CROPLANDS AND MANAGE PASTURES AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.

3. NO EQUIPMENT DIRECTLY ABOVE EXISTING PIPELINE WITH OUT PADDING/MATTING AND APPROVAL OF OWNER AUTHORITY.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL UPLAND CONSTRUCTION P2

TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-016	0
SCALE: N.T.S.	APP.: JEA		

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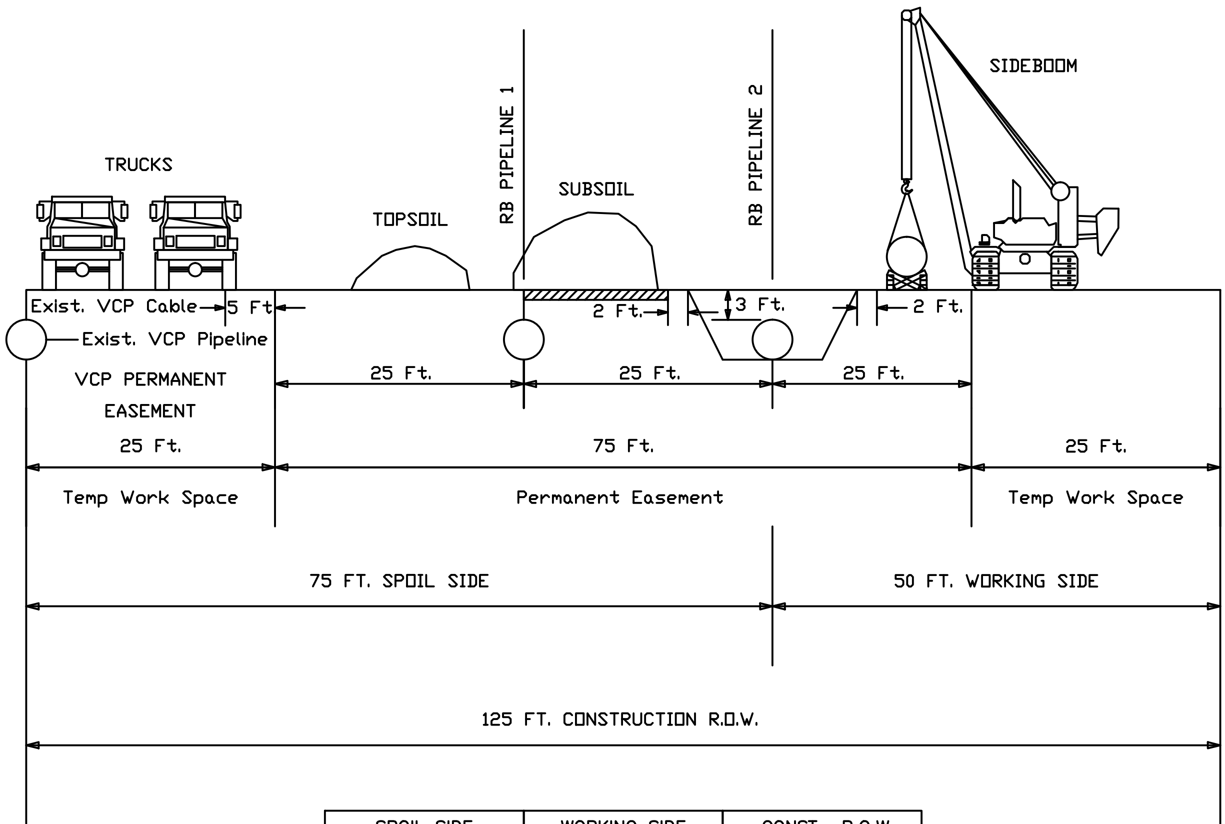

SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
75'	50'	125'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN ALL CULTIVATED OR ROTATED CROPLANDS AND MANAGE PASTURES AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.

3. NO EXCAVATION WITHIN EXISTING PIPELINE PERMANENT EASEMENT.

4. NO EQUIPMENT DIRECTLY ABOVE EXISTING PIPELINE WITH OUT PADDING/MATTING AND APPROVAL OF OWNER AUTHORITY.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL UPLAND CONSTRUCTION P2
ADJACENT TO VALLEY CROSSING PIELINE

TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-017	0
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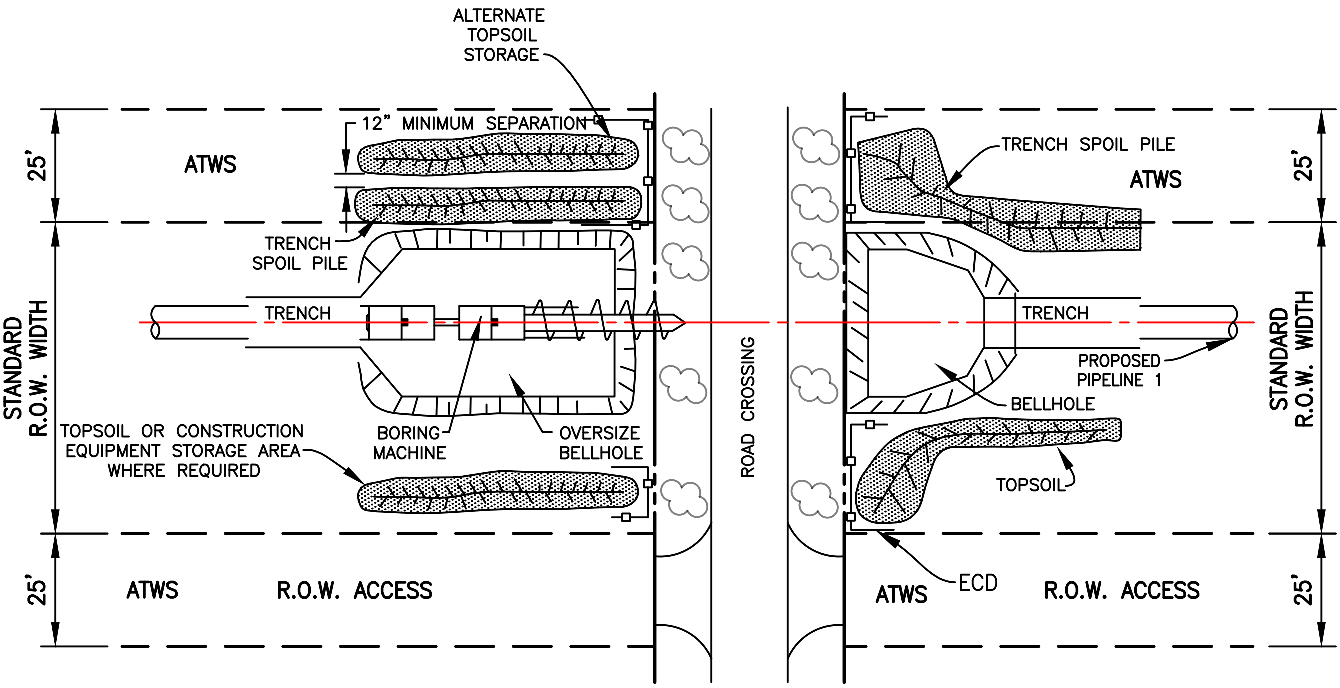
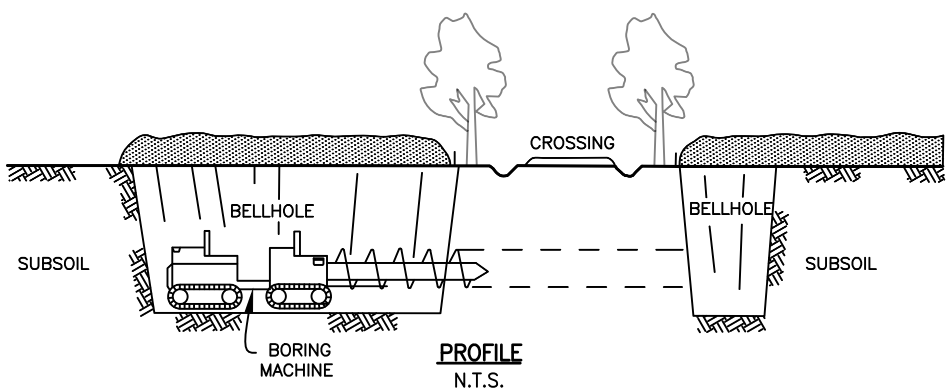


PLAN VIEW
N.T.S.

ECD:
EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).



PROFILE
N.T.S.

NOTES:

1. UNLESS THE LANDOWNER OR LAND MANAGEMENT AGENCY SPECIFICALLY APPROVES OTHERWISE, RB PIPELINE WILL REASONABLY PREVENT MIXING TOPSOIL WITH SUBSOIL BY STRIPPING TOPSOIL FROM THE TRENCH AND SUBSOIL STORAGE AREA (DITCH PLUS SPOIL SIDE METHOD) IN:
   A. CULTIVATED OR ROTATED CROPLANDS AND MANAGED PASTURES: AND
   B. OTHER AREAS, AT THE LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.
2. EXCAVATE BELLHOLE, STORING TRENCH SPOIL ON OPPOSITE SIDE OF RIGHT-OF-WAY FROM TOPSOIL, OR ADJACENT TO TOPSOIL MAINTAINING A 12" MINIMUM SEPARATION TO AVOID MIXING TOPSOIL AND TRENCH SPOIL.
3. THE CONSTRUCTION ROW WILL BE GRADED TO RESTORE PRE-CONSTRUCTION CONTOURS AS CLOSELY AS PRACTICABLE AND TO LEAVE THE SOIL IN THE PROPER CONDITION FOR PLANTING.
4. INSTALL TEMPORARY EROSION CONTROL PROCEDURES AS SPECIFIED BY THE PIPELINE INSPECTOR.

REV.	DATE	BY	DESCRIPTION	CHK.
1	12/21/17	MM	RE-ISSUED FOR USE	RK
0	07/27/17	TRB	ISSUED FOR USE	RDC

PROJECT NO.

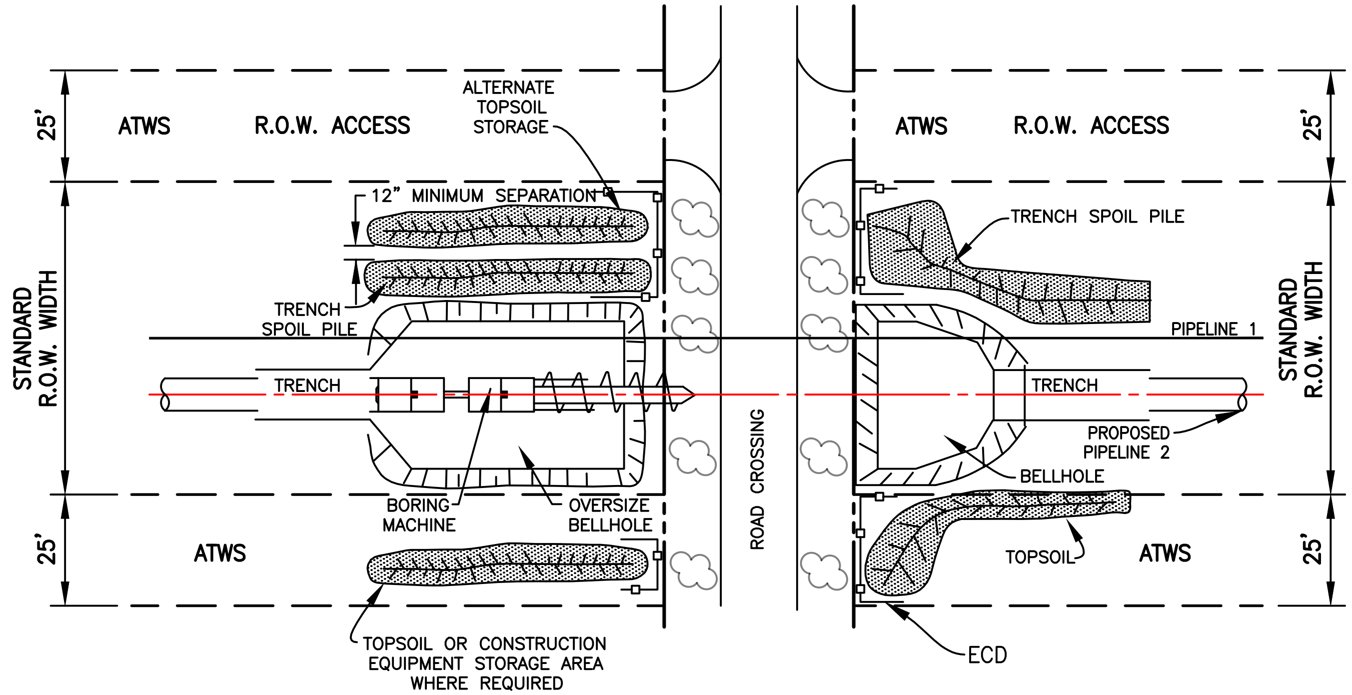
WOOD GROUP USA, INC.

DAKOTA ACCESS, LLC

TYPICAL
ROAD BORE CROSSING AND SPOIL SALVAGE (PIPELINE 1)

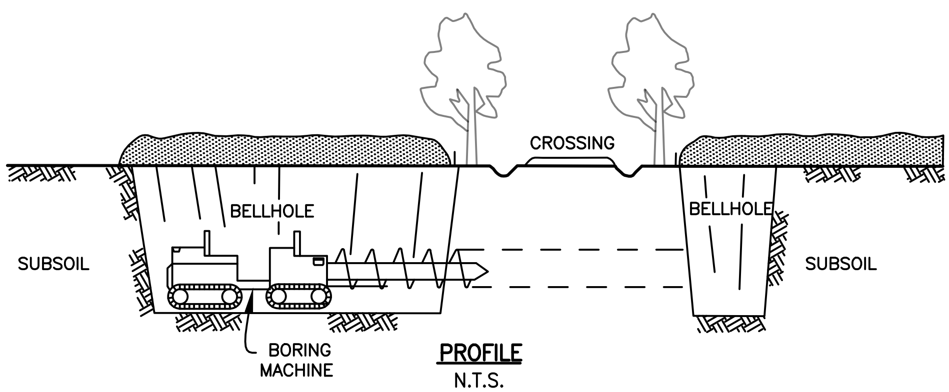
DRAWN BY: DAH	DATE: 07/27/17	DWG. NO.	REV.
CHECKED BY: RDC	DATE: 07/27/17	108642-P3-1	1
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-P3-1_REV1.dwg PLOT DATE: 12/19/2017 BY: MUALLEM, MIKE (WG MUSTANG)



PLAN VIEW
N.T.S.

ECD:
EROSION CONTROL DEVICE
(SILT FENCE, STRAW BALES OR SANDBAGS).



PROFILE
N.T.S.

NOTES:

1. UNLESS THE LANDOWNER OR LAND MANAGEMENT AGENCY SPECIFICALLY APPROVES OTHERWISE, RB PIPELINE WILL REASONABLY PREVENT MIXING TOPSOIL WITH SUBSOIL BY STRIPPING TOPSOIL FROM THE TRENCH AND SUBSOIL STORAGE AREA (DITCH PLUS SPOIL SIDE METHOD) IN:
   A. CULTIVATED OR ROTATED CROPLANDS AND MANAGED PASTURES: AND
   B. OTHER AREAS, AT THE LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST.
2. EXCAVATE BELLHOLE, STORING TRENCH SPOIL ON OPPOSITE SIDE OF RIGHT-OF-WAY FROM TOPSOIL, OR ADJACENT TO TOPSOIL MAINTAINING A 12" MINIMUM SEPARATION TO AVOID MIXING TOPSOIL AND TRENCH SPOIL.
3. THE CONSTRUCTION ROW WILL BE GRADED TO RESTORE PRE-CONSTRUCTION CONTOURS AS CLOSELY AS PRACTICABLE AND TO LEAVE THE SOIL IN THE PROPER CONDITION FOR PLANTING.
4. INSTALL TEMPORARY EROSION CONTROL PROCEDURES AS SPECIFIED BY THE PIPELINE INSPECTOR.

REV.	DATE	BY	DESCRIPTION	CHK.
1	12/21/17	MM	RE-ISSUED FOR USE	RK
0	07/27/17	TRB	ISSUED FOR USE	RDC

PROJECT NO.

WOOD GROUP USA, INC.

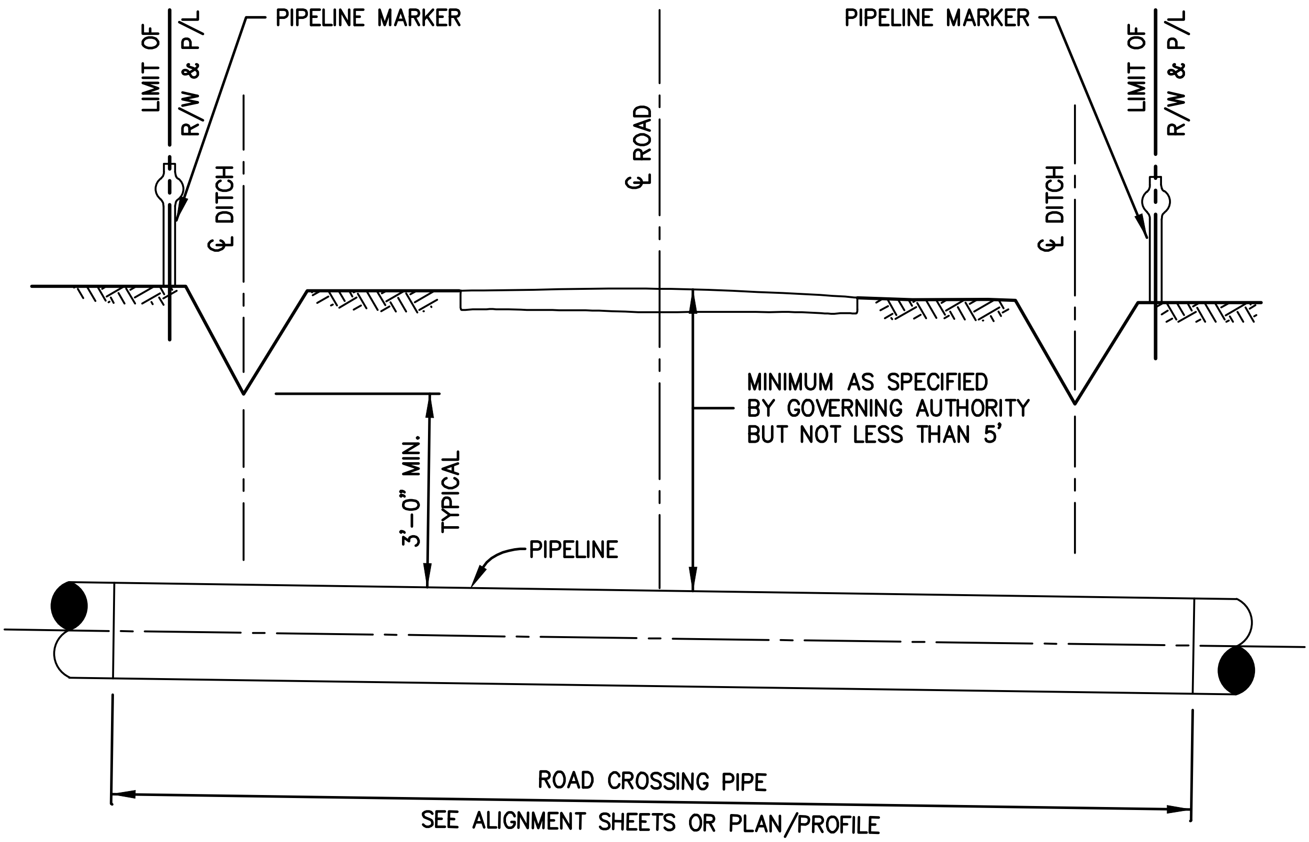
DAKOTA ACCESS, LLC

TYPICAL
ROAD BORE CROSSING AND SPOIL SALVAGE (PIPELINE 2)

DRAWN BY: DAH	DATE: 07/27/17	DWG. NO.	REV.
CHECKED BY: RDC	DATE: 07/27/17	108642-P3-2	1
SCALE: N.T.S.	APP.:		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-P3-2_REV1.dwg PLOT DATE: 12/19/2017 BY: MUALLEM, MIKE (WG MUSTANG)

TYPICAL OPEN CUT ROAD CROSSING INSTALLATION



NOTES:

1. CROSSING INSTALLATION SHALL BE IN ACCORDANCE WITH APPLICABLE PERMIT AND SPECIFICATIONS. A 25' OFFSET IS REQUIRED BETWEEN PIPELINE 1 AND PIPELINE 2.
2. MINIMUM LENGTH OF PIPE REQUIRED FOR ROAD CROSSING SHALL BE AS SPECIFIED ON ALIGNMENT DRAWING. FULL JOINTS OF PIPE SHALL BE USED UNLESS OTHERWISE DIRECTED BY THE COMPANY.
3. NO FIELD BENDS ALLOWED WITHIN 50 FEET OF ROAD R/W AND PIPE TO BE LAND STRAIGHT WITH A MINIMUM OF 5 FEET COVER UNDER CENTERLINE OF ROAD UNLESS OTHERWISE NOTED.
4. A CATHODIC PROTECTION TEST LEAD SHALL BE INSTALLED WHERE SPECIFIED BY THE COMPANY.
5. PAVEMENT TO BE PROTECTED WHEN CROSSING WITH CONSTRUCTION EQUIPMENT.
6. PIPELINE MARKERS SHALL BE INSTALLED WHERE SPECIFIED BY THE COMPANY.
7. THE ROADWAY TO BE RESTORED BACK TO ORIGINAL CONDITION.

REV.	DATE	BY	DESCRIPTION	CHK.
0	7/27/17	TRB	ISSUED FOR USE	RC

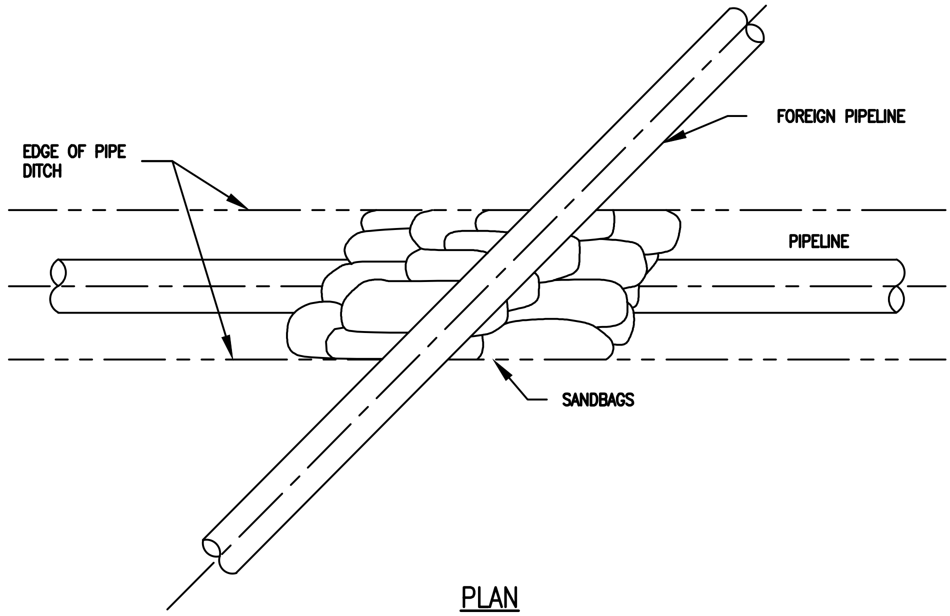
PROJECT NO.

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

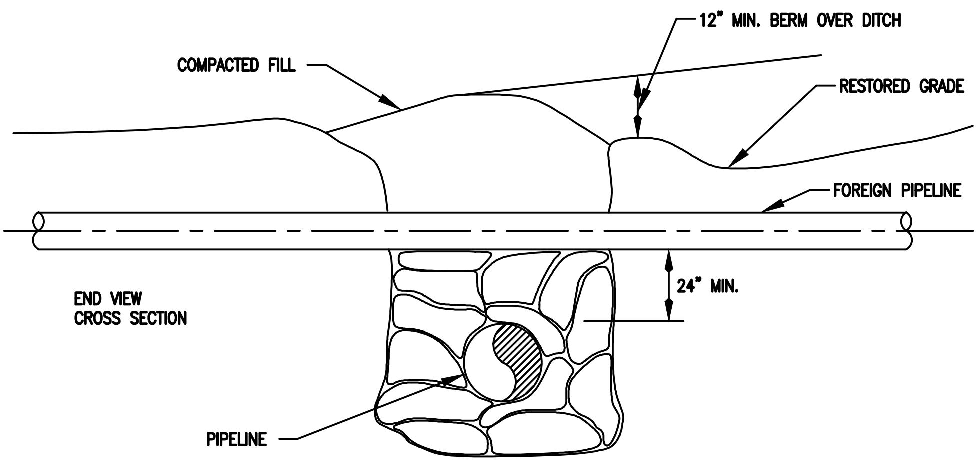
RIO BRAVO PIPELINE

TYPICAL OPEN CUT ROAD CROSSING INSTALLATION

DRAWN BY: TRB	DATE: 07/27/17	DWG. NO.	REV.
CHECKED BY: RC	DATE: 07/27/17	108642-P3-3	0
SCALE: N.T.S.	APP.:		



PLAN



ELEVATION

NOTES:

1. BURIED PIPELINE(S) LOCATIONS & DEPTHS TO BE DETERMINED BY ELECTRONIC MEANS IN ADVANCE OF PIPELINE INSTALLATION AND CONFIRMED BY CAREFULLY EXPOSING BY HAND DIGGING OR "HYDRO VAC".
2. OWNER OF BURIED PIPELINE(S) SHALL BE NOTIFIED A LEAST 48 HOURS IN ADVANCE OF EXCAVATION OF CROSSING, OR AS SPECIFIED ON THE CROSSING LINE LIST. THE OWNER OR HIS REPRESENTATIVE SHALL BE REQUESTED TO BE PRESENT ON SITE WHEN THE CROSSING OPERATION IS TO TAKE PLACE.
3. PIPELINE CROSSINGS SHALL BE CONSTRUCTED ACCORDING TO THIS DETAIL, OR A SPECIFIC CROSSING PERMIT OR DRAWING IF MORE STRINGENT.

HGA
HUNT, GUILLOT & ASSOCIATES, L.L.C.
603 REYNOLDS DRIVE
RUSTON, LA 71270
PHONE: 318-255-6825

RIO BRAVO PIPELINE

REV	DESCRIPTION	CHK.	DATE	APP.	DATE
P	PRELIMINARY	–	–	–	–

HGA JOB NO: 8.J15028.00.0		
DESIGNED BY	HGA	08/17/16
DRAWN BY	RH	08/17/16
CHECKED BY	REB	08/17/16
APPROVED BY	MB	08/17/16
SCALE	NTS	

TYPICAL FOREIGN PIPELINE CROSSING

DRAWING NUMBER 8.J15028-TYP-1Y

REV. P

APPENDIX E

RIO GRANDE LNG PROJECT PROJECT-SPECIFIC WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

CP16-454-000

CP16-455-000

Rio Grande LNG Project
Rio Bravo Pipeline Project

Resource Report 1: General Project Description

Appendix 1.L (part B)
Project-Specific Wetland and Waterbody Construction and Mitigation Procedures
Revision 3

November 2017

Prepared for:

RIO GRANDE LNG
A NextDecade Company

RIO BRAVO PIPELINE

3 Waterway Square Place, Suite 400
The Woodlands, TX 77380

Prepared by:

ecology and environment, inc.
Global Environmental Specialists
2 Riverway, Suite 625
Houston, TX 77056

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Table of Contents

List of Appendices

Abbreviations and Acronyms

ATWS	additional temporary work space
BSC	Brownsville Ship Channel
Director	Director of the Office of Energy Projects
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
HDD	horizontal directional drilling
LNG	liquefied natural gas
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory
Pipeline System	Pipeline and all associated facilities owned by Rio Bravo Pipeline Company, LLC
Project	Terminal and Pipeline System
Project-Specific Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Project-Specific Procedures	Project-Specific Wetland and Waterbody Construction and Mitigation Procedures
RB Pipeline	Rio Bravo Pipeline Company, LLC
RG Developers	Rio Grande LNG, LLC, and Rio Bravo Pipeline Company, LLC
RGLNG	Rio Grande LNG, LLC
ROW	right-of-way
Secretary	Secretary of FERC
Terminal	RGLNG's natural gas liquefaction facility and LNG export terminal
TPWD	Texas Parks and Wildlife Department
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1 Applicability

A. Rio Grande LNG, LLC (RGLNG) proposes to construct a natural gas liquefaction facility and liquefied natural gas (LNG) export terminal (Terminal) in Cameron County, Texas, along the north embankment of the Brownsville Ship Channel (BSC). In concert with the Terminal, Rio Bravo Pipeline Company, LLC (RB Pipeline) proposes to construct an associated pipeline system (Pipeline System) within the state of Texas running between multiple interconnects at the Agua Dulce Hub[1] and the Terminal site. RGLNG and RB Pipeline are hereinafter referred to collectively as the "RG Developers," and the Terminal and Pipeline System are hereinafter referred to collectively as the "Project."

B. The intent of the Wetland and Waterbody Construction and Mitigation Procedures (Project-Specific Procedures) is to identify baseline mitigation measures for minimizing the extent and duration of Project-related disturbance on wetlands and waterbodies. The Terminal portion of the Project will have six LNG liquefaction trains, four LNG tanks, two marine jetties for ocean-going LNG vessels, and one turning basin. The Pipeline System will include two parallel 42-inch-diameter pipelines running between the Agua Dulce Market Area and the Terminal (a distance of approximately 135.5 pipeline miles), a 2.4-mile Header System, three compressor stations, two interconnect booster stations, associated metering sites, mainline valve sites, access roads, and temporary contractor/pipe yards.

C. The RG Developers will specify in their applications for a new Federal Energy Regulatory Commission (FERC) authorization, and in prior notice and advance notice filings, any individual measures in these Project-Specific Procedures they consider unnecessary, technically infeasible, or unsuitable due to local conditions and will fully describe any alternative measures they will use. The RG Developers will also explain how the alternative measures will achieve a comparable level of mitigation. These Project-Specific Procedures are based on the FERC Wetland and Waterbody Construction and Mitigation Procedures (FERC 2013). Deviations from the FERC Procedures proposed by the RG Developers to reflect site-specific conditions are **bolded** in the text.

[1] The Agua Dulce Hub is located in Nueces County, Texas, and includes connections for the following pipelines: Houston Pipe Line Company Pipeline, Gulf South Pipeline, Kinder Morgan Texas Pipelines, Natural Gas Pipeline Co. of America, Transcontinental Gas Pipeline, Tennessee Gas Pipeline, TransTexas Gas, and EPGT Texas Pipeline. Based on the proposed Pipeline System interconnects being relatively close to the Agua Dulce Hub, it is expected that pricing indicators for the Pipeline System feed natural gas will be comparable to those at the Agua Dulce Hub. The proposed Pipeline System interconnect locations will hereafter be collectively referred to as the "Agua Dulce Market Area.

Based on the location of the Project in South Texas, no coldwater fisheries are present in the Project area, and these Project-Specific Procedures omit discussions regarding coldwater fisheries. Additionally, based on existing conditions, little if any rock will be encountered during construction, and the RG Developers do not anticipate the need for blasting as part of the construction for either the Terminal or the Pipeline System.

Once the Project is authorized, the RG Developers will request further changes as variances to the measures in the Project-Specific Procedures. The Director of the Office of Energy Projects (Director) will consider approval of variances upon the RG Developers' written request, if the Director agrees that a variance:

1. Provides equal or better environmental protection;
2. Is necessary because a portion of the Project-Specific Procedures is infeasible or unworkable based on Project-specific conditions; or
3. Is specifically required in writing by another federal, state, or Native American land management agency for the portion of the Project on its land or under its jurisdiction.

Project-related impacts on non-wetland areas are addressed in the Project-Specific Upland Erosion Control, Revegetation, and Maintenance Plan (Project-Specific Plan).

D. Definitions

1. "Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing and other permanent waterbodies, such as ponds and lakes:
   a. A "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing.
   b. An "intermediate waterbody" includes all waterbodies more than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing.
   c. A "major waterbody" includes all waterbodies more than 100 feet wide at the water's edge at the time of crossing.
2. "Wetland" includes any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current federal methodology for identifying and delineating wetlands.

2 Pre-construction Filing

A. The following information will be filed with the Secretary of FERC (Secretary) before initiating construction for review and written approval by the Director:

1. Site-specific justifications for additional temporary workspace (ATWS) areas that would be closer than 50 feet from a waterbody or wetland; and

2. Site-specific justifications for the use of a construction right-of-way (ROW) more than 75 feet wide in wetlands.

As discussed in Section 6 below, RB Pipeline is proposing a nominal construction ROW of 75 feet in wetland areas of less than approximately 1,000 linear feet.

Table 1.K-2 Revision 3 (November 2017) in Appendix 1.K of Resource Report 1, "General Project Description," details the site-specific justifications for ATWS that would be within wetlands and waterbodies and Table 1.K-3 Revision 1 (November 2017) in Appendix 1.K details the site-specific justifications for ATWS that would be closer than 50 feet to a wetland or waterbody, based on the current footprint for the Pipeline System.

Table 1.K-1 Revision 3 (November 2017) in Appendix 1.K of Resource Report 1, "General Project Description," details the site-specific justifications for the use of a construction ROW more than 75 feet wide in wetlands, based on the current footprint for the Pipeline System.

Table 1.K-4 Revision 3 (November 2017) in Appendix 1.K of Resource Report 1, "General Project Description," details site–specific justification for impacts to wetlands from the modification of proposed existing access roads and the creation of one new roads, based on the current footprint for the Pipeline System.

B. The RG Developers will file the following information with the Secretary before initiating construction:

1. Spill Prevention and Response Procedures, as specified in Section 4.A;

2. A schedule identifying when trenching will occur within each waterbody more than 10 feet wide within any waterbody identified as habitat for federally listed threatened or endangered species. The RG Developers will revise the schedule as necessary to provide FERC staff at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice. (Note: At this time, the RG Developers do not anticipate the need for blasting during construction.)

3. Plans for horizontal directional drilling (HDD) under wetlands or waterbodies, as specified in Section 5.2.6.d;
4. Site-specific plans for major waterbody crossings, as described in Section 5.2.9.
5. A wetland delineation report, as described in Section 6.1; and
6. Hydrostatic testing information, as specified in Section 7.2.

3 Environmental Inspectors

A. The RG Developers will assign, at a minimum, one Environmental Inspector for the Terminal and one Environmental Inspector for each pipeline construction spread during construction and restoration. The number and experience of Environmental Inspectors assigned to each spread/site will be appropriate for the length of the construction spread and the number/significance of resources affected.

B. The Environmental Inspector's responsibilities are outlined in Section 2 of the Project-Specific Plan.

4 Pre-construction Planning

A. RGLNG will develop a Spill Prevention and Response Procedures document for the Terminal and RB Pipeline will develop a Spill Prevention and Response Procedures document for the Pipeline System. Both documents will meet the applicable requirements of state and federal agencies. A copy of each document will be filed with the Secretary prior to construction and made available in the field on each construction spread.

1. The RG Developers and their contractors will structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. The RG Developers and their contractors will, at a minimum, ensure that:
   a. All employees handling fuels and other hazardous materials are properly trained;
   b. All equipment is in good operating order and inspected on a regular basis;
   c. Fuel trucks transporting fuel to onsite equipment travel only on approved access roads;

d. All equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. The activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the RG Developers and their contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;

e. Hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas;

f. Concrete-coating activities are not performed within 100 feet of a wetland or waterbody boundary unless the location is an existing industrial site designated for such use. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the RG Developers and their contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;

g. Pumps operating within 100 feet of a waterbody or wetland boundary utilize appropriate secondary containment systems to prevent spills; and

h. Bulk storage of hazardous materials, including chemicals, fuels, and lubricating oils, have appropriate secondary containment systems to prevent spills.

2. The RG Developers and their contractors will structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, the RG Developers and their contractors will:

a. Ensure that each construction crew (including cleanup crews) has sufficient supplies of absorbent and barrier materials on hand to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills and unanticipated discoveries of contamination;

b. Ensure that each construction crew has sufficient tools and material on hand to stop leaks;

c. Know the contact names and telephone numbers for all local, state, and federal agencies (including, if necessary, the U.S. Coast Guard and the National

Response Center) that must be notified of a spill; and

d. Follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.

4.1 Agency Coordination

The RG Developers will coordinate with the appropriate local, state, and federal agencies, as outlined in these Project-Specific Procedures and in the FERC Order.

5 Waterbody Crossings

Construction of the Terminal will result in the permanent modification of the site, which will include modifications along the shoreline of the BSC, and active navigation channel with the Port of Brownsville. RGLNG is coordinating directly with the USACE as part of the permitting process to develop and permit the specific in-water construction techniques and necessary mitigation measures. Impacts to the BSC resulting from construction will be permanent.

Construction of the Pipeline System will result in temporary impacts to waterbodies along the length of Pipeline 1 and 2, and the Header System. No aboveground facilities are sited within or near waterbodies.

5.1 Notification Procedures and Permits

1. The RG Developers have submitted applications to the U.S. Army Corps of Engineers (USACE) for the appropriate wetland and waterbody crossing permits.
2. If applicable, the RG Developers will provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least one week before beginning work in the waterbody, or as otherwise specified by that authority. (Note: The terminal is located in a marine environment and the BSC is not a potable surface water supply, and RB Pipeline has not identified any potable surface water supply intakes located within 3 miles downstream of waterbody crossings associated with the Pipeline System.)
3. As part of the applications to the USACE, the RG Developers are pursuing Section 401 water quality certification from the Railroad Commission of Texas.
4. The RG Developers will notify appropriate federal and state authorities at least 48 hours

before beginning dredging or trenching within waterbodies, or as specified in applicable permits.

5.2 Installation

Construction of the material offloading facility and permanent marine facilities (including dredging) at the Terminal will occur continuously spanning a multiple year timeframe. RGLNG will initiate in water activities following receipt of all permits and receiving a notice to proceed from FERC. Specific mitigation measures will be developed as part of the permitting process for the Terminal.

Construction of the Pipeline System will have more narrowly defined impacts to waterbodies. While the aboveground facilities have been sited to avoid waterbodies, the pipeline facilities will require the crossings of numerous waterbodies. RB Pipeline will adhere to the following:

1. Time Window for Construction

   As permitted by federal or state agencies, in-stream work, except that which is required to install or remove equipment bridges, will occur between June 1 and November 30.

   If a need is identified to install waterbody crossings outside of the proposed time window for construction, the RG Developers will coordinate with the U.S. Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Department (TPWD) to obtain approval and will submit appropriate documentation to FERC for approval.

2. Extra Work Areas

   a. To the extent practicable, all extra work areas (such as staging areas) and ATWS areas (such as spoil storage areas) will be located at least 50 feet away from the water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land.

   b. It may become necessary to locate ATWS within 50 feet of a stream in some areas that are not active agricultural land because of the adjacent land use or site-specific limitations. Site-specific justification for each ATWS area with a setback less than 50 feet from the water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land, will be filed by RB Pipeline with the Secretary for review and written approval by the Director. The justifications will specify the site-specific conditions that will not permit a 50-foot setback and measures to ensure that the waterbody is adequately protected.

c. The size of ATWS areas will be limited to the minimum needed to construct the waterbody crossing.

3. General Crossing Procedures

a. RB Pipeline will comply with USACE permit terms and conditions.

b. Crossings will be constructed as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.

c. Where pipelines parallel a waterbody, at least 15 feet of undisturbed vegetation will be maintained between the waterbody (and any adjacent wetland) and the construction ROW, except where maintaining this offset will result in greater environmental impact or will result in unsafe working conditions. (Note: Based on current design, RB Pipeline has not identified any locations where the pipelines will need to parallel a waterbody.)

d. If locations are identified where the pipeline will be installed such that a 15-foot vegetated buffer between the waterbody and the construction ROW cannot be maintained, RB Pipeline will file site-specific justifications with the Secretary for review and written approval by the Director. The justifications will specify the conditions that will not permit a 15-foot vegetated buffer and the measures needed to ensure the waterbody is adequately protected.

e. Where waterbodies meander or have multiple channels, the Pipeline System has been routed to minimize the number of waterbody crossings.

f. Adequate waterbody flow rates will be maintained to protect aquatic life and prevent the interruption of existing downstream uses.

g. Waterbody buffers (e.g., extra work area setbacks, refueling restrictions) will be clearly marked in the field with signs and/or highly visible flagging until construction-related ground-disturbing activities are complete.

h. Waterbodies may be crossed when they are dry and not flowing using standard upland construction techniques provided that the Environmental Inspector verifies that water is unlikely to flow between initial disturbance and final stabilization of the feature. In the event of perceptible flow, RB Pipeline will comply with all applicable Project-Specific Procedure requirements for "waterbodies," as defined in Section 1.C.1.

4. Spoil Pile Placement and Control

   a. All spoil from minor and intermediate waterbody crossings and upland spoil from major waterbody crossings will be placed in the construction ROW at least 10 feet from the water's edge or in ATWS areas, as described in Section 5.2.2.

   b. Sediment barriers will be used to prevent the flow of spoil or silt-laden water into any waterbody.

5. Equipment Bridges

   a. Only clearing equipment and equipment necessary for installing equipment bridges will cross waterbodies prior to bridge installation. The number of such crossings of each waterbody will be limited to one per piece of clearing equipment.

   b. Equipment bridges will be constructed and maintained to allow unrestricted flow and prevent soil from entering the waterbody. Examples of such bridges include:

      1) Equipment pads and culvert(s);

      2) Equipment pads or railroad car bridges without culverts;

      3) Clean rock fill and culvert(s); and

      4) Flexi-float or portable bridges.

      Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Soil will not be used to construct or stabilize equipment bridges.

   c. Equipment bridges will be designed and maintained to withstand and pass the highest flow expected to occur while the bridge is in place. Culverts will be aligned to prevent bank erosion or streambed scour. If necessary, energy-dissipating devices will be installed downstream of the culverts.

   d. Equipment bridges will be designed and maintained to prevent soil from entering the waterbody.

   e. Temporary equipment bridges will be removed as soon as practicable after permanent seeding.

   f. If there will be more than one month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the ROW is available, temporary equipment bridges will be removed as soon as practicable after final cleanup.

g. RB Pipeline will secure any necessary approval from the USACE for any permanent bridges required for operation. (Note: Based on current design, RB Pipeline has not identified any locations where permanent bridges will be required for operation).

6. Dry-Ditch Crossing Methods

a. Unless approved otherwise by the appropriate federal or state agency, the pipelines will be installed using one of the dry ditch methods outlined below for crossing waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state designated as significant warm-water fisheries or federally designated as critical habitats. (Note: Based on the current design, neither significant warm-water fisheries nor critical habitats have been identified as being impacted by the Project.) Based on ongoing discussions with the USACE, RB Pipeline anticipates that USACE will be issuing an Individual Permit for RB Pipeline rather than authorizing individual pipeline crossings under Nationwide Permit 12.

b. Dam and Pump

(Note: Based on current design, RB Pipeline is currently not proposing to use dam and pump as part of pipeline construction activities but may revert to this method on a case-by-case basis if site-specific conditions prevent use of flumed or HDD construction methods).

1) The dam-and-pump method may be used without prior approval for crossing waterbodies where pumps can adequately transfer streamflow volumes around the work area and there are no concerns about sensitive species passage.

2) Implementation of the dam-and-pump crossing method must meet the following performance criteria:

i. Pumps, including onsite backup pumps, will be sufficient to maintain downstream flows;

ii. Dams will be constructed with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);

iii. Pump intakes will be screened to minimize entrainment of fish;

iv. Streambed scour will be prevented at pump discharge; and

v. Dams and pumps will be continuously monitored to ensure proper operation throughout the waterbody crossing.

c. Flume Crossing

The flume crossing method requires implementation of the following steps:

1) Flume pipes will be installed before any trenching;

2) Sand bags, or sand bags and plastic sheeting (or the equivalent) will be used for diversion structures to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required to achieve an effective seal);

3) Flume pipe(s) will be properly aligned to prevent bank erosion and streambed scour;

4) Flume pipe(s) will not be removed during trenching, pipe laying, backfilling activities, or initial streambed restoration efforts; and

5) All flume pipes and dams that are not also part of the equipment bridge will be removed as soon as final cleanup of the stream bed and bank is complete.

d. Horizontal Directional Drilling

For each waterbody or wetland that will be crossed using HDD, RB Pipeline will file a plan with the Secretary for the review and written approval by the Director that includes:

1) Site-specific construction diagrams that show the locations of mud pits, pipe-assembly areas, and all areas to be disturbed or cleared for construction;

2) Justification that disturbed areas are limited to the minimum needed to construct the crossing;

3) Identification of any aboveground disturbance or clearing between the HDD entry and exit workspaces during construction;

4) A description of how an inadvertent release of drilling mud will be contained and cleaned up; and

5) A HDD contingency plan for crossing the waterbody or wetland in the event the HDD is unsuccessful and how the abandoned drill hole will be sealed, if necessary.

7. Crossings of Minor Waterbodies

Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

a. To the extent practicable, in-stream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) will be completed within 24 hours;

b. Streambanks and unconsolidated streambeds may require additional restoration after this period;

c. Use of equipment operating in the waterbody will be limited to that needed to construct the crossing; and

d. Equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification or protected status (e.g., agricultural or intermittent drainage ditches). However, if equipment bridges are used, they will be constructed as described in Section 5.2.5.

8. Crossings of Intermediate Waterbodies

Where a dry-ditch crossing is not required, RB Pipeline will cross intermediate waterbodies using the open-cut crossing method, with the following restrictions:

a. In-stream construction activities (not including rock-breaking measures) will be completed within 48 hours, unless site-specific conditions make completion within 48 hours infeasible;

b. Use of equipment operating in the waterbody will be limited to that needed to construct the crossing; and

c. All other construction equipment must cross on an equipment bridge, as specified in Section 5.2.5.

9. Crossings of Major Waterbodies

All flowing and perennial major waterbody crossings will be constructed using HDD methods, as presented in this Section 5.2.9. The remaining waterbodies (i.e., those waterbodies that were not identified as flowing and perennial) identified as "major" were delineated as either intermittent streams or ponds and crossing methods other than

HDD are proposed. These remaining major waterbodies are proposed to be constructed using open cut methodologies based on the expectation that they will be dry during construction. If conditions at the time of construction suggest that an alternate crossing method is merited, RB Pipeline will coordinate with FERC and USACE to modify the proposed crossing method.

Before construction, RB Pipeline will file with the Secretary a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each perennial major waterbody crossing for the review and written approval by the Director. This plan will be developed in consultation with the appropriate state and federal agencies and will include extra work areas, ATWS areas, spoil storage areas, sediment control structures, etc. as well as mitigation for navigational issues.

The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.

10. Temporary Erosion and Sediment Control

RB Pipeline will install sediment barriers (as defined in Section 5.2.4 of the Project-Specific Plan) immediately after initial disturbance of the waterbody or adjacent upland.

Sediment barriers will be properly maintained throughout construction and reinstalled as necessary (such as after backfilling the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Project-Specific Plan. However, the following specific measures will be implemented at stream crossings:

a. Sediment barriers will be installed across the entire construction ROW at all waterbody crossings where necessary to prevent the flow of sediments into the waterbody. Removable sediment barriers (or drivable berms) will be installed across the travel lane. These removable sediment barriers can be removed during the construction day, but will be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent;

b. Where waterbodies are adjacent to the construction ROW, and the ROW slopes toward the waterbody, sediment barriers will be installed along the edge of the construction ROW as necessary to contain spoil within the construction ROW and prevent sediment flow into the waterbody; and

c. Temporary trench plugs will be used at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

11. Trench Dewatering

    The trench (either on or off the construction ROW) will be dewatered in a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody. Dewatering structures will be removed as soon as practicable after the completion of dewatering activities.

5.3 Restoration

Restoration associated with construction of the Terminal, specifically the shoreline of the BSC will occur following completion of discreet segments of the marine facilities. Restoration will occur in accordance with the plans presented in the USACE application and approved for construction.

Restoration of waterbodies associated with the Pipeline System will occur as more discreet activities following installation of individual pipelines. RB Pipeline will adhere to the following:

1. For open-cut crossings, waterbody banks will be stabilized and temporary sediment barriers will be installed within 24 hours of completing in-stream construction activities. For dry-ditch crossings, streambed and bank stabilization will be completed before returning flow to the waterbody channel.
2. All waterbody banks will be returned to pre-construction contours or to a stable angle of repose as approved by the Environmental Inspector.
3. Erosion control fabric or a functional equivalent will be installed on waterbody banks at the time of final bank re-contouring. Synthetic monofilament mesh/netted erosion control materials will not be used in areas designated as sensitive wildlife habitat unless the product is specifically designed to minimize harm to wildlife. Erosion control fabric will be anchored with staples or other appropriate devices.
4. RB Pipeline will ensure that application of riprap for bank stabilization complies with the USACE permit terms and conditions.
5. Unless otherwise specified by permit, use of riprap will be limited to areas where flow conditions preclude effective vegetative stabilization techniques, such as seeding and using erosion control fabric.
6. Disturbed riparian areas will be revegetated with native species of conservation grasses, legumes, and woody species, similar in density to adjacent undisturbed lands.

7. A permanent slope breaker will be installed across the construction ROW at the base of slopes greater than 5% that are less than 50 feet from the waterbody or as needed to prevent sediment transport into the waterbody. In addition, sediment barriers will be installed as outlined in the Project-Specific Plan.

8. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.

9. Sections 5.3.2 through 5.3.6 also apply to perennial or intermittent streams not flowing at the time of construction.

5.4 Post-construction Maintenance and Reporting

1. Routine vegetation mowing or clearing adjacent to waterbodies will be limited to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction ROW. However, to facilitate periodic corrosion/leak surveys, a corridor centered on each pipeline, and up to 10 feet wide may be cleared within riparian areas at a frequency necessary to maintain the 10 foot corridors in an herbaceous state. Further, trees that are within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating will be cut and removed from the permanent ROW. Routine vegetation mowing or clearing will not be conducted in riparian areas that are between HDD entry and exit points.

2. Herbicides or pesticides will not be used in or within 100 feet of a waterbody, except as allowed by the appropriate land management or state agency.

3. Time-of-year restrictions specified in Section 7.1 of the Project-Specific Plan (March 1 – August 31 of any year) apply to routine mowing and clearing of riparian areas.

6 Wetland Crossings

6.1 General

1. Wetland delineations will be conducted using the current federal methodology, and wetland delineation reports will be filed with the Secretary before construction.

   These reports will identify:

   a. By milepost (MP), all wetlands that would be affected;

b. The National Wetlands Inventory (NWI) classification for each wetland;

c. The crossing length of each wetland in feet; and

d. The area of permanent and temporary disturbance that would occur in each wetland by NWI classification type.

The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures apply to these agricultural wetlands. (Note: Field work conducted to date has not identified any wetlands in actively cultivated or rotated cropland.)

2. RB Pipeline has designed the Pipeline System to avoid wetland areas to the maximum extent possible. Where wetlands cannot be avoided or crossed by following an existing ROW, the pipelines have been routed in a manner that minimizes wetland disturbance to the extent feasible. The construction ROW for Pipeline 2 will overlap a portion of the ROW for Pipeline 1 to minimize total disturbance throughout the Project, including wetlands. Pipeline 2 will be offset from Pipeline 1 no more than 25 feet unless site-specific constraints adversely affect the stability of the existing pipeline.

3. For both Pipeline 1 and Pipeline 2, RB Pipeline is proposing a 75-foot construction ROW for wetland crossings of less than approximately 1,000 linear feet. Appendix A presents the typical proposed ROW configuration for construction in wetlands.

4. For both Pipeline 1 and Pipeline 2, RB Pipeline is proposing a 100-foot construction ROW for wetland crossings over 1,000 feet in length to account for potential ditch sloughing and to provide safe use of the travel lane while the pipeline is being maneuvered and lowered into place. Refer to Table 1.K-1 Revision 3 (November 2017) of Appendix 1.K for site-specific justifications for each 100-foot construction ROW in wetlands.

5. At milepost 46.7 RB Pipeline proposes to use a 100-foot construction ROW for wetland crossing (WW-TO4-024) less than 1,000 feet in length for both Pipeline 1 and Pipeline 2. At this location, the wetland feature abuts an intermittent major waterbody which will be crossed by open cut. In order to cross this waterbody, dams will be constructed within the 25-foot temporary workspace outside of the permanent ROW to allow for a dry, open cut crossing. RB Pipeline will treat the abutting wetlands and waterbody as a single crossing and therefore a 100-foot construction ROW is requested for these wetlands. Refer to Table 1.K-1 Revision 3 (November 2017) of Appendix 1.K for site-specific data for these crossings.

6. At milepost 131.4 RB Pipeline proposes to use a 100-foot construction ROW for a wetland crossing less than 1,000 feet for both Pipeline 1 and Pipeline 2. This area will be utilized for pullback of the pipe section for the road bore under State Highway 48; therefore, RB Pipeline requires additional space to weld and install the bore section. In addition, Type C soils are present at this location which would require a wider ditch and increased spoil. Refer to Table 1.K-1 Revision 3 (November 2017) of Appendix 1.K for site-specific data for this crossing.

7. At milepost 132.8 RB Pipeline proposes to use a 100-foot construction ROW for a wetland crossing less than 1,000 feet for both Pipeline 1 and Pipeline 2. This area will be utilized for the additional workspace required for the point of inflection and for the additional workspace required for the horizontal direction drill operations. In addition, Type C soils are present at this location which would require a wider ditch and increased spoil. Refer to Table 1.K-1 Revision 3 (November 2017) of Appendix 1.K for site-specific data for this crossing.

8. RB Pipeline has identified additional locations where additional temporary workspace will be required in wetland areas, due to site-specific conditions. The RG Developers have developed site-specific justifications for additional workspaces within wetlands for the Secretary for review and for written approval by the Director. Refer to Table 1.K-2 Revision 3 (November 2017) of Appendix 1.K for a description of these workspaces and their justification.

9. Wetland boundaries and buffers will be clearly marked in the field with signs and/or highly visible flagging until construction-related ground-disturbing activities are complete.

10. RB Pipeline will implement the measures noted here in Sections 5 and 6 in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of Sections 5 and 6 cannot be met, RB Pipeline will file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan will address at a minimum:

    a. Spoil control;

    b. Equipment bridges;

    c. Restoration of waterbody banks and wetland hydrology;

    d. Timing of the waterbody crossing;

    e. Method of crossing; and

f. Size and location of all extra work areas and ATWS areas.

11. Aboveground facilities will not be located in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations. (Note: With the exception of the permanent Terminal facilities, all aboveground facilities will be located outside of wetlands.)

6.2 Installation

RGLNG will establish the limits of construction workspace at the Terminal as part of the initial grading activities (inclusive of the haul road and Port Isabel dredge pile and storage yards and parking areas. No additional workspace is anticipated. If the need for additional workspace is identified that could impact wetlands, RGLNG will coordinate with FERC and USACE for review and approval in advance.

During installation of the Pipeline System, RB Pipeline will adhere to the following:

1. Extra Work Areas and Access Roads

   a. To the extent possible, all extra work areas (such as staging areas) and ATWS (such as additional spoil storage areas) will be located at least 50 feet away from wetland boundaries, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land.

   b. RB Pipeline will file a site-specific justification for each extra work area and ATWS with a setback less than 50 feet from wetland boundaries with the Secretary for review and written approval by the Director, except where adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification will specify the site-specific conditions that will not permit a 50-foot setback and measures to ensure the wetland is adequately protected. Refer to Table 1.K-3 Revision 1 (November 2017) of Appendix 1.K for justification where site-specific conditions do not permit a 50-foot setback and additional measures to ensure that the wetland is adequately protected.

   c. The construction ROW may be used for access when the wetland soil is firm enough to avoid rutting or the construction ROW has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats).

      In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing will use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, construction equipment will be limited to one pass through the wetland using the construction ROW.

d. The only access roads, other than the construction ROW, which will be used in wetlands, are those existing roads that can be used with no modifications or improvements, other than routine repair, and no impact on the wetland. Refer to Table 1.K-4 Revision 2 (November 2017) of Appendix 1.K for justification where site-specific conditions result in impacts to wetlands from the modification of an existing access road and the creation of one new road. RB Pipeline will continue to design and engineer access roads to minimize impacts to the identified wetlands.

2. Crossing Procedures

a. RB Pipeline will comply with USACE permit terms and conditions.

b. The pipeline will be assembled in an upland area unless the wetland is dry enough to adequately support skids and pipe.

c. "Push-pull" or "float" techniques will be used to place the pipe in the trench where water and other site conditions allow.

d. The length of time that topsoil is segregated and the trench is open will be minimized. Wetlands will not be trenched until the pipeline is assembled and ready for lowering in.

e. Construction equipment operating in wetland areas will be limited to that needed to clear the construction ROW, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction ROW.

f. Vegetation will be cut just above ground level, leaving existing root systems in place, and removed from the wetland for disposal.

g. Woody debris may be burned in wetlands, if approved by the USACE and done in accordance with state and local regulations, ensuring that all remaining woody debris is removed for disposal.

h. Pulling stumps and grading activities will be limited to directly over the trenchline. Grading or removing stumps or root systems from the rest of the construction ROW in wetlands will not occur unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction ROW.

i. The top 1 foot of topsoil will be segregated from the area disturbed by trenching, except in areas where standing water is present or soils are saturated. Immediately after backfilling is complete, the segregated topsoil will be restored to its original location.

j. Rock and soil imported from outside the wetland, tree stumps, or brush riprap will not be used to support equipment on the construction ROW.

k. If standing water or saturated soils are present or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, low ground weight construction equipment will be used or normal equipment will be operated on timber riprap, prefabricated equipment mats, or terra mats.

l. All Project-related material used to support equipment on the construction ROW will be removed upon completion of construction.

3. Temporary Sediment Control

RB Pipeline will install sediment barriers (as defined in Section 5.2.4 of the Project-Specific Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers will be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted in Section 6.2.3.c, sediment barriers will be maintained until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Project-Specific Plan.

a. Sediment barriers will be installed across the entire construction ROW immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetland.

b. Where wetlands are adjacent to the construction ROW and the ROW slopes toward the wetland, sediment barriers will be installed along the edge of the construction ROW as necessary to contain spoil within the construction ROW and prevent sediment flow into the wetland.

c. Sediment barriers will be installed along the edge of the construction ROW as necessary to contain spoil and sediment within the construction ROW through wetlands. These sediment barriers will be removed during ROW cleanup.

4. Trench Dewatering

The trench will be dewatered (either on or off the construction ROW) in a manner that does not cause erosion and does not result in silt-laden water flowing into any wetland.

Pumps that must be located in wetlands during the dewatering process will use secondary containment. Dewatering structures will be removed as soon as practicable after the completion of dewatering activities.

6.3 Restoration

Impacts from construction of wetlands within the footprint of the Terminal will result in permanent impact that will be mitigated for in accordance with USACE permit conditions. The haul road required to access the Port Isabel dredge pile will temporarily impact wetland areas adjacent to the BSC. Once adequate fill material has been obtained from the dredge pile, RGLNG will remove the haul road and restore preconstruction contours in accordance with permit conditions.

Restoration of wetlands associated with the Pipeline System will occur as more discreet activities following installation of individual pipelines. RB Pipeline will adhere to the following:

1. Where the pipeline trench may drain a wetland, trench breakers will be constructed at the wetland boundaries and/or seal the trench bottom as necessary to maintain the original wetland hydrology.
2. Pre-construction wetland contours will be restored to maintain the original wetland hydrology.
3. For each wetland crossed, a trench breaker will be installed at the base of slopes near the boundary between the wetland and adjacent upland areas. A permanent slope breaker will be installed across the construction ROW at the base of slopes greater than 5% where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, sediment barriers will be installed as outlined in the Project-Specific Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.
4. Fertilizer, lime, or mulch will not be used unless required in writing by the appropriate federal or state agency.
5. RB Pipeline will consult with the USACE to develop a Project-specific wetland restoration plan. The restoration plan will include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of invasive species and noxious weeds, and monitoring the success of the revegetation and weed control efforts.

6. Until a Project-specific wetland restoration plan is developed and/or implemented, the construction ROW will be temporarily revegetated with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present).

7. RB Pipeline will ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.

8. Temporary sediment barriers located at the boundary between wetland and adjacent upland areas will be removed after revegetation and stabilization of adjacent upland areas are judged to be successful as specified in Section 7.1.e of the Project-Specific Plan.

6.4 Post-Construction Maintenance and Reporting

1. Routine vegetation mowing or clearing will not be conducted over the full width of the permanent ROW in wetlands. However, to facilitate periodic corrosion/leak surveys, However, to facilitate periodic corrosion/leak surveys, a corridor centered on each pipeline, up to 10 feet wide may be cleared within wetland areas at a frequency necessary to maintain the 10 foot corridors in an herbaceous state. Further, trees that are within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating will be cut and removed from the permanent ROW. Routine vegetation mowing or clearing will not be conducted in wetlands that are between HDD entry and exit points.

2. Herbicides or pesticides will not be used in or within 100 feet of a wetland, except as allowed by the appropriate federal or state agency.

3. Time-of-year restrictions specified in Section 7.1 of the Project-Specific Plan (March 1 – August 31 of any year) apply to routine mowing and clearing of wetland areas.

4. The RG Developers will monitor and record the success of wetland revegetation annually until wetland revegetation is successful.

5. Wetland revegetation will be considered successful if all of the following criteria are satisfied:

   a. The affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology, and vegetation);

   b. Vegetation is at least 80% of either the cover documented for the wetland prior to construction or at least 80% of the cover in adjacent wetland areas that were not disturbed by construction;

c. If natural rather than active revegetation was used, the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion; and

d. Invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction.

6. Within three years after construction, RB Pipeline will file a report with the Secretary identifying the status of the wetland revegetation efforts and documenting success as defined in Section 6.4.5.

   For any wetland where revegetation is not successful at the end of three years after construction, RB Pipeline will develop and implement (in consultation with a professional wetland ecologist) a remedial revegetation plan to actively revegetate wetlands. Revegetation efforts will continue and a report will be filed annually documenting progress in these wetlands until wetland revegetation is successful.

7 Hydrostatic Testing

Discussions of Hydrostatic testing are applicable to the Pipeline System. RGLNG will obtain all necessary permits for water intakes and/or discharges associated with the Terminal activities prior to initiating intakes and/or discharges.

7.1 Notification Procedures and Permits

1. RB Pipeline will apply for state-issued water withdrawal permits, as required.
2. RB Pipeline will apply to the U.S. Environmental Protection Agency (EPA) for National Pollutant Discharge Elimination System (NPDES) permits and Railroad Commission of Texas discharge permits, as required.
3. Appropriate state agencies will be notified of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

7.2 General

1. One hundred (100) percent non-destructive testing of all pipeline section welds or hydrostatic testing of the pipeline sections will be performed before installation under waterbodies or wetlands.

2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, secondary containment and the refueling of these pumps will be addressed in RB Pipeline's Spill Prevention and Response Procedures.

3. RB Pipeline will file a list with the Secretary before construction, identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location. (Note: Proposed hydrostatic test water source locations are provided in Resource Report 1, "General Project Description," Table 1.5.1; discharge locations will be provided as they are identified.)

7.3 Intake Source and Rate

1. The intake hose will be screened to minimize the potential for entrainment of fish.

2. RB Pipeline will not use state-designated exceptional value waters, waterbodies that provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies unless appropriate federal, state, and/or local permitting agencies grant written permission. (Note: to date RB Pipeline has not identified any of these resources in the Project area)

3. Adequate flow rates will be maintained to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.

4. Hydrostatic test manifolds will be located outside wetlands and riparian areas to the maximum extent practicable.

7.4 Discharge Location, Method, and Rate

1. Discharge rates will be regulated using energy dissipation device(s) and sediment barriers will be installed, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.

2. No discharge into state-designated exceptional value waters (waterbodies that provide habitat for federally listed threatened or endangered species) or waterbodies designated as public water supplies will occur unless appropriate federal, state, and local permitting agencies grant written permission. (Note: to date RB Pipeline has not identified any of these resources in the Project area)

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Appendix A: Wetland and Waterbody ROW Construction Typicals

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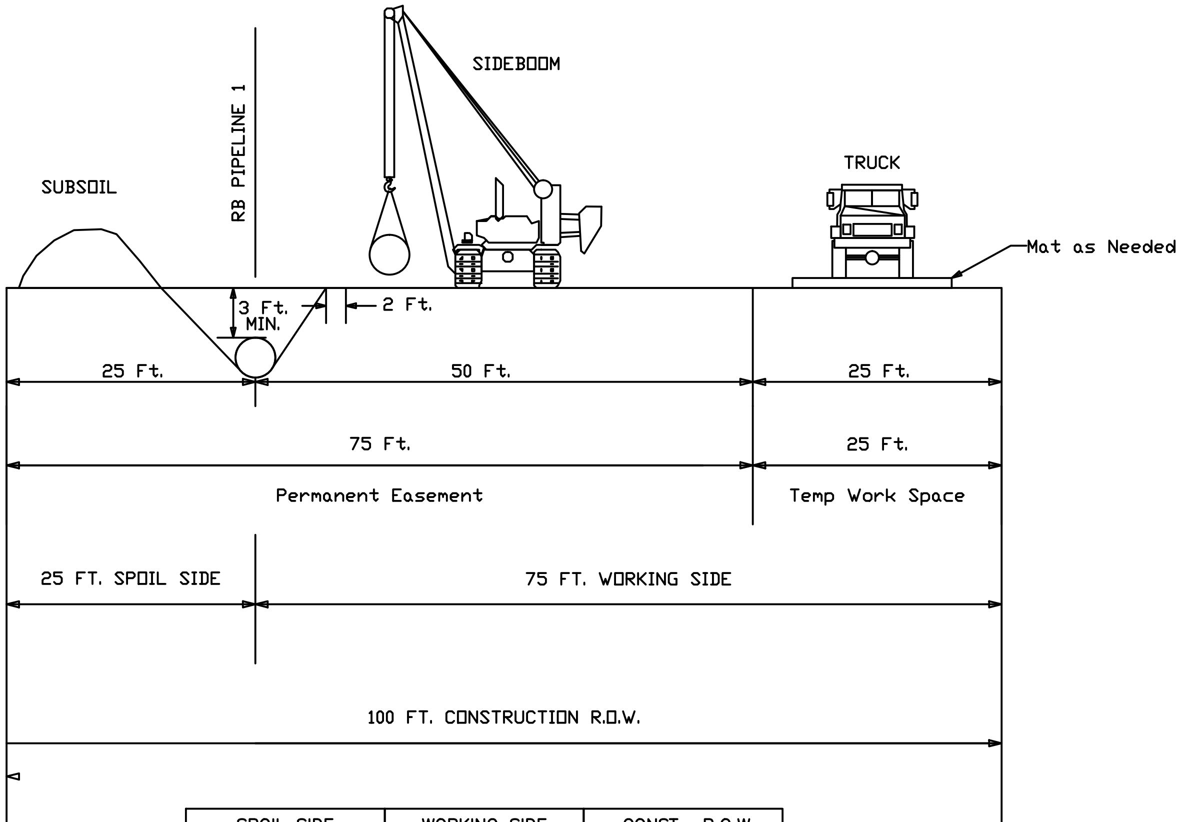


SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
25'	75'	100'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE WIDTH OF THE DITCH LINE ONLY. DOES NOT APPLY TO SATURATED SOILS AND/OR AREAS OF FREESTANDING WATER.
3. EQUIPMENT TO WORK ON MATS OR ACCEPTED SUBSTRATE AS REQUIRED.
4. ADDITIONAL WIDTH IN LONG WETLANDS TO PROVIDE SAFE USE OF TRAVEL LANE WHILE PIPE IS BEING MANEUVERED AND LOWERED INTO DITCH

REV.	DATE	BY	DESCRIPTION	CHK.

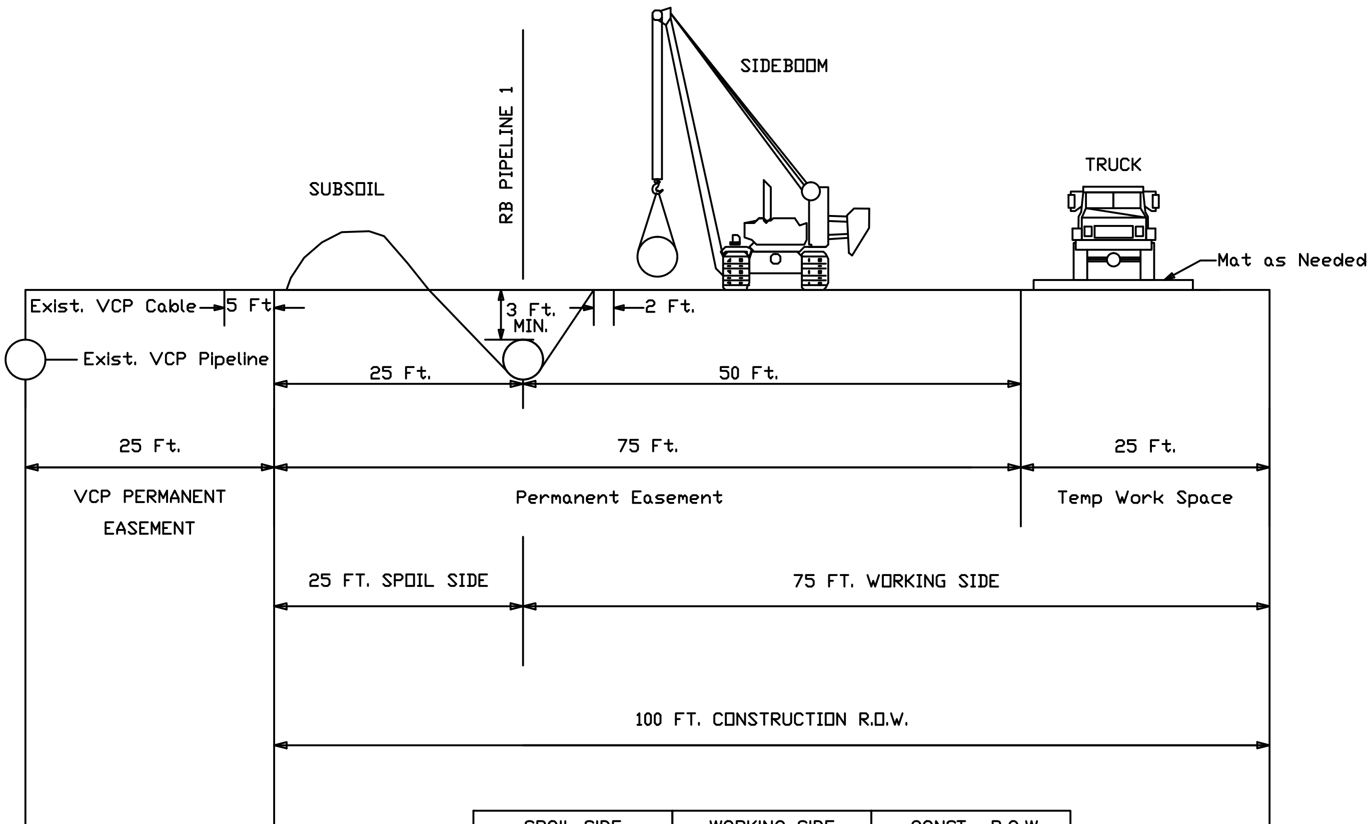
PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL WETLAND CONSTRUCTION P1
(WETLAND CROSSINGS LONGER THAN 1,000 FEET) TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-006	1
SCALE: N.T.S.	APP.: JEA		



SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
25'	75'	100'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE WIDTH OF THE DITCH LINE ONLY. DOES NOT APPLY TO SATURATED SOILS AND/OR AREAS OF FREESTANDING WATER.

3. EQUIPMENT TO WORK ON MATS OR ACCEPTED SUBSTRATE AS REQUIRED.

4. ADDITIONAL WIDTH IN LONG WETLANDS TO PROVIDE SAFE USE OF TRAVEL LANE WHILE PIPE IS BEING MANEUVERED AND LOWERED INTO DITCH

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL WETLAND CONSTRUCTION P1
ADJACENT TO VALLEY CROSSING PIPELINE
(WETLAND CROSSINGS LONGER THAN 1,000 FEET) TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-007	1
SCALE: N.T.S.	APP.: JEA		

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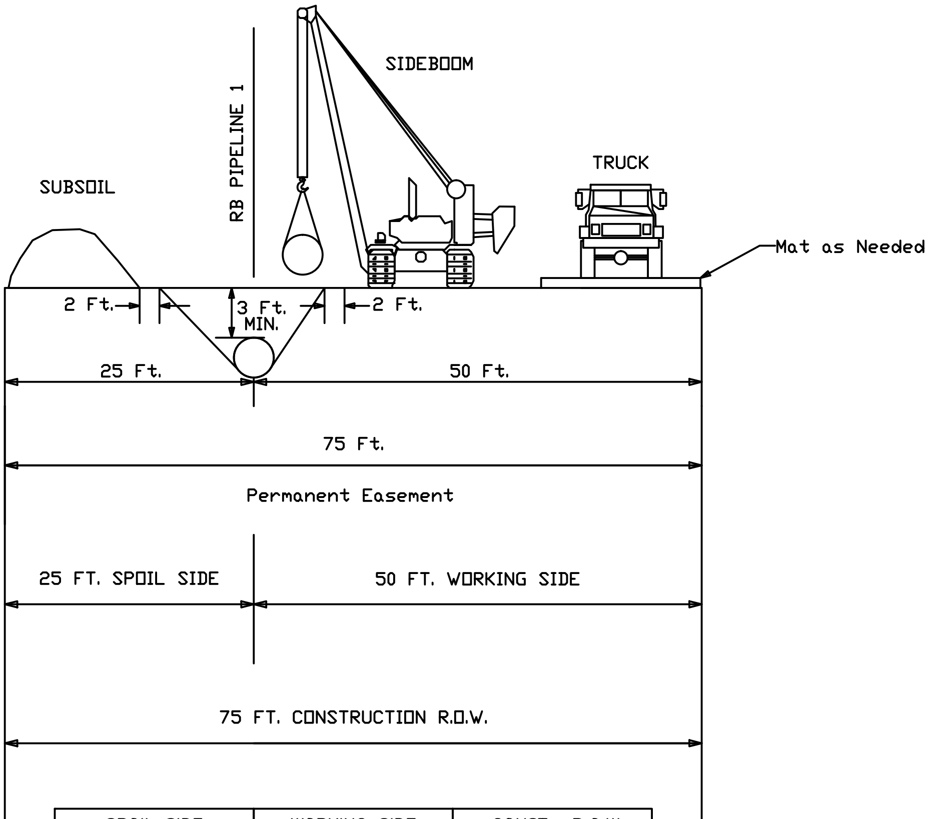

SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
25'	50'	75'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE WIDTH OF THE DITCH LINE ONLY. DOES NOT APPLY TO SATURATED SOILS AND/OR AREAS OF FREESTANDING WATER.

3. EQUIPMENT TO WORK ON MATS OR ACCEPTED SUBSTRATE AS REQUIRED.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL WETLAND CONSTRUCTION P1

TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-008	1
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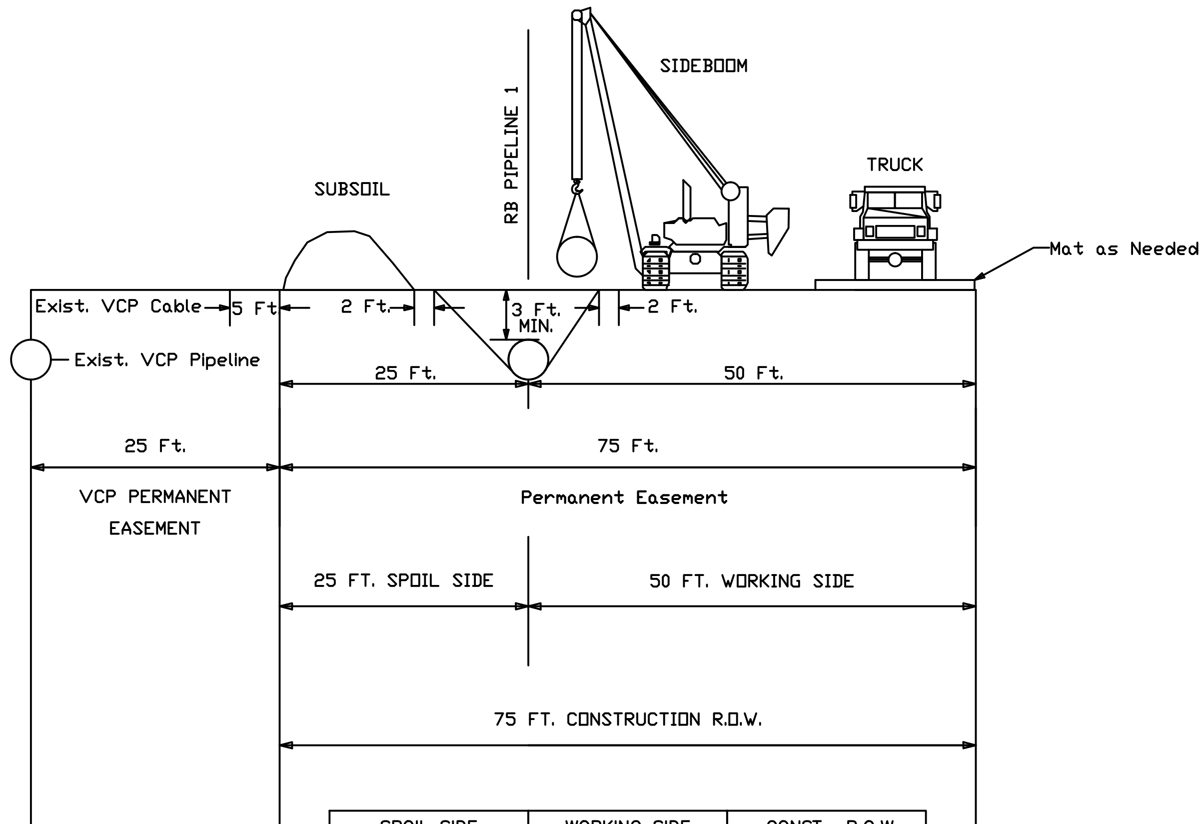

SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
25'	50'	75'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE WIDTH OF THE DITCH LINE ONLY. DOES NOT APPLY TO SATURATED SOILS AND/OR AREAS OF FREESTANDING WATER.

3. EQUIPMENT TO WORK ON MATS OR ACCEPTED SUBSTRATE AS REQUIRED.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL WETLAND CONSTRUCTION P1
ADJACENT TO VALLEY CROSSING PIPELINE

TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-009	1
SCALE: N.T.S.	APP.: JEA		

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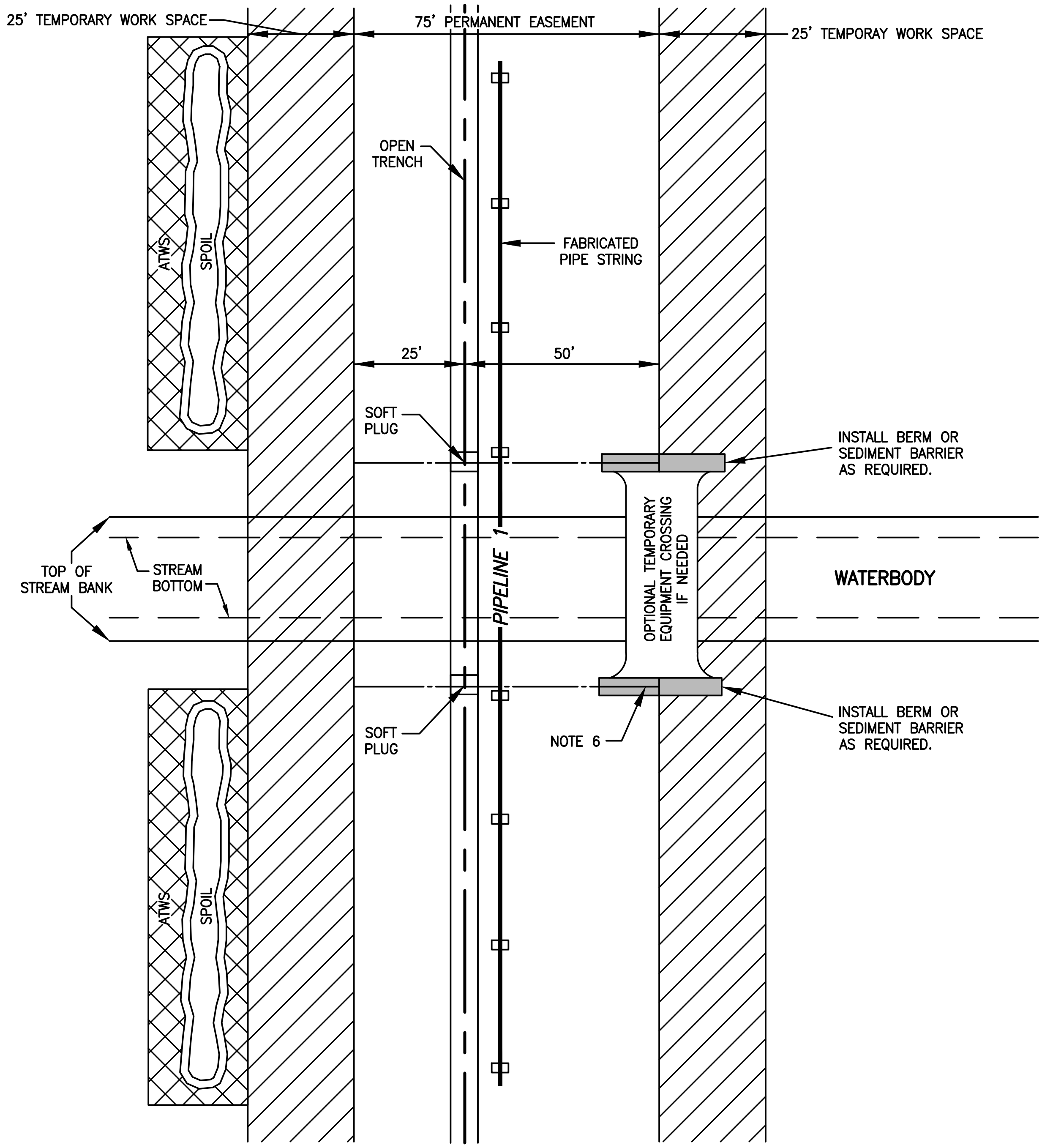


NOTES:

1. THIS METHOD APPLIES TO PONDS, DRY WASHES, SWALES, INCISED DRAINAGE AND DITCHES WITH NO PERCEPTIBLE FLOW AT TIME OF CROSSING.
2. INDICATED FOR ADJACENT UPLAND WHERE REQUIRED.
3. ADDITIONAL WORKSPACE SHOULD BE MIN. 50' FROM TOP OF BANK.
4. INSTALL SILT FENCE OR A BERM TO PREVENT RUNOFF FROM ROW TO ADJACENT UNDISTURBED DRAINAGE.
5. STOCK PILE TOPSOIL AND SPOIL SEPARATELY. TOPSOIL SHALL NOT BE STOCKPILED ACROSS THE DRAINAGE CHANNEL AND SHALL BE PLACED A MIN. OF 50 FEET FROM THE TOPBANK.
6. INSTALL TEMPORARY SLOPE BREAKERS WHERE REQUIRED.
7. TRENCH, STRING PIPE, AND BACKFILL USING STANDARD UPLAND CONSTRUCTION PROCEDURES.
8. RESTORE WATERCOURSE CHANNEL AND BANKS (EXCEPT TRAVEL LANE IF USED) TO APPROXIMATE PRE-CONSTRUCTION PROFILE IMMEDIATELY AFTER PIPE IS LOWERED IN AND BACKFILLED. INSTALL PERMANENT EROSION CONTROLS WHERE REQUIRED.
9. REMOVE ANY TEMPORARY CROSSING STRUCTURES AND/OR GRAVEL.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

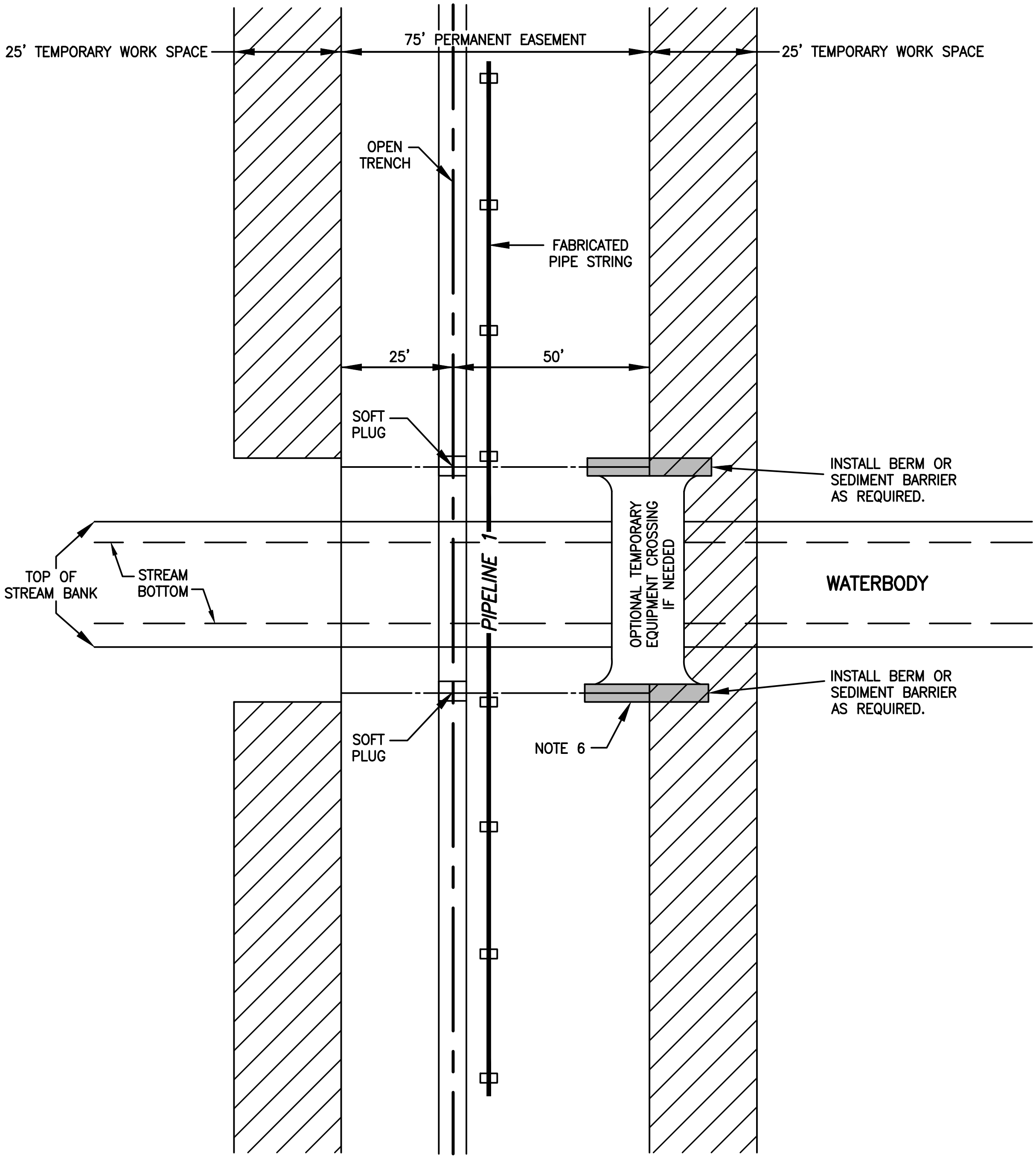
RIO BRAVO PIPELINE

PIPELINE 1 OPEN CUT WET CROSSING METHOD
WITH 125 FOOT CONSTRUCTION SPACE
NON-FLOWING WATERBODY

TEXAS

DRAWN BY: WT	DATE: 10/20/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/24/17	108642-99-012	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-012.dwg PLOT DATE: 11/8/2017 BY: RUEHLEN, DJ



NOTES:

1. THIS METHOD APPLIES TO PONDS, DRY WASHES, SWALES, INCISED DRAINAGE AND DITCHES WITH NO PERCEPTIBLE FLOW AT TIME OF CROSSING.
2. INDICATED FOR ADJACENT UPLAND WHERE REQUIRED.
3. ADDITIONAL WORKSPACE SHOULD BE MIN. 50' FROM TOP OF BANK.
4. INSTALL SILT FENCE OR A BERM TO PREVENT RUNOFF FROM ROW TO ADJACENT UNDISTURBED DRAINAGE.
5. STOCK PILE TOPSOIL AND SPOIL SEPARATELY. TOPSOIL SHALL NOT BE STOCKPILED ACROSS THE DRAINAGE CHANNEL AND SHALL BE PLACED A MIN. OF 50 FEET FROM THE TOPBANK.
6. INSTALL TEMPORARY SLOPE BREAKERS WHERE REQUIRED.
7. TRENCH, STRING PIPE, AND BACKFILL USING STANDARD UPLAND CONSTRUCTION PROCEDURES.
8. RESTORE WATERCOURSE CHANNEL AND BANKS (EXCEPT TRAVEL LANE IF USED) TO APPROXIMATE PRE-CONSTRUCTION PROFILE IMMEDIATELY AFTER PIPE IS LOWERED IN AND BACKFILLED. INSTALL PERMANENT EROSION CONTROLS WHERE REQUIRED.
9. REMOVE ANY TEMPORARY CROSSING STRUCTURES AND/OR GRAVEL.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

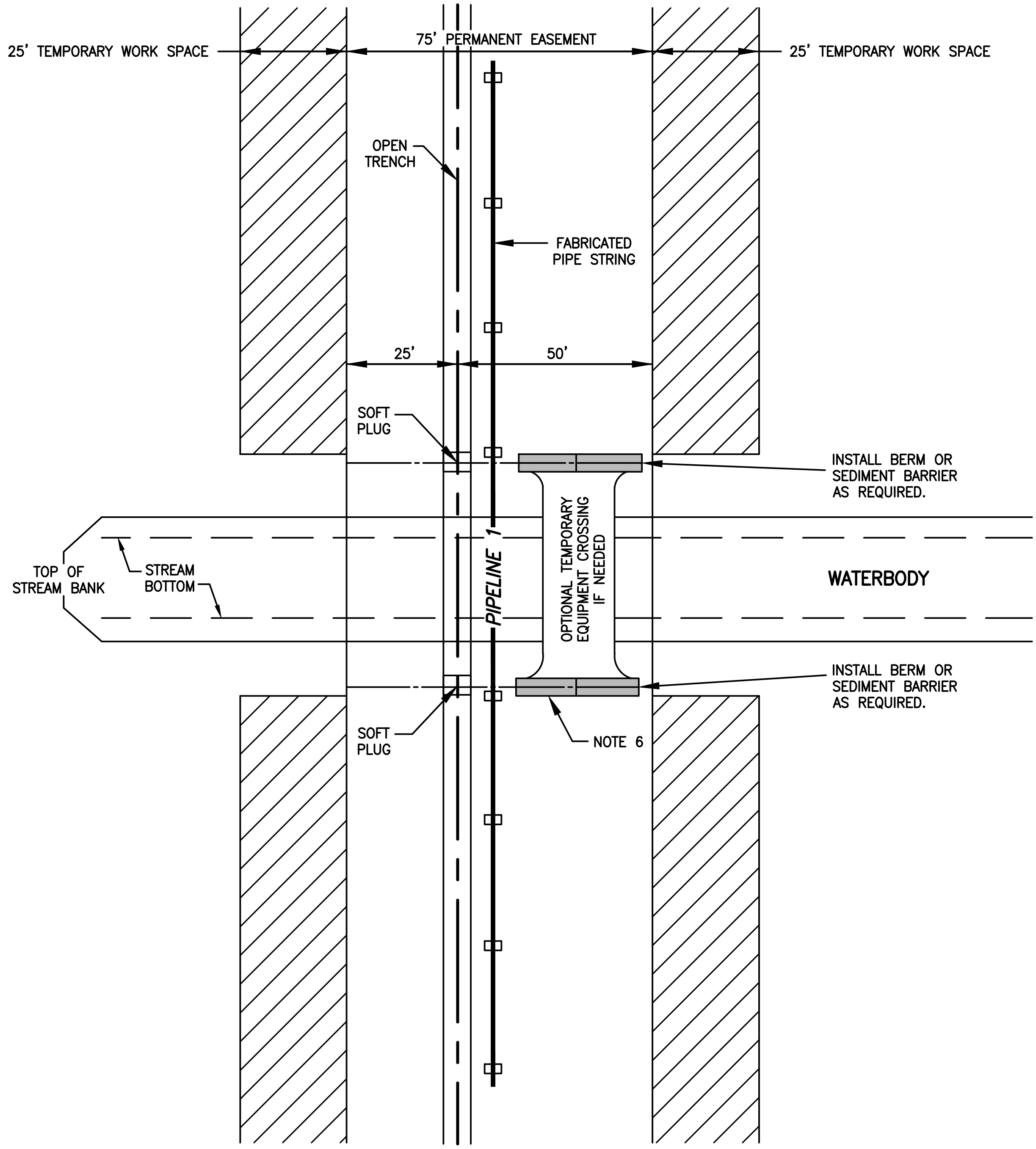
RIO BRAVO PIPELINE

PIPELINE 1 OPEN CUT WET CROSSING METHOD WITH 100 FOOT CONSTRUCTION SPACE NON-FLOWING WATERBODY

TEXAS

DRAWN BY: WT	DATE: 10/20/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/24/17	108642-99-013	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-013.dwg PLOT DATE: 11/8/2017 BY: RUEHLEN, DJ



NOTES:

1. THIS METHOD APPLIES TO PONDS, DRY WASHES, SWALES, INCISED DRAINAGE AND DITCHES WITH NO PERCEPTIBLE FLOW AT TIME OF CROSSING.
2. INDICATED FOR ADJACENT UPLAND WHERE REQUIRED.
3. ADDITIONAL WORKSPACE SHOULD BE MIN. 50' FROM TOP OF BANK.
4. INSTALL SILT FENCE OR A BERM TO PREVENT RUNOFF FROM ROW TO ADJACENT UNDISTURBED DRAINAGE.
5. STOCK PILE TOPSOIL AND SPOIL SEPARATELY. TOPSOIL SHALL NOT BE STOCKPILED ACROSS THE DRAINAGE CHANNEL AND SHALL BE PLACED A MIN. OF 50 FEET FROM THE TOPBANK.
6. INSTALL TEMPORARY SLOPE BREAKERS WHERE REQUIRED.
7. TRENCH, STRING PIPE, AND BACKFILL USING STANDARD UPLAND CONSTRUCTION PROCEDURES.
8. RESTORE WATERCOURSE CHANNEL AND BANKS (EXCEPT TRAVEL LANE IF USED) TO APPROXIMATE PRE-CONSTRUCTION PROFILE IMMEDIATELY AFTER PIPE IS LOWERED IN AND BACKFILLED. INSTALL PERMANENT EROSION CONTROLS WHERE REQUIRED.
9. REMOVE ANY TEMPORARY CROSSING STRUCTURES AND/OR GRAVEL.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

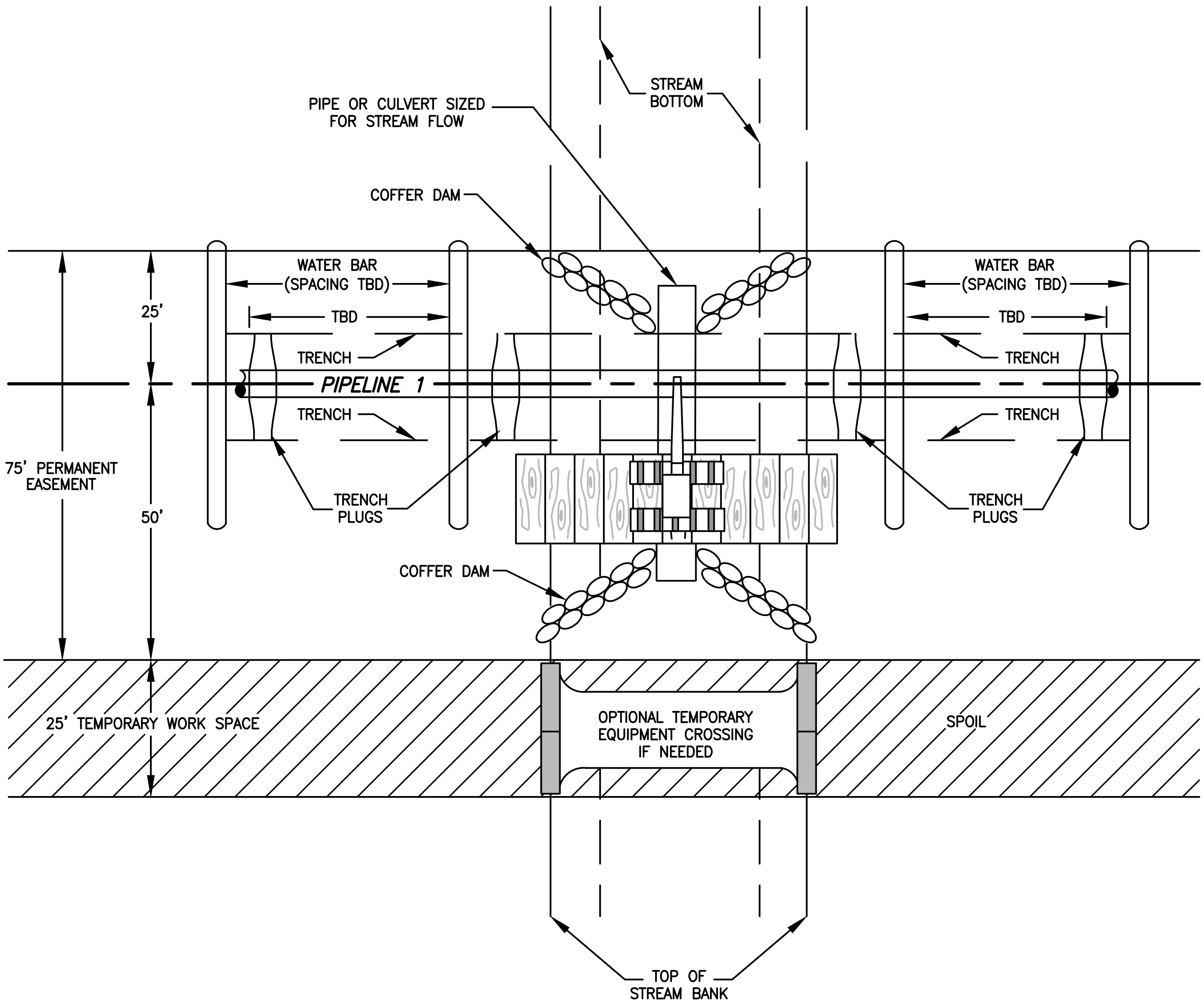
RIO BRAVO PIPELINE

PIPELINE 1 OPEN CUT WET CROSSING METHOD WITH 75 FOOT CONSTRUCTION SPACE NON-FLOWING WATERBODY

TEXAS

DRAWN BY: WT	DATE: 10/20/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/24/17	108642-99-014	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-014.dwg PLOT DATE: 11/8/2017 BY: RUEHLEN, DJ



NOTES:

1. SPOIL WILL BE PLACED IN THE CONSTRUCTION ROW AT LEAST 10 FEET FROM THE WATER'S EDGE OR IN THE ATWS AREAS.
2. ATWS WILL BE AT LEAST 50 FEET FROM THE WATERBODY UNLESS A SITE-SPECIFIC JUSTIFICATION HAS BEEN APPROVED.
3. SEDIMENT BARRIERS WILL BE USED TO PREVENT THE FLOW OF SPOIL OR SILT-LADEN WATER INTO ANY WATERBODY.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

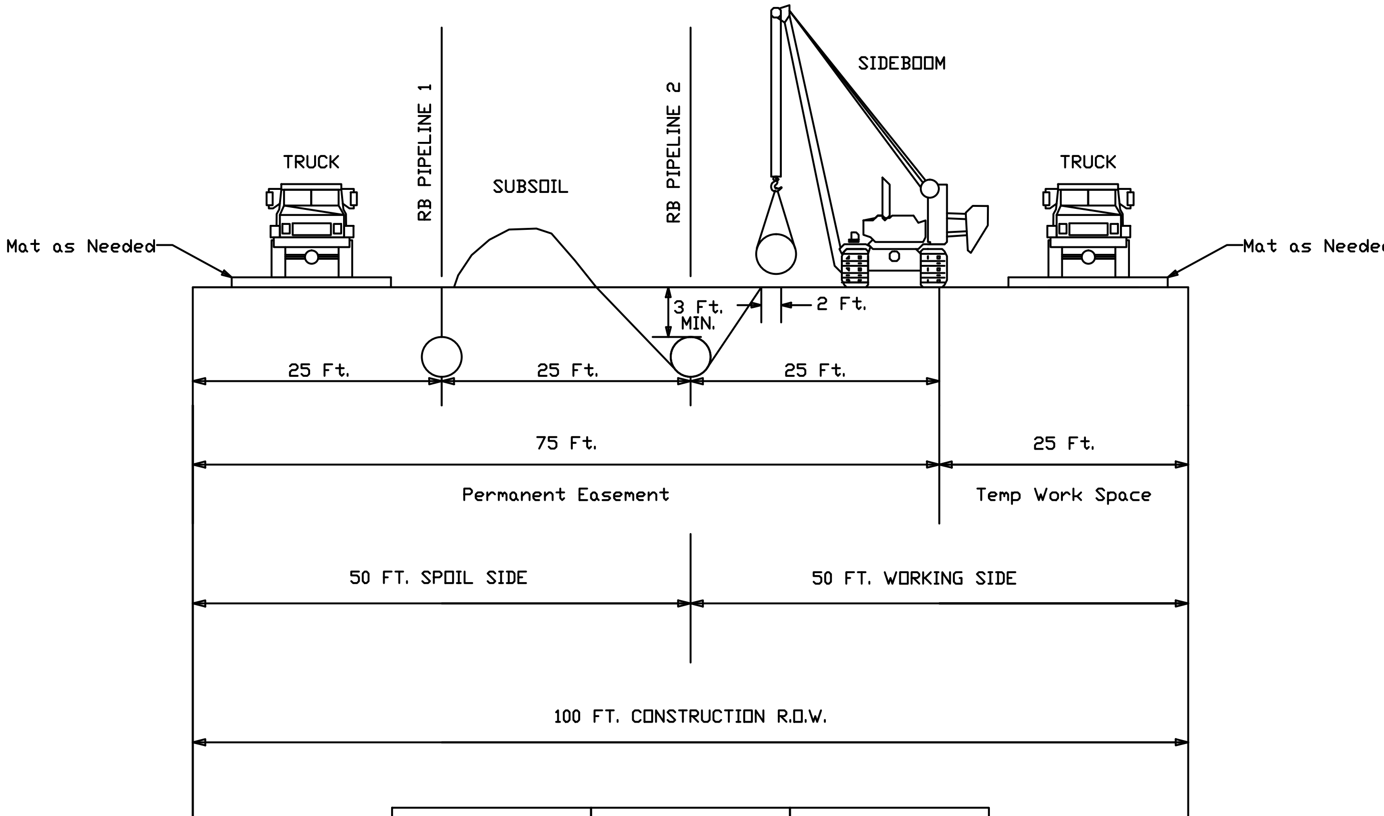
RIO BRAVO PIPELINE

PIPELINE 1
FLOWING STREAM CROSSING
WITH PIPE OR CULVERT

TEXAS

DRAWN BY: WT	DATE: 10/20/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/24/17	108642-99-015	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-015.dwg PLOT DATE: 11/15/2017 BY: RUEHLEN, DJ



SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
50'	50'	100'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE WIDTH OF THE DITCH LINE ONLY. DOES NOT APPLY TO SATURATED SOILS AND/OR AREAS OF FREESTANDING WATER.

3. EQUIPMENT TO WORK ON MATS OR ACCEPTED SUBSTRATE AS REQUIRED.

4. ADDITIONAL WIDTH IN LONG WETLANDS TO PROVIDE SAFE USE OF TRAVEL LANE WHILE PIPE IS BEING MANEUVERED AND LOWERED INTO DITCH

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

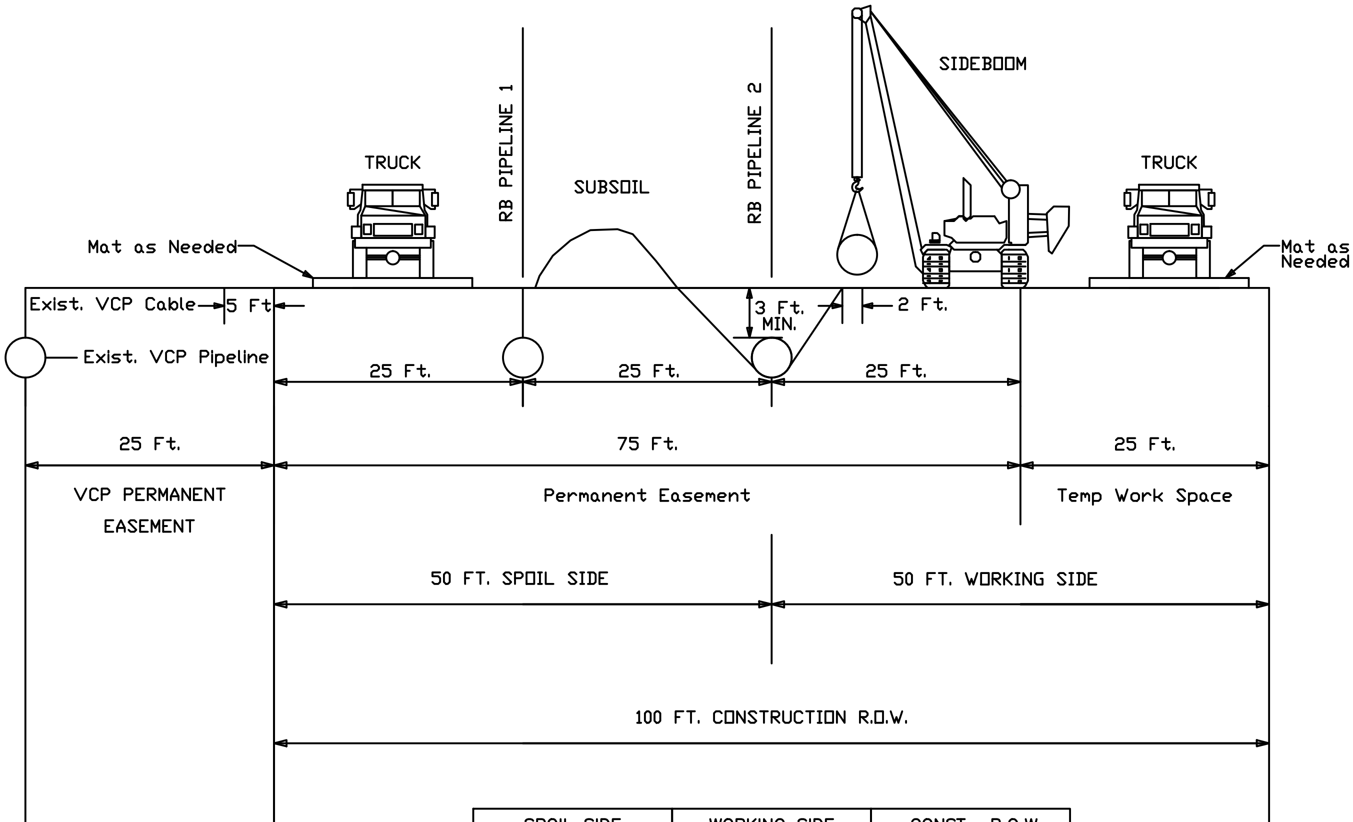
WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL WETLAND CONSTRUCTION P2
(WETLAND CROSSINGS LONGER THAN 1,000 FEET) TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO. 108642-99-018	REV. 1
CHECKED BY: JRK	DATE: 10/13/17		
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-018_REV1.dwg PLOT DATE: 12/19/2017 BY: MUALLEM, MIKE (WG MUSTANG)



SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
50'	50'	100'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE WIDTH OF THE DITCH LINE ONLY. DOES NOT APPLY TO SATURATED SOILS AND/OR AREAS OF FREESTANDING WATER.

3. EQUIPMENT TO WORK ON MATS OR ACCEPTED SUBSTRATE AS REQUIRED.

4. ADDITIONAL WIDTH IN LONG WETLANDS TO PROVIDE SAFE USE OF TRAVEL LANE WHILE PIPE IS BEING MANEUVERED AND LOWERED INTO DITCH

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

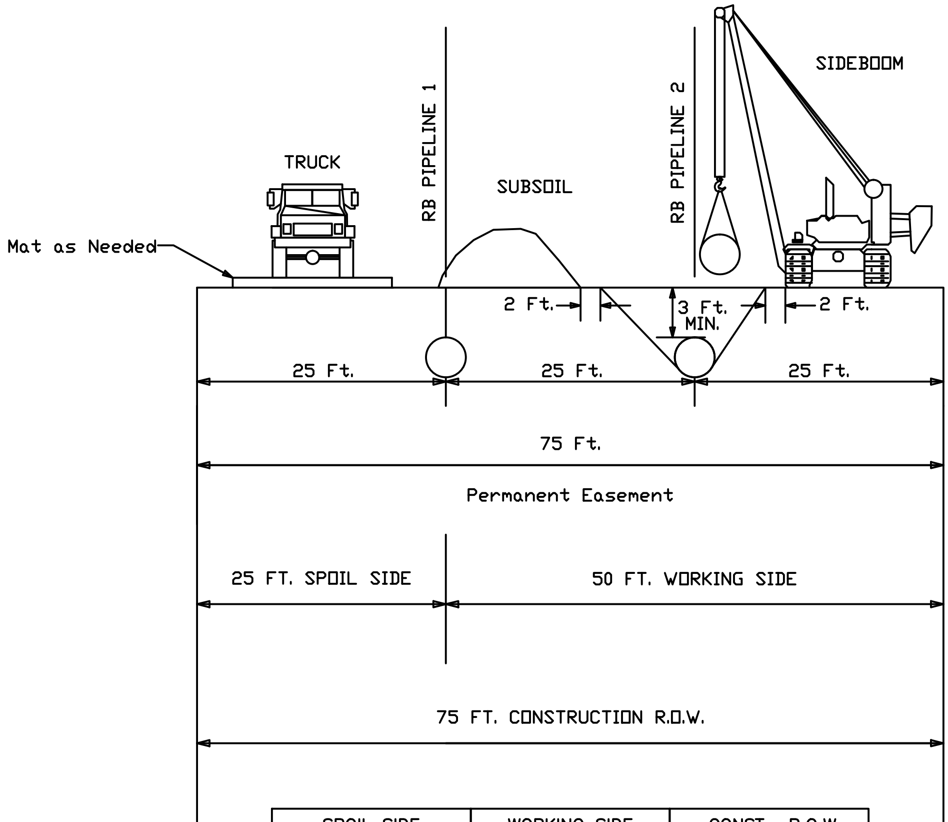
WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL WETLAND CONSTRUCTION P2
ADJACENT TO VALLEY CROSSING PIPELINE
(WETLAND CROSSINGS LONGER THAN 1,000 FEET) TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-019	1
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-019_REV1.dwg PLOT DATE: 12/19/2017 BY: MUALLEM, MIKE (WG MUSTANG)



SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
50'	25'	75'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE WIDTH OF THE DITCH LINE ONLY. DOES NOT APPLY TO SATURATED SOILS AND/OR AREAS OF FREESTANDING WATER.

3. EQUIPMENT TO WORK ON MATS OR ACCEPTED SUBSTRATE AS REQUIRED.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

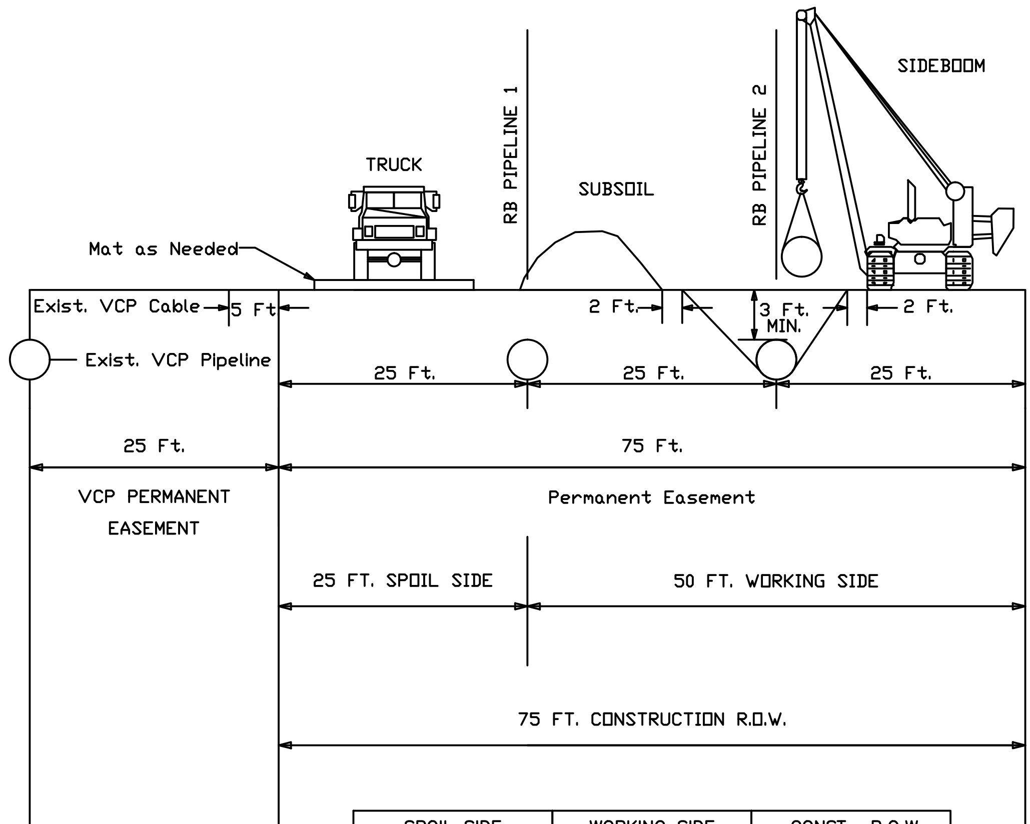
RIO BRAVO PIPELINE

TYPICAL WETLAND CONSTRUCTION P2

TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-020	1
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-020_REV1.dwg PLOT DATE: 12/19/2017 BY: MUALLEM, MIKE (WG MUSTANG)



SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONST. R.O.W. (FT.)
25'	50'	75'

NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN IN THE ABOVE SKETCH AND TABLE ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS THAT MAY INCLUDE ATWS WHICH ARE SHOWN ON THE ALIGNMENT SHEETS AND NOTED IN THE ATWS TABLES.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED FOR THE WIDTH OF THE DITCH LINE ONLY. DOES NOT APPLY TO SATURATED SOILS AND/OR AREAS OF FREESTANDING WATER.
3. EQUIPMENT TO WORK ON MATS OR ACCEPTED SUBSTRATE AS REQUIRED.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

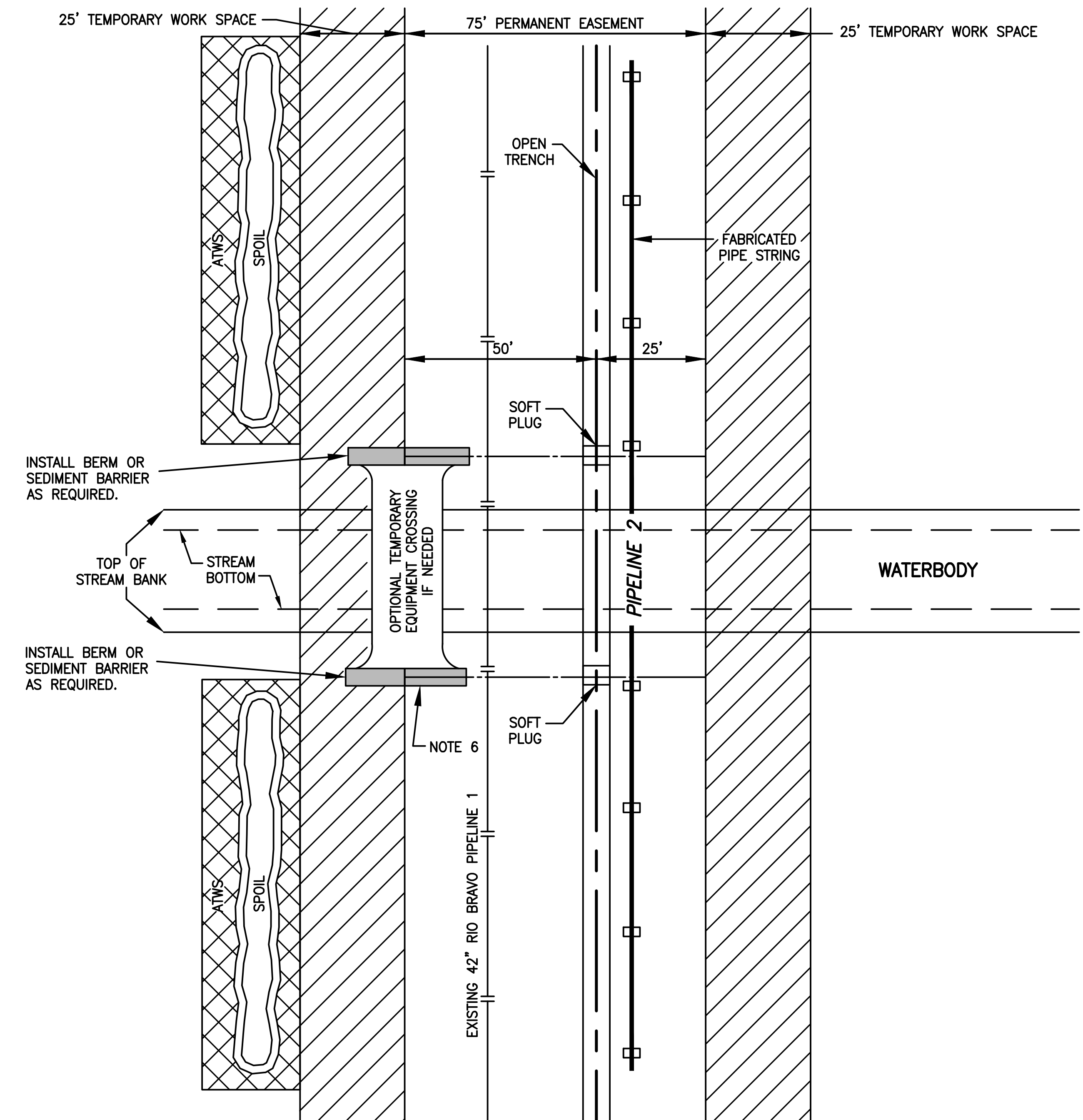
RIO BRAVO PIPELINE

TYPICAL WETLAND CONSTRUCTION P2
ADJACENT TO VALLEY CROSSING PIPELINE

TEXAS

DRAWN BY: MJV	DATE: 10/12/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/13/17	108642-99-021	1
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-021_REV1.dwg PLOT DATE: 12/19/2017 BY: MUALLEM, MIKE (WG MUSTANG)



NOTES:

1. THIS METHOD APPLIES TO PONDS, DRY WASHES, SWALES, INCISED DRAINAGE AND DITCHES WITH NO PERCEPTIBLE FLOW AT TIME OF CROSSING.
2. INDICATED FOR ADJACENT UPLAND WHERE REQUIRED.
3. ADDITIONAL WORKSPACE SHOULD BE MIN. 50' FROM TOP OF BANK.
4. INSTALL SILT FENCE OR A BERM TO PREVENT RUNOFF FROM ROW TO ADJACENT UNDISTURBED DRAINAGE.
5. STOCK PILE TOPSOIL AND SPOIL SEPARATELY. TOPSOIL SHALL NOT BE STOCKPILED ACROSS THE DRAINAGE CHANNEL AND SHALL BE PLACED A MIN. OF 50 FEET FROM THE TOPBANK.
6. INSTALL TEMPORARY SLOPE BREAKERS WHERE REQUIRED.
7. TRENCH, STRING PIPE, AND BACKFILL USING STANDARD UPLAND CONSTRUCTION PROCEDURES.
8. RESTORE WATERCOURSE CHANNEL AND BANKS (EXCEPT TRAVEL LANE IF USED) TO APPROXIMATE PRE-CONSTRUCTION PROFILE IMMEDIATELY AFTER PIPE IS LOWERED IN AND BACKFILLED. INSTALL PERMANENT EROSION CONTROLS WHERE REQUIRED.
9. REMOVE ANY TEMPORARY CROSSING STRUCTURES AND/OR GRAVEL.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

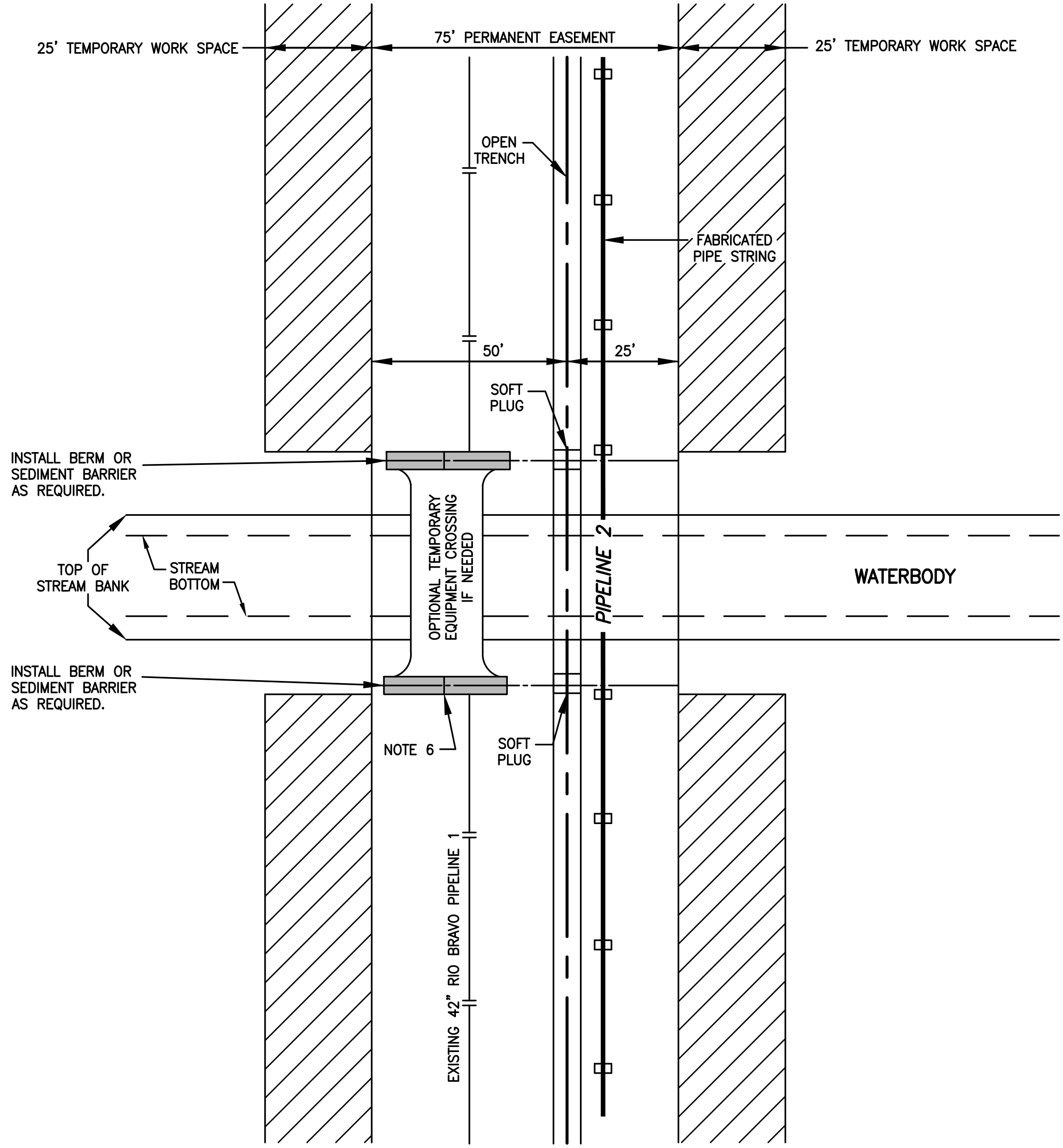
RIO BRAVO PIPELINE

PIPELINE 2 OPEN CUT WET CROSSING METHOD WITH 125 FOOT CONSTRUCTION SPACE NON-FLOWING WATERBODY

TEXAS

DRAWN BY: WT	DATE: 10/20/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/24/17	108642-99-024	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-024.dwg PLOT DATE: 11/8/2017 BY: RUEHLEN, DJ



NOTES:

1. THIS METHOD APPLIES TO PONDS, DRY WASHES, SWALES, INCISED DRAINAGE AND DITCHES WITH NO PERCEPTIBLE FLOW AT TIME OF CROSSING.
2. INDICATED FOR ADJACENT UPLAND WHERE REQUIRED.
3. ADDITIONAL WORKSPACE SHOULD BE MIN. 50' FROM TOP OF BANK.
4. INSTALL SILT FENCE OR A BERM TO PREVENT RUNOFF FROM ROW TO ADJACENT UNDISTURBED DRAINAGE.
5. STOCK PILE TOPSOIL AND SPOIL SEPARATELY. TOPSOIL SHALL NOT BE STOCKPILED ACROSS THE DRAINAGE CHANNEL AND SHALL BE PLACED A MIN. OF 50 FEET FROM THE TOPBANK.
6. INSTALL TEMPORARY SLOPE BREAKERS WHERE REQUIRED.
7. TRENCH, STRING PIPE, AND BACKFILL USING STANDARD UPLAND CONSTRUCTION PROCEDURES.
8. RESTORE WATERCOURSE CHANNEL AND BANKS (EXCEPT TRAVEL LANE IF USED) TO APPROXIMATE PRE-CONSTRUCTION PROFILE IMMEDIATELY AFTER PIPE IS LOWERED IN AND BACKFILLED. INSTALL PERMANENT EROSION CONTROLS WHERE REQUIRED.
9. REMOVE ANY TEMPORARY CROSSING STRUCTURES AND/OR GRAVEL.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

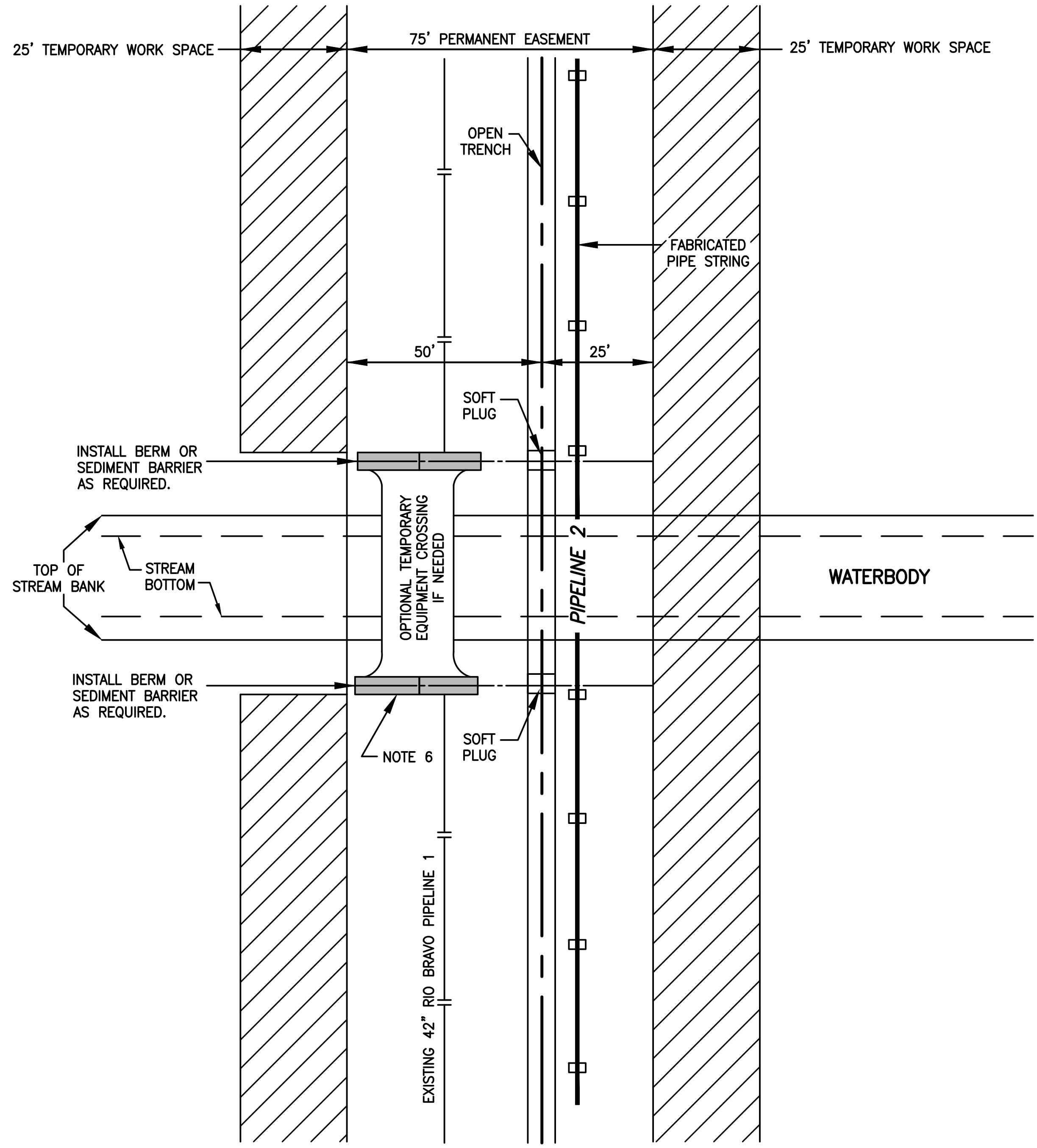
RIO BRAVO PIPELINE

PIPELINE 2 OPEN CUT WET CROSSING METHOD
WITH 100 FOOT CONSTRUCTION SPACE
NON-FLOWING WATERBODY

TEXAS

DRAWN BY: WT	DATE: 10/20/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/24/17	108642-99-025	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-025.dwg PLOT DATE: 11/8/2017 BY: RUEHLEN, DJ



NOTES:

1. THIS METHOD APPLIES TO PONDS, DRY WASHES, SWALES, INCISED DRAINAGE AND DITCHES WITH NO PERCEPTIBLE FLOW AT TIME OF CROSSING.
2. INDICATED FOR ADJACENT UPLAND WHERE REQUIRED.
3. ADDITIONAL WORKSPACE SHOULD BE MIN. 50' FROM TOP OF BANK.
4. INSTALL SILT FENCE OR A BERM TO PREVENT RUNOFF FROM ROW TO ADJACENT UNDISTURBED DRAINAGE.
5. STOCK PILE TOPSOIL AND SPOIL SEPARATELY. TOPSOIL SHALL NOT BE STOCKPILED ACROSS THE DRAINAGE CHANNEL AND SHALL BE PLACED A MIN. OF 50 FEET FROM THE TOPBANK.
6. INSTALL TEMPORARY SLOPE BREAKERS WHERE REQUIRED.
7. TRENCH, STRING PIPE, AND BACKFILL USING STANDARD UPLAND CONSTRUCTION PROCEDURES.
8. RESTORE WATERCOURSE CHANNEL AND BANKS (EXCEPT TRAVEL LANE IF USED) TO APPROXIMATE PRE-CONSTRUCTION PROFILE IMMEDIATELY AFTER PIPE IS LOWERED IN AND BACKFILLED. INSTALL PERMANENT EROSION CONTROLS WHERE REQUIRED.
9. REMOVE ANY TEMPORARY CROSSING STRUCTURES AND/OR GRAVEL.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

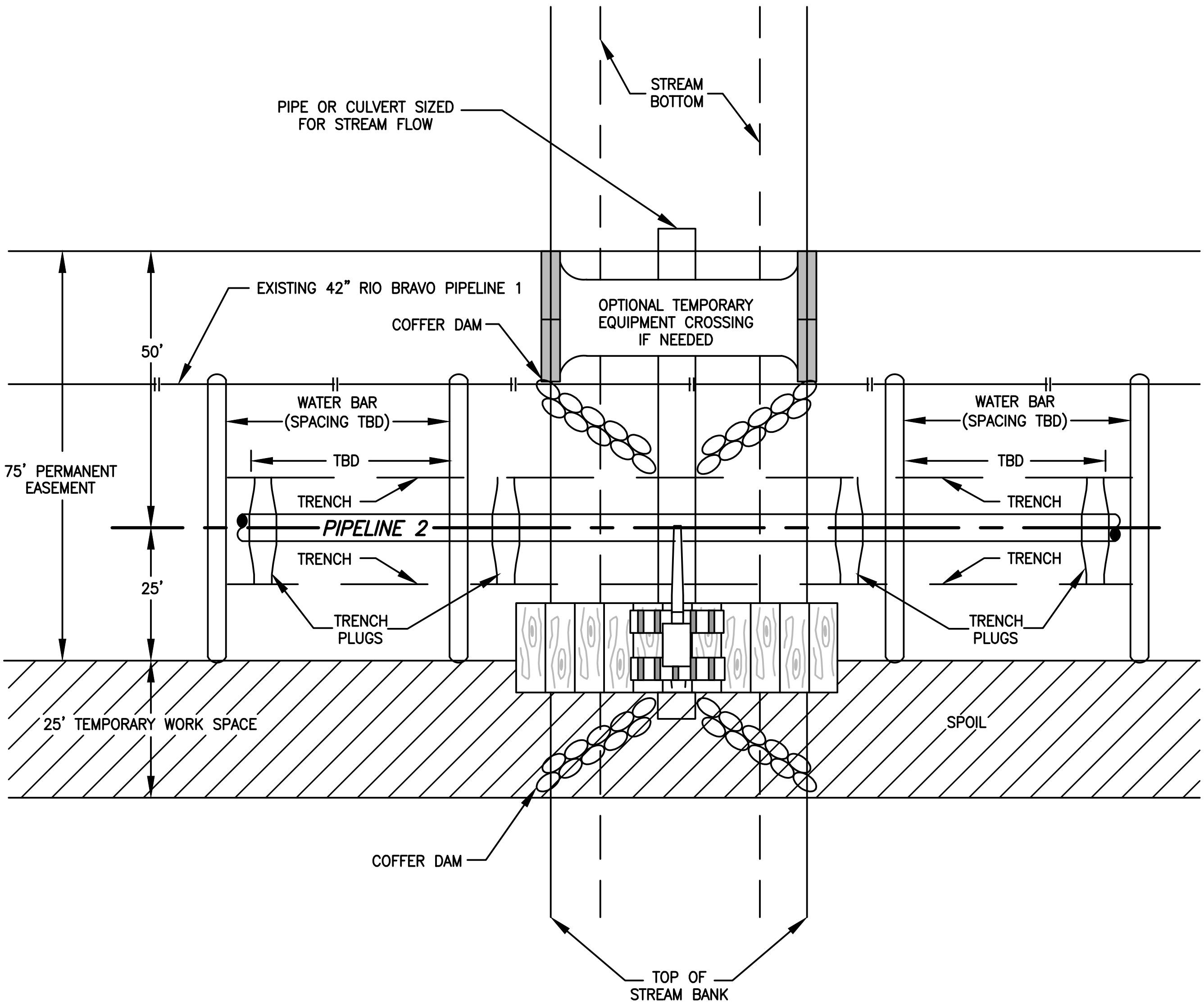
RIO BRAVO PIPELINE

PIPELINE 2 OPEN CUT WET CROSSING METHOD WITH 75 FOOT CONSTRUCTION SPACE NON-FLOWING WATERBODY

TEXAS

DRAWN BY: WT	DATE: 10/20/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/24/17	108642-99-026	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-026.dwg PLOT DATE: 11/8/2017 BY: RUEHLEN, DJ



NOTES:

1. SPOIL WILL BE PLACED IN THE CONSTRUCTION ROW AT LEAST 10 FEET FROM THE WATER'S EDGE OR IN THE ATWS AREAS.
2. ATWS WILL BE AT LEAST 50 FEET FROM THE WATERBODY UNLESS A SITE-SPECIFIC JUSTIFICATION HAS BEEN APPROVED.
3. SEDIMENT BARRIERS WILL BE USED TO PREVENT THE FLOW OF SPOIL OR SILT-LADEN WATER INTO ANY WATERBODY.

REV.	DATE	BY	DESCRIPTION	CHK.

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

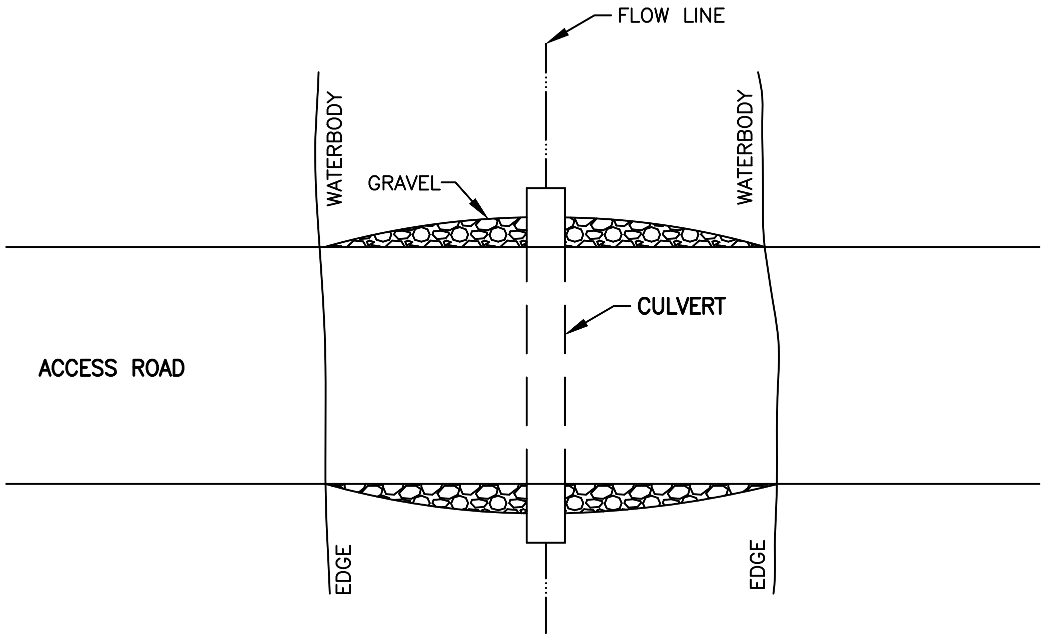
RIO BRAVO PIPELINE

PIPELINE 2
FLOWING STREAM CROSSING
WITH PIPE OR CULVERT

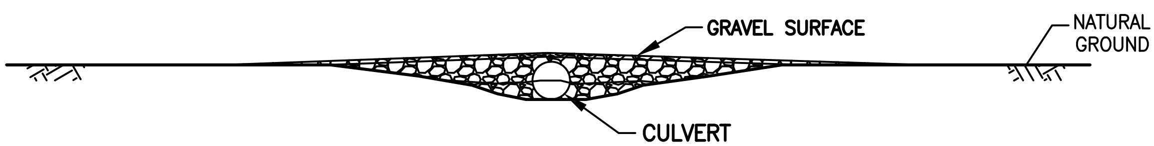
TEXAS

DRAWN BY: WT	DATE: 10/20/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 10/24/17	108642-99-027	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-027.dwg PLOT DATE: 11/15/2017 BY: RUEHLEN, DJ



PLAN VIEW
N.T.S.



PROFILE
N.T.S.

NOTES:
1. THE SIZE OF THE WATERBODY WILL DETERMINE WHETHER CULVERTS OR A BRIDGE WILL BE USED.
2. THE APPROPRIATE PIPE SIZE AND/OR NUMBER OF PIPES WILL BE USED SO AS TO NOT IMPEDE FLOW.
3. TEXTILE WILL BE LAID UNDER ALL GRAVEL THAT IS TO BE REMOVED.
4. PROPER EROSION CONTROL MEASURES WILL BE IMPLEMENTED ACCORDING TO APPLICABLE PERMITS AND REGS.
5. NECESSARY MATS WILL BE TEMPORARY AND REMOVED AT THE END OF CONSTRUCTION.
6. SILT FENCE WILL BE USED AS NEEDED.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/21/17	MM	ISSUED FOR USE	RK

PROJECT NO. 108642

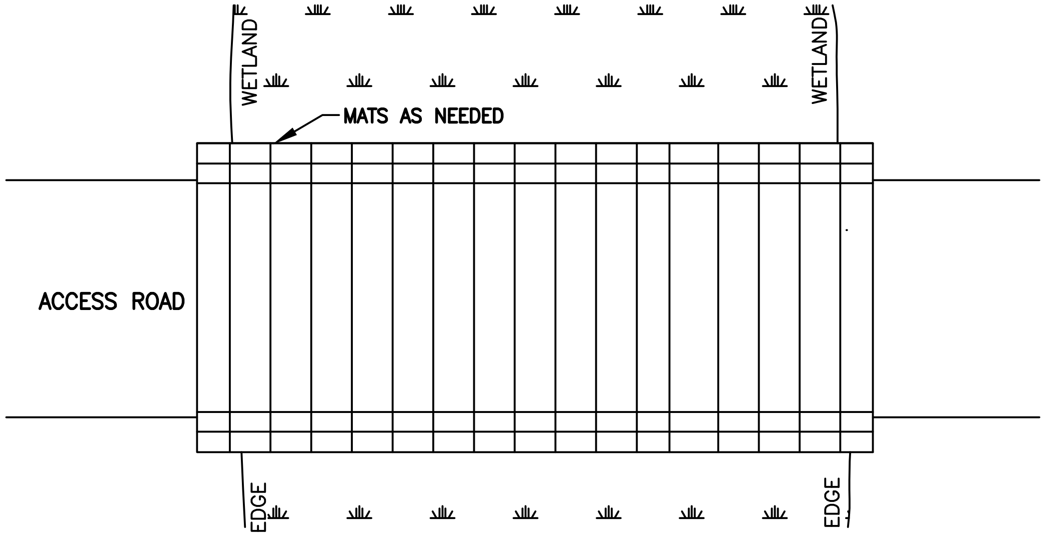
WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL ACCESS ROAD CROSSING WATERBODY
TEXAS

DRAWN BY: MM	DATE: 12/19/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 12/19/17	108642-99-032	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-032.dwg PLOT DATE: 12/21/2017 BY: MUALLEM, MIKE (WG MUSTANG)



PLAN VIEW
N.T.S.

PROFILE
N.T.S.

NOTES:
1. MATS WILL BE TEMPORARY AND REMOVED AT THE END OF CONSTRUCTION.
2. INSTALL ADEQUATE EROSION AND SEDIMENT CONTROLS AT APPROACHES TO MATS TO PROMOTE A SMOOTH TRANSITION TO, AND MINIMIZE SEDIMENT TRACING ONTO MATS.
3. TIMBER MATS OR COMPARABLE COMPOSITE MATS WILL BE USED.
4. MATS SHOULD BE IN GOOD CONDITION TO ENSURE PROPER INSTALLATION, USE AND REMOVAL.
5. MATS WILL BE APPROPRIATE SIZE.
6. MATS WILL BE USED IN WET AREAS THAT ARE NOT FLOWING WATER.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/21/17	MM	ISSUED FOR USE	RK

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

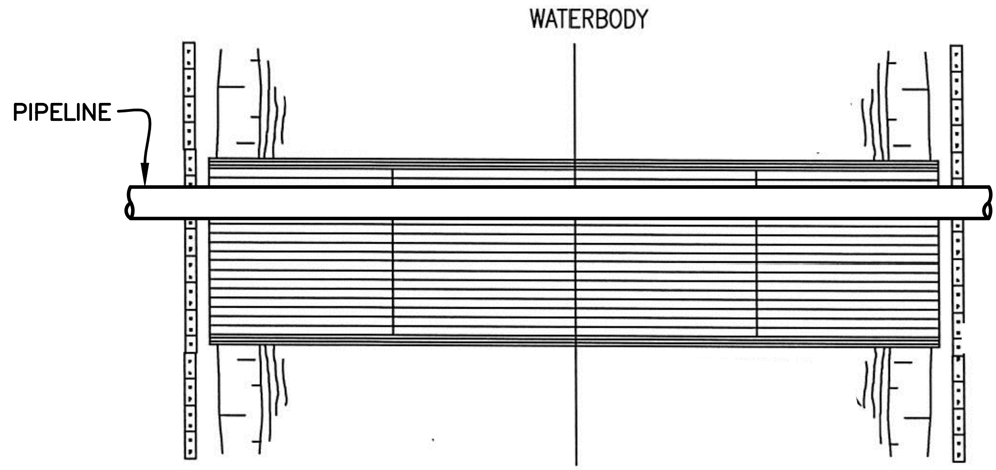
RIO BRAVO
PIPELINE

TYPICAL ACCESS ROAD CROSSING WETLAND

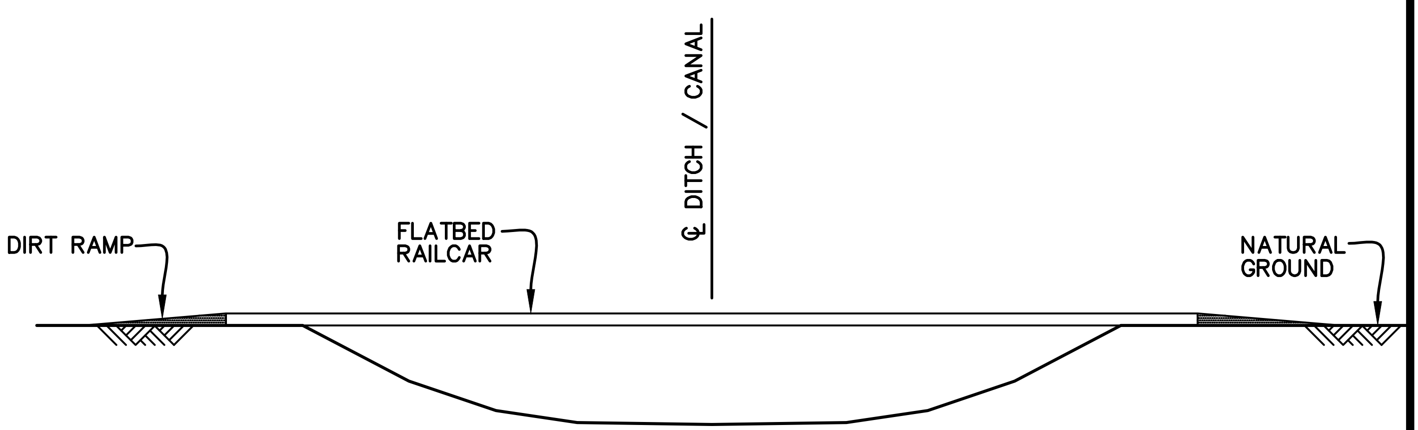
TEXAS

DRAWN BY: MM	DATE: 12/19/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 12/19/17	108642-99-033	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-033.dwg PLOT DATE: 12/21/2017 BY: MUALLEM, MIKE (WG MUSTANG)



PLAN VIEW
N.T.S.



PROFILE
N.T.S.

NOTES:
1. BRIDGES WILL BE TEMPORARY AND REMOVED AT THE END OF CONSTRUCTION.
2. ADEQUATE EROSION AND SEDIMENT CONTROL WILL BE USED DURING CONSTRUCTION.
3. RAILROAD CARS WILL BE IN GOOD CONDITION TO ENSURE PROPER INSTALLATION, USE AND REMOVAL.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/21/17	MM	ISSUED FOR USE	RK

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL WATER BODY CROSSING USING RAILCAR

TEXAS

DRAWN BY: MM	DATE: 12/21/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 12/21/17	108642-99-034	0
SCALE: N.T.S.	APP.: JEA		

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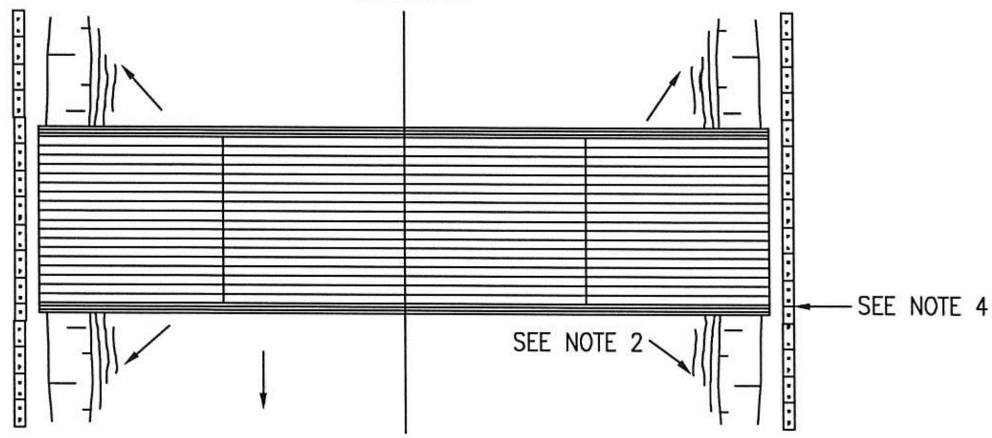
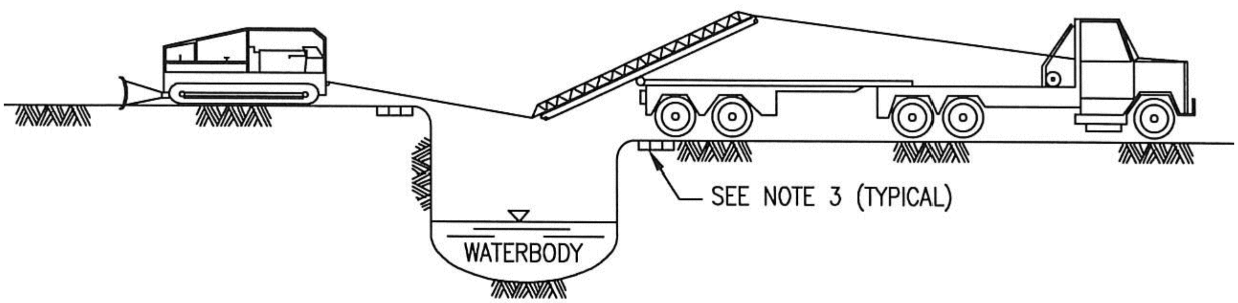


PLAN



PROFILE

NOTES:

1. THIS TYPE OF BRIDGE GENERALLY USED ON NARROW, DEEP CROSSINGS.
2. BRIDGE ANCHORED AND/OR TIED OFF TO ANCHOR BLOCKS FOR STABILITY.
3. UTILIZE APPROACH FILLS OF CLEAN GRANULAR MATERIAL, SWAMP MATS, SKIDS OR OTHER SUITABLE MATERIALS TO AVOID CUTTING THE BANKS WHEREVER FEASIBLE. ENSURE ADEQUATE FREEBOARD. AS REQUIRED, ENSURE THAT FILL MATERIAL USED DOES NOT SPILL INTO WATERBODY.
4. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY. SILT FENCE, HAY BALES OR SAND BAGS MAY BE USED INTERCHANGEABLY.
5. REMOVE PORTABLE BRIDGES AS SOON AS POSSIBLE AFTER PERMANENT SEEDING UNLESS OTHERWISE DIRECTED BY COMPANY REPRESENTATIVE. THE STRUCTURE IS TO BE REMOVED IF THERE IS MORE THAN ONE MONTH BETWEEN FINAL GRADING AND SEEDING, AND ALTERNATIVE ACCESS TO THE CONSTRUCTION R.O.W. IS AVAILABLE.
6. DISPOSE OF ANY ROCK AS DIRECTED BY THE COMPANY REPRESENTATIVE.
7. RESTORE AND STABILIZE BED AND BANKS TO APPROXIMATE PRE-CONSTRUCTION CONDITIONS.

REV.	DATE	BY	DESCRIPTION	CHK.
0	12/21/17	MM	ISSUED FOR USE	RK

PROJECT NO. 108642

WOOD GROUP USA, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2999

RIO BRAVO PIPELINE

TYPICAL BRIDGED WATERBODY CROSSING

TEXAS

DRAWN BY: MM	DATE: 12/21/17	DWG. NO.	REV.
CHECKED BY: JRK	DATE: 12/21/17	108642-99-035	0
SCALE: N.T.S.	APP.: JEA		

FILE: R:\Projects\108642\Discipline\CAD\Drawings\99-Typical\WOOD\108642-99-035.dwg PLOT DATE: 12/21/2017 BY: MUALLEM, MIKE (WG MUSTANG)

APPENDIX F

REQUESTED ALTERNATIVE MEASURES FROM THE FERC PLAN AND PROCEDURES FOR THE RIO GRANDE LNG PROJECT

Appendix F-1
Requested Alternative Measures from the FERC Procedures Section II.A.2, Site-Specific Justification for Use of a Construction Right-of-Way Width Greater than 75 Feet in Wetlands

MP Begin	MP End	Workspace Dimensions (feet)[a]	Existing Land Use	Feature ID	Feature Type	RB Pipeline's Justification[b]	FERC Recommendation
Pipelines 1 and 2							
0.0	0.5	2,538 x 25	Scrub / Forested Wetland, Open Water	WW-TDS-060, SS-TDS-016	PFO	The section of a 42-inch pipeline would be too large and heavy to be safely constructed outside of wetland and moved to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line. This wetland is at the beginning requiring additional space to make tie-ins to the launcher facilities. The initial construction process requires additional space to mobilize construction equipment prior to beginning the construction sequence.	Acceptable
2.2	2.4	1,566 x 25	Scrub / Forested Wetland, Open Water	WW-TDS-059, SS-TDS-017	PFO	The section of a 42-inch pipeline would be too large and heavy to be safely constructed outside of wetland and moved to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable
45.4	46.1	3,339 x 25	Emergent Wetland	WW-T05-004	PEM	The section of a 42-inch pipeline would be too large and heavy to be safely constructed outside of wetland and moved to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable

Appendix F-1 (continued)
Requested Alternative Measures from the FERC Procedures Section II.A.2, Site-Specific Justification for Use of a Construction Right-of-Way Width Greater than 75 Feet in Wetlands

MP Begin	MP End	Workspace Dimensions (feet)[a]	Existing Land Use	Feature ID	Feature Type	RB Pipeline's Justification[b]	FERC Recommendation
Pipelines 1 and 2 (continued)							
46.7	46.7	104 x 25	Emergent Wetland	WW-T04-024	PEM	Wetland WW-T04-024 abuts an intermittent, major waterbody (HY-T04-001). Due to the adjoining nature of these two features, they are treated as a single crossing.The section of a 42-inch pipeline would be too large and heavy to be safely constructed outside of wetland and moved to location. Therefore, the wetland will be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable
105.1	105.4	1,655 x 25	Emergent Wetland	WW-T10-006	PEM	The section of a 42-inch pipeline would be too large and heavy to be safely constructed outside of wetland and moved to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable
105.5	105.8	1,641 x 25	Emergent Wetland	WW-T10-007	PEM	The section of a 42-inch pipeline would be too large and heavy to be safely constructed outside of wetland and moved to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable

Appendix F-1 (continued)
Requested Alternative Measures from the FERC Procedures Section II.A.2, Site-Specific Justification for Use of a Construction Right-of-Way Width Greater than 75 Feet in Wetlands

MP Begin	MP End	Workspace Dimensions (feet)[a]	Existing Land Use	Feature ID	Feature Type	RB Pipeline's Justification[b]	FERC Recommendation
Pipelines 1 and 2 (continued)							
125.0	129.0	21,478 x 25	Emergent Wetland	WW-T09-002B, WW-T09-002	EEM	This wetland area would be crossed in similar fashion and reasoning as other wetlands greater than 1,000 feet in length. This section of 42-inch pipeline would be too large and heavy to safely construct the section outside of wetland and move to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable
129.3	129.7	2,287 x 25	Emergent Wetland, Open Water	WW-T09-001, SS-T09-005	EEM	This wetland area would be crossed in similar fashion and reasoning as other wetlands greater than 1,000 feet in length. This section of 42-inch pipeline would be too large and heavy to safely construct the section outside of wetland and move to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable
130.8	131.2	2,164 x 25	Emergent Wetland, Open Water	WW-T09-003, WW-T03-001, SS-T09-001	EEM, EUS	This wetland area would be crossed in similar fashion and reasoning as other wetlands greater than 1,000 feet in length. This section of 42-inch pipeline would be too large and heavy to safely construct the section outside of wetland and move to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable

Appendix F-1 (continued) Requested Alternative Measures from the FERC Procedures Section II.A.2, Site-Specific Justification for Use of a Construction Right-of-Way Width Greater than 75 Feet in Wetlands							
MP Begin	MP End	Workspace Dimensions (feet)[a]	Existing Land Use	Feature ID	Feature Type	RB Pipeline's Justification[b]	FERC Recommendation
Pipelines 1 and 2 (continued)							
131.4	131.6	788 x 25	Emergent Wetland	WW-T01-003	EEM	The section of a 42-inch pipeline would be too large and heavy to be safely constructed outside of wetland and moved to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line. In addition, this section would be utilized as the pullback section for the Road Bore pipe requiring additional space to weld up the bore section.	Acceptable
131.6	132.5	5,381 x 25	Emergent Wetland	WW-T01-001	EEM, EUS	This wetland area would be crossed in similar fashion and reasoning as other wetlands greater than 1,000 feet in length. This section of 42-inch pipeline would be too large and heavy to safely construct the section outside of wetland and move to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable
132.8	132.9	617 x 25	Emergent Wetland	WW-T01-002	EEM	This area will be utilized for the additional workspace required for the point of inflection and for the additional workspace required for the horizontal direction drill operations. Additionally, the anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable

Appendix F-1 (continued)
Requested Alternative Measures from the FERC Procedures Section II.A.2, Site-Specific Justification for Use of a Construction Right-of-Way Width Greater than 75 Feet in Wetlands

MP Begin	MP End	Workspace Dimensions (feet)[a]	Existing Land Use	Feature ID	Feature Type	RB Pipeline's Justification[b]	FERC Recommendation
Pipelines 1 and 2 (continued)							
134.1	134.4	842 x 25	Emergent Wetland	WW-T02-003	EEM	The section of a 42-inch pipeline would be too large and heavy to be safely constructed outside of wetland and moved to location. Therefore, the wetland will be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable
136.0	136.3	1,754 x 25	Emergent Wetland	WW-T02-003	EEM	The section of a 42-inch pipeline would be too large and heavy to be safely constructed outside of wetland and moved to location. Therefore, the wetland would be crossed using upland construction techniques and sequencing in anticipated Type C soils requiring additional space for spoil storage and working space due to the potential sloughing of the ditch line.	Acceptable

[a] Dimensions provided are for the temporary workspace above the typical 75-foot width workspace in wetlands; the discrepancies between the length of the temporary workspace and the distance between milepost start and end are due to rounding.

[b] Type C soils include granular soils (such as sand and loamy sand); soil from which water is freely seeping; and material in a sloped, layered system where the layers dip into the excavation. These soils require a greater height to depth ratio for trench excavation than other, more stable soil types.

Appendix F-2 Requested Alternative Measures from the FERC Procedures Section V.B.2.a and VI.B.1.a, Site-Specific Justification for Additional Temporary Workspace within Wetlands and Waterbodies								
ATWS ID	**MP Begin**	**MP End**	**Workspace Dimensions (feet)[a]**	**Existing Land Use**	**Feature ID**	**Feature Type**	**RB Pipeline's Justification[b]**	**FERC Recommendation**
Pipelines 1 and 2								
ATWS -397	125.8	125.8	150 X 25	Emergent Wetland	WW-T09-002B	EEM	Foreign pipieline crossing	Acceptable
ATWS -398	125.9	125.9	100 X 25	Emergent Wetland	WW-T09-002	EEM	Point of inflection requiring additional spoil storage	Acceptable
ATWS -399	126.5	127.0	2,294 X 50	Emergent Wetland	WW-T09-002	EEM	Generally, this area is comprised of sandy, loamy dunes with side slopes and hill crests. Because of the anticipated Type C soils and topography, the RG Developers have generally tried to route the center of the ROW at or near the crest of each dune in order to cross this generalized wetland area safely by avoiding a side hill lay in sand. In order to provide a suitable and safe working terrain, the hill crest would be right of wayed (leveled) the entire width of the working area and ditch line in order to provide a smooth and level workspace. In addition, assuming 3-4 foot of cover minimum (8-foot bottom of ditch) with the anticipated sandy soils with the natural angle of repose of 1½ to 1 slope, the top of ditch could be as wide as 28 feet from ditch line sloughing.	Acceptable

Appendix F-2 **Requested Alternative Measures from the FERC Procedures Section V.B.2.a and VI.B.1.a, Site-Specific Justification for Additional Temporary Workspace within Wetlands and Waterbodies (continued)**								
ATWS ID	**MP Begin**	**MP End**	**Workspace Dimensions (feet)[b]**	**Existing Land Use**	**Feature ID**	**Feature Type**	**RB Pipeline's Justification[c]**	**FERC Recommendation**
Pipelines 1 and 2 (continued)								
ATWS -400	126.5	127.0	2,286 X 25	Emergent Wetland	WW-T09-002	EEM	Generally, this area is comprised of sandy, loamy dunes with side slopes and hill crests. Because of the anticipated Type C soils and topography, the RG Developers have generally tried to route the center of the ROW at or near the crest of each dune in order to cross this generalized wetland area safely by avoiding a side hill lay in sand. In order to provide a suitable and safe working terrain, the hill crest would be right of wayed (leveled) the entire width of the working area and ditch line in order to provide a smooth and level workspace. In addition, assuming 3-4 foot of cover minimum (8-foot bottom of ditch) with the anticipated sandy soils with the natural angle of repose of 1½ to 1 slope, the top of ditch could be as wide as 28 feet from ditch line sloughing.	Acceptable
ATWS -401	127.7	127.7	100 X 25	Emergent Wetland	WW-T09-002	EEM	Point of inflection requiring additional spoil storage	Acceptable
ATWS -402	128.7	128.7	100 X 25	Emergent Wetland	WW-T09-002	EEM	Point of inflection requiring additional spoil storage	Acceptable
ATWS -407	130.8	130.8	200 X 75	Emergent Wetland	WW-T09-003	EUS	Canal Crossing; HDD operations	Acceptable
ATWS -408	130.8	130.8	200 X 25	Emergent Wetland	WW-T09-003	EUS	Canal Crossing; HDD operations	Acceptable
ATWS -409	130.9	130.9	100 x 25	Emergent Wetland	WW-T09-003	EUS	Point of Inflection requiring additional spoil storage	Acceptable
ATWS -412	131.6	131.6	75 X 50	Upland Shrub / Forest, Industrial / Commercial, Emergent Wetland	WW-T01-003	EEM	Road Crossing; road will be bored and bore equipment staging requires additional space	Acceptable

Appendix F-2
Requested Alternative Measures from the FERC Procedures Section V.B.2.a and VI.B.1.a, Site-Specific Justification for Additional Temporary Workspace within Wetlands and Waterbodies (continued)

ATWS ID	MP Begin	MP End	Workspace Dimensions (feet)[b]	Existing Land Use	Feature ID	Feature Type	RB Pipeline's Justification[c]	FERC Recommendation
Pipelines 1 and 2 (continued)								
ATWS -413	131.6	131.6	75 X 25	Upland Shrub / Forest, Industrial / Commercial, Emergent Wetland	WW-T01-003	EEM	Road Crossing; road will be bored and bore equipment staging requires additional space	Acceptable
ATWS -414	131.6	131.6	253 X 50	Industrial / Commercial, Emergent Wetland	WW-T01-001	EEM, EUS	Point of Inflection requiring additional spoil storage / Road Crossing; road will be bored, bore equipment staging requires additional space	Acceptable
ATWS -415	131.6	131.6	75 X 25	Industrial / Commercial, Emergent Wetland	WW-T01-001	EEM	Road Crossing; road will be bored, bore equipment staging requires additional space	Acceptable
ATWS -416	132.9	132.9	65 X 75	Emergent Wetland	WW-T01-002	EEM	Canal and Wetland Crossing; HDD operations	Acceptable
ATWS -417	132.9	132.9	200 X 25	Emergent Wetland	WW-T01-002 and WW-TDS- 146	EEM	Canal and Wetland Crossing; HDD operations	Acceptable

a The discrepancies between the length of the ATWS and the distance between milepost start and end are due to rounding.

b Type C soils include granular soils (such as sand and loamy sand), soil from which water is freely seeping, and material in a sloped, layered system where the layers dip into the excavation. These soils require a greater height to depth ratio for trench excavation than other, more stable soil types.

Appendix F-3
Requested Alternative Measures from the FERC Procedures Section V.B.2.a and VI.B.1.a, Site-Specific Justification for Additional Temporary Workspace within 50 feet of Wetlands and Waterbodies

ATWS ID	MP Begin	MP End	Workspace Dimensions (feet)	Existing Land Use	Distance to Wetland / Waterbody (feet)	Wetland / Waterbody Feature ID	RB Pipeline's Justification	Protection Measures	FERC Recommendation
Header System									
ATWS-HS-15	HS-0.9	HS-1.0	150 x 25	Open Land, Upland Shrub / Forest	5.0	SS-TDS-018	Foreign Pipeline Crossing / Stream Crossing; stream is anticipated to be dry but would require a deeper trench and additional spoil storage	Mandatory installation of silt fencing around the perimeter of workspace adjacent to waterbody, and of hay bales or wattles where additional protection is required.	Acceptable
Pipelines 1 and 2									
ATWS-174	69.8	69.9	409 x 25	Open Land	37.5	WW-TDS-142	Road Crossing adjacent to a wetland; road will be bored, bore equipment staging requires additional space. Point of Inflection requiring additional spoil storage	Mandatory installation of silt fencing around the perimeter of workspace adjacent to wetland, and or hay bales or wattles where additional protection is required.	Acceptable
ATWS-223	88.5	88.5	75 x 24	Upland Shrub / Forest	10.0	WW-T03-003	Road Crossing adjacent to a wetland; road will be bored, bore equipment staging requires additional space.	Mandatory installation of silt fencing around the perimeter of workspace adjacent to wetland, and or hay bales or wattles where additional protection is required.	Acceptable
ATWS-269	99.8	99.8	200 x 25	Upland Shrub / Forest	44.7	SS-T04-006	Canal Crossing adjacent to another waterbody; HDD operations require additional space	Mandatory installation of silt fencing around the perimeter of workspace adjacent to waterbody, and of hay bales or wattles where additional protection is required.	Acceptable
ATWS-326	114.5	114.5	102 x 25	Upland Shrub / Forest	35.2	WW-T04-027	Point of Inflection requiring additional spoil storage	Mandatory installation of silt fencing around the perimeter of workspace adjacent to waterbody, and of hay bales or wattles where additional protection is required.	Acceptable

Appendix F-4 Requested Alternative Measures from the FERC Procedures Section V.B.2.a and VI.B.1.a, Site-Specific Justification for Access Roads within Wetlands and Aboveground Facilities Within Wetlands								
Name	**Access Road ID**	**Nearest MP**	**Permanent / Temporary**	**Existing / New**	**Final Width (feet)**	**Wetland ID and Feature Type**	**RB Pipeline's Proposed Justification**	**FERC Recommendation**
Aboveground Facilities								
Rio Grande LNG Terminal	N/A	135.5	Permanent	New	N/A	Aquatic Resources 1, 3, 4, and 5; EEM, ESS, and EUS	The proposed LNG Terminal site is the most environmentally preferable and practical alternative that meets the Project's stated purpose.	Acceptable
Access Roads								
Access to pipeline ROW from unnamed King Ranch Road	AR-006	0.0	Temporary	Existing Dirt/Gravel Road	12	WW-TDS-060, PFO	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. RB Pipeline will continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands or unless clearing of forested wetland vegetation is required.

Appendix F-4 (continued)
Requested Alternative Measures from the FERC Procedures Section V.B.2.a and VI.B.1.a, Site-Specific Justification for Access Roads within Wetlands and Aboveground Facilities Within Wetlands (continued)

Name	Access Road ID	Nearest MP	Permanent / Temporary	Existing / New	Final Width (feet)	Wetland ID and Feature Type	RB Pipeline's Proposed Justification	FERC Recommendation
Access Roads (continued)								
Avoidance of farm pond (HY-TDS-106)	AR-030	58.0	Temporary	Existing Two Track Road	12	WW-TDS-018, PEM	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. The existing road will be used as a pass around the waterbody within the right-of-way, therefore reducing impacts on the waterbody. RB Pipeline will continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands.
Access to pipeline right-of-way from Old Port Isabel Road	AR-055	126.5	Temporary	Existing Two Track Road	12	WW-T10-009B, WW- T09-002, WW-TDS-149, EEM	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. RB Pipeline would continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands.
Access to pipeline right-of-way on Port of Brownsville Property	AR-056	130.7	Temporary	Existing Two Track Road	12	WW-T09-001, WW-T10-001, EEM	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. RB Pipeline would continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands.

Appendix F-4 (continued) Requested Alternative Measures from the FERC Procedures Section V.B.2.a and VI.B.1.a, Site-Specific Justification for Access Roads within Wetlands and Aboveground Facilities Within Wetlands (continued)								
Name	**Access Road ID**	**Nearest MP**	**Permanent / Temporary**	**Existing / New**	**Final Width (feet)**	**Wetland ID and Feature Type**	**RB Pipeline's Proposed Justification**	**FERC Recommendation**
Access Roads (continued)								
Access to pipeline ROW off SH-48	AR-058	132.5	Temporary	Existing Dirt/Gravel Road	12	WW-T01-001, EUS	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. RB Pipeline will continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands.
Access to pipeline ROW off SH-49	AR-060	134.1	Temporary	Existing Dirt/Gravel Road	12	WW-T02-003, EEM	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. RB Pipeline will continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands.
Access to pipeline ROW off SH-50	AR-061	134.7	Temporary	Existing Two Track Road	12	WW-T02-001a, EUS	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. RB Pipeline will continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands.

Appendix F-4 (continued)
Requested Alternative Measures from the FERC Procedures Section V.B.2.a and VI.B.1.a, Site-Specific Justification for Access Roads within Wetlands and Aboveground Facilities Within Wetlands (continued)

Name	Access Road ID	Nearest MP	Permanent / Temporary	Existing / New	Final Width (feet)	Wetland ID and Feature Type	RB Pipeline's Proposed Justification	FERC Recommendation
Access Roads (continued)								
Access to pipeline ROW off SH-51	AR-062	135.2	Temporary	Existing Two Track Road	12	WW-T02-001c, EUS	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. RB Pipeline will continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands.
Access to pipeline ROW off SH-52	AR-063	135.3	Temporary	Existing Two Track Road	12	WW-T02-001c, EUS	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. RB Pipeline will continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands.
Access to pipeline ROW off SH-53	AR-064	135.4	Temporary	Existing Two Track Road	12	WW-T02-001c , EUS	The use of the existing road system reduces overall impacts by eliminating the need for the creation of new roads. RB Pipeline will continue to design and engineer the access roads to minimize impacts to the identified wetlands, including the potential use of equipment mats and/or board road mats as required. No external fill is anticipated within the wetlands.	Acceptable unless the use of external fill (other than construction mats) would be placed in wetlands.

APPENDIX G

WATERBODIES CROSSED BY THE RIO BRAVO PIPELINE SYSTEM

Appendix G-1
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Desig-nation[b]	Impair-ment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Header System													
SS-TDS-018	Unnamed	Intermittent Stream	Desktop	Freshwater	PCR-1	N/A	N/A	HS-1.0	14.8	Intermediate	Open Cut	Yes	100
Pipeline 1													
SS-TDS-016	Derramadero De Machos Creek	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	0.3	8.2	Minor	Open Cut	Yes	100
SS-TDS-017	Jaboncillos Creek	Intermittent Stream	Desktop	Freshwater	PCR-1	N/A	N/A	2.2	51.9	Intermediate	Open Cut	Yes	100
SS-TDS-014	Unnamed	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	2.7	3.1	Minor	Open Cut	Yes	125
SS-TDS-013	Unnamed	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	5.7	2.0	Minor	Open Cut	Yes	125
SS-TDS-012	Unnamed	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	8.7	2.7	Minor	Open Cut	Yes	125
SS-TDS-011	Radicha Creek	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	8.9	2.2	Minor	Open Cut	Yes	125
SS-TDS-010	Solado Creek	Intermittent Stream	Desktop	Freshwater	PCR-1	N/A	N/A	17.9	2.0	Minor	Not Crossed by Centerline	Yes	100
SS-T05-001	Los Olmos Creek	Perennial Stream	Field	Freshwater	PCR-1	N/A	N/A	19.1	205.5	Major	HDD	No	75
HY-TDS-103[e]	Unnamed	Reservoir	Desktop	Freshwater	N/A	N/A	N/A	30.8	13.4	Major	Open Cut	Yes	100
HY-TDS-103[e]	Unnamed	Reservoir	Desktop	Freshwater	N/A	N/A	N/A	30.8	538.6	Major	Open Cut	Yes	100

Appendix G-1 (continued)
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Desig-nation[b]	Impair-ment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 1 (continued)													
HY-T08-002[e]	Unnamed	Reservoir	Field	Freshwater	N/A	N/A	N/A	30.9	440.5	Major	Open Cut	Yes	100
HY-TDS-103[e]	Unnamed	Reservoir	Desktop	Freshwater	N/A	N/A	N/A	31.0	1.7	Major	Open Cut	Yes	100
HY-T08-001[e]	Unnamed	Reservoir	Field	Freshwater	N/A	N/A	N/A	31.2	315.8	Major	Open Cut	Yes	100
HY-TDS-104[e]	Unnamed	Reservoir	Desktop	Freshwater	N/A	N/A	N/A	31.2	0.0	Major	Open Cut	Yes	100
HY-T07-001	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	32.9	37.1	Intermediate	Not Crossed by Centerline	Yes	125
HY-T05-001	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	46.2	145.9	Major	Open Cut	No	75
HY-T04-001	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	46.7	783.3	Major	Open Cut	No	100
SS-TDS-025	Unnamed	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	52.5	4.9	Minor	Open Cut	Yes	125
HY-TDS-106	Unnamed	Farm Pond	Desktop	Freshwater	N/A	N/A	N/A	58.0	386.2	Major	Open Cut	No	75
SS-T10-011	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	77.8	58.1	Intermediate	HDD	No	75
SS-T10-010	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	79.1	110.6	Intermediate	HDD	No	75
SS-T10-003	East Main Drain	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	82.4	108.5	Major	HDD	No	75

Appendix G-1 (continued)
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Designation[b]	Impairment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 1 (continued)													
SS-T10-008	Donna Drain	Perennial Stream	Field	Freshwater	PCR-1	N/A	N/A	86.6	185.9	Major	HDD	No	75
SS-T04-005	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	92.1	45.4	Intermediate	HDD	No	75
SS-T02-004	North Floodway	Perennial Stream	Field	Freshwater	PCR-1	N/A	N/A	93.4	76.7	Intermediate	HDD	No	75
SS-T04-008	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	94.7	19.4	Intermediate	HDD	No	75
SS-T04-006	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	98.8	2.0	Minor	HDD	No	75
SS-T09-007	Arroyo Colorado[f]	Perennial Stream	Field	Freshwater	PCR-1	SF; High Aquatic Life Use	Impaired	100.1	313.4	Major	HDD	No	75
SS-T14-004	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	101.4	51.2	Intermediate	HDD	No	75
SS-TDS-003[g]	Unnamed	Intermittent Stream	Desktop	Freshwater	PCR-1	N/A	N/A	101.7	12.7	Intermediate	Open Cut	Yes	125
SS-T08-001	San Vincente Drainage Ditch	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	102.2	48.0	Intermediate	HDD	No	75
HY-T10-002	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	102.8	275.3	Major	Open Cut	No	100
SS-T10-006	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	103.0	17.5	Intermediate	Open Cut	No	75

Appendix G-1 (continued)
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Designation[b]	Impairment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 1 (continued)													
SS-T10-007	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	103.3	20.4	Intermediate	Open Cut	No	75
SS-TDS-001	Unnamed	Intermittent Stream	Desktop	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	103.8	27.2	Intermediate	Open Cut	No	75
SS-T10-012	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	105.1	28.8	Intermediate	Open Cut	Yes	100
SS-T10-013	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	105.4	146.2	Major	Open Cut	Yes	100
SS-T10-014	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	105.8	20.5	Intermediate	Open Cut	Yes	100
SS-T10-015	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	105.8	24.4	Intermediate	Open Cut	Yes	100
SS-T10-016	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	106.2	21.7	Intermediate	Open Cut	Yes	125
SS-T10-005	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	107.5	41.0	Intermediate	Open Cut	Yes	75
SS-T10-004	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	107.7	26.7	Intermediate	Open Cut	Yes	75
HY-T05-007	Unnamed	Farm Pond	Field	Freshwater	Not Classified	SF; Low Aquatic Life Use	Not Impaired	111.1	10.5	Intermediate	Open Cut	Yes	125
HY-T05-006	Unnamed	Farm Pond	Field	Freshwater	Not Classified	SF; Low Aquatic Life Use	Not Impaired	111.5	7.0	Minor	Open Cut	Yes	75
HY-T10-001	Unnamed	Farm Pond	Field	Freshwater	Not Classified	SF; Low Aquatic Life Use	Not Impaired	111.9	19.0	Intermediate	Open Cut	Yes	125

Appendix G-1 (continued) Waterbodies Crossed by the Rio Bravo Pipeline System													
Waterbody ID[a]	**Waterbody Name**	**Type**	**Desktop or Field**	**Salinity Regime**	**Water Quality Class[b]**	**Fishery Desig-nation[b]**	**Impair-ment Status[b]**	**MP**	**Crossing Length (ft)**	**FERC Class.**	**Proposed Crossing Method[c]**	**Anticipated to be Dry at Time of Crossing[d]**	**Cons ROW Width (ft)**
Pipeline 1 (continued)													
HY-T15-002	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	113 + 7,279 feet[h]	189.0	Major	Open Cut	Yes	75
SS-T15-007	Unnamed	Ephemeral Stream	Field	Freshwater	N/A	N/A	N/A	113 + 10,956 feet[h]	17.0	Intermediate	Open Cut	Yes	75
SS-T04-007	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	115.8	25.4	Intermediate	HDD	No	75
HY-T04-002	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	116.3	85.9	Intermediate	Open Cut	No	100
SS-T05-003	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	116.5	33.9	Intermediate	HDD	No	75
SS-T02-002	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	117.2	20.1	Intermediate	Bore	No	75
SS-T02-003	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	118.1	46.8	Intermediate	Not Crossed by Centerline	No	75
SS-T04-009	Resaca de los Cuates	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	118.9	324.3	Major	HDD	No	75
HY-T04-003	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	119.1	140.1	Major	HDD	No	75
HY-T04-003	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	119.2	124.2	Major	HDD	No	75
SS-T09-009	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	119.3	70.0	Intermediate	Open Cut	No	75
SS-T05-004	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	119.7	21.9	Intermediate	Open Cut	Yes	75

Appendix G-1 (continued)
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Designation[b]	Impairment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 1 (continued)													
SS-T05-005	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	120.3	14.9	Intermediate	Open Cut	Yes	125
SS-T09-011	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	120.8	2.2	Minor	Open Cut	Yes	125
SS-T05-006	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	121.6	19.3	Intermediate	Bore	No	75
SS-T05-007	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	121.6	41.7	Intermediate	Bore	No	75
SS-T05-008	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	121.6	30.5	Intermediate	Bore	No	75
SS-T05-009	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	122.0	2.2	Minor	Bore	Yes	75
SS-T09-008	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	N/A	N/A	124.2	87.6	Intermediate	HDD	No	75
SS-T09-005	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	129.5	2.0	Minor	Open Cut	Yes	100
SS-T09-004	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	130.0	2.3	Minor	Not Crossed by Centerline	Yes	125
SS-T09-003	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	130.1	3.0	Minor	Open Cut	Yes	125
SS-T09-002	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	130.2	2.2	Minor	Open Cut	Yes	125

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Desig-nation[b]	Impair-ment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 1 (continued)													
SS-T09-001	Unnamed	Perennial Stream	Field	Estuarine	PCR-1	SF	N/A	130.7	62.1	Intermediate	HDD	No	75
SS-T01-001	Channel to San Martin Lake[f]	Perennial Stream	Field	Estuarine	PCR-1	SF	N/A	133.5	220.9	Major	HDD	No	75
SS-T02-001	Channel to Bahia Grande[f]	Perennial Stream	Field	Estuarine	PCR-1	SF	N/A	135.2	73.2	Intermediate	HDD	No	75
Pipeline 2													
SS-TDS-016	Derramadero De Machos Creek	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	0.3	15.7	Minor	Open Cut	Yes	100
SS-TDS-017	Jaboncillos Creek	Intermittent Stream	Desktop	Freshwater	PCR-1	N/A	N/A	2.2	49.7	Intermediate	Open Cut	Yes	100
SS-TDS-014	Unnamed	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	2.7	3.1	Minor	Open Cut	Yes	125
SS-TDS-013	Unnamed	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	5.7	2.0	Minor	Open Cut	Yes	125
SS-TDS-012	Unnamed	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	8.7	2.5	Minor	Open Cut	Yes	125
SS-TDS-011	Radicha Creek	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	8.9	2.0	Minor	Open Cut	Yes	125
SS-TDS-010	Solado Creek	Intermittent Stream	Desktop	Freshwater	PCR-1	N/A	N/A	17.9	2.0	Minor	Not Crossed by Centerline	Yes	100
SS-T05-001	Los Olmos Creek[f]	Perennial Stream	Field	Freshwater	PCR-1	N/A	N/A	19.1	205.2	Major	HDD	No	75

Appendix G-1 (continued) Waterbodies Crossed by the Rio Bravo Pipeline System													
Waterbody ID[a]	**Waterbody Name**	**Type**	**Desktop or Field**	**Salinity Regime**	**Water Quality Class[b]**	**Fishery Desig-nation[b]**	**Impair-ment Status[b]**	**MP**	**Crossing Length (ft)**	**FERC Class.**	**Proposed Crossing Method[c]**	**Anticipated to be Dry at Time of Crossing[d]**	**Cons ROW Width (ft)**
Pipeline 2 (continued)													
HY-TDS-103[e]	Unnamed	Reservoir	Desktop	Freshwater	N/A	N/A	N/A	30.8	642.4	Major	Open Cut	Yes	100
HY-T08-002[e]	Unnamed	Reservoir	Field	Freshwater	N/A	N/A	N/A	31.0	254.9	Major	Open Cut	Yes	100
HY-TDS-103[e]	Unnamed	Reservoir	Desktop	Freshwater	N/A	N/A	N/A	31.0	111.3	Major	Open Cut	Yes	100
HY-T08-001[e]	Unnamed	Reservoir	Field	Freshwater	N/A	N/A	N/A	31.2	331.6	Major	Open Cut	Yes	100
HY-TDS-104[e]	Unnamed	Reservoir	Desktop	Freshwater	N/A	N/A	N/A	31.2	0.1	Major	Open Cut	Yes	100
HY-T07-001	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	32.9	37.1	Intermediate	Not Crossed by Centerline	Yes	125
HY-T05-001	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	46.2	155.9	Major	Open Cut	No	75
HY-T04-001	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	46.7	734.9	Major	Open Cut	No	100
SS-TDS-025	Unnamed	Ephemeral Stream	Desktop	Freshwater	N/A	N/A	N/A	52.5	3.9	Minor	Open Cut	Yes	125
HY-TDS-106	Unnamed	Farm Pond	Desktop	Freshwater	N/A	N/A	N/A	58.0	358.9	Major	Open Cut	No	75
SS-T10-011	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	77.8	61.6	Intermediate	HDD	No	75
SS-T10-010	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	79.1	110.9	Intermediate	HDD	No	75

Appendix G-1 (continued)
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Desig-nation[b]	Impair-ment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 2 (continued)													
SS-T10-003	East Main Drain	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	82.4	108.2	Major	HDD	No	75
SS-T10-008	Donna Drain	Perennial Stream	Field	Freshwater	PCR-1	N/A	N/A	86.6	182.9	Major	HDD	No	75
SS-T04-005	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	92.1	44.7	Intermediate	HDD	No	75
SS-T02-004	North Floodway	Perennial Stream	Field	Freshwater	PCR-1	N/A	N/A	93.4	77.5	Intermediate	HDD	No	75
SS-T04-008	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	94.7	17.5	Intermediate	HDD	No	75
SS-T04-006	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	98.8	2.0	Minor	HDD	No	75
SS-T09-007	Arroyo Colorado[f]	Perennial Stream	Field	Freshwater	PCR-1	SF; High Aquatic Life Use	Impaired	100.1	317.0	Major	HDD	No	75
SS-T14-004	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	101.4	51.2	Intermediate	HDD	No	75
SS-TDS-003[g]	Unnamed	Intermittent Stream	Desktop	Freshwater	PCR-1	N/A	N/A	101.7	13.0	Intermediate	Open Cut	Yes	125
SS-T08-001	San Vincente Drainage Ditch	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	102.2	48.0	Intermediate	HDD	No	75
HY-T10-002	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	102.8	156.0	Major	Open Cut	No	100

Appendix G-1 (continued) Waterbodies Crossed by the Rio Bravo Pipeline System													
Waterbody ID[a]	**Waterbody Name**	**Type**	**Desktop or Field**	**Salinity Regime**	**Water Quality Class[b]**	**Fishery Desig-nation[b]**	**Impair-ment Status[b]**	**MP**	**Crossing Length (ft)**	**FERC Class.**	**Proposed Crossing Method[c]**	**Anticipated to be Dry at Time of Crossing[d]**	**Cons ROW Width (ft)**
Pipeline 2 (continued)													
SS-T10-006	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	103.0	18.0	Intermediate	Open Cut	No	75
SS-T10-007	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	103.3	20.6	Intermediate	Open Cut	No	75
SS-TDS-001	Unnamed	Intermittent Stream	Desktop	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	103.8	27.5	Intermediate	Open Cut	No	75
SS-T10-012	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	105.1	33.6	Intermediate	Open Cut	Yes	100
SS-T10-013	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	105.4	145.6	Major	Open Cut	Yes	100
SS-T10-014	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	105.8	21.2	Intermediate	Open Cut	Yes	100
SS-T10-015	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	105.8	24.5	Intermediate	Open Cut	Yes	100
SS-T10-016	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	106.2	21.6	Intermediate	Open Cut	Yes	125
SS-T10-005	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	107.5	41.8	Intermediate	Open Cut	Yes	75
SS-T10-004	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	107.7	26.7	Intermediate	Open Cut	Yes	75
HY-T05-007	Unnamed	Farm Pond	Field	Freshwater	Not Classified	SF; Low Aquatic Life Use	Not Impaired	111.1	9.7	Intermediate	Open Cut	Yes	125

Appendix G-1 (continued)
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Designation[b]	Impairment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 2 (continued)													
HY-T05-006	Unnamed	Farm Pond	Field	Freshwater	Not Classified	SF; Low Aquatic Life Use	Not Impaired	111.5	6.8	Minor	Open Cut	Yes	75
HY-T10-001	Unnamed	Farm Pond	Field	Freshwater	Not Classified	SF; Low Aquatic Life Use	Not Impaired	111.9	21.8	Intermediate	Open Cut	Yes	125
HY-T15-002	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	113 + 7,279 feet[h]	189.0	Major	Open Cut	No	75
SS-T15-007	Unnamed	Ephemeral Stream	Field	Freshwater	N/A	N/A	N/A	113 + 10,95 feet[h]	17.0	Intermediate	Open Cut	Yes	75
SS-T04-007	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	115.8	25.3	Intermediate	HDD	No	75
HY-T04-002	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	116.3	120.5	Major	Open Cut	No	100
SS-T05-003	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	116.5	34.1	Intermediate	HDD	No	75
SS-T02-002	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	117.2	20.3	Intermediate	Bore	No	75
SS-T02-003	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	118.1	46.8	Intermediate	Not Crossed by Centerline	No	75
SS-T04-009	Resaca de los Cuates	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	118.9	322.8	Major	HDD	No	75
HY-T04-003	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	119.1	151.2	Major	HDD	No	75

Appendix G-1 (continued)
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Desig-nation[b]	Impair-ment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 2 (continued)													
HY-T04-003	Unnamed	Farm Pond	Field	Freshwater	N/A	N/A	N/A	119.2	126.3	Major	HDD	No	75
SS-T09-009	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	119.3	70.1	Intermediate	Open Cut	No	75
SS-T05-004	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	119.6	22.7	Intermediate	Open Cut	Yes	75
SS-T05-005	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	120.3	15.7	Intermediate	Open Cut	Yes	125
SS-T09-011	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	120.8	2.3	Minor	Open Cut	Yes	125
SS-T05-006	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	121.6	18.3	Intermediate	Bore	No	75
SS-T05-007	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	121.6	43.0	Intermediate	Bore	No	75
SS-T05-008	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	121.6	30.1	Intermediate	Bore	No	75
SS-T05-009	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	122.0	2.2	Minor	Bore	Yes	75
SS-T09-008	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	N/A	N/A	124.2	88.1	Intermediate	HDD	No	75
SS-T09-005	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	129.5	2.0	Minor	Open Cut	Yes	100
SS-T09-004	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	130.0	2.3	Minor	Open Cut	Yes	125

Appendix G-1 (continued)
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Desig-nation[b]	Impair-ment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 2 (continued)													
SS-T09-003	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	130.1	2.4	Minor	Open Cut	Yes	125
SS-T09-002	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	130.2	2.4	Minor	Open Cut	Yes	125
SS-T09-001	Unnamed	Perennial Stream	Field	Estuarine	PCR-1	SF	N/A	130.7	61.1	Intermediate	HDD	No	75
SS-T01-001	Channel to San Martin Lake	Perennial Stream	Field	Estuarine	PCR-1	SF	N/A	133.5	217.6	Major	HDD	No	75
SS-T01-001	Channel to San Martin Lake[f]	Perennial Stream	Field	Estuarine	PCR-1	SF	N/A	133.6	1.6	Major	HDD	No	75
SS-T02-001	Channel to Bahia Grande[f]	Perennial Stream	Field	Estuarine	PCR-1	SF	N/A	135.2	73.2	Intermediate	HDD	No	75

Appendix G-1 (continued)
Waterbodies Crossed by the Rio Bravo Pipeline System

Waterbody ID[a]	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[b]	Fishery Desig-nation[b]	Impair-ment Status[b]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[c]	Anticipated to be Dry at Time of Crossing[d]	Cons ROW Width (ft)
Pipeline 2 (continued)													

PCR = Primary Contact Recreation; SF = sustainable fisheries.

[a] Due to the orientation and shape of certain waterbody features, some are crossed multiple times by the pipeline centerline. Each individual crossing is listed so a feature may be listed multiple times.

[b] Surface waters that are not designated segments or subsegments by TCEQ may still have water quality classifications, fishery designations, or impairment statuses. PCR 1 is defined as activities that are presumed to involve a significant risk of ingestion of water, such as wading by children, swimming, and surfing. This is presumed to apply to all tidal waterbodies and perennial and freshwater intermittent streams. For the purposes of this analysis, estuarine waterbodies were assumed to be tidal. SF include those waterbodies with the potential to have sufficient fish production of fishing activity to create significant long-term human consumption of fish; all designated waterbodies and all bays, estuaries, and tidal rivers are considered to have SF.

[c] A crossing method is not applicable to temporary workspaces as trenching would not occur within them. The crossing length for waterbodies not crossed by the centerline reflects the longest distance crossed by construction workspaces.

[d] Waterbodies anticipated to be dry at the time of crossing is based on RB Pipeline's assessment of site-specific field data and aerial imagery. RB Pipeline would confirm the condition of each waterbody prior to initiating any construction activities.

[e] This feature has been partially field delineated and partially desktop delineated due to shift in pipeline alignment.

[f] Jurisdictional water under Section 10 of the Rivers and Harbors Act.

[g] The pull-string for one HDD crossing would encroach on intermittent stream SS-TDS-003 at MP 101.7. RB Pipeline would install a temporary bridge to allow for the pull-string to be placed on rollers across the bridge and minimize impacts on the waterbody.

[h] Due to a short re-route since issuance of the draft EIS, the beginning and ending milepost is presented as feet downstream of the nearest original milepost.

Appendix G-2
Waterbodies Crossed by Access Roads for the Rio Bravo Pipeline System

Waterbody ID	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Class[a]	Fishery Designation[a]	Impairment Status[a]	Access Road ID	Access Road Type	Nearest MP	Crossing Length (ft)[b]	Crossing Method
SS-TDS-029	Unnamed	Intermittent Stream	Desktop	Freshwater	PCR-1	N/A	N/A	HS-001	Permanent	HS-1.4	51.7	Existing Culvert
SS-TDS-021	Unnamed	Intermittent Stream	Desktop	Freshwater	PCR-1	N/A	N/A	AR-009	Temporary	2.5	42.4	Install Temporary Culvert
HY-TDS-109	Unnamed	Farm Pond	Desktop	Freshwater	N/A	N/A	N/A	AR-024	Temporary	46.8	44.5	Install Temporary Equipment Mats
HY-TDS-109	Unnamed	Farm Pond	Desktop	Freshwater	N/A	N/A	N/A	AR-024	Temporary	46.8	58.9	Install Temporary Equipment Mats
SS-T04-006	Unnamed	Intermittent Stream	Field	Freshwater	PCR-1	N/A	N/A	AR-048	Temporary	99.1	2.0	Install Temporary Culvert
SS-T05-003	Unnamed	Perennial Stream	Field	Freshwater	PCR-1	SF; Low Aquatic Life Use	Not Impaired	AR-053	Temporary	116.5	15.8	Existing Culvert[c]

[a] Surface waters that are not designated segments or subsegments by TCEQ may still have water quality classifications, fishery designations, or impairment statuses. PCR 1 is defined as activities that are presumed to involve a significant risk of ingestion of water, such as wading by children, swimming, and surfing. This is presumed to apply to all tidal waterbodies and perennial and freshwater intermittent streams. For the purposes of this analysis, estuarine waterbodies were assumed to be tidal. SF include those waterbodies with the potential to have sufficient fish production of fishing activity to create significant long-term human consumption of fish; all designated waterbodies and all bays, estuaries, and tidal rivers are considered to have SF.

[b] Crossing length is calculated based on the centerline of proposed access roads and is not provided for features which are not crossed by this centerline.

[c] Based on a review of aerial imagery, and to be confirmed during field surveys.

Appendix G-3
Waterbodies Within Additional Temporary Workspace along the Rio Bravo Pipeline System

Waterbody ID	Waterbody Name	Type	Desktop or Field	Salinity Regime	Water Quality Classification[a]	Fishery Designation[a]	Impairment Status[a]	MP	Crossing Length (ft)	FERC Class.	Proposed Crossing Method[b]
SS-T09-004	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	130.0	2.3	Minor	N/A
SS-T09-003	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	130.1	2.4	Minor	N/A
SS-T09-002	Unnamed	Ephemeral Stream	Field	Estuarine	PCR-1	SF	N/A	130.2	2.4	Minor	N/A

[a] Surface waters that are not designated segments or subsegments by TCEQ may still have water quality classifications, fishery designations, or impairment statuses. PCR 1 is defined as activities that are presumed to involve a significant risk of ingestion of water, such as wading by children, swimming, and surfing. This is presumed to apply to all tidal waterbodies and perennial and freshwater intermittent streams. For the purposes of this analysis, estuarine waterbodies were assumed to be tidal. SF include those waterbodies with the potential to have sufficient fish production of fishing activity to create significant long-term human consumption of fish; all designated waterbodies and all bays, estuaries, and tidal rivers are considered to have SF.

[b] A crossing method is not applicable to temporary workspaces as trenching would not occur within them. The crossing length for waterbodies not crossed by the centerline reflects the longest distance crossed by construction workspaces.

APPENDIX H

ROADS CROSSED BY THE RIO BRAVO PIPELINE SYSTEM

Appendix H
Roads Crossed by the Rio Bravo Pipeline System

Approximate MP	Access Road Number[a]	Road Name	Public / Private	Road Type	Frequency of Use[b]	Proposed Crossing Method	Alternative Access / Detour Required	Project Component Affecting the Road
Jim Wells County								
HS-2.5	HS-001	Unknown	Private	Dirt / Gravel	Uncommon	Not crossed by the Centerline	No – uncommonly used and does not directly access any infrastructure	Metering Site HS-4
Kleberg County								
HS-0.4	HS-003	Unknown	Private	Paved	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
HS-0.8	HS-002	Unknown	Private	Dirt / Gravel	Uncommon	Not crossed by the Centerline	No – uncommonly used and does not directly access any infrastructure	Metering Site HS-3
HS-1.6	HS-001	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
0.1	AR-006	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
0.9	AR-007	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
1.2	AR-008	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
1.4	AR-009	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
1.8	AR-009	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
2.6	AR-009	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Kleberg County (continued)								
3.3	AR-010	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
4.4	AR-011	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
5.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
5.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
7.4	AR-012	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
9.4	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
9.8	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
10.6	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
11.7	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
12.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
13.4	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
13.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
14.4	AR-012	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Kleberg County (continued)								
15.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
16.1	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
16.6	N/A	Unknown	Private	Dirt / Gravel	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
17.7	N/A	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
17.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
18.0	N/A	State Highway 285	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
18.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
18.8	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
18.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
19.0	N/A	W. Olive Ave	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
Kenedy County								
19.5	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Kenedy County (continued)								
19.6	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
20.4	AR-014	Unknown	Private	New and Existing Dirt / Gravel Road	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
21.4	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
21.5	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
21.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
22.2	N/A	Unknown	Private	Dirt / Gravel & Semi- vegetated two-track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
22.4	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
22.8	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
23.1	N/A	Unknown	Private	Dirt / Gravel	Regular	Open Cut	No – alternative is already available to access ranching infrastructure	Centerline
23.1	AR-015	Stuart Ranch Road	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
23.2	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Kenedy County (continued)								
23.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
23.8	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
25.5	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Not crossed by the Centerline	No – rarely used and does not directly access any infrastructure	
28.4	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
29.1	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Not crossed by the Centerline	No – rarely used and does not directly access any infrastructure	ATWS
29.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
29.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
30.2	N/A	Unknown	Private	Dirt / Gravel	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
30.7	AR-016	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
31.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
31.3	AR-017	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
31.6	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Kenedy County (continued)								
31.7	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
34.0	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
35.1	AR-018	West Turcotte Road	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
37.9	AR-019	West Road	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
37.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Bore	No – impact avoided via bore crossing	Centerline
38.1	AR-019	East Turcotte West	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
38.4	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
38.8	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
40.0	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
41.1	AR-020	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
42.3	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
43.2	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Not crossed by the Centerline	No – uncommonly used and does not directly access any infrastructure	Contractor / Pipe Yard 2
43.3	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
43.6	AR-021	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Kenedy County (continued)								
43.8	AR-022	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
44.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Temporary workspace
45.1	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
46.4	AR-023	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
46.5	AR-023	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
46.6	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
46.7	AR-024	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
46.8	AR-024	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
47.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
48.6	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
48.6	N/A	Unknown	Private	Dirt / Gravel	Regular	Open Cut	No – alternative is already available to access the highway	Centerline
48.9	AR-026	Unknown	Private	Dirt / Gravel	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Temporary workspace

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Kenedy County (continued)								
49.1	N/A	Stullidos Road	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
49.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
49.6	AR-027	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
49.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Not crossed by the Centerline	No – uncommonly used and does not directly access any infrastructure	Temporary workspace
50.7	AR-028	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Temporary workspace
51.0	AR-028	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Temporary workspace
53.3	AR-029	County Road 3122	Private	Paved	Regular	Bore	No – impact avoided via bore crossing	Centerline
57.9	AR-030	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
58.1	AR-030	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
58.9	AR-031	Unknown	Private	Dirt / Gravel	Regular	Open Cut	Yes – continuous access to ranching infrastructure from Highway 77 is required	Centerline / Compressor Station 2
60.1	N/A	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
61.9	AR-032	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
62.7	AR-033	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Kenedy County (continued)								
62.8	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
63.0	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
63.2	AR-034	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
63.6	AR-035	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
63.6	AR-036	Unknown	Public	Paved	Regular	Bore	No – impact avoided via bore crossing	Centerline
64.5	AR-037	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
65.6	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
65.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
66.1	AR-038	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
Willacy County								
67.1	AR-039	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
68.3	AR-040	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
68.3	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
68.4	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Willacy County (continued)								
69.0	AR-041	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
69.9	N/A	U.S. Highway 77	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
70.1	AR-042	Unknown	Private	Dirt / gravel	Uncommon	Open Cut	No – uncommonly used and alternative access to infrastructure already exists	Centerline
70.3	AR-042	Unknown	Private	Dirt / gravel	Uncommon	Open Cut	No – uncommonly used and alternative access to infrastructure already exists	Centerline
70.4	AR-042	Unknown	Private	Dirt / gravel	Uncommon	Open Cut	No – uncommonly used and alternative access to infrastructure already exists	Centerline
70.6	AR-042	Unknown	Private	Dirt / gravel	Uncommon	Open Cut	No – uncommonly used and alternative access to infrastructure already exists	Centerline
70.8	N/A	Unknown	Private	Dirt / gravel	Uncommon	Open Cut	No – uncommonly used and alternative access to infrastructure already exists	Centerline
71.6	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and alternative access to infrastructure already exists	Centerline
72.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and alternative access to infrastructure already exists	Centerline
74.3	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
74.5	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Willacy County (continued)								
75.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
75.4	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
75.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
76.5	N/A	Correa Road	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
77.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
77.8	N/A	Unknown	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
78.4	N/A	Unknown	Private	Dirt / Gravel and Semi-vegetated two-track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
79.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
79.7	N/A	Swanberg Road / County Road 3910	Public	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
80.1	AR-043	San Andreas County Road (445)	Public	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
81.6	N/A	Unknown	Private	Dirt / Gravel and Semi-vegetated two-track	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Willacy County (continued)								
82.4	N/A	Unknown	Private	Semi-vegetated two- track	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
82.4	N/A	Unknown	Private	Semi-vegetated two- track	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
83.6	N/A	Farm to Market Road 3142	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
83.9	N/A	Farm to Market Road 497 / SH 186	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
85.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
86.2	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
86.6	N/A	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD crossing	Centerline
87.1	N/A	Unknown	Private	Dirt / Gravel	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
88.5	N/A	Farm to Market Road 2100 / T Flores Road	Public	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
89.5	N/A	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
89.6	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and alternative access to infrastructure already exists	Centerline
89.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
90.9	N/A	Farm to Market Road 1420	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Willacy County (continued)								
90.9	N/A	Unknown	Public	Dirt / Gravel	Regular	Open Cut	No – alternative is already available to access Highway 77	Centerline
91.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
92.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
92.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
92.8	N/A	Farm to Market Road 1018	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
93.1	N/A	Levee Road	Private	Semi-vegetated two- track	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
93.6	N/A	Levee Road	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
93.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
94.2	AR-045	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
94.3	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
94.9	N/A	Farm to Market Road 1420	Public	Paved	Daily	HDD	No – impact avoided via HDD crossing	Centerline
95.2	AR-046	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
95.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued)
Roads Crossed by the Rio Bravo Pipeline System

Approximate MP	Access Road Number[a]	Road Name	Public / Private	Road Type	Frequency of Use[b]	Proposed Crossing Method	Alternative Access / Detour Required	Project Component Affecting the Road
Willacy County (continued)								
96.5	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
96.8	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
97.8	AR-047	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
98.8	N/A	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD	Centerline
99.7	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
99.8	N/A	Unknown	Unknown	Dirt	Unknown	HDD	No – impact avoided via HDD	Centerline
Cameron County								
100.1	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
100.4	N/A	Farm to Market Road 2925 / E Brown Tract Road	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
100.5	N/A	County Line Road	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
101.4	N/A	Unknown	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Cameron County (continued)								
101.9	N/A	Parker Road	Public	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
102.5	N/A	North Olmito Road)	Public	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
102.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
102.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
103.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
103.3	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
103.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
103.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
105.0	N/A	Farm to Market Road 1847	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
105.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
105.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
105.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Cameron County (continued)								
106.3	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
106.3	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
107.5	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
107.7	N/A	Fernando East Road	Public	Dirt / Gravel	Regular	Open Cut	Yes – Continuous access to residences from FM 1847 is required	Centerline
109.1	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
110.4	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
110.7	N/A	General Brant Road	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
111.9	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
111.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
112.2	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
112.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
112.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
112.5	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Cameron County (continued)								
112.6	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
112.8	N/A	Unknown	Private	Dirt / Gravel	Regular	Open Cut	Yes – road provides access to residence and wind turbines	Centerline
112.8	AR-050	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
113.2	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
113.4	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
113.7	AR-051	Unknown	Private	Dirt / Gravel	Regular	Open Cut	Yes – provides access to residence from FM 1847	Centerline
113.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
114.4	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
114.5	AR-052	Unknown	Private	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
114.8	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
114.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
114.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
115.1	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
115.2	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
115.2	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Cameron County (continued)								
115.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
115.8	N/A	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD crossing	Centerline
115.8	N/A	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD crossing	Centerline
116.0	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
116.1	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
116.1	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
116.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
116.4	AR-053	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD crossing	Centerline
116.6	AR-053	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD crossing	Centerline
117.2	N/A	Farm to Market Road 510 / San Jose Road	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
118.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
118.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
118.4	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Cameron County (continued)								
118.4	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Not crossed by the Centerline	No – uncommonly used and does not directly access any infrastructure	ATWS
118.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Not crossed by the Centerline	No – uncommonly used and does not directly access any infrastructure	ATWS
118.8	N/A	Unknown	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
118.9	N/A	Shuckman Road	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
119.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
119.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
119.2	N/A	Shuckman Road	Private	Dirt / Gravel	Regular	Open Cut	No – alternative access is available via Tracy 43 Road which will be bored	Centerline
119.3	N/A	Unknown	Private	Semi-vegetated two- track	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
119.5	N/A	Tract 43	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
119.6	N/A	Unknown	Private	Semi-vegetated two- track	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
120.1	N/A	Farm to Market Road 3069	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
120.5	N/A	Share 28 Road	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
120.6	N/A	Unknown	Private	Semi-vegetated two- track	Uncommon	Open Cut	No – alternative access to farming infrastructure is available	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Cameron County (continued)								
121.3	N/A	Farm to Market Road 2480	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
121.6	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
122.0	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
122.0	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Bore	No – impact avoided via bore crossing	Centerline
122.1	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
122.3	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
122.5	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
122.6	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
122.7	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
123.2	N/A	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
123.4	N/A	State Highway 100 / E Ocean Blvd	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Cameron County (continued)								
124.1	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
124.2	N/A	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD crossing	Centerline
124.2	N/A	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD crossing	Centerline
124.6	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
124.8	N/A	Old Port Isabel Road	Public	Dirt / Gravel	Regular	Bore	No – impact avoided via bore crossing	Centerline
125.8	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
126.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
126.5	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
126.5	AR-055	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
127.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
127.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
128.7	AR-055	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
128.7	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
128.9	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
129.3	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Cameron County (continued)								
129.6	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
129.6	AR-056	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
129.7	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
130.6	AR-056	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD crossing	Centerline
130.6	N/A	Unknown	Private	Semi-vegetated two- track	Rare	HDD	No – impact avoided via HDD crossing	Centerline
131.2	N/A	Unknown	Private	Semi-vegetated two- track	Rare	Open Cut	No – rarely used and does not directly access any infrastructure	Centerline
131.3	AR-057	Unknown	Private	Dirt / Gravel	Uncommon	Open Cut	Yes – roadway provides the only access to infrastructure	Centerline
131.6	N/A	SH-48	Public	Paved	Daily	Bore	No – impact avoided via bore crossing	Centerline
132.4	N/A	Unknown	Public	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
132.5	AR-058	Unknown	Public	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
132.7	AR-059	Unknown	Public	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline
133.8	N/A	Unknown	Public	Semi-vegetated two- track	Uncommon	HDD	No – impact avoided via HDD crossing and alternative routes exist where the road is within ATWS	Centerline, ATWS
134.1	AR-060	Unknown	Public	Dirt / Gravel	Uncommon	Open Cut	No – uncommonly used and does not directly access any infrastructure	Centerline

Appendix H (continued) Roads Crossed by the Rio Bravo Pipeline System								
Approximate MP	**Access Road Number[a]**	**Road Name**	**Public / Private**	**Road Type**	**Frequency of Use[b]**	**Proposed Crossing Method**	**Alternative Access / Detour Required**	**Project Component Affecting the Road**
Cameron County (continued)								
134.7	AR-061	Unknown	Public	Semi-vegetated two- track	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
135.1	N/A	Unknown	Public	Semi-vegetated two- track	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
135.1	AR-062	Unknown	Public	Semi-vegetated two- track	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
135.3	AR-063	Unknown	Public	Semi-vegetated two- track	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline
135.4	AR-064	Unknown	Public	Semi-vegetated two- track	Uncommon	HDD	No – impact avoided via HDD crossing	Centerline

[a] The complete list of the Pipeline System access roads is in Appendix C.

[b] "Frequency of Use" is divided into four categories: Daily, Regular, Uncommon and Rare, ranging from highest to lowest based on the evaluation of road condition and infrastructure located upstream or downstream of road crossings as determined by examining aerial imagery. Typically, "Daily" has been assigned to paved, public roadways, such as county or state roads or highways; "Regular" generally applies to dirt or paved roads providing direct access to facility, farming / ranching storage, or private residence; while "Uncommon" is used to describe dirt or paved roads that do not provide direct access to such infrastructure; and "Rare" applies to the apparently least used roads, such as two-track roads with vegetative overgrowth.

APPENDIX I

SOIL SERIES CROSSED BY THE RIO BRAVO PIPELINE SYSTEM PIPELINE CENTERLINES

Appendix I Soil Series Crossed by the Rio Bravo Pipeline System Pipeline Centerlines									
Map Unit	**Soil Series**	**Prime[a]**	**Hydric[b]**	**Wind[c]**	**Water[d]**	**Rutting Potential[e]**	**Restrictive Layers[f]**	**Poor Revegetation Potential[g]**	**Other**
29	Papagua soils, depressional	No	Hydric	High	Slight	Moderate	None	No	--
31	Papalote fine sandy loam, 0 to 1 percent slopes	If Irrigated	Not Hydric	High	Slight	Severe	None	No	--
DnB	Delfina fine sandy loam, 0 to 2 percent slopes	If Irrigated	Not Hydric	High	Slight	Moderate	None	No	--
CkA	Clareville clay loam, 0 to 1 percent slopes	Yes	Not Hydric	Moderate	Slight	Severe	None	No	--
CmB	Colmena fine sandy loam, 1 to 3 percent slopes	Yes	Not Hydric	High	Slight	Moderate	None	No	--
PtB	Premont fine sandy loam, 0 to 3 percent slopes	If Irrigated	Not Hydric	High	Slight	Moderate	None	No	--
CrB	Czar fine sandy loam, 1 to 3 percent slopes	If Irrigated	Not Hydric	High	Slight	Moderate	None	No	--
CzA	Czar sandy clay loam, 0 to 1 percent slopes	Yes	Not Hydric	Moderate	Slight	Moderate	None	No	--
GeB	Gertrudis fine sandy loam, 0 to 3 percent slopes	If Irrigated	Not Hydric	High	Slight	Moderate	None	No	--
PgA	Papagua fine sandy loam, 0 to 1 percent slopes, occasionally ponded	No	Hydric	High	Slight	Moderate	None	No	--
PeB	Palobia fine sandy loam, 0 to 3 percent slopes	No	Not Hydric	High	Slight	Moderate	None	No	--
PbB	Palobia loamy fine sand, 1 to 3 percent slopes	No	Not Hydric	High	Slight	Moderate	None	Yes[h]	Nonsaline to strongly saline
PaA	Padrones fine sand, 0 to 3 percent slopes	No	Not Hydric	Severe	Slight	Moderate	None	No	--
PfB	Palobia-Colmena complex, 1 to 3 percent slopes	No	Not Hydric	High	Slight	Moderate	None	No	--
CrA	Czar fine sandy loam, 0 to 1 percent slopes	If Irrigated	Not Hydric	High	Slight	Moderate	None	No	--

Appendix I (continued)
Soil Series Crossed by the Rio Bravo Pipeline System Pipeline Centerlines

Map Unit	Soil Series	Prime[a]	Hydric[b]	Wind[c]	Water[d]	Rutting Potential[e]	Restrictive Layers[f]	Poor Revegetation Potential[g]	Other
DfB	Delfina loamy fine sand, 0 to 2 percent slopes	If Irrigated	Not Hydric	Severe	Slight	Moderate	None	No	--
GRE	Gullied land-Riverwash complex, frequently flooded	N/A	N/A	N/A	N/A	N/A	N/A	N/A	--
YtC	Yturria fine sandy loam, 1 to 5 percent slopes	If Irrigated	Not Hydric	High	Slight	Moderate	None	No	--
BrA	Bordas loamy fine sand, 0 to 1 percent slopes, occasionally ponded	No	Hydric	High	Slight	Moderate	None	No	--
RaB	Ramita fine sand, 0 to 2 percent slopes	No	Hydric	Severe	Slight	Moderate	None	Yes[h]	Nonsaline to strongly saline
RbB	Ramita-Bordas complex, 0 to 2 percent slopes, occasionally ponded	No	Hydric	High	Slight	Moderate	None	Yes[h]	Nonsaline to strongly saline
NsC	Nueces-Sarita association, 0 to 3 percent slopes	No	Not Hydric	Severe	Slight	Moderate	None	Yes	--
SnC	Sarita fine sand, 0 to 5 percent slopes	No	Not Hydric	Severe	Slight	Moderate	None	Yes	--
FmC	Falfurrias-Atiras-Medanito complex, 0 to 5 percent slopes	No	Not Hydric	Severe	Slight	Moderate	None	No	--
SsC	Sarita-Topo complex, 0 to 5 percent slopes, frequently ponded	No	Predominantly Non-Hydric	Severe	Slight	Moderate	None	No	--
ToA	Topo fine sandy loam, 0 to 1 percent slopes, rarely flooded, frequently ponded	No	Hydric	High	Slight	Moderate	None	Yes[h]	Very slightly saline to strongly saline
FtD	Falfurrias-Topo complex, 0 to [h] percent slopes, frequently ponded	No	Predominantly Non-Hydric	Severe	Moderate	Moderate	None	Yes	--

Appendix I (continued) Soil Series Crossed by the Rio Bravo Pipeline System Pipeline Centerlines									
Map Unit	**Soil Series**	**Prime[a]**	**Hydric[b]**	**Wind[c]**	**Water[d]**	**Rutting Potential[e]**	**Restrictive Layers[f]**	**Poor Revegetation Potential[g]**	**Other**
LpC	Lopeno-Potrero-Arenisco complex, 0 to 5 percent slopes, very rarely flooded	No	Not Hydric	Severe	Slight	Moderate	None	No	--
SrC	Sarita-Cayo complex, 0 to 5 percent slopes	No	Not Hydric	Severe	Slight	Moderate	None	No	--
NfC	Nueces fine sand, 0 to 3 percent slopes	Statewide Importance, if irrigated	Not Hydric	Severe	Slight	Moderate	None	No	--
EsA	Estella fine sand, 0 to 1 percent slopes	No	Not Hydric	Severe	Slight	Moderate	None	No	--
SzA	Sauz-Saucel complex, 0 to 1 percent slopes, occasionally flooded, occasionally ponded	No	Hydric	High	Slight	Moderate	None	Yes[h]	Very slightly saline to strongly saline
SF	Salt flat, rarely flooded, occasionally ponded	N/A	Not Hydric	N/A	N/A	N/A	N/A	N/A	--
FaC	Falfurrias fine sand, 0 to 5 percent slopes	No	Not Hydric	Severe	Slight	Moderate	None	Yes	--
PrC	Potrero-Lopeno-Noria complex, 0 to 5 percent slopes, very rarely flooded, frequently ponded	No	Predominantly Non-Hydric	Severe	Slight	Moderate	None	No	--
SyA	Sauz loamy fine sand, 0 to 1 percent slopes, rarely flooded	No	Hydric	High	Slight	Moderate	None	Yes[h]	Slightly saline to strongly saline
SuA	Saucel fine sandy loam, 0 to 1 percent slope, rarely flooded, occasionally ponded	No	Hydric	Low	Slight	Moderate	None	Yes[h]	Strongly saline
FaE	Falfurrias fine sand, 5 to 15 percent slopes	No	Not Hydric	Severe	Moderate	Moderate	None	Yes	--
QuA	Quiteria fine sand, 0 to 1 percent slopes	No	Not Hydric	Severe	Slight	Moderate	None	Yes[h]	Nonsaline to strongly saline

Appendix I (continued) Soil Series Crossed by the Rio Bravo Pipeline System Pipeline Centerlines									
Map Unit	**Soil Series**	**Prime[a]**	**Hydric[b]**	**Wind[c]**	**Water[d]**	**Rutting Potential[e]**	**Restrictive Layers[f]**	**Poor Revegetation Potential[g]**	**Other**
MoA	Montealto clay, 0 to 1 percent slope, occasionally ponded	No	Hydric	Moderate	Slight	Severe	None	Yes[h]	Slightly saline to strongly saline
Su	Sauz fine sand	No	Hydric	Severe	Slight	Moderate	None	Yes[h]	Very slightly saline to strongly saline
Yf	Yturria fine sandy loam	If Irrigated	Not Hydric	High	Slight	Moderate	None	No	--
Rf	Rio fine sandy loam	If Drained	Hydric	Moderate	Slight	Moderate	None	No	--
DeA	Delfina loamy fine sand, warm, 0 to 2 percent slopes	If Irrigated	Not Hydric	Severe	Slight	Moderate	None	No	--
Ja	Jarron sandy clay loam	No	Hydric	Low	Slight	Severe	None	Yes[h]	Slightly saline to strongly saline
Ln	Lozano fine sandy loam	No	Not Hydric	High	Slight	Moderate	None	No	--
Ly	Lyford sandy clay loam	No	Not Hydric	Moderate	Slight	Severe	None	No	--
Tc	Tiocano clay, 0 to 1 percent slopes, occasionally ponded	No	Hydric	Moderate	Slight	Severe	None	No	--
Rd	Raymondville clay loam	Yes	Not Hydric	Moderate	Slight	Severe	None	No	--
Mp	Mercedes clay, ponded	No	Hydric	Moderate	Slight	Severe	None	Yes[h]	Slightly saline to strongly saline
Rg	Rio sandy clay loam	If Drained	Hydric	Moderate	Slight	Severe	None	No	--
Me	Mercedes clay	No	Not Hydric	Moderate	Slight	Severe	None	Yes[h]	Nonsaline to strongly saline
HoA	Hidalgo sandy clay loam, 0 to 1 percent slopes	If Irrigated	Not Hydric	Moderate	Slight	Severe	None	No	--
Ra	Racombes sandy clay loam	Yes	Not Hydric	Moderate	Slight	Severe	None	No	--
WaB	Willacy fine sandy loam, 1 to 3 percent slopes	Yes	Not Hydric	High	Slight	Moderate	None	No	--

Appendix I (continued) Soil Series Crossed by the Rio Bravo Pipeline System Pipeline Centerlines									
Map Unit	**Soil Series**	**Prime[a]**	**Hydric[b]**	**Wind[c]**	**Water[d]**	**Rutting Potential[e]**	**Restrictive Layers[f]**	**Poor Revegetation Potential[g]**	**Other**
Wf	Willamar fine sandy loam	No	Not Hydric	Moderate	Slight	Severe	None	Yes[h]	Very slightly saline to strongly saline
Lm	Lomalta clay	No	Hydric	Moderate	Slight	Severe	None	Yes[h]	Slightly saline to strongly saline
Le	Latina sandy clay loam, 0 to 1 percent slopes, occasionally ponded, rarely flooded	No	Hydric	Moderate	Slight	Severe	None	Yes[h]	Strongly saline
Ws	Willamar fine sandy loam, strongly saline	No	Hydric	Moderate	Slight	Severe	None	Yes[h]	Strongly saline
Ic	Incell clay	No	Hydric	Low	Slight	Severe	None	No	--
Po	Porfirio sandy clay loam	No	Hydric	Moderate	Slight	Severe	None	Yes[h]	Slightly saline to strongly saline
W	Water	N/A	N/A	N/A	N/A	N/A	N/A	N/A	--
WaA	Willacy fine sandy loam, 0 to 1 percent slopes	Yes	Not Hydric	High	Slight	Moderate	None	No	--
HgB	Hidalgo fine sandy loam, 1 to 3 percent slopes	If Irrigated	Not Hydric	High	Slight	Moderate	None	No	--
Ca	Camargo silty clay loam, 0 to 1 percent slopes, rarely flooded	Yes	Not Hydric	Moderate	Slight	Severe	None	No	--
WM	Willamar soils	No	Not Hydric	Moderate	Slight	Severe	None	Yes[h]	Very slightly saline to strongly saline
RO	Rio clay loam	If Drained	Not Hydric	Low	Slight	Severe	None	No	--
OR	Orelia clay loam, clayey subsoil variant	No	Not Hydric	Moderate	Slight	Severe	None	Yes[h]	Nonsaline to strongly saline
DE	Delfina fine sandy loam, warm, 0 to 2 percent slopes	If Irrigated	Not Hydric	High	Slight	Moderate	None	No	--

Appendix I (continued) Soil Series Crossed by the Rio Bravo Pipeline System Pipeline Centerlines									
Map Unit	**Soil Series**	**Prime[a]**	**Hydric[b]**	**Wind[c]**	**Water[d]**	**Rutting Potential[e]**	**Restrictive Layers[f]**	**Poor Revegetation Potential[g]**	**Other**
CH	Chargo silty clay	No	Not Hydric	Moderate	Slight	Severe	None	Yes[h]	Slightly saline to strongly saline
OM	Olmito silty clay	Yes	Not Hydric	Moderate	Slight	Severe	None	Yes[h]	Nonsaline to strongly saline
LAA	Laredo silty clay loam 0 to 1 percent slopes, rarely flooded	Yes	Not Hydric	Moderate	Slight	Severe	None	No	--
BE	Benito clay	No	Hydric	Low	Slight	Severe	None	Yes[h]	Nonsaline to strongly saline
HA	Harlingen clay	No	Not Hydric	Moderate	Slight	Severe	None	Yes[h]	Slightly saline to strongly saline
CE	Cameron silty clay	Yes	Not Hydric	Moderate	Slight	Severe	None	No	--
LD	Laredo-Olmito complex	If Irrigated	Not Hydric	Moderate	Slight	Severe	None	No	--
LC	Laredo silty clay loam, saline	No	Not Hydric	Low	Slight	Severe	None	Yes[h]	Slightly saline to strongly saline
SE	Sejita silty clay loam	No	Hydric	Low	Slight	Severe	None	Yes[h]	Strongly saline
PO	Point Isabel clay loam	No	Not Hydric	Moderate	Moderate	Severe	None	Yes[h]	Slightly saline to strongly saline
USX	Twinpalms-Yarborough complex, 0 to 3 percent slopes, frequently flooded	No	Partially Hydric	High	Slight	Severe	None	Yes[h]	Strongly saline
BA	Barrada clay, 0 to 1 percent slopes, very frequently flooded, occasionally ponded	No	Hydric	Low	Slight	Severe	None	Yes[h]	Strongly saline
UdB	Udipsamments, gently undulating, occasionally flooded	No	Not Hydric	Severe	N/A	N/A	None	N/A	Slightly saline to strongly saline

Appendix I (continued) Soil Series Crossed by the Rio Bravo Pipeline System Pipeline Centerlines									
Map Unit	Soil Series	Prime[a]	Hydric[b]	Wind[c]	Water[d]	Rutting Potential[e]	Restrictive Layers[f]	Poor Revegetation Potential[g]	Other

[a] As designated by the NRCS (2015a).
[b] As designated by the NRCS (2015a), based on percent of map unit designated hydric (NRCS 2015b).
[c] Soils with a wind erodibility group classification of 1 or 2 is severe, 3-6 is moderate, and 7 or 8 is low.
[d] Hazard of severe water erosion soil loss from unsurfaced roads and trails as designated by the NRCS (2015a).
[e] Soils with fine textures and poor drainage classes.
[f] Soils identified as containing restrictive layers within the soil unit profile (minimum 5 feet).
[g] Component soil series that have surface texture of sandy loam or coarser, are moderately well to excessively drained, or have steep slopes (greater to or equal to 9%)
[h] Not rated, but salinity indicates poor revegetation potential.

APPENDIX J

WETLANDS CROSSED BY THE RIO BRAVO PIPELINE SYSTEM

Appendix J-1 Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
PIPELINE 1								
Kleberg County								
WW-TDS-060	Desktop	PFO	0.0	0.3	1617.8	Open Cut	5.78	4.30
WW-TDS-060	Desktop	PFO	0.3	0.5	864.7	Open Cut		
WW-TDS-059	Desktop	PFO	2.2	2.2	119.1	Open Cut	3.21	2.58
WW-TDS-059	Desktop	PFO	2.2	2.5	1417.4	Open Cut		
WW-TDS-058	Desktop	PFO	2.8	2.8	303.2	Open Cut	0.52	0.52
WW-TDS-053	Desktop	PEM	5.2	5.3	175.1	Open Cut	0.31	0.31
WW-TDS-052[f]	Desktop	PEM	6.6	6.6	114.0	Not crossed by centerline	0.05	0.05
WW-TDS-047[f]	Desktop	PEM	11.1	11.1	26.2	Not crossed by centerline	<0.01	<0.01
WW-TDS-046[f]	Desktop	PEM	11.1	11.1	31.8	Not crossed by centerline	<0.01	<0.01
WW-TDS-043	Desktop	PEM	11.4	11.4	2.7	Open Cut	0.02	0.02
WW-TDS-041	Desktop	PEM	11.8	11.8	97.0	Open Cut	0.11	0.11
WW-TDS-040	Desktop	PSS	15.0	15.0	238.3	Open Cut	0.41	0.41
WW-TDS-039	Desktop	PSS	15.2	15.3	528.6	Open Cut	1.22	1.22
WW-TDS-039	Desktop	PSS	15.4	15.4	111.0	Open Cut		
WW-TDS-038	Desktop	PEM	16.0	16.1	322.4	Open Cut	0.61	0.61
WW-TDS-035	Desktop	PSS	17.9	17.9	44.3	Open Cut	0.06	0.06
WW-TDS-033A	Desktop	PEM	19.1	19.1	32.9	HDD	0.00	0.00
Kenedy County								
WW-TDS-033	Desktop	PEM	19.1	19.1	79.2	HDD	0.00	0.00

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Kenedy County (continued)								
WW-T08-003	Field	PEM	31.3	31.3	186.6	Open Cut	0.33	0.33
WW-T08-001	Field	PEM	31.5	31.6	119.1	Open Cut	0.13	0.13
WW-T04-008	Field	PEM	35.5	35.6	112.9	Open Cut	0.15	0.15
WW-T04-009	Field	PEM	35.8	35.9	131.5	Open Cut	0.23	0.23
WW-T04-010	Field	PEM	35.9	36.0	307.3	Open Cut	0.50	0.50
WW-T04-013	Field	PEM	36.0	36.0	91.7	Open Cut	0.18	0.18
WW-T04-013	Field	PEM	36.0	36.0	11.1	Open Cut		
WW-T04-014[f]	Field	PEM	36.4	36.4	32.2	Not crossed by centerline	0.01	0.01
WW-T04-015	Field	PEM	36.5	36.6	394.7	Open Cut	0.80	0.80
WW-T04-015	Field	PEM	36.6	36.6	72.3	Open Cut		
WW-TDS-116[g]	Desktop	PEM	38.0	38.0	63.4	Open Cut	1.44	1.44
WW-T04-011[g]	Field	PEM	38.0	38.1	745.1	Open Cut		
WW-TDS-117[f,g]	Desktop	PEM	38.0	38.0	82.0	Not crossed by centerline		
WW-T04-012	Field	PEM	39.1	39.1	110.4	Open Cut	0.12	0.12
WW-T04-017[f]	Field	PEM	40.2	40.5	142.7	Not crossed by centerline	0.04	0.04
WW-T04-018[f]	Field	PEM	40.5	40.5	35.2	Not crossed by centerline	0.01	0.01
WW-T04-021	Field	PEM	44.6	44.6	90.4	Open Cut	0.11	0.11
WW-T05-003	Field	PEM	45.0	45.1	706.9	Open Cut	1.30	1.30
WW-T05-003	Field	PEM	45.1	45.2	63.8	Open Cut		
WW-T05-004	Field	PEM	45.4	45.6	977.5	Open Cut	7.82	5.92

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Kenedy County (continued)								
WW-T05-004	Field	PEM	45.6	46.1	2512.8	Open Cut		
WW-T05-005	Field	PEM	46.2	46.2	158.2	Open Cut	0.28	0.28
WW-T04-026	Field	PEM	46.2	46.3	290.7	Open Cut	0.50	0.50
WW-T04-025	Field	PEM	46.4	46.5	414.7	Open Cut	0.73	0.73
WW-T04-024	Field	PEM	46.7	46.7	137.0	Open Cut	0.26	0.21
WW-T04-022	Field	PEM	47.4	47.5	457.0	Open Cut	0.78	0.78
WW-TDS-118[f]	Desktop	PEM	48.6	48.6	48.8	Not crossed by centerline	0.01	0.01
WW-TDS-032[f]	Desktop	PEM	49.7	49.8	243.9	Not crossed by centerline	0.11	0.11
WW-TDS-031	Desktop	PEM	50.4	50.4	235.4	Open Cut	0.42	0.42
WW-TDS-030	Desktop	PEM	50.8	50.9	432.5	Open Cut	0.76	0.76
WW-TDS-029	Desktop	PEM	51.0	51.0	92.9	Open Cut	0.20	0.20
WW-TDS-119[f]	Desktop	PEM	52.0	52.0	136.8	Not crossed by centerline	0.04	0.04
WW-TDS-120	Desktop	PEM	53.4	53.4	106.4	Open Cut	0.16	0.16
WW-TDS-121	Desktop	PEM	53.5	53.6	458.3	Open Cut	0.82	0.82
WW-TDS-122	Desktop	PEM	53.9	54.0	746.7	Open Cut	1.38	1.38
WW-TDS-024	Desktop	PEM	54.6	54.6	57.0	Open Cut	0.25	0.25
WW-TDS-024	Desktop	PEM	54.7	54.7	74.1	Open Cut		
WW-TDS-023	Desktop	PEM	55.0	55.1	407.0	Open Cut	0.74	0.74
WW-TDS-022	Desktop	PEM	55.2	55.2	313.4	Open Cut	0.54	0.54
WW-TDS-021	Desktop	PEM	55.5	55.5	314.7	Open Cut	0.54	0.54
WW-TDS-123	Desktop	PEM	56.2	56.2	92.8	Open Cut	0.16	0.16

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Kenedy County (continued)								
WW-TDS-125	Desktop	PEM	56.8	56.8	205.3	Open Cut	0.39	0.39
WW-TDS-126	Desktop	PEM	57.0	57.0	34.2	Open Cut	0.75	0.75
WW-TDS-126	Desktop	PEM	57.0	57.1	411.1	Open Cut		
WW-TDS-127	Desktop	PEM	58.0	58.1	40.1	Open Cut	0.07	0.07
WW-TDS-128	Desktop	PEM	58.3	58.3	104.4	Open Cut	0.19	0.19
WW-TDS-015[f]	Desktop	PEM	59.0	59.0	91.5	Not crossed by centerline	0.01	0.01
WW-TDS-131	Desktop	PEM	60.6	60.7	275.2	Open Cut	0.47	0.47
WW-TDS-132	Desktop	PSS	60.8	60.9	163.9	Open Cut	0.26	0.26
WW-TDS-133[f]	Desktop	PEM	61.0	61.1	131.9	Not crossed by centerline	0.06	0.06
WW-TDS-134	Desktop	PEM	61.3	61.4	330.7	Open Cut	0.57	0.57
WW-TDS-135	Desktop	PEM	63.7	63.7	42.4	Open Cut	0.16	0.16
WW-TDS-136	Desktop	PEM	64.1	64.2	437.1	Open Cut	0.76	0.76
WW-TDS-137	Desktop	PEM	64.8	64.9	310.8	Open Cut	0.54	0.54
WW-TDS-138	Desktop	PEM	65.4	65.4	41.1	Open Cut	0.16	0.16
WW-TDS-138	Desktop	PEM	65.5	65.5	107.3	Open Cut		
Willacy County								
WW-TDS-139	Desktop	PEM	65.7	65.8	228.1	Open Cut	0.40	0.40
WW-TDS-141	Desktop	PEM	68.5	68.5	143.3	Open Cut	0.27	0.27
WW-TDS-142	Desktop	PEM	69.6	69.7	352.7	Open Cut	1.05	1.05
WW-TDS-142	Desktop	PEM	69.7	69.8	125.1	Open Cut		

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Willacy County (continued)								
WW-TDS-106[f]	Desktop	PEM	70.2	70.2	193.1	Not crossed by centerline	0.03	0.03
WW-TDS-107	Desktop	PEM	70.4	70.5	508.6	Open Cut	0.86	0.86
WW-TDS-113	Desktop	PSS	73.0	73.1	593.7	Open Cut	1.03	1.03
WW-TDS-115	Desktop	PEM	74.0	74.0	78.1	Open Cut	0.07	0.07
WW-T10-003	Field	PEM	82.1	82.3	904.5	HDD	0.00	0.00
WW-T10-005	Field	PEM	87.3	87.3	13.9	Open Cut	0.02	0.02
WW-T10-004B	Field	PEM	87.9	88.0	158.1	Open Cut	0.17	0.17
WW-T05-001[f]	Field	PEM	88.7	88.7	99.1	Not crossed by centerline	0.03	0.03
WW-T09-004	Field	PEM	99.9	100.0	836.1	HDD	0.00	0.00
WW-T09-004	Field	PEM	100.0	100.0	6.7	HDD	0.00	0.00
Cameron County								
WW-T10-006	Field	PEM	105.1	105.4	1673.5	Open Cut	3.81	2.87
WW-T10-007	Field	PEM	105.5	105.8	1644.9	Open Cut	3.77	2.83
WW-T05-008	Field	PSS	111.5	111.5	72.1	Open Cut	0.13	0.13
WW-T05-007	Field	PSS	111.8	111.8	69.0	Open Cut	0.11	0.11
WW-T15-005	Field	PEM	113 + 1,039 ft[h]	113 + 1,066 ft[h]	1.5	Open Cut	0.01	0.01
WW-T15-005	Field	PEM	113 + 1,160 ft[h]	113 + 1,554 ft[h]	323.8	Open Cut	0.35	0.35
WW-T15-005	Field	PFO	113 +1,526 ft[h]	113 + 1,614 ft[h]	26.6	Open Cut	0.03	0.03
WW-T15-006	Field	PFO	113 + 1,529 ft[h]	113 + 2,781ft[h]	218.8	Open Cut	0.36	0.36
WW-T15-007	Field	PSS	113 + 3,864 ft[h]	113 + 3,947 ft[h]	56.3	Open Cut	0.10	0.10

Appendix J-1 (continued)
Wetlands Crossed by the Rio Bravo Pipeline System

Wetland ID[a]	Desktop / Field	Cowardin Class	From MP	To MP	Crossing Length (feet)	Proposed Crossing Method	Construction Impacts (acres)[b,c,d]	Operation Impacts (acres)[d,e]
WW-T15-007	Field	PEM	113 + 3,932 ft[h]	113 + 5,492 ft[h]	1,525.0	Open Cut	2.51	2.51
WW-T15-007	Field	PSS	113 + 5,438 ft[h]	113 + 5,707 ft[h]	167.2	Open Cut	0.18	0.18
WW-T15-008	Field	PEM	113 + 7,227 ft[h]	113 + 7,279 ft[h]	37.7	Open Cut	0.07	0.07
WW-T15-008	Field	PEM	113 + 7,449 ft[h]	113 + 7,511 ft[h]	45.3	Open Cut	0.08	0.08
WW-T15-009[f]	Field	PEM	113 + 10,203 ft[h]	113 + 10,213 ft[h]	10.0	Not crossed by centerline	<0.01	<0.01
WW-T15-009	Field	PEM	113 + 10,261 ft[h]	113 + 10,810ft[h]	458.6	Open Cut	0.82	0.82
WW-T15-009	Field	PEM	113 + 10,769 ft[h]	113 + 10,991 ft[h]	147.4	Open Cut	0.24	0.24
WW-T15-009	Field	PEM	113 + 10,956 ft[h]	113 + 11,144 ft[h]	166.7	Open Cut	0.26	0.26
WW-T04-006	Field	PEM	118.1	118.1	24.3	Open Cut	0.03	0.03
WW-T09-002B	Field	EEM	125.0	125.0	109.5	Open Cut	49.29	36.95
WW-T09-002B	Field	EEM	125.0	125.8	4461.2	Open Cut		
WW-T09-002	Field	EEM	125.8	129.0	16890.3	Open Cut		
WW-T09-001	Field	EEM	129.3	129.5	1155.6	Open Cut	6.01	4.70
WW-T09-001	Field	EEM	129.5	129.8	1697.8	Open Cut		
WW-T09-001	Field	EEM	130.5	130.7	602.6	HDD	0.00	0.00
WW-T09-003	Field	EEM	130.7	130.8	667.7	HDD	0.00	0.00
WW-T09-003	Field	EUS	130.8	130.8	26.3	HDD	0.00	0.00

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Cameron County (continued)								
WW-T09-003	Field	EUS	130.8	131.0	839.9	Open Cut	3.56	2.84
WW-T09-003	Field	EEM	131.0	131.0	55.9	Open Cut		
WW-T09-003	Field	EEM	131.0	131.0	9.9	Open Cut		
WW-T09-003	Field	EUS	131.0	131.1	161.7	Open Cut		
WW-T09-003	Field	EEM	131.1	131.1	137.1	Open Cut		
WW-T09-003	Field	EUS	131.1	131.1	135.3	Open Cut		
WW-T09-003	Field	EEM	131.1	131.1	23.6	Open Cut		
WW-T09-003	Field	EEM	131.1	131.2	377.9	Open Cut		
WW-T03-001	Field	EEM	131.2	131.2	182.5	Open Cut	0.69	0.42
WW-T01-003	Field	EEM	131.4	131.6	845.4	Open Cut	1.87	1.43
WW-T01-001	Field	EEM	131.6	131.6	135.2	Open Cut	11.31	8.37
WW-T01-001	Field	EUS	131.6	131.8	899.4	Open Cut		
WW-T01-001	Field	EEM	131.8	132.4	3422.2	Open Cut		
WW-T01-001	Field	EUS	132.4	132.5	330.1	Open Cut		
WW-T01-002[i]	Field	EEM	132.8	132.9	648.2	Open Cut	1.46	1.11
WW-T01-002	Field	EEM	132.9	132.9	63.3	HDD	0.00	0.00
WW-T01-002	Field	EUS	132.9	133.0	509.7	HDD	0.00	0.00
WW-T01-002	Field	EEM	133.0	133.1	178.2	HDD	0.00	0.00
WW-T01-002	Field	EUS	133.1	133.3	1053.3	HDD	0.00	0.00
WW-T01-002	Field	EEM	133.3	133.3	42.4	HDD	0.00	0.00
WW-T01-002	Field	EUS	133.3	133.4	955.3	HDD	0.00	0.00
WW-T01-002	Field	EEM	133.4	133.5	14.3	HDD	0.00	0.00
WW-T01-002	Field	EUS	133.5	133.5	33.1	HDD	0.00	0.00
WW-T01-002	Field	EEM	133.5	133.5	26.6	HDD	0.00	0.00

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Cameron County (continued)								
WW-T02-002	Field	EUS	133.5	133.8	1202.2	HDD	0.00	0.00
WW-T02-003	Field	EEM	134.1	134.1	53.7	Open Cut	2.13	1.67
WW-T02-003	Field	EEM	134.2	134.4	985.5	Open Cut		
WW-T02-003	Field	EEM	134.5	134.5	286.1	HDD	0.00	0.00
WW-T02-001	Field	EUS	134.7	134.7	93.5	HDD	0.00	0.00
WW-T02-001	Field	EEM	134.7	134.8	217.5	HDD	0.00	0.00
WW-T02-001	Field	ESS	134.8	135.1	1764.8	HDD	0.00	0.00
WW-T02-001	Field	EEM	135.1	135.1	10.0	HDD	0.00	0.00
WW-T02-001	Field	EUS	135.1	135.2	157.9	HDD	0.00	0.00
WW-T02-001	Field	EEM	135.2	135.2	26.8	HDD	0.00	0.00
WW-T02-001	Field	EUS	135.2	135.2	52.8	HDD	0.00	0.00
WW-T02-001	Field	ESS	135.2	135.2	129.7	HDD	0.00	0.00
W-3	Field	ESS/EEM	135.2	135.3	765.5	HDD	0.00	0.00
W-3	Field	EEM/ESS	135.4	135.5	414.8	HDD	0.00	0.00
PIPELINE 2								
Kleberg County								
WW-TDS-060	Desktop	PEM[j]	0.0	0.3	1507.6	Open Cut	5.78	4.30
WW-TDS-060	Desktop	PEM[j]	0.3	0.5	1004.5	Open Cut		
WW-TDS-059	Desktop	PEM[j]	2.2	2.2	120.4	Open Cut	3.21	2.58
WW-TDS-059	Desktop	PEM[j]	2.2	2.5	1400.6	Open Cut		
WW-TDS-058	Desktop	PEM[j]	2.8	2.8	300.0	Open Cut	0.52	0.52
WW-TDS-053	Desktop	PEM	5.2	5.3	184.2	Open Cut	0.31	0.31
WW-TDS-052	Desktop	PEM	6.6	6.6	17.7	Open Cut	0.05	0.05

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Kleberg County (continued)								
WW-TDS-047[f]	Desktop	PEM	11.1	11.1	26.2	Not crossed by centerline	<0.01	<0.01
WW-TDS-046f	Desktop	PEM	11.1	11.1	31.8	Not crossed by centerline	<0.01	<0.01
WW-TDS-043	Desktop	PEM	11.4	11.4	29.1	Open Cut	0.02	0.02
WW-TDS-041	Desktop	PEM	11.8	11.8	48.3	Open Cut	0.11	0.11
WW-TDS-040	Desktop	PEM[j]	15.0	15.0	242.7	Open Cut	0.41	0.41
WW-TDS-039	Desktop	PEM[j]	15.3	15.4	810.8	Open Cut	1.22	1.22
WW-TDS-038	Desktop	PEM	16.0	16.1	379.2	Open Cut	0.61	0.61
WW-TDS-035	Desktop	PEM[j]	17.9	17.9	32.9	Open Cut	0.06	0.06
WW-TDS-033A	Desktop	PEM	19.1	19.1	39.2	HDD	0.00	0.00
Kenedy County								
WW-TDS-033	Desktop	PEM	19.1	19.1	93.1	HDD	0.00	0.00
WW-T08-003	Field	PEM	31.3	31.3	197.1	Open Cut	0.33	0.33
WW-T08-001	Field	PEM	31.6	31.6	88.0	Open Cut	0.13	0.13
WW-T04-008	Field	PEM	35.5	35.6	70.8	Open Cut	0.15	0.15
WW-T04-009	Field	PEM	35.8	35.9	115.3	Open Cut	0.23	0.23
WW-T04-010	Field	PEM	35.9	36.0	270.7	Open Cut	0.50	0.50
WW-T04-013	Field	PEM	36.0	36.0	101.1	Open Cut	0.18	0.18
WW-T04-014	Field	PEM	36.4	36.4	2.8	Open Cut	0.01	0.01
WW-T04-015	Field	PEM	36.5	36.6	498.0	Open Cut	0.80	0.80

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Kenedy County (continued)								
WW-TDS-116[f,g]	Desktop	PEM	38.0	38.0	319.0	Not crossed by centerline	0.07	0.07
WW-T04-011[g]	Field	PEM	38.0	38.1	866.2	Open Cut	1.36	1.36
WW-TDS-117[f,g]	Desktop	PEM	38.0	38.0	82.0	Not crossed by centerline		
WW-T04-012	Field	PEM	39.1	39.1	30.6	Open Cut	0.12	0.12
WW-T04-017[f]	Field	PEM	40.2	40.5	142.7	Not crossed by centerline	0.04	0.04
WW-T04-018	Field	PEM	40.5	40.5	28.0	Open Cut	0.01	0.01
WW-T04-021	Field	PEM	44.6	44.6	58.0	Open Cut	0.11	0.11
WW-T05-003	Field	PEM	45.0	45.1	704.0	Open Cut	1.30	1.30
WW-T05-003	Field	PEM	45.1	45.2	55.3	Open Cut		
WW-T05-004	Field	PEM	45.4	45.6	913.6	Open Cut	7.82	5.92
WW-T05-004	Field	PEM	45.6	46.1	2473.5	Open Cut		
WW-T05-005	Field	PEM	46.2	46.2	166.1	Open Cut	0.28	0.28
WW-T04-026	Field	PEM	46.2	46.3	294.0	Open Cut	0.50	0.50
WW-T04-025	Field	PEM	46.4	46.5	429.5	Open Cut	0.73	0.73
WW-T04-024	Field	PEM	46.7	46.7	104.8	Open Cut	0.26	0.21
WW-T04-022	Field	PEM	47.4	47.5	448.6	Open Cut	0.78	0.78
WW-TDS-118[f]	Desktop	PEM	48.6	48.6	48.8	Not crossed by centerline	0.01	0.01
WW-TDS-032	Desktop	PEM	49.7	49.7	69.3	Open Cut	0.11	0.11
WW-TDS-031	Desktop	PEM	50.4	50.4	257.3	Open Cut	0.42	0.42
WW-TDS-030	Desktop	PEM	50.8	50.9	454.0	Open Cut	0.76	0.76

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Kenedy County (continued)								
WW-TDS-029	Desktop	PEM	51.0	51.0	178.6	Open Cut	0.20	0.20
WW-TDS-119	Desktop	PEM	52.0	52.0	17.2	Open Cut	0.04	0.04
WW-TDS-120[f]	Desktop	PEM	53.4	53.5	325.1	Not crossed by centerline	0.16	0.16
WW-TDS-121	Desktop	PEM	53.5	53.6	484.9	Open Cut	0.82	0.82
WW-TDS-122	Desktop	PEM	53.9	54.0	839.5	Open Cut	1.38	1.38
WW-TDS-024	Desktop	PEM	54.6	54.6	86.6	Open Cut	0.25	0.25
WW-TDS-024	Desktop	PEM	54.6	54.7	108.2	Open Cut		
WW-TDS-023	Desktop	PEM	55.0	55.1	475.9	Open Cut	0.74	0.74
WW-TDS-022	Desktop	PEM	55.2	55.2	312.6	Open Cut	0.54	0.54
WW-TDS-021	Desktop	PEM	55.5	55.5	317.3	Open Cut	0.54	0.54
WW-TDS-123	Desktop	PEM	56.2	56.2	100.4	Open Cut	0.16	0.16
WW-TDS-125	Desktop	PEM	56.8	56.8	253.6	Open Cut	0.39	0.39
WW-TDS-126	Desktop	PEM	57.0	57.1	409.2	Open Cut	0.75	0.75
WW-TDS-127	Desktop	PEM	58.0	58.1	44.3	Open Cut	0.07	0.07
WW-TDS-128	Desktop	PEM	58.3	58.3	111.5	Open Cut	0.19	0.19
WW-TDS-015[f]	Desktop	PEM	59.0	59.0	91.5	Not crossed by centerline	0.01	0.01
WW-TDS-131	Desktop	PEM	60.6	60.7	287.2	Open Cut	0.47	0.47
WW-TDS-132	Desktop	PEM[j]	60.8	60.9	144.2	Open Cut	0.26	0.26
WW-TDS-133	Desktop	PEM	61.1	61.1	43.9	Open Cut	0.06	0.06
WW-TDS-134	Desktop	PEM	61.3	61.4	337.2	Open Cut	0.57	0.57
WW-TDS-135	Desktop	PEM	63.7	63.7	138.8	Open Cut	0.16	0.16
WW-TDS-135	Desktop	PEM	63.8	63.8	10.2	Open Cut		

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Kenedy County (continued)								
WW-TDS-136	Desktop	PEM	64.1	64.2	437.7	Open Cut	0.76	0.76
WW-TDS-137	Desktop	PEM	64.8	64.9	318.0	Open Cut	0.54	0.54
WW-TDS-138[f]	Desktop	PEM	65.4	65.4	416.9	Not crossed by centerline	0.16	0.16
WW-TDS-139	Desktop	PEM	65.7	65.8	249.9	Open Cut	0.40	0.40
Willacy County								
WW-TDS-141	Desktop	PEM	68.5	68.5	173.7	Open Cut	0.27	0.27
WW-TDS-142	Desktop	PEM	69.6	69.7	401.9	Open Cut	1.05	1.05
WW-TDS-142	Desktop	PEM	69.7	69.8	347.1	Open Cut		
WW-TDS-106[f]	Desktop	PEM	70.2	70.2	193.1	Not crossed by centerline	0.03	0.03
WW-TDS-107	Desktop	PEM	70.4	70.5	494.0	Open Cut	0.86	0.86
WW-TDS-113	Desktop	PEM[j]	73.0	73.1	611.9	Open Cut	1.03	1.03
WW-TDS-115	Desktop	PEM	74.0	74.0	89.5	Open Cut	0.07	0.07
WW-T10-003	Field	PEM	82.1	82.3	888.4	HDD	0.00	0.00
WW-T10-005	Field	PEM	87.3	87.3	7.1	Open Cut	0.02	0.02
WW-T10-004	Field	PEM	87.9	87.9	18.6	Open Cut	0.17	0.17
WW-T05-001[f]	Field	PEM	88.7	88.7	99.1	Not crossed by centerline	0.03	0.03
WW-T09-004	Field	PEM	99.9	100.0	797.6	HDD	0.00	0.00
Cameron County								
WW-T10-006	Field	PEM	105.1	105.4	1664.4	Open Cut	3.81	2.87
WW-T10-007	Field	PEM	105.5	105.8	1642.2	Open Cut	3.77	2.83
WW-T05-008	Field	PEM[j]	111.4	111.5	76.4	Open Cut	0.13	0.13

Appendix J-1 (continued)
Wetlands Crossed by the Rio Bravo Pipeline System

Wetland ID[a]	Desktop / Field	Cowardin Class	From MP	To MP	Crossing Length (feet)	Proposed Crossing Method	Construction Impacts (acres)[b,c,d]	Operation Impacts (acres)[d,e]
Cameron County (continued)								
WW-T05-007	Field	PEM[j]	111.8	111.8	62.9	Open Cut	0.11	0.11
WW-T05-006	Field	PEM	113.8	113.9	990.0	Open Cut	1.69	1.69
WW-T15-005[f]	Field	PEM	113 + 1,039 ft[h]	113 + 1,066 ft[h]	27.0	Not crossed by centerline	0.01	0.01
WW-T15-005	Field	PEM	113 + 1,160 ft[h]	113 + 1,554 ft[h]	74.6	Open Cut	0.35	0.35
WW-T15-005[f]	Field	PEM[j]	113 + 1,526 ft[h]	113 + 1,614 ft[h]	88.0	Not crossed by centerline	0.03	0.03
WW-T15-006	Field	PEM[j]	113 + 1,529 ft[h]	113 + 2,781ft[h]	185.0	Open Cut	0.36	0.36
WW-T15-007	Field	PEM[j]	113 + 3,864 ft[h]	113 + 3,947 ft[h]	61.0	Open Cut	0.10	0.10
WW-T15-007	Field	PEM	113 + 3,932 ft[h]	113 + 5,492 ft[h]	1,507.5	Open Cut	2.51	2.51
WW-T15-007[f]	Field	PEM[j]	113 + 5,438 ft[h]	113 + 5,707 ft[h]	269.0	Not crossed by centerline	0.18	0.18
WW-T15-008	Field	PEM	113 + 7,227 ft[h]	113 + 7,279 ft[h]	42.0	Open Cut	0.07	0.07
WW-T15-008	Field	PEM	113 + 7,449 ft[h]	113 + 7,511 ft[h]	44.3	Open Cut	0.08	0.08
WW-T15-009[f]	Field	PEM	113 + 10,203 ft[h]	113 + 10,213 ft[h]	10.0	Not crossed by centerline	<0.01	<0.01
WW-T15-009	Field	PEM	113 + 10,261 ft[h]	113 + 10,810ft[h]	504.5	Open Cut	0.82	0.82
WW-T15-009	Field	PEM	113 + 10,769 ft[h]	113 + 10,991 ft[h]	124.0	Open Cut	0.24	0.24
WW-T15-009	Field	PEM	113 + 10,956 ft[h]	113 + 11,144 ft[h]	140.0	Open Cut	0.26	0.26
WW-T04-027	Field	PEM	114.3	114.4	462.0	Open Cut	0.81	0.81
WW-T04-006	Field	PEM	118.1	118.1	11.1	Open Cut	0.03	0.03

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Cameron County (continued)								
WW-T09-002	Field	EEM	125.0	125.0	130.8	Open Cut	49.29	36.95
WW-T09-002	Field	EEM	125.0	125.8	4487.4	Open Cut		
WW-T09-002	Field	EEM	125.8	129.0	16854.7	Open Cut		
WW-T09-001	Field	EEM	129.3	129.5	1185.0	Open Cut	6.01	4.70
WW-T09-001	Field	EEM	129.5	129.7	1066.6	Open Cut		
WW-T09-001	Field	EEM	129.7	129.8	418.7	Open Cut		
WW-T09-001	Field	EEM	130.5	130.7	593.0	HDD	0.00	0.00
WW-T09-003	Field	EEM	130.7	130.8	459.3	HDD	0.00	0.00
WW-T09-003	Field	EUS	130.8	130.8	54.5	HDD	0.00	0.00
WW-T09-003	Field	EEM	130.8	130.8	126.8	HDD	0.00	0.00
WW-T09-003	Field	EUS	130.8	130.8	55.9	HDD	0.00	0.00
WW-T09-003	Field	EUS	130.8	131.0	808.8	Open Cut	3.56	2.84
WW-T09-003	Field	EEM	131.0	131.0	44.7	Open Cut		
WW-T09-003	Field	EEM	131.0	131.1	7.0	Open Cut		
WW-T09-003	Field	EUS	131.1	131.1	114.5	Open Cut		
WW-T09-003	Field	EEM	131.1	131.1	160.9	Open Cut		
WW-T09-003	Field	EUS	131.1	131.1	148.1	Open Cut		
WW-T09-003	Field	EEM	131.1	131.1	7.8	Open Cut		
WW-T09-003	Field	EEM	131.1	131.2	152.8	Open Cut		
WW-T09-003	Field	EEM	131.2	131.2	113.5	Open Cut		
WW-T03-001	Field	EEM	131.2	131.2	306.6	Open Cut	0.69	0.42
WW-T01-003	Field	EEM	131.4	131.6	819.6	Open Cut	1.87	1.43
WW-T01-001	Field	EEM	131.6	131.6	133.6	Open Cut	11.31	8.37
WW-T01-001	Field	EUS	131.6	131.8	921.7	Open Cut		

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Cameron County (continued)								
WW-T01-001	Field	EEM	131.8	132.4	3452.6	Open Cut		
WW-T01-001	Field	EUS	132.4	132.5	415.3	Open Cut		
WW-T01-002[i]	Field	EEM	132.8	132.9	638.1	Open Cut	1.46	1.11
WW-T01-002	Field	EEM	132.9	132.9	78.9	HDD	0.00	0.00
WW-T01-002	Field	EUS	132.9	133.0	496.4	HDD	0.00	0.00
WW-T01-002	Field	EEM	133.0	133.1	177.2	HDD	0.00	0.00
WW-T01-002	Field	EUS	133.1	133.3	1079.1	HDD	0.00	0.00
WW-T01-002	Field	EEM	133.3	133.3	43.2	HDD	0.00	0.00
WW-T01-002	Field	EUS	133.3	133.5	986.1	HDD	0.00	0.00
WW-T01-002	Field	EEM	133.5	133.5	38.2	HDD	0.00	0.00
WW-T02-002	Field	EUS	133.5	133.6	187.7	HDD	0.00	0.00
WW-T02-002	Field	EUS	133.6	133.7	943.7	HDD	0.00	0.00
WW-T02-002	Field	EEM	133.7	133.7	66.1	HDD	0.00	0.00
WW-T02-002	Field	EUS	133.7	133.8	70.5	HDD	0.00	0.00
WW-T02-003	Field	EEM	134.1	134.1	59.0	Open Cut		
WW-T02-003	Field	EEM	134.2	134.4	786.6	Open Cut	2.13	1.67
WW-T02-003	Field	EEM	134.4	134.4	51.7	Open Cut		
WW-T02-003	Field	EEM	134.5	134.5	279.2	HDD	0.00	0.00
WW-T02-001	Field	EUS	134.7	134.7	96.7	HDD	0.00	0.00
WW-T02-001	Field	EEM	134.7	134.8	376.3	HDD	0.00	0.00
WW-T02-001	Field	ESS	134.8	135.1	1577.6	HDD	0.00	0.00
WW-T02-001	Field	EEM	135.1	135.1	50.4	HDD	0.00	0.00
WW-T02-001	Field	EUS	135.1	135.2	144.1	HDD	0.00	0.00
WW-T02-001	Field	EEM	135.2	135.2	29.5	HDD	0.00	0.00

Appendix J-1 (continued) Wetlands Crossed by the Rio Bravo Pipeline System								
Wetland ID[a]	**Desktop / Field**	**Cowardin Class**	**From MP**	**To MP**	**Crossing Length (feet)**	**Proposed Crossing Method**	**Construction Impacts (acres)[b,c,d]**	**Operation Impacts (acres)[d,e]**
Cameron County (continued)								
WW-T02-001	Field	EUS	135.2	135.2	53.6	HDD	0.00	0.00
WW-T02-001	Field	ESS	135.2	135.2	129.0	HDD	0.00	0.00
W-3	Field	ESS/EEM	135.2	135.4	764.2	HDD	0.00	0.00
W-3	Field	EEM/ESS	135.4	135.5	412.2	HDD	0.00	0.00

a Due to the orientation and shape of certain wetland features, some are crossed multiple times by the pipeline centerline. Each individual crossing is listed so that some features are listed multiple times. Due to the short distance between separate crossings of the same feature, it is expected that during construction these features will be treated as a single crossing. Impact acreage is provided for the entire feature and is not repeated for multiple crossings of the same feature.

b Crossing length is provided for features crossed by trenchless construction methods (i.e. HDD); however, the impact acreage is shown as 0.00 for HDD crossings because impacts will be avoided.

c Construction impacts include all areas of the 75-foot permanent right-of-way and temporary right-of-way that will be disturbed during construction of the Pipeline System but does not include ATWS.

d The sum of the addends may not equal the totals presented in table 4.4.2-1 due to rounding.

e Operation impacts represent those areas of the pipeline right-of-way that would be retained during operation of the Pipeline System and are based on a 75-foot permanent ROW.

f The wetland is not crossed by the pipeline centerline; its crossing length represents the longest distance crossed by the temporary construction workspaces.

g This feature has been partially field delineated and partially desktop delineated due to shifts in pipeline alignment.

h Due to a short re-route since issuance of the draft EIS, the beginning and ending milepost is presented as feet downstream of the nearest original milepost.

i Wetland WW-T01-002 is located at MP 132.79 and would be crossed by a combination of HDD and open cut as shown on the alignment sheets. The HDD crossing exit pit is located at MP 132.88, approximately 600 feet within Wetland WW-T01-002. As this location is the exit pit for the HDD, RB Pipeline requires sufficient level workspace behind the exit pit to allow for equipment placement and pull-back of the pipe during installation. Impacts reported for this feature are for the open cut portion only.

j Forested and scrub-shrub wetlands restored following construction of Pipeline 1 would revegetate to emergent vegetation conditions prior to construction of Pipeline 2, rather than the pre-construction vegetative cover. Therefore, construction of Pipeline 2 would have a greater impact on PEM wetlands than Pipeline 1.

Appendix J-2 Wetlands within Additional Temporary Workspace along the Rio Bravo Pipeline System								
Wetland ID	Desktop / Field	Cowardin Class	ATWS ID	From MP	To MP	Crossing Length (feet)	Construction Impacts (acres)[a]	Operation Impacts (acres)[b]
PIPELINES 1 AND 2								
Cameron County								
WW-T09-002B	Field	EEM	ATWS-397	125.8	125.8	158.4	0.09	0.00
WW-T09-002	Field	EEM	ATWS-398	125.9	125.9	105.6	0.05	0.00
WW-T09-002	Field	EEM	ATWS-400	126.5	127.0	2270.4	1.31	0.00
WW-T09-002	Field	EEM	ATWS-399	126.5	127.0	2270.4	2.63	0.00
WW-T09-002	Field	EEM	ATWS-401	127.7	127.7	52.8	0.06	0.00
WW-T09-002	Field	EEM	ATWS-402	128.7	128.7	105.6	0.06	0.00
WW-T09-003	Field	EUS	ATWS-408	130.8	130.8	211.2	0.12	0.00
WW-T09-003	Field	EUS	ATWS-407	130.8	130.8	211.2	0.34	0.00
WW-T09-003	Field	EUS	ATWS-409	130.9	130.9	105.6	0.06	0.00
WW-T01-003	Field	EEM	ATWS-413	131.6	131.6	52.8	0.03	0.00
WW-T01-003	Field	EEM	ATWS-412	131.6	131.6	52.8	0.06	0.00
WW-T01-001	Field	EEM	ATWS-415	131.6	131.6	52.8	0.04	0.00
WW-T01-001	Field	EEM	ATWS-414	131.6	131.6	316.8	0.17	0.00
WW-T01-001	Field	EUS	ATWS-414	131.6	131.6	158.4	0.06	0.00
WW-T01-002	Field	EEM	ATWS-416	132.9	132.9	158.4	0.18	0.00
WW-T01-002	Field	EEM	ATWS-417	132.9	132.9	158.4	0.18	0.00
WW-TDS-146	Desktop	EEM	ATWS-417	132.9	132.9	105.6	0.03	0.00

[a] Construction impacts include all ATWS areas that would be temporarily disturbed during construction of Pipelines 1 and 2.
[b] ATWS would be restored following Project construction and would not be maintained.

Appendix J-3 Wetlands Crossed by Access Roads for the Rio Bravo Pipeline System								
Wetland ID[a]	**Nearest MP**	**Desktop / Field**	**Cowardin Class**	**Access Road ID**	**Access Road Type**	**Crossing Length (feet)[b]**	**Construction Impacts (acres)[c]**	**Operation Impacts (acres)[d]**
PIPELINES 1 AND 2								
Kleberg County								
WW-TDS-060	0.0	Desktop	PFO	AR-006	Temporary	87.7	0.02	0.00
Kenedy County								
WW-TDS-018	58.0	Desktop	PEM	AR-030	Temporary	643.3	0.18	0.00
Cameron County								
WW-T10-009B	126.4	Field	EEM	AR-055	Temporary	8488.9	2.32	0.00
WW-T09-002[e]	126.5	Field	EEM	AR-055	Temporary	194.3	0.05	0.00
WW-TDS-149[e]	126.5	Desktop	EEM	AR-055	Temporary	466.8	0.13	0.00
WW-T09-002[e]	126.5	Field	EEM	AR-055	Temporary	93.0	0.03	0.00
WW-T09-002[e]	126.5	Field	EEM	AR-055	Temporary	148.3	0.04	0.00
WW-TDS-149[e]	126.5	Desktop	EEM	AR-055	Temporary	368.6	0.10	0.00
WW-T09-002[e]	126.6	Field	EEM	AR-055	Temporary	83.5	0.02	0.00
WW-TDS-149[e]	126.6	Desktop	EEM	AR-055	Temporary	527.5	0.15	0.00
WW-T09-002[e]	126.7	Field	EEM	AR-055	Temporary	345.3	0.10	0.00
WW-TDS-149[e]	126.7	Desktop	EEM	AR-055	Temporary	346.2	0.10	0.00
WW-T09-002[e]	128.7	Field	EEM	AR-055	Temporary	10943.6	3.02	0.00
WW-T09-001	129.6	Field	EEM	AR-056	Temporary	166.6	0.05	0.00
WW-T10-001	130.7	Field	EEM	AR-056	Temporary	6127.6	1.69	0.00
WW-T09-001	130.7	Field	EEM	AR-056	Temporary	123.1	0.03	0.00
WW-T01-001	132.5	Field	EUS	AR-058	Temporary	150.8	0.04	0.00
WW-T02-003	134.1	Field	EEM	AR-060	Temporary	233.6	0.06	0.00
WW-T02-001a	134.7	Field	EUS	AR-061	Temporary	74.4	0.02	0.00
WW-T02-001c	135.2	Field	EUS	AR-062	Temporary	194.7	0.05	0.00

Appendix J-3 (continued) Wetlands Crossed by Access Roads for the Rio Bravo Pipeline System								
Wetland ID[a]	**Nearest MP**	**Desktop / Field**	**Cowardin Class**	**Access Road ID**	**Access Road Type**	**Crossing Length (feet)[b]**	**Construction Impacts (acres)[c]**	**Operation Impacts (acres)[d]**
Cameron County (continued)								
WW-T02-001c	135.3	Field	EUS	AR-063	Temporary	99.5	0.03	0.00
WW-T02-001c	135.3	Field	EUS	AR-063	Temporary	4.0	<0.01	0.00
WW-T02-001c	135.4	Field	EUS	AR-064	Temporary	101.9	0.03	0.00

[a] Due to the orientation and shape of certain wetland features, some are crossed by multiple access roads. Each individual crossing is listed so that some features are listed multiple times.

[b] Crossing length is calculated based on the centerline of proposed access roads.

[c] Construction impact calculations are based on the road widths presented in appendix C minus the areas of overlap with permanent Pipeline System components.

[d] Temporary access roads are only used during construction and thus no operational impacts on wetlands from temporary access roads would result. Each of these roads is existing and would be used without modification, though RB Pipeline would use matting where soils are saturated to reduce impacts due to rutting and compaction.

[e] This single feature has been partially field delineated and partially desktop delineated due to shifts in access road alignment.

APPENDIX K

MIGRATORY BIRDS AND BIRDS OF CONSERVATION CONCERN IN THE RIO GRANDE LNG PROJECT AREA

Appendix K-1
Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site

Common Name	Scientific Name	Potential to Nest on LNG Terminal Site	Justification[a]	Habitat Description	Potential to Occur at LNG Terminal Site[b]	Justification
Magnificent frigatebird[c]	*Fregata magnificens*	No	Nests on islands	Oceanic coasts, islands. Occurs over warm waters, usually along coast but also for offshore at times. Also soars inland in coastal areas. Strays are rarely seen far inland around fresh water. Nests on islands, usually small islands with dense growth of mangroves or other trees or shrubs.	No	Recorded in 5 of 6 sightings datasets, but suitable habitat does not occur on Terminal site
Least bittern	*Ixobrychus exilis*	Yes	Known to nest on NWR; suitable nesting habitat occurs on Terminal site	Fresh marshes, reedy ponds. Mostly freshwater marsh but also brackish marsh, in areas with tall, dense vegetation standing in water. May be over fairly deep water, because it mostly climbs in reeds rather than wading. Sometimes in salt marsh or in mangroves. Breeding in Project area.	Yes, seasonally	Recorded in only 2 of 6 sightings datasets, but suitable habitat occurs on Terminal site
Reddish egret[c]	*Egretta rufescens*	Yes	Known to nest on NWR; suitable nesting habitat occurs on Terminal site	Year-round resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear.	Yes	Recorded in all sightings datasets, suitable habitat occurs on Terminal site
Harris's hawk[c]	*Parabuteo unicinctus*	No	Known to nest on NWR, but no nesting habitat on Terminal site	River woods, mesquite, brush, cactus deserts. Found mostly in open dry country. Most common in saguaro cactus desert in Arizona, in mesquite brush land in Texas and New Mexico. Also found in trees along rivers, and recently has become resident in suburban areas of some southwestern cities. Resides year-round in Project area.	No	Recorded in all sightings datasets, but no suitable habitat occurs on Terminal site
White-tailed hawk[c]	*Buteo albicaudatus*	Yes	Known to breed on Laguna Atascosa NWR; suitable nesting habitat occurs on Terminal site	Inhabits prairies, cordgrass flats, and scrub-live oak along the Texas coast; in inland habitats prefers prairies, mesquite/oak savannas, and savanna/chaparral.	Yes	Recorded in all sightings datasets; suitable habitat occurs on Terminal site
Bald eagle	*Haliaeetus leucocephalus*	No	Overwintering only	Prefer areas close to coasts, bays, rivers, lakes, or other large bodies of water that concentrate prey, including fish, waterfowl, and wading birds.	No – out of known range	Only recorded on NWR and Terminal outside of species' known range

Appendix K-1 (continued) Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site						
Common Name	**Scientific Name**	**Potential to Nest on LNG Terminal Site**	**Justification[a]**	**Habitat Description**	**Potential to Occur at LNG Terminal Site[b]**	**Justification**
Peregrine falcon	*Falco peregrinus*	No	Overwintering only	Both subspecies migrate across the state from more northern breeding areas in the U.S. and Canada to winter along the coast. The subspecies are not easily distinguished thus reference is generally made only to the species level. Inhabit wide range of habitats including urban, barrier islands, and lake shores; nest in tall cliff eyries. Winters in the Project area.	Yes, seasonally	Recorded in 5 of 6 sightings datasets; suitable habitat occurs on Terminal site
Yellow rail	*Coturnicops noveboracensis*	No	Overwintering only	Grassy marshes, meadows. In summer, favors large wet meadows or shallow marshes dominated by sedges and grasses. Typically in fresh or brackish marsh with water no more than a foot deep. In winter mostly in coastal salt marsh, especially drier areas with dense stands of *Spartina*. Overwinters in the Project area.	No – out of known range	Not recorded in any sightings dataset and Terminal outside of species' known range
Wilson's plover[c]	*Charadrius wilsonia*	Yes	Known to nest on NWR and suitable nesting habitat occurs on Terminal site	Open beaches, tidal flats, and sandy islands. Found only in coastal regions, typically in very open areas such as white sand or shell beaches, estuaries, tidal mudflats. May favor islands, such as offshore barrier beaches, dredge spoil islands. Summer breeding in Project area.	Yes, seasonally	Recorded in all sightings datasets; suitable habitat occurs on Terminal site
Snowy plover[c]	*Charadrius alexandrinus*	Yes	Known to nest on NWR and suitable nesting habitat occurs on Terminal site	Beaches, sandy flats. At all seasons, tends to be found in places where habitat matches pale color of back -- dry sand beaches along coast; salt pans or alkaline flats in interior. Usually in places with very little vegetation, not around marshes. Also sometimes forages on open mudflats. Year-round in Project area.	Yes	Recorded in all sightings datasets; suitable habitat occurs on Terminal site
Mountain plover	*Charadrius montanus*	No	Overwintering only	Semi-arid plains, grasslands, plateaus. Favors areas of very short grass, even bare soil. Typically far from water. Nests mostly in short-grass prairie, including overgrazed pasture and very arid plains. Winter habitats include desert flats, plowed fields. Overwinters in the Project area.	No	Only recorded in 1 sightings dataset, and no suitable habitat occurs on Terminal site

Appendix K-1 (continued) Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site						
Common Name	**Scientific Name**	**Potential to Nest on LNG Terminal Site**	**Justification[a]**	**Habitat Description**	**Potential to Occur at LNG Terminal Site[b]**	**Justification**
American oyster-catcher[c]	*Haematopus palliatus*	Yes	Confirmed breeding in Cameron County and suitable nesting habitat occurs on Terminal site	Coastal habitats including sand and shell beaches, dunes, salt marsh, mudflats and dredge spoil islands. Occurs along Texas Gulf Coast, resides year-round in Project area.	Yes	Recorded in all sightings datasets; suitable habitat occurs on Terminal site
Lesser yellowlegs[d]	*Tringa falvipes*	No	Overwintering only	Marshes, mudflats, shores, ponds. Occurs widely in migration, including coastal estuaries, salt and fresh marshes, edges of lakes and ponds; typically more common on freshwater habitats. Breeds in large clearings, such as burned areas, near ponds in northern forest. Overwinters in the Project area.	Yes, seasonally	Recorded in all sightings datasets; suitable habitat occurs on Terminal site
Solitary sandpiper[d]	*Tringa solitaria*	No	Overwintering only	Stream sides, wooded swamps and ponds, fresh marshes. In migration generally along shaded streams and ponds, riverbanks, narrow channels in marshes. Sometimes along the edges of open mudflats, but generally avoids tidal flats and salt marsh. Overwinters in the Project area.	No	Recorded in 4 of 6 sightings datasets, but no suitable habitat occurs on Terminal site
Whimbrel[c]	*Umenius phaeopus*	No	Overwintering only	Shores, mudflats, marshes, tundra. Found on a wide variety of habitats on migration. Most common on mudflats, but also found on rocky shores, sandy beaches, salt marshes, flooded agricultural fields, grassy fields. In summer, breeds on Arctic tundra. Overwinters in the Project area.	Yes, seasonally	Recorded in all sightings datasets; suitable habitat occurs on Terminal site
Long-billed curlew	*Numenius americanus*	No	Overwintering only	High plains, rangeland. In winter, also cultivated land, tide flats, salt marshes. Breeding habitat is mostly native dry grassland and sagebrush prairie. In migration and winter often in farm fields, marshes, coastal mudflats, in addition to grasslands. Overwinters in the Project area.	Yes, seasonally	Recorded in all sightings datasets; suitable habitat occurs on Terminal site

Appendix K-1 (continued) Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site						
Common Name	**Scientific Name**	**Potential to Nest on LNG Terminal Site**	**Justification[a]**	**Habitat Description**	**Potential to Occur at LNG Terminal Site[b]**	**Justification**
Marbled godwit	*Limosa fedoa*	No	Overwintering only	Prairies, pools, shores, tide flats. Breeds mostly on northern Great Plains, in areas of native prairie with marshes or ponds nearby. In migration and winter around tidal mudflats, marshes, ponds, mainly in coastal regions. Overwinters in the Project area.	Yes, seasonally	Recorded in all sightings datasets; suitable wintering habitat occurs on Terminal site
Hudsonian godwit	*Limosa haemastica*	No	Overwintering only	Marshes, prairie pools, mudflats; edge of tundra in summer. Spring migrants are usually on shallow marshy lakes, flooded pastures, rice fields, mudflats around ponds. Fall migrants on Atlantic Coast may be on marshy ponds or tidal flats. Spring and Fall migrant through Project Area.	No	Only recorded on NWR, and limited suitable habitat occurs on Terminal site
Short-billed dowitcher	*Limnodromus griseus*	No	Overwintering only	Mudflats, tidal marshes, pond edges. Migrants and wintering birds favor coastal habitats, especially tidal flats on protected estuaries and bays, also lagoons, salt marshes, sometimes sandy beaches. Migrants also stop inland on freshwater ponds with muddy margins. Breeds in far north, overwinters in the Project area.	Yes, seasonally	Recorded in all sightings datasets; suitable habitat occurs on Terminal site
Sandwich tern[c]	*Thalasseus sandvicensis*	Yes	Known to breed in Cameron County and suitable nesting habitat on Terminal site	Coastal waters, jetties, beaches. Favors warm waters near coastlines, often fairly shallow areas such as bays and estuaries near extensive beaches, mudflats. Sometimes forages farther out to sea. Nests on sandy islands, beaches, sandbars, in coastal lagoons or offshore. Resides year-round in Project area.	Yes	Recorded in all sightings datasets; suitable habitat occurs on Terminal site
Least tern[c]	*Sterna antillarum*	No	Known to nest on NWR, but no nesting habitat on Terminal site	Inhabits sand and gravel bars within braided streams, rivers; also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc.). Occurs during breeding season in Project area.	No	Recorded in all sightings datasets, but suitable habitat does not occur on Terminal site
Gull-billed tern[c]	*Gelochelidon nilotica*	Yes	Known to nest on NWR and suitable nesting habitat occurs on Terminal site	Salt marshes, fields, coastal bays. Restricted to seacoast in North America but does most foraging over marshes, pastures, farmland, and other open country just inland from coast. Nests mostly on beaches, islands. Resides year-round in Project area.	Yes	Recorded in all sightings datasets; suitable habitat occurs on Terminal site

Appendix K-1 (continued) Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site						
Common Name	**Scientific Name**	**Potential to Nest on LNG Terminal Site**	**Justification[a]**	**Habitat Description**	**Potential to Occur at LNG Terminal Site[b]**	**Justification**
Black skimmer	*Rynchops niger*	Yes	Known to nest on NWR and suitable nesting habitat occurs on Terminal site	Mostly ocean beaches, tidewater. Favors coastal waters protected from open surf, such as lagoons, estuaries, inlets, sheltered bays. Resides year-round in Project area.	Yes	Recorded in all sightings datasets; suitable habitat occurs at Terminal site
Red-billed pigeon	*Patagioenas flavirostris*	No	No known breeding in Cameron County, no suitable nesting habitat on Terminal site	River woodlands, tall brush. In Texas, found mostly in relatively undisturbed native woods of hackberry, mesquite, huisache, ebony, and other trees. Farther south, inhabits dry woodlands of various types, generally avoiding more humid regions of rain forest. Resides year-round in Project area.	No	Only recorded on NWR, no suitable habitat occurs on Terminal site
Green parakeet	*Aratinga holochlora*	No	No known breeding in Cameron County	Native populations in tropical and subtropical woodlands, farmlands, and plantations; feral US populations in the Rio Grande Valley of southern Texas. Resides year-round in extreme South Texas.	No	Only recorded on NWR, no suitable habitat on Terminal site
Burrowing owl	*Athene cunicularia*	No	Overwintering only	Open grassland, prairies, farmland, and airfields. Favors areas of flat open ground with very short grass or bare soil. Prairie-dog towns once furnished much ideal habitat found on airports, golf courses, vacant lots, industrial parks, other open areas. Overwinters in the Project area.	No	Only recorded on NWR, no suitable habitat on Terminal site
Elf owl	*Micrathene whitneyi*	No	No known breeding in Cameron County	Saguaro deserts, wooded canyons. Any lowland habitat providing cover and good nesting cavities. Most common in deserts with many tall saguaro cactus or large mesquites. Summer breeding in Project area.	No	Not recorded in any sightings datasets, no suitable habitat occurs on Terminal site
Buff-bellied hummingbird[d]	*Amazilia yucatanensis*	No	Breeds in south Texas but no suitable nesting habitat on Terminal site	Woods, thickets. In Texas found mostly in semi-open habitats, such as woodland edges or clearings, areas of brush and scattered trees. Sometimes around citrus groves. A regular resident of suburban neighborhoods, especially those with trees and extensive gardens. Resides year-round in Project area.	No	Recorded in 4 of 6 sightings datasets, but no suitable habitat on Terminal site

Appendix K-1 (continued) Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site						
Common Name	**Scientific Name**	**Potential to Nest on LNG Terminal Site**	**Justification[a]**	**Habitat Description**	**Potential to Occur at LNG Terminal Site[b]**	**Justification**
Red-headed woodpecker	*Melanerpes erythrocephalus*	No	Overwintering only	Groves, farm country, orchards, shade trees in towns, large scattered trees. Avoids unbroken forest, favoring open country or at least clearings in the woods. Forest edges, orchards, open pine woods, groves of tall trees in open country are likely habitats. Overwinters in the Project area.	No – out of known range	Only recorded on NWR and Terminal outside of species' known range
Northern beardless-tyrannulet	*Camptostoma imberbe*	No	No known breeding in Cameron County, no suitable nesting habitat on Terminal site	In woods near streams through dry country, favors native woodland of huisache, ebony, hackberry, and mesquite in southern Texas. Limited to extreme south Texas – Cameron and Hidalgo Counties.	No	Only recorded on NWR, no suitable habitat occurs on Terminal site
Rose- throated becard	*Pachyramphus aglaiae*	No	Breeds in south Texas but no suitable nesting habitat on Terminal site	Wooded canyons, river groves, sycamores, generally in native woodlands near Rio Grande. Limited to extreme south Texas – Cameron and Hidalgo Counties.	No	Not recorded in any sightings datasets, no suitable habitat occurs on Terminal site
Loggerhead shrike	*Lanius ludovicianus*	No	Overwintering only	Semi-open country with lookout posts; wires, trees, scrub. Breeds in any kind of semi-open terrain, from large clearings in wooded regions to open grassland or desert with a few scattered trees or large shrubs. In winter, may be in totally treeless country if fences or wires provide hunting perches. Overwinters in the Project area.	No	Recorded in all sightings datasets, but no suitable habitat occurs on Terminal site
Bell's vireo[c]	*Vireo bellii*	No	Terminal outside of species' known range	Dense, low growth, especially in second-growth scrub or brushy fields.	No – out of known range	Not recorded in any sightings dataset and Terminal outside of species' known range
Verdin[c]	*Auriparus flaviceps*	No	Known to nest on NWR, but no nesting habitat on Terminal site	Brushy desert valleys, mesquites. Most common in Sonoran desert and mesquite woods at lower elevations. Also lives in other kinds of low open brush, including desert stands of acacia and paloverde, thickets of salt cedar, low riverside woods. Common in suburbs of some southwestern towns. Resides year-round in Project area.	No	Recorded in only 3 of 6 sightings datasets, but no suitable habitat occurs on Terminal site

Appendix K-1 (continued) Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site						
Common Name	**Scientific Name**	**Potential to Nest on LNG Terminal Site**	**Justification[a]**	**Habitat Description**	**Potential to Occur at LNG Terminal Site[b]**	**Justification**
Sedge wren	*Cistothorus platensis*	No	Overwintering only	Grassy marshes, sedgy meadows. Breeds mostly in damp meadows of grass or sedges, also in lush hayfields and other fields with dense low growth and scattered bushes. Winters in rank weedy meadows and coastal prairies. Overwinters in the Project area.	No	Recorded in only 3 of 6 sightings datasets, but no suitable habitat occurs on Terminal site
Curve-billed thrasher[c]	*Toxostoma curvirostre*	No	Known to nest on NWR, but no nesting habitat on Terminal site	Deserts, arid brush. Lives in Sonoran desert or in dry brushy country, mainly in lowlands. Avoids extreme desert situations with sparse plant life. Often in suburban neighborhoods. In southern Texas, lives in chaparral with prickly-pear cactus. Sometimes on open grassland around stands of cholla. Resides year-round in Project area.	No	Recorded in 4 of 6 sightings datasets, but no suitable habitat occurs on Terminal site
Sprague's pipit	*Anthus spragueii*	No	Overwintering only	Only in Texas during migration and winter, mid-September to early April; strongly tied to native upland prairie, can be locally common in coastal grasslands; sensitive to patch size, and avoids edges.	Yes, seasonally	Recorded in 5 of 6 sightings datasets; suitable habitat occurs on Terminal site
Tropical parula	*Parula pitiayumi*	No	No known breeding in Cameron County, no suitable nesting habitat on Terminal site	Dense, riverside woodlands, mainly low live oaks with Spanish moss. Primarily a summer resident in southern Texas, known from live oak groves south of Kingsville.	No	Only recorded on NWR, no suitable habitat occurs on Terminal site
Worm-eating warbler	*Helmitheros wermivorum*	No	Overwintering only	Leafy wooded slopes. During breeding season, frequents dense deciduous woodlands. Prefers cool, shaded banks, sheer gullies and steep, forested slopes covered with medium-sized trees and an undergrowth of saplings and shrubs. In winter in the tropics, forages alone in dense thickets or in the forest undergrowth, usually near the ground. Spring and Fall migrant through Project Area.	No	Only recorded on NWR, no suitable habitat occurs on Terminal site

Appendix K-1 (continued)
Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site

Common Name	Scientific Name	Potential to Nest on LNG Terminal Site	Justification[a]	Habitat Description	Potential to Occur at LNG Terminal Site[b]	Justification
Swainson's warbler	*Limnothlypis swainsonii*	No	Overwintering only	Swamps and river floodplain forests. Breeds both in Swamps and bottomlands of the southern coastal plains and in moist Appalachian forests. In swamps, prefers large tract with dense understory and sparse ground cover. Winters in woodland undergrowth in tropics. Spring and Fall migrant through Project Area.	No	Only recorded on NWR, no suitable habitat occurs on Terminal site
Summer tanager	*Piranga rubra*	No	Known to nest on NWR, but no nesting habitat on Terminal site	Woods, groves (especially oaks). In the Southeast, breeds in dry open woods, especially those of oak, hickory, or pine. In the Southwest, breeds in cottonwood-willow forests along streams. Winters in the tropics, mainly in lowlands but also up to middle elevations in mountains. Summer breeding in the Project area.	No	Recorded in 2 of 6 sightings datasets, but no suitable habitat occurs on Terminal site
White- collared seedeater	*Sporophila torqueola*	No	No known breeding in Cameron County, no suitable nesting habitat on Terminal site	Weedy places, tall grass, brush. In Texas, found mainly in weedy overgrown fields or brushy open woods, typically close to water; may roost in tall marsh growth. Farther south in tropics, found in a wide variety of open habitats, from marshes and open grassy fields to brushy edges of woods. Resides year-round in Project area.	No	Only recorded on NWR, no suitable habitat occurs on Terminal site
Dickcissel	*Spiza americana*	No	Known to nest on NWR, but no nesting habitat on Terminal site	Alfalfa and other fields; meadows, prairies. Nest in fields of alfalfa, clover, timothy, or other crops. In migration, may be found in any kind of grassy or weedy fields. Summer breeding in Project area.	No	Recorded in 2 of 6 sightings datasets, but no suitable habitat occurs on Terminal site
Cassin's sparrow[d]	*Aimophila cassinii*	No	Known to nest on NWR, but no nesting habitat on Terminal site	Desert grassland, brushy fields. Breeds in a variety of situations having good ground cover of grass and low shrubs; ranges from open grassland with only scattered shrubs to brushy areas with grassy understory. In migration and winter, also found in pure grassland, brushy areas, and deserts. Resides year- round in Project area.	No	Recorded in 4 of 6 sightings datasets; suitable habitat is limited on Terminal site

Appendix K-1 (continued) Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site						
Common Name	**Scientific Name**	**Potential to Nest on LNG Terminal Site**	**Justification[a]**	**Habitat Description**	**Potential to Occur at LNG Terminal Site[b]**	**Justification**
Botteri's sparrow[d]	*Aimophila botterii*	No	Known to nest on NWR, but no nesting habitat on Terminal site	Grassland and short grass plains with scattered bushes and shrubs, sagebrush, mesquite or yucca; nests on the ground on low clumps of grass. Limited to extreme South Texas.	No	Recorded in 3 of 6 sightings datasets; no suitable habitat occurs on Terminal site
Le Conte's Sparrow[d]	*Ammodramus leconteii*	No	Overwintering only	Tall grass, weedy hayfields, marshes. Breeds in wet meadows or the edges of marshes. Winters mostly in damp weedy fields, shallow freshwater marshes, and coastal prairies. Overwinters in the Project area.	No	Recorded in 2 of 6 sightings datasets, no suitable habitat occurs on Terminal site
Seaside sparrow[d]	*Ammodramus maritimus*	Yes	Breeding not confirmed in Cameron County but suitable nesting habitat does occur on Terminal site	Salt marshes. Lives in tidal marshes along coast, favoring areas with dense tall growth above level of highest tides and with openings and edges for foraging. Habitats often feature *Spartina*, rushes, and salt grass. Resides year-round in Project area.	Yes	Recorded in 4 of 6 sightings datasets; suitable habitat occurs on Terminal site
Lark bunting[c]	*Calamospiza melanocorys*	No	Overwintering only	Plains and prairies. Breeds mostly on native shortgrass prairie; also on sagebrush plains with understory. During migration and winter, found in many kinds of open country, including prairies, agricultural fields, desert grassland, and weedy vacant lots. Overwinters in the Project area.	No	Only recorded on NWR, no suitable habitat occurs on Terminal site
Harris's sparrow[d]	*Zonotrichia querula*	No	Overwintering only	Stunted boreal forest; in winter, brush, open woods. Breeds in the zone where northern forest gives way to tundra. During migration and winter, found in thickets, woodland edges, brushy fields, hedgerows, shelterbelts. Overwinters in the Project area.	No – out of known range	Only recorded on NWR and Terminal outside of species' known range
Chestnut-collared longspur	*Calcarius ornatus*	No	Overwintering only	Plains, prairies. Breeds in the general region of shortgrass prairie, but in areas of slightly longer grass and scattered taller weeds. Winters in shortgrass prairies and fields. Overwinters in the Project area.	No – out of known range	Not recorded in any sighting dataset and Terminal outside of species' known range

Appendix K-1 (continued)
Birds of Conservation Concern Potentially Occurring at the LNG Terminal Site

Common Name	Scientific Name	Potential to Nest on LNG Terminal Site	Justification[a]	Habitat Description	Potential to Occur at LNG Terminal Site[b]	Justification
Hooded oriole	*Icterus cucullatus*	No	Confirmed breeding in Cameron County, but no suitable nesting habitat on Terminal site	Open woods, shade trees, palms. Breeds in groves of trees (such as cottonwood, walnut, sycamore) along streams and in canyons, and in open woods in lowlands. Often common in suburbs and city parks. Especially favors palm trees, and will nest in isolated groups of palms even in cities. Summer breeding in Project area.	No	Recorded in 3 of 6 sightings datasets, no suitable habitat occurs on Terminal site
Altamira oriole	*Icteru gularis*	No	Confirmed breeding in Cameron County, but no suitable nesting habitat on Terminal site	Semi-arid areas with scattered trees, open riparian woodland, open areas within more humid environments. Restricted to deep South Texas, resides year-round.	No	Recorded in 2 of 6 sightings datasets, but no suitable habitat occurs on Terminal site
Audubon's oriole	*Octerus graduacauda*	No	Known to nest on NWR, but no nesting habitat on Terminal site	Woodland thickets near Rio Grande, mesquite brushland and live oak groves. Resides year-round in Project area.	No	Only recorded on NWR and limited suitable habitat on Terminal site

Sources: Cornell Lab of Ornithology 2015; USFWS 2015b.

[a] Potential to breed in Project counties is based on Texas Breeding Bird Atlas data (http://txtbba.tamu.edu/) and Audubon Guide to American Birds data (http://www.audubon.org/bird-guide).

[b] Seasonal occurrence and abundance is based on data provided in the Laguna Atascosa NWR Comprehensive Conservation Plan (USFWS 2010).

[c] This species was identified during surveys at the LNG Terminal site during the spring of 2017. Species were observed either on the site or flying over or by the site.

[d] Members of this species group were identified during surveys at the LNG Terminal site during the spring of 2017. Species were observed either on the site or flying over or by the site.

Appendix K-2
Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities

Species	Scientific Name	Status	Habitat Description	Potential to Occur[a]	Likelihood of Occurrence (rationale)[b]	Known to Breed in Project Counties[c]
Altamira oriole	*Icterus gularis*	MBTA	Semi-arid areas with scattered trees, open riparian woodland, open areas within more humid environments. Restricted to deep South Texas, resides year-round.	Yes	Unlikely (LH)	Yes
American oystercatcher	*Haematopus palliatus*	MBTA	Coastal habitats including sand and shell beaches, dunes, salt marsh, mudflats and dredge spoil islands. Occurs along Texas Gulf Coast, resides year-round in Project area.	Yes	Unlikely (LH)	Yes
Audubon's oriole	*Octerus graduacauda*	MBTA	Woodland thickets near Rio Grande, mesquite brushland and live oak groves. Resides year-round in Project area.	Yes	Likely (SH)	Not Confirmed
Bald eagle	*Haliaeetus leucocephalus*	BGEPA	Prefer areas close to coasts, bays, rivers, lakes, or other large bodies of water that concentrate prey, including fish, waterfowl, and wading birds. Winters in the Project area.	No	Not Present (OR)	No - overwinters
Bell's vireo	*Vireo bellii*	MBTA	Dense, low growth, especially in second-growth scrub or brushy fields. Summer breeding in Project area.	No	Not Present (OR)	No
Black skimmer	*Rynchops niger*	MBTA	Mostly ocean beaches, tidewater. Favors coastal waters protected from open surf, such as lagoons, estuaries, inlets, sheltered bays. Resides year-round in Project area.	Yes	Unlikely (LH)	Yes[d]
Buff-bellied hummingbird	*Amazilia yucatanensis*	MBTA	Woods, thickets. In Texas found mostly in semi-open habitats, such as woodland edges or clearings, areas of brush and scattered trees. Sometimes around citrus groves. A regular resident of suburban neighborhoods, especially those with trees and extensive gardens. Resides year-round in Project area.	Yes	Likely (SH)	Yes[d]

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur**[a]	**Likelihood of Occurrence (rationale)**[b]	**Known to Breed in Project Counties**[c]
Burrowing owl	*Athene cunicularia*	MBTA	Open grassland, prairies, farmland, and airfields. Favors areas of flat open ground with very short grass or bare soil. Prairie-dog towns once furnished much ideal habitat found on airports, golf courses, vacant lots, industrial parks, other open areas. Overwinters in the Project area.	Yes	Unlikely (LH, SO)	No - overwinters
Cassin's sparrow	*Aimophila cassinii*	MBTA	Desert grassland, brushy fields. Breeds in a variety of situations having good ground cover of grass and low shrubs; ranges from open grassland with only scattered shrubs to brushy areas with grassy understory. In migration and winter, also found in pure grassland, brushy areas, and deserts. Resides year- round in Project area.	Yes	Likely (SH)	Yes[d]
Chestnut-collared longspur	*Calcarius ornatus*	MBTA	Plains and prairies. Breeds in the general region of shortgrass prairie, but in areas of slightly longer grass and scattered taller weeds. Winters in shortgrass prairies and fields. Overwinters in the Project area.	No	Not Present (OR)	No - overwinters
Curve-billed thrasher	*Toxostoma curvirostre*	MBTA	Deserts and arid brush. Lives in Sonoran desert or in dry brushy country, mainly in lowlands. Avoids extreme desert situations with sparse plant life. Often in suburban neighborhoods. In southern Texas, lives in chaparral with prickly-pear cactus. Sometimes on open grassland around stands of cholla. Resides year-round in Project area.	Yes	Likely (SH)	Yes
Dickcissel	*Spiza americana*	MBTA	Alfalfa and other fields; meadows, prairies. Nest in fields of alfalfa, clover, timothy, or other crops. In migration, may be found in any kind of grassy or weedy fields. Summer breeding in Project area.	Yes	Unlikely (SO)	No

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur[a]**	**Likelihood of Occurrence (rationale)[b]**	**Known to Breed in Project Counties[c]**
Elf owl	*Micrathene whitneyi*	MBTA	Saguaro deserts, wooded canyons. Any lowland habitat providing cover and good nesting cavities. Most common in deserts with many tall saguaro cactus or large mesquites. Summer breeding in Project area.	No	Not Present (OR)	No
Green parakeet	*Aratinga holochlora*	MBTA	Native populations in tropical and subtropical woodlands, farmlands, and plantations; feral US populations in the Rio Grande Valley of southern Texas. Resides year-round in extreme South Texas.	No	Not Present (OR)	No
Gull-billed tern	*Gelochelidon nilotica*	MBTA	Salt marshes, fields, coastal bays. Restricted to seacoast in North America but does most foraging over marshes, pastures, farmland, and other open country just inland from coast. Nests mostly on beaches, islands. Resides year-round in Project area.	Yes	Likely (SH)	Yes
Harris's hawk	*Parabuteo unicinctus*	MBTA	River woods, mesquite, brush, cactus deserts. Found mostly in open dry country. Most common in saguaro cactus desert in Arizona, in mesquite brushland in Texas and New Mexico. Also found in trees along rivers, and recently has become resident in suburban areas of some southwestern cities. Resides year-round in Project area.	Yes	Likely (SH)	Yes
Harris's sparrow	*Zonotrichia querula*	MBTA	Stunted boreal forest; in winter, brush, open woods. Breeds in the zone where northern forest gives way to tundra. During migration and winter, found in thickets, woodland edges, brushy fields, hedgerows, shelterbelts. Overwinters in the Project area.	No	Not Present (OR)	No - overwinters

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur[a]**	**Likelihood of Occurrence (rationale)[b]**	**Known to Breed in Project Counties[c]**
Hooded oriole	*Icterus cucullatus*	MBTA	Open woods, shade trees, palms. Breeds in groves of trees (such as cottonwood, walnut, sycamore) along streams and in canyons, and in open woods in lowlands. Often common in suburbs and city parks. Especially favors palm trees, and will nest in isolated groups of palms even in cities. Summer breeding in Project area.	Yes	Unlikely (LH, SO)	Yes
Hudsonian godwit	*Limosa haemastica*	MBTA	Marshes, prairie pools, mudflats; edge of tundra in summer. Spring migrants are usually on shallow marshy lakes, flooded pastures, rice fields, mudflats around ponds. Fall migrants on Atlantic Coast may be on marshy ponds or tidal flats. Spring and Fall migrant through Project Area.	Yes	Unlikely (LH, SO)	No - overwinters
Lark bunting	*Calamospiza melanocorys*	MBTA	Plains, prairies. Breeds mostly on native shortgrass prairie; also on sagebrush plains with understory. During migration and winter, found in many kinds of open country, including prairies, agricultural fields, desert grassland, and weedy vacant lots. Overwinters in the Project area.	Yes	Unlikely (LH, SO)	No - overwinters
Le Conte's Sparrow	*Ammodramus leconteii*	MBTA	Tall grass, weedy hayfields, marshes. Breeds in wet meadows or the edges of marshes. Winters mostly in damp weedy fields, shallow freshwater marshes, and coastal prairies. Overwinters in the Project area.	Yes	Unlikely (LH, SO)	No - overwinters
Least bittern	*Ixobrychus exilis*	MBTA	Fresh marshes, reedy ponds. Mostly freshwater marsh but also brackish marsh, in areas with tall, dense vegetation standing in water. May be over fairly deep water, because it mostly climbs in reeds rather than wading. Sometimes in salt marsh or in mangroves. Breeding in Project area.	Yes	Unlikely (LH, SO)	Yes

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur[a]**	**Likelihood of Occurrence (rationale)[b]**	**Known to Breed in Project Counties[c]**
Least tern	*Sterna antillarum*	E	Inhabits sand and gravel bars within braided streams, rivers; also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc.). Occurs during breeding season in Project area.	Yes	Not Present (NH)	Yes
Lesser yellowlegs	*Tringa falvipes*	MBTA	Marshes, mudflats, shores, ponds. Occurs widely in migration, including coastal estuaries, salt and fresh marshes, edges of lakes and ponds; typically more common on freshwater habitats. Breeds in large clearings, such as burned areas, near ponds in northern forest. Overwinters in the Project area.	Yes	Unlikely (SO)	No - overwinters
Loggerhead shrike	*Lanius ludovicianus*	MBTA	Semi-open country with lookout posts; wires, trees, scrub. Breeds in any kind of semi-open terrain, from large clearings in wooded regions to open grassland or desert with a few scattered trees or large shrubs. In winter, may be in totally treeless country if fences or wires provide hunting perches. Overwinters in the Project area.	Yes	Unlikely (LH, SO)	No - overwinters
Long-billed curlew	*Numenius americanus*	MBTA	High plains, rangeland. In winter, also cultivated land, tide flats, salt marshes. Breeding habitat is mostly native dry grassland and sagebrush prairie. In migration and winter often in farm fields, marshes, coastal mudflats, in addition to grasslands. Overwinters in the Project area.	Yes	Unlikely (SH, SO)	No - overwinters
Magnificent frigatebird	*Fregata magnificens*	MBTA	Oceanic coasts, islands. Occurs over warm waters, usually along coast but also far offshore at times. Also soars inland in coastal areas. Strays are rarely seen far inland around fresh water. Nests on islands, usually small islands with dense growth of mangroves or other trees or shrubs.	Yes	Not Present (NH)	No[d]

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur[a]**	**Likelihood of Occurrence (rationale)[b]**	**Known to Breed in Project Counties[c]**
Marbled godwit	*Limosa fedoa*	MBTA	Prairies, pools, shores, tide flats. Breeds mostly on northern Great Plains, in areas of native prairie with marshes or ponds nearby. In migration and winter around tidal mudflats, marshes, ponds, mainly in coastal regions. Overwinters in the Project area.	Yes	Unlikely (SO)	No - overwinters
Mountain plover	*Charadrius montanus*	MBTA	Semi-arid plains, grasslands, plateaus. Favors areas of very short grass, even bare soil. Typically far from water. Nests mostly in short-grass prairie, including overgrazed pasture and very arid plains. Winter habitats include desert flats, plowed fields. Overwinters in the Project area.	Yes	Unlikely (LH, SO)	No - overwinters
Northern beardless-tyrannulet	*Camptostoma imberbe*	ST	See Appendix 3.I – Potential to Occur and Likelihood of Occurrence for State-listed Species in the Project Area, by Project Component.	No	Not Present (NH)	Not Confirmed
Peregrine falcon	*Falco peregrinus*	ST	See Appendix 3.I – Potential to Occur and Likelihood of Occurrence for State-listed Species in the Project Area, by Project Component.	Yes	Unlikely (LH, SO)	No - overwinters
Red knot	*Calidris canutus rufa*	T	See Table 3.5-1-Potential to Occur and Likelihood of Occurrence for Federally Listed Species Identified within the Project Area, by Component.	Yes	Likely (SH, SO)	No - overwinters
Red-billed pigeon	*Patagioenas flavirostris*	MBTA	River woodlands, tall brush. In Texas, found mostly in relatively undisturbed native woods of hackberry, mesquite, huisache, ebony, and other trees. Farther south, inhabits dry woodlands of various types, generally avoiding more humid regions of rain forest. Resides year-round in Project area.	No	Not Present (OR)	No
Red-crowned parrot	*Amazona viridigenalis*	C	See Table 3.5-1-Potential to Occur and Likelihood of Occurrence for Federally Listed Species Identified within the Project Area, by Component.	Yes	Not Present (NH)	Yes

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur[a]**	**Likelihood of Occurrence (rationale)[b]**	**Known to Breed in Project Counties[c]**
Reddish egret	*gretta rufescens*	ST	See Appendix 3.I – Potential to Occur and Likelihood of Occurrence for State-listed Species in the Project Area, by Project Component.	Yes	Likely (SH)	Yes
Red-headed woodpecker	*Melanerpes erythrocephal us*	MBTA	Groves, farm country, orchards, shade trees in towns, large scattered trees. Avoids unbroken forest, favoring open country or at least clearings in the woods. Forest edges, orchards, open pine woods, groves of tall trees in open country are likely habitats. Overwinters in the Project area.	No	Not Present (OR)	No - overwinters
Rose-throated becard	*Pachyramphu s aglaiae*	ST	See Appendix 3.I – Potential to Occur and Likelihood of Occurrence for State-listed Species in the Project Area, by Project Component.	No	Not Present (NH)	Yes[d]
Sandwich tern	*Thalasseus sandvicensis*	MBTA	Coastal waters, jetties, beaches. Favors warm waters near coastlines, often fairly shallow areas such as bays and estuaries near extensive beaches, mudflats. Sometimes forages farther out to sea. Nests on sandy islands, beaches, sandbars, in coastal lagoons or offshore. Resides year-round in Project area.	Yes	Unlikely (LH)	Yes
Seaside sparrow	*Ammodramus maritimus*	MBTA	Salt marshes. Lives in tidal marshes along coast, favoring areas with dense tall growth above level of highest tides and with openings and edges for foraging. Habitats often feature spartina, rushes, and saltgrass. Resides year-round in Project area.	Yes	Unlikely (LH)	Not Confirmed
Sedge wren	*Cistothorus platensis*	MBTA	Grassy marshes, sedgy meadows. Breeds mostly in damp meadows of grass or sedges, also in lush hayfields and other fields with dense low growth and scattered bushes. Winters in rank weedy meadows, coastal prairies. Overwinters in the Project area.	Yes	Unlikely (LH, SO)	No - overwinters

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur**[a]	**Likelihood of Occurrence (rationale)**[b]	**Known to Breed in Project Counties**[c]
Short-billed dowitcher	*Limnodromus griseus*	MBTA	Mudflats, tidal marshes, pond edges. Migrants and wintering birds favor coastal habitats, especially tidal flats on protected estuaries and bays, also lagoons, salt marshes, sometimes sandy beaches. Migrants also stop inland on freshwater ponds with muddy margins. Breeds in far north, overwinters in the Project area.	Yes	Unlikely (LH, SO)	No - overwinters
Snowy plover	*Charadrius alexandrinus*	MBTA	Beaches, sandy flats. At all seasons, tends to be found in places where habitat matches pale color of back -- dry sand beaches along coast; salt pans or alkaline flats in interior. Usually in places with very little vegetation, not around marshes. Also sometimes forages on open mudflats. Year-round in Project area.	Yes	Unlikely (LH)	Yes
Solitary sandpiper	*Tringa solitaria*	MBTA	Streamsides, wooded swamps and ponds, fresh marshes. In migration generally along shaded streams and ponds, riverbanks, narrow channels in marshes. Sometimes along the edges of open mudflats, but generally avoids tidal flats and salt marsh. Overwinters in the Project area.	Yes	Unlikely (LH, SO)	No - overwinters
Sprague's pipit	*Anthus spragueii*	C	See Table 3.5-1-Potential to Occur and Likelihood of Occurrence for Federally Listed Species Identified within the Project Area, by Component.	Yes	Unlikely (LH, SO)	No - overwinters
Summer tanager	*Piranga rubra*	MBTA	Woods, groves (especially oaks). In the Southeast, breeds in dry open woods, especially those of oak, hickory, or pine. In the Southwest, breeds in cottonwood-willow forests along streams. Winters in the tropics, mainly in lowlands but also up to middle elevations in mountains. Summer breeding in Project area.	Yes	Unlikely (LH, SO)	Yes

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur**[a]	**Likelihood of Occurrence (rationale)**[b]	**Known to Breed in Project Counties**[c]
Swainson's warbler	*Limnothlypis swainsonii*	MBTA	Swamps and river floodplain forests. Breeds both in swamps and bottomlands of the southern coastal plains and in moist Appalachian forests. In swamps, prefers large tract with dense understory and sparse ground cover. Winters in woodland undergrowth in tropics. Spring and Fall migrant through Project Area.	Yes	Not Present (NH, SO)	No - overwinters
Texas Botteri's sparrow	*Aimophila botterii texana*	ST	See Appendix 3.I – Potential to Occur and Likelihood of Occurrence for State-listed Species in the Project Area, by Project Component.	No	Not Present (NH)	Yes
Tropical parula	*Parula pitiayumi*	ST	See Appendix 3.I – Potential to Occur and Likelihood of Occurrence for State-listed Species in the Project Area, by Project Component.	Yes	Unlikely (LH, SO)	Not Confirmed
Verdin	*Auriparus flaviceps*	MBTA	Brushy desert valleys, mesquites. Most common in Sonoran desert and mesquite woods at lower elevations. Also lives in other kinds of low open brush, including desert stands of acacia and paloverde, thickets of saltcedar, low riverside woods. Common in suburbs of some southwestern towns. Resides year-round in Project area.	Yes	Likely (SH)	Yes
Whimbrel	*Numenius phaeopus*	MBTA	Shores, mudflats, marshes, tundra. Found on a wide variety of habitats on migration. Most common on mudflats, but also found on rocky shores, sandy beaches, salt marshes, flooded agricultural fields, grassy fields. In summer, breeds on Arctic tundra. Overwinters in the Project area.	Yes	Unlikely (SH, SO)	No - overwinters

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur[a]**	**Likelihood of Occurrence (rationale)[b]**	**Known to Breed in Project Counties[c]**
White- collared seedeater	*Sporophila torqueola*	MBTA	Weedy places, tall grass, brush. In Texas, found mainly in weedy overgrown fields or brushy open woods, typically close to water; may roost in tall marsh growth. Farther south in tropics, found in a wide variety of open habitats, from marshes and open grassy fields to brushy edges of woods. Resides year-round in Project area.	Yes	Unlikely (LH)	No
White-tailed hawk	*Buteo albicaudatus*	ST	See Appendix 3.I – Potential to Occur and Likelihood of Occurrence for State-listed Species in the Project Area, by Project Component.	Yes	Unlikely (LH, SO)	Yes
Wilson's plover	*Charadrius wilsonia*	MBTA	Open beaches, tidal flats, and sandy islands. Found only in coastal regions, typically in very open areas such as white sand or shell beaches, estuaries, tidal mudflats. May favor islands, such as offshore barrier beaches, dredge spoil islands? Summer breeding in Project area.	Yes	Unlikely (SH, SO)	Yes
Worm-eating warbler	*Helmitheros wermivorum*	MBTA	Leafy wooded slopes. During breeding season, frequents dense deciduous woodlands. Prefers cool, shaded banks, sheer gullies and steep, forested slopes covered with medium-sized trees and an undergrowth of saplings and shrubs. In winter in the tropics, forages alone in dense thickets or in the forest undergrowth, usually near the ground. Spring and Fall migrant through Project area.	Yes	Not Present (NH)	No - overwinters
Yellow rail	*Coturnicops noveboracensis*	MBTA	Grassy marshes, meadows. In summer, favors large wet meadows or shallow marshes dominated by sedges and grasses. Typically in fresh or brackish marsh with water no more than a foot deep. In winter mostly in coastal salt marsh, especially drier areas with dense stands of spartina. Overwinters in the Project area.	No	Not Present (OR)	No - overwinters

Appendix K-2 (continued) Birds of Conservation Concern Potentially Occurring near the Pipeline System and Facilities						
Species	**Scientific Name**	**Status**	**Habitat Description**	**Potential to Occur**[a]	**Likelihood of Occurrence (rationale)**[b]	**Known to Breed in Project Counties**[c]

MBTA = Migratory Bird Treaty Act; BGEPA = Bald and Golden Eagle Protection Act; E = Federal Endangered; T = Federal Threatened; C = Federal Candidate; ST = State Threatened; Rationale Codes: SH = suitable habitat; LH = limited habitat; NH = no habitat; OR = outside range; and SO = seasonal or migratory occurrence.

Sources: Cornell Lab of Ornithology 2015; USFWS 2015b.

[a] Potential to Occur designation is determined based on the species' presently known range.

[b] Likelihood of Occurrence' designation is based on the presence of a species' preferred habitat within Project workspaces and the species' residency status.

[c] Potential to breed in Project counties is based on Texas Breeding Bird Atlas data (http://txtbba.tamu.edu/).

[d] These species were classified for breeding in Project counties using Audubon Guide to American Birds data (http://www.audubon.org/bird-guide).

Appendix K-3
Migratory Birds Observed during Surveys at the LNG Terminal in Spring, 2017

Species	Scientific Name	Survey Date			Total	Resident Status[a]
		26-Apr	11-May	25-May		
Red-breasted merganser	*Mergus serrator*		3		3	Winter
Northern bobwhite	*Colinus virginianus*	1		2	3	All-year
Magnificent frigatebird	*Fregata magnificens*		1		1	Summer
Brown pelican	*Pelecanus occidentalis*	5	42	66	113	All-year
Great blue heron	*Ardea herodias*	12	17	21	50	All-year
Great egret	*Ardea alba*		4	5	9	All-year
Snowy egret	*Egretta thula*		10	2	12	All-year
Little blue heron	*Egretta caerulea*		1	1	2	All-year
Tricolored heron	*Egretta tricolor*	2	4	11	17	All-year
Reddish egret	*Egretta rufescens*	4			4	All-year
Cattle egret	*Bubulcus ibis*	1		2	3	All-year
White ibis	*Eudocimus albus*		5		5	All-year
Roseate spoonbill	*Platalea ajaja*		3		3	All-year
Black vulture	*Coragyps atratus*	1		6	7	All-year
Turkey vulture	*Cathartes aura*	13	11	12	36	All-year
Osprey	*Pandion haliaetus*	3	1	3	7	Winter
Harris's hawk	*Parabuteo unicinctus*	3		1	4	All-year
White-tailed hawk	*Geranoaetus albicaudatus*	1		1	2	All-year
Swainson's hawk	*Buteo swainsoni*	2			2	Migration
Black-bellied plover	*Pluvialis squatarola*	5	2	2	9	Winter
Snowy plover	*Charadrius nivosus*	1		4	5	All-year
Wilson's plover	*Charadrius wilsonia*		1	9	10	Summer
American oystercatcher	*Haematopus palliatus*	7	1		8	All-year
Whimbrel	*Numenius phaeopus*	1	1		2	Winter
Sanderling	*Calidris alba*	7	1	2	10	Winter
Dunlin	*Calidris alpina*	85	5		90	Winter
Spotted sandpiper	*Actitis macularius*	1			1	Winter
Willet	*Tringa semipalmata*	10	13	16	39	All-year
Laughing gull	*Leucophaeus atricilla*	29	272	142	443	All-year
Ring-billed gull	*Larus delawarensis*	1			1	Winter
Herring gull	*Larus argentatus*			2	2	Winter
Least tern	*Sternula antillarum*	5	1	9	15	Summer
Gull-billed tern	*Gelochelidon nilotica*		1	2	3	All-year
Caspian tern	*Hydroprogne caspia*	2	14	10	26	Winter
Forster's tern	*Sterna forsteri*	3			3	Winter

Appendix K-3 (continued) Migratory Birds Observed during Surveys at the LNG Terminal in Spring, 2017						
Species	**Scientific Name**	**Survey Date**			**Total**	**Resident Status[a]**
		26-Apr	**11-May**	**25-May**		
Royal tern	*Thalasseus maximus*	29	25	24	78	Winter
Sandwich tern	*Thalasseus sandvicensis*		1	3	4	All-year
Mourning dove	*Zenaida macroura*	4	12	9	25	All-year
Common ground-dove	*Columbina passerina*	2			2	All-year
Common nighthawk	*Chordeiles minor*	7	1	3	11	Summer
Golden-fronted Woodpecker	*Melanerpes aurifrons*	1			1	All-year
Crested caracara	*Caracara cheriway*	2	3	1	6	All-year
Great crested flycatcher	*Myiarchus crinitus*		2		2	Migration
Brown-crested Flycatcher	*Myiarchus tyrannulus*	5	1	6	12	Summer
Eastern kingbird	*Tyrannus*	3			3	Migration
Scissor-tailed Flycatcher	*Tyrannus forficatus*	3		1	4	Summer
Bell's vireo	*Vireo bellii*	1		2	3	Summer
Green jay	*Cyanocorax yncas*	2			2	All-year
Tamaulipas crow	*Corvus imparatus*		2		2	Winter
Chihuahuan raven	*Corvus cryptoleucus*			1	1	All-year
Horned lark	*Eremophila alpestris*	7	4	9	20	All-year
Northern rough-winged swallow	*Stelgidopteryx serripennis*	1	11		12	All-year
Bank swallow	*Riparia*	4	1		5	Summer
Barn swallow	*Hirundo rustica*	410	28	2	440	Summer
Verdin	*Auriparus flaviceps*	1	1	2	4	All-year
Bewick's wren	*Thryomanes bewickii*	3	8	6	17	All-year
Cactus wren	*Campylorhynchus brunneicapillus*	1			1	All-year
Northern mockingbird	*Mimus polyglottos*	9	11	12	32	All-year
Long-billed thrasher	*Toxostoma longirostre*	2	2	1	5	All-year
Curve-billed thrasher	*Toxostoma curvirostre*		4	4	8	All-year
Magnolia warbler	*Setophaga magnolia*			1	1	Migration
Olive sparrow	*Arremonops rufivirgatus*	4	5	6	15	All-year
Lark sparrow	*Chondestes grammacus*	7	3		10	Winter
Lark bunting	*Calamospiza melanocorys*	1			1	Winter
Scarlet tanager	*Piranga olivacea*	1			1	Migration

Appendix K-3 (continued) Migratory Birds Observed during Surveys at the LNG Terminal in Spring, 2017						
Species	**Scientific Name**	**Survey Date**			**Total**	**Resident Status[a]**
		26-Apr	**11-May**	**25-May**		
Northern cardinal	*Cardinalis*	8	12	10	30	All-year
Pyrrhuloxia	*Cardinalis sinuatus*	1			1	All-year
Blue grosbeak	*Passerina caerulea*			1	1	Summer
Indigo bunting	*Passerina cyanea*	4			4	Summer
Red-winged blackbird	*Agelaius phoeniceus*		8	3	11	All-year
Eastern meadowlark	*Sturnella magna*	12	8	10	30	All-year
Brewer's blackbird	*Euphagus cyanocephalus*	3			3	Winter
Great-tailed grackle	*Quiscalus mexicanus*		4	6	10	All-year
Bronzed cowbird	*Molothrus aeneus*	2	6	10	18	Summer
Unidentified Species						
Cormorant spp.	*Phalacrocorax spp.*	8	6	15	29	N/A
Sandpiper spp.	*Calidris spp.*	30	2	2	34	N/A
Yellowlegs spp.	*Tringa spp.*	2			2	N/A
Tern spp.	N/A			1	1	N/A
Hummingbird spp.	N/A	5			5	N/A
Swallow spp.	N/A	19	3		22	N/A
Sparrow spp.	N/A	2	2		4	N/A
Unknown Species						
Unknown shorebird	N/A		25	5	30	N/A
Unknown passerine	N/A	1	6	3	10	N/A
Unknown	N/A	2	1		3	N/A
Species Count[b]	N/A	**58**	**48**	**48**	**77**	N/A
Total Unidentified Birds		***66***	***13***	***18***	***97***	
Total Unknown Birds		***3***	***32***	***8***	***43***	
Total Birds		**814**	**622**	**490**	**1,926**	

[a] All year = Present all year; Summer = Present at least April-August; Winter = Present at least October-March; Migration = Migrates through region in spring and/or fall.

[b] The species count excludes all unidentified birds observed during surveys, with the exception of the Cormorant spp., yellowlegs spp., and hummingbird spp., which were counted as individual species since those groups were not identified down to a species level at any point during the survey effort.

APPENDIX L

VISUAL SIMULATIONS OF THE RIO GRANDE LNG TERMINAL

Bahia Grande Channel (0.2 mile west-southwest of the property boundary) - Existing

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 1

Bahia Grande Channel (0.2 mile west-southwest of the property boundary) - Daytime Simulation

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 2

Bahia Grande Channel (0.2 mile west-southwest of the property boundary) - Nighttime Simulation

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 3

SH-48 (2.6 miles north-northeast of the property boundary) – Existing

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 4

SH-48 (2.6 miles north-northeast of the property boundary) – Daytime Simulation

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 5

SH-48 (2.6 miles north-northeast of the property boundary) – Nighttime Simulation

Jaime J. Zapata Memorial Boat Ramp, Fishing Pier, and Kayak Launch Pad (Zapata boat launch) (1.7 miles southwest of the property boundary) – Existing

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 7

Jaime J. Zapata Memorial Boat Ramp, Fishing Pier, and Kayak Launch Pad (Zapata boat launch) (1.7 miles southwest of the property boundary) - Daytime Simulation

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 8

Port Isabel Lighthouse (4.0 miles northeast of the property boundary) – Existing

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 9

Port Isabel Lighthouse (4.0 miles northeast of the property boundary) - Daytime Simulation

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 10

Shrimp Basin (4.8 miles southwest of the property boundary) – Existing

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 11

Shrimp Basin (4.8 miles southwest of the property boundary) - Daytime Simulation

Isla Blanca Park Boat Ramp (4.8 miles northeast of the property boundary) – Existing

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 13

Isla Blanca Park Boat Ramp (4.8 miles northeast of the property boundary) - Daytime Simulation

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 14

Island Grand Hotel (6.3 miles northeast of the property boundary) – Existing

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 15

Island Grand Hotel (6.3 miles northeast of the property boundary) - Daytime Simulation

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 16

Palmetto Pilings (4.9 miles southeast of the property boundary) - Existing

Figure 17

Palmetto Pilings (4.9 miles southeast of the property boundary) - Daytime Simulation

Palo Alto Battlefield (12.0 miles west of the property boundary) - Existing

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 19

Palo Alto Battlefield (12.0 miles west of the property boundary) - Daytime Simulation

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 20

Fort Belknap (4.1 miles south-southwest of the property boundary) - Existing

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 21

Fort Belknap (4.1 miles south-southwest of the property boundary) - Daytime Simulation

Appendix L
Visual Simulations of the Rio Grande LNG Terminal
Figure 22

APPENDIX M

RIO GRANDE LNG PROJECT ESSENTIAL FISH HABITAT ASSESSMENT

CP16-454-000

CP16-455-000

Rio Grande LNG Project
Rio Bravo Pipeline Project

Appendix 3.A
Essential Fish Habitat Assessment
Revision 3

February 2019

Prepared for:

RIO GRANDE LNG
A NextDecade Company

RIO BRAVO PIPELINE

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Abbreviations and Acronyms

Agua Dulce Market Area	the proposed Pipeline System interconnect locations
APE	Area of Potential Effect
BND	Brownsville Navigation District
BSC	Brownsville Ship Channel
dB re 1 μPa	decibel relative to 1 micropascal
dB re 1 μPa^2/sec	decibel relative to 1 micropascal squared per second
DEIS	Draft Environmental Impact Statement
EFH	essential fish habitat
FERC	Federal Energy Regulatory Commission
FMP	fishery management plan
GMFMC	Gulf of Mexico Fishery Management Council
Header System	the approximately 2.4-mile-long header system owned by Rio Bravo Pipeline Company, LLC
HDD	horizontal direction drilling
HMS	highly migratory species
LNG	liquefied natural gas
mm	millimeter
MOF	material offloading facility
MP	milepost
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service (also, NOAA Fisheries)
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	National Oceanic and Atmospheric Administration National Marine Fisheries Service (also, NMFS)
Pipeline System	Pipeline and all associated facilities owned by Rio Bravo Pipeline Company, LLC
Project	Terminal and Pipeline System

RB Pipeline	Rio Bravo Pipeline Company, LLC
RG Developers	Rio Grande LNG, LLC, and Rio Bravo Pipeline Company, LLC
RGLNG	Rio Grande LNG, LLC
SEL	sound exposure level
SPL	sound pressure level
SWPPP	Stormwater Pollution Prevention Plan
Terminal	RGLNG's natural gas liquefaction facility and liquefied natural gas export terminal
USACE	U.S. Army Corps of Engineers

1 Introduction and Background

Rio Grande LNG, LLC (RGLNG) proposes to construct a natural gas liquefaction facility and liquefied natural gas (LNG) export terminal (Terminal) in Cameron County, Texas, along the north embankment of the Brownsville Ship Channel (BSC). In concert with the Terminal, Rio Bravo Pipeline Company, LLC (RB Pipeline) proposes to construct an associated pipeline system (Pipeline System) within the state of Texas to allow for interconnection with a network of existing pipelines that traverse the northern end of Kleberg County and Jim Wells County, and which are in proximity to the Energy Transfer Partners King Ranch Gas Plant (formerly the Exxon King Ranch Gas Plant). Pipelines in the referenced network are tied into the Agua Dulce Hub[1]. The Pipeline System will collect and transport natural gas to the Terminal site. RGLNG and RB Pipeline are hereinafter referred to collectively as the "RG Developers", and the Terminal and Pipeline System are hereinafter referred to collectively as the "Project." Figure 1-1 provides a Project overview map showing the locations of the proposed Project facilities.

On May 5, 2016, RG Developers filed an application for authorization pursuant to Section 3(a) of the Natural Gas Act (NGA), and Section 7(c) of the NGA with regard to a proposed natural gas liquefaction plant/export terminal and interstate natural gas pipeline facility, respectively. The FERC has assigned the RGLNG Project Docket Number CP16-454-000 and the associated RB Pipeline Project Docket Number CP16-455-000. The FERC issued a Draft Environmental Impact Statement (DEIS) for the Project on October 12, 2018 (Accession Number 20180118-3038).

The 1996 Sustainable Fishery Act amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth provisions to identify and protect important habitats of federally managed marine and anadromous fish species. Under these provisions, federal agencies that fund, permit, or undertake activities that may adversely affect essential fish habitat (EFH) are required to consult with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NOAA Fisheries) regarding the potential effects of their actions on EFH. The MSFCMA defines an adverse effect as "any impact which reduces quality and/or quantity of EFH." These effects "may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, or reduction in

[1] The Agua Dulce Hub is located in Nueces County, Texas, and includes connections for the following pipelines: Houston Pipe Line Company, Gulf South Pipeline, Kinder Morgan Texas Pipelines, Natural Gas Pipeline Co. of America, Transcontinental Gas Pipeline, Tennessee Gas Pipeline, TransTexas Gas, and EPGT Texas Pipeline. Based on the Pipeline System interconnects being relatively close to the Agua Dulce Hub, it is expected that pricing indicators for the Pipeline System feed natural gas will be comparable to those at the Agua Dulce Hub. The Pipeline System interconnect locations will hereafter be collectively referred to as the "Agua Dulce Market Area."

species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions."

EFH, as defined by the MSFCMA, includes "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of essential fish habitat, "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 Code of Federal Regulations 600.10).

NOAA Fisheries' Southeast Fisheries Science Center has compiled available information on the distribution, abundance, and habitat requirements for species managed by the Gulf of Mexico Fishery Management Council (GMFMC), the South Atlantic Fishery Management Council, and NOAA Fisheries. Detailed information is presented in a series of species reports that comprise a survey of the important literature, as well as original analyses, of fishery-independent datasets from NOAA Fisheries and several Gulf coastal states.

This EFH Assessment has been prepared to facilitate the FERC's National Environmental Policy Act review and development of an environmental impact statement for the Project. This EFH assessment provides:

- A general description of the Project (Section 2);
- Existing EFH environment in South Texas (Section 3);
- Identification of managed species and EFH in the Project's Area of Potential Effect (APE) (Section 4);
- An analysis of potential impacts on EFH and mitigation measures (Section 5); and
- Conclusions (Section 6).

The draft EFH Assessment that was filed with the FERC on May 5, 2016 (Accession number 20160505-5179) was revised on October 31, 2016 to address FERC comments received on August 29, 2016. Changes reflected in the Revision 1 of the Draft EFH Assessment included an assessment of impacts to EFH as a result of temporary use of the haul road, updates to the pile driving impact discussion based on revised engineering and design information, and updates to essential fish habitat classification and quantification to ensure consistency with impacts reported in Resource Reports 2 and 3 filed with the FERC on May 5, 2016.

Changes reflected in this Revision 3 of the EFH Assessment include a revaluation of the EFH impacts along the Pipeline System and at the Terminal site, per the direction of NOAA Fisheries personnel during a meeting held on November 15, 2018 (NMFS 2018). Acreage impacts presented in Revision 2 of the assessment were derived from the EFH Mapper (NOAA 2018), which, according to NOAA Fisheries personnel overestimate functional EFH acreage (NMFS 2018).

Upon further analysis of Revision 2, it has been concluded that EFH impacts have been overestimated; therefore, a reevaluation of EFH was conducted while placing a higher priority on using habitat descriptions laid out by Fishery Management Plans (FMPs) to adequately identify EFH, as opposed to previous prioritization of the EFH Mapper. As part of the reevaluation, hydrologic connectivity between inundated areas within the Terminal site and along the Pipeline System with the BSC was carefully considered and cross referenced with the descriptions laid out by the FMPs.

Upon reevaluation of FMPs, the tidally isolated wind tidal flat and the mangroves at the west and east ends, respectively, of the Terminal site were omitted from EFH acreage impacts due to lack of adequate habitat. Moreover, infrequently inundated fringe mangrove and soft bottom EFH adjacent to the San Martin Lake channel and the Bahia Grande pilot channel have also been omitted from EFH acreage impacts. See Section 5 for a detailed discussion of EFH impacts.

2/20/2018

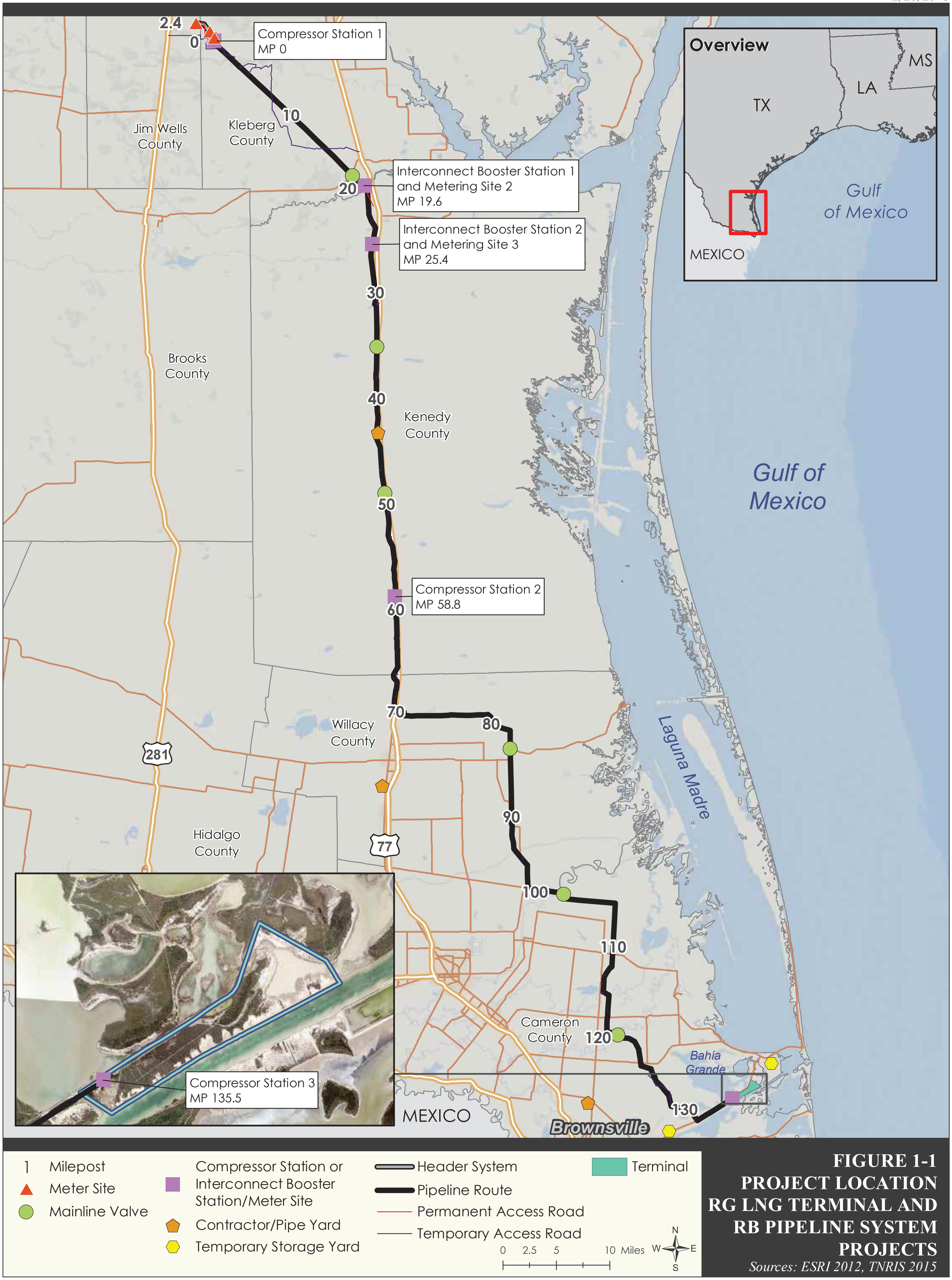

FIGURE 1-1
PROJECT LOCATION
RG LNG TERMINAL AND
RB PIPELINE SYSTEM
PROJECTS

Sources: ESRI 2012, TNRIS 2015

2 Description of the Project

The Terminal site will be located in Cameron County, Texas, on the north side of the BSC and approximately centered between the eastern end of the main channel at Laguna Madre and the turning basin at the western end of the BSC. The Terminal will have six liquefaction trains, four LNG tanks, two marine jetties for ocean-going LNG vessels, one turning basin, and four LNG and two natural gas liquids truck loading bays. The Terminal is configured to efficiently manage the size of the proposed facility. In particular, RGLNG has developed a master plan with a plant layout and infrastructure that allows for continuous construction activities centered around the successive construction of the six liquefaction trains, with supporting utilities and infrastructure being added in support of the stepped increased liquefaction capacity. Though construction of the six liquefaction trains is anticipated to be continuous, the construction process will take place in six stages, with the start of each train's construction ideally occurring between six to nine months after the previous train's commenced construction. RGLNG developed a staged construction schedule to avoid an excessive amount of pre-investment in supporting utilities and infrastructure that will only be needed when later constructed trains come into operation and to reduce peak manpower requirements and thereby reduce impacts. This proposed configuration of the Terminal will allow a portion of the Project to come online (subject to FERC approval) and start producing revenues while construction continues on the later stage facilities.

The Terminal will receive natural gas feedstock from the Pipeline System within the state of Texas. The Pipeline System, to be developed by RB Pipeline, will include two parallel 42-inch-diameter pipelines approximately 135 miles in length, three compressor stations, an approximately 2.4-mile-long header system (Header System) to interconnect with a network of existing natural gas transmission pipelines, two interconnect booster stations for injection of additional gas into the Pipeline System from existing natural gas pipelines (downstream from Compressor Station 1), associated metering stations, mainline valve sites, access roads, and temporary contractor/pipe yards. The pipelines will run north to south from a starting point (milepost [MP] 0.0) to the Terminal, as shown in Figure 1-1. The Pipeline System will be constructed in a staggered process, timed so as to ensure that the construction of the first pipeline and its associated components (Pipeline 1) is completed by the time Stage 1 of the Terminal construction process is completed, and so that the construction of the second pipeline and its associated components (Pipeline 2) is completed by the time Stage 4 of the Terminal construction is completed. Pipeline 1 and Pipeline 2 will share the same construction and operational footprint. As described in greater detail in Sections 1.2.2 and 1.2.3 of Resource Report 1, "General Project Description," the Pipeline System will have a Header System at the upstream end of the Pipeline System with multiple interconnects to the existing natural gas pipeline grid located in the Agua Dulce Market Area, and the two interconnect booster stations will allow access to existing natural gas pipelines that are traversed by the pipelines south of Compressor Station 1 and the Header System. See Resource Report 1, "General Project Description" and subsequent responses to FERC generated Environmental Information Requests for further details about the design, construction, and operation of the Terminal and the Pipeline System.

3 Existing Environment

3.1 Physical Environment

3.1.1 Terminal

The Terminal will be located within an approximately 984-acre parcel of land situated along the north embankment of the BSC. As an active navigation channel, the BSC is maintained to a depth of 42 feet in proximity to the Terminal site. The western boundary of the Terminal site is delineated by an excavated pilot channel that connects the BSC to the Bahia Grande. This channel is approximately 2,200 feet long, 34 feet wide, and 3 feet deep and is considered a navigable water and is regulated under Section 10 of the Rivers and Harbors Act. The Bahia Grande is located immediately north of the Terminal site but separated from the site by State Highway 48.

In addition to the significant surface waterbodies that occur in the general proximity of the Terminal, estuarine habitats do occur within the site. Field surveys at the Terminal site documented the presence of subtidal and intertidal flats, emergent and scrub-shrub estuarine wetlands, all likely relicts from the broader ecosystem that existed prior to the establishment of the BSC. Historic dredging activities at the Terminal site have introduced raised spoil piles along the length of the BSC that serve to isolate wetland complexes and prevent the regular exchange of tidal flow to the tidal flats and estuarine emergent and scrub-shrub wetlands that have been identified at the site. The tidally isolated areas are only inundated at extreme high tides, storm tides, or as a result of rainfall. Once inundated, these isolated areas become hypersaline as a result of evaporation. Hypoxic conditions are frequent and these areas are completely dry for portions of the year.

3.1.2 Pipeline System

A majority of the Pipeline System will be located inland, however, the pipeline will cross the San Martin Lake channel at MP 133.4 and the Bahia Grande pilot channel at MP 135.1, as well as estuarine scrub-shrub and emergent wetlands and sand/mud bottom habitat occurring from MP 131.5 to MP 135.5. A trenchless crossing method (i.e., horizontal directional drilling [HDD]) will be used at the San Martin Lake channel and the Bahia Grande pilot channel, thus no impacts to EFH are expected.

3.2 Biological Environment

Figure 3-1 depicts the aquatic habitat types that were delineated within the construction and operational footprint of the Project that have the potential to be classified as EFH. These aquatic habitats include mangroves, emergent marsh, soft bottom, sand/shell bottom, and open water. An initial review of the EFH viewer identified potential EFH habitat within the Project footprint. However, based on the direction

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Date: 2/6/2019

FIGURE 3-1
AQUATIC HABITATS
WITHIN THE PROJECT AREA
RG LNG TERMINAL AND
RB PIPELINE SYSTEM PROJECTS
Sources: ESRI 2018

of NOAA Fisheries personnel during a meeting held on November 15, 2018 (NMFS 2018), the potential EFH identified by the viewer was further evaluated based on the habitat descriptions laid out by the FMPs to further refine the EFH boundaries within the Project footprint. As part of the evaluation, hydrologic connectivity between inundated areas within the Terminal site and along the Pipeline System with the BSC was carefully considered and cross referenced with the descriptions laid out by the FMPs. The results of this evaluation concluded that open water habitat is the only EFH present within the Project footprint. The following sections provides a description of each aquatic habitat identified in Figure 3-1; provides the rationale on the determination of the open water habitat as EFH; and why mangroves, emergent marsh, soft bottom, sand/shell bottom habitats were determined not to be classified as EFH. Further discussion on impacts to open water EFH are presented in Section 5.

3.2.1 Mangroves

Mangrove habitats in South Texas are dominated by black mangrove (*Avicennia germinans*) with an understory of various herbaceous salt-tolerant species. The complex of prop roots produced by mangroves slows the movement of water during tidal ebb and flow and provides juvenile nursery habitat to a variety of species. These systems also provide shoreline protection and nutrient production for other ecosystems such as tidal flats and seagrasses (NMFS 2011).

The mangrove habitats delineated in the Project area are located in isolated depressional areas adjacent to State Highway 48 both along the Pipeline System and on the northwestern portion of the Terminal site (see Figure 3-1). These habitats are likely relicts from the broader estuarine system that existed prior to construction of the BSC and State Highway 48. As with the Bahia Grande located north of the highway, the functionality of these habitats has been altered due to prior human development. Historic dredging of the BSC and elevation of the highway roadbed have introduced raised spoils on the northern and southern boundaries of the Terminal site, which have isolated native wetland complexes and limited the exchange of tidal flow.

Given the location of mangrove habitats in the Project area, their hydrology is driven more by storm events and extreme tidal events rather than daily tidal exchange. Because tidal flow is restricted within these habitats, once water is introduced, it is likely that hypersaline and anoxic conditions would rapidly develop through evaporation, producing an environment that does not provide suitable nursery and foraging habitat for aquatic species. Therefore, these habitats within the APE do not function as EFH.

3.2.2 Emergent Marsh

Emergent marsh habitats support aquatic vegetation that provides abundant habitat and forage for invertebrate and finfish species. Due to their high productivity, South Texas coastal marshes provide sufficient habitat and forage to support small, resident fish species and provide nursery habitat for a variety of important coastal and reef species (Texas A&M Agrilife Extension 2015).

Emergent marsh habitats delineated in the Project area are located on the eastern and western flanks of the Terminal site, adjacent to State Highway 48 along the Pipeline System, and on the Terminal site (see Figure 3-1). As with the mangrove habitats, these emergent marsh habitats are likely relicts from the complex estuarine system that existed prior to human development in the region. Raised spoils along the bank of the BSC and State Highway 48 have isolated these marsh habitats from daily tidal exchange. Due to restricted tidal flow, once water is introduced it is expected that conditions within these habitats would become hypersaline and anoxic due to evaporation and stagnant water, thereby limiting their functionality as nursery and foraging habitat for aquatic species. Therefore, these habitats within the APE do not function as EFH.

3.2.3 Soft Bottom

Soft bottom mud flat habitats are typically sparsely vegetated and inhabited by a variety of invertebrate species, such as gastropods and crustaceans that forage on microfauna. In turn, juvenile and adult finfish follow tides into these areas to feed on invertebrates and microfauna.

Soft bottom mud flat habitats delineated in the Project area are primarily located on the edges of emergent marsh and mangrove habitats on the Terminal site, and along the Pipeline System south of State Highway 48 (see Figure 3-1). While some of the mud flats identified within the Terminal site extend to the BSC shoreline, these habitats are elevated above the mean high tide line due to dredge spoils. Therefore, as with other estuarine habitats in the Project area, the soft bottom mud flat habitats are isolated from regular tidal exchange and thus the functionality of these habitats has been altered by human development. Due to the isolation from regular tidal exchange, these habitats within the APE do not function as EFH.

3.2.4 Sand/Shell Bottom

Sand/shell bottom habitats are sparsely vegetated and regularly inundated and inhabited by a variety of invertebrate species as well as juvenile and adult finfish foraging on invertebrates and microfauna.

A large lagoon on the eastern portion of the Terminal site has been delineated as sand bottom habitat (Figure 3-1). These lagoons are isolated from open waters and regular tidal exchange by dredge spoil placed during construction of the BSC. While generally inundated, their hydrology is dominated by rain events and extreme high tides rather than daily tides. Due to restricted tidal flow, once water and aquatic fauna are introduced to the lagoons during extreme events, tidal ebbing isolates the lagoons and strands fauna. Thus, due to this isolation, conditions would become hypersaline and anoxic due to evaporation and stagnant water conditions thereby limiting the lagoons' functionality as nursery and foraging habitat. Due to the isolation from regular tidal exchange, these habitats within the APE do not function as EFH.

3.2.5 Open Water

Open water habitats, such as the BSC, San Martin Lake channel, and Bahia Grande pilot channel (Figure 3-1) typically support a diverse community of benthic invertebrates similar to those of other estuarine habitats. Open water habitats also support a diverse demersal and pelagic community of invertebrates and finfish. Invertebrates common to shallow, open water systems of the South Texas coast include those common to coastal marshes, as well as various gelatinous species (e.g., jellyfish) and pelagic mollusks. Demersal and pelagic finfish species in open water habitats off the South Texas coast include those common to coastal marshes, as well as more open water species. In addition, highly migratory megafauna, such as cartilaginous fishes (e.g., sharks), marine mammals, and sea turtles, inhabit coastal waters of South Texas to forage, give birth, or nest, and are known to occasionally occur within the BSC, particularly from Brazos Santiago Pass to the Laguna Madre and South Bay, which is approximately four miles downstream from the Terminal site.

The excavated nature of the BSC, coupled with ongoing dredging activities in the BSC, however, limit the development of a significantly diverse community within the BSC itself. Some diversity is evident along the shorelines but more typical estuarine community development is more common in connected waterbodies such as Laguna Madre, South Bay, and, to a lesser extent, Bahia Grande and its surrounding estuaries. As indicated above, open water is the only EFH type that will be impacted by the Project.

4 Essential Fish Habitat and Managed Fisheries

4.1 Essential Fish Habitat

In the Gulf of Mexico, EFH includes all types of aquatic habitat—wetlands, coral reefs, seagrasses, and rivers—where fish spawn, breed, feed, or grow to maturity. The MSFCMA mandates the identification of habitats essential to managed species and the implementation of measures to conserve and enhance these habitats. NOAA Fisheries and the regional fishery management councils describe and identify EFH in each FMP. To date, EFH has been described for approximately 1,000 species (NMFS 2015b).

The two primary physical features that determine suitability of habitat for supporting managed species are substrate type and water depth. As a result, NOAA Fisheries and GMFMC mapped depth and substrate preference for each species and life stage managed under a FMP. As part of this analysis, the Gulf of Mexico was divided into five eco-regions based primarily on existing boundary units in the existing NOAA Fisheries statistical grid system for depicting fishing effort. Eco-region 5 extends from Freeport, Texas, to the Texas-Mexico border. Eco-region 5 is characterized by an increased tropical influence with higher temperatures, lower rainfall, and resultant higher salinities, including hypersaline habitats, than other eco-regions in the Gulf of Mexico. In addition, this eco-region has less marsh habitat and more submerged aquatic vegetation than more northern eco-regions. Based on the general distribution of life stages, a density status was applied to each species and life stage in each eco-region. Egg, larval, and post-larval stages are designated, in order of increasing abundance, as "no occurrence," "occurrence," or "common." Juvenile stages are designated, in order of increasing abundance, as "no occurrence," "occurrence," or "nursery area." Adults and spawning adults are designated, in order of increasing abundance, as "no occurrence," "occurrence," "adult area" or "major adult area and commercial fishing ground." If a species and life stage was identified as present within an eco-region, substrates and depths with documented use for spawning, breeding, feeding, or growth to maturity were designated as EFH. (GMFMC 2004).

The designations for managed species with the potential to occur within Eco-region 5 are provided in Table 4-1.

Table 4-1: Summary of Occurrence in Eco-Region 5 of Managed Species by Life Stage

Managed Species	Egg	Larval	Post-Larval	Early Juvenile	Late Juvenile	Adult	Spawning Adult
Shrimp Fishery Management Plan							
Brown shrimp	Common	Common	Nursery Area	Nursery Area	Nursery Area	Major Adult Area and Commercial Fishing Ground	Major Adult Area and Commercial Fishing Ground
White shrimp	Common	Common	Nursery Area	Nursery Area	Nursery Area	Major Adult Area and Commercial Fishing Ground	Major Adult Area and Commercial Fishing Ground
Pink shrimp	Common	Common	Nursery Area	Nursery Area	Nursery Area	Adult Area	Adult Area
Royal red shrimp	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Adult Area	Adult Area
Red Drum Fishery Management Plan							
Red drum	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Spawning Area
Reef Fish Fishery Management Plan							
Mutton snapper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Blackfin snapper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Red snapper	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Cubera snapper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Gray snapper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Adult Area	Adult Area
Lane snapper	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Silk snapper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Yellowtail snapper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Wenchman	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Vermillion snapper	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Dog snapper	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Mahogany snapper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Schoolmaster	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence

Table 4-1: Summary of Occurrence in Eco-Region 5 of Managed Species by Life Stage

Managed Species	Egg	Larval	Post-Larval	Early Juvenile	Late Juvenile	Adult	Spawning Adult
Speckled hind	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Yellowedge grouper	Common	Common	Common	Nursery Area	Nursery Area	Major Adult Area and Commercial Fishing Ground	Major Adult Area and Commercial Fishing Ground
Goliath grouper	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Red grouper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Warsaw grouper	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Snowy grouper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Black grouper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Yellowmouth grouper	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Gag	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Adult Area	Adult Area
Scamp	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Yellowfin grouper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Dwarf sand perch	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Marbled grouper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Nassau grouper	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Red hind	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Rock hind	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Sand perch	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Goldface tilefish	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Blueline tilefish	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Golden tilefish	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Anchor tilefish	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Blackline tilefish	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Greater amberjack	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area

Table 4-1: Summary of Occurrence in Eco-Region 5 of Managed Species by Life Stage

Managed Species	Egg	Larval	Post-Larval	Early Juvenile	Late Juvenile	Adult	Spawning Adult
Lesser amberjack	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Almaco jack	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Banded rudderfish	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Gray triggerfish	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Hogfish	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Coastal Migratory Pelagics Fishery Management Plan							
King mackerel	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area
Spanish mackerel	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence	Occurrence
Cobia	Common	Common	Common	Nursery Area	Nursery Area	Adult Area	Adult Area

Source: GMFMC 2004
Key:
Common = species inhabits the area and is relatively more abundant than in other parts of its distribution
Occurrence = species is known to inhabit but is relatively less abundant than in other parts of its distribution
Nursery Area = young stages (juveniles) occur or concentrate for feeding and/or refuge
Adult Area = sexually mature individuals occur or congregate
Major Adult Area = sexually mature individuals occur or congregate and are relatively more abundant than in other adult areas they occupy
Commercial Fishing Ground = species is harvested for its economic value

4.1.1 Shrimp EFH

Designated EFH under the Shrimp FMP includes all Gulf of Mexico estuaries; Gulf of Mexico waters and substrates from Fort Walton Beach, Florida, to the southern extent of GMFMC jurisdiction off the Florida Keys out to depths of 100 fathoms (600 feet); waters and substrates extending from Grand Isle, Louisiana, to Pensacola Bay, Florida, from 100 to 325 fathoms (600 to 1,950 feet); and waters and substrates from Pensacola Bay, Florida, to the Texas-Mexico border to depths of 35 fathoms (210 feet). All three commercial species (brown, white, and pink) spawn over the Gulf of Mexico continental shelf. Eggs and larvae are pelagic with post-larvae migrating to estuaries where they inhabit a variety of benthic habitats as they mature. Upon maturation, they emigrate to deeper parts of estuaries and eventually offshore habitats for spawning. In Eco-region 5, the highest habitat use is for offshore and nearshore sand/shell habitats and offshore, nearshore and estuarine soft bottoms (GMFMC 2004)

Figures 4-1-1 and 4-1-2 depict shrimp EFH within the Pipeline System and Terminal boundary. The figures depict shrimp EFH determined to be present within the Project footprint based on the habitat descriptions in Section 3.2.

4.1.2 Red Drum EFH

Designated EFH under the Red Drum FMP includes all Gulf of Mexico estuaries; Gulf of Mexico waters and substrates from Vermillion Bay, Louisiana, to Mobile Bay, Alabama, to depths of 25 fathoms (150 feet); and waters and substrates from Crystal River, Florida, to the southern extent of GMFMC jurisdiction off the Florida Keys between depths of 5 and 10 fathoms (30 and 60 feet). In the Gulf of Mexico, they inhabit a variety of substrates including seagrass, sand, shell, mud, and oyster reefs. Spawning occurs in deeper water near the mouths of bays and inlets, and on the Gulf side of the barrier islands. Eggs and larvae are transported into estuaries where they inhabit shallow, protected waters with grassy or slightly muddy bottoms. At the age of three to four, they tend to leave the protection of estuaries and move into open coastal waters where they occur in schools or as solitary individuals. In Eco-region 5, the highest habitat use is for nearshore sand/shell bottoms, estuarine submerged aquatic vegetation, and estuarine soft bottom (GMFMC 2004).

Figures 4-2-1 and 4-2-2 depict red drum EFH within the Pipeline System and Terminal boundary. The figures depict red drum EFH determined to be present within the Project footprint based on the habitat descriptions in Section 3.2.

4.1.3 Reef Fish EFH

Designated EFH under the Reef Fish FMP includes all Gulf of Mexico estuaries and Gulf of Mexico waters and substrates extending from the Texas/Mexico border to the southern extent of GMFMC jurisdiction off the Florida Keys out to depths of 100 fathoms. In general, reef fish are widely distributed in the Gulf of Mexico, occupying both pelagic and benthic habitats during their life cycle. Spawning typically occurs in open water with plankton egg and larval life stages. Juveniles are typically demersal and associated with high relief bottom habitats (i.e., reefs, ledges, and caves) in waters less than 325 feet; however, some species inhabit sand and soft bottom substrates. Some juvenile snapper and grouper species have been documented in seagrass beds, mangrove estuaries, inshore lagoons, and bay systems. Upon maturation, adult reef fish settle on reefs and other high relief bottom habitats similar to those inhabited by juveniles. Juveniles within estuarine habitats emigrate to bottom structure on the continental shelf. Within Eco-region 5, overall habitat use was highest for nearshore reefs, offshore hard bottoms, offshore reefs, offshore pelagic, and offshore sand/shell habitats (GMFMC 2004).

Figures 4-3-1 and 4-3-2 depict reef fish EFH within the Pipeline System and Terminal boundary. The figures depict reef fish EFH determined to be present within the Project footprint based on the habitat descriptions in Section 3.2.

4.1.4 Coastal Migratory Pelagic EFH

Designated EFH under the Coastal Migratory Pelagic FMP includes all Gulf of Mexico estuaries and waters, and substrates extending from the Texas/Mexico border to the boundary of the GMFMC out to depths of 100 fathoms (600 feet). In general, coastal pelagic species spawn over the continental shelf with eggs and larvae occurring over the middle continental shelf. Juveniles and adults occur in mid-shelf waters less than 250 feet and migrate seasonally based on temperature (GMFMC 2004).

Figures 4-4-1 and 4-4-2 depict coastal migratory pelagic EFH within the Pipeline System and Terminal boundary. The figures depict coastal migratory pelagic EFH determined to be present within the Project footprint based on the habitat descriptions in Section 3.2.

4.1.5 Atlantic Highly Migratory Species (HMS) EFH

For highly mobile pelagic species such as tuna, swordfish, and sharks, defining EFH is difficult. Although some HMS may frequent the pelagic waters of the continental shelf as well as inshore areas, they are primarily open-ocean species. Their distributions are usually not correlated with the areas or features commonly considered as fish habitat and for which parameters such as bottom substrate, sediment type or vegetation density can be described. These species most often associate with oceanographic conditions of the water column such as oceanic fronts, river plumes, shelf edges, sea mounts, and thermoclines. Distributions of juveniles, adults, and especially early life stages (larvae for tunas and billfishes; neonates for sharks) may be constrained by tolerance of temperature, salinity, or oxygen levels; thus, these physicochemical properties may be used to define the boundaries of essential habitat in a broad sense. However, even when these parameters and tolerances are well understood and can be used to define the limits of a species' habitat, the distribution of these characteristics is not fixed in space or time but varies over seasons and years (NMFS 2006, 2009).

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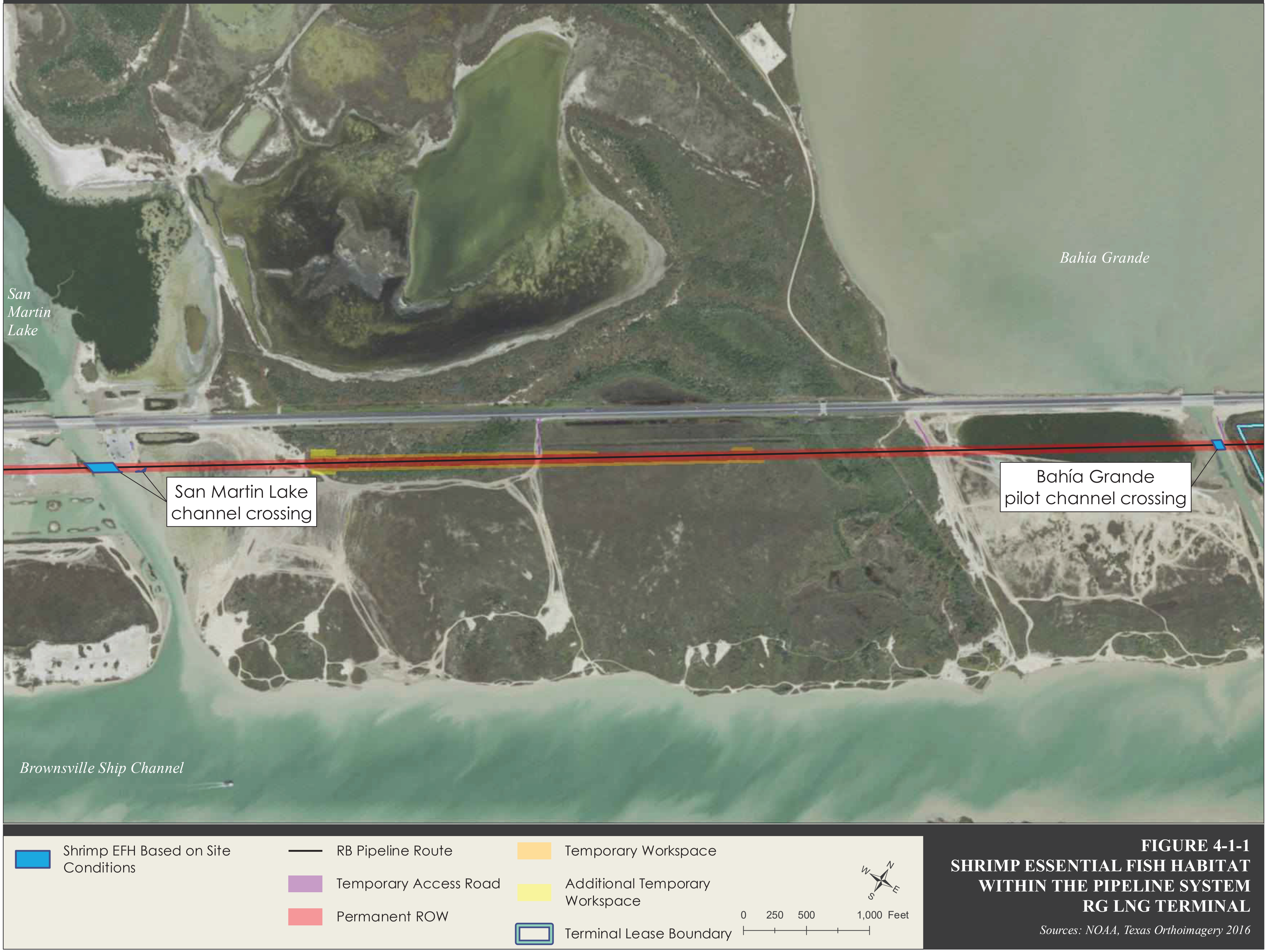

FIGURE 4-1-1
SHRIMP ESSENTIAL FISH HABITAT WITHIN THE PIPELINE SYSTEM
RG LNG TERMINAL

Sources: NOAA, Texas Orthoimagery 2016

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FIGURE 4-1-2
SHRIMP ESSENTIAL FISH HABITAT WITHIN THE TERMINAL BOUNDARY
RG LNG TERMINAL

Sources: NOAA, Texas Orthoimagery 2016

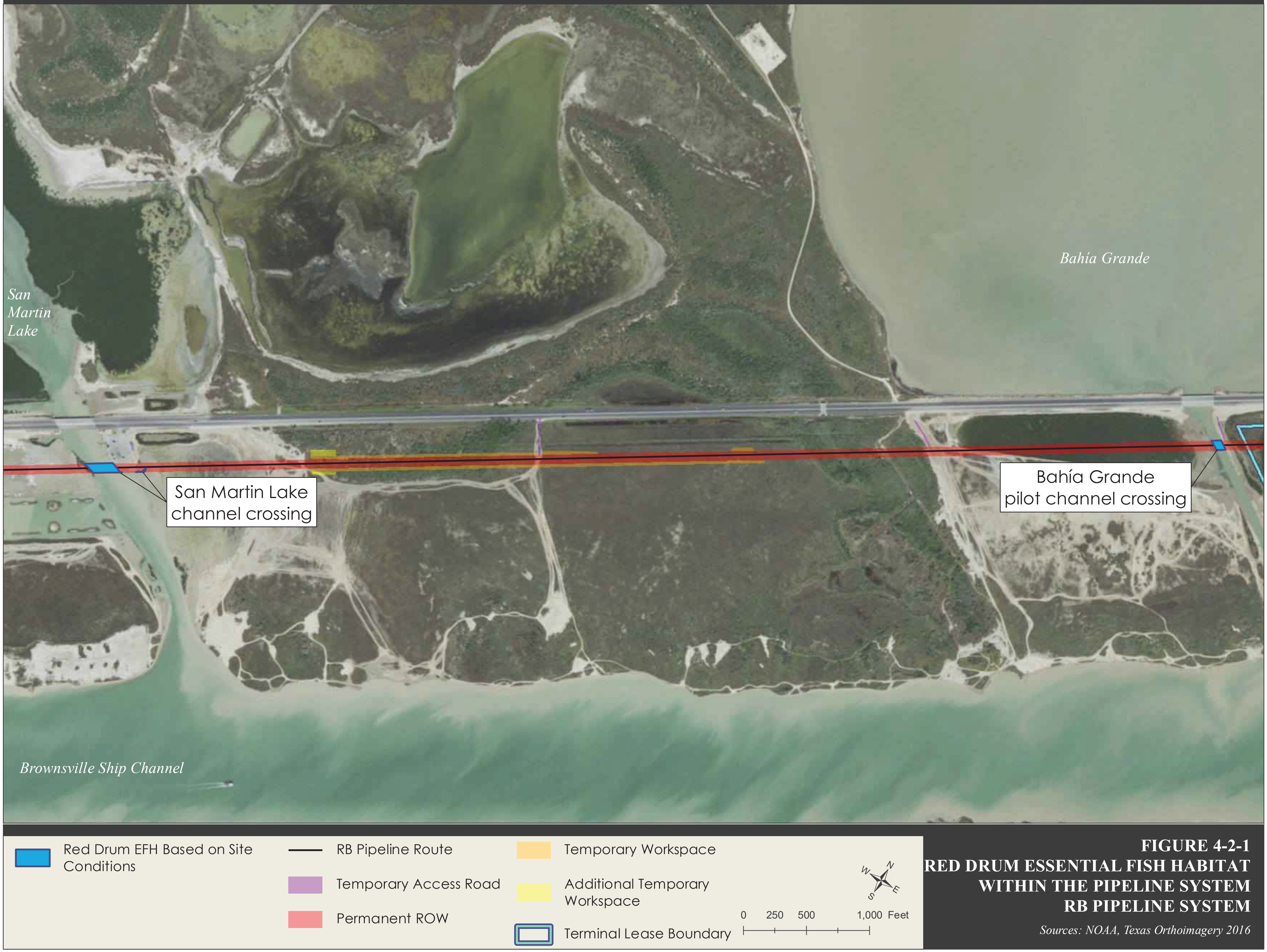

FIGURE 4-2-1
RED DRUM ESSENTIAL FISH HABITAT WITHIN THE PIPELINE SYSTEM
RB PIPELINE SYSTEM

Sources: NOAA, Texas Orthoimagery 2016

FIGURE 4-2-2
RED DRUM ESSENTIAL FISH HABITAT WITHIN THE TERMINAL BOUNDARY
RG LNG TERMINAL

Sources: NOAA, Texas Orthoimagery 2016

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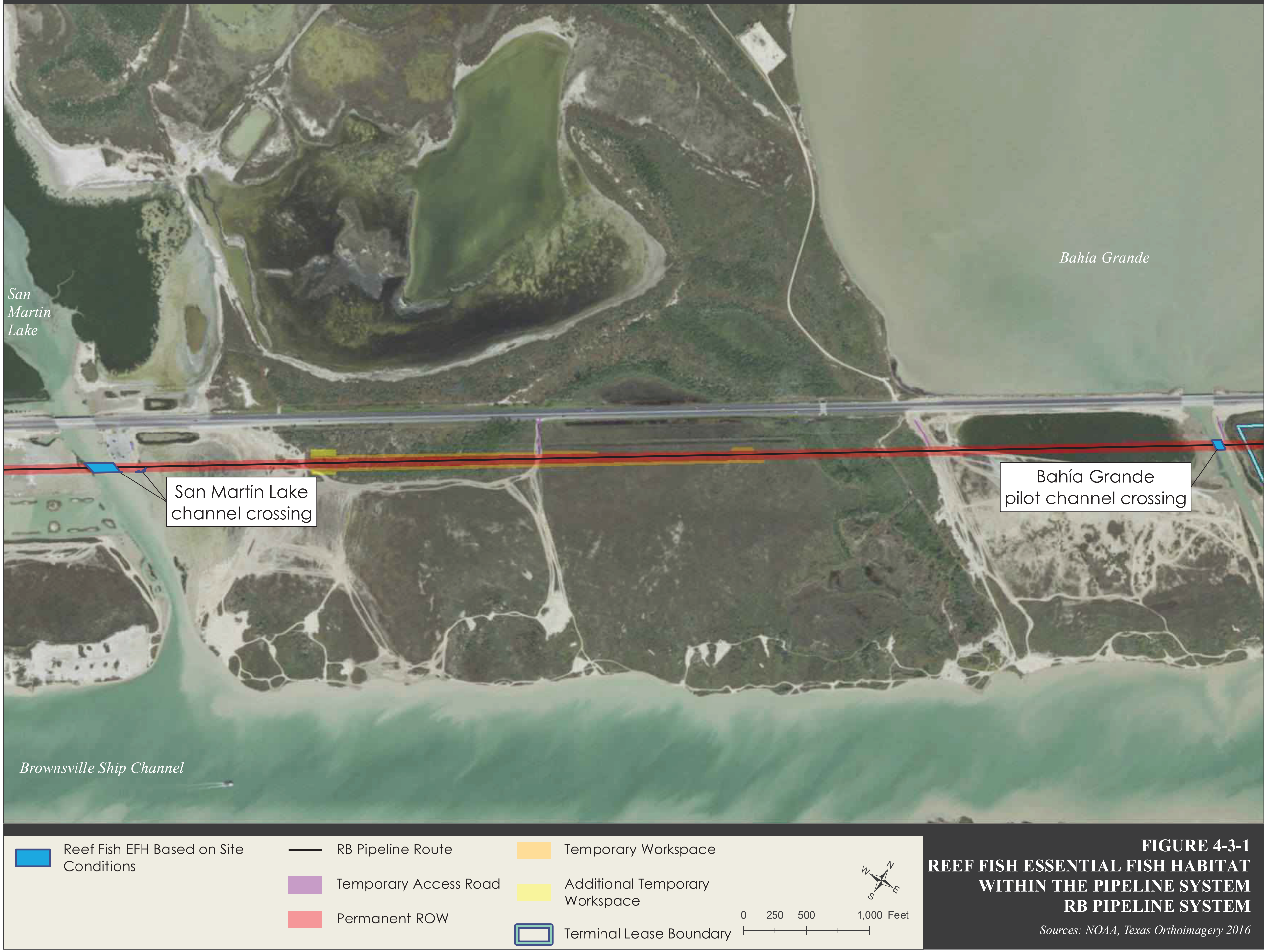

FIGURE 4-3-1
REEF FISH ESSENTIAL FISH HABITAT WITHIN THE PIPELINE SYSTEM
RB PIPELINE SYSTEM

Sources: NOAA, Texas Orthoimagery 2016

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FIGURE 4-3-2
REEF FISH ESSENTIAL FISH HABITAT WITHIN THE TERMINAL BOUNDARY
RG LNG TERMINAL

Sources: NOAA, Texas Orthoimagery 2016

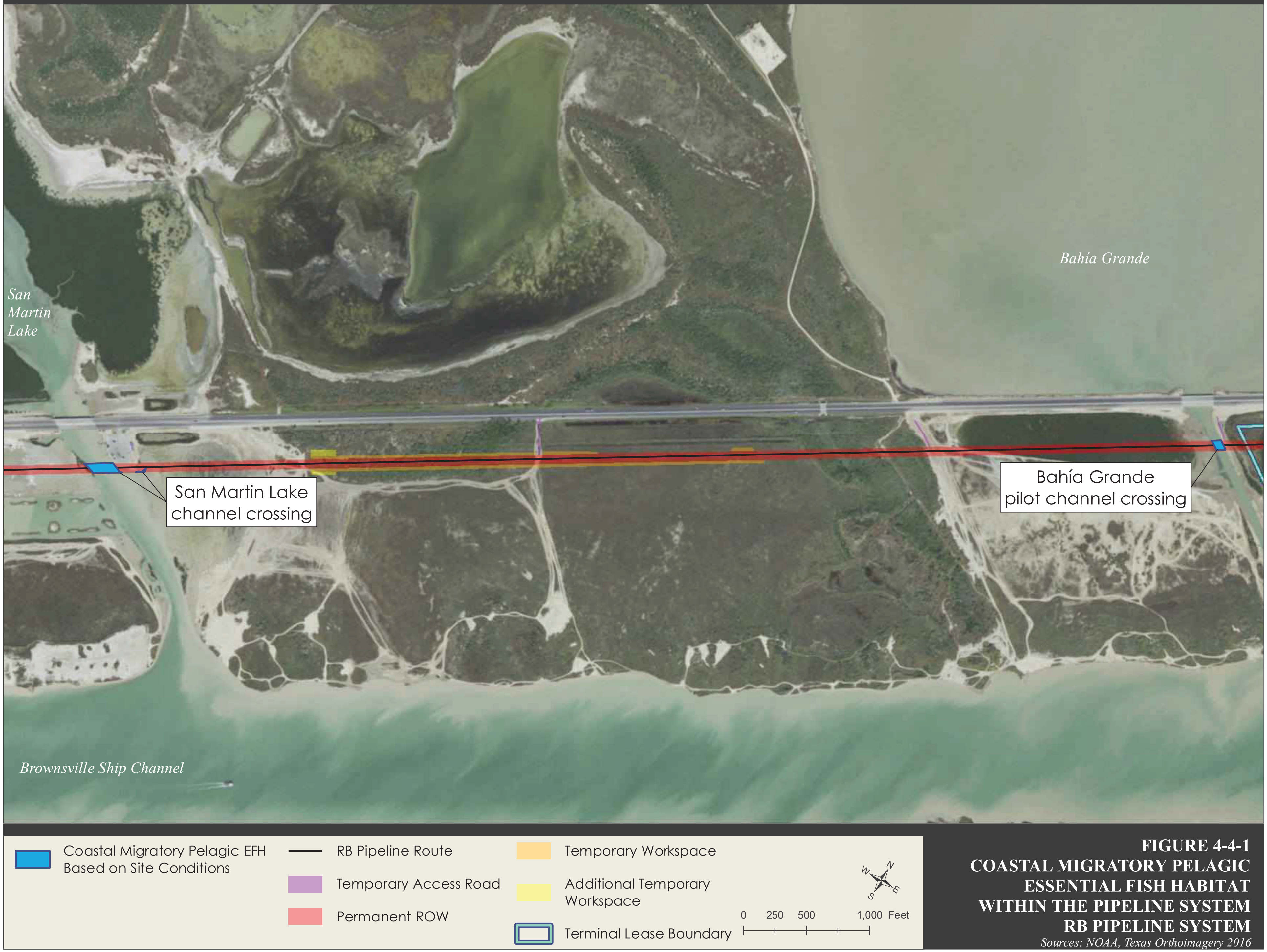

FIGURE 4-4-1
COASTAL MIGRATORY PELAGIC ESSENTIAL FISH HABITAT WITHIN THE PIPELINE SYSTEM
RB PIPELINE SYSTEM
Sources: NOAA, Texas Orthoimagery 2016

FIGURE 4-4-2
COASTAL MIGRATORY PELAGIC ESSENTIAL FISH HABITAT WITHIN THE TERMINAL BOUNDARY
RG LNG TERMINAL
Sources: NOAA, Texas Orthoimagery 2016

4.2 Managed Fisheries

The NOAA Fisheries Habitat Conservation EFH Mapper indicates that habitat within the APE has designated EFH for one or more species under a regional FMP (NOAA 2015). As the BSC connects tidal estuaries with the nearshore Gulf of Mexico, most life stages (i.e., larval/neonate, juvenile, and adult) of these species have the potential to occur within the BSC. In general, the species with designated EFH are found in a wide range of salinities but are estuarine-dependent during early life stages.

Based on an evaluation of estuarine habitats delineated within the APE, preliminary consultation with NOAA Fisheries (NMFS 2015d), and review of the probability of occurrence of species and life stages in Eco-region 5 (GMFMC 2004), the species identified in Table 4-2 have the greatest likelihood of occurring within the APE. Species managed under the Coastal Migratory Pelagics FMP and Highly Migratory Species FMP may occur transiently within the BSC. However, these species are not expected to regularly occur within the APE and thus are not evaluated for potential impacts to EFH in Section 5.

Table 4-2: Managed Species Potentially Occurring in the Area of Potential Effect

Managed Species	FMP Managed Under	Eggs	Larvae/Neonates	Juveniles	Adults
Brown shrimp (*Penaeus aztecus*)	Shrimp			■	
White shrimp (*Penaeus setiferus*)	Shrimp			■	
Red drum (*Sciaenops ocellatus*)	Red Drum		■	■	■
Gray snapper (*Lutjanus griseus*)	Reef Fish				■
Lane snapper (*Lutjanus synagris*)	Reef Fish			■	
Dog snapper (*Lutjanus jocu*)	Reef Fish			■	
Goliath grouper (*Epinephelus itajara*)	Reef Fish		■	■	
Yellowmouth grouper (*Mycteroperca interstitialis*)	Reef Fish			■	
Cobia (*Rachycentron canadum*)	Coastal Migratory Pelagics			■	■
Spanish mackerel (*Scomberomorus maculatus*)	Coastal Migratory Pelagics			■	■
King mackerel (*Scomberomorus cavella*)	Coastal Migratory Pelagics			■	■

Table 4-2: Managed Species Potentially Occurring in the Area of Potential Effect

Managed Species	FMP Managed Under	Eggs	Larvae/Neonates	Juveniles	Adults
Atlantic sharpnose shark (*Rhizoprionodon terraenovae*)	Highly Migratory Species		■	■	■
Blacktip shark (*Carcharhinus limbatus*)	Highly Migratory Species		■	■	■
Bonnethead shark (*Sphyrna tiburo*)	Highly Migratory Species		■	■	■
Bull shark (*Carcharhinus leucas*)	Highly Migratory Species		■	■	■
Finetooth shark (*Carcharhinus isodon*)	Highly Migratory Species		■		
Lemon shark (*Negaprion brevirostris*)	Highly Migratory Species		■	■	
Scalloped hammerhead shark (*Sphyrna lewini*)	Highly Migratory Species		■	■	
Silky shark (*Carcharhinus falciformis*)	Highly Migratory Species		■	■	■
Spinner shark (*Carcharhinus brevipinna*)	Highly Migratory Species		■	■	
Tiger shark (*Galeocerdo cuvier*)	Highly Migratory Species				■

Sources: GMFMC 2004, NMFS 2015d, NMFS 2009

4.3 Life History of Managed Species

The following describes the life history characteristics and habitat preferences of federally managed species with the potential to occur within the Project's APE based on occurrence within Eco-region 5, EFH designation, coordination with NOAA Fisheries, and field determinations of existing habitat within the APE. No surveys have been conducted to confirm the presence or absence of species in the APE.

4.3.1 Shrimp

Brown Shrimp

Brown shrimp (*Penaeus aztecus*) inhabit continental shelf waters throughout the Gulf of Mexico but are most abundant from Texas to Mississippi. While distributed throughout bays and estuaries, adults generally prefer nearshore waters ranging in depths from 45 to 360 feet and are positively correlated with turbidity. In the spring and fall, adults move to waters greater than 60 feet to spawn, producing demersal eggs and larvae. Post-larvae migrate to estuaries in the spring and are predominantly found in shallow vegetated habitats but are known to occur over sand and unvegetated mud bottoms. Post-larvae and juveniles are most abundant in marsh edge habitat and submerged aquatic vegetation; abundances are highest in turbid estuaries. Sub-adult brown shrimp move to gradually deeper waters over sand, shell, and mud bottoms less than 60 feet and prefer turbid environments (GMFMC 2004).

White Shrimp

White shrimp (*Penaeus setiferus*) inhabit estuaries and nearshore waters (typically less than 100 feet) from Florida's bend to South Texas. Adults prefer nearshore mud or silt bottom habitats and spawn from spring to fall. Eggs and larvae primarily occur in nearshore waters but are sometimes carried to passes and estuaries. Post-larvae enter estuaries through passes in summer, preferring shallow mud bottoms with large amounts of decaying matter or vegetative cover. Juvenile white shrimp prefer marsh edge and submerged aquatic vegetation habitats with high organic content and turbidity. Sub-adults migrate from estuaries in late summer or fall in response to size and environmental conditions. In nearshore waters, adults prefer mud, sand, or shell bottom habitats (GMFMC 2004)

4.3.2 Red Drum

Red drum (*Sciaenops ocellatis*) are prevalent throughout the Gulf of Mexico in bays, estuaries, and coastal waters with substrates including sand, mud, and oyster reefs; adults are most commonly found in depths to about 120 feet. Spawning occurs in the fall in nearshore waters around channels and passes with planktonic larvae carried into bays and estuaries. Larvae occur over vegetated and unvegetated bottoms of open bays, estuaries, and tidal flats. Post-larvae and early juveniles utilize shallow tidal flats, mud bottoms, seagrass beds, and protected backwaters up to 10 feet deep as nursery habitat. Late juveniles begin moving to slightly deeper, vegetated inshore waters and are known to migrate to the open Gulf of Mexico during cold months. Sub-adults and adults occur in nearshore waters up to 200 feet but are most common in inshore marsh, bayou, and barrier island habitats (GMFMC 2004)

4.3.3 Reef Fish

Gray Snapper

Gray snapper (*Lutjanus griseus*) occur in estuaries and continental shelf waters throughout the Gulf of Mexico and are most abundant off south and southwest Florida. Adults are marine, estuarine, and riverine and range from freshwater creeks and rivers to 20 miles offshore near coral reefs up to 600 feet deep. Gray snapper are found in a variety of habitats including mangroves, seagrasses, sand, mud and rock bottoms, and coral reefs. Spawning occurs offshore around reefs in summer. Eggs and larvae are offshore and pelagic with post-larvae moving into estuarine habitats, predominately seagrass beds. Juveniles prefer seagrass beds and mangroves but are known from bayous, ponds, and freshwater creeks. Upon leaving nursery habitats, adults move to a variety of marine, estuarine, and freshwater habitats (GMFMC 2004).

Lane Snapper

Lane snapper (*Lutjanus synagris*) occur throughout the Gulf of Mexico on the continental shelf to depths of 425 feet. Though known to occur over all bottom types, adults are most common on coral reefs, manmade structures, and sand bottoms. Spawning occurs in offshore waters in spring and summer producing pelagic eggs, and little is known regarding the larval life stage. Juvenile nursery areas include grassy estuaries and mangroves in South Texas and shallow sand and mud bottoms throughout the Gulf of Mexico up to 60 feet deep. Sub-adults move further offshore before settling on offshore reefs and sand bottoms (GMFMC 2004).

Dog Snapper

Dog snapper (*Lutjanus jocu*) are found throughout the Gulf of Mexico in shallow, coastal areas to depths over 400 feet. Occupying a range of habitats from shallow, vegetated flats to deep reefs, dog snapper are most common on coral reefs. They spawn in offshore waters producing floating, pelagic eggs. Larvae move with the currents with early juveniles migrating to shallow coastal waters including estuaries and occasionally up rivers. Late juveniles occur around mangroves, jetties, pilings and other hard structures. Dog snapper move to deeper water as they grow, eventually settling on rocky coral reefs (GMFMC 2004)

Goliath Grouper

Goliath grouper (*Epinephelus itajara*) occur in shallow waters of the Gulf of Mexico and are most abundant off the southwest Florida coast and on the Campeche Banks. Young adults occur around inshore docks, jetties, and rock structures while adults prefer offshore wrecks and ledges to depths up to 300 feet, though abundance is greatest from 5 to 150 feet. Spawning occurs from June to December around wrecks, reefs, and other hard structures at depth from 100 to 150 feet. Eggs and larvae are pelagic with juveniles settling in bays, estuaries, and canals within seagrass and mangroves. Late juveniles are also known to occur around ledges, holes, and shallow reefs to 10 feet. Goliath grouper move to deeper reefs and other hard structures as they grow and mature (GMFMC 2004).

Yellowmouth Grouper

Within the Gulf of Mexico, yellowmouth grouper (*Mycteroperca interstitialis*) occur off the Campeche Banks, the west coast of Florida, Texas' Flower Garden Banks, and the coast of Cuba. Adults occupy rocky bottoms and coral reefs from 60 to 600 feet but typically occur at depths less than 300 feet. Spawning occurs in the spring and summer on home reefs with pelagic eggs and larvae moving with the currents. Juveniles settle in shallow, mangrove-lined lagoons and move to deeper water as they grow (GMFMC 2004).

4.3.4 Coastal Migratory Pelagics

Cobia

Cobia (*Rachycentron canadum*) are found in bays, inlets, coastal, and offshore shelf waters of the northern Gulf of Mexico, from depths of 3 feet to over 200 feet. Adults migrate seasonally from March through October and spawn from April through September in coastal waters. Eggs are planktonic and typically found in the neuston drifting with the currents. Larvae and juveniles occur in continental shelf waters from the surface to 900 feet but are most commonly associated with surface waters. Once reaching maturity, cobia traverse a wide range of waters from shallow bays and inlets to the continental shelf. Cobia migrate seasonally, occurring in the northern Gulf of Mexico from March through October and moving to the southern Gulf of Mexico from November to March (GMFMC 2004).

Spanish Mackerel

Spanish mackerel (*Scomberomorus maculatus*) are distributed along the western Atlantic coast and in the Gulf of Mexico from the Florida Keys to the Yucatan Peninsula, Mexico. Adults migrate to the northern Gulf of Mexico in spring and return to the eastern and western Gulf of Mexico (Florida and Mexico, respectively) in fall. Spawning occurs from May through September on the inner continental shelf with the northeastern and north central Gulf of Mexico preferred spawning regions. Pelagic eggs and larvae are found over the inner continental shelf at depths less than 150 feet. Juveniles are common in coastal and estuarine waters of the northern Gulf of Mexico and use estuaries as nurseries. Adults occur in inshore and coastal waters up to 225 feet and are often associated with piers, jetties, boats, and other coastal structure. Florida is considered the center of abundance for Spanish mackerel (GMFMC 2004).

King Mackerel

King mackerel (*Scomberomorus cavalla*) are distributed throughout the Gulf of Mexico with centers of distribution in south Florida and Louisiana. Adults occur in coastal waters and over reefs in depths up to 600 feet; the species only rarely enters estuaries. Their seasonal migration to the northern Gulf of Mexico in spring is temperature dependent. King mackerel spawn over the continental shelf from May to October with the northwest and northeast Gulf of Mexico preferred spawning regions. Pelagic eggs and larvae are found over the middle and outer continental shelf to depths of 550 feet. Juveniles prefer inshore to middle shelf habitats and are most abundant in the northcentral and northwest Gulf of Mexico. Adults are most common at depths less than 250 feet and have a center of abundance in Florida. Individuals seldom enter estuaries but prey on estuarine-dependent species (GMFMC 2004).

4.3.5 Highly Migratory Species

Coastal Sharks

A variety of shark species inhabit the Gulf of Mexico, including coastal waters of South Texas. Typically occurring on the continental shelf, coastal sharks forage within bays and estuaries along the Gulf coast. Common coastal shark species of South Texas include lemon (*Negaprion brevirostris*), bull (*Carcharhinus leucas*), finetooth (*Carcharhinus isodon*), spinner (*Carcharhinus brevipinna*), silky (*Carcharhinus falciformis*), tiger (*Galeocerdo cuvieri*), scalloped hammerhead (*Sphyrna lewini*), bonnethead (*Shyrna tiburo*), blacktip (*Carcharhinus limbatus*), and Atlantic sharpnose (*Rhizoprionodon terraenovae*). Relatively little is known about these species' life histories and spawning habits; however, young-of-the-year (neonates) generally inhabit shallow, coastal water nurseries with juveniles moving toward open water, continental shelf habitats.

5 Potential Impacts to EFH

Potential impacts as a result of construction and operation of the Project are actions which result in the reduction in quantity or quality of EFH. Potential impacts include direct and indirect effects on EFH and managed species.

5.1 Biological Communities

5.1.1 Mangroves

Mangroves along the Pipeline System would be avoided by using a trenchless pipeline construction method (i.e, HDD). Although unlikely, incidental returns during HDD process could impact adjacent mangrove EFH. Mangrove habitats that would be avoided during construction and operation could be indirectly impacted by stormwater runoff and inadvertent spills during construction (see Section 5.2.4).

A total of 19.8 acres of mangrove habitat would be lost as a result of construction and operation of the Terminal; however, based on the hydrologic isolation of mangrove habitat within the APE from regular tidal exchange, these areas are not EFH, and thus construction and operation of the Project would not impact mangrove EFH.

5.1.2 Emergent Marsh

No direct impacts to emergent marsh habitat within the APE of the Pipeline System is expected. Emergent marsh EFH along the Pipeline System would be avoided by using a trenchless pipeline construction method (i.e, HDD). Although unlikely, incidental returns during HDD process could impact adjacent emergent marsh EFH. Moreover, emergent marsh within the San Martin Lake channel and the Bahia Grande pilot channel are irregularly inundated, and thus do not provide adequate emergent marsh EFH. Adjacent emergent marsh habitats could be indirectly impacted by stormwater runoff or inadvertent spills (see Section 5.2.4).

A total of 114.8 acres of emergent marsh habitat would be permanently lost as a result of construction and operation of the Terminal. However, given the hydrologic isolation of emergent marsh habitats from regular tidal exchange, these areas do not serve as EFH, and construction and operation of the Project would not impact emergent marsh EFH.

5.1.3 Soft Bottom

No direct impacts to soft bottom habitat within the APE of the Pipeline System is expected. Soft bottom EFH along the Pipeline System would be avoided by using a trenchless pipeline construction method (i.e., HDD). Although unlikely, incidental returns during HDD process could impact adjacent soft bottom

EFH. Adjacent soft bottom habitats could be indirectly impacted by stormwater runoff or inadvertent spills (see Section 5.2.4).

A total of 47.7 acres of soft bottom mud flat habitat would be permanently lost as a result of construction and operation of the Terminal. Soft bottom mud flat habitats within the Terminal are isolated from regular tidal exchange and, therefore, do not function as EFH. The Project is not anticipated to reduce quantity or quality of soft bottom EFH in the South Texas region.

5.1.4 Sand/Shell Bottom

Sand/shell bottom channels within the Pipeline System footprint would be crossed using a trenchless construction method and thus these habitats would not be impacted by construction or operation of the Pipeline System. Adjacent soft bottom habitats could be indirectly impacted by stormwater runoff or inadvertent spills (see Section 5.2.4). Although unlikely, incidental returns during HDD process could impact adjacent sand/shell EFH.

A total of 47.7 acres of sand/shell bottom habitat within the isolated lagoon would be permanently lost as a result of construction and operation of the Terminal. The lagoon on the eastern portion of the Terminal site has been isolated from open waters and regular tidal exchange by dredge spoil placed during construction of the BSC. Given this feature’s isolation and its propensity to develop hypersaline and hypoxic conditions following extreme high tides, these areas do not function as EFH; therefore, the Project is not anticipated to reduce quantity or quality of sand/shell bottom EFH in the south Texas region.

5.1.5 Open Water

Open waters of the BSC provide access to coastal estuaries such as the Laguna Madre and South Bay from the open Gulf of Mexico. Mobile species that utilize these estuaries for foraging as adults would experience temporary displacement during construction of the marine facilities and could be impacted by maintenance dredging and ballast water exchange during operation of the Terminal.

Open water habitats along the Pipeline System would be crossed using a trenchless construction method and thus these habitats would not be impacted by construction or operation of the Pipeline System. Although unlikely, incidental returns during HDD process could impact open water EFH. Open water EFH could also be indirectly impacted by stormwater runoff or inadvertent spills (see Section 5.2.4).

A total of 58.4 acres of open water below the ordinary high water mark within the lease boundary of the Terminal and 68.7 acres of open water outside of the lease boundary within the BSC would be impacted as a result of construction and operation of the Terminal. These minor impacts would be short-term and highly localized. This habitat would be directly impacted by dredging, pile driving, and hydrostatic testing, and indirectly impacted by stormwater runoff and inadvertent spills during construction. Operational impacts to the BSC could result from maintenance dredging, ballast water exchange, water curtain and cooling water withdrawal, and the firewater system.

While the BSC receives daily tidal exchange and provides an open water connection to coastal estuaries and the open Gulf of Mexico, the excavated nature of the BSC, its steep slopes, and ongoing maintenance dredging activities limit the development of aquatic vegetation characteristic of certain types of EFH. The benthic substrates (either sand or mud) of the BSC have the potential to provide EFH to those species identified for similar habitats above; however, given the regular disturbance of the substrate and recreational and commercial vessel use, the available EFH is expected to have minimal functionality. Therefore, the loss of 127.1 acres of low-quality open water EFH would result in a minor impact on the overall quantity and quality of open water EFH in the region.

5.2 Construction Impacts

5.2.1 Dredging

Construction of the Terminal would require the excavation and dredging of the north shoreline of the BSC for the installation of the material offloading facility (MOF), the LNG export berths, and the turning basin, as described in Resource Report 1, "General Project Description," Section 1.5.1. Excavation of the marine facilities berth would occur in stages, with land-based terrestrial excavation followed by marine dredging to remove the remaining material below the water surface. This would allow excavation to take place without directly contacting aquatic habitats, which would minimize impacts to fisheries and aquatic resources. However, during marine dredging activities, potential impacts on managed species and EFH could occur from suspension of sediments (turbidity) and disturbed substrate. RGLNG is currently evaluating the viability of both mechanical dredging and hydraulic dredging. Regardless of the dredging methodology employed, dredging activities associated with the MOF are expected to occur over half a month while the separate, and more substantial, dredging activities associated with construction of the LNG berths and turning basin would occur over a period of approximately 14 months.

Dredging would suspend sediments in the water column for a period of time, depending on the size of the sediment particles. Coarser sediments would fall out and would resettle quickly (hours), while finer sediments could remain suspended for longer periods of time (days). Construction impacts are expected to be localized and not significantly different from impacts resulting from current and ongoing maintenance dredging activities conducted within the BSC. Localized effects to managed species and EFH resulting from the temporary increase in turbidity and suspension of solids would include reduced light penetration and a corresponding reduction in primary production, a reduction in predation efficiency for visual predators (Gardner 1981), and reduced dissolved oxygen concentrations. Based on the tidal fluctuation within the BSC and the channel's linear nature, localized turbidity plumes are expected to be dispersed quickly,

During periods of increased turbidity, it is expected that juvenile and adult fish in the area would relocate to other similar habitat where prey would still be accessible and forage efficiency would improve. Eggs and larvae (or neonates) are the life stages that are most likely to be directly affected by a temporary increase in turbidity and a potential decrease in dissolved oxygen concentrations. Because these life stages are more sensitive to such stresses and are less able to emigrate from the affected area, they are more susceptible to impacts compared with juvenile and adult fish. However, effects from elevated turbidities are associated with long-term exposure, which would not occur as part of Project construction. Therefore, increased turbidities would have a short-term, minor impact on managed species and EFH, with mobile species and life stages expected to move away from active construction areas and quickly return to previously disturbed areas.

Dredging could have impacts on managed species and EFH from removal of the benthic substrate within the limits of the dredge area. Dredging activities would temporarily fluidize sediments and some bottom-dwelling species, such as shrimp, may be affected because they could be entrained during dredging activities. Larger, more mobile, demersal species would be temporarily displaced. The direct loss of benthic habitat would be minimized to the extent practicable by minimizing the construction footprint. Benthic communities are very resilient to habitat disturbance and temporarily disturbed areas are expected to recolonize with a similar benthic community composed of organisms or offspring of organisms from adjacent benthic areas (Brooks et al. 2006; Diaz et al. 2004). Due to the fact that the only EFH habitat that exists within Terminal site is open water, dredging activities would not convert any other EFH into open water EFH.

5.2.2 Pile Driving

The jetty structure associated with LNG Berth 1 would be constructed prior to dredging of the berth pocket, which would allow for land-based pile driving activities during Stage 1 of Terminal construction. The Berth 2 Jetty structure is planned as part of Stage 4 construction after the dredging of the berth pocket. The intent is to build the Berth 2 Jetty structure in the same fashion as the Berth 1 Jetty structure by leaving a small land mass in place after dredging most of the berth pocket to allow the second jetty to be constructed from land using land based equipment, and then to excavate underneath. This will allow piling for Berth 2 Jetty to be installed mostly 'in the dry', thereby eliminating the need for in-water pile driving activities, as described in Resource Report 1, "General Project Description," Section 1.5.1.17.

Land-based pile driving activities would be buffered by the surrounding soil, which will reduce noise reaching the BSC; however, the limited amount of in-water pile driving could result in short-term increases in underwater noise levels in the BSC. The impacts of underwater sound on fish can be pathological, physiological, and behavioral, including physical damage, stress, and changes in behavior (ICF Jones and Stokes and Illingworth and Rodkin, Inc. 2009). Fish with swim bladders would be more vulnerable to such pressure changes which can cause a temporary inability to control buoyancy (ICF Jones and Stokes and Illingworth and Rodkin, Inc. 2009) and temporary loss of hearing also may occur as a result of exposure to noise from impact pile driving (Popper and Hastings 2009; Popper et al. 2005). In addition, sound can induce generalized stress responses in fish, particularly a startle response during initial activity, which induces behavioral changes such as site avoidance throughout the remainder of pile driving activities. Additional behavioral changes include moving to deeper depths and altered schooling behavior (Wysocki et al. 2006).

The extent to which fish react varies among species, life stage, and with other environmental conditions. A cooperative effort between several federal and state transportation and resource agencies along the West Coast of the U.S. resulted in the establishment of interim criteria for the onset of physical injury to fishes exposed to the underwater sounds generated by impact pile driving (Stadler and Woodbury 2009). The onset of physical injury uses dual criteria of the sound pressure level (SPL) and cumulative sound exposure level (SEL), with injury expected to occur if either of these criteria are exceeded. A potential onset of physical injury is determined if either the peak SPL exceeds 206 decibels relative to 1 micropascal (dB re 1 μPa) or the SEL, accumulated over all pile strikes generally occurring within a single day, exceeds 187 dB re 1 μPa squared per second (dB re 1 μPa^2/sec) for fishes 2 grams or larger and 183 dB re 1 μPa^2/sec for smaller fishes. Adverse behavioral effects occur at a threshold of 150 dB re 1 μPa (Stadler and Woodbury 2009).

The intensity of pile-driving sound is greatly influenced by factors such as the types of piles and hammers and the physical environment in which the driving activity takes place. Land-based pile driving activities would be buffered by the surrounding soil, which will reduce noise reaching the BSC; however, in-water pile driving could result in short-term increases in underwater noise levels in the BSC. Detailed descriptions of the pile types and quantities to be driven as well as the installation methodology are provided in the DEIS for the Project issued on October 12, 2018 (Accession Number 20180118-3038).

The majority of the pilings associated with the MOF would be installed from land, which will significantly limit underwater sound propagation and minimize impacts to aquatic organisms; however, a single aid to navigation requiring in-water installation of two steel pipe or precast concrete piles would be constructed in conjunction with the MOF. In addition, steel sheet piles to form the MOF bulkhead would require in-water installation by vibratory hammer. In order to determine reasonable SELs that would be likely to result from installation of these piles, studies of pile-driving operations with similar properties were evaluated. Pile-driving noise associated with the in-water installation of piles at the MOF would be expected to range from 174 to 183 dB SEL (200 to 210 dB SPL) for steel piles depending on pile diameter, be 166 dB SEL (188 dB SPL) for 24-inch concrete piles, and be 160 dB SEL (175 dB SPL) for steel sheet piles installed by vibratory hammer (ICF Jones and Stokes and Illingworth and Rodkin, Inc. 2009). Sound pressure level estimates are at a distance of 10 meters (33 feet) from the source for unattenuated installation in water depths of approximately 15 meters (49 feet) (ICF Jones and Stokes and Illingworth and Rodkin, Inc. 2009).

Berth 1 Jetty would be constructed prior to dredging of the berth pocket, which would allow for complete land-based pile-driving of the jetty structure; a single aid to navigation requiring in-water installation of two steel pipe or precast concrete piles would be constructed in conjunction with Berth 1 Jetty. Berth 2 Jetty would be constructed utilizing land-based construction equipment (i.e. cranes, trucks, and support equipment) and the construction activities will include pile-driving. All piling associated with the Berth 2 Jetty structures will be installed 'in the dry' and will not require in-water pile-driving activities. Sound pressure level estimates for installation of piles at Berths 1 and 2 would be similar to those described for construction of the MOF. Source levels are proxies and it is assumed they are representative of the methods and piles that would be driven during construction of the Terminal; however, it is not possible to predict project-specific underwater sound levels until construction equipment and methodologies are finalized.

As the proxy underwater noise estimates indicate, in-water pile driving activities would exceed the limit for adverse behavioral impacts and have the potential to exceed limits for the onset of physical injury. RGLNG would minimize in-water pile driving to the extent possible; however, some in-water driving will be required. Once pre-construction engineering and design is complete, RGLNG will fully evaluate the potential for underwater noise impacts based on the planned in-water pile driving activities (i.e., considering pile type, size and driving equipment) and in the event that injury thresholds are exceeded, appropriate mitigation measures will be put in place to minimize such impacts.

In-water pile driving associated with construction of the MOF is anticipated to take three months. Given the temporal nature of pile-driving, permanent deterrence from the area for foraging would not occur. In addition, noise impacts would be localized to the immediate vicinity of the marine berths and ample similar habitat is found throughout the BSC, so it is anticipated that displaced species would find suitable habitat. Based on the short duration of pile driving activities, the abundance of EFH adjacent to the Terminal site, and implementation of proposed mitigation measures, impacts to managed species and EFH from pile driving noise would be short-term and minor.

5.2.3 Hydrostatic Testing

During construction of the Terminal, RGLNG would need water for hydrostatic testing of non-cryogenic piping, freshwater storage tanks, and LNG tanks. Hydrostatic testing of non-cryogenic piping and freshwater storage tanks would use approximately 10 million gallons of freshwater supplied by the Brownsville Navigation District (BND) or other municipal sources while testing of LNG tanks would be done using approximately 30 million gallons of seawater drawn from the BSC for each of the four tanks. Water would be withdrawn from the BSC using onshore pumps with intakes placed in the deepest water practicable at a rate up to 3,472 gallons per minute. The pump intakes would be screened with approximately 5 millimeters (mm) mesh to minimize entrainment of aquatic organisms; however, some loss of early life stage aquatic organisms could occur during water withdrawal. Given the short duration of withdrawal and the small volume of water withdrawn compared to the total volume within the BSC, the withdrawal of hydrostatic test water would have a minor impact on managed species.

A minimal amount of an approved chemical additive may be used to prevent microbiologically influenced corrosion when performing hydrostatic testing of the tanks. The concentration used would be dilute enough to discharge back into the BSC. Upon completion of testing, any water that is not repurposed for onsite use will be discharged to the Terminal's stormwater collection system, which will discharge to onsite retention ponds and then to the BSC. Prior to release of the water, it will be tested to confirm suitability for release and then treated, if required; presence of the proposed corrosion preventative would not require treatment. Release would be under controlled conditions in accordance with applicable discharge permits. In addition, energy-dissipating devices such as a silt fence and/or hay bale filters would be used to minimize erosion and scouring and associated turbidity during discharge. Water discharged to the BSC would have been within the Terminal's stormwater collection system for a sufficient time to reach an ambient temperature approximately equal to that of surface waters of the BSC. As part of a complex estuary system, the BSC and aquatic biota inhabiting it are subject to and tolerant of fluctuating environmental conditions such as temperature and salinity (Applebaum et al. 2005, Patillo et al. 1995). Given the small volume of discharged hydrostatic test water compared to the total volume of the BSC and daily tidal exchange within the BSC, the local environmental conditions are expected to stabilize rapidly following discharge. Given that discharged hydrostatic water would be tested and treated, would be of ambient temperature, and the BSC is an estuarine environment that regularly receives freshwater inflows, discharge of hydrostatic test water would have short-term, negligible impacts on managed species and EFH within the BSC.

5.2.4 Stormwater Runoff and Spills

During construction of the Terminal and Pipeline System, disturbed soils would be exposed to potential erosion from stormwater runoff. As stormwater runoff moves across disturbed sites, it would pick up sediment particles or soil, as well as oil, grease, and residue from inadvertent leaks and spills from construction equipment being used on the site. An unanticipated release of petroleum products, such as fuel, could adversely impact managed species or EFH via suffocation, ingestion, degradation of habitat, and bio-accumulation. All leaks and spills potentially resulting in contamination would be contained and remedied on site as soon as practical through implementation of RGLNG's and RB Pipeline's Spill Prevention and Response Procedures which will be prepared in advance of Project construction activities. To minimize impacts to adjacent EFH from stormwater runoff, prior to construction, RGLNG and RB Pipeline will follow prepared Stormwater Pollution Prevention Plans (SWPPP) for both the Pipeline System and Terminal site, which describe measures that would control erosion, sedimentation, and pollutants in runoff from construction workspaces.

5.2.5 Pipeline Installation

Impacts to all EFH at the San Martin Lake channel and Bahia Grande pilot channel crossings will be avoided with the use of a trenchless method (i.e, HDD). Although unlikely, there would be potential for inadvertent returns during the drilling process. To minimize any indirect impacts on EFH and managed species, RB Pipeline will adhere to measures outlined in Revision 4 of the Project-Specific Plan, and Revision 3 of the Project-Specific Procedures, provided in the RG Developers' Supplemental Filing dated December 22, 2017 (FERC Accession No. 20171222-5255), including but not limited to installing cross-drainage to maintain surface hydrology, installing erosion controls, and installing equipment mats to minimize soil compaction.

5.3 Operation Impacts

Due to avoidance during installation, and restoration of disturbed habitats following construction, normal operation of the Pipeline System would have no impact on managed species or EFH.

5.3.1 Maintenance Dredging

During operation of the Terminal, periodic maintenance dredging of the turning basin and berth pocket areas would occur to maintain the necessary minimum water depths. Maintenance dredging would produce a fraction of the initial dredging volume. Potential impacts of maintenance dredging on managed species and EFH would be similar to those described for initial construction (see Section 5.2.1) and include increased turbidity and disruption of substrate. These impacts would be temporary, limited to the immediate vicinity of the Terminal, and similar to impacts from the USACE's periodic maintenance dredging of the entire BSC; therefore, maintenance dredging of the marine facilities during operation of the Terminal would have only short-term and minor impacts on managed species and EFH.

5.3.2 Ballast Water Exchange

The discharge of ballast water at the marine berth during loading of LNG could have impacts on managed species and EFH, including changes to the local environmental conditions and introduction of invasive species. RGLNG would not own the LNG vessels calling on the Terminal and would have no control over their ballasting procedures. However, the discharge of ballast water would be conducted in accordance with the United States Coast Guard regulations (USCG 2012) and the vessel's approved Ballast Water Management Plan. Ballast water that is likely to be discharged to the BSC from arriving vessels would mainly be composed of open ocean water retrieved during ballast water exchange activities during transoceanic shipping. Ballast water introduced into the BSC as a result of this discharge could have physicochemical characteristics significantly different from those within the BSC, including salinity, dissolved oxygen concentration, temperature, and pH. Changes in these physicochemical parameters could impact managed species in the immediate vicinity of the marine berth. In general, estuarine species are exposed to and tolerant of fluctuating environmental conditions. However, mobile species could be temporarily displaced as a result of local changes in water conditions, and less mobile or sessile species could experience physiological stress that may impact foraging and survival. Given the small volume of discharged ballast water compared to the water volume within the BSC, the local environmental conditions would stabilize rapidly following discharge of ballast water, and displacement or stress on fisheries resources would be short-term. In summary, in light of the tolerance of local species and the rapid stabilization of physicochemical conditions, ballast discharges are expected to have short-term, negligible impacts on managed species.

5.3.3 Water Curtain and Cooling Water

During operation, LNG vessels calling on the Terminal will use a water curtain to protect the hull by dispersing LNG vapor if a leak occurs during transfer operations. Water for the water curtain will be withdrawn from the BSC through the vessel's hull-mounted dedicated water curtain pump that features a perforated plate with 6- to 8-millimeter holes to minimize the potential for entrainment of aquatic species. The rate of flow for the vessel's water curtain system would vary based on vessel size but is anticipated to range from 1,300 to 3,900 gallons per minute. While the perforated plate is designed to minimize entrainment of aquatic species, due to the volumes withdrawn, some loss of early life stage aquatic organisms could occur during water withdrawal. Water would be discharged back to the BSC in an unaltered in composition. Therefore, impacts to fisheries resources from the use of water curtains would be short-term and minor.

LNG vessels serving the Terminal would pump water into the ship in the same manner as other commercial vessels in order to cool machinery and condition living spaces. LNG vessels would use a once-through cooling water system with water withdrawn and then returned to the BSC. This withdrawal and discharge would occur via several sea chests, which are steel boxes inset into the side of the ship below the waterline. Each sea chest is protected by an outer grating designed to keep marine debris away from intake valves. Behind the grating, screening would keep out smaller debris. Sea chest screening is expected to be approximately 5 mm, which is typical of large commercial vessels.

The withdrawal location on the side of the hull near the waterline would avoid impacts to benthic and demersal species and the use of an outer grating would minimize impingement of adult and juvenile pelagic organisms, especially during loading operations when power systems are on standby and required withdrawal volumes are reduced. Intake velocities under these conditions have been estimated at 30.5 centimeters per second, which is a velocity that can be avoided by most pelagic adult and juvenile finfish (AOP 2016). However, eggs and larvae in proximity to the intakes would be entrained on the inner screening. Based on the small volume of water withdrawn for cooling and the lack of identified spawning or nursery habitat within the BSC, the loss of eggs and larvae during cooling water intake is expected to be minor and would not have a population-level effect.

Other than an increase in temperature of up to 4 degrees Fahrenheit, the physicochemical properties of cooling water would not be altered during cooling operations (Southern LNG 2006). Given the small volumes of cooling water required, the limited increase in temperature, and the daily tidal exchange within the BSC, any temperature difference in discharged cooling water would be rapidly moderated. Therefore, the discharge of cooling water from a loading LNG vessel would have no effect on fisheries resources.

LNG vessels are not anticipated to require water from the BSC for any additional uses while hoteling or loading at the Terminal; however any unanticipated use, if required, would be short-term and negligible.

5.3.4 Firewater System

During operation, the Terminal would maintain a firewater system to control and/or extinguish a fire event. The system would be supplied by freshwater pumps supplied from a municipal source; however, seawater pumps would be installed for redundancy. In the event they are required, the seawater pumps would draw directly from the BSC at a rate of approximately 6,770 gallons per minute during normal operation. The pumps will be designed to supply this volume at a total head not less than 65% of the total rated head. The pump chambers would be screened with approximately 5 mm mesh to minimize entrainment of aquatic organisms; however, some loss of early life stage aquatic organisms could occur during water withdrawal. Following use, firewater would be discharged from the site in the same manner as stormwater runoff as described above. Based on the unlikely need to withdraw water from the BSC for the firewater system, the use of intake screens on pumps, and discharge through the Terminal's stormwater drainage system, operation of the firewater system would have a negligible impact on managed species or EFH resources.

5.3.5 Stormwater Runoff and Spills

During operation of the Terminal, stormwater from the Terminal site would discharge into the BSC through a system of drainage ditches, pipes, and intermediate ponds and settling basins. Clean surface water runoff from areas where no hydrocarbons or other contaminants are present would be routed via gravity and, if necessary, pumped through a system of drainage ditches, pipes, and intermediate ponds and settling basins to an outfall to the BSC. Surface water runoff from areas that could be contaminated by hydrocarbons or other contaminants would be collected in the intermediate ponds and settling basins and routed to a treatment facility to prevent contaminant discharge to the BSC. Following removal of contaminants, treated water would be discharged to the BSC. Based on this drainage design and adherence to measures described in RGLNG's SWPPP, the potential for impacts on managed species and EFH from stormwater runoff and inadvertent spills would be negligible.

In addition to the on-site drainage system, the Terminal waterfront will be stabilized with shoreline protection, which will include riprap slope protection at the marine berths and turning basin. This slope protection will extend from the toe of the dredged slope to an above-water plateau. The remainder of the shoreline will be protected by riprap that will extend from the final grade elevation to the existing elevation at adjacent, undisturbed areas. This shoreline protection will be tied to the MOF bulkhead and serve to minimize shoreline erosion and associated localized turbidity during operation of the Terminal.

6 Conclusions

Construction and operation of the Project would result in short-term and minor impacts on EFH and managed species that are highly localized. Temporary impacts from dredging and pile driving are not expected to be significant given the dredging methods to be used, ongoing maintenance dredging activities conducted within the BSC, the Terminal's location approximately 7 miles upstream from the Gulf of Mexico, and the availability of high quality EFH within the Laguna Madre and South Bay complex.

Dredging of the marine facilities would temporarily disturb bottom sediments and increase turbidity in the localized area around dredging activities, which could result in reduced primary production and adverse physiological effects on managed invertebrate and finfish species. In addition, where it is implemented, hydraulic dredging could entrain benthic species and eggs or larvae. Dredging activities would temporarily fluidize sediments and the deposition of sediments re-suspended by dredging activities could adversely affect benthic species. Larger, more mobile species would be temporarily displaced during dredging activities. However, considering the use of land-based excavation to the extent practicable, use of hydraulic dredging when practicable to contain sediment, and the influence of tidal exchange to disperse turbidity plumes, these impacts would be short-term and minor.

In-water pile driving to construct the LNG berths could result in underwater noise, which could have pathological, physiological, and behavioral impacts on managed invertebrate and finfish species. It is anticipated that some species would avoid areas of active pile driving due to increased underwater noise. However, pile driving would be short in duration and, thus, permanent deterrence from the area for foraging would not occur. Based on the use of land-based pile driving to the extent practicable, the short duration of pile driving activities, the abundance of suitable habitat adjacent to the Terminal site, and baseline noise levels in the navigation channel, impacts to managed species and EFH from pile driving noise would be short-term and minor.

Ballast water discharged during loading of LNG could alter local environmental conditions and impact managed species and EFH in proximity to the LNG berths. However, estuarine species, including managed species that utilize the EFH types observed in the Terminal area, are tolerant of fluctuating environmental conditions. Mobile species could be temporarily displaced while less mobile or sessile species could experience physiological stress that may impact foraging and survival. However, given tidal exchange within the BSC, the local environmental conditions would stabilize rapidly following discharge of ballast water, and displacement or stress would be short-term and negligible.

A total of 58.4 acres of open water below the ordinary highwater mark within the lease boundary of the Terminal and 68.7 acres of open water outside of the lease boundary within the BSC would be impacted as a result of construction and operation of the Terminal. This habitat would be directly impacted by dredging, pile driving, and hydrostatic testing, and indirectly impacted by stormwater runoff and inadvertent spills during construction. Impacts to open water EFH would be minor, short-term, and highly localized.

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APPENDIX N

PROJECT-SPECIFIC BEST MANAGEMENT PRACTICES, NORTHERN APLOMADO FALCON

Rio Grande LNG Project
Northern Aplomado Falcon Best Management Practices
November 2018

Rio Grande LNG, LLC ("RG LNG") and Rio Bravo Pipeline, LLC ("RB Pipeline") (collectively, "RG Developers") will implement the following best management practices ("BMPs") during the construction and/or operation of the Rio Grande LNG Project ("Project") to avoid, minimize, and mitigate impacts to the northern aplomado falcon (*Falco femoralis septentrionalis*). The following BMPs are based on the results of consultations with U.S. Fish and Wildlife Service ("USFWS"), Texas Parks and Wildlife ("TPWD"), and the BMPs for the northern aplomado falcon recommended by the USFWS Texas Coastal Ecological Service Field Office ("ESFO") – Corpus Christi.

<u>Project Planning and Documentation</u>

- Prior to the start of construction, RG Developers will coordinate with USFWS and The Peregrine Fund to acquire the most recent aplomado falcon nest data. The data will be shared with USFWS.
- Prior to construction, RG Developers will consult with USFWS to determine if pre-activity surveys should be conducted in suitable habitat for territorial aplomado falcons and/or nest sites. Pre-activity surveys will be conducted by qualified, permitted individuals in accordance with protocols that are recognized by USFWS and/or TPWD.
- RG Developers will provide training to construction and maintenance staff on the species, the BMPs identified for species protection, and the role of the biological monitor.
- Measures to reduce adverse environmental impacts to aplomado falcons will be incorporated into the Project, in accordance with agency plans, permits, and regulations.

<u>During Construction/Maintenance</u>

- RG Developers will adhere to the Project-specific Upland Erosion Control, Revegetation, and Maintenance Plan.
- RG Developers will adhere to the Project-specific Wetland and Waterbody Construction and Mitigation Procedures.
- RG Developers will adhere to the Rio Grande LNG Project Migratory Bird Conservation Plan.
- Within areas deemed to be suitable habitat, RG Developers will construct the Rio Bravo Pipeline System between August 1 and January 31 (outside of the breeding season). Alternatively, RB Pipeline will use biological monitors during the breeding season to monitor active aplomado falcon nests within 0.5 mile of construction activities.
- RG Developers will construct the Rio Grande LNG Terminal and associated temporary offsite facilities that are within one (1) mile of active aplomado falcon nests between August 1 and January 31. Alternatively, if construction will occur during the nesting season, RG LNG will use biological monitors to monitor active aplomado falcon nests within one (1) mile of construction activities.

- Construction and maintenance activities will be conducted during daylight hours to avoid noise and lighting issues during the night to the extent possible. If construction or maintenance work activities continue at night (i.e., horizontal direction drill crossings), all lights will be shielded to direct light only onto the work site, the minimum wattage needed will be used, and the number of lights will be minimized.
- The perimeter of all Project workspace to be disturbed during construction or maintenance activities will be clearly demarcated using flagging or temporary construction fence, and no disturbance outside that perimeter will be authorized.
- All access roads into and out of the Project workspace will be flagged, and no travel outside of those boundaries will be authorized.
- To prevent drowning of aplomado falcons, open-top liquid or water storage containers will not be used.
- Waste materials and other discarded materials will be removed from the site as quickly as possible. This should assist in keeping the Project area and surroundings free of litter and reduce the amount of disturbed area needed for waste storage.

Post Construction

- The need for and extent of site restoration will be determined in coordination with USFWS, TPWD and the landowner.
- The Project management plan will provide a report describing the implementation of BMPs and their effectiveness at the completion of the Project. Documentation of completion of any mitigation actions will be included in the report. Mitigation will be developed in coordination with USFWS.

Facility Operations

- Security lighting along fences and other facilities will be designed to minimize light pollution beyond the designated security zone while achieving light levels needed for safety and operational purposes.

Additional General Recommendations

- RG Developers will report all newly discovered aplomado falcon active nests within one (1) day, and new aplomado falcon sightings within three (3) days, to the USFWS Texas Coastal ESFO - Corpus Christi at 817-277-110.
- RG Developers will minimize incidental take through BMPs and coordination with USFWS Texas Coastal ESFO - Corpus Christi.

APPENDIX O

LOCATION OF ADDITIONAL TEMPORARY WORKSPACE FOR THE RIO BRAVO PIPELINE SYSTEM

Appendix O Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Header System							
Jim Wells County	ATWS-HS-21	HS-2.1	HS-2.1	0.2	350 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kleberg County	ATWS-HS-20	HS-1.7	HS-1.7	0.1	100 x 25	Open Land, Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kleberg County	ATWS-HS-19	HS-1.6	HS-1.6	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-HS-18	HS-1.6	HS-1.6	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-HS-17	HS-1.0	HS-1.0	0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-HS-16	HS-1.0	HS-1.0	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-HS-15	HS-0.9	1.0	0.1	150 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kleberg County	ATWS-HS-14	HS-0.9	HS-0.9	0.1	100 x 25	Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kleberg County	ATWS-HS-13	HS-0.8	HS-0.9	0.1	150 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kleberg County	ATWS-HS-12	HS-0.8	HS-0.9	0.1	150 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kleberg County	ATWS-HS-11	HS-0.7	HS-0.8	0.1	200 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kleberg County	ATWS-HS-10	HS-0.6	HS-0.6	0.1	150 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kleberg County	ATWS-HS-09	HS-0.6	HS-0.6	0.1	150 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kleberg County	ATWS-HS-08	HS-0.5	HS-0.5	0.1	75 x 25	Open Land	Foreign Pipeline Crossing and Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kleberg County	ATWS-HS-07	HS-0.4	HS-0.5	0.1	225 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kleberg County	ATWS-HS-06	HS-0.3	HS-0.3	0.1	100 x 25	Upland Shrub / Forest Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage and Foreign Pipeline Crossing
Kleberg County	ATWS-HS-05	HS-0.3	HS-0.3	0.1	100 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-HS-04	HS-0.2	HS-0.3	0.1	250 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing and Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-HS-03	HS-0.2	HS-0.2	0.1	207 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing and Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-HS-02	HS-0.1	HS-0.1	0.2	410 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing and Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-HS-01	HS-<0.1	HS-<0.1	0.1	163 x 25	Upland Shrub / Forest Land	Foreign Pipeline Crossing and Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Pipelines 1 and 2							
Kleberg County	ATWS-002	0.5	0.5	0.1	150 x 25	Open Land	Foreign Pipeline Crossing
Kleberg County	ATWS-003	0.8	0.8	0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-004	0.8	0.8	<0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-005	0.8	0.8	0.1	155 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kleberg County	ATWS-006	0.8	0.8	0.1	150 x 25	Open Land	Foreign Pipeline Crossing and Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-007	0.9	0.9	0.1	110 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-008	0.9	0.9	0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-009	0.9	0.9	0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-010	2.6	2.69	0.1	75 x 25	Open Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Kleberg County	ATWS-011	2.7	2.7	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Kleberg County	ATWS-012	3.2	3.2	0.1	100 x 25	Open Land, Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kleberg County	ATWS-013	3.2	3.2	0.1	251 x 25	Open Land	Point of Inflection requiring additional spoil storage, Foreign Pipeline Crossing, and Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-014	3.2	3.2	0.1	75 x 25	Open Land	Point of Inflection requiring additional spoil storage, Foreign Pipeline Crossing, and Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-015	3.2	3.3	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kleberg County	ATWS-016	3.3	3.3	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-017	3.4	3.4	0.1	150 x 25	Open Land	Foreign Pipeline Crossing
Kleberg County	ATWS-018	3.4	3.5	0.1	100 x 25	Open Land	Point of Inflection requiring additional spoil storage
Kleberg County	ATWS-019	3.5	3.5	0.1	100 x 25	Open Land	Point of Inflection requiring additional spoil storage
Kleberg County	ATWS-020	4.4	4.4	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-021	4.4	4.4	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-022	4.4	4.5	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-023	4.4	4.5	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-024	5.05	5.07	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-025	5.07	5.09	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-026	5.08	5.1	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-027	5.1	5.12	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATW-028	5.6	5.7	0.1	75 x 25	Upland Shrub / Forest Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kleberg County	ATWS-029	5.7	5.7	0.1	75 x 25	Upland Shrub / Forest Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Kleberg County	ATWS-030	7.4	7.4	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-031	7.4	7.4	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-032	7.4	7.5	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-033	7.5	7.5	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-034	8.6	8.7	0.1	75 x 25	Open Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Kleberg County	ATWS-035	8.7	8.7	0.1	75 x 25	Open Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Kleberg County	ATWS-036	8.9	8.9	0.1	75 x 25	Open Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Kleberg County	ATWS-037	8.9	8.9	<0.1	75 x 25	Open Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Kleberg County	ATWS-038	11.6	11.6	0.1	125 x 25	Open Land	Foreign Pipeline Crossing and Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-039	11.6	11.6	0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kleberg County	ATWS-040	12.7	12.7	0.1	150 x 25	Open Land	Foreign Pipeline Crossing

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kleberg County	ATWS-041	13.7	13.7	0.1	150 x 25	Open Land	Foreign Pipeline Crossing
Kleberg County	ATWS-042	15.6	15.6	0.1	150 x 25	Open Land	Foreign Pipeline Crossing
Kleberg County	ATWS-043	17.6	17.7	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-044	17.7	17.7	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-045	17.7	17.7	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-046	17.7	17.7	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-047	17.9	18.0	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-048	17.9	18.0	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-049	18.0	18.0	0.1	75 x 25	Upland Shrub / Forest Land, Industrial / Commercial	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-050	18.0	18.0	0.1	75 x 25	Open Land, Upland Shrub / Forest Land, Industrial / Commercial	Road Crossing; road will be bored and bore equipment staging requires additional space
Kleberg County	ATWS-051	18.5	18.5	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kleberg County	ATWS-052	18.5	18.6	0.5	324 x 75	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage and additional bore pull back area for Horizontal Directional Drill operations

Appendix O (continued)
Location of Additional Temporary Workspace for the Rio Bravo Pipeline System

County	ATWS ID	Start MP	End MP	Acres	Dimension (feet)	Existing Land Use	Justification
Kleberg County	ATWS-053	18.6	18.6	<0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kleberg County	ATWS-054	18.8	18.8	0.2	200 x 50	Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Kleberg County	ATWS-055	18.8	18.8	0.1	200 x 25	Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Kenedy County	ATWS-056	19.1	19.1	0.2	200 x 50	Open Land, Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Kenedy County	ATWS-057	19.1	19.1	<0.1	84 x 44	Open Land	Canal Crossing; Horizontal Directional Drill operations
Kenedy County	ATWS-058	19.4	19.5	0.1	150 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kenedy County	ATWS-059	19.8	19.8	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-060	20.2	20.3	0.1	150 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kenedy County	ATWS-061	23.0	23.0	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-062	23.0	23.0	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-063	23.0	23.0	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-064	23.0	23.1	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-065	23.8	23.8	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-066	25.4	25.5	0.1	200 x 25	Open Land	Foreign Pipeline Crossing
Kenedy County	ATWS-067	27.4	27.5	0.1	150 x 25	Open Land	Foreign Pipeline Crossing
Kenedy County	ATWS-068	27.7	27.7	0.1	150 x 25	Open Land, Upland Shrub / Forest Land	Foreign Pipeline Crossing

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	ATWS ID	Start MP	End MP	Acres	Dimension (feet)	Existing Land Use	Justification
Kenedy County	ATWS-069	27.8	27.9	0.1	150 x 25	Upland Shrub / Forest Land	Foreign Pipeline Crossing
Kenedy County	ATWS-070	29.1	29.1	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-071	29.2	29.3	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-072	29.8	29.8	0.1	100 x 25	Open Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-073	30.0	30.0	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-074	30.6	30.6	0.1	150 x 25	Open Land	Foreign Pipeline Crossing
Kenedy County	ATWS-075	30.7	30.7	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-076	30.7	30.7	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-077	30.7	30.7	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-078	30.7	30.7	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-079	31.0	31.0	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-080	32.2	32.2	0.1	150 x 25	Open Land	Foreign Pipeline Crossing
Kenedy County	ATWS-081	33.9	34.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-082	33.9	34.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-083	34.0	34.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kenedy County	ATWS-084	34.0	34.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-085	35.0	35.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-086	35.0	35.0	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-087	35.0	35.1	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-088	35.0	35.1	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-089	37.3	37.4	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-090	37.8	37.8	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-091	37.8	37.8	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-092	37.8	37.8	0.1	108 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-093	37.8	37.9	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-094	37.9	37.9	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-095	38.1	38.1	0.1	103 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kenedy County	ATWS-096	38.1	38.1	0.1	100 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-097	40.7	40.8	0.1	150 x 25	Open Land	Foreign Pipeline Crossing
Kenedy County	ATWS-098	41.0	41.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-099	41.0	41.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-100	41.0	41.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-101	41.0	41.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-102	41.8	41.8	0.1	100 x 25	Open Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-103	42.3	42.3	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-104	42.3	42.3	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-105	42.3	42.3	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-106	42.3	42.3	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-107	43.5	43.5	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-108	43.5	43.6	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kenedy County	ATWS-109	43.6	43.6	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-110	43.6	43.6	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-111	43.6	43.6	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-112	43.8	43.8	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-113	43.8	43.9	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-114	43.9	43.9	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-115	43.9	43.9	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-116	49.0	49.0	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-117	49.0	49.0	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-118	49.0	49.0	0.1	179 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-119	49.0	49.0	0.1	68 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-120	49.0	49.0	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kenedy County	ATWS-121	49.0	49.0	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-122	49.5	49.6	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-123	49.6	49.6	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-124	49.6	49.6	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-125	49.6	49.6	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-126	51.8	51.8	0.1	100 x 25	Open Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-127	52.9	52.9	0.1	100 x 25	Open Land	Point of Inflection requiring additional spoil storage
Kenedy County	ATWS-128	53.2	53.2	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-129	53.2	53.2	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-130	53.2	53.2	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-131	53.2	53.2	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-132	54.0	54.1	0.1	150 x 25	Open Land	Point of Inflection requiring additional spoil storage

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kenedy County	ATWS-133	58.8	58.8	<0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kenedy County	ATWS-134	58.8	58.9	<0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kenedy County	ATWS-135	58.8	58.9	<0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kenedy County	ATWS-136	59.8	59.8	0.1	150 x 25	Open Land	Foreign Pipeline Crossing
Kenedy County	ATWS-137	60.0	60.0	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-138	60.0	60.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-139	60.0	60.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-140	60.0	60.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-141	61.8	61.8	<0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-142	61.8	61.8	<0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-143	61.8	61.9	<0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-144	61.8	61.9	<0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kenedy County	ATWS-145	62.6	62.6	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-146	62.6	62.6	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-147	62.6	62.6	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-148	62.6	62.7	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-149	63.0	63.0	0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Kenedy County	ATWS-150	63.1	63.1	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-151	63.1	63.1	0.1	75 x 25	Open Land, Industrial / Commercial	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-152	63.1	63.1	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-153	63.6	63.6	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-154	63.6	63.6	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-155	63.6	63.6	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-156	63.6	63.6	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Kenedy County	ATWS-157	64.4	64.4	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-158	64.4	64.4	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-159	64.4	64.4	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-160	64.4	64.4	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-161	66.0	66.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-162	66.0	66.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-163	66.0	66.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Kenedy County	ATWS-164	66.0	66.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-165	67.0	67.1	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-166	67.0	67.1	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-167	67.1	67.1	<0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-168	67.1	67.1	<0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued)
Location of Additional Temporary Workspace for the Rio Bravo Pipeline System

County	ATWS ID	Start MP	End MP	Acres	Dimension (feet)	Existing Land Use	Justification
Willacy County	ATWS-169	68.9	68.9	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-170	68.9	68.9	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-171	68.9	69.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-172	69.0	69.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-173	69.8	69.8	0.1	118 x 25	Upland Shrub / Forest Land, Industrial / Commercial	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-174	69.8	69.8	0.2	409 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-175	69.9	69.9	0.1	100 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-176	69.9	69.9	0.1	100 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-177	71.6	71.6	0.1	150 x 25	Upland Shrub / Forest Land	Foreign Pipeline Crossing
Willacy County	ATWS-178	72.3	72.3	0.1	150 x 25	Upland Shrub / Forest Land	Foreign Pipeline Crossing
Willacy County	ATWS-179	74.4	74.4	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Willacy County	ATWS-180	74.4	74.4	<0.1	75 x 25	Open Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage

Appendix O (continued)
Location of Additional Temporary Workspace for the Rio Bravo Pipeline System

County	ATWS ID	Start MP	End MP	Acres	Dimension (feet)	Existing Land Use	Justification
Willacy County	ATWS-181	75.3	75.3	0.1	100 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Willacy County	ATWS-182	75.4	75.4	0.1	100 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Willacy County	ATWS-183	76.4	76.5	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-184	76.4	76.5	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-185	76.5	76.5	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-186	76.5	76.5	<0.1	75 x 25	Open Land, Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-187	77.6	77.6	0.3	200 x 75	Agricultural Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Willacy County	ATWS-188	77.9	77.9	0.3	200 x 75	Agricultural Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Willacy County	ATWS-189	78.7	78.9	2.5	1,475 x 75	Agricultural Land	Horizontal Directional Drill operations at Point of Inflection requiring Bore Pull Back area and additional spoil storage for bell hole tie-in
Willacy County	ATWS-423	78.9	78.9	0.4	200 x 50	Agricultural Land	Horizontal Directional Drill operations
Willacy County	ATWS-190	78.9	78.9	<0.1	42 x 25	Agricultural Land	Horizontal Directional Drill operations
Willacy County	ATWS-191	79.2	79.2	0.2	200 x 50	Agricultural Land	Horizontal Directional Drill operations
Willacy County	ATWS-192	79.2	79.2	0.1	200 x 25	Agricultural Land	Horizontal Directional Drill operations
Willacy County	ATWS-193	79.6	79.7	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Willacy County	ATWS-194	79.68	79.7	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-195	79.7	79.7	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-196	79.7	79.7	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-197	80.0	80.0	0.1	100 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Willacy County	ATWS-198	80.1	80.1	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-199	80.1	80.1	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-200	80.1	80.1	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-201	80.1	80.1	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-202	81.9	81.9	0.1	100 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Willacy County	ATWS-203	82.0	82.0	0.2	200 x 50	Agricultural Land	Adjacent to Horizontal Directional Drill operations wetland crossing, additional spoil storage required in upland area
Willacy County	ATWS-204	82.0	82.0	0.1	200 x 25	Agricultural Land	Adjacent to Horizontal Directional Drill operations wetland crossing, additional spoil storage required in upland area
Willacy County	ATWS-205	82.6	82.6	0.2	200 x 50	Agricultural Land	Adjacent to Horizontal Directional Drill operations wetland crossing, additional spoil storage required in upland area

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Willacy County	ATWS-206	82.6	82.6	0.1	200 x 25	Agricultural Land	Adjacent to Horizontal Directional Drill operations wetland crossing, additional spoil storage required in upland area
Willacy County	ATWS-207	83.5	83.6	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-208	83.6	83.6	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-209	83.6	83.6	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-210	83.6	83.6	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-211	83.8	83.8	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-212	83.8	83.9	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-213	83.9	83.9	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-214	83.9	84.0	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-215	86.4	86.4	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-216	86.4	86.4	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-217	86.7	86.7	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-218	86.7	86.7	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations

Appendix O (continued)
Location of Additional Temporary Workspace for the Rio Bravo Pipeline System

County	ATWS ID	Start MP	End MP	Acres	Dimension (feet)	Existing Land Use	Justification
Willacy County	ATWS-219	87.9	88.0	0.1	150 x 25	Upland Shrub / Forest Land	Adjacent to wetland crossing, additional spoil storage required in upland area
Willacy County	ATWS-220	88.4	88.5	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-221	88.4	88.5	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-222	88.5	88.5	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-223	88.5	88.5	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-224	89.5	89.5	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-225	89.5	89.5	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-226	89.5	89.5	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-227	89.5	89.5	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-228	90.8	90.8	0.1	100 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-229	90.8	90.8	0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-230	90.8	90.9	0.1	87 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Willacy County	ATWS-231	90.9	90.9	<0.1	75 x 25	Agricultural Land	Foreign Pipeline Crossing
Willacy County	ATWS-232	90.9	90.9	<0.1	75 x 25	Agricultural Land	Foreign Pipeline Crossing
Willacy County	ATWS-233	90.9	91.0	0.1	200 x 25	Agricultural Land	Foreign Pipeline Crossing
Willacy County	ATWS-234	91.7	91.7	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Willacy County	ATWS-235	91.7	91.7	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Willacy County	ATWS-236	91.7	91.7	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Willacy County	ATWS-237	91.7	91.7	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Willacy County	ATWS-238	91.9	91.9	0.2	200 x 50	Agricultural Land	Horizontal Directional Drill operations crossing under canal
Willacy County	ATWS-239	91.9	91.9	0.1	200 x 25	Agricultural Land	Horizontal Directional Drill operations crossing under canal
Willacy County	ATWS-240	92.2	92.2	0.2	200 x 50	Agricultural Land	Horizontal Directional Drill operations crossing under canal
Willacy County	ATWS-241	92.2	92.2	0.1	200 x 25	Agricultural Land	Horizontal Directional Drill operations crossing under canal
Willacy County	ATWS-242	92.5	92.5	0.1	100 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Willacy County	ATWS-243	92.8	92.8	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-244	92.8	92.8	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-245	92.8	92.8	<0.1	75 x 25	Open Land, Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Willacy County	ATWS-246	92.8	92.8	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-247	92.9	93.0	0.1	57 x 50	Open Land, Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-248	92.9	93.0	0.2	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-249	93.6	93.7	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-250	93.6	93.7	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-251	94.2	94.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-252	94.2	94.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-253	94.2	94.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-254	94.2	94.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-255	94.6	94.6	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-256	94.6	94.6	0.1	166 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-257	94.9	94.9	0.3	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-258	94.9	94.9	<0.1	48 x 25	Open Land, Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-259	95.2	95.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Willacy County	ATWS-260	95.2	95.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-261	95.2	95.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-262	95.2	95.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Willacy County	ATWS-263	97.0	97.1	0.1	100 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Willacy County	ATWS-264	98.6	98.6	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-265	98.6	98.6	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-266	98.9	99.0	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-267	98.9	99.0	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-268	99.8	99.8	0.2	200 x 50	Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Willacy County	ATWS-269	99.8	99.8	0.1	200 x 25	Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-270	100.2	100.2	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-271	100.2	100.2	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-272	100.4	100.4	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-273	100.4	100.4	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Cameron County	ATWS-274	100.4	100.5	0.1	314 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space and Point of Inflection requiring additional spoil storage
Cameron County	ATWS-275	100.4	100.5	<0.1	40 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space and Point of Inflection requiring additional spoil storage
Cameron County	ATWS-276	100.5	100.5	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-277	100.5	100.5	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-278	100.9	101.0	0.1	203 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-279	101.1	101.2	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-280	101.1	101.2	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-281	101.5	101.5	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-282	101.5	101.5	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-283	101.9	101.9	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-284	101.9	101.9	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-285	101.9	101.9	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Cameron County	ATWS-286	101.9	101.9	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-287	102.0	102.0	0.2	200 x 50	Agricultural Land, Upland Shrub / Forested Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-288	102.0	102.0	0.1	200 x 25	Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-289	102.3	102.3	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-290	102.3	102.3	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-291	102.4	102.5	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-292	102.5	102.5	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-293	102.5	102.5	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-294	102.5	102.5	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-295	102.9	102.9	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required (no Horizontal Directional Drill operations)
Cameron County	ATWS-296	102.9	102.9	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required (no Horizontal Directional Drill operations)
Cameron County	ATWS-297	103.2	103.3	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required (no Horizontal Directional Drill operations)

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Cameron County	ATWS-298	103.3	103.3	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required (no Horizontal Directional Drill operations)
Cameron County	ATWS-299	103.7	103.8	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required (no Horizontal Directional Drill operations)
Cameron County	ATWS-300	103.8	103.8	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required (no Horizontal Directional Drill operations)
Cameron County	ATWS-301	104.9	104.9	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-302	104.9	104.9	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-303	105.0	105.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-304	105.0	105.0	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-305	105.8	105.8	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required and Point of Inflection requiring additional spoil storage
Cameron County	ATWS-306	105.8	105.9	0.1	150 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-307	106.2	106.2	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required

Appendix O (continued)
Location of Additional Temporary Workspace for the Rio Bravo Pipeline System

County	ATWS ID	Start MP	End MP	Acres	Dimension (feet)	Existing Land Use	Justification
Cameron County	ATWS-308	106.2	106.2	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-309	107.4	107.4	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-310	107.4	107.5	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-311	107.6	107.6	<0.1	75 x 25	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-312	107.6	107.6	<0.1	75 x 25	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-313	107.6	107.6	<0.1	75 x 25	Open Land, Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-314	107.6	107.6	<0.1	75 x 25	Open Land, Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-315	110.6	110.6	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-316	110.6	110.6	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-317	110.6	110.6	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-318	110.6	110.6	<0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-319	111.9	112.0	0.1	100 x 25	Upland Shrub / Forest Land	Point of Inflection requiring additional spoil storage

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Cameron County	ATWS-320	112.7	112.7	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-321	112.7	112.8	0.1	150 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-322	112.8	112.8	0.1	75 x 25	Open Land, Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-327	113+9,317[a]	113+9,380[a]	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-328	113+9,129[a]	113+9,233[a]	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-329	113+9,380[a]	113+9,469[a]	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-330	113+9,222[a]	113+9,327[a]	0.1	75 x 25	Upland Shrub / Forest Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-333	115.6	115.6	0.6	200 x 125	Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-335	115.9	115.9	0.6	200 x 125	Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-337	116.3	116.3	0.6	200 x 125	Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-339	116.6	116.6	0.6	200 x 125	Open Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-343	117.1	117.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-344	117.1	117.2	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Cameron County	ATWS-345	118.2	118.4	0.1	200 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-346	118.3	118.4	3.0	1,768 x 75	Agricultural Land	Horizontal Directional Drill operations at Point of Inflection requiring Bore Pull Back area and additional spoil storage for bell hole tie-in
Cameron County	ATWS-347	118.6	118.6	0.2	200 x 50	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-348	118.6	118.6	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-349	119.2	119.2	0.1	62 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-350	119.26	119.2	0.1	200 x 25	Agricultural Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-351	119.3	119.3	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-352	119.4	119.5	0.1	100 x 35	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-353	119.5	119.5	0.1	75 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage and Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-354	119.6	119.6	0.1	75 x 25	Open Land, Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-355	119.6	119.6	0.1	75 x 25	Open Land, Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-356	119.6	119.6	0.1	75 x 25	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Cameron County	ATWS-357	119.6	119.6	0.1	75 x 25	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-358	119.9	119.9	0.1	202 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-359	120.0	120.0	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-360	120.0	120.0	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-361	120.0	120.0	<0.1	75 x 25	Open Land, Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-362	120.0	120.0	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-363	120.2	120.2	0.1	100 x 25	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-364	120.5	120.5	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-365	120.5	120.5	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space and Point of Inflection requiring additional spoil storage
Cameron County	ATWS-366	120.5	120.5	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space and Point of Inflection requiring additional spoil storage
Cameron County	ATWS-367	120.7	120.7	0.1	75 x 25	Open Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Cameron County	ATWS-368	120.7	120.8	0.1	75 x 25	Agricultural Land, Upland Shrub / Forested Land	Stream Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-369	121.2	121.3	0.1	100 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-370	121.3	121.3	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-371	121.3	121.3	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-372	121.3	121.3	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-373	121.3	121.3	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-374	121.5	121.5	1.0	75 x 25	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-375	121.5	121.5	1.0	75 x 25	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-376	121.6	121.6	<0.1	75 x 25	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-377	121.6	121.6	<0.1	75 x 25	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-378	121.9	122.0	0.1	166 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-379	121.9	122.0	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Cameron County	ATWS-380	122.0	122.0	0.2	250 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-381	122.0	122.0	0.1	100 x 35	Agricultural Land	Canal Crossing; feature will be crossed using dry ditch method and additional upland staging is required
Cameron County	ATWS-382	122.1	122.1	0.1	100 x 25	Agricultural Land	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-383	123.3	123.3	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-384	123.3	123.3	<0.1	75 x 25	Agricultural Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-385	123.42	123.4	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-386	123.4	123.4	<0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-387	123.6	123.7	0.1	100 x 25	Open Land	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-388	123.9	124.0	0.2	200 x 50	Open Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-389	123.9	124.0	0.1	200 x 25	Open Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-390	124.3	124.3	0.2	200 x 50	Open Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-391	124.3	124.3	0.1	200 x 25	Open Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-392	124.6	124.6	0.1	100 x 25	Open Land	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-393	124.7	124.8	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space

Appendix O (continued)
Location of Additional Temporary Workspace for the Rio Bravo Pipeline System

County	ATWS ID	Start MP	End MP	Acres	Dimension (feet)	Existing Land Use	Justification
Cameron County	ATWS-394	124.8	124.8	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-395	124.8	124.8	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-396	124.8	124.8	0.1	75 x 25	Open Land	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-397	125.7	125.8	0.1	150 x 25	Emergent Wetlands	Foreign Pipeline Crossing
Cameron County	ATWS-398	125.9	125.9	0.1	100 x 25	Emergent Wetlands	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-399	126.5	126.97	2.6	2,294 x 50	Emergent Wetlands	Adjacent to wetland crossing, additional spoil storage required in upland area
Cameron County	ATWS-400	126.5	126.9	1.3	2,286 x 25	Emergent Wetlands	Adjacent to wetland crossing, additional spoil storage required in upland areas
Cameron County	ATWS-401	127.6	127.6	0.1	100 x 25	Emergent Wetlands	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-402	128.7	128.7	0.1	100 x 25	Emergent Wetlands	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-403	129.0	129.2	1.3	1,169 x 50	Barren	Adjacent to wetland crossing, additional spoil storage required in upland areas
Cameron County	ATWS-404	129.0	129.2	1.4	1,227 x 50	Upland Shrub / Forest Land	Adjacent to wetland crossing, additional spoil storage required in upland areas
Cameron County	ATWS-424	130.4	130.5	0.2	200 x 50	Open Land, Upland Shrub / Forest Land	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-407	130.8	130.8	0.3	200 x 75	Emergent Wetlands	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-408	130.8	130.8	0.1	200 x 25	Emergent Wetlands	Canal Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-409	130.9	130.9	0.1	100 x 25	Emergent Wetlands	Point of Inflection requiring additional spoil storage
Cameron County	ATWS-410	131.2	131.3	0.4	772 x 25	Upland Shrub / Forest Land	Adjacent to wetland crossing, additional spoil storage required in upland area

Appendix O (continued) Location of Additional Temporary Workspace for the Rio Bravo Pipeline System							
County	**ATWS ID**	**Start MP**	**End MP**	**Acres**	**Dimension (feet)**	**Existing Land Use**	**Justification**
Cameron County	ATWS-411	131.2	131.4	0.4	779 x 25	Upland Shrub / Forest Land	Adjacent to wetland crossing, additional spoil storage required in upland area
Cameron County	ATWS-412	131.5	131.56	0.1	75 x 50	Upland Shrub / Forest Land, Emergent Wetlands, Industrial / Commercial	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-413	131.5	131.5	<0.1	75 x 25	Upland Shrub / Forest Land, Emergent Wetlands, Industrial / Commercial	Road Crossing; road will be bored and bore equipment staging requires additional space
Cameron County	ATWS-414	131.5	131.5	0.2	253 x 50	Emergent Wetlands, Industrial / Commercial	Road Crossing; road will be bored and bore equipment staging requires additional space and Point of Inflection requiring additional spoil storage
Cameron County	ATWS-415	131.5	131.6	<0.1	75 x 25	Emergent Wetlands, Industrial / Commercial	Additional space, or road will be open cut and requires an additional 2 feet of excavation and additional spoil storage
Cameron County	ATWS-416	132.8	132.9	0.1	65 x 75	Emergent Wetlands	Canal and Wetland Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-417	132.8	132.9	0.2	200 x 25	Emergent Wetlands	Canal and Wetland Crossing; Horizontal Directional Drill operations
Cameron County	ATWS-418	133.7	133.8	0.2	200 x 50	Upland Shrub / Forest Land	Canal and Wetland Crossing; Horizontal Directional Drill operations

[a] Due to a short re-route since issuance of the draft EIS, the beginning and ending milepost is presented as feet downstream of the nearest original milepost.

APPENDIX P

AIR CUMULATIVE ANALYSIS

CUMULATIVE AIR QUALITY IMPACTS DURING LNG TERMINAL OPERATIONS

Introduction

Many of the public scoping comments issued for the Rio Grande LNG Project express concern over cumulative air quality impacts from emissions of the three LNG terminals proposed along the BSC. Therefore, we conducted a cumulative impact analysis to quantify the impacts of simultaneous operation of all three planned terminals. As discussed in section 4.11.1 of the EIS, a full NAAQS analysis (including existing and permitted emissions sources) is required in the TCEQ air permitting process for Rio Grande LNG's PSD Permit for 1-hour and annual NO_2 for the LNG Terminal. However, the full PSD NAAQS Analysis prepared for TCEQ is not required to include the mobile sources (e.g., LNG tankers and support vessels), or stationary sources from other project that are planned, but have not yet been permitted. Therefore, we conducted a cumulative impact assessment to estimate the criteria pollutant concentrations during concurrent operation of the three proposed Brownsville LNG Terminals. Our assessment also includes the remaining criteria pollutants and averaging periods for which dispersion modeling was conducted. The methods, results, and conclusions are summarized below.

Methodology

The predicted ambient air quality impacts from the operation of the Rio Grande LNG, Texas LNG, and Annova LNG Terminals were used assess the predicted potential cumulative impacts during concurrent operation of all three facilities. The cumulative impacts were compiled for five criteria pollutants (NO_2, CO, $PM_{2.5}$, PM_{10}, and SO_2) at specified averaging periods (e.g., 1-hour, 8-hour, 24-hour, and annual) for comparison to the primary NAAQS.

Each applicant provided air dispersion modeling results for operation of their project at full buildout. The emissions from operation of the projects included both the stationary emission sources at the LNG terminal and the mobile sources (e.g., LNG tankers and support vessels) within the moored safety zone. The modeling results for the Rio Grande LNG Terminal also include RB Pipeline's proposed Compressor Station 3, located within the Rio Grande LNG Terminal site.

Impacts from each of the three projects were predicted using the same standardized receptor grid, so that the predicted impacts could be compiled at the same spatial locations. The standardized receptor grid included 30,000 receptors laid out in three nested receptor grids; 10,000 fine receptors with 150-meter spacing, 10,000 medium receptors with 450-meter spacing, and 10,000 coarse receptors with 1,000-meter spacing; to provide increased coverage in the vicinity of the three projects, where higher impacts are predicted. Table O.1-1 includes the detailed parameters used to develop the standardized receptor grid.

Table O.1-1 Receptor Grid Coordinates					
Description	Southwest Corner		Spacing (m)	Grid Extent (km)	Grid Matrix Configuration
	UTM Easting (m)	UTM Northing (m)			
Grid Centerpoint	677718.13	2879943.75	N/A	N/A	100 x 100 (10,000)
Fine Receptors	670218.13	2872443.75	150	15 x 15	100 x 100 (10,000)
Medium Receptors	655218.13	2857443.75	450	45 x 45	100 x 100 (10,000)
Coarse Receptors	627718.13	2829943.75	1,000	100 x 100	100 x 100 (10,000)

The modeling was conducted using the parameters established for each applicant's air quality impacts analysis; therefore, some of the model assumptions differ between the analyses. Specific examples of variation described below include the meteorological data inputs and concentration ranks used to quantify model outputs. The detailed modeling methodologies for each project are available on the FERC docket for each project.[1]

Observation-based meteorological data are used in air dispersion modeling to establish the atmospheric conditions near a pollutant source, and allow the model to predict the dispersion of pollutants based on site-specific conditions. The Annova and Texas LNG assessments are based on 1-year meteorological data, while the Rio Grande LNG used 5-year meteorological data.

In addition, as depicted in table O.1-2, in some cases, the applicants used concentration ranks that differ from TCEQ modeling guidance.[2] Concentration ranks are statistically-determined, and higher concentration ranks are more conservative. For example, TCEQ recommends that, when using 1-year meteorological data, the maximum high, first high (H1H) value should be reported for 1-hour NO_2; however, Texas LNG provided the maximum high, eighth high (H8H) value, which is lower and therefore less conservative than TCEQ's recommendation.

1 The air dispersion model protocols are available on FERC's eLibrary website, located at http://www.ferc.gov/docs-filing/elibrary.asp, by searching Docket Number CP16-454 or CP16-455 and accession number 20170224-5143 for the Rio Grande LNG Project; Docket Number CP16-116 and accession numbers 20170928-5165 and 20171212-5161 for the Texas LNG Project, and Docket Number CP16-480 and accession number 20160713-4004 for the Annova LNG Project.

2 Texas Commission on Environmental Quality. 2015. Air Quality Modeling Guidelines, APDG 6232. Online at: https://www.tceq.texas.gov/assets/public/permitting/air/Modeling/guidance/airquality-mod-guidelines6232.pdf.

Table O.1-2
Concentration Ranks for Each Criteria Pollutant at Each Averaging Period in Air Dispersion Modeling

Pollutant	Averaging Period	Concentration Rank			TCEQ Guidance
		Annova LNG	Rio Grande LNG	Texas LNG	
CO	1-hour	H2H	H2H	H2H	For full NAAQS Analysis, when using one year of meteorological data, report the maximum H1H. When using five years of meteorological data, report the maximum H2H.
	8-hour	H2H	H2H	H2H	
NO_2	1-hour	H1H	8th Highest Max Daily 1-hour values averaged over 5 years	8th Highest Maximum Daily 1-hour values averaged over 1 year	For full NAAQS Analysis, when using one year of meteorological data, report the maximum H1H. When using five years of meteorological data, report the maximum H8H.
	Annual	Annual values averaged across 1 year	Annual values averaged across 1 year	Annual values averaged across 1 year	
SO_2	1-hour	H1H	H4H	4th Highest Maximum Daily 1-hour values averaged over 1 year	For full NAAQS Analysis, when using one year of meteorological data, report the maximum H1H. When using five years of meteorological data, report the maximum H4H.
PM_{10}	24-hour	H1H	H6H (did not use concatenated meteorological data)	H6H	For full NAAQS Analysis, when using one year of meteorological data, report the maximum H1H. When using five years of meteorological data, report the maximum H6H for the concatenated 5-year period.
$PM_{2.5}$	24-hour	H1H	H8H	8th Highest Maximum Daily 1-hour values averaged over 1 year	For full NAAQS Analysis, when using one year of meteorological data, report the maximum H1H. When using five years of meteorological data, report the maximum 5-year average of H8H for each receptor.
	Annual	Annual values averaged across 1 year	Annual values averaged across 1 year	Annual values averaged across 1 year	Annual values averaged across 1 year

Pollutant concentrations for given averaging periods from the three projects were combined with a background concentration to develop the cumulative impacts. The results of the cumulative assessment are provided below.

Results and Conclusions

Figures O-1 through O-8 depict the cumulative impact assessment based on the air pollutant dispersion model output provided for the Rio Grande LNG, Texas LNG, and Annova LNG terminals. The estimated cumulative peak concentration is based on combining the predicted concentrations from each project at each receptor location regardless of the time when is occurs. Since the timing and location of the maximum predicted impacts from each terminal would differ, the method used to develop the peak cumulative concentrations is conservative. The cumulative concentrations were compared to the NAAQS. While this cumulative analysis does not follow the methodology prescribed in a full impacts analysis that would be conducted as a part of the Federal PSD permitting process set by EPA to assess stationary source project impacts to the NAAQS, the primary NAAQS represent standardized air quality criteria and were therefore used as a benchmark for comparison against model results. Table O.1-3 summarizes the peak concentrations estimated for concurrent operation of the three projects.

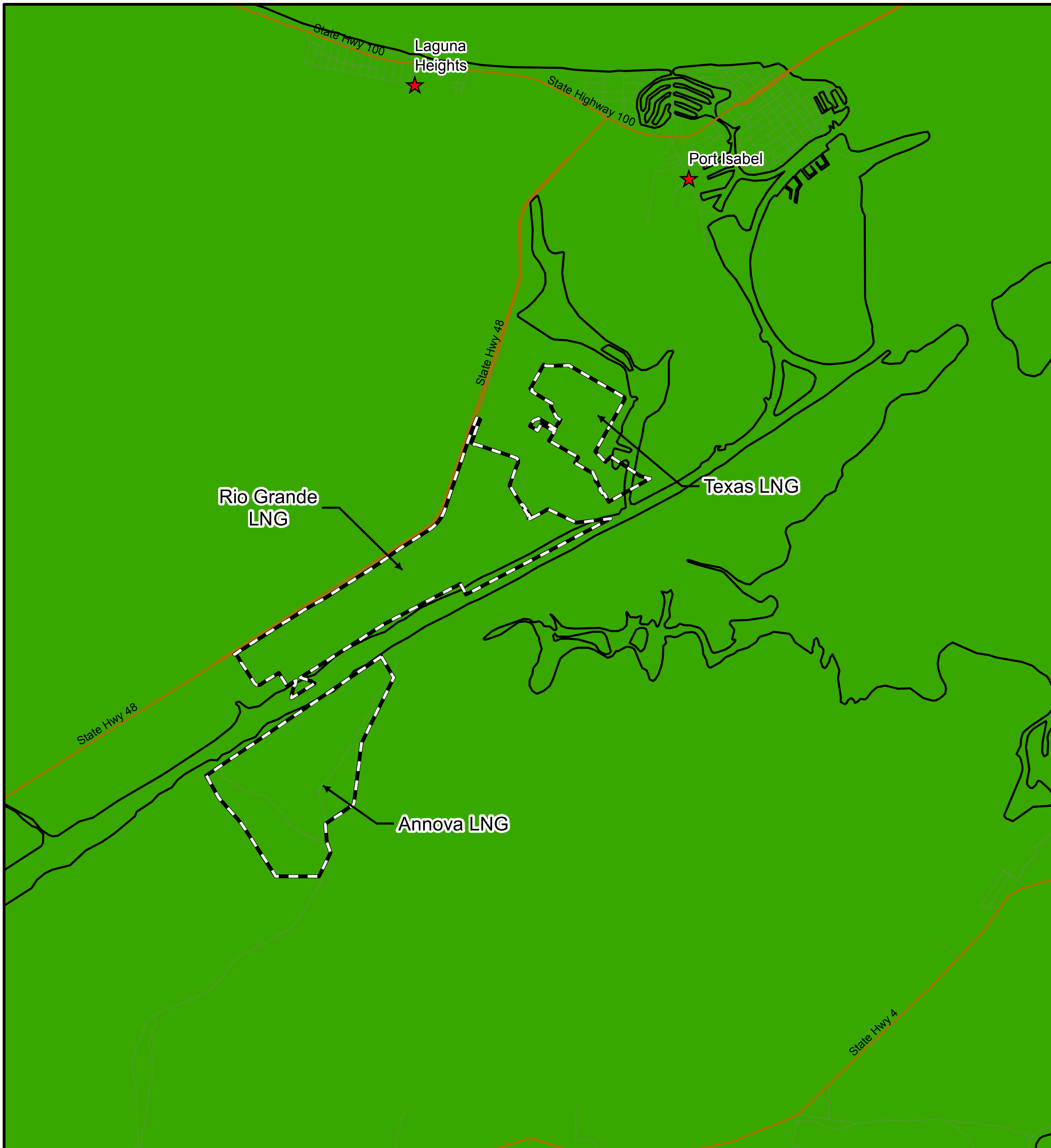
Table O.1-3
Peak Concentrations Estimated in Cumulative Air Dispersion Modeling for Stationary Source and LNG Vessels for the Brownsville LNG Projects

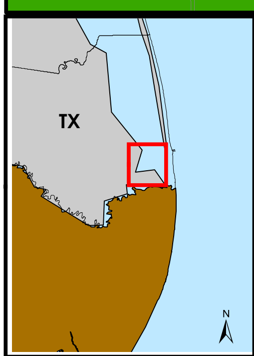
Criteria Air Pollutant	Averaging Period	Background Concentration[a] (µg/m³)	Peak Concentration based on Modeled Results (µg/m³)[b]			NAAQS (µg/m³)
			Peak Concentration[c]	Laguna Heights	Port Isabel	
CO	1-hour	2,175.5	2,746	2,337	2,324	40,000
	8-hour	1,259.5	1,453	1,294	1,290	10,000
NO_2	1-hour	49.9	196	73	72	188
	Annual	6.1	9	6	6	100
SO_2	1-hour	10.6	23	14	14	196
PM_{10}	24-hour	62.0	64	62	62	150
$PM_{2.5}$	24-hour	22.9	25	23	23	35
	Annual	9.1	9	9	9	12

a Background concentrations retrieved from Tables 4-1 and 4-2 of dispersion modeling report provided for the Texas LNG project (available on FERC's eLibrary website, located at http://www.ferc.gov/docs-filing/elibrary.asp, by searching Docket Number CP16-116 and accession numbers 20170928-5165).
b Modeled impacts include stationary sources and LNG Vessels at the LNG Terminal sites.
c Peak concentrations predicted for each of the three projects for each receptor location were conservatively combined without regard to day or time of occurrence.

As shown above, predicted peak cumulative pollutant concentrations for the three projects were below the NAAQS, with the exception of the 1-hr NO_2 NAAQS. The predicted maximum cumulative impact of NO_2 for the 1-hour averaging period is estimated to be greater than the short-term NAAQS of 188 $\mu g/m^3$. The predicted peak cumulative impact is geographically located between the fence lines of the Rio Grande LNG and Texas LNG terminals as depicted in figure O-3. Because it is unlikely that all three terminals would be loading LNG vessels simultaneously, the peak concentrations presented in table O.1-3are a conservative representation of combined impacts. As depicted in figure O-3 and table O.1-3, concentrations of 1-hour NO_2 in residential areas in Port Isabel and Laguna Heights are estimated to be below 75 $\mu g/m^3$, which is well below the short-term NAAQS.

As depicted in Figures O-1 through O-8, cumulative impacts are expected to disperse for all pollutants before reaching population centers in Port Isabel and Laguna Heights and would be below the NAAQS. Therefore, while concurrent operations of the LNG facilities would result in increased concentrations of air pollutants in the immediate vicinity of the facilities, the projects emissions are not expected to result in a significant impact on regional air quality.





Legend

Proposed LNG Facility Fenceline

1-hour CO

2,176 - 4,000	16,000 - 20,000
4,000 - 8,000	20,000 - 24,000
8,000 - 12,000	24,000 - 28,000
12,000 - 16,000	28,000 - 32,000
	32,00 - 40,000
	>40,000

NAAQS = 40,000 μg/m^3

Concentration in μg/m^3

0 0.5 1

Miles

N

Scale: 1:64,000

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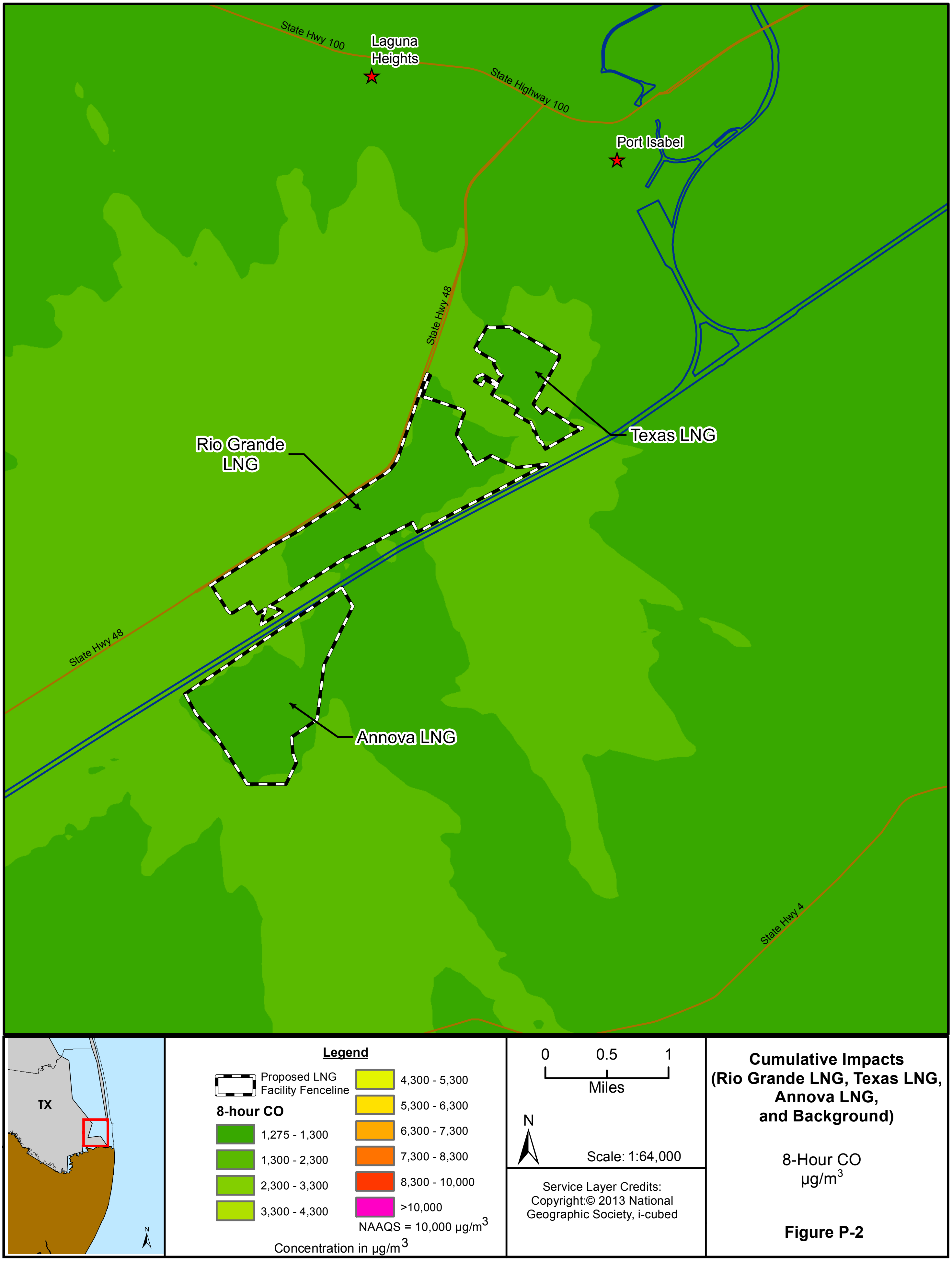
Cumulative Impacts (Rio Grande LNG, Texas LNG, Annova LNG, and Background)

1-Hour CO
μg/m^3

Figure P-1



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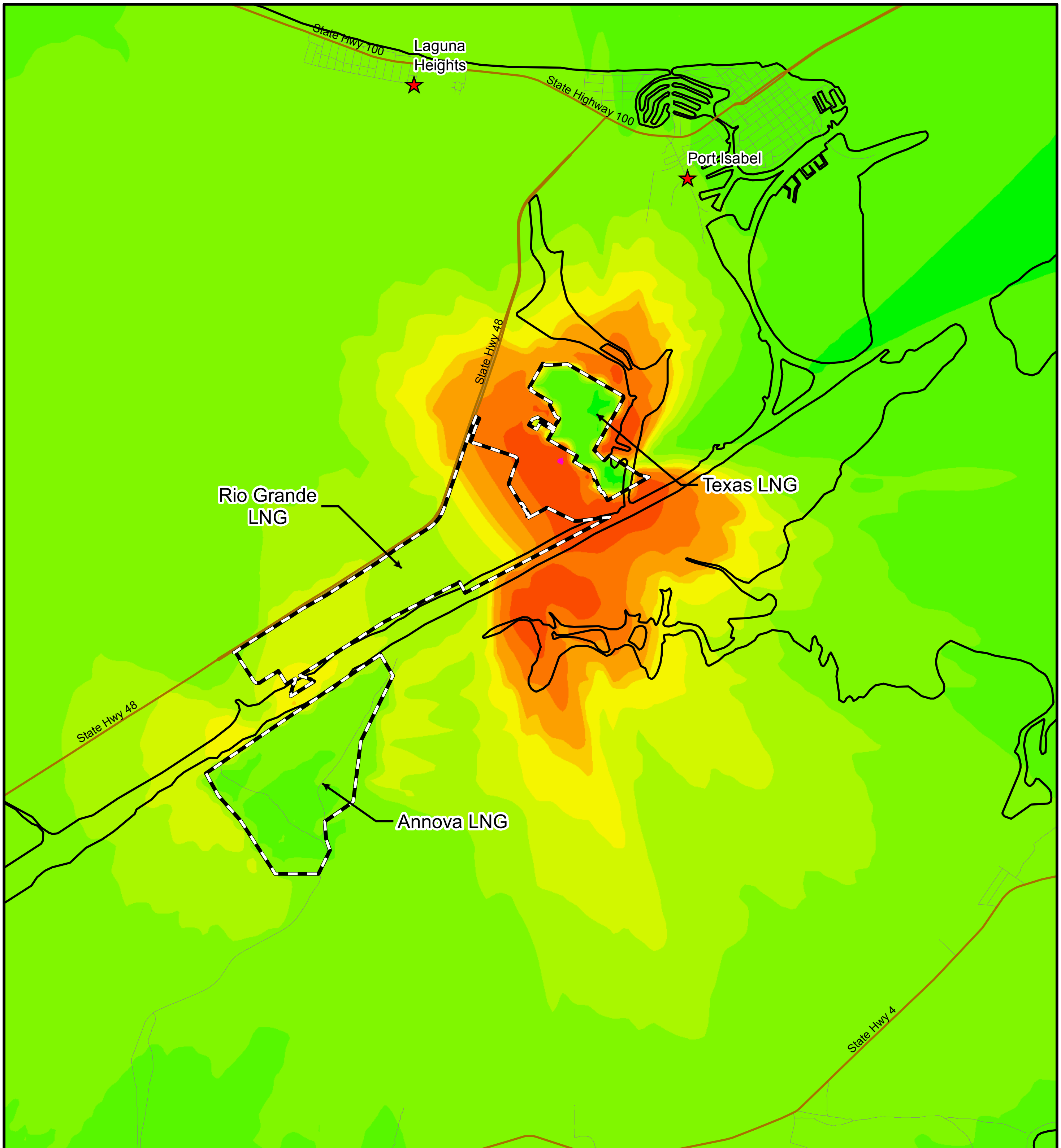
Cumulative Impacts (Rio Grande LNG, Texas LNG, Annova LNG, and Background)

8-Hour CO
$\mu g/m^3$

Figure P-2



Legend

Proposed LNG Facility Fenceline

1-hour NO_2

56.6 - 60	100 - 110
60 - 70	110 - 115
70 - 80	115 - 130
80 - 90	130 - 150
90 - 100	150 - 188
	>188

NAAQS = 188 $\mu g/m^3$

Concentration in $\mu g/m^3$

0 0.5 1

Miles

N

Scale: 1:64,000

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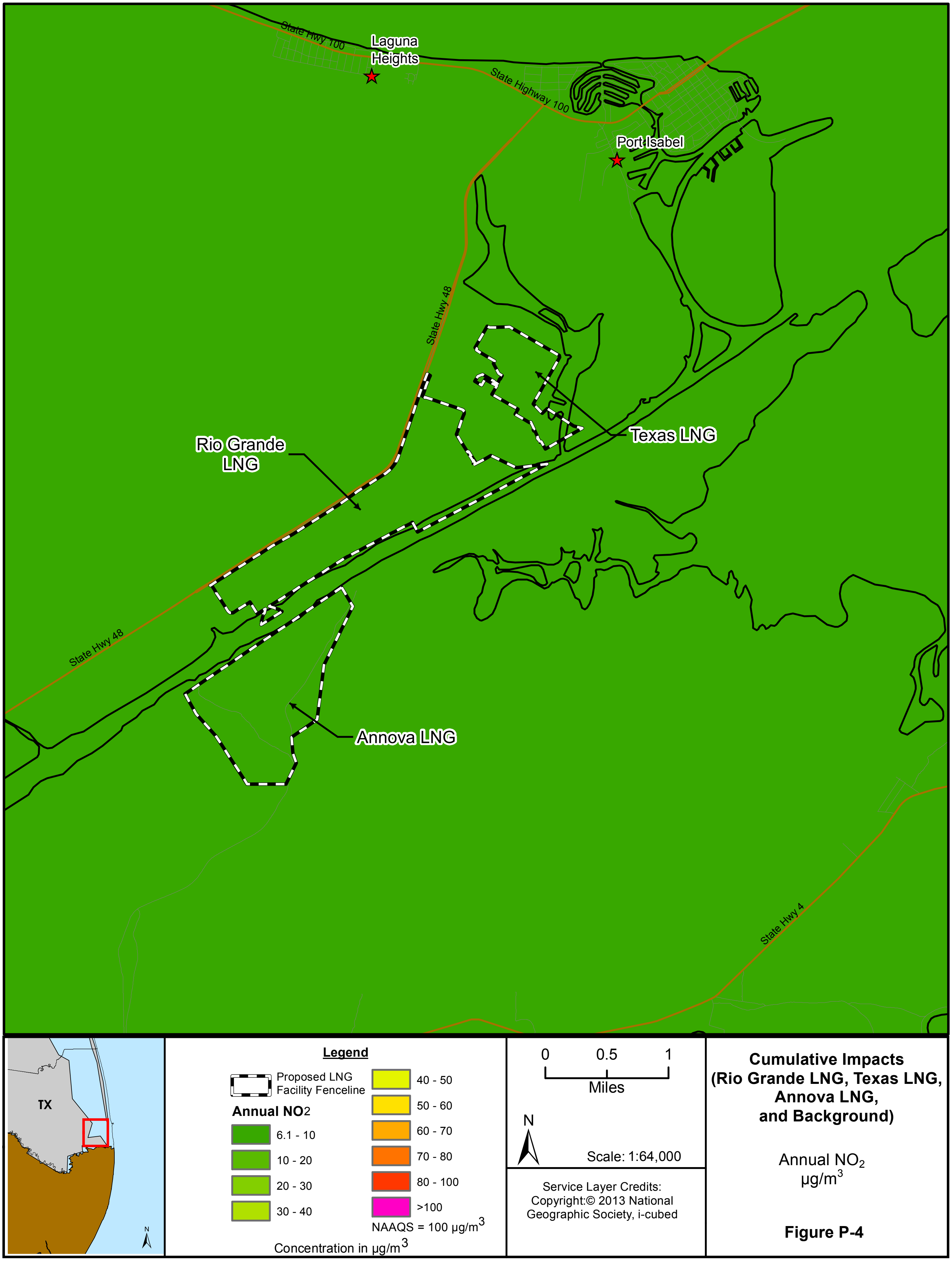
Cumulative Impacts (Rio Grande LNG, Texas LNG, Annova LNG, and Background)

1-Hour NO_2
$\mu g/m^3$

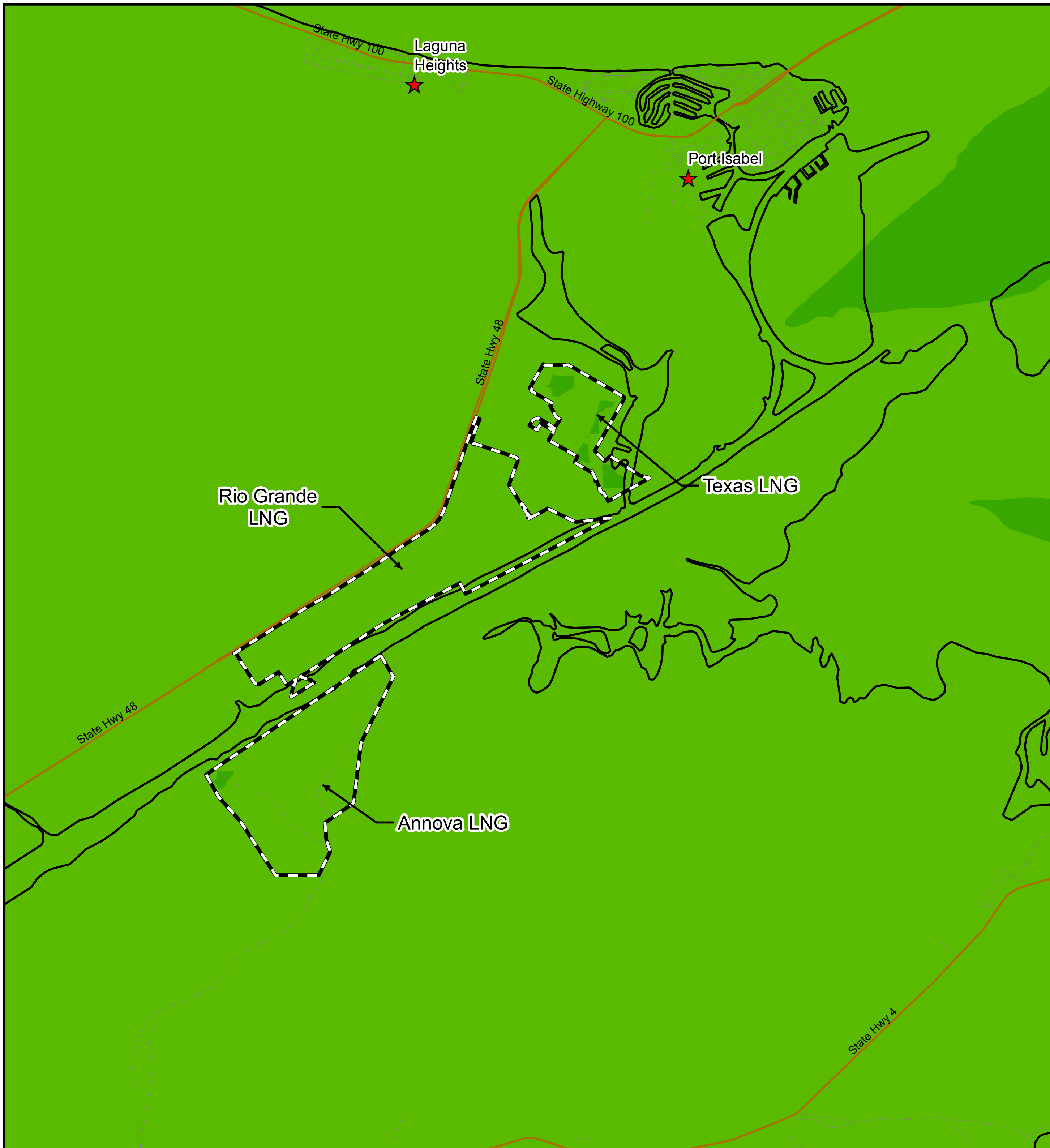
Figure P-3



Cumulative Impacts (Rio Grande LNG, Texas LNG, Annova LNG, and Background)

Annual NO_2
$\mu g/m^3$

Figure P-4



Legend

Proposed LNG Facility Fenceline

1-hour SO_2

11 - 13	75 - 95
13 - 35	95 - 115
35 - 55	115 - 135
55 - 75	135 - 155
	155 - 196
	>196

NAAQS = 196 µg/m^3

Concentration in µg/m^3

0 0.5 1

Miles

N

Scale: 1:64,000

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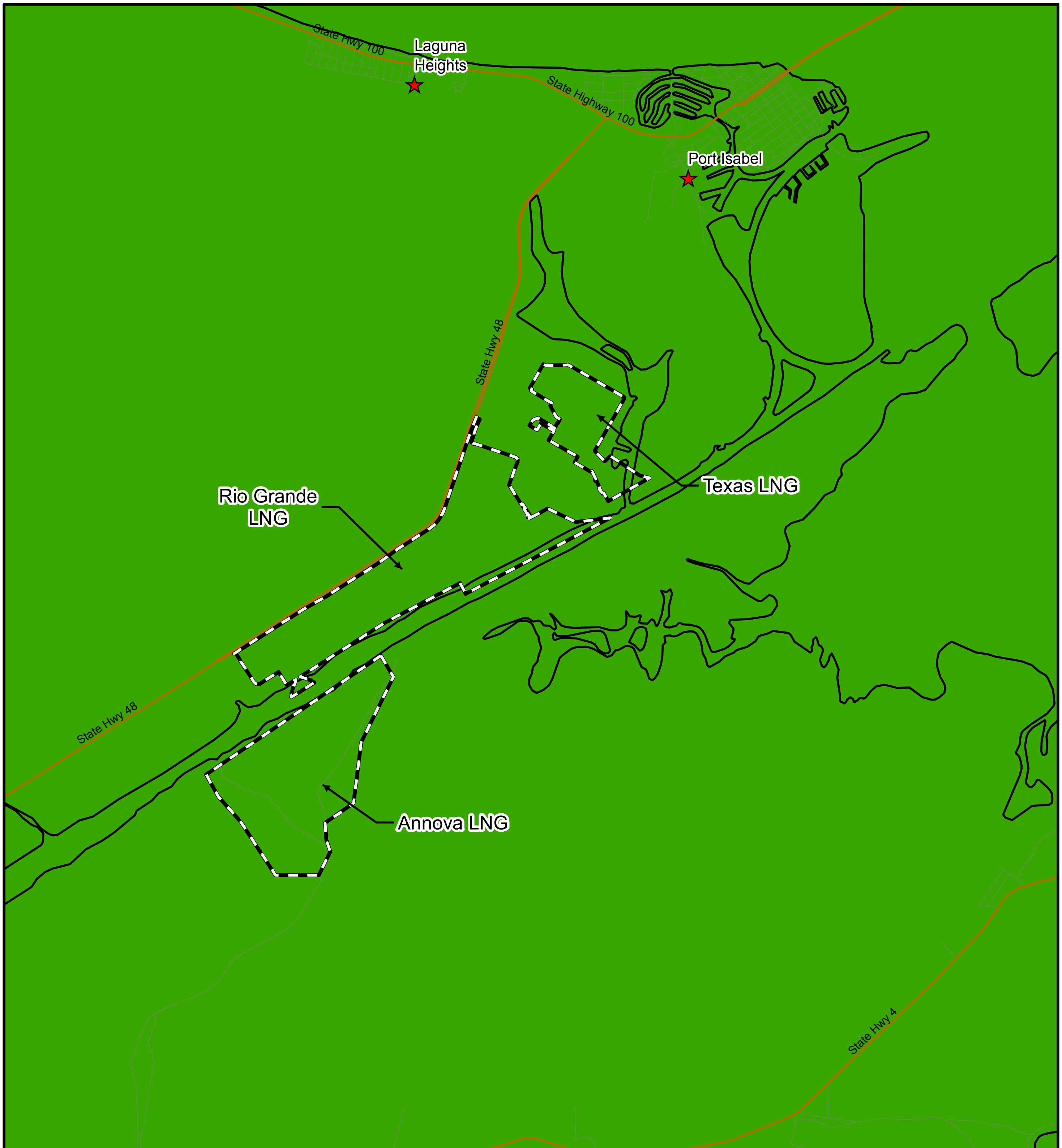
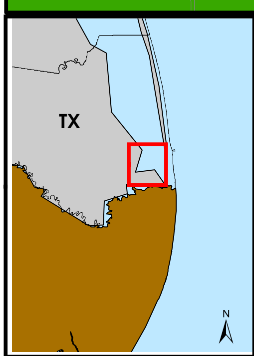
Cumulative Impacts (Rio Grande LNG, Texas LNG, Annova LNG, and Background)

1-Hour SO_2
µg/m^3

Figure P-5





Legend

Proposed LNG Facility Fenceline

24-Hour PM$_{10}$

62 - 65	95 - 105
65 - 75	105 - 115
75 - 85	115 - 125
85 - 95	125 - 135
	135 - 150
	>150

NAAQS = 150 μg/m^3

Concentration in μg/m^3

0 0.5 1

Miles

N

Scale: 1:64,000

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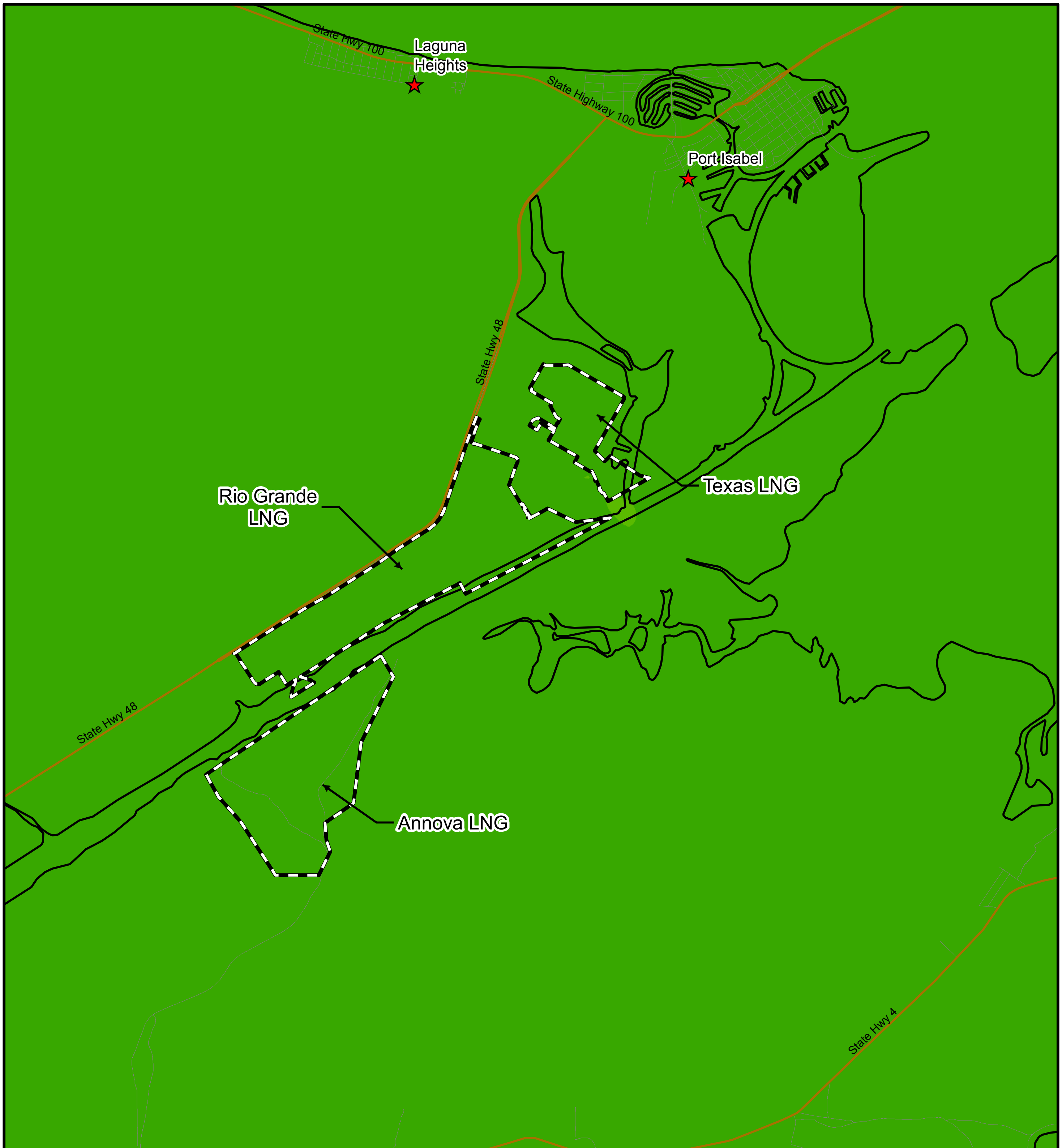
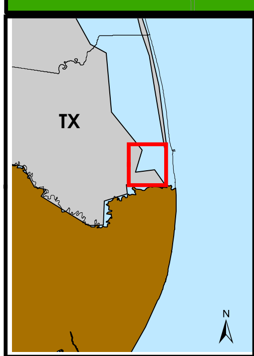
Cumulative Impacts (Rio Grande LNG, Texas LNG, Annova LNG, and Background)

24-Hour PM$_{10}$
μg/m^3

Figure P-6





Legend

Proposed LNG Facility Fenceline

24-Hour PM 2.5

22.9 - 24.5	27.5 - 28.5
24.5 - 25.5	28.5 - 29.5
25.5 - 26.5	29.5 - 31.0
26.5 - 27.5	31.0 - 33.0
	33.0 - 35.0
	>35.0

NAAQS = 35 μg/m^3

Concentration in μg/m^3

0 0.5 1
Miles

N

Scale: 1:64,000

Service Layer Credits:
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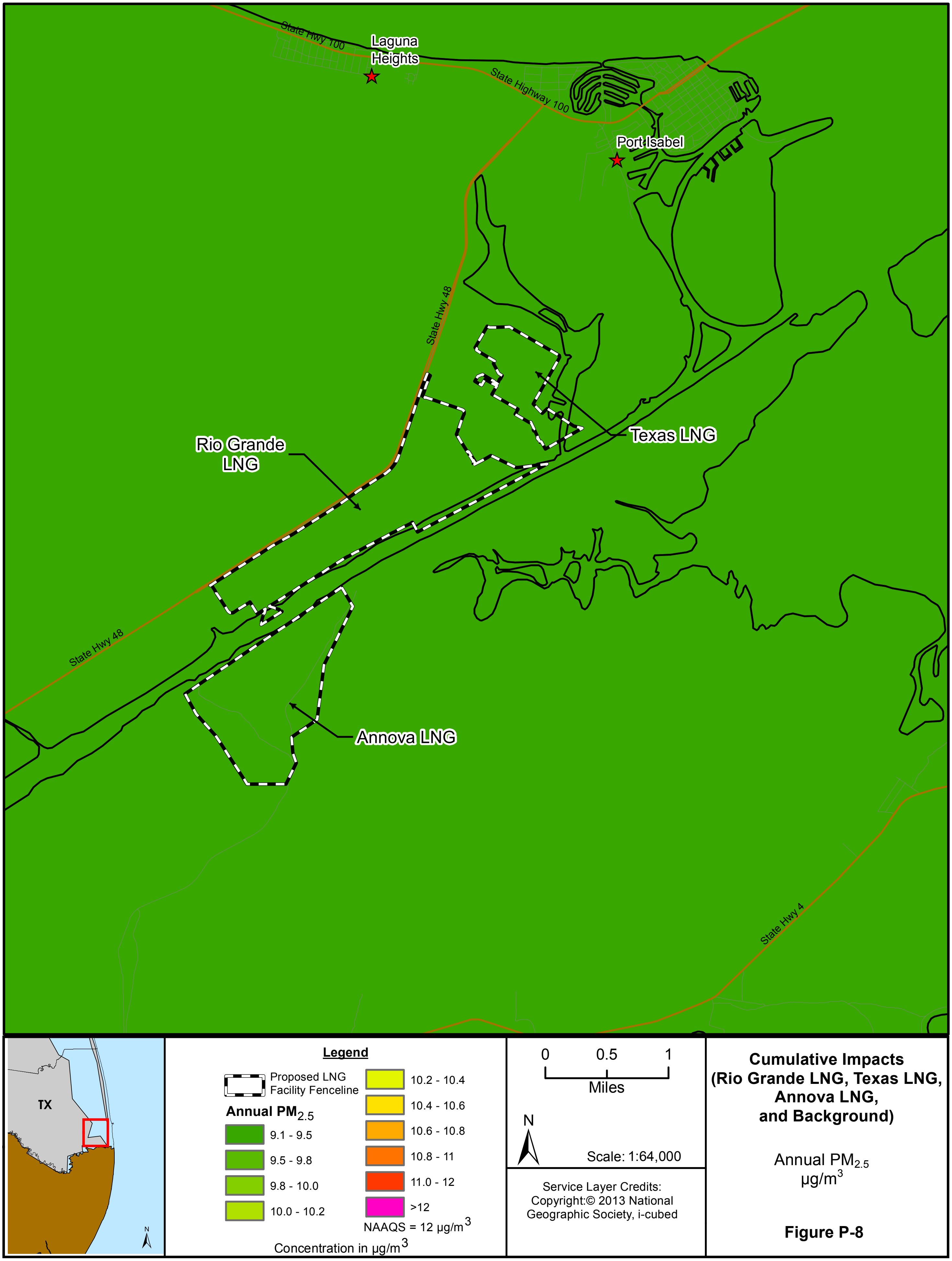
Cumulative Impacts (Rio Grande LNG, Texas LNG, Annova LNG, and Background)

24-Hour $PM_{2.5}$
μg/m^3

Figure P-7



Cumulative Impacts (Rio Grande LNG, Texas LNG, Annova LNG, and Background)

Annual $PM_{2.5}$
μg/m^3

Figure P-8

APPENDIX Q

CONSTRUCTION NOISE NORMALIZATION FOR CUMULATIVE IMPACT NOISE ASSESSMENT

SLR

Technical Memorandum

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Environmental Engineer
Federal Energy Regulatory Commission

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Date: May 30, 2018

Subject: Texas LNG Construction Noise Normalization for Cumulative Noise Impact Assessment

1. INTRODUCTION

At the request of Perennial Environmental, SLR International Corporation (SLR) has been acting as the Federal Energy Regulatory Commission (FERC) third-party reviewer for noise components of the Texas LNG Project. As part of this review, SLR has been compiling the cumulative noise impact section of the Draft Environmental Impact Statement (DEIS) for the Project. The cumulative impact section assesses the potential cumulative effects from all reasonably foreseeable future actions in the geographic scope of the Texas LNG project. There are two other LNG projects proposed for the geographic area of the Texas LNG project: the Annova LNG and the Rio Grande LNG projects.

2. CONSTRUCTION NOISE PREDICTIONS

Each of the three LNG projects calculated the construction sound level contributions at a set of project-specific noise sensitive areas (project NSAs) using slightly different sound level metrics. As part of the cumulative assessment, SLR has developed a set of cumulative NSAs and calculation points (CPs). There were two CPs representing locations at which noise impacts might be of concern but which were not NSAs: the observation platform for the Palmito Ranch Battlefield National Historic Landmark and a location in the Laguna Atascosa National Wildlife Refuge (LANWR). The cumulative NSAs were generated from the combination of the three sets of project NSAs by combining NSAs in close proximity and removing duplicated NSA locations. **Table 1**, below, summarizes the NSAs and metrics used for each project.

Table 1: Summary of NSAs and Sound Level Metrics

Project	Number of NSAs	Number of NSAs that Correspond with Cumulative NSAs	Construction Evaluation Metric	Comment
Annova LNG	4	4	24-hour L_{dn}	24-hour Construction
Rio Grande LNG	4	4	L_{max} / L_{eq}	Daytime only construction
Texas LNG	3	2	24-hour L_{dn}	Construction includes 24-hours per day dredging, 10-hours per day other construction - Concurrent with 24-hour operations of Phase 1 equipment

The project NSAs did not necessarily coincide with the full set of cumulative NSAs. As such, it was necessary to predict the sound levels at those cumulative NSAs for which there is not corresponding project NSA. In order to sum the sound level contributions of the three different projects, the sound levels were predicted for the cumulative set of NSAs and CPs and the metrics for the different projects had to be standardized so that they could be compared.

2.1. Propagation Calculations

Each project predicted construction sound levels at a specific set of project NSAs closest to that project. Using a standard hemispherical spreading formula, SLR used these predicted sound levels, along with the distances from the acoustic center of each project to the project NSAs and standardized cumulative NSAs or CPs, to predict the sound levels at the standardized cumulative NSAs or CPs.

The hemispherical spreading formula is: $L_{p2} = L_{p1} + 20 \times \log_{10}(\text{Distance1} / \text{Distance2})$

Where L_{p1} is the sound pressure level at Distance1 and L_{p2} is the sound pressure level at Distance2. Distances must be in the same units.

This is a conservative calculation methodology as it does not account for additional propagation losses due to atmospheric absorption, ground effect, foliage, or terrain effects. It will thus tend to overestimate the potential construction sound levels.

Table 2 shows a summary of the sound levels as predicted by each project at the project-specific NSAs, the distance from the NSAs to the project acoustic center, and the distance from the acoustic center to the cumulative NSA points. For those cumulative NSAs or CPs at which there is no corresponding project NSA, the sound levels have been calculated by using the predicted levels at the project NSA in parenthesis and propagating them to the cumulative NSA distance. Sound levels that have been calculated in this manner are shown as shaded and italicized values.

Table 2: Summary of LNG Project Construction Sound Levels at the Cumulative NSAs / CPs

Cumulative NSA / CP	Project-Specific NSA Designation	Distance from NSA / CP to Project	Existing Sound Level	Predicted Construction Sound Level Contribution	Predicted Construction Sound Level Contribution
		miles	(L_{dn} dBA)	(L_{eq} dBA)	(L_{dn} dBA)
ANNOVA LNG					
NSA C1	NSA 1	4.2	56.0	N/A	49.0
NSA C2	[a] (NSA 2)	5.2	50.2		*47.1*
NSA C3	[a] (NSA 2)	5.4	50.2		*46.8*
NSA C4	NSA 2	4.6	46.0		48.0
NSA C5	NSA 3	2.3	46.0		54.0
NSA C6	[a] (NSA 2)	3.9	46.0		*49.8*
CP 1	NSA 4	3.3	43.0		52.0
CP 2	[a] (NSA 2)	1.7	59.0		*56.9*
RIO GRANDE LNG					
NSA C1	NSA 2	3.7	56.0	52.2	49.2
NSA C2	NSA 3	3.7	50.2	46.1	43.1
NSA C3	NSA 4	3.9	50.2	45.7	42.7
NSA C4	[a] (NSA 2)	4.9	46.0	49.7	*46.7*
NSA C5	NSA 1	5.5	46.0	50.9	*47.9*
NSA C6	[a] (NSA 2)	5.4	46.0	49.0	*46.0*
CP 1	Palmito Ranch BF	5.4	43.0	42.9	*39.9*
CP 2	LANWR	0.8	59.0	51.7	*48.7*
TEXAS LNG					
NSA C1	[a] (NSA 2)	2.7	56.0	N/A	*50.3*
NSA C2	NSA 2	1.6	50.2		54.9
NSA C3	NSA 3	1.7	50.2		54.6
NSA C4	[a] (NSA 2)	4.4	46.0		*45.9*
NSA C5	[a] (NSA 2)	5.5	46.0		*44.1*
NSA C6	[a] (NSA 2)	7.3	46.0		*41.6*
CP 1	[a] (NSA 2)	6.8	43.0		*42.2*
CP 2	[a] (NSA 2)	1.7	59.0		*54.3*

[a] Sound levels at this cumulative NSA were not calculated by the project for construction noise. Sound levels at the project NSA in parenthesis were propagated to the cumulative NSA or CP distance as described in this memo.

2.2. Sound Level Metric Normalization

The three different LNG projects include varying degrees of detail about the construction noise calculations and schedules. Rio Grande LNG included only daytime sound levels (as L_{eq} values) for construction, as those activities would only occur during the day. Annova LNG and Texas LNG included 24-hour L_{dn} values for construction based on daytime and nighttime activities. For

Annova LNG, all construction activities are assumed for 24-hours per day. For Texas LNG, general site preparation construction is included for 10 daytime hours per day, but dredging and the Phase 1 operational noise sources are based on 24 hours per day.

In order to combine the sound levels from the three different projects, the sound level metrics had to be standardized. The 24-hour L_{dn} was chosen as the standardized metric because it is the standard FERC and EPA sound level metric, and it was used by two of the projects.

The equivalent sound level (L_{eq}) is the sound level that has the same (equivalent) sound energy as all of the sounds measured during a given period. If a noise source generates a sound level of 50 dBA over a one-hour period, it would produce a one-hour L_{eq} of 50 dBA. If the noise source generated a sound level of 50 dBA for half of the hour, but generated no noise during the other half of the hour, the one-hour L_{eq} would drop by three decibels, to 47 dBA, as a three decibel decrease indicates a halving of the sound energy.

The Rio Grande LNG construction activities will take place for 12-hours a day, from 7:00 am until 7:00 pm during daylight hours only. As the Rio Grande LNG construction will take place during the daytime for 12 hours (or half of the total hours in a day), the 24-hour L_{dn} will be three decibels lower than the predicted sound level L_{eq} during the 12-hour construction shift. The Rio Grande LNG construction sound level contributions have been calculated by subtracting three decibels from the given L_{eq}.

3. CUMULATIVE ASSESSMENT

In order to predict the potential cumulative impact of construction noise from all three of the projects during simultaneous construction activities, the predicted sound levels, as L_{dn} values, can be logarithmically combined at each of the standardized cumulative assessment NSAs or CPs. This prediction would be a worst-case construction noise assessment, as it would combine the maximum construction noise contributions from all three LNG projects.

4. CONCLUSION

To allow comparison and cumulative assessment for the predicted construction sound levels from the three LNG projects, the sound levels had to be assessed in terms of a common set of NSAs and Calculation Points. In addition, the metric used to present the sound levels had to be normalized. The sound levels from each project have been predicted at a set of standardized cumulative NSAs and CPs from the provided project construction noise levels using a standard hemispherical spreading formula. The sound level metrics have been normalized to use the FERC standard 24-hour L_{dn} for all construction noise. The results of the standardization and normalization are shown in **Table 2**.

APPENDIX R

DRAFT ENVIRONMENTAL IMPACT STATEMENT COMMENTS AND RESPONSES

SEE VOLUME III

APPENDIX S

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APPENDIX S

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EDGE Engineering and Science, LLC is a third party contractor assisting the Commission staff in reviewing the environmental aspects of the project application and preparing the environmental documents required by NEPA. Third party contractors are selected by Commission staff and funded by project applicants. Per the procedures in 40 CFR 1506.5(c), third party contractors execute a disclosure statement specifying that they have no financial or other conflicting interest in the outcome of the project. Third party contractors are required to self-report any changes in financial situation and to refresh their disclosure statements annually. The Commission staff solely directs the scope, content, quality, and schedule of the contractor's work. The Commission staff independently evaluates the results of the third-party contractor's work and the Commission, through its staff, bears ultimate responsibility for full compliance with the requirements of NEPA.

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