Office of Energy Projects

March 2020

Double E Pipeline, LLC **Docket No. CP19-495-000**

Double E Pipeline Project

Environmental Assessment

Cooperating Agency:

U.S. Department of Interior,
Bureau of Land Management

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 4
Double E Pipeline, LLC
Double E Pipeline Project
Docket No. CP19-495-000

TO THE INTERESTED PARTY:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the Double E Pipeline Project (Project), proposed by Double E Pipeline, LLC (Double E) in the above-referenced docket. Double E filed an application in Docket No. CP19-495-000 requesting a Certificate of Public Convenience and Necessity pursuant to Section 7(c) of the Natural Gas Act to construct and operate certain natural gas pipeline facilities. Double E requests authorization to construct and operate approximately 135 combined miles of varying diameter trunk-lines and lateral pipeline connecting the Delaware Basin production areas in New Mexico and Texas to the Waha Hub. The proposed trunkline and lateral pipelines run through Eddy County, New Mexico and Loving, Ward, Reeves, and Pecos Counties, Texas.

The EA assesses the potential environmental effects of the construction and operation of the Double E Pipeline Project in accordance with the requirements of the National Environmental Policy Act (NEPA). The FERC staff concludes that approval of the proposed Project, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The U.S. Bureau of Land Management participated as a cooperating agency in the preparation of the EA. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected by the proposal and participate in the NEPA analysis. The BLM will adopt and use the EA to issue a Right-of-Way Grant and Temporary Use Permits for the portion of the Project on federal lands.

The proposed Double E Pipeline Project includes the following facilities:

- approximately 33.3 miles of new 30-inch-diameter T100 pipeline from Summit Midstream Partners, LP's existing Lane Processing Plant located in Eddy County, New Mexico, to the proposed Poker Lake Meter Station site, also in Eddy County;
- 84.2 miles of new 42-inch-diameter T200 pipeline from the proposed Poker Lake Meter Station in Eddy County, New Mexico through Loving, Ward, and Reeves Counties, Texas and terminating at the proposed Waha Receiver and Separation site in Reeves County, Texas;
- 1.4 miles of new 42-inch-diameter T300 pipeline from the proposed Double E Waha Receiver and Separation site in Reeves County, Texas to the final delivery locations in Pecos County, Texas; and
- 16.4 miles of new 30-inch-diameter L100 pipeline from the existing Loving Processing Plants to the proposed T100 pipeline in Eddy County, New Mexico.

The Commission mailed a copy of the *Notice of Availability* for the EA to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; and newspapers and libraries in the Project area. The EA is only available in electronic format. It may be viewed and downloaded from the FERC's website (www.ferc.gov), on the Environmental Documents page (https://www.ferc.gov/industries/gas/enviro/eis.asp). In addition, the EA may be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link https://www.ferc.gov/docs-filing/elibrary.asp), click on General Search, and enter the docket number in the "Docket Number" field, excluding the last three digits (i.e., CP19-495). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

Any person wishing to comment on the EA may do so. Your comments should focus on EA's disclosure and discussion of potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this Project, it is important that we receive your comments in Washington, DC on or before **5:00 pm Eastern Time on April 23, 2020**.

For your convenience, there are three methods you can use to file your comments to the Commission. The Commission encourages electronic filing of comments and has staff available to assist you at (866) 208-3676 or FercOnlineSupport@ferc.gov. Please carefully follow these instructions so that your comments are properly recorded.

(1) You can file your comments electronically using the eComment feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. This is an easy method for submitting brief, text-only comments on a project;

(2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

(3) You can file a paper copy of your comments by mailing them to the following address. Be sure to reference the Project docket number (CP19-495-000) with your submission: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, DC 20426.

Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR 385.214). Motions to intervene are more fully described at http://www.ferc.gov/resources/guides/how-

to/intervene.asp. Only intervenors have the right to seek rehearing or judicial review of the Commission's decision. The Commission may grant affected landowners and others with environmental concerns intervenor status upon showing good cause by stating that they have a clear and direct interest in this proceeding which no other party can adequately represent. Simply filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered.

Additional information about the Project is available from the Commission's Office of External Affairs, at (866) 208-FERC, or on the FERC website (www.ferc.gov) using the eLibrary link. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to www.ferc.gov/docs-filing/esubscription.asp.

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TECHNICAL ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
AQCR	Air Quality Control Regions
ATWS	Additional Temporary Workspaces
BCC	Birds of Conservation Concern
Bcf/d	Billion Cubic Feet per Day
BCR	Bird Conservation Region
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best Management Practices
BISON-M	Biota Information System of New Mexico
Certificate	Certificate of Public Convenience and Necessity
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Commission	Federal Energy Regulatory Commission
dBA	A-weighted decibel
E&SC Plan	Double E's Erosion and Sediment Control Plan
EA	Environmental Assessment
EI	Environmental Inspectors
EMNRD	New Mexico Energy, Minerals, and Natural Resources Department
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FERC Plan	FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan*
FERC Procedures	FERC's *Wetland and Waterbody Construction and Mitigation Procedures*
GHG	greenhouse gas
HAP	hazardous air pollutant
HCA	high consequence area
HDD	horizontal directional drill
HUC	Hydrologic Unit Code
IPaC	Information for Planning and Consultation (USFWS)
L_{eq}	24-hour equivalent sound level
L_{dn}	day-night sound level
LPC	lesser prairie chicken
MCAD	Maroon Cliffs Archaeological District
MBTA	Migratory Bird Treaty Act
MP	Milepost
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGA	Natural Gas Act

NHPA	National Historic Preservation Act
NMDOT	New Mexico Department of Transportation
NMDGF	New Mexico Department of Game and Fish
NMSLO	New Mexico State Lands Office
NOAA-NMFS	National Oceanic and Atmospheric Administration - National Marine Fisheries Service
NOI	*Notice of Intent to Prepare an Environmental Assessment for the Planned Double E Pipeline Project and Request for Comments on Environmental Issues*
NO_x	nitrogen oxides
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
NWP	Nationwide Permit (USACE)
OEP	Office of Energy Projects
PBR	Permit by Rule
PEM	palustrine emergent
PUB	palustrine unconsolidated bottom
PHMSA	Pipeline and Hazardous Materials Safety Administration
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns
PM_{10}	particulate matter less than or equal to 10 microns
Project	Double E Pipeline Project
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Office
SPCC Plan	Double E's Spill Prevention, Control, and Countermeasures Plan
SO_2	sulfur dioxide
Summit	Summit Permian Transmission, LLC
SWPPP	Stormwater Pollution Prevention Plans
TAC	Texas Administrative Code
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TXDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database
TXUL	University of Texas System Lands Office
USACE	U.S. Army Corps of Engineers, Albuquerque District
USDA	U.S. Department of Agriculture
USDOI	U.S. Department of the Interior
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOCs	volatile organic compounds
VRM	Visual Resource Management
XTO	XTO Energy, Inc.

A. Proposed Action

1. Introduction

The staff of the Federal Energy Regulatory Commission (FERC or Commission) prepared this environmental assessment (EA) to address the environmental impacts of the construction and operation of the proposed Double E Pipeline Project (Project). On July 31, 2019, Double E Pipeline, LLC (Double E) filed an application with the Commission in Docket No. CP19-495-000 under Section 7(c) of the Natural Gas Act (NGA) and Part 157 of the Commission's regulations. Double E seeks to obtain a Certificate of Public Convenience and Necessity (Certificate) to construct and operate approximately 135 combined miles of varying diameter trunklines and lateral pipeline connecting the Delaware Basin production areas in New Mexico and Texas to the Waha Hub. See figure 1 for the Project Location Map.

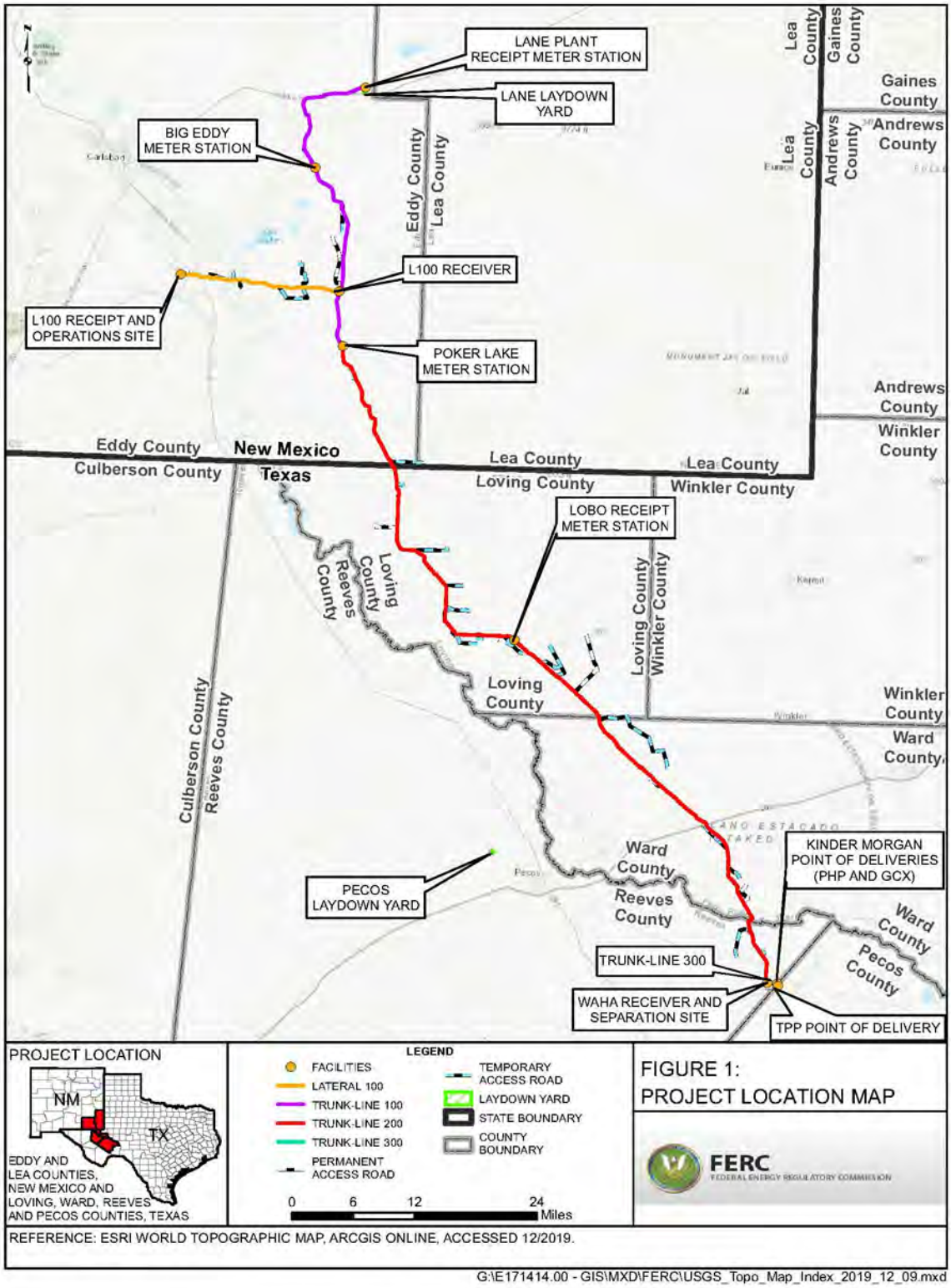
The FERC is the lead federal agency for authorizing interstate natural gas transmission facilities under the NGA, and the lead federal agency for preparation of this EA. The U.S. Bureau of Land Management (BLM), Carlsbad, New Mexico Field Office is a cooperating agency and assisted in preparing this EA.

We[1] prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA); the Council on Environmental Quality's (CEQ) regulations for implementing NEPA (Title 40 Code of Federal Regulations, Parts 1500-1508 [40 CFR 1500-1508]); and the Commission's regulations at 18 CFR 380. The assessment of environmental impacts is an integral part of the Commission's decision on whether to issue Double E a Certificate to construct and operate the proposed facilities. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment which could result from implementation of the proposed action;
- identify and recommend reasonable alternatives and specific mitigation measures, as necessary, to avoid or minimize Project-related environmental impacts; and
- facilitate public involvement in the environmental review process.

[1] "We," "us," and "our" refer to the environmental staff of the Office of Energy Projects.

Figure 1: Project Location Map



2. Project Purpose and Need

According to Double E, the Project's purpose is to construct and operate a pipeline system to provide 1.35 billion cubic feet per day (Bcf/d) of interstate natural gas transportation service from certain receipt points within the Delaware Basin to delivery points at the Waha Hub in Reeves and Pecos Counties, Texas.[2]

Under section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decision on economic issues, including need, as well as environmental impacts. Approval would be granted if, after consideration of both environment and non-environmental issues, the Commission finds that the Project is in the public interest.

The Project crosses BLM-administered lands in New Mexico. As such, Section 28 of the Mineral Leasing Act authorizes the BLM to issue a Right-of-Way Grant and Temporary Use Permits for the portions of the Project that would encroach on any federal lands in the Project area.

3. Scope of this Environmental Assessment

As the lead federal agency for the Project, FERC is required to comply with Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act (NHPA). These statutes have been considered in the preparation of this EA. The Commission will use this document to consider the environmental impacts that could result if it authorizes the Project. In addition to FERC and the BLM, other federal, state, and local agencies may use this EA for issuing permits for all or part of the proposed Project. Permits and approvals for the Project are discussed in section A.10.

The resources and topics addressed in this EA include geology, soils, groundwater, surface waters, wetlands, fisheries, wildlife, vegetation, federally listed species, species of special concern, land use, recreation, visual impacts, socioeconomics, cultural resources, air quality, noise, reliability and safety, and cumulative impacts. It also assesses the no-action, system, and route alternatives. This EA describes the affected environment as it currently exists, discusses anticipated environmental consequences of the Project, and presents our and the BLM's recommended mitigation measures.

4. Public Review and Comment

On July 25, 2018, Double E (known at that time as Summit Permian Transmission, LLC [Summit]) filed a request with the FERC to initiate the Commission's pre-filing process for its Project. At that time, Double E/Summit was in the preliminary design stage of the Project and no formal application had been filed with FERC. The purpose of the pre-filing process is to

[2] Double E has contracted a precedent agreement with XTO Energy, Inc. to provide up to 0.75 Bcf/d of firm transportation capacity for 10 years on the Double E Pipeline. Additional commitments were obtained from a binding open season for an additional 0.25 Bcf/d, totaling a subscribed volume of 1.0 Bcf/d for the Project.

involve interested stakeholders early in the project planning process and to identify and resolve issues prior to filing an application with the FERC. On August 16, 2018, FERC granted Double E/Summit's request and assigned the planned Project a pre-filing docket number (PF18-6-000) to place information related to the Project into the public record. The BLM, as a cooperating agency, agreed to conduct its environmental review of the Project in conjunction with the Commission's environmental review process.

In October 2018, during the pre-filing process, Double E/Summit held two informational open houses in Pecos, Texas and Carlsbad, New Mexico. The purpose of the open houses was to provide affected landowners, elected and agency officials, and the general public with information about the Project and to give them an opportunity to ask questions and express their concerns. We participated in the open houses and provided information regarding the Commission's environmental review process to interested stakeholders.

On December 11, 2018, we issued a *Notice of Intent to Prepare an Environmental Document for the Planned Double E Pipeline Project and Request for Comments on Environmental Issues* (NOI). The NOI was mailed to about 637 entities, including federal, state, and local officials; Native American groups; agency representatives; potentially affected landowners and other interested individuals; and local libraries and newspapers. The NOI established a 30-day scoping period and requested comments on specific concerns about the Project or issues that should be considered during the preparation of the EA.

We received a total of five comment letters; three from Native American tribes; one from the New Mexico Department of Transportation (NMDOT); and one from the New Mexico Department of Game and Fish (NMDGF). The Choctaw Nation of Oklahoma and the Alabama Coushatta Tribe of Texas both stated that the Project lies outside of their area of historic interest and deferred to other Tribes of interest. The Hopi Tribe requested consultation for projects in south eastern New Mexico with the potential to effect prehistoric cultural resources. The NMDOT commented that utilities that cross public and state roads must meet NMDOT requirements. The NMDGF stated concerns about sensitive species, including impacts on the lesser prairie chicken, migratory birds, and other wildlife; offered sensitive time windows to minimize or avoid impacts on species; and included seeding recommendations for reclamation of areas disturbed by the Project. All substantive comments received from stakeholders are addressed in this EA.

The majority of the issues identified during our environmental review process involved alternative pipeline route variations to avoid or minimize impacts on resources such as cultural resources sites or existing or planned oil and natural gas infrastructure, such as well pads or pipelines. These concerns were identified by Double E/Summit, the BLM staff, and other stakeholders, including private landowners and energy company representatives. A number of alternative routes that avoided sensitive resources or energy infrastructure were developed early in the process and voluntarily incorporated (and eventually filed) by Double E into its proposed routing of the Project. Route adjustments were made throughout the pre-filing process and continued after Double E filed its application on July 31, 2019.[3] On November 6, 2019, Double E filed a supplement incorporating a new route alternative into its proposal. This new route

[3] At the time of filing, Double E was no longer using the "Summit" designation.

alignment, along with other route adjustments Double E has incorporated into its proposed pipeline routing are presented in table A-1. Section C describes our analysis of the alternatives considered for this proposal.

TABLE A-1
Route Variations or Alternatives Adopted into the Proposed Pipeline Route for the Double E Pipeline Project

Variation/Alternative	Location (Facility)	County/State	Description/Comments
Route Variation 1	MP 4.5 (T100)	Eddy County, NM	Route Variation 1 extends about 1,500 feet at the crossing of Hobbs Highway (NM Highway 180/U.S. Highway 62). Incorporation was due to utility and power lines at the crossing of the original route identified during initial civil surveys.
Route Variation 3	MP 48 (T200)	Loving County, TX	Route Variation 3 extends about 1.3 miles and was adjusted to avoid an existing surface site.
Route Variation T100 MP 9.9	MP 9.9 (T100)	Eddy County, NM	This variation extends for about 1.63 miles and was adjusted to the east side of an existing pipeline and to avoid other utilities.
Route Variation T200 MP45.8	MP 45.8 (T200)	Eddy County, NM	This variation extends for about 1.69 miles and was adjusted to avoid existing facilities to avoid a sensitive resource area.
Route Variation T200 MP74.4	MP 74.4 (T200)	Loving County, TX	This variation extends for about 3.16 miles and was adjusted to avoid existing facilities and align with the east side of a property boundary.
Route Variation T200 MP95.9	MP 95.9 (T200)	Ward County, TX	This variation extends for about 0.69 mile and was adjusted the horizontal directional drill (HDD) of Interstate 20 to the east side of existing pipelines to support a constructible HDD.
Route Variation L100 MP0.0	MP 0.0 (L100)	Eddy County, NM	This variation extends for about 5.7 miles and was adjusted to avoid new utility rights-of-way previously authorized by regulatory or permitting agencies but not yet constructed. It also avoids a sensitive resource area and enables safe construction methods.
Route Variation L100 MP10.0	MP 10.0 (L100)	Eddy County, NM	This variation extends for about 0.67 mile and was adjusted to avoid existing pipelines and facilities near the Pecos River. It also reduces a number of utility crossings necessary for the Project.
Route Variation T100 MP0.0	MP 0.0 (T100)	Eddy County, NM	This variation extends for less than 0.1 mile and was adopted for the tie-in to the Land Plant Receipt Meter Station.
Route Variation T100 MP5.7	MP 5.7 (T100)	Eddy County, NM	This variation extends for about 0.4 mile and was adopted to avoid a sensitive resource area.
Route Variation T100 MP7.6	MP 7.6 (T100)	Eddy County, NM	This variation extends for about 0.5 mile and was adopted to avoid a sensitive resource area.
Route Variation T100 MP13.0	MP 13.0 (T100)	Eddy County, NM	This variation extends for about 0.5 mile and was incorporated to avoid a sensitive resource area.
Route Variation T100 MP15.6	MP 15.6 (T100)	Eddy County, NM	This variation extends for approximately 1.8 miles and was adopted to avoid a new utility right-of-way that was approved by the permitting agencies but not yet constructed.
Route Variation T100 MP17.8	MP 17.8 (T100)	Eddy County, NM	This variation extends for 1.8 miles and was adopted to avoid existing and new utility rights-of-way that have been approved by the permitting agencies but not yet constructed.
Route Variation T100 MP24.4	MP 24.4 (T100)	Eddy County, NM	This variation extends for 2.9 miles and was adopted to avoid existing utilities and new well pads that have been approved by the permitting agencies but not yet constructed.
Route Variation T100 MP29.5	MP 29.5 (T100)	Eddy County, NM	This variation extends for approximately 1 mile and is approximately the same length. This variation was adopted to avoid existing pipelines.
Route Variation T100/T200 MP31.8	MP 31.8 (T100/T200)	Eddy County, NM	This variation extends for approximately 4 miles. It was adopted to avoid pipeline crossings and conflicts with the existing XTO Energy, Inc. and MarkWest facilities.
Route Variation T200 MP36.4	MP 36.4 (T200)	Eddy County, NM	This variation extends for approximately 5 miles and was adopted to avoid conflicts with future MarkWest facilities.
Route Variation T200 MP46.0	MP 46.0 (T200)	Eddy County, NM	This variation extends for approximately 0.6 mile and was adopted to avoid conflicts with future MarkWest facilities.

TABLE A-1
Route Variations or Alternatives Adopted into the Proposed Pipeline Route for the Double E Pipeline Project

Variation/Alternative	Location (Facility)	County/State	Description/Comments
Route Variation T200 MP54.4	MP 54.4 (T200)	Loving County, TX	This variation extends for approximately 0.8 mile and was adopted to avoid a well pad.
Route Variation T200 MP59.7	MP 59.7 (T200)	Loving County, TX	This variation extends for approximately 0.4 mile and was adopted to avoid a well pad.
Route Variation T200 MP64.3	MP 64.3 (T200)	Loving County, TX	This variation extends for approximately 1.2 miles and was adopted adjust the route to the southwest side of existing pipelines and to support constructability.
Route Alternative T200 - R1 [1]	MP 61.6 – MP 69.8 (T200 -R1)	Loving County, TX	This alternative incorporates the route variations identified within the MP ranges in this table, as well as new routing based on landowner requests and preferences.
Route Variation T200 MP68.6	MP 68.6 (T200)	Loving County, TX	This variation extends for approximately 1.2 miles and was adopted adjust the route to the southwest side of existing pipelines and to support constructability.
Route Variation T200-MP99.4	MP 99.4 (T200)	Ward County, TX	This variation extends for approximately 0.3 mile and was adopted to reduce the bend in the pipeline.
Route Variation T200-MP99.9	MP 99.9 (T200)	Ward County, TX	This variation extends for approximately 0.3 mile and was adopted to reduce the bend in the pipeline.
Route Variation T200-MP102.4	MP 102.4 (T200)	Ward County, TX	This variation extends for approximately 0.3 mile and was adopted to avoid a future Kinder Morgan pipeline.
Route Variation T200-MP103.0	MP 103 (T200)	Ward County, TX	This variation extends for approximately 1.0 mile and was adopted to avoid a future pad site and waterlines.
Route Variation T200-MP109.2	MP 109.2 (T200)	Reeves County, TX	This variation extends for approximately 0.5 mile and was adopted to stay west of existing corridors and pad site.
Route Variation T300-MP116.3	MP 116.3 (T300)	Reeves County, TX	This variation extends for approximately 0.2 mile and was adopted to tie into the Waha Delivery Stations.
Route Variation L100-MP8.0	MP 8.0 (L100)	Eddy County, NM	This variation extends for approximately 1.3 miles and was adopted to stay on the southerly property line for the land owner and to avoid existing pipelines and pad sites in the area.
Route Variation L100-MP12.4	MP 12.4 (L100)	Eddy County, NM	This variation extends for approximately 1.5 miles and was adopted to avoid a pad site, water lines, existing pipelines, power lines, and power poles.
Route Variation L100-MP14.6	MP 14.6 (L100)	Eddy County, NM	This variation extends for approximately 1.7 miles and was adopted to change the tie-in due to landowner and tie-in location preference and avoids existing corridors, power lines, and power poles.
Route Variations L100 – R2 and R3	MP 0.0-1.3 and MP 0.0-0.8 on L100	Eddy County, NM	R2 and R3 are new route adjustments identified in the November 6, 2019 supplement, assumed for change in routing at landowner(s) request.

[1]This alternative route was originally identified in the April 2019 filing, but was fully supplemented with environmental information on November 6, 2019.

5. Proposed Facilities

The scope of facilities includes the following:

- Approximately 33.3 miles of new 30-inch-diameter trunkline pipeline (Trunkline 100 or T100) from Summit Midstream Partners, LP's existing Lane Processing Plant in Eddy County, New Mexico to the proposed Poker Lake Meter Station in Eddy County, New Mexico. In addition to the trunkline, this portion of the Project would include:
  - the new Poker Lake Meter Station on a 30-acre site;
  - one 30-inch pig launcher[4] and one receipt meter located within the Lane Processing Plant within a 200-foot by 150-foot site;
  - one mainline block valve within a 40-foot by 50-foot gravel pad within the proposed right-of-way;
  - one receipt meter (Lane Processing Plant Receipt Meter Station) located within the existing Lane Processing Plant site;
  - one receipt meter (XTO Energy, Inc. [XTO] Big Eddy Processing Plant/Husky Meter Station);
  - one 30-inch pig receiver within the new Poker Lake Meter Station site;
  - one Regional Office Building at the Poker Lake Meter Station site. This site would also be used temporarily for laydown and as a material storage yard; and
  - four permanent and six temporary access roads.

- Approximately 84.2 miles of new 42-inch-diameter trunkline pipeline (Trunkline 200 or T200) from the proposed Poker Lake Meter Station through Loving, Ward, and Reeves Counties, Texas and terminating at the proposed Waha Receiver and Separation site in Reeves County, Texas. In addition to the trunkline, this portion of the project would include:
  - the Waha Receiver and Separation site;
  - four mainline block valves within a 40-foot by 50-foot gravel pad within the proposed right-of-way;
  - one 42-inch pig launcher, located within the proposed Waha Receiver and Separation site;
  - one 42-inch pig receiver, located within the proposed Waha Receiver and Separation site;
  - one receipt meter (Lobo Receipt Meter Station); and
  - twelve permanent and 21 temporary access roads.

[4] A "pig" is a tool that the pipeline company inserts into and pushes through the pipeline for cleaning the pipeline, conducting internal inspections, or other purposes.

- Approximately 16.3 miles of new 30-inch-diameter lateral pipeline (Lateral 100 or L100) from the existing Loving Processing Plants (see list below) to the proposed trunkline in Eddy County, New Mexico. Additional facilities would include:
  - one 30-inch pig launcher and one pig receiver within the L100 Receipt and Operations site;
  - one mainline block valve within a 40-foot by 50-foot gravel pad within the proposed right-of-way;
  - three permanent and four temporary access roads; and
  - three receipt meters with an approximate 400-foot by 400-foot site at the Loving Processing Plants, including:
    - one receipt meter to serve the new Sendero Midstream Partners Plant, currently under construction;
    - one receipt meter to serve the existing Matador Resources Company's Plant; and
    - one receipt meter to serve Lucid Road Runner Energy Company.

- Approximately 1.4 miles of new 42-inch-diameter trunkline (Trunkline 300 or T300) from the proposed Double E Waha Pigging Station site in Reeves County, Texas to the final delivery locations in Pecos County, Texas. Aboveground facilities would include:
  - one side valve to serve Kinder Morgan's Permian Highway Pipeline, currently under construction;
  - one side valve to serve Kinder Morgan's existing Gulf Coast Express Pipeline;
  - one delivery meter to serve Energy Transfer Company's existing Trans Pecos Pipeline header pipeline;
  - one mainline block valve within a 40-foot by 50-foot gravel pad within the proposed right-of-way; and
  - three permanent access roads.

Figure 1 illustrates the general Project location; detailed maps and drawings of the Project are included in appendix A. See table A-2 for the Project's proposed points of receipt and delivery. See tables A-3 and A-4 for a listing of the Project's pipeline and aboveground facilities in each county.

TABLE A-2 Points of Receipt and Delivery for the Double E Pipeline Project				
Facility Type and Name	**Approximate MP**	**County, State**	**Volume of Gas**	**Producer/Consumer**
T100 Point of Receipt (POR) - Receipt Meters				
POR 1 (Lane Plant Receipt Meter Station)	0.0	Eddy County, NM	90 MMcfd[1]	Summit Midstream Partners (Lane Processing Plant)
POR 2 (Big Eddy Meter Station)	13.8	Eddy County, NM	250 MMcfd	XTO
POR 3 (XTO Receipt Meter) (Poker Lake Meter Station)	33.3	Eddy County, NM	425 MMcfd	XTO (Poker Lake Plant)
T200 POR - Receipt Meter				
POR 4 (Lobo Receipt Meter Station)	70.4	Loving County, TX	100 MMcfd	Enlink
L100 POR - Receipt Meters				
POR 5 (Matador Receipt Meter)	16.2	Eddy County, NM	200 MMcfd	Matador Plant
POR 6 (Sendero Receipt Meter)	16.2	Eddy County, NM	100 MMcfd	Sendero Plant
POR 7 (Lucid Road Runner Receipt Meter)	16.2	Eddy County, NM	185 MMcfd	Lucid Road Runner Plant
T300 Point of Delivery (“POD”) - Delivery Meters				
POD 1 Gulf Coast Express (GCX) Pipeline Side Valve	116.3	Reeves County, TX	500 MMscfd	Kinder Morgan’s Gulf Coast Express Pipeline
POD 2 Permian Highway Pipeline (PHP) Side Valve	116.3	Reeves County, TX	500 MMscfd	Kinder Morgan’s Permian Highway Pipeline
POD 3 Trans-Pecos Pipeline (TPP) Delivery Meter	116.6	Pecos County, TX	500 MMscfd	Energy Transfer Partners Trans-Pecos Pipeline

[1] MMcfd is million cubic feet per day.

TABLE A-3 Pipeline Facilities for the Double E Pipeline Project				
Facility	**Pipeline Diameter and Type**	**County, State**	**MPs**	**Approximate Length (miles)**
T100	30-inch New	Eddy County, NM	0.0 - 33.3	33.3
T200	42-inch New	Eddy County, NM	33.3 - 46.9	13.6
	42-inch New	Loving County, TX	46.9 – 61.6	14.7
	42-inch (T200-R1)	Loving County, TX	0.0 - 10.5	10.5
	42-inch New	Loving County, TX	69.8 - 81.8	12.0
	42-inch New	Ward County, TX	81.8 - 108.4	26.6
	42-inch New	Reeves County, TX	108.4 - 115.2	6.8
T300	42-inch New	Reeves County, TX	115.2 - 116.4	1.2
	42-inch New	Pecos County, TX	116.4 -116.5	0.1
L100	30-inch New	Eddy County, NM	0.0 - 4.2	4.2
	30-inch (L100-R2)	Eddy County, NM	0.0 - 1.3	1.3
	30-inch New	Eddy County, NM	5.4 – 13.7	8.3
	30-inch (L100-R3)	Eddy County, NM	0.0 – 0.8	0.8
	30-inch New	Eddy County, NM	14.5 – 16.2	1.7
Total				**135.2**
Note: Total may not equal the sum of the column due to rounding.				

TABLE A-4 Aboveground Facilities for the Double E Pipeline Project			
Facility Type and Name	**Approximate MP**	**County, State**	**Description**
T100			
30-Inch Pig Launcher with Side Valve	0.0	Eddy County, NM	Install new pig launcher within existing Lane Processing Plant
Point of Receipt (POR) 1 (Lane Plant Receipt Meter Station) with Side Valve	0.0	Eddy County, NM	Install new receipt meter within existing Lane Processing Plant
POR 2 (Big Eddy Meter Station) with Side Valve	13.8	Eddy County, NM	Install new meter station adjacent to permanent right-of-way (ROW)
Mainline Block Valve (MLV) #1 (Automated)	14.9	Eddy County, NM	Install new valve within permanent ROW
MLV #2 (Automated)1, one 30-inch and one 42-inch Side Valve	33.3	Eddy County, NM	Install new valve within the Poker Lake Meter Station
Regional Office Building	33.3	Eddy County, NM	New regional office building within the Poker Lake Meter Station
30-Inch Pig Receiver with Side Valve	33.3	Eddy County, NM	Install new pig receiver within the Poker Lake Meter Station
POR 3 (XTO Receipt Meter) with Side Valve (Poker Lake Meter Station)	33.3	Eddy County, NM	Install new receipt meter within the Poker Lake Meter Station
T200			
42-Inch Pig Launcher with Side Valve	33.3	Eddy County, NM	Install new pig launcher within the Poker Lake Meter Station
MLV #3	53.3	Eddy County, NM	Install new valve within permanent ROW
MLV #4	72.1	Loving County, TX	Install new valve within permanent ROW
POR 4 (Lobo Receipt Meter Station) with Side Valve	72.2	Loving County, TX	Install new receipt meter
MLV #5 (Automated)	90.9	Ward County, TX	Install new valve within permanent ROW
MLV #6	106.1	Reeves County, TX	Install new valve within permanent ROW
T300			
42-Inch Pig Receiver with Side Valve	115.2	Reeves County, TX	Install new pig receiver within proposed Waha Receiver and Separation Site
Waha Receiver and Separation Site One Inlet Valve and Two Bypass Valves	115.2	Reeves County, TX	New pigging facility
Point of Delivery (POD) 1 (Kinder Morgan GCX Pipeline Side Valve)	116.3	Reeves County, TX	Install new side valve for interconnect with Kinder Morgan's Gulf Coast Express Pipeline
POD 2 (Kinder Morgan PHP Side Valve	116.3	Reeves County, TX	Install new side valve for interconnect with Kinder Morgan's Permian Highway Pipeline
POD 3 (TPP Delivery Meter) with Side Valve	116.6	Pecos County, TX	Install new delivery meter for interconnect with ETC's TPP within the TPP POD site
L100			
Mainline Side Gate on T-100 for L100 Tie-In	0.0	Eddy County, NM	Install new valve within permanent ROW

TABLE A-4 Aboveground Facilities for the Double E Pipeline Project			
30-Inch Pig Receiver with Side Valve	0.0	Eddy County, NM	Install new pig receiver within permanent ROW
30-Inch Pig Launcher with Side Valve	16.3	Eddy County, NM	Install new pig launcher within the L100 Receipt and Operations Site
POR 5 (Matador Receipt Meter) with Side Valve	16.3	Eddy County, NM	Install new receipt meter for Matador Resources within the L100 Receipt and Operations Site
POR 6 (Sendero Receipt Meter) with Side Valve	16.3	Eddy County, NM	Install new receipt meter for Sendero Plant within the L100 Receipt and Operations Site
POR 7 (Lucid Road Runner Receipt Meter)	16.3	Eddy County, NM	Install new receipt meter for Lucid Road Runner Plant within the L100 Receipt and Operations Site

6. Construction and Operation Procedures

The design, construction, testing, and operations of the Project would conform to applicable regulations including 49 CFR 192 (Transportation of Natural and Other Gas by Pipeline) and 18 CFR 380.15 (Siting and Maintenance Requirements). During construction and restoration of the Project, Double E would implement the measures contained in the following plans, in addition to other federal, state, and local permit requirements:

- FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (FERC Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (FERC Procedures)[5] ;
- Project-specific Erosion and Sedimentation Control (E&SC) Plan;
- Horizontal Directional Drill (HDD) Inadvertent Release Contingency Plan;
- Fugitive Dust Control Plan;
- Hydrostatic Testing Best Management Practices Plan;
- Utility Crossing Plan;
- Spill Prevention, Control, and Countermeasures Plan (SPCC Plan);
- Stormwater Pollution Prevention Plan (SWPPP);
- Double E Emergency Response Manual;
- Noxious Weed Control Plan;
- Project Reclamation Plan
- Unanticipated Discoveries of Historic Properties and Human Remains, New Mexico and Texas; and
- Unanticipated Paleontological Discoveries Plan; and
- Cultural Resources Mitigation and Treatment Plan.

[5] The FERC Plan and Procedures are set of baseline construction and mitigation measures developed to minimize the potential environmental impacts of construction on upland areas, wetlands, and waterbodies. The Plan and Procedures can be viewed on FERC website at: www.ferc.gov/industries/gas/enviro/plan.pdf and www.ferc.gov/industries/gas/enviro/procedures.pdf.

Several of these Plans, including the E&SC, Noxious Weed Control Plan and Project Reclamation Plan would be filed prior to construction, for the review and written approval of the Director of the Office of Energy Projects as part of Double E's Project Implementation Plan. Following the requirements of the Commission's Plan and Procedures, Double E would train and provide Environmental Inspectors (EI) for the duration of construction and restoration activities. The training would address construction activities, environmental regulatory requirements, Project-specific commitments, and regulatory restrictions of the Project. The training would be specific to the Project's construction, including mitigation planning, operator requirements and qualifications, and safety requirements. The EIs would have the authority to order corrective actions and cease construction operations should operations result in a violation of local, state, or federal permitting conditions, or violate the environmental conditions of the FERC Certificate. Additional discussion about EIs' responsibilities is included in section A.6.5.

6.1 Aboveground Facility Construction

The Project would include aboveground facility construction in Eddy County, New Mexico as well as Loving, Ward, Reeves, and Pecos Counties in Texas. The Project would include construction of various small-scale facilities such as meter stations, block and side valves, pipeline inspection pig launchers, and temporary and permanent access roads. A larger footprint for operations is anticipated for the Poker Lake Meter Station and Regional Office Building, in Eddy County, New Mexico and the Waha Receiving and Separation Site in Reeves County, Texas. The Poker Lake Meter Station would be within a fenced area of approximately 30 acres. This would be an operations center for the Double E Pipeline, and during construction, a location where equipment could be staged, assembled, or stored. A permanent facility for the XTO Receipt Meter would be located within this area.

Within the pipelines' rights-of-way, mainline block valves within gravel pads of 40 feet by 50 feet would be constructed approximately every 15 to 20 miles. To reduce construction of new permanent access roads, the block valves would be placed adjacent to existing public roads where possible. The valves would meet the requirements of the U.S. Department of Transportation's (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). Mainline block valves are used for segmentation during maintenance procedures, operations, and safety conditions to release gases. Side valves would be located to enable isolation of points of receipt and delivery.

6.2 Pipeline Construction

The Project consists of construction of about 135 combined miles of varying diameter trunk and lateral pipelines, running in a generally southeastern direction from Eddy County in New Mexico to Pecos County in Texas. A 125-foot-wide construction right-of-way would be used, which consists of a 50-foot-wide permanent easement and 75 feet for construction access and temporary work space.

The first phase of the Project construction would involve surveying and staking the construction rights-of-way, the pipelines' centerlines, highway and railroad crossings, and additional temporary workspaces (ATWS) to clearly delineate these areas. Both New Mexico and Texas would be notified through the "One Call" system to locate underground utility

locations to be marked with paint and flags. Following the rights-of-way staking and the One-Call mark outs, the construction area would be cleared of vegetation.

Clearing and grubbing techniques would be used to remove vegetation (i.e., brush, large rocks, trees, stumps or logs) for access to the right-of-way. These techniques would follow FERC's Plan and Procedures, E&SC Plans,[6] and the site-specific SWPPPs[7] developed for the Project. During this process, all excavated material would remain within the construction right-of-way and stacked, as directed by the EI. Wetland areas would be cut to ground level to ensure root systems remain intact. All disturbed areas would be restored/stabilized in accordance with the site-specific SWPPPs.

Trenching would begin after the workspaces have been cleared of vegetation. Trenches would be excavated with track-mounted excavators to a depth allowing 3 feet of soil cover between the top of the pipe and the ground surface and 12 inches wider than the pipe width. Trenches may allow for greater than 3 feet of soil cover when crossing sensitive areas such as agricultural land, streams, wetlands, roads, and railroads. If large rocks are encountered, they would be broken apart using traditional rock-trenching methods. Based on our analysis, blasting is not expected for the Project. However, if blasting is necessary, Double E would file a blasting plan with the Commission for written approval.

Segments of new pipe (joints) would be laid out along the construction right-of-way, parallel to the trench. Pipe joints would be bent as required to account for natural grade changes and directional changes of the right-of-way. Track-mounted hydraulic bending machines would be used to bend selected joints. The pipe joints would then be placed on temporary supports and welded together into longer segments. Double E would use qualified welders and welding procedures, per the American Petroleum Institute standards. Visual inspections and non-destructive integrity testing (i.e., radiography or ultrasound) would be completed after welding is complete. The joints would be re-welded or cut out and repaired if defects are identified. Following approved welding inspection, the joints would be epoxy coated and the coating would be inspected.

The trench would be inspected prior to lowering the pipe segments into the trench. Any rocks or other debris present would be removed so that the pipe or coating is not damaged. Soil or sand padding may be added to the trench in rocky areas to protect the integrity of the pipe. In areas of saturated soils, bag weights, screw anchors, and concrete-coated pipe may be used. Once the trench is prepared, the pipe would be lowered into the trench using side-boom tractors or similar equipment.

Excavated materials from adjacent soil stockpiles would be used to back fill the trench using bladed equipment or backhoes. A minimum of 6 inches of clean backfill padding would be required around all sides of the pipe. A sifting device such as a padding bucket would be used to obtain the minimum required backfill. If previously excavated material contains large rocks

[6] Double E would develop the E&SC Plan for the Project prior to construction and file it as part of the Project's Implementation Plan.

[7] Double E would develop the SWPPPs for the Project prior to construction and file as part of the Project's Implementation Plan.

or other materials, clean fill would be used or a protective coating would be placed around the pipe prior to backfilling. To complete the backfilling, the remaining topsoil would be placed into the trench. In areas that may encounter settling such as open land, grasslands, and agricultural lands, a small crown may be added to account for soil settling. Any excess soil would be evenly distributed within the right-of-way, while maintaining existing contours and in agreement with landowners and agency requirements.

After backfilling, the pipe would be hydrostatically tested in accordance with 49 CFR 192 requirements to ensure it is capable of safely operating at the design pressure. The hydrostatic test requires a minimum of 8 hours for the test segments to be filled with water at 1.25 to 1.5 times the designed operating pressure. If any loss of pressure is detected, the pipeline segment would be investigated, repaired, and retested until it passes the hydrostatic testing. The test water may be pumped and used on the next segment or discharged in accordance with State permitting requirements. When a pipe segment has cleared testing, the cap and manifold would be removed, and the section connected to the previous section of pipeline.

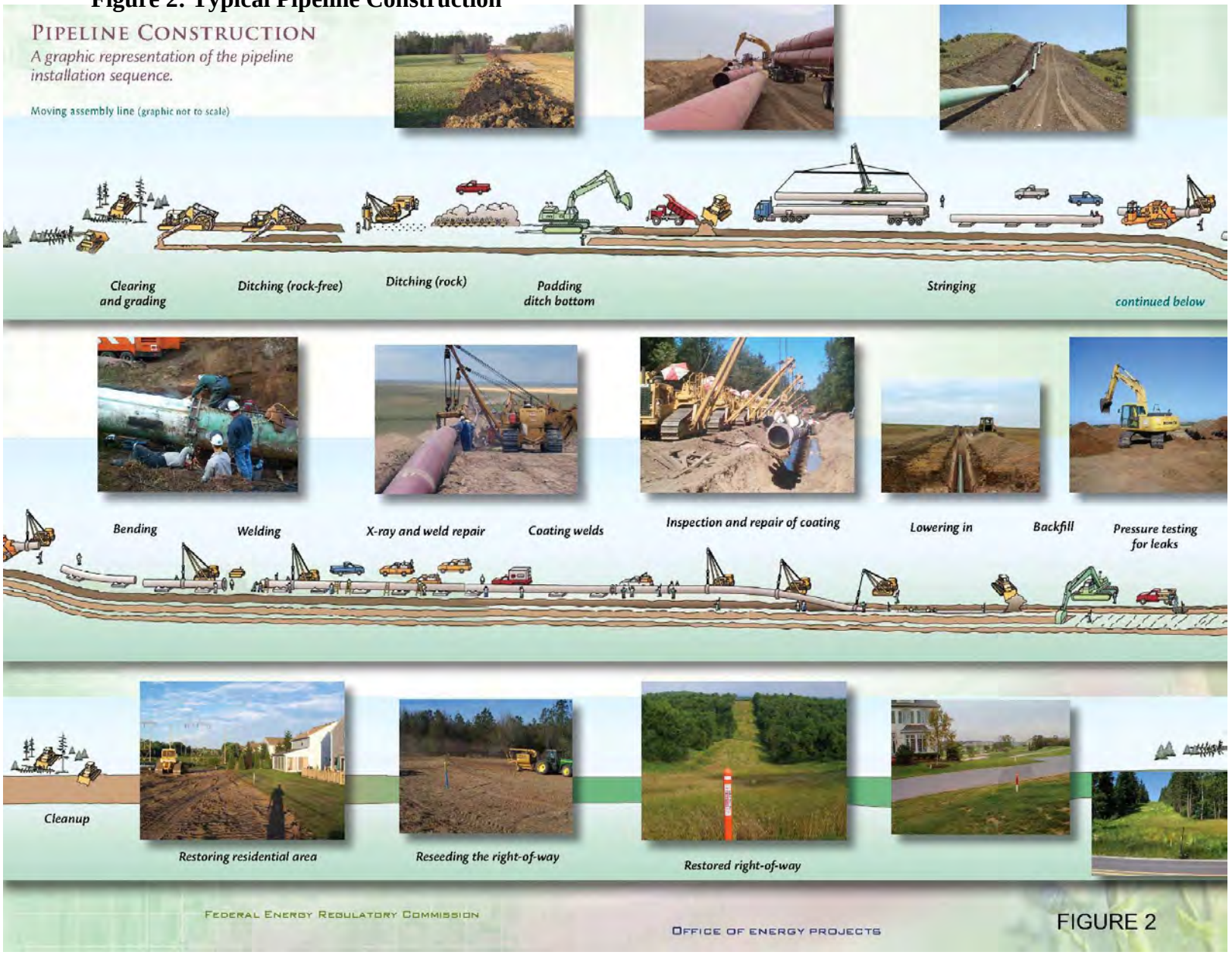
Appropriate cathodic protection and pipeline markers would be installed along the entire length of the pipelines.

Within 20 days of trench backfill, Double E would remove all debris, surplus, and waste from the right-of-way, complete final grading, and restore the area to its preconstruction condition. Double E would follow the guidelines described in the Commission's Plan and Procedures, recommendations in this EA, and any restoration and seeding requirements authorized by the BLM and any other applicable federal, state, or local permits. The right-of-way would be graded to match original contours except in cases where new drainage patterns or features are used to prevent possible erosion, scour, or exposure of the pipeline. In upland areas, the right-of-way would be seeded to establish an herbaceous cover.

In addition to the standard pipeline construction methods described above, the Project would use special construction techniques where warranted by site-specific conditions (i.e., agricultural lands, road and railroad crossings, utilities, wetlands, and waterbodies) as described below. No steep slopes, residential areas, or active croplands/orchards are crossed by the Project that would require special construction methods.

A diagram illustrating typical pipeline construction is provided in figure 2.

Figure 2: Typical Pipeline Construction



6.2.1 Active Croplands

A portion of L100 crosses agricultural fields that consist of dryland grass/hay fields and irrigated hay fields. No aboveground facilities would be sited within active cropland areas. All workspaces impacted by construction would be restored to pre-existing conditions and hydrology. Double E would adhere by measures in the Commission's Plan by segregating topsoil in these agricultural areas. A minimum of 12 inches of topsoil would be segregated where possible. In areas with less than 12 inches of topsoil, the entire topsoil layer would be segregated. Prior to construction, Double E would work with landowners to identify any drain tiles or irrigation systems. After completion, any damaged tiles or systems would be replaced or repaired. About 3 feet of cover would be used in agricultural lands, and final grading would follow original contours.

6.2.2 Road Crossings

Double E proposes to cross roads utilizing either standard open-cut or conventional bore methods. State and/or federal road crossings would be completed using conventional boring, which entails drilling underneath the roadway. Double E would cross minor roads using the open-cut method. Double E would maintain one lane of traffic and would implement traffic control and safety signage. Temporary detours would be used if extensive construction time is needed for road open cuts, or if it is not feasible to safely maintain access. The pipelines would be buried at least 5 feet below the road surface, except for areas of consolidated rock. After the crossings are complete, all roads would be restored to pre-existing conditions.

6.2.3 Railroad Crossings

Double E plans to complete railroad crossings using conventional boring methods. Double E would file for necessary permits for associated crossings. The construction methods and depths of crossings under the railroads would be in accordance with the permit issued.

6.2.4 Utility Crossings

Double E would use each State's One-Call program to identify foreign line operations prior to construction of the Project facilities. Double E would adhere to foreign operator requirements and use appropriate construction methods to protect crossing utilities. Double E indicates it would consult with the foreign pipeline operators regarding protection measures to protect existing pipeline and powerline integrity. In the event damage occurs during construction, Double E would implement the appropriate actions to minimize effects to human health, safety, and the environment. A Utility Crossing Plan[8] has been developed by Double E to address construction-related protocols in relation to foreign pipeline crossings.

[8] Double E's Utility Crossing Plan was included as appendix 1-G to Resource Report 1 in its July 31, 2019 application. The Utility Crossing Plan can be viewed on the FERC website at http://www.ferc.gov. Using the "eLibrary" link, select "Advanced Search" from the eLibrary menu and enter 20190731-5124 in the "Numbers: Accession Number" field.

6.2.5 Wetlands

Four palustrine emergent (PEM) wetlands and three ponds (which are considered palustrine unconsolidated bottom [PUB] wetlands) would be crossed by the Project. Two of the PEM wetlands would be crossed via the HDD method, avoiding any direct impacts. Double E would use Best Management Practices (BMPs) and follow applicable state and federal permitting requirements, along with the Commission's Procedures to cross the remaining wetlands, including the use of timber mats while crossing saturated wetlands. Removal of tree stumps or root structures would only occur along the trench line, unless removal was needed for safety reasons. The topsoil would be segregated up to 1 foot in depth, hydrologic conditions permitting, and would be backfilled onto the trench following crossing.

Conventional open ditch (also referred to as open-cut) construction methods would be used to cross the remaining wetlands (two PEMs and three ponds). Open ditch construction methods are dependent on site-specific conditions, including weather and soil conditions. Hydrological conditions would dictate the use of either conventional open ditch lay or open ditch push/pull lay methods. The construction supervisor and/or Double E representative would select the proper construction method at the time of construction.

6.2.6 Waterbodies

Waterbody crossings would be completed in accordance with applicable state and federal permitting and in accordance with the measures in the Commission's Procedures. The construction methods used would be based on site-specific conditions at the time of flow. Double E would use standard upland construction techniques for crossing waterbody channels that are dry or non-flowing at the time of crossing.

For minor (less than 10 feet wide) and intermediate (between 10 and 100 feet wide) waterbodies with flowing water, methods such as dry-ditch or conventional bore crossing would be used. One major waterbody (i.e., over 100 feet wide) would be crossed by the Project (SNM-TMA-003 at MP29.5 along Line T100). This location is an ephemeral wash and would be crossed via an open cut, if non-flowing. However, if the wash is flowing at the time of construction, a site-specific construction plan filed with the Commission would be required. A dry-ditch crossing includes using techniques such as dam and pump or flume to divert the flow of water across or around the construction work areas. The open-cut method employs the same general construction procedures that were described above for conventional pipeline construction.

For typical crossings, the pipeline trench would be excavated immediately prior to pipe laying activities, within waterbody areas. Double E would follow the measures in the Commission's Procedures. If construction areas yield large quantities of rock and require additional measures, work timing may need to be extended.

The pipelines would be installed with a minimum of 5 feet of soil between the waterbody bottom to the top of the pipeline, with the exception of consolidated rock areas where a 2-foot minimum would be maintained. The trench spoils from the crossing would be placed above the high-water mark along the bank and used as backfill after construction after the pipe has been

installed. Soils and material not used as backfill would be disposed of at an upland location within the limits of disturbance or properly disposed of offsite at a commercial disposal facility. The area would be returned to pre-construction grading and conditions.

The Pecos River is the only perennial waterbody crossed (in two locations), and would be crossed via HDD methodology, which is described below.

6.2.7 Horizontal Directional Drilling

HDD is a trenchless method of installing underground utilities such as pipe, conduit, or cables in a relatively shallow arc or radius along a prescribed underground path using a surface-launched drilling rig. The HDD technique may be used when conventional trenching or excavating is not practical or when minimal surface or waterbody disturbance is required.

Drilling fluids, consisting of a mixture of water, bentonite (an inert, non-toxic clay), and/or polymers are pumped into the bore during the entire HDD installation process. The exact mixture of fluids is typically determined by the HDD contractor based on the anticipated and actual geotechnical materials encountered within the bore and the performance of the drilling equipment as the drilling process progresses. The drilling fluids are typically a mixture of freshwater and bentonite. Typically, the drilling fluid contains no more than 5 percent bentonite (95 percent freshwater).

Double E would use HDD at two crossings of the Pecos River, two pipeline corridor crossings, and one road/railroad crossing along T200 and L100 (table A-5). This method was chosen to avoid impacts on existing utilities and sensitive environmental resources and to avoid traffic disturbance along the road/railroad crossing. Construction along pipeline segment T200 would require approximately 6,870 feet of HDD for which the depth of cover would range from 10 feet to 50 feet. Construction along pipeline segment L100 would require approximately 3,500 feet of HDD with a depth of cover between 45 and 50 feet. Staging areas would be located at both sides of each HDD crossing, and would consist of approximately 250-foot by 400-foot staging pads. The pad on the entrance side of the bore would be matted and provide workspace for the drill equipment and water storage facilities. The pad site on the exit side would be evaluated to determine if matting installation is needed to support operations at this end.

HDD operations are usually a 24-hour a day effort during drilling and pullback of the pipe. As the hole nears completion, the pipe would be welded and hydrostatically tested, and then pulled into place. Double E has submitted an HDD contingency plan/inadvertent return plan[9] detailing actions that would be taken should problems develop during drilling or pullback and measures to be implemented in order to mitigate potential damage on the environment.

Double E has provided site-specific construction diagrams which show schematics and profiles for construction. These are found in appendix B.

[9] Double E's HDD Plan was included as appendix 2-B to Resource Report 2 in its July 31, 2019, application. The HDD Plan can be viewed on the FERC website at http://www.ferc.gov. Using the "eLibrary" link, select "Advanced Search" from the eLibrary menu and enter 20190731-5124 in the "Numbers: Accession Number" field.

TABLE A-5 Proposed HDD Crossings along the Double E Pipeline Route						
Facility	County, State	Entry MP	Exit MP	Crossing Length (feet)	Depth of Cover (feet)[1]	Feature Crossing
T200	Eddy, NM	35.6	35.3	1,400	50	Utility crossing/pipeline corridor
T200	Loving, TX	41.8	42.1	1,500	15 (minimum)	Utility crossing/pipeline corridor
T200	Ward, TX	97.2	96.9	1,300	10 (minimum)	Interstate 20 West/Interstate 20 East/Union Pacific Railroad
T200	Ward and Reeves, TX	108.2	108.5	1,900	50	Pecos River (Stream ID STX-TMA-024) and PEM wetland (Wetland ID WTX-TMA-001)
L100	Eddy, NM	10.3	10.6	1,600	45	Pecos River (Stream ID SNM-DAD-013) and PEM wetland (Wetland ID WNM-DAD-001)
1 The depth of cover at its deepest point.						

6.3 Contractor Yards, Additional Temporary Workspaces, and Access Roads

The Project would require the use of numerous temporary work spaces such as pipeline laydown yards, staging areas, parking, temporary access roads, and ATWS during construction.

Three new (Poker Lake Meter Station, Waha Receiver and Separation Site, and L100 Receipt and Operation Site) and one existing (Lane Plant Receipt Meter Station) aboveground facility sites would be used as temporary workspaces. Additionally, a pipe laydown area of about 6.4 acres would be set up at the Lane Plant site and a second temporary laydown yard (Pecos Laydown Yard) of about 31.5 acres would be established in Reeves County, Texas for contractor staging. Additional ATWS would be required along the pipeline right-of-way in Eddy County, New Mexico and Loving, Reeves, Pecos, and Ward County, Texas to allow for safe accommodations and access to construct the Project facilities.

Access for constructing the Project would be via existing public roads, the construction right-of-way, and newly-constructed access roads. Double E would temporarily use about 61 miles of existing access roads during construction, and would construct 17 permanent access roads to support overall operations. All roads used for temporary construction access would be restored to pre-existing conditions following completion. Roads used permanently for operational purposes would be maintained regularly to support continued access. See table C-2 in appendix C for a list of access roads.

6.4 Project Restoration and Operations

Restoration of the Project's workspaces, including pipeline rights-of-way and aboveground facilities, would be in accordance with the Commission's Plan and Procedures. Appropriate protective measures, such as fencing, may be required at certain aboveground facilities.

Operation and maintenance of the Project would be in compliance with USDOT and Commission regulations including inspection, repair, and pigging of the pipelines. Vegetation management within the permanent rights-of-way would be scheduled outside of migratory bird nesting season per U.S. Fish and Wildlife Service (USFWS) consultation, and in accordance with the Commission's Plans and Procedures. Double E has committed to adhere to BLM's requirements to control or eliminate noxious weeds and undesirable plants on BLM-managed land (see EA section B.4.3 for more information).

Aboveground facilities would incorporate telemetry to notify local and gas control headquarters personnel of safety systems and alarm activation. Maintenance personnel would respond as appropriate. Routine maintenance and testing of all facilities including safety equipment such as pressure relief devices, fire and gas detection, and alarms would be performed regularly.

6.5 Environmental Compliance Inspection and Monitoring

The number of EIs covering each construction spread would vary according to the size of the spread and the affected resources in that area. At least two EIs would be present on each spread, but the total number would depend on the affected area resources and significance of the effect of construction activities. Double E currently proposes to use two spreads with a separate workforce constructing the aboveground facilities associated with points of receipt and delivery.

As previously stated, the EIs would be responsible for verifying that the measures contained in Double E's approved plans and any other environmental permit conditions or agreements are followed during construction and restoration activities. The EIs would have stop work authority. In addition, Double E's Environmental Foreman and team would oversee installation and maintenance of environmental controls and construction activities in environmentally sensitive areas.

Double E would provide environmental training to all construction personnel. The training program would cover requirements for environmental compliance with federal, state, and county permits, and with Double E's approved construction and restoration plans, which would be included in contractor bid documents. All personnel would also be trained in safety and personal awareness before permitting work on the Project, and the contractor would be required to comply with the Minimum Federal Safety Standards adopted by the USDOT under the Natural Gas Pipeline Safety Act of 1968, as well as additional Double E standards.

FERC staff would inspect the Project during construction for environmental compliance with the FERC Certificate. Restoration and revegetation efforts would be considered successful based on the requirements in the FERC Plan and Procedures, including ensuring that the pipeline rights-of-way, aboveground facilities, and ATWS surface conditions are similar to adjacent undisturbed lands; construction debris is removed; and proper drainage and contours are restored.

The BLM would also inspect the Project facilities on its land to ensure that the protective measures contained in the BLM's Record of Decision and other applicable plans for BLM-managed lands are implemented and are effective. BLM inspectors would also have stop work

authority on BLM-managed lands. Double E would employ an EI with monitoring experience in cultural resources, one for paleontological resources, a biological monitor, and others as designated by the BLM staff.

7. Construction Schedule

Double E has requested a FERC Certificate by June 1, 2020. Double E anticipates beginning construction in September 2020 and completing major construction activities in August 2021. Initial cleanup activities would begin immediately following backfill operations. Initial restoration activities (i.e., final grading, topsoil replacement, and installation of permanent erosion control structures) would be completed within 20 days of backfill operations, barring any weather delays. Final cleanup/restoration of the Project area is anticipated to begin in December 2020 and finish in December 2021.

With the exception of proposed HDD construction, Double E states that construction activities would generally take place during daylight hours Monday through Saturday. Sunday would be worked in some instances when the Project has experienced a weather day during the week or as necessary to recover schedule. Observation of federal holidays would be at the discretion of the contractor. Double E would generally limit the contractor to 12 hours work per day onsite, except in emergencies or when schedule or special construction activities may otherwise dictate. Certain construction activities must continue uninterrupted until completion and may extend typical work hours, such as operation of pumps at waterbody crossings, hydrostatic testing, and tie-in work.

Double E estimates that each HDD would be completed in 35 to 45 days, based on a 6-day work week, and that it does not anticipate 24-hour construction work days at these locations; however, we recognize that some HDDs may need to operate continuously at critical times.

Double E states that the average construction workforce for the Project would be approximately 500 people for the Project, and the peak construction workforce would be approximately 600 people. Ten permanent personnel would be hired to operate and maintain the new Project facilities.

8. Land Requirements

Due to the sandy nature of the soil and to provide adequate room for construction equipment to safely pass, Double E has proposed to use a 125-foot-wide temporary right-of-way for construction of the pipelines. As Double E has also proposed to conduct topsoil segregation in certain areas along the right-of-way, we agree that a 125-foot-wide temporary construction right-of-way is suitable for this Project. Double E would permanently retain and maintain approximately 50 feet of right-of-way for pipeline operation. Temporary land requirements would include construction right-of-way, ATWS, laydown yards, and temporary access roads. Project construction would disturb approximately 2,863 acres, including 2,006.6 acres for pipeline right-of-way workspace, 233.3 acres for ATWS, and 69.6 acres for staging areas. In addition, the Project would require 307.2 acres for temporary access roads, 82.7 acres for permanent access roads, and 163.5 acres for constructing the aboveground facilities.

Permanent land requirements would include the new 50-foot-wide permanent pipeline easement, associated aboveground facilities, and new permanent access roads. Following construction, approximately 967 acres would be retained for permanent easement, including 818.1 acres for maintenance of pipelines, 82.7 acres for permanent access roads, and 66.3 acres for maintenance of new aboveground facilities for operation.

The Project would require use of two pipe laydown yards: the Lane Laydown Yard site is located at approximately milepost 0.0 in Eddy County, Texas, and the Pecos Laydown Yard site is located approximately 12 miles southwest from the T200 right-of-way in Reeves County, Texas. The Lane Laydown yard would temporarily affect 6.4 acres, and the Pecos Laydown yard would temporarily affect 31.5 acres. Both yards would be restored to their previous conditions after construction.

Although Double E has identified where ATWS would be required, additional or alternative areas could be identified in the future due to changes in site-specific construction requirements. Additional ATWS could be needed for unanticipated topsoil storage, disposal areas, temporary or permanent access, pipe and material storage, and related construction activities. If additional ATWS is required due to site-specific conditions during construction, Double E may request ATWS not already identified on an as-needed basis from FERC and/or the BLM as a part of the Variance process. Double E would be required to file information on each of those areas for review and written approval by the appropriate agencies, prior to use. A summary of the land requirements for the Project is provided in table C-3 in appendix C.

Because the proposed Project would be developed along with other oil and natural gas interests in the area, several utilities would be either crossed or would parallel the proposed pipeline(s). A list of utilities crossed and/or paralleled are included in table C-1 appendix C. The proposed pipeline and lateral route(s) follow existing right-of-way (pipeline, public/lease roads, and electric transmission) for about 72 percent of the linear mileage.

A detailed discussion of land requirements and associated impacts that may result from construction and operation of the Project is provided in section B.5 Land Use, Recreation, and Visual Resources.

8.1 Public Lands Crossed by the Project

The Project would cross BLM-managed lands for a total of approximately 46.1 miles (or 35 percent of the total Project), all within Eddy County, New Mexico, impacting approximately 968.2 acres. Double E would maintain approximately 967 acres in easement for operation which includes the 50-foot-wide permanent easement and aboveground facilities. In addition, construction would impact approximately 170.4 acres of New Mexico state lands and approximately 61.8 acres of lands managed by Texas University System.

9. Non-Jurisdictional Facilities

Under Section 7 of the NGA, the Commission is required to consider, as part of its decision to authorize jurisdictional facilities, all factors bearing on the public convenience and necessity. The primary jurisdictional facilities for the Project are the combined 135 miles of new

pipelines and laterals and their related aboveground facilities (e.g., pigging facilities; receipt and delivery points).

Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. These non-jurisdictional facilities may be integral to the need for the proposed facilities (e.g., a gas-fueled power plant at the end of a jurisdictional pipeline) or they may be minor, non-integral components of the jurisdictional facilities that would be constructed and operated as a result of the proposed facilities, such as providing electric or water utility services.

In this regard, the new Poker Lake Meter Station and Regional Office Building would require the installation of new 120/240-volt electric powerlines for power. In addition, 120/240-volt electric power is required for cathodic protection at each meter station and at the Waha Receiver and Separation Site. Specifically, the following non-jurisdictional facilities would be required for the Project:

- Poker Lake Meter Station and Regional Office Building: an approximate 350-foot-long electric line across New Mexico State Lands would be installed by Xcel Energy to provide electric service.
- Lane Plant Receipt Meter Station: the meter station would be located directly adjacent to the Lane Processing Plant, which would provide the electric service for the meter station. Less than 1,000 feet of power line would be installed entirely within the existing plant boundaries.
- Big Eddy Meter Station: the meter station would be located near the Big Eddy Processing Plant and its associated electric utility service. Less than 1,000 feet of power line would be installed, all within the plant boundaries.
- L100 Receipt and Operations Site: This site contains the Matador, Sendero, and Lucid Roadrunner Receipt Meters. An existing local distribution electric utility service runs approximately 100 feet from the site, and new lines would be installed by the local utility for service.
- Lobo Receipt Meter Station: the facility would be located within 1.5 miles of EnLink Lobo Plant. Existing power infrastructure along the roadway would be tapped and a new line installed to follow the existing access road.
- Waha Receiver and Separation Site: power is available within the proposed site boundaries, as an existing electric substation is located adjacent to the site to provide service.
- Trans-Pecos Pipeline (TPP) Point of Delivery: the facility would be located within 0.1 mile of the Trans-Pecos Pipeline Plant. Existing power infrastructure along roadway would be tapped and a new electric line installed to follow the existing access road.
- Kinder Morgan Point of Deliveries (Gulf Coast Xpress Pipeline [GCX] and Permian Highway Pipeline [PHP]) side valves: these minor facilities would be constructed within the existing Kinder Morgan site, which has power available onsite.

In addition, a water well would be utilized at the proposed Poker Lake Meter Station for water service, and an aerobic wastewater system with spray irrigation would be used for wastewater. Applicable permits would be obtained as required from the New Mexico Office of the State Engineer for the water well and the New Mexico Environmental Department for the wastewater system.

Fiber optic cable would be installed adjacent to the proposed T100 pipeline at the Lane Plant Receipt Meter Station to the Poker Lake Meter Station and Regional Office Building. The installation of the cable would occur during the same phase of construction as pipeline construction. Fiber optic cable would be co-located in the trench adjacent to the pipe during the backfill operation. The fiber optic cable would be used for communication purposes, ensuring Supervisory Control and Data Acquisition communications across the Project facilities. The fiber optic cable would transmit communications between the Lane Plant Receipt Meter Station, Big Eddy Meter Station, Mainline Block Valve #1, and the Poker Lake Meter Station.

The described non-jurisdictional facilities are part of private construction projects under state and local jurisdiction. Additionally, FERC has no authority over the permitting, licensing, funding, construction, or operation of local electric distribution lines. Though construction of the non-jurisdictional electrical facilities may overlap with the construction of the Project, we find that construction of these facilities would result in negligible environmental impacts due to the minor activities associated with extension of the existing power service to the proposed facilities. Impacts associated with these non-jurisdictional facilities are further discussed in Cumulative Impacts (EA section B.11).

10. Permits

A number of federal, state, and local regulatory agencies have permit or approval authority or consultations associated with the proposed Project. Table A-6 provides a list of permits and consultations, the applicable local, state, and federal agencies, as well as any responses received to date. Double E would be responsible for obtaining all permits and approvals required for construction and operation of the Project, regardless of whether they appear in the table.

TABLE A-6 List of Permits and Approvals			
Agency	**Permit / Approval / Consultation**	**Actual Date (Anticipated by Double E)**	
		Submittal	**Approval**
Federal			
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity	07/31/2019	Pending
US Fish & Wildlife Service Austin, TX Ecological Services Field Office	Consultations for impacts on federally listed threatened and endangered species and critical habitat under Section 7 of the Endangered Species Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act	10/24/2018; 07/19/2019; 10/21/2019	11/28/2018; 08/7/2019; 11/22/2019
US Fish & Wildlife Service in BLM-Carlsbad, NM Office	Consultations for impacts on federally listed threatened and endangered species and critical habitat under Section 7 of the Endangered Species Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act	10/24/2019 and 02/20/2019; 07/19/2019	02/20/2019; 09/12/2019
US Army Corps of Engineers, Albuquerque District	Clean Water Act, Section 404, Nationwide Permit 12	01/31/2020	(03/2020)
Bureau of Land Management, Carlsbad, NM	Right-of-way (ROW) Grant (SF-299)	08/08/2019	(08/2020)
State – NM			
NM Department of Game and Fish	Consultations for impacts on state-listed threatened and endangered species	11/24/2018	12/31/2018
NM Environment Department Surface Water Quality Bureau	401 Water Quality Certification	01/31/2020 (Nationwide Permit 12 PCN)	(03/2020) Assumed that Project will meet 401 Certification requirements attached to applicable Nationwide Permit (NWP)
NM Energy, Minerals and Natural Resources Department	Hydrostatic Test Water Discharge Permit	(04/2020)	(07/2020)
NM State Land Office	ROW Entry Request	09/2018 and 04/2019	09/2018 and 04/2018
	State Land Office easement	12/12/2019	(03/2020)
NM State Historic Preservation Division	National Historic Preservation Act, Section 106 Consultation	04/12/2019; 07/31/2019; 01/21/2020	12/18/2019
NM Department of Transportation - Utilities Section	Permit to install Utilities Facilities within Public ROW	(05/2020)	(06/2020)
State – TX			
TX Parks and Wildlife Department, Wildlife Habitat Assessment Program	Consultations for impacts on state-listed threatened and endangered species	10/24/2018; 07/19/2019; 10/21/2019	12/12/2018; 11/26/2019
	Sand and Gravel Permit	N/A – No streams crossed meet requirements for permitting.	N/A
TX Historical Commission	National Historic Preservation Act, Section 106 Consultation	04/12/2019; 07/19/2019; Addendums 07/22/2019 and 07/24/2019; (11/2019)	01/03/2020
Railroad Commission of TX	401 Water Quality Certification	01/31/2020 (Nationwide Permit 12 PCN)	(03/2020) Project will meet 401 Certification requirements attached to applicable NWP
	Hydrostatic Test Water Discharge Permit	(04/2020)	(07/2020)
TX Department of Transportation ("TXDOT") Odessa District	Permit to Construct Access Driveway Facilities Highway ROW; Notice of Proposed Installation Utility Line on TXDOT Highway ROW	(07/2020)	(07/2020)
University Lands	Application for Pipeline Easement Contract	06/21/2019; Addendum to Phase I Report – 07/22/2019	07/23/2019

B. Environmental Analysis

The following sections discuss the Project's potential direct and indirect impacts on environmental resources. When considering environmental consequences, the duration and significance of any impacts may be temporary, short-term, long-term, or permanent. Temporary impacts generally occur during construction, with the resources returning to pre-construction conditions almost immediately. Short-term impacts could continue for up to three years following construction. Long-term impacts would require more than 3 years to recover, but eventually would recover to pre-construction conditions. Permanent impacts occur when activities modify resources to the extent that they would not return to pre-construction conditions during the life of the Project, such as with the construction of an aboveground facility. An impact would be considered significant if it would result in a substantial adverse change in the physical environment.

1. Geology

1.1 Physiographic Setting and Geologic Conditions

The footprint of the proposed Project is located within the Pecos Valley Section of the Great Plains Physiographic Province (Fenneman and Johnson, 1946), or sometimes called the Great American Desert. The Great Plains Province borders the Rocky Mountains to the west and the Central Lowlands Province to the east, consisting of 450,000 square miles. The province's geologic features consist of sedimentary rock of the Permian, Triassic, and Jurassic Cenozoic age. The rock consists of sandstones, shales, limestones, conglomerate and lignite bedrock, overlain with quaternary alluvial deposits. The features primarily slope to the east, including plains, tablelands and horizontal plateaus (U.S. National Park Service, 2018).

Within the Pecos Valley Section, the Project crosses from north to south within Eddy and Lea Counties in New Mexico, and Loving, Ward, Reeves, and Pecos Counties in Texas. The geomorphology consists of plains, hills, basins, and flats. Elevation within this section ranges from 4,000 to 6,900 feet above mean sea level. Topographic relief of the Pecos Valley is generally 100 to 400 feet but can be up to 500 feet in areas of steeper mesas (U.S. Forest Service, 2018). The maximum relief within the Project area is 1,100 feet, with the elevation ranging from 2,500 to 3,600 feet above mean sea level; however, local relief of the Project area is generally between 50 to 150 feet (USFWS, 2018).

1.2 Mineral and Non-Mineral Resources

An assortment of mineral and petroleum reserves is located within the Capitan Reef area of New Mexico and the Delaware Basin area of New Mexico and Texas. As of January 2019, the New Mexico Energy, Minerals and Natural Resources Department (EMNRD)-Oil Conservation Division documented 155 oil/gas wells within 0.25 mile of the Project area in New Mexico, none of which are within the Project's construction right-of-way (EMNRD, 2019). Official GIS datasets pulled in January 2019, from the Railroad Commission of Texas (2019), documented 282 oil/gas wells within 0.25 mile of the Texas section of the Project. A desktop review revealed seven active oil/gas wells within the Project right-of-way; however, a refined

evaluation by aerial review, field observations, civil survey data and continued route refinement confirmed that no wells or well pads are within the proposed construction right-of-way or other work areas. Therefore, the Project would neither directly impact nor inhibit operations of existing wells.

A rich reserve of potassium carbonate (potash) is within the Capitan Reef and Delaware Basin of New Mexico. Potash is used commercially for fertilizers and soaps (Austin, 1980). Also found in this area are sodium and caliche (gravel, sand, and nitrate mixture). Caliche is mined in this area as a source of sodium nitrate and iodine, commonly used in industrial processing. Five active potash mining operations are within 0.25 mile of the New Mexico portion of the Project (New Mexico State Land Office [NMSLO], 2018). Mining operations occur intermittently along the first 25 miles of the Project. In addition, mine workings that extend within the Project right-of-way at several locations are shown in table B-1 (NMSLO, 2018; BLM, 2019). Subsidence related to underground mining activities could impact the ground surface. In addition, mining operators would likely be prohibited from continued mining activities in and around the permanent pipeline easement.

TABLE B-1
Mining Operations within the Double E Pipeline Right-of-Way

Approximate MP	County, State	Mineral Resource	Status	Facility Name/Owner
T100				
0.0	Eddy, New Mexico	Potash	Active	Intrepid Potash
3.4	Eddy, New Mexico	Potash	Active	Intrepid Potash
3.6-6.7	Eddy, New Mexico	Potash	Active	Intrepid Potash
5.3-5.6	Eddy, New Mexico	Potash	Active	Intrepid Potash
7.0-8.0	Eddy, New Mexico	Potash	Active	Intrepid Potash
8.1-8.2	Eddy, New Mexico	Potash	Active	Intrepid Potash
8.5-9.8	Eddy, New Mexico	Potash	Active	Intrepid Potash
9.9-10.1	Eddy, New Mexico	Potash	Active	Mosaic Potash
12.7-13.6	Eddy, New Mexico	Potash	Active	Mosaic Potash
14.-14.7	Eddy, New Mexico	Potash	Active	Intrepid Potash
17.8	Eddy, New Mexico	Potash	Active	Mosaic Potash
20.1-21.4	Eddy, New Mexico	Potash	Active	Mosaic Potash
21.9-23.1	Eddy, New Mexico	Potash	Active	Mosaic Potash
T200				
R1 6.3	Loving, Texas	Lease	Expired	Csc Interests, Inc.
R1. 7.8	Loving, Texas	Lease	Terminated	Chalfant Properties, Inc.

Within the Texas portion of the Project, one active caliche mineral mine is within 0.25 mile of T200 near MP 76. No active mineral mines are within the proposed construction right-of-way in Texas (Texas General Land Office, 2018). The Project's routing was developed to minimize or avoid impacts on active mining operations to the extent practicable.

There are no known active coal mines or coal mining operations within 0.25 mile of the Project (EMNRD, 2018; Railroad Commission of Texas, 2018).

We conclude that construction and operation of the Project facilities would not result in long-term impacts on oil/gas wells, given that Double E routed its proposed facilities to avoid oil and gas wells to the extent practicable. Double E states it would continue to coordinate with the potash mine operators (Intrepid Potash Mines and Mosaic Potash) of constructing in and near active mines that would be crossed by the proposed T100 right-of-way. In addition, the potash mines to be crossed by Line T100 are located either on BLM or New Mexico state trust lands, and these crossings are also subject to approval by the BLM or NMSLO. See section 1.3.4 for an additional discussion of the potential for subsidence due to underground mining activities.

1.3 Geologic Hazards

Geologic hazards are natural physical conditions that can, when present, result in damage to land and structures or injury to people. Potential geologic hazards in the Project area were determined through database searches and literature and topographic map reviews, and include seismicity (earthquakes and faults), slope stability and landslides, subsidence, flooding/scour, soil liquefaction, soil expansion, and volcanism. The Project rights-of-way and workspaces are not characterized by volcanic or soil expansion, or susceptible to landslides; thus, the Project would not be affected by such hazards. Seismic hazards, karst conditions, subsidence and flooding are discussed below.

1.3.1 Seismic Hazards

Seismic hazards include earthquakes, ground faulting, and secondary effects such as soil liquefaction. The Project area is considered to be within the "Low" Earthquake Hazard Zone with little historical seismicity. The USGS earthquake hazard program mapping shows seismicity in terms of peak ground acceleration as a fraction of standard gravity. Within the Project area, the region's seismic hazard is between 4 and 10 percent gravity, for the 2 percent probability of return period in 50 years (USGS, 2014). These values represent light ground shaking with little to no associated damage, and low potential for soil liquefaction to occur. In addition, saturated soils that could contribute to soil liquefaction are not likely to be present in the Project's vicinity.

In New Mexico's southeastern corner, clusters of small magnitude (seismic moment[10] $\leq$ 4) earthquakes have occurred. These have occurred in the Great Plains Province area, near the Project area. In Texas, notable historic earthquakes of a magnitude of 4.5 or greater have occurred, mostly in the northern and western panhandles. The closest earthquake of a magnitude of 5.7 occurred 70 miles from the Project area in 1995. The Project area is depicted as less than one percent chance of damage from an earthquake, according to the USGS (2018). In addition, no known active surface faults (Quaternary faults) have been identified within the Project area (Machette, 1998; USGS, 2018). Therefore, seismic-related impacts from construction and operation of the Project is expected to be low.

[10] The seismic moment is a measure of the size of an earthquake based on the area of fault rupture, the average amount of slip, and the force that was required to overcome the friction sticking the rocks together that were offset by faulting. Seismic moment has replaced the more common "Richter magnitude" scale.

1.3.2 Landslides

The USGS defines a landslide as the mass movement of debris, rock, or earth/soil, as it slides, falls, topples, spreads, and/or flows down a slope. Typically, landslides occur on slopes which are unstable due to extreme weather conditions, including rainfall or snow amounts, stream/bank erosion, changes in the groundwater table or surface water levels, earthquakes or volcanic activity. Landfalls can also be a result of human activity. According to the USGS National Landslide Information Center (1997), the Project is within a Low Landslide Incidence area.

Based on the degree of slope, soil type, and ordinary climate conditions, erosion hazards are rated as moderate within the Project area. The arid climate and moderately flat terrain do not create landslide hazards. U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) mapping indicates less than 8 percent slopes within a majority of the proposed facilities and up to 15 percent slopes surrounding the remainder of the facilities (USDA-NRCS, 2018). The data indicate no significant risks of slope related landslides during construction or operation of the Project.

1.3.3 Karst

The USGS "Karst in the U.S. Map" identifies portions of the Project area where karst could develop or exist due to carbonate rocks at or near the surface (Weary et al., 2014). Carbonate rock formations have the potential to become karst formations. According to USGS mapping, karst or potential karst formations lie beneath approximately 33.9 miles of the proposed pipelines, with potential karst formations that include: T100 between MPs 14-16, MPs 17-18, MPs 19-22; T200 between MPs 39-42, MPs 43-48, MPs 51-52, MPs 55-57, MPs 60-70 (including Re-Route R-1), MPs 71-75, MPs 80-82, MPs 83-86, MPs 88-89, MPs 92-103; and Line L100 between MPs 15-16.

In addition, two of the proposed meter stations, Big Eddy and Lobo Receipt, and two of the HDD locations, on T200 between MP 41.8-42.1 and MPs 96.9-97.25 may be underlain by a karst layer. The other three HDD locations are within a shallow depth of karst, which may be intersected during drilling activities. Double E conducted a geotechnical survey to better characterized potential karst features along its Project route. Several reroutes were adopted to avoid and minimize crossings of high-risk karst features. One location (Re-route 3) on a section of L100, was reviewed by a field survey for verification of karst conditions. In this section, a small playa lake[11] feature was identified. A soil test pit revealed the soils to be non-hydric, containing several small swallets (sinkholes) in the soil which averaged 30 centimeters in diameter and depth. These were located within larger cover-collapsed sinkholes, signifying solution enlarged fractures, which could occur during excavating.

[11] A playa is defined as a shallow, low energy wetland situated in a topographic depression (Cowardin et al., 1979; Tiner 2019). Generally, this is an historic lakebed that has since dried, leaving deposits such as clay, salt, or alkalai.

Based on the geotechnical survey and USGS mapping, the risk of significant ground subsidence due to karst development along the pipeline is low. The ability of the proposed pipeline to bridge minor subsidence without damage makes the risk of damage from localized depression from ground settlement of fissure development low. Double E has developed an acceptable *Karst Mitigation Plan*[12] that specifies practices to be implemented during construction should karst be discovered during trenching or drilling activities. Double E also has filed an acceptable *HDD Inadvertent Release Contingency Plan* for addressing inadvertent returns or loss of drilling fluids during HDD operations.

1.3.4 Subsidence

Five active potash mine areas exist in the Project area. These mining areas may use subsurface mining techniques, which can induce mine-related subsidence or the potential collapse of mine workings. Double E would monitor potential ground movement through onsite operations and potentially using technologies incorporating satellite imagery and radar to detect ground movement. If any subsidence along the pipeline is recorded during construction, Double E would coordinate with the appropriate agencies and the landowners/mine operators to mitigate for subsidence impacts.

Similarly, oil/gas extraction has the potential to create subsidence. Double E would continue to coordinate with oil/gas companies regarding the location of well pads and pipelines planned or proposed in the area that may impact Double E's pipeline route. Double E would also monitor and continue to field-verify site-specific features such as road crossings, foreign utility crossings, and oil/gas assets within or near the Project rights-of-way and workspace areas.

1.3.5 Flooding

Flooding (as well as shallow groundwater) can cause buoyancy in pipelines. Flooding can also induce migration of streams and cause scour that can undermine or expose a pipeline. The Project crosses the 100-year Federal Emergency Management Agency (2018) floodplain of the Pecos River in Eddy County, New Mexico and again where the same river is crossed in Ward and Reeves Counties, Texas. Construction of the pipeline within these areas would be installed via HDD at a depth of at least 45 feet. Numerous ephemeral streams and washes cross the proposed construction right-of-way. Double E would increase the depth of cover to at least 5 feet at all crossings. No aboveground facilities are sited within any designated floodplains. Therefore, minimal flooding and scour issues are anticipated from construction and operation of the Project.

Construction and operation of the Project would not result in significant impacts on geologic resources, and any potential geologic hazards encountered during construction would be adequately minimized with implementation of measures contained in Double E's *Karst Mitigation* and *HDD Inadvertent Release Contingency Plans*.

[12] Double E's *Karst Mitigation Plan* was included as appendix 6-D to Resource Report 6 in its July 31, 2019, application. The *Karst Mitigation Plan* can be viewed on the FERC website at http://www.ferc.gov. Using the "eLibrary" link, select "Advanced Search" from the eLibrary menu and enter 20190731-5124 in the "Numbers: Accession Number" field.

1.4 Paleontology

Paleontological resources are the fossilized remains of prehistoric plants and animals, as well as the impressions of these organisms that are left in rock or other materials. The majority of the Project area overlies Quaternary deposits (approximately 15 to 30 feet thick), which generally do not contain significant fossils, except for the Quaternary Gatuna Formation containing Cretaceous fossils. Some bedrock strata may contain fossils, although high-quality specimens are uncommon.

On January 4, 2019, Double E's paleontological consultant conducted a paleontological survey on the TL100, between approximate MPs 4.9 to 5.1, which falls within an area that the BLM classifies as having geologic units that are known to contain a high occurrence of paleontological resources. Due to the recommendations from the survey, Double E developed an *Unanticipated Paleontological Discoveries Plan*[13] that would be implemented during construction for the entire Project. As part of the plan, Double E would train construction personnel on the procedures to follow if paleontological resources are discovered during construction. In addition, the BLM would require a paleontological monitor to be present during construction between MPs 4.9 to 5.1. Upon discovery of any paleontological resources, Double E would cease construction activities in the area of the discovery and consult with EMNRD, the University of Texas at Austin Vertebrate Paleontology Laboratory, and/or the BLM depending on the location of the resources. We reviewed the *Unanticipated Paleontological Discoveries Plan* and find it acceptable. With implementation of these measures, we conclude that the Project would not adversely affect paleontological resources.

2. Soils

Information regarding soil types and characteristics in the Project area was obtained from the USDA-NRCS soils database; soil surveys of Eddy and Lea Counties, New Mexico; and soil surveys of Loving, Ward, Reeves, and Pecos Counties, Texas. As described in EA section B.1, the Project area is within the Pecos Valley Section of the Great Plains Physiographic Province, which is characterized by sedimentary rock that is overlain with quaternary alluvial deposits. The alluvial deposits in the Project area consist of a variety of soil types with slopes that range from 0 to 25 percent. The majority of the parent material associated with soils in the Project area consists of mixed alluvium, loamy alluvium, and aeolian (wind-driven) deposits. Most of the soils in the Project area are well drained to excessively well drained with variable permeabilities. Surface textures associated with soils in the Project area primarily include fine sandy loams, gravelly fine sands, gravelly loams, loams, and loamy fine sands.

Construction activities such as clearing, grading, excavation, backfilling, heavy equipment traffic, and restoration could result in adverse impacts on soil resources in temporary workspaces, on access roads, and at aboveground facilities. Clearing activities would require the removal of protective vegetation and expose soils to the effects of wind, sun, and precipitation,

[13] Double E's *Unanticipated Paleontological Discoveries Plan* is included as appendix 6-I to Resource Report in its July 31, 2019, application. The Discoveries Plan can be viewed on the FERC website at http://www.ferc.gov. Using the "eLibrary" link, select "Advanced Search" from the eLibrary menu and enter 20190731-5124 in the "Numbers: Accession Number" field.

which could increase soil erosion and the transport of sediment to sensitive areas such as waterbodies or ephemeral washes. Grading and equipment traffic could compact soil, reducing porosity and percolation rates, which could result in increased runoff potential. Soil contamination resulting from equipment spills and/or leakage of fuels, lubricants, and coolants could also impact soils.

Soils affected by construction and operation include those within the 125-foot-wide construction right-of-way, ATWS, aboveground facilities, access roads, and contractor areas/yards. The primary soil limitations identified in these work areas include wind and water erosion, and poor revegetation. These potential impacts, as well as the implementation of the specific protective measures from FERC's Plan and Procedures, are addressed in the following subsections.

2.1 Erosion Hazard

The Project route crosses approximately 1,713.2 acres of soils with a high potential for erosion by water and approximately 1,122.8 acres of soils with a high potential for erosion by wind. These acreages constitute approximately 69 percent and 45 percent, respectively, of the total acreage of soils crossed by the Project. The potential for wind and water erosion would increase during construction activities conducted within the North American monsoon season, which occurs in the Project area between June 15 and September 30.

To minimize the potential for wind and water erosion, Double E would implement erosion control measures in the FERC's Plan and Procedures, consisting of installing barriers (e.g., silt fencing, filter socks) or diversion structures (e.g., temporary slope breakers) to prevent the migration of sediment-laden waters from approved work areas. Measures requiring the installation, placement, and spacing of temporary slope breakers would be implemented in accordance with FERC's Plan and Procedures and incorporated in Double E's E&SC Plan. In addition, the proposed 125-foot-wide right-of-way limit would provide enough space to contain the limited drift of soils and prevent construction debris and materials from entering adjacent waterbodies and sensitive resources. During construction, an EI would monitor and environmental crews would maintain erosion controls until work areas have been appropriately stabilized and/or permanent erosion controls are installed. Potential impacts associated with wetland and waterbody crossings are discussed in section B.3, Water Resources and Wetlands.

Stormwater surface flow would be managed with the installation of breaks in windrowed spoil piles and the use of diversion structures to minimize upgradient flooding and downstream sedimentation. Double E would identify locations where stormwater runoff may occur and install breaks at regulator intervals. During trenching activities, Double E would install flume pipes and diversion berms or ditches to direct stormwater across trenches as necessary. Trench plugs as well as inlet and outlet structures would also be utilized as needed to prevent erosion and scouring.

To evaluate topsoil in the Project area, a geomorphological study was conducted by a Certified Professional Soil Scientist on behalf of Double E. A review of soil maps in the Project area indicated that topsoil depths should range from approximately 1 to 18 inches along the Project route with an average depth of 8 inches.

About 22.9 acres of agricultural land identified as dryland grass/hayfields and irrigated hayfields would be crossed by Line L100 in Eddy County during construction. Although Double E has committed to topsoiling in hayfields crossed by Line L100, the FERC Plan requires topsoil segregation be conducted in cultivated or rotated croplands, managed pasture, residential areas, and other areas at the landowner or agency request. Therefore, during construction activities, additional areas may be identified for topsoil segregation, by the EI(s), BLM monitors, or upon request by affected landowners. As described in section B.3.a and b of the FERC Plan, at least 12 inches of topsoil would be segregated in deep soils with more 12 inches of topsoil. If less than 12 inches of topsoil is present, then the entire topsoil layer would be segregated.

Double E has also proposed to conduct ditchline topsoiling in right-of-way areas that are flat or have a slightly rolling topography. As the soils throughout the Project area have a low revegetation potential, we find that that Double E's proposal to segregate topsoil in areas along the right-of-way that are flat or have slightly rolling topography is acceptable; however, we encourage Double E to consider full-width topsoiling to the fullest extent feasible to potentially increase the revegetation rate.

When construction requires grading of the entire pipeline right-of-way width of 125 feet, Double E would move topsoil to the far edges of either the working side or the spoil side of the work area to protect it from construction traffic. Section IV.B.6 of the FERC Plan requires that topsoil piles be stabilized with use of sediment barriers, mulch, temporary seeding, tackifiers, or functional equivalents. Double E has identified spraying the topsoil pile with water to form a crust as a functional equivalent, and based on our experience in the area, we agree with this method.

To further reduce the potential for erosion, Double E would adhere to a 60-day schedule between the initial removal of topsoil and the completion of pipeline installation and backfilling activities. In addition, final grading, topsoil replacement, and the installation of permanent erosion controls would be completed within 20 days following the completion of backfilling activities. Once backfilling is complete, cleanup and restoration activities would begin immediately. In the event that the 60-day schedule needs to be extended due to weather conditions, the previously described temporary erosion controls would be installed and routinely monitored by the EI until conditions allow the commencement of cleanup activities. As a result, impacts on topsoil would be adequately minimized during construction. With the implementation of the previously described erosion controls specified in FERC's Plan and Procedures, impacts resulting from erosion would be minimal.

2.2 Soil Compaction

Soils characterized by a high potential for compaction are not anticipated to be encountered during Project construction. However, Double E would avoid construction during periods of heavy rainfall and grade work areas to their original contour to avoid the potential for soil compaction. Rutted areas would also be repaired prior to final revegetation, seeding, and mulching.

In the event that soil compaction occurs, Double E would de-compact soils per the measures outlined in the FERC Plan, which would include the removal of large stones prior to

replacing topsoil. In addition, Double E would ensure that topsoil and subsoil are not mixed during de-compaction. Therefore, impacts resulting from soil compaction are not anticipated.

2.3 Post-Construction Revegetation

The Project would temporarily disturb approximately 2,042.0 acres of soils characterized by having a low revegetation potential. This acreage constitutes approximately 83 percent of the total acreage of soils that would be affected by Project activities. At a minimum, Double E would adhere to the restoration and revegetation requirements outlined in the FERC Plan as well as any applicable permit conditions to minimize impacts on soils. As described in EA section B.2.1, Double E would segregate topsoil, store it at the far edges of work areas, and spray it with water to avoid topsoil loss and erosion in an agricultural area along Line L100 and over the ditch line in areas with flat or rolling terrain. These measures are consistent with the FERC Plan and would be incorporated into Double E's E&SC Plan.

Double E, however, has proposed to spread topsoil with a bulldozer or motor grader to pack it to prevent loss due to wind erosion. FERC's Plan requires applicants to stabilize topsoil piles with the use of sediment barriers, mulch, temporary seeding, tackifiers, or functional equivalents. Topsoil packing is not a measure we see commonly employed. We believe that Double E's proposal to pack the topsoil could aid in minimizing wind erosion given the arid environment of the project area; however, it could also lead to subsoil mixing and compaction of the topsoil resource. To ensure that topsoil is adequately protected and to further evaluate whether topsoil packing is an acceptable functional equivalent to mitigate wind erosion, **we recommend that:**

- **<u>Prior to construction</u>, Double E should file with the Secretary and the BLM project-specific justification for its plan to pack segregated topsoil along the right-of-way to minimize wind erosion. Double E should address the potential for topsoil mixing if decompaction measures are necessary. Double E <u>should not</u> pack segregated topsoil piles <u>unless</u> it has received written approval from the Director of the Office of Energy Projects (OEP) to incorporate this measure into its E&SC Plan.**

In November 2018, Double E initiated consultations with the NMSLO, the University of Texas System Lands Office (TXUL), USDA-NRCS, and the BLM regarding Project-specific seed mixes and soil amendments to assist with revegetation in the Project area. USDA-NRCS representatives in New Mexico and Texas provided seed mixes for a wide variety of ecological sites as well as recommendations for their implementation. The BLM also provided seed mixtures and planting procedures for a variety of sites in the Project area.

In addition, the Texas Parks and Wildlife Department (TPWD) provided seed recommendations in its November 27, 2018 correspondence. Site-specific revegetation measures, seed mixes, and agency recommendations would be incorporated into the Project's E&SC Plan and implemented during construction.

Following revegetation efforts, Double E would conduct follow-up inspections of disturbed areas to ensure that successful revegetation has occurred and to address landowner concerns per the FERC Plan. At a minimum, these inspections would be conducted after the first

and second growing seasons. Revegetation would be considered successful for both private and public lands when the condition of disturbed right-of-way is similar to adjacent undisturbed lands, construction debris is removed, and natural contours and drainage patterns have been restored. Restoration techniques for waterbody and wetland crossings are described in EA section B.3, below. With the implementation of NMSLO, NRCS, and TXUL recommendations, measures contained in the FERC Plan, and Double E's planned measures, the potential for poor revegetation would be adequately minimized.

Double E identified Texas- and New Mexico-listed noxious weeds species that include saltover *(Halogeton glomeratus)*, scotch thistle *(Onopordum acanthium)*, and saltcedar (*Tamarix* sp.). Construction equipment could potentially spread noxious weeds, and exposed topsoil could provide recruitment for these species. Double E would implement the following practices to avoid and minimize the potential for the introduction of noxious weeds and invasive species during construction:

- implement erosion control measures in the FERC's Plan and Procedures to prevent the movement of sediments into newly disturbed soils;
- minimize the time that bare soil is exposed to avoid the recruitment of noxious weeds;
- re-seed promptly after final grading;
- ensure that mulch and straw are certified as weed-free;
- install wash stations to clean equipment;
- install track pads, gravel beds, or rumble strips at ingress and egress points to limit the transport of weeds; and
- treat infested soils as appropriate.

Additional discussion of noxious weeds and associated mitigation is provided in section B.4, below. With the implementation of the previously described measures, no significant impacts from noxious weeds and invasive species are anticipated.

Shallow bedrock is potentially present beneath approximately 60.0 acres of soils crossed by the Project, which is approximately 2.5 percent of the total soil acreage affected by Project activities. Stoney and/or rocky soils are present in approximately 82.9 acres of soils affected by the Project, which is approximately 3.4 percent of the total soil acreage affected. Therefore, rocky material could be mixed with topsoil during backfilling, potentially impacting soil fertility and revegetation.

When rocky soils are encountered during construction, Double E would utilize rock excavation techniques such as rock trenchers, hydraulic hoe hammers, and ripper teeth. Blasting is not anticipated to be required. However, if blasting is deemed necessary during excavation activities, Double E would file site-specific blasting procedures for our review and approval, prior to the implementation of any blasting activities.

Prior to replacing topsoil and conducting restoration activities, Double E would remove large stones and rocky materials that are not congruent with adjacent, undisturbed areas. In addition, Double E would ensure that topsoil and subsoil are not mixed during backfilling and

decompaction activities. Therefore, the potential for introducing rocky materials into topsoil would be minimized with the implementation of the measures described in the FERC Plan.

2.4 Contaminated Soils

Subsurface contaminants are not anticipated to be encountered during construction. In the event that contaminated soils are unearthed during excavation activities, work would be halted and the appropriate agencies would be notified. Accidental spills or leaks of fuels, lubricants, or coolant from construction equipment would be addressed according to the cleanup and response procedures listed in Double E's SPCC Plan.[14] We have reviewed the SPCC Plan and find the measures acceptable.

2.5 Prime or Unique Farmland or Farmland of Statewide Importance

The Project would temporarily affect approximately 11.0 acres of Prime Farmland and approximately 158.4 acres of Farmland of Statewide Importance. Land classified with these designations would be crossed during construction of Lines T200 and L100. The construction and operation of aboveground facilities and appurtenant facilities associated with the Project would not permanently affect any soil series that are USDA-NRCS-classified Prime Farmland Soils or Farmland of Statewide Importance Soils. As previously discussed in section B.2.3, topsoil would be segregated, backfilled, and revegetated in accordance with the FERC Plan, which Double E would incorporate into its E&SC Plan. Therefore, agricultural soils that are temporarily affected during the installation of Lines T200 and L100 would be restored to their original condition following Project construction. As a result, no significant impacts on farmland are anticipated.

3. Water Resources and Wetlands

3.1 Groundwater Resources

The proposed Project lies within the Pecos Valley Section of the Great Plains Physiographic Province in Texas and New Mexico. It is underlain by the Pecos River Basin alluvial aquifer, which is a major aquifer in New Mexico and west Texas. The water-bearing sediments include alluvial and aeolian deposits that extend up to 1,500 feet below ground surface and have an average freshwater saturated thickness of approximately 250 feet (Texas Water Development Board [TWDB], 2016). Recharge of the aquifer is primarily from direct precipitation and infiltration from intermittent streamflow, supplemented by return irrigation water, and subsurface flow from older formation.

The Pecos River Basin alluvial aquifer is characterized by high levels of chloride and sulphate in excess of secondary drinking water standards, resulting from previous oil field activities, in addition to naturally occurring arsenic and radionuclides in excess of primary drinking water standards. Also, more than 80 percent of groundwater pumped from the Pecos

[14] Double E's SPCC Plan was included as appendix 2-C to Resource Report 2 in its July 31, 2019, application. The SPCC Plan can be viewed on the FERC website at http://www.ferc.gov. Using the "eLibrary"link, select "Advanced Search" from the eLibrary menu and enter 20190731-5124 in the "Numbers: Accession Number" field.

Valley aquifer is used for irrigation, and the rest is withdrawn for municipal supplies, industrial use, and power generation (TWDB, 2011).

The Project area lies within the Arid West Region which is characterized by a generally hot and dry climate (average annual precipitation is less than 15 inches) with a long summer dry season. The landscape is dominated by grasses and shrubs with no forest cover. Soils are mostly dry, poorly developed, and low in organic matter. Ephemeral streams/channels are common and water tables are often perched. The major streams and rivers that flow through the area have headwaters outside of the Arid West (U.S. Army Corps of Engineers [USACE], 2008).

3.1.1 Sole-Source Aquifers and Protected Aquifers

Under Section 1424(e) of the Safe Drinking Water Act, the U.S. Environmental Protection Agency (EPA) defines a sole or principal source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer, and for which there are no other reasonably available alternative drinking water source(s) that could physically, legally, and economically supply all those who depend on the aquifer for drinking water should the aquifer become contaminated. None of the Project areas are within sole-source aquifers (EPA, 2017). No wellhead protection areas or other protected groundwater sources were defined within the Project area.

3.1.2 Water Supply Wells and Springs

3.1.2.1 New Mexico

No seeps or springs are present in the proposed construction workspaces, based on Double E's surveys.

Eleven active groundwater wells and one expired (not active) well were identified within 150 feet of Project construction work areas. Of the active wells, three were listed as livestock watering, one was listed as domestic, five were listed as sanitary and commercial use, one was listed as prospecting or development, and one was listed as industry. Of these, three wells are within the construction right-of-way of Line L100; two of which are owned by Double E. Two groundwater supply wells within 1,000 feet of the proposed L100 are underlain by karst (TWDB, 2015; New Mexico Office of State Engineer, 2014; USGS, 2016). Additionally, one private water well is within 1,000 feet of the proposed L100 construction workspace, which is also underlain by karst.

Two of the proposed HDD crossings would be conducted in areas defined by the BLM as "medium" karst potential areas. These areas are also underlain by a karst layer, which could be intersected during drilling activities. Further discussion of karst resources can be found in section B.1, above.

3.1.2.2 Texas

No seeps or springs in the proposed construction workspaces were identified during Double E's field surveys. One active groundwater well is within 150 feet of the Project's Pecos laydown yard in Texas, and is listed as an active irrigation well. Six groundwater supply wells

or springs were identified within 1,000 feet of the proposed T200 Line workspace limits, which are underlain by karst (TWDB, 2015; New Mexico Office of the State Engineer, 2014; USGS, 2016). Four of the wells are listed as unused.

Texas is divided into 16 Groundwater Management Areas which are further divided into Groundwater Conservation Districts. According to the TWDB, approximately 0.15 percent of the Project lies within a confirmed Conservation District.

3.1.2.3 Groundwater Contamination

The Project does not involve construction in general proximity to areas of known contamination. Pipeline and aboveground construction activities require the use of heavy equipment and associated fuels, lubricants, and other potentially hazardous substances that, if spilled, could affect shallow groundwater and/or aquifers. Accidental spills or leaks of hazardous materials associated with vehicle fueling, vehicle maintenance, and material storage would present the greatest potential contamination threat to groundwater resources. If not properly addressed, soil contamination resulting from these spills or leaks could continue to add pollutants to the groundwater for some period after the spill occurred.

According to the comprehensive environmental database search for contaminated or hazardous waste sites completed by Environmental Data Resources, Inc. on behalf of Double E, no reported instances of contaminated groundwater have been reported within 0.25 mile of the proposed facilities. Therefore, no effect from contaminated groundwater is anticipated. Should Double E encounter unanticipated contaminated groundwater during construction, it would evaluate and treat impacted groundwater in accordance with the measures contained in its SPCC Plan and federal and state permitting requirements.

3.1.2.4 Groundwater Impacts and Mitigation

Construction activities, including clearing, trench excavation, dewatering, and fuel handling, could affect groundwater in several ways. Clearing and grading would remove vegetation that provides filtration and slows surface runoff. Trenching and soil stockpiling activities would temporarily alter overland flow and groundwater recharge and could alter near-surface groundwater flows where shallow groundwater is encountered. Heavy equipment use could compact the soil along the construction right-of-way and slow groundwater recharge rates. Shallow groundwater could also affect the buoyancy of the pipe, increase the potential for pipe corrosion, and cause sidewall instability during construction. In the event groundwater was to infiltrate into the excavated areas, dewatering could result in localized, minor changes in the water table.

Pipeline construction activities are not expected to impact groundwater resources, as the average depth of the groundwater in the Pecos Aquifer is far greater than the Project's trenching or HDD depths. Similarly, no impacts on the Groundwater Conservation District are anticipated as shallow pipeline construction is unlikely to intersect the groundwater table. Therefore, construction, operation, and maintenance of the proposed facilities would not be expected to have long-term impacts on groundwater resources. Effects from construction would likely be

temporary, and the groundwater system would recover to equilibrium within a period of days to a few months.

Prior to construction, the existence of the wells identified through desktop review of publicly available information would be confirmed with landowners. For active water wells within 250 feet of construction activities, Double E would complete pre- and construction testing where allowed by the landowner. Evaluation of drinking water well yields and water quality testing would be conducted prior to construction. If it is determined that a private water supply or quality is damaged as a result of the Project, Double E would arrange for a temporary source of potable water until the water quality and/or well yield is restored. To minimize the risk of potential fuel or equipment fluid spills, Double E would implement its SPCC Plan throughout the duration of construction to prevent spills or leaks of hazardous materials associated with vehicle fueling, vehicle maintenance, and material storage. Other groundwater impacts during construction would be effectively minimized or avoided by implementing construction practices outlined in FERC's Plan and Procedures. Therefore, impacts on groundwater resources would be adequately minimized. As a result, no significant impacts on groundwater are anticipated.

3.2 Surface Water Resources

3.2.1 Surface Water Resources

The Project would cross 152 stream features. Double E conducted a survey of surface waterbodies within the Project area from July 2018 through August 2019. Field delineated features crossed by the Project included 148 ephemeral streams, 1 intermittent, 2 perennial streams, and 1 dry historic canal. See appendix C for a table (C-4) of waterbodies crossed by the Project.

Double E would construct its facilities in accordance with the FERC Procedures and the regulations and requirements of applicable permits such as USACE authorizations under Section 404 of the Clean Water Act, National Pollutant Discharge Elimination System stormwater discharge permit, and Hydrostatic Test Water Discharge Permit. Double E submitted its notification to the USACE indicating its intent to construct the Project in accordance with the USACE's Nationwide Permit 12.

3.2.1.1 New Mexico

The Project areas in New Mexico are located within the Williams Sink (USGS Hydrologic Unit Code [HUC] #1306001115), Clayton Basin (HUC #1306001102), Salt Lake (HUC #1306001117), Delaware River-Pecos River (HUC #1306001114), Black River-Pecos River (HUC # 1306001112), Black River (HUC #1306001111), Red Bluff Reservoir (HUC #1307000101), Red Hills Draw (HUC #1307000105), and Narrow Bow Draw-Pecos River (HUC #1307000104) watersheds.

In New Mexico, the Project would cross 62 ephemeral waterbodies and 1 intermittent waterbody. Sixty of the waterbodies would be constructed via the open-cut method. Both perennial crossings of the Pecos River (first of the two crossings, at milepost 10.5) would be crossed via HDD. The Southern Canal, a historic water feature, would be crossed via horizontal bore (see EA section B.7, Cultural Resources).

The Lower Pecos River below Carlsbad is designated as a Special Status Waterbody in New Mexico, as it contains the state-listed western river cooter and plain-bellied water snake (USACE, 2017) (See section B.4 for more information). The Project does not cross any designated National Wild and Scenic Rivers or Section 10 Navigable Waters (USFWS, 2014, 2011). None of the waterbodies are designated Outstanding National Resource Waters according to the New Mexico Environment Department. There are no potable water intakes located downstream of the Project.

3.2.1.2 Texas

The Project within Texas is located within the Red Bluff Reservoir (HUC #1307000101), Red Hills Draw (HUC #1307000105), Narrow Bow Draw-Pecos River (HUC #1307000104), Horsehead Draw-Pecos River (HUC #1307000106), Rudd Draw-Soda Lake (HUC #1307000108), China Lake (HUC #130700070701), Town of Kermit-Monument Draw (HUC #1307000708), Black Draw-Pecos River (HUC #1307000110), Linterna Gas Field-Hackberry Draw (HUC #1307000606), and Coyanosa Draw (HUC #1307000605) watersheds.

The Project would cross 85 ephemeral waterbodies in Texas, which would be crossed via the open-cut method. One perennial waterbody, the Pecos River within Texas (second of the two crossings, at MP 108.4) would be crossed via HDD. In addition, the Big Valley Canal, an historic water feature, would be crossed via horizontal bore (see section B.7., Cultural Resources).

The Project would cross the Pecos River upstream of the confluence of Independence Creek in Crockett/Terrell Counties and Red Bluff Dam in Loving/Reeves Counties, Texas, which is a portion of the river considered impaired for "depressed dissolved oxygen" (Texas Commission on Environmental Quality, 2016). The Pecos River from the confluence of the Black River to the Texas Border is listed as an impaired waterbody for *E. coli*, polychlorinated biphenyls, and dissolved oxygen (New Mexico Environment Department, 2018). Because the Pecos River would be crossed utilizing HDD, construction would not be expected to further impact 303(d)/impaired waters. A review of the Texas Commission on Environmental Quality Texas Drinking Water Watch determined that there are no potable water intakes downstream of the Project area in Texas.

According to the TPWD, none of the Project waterbodies are Ecologically Significant Stream Segments. No mapped critical habitats for federally listed species and no known trout streams would be crossed (see section B.4.4).

According to the EPA's National Sediment Quality Survey, the Lower Pecos Watershed (which, for the Project areas, incorporates all the Texas HUCs listed above) contains one Tier 1 (sediment contamination associated with probable adverse effects on aquatic life) and one Tier 2 (sediment contamination associated with possible adverse effects) Sampling Station Location; however, the watershed was not classified as an Area of Probable Concern for sediment contamination (EPA, 2004a).

3.2.2 Crossing Methods and Mitigation

Double E anticipates that most ephemeral and intermittent waterbodies would be crossed using open-cut methods during "no flow" conditions. However, if the waterbodies are flowing water at the time of the crossing, Double E would cross the waterbodies using a dry-ditch method such as dam and pump or flume, depending on the conditions encountered in the field. Perennial (flowing) waterbodies would be crossed by either an HDD or bore.

For open-cut or dry-ditch crossings, trench spoil is required to be stored at least 10 feet from the stream banks (topographic conditions permitting), per the FERC Procedures. Sediment barriers, such as silt fence and staked straw bales, are then installed to prevent spoil and sediment-laden water from entering the stream. Per the FERC Procedures, a site-specific construction plan would need to be filed by Double E if a major waterbody (greater than 100 feet wide) is flowing at the time of crossing. One crossing at MP 29.5 was identified as a major waterbody crossed by Line T100.

The Big Valley Canal, listed in the table C-4 in appendix C and crossed by Line T200, appears to no longer convey water due to lack of ordinary high-water mark indicators and vegetation overgrowth. This canal, along with others in the area, were historically used as irrigation ditches to direct water from the Pecos River inland. To avoid direct impact on the Big Valley Canal, the feature would be crossed using direct bore. The Project also crosses the Southern Canal at MP 14.8 on Line L100, which would be crossed using a horizontal bore method.

Construction of the pipelines across or near waterbodies has the potential to result in short-term and minor direct impact on waterbodies from excavation activities within waterbody, construction adjacent to stream channels, the clearing and grading of adjacent lands and streambanks, trench dewatering, from the unanticipated releases of drilling mud during HDD operations, and spills or leaks of chemical contaminants such as fuels or lubricants. Construction activities could result in temporary modification of aquatic habitats through indirect impacts such as increased erosion, sedimentation and/or turbidity, and decreased dissolved oxygen concentrations, particularly within or near flowing surface waters.

To minimize erosion and sedimentation during construction through waterbodies, Double E would implement the protective measures contained in its E&SC Plan (developed based on the FERC Procedures), which includes the following:

- installing erosion and sedimentation control devices immediately following initial soil disturbance where required;
- inspecting and maintaining erosion and sediment control devices throughout the duration of construction and restoration;
- repairing or replacing devices within 24 hours of identifying deficiencies; and
- restoring temporary disturbance areas to pre-construction contours and drainage patterns.

In addition, in accordance with the FERC Procedures, Double E would limit its construction equipment to that needed to complete each waterbody crossing. All extra workspaces would be located at least 50 feet away from the water's edge, except where the adjacent upland consists of active cropland or other disturbed land. In addition, all stockpiled spoil from waterbody crossings would be placed in the construction right-of-way at least 10 feet from the water's edge. Waterbody banks would be stabilized with erosion control fabric or equivalent.

The HDD method would be used at both Pecos River crossings. HDD crossings generally avoid or minimize impacts on surface waters. HDDs also avoid disturbing the bed and banks of waterbodies and minimize ground disturbance to streams and the land surface between the entry and exit points of the crossing. ATWS would be located on either side of the waterbody feature to accommodate the entry and exit locations of the HDD. Our review of Double E's Pecos River crossing plans confirms that proposed ATWS is at least 50 feet from the water banks, per the requirements of the FERC Procedures.

The execution of the HDD method requires the use of drilling mud under pressure, and the potential exists for an inadvertent release of the drilling mud. Double E would use appropriate BMPs and drilling methods to limit the potential for an inadvertent return. Such practices include the contractor taking care such that penetration rates would not exceed the rate of cuttings removal from the hole; maintaining proper drilling fluid properties to clean the hole and not allowing excess solids to build up in the drilling fluid; and maintaining drilling fluid returns at all times during the pilot hole, hole opening, and pullback processes. Containment materials, such as hay bales, silt fence, and/or sand bags would be deployed in the event an inadvertent release occurs in or near any waterbody or wetland. Berms may also be constructed as needed to prevent release of materials from flowing into a waterbody or wetland.

Drilling fluids, consisting of a mixture of water, bentonite (an inert, non-toxic clay), and/or polymers are pumped into the bore during the entire HDD installation process. The exact mixture of fluids is typically determined by the HDD contractor based on the anticipated and actual geotechnical materials encountered within the bore and the performance of the drilling equipment as the drilling process progresses. The drilling fluids are typically a mixture of freshwater and bentonite. Typically, the drilling fluid contains no more than 5 percent bentonite (95 percent freshwater). Double E has not addressed drilling fluid additives or mixture content. Therefore, **we recommend that**:

- **<u>Prior to any HDD construction</u>, Double E should file with the Secretary, for review and written approval by the Director of OEP, a listing of all drilling fluid additives that may be used during HDD activities, along with their respective safety data sheets, and indicate the ecotoxicity of each additive to the identified toxicity for relevant biotic receptors (e.g., fish). Double E should also identify whether the additives are non-petrochemical-based, non-hazardous, and NSF International/American National Standards Institute (NSF/ANSI) 60 Drinking Water Treatment Chemicals – Health Effects compliant.**

Double E has prepared an *HDD Inadvertent Return Contingency* Plan that outlines specific procedures and methods for addressing an inadvertent release of drilling mud. This plan

includes procedures for monitoring, detection, isolating, stopping, and clean-up of inadvertent releases, as well as making necessary agency notifications. We have reviewed this plan and find it acceptable.

To minimize the risk of potential fuel or equipment fluid spills, Double E has developed an acceptable SPCC Plan, which would be implemented throughout the duration of construction.

Once construction is completed, Double E would restore disturbed construction work areas and water body banks to match pre-construction contours and drainage patterns. All riparian areas would be revegetated with native species of conservation grasses, legumes and woody species, similar in density to adjacent undisturbed lands. Upland disturbed areas would be seeded using seed mix and seeding rates as developed through consultation with the NRCS. Temporary erosion controls would remain in place until final stabilization is approved. Based on these measures, we conclude that potential impacts on waterbodies would be short-term and not significant.

3.2.3 Hydrostatic Testing

In accordance with USDOT regulations, Double E would conduct hydrostatic testing for the new pipeline prior to placing it into service to ensure it is capable of operating at the design pressure. The pipeline would be tested in six sections, moving the water from the south to the north, using approximately 11.0 million gallons of water. Hydrostatic test waters would be obtained from local groundwater sources, specifically from within the 73.1-acre Waha Receiver and Separation Site. Additionally, Double E is evaluating the use of temporary storage facilities at the Waha Receiver and Separation Site to provide test water for the pipeline, Trans Pecos Pipeline Point of Delivery, and Lobo Receipt Meter Station. The water in the pipe would be pressurized and held for a minimum of 8 hours and is not anticipated to contain any chemical additives. If any leaks are detected, Double E would repair the piping segments and retest.

Upon completion of the hydrostatic test, water would be pushed back from the northern end of the pipe to the Poker Lake Meter Station where Double E is working with another operator to test and then place the water into existing reservoirs for reuse. If this option is not feasible, the water would be discharged into an upland area in accordance the hydrostatic test water discharge permits issued by the Railroad Commission of Texas and the New Mexico Environment Department, Surface Water Quality Bureau, to include discharge of test water using energy dissipation devices (e.g., straw bale dewatering structures lined with geotextile fabric) to reduce the velocity of the discharged water, thereby reducing the potential for erosion where the water is discharged. Impacts from the withdrawal and discharge of hydrostatic test water would be short-term and not significant.

3.2.4 Federal Emergency Management Agency Flood Zones

The Project would cross a Federal Emergency Management Agency 100-year floodplain for the Pecos River twice (Line L100 at MP 10.5 and Line T200 at MP 108.4). Construction of the pipeline within these floodplain areas would be via HDD at a depth of at least 45 feet, and therefore would not alter the function of the areas during a flood event. No aboveground facilities are proposed to be constructed with a floodplain. Outside of the Pecos River crossings,

the proposed route is in an Area of Minimal Flood Hazard (Federal Emergency Management Agency, 2018).

3.3 Wetlands

The USACE defines wetlands as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturated soil conditions." Section I.B.2 of the FERC Procedures defines a wetland as any area that is not actively cultivated or rotated cropland and that satisfies the requirements of the current federal methodology for identifying and delineating wetlands.

Double E conducted wetland and field delineations between July 2018 and August 2019 in accordance with the USACE *Wetlands Delineation Manual* (USACE, 1987) and the 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).* Double E also accessed the USFWS's National Wetlands Inventory to determine if wetlands were present within the Project sites. Table B-2 lists the wetlands crossed by the Project.

TABLE B-2
Wetlands Crossed by the Project

Wetland ID	State	Approx. MP	National Wetland Inventory/ Cowardin Classification	Approx. Crossing Length (feet)	Crossing Method	Construction (acres)	Operation[1] (acres)
Line T200							
WNM-TMA-002	NM	40.3	PEM	31.4	Open Cut	0.1	<0.1
WTX-TMA-001	TX	108.4	PEM	34.3	HDD	0.0	0.0
Line T200 Subtotal						**0.1**	**<0.1**
Line L100							
WNM-DAD-001	NM	10.5	PEM	73.0	HDD	0.0	0.0
PNM-TMA-003	NM	12.9	PUB (Pond)	110.9	Open Cut	0.2	<0.1
WNM-TMA-001	NM	12.9	PEM	767.6	Open Cut	1.2	0.2
PNM-TMA-002	TX	13.0	PUB (Pond)	N/A – not crossed by pipeline centerline	Open Cut	<0.1	0.0
Line L100 Subtotal						**<1.5**	**<0.3**
TOTAL						**<1.6**	**0.3**

[1] Operation impacts associated with the pipeline facilities are based on a 10-foot-wide corridor being maintained in an herbaceous state and selective shrub clearing within 10 feet of either side of the herbaceous corridor (open cut crossings). Therefore, minimal to no operational impacts would occur on emergent wetlands.

3.3.1 New Mexico

The Project would cross three wetlands in New Mexico; all are PEM wetlands, which are characterized by herbaceous hydrophytic vegetation and typically occur along stream banks and in wet meadows. Of the wetlands crossed, one would be entirely avoided via HDD at the Pecos River crossing (at MP 10.5 along Line L100). The entry and exit point of the HDD are located outside of the wetland area. The second wetland identified is an open-ended, PEM wetland within the Project right-of-way along Line L100; two freshwater ponds (classified as PUB wetlands) were identified within the larger PEM wetland. PUB wetlands are characterized by the presence of surface water for brief periods, from days to weeks during the growing season. The third PEM wetland was identified within the Project right-of-way along Line T200.

Two areas categorized as riparian communities were observed along the proposed Project route along Line L100 in New Mexico. The Project crosses wetland and riparian communities at the Pecos River crossing and near a lateral ditch off of the Black River Supply Ditch.

During consultation with the BLM Carlsbad Field Office, playas were identified as a point of potential concern by BLM resource staff. However, field investigations conducted by Double E concluded that no playa features exist within the construction work area.

3.3.2 Texas

The Pipeline Project would cross one PEM wetland within Texas along Line T200; however, this wetland would be entirely avoided via the HDD crossing at the Pecos River. Likewise, the riparian vegetation crossed at the Pecos River at MP 108.35 would be avoided, as the HDD entry and exit points would be outside of the riparian/wetland area.

3.3.3 Impacts and Mitigation

Construction of the Project would temporarily impact about 1.6 acres of PEM and PUB wetlands. In accordance with the FERC Procedures, Double E would limit disturbance to a 75-foot-wide construction corridor. Double E would retain a 50-foot-wide permanent easement centered on its pipeline, which would include approximately 1 acre of wetlands Project-wide. Vegetation maintenance in PEM wetlands would be limited to a 10-foot-wide corridor centered on the pipeline, which would affect 0.3 acre of wetlands.

Double E would minimize the potential for wetland impacts by implementing measures contained in the FERC Procedures. These measures include:

- limiting the width of the construction right-of-way in wetlands to 75 feet;
- locating ATWS in undisturbed lands at least 50 feet back from wetland boundaries;
- limiting equipment and temporarily installing mats where necessary to create a stable surface for equipment, to minimize soil mixing and compaction; and
- installing erosion control devices to control sedimentation until soils are adequately stabilized and adjacent upland areas are restored.

Impacts on wetlands from installing the pipeline via open-cut would include potential alteration of wetland value from vegetation clearing. Open-cut construction could result in temporary impacts on wetlands from the loss of herbaceous vegetation, potentially altering wildlife habitat; soil disturbance from excavation, trenching, grading, and compaction; increased sedimentation and turbidity; and hydrologic profile changes. Construction activities could also impact water quality within the affected wetlands as a result of increased sedimentation or inadvertent spills of fuel or chemicals. Wetland construction, restoration, and revegetation would be performed in accordance with the FERC Procedures and state requirements.

Regarding wetland restoration, FERC Procedures require implementation of a Project-specific wetland restoration plan for reestablishing native herbaceous species, preventing the spread of invasive species and monitoring the success of revegetation and weed control efforts. Until this plan is developed/implemented, the FERC Procedures require temporary revegetation with annual rye in unsaturated wetlands after construction is completed.

As described above, the potential for accidental releases of drilling mud exists. Impacts on wetlands from an inadvertent release would be minimized by implementation of Double E's *HDD Inadvertent Return Contingency Plan*, which includes procedures for monitoring, detection, isolating, stopping, and clean-up of inadvertent releases, as well as making necessary agency notifications.

Consistent with the FERC Procedures, Double E would monitor and annually record the success of wetland revegetation. Wetland revegetation would 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 percent of either the cover documented for the wetland prior to construction, or at least 80 percent 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.

Within three years after construction, a report would be filed with the Commission identifying the status of the wetland revegetation efforts and documenting success. A remedial revegetation plan would be developed and implemented for any wetland where revegetation is not successful.

Based on the limited amount of wetlands impacted by the Project; the use of HDD to avoid certain wetland impacts; and the described measures to further reduce impacts, we find that impacts on wetlands would be adequately minimized and not significant.

4. Vegetation and Wildlife

4.1 Vegetation

The Project area lies within the Chihuahuan Desert Ecoregion, which consists of low, desert shrublands that include a wide variety of yuccas, cacti, and thorny shrubs (U.S. Department of the Interior [USDOI], 2018a; Bailey, 1995). Between June 2018 and July 2019, Double E conducted vegetation and habitat surveys that identified vegetation sub-communities crossed by the proposed pipeline routes. Descriptions of these vegetation communities are provided below for New Mexico and Texas, respectively.

4.1.1 New Mexico

4.1.1.1 Vegetation Communities

Vegetation community descriptions in New Mexico were based on the National Vegetation classification and the EPA's Ecoregion list. Seven general vegetation communities would be crossed by the pipeline rights-of-way and aboveground facilities in New Mexico. These communities are described below.

Mesquite and Mixed Desert Shrublands. Mesquite Shrublands occur primarily on sandy and loamy fine sands, stony soils, and loamy fine sand soil types. Vegetation cover in mesquite shrublands can be variable depending on soil types; however, they are generally dominated by honey mesquite, broom snakeweed, plains yucca, and sand sagebrush. Grass cover is dominated by bush muhly, alkali sacaton, black gramma grass, little bluestem, and purple three-awn.

Mixed Desert Shrublands are found mainly in sandy loams on stony and rough soil types. Vegetation is dominated by broom snakeweed, honey mesquite, plains yucca, sand sagebrush, indigobush, catclaw acacia, and javelina bush. Dominant understory forb species include hog potato, grassland croton, twinleaf senna, silverleaf nightshade, birdbill dayflower, bicolor fanmustard, fragrant heliotrope, annual white buckwheat, and mountain pepperweed. Dominant grasses include alkali sacaton, bush muhly, black gramma grass, sand dropseed, and purple three-awn.

Creosote Bush Scrub/Shrub. Creosote bush shrublands are scattered along the Project route and generally occur on stony limestone, gravelly-fine sandy loams, and gypsum-derived soil types. This vegetation community is dominated by creosote bush, plains yucca, broom snakeweed, catclaw acacia, and widely spaced forbs and grasses with a low-density understory vegetation cover. Acacia shrublands dominated by dense thickets of catclaw acacia with understory species, similar to those found in creosote bush shrublands, were documented in the Project area. These communities were found to co-occur with creosote bush shrubland communities in the Project area.

Desert Grasslands. Desert grasslands that occur primarily on sandy loams were observed by Double E within the Project area about 5 miles north of the Texas boundary. Vegetation in desert grasslands is dominated by alkali sacaton, bushy muhly, black gramma,

purple three-awn, and patches of sandbur grass. Honey mesquite, plains yucca, sand sagebrush, and forbs, including birdbill dayflower and silverleaf nightshade, are also common.

Shinnery Oak Shrublands. Shinnery oak shrublands were observed to be relatively uncommon and scattered throughout the Project area during field surveys. They occur primarily on sandy loams *(Kermit-Berino fine sands)*, and vegetation is dominated by shinnery oak *(Quercus harvardii)*, honey mesquite, plains yucca, sand sagebrush, bush muhly, little bluestem, and various dropseeds. This habitat type often forms an ecotone with mixed desert shrublands and mesquite shrublands.

Herbaceous Upland. Small mesic depressions totaling about 25 acres were documented across the Project area in New Mexico. These areas support mesic growing conditions and contain diverse plant and animal life. Honey mesquite, little-leaf sumac, and netleaf hackberry are the dominant shrub species found in this community. Understory species are dominated by annual sunflower, bluegrass, birdbill dayflower, silverleaf nightshade, switchgrass, and black gramma grass.

Wetland/Riparian. Two areas categorized as wetland or riparian communities were observed along the L100 route in New Mexico. The Project crosses wetland and riparian communities at the Pecos River crossing and near a lateral ditch off of the Black River Supply Ditch. Dominant species include saltgrass and feather fingergrass. Small patches of common threesquare were also observed. Saltcedar (a noxious weed) was occasionally found in more saturated areas. About 23 acres of riparian and wetland areas would be crossed by the Project in New Mexico.

Agriculture. Agricultural lands were observed along the proposed Line L100 right-of-way on private lands and consist of dryland grass and hay fields. No row crops or orchards were identified within the survey area in New Mexico.

4.1.1.2 Special Status Vegetation

Important Plant Areas are specific places across New Mexico that support either a high diversity of sensitive plant species or consist of the last remaining locations of New Mexico's most endangered plants (EMNRD, 2019). Portions of Line T100 and a proposed access road on T100 cross a New Mexico Important Plant Area (#106 – Forty-Niner Ridge) that contains suitable habitat for the Tharp's blue star, which is a New Mexico state-listed species (see section B.4.3, Special Status Species).

4.1.1.3 Noxious Weeds

Noxious weed species listed by the State of New Mexico (New Mexico Department of Agriculture [NMDA], 2016) were observed in the Project area during field surveys. These species included Scotch thistle (*Onopordum acanthium*) – A list; African rue (*Peganum harmala*) – B List; halogeton (*Halogeton glomeratus*)– B List; and saltcedar (*Tamarix spp.)* – C

List[15]. Two additional non-listed noxious weed species, goathead and Russian thistle, were observed in the Project area.

Population occurrences of noxious weed species in New Mexico were concentrated in the northern portion of the proposed T100 and L100 rights-of-way. Saltcedar was the most common noxious weed observed during field surveys.

4.1.2 Texas

4.1.2.1 Vegetation Communities

Double E used the TPWD's Texas Ecosystem Analytical Mapper tool to identify vegetation communities in the Project area in Texas (TPWD, 2018a). Five general vegetation communities would be crossed by the Project in Texas. These communities were verified by Double E's biologists during the June 2018 and July 2019 field surveys. These communities are summarized below.

Mesquite and Mixed Desert Shrublands. Honey mesquite is the most dominant species of this broadly defined vegetation community. It is typically found on former prairie or savanna soils. Although co-dominants vary by region, species commonly associated with mesquite shrublands include lotebush, juniper, sugar or netleaf hackberry, pricklypear, and agarito. The Mesquite and Mixed Desert Shrubland community also includes Creosote Bush Shrubland, Tobosa / Mesquite Shrubland, Salty Desert Scrub, Desert Wash Shrubland, Gyp ("Gypsum") Shrubland (less than 1 percent), Desert Deep Sand and Dune Shrubland (less than 1 percent), Desert Wash Barren (less than 1 percent), and Desert Pavement.

Grasslands. Grasslands in the Project area include Tobosa Grassland, Loamy Plains Grassland, Sandy Desert Grassland, and Gyp Grassland (less than 1 percent). Tobosa grassland is mapped on clay flats from the Trans-Pecos eastward into the Rolling Plains and Edwards Plateau. Tobosa grass may form open or dense stands with few shrubs in some stands, while other areas are more diverse. Sparse shrub cover with species such as mesquite, lotebush, joint-fir, tarbush, and allthron may be present. Succulents such as Engelmann pricklypear, Buckley's yucca, and Christmas cactus are common. Other grasses that may be present include blue grama and sideoats grama.

Loamy Plains Grasslands typically occur on relatively deep, loamy soils in areas within a matrix of broad grasslands over shallower soils (Trans-Pecos: Shallow Desert Grassland) or rolling, discontinuous soils (Trans-Pecos: Desert Grassland). Grasses in this community may include sideoats grama, black grama, blue grama, tobosa, silver bluestem, and fluffgrass. Mesquite, tarbrush, and creosote bush are common invasive species in areas that generally lack a high density of javelina bush, whitethorn acacia, or juniper species.

[15] A-list species are currently not present in New Mexico or have limited distribution. Preventing new infestations of these species is the highest priority; B-list species are limited to portions of the state and management should be designed to stop any further spread; C-list species are wide-spread in the state and management decisions for these species should be determined at the local level (NMDA, 2016).

Sandy Desert Grassland occurs at relatively low elevation deserts along the northern part of the Trans-Pecos and extends into the southern High Plains. Common grasses include sand dropseed, tobosa, Lehmann lovegrass, Mediterranean lovegrass, threeawns, and sand muhly. Mesquite, creosote bush, catclaw acacia, and yucca species may be present.

Gyp Grassland typically occurs at relatively low elevations in gypsum-influenced soils. Representative species may include gypgrass, gypsum grama, rough coldenia, sand nama, alkali sacaton, and onion blanket-flower. Common shrubs include fourwing saltbush, Torrey's yucca, mesquite, creosote bush, and javelina bush.

Creosote Bush Scrub/Shrub. Creosote Bush Scrub/Shrub communities in the Project area include Creosote Bush Scrub and Sparse Creosote Bush Scrub. The Creosote Bush Scrub community is mapped at low elevations within intermountain basins in the Trans-Pecos, and exists primarily on flats or gently rolling landscapes over gravelly colluvial or alluvial soils. Creosote bush is often the primary dominant species, and diversity is often low. Other woody species may include mesquite, mariola, catclaw acacia, and whitethorn acacia. Common succulents include Christmas cactus, Torrey's yucca, and pricklypear. Bush muhly, fluffgrass, burrograss, slim tridens, threeawn, and chino grama are common grasses in the creosote bush scrub community.

The Sparse Creosote Bush Scrub community generally occurs in low desert flats and is commonly dominated by a sparse cover of creosote bush with a low diversity of other species. Shrubs such as mariola and whitethorn acacia may be present with succulents such as Torrey's yucca, lechuguilla, and ocotillo (TPWD, 2018a).

Desert Grasslands. Desert Grasslands in the Project area include the Desert Grassland and Salty Desert Grassland communities. The Desert Wash Grassland community is mapped along relatively low elevation arroyos and draws. Common grasses include sideoats grama, silver bluestem, black grama, and threeawn species. Some areas may be well-watered and salty and support species such as saltgrass and alkali sacaton. Common shrubs include mesquite, creosote bush, and Acacia species.

Salty Desert Grasslands are associated with salty, moist soils along the Pecos River and other salty basins and alluvial fans. Alkali sacaton is often dominant and species such as Russian thistle, false Rhodes grass, pink pappusgrass, tobosa, burrograss, desert seepweed, and pickle-weed are often present. Shrubs and small trees such as mesquite, fourwing saltbush, allthorn, and saltcedar are also present.

Marsh/Wetland/Riparian. This marsh habitat occurs in soils that are not considered to be naturally moist. These soils may exist in areas with man-made stock tanks that are alternately wet and dry. Common dominant species include spikerushes, cattails, bermudagrass, and smartweeds.

As previously described in section B.3, the Project would cross one PEM wetland within Texas along Line L100. However, this wetland would be entirely avoided via HDD at the Pecos River Crossing, and the HDD entry and exit points are located outside of the wetland area.

Urban Low Intensity/Barren. "Urban Low Intensity" and "Barren" areas were also mapped in the Project vicinity. The Urban Low Intensity designation is characterized by areas that are disturbed but not entirely covered with impervious cover. The Barren designation includes areas with little to no vegetation cover that are generally associated with human-associated land clearing.

4.1.2.2 Noxious Weeds

Two noxious weed species were observed during the habitat surveys in Texas. African rue was found at the Laydown Yard property and along the T300 pipeline near milepost 113.6 about 1,200 feet south of Farm-to-Market Road 1450; and saltcedar was found within the riparian zone of the Pecos River crossing in Texas near MP 108.35. Both species are identified as noxious on NRCS' Introduced, Invasive and Noxious Weed database for Texas.

4.1.3 Impacts and Mitigation

Table C-5 in appendix C identifies the acreages of vegetation communities that would be temporarily and permanently affected by the construction and operation of the Project. Construction and operation of the Project would result in approximately 2,410 acres of temporary vegetation disturbance. This total includes approximately 6.2 acres of new access roads. About 1.6 acres and 0.3 acre of wetland and riparian areas would be temporarily and permanently affected during the Project, respectively.

Construction and operation of the Project would result in temporary and permanent, direct and indirect, and short- and long-term adverse impacts on vegetation. The majority of these impacts would occur in desert shrubland communities. Clearing and grading of the pipeline construction work areas would temporarily remove about 2,410 acres of vegetation from the Project area for a period of at least 2 to 5 years, until restoration is complete. Post-construction, Double E would permanently maintain an operational 50-foot-wide easement in an area that encompasses about 865 acres. Only forbs and grasses would be allowed to grow in a 10-foot swath, centered over the pipeline. Scrubs and bushes would be allowed to grow within a 15-foot area on either side of the 10-foot corridor centered on the pipeline. Tree and deep-rooted shrub growth would generally be prohibited within this portion of the right-of-way over the pipe during operation and maintenance of the pipelines.

The Project is located in xeric desert environments, and about 80 percent of the soils crossed by the Project may present challenges during revegetation. Refer to section B.2.3 (Post-Construction Revegetation) for a more detailed discussion of revegetation. As such, restoration of temporarily cleared construction work areas is expected to take approximately 2 to 5 years or more. Potential indirect impacts on vegetation during construction may include compaction of soils and alteration of topsoil layers that could affect post-construction revegetation. Our recommendation regarding topsoil compaction is provided in section 2.3, Post-Construction Revegetation and section E, FERC Staff Conclusions and Recommendations. Dust from construction activities could also indirectly affect adjacent vegetation by coating leaves with dust and preventing photosynthesis. Erosion associated with construction may also indirectly affect vegetation re-establishment and growth and could potentially inhibit reclamation.

Direct impacts on vegetation could result from vehicles or construction equipment driving over plants or from construction personnel walking on plants. Plants growing within the construction corridor and associated workspaces would be most vulnerable to direct impacts. Construction could also affect vegetation communities by reducing or degrading available habitat for new plant growth.

Depending on the proximity of ground disturbance to plant habitat, construction could indirectly affect special status plant species and the ecological processes that sustain them. Construction could potentially affect ecological processes and habitat conditions that include ground cover, soil nutrient flows, hydrological flows, solar exposure, thermal cover, fugitive dust loads, non-native species dispersal, habitat connectivity, and pollinator and dispersal visitation behaviors.

Following the completion of construction, the unauthorized use of access routes by the public could result in direct disturbance of vegetation and sensitive plant species.

4.1.3.1 Best Management Practices and Revegetation

Double E would implement the measures contained in FERC's Plan and Procedures to minimize impacts on vegetation. Double E would also implement measures required by the BLM and/or state-management agencies as applicable. These measures would be incorporated and included into the Project's E&SC Plan. Other plans to be developed to ensure successful revegetation would be filed in Double E's Implementation Plan, prior to construction include:

- a Project-specific *Reclamation Plan*; and
- a Project-specific *Noxious Weed Plan* (see below for additional discussion of noxious weeds).

In addition, Double E would:

- return ATWS and other temporary work areas to pre-existing contours and conditions as soon as possible and revegetate the areas in accordance with landowner and land-management agency requirements using federal or state agency, landowner, or NRCS-recommended native seed mixes; and
- conduct follow-up inspections of all disturbed areas, as necessary, to determine the success of revegetation and address landowner concerns. At a minimum, inspections would be conducted after the first and second growing seasons to confirm that revegetation efforts are proceeding satisfactorily.
- develop efforts to control unauthorized off-road vehicle use in cooperation with private landowners, the BLM, and state land managers. During construction, keep vehicles and equipment on existing roads and approved temporary and new access routes, and avoid travel across undisturbed surfaces; instruct workers to park in designated areas authorized by the agencies and ATWS described in this EA and Double E's FERC and BLM permit applications;
- maintain signage and gates as necessary to avoid inadvertent use of unauthorized access; and

- create water bars from soil during construction to reroute water away from construction right-of-way and workspaces to further reduce sedimentation and erosion potential.

The BLM could require additional measures on BLM-managed land to further reduce impacts on vegetation.

4.1.3.2 Noxious Weeds

The use of construction equipment and clearing of native vegetation could increase the spread of invasive or noxious weed populations, which would also affect the revegetation success of native communities during post-construction reclamation. During construction, exposed topsoil may provide for the recruitment of invasive species, and vehicles and construction equipment could transport seeds from infested areas to non-infested areas. This is a particular concern at the Pecos River crossings.

To reduce the potential for introducing or spreading noxious weeds, Double E has committed to adhering to erosion control measures as outlined in the FERC's Plan and Procedures. Implementation of these measures would help mitigate sediment movement into newly disturbed soils to avoid the potential of invasive plant species seed distribution. Additionally, Double E would use construction techniques along the pipeline routes to minimize the time bare soil is exposed to prevent the establishment of invasive species. Double E has committed to reseeding all disturbed areas promptly after final grading in compliance with landowner agreements and state and local permits. Double E has also committed to using local sources of certified weed-free straw or hay for reclamation and erosion control.

In addition, Double E would develop a *Noxious Weed Control Plan* that would reduce the potential for the introduction of noxious weeds and invasive species to newly disturbed construction areas. Additional measures are included in EA section B.2.3. The *Noxious Weed Control Plan* would include the following BMPs:

- identifying and pre-treating existing weed populations found within the right-of-way. Double E would consult with the BLM for acceptable weed control methods, which would include the provisions in the FERC Plan and BLM requirements;
- cleaning equipment and vehicles used to move vegetation and topsoil during Project clearing and restoration phases to remove seeds, roots, and rhizomes prior to being moved off site;
- establishing wash stations at the entrance and exit of Project areas that include sensitive resource areas;
- returning topsoil and vegetation from infested sites to areas where they were stripped; and
- following restoration, conducting weed monitoring along the rights-of-way, ATWS and disturbed sections of access roads after the first and second growing seasons, and develop an integrated weed control program to control weeds within the permanently maintained rights-of-way.

As identified above, Double E would place wash stations at the start of each construction spread and/or where the contractors would unload equipment prior to moving it into the right-of-way. Wash stations would be placed at the Waha Pigging Facility area; at the Poker Lake Operational facility; the L100 Meter/Operation area at the end of Line L100; and at the Lane Plant. For those areas where noxious weeds were observed during biological field surveys, Double E would assess the need for additional wash stations to prevent the transport of noxious weeds from these areas. Once Double E has selected its construction contractor, Double E would verify equipment unloading areas and evaluate the need for additional wash stations. If deemed necessary, Double E would file requests for new wash station locations with the appropriate agencies.

During consultations with the BLM, additional measures were identified that may be required in the BLM's Right-of-Way Grant Authorization. The BLM would require the use of native plant species in post-construction reclamation seed mixes. According to the BLM, seed mixes would need to be certified weed-free and seed test results would be requested from the vendor to avoid inadvertently introducing invasive or noxious weed species to reclamation sites. Any alternate seeds used to substitute for primary plant species that are unavailable at the time of reclamation would also be native.

In its comments, the NMDGF stated that seeds should be sourced from the same region and habitat type as the reclamation site. Double E also has agreed to continue to work in accordance with the FERC Plan and Procedures, BLM, New Mexico State Lands Trust, Texas University Lands, and landowner requests for revegetation and maintenance of the Project, including addressing the occurrence of noxious weeds in the right-of-way and Project workspaces. We find this is appropriate strategy for ensuring noxious weeds are adequately addressed before, during, and after construction activities.

Short and long-term productivity of vegetation would be temporarily affected during construction until the completion of restoration and reclamation activities. However, the implementation of Double E's proposed measures, the Commission's Plan and Procedures, the *Noxious Weed Control Plan*, and additional measures required by the BLM and other land-managing agencies would adequately minimize Project adverse impacts on vegetation.

4.2 Wildlife and Fisheries

4.2.1 Wildlife

The Project lies within the Chihuahuan Desert Ecoregion. Common mammalian species observed during field studies in the Project area included coyote, mule deer, desert cottontail, javelina, banner-tailed kangaroo rat, and black-tailed jackrabbit.

Reptile species observed during field surveys in the Project area included prairie rattlesnake, western diamond-backed rattlesnake, ornate box turtle, eastern collared lizard, little striped whiptail, and round-tailed horned lizard.

Bird species observed during field surveys in the Project area included greater roadrunner, turkey vulture, red-tailed hawk, scaled quail, loggerhead shrike, western meadowlark, cactus wren, scissor-tailed flycatcher, and pyrrhuloxia (desert cardinal).

Habitat surveys within the Project area were conducted by Double E's biologists from June 2018 to September 2018. Additional surveys were conducted in January 2019 to evaluate Project reroutes in New Mexico. Proposed Project reroutes in Texas were surveyed between September 2018 and June 2019.

The Project would not cross any State Wildlife Areas; however, it would cross NMDGF Game Management Unit 31 in the southeast corner of the state (NMDGF, 2019a). No big game winter ranges or important fawning/calving habitats were identified within this Management Unit or in the Project area in Texas (TPWD, 2019a; National Fish and Wildlife Foundation, 2018). No privately held game preserves have been identified by landowners within 1 mile of the Project, and no conservation easements are crossed by the Project. The Project does not cross any National Parks, National Wildlife Refuges, or state Wildlife Management Areas (USDOI, 2014a and 2014b; TPWD, 2013a; NMDGF, 2016c; University of Montana, 2017; and USFWS, 2016).

In addition, no sanctuaries or wildlife preserves were identified along the proposed Project route (Biota Information System of New Mexico [BISON-M], 2019; Schmerler, 2018). The Pecos River crossing in the vicinity of the MP 10.5 on Line L100 in New Mexico is designated as Special Fish Habitat (refer to section B.4.4 for additional information regarding this designation). Additionally, Line L100 would cross the NMDGF's Lower Pecos and Black Rivers Conservation Opportunity Area, including a section on the eastern boundary of the conservation area characterized as a desert alkaline-saline wetland (BISON-M, 2019).

4.2.1.1 Impacts and Mitigation

Construction and operation of the Project would result in temporary and permanent, direct and indirect, and short and long-term adverse impacts on wildlife and wildlife habitat. Impacts would primarily result from disturbance, displacement, or direct mortality associated with:

- construction dust and noise, increased construction traffic, and night-lighting;
- vegetation clearing, ground-moving operations, and trenching activities. Smaller wildlife species may fall into trenches and become trapped. Construction could also result in the direct mortality of less mobile animals such as rodents, reptiles, amphibians, and invertebrates that may be unable to escape the immediate construction area; and
- potential inadvertent release during HDD operations that could kill or injure aquatic species.

Clearing of vegetation would reduce nesting, cover, and foraging habitat for many species. Larger and more mobile wildlife, such as birds and large mammals, are expected to temporarily relocate to adjacent available habitat during construction activities. However, suitable adjacent and available habitat has been reduced in most of the Project area due to existing oil and gas activities and other disturbance in the region.

The vegetation used by wildlife for foraging and habitat that would be affected by the Project is summarized in table C-5 in appendix C and discussed in detail in section B.4.1. Construction activities would involve temporary clearing, grading, and removal of 2,410 acres of

vegetation that provide forage, protective cover, and habitat for wildlife. About 865 acres would be permanently maintained for Project facilities and roads. As previously discussed, the temporarily affected wildlife forage in Project rights-of-way and ATWS would be restored following the completion of construction.

Since the Project is located in xeric desert environments and about 80 percent of the soils crossed by the Project present revegetation challenges, restoration of the Project workspaces would require additional time and efforts to fully restore. Based on our experience, it is anticipated that it would take at least 2 to 5 years before vegetation would be restored to pre-construction conditions. Erosion from construction in disturbed areas could also delay reclamation efforts and indirectly disturb adjacent wildlife habitat.

Construction activities could result in the increased mortality of wildlife, increased dust, and habitat degradation. Increased construction-related night lighting could also affect wildlife population viability and behavior.

The increase in ambient noise in the immediate vicinity during construction, particularly near HDD activities conducted during breeding and nesting seasons, could temporarily affect wildlife behavior. Foraging, mating, and nesting may be disrupted and result in decreased wildlife production and habitat use or the abandonment of nests. On-going vegetation management and other maintenance activities in the right-of-way could also interfere with wildlife breeding, nesting, and foraging.

Best Management Practices and Measures

Double E has committed to implementing a Project-specific E&SC Plan based upon on the requirements outlined in FERC's Plan and Procedures. Double E would file the final E&SC Plan prior to construction for FERC review and approval. Where necessary, Double E would install temporary erosion and sediment controls that would be maintained throughout construction. Additionally, Double E has committed to incorporating seeding recommendations identified by the NRCS, BLM, and state and local agencies.

To minimize new disturbance and vegetation clearing along previously undisturbed corridors, Double E has designed the Project to parallel and use existing disturbed areas as much as practicable and would limit disturbance and clearing to areas necessary to facilitate safe and efficient installation of the facilities. Double E has also committed to constructing and maintaining pipeline trenches in a manner that would prevent human or wildlife entrapment by implementing the following measures:

- The ends of welded pipeline sections would be capped at night to prevent entrapment.
- If a trench is left open for 8 hours or less, no escape ramps would be constructed. However, prior to backfilling, the trench would be inspected for wildlife by a wildlife biologist. If wildlife is present, the biologist would assist in its removal and release it at least 100 yards from the trench in undisturbed habitat.
- If a trench is left open for over 8 hours, escape ramps or ladders would be constructed at no less than a 30-degree slope or 500 feet apart within the trenches.

- Double E would provide a report to the applicable agencies on the vertebrates found and removed from trenches within 24 hours of removal.
- To check for any wildlife that may be covered or not visible, the biologist would inspect the top 2 inches of loose soil in the trench prior to backfilling.

Because construction noise would be short-term and would generally diminish in a relatively short distance from the source, noise effects on wildlife are not expected to be sustained and would primarily occur during HDD activities. Due to the extensive amount of existing industrial facilities in the area, particularly in Texas, wildlife species in the Project area are assumed to be somewhat habituated to noise from existing operating facilities and construction. With the exception of sensitive species such as the ferruginous hawk and Harris hawk, wildlife are expected to become habituated to any increase in new construction and operational noise. However, behavioral modifications could occur until wildlife becomes habituated to the new noise sources. Changes in behavior could include habitat avoidance and nest abandonment. A discussion of impacts and mitigation for migratory birds and raptors is further provided below.

During scoping, we received comments from the NMDGF regarding measures the agency recommends to further reduce impacts on wildlife during construction of the Project. In addition, during consultations with the TPWD, Double E received similar comments regarding potential measures to minimize impacts on wildlife from unauthorized collecting, noise, trench entrapment, construction-related dust and debris, and potential HDD inadvertent releases. Double E has adopted these measures into its construction plans for the Project. These measures include the following:

- Provide environmental awareness training to all employees, contractors, and/or site visitors of relevant rules and regulations that protect wildlife, particularly special status species.
- Provide enclosed solid waste receptacles at all Project areas. Non-hazardous solid waste (trash) would be collected and deposited in the on-site receptacles. Solid waste would be collected and disposed of by a local waste disposal contractor.
- Clearly delineate and maintain Project boundaries (including staging areas) for contractors to restrict unapproved access. This may include posting signs on approved access routes.
- To the extent practicable, schedule all vegetation removal, trimming, and grading of vegetated areas outside of peak wildlife breeding and nesting seasons (generally April 1 through August 15). This timing is consistent with the migratory bird window in the FERC Plan.
- Prevent increased night lighting of native habitats as much as possible. If it is not possible to restrict construction activities to daylight hours, use down shielding or directional lighting to avoid light trespass into wildlife habitat. To the maximum extent practicable, while allowing for public safety, use low intensity energy saving lighting (e.g., low pressure sodium lamps). Bright white light, such as metal halide, halogen, fluorescent, mercury vapor, or incandescent lamps should not be used.

- Use appropriate deterrents to prevent wildlife from nesting or denning on structures where they cause conflicts, may endanger themselves, or create a human health and safety hazard.
- Implement standard soil erosion and dust control measures, including establishing vegetation cover to stabilize soil and using erosion blankets to prevent soil loss.
- Prepare and implement a Hazardous Materials Control Plan and a trash disposal plan.
- Implement inadvertent release measures, particularly for releases into open water.
- Check for wildlife under vehicles and equipment that have been stationary for more than 1 hour and each morning prior to moving or operation.
- Require that all personnel follow posted speed limits.
- Prohibit firearms or pets at Project work sites.

In summary, Double E has committed to adopt the measures recommended by the TPWD and NMDGF into its Project and would adhere to any additional measures required by the BLM for wildlife species on federal lands. In addition, with the implementation of the measures contained in FERC's Plan and Procedures and Double E's *Noxious Weed Control Plan*, construction and operation of the Project would not result in long-term or significant impacts on wildlife.

4.2.1.2 Migratory Birds and Raptors

Migratory birds are species that nest in the United States and Canada during the summer and migrate to and from the tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. Migratory birds are protected under the Migratory Bird Treaty Act ([MBTA] – 16 U.S. Code 703-711), and bald and bolden eagles are protected under the Bald and Golden Eagle Protection Act ([BGEPA] – 16 U.S Code 668-668d). The MBTA, as amended, prohibits the intentional taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. Executive Order 13186 was enacted in 2001 to, among other things, ensure that environmental analyses of federal actions evaluate the impacts of actions on migratory birds. Executive Order 13186 directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and avoid, minimize, or mitigate adverse impacts on migratory birds through enhanced collaboration with the USFWS. The order emphasizes species of concern, priority habitats, and key risk factors with a particular focus on population-level impacts.

On March 30, 2011, the USFWS and the Commission entered into a Memorandum of Understanding that focuses on avoiding or minimizing adverse impacts on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two agencies. This voluntary agreement does not waive legal requirements under the MBTA, BGEPA, ESA, Federal Power Act, NGA, or any other statute and does not authorize the take of migratory birds.

The BGEPA provides added protection to bald and golden eagles. The BGEPA prohibits the take, possession, sale, offer to sell, purchase, barter, transport, and export or import of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit.

The definition of "take" under this act is "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb." The definition of "disturb" under the Act is "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." If a proposed project or action occurs in an area where nesting, feeding, or roosting eagles occur, the proponent often needs to implement special conservation measures to follow the BGEPA.

Hawks, falcons, vultures, owls, songbirds, and other insect eating birds are protected under New Mexico State Statutes (17-2-13 and 17-2-14 of the New Mexico Statutes [Annotated]). TPWD Code - Chapter 64, Code Section 64.002, regarding protection of nongame birds, provides that no person may catch, kill, injure, pursue, or possess a bird that is not a game bird. TPWD Code Section 64.003, regarding destroying nests or eggs, provides that no person may destroy or take the nests, eggs, or young of any wild game bird, wild bird, or wild fowl. TPWD Code Chapter 64 does not allow for incidental take, which is more restrictive than the MBTA.

A variety of migratory bird species, including songbirds and raptors, use habitat in the Project area. The USFWS-established Birds of Conservation Concern (BCC) (USFWS, 2008) report identifies priority bird species at the national, regional, and Bird Conservation Region levels. The Project lies within the boundaries of BCC Bird Conservation Regions 18 — Shortgrass Prairie and 35 — Chihuahuan Desert (USFWS, 2008). Table C-6 in appendix C identifies those birds identified in the Project area.

The Project right-of-way is located in the vicinity of two Audubon Important Bird Areas managed by the BLM in New Mexico. The first area is the Laguna Grande Complex, which consists of a group of salt playas 0.8 mile from the proposed right-of-way that provide nesting habitat for snowy plover and important stopover sites for migrating shorebirds. The second area is a portion of the Phantom Banks area that lies 1.8 mile from the proposed right-of-way and supports a colony of nesting great blue heron (BISON-M, 2019).

Double E provided the USFWS Carlsbad Field and Austin Ecological Services Field Offices and BLM Carlsbad Office with its BCC search results and proposed mitigation in letters dated October 24, 2018. Double E identified nine species listed as BCC; four species were BCC throughout their entire range and the remaining five are listed as Bird Conservation Regions 18 and 35. Further review of Regions 18 and 35 in New Mexico and Texas identified eight more species: Baird's sparrow, burrowing owl, Cassin's sparrow, golden eagle, lark bunting, lesser yellowlegs, long-billed curlew, and semipalmated sandpiper. Double E also requested recommendations on appropriate conservation measures for BCC species from the USFWS in the Project area. In response to Double E's letters, the USFWS provided Double E with updated species lists and nationwide standard conservation measures (USFWS, 2018).

Raptor nest observations were documented by Double E biologists during habitat surveys completed in 2018 and 2019 where access permission was granted. On private lands, raptor nests were identified within a 325-foot (approximately 100-meter) study corridor along the Project route. If trees suitable for raptor nests or transmission lines were identified in the general

Project area, they were checked for raptor nests via pedestrian or binocular viewing. On BLM lands, observations were completed within the proposed pipeline rights-of-way plus a 200-meter buffer. A 50-meter buffer was applied to the proposed rights-of-way during surveys completed on New Mexico State Trust Lands.

Double E's biologists reported 15 occupied raptor nests and 32 unoccupied or unknown status raptor nests during the surveys completed in 2018 and 2019. No bald or golden eagles or their nests were observed during general field surveys. Based on the absence of suitable habitat, bald eagles are not expected to occur in the Project area. Golden eagles may use the Project area for foraging; however, suitable cliff and large tree nesting habitat for this species is limited in the Project area. We do not anticipate that the Project would adversely impact bald or golden eagles due to the lack of suitable habitat in the Project area.

One individual Harris hawk was observed during the habitat surveys. Additional sensitive species that were observed during field surveys included prairie falcon, western burrowing owl, and lesser prairie chicken.

Construction activities would involve temporary clearing, grading, and removal of 2,410 acres of vegetation that provide forage, protective cover, and habitat for birds. Loss of full foraging and nesting use in those acres would extend for a period of at least 2 to 5 years until restoration is complete. Approximately 865 of these acres would be permanently maintained for operational use. Deep-rooted shrubs would be controlled in the operational right-of-way, which could potentially degrade existing habitat.

If construction occurs during nesting seasons for raptors and other migratory birds, direct and indirect impacts could occur on nesting birds, eggs, and young. Impacts could include the loss of foraging and nesting habitat following the removal of vegetation within construction workspaces.

Construction Mitigation

Double E's construction schedule could overlap the nesting season for many bird species and could impact migratory birds, including disturbance due to noise, and possible mortality and destruction of nests. These impacts would be limited to a single nesting season during Project construction. Construction would also reduce the amount of habitat available for foraging and would temporarily displace birds into adjacent habitats; however, a high proportion of adjacent similar habitat is available in the Project area. Implementation of the construction and restoration measures in the FERC Plan would reduce the extent and duration of impacts on migratory bird habitat by restoring all areas not necessary to be maintained for operation to preconstruction conditions.

If active nests or breeding behavior are detected during the surveys, Double E has committed to establishing buffer zones (i.e., fence barrier or flagging barrier) to avoid the nest until after the chicks have fledged. Since construction is likely to occur outside of the nesting season, during clearing activities Double E would remove observed unoccupied raptor nests within the rights-of-way limits and collapse unoccupied owl burrows within the right-of-way to lessen/avoid the likelihood of occupation. To prevent direct mortality to burrowing owls, each

burrow would be evaluated by a qualified biologist prior to collapsing burrows that are presumed to be unoccupied.

In addition, in its letters dated October 28, 2018 to the USFWS Carlsbad Field and Austin Ecological Service Field Offices and BLM Carlsbad Office, Double E proposed the following conservation measures:

- Placement of facilities such as access roads and contractor staging yards would occur in previously cleared areas where feasible.
- The width of the permanent right-of-way would be minimized to only that which is absolutely necessary to maintain the integrity of the pipeline (currently proposed to maintain up to 50 feet).
- Adherence to the Project's E&SC Plan, based on protocols and procedures outlined in FERC's Plan and Procedures, and local and other state requirements.
- Following construction, in accordance with the FERC Plan, Double E would not conduct routine vegetation maintenance along the pipeline rights-of-way between April 15 and August 1 each year to avoid primary breeding and nesting seasons, to the extent practicable.

Comments from NMDGF and TPWD

Based on comments received on the Project regarding migratory birds, the NMDGF and TPWD recommended that ground disturbance and vegetation removal activities be conducted outside of the primary breeding season for migratory songbirds and raptors (identified by the agencies as March 1 to September 1 in New Mexico and March 15 to September 15 in Texas) (Schmerler, 2018; Wunder, 2018). If ground-disturbing and clearing activities during the breeding season cannot be avoided, the agencies recommended that the area should be surveyed for active nest sites immediately prior to disturbance. The NMDGF requested that pre-construction surveys be conducted within a 0.25-mile buffer from the centerline, and within a 0.5-mile buffer from the centerline in areas where Harris hawks have been observed (Kellermueller, 2019). The NMDGF also indicated that burrowing owls use winter burrows in the southeast portion of New Mexico and western Texas and may use burrows year-round in the Project area (Kellermueller, 2019).

As indicated above, regardless of the time of year Double E mobilizes for construction activities, Double E has agreed to perform pre-construction avian nest surveys prior to clearing and would flag and avoid nests until chicks have fledged. The results of the pre-construction surveys establishing presence/absence would be filed with FERC and BLM prior to construction.

We find that vegetation maintenance during Project operations would be conducted outside of the peak nesting season (April 15 and August 1), as required by the FERC Plan, and would avoid direct impacts on migratory birds. The FERC Plan allows for altering this time window in the event operational activities need to occur, if approved by the land management agency or the USFWS. Double E would conduct vegetation clearing over the full width of the right-of-way in uplands no more than every three years. We and Double E anticipate that the

need for routine vegetation maintenance would be infrequent and limited to specific locations such as pipeline markers and road crossings.

In summary, based on the implementation of Double E's proposed and adopted measures, impacts on birds during the nesting season would be adequately avoided or minimized. We conclude that construction and operation of the Project would not have significant impacts on migratory birds, bald and golden eagles, or other raptors of concern. In addition, the BLM may require additional measures or surveys for migratory birds on BLM-managed land in the Project area, prior to construction on federal lands.

4.2.2 Fisheries

The Project would cross one perennial stream, the Pecos River, in two locations via HDD. One crossing is located in New Mexico at MP 10.5 along Line L100, and the other crossing is located in Texas at MP 108.4. No other perennial waters would be crossed by the Project.

The Pecos River is not a stocked water in New Mexico or Texas and there is no federally designated Essential Fish Habitat within or downstream of the Project. The Pecos watershed in the areas crossed by the Project does not include Outstanding Waters or Gold Medal Waters as designated by the NMDGF or TPWD (NMDGF, 2016b; TPWD, 2019b). According to the USFWS's IPaC database (USFWS, 2019b), no mapped critical habitat for federally listed fish species is present in waterbodies within the Project area.

None of the waterbodies in the Project area contain species managed by the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA-NMFS) (2017). Because none of the waterbodies crossed by the Project contain Essential Fish Habitat as designated under the Magnuson-Stevens Fishery Conservation and Management Act of 1976, coordination with NOAA is not required (NOAA-NMFS, 2017). The portion of the Pecos River that would be crossed by the proposed Line L100 is a designated Special Status Water in New Mexico.

The Pecos River in the vicinity of the MP 10.5 along L100 in New Mexico is designated as Special Fish Habitat by NMDGF for the blue sucker, gray redhorse, Mexican tetra, and Pecos pupfish (USACE, 2017). These species have various sensitivity status (federal, state, and/or BLM, as shown on table C-7 in appendix C) and are further discussed in the applicable portions of Section B, below. No significant spawning locations for warmwater fish were identified in the vicinity of the Pecos River crossing in New Mexico (NMDGF, 2016a).

No important fish breeding or spawning areas were identified at the Pecos River crossing in Texas (Texas State University, 2013); however, the Pecos River is listed as a high aquatic life use, warm waterbody in Texas (TAC, 2018). In Texas, Ecologically Significant Stream Segments are waterbodies that have been determined to possess unique ecological value. None of the waterbodies within the Project area in Texas were identified as Ecologically Significant Stream Segments (TPWD, 2018b). Additional sensitive fish species that may occur within the Project area in Texas are discussed in Section B.4.3.

4.2.2.1 Impacts and Mitigation

Fuels, lubricants or drilling fluids used during routine construction activities and HDD operations could spill into aquatic habitats and resources. This could increase water turbidity and result in direct impacts on fish, which may include mortality depending on the magnitude and severity of the spill. Potential construction impacts could include temporary fragmentation of stream habitat and clearing of riparian vegetation, which could affect stream dynamics and fish habitat within the streams. Other impacts from construction could include increased sedimentation from upland areas and temporary increases in turbidity caused by runoff from upland construction areas during storm events.

Double E would cross intermittent and ephemeral waterbodies during dry conditions, or consistent with measures in the Commission's Procedures. Any jurisdictional intermittent or ephemeral waterbodies that are flowing at the time of construction would be crossed using dam and pump or flume techniques. The storage and use of hazardous materials would also be restricted during waterbody crossing activities and refueling and storage of hazardous materials would be prohibited within 100 feet of streams and wetlands during construction.

Double E has also committed to avoiding the withdrawal of hydrostatic test water from the Pecos River or other sources of surface water. Groundwater sources or other commercial sources would be used for hydrostatic testing. Deposition locations for hydrostatic test water after use have not been finalized; however, Double E would file this information, prior to construction.

We conclude that the Project could result in temporary impacts on fish from sedimentation or a potential inadvertent release during HDD activities at the Pecos River crossings. These effects are expected to be mitigated by the implementation of Double E's committed measures, the use of non-toxic drilling fluids, and the development of an acceptable HDD contingency plan for inadvertent returns. Any remaining impacts are not anticipated to affect the long-term health of fisheries in the Project area.

4.3 Special Status Species

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy. Included in this category are federally listed species that are protected under Section 7 of the ESA, species proposed or candidates for listing by the USFWS, sensitive species designated by the BLM, and those species that are state listed as threatened, endangered, or otherwise considered sensitive.

Section 7(a)(2) of the ESA requires the Commission to ensure that any action it authorizes, funds, or carries out would not jeopardize the continued existence of federally listed or proposed listed species, or result in the adverse modification or destruction of critical habitat for federally listed and proposed species. As the lead federal agency for the Project, FERC is responsible for ESA consultation with the USFWS to determine whether any proposed or federally listed species, or critical or proposed critical habitat may occur in the Project area, and to determine the Project's potential impacts on these species and critical habitat.

Candidate species and species under review for listing on the ESA receive no statutory protection under the ESA and, as such, a determination of effect is not required by the USFWS for these species. The USFWS does encourage cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the ESA. Species classified as candidates or under review for listing under the ESA are typically considered during our assessments, as they may be listed in the future.

Double E Pipeline used the USFWS' Information for Planning and Conservation (IPaC) system and consulted with the USFWS to identify federal threatened or endangered species or designated critical habitats that could occur in the Project area, including the ancillary contractor and pipe storage yards and new access roads.

We reviewed the special status species master list provided by Double E in its application and identified additional state and BLM sensitive species from agency consultations that may potentially occur in the Project area. We revised the master list and narrowed down the species requiring further determination for potential presence in the Project area. Table C-7 in appendix C identifies 55 federally listed, state-listed, and/or BLM sensitive species as potentially having suitable habitat in the Project area. Potential impacts on special status species would be of a similar type as those identified for general wildlife (see section B.4.2), but may have more deleterious results due to the rarity and/or sensitivity of the species.

Seven of the special status species listed in table C-7 were observed during Double E's general habitat surveys in 2018 and 2019 — monarch butterfly, Texas horned lizard, western burrowing owl, Harris's hawk, lesser prairie chicken (also referred to as "LPC"), prairie falcon, and Scheer's pincushion cactus.

None of these seven species are federally listed under the ESA. The monarch butterfly is under review by the USFWS for ESA listing and is also BLM sensitive. The horned lizard is threatened in Texas. The burrowing owl is a USFWS Species of Concern, BLM sensitive, protected in New Mexico as a New Mexico Species of Greatest Conservation Need, and is Rare in Texas. The Harris hawk is a New Mexico Species of Management Concern. The LPC is under review by the USFWS and is BLM sensitive. The prairie falcon is rare in Texas. Scheer's pincushion cactus is BLM sensitive and endangered in New Mexico. These species are further discussed in the applicable sections below.

4.3.1 Federally Listed Species

Use of the USFWS's IPaC tool and consultations with the USFWS, Carlsbad Field and Austin Ecological Services Field Offices identified 38 species that are either protected under the ESA or are under review for listing by the USFWS, as potentially occurring in the Project area; No USFWS-designated Critical Habitat was identified in the Project area for any of these species during the IPaC review using the NMDGF's Environmental Review Tool (BISON-M, 2019). The USFWS indicated that three of the federally listed species, the least tern, piping plover, and the rufa red knot, only need be considered federally for wind projects. Therefore, no impacts are expected, and we have dismissed these from discussion below.

As our non-federal representative, Double E informally consulted with the USFWS to provide its IPaC results and to request survey protocols. Double E also provided the USFWS with survey results and supplemental Project information for route changes, including the addition of the Pecos laydown yard in Texas (letters dated October 24, 2018, and July 19 and October 21, 2019, to the USFWS Austin Ecological Services Field Office). Similar letters were provided to the USFWS Carlsbad Field Office in letters dated October 24, 2018, and February 20 and July 19, 2019, for Project updates in New Mexico.

After review of Double E's species and effects determinations, the USFWS Austin Field Office responded in correspondence dated November 28, 2018, and follow up letters on July 19, October 21, and November 22, 2019, stating that "after reviewing the information provided on the Project, the Service has determined that Project is unlikely to cause incidental take of any federally listed threatened or endangered species."

The USFWS Carlsbad Field Office also responded to Double E regarding federally listed species. In its letter dated February 20, 2019, Double E requested concurrence with a "no effect" determination for 11 species in New Mexico. In correspondence dated February 20, 2019, the USFWS stated that "the Service does not provide concurrence with no effect determination, but believes your agency has complied with section 7(a)(2) of the ESA by making a determination. Therefore, no further endangered species consultation will be required for this project unless: 1) the identified action is subsequently modified in a manner that causes an effect on listed species or critical habitat; 2) new information reveals the identified action may affect federally protected species or designated critical habitat in a manner or event not previously considered; or 3) a new species is listed or critical habitat is designated under ESA that may be affected by the action." In a follow up correspondence dated September 12, 2019, the USFWS Carlsbad Office responded to Double E's September 12, 2019 updated Project information by stating "If the determinations (no effect) have not changed, the Service acknowledges the changed route. The Service's previous response stands."

Double E's analysis concluded that federally listed species are not expected to occur in the Project area because of the lack of suitable habitat and applied a *no effect* determination for the Project's effects. We identified that the Project would have *no effect* for 24 of the 36 federally listed species identified in our independent analysis. For the species with "no effect" determination, impacts are not expected to occur in the Project area because of the lack of suitable habitat, or the species is endemic only to localities far removed from the Project area. Therefore, based on our independent analysis, we determined that some suitable or potential habitats would be crossed by the Project, and that the Project *may affect, but is not likely to adversely affect* four federally listed species, as further discussed below.

In summary, we determined that the remaining 12 federally listed, candidate, or species under federal review or otherwise considered sensitive may occur in the Project area, and are included in table C-7 in appendix C. Specifically, two are federally endangered (northern aplomado falcon and southwestern willow flycatcher), two are federally threatened (Pecos bluntnosed shiner and western snowy plover), one is categorized as a candidate for federal listing (Wright's marsh thistle), six are under review for federal listing (monarch butterfly, Pecos

pupfish, desert massasauga, spot-tailed earless lizard, lesser prairie chicken, and Tharp's blue star), and one is considered a USFWS "species of concern"[16] (western burrowing owl).

Because we determined that the Project *is not likely adversely affect* four federally listed species (Pecos bluntnose shiner, northern aplomado falcon, western snowy plover, and southwestern willow flycatcher), we are requesting that the USFWS consider this EA (along with any species survey reports the USFWS may have received directly from Double E) as our biological assessment for the Project, and that the USFWS provide concurrence, as appropriate, with our effect determinations. Because the status of species "under review" by the USFWS could change during Project implementation, these species were included in our EA analysis below; however, as all of the "under review" species also have either BLM or State sensitivity or listing status, the non-ESA species are discussed in those sections, as applicable. The Wright's marsh thistle, as a federal candidate species, is discussed in this section, even though it has not yet been listed or proposed under the ESA.

Pecos Bluntnose Shiner (*Notropis simus pecosensis*) (Threatened). This shiner is federally listed as threatened and is state listed as endangered in New Mexico. Although the species was historically known to occur in the Pecos River in New Mexico from Fort Sumner south to the New Mexico/Texas state line, this species is currently concentrated in the Pecos River between Fort Sumner and Artesia, New Mexico. This area is about 60 river miles north (and upstream) of the Project area (USFWS, 2019a). Reduced instream flows in the Pecos River resulting from extensive agricultural draws are the primary cause of the decline of this species. Some sections of the Pecos River are completely devoid of water downstream of diversions during the summer months (USFWS, 1987).

The Project would cross the Pecos River in segments not currently known to be occupied by the Pecos bluntnose shiner. However, the Line L100 Pecos River crossing location in New Mexico does appear to support suitable habitat for this species based upon the habitat surveys conducted by Double E's biologists. Irrigation return flows at this location appear to provide pools, riffles, and runs that could support the Pecos bluntnose shiner.

Construction and hydrostatic water discharge in and adjacent to Pecos River crossing locations could increase sedimentation, generate potential contamination from construction erosion, result in unanticipated drilling mud releases, and cause inadvertent spills of hazardous materials. These potential events could result in mortality or affect breeding behavior of the shiner if it is present in the vicinity of the crossings.

To avoid potential impacts on this species, Double E would cross the Pecos River using HDD. In the event of an inadvertent release of drilling mud, Double E would implement measures contained in its *HDD Inadvertent Return Contingency Plan*. In addition, Double E would store all hazardous materials and staging at least 100 feet from waterbodies and implement hydrostatic discharge protocols. Double E would also install erosion control measures at crossing locations to control sediment until restoration is deemed successful. Based on the low potential for occurrence of the Pecos bluntnose shiner in the Project area and the

[16] This is an informal term that refers to those species which the USFWS believes might be in need of concentrated conservation actions.

implementation of the recommended and proposed measures, we have determined that construction and operation of the Project *is not likely to adversely affect* individuals or populations of the Pecos bluntnose shiner.

Northern Aplomado Falcon (*Falco femoralis septentrionalis*) (Endangered). The northern aplomado falcon is listed as federally endangered in the Project area in New Mexico. Elsewhere it is listed as an experimental, non-essential population. This falcon is also state-listed as endangered in both Texas and New Mexico.

Northern aplomado falcons require open grassland or savannah habitat with scattered trees or shrubs where they are most often seen in pairs; they are also known to use stick nests built by other birds (TPWD, 2019c). The Project area in Texas contains suitable grassland habitat, and the falcon was recorded by the NMDGF within 1 mile of the Project area in New Mexico (Wunder, 2018). No species-specific surveys were conducted for this species.

Suitable foraging habitat for the aplomado falcon is present in the Project area. Several larger grasslands, including a 2.5-mile area dominated by grasslands, are crossed by the Project. Project activities could temporarily remove suitable foraging habitat for this species and reduce the abundance of prey. Construction noise and increased human presence could alter aplomado falcon behavior if the bird is foraging in the vicinity of the construction area.

Implementation of the measures in FERC's Plan and Procedures, and Double E's proposed measures summarized in section B.4.2.1.2 (migratory birds and raptors), including Double E's commitment to conduct pre-construction nesting surveys and avoid any occupied nest until the fledglings have fled; together with the revegetation measures in the FERC Plan would reduce the extent and duration of impacts on migratory bird habitat by restoring all areas not necessary to be maintained for operation to preconstruction conditions. These measures would adequately minimize long-term impacts on the northern aplomado falcon. In addition, because this species is a rare mobile visitor to the area, individuals would likely avoid active areas of construction. Therefore, direct impacts are not anticipated for this species. As such, we conclude that construction and operation of the Project *is not likely to adversely affect* the northern aplomado falcon.

Western Snowy Plover (*Charadrius alexandrinus*) (Threatened). Snowy plover are federally listed as threatened and are listed as rare in Texas. Plovers nest on beaches and sandy flats. Plover nests have been identified within 0.8 mile of the Line T100 right-of-way in the Laguna Grande Complex, which consists of a group of salt playas near the northern extent of the Project (BISON-M, 2019).

Construction activities could temporarily modify flight behavior of this species if it passes through the Project area during the breeding season. However, because this species is believed to be a rare mobile visitor to the area, it is unlikely that snowy plovers would nest in the immediate vicinity of the Project footprint and they would likely avoid active construction areas. Therefore, we conclude that construction and operation of the Project *is not likely to adversely affect* the western snowy plover.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*) (Endangered). The southwestern willow flycatcher is listed as federally endangered and state endangered in both New Mexico and Texas. Nesting habitat for this species includes larger riparian and wetland thickets, generally of willow, tamarisk, and sometimes boxelder or Russian olive. Migrating flycatchers can occur in sparse or small riparian habitats or patches of riparian vegetation that may be dominated by native or exotic plant species. Migratory habitat for this species is present along the Pecos River.

Construction activities could affect behavior of this species during migration and cause flycatchers to temporarily avoid the Project area during migration. However, because the southwestern willow flycatcher is a rare mobile visitor to the Project area, suitable nesting habitat is not present in the Project area, and no riparian vegetation clearing would be necessary for the proposed HDD at the Pecos River, we find that at there is a very low probability that the Project would impact this species. Therefore, construction and operation of the Project *is not likely to adversely affect* the southwestern willow flycatcher.

Wright's marsh thistle (*Cirsium wrightii*) (Candidate). This thistle is a federal Candidate species, BLM sensitive, and endangered in New Mexico. It is known to inhabit wet, alkaline soils in spring seeps and marshy edges of streams and ponds that may occur in Project area. Potential habitat for this species could be present at the Pecos River crossing in New Mexico.

Potential impacts on the Wright's marsh thistle could include direct impacts from vehicles or construction equipment driving over, displacing, or killing plants. Construction personnel may also inadvertently trample or collect plants. Plants growing within the disturbance corridor and associated workspaces would be most vulnerable to direct impacts; however, vegetation near disturbed areas would also be vulnerable to accidental damage from vehicle and foot traffic leaving the disturbance area. Construction could also impact the population by reducing or degrading available habitat for new plant growth.

Depending on the proximity of ground disturbance to special status plant species habitat, Project construction could result in indirect impacts on special status plant species and the ecological processes that sustain them. Indirect impacts may include the degradation of habitat conditions that include ground cover, soil nutrient flows, hydrological flows, reductions in photosynthesis due to dust, thermal cover, fugitive dust loads, non-native species dispersal, habitat connectivity, and changes in visitation behaviors of pollinators and dispersal agents.

Inadvertent releases during HDD operations at the Pecos River could result in impacts on marsh thistle habitat and individual specimens; however, implementation of the Double E's measures in its Inadvertent Release Plan would adequately minimize impacts. As such, direct impacts on the marsh thistle are not anticipated. Additionally, refueling and storage of hazardous materials would be prohibited within 100 feet of streams and wetlands during construction.

Due to Double E's commitment to using the measures in the FERC's Plan and Procedures and the implementation of measures in Double E's Inadvertent Return Contingency Plan, we conclude that impacts from construction of the Project on the Wright's marsh thistle would not be significant in the long term.

4.3.1.1 Summary of Section 7 ESA Findings

The USFWS Carlsbad Field and Austin Ecological Services Field Offices have provided their respective comments and review of the Project directly with Double E; however, we request concurrence with our four determinations of effect findings to complete our consultation, in our role as lead agency with the USFWS for Section 7 compliance.

With the mitigation adopted by Double E, we find that the Project *may affect, but is not likely to adversely affect* four federal listed species: Pecos bluntnose shiner, northern aplomado falcon, western snowy plover, and southwestern willow flycatcher. Because Section 7 consultation has not yet been completed between the FERC and the USFWS for the Project, **we recommend that:**

- **Double E should <u>not begin</u> construction activities <u>until</u>:**

    a. **FERC staff receives comments from the USFWS regarding the proposed action;**
    b. **FERC staff completes ESA consultation with the USFWS; and**
    c. **Double E has received written notification from the Director of OEP that construction or use of mitigation may begin.**

4.3.2 BLM Sensitive Species

BLM's Reference Manual 6840 – Special Status Species Management (2008) directs the BLM to conserve "BLM special status species and the ecosystems upon which they depend on BLM-administered lands" (6840.01). The BLM defines "Sensitive Species" as those species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. BLM "Watch" species includes those species with insufficient data on population or habitat trends or threats. Consultation with the BLM's Carlsbad Field Office and review of the New Mexico BLM's Sensitive and Animal and Plant List (BLM, 2018) identified 51 BLM sensitive and watch species that could occur within the Project region in Eddy County, New Mexico. No federal lands are crossed in Texas.

Based on review of habitat types found in the Project area and in consultation with the BLM, we determined that the Project would have no impact on 23 of the 51 BLM sensitive and watch species originally identified for the Project. Suitable habitat was not identified for these species during general habitat surveys completed by Double E biologists from June 2018 to July 2019.

The potential for occurrence assessment for the remaining 28 BLM Sensitive and Watch species was based on known occurrences, agency communications, observed suitable habitat within the Project area, and a review of survey results and geographic ranges of the various species. These species and determinations of effect are included in table C-7 of appendix C.

The BLM provided survey protocols to Double E, which Double E implemented through appropriate transect spacing and buffer distances on federally managed lands in the Project

footprint. Four species – the monarch butterfly, western burrowing owl, LPC, and Scheer's pincushion cactus – were observed during Double E's biological surveys in 2018 and 2019. These and other select BLM sensitive species that may occur in the Project area, and associated impacts and mitigation, are discussed below.

Insects

The Monarch butterfly **(***Danaus plexippus plexippus*) is a BLM sensitive species and is also under review for listing by the USFWS. Adults feed on a variety of flowering plant species; however, the monarch butterfly only lays eggs on milkweeds, and larvae only feed on milkweed species. The western population overwinters in various coastal sites in central and southern California. Monarch butterflies have multiple generations during their migrations, and the second, third, and fourth generations return to northern portions of the United States and Canada in the spring.

The recent large-scale decline of North American monarchs is primarily the result of the reduction of milkweed in core breeding habitat. The reduction of milkweed has been attributed to the widespread adoption of genetically modified herbicide-tolerant corn and soybeans as well as the use of the herbicide glyphosate on these crops (NatureServe, 2019a). Direct impacts on this species could occur as a result of Project construction, which may include crushing adults and caterpillars, the loss of forage plants, and habitat fragmentation.

No species-specific surveys have been completed to date for this species; however, monarch butterflies were observed feeding on composite flowers during the general habitat surveys conducted late in the summer. These observations primarily occurred in areas where mesquite was not present. Milkweeds were not noted during surveys but may occur in more mesic areas outside of survey areas.

Reseeding mixes used in affected Project areas would be composed of agency-recommended native species and it is expected that flowering plants, including milkweed, would be included in reclamation mixes and re-established along the right-of-way. We find that the reclamation procedures proposed for this Project would adequately minimize any potential effects on the monarch butterfly and associated habitat, thereby assisting in the conservation of this species.

Birds

The western burrowing owl (*Athene cunicularia hypugaea*), a grassland species, is BLM sensitive species and a USFWS species of concern. It is distributed throughout western North America in open areas with short vegetation and bare ground in desert, grassland, and shrub-steppe environments. Western burrowing owls use mammal burrows for nesting. The NMDGF noted that burrowing owls use winter burrows in southeast New Mexico and can use burrows year-round in the Project area, including as night roosts in the winter (Kellermueller, 2019). Effects on burrowing owls from the construction of the Project would be similar to those described in section B.4.2.1.2 (Migratory Birds and Raptors).

Double E would complete nest surveys prior to clearing if construction would occur within the bird nesting season (March 15 to September 15). If active nests or breeding behavior

are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged. Additional information regarding the burrowing owl is discussed below in section B.4.3.3, State Listed Species.

The common ground-dove (*Columbina passerina*) is a BLM watch species and occurs in open stands of creosote bush and large succulents (*Ferocactus pringlei, Echinocactus platyaconthus*) in southern New Mexico and southwest Texas. It may occur along the Pecos River. If doves are present during Project construction, direct effects may occur to nests, eggs, and young. Double E would complete nest surveys prior to clearing if construction occurs within the bird nesting season (March 15 to September 15). No long-term adverse impacts are anticipated with implementation of Double E's avoidance measures.

The lesser prairie chicken (*Tympanuchus pallidicinctus*) is a BLM sensitive species and is also under review for listing as threatened under the ESA. The LPC is also a Species of Greatest Conservation Need in New Mexico (section B.4.3.3). Due to the interest that both the BLM and the NMDGF have in protecting it, we discuss the LPC both here and in section B.4.3.3.1.

We reviewed the BLM's New Mexico Statewide Spatial Data for LPC and identified areas where the Project crosses Isolated Population Areas of LPC. The northernmost portion of project area is within the LPC Isolated Population Area managed by the BLM Carlsbad Field Office (BLM, 2019a).

LPC are found throughout dry grasslands that contain shinnery oak or sand sage. Currently, they are most commonly found in sandy-soiled, mixed-grass vegetation, and short-grass habitats with clayey or loamy soils interspersed. LPC are also found in farmland and smaller fields, especially in winter. Shinnery oak are used as cover and produce acorns, which are important food for LPC and many other species of birds, such as the scaled quail, northern bobwhite, and mourning dove. The current geographic range of shinnery oak is nearly congruent with that of LPC, and these species sometimes are considered ecological partners. Population densities of LPC are greater in shinnery oak habitat than in sand sage habitat (Mudgett, 2019).

LPC use a breeding system in which males form display groups. These groups perform mating displays on arenas called leks. During mating displays, males vocalize to attract females to the lek in a display that is called booming. Leks are often on knolls, ridges, or other raised areas. In New Mexico, leks are just as likely to be on flat areas such as roads, abandoned oil drill pads, dry playa lakes, or at the center of wide, shallow depressions. Leks may be completely bare, covered with short grass, or have scattered clumps of grass or short tufts of plants. An important physical requirement for leks is visibility of surroundings, but the most important consideration is proximity of suitable nesting habitat, breeding females, and the ability to hear male vocalizations (Mudgett, 2019).

LPC populations continue to decline in Lea and Eddy Counties due to unpredictable weather cycles and habitat loss. The widespread presence of oil field development in LPC range has also reduced overall habitat suitability and availability.

Double E identified one isolated adult LPC during its general habitat surveys on BLM-managed lands in June 2019 along the proposed Line T100 alignment near the northern extent of the Project area. This LPC occurred in a BLM Isolated Population Area and in Category 3 habitat, as defined by the New Mexico Critical Habitat Assessment Tool (see section 4.3.3). No chicks were observed. No species-specific protocol surveys have been completed by Double E for LPC in the Project area.

During coordination between us, the BLM, and the NMDGF (BLM, 2019b; Beauprez, 2019), both the BLM and NMDGF recommended that LPC protocol surveys, as defined in the *LPC Range-Wide Conservation Plan*, be completed to at least 1 mile from Project centerlines where the Project crosses suitable habitat designated as Category 3 areas (see section B.4.3.3.1 for Category 3 designation). Both agencies indicated that surveys be completed in the proposed rights-of-way and new access roads that cross BLM-designated Isolated Populated Areas. The BLM also indicated that a timing restriction would be implemented in the event of an LPC sighting during survey activities.

In addition, the following measure has been identified for implementation on BLM-managed land/BLM Isolated Population Area, specific to where the LPC individual was observed during the June 2019 habitat survey, for both construction and for future actions:

- Double E would implement the BLM's Timing Limitation Stipulation/Condition of Approval for LPC (oil and gas activities) from March 1 through June 15 annually. During that period, activities that produce noise or involve human activity, such as pipeline and access road construction, would be allowed except between 3:00 am and 9:00 am. Normal vehicle use on existing roads would not be restricted.

The BLM's Carlsbad Field Office publishes an annual map of where the LPC timing and noise stipulations and conditions of approval (limitations) apply on BLM-managed lands for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map identifies BLM-managed areas that are Habitat Areas, Isolated Population Area, and Primary Population Area. The LPC Timing Area map also has an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

Exceptions to timing and noise requirements would be considered on a case by case basis; however, these exceptions would not be granted if BLM determines, on the basis of biological data or other relevant facts or circumstances, that the grant of an exception would disrupt LPC booming activity during the breeding season. Requests for exceptions on a non-emergency basis may also be considered, but these exceptions would not be granted if BLM determines that there are LPC sightings, historic leks, and/or active leks within 1.5 miles of the proposed location, or any combination of the above-mentioned criteria combined with suitable habitat. However, based upon a meeting in June 2019 between Double E and the BLM, filed information from July 2019, and our own consultations, the BLM determined that the Project does not intersect any noise restricted areas; therefore, no noise mitigation measures or restrictions currently apply.

In its response filed on September 26, 2019, Double E agreed to implement the time of year restriction with proximity to the location of the identified LPC near Line T100, per stipulations included in the BLM Right-of-Way Grant authorization. Double E also indicated it would complete LPC surveys in accordance with requested protocols. Any active nest locations would be flagged and avoided until nesting is completed. However, Double E has not responded to the entirety of the BLM's recommendations for protocol surveys and conservation measures for LPC on BLM managed lands. The BLM will take this under consideration when deciding whether to issue Double E a Right-of-Way Grant for the Project.

Additional information and measures are identified in section B.4.3.3.1, New Mexico state species. Based on Double E's adoption of the BLM mitigation measures and those in section B.4.3.3.1, which include conducting species-specific surveys in April 2020 for the LPC on New Mexico state lands and pre-construction avian nest surveys prior to clearing activities, we find that potential effects on LPC resulting from construction and operation of the Project would be minimized, and no long-term effects on LPC are anticipated.

The chestnut-collared longspur (*Calcarius ornatus*), McCown's longspur (*Rhynchophanes mccownii*), mountain plover (*Charadrius montanus*), peregrine falcon (*Falco peregrinus*), and Sprague's pipit (*Anthus spragueii*) are BLM sensitive or watch species only anticipated to occur in the Project area during migration. Construction activities could affect behavior of these species and cause them to temporarily avoid the Project area during migration. Because these five birds are primarily rare, winter mobile visitors to the Project area and suitable nesting habitat is not present in the Project area, we conclude that the Project would not significantly impact the two longspur species, mountain plover, peregrine falcon, or Sprague's pipit in the long-term.

Mammals

The black-tailed prairie dog (*Cynomys ludovicianus*) is a BLM sensitive and Texas rare species. Suitable prairie dog habitat may be present within the Project area (Schmerler, 2018). Because we received specific recommendations for mitigation measures for the black-tailed prairie dog from the TPWD, the remainder of our discussion for this species in presented in section B.4.3.3.2.

Townsend's pale big-eared bat (*Corynorhinus townsendii*), a BLM sensitive and Texas rare species, could forage in the Project area; however, no suitable roosting habitat has been identified within the Project footprint for this species. Because no significant open caves or mines have been identified near the Project footprint, and disturbed vegetation areas would be reseeded with native seed mixes as committed to by Double E, no direct long-term impacts on this species are anticipated.

Aquatic Species

BLM sensitive or "watch" aquatic or riparian species in the general Project area include the bigscale logperch (*Percina macrolepida*), blue sucker (*Cycleptus elongatus*), gray redhorse (*Moxostoma congestum*), greenthroat darter (*Etheostoma lepidum*), Mexican tetra (*Astyanax mexicanus*), Pecos pupfish (*Cyprinodon pecosensis*), Rio Grande chub (*Gila pandora*), Rio

Grande sucker (*Catostomus plebius*), eastern barking frog (*Craugastor augustii latrans*), western narrow-mouthed toad (*Gastrophryne olivacea*), Rio Grande cooter (*Pseudemys gorzugi*) (a turtle species also known as the western river cooter), North American least shrew (*Cryptotis parva*), and Wright's water willow (*Justicia wrightii*). The Pecos pupfish is currently under review for listing by the USFWS and is also state-listed as threatened in Texas and New Mexico. The Pecos pupfish, and any other state cross-listed species, are further discussed in the New Mexico sensitive species section (B.4.3.3.1).

BLM sensitive/watch aquatic or riparian species could potentially be impacted by construction activities at the Pecos River crossings. Impacts would primarily occur in the event of an inadvertent release during HDD activities. In the event of an inadvertent release, Double E would implement the measures in its Inadvertent Return Contingency Plan. Implementation of these measures would minimize potential impacts on aquatic and riparian species.

Reptiles

The desert massasauga is a BLM sensitive rattlesnake species that could be present in the Project area and impacted by construction. Because it is also state-listed in New Mexico and most of the comments we received for this species came from the NMDGF, we discuss the massasauga in section B.4.3.3.1, below.

Plants

Potential impacts on BLM sensitive plant species could occur from construction-related disturbance and mortality, and habitat fragmentation from the presence of the right-of-way. The loss of previously unidentified individuals or plant assemblages could contribute to declines in species abundance, habitat quality, and species occurrence connectivity. Depending on the proximity of ground disturbance to special status plant species habitat, Project construction could result in indirect impacts on special status plant species and the ecological processes that sustain them. Indirect impacts may include the degradation of habitat conditions that include ground cover, soil nutrient flows, hydrological flows, reductions in photosynthesis due to dust, thermal cover, fugitive dust loads, non-native species dispersal, habitat connectivity, and changes in visitation behaviors of pollinators and dispersal agents.

To minimize potential impacts on sensitive plants, vehicles and equipment would be kept on existing roads and approved surfaces and would avoid travel across undisturbed surfaces. In addition, workers would be instructed not to park in off-road areas and would be required to stay on rights-of-way or other approved access areas.

Below, we discuss two BLM sensitive plant species, the Tharp's blue star and the Scheer's pincushion cactus, identified by the BLM as potentially occurring in the Project area. Two other BLM sensitive plants, Wright's marsh thistle (federal candidate) and Wright's water willow (water-dependent), were discussed in previous sections, as noted.

Tharp's blue star (*Amsonia tharpii*) is a perennial herb with pale blue flowers that bloom from April to early May. This species is also under review for listing as a threatened species by the USFWS and is known to occur in three locations in Eddy and Chaves Counties, New Mexico and one site in Pecos County, Texas (NatureServe, 2019b). It occurs on shallow, well-drained,

stony loams in limestone and gypsum hill habitats in Chihuahuan shrub/scrub communities and in shortgrass communities between 3,100 to 3,500 feet above mean sea level. The nearest known population to the proposed Project is located at Cedar/Pierce Canyon, which is approximately 4.3 miles south of the L100 right-of-way. Potentially suitable habitat for this species is crossed by the proposed Project, primarily on the L100 route, approximately 2 to 2.9 miles east of the Pecos River crossing (Roth, 2019). Additionally, the Forty-Niner Ridge Important Plant Area, which includes blue star populations, is crossed by the proposed Project right-of-way near the northern extent of the route (EMNRD-Forestry Division, 2017).

Existing impacts on this species include livestock overgrazing and regular monitoring (human traffic) at known locations. Active oil and natural gas development facilities are currently located in the vicinity of two of the known populations. Potential effects on the Tharp's blue star could include direct mortality during clearing and grading activities in suitable habitats, trampling, vehicle traffic, and habitat fragmentation. Plants growing within the disturbance corridor and associated workspaces would be most vulnerable to direct impacts. Vegetation near disturbed areas would also be vulnerable to accidental damage from vehicle and foot traffic leaving the disturbance area. Construction could also impact the population by reducing or degrading available habitat for new plant growth.

Surveys for Tharp's blue star were completed by Double E biologists in 2018 and 2019 in suitable habitat identified by the BLM. Surveys were conducted within five portions of the L100 and northern portions of the T100 rights-of-way including sections of the Forty-Niner Ridge Important Plant Area. Surveys in 2018 were conducted after the blooming season in July and in September. Surveys were conducted at the end of the blooming season in May 2019 to provide a higher likelihood of detecting this species. No Tharp's blue star were observed during survey activities.

If previously unidentified blue star populations are identified during construction, Double E Pipeline has committed to working with the USFWS and the BLM to determine the appropriate mitigation measures or seek to avoid populations through HDD, minor adjustments in the pipeline alignment, or reducing the right-of-way width in those areas, where possible.

Since no individuals or populations of Tharp's blue star were identified in the Project area, Double E's commitment to its BMPs and the adoption of the agency-recommended mitigation measures, we conclude that potential impacts from construction and operation of the Project on the Tharp's blue star would not be significant in the long term.

Surveys for Scheer's pincushion cactus (*Coryphantha robustispina var. scheeri*) were completed by Double E biologists between June 26 and September 11, 2019, within potentially suitable habitat and known occurrence areas as identified by BLM botanists. Four Scheer's pincushion cactus specimens were identified during the surveys. One individual was observed within the proposed Project right-of-way, and the other three individuals were identified between 60 and 1,030 feet from the right-of-way (Kish and Anders, 2019). As a result, at least one Scheer's pincushion cactus — out of 262 (0.004 percent) of all individuals ever documented within the BLM's Carlsbad Field Office is likely to become displaced by Project activities without active intervention. Double E is working with the BLM on approved transplanting protocols for the one specimen identified to date within the proposed corridor. Avoidance or

transplant protocols for the individual would ensure that Project impacts on the individual cactus are considered and that population-level impacts would be minimal.

The BLM has indicated that in its authorization it may require the following measures to protect sensitive plant species:

- To protect any special status plant species that were not observed during field surveys, vehicles and equipment would be required to be kept on existing roads and approved surfaces and should avoid travel across undisturbed surfaces; workers will be instructed not to park off roads or rights-of-way in undisturbed areas.
- Clearing of brush species within the permanent right-of-way would be allowed: maximum width of clearing operations would not exceed 30 feet (Clearing is defined as the removal of brush while leaving ground vegetation [grasses, weeds, etc.] intact). Clearing is best done by holding the blade 4 to 6 inches above the ground surface.
- BLM special status plant surveys would be required for subsequent actions tiered from this analysis when the impacts effects zones of the proposed actions intersect special status species potential habitat that has not been surveyed within three years prior to the notice of application for the proposed action. If occupied habitat is observed within the impacts effects zones for the proposed action(s), the proposed action(s) would avoid occupied habitat and mitigate anticipated impacts as determined appropriate for the conservation of the species by the BLM's Authorized Officer in coordination with a BLM biologist.
- BLM would provide Double E with approved transplanting protocols for Scheer's pincushion cactus individuals that were found or could be found within the proposed right-of-way and cannot be avoided.

Summary of Impacts on BLM Sensitive and Watch Species

In summary, potential impacts on BLM Sensitive and Watch plant and animal species are expected to be of a similar nature as impacts identified for general vegetation and wildlife as discussed previously in sections B.4.1 and B.4.2. Double E would restore vegetation cover to a natural condition and minimize the introduction and/or spread of exotic or invasive species. Double E would also and minimize the impacts of noise, erosion, traffic, and equipment on BLM Sensitive and Watch species.

With the implementation of Double E's proposed measures as well as the additional BLM-required measures, we conclude that construction and operation of the Project would not have a significant impact on BLM special status species in the long-term.

We also acknowledge that the BLM may include additional measures in any Right-of-Way Grant authorization for further protection of sensitive species on federal lands.

4.3.3 State-Listed Species

Double E provided information on state-listed species for both New Mexico and Texas. Several species are considered rare or are listed due to their decline in population or habitats, and

are protected in both New Mexico and Texas, by the NMDGF and TWPD, respectively. We considered the Project's impacts on state-listed species; table C-7 in appendix C summarizes our impacts analysis and conclusion for most of these species. However, certain species warranted more detailed discussion, as indicated by comments from the NMDGF and TWPD or that were sighted in the Project area. A number of state-sensitive species also have USFWS or BLM status; those that were discussed previously are not repeated here.

4.3.3.1 New Mexico

New Mexico state threatened or endangered species are protected under the New Mexico Wildlife Conservation Act (17-2-41 of the New Mexico Statutes [Annotated] 1978) and the State's Endangered Plant Species regulations (Section 75-6-1 of the New Mexico Statutes [Annotated], 1978).

Double E reviewed the New Mexico Critical Habitat Assessment Tool (NMDGF, 2019b), NMDGF BISON-M data (BISON-M, 2019), the New Mexico Rare Plants website (New Mexico Rare Plant Technical Council, 1999), and the New Mexico EMNRD (2018) state endangered plant species list. In addition, Double E initiated consultation with the NMDGF in November 2018. We also contacted NMDGF wildlife biologists to seek species mitigation requirements for LPC and general special status species (Beauprez, 2019; Kellermueller, 2019).

The state-threatened plain-bellied water snake (*Nerodia erythrogaster*), which is dependent on permanent bodies of water in and along the Pecos and Black Rivers, could be affected by construction erosion and a potential inadvertent return during HDD activities at the Pecos River crossing. Protective measures identified for an inadvertent release during HDD were previously discussed in section B.4.3. With implementation of these measures, we find that no long-term impacts are anticipated on the snake due to the avoidance of river via HDD.

Harris's hawk (*Parabuteo unicinctus*), a New Mexico Species of Management Concern, was observed within the Project area on a portion of the proposed T100 route during the habitat surveys in 2018 and 2019. One Harris's hawk nest was confirmed during the surveys near the northern portion of the Project. Double E would conduct surveys for migratory birds if construction would occur during the bird breeding and nesting season. As described in section B.4.2.1.2, raptor surveys would be completed prior to initiating construction.

The desert massasauga (*Sistrurus catenatus edwardsii*) is also a Texas rare and BLM sensitive species. It is a small rattlesnake primarily found in rocky, semi-arid and arid areas, and desert grasslands. The desert massasauga can be differentiated from the western massasauga by its smaller size and lighter coloration (NatureServe, 2019b).

Although no species-specific Project surveys were conducted for this species, three western massasauga were observed during Double E's general habitat surveys. The desert massasauga also has been documented by the NMDGF within 1 mile of the Project area (Wunder, 2018).

In comments on the Project, the NMDGF recommended conducting surveys in suitable habitat for desert massasauga within the Project footprint if pipeline construction would occur during the snake's activity period (1 April - 30 September). If desert massasauga are detected,

NMDGF recommends that the individuals be relocated by a qualified biologist at least 0.5 mile away from construction areas in appropriate habitat. Double E has agreed to incorporate this measure into its Project. Since these snakes have been previously observed in the Project area during habitat studies, we agree with the NMDGF's recommendations and determine that implementing this mitigation would adequately minimize the potential effects on the desert massasauga and help with the conservation of this species.

The Pecos pupfish (*Cyprinodon pecosensis*) is state listed as threatened in New Mexico and Texas and is under review for federal listing. This species occurs in saline springs and gypsum sinkholes at Bitter Lake National Wildlife Refuge and Bottomless Lakes State Park. Elsewhere, it is present irregularly in the Pecos River south of Bitter Lake and Bottomless Lakes State Park to the Texas state line. The species was formerly present in the Laguna Grande in Eddy County, New Mexico. Typical habitat consists of saline springs and gypsum sinkholes, main channels of the Pecos River, backwater areas, and side pools that lack sunfish or other predators. The NMDGF has recorded pupfish populations in the Pecos River within 1 mile of the Project area (Wunder, 2018).

Potential impacts and mitigation for the Pecos pupfish are similar those identified previously for the Pecos bluntnose shiner. We have determined that no long-term impacts are expected due to avoidance of the river via HDD.

LPC habitats that could be affected by the Project are included in table B-3. Additional discussion on the LPC is included in section B.4.3.2, BLM Sensitive Species. We reviewed the New Mexico Critical Habitat Assessment Tool database and determined that the nearest, known lek sites to the Project area are located approximately 7 and 8 miles east of the proposed T100 construction corridor. These leks are both historic and were last observed as active in 1989 and 1988. LPC surveys were last completed at those lek locations in 2018 and 2014.

LPC Category 3 and 4 habitat areas are also crossed by the proposed T100 construction corridor and associated access roads. Category 3 is identified as a "Lek Maximum Entropy Classifier" region that describes potential habitat based on leks, nests, landcover, site conditions and other data to describe the landscape. Category 4 is the estimated occupied range plus a 10-mile buffer (Lesser Prairie Chicken Initiative, 2019; University of Kansas, 2019).

In its comments, the NMDGF recommends that to reduce potential noise effects on LPC, the current background A-weighted decibel scale (dBA) levels and what they are anticipated to be during and following construction should be identified. The NMDGF has indicated that noise levels within LPC range should be reduced to 49 decibels when 30 feet away from the noise source (NMDGF, 2007a). If dBA levels exceed acceptable threshold noise levels during construction, construction timing restrictions during LPC breeding and nesting periods should be implemented in suitable habitat. Equipment shielding may be required. Double E has not agreed to implement these requirements. However, based upon a meeting in June 2019 between Double E and the BLM, filed information from July 2019, and our own consultations, the BLM determined that the Project does not intersect any noise restricted areas; therefore, no noise mitigation measures or restrictions currently apply and we concur no noise measures are required.

In addition, during coordination between FERC staff, the BLM, and the NMDGF (BLM, 2019b; Beauprez, 2019), both the BLM and NMDGF recommended that LPC protocol surveys, as defined in the *LPC Range-Wide Conservation Plan*, be completed to at least 1 mile from Project centerlines where the Project crosses suitable habitat designated as Category 3 areas. Both agencies indicated that surveys be completed in the proposed rights-of-way and new access roads that cross BLM-designated Isolated Populated Areas. As stated in section B.4.3.2, Double E would finalize any additional mitigation measures for LPC with BLM on federal lands.

TABLE B-3
Lesser Prairie Chicken Habitat Areas Impacted by the Project

Facility	Milepost (entry)	Milepost (exit)	Crossing Length (feet)	Width (feet)	Acreage Affected[1]		Habitat Type/Name
					Construction	Operation	
T100	0	0.1	119.3	44.9	0.1	0.1	
T100	5.4	5.8	1,783.70	125	5.3	2.0	USDA-NRCS Category 4 Action Area
T100	8.1	15.3	38,031.80	125	115.5	43.7	
L100	21.4	23.2	9,620.80	125	27.7	11.0	
Big Eddy Meter Station	NA	NA	998.2	326.65	3.7	1.7	
Lane Laydown Yard	NA	NA	95.5	36.3	0.1	0.0	
T100	0	5.4	28,522.00	125	85.3	32.8	
T100	15.3	21.4	32,016.70	125	102.8	26.8	
T100	23.2	30.1	36,419.70	125	112.8	41.8	
L100	0	3.4	17,791.50	125	54.7	20.4	USDA-NRCS Category 3 Action Area
Existing Access Roads	NA	NA	93,100.40	30	64.1	22.8	
New Access Roads	NA	NA	955.4	30	0.7	0.0	
L100 Receiver	NA	NA	425.7	400.2	3.2	0.7	
Lane Plant Receipt Meter Station	NA	NA	825.2	505.1	9.6	9.6	
T100	0	0.2	264.2	125	2.7	1.0	
T200	37.5	39.2	2,721.1	125	7.8	10.2	
Lane Plant Receipt Meter Station	NA	NA	825.2	505.1	6.4	0.7	BLM Isolated Population Area
Lane Laydown Yard	NA	NA	2,703.0	1,055.0	38.0	0.0	
Totals			27,219.40	4058.1	658.0	266.4	

[1]Construction width = 125 feet, operation width = 90 feet. Length x width divided by 43,560 square feet in an acre. Numbers rounded to the nearest tenth. Construction acreages include temporary and permanent workspaces, including ATWS; operational acreages subtract all temporary workspaces.

Also, Double E proposes to perform species-specific survey in April 2020 for the LPC on New Mexico state lands. In addition, pre-construction avian nest surveys would also be conducted prior to clearing. Active nest locations would be flagged and those areas would be avoided until nesting is completed. Double E states it would continue to work with the NMDGF during project planning and to coordinate construction activities. With the implementation of Double E's proposed measures, we conclude that construction and operation of the Project would not have a significant impact on New Mexico state-listed species in the long-term.

4.3.3.2 Texas

Texas endangered or threatened animal species regulations are contained in Chapters 67 (Nongame Species) and 68 (Endangered Species) of the TPWD Code and Sections 65.171 - 65.176 (Threatened and Endangered Nongame Species) of Title 31 of the Texas Administrative Code (TAC). Details concerning endangered or threatened plant species regulations are contained in Chapter 88 (Endangered Plants) of the TPWD Code and sections 69.01 - 69.9 (Endangered, Threatened, and Protected Native Plants) of the TAC. Species designated in Texas as rare are species and communities tracked in the Texas Natural Diversity Database (TXNDD), and the TPWD actively promotes their conservation. The TPWD considers it important to evaluate and minimize impacts on Texas rare species and their habitat to reduce the likelihood of endangerment and preclude the need to list rare species as threatened or endangered in the future.

In October 2018, Double E consulted with the TPWD regarding special status species in Texas. The TPWD provided Double E a list of potential state-listed and rare species that may occur within the Project area, as well as recommendations for impact minimization and avoidance (Schmerler, 2018). In addition, the TPWD rare species lists for Loving, Ward, and Reeves Counties, Texas, and the TXNDD were reviewed to confirm additional Rare and protected species that could be present in the Project area. In a letter dated July 19, 2019, Double E also provided its proposed mitigation measures in response to the TPWD's November 27, 2018 letter of the agency's recommended measures. In its letter, Double E provided an itemized discussion regarding how Double E would either implement those recommendations and/or meet their general intent as is practicable/allowable given the length and size of the subject Project facilities.

A total of 75 Texas state-listed and rare species were initially identified as potentially occurring within the Project area. Based on a review of habitat types found in the Project area and TPWD communications, it was determined that 40 of the 75 species do not have the potential to occur based on the lack of suitable habitat in the Project area. In addition, several species are endemic to localities that are far removed from the Project area.

Twenty-four Texas listed or rare species that may occur in the Project area are summarized on table C-7 in appendix C. The potential for occurrence assessment for these 24 species was based on known occurrences, agency discussions, observed suitable habitat within the Project area, a review of survey results, and geographic ranges of the species.

Of these 24 species, 3 species — the Texas horned lizard, prairie falcon, and western burrowing owl — were observed during Double E's biological surveys in 2018 and 2019.

(Impacts on the burrowing owl were discussed above). Other select Texas rare and sensitive species that may occur in the Project area are further discussed below.

Construction-related vegetation clearing could result in direct mortality and habitat fragmentation of the adult and larval stages of the Horn's tiger beetle (*Cicindela hornii*), which is a Texas Rare grassland insect species. Although this species is only considered Rare in Texas, Texas actively promotes its conservation. If present during construction, any direct impacts would be short-term and limited to time of construction.

The headwater catfish (*Ictalurus lupus*), a Texas rare species, is currently limited to the Rio Grande drainage, which includes the Pecos River basin. This species is dependent on permanent bodies of water in and along the Pecos and Black Rivers and could be affected by construction erosion and unplanned inadvertent returns into the Pecos River. Likewise, suitable habitat for the Pecos River muskrat (*Ondatra zibethicus ripensis*) occurs along the Pecos River muskrat occurs along the Pecos River in the Project area, and construction activities could result in damage to burrows or direct mortality of adults and young. Implementation of the previously discussed protective measures for the Pecos River HDD crossings in sections B.3.2 and B.3.3 would ensure that construction of the Project would have not have long-term impacts on the headwater catfish or the Pecos River muskrat.

The Texas horned lizard (*Phrynosoma cornutum*), a Texas state-listed threatened species, has been observed in multiple locations in the Project area and could experience direct mortality and habitat fragmentation during construction and reclamation. In Double E's July 19, 2019 letter to the TPWD, Double E committed to following measures:

- A permitted and qualified biological monitor would be present onsite to remove any lizards observed within the right-of-way in suitable habitat that cannot be avoided. The biological monitor would monitor these areas during clearing, construction, and reclamation actions to find horned lizards within the Project footprint and relocate them off-site to an area that is close by safe from construction actions, and contains similar habitat.
- Given the large diameter of the pipeline and trench width necessary, any open trenches or excavation areas would be inspected every morning to ensure that no Texas horned lizards or other wildlife have been trapped. See previous discussion and mitigation commitments in section B.4.2.
- Double E would provide contractor training on identifying Texas horned lizards and proper protocol to follow if horned lizards are found during Project actions, including notifying the permitted biological monitor and/or Environmental Inspector for horned lizard relocation. Because the biological monitor cannot oversee all construction activity at the same time, it's important for the contractor to be able to identify protected species and to be on the lookout for them during construction.
- Project personnel would avoid impacts on harvester ant mounds, the lizard's preferred diet, in identified and marked suitable horned lizard habitat, as feasible.

With the implementation of the measures above, no long-term impacts are expected on the Texas horned lizard.

The spot-tailed earless lizard (*Holbrookia lacerate*) is listed as rare by the TPWD and is under USFWS review for listing under the ESA. This lizard prefers moderately open prairie-brushland regions as well as oak-juniper woodlands and mesquite-prickly pear associations. The species requires fairly flat areas free of vegetation or other obstructions (e.g., open meadows, old and new fields, graded roadways, cleared and disturbed areas, prairie savanna) (NatureServe, 2019b). Double E identified one TPWD record that reported an occurrence of this species about 5 miles from the proposed Project (Schmerler, 2018).

Suitable habitat for this species may exist within the Project area. Construction of the Project could result in direct mortality of this lizard if it is crushed during construction, or result in habitat fragmentation and temporary loss of habitat and prey.

The TPWD recommended monitoring the federal listing status of the spot-tailed earless lizard throughout Project planning and construction. As with any sensitive species, if the spot-tailed earless lizard were to become federally listed or proposed during Project review or construction, the FERC would be required to re-initiate Section 7 consultation with the USFWS.

As with the Texas horned lizard, Double E would have a biological monitor on site during construction in suitable habitat and move lizards off site if necessary. In addition, contractor training would be provided to onsite personnel on lizard characteristics for identification purposes. Implementation of the proposed mitigation measures would adequately minimize potential effects on this species, and no long-term impacts are anticipated.

The Baird's sparrow (*Ammodramus bairdii*), a Texas rare species, winters in extreme southern New Mexico in dense and expansive grasslands that often contain a shrub component. This species is only anticipated to occur in the Project area as a migrant. Construction activities could affect the behavior of this species and cause individuals to temporarily modify their behavior during migration by avoiding pipeline construction activities. Because the Baird's sparrow is primarily a rare, winter, mobile visitor to the area, we conclude that no long-term impacts are anticipated for this species.

Suitable habitat for the ferruginous hawk (*Buteo regalis*) and prairie falcon (*Falco mexicanus*), Texas rare species, is present in the Project area. Prairie falcon have been observed multiple times in the Project area; however, no active nests were identified during the general habitat surveys completed in 2018 and 2019 by Double E Pipeline biologists. Potential effects to these two raptor species would be identical to those described in section B.4.2.2, which include direct loss of eggs and young due to nest disturbance. With the implementation of Double E's proposed measures, we find that construction of the Project would have no long-term impacts on these raptors with implementation of migratory bird mitigation.

As mentioned above, suitable habitat for the black-tailed prairie dog (*Cynomys ludovicianus*) may be present within the Project area (Schmerler, 2018). The TXNDD has population records for black-tailed prairie dog occurrences approximately 4.5 miles from the proposed pipeline and several additional records for this species beyond this distance. Although no active black-tailed prairie dog towns or burrows were observed within the Project footprint during general habitat surveys completed by Double E biologists in 2018 and 2019; no species-specific prairie dog surveys were conducted for the Project.

If prairie dogs are present within 0.25 mile of the proposed right-of-way and new access road areas, construction activities could disturb and fragment colonies. If prairie dog colonies are identified in the Project area during construction, Double E has agreed to implement the below measures recommended by the TPWD in its November 27, 2018 letter, which would adequately minimize impacts on prairie dog towns or burrows:

- Double E would avoid construction in prairie dog colonies and install exclusion fencing to keep prairie dogs from entering the Project area. If prairie dog burrows would be disturbed during construction, non-harmful exclusion methods would be used to encourage the animals to vacate the area prior to disturbance and discourage them from returning to the area during construction.
- If prairie dogs are encountered on the Project site, Double E would contract a prairie dog relocation specialist. If impacting portions of a larger colony, prairie dogs would be encouraged to move away from the Project area by mowing overgrown adjacent areas. Conversely, prairie dogs can be discouraged from utilizing areas by not moving and allowing grass or other tall vegetation to grow or by scraping all vegetation off the Project site and leaving soil exposed.
- Double E would time any relocation efforts and/or humane removal to be completed immediately before construction to discourage recolonization of the Project area.

Given the lack of colonies in the Project area, no long-term impacts are anticipated on the black-tailed prairie dog with implementation of mitigation.

One TXNDD record was identified for the kit fox (*Vulpes macrotis*), a Texas rare species, approximately 5 miles from the proposed pipeline right-of-way (Schmerler, 2018). This species primarily inhabits open desert, shrubby, or shrub-grass habitat. Suitable kit fox habitat was observed in the Project area during Double E's habitat surveys. No fox dens were observed during the surveys; however, no protocol surveys were completed. Because kit foxes are mobile and would most likely avoid construction work areas, we do not anticipate direct impacts on adult foxes. The TPWD recommends that precautions be taken to avoid active dens that are detected during construction actions. Double E states it would avoid direct impacts on kit foxes and active dens.

The pocketed free-tailed bat (*Nyctinomops femorosaccus*) occurs in desert grassland habitat and roosts in caves and cliff crevices and under building roof tiles. No suitable cave or cliff habitat is present within the Project footprint; however, this species could forage in the Project area. Since no suitable habitat is present, we conclude that Project would have minimal impacts on the pocketed free-tailed bat.

In its comments, the TPWD identified an additional 11 rare plant species that were not addressed in Double E's filings with the FERC. These include bushy wild-buckwheat (*Eriogonum suffruticosum*), longstalk heimia (*Nesaea longipes*), Correll's green pitaya (*Echinocereus viridiflorus var. correllii*), dwarf broomspurge (*Euphorbia jejuna*), grayleaf rock-daisy (*Perityle cinerea*), gyp locoweed (*Astragalus gypsodes*), Hester's cory cactus (*Escobaria hesteri*), Irion County wild-buckwheat (*Eriogonum nealleyi*), two-bristle rock-daisy (*Perityle*

bisetosa var bisetosa), white column cactus (*Escobaria albicolumnaria*), and Wright's trumpets (*Acleisanthes wrightii*).

Double E states it would continue to work with the TPWD to minimize impacts on sensitive plants. With the implementation of Double E's proposed measures and the FERC Plan regarding minimizing ground disturbance to that necessary and ensuring effective restoration and revegetation (including using approved seed mixes), we conclude that construction and operation of the Project would not have a significant impact on Texas state-sensitive plant species.

5. Land Use, Recreation, and Visual Resources

The land use affected by construction and operation of the Project's pipelines and aboveground facilities were identified and categorized by reviewing Double E's habitat and field survey results, and review of aerial imagery (ESRI, 2016). The following is a list of land uses within the Project area and their definitions:

- Agricultural land – dryland grass/hay fields and irrigated hay fields. No row crops or orchards are crossed by the Project.
- Rangeland – non-forested vegetated lands primarily used for grazing.
- Open land – non-forested land used for open space.
- Industrial/commercial land – industrial and commercial lots, roadways and railroads and associated easements, transportation rights-of-way, and quarries.
- Wetland – palustrine emergent wetlands.
- Open Water – waterbodies and ponds 100 feet wide and greater.
- Utility right-of-way – existing linear corridors used by pipelines and other utilities.

Temporary and permanent land use impacts are summarized in table B-4 by facility.

Construction of the Project's facilities would temporarily impact approximately 2,863 acres of land, including 967 acres for permanent maintenance activities for the pipelines and aboveground facilities. The acreage shown for impacts includes all areas that would be disturbed, including both temporary (construction) and permanent (operational) impacts. Approximately 72 percent of the Project's pipelines parallels or is adjacent to existing utility rights-of-way. No forest/woodland areas or residential areas are associated with the Project.

Construction of the pipelines would require about a 125-foot-wide corridor, consisting of a 75-foot-wide temporary construction right-of-way and a 50-foot-wide permanent easement. ATWS would be utilized in special construction areas such as adjacent to road and railroad crossings, waterbody and wetland crossings, utility crossings and staging and pull-back areas for HDDs. Areas used for temporary right-of-way and ATWS would be allowed to revert to their pre-existing land use/vegetation cover conditions following completion of the Project.

During construction, public roads would provide the primary access to the construction right-of-way and ATWS. About 83.0 miles of existing access roads would be used during construction. Of this total, about 13.2 miles of these access roads would continue to be used for operation, including 10 new access roads, totaling 1.7 miles. Existing access roads are about 30

feet in width and are not proposed to be widened for use during construction. Some access roads may require roadbed improvements but generally the existing access roads would be maintained as is throughout construction. If existing access roads are damaged during use, the roads would be restored to preconstruction conditions.

Temporary workspace would be used for laydown and staging. In addition, a 31.5-acre site in Reeves County, Texas and a 38.1-acre site in Eddy County, New Mexico would be used as contractor yards for laydown and staging. The 31.5-acre Pecos Laydown yard in Reeves County is situated entirely within open land and is a commercial property that leases space specifically for similar use. Upon completion of the Project and expiration of the lease, the site would revert to the responsibility of the owners. The 38.1-acre Lane Laydown Yard in Eddy County would be within the existing disturbed area of Summit Midstream's Lane Processing Plant.

5.1 Open Land

Open land crossed by the Project consists of idle, non-forested lands. During Double E's habitat surveys, open land was observed to be mostly dominated by scrub-shrub vegetation. A total of 1,195.7 acres would be used during construction of the Project, of which 432.8 acres would be maintained for operation. Of the 432.8 acres affected by operation, 405.8 acres are associated with maintenance of the pipeline right-of-way and 27 acres for the aboveground facilities.

TABLE B-4
Land Use Impacts in Acres

Facility/ County, State[1]	Agricultural Land		Rangeland		Open Land		Industrial/Commercial		Wetland[4]		Open Water[5]		Utility Row		Totals	
	Const[2]	Oper[3]	Const[2]	Oper[3]	Const[2]	Oper[3]	Const[2]	Oper[3]	Const[2]	Oper[3]	Const[2]	Oper[3]	Const[2]	Oper[3]	Const[2]	Oper[3]
Line T100[6]																
Eddy, NM	0.0	0.0	518.6	191.7	0.1	<0.1	10.8	4.0	0.0	0.0	0.6	0.3	16.2	6.4	**546.3**	**202.4**
Line T200[6]																
Eddy, NM	0.0	0.0	220.6	79.4	0.0	0.0	2.5	1.2	0.1	<0.1	0.0	0.0	3.0	1.5	**226.2**	**82.1**
Loving, TX	0.0	0.0	37.3	12.4	523.8	192.6	21.7	10.9	0.0	0.0	0.3	0.1	26.7	9.5	**609.8**	**225.5**
Reeves, TX	0.0	0.0	9.0	3.4	97.9	31.9	7.0	2.4	<0.1	<0.1	0.1	0.1	8.1	2.5	**122.1**	**40.3**
Ward, TX	0.0	0.0	8.9	3.3	404.7	147.1	9.2	3.5	<0.1	<0.1	<0.1	<0.1	19.5	7.2	**442.3**	**161.1**
Line T300[6]																
Pecos, TX	0.0	0.0	0.0	0.0	1.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.8**	**0.8**
Reeves, TX	0.0	0.0	5.3	2.7	13.0	4.2	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	**18.7**	**7.1**
Line L100[6]																
Eddy, NM	22.9	8.0	136.9	48.3	90.1	29.2	5.2	1.7	1.2	0.8	0.3	0.2	16.1	10.6	**272.7**	**98.8**
Lane Plant Receipt Meter Station																
Eddy, NM	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.7	0.0	0.0	0.0	0.0	0.0	<0.1	**6.4**	**0.7**
Big Eddy Meter Station																
Eddy, NM	0.0	0.0	0.0	0.0	3.7	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.7**	**1.7**
Poker Lake Meter Station																
Eddy, NM	0.0	0.0	37.4	30.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**37.4**	**30.1**
Lobo Receipt Meter Station																
Loving, TX	0.0	0.0	0.0	0.0	6.0	2.1	0.5	0.1	0.0	0.0	0.0	0.0	0.6	0.0	**6.5**	**2.2**
Waha Receiver and Separation Site																
Reeves, TX	0.0	0.0	68.1	3.2	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	5.0	0.0	**76.7**	**3.2**
Trans Pecos Pipeline Point of Delivery																
Pecos, TX	0.0	0.0	0.0	0.0	4.2	2.3	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	**4.2**	**2.3**
Kinder Morgan Points of Delivery (Permian Highway Pipeline and Gulf Coast Express Pipeline)																
Reeves, TX	0.0	0.0	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.1**	**1.1**
L100 Receiver																
Eddy, NM	0.0	0.0	3.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.2**	**0.7**
L100 Receipt and Operations Site																
Eddy, NM	0.0	0.0	0.0	0.0	21.5	21.5	0.0	0.0	0.0	0.0	0.0	0.0	2.8	2.8	**24.3**	**24.3**
Laydown Yards																
Eddy, NM	0.0	0.0	0.0	0.0	0.0	0.0	38.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**38.1**	**0.0**
Reeves, TX	0.0	0.0	0.0	0.0	31.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**31.5**	**0.0**
Totals[1]	**22.9**	**8.0**	**1049.0**	**376.9**	**1195.7**	**432.8**	**105.4**	**24.7**	**1.3**	**0.8**	**1.3**	**0.7**	**97.4**	**40.5**	**2473.0[7]**	**884.4[7]**

[1] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends in all cases.

[2] "Const" = Land affected during pipeline construction, which is comprised of the 50-foot-wide permanent easement, the 75-foot-wide temporary workspace and ATWS where applicable. Land affected during construction of aboveground facilities is comprised of the permanent facility boundary and temporary workspace.

[3] "Oper" = Land affected during operation, which includes the 50-foot-wide permanent easement and aboveground facilities.

[4] Impacts on wetlands would be avoided and/or minimized through reduction of the construction right-of-way width to 75 feet in wetlands and through implementation of HDD.

[5] Open water waterbodies that would be crossed via HDD include two Pecos River crossings, one in Eddy County, NM and one in Ward County, TX. Open water ponds in Loving County, TX and in Eddy County, NM would be crossed via open ditch construction.

[6] Mainline block valves would be within the 50-foot-wide permanent pipeline easement and are accounted for within the pipeline acreage.

[7] This table does not include permanent or temporary access roads which would bring the Construction total to 2,863 acres and the Operation total to 967 acres.

5.2 Rangeland

Rangeland crossed by the Project is defined as non-forested vegetated lands primarily used for grazing. According to the BLM, rangeland can be further defined as uncultivated land that provides the necessities of life for grazing and browsing animals. The rangeland crossed by the Project managed by the BLM is allotted for cattle year-long grazing, with an average rating of 7-8 Animal Units per section. Rangeland crossed by the Project is dominated by scrub-shrub vegetation. The Line T100, Line T200, Line T300, Line L100 pipelines, the Big Eddy Meter Station, the Poker Lake Meter Station, the Waha Receiver and Operations site, and the L100 Receiver would impact a total of 1,049.0 acres of rangeland during construction of the Project, of which 376.9 acres would be permanently maintained.

Impacts on rangeland would generally be short term, as disturbed areas would be restored to pre-construction contours and revegetated. Impacts associated with the permanent easements held for the operational life of the pipeline and the aboveground facilities would be long-term and permanent.

5.3 Industrial/Commercial Land

Industrial/Commercial lands crossed by the Project includes industrial and commercial lots, roadways and railroads and associated easements, and quarries. Much of the Project area is developed with infrastructure or is being developed, largely due to the presence of oil and gas activities. The industrial and commercial lands are sparsely vegetated or lack vegetation due to the presence of impervious surfaces. A total of 105.4 acres of industrial/commercial land would be used during construction of the Project, of which 24.7 acres would be maintained as permanent easement for operation.

Double E would minimize impacts in commercial/industrial areas by timing construction to avoid peak use periods, maintaining access to businesses, and expediting construction through these areas where practicable. Double E would coordinate directly with affected commercial/industrial landowners on an individual basis to further reduce potential adverse impacts. Following completion of construction, these areas would revert to their former use, although restrictions against the placement of structures in the pipeline right-of-way would have a permanent impact on these areas.

5.4 Utility Rights-of-Way

In an effort to minimize impacts on the environment, Double E attempted to collocate with existing linear corridors (pipeline and other utility rights-of-way) while routing the Project's pipelines. A total of 97.4 acres of utility rights-of-way would be used during construction of the Project, of which 40.5 acres would be maintained for like use. No anticipated permanent impacts on existing utilities are expected. Double E's pipeline facilities would be collocated adjacent to about 138 different utilities, and a total of 877 utilities would be crossed by the Project's pipelines. See the table C-1 in appendix C for these locations and utilities crossed.

5.5 Agricultural Land

Agricultural land crossed by the Project is comprised of dryland grass/hay fields and irrigated hay fields along the Line L100 pipeline right-of-way. No row crops or orchards are crossed by the Project. A total of 22.9 acres of agricultural land would be impacted during construction of the Project. Agricultural land affected by the Project would be allowed to revert to its original agricultural use, although restrictions on the placement of new structures in the permanent pipeline easement would be put into place. Aboveground facilities and appurtenant facilities are not proposed by Double E within agricultural land.

In order to minimize impacts on agricultural use, Double E would perform topsoil segregation in accordance with the measures in the Commission's Plan and at the landowner's request. A minimum of 12 inches of topsoil would be segregated in deep soils, and the entire topsoil layer, where possible, would be segregated in soils with less than 12 inches of topsoil. Double E would work with landowners to identify agricultural drain tiles or irrigation systems prior to construction starting on their property. If drain tiles or irrigation systems are damaged by construction of the pipeline, Double E would work with the landowner to repair or replace those damaged sections, in accordance with the FERC Plan. Agricultural land would be returned to its original contour to maintain pre-construction hydrology.

5.6 Public Land, Recreation, or Sensitive Land Areas

No federally managed parks or National Wildlife Refuges are crossed by the Project. The Project does not cross and is not within 0.25 mile of Indian reservations, National Wilderness Areas, state parks, or registered natural landmarks. The Project does not cross USDA-NRCS farm and ranch land protection, agricultural conservation easements or lands, or wetlands reserve lands.

The Project crosses numerous public lands, including those managed by the BLM, Carlsbad Field Office, the NMSLO, and the TXUL. These crossing lengths and acreages are provided by milepost and are summarized table C-8 included in appendix C.

The Project would cross BLM lands in New Mexico for a total of about 46.1 miles (or 35 percent of the total Project). In addition to oil and gas exploration and production activities, the Project would cross through rangelands subject to grazing. The BLM, Carlsbad Field Office administers livestock grazing on 268 allotments over 2.1 million acres, for a total of 377,591 permitted animal unit months (an animal unit month is the amount of forage required by one animal unit for one month). Double E would minimize impacts on existing range improvements (e.g., fence lines, cattle guards, range studies, livestock water pipelines, and water troughs) on BLM land to the extent practicable.

Functional use would be maintained at all times through coordination with allotment holders during construction. Double E would coordinate with landowners about fencing requirements in easement negotiations, prior to construction. When passing through a fence line, the fence would be braced and tied off on both sides of the passageway with H-braces prior to cutting the fence. Additional temporary fencing may be required during construction. Once

construction is completed, the fence would be restored to original or better conditions. No permanent gates would be installed unless approved by the landowner or land managing agency.

The NMSLO is responsible for administering 9 million acres of surface and 13 million acres of subsurface lands for beneficiaries of the New Mexico state land trust, which includes schools, universities, hospitals, and other important institutions. NMSLO's mission is to maximize revenue while protecting the health of the land for the future.

Construction of Line T100, Line T200, Line L100, Big Eddy Receipt Meter Station and Poker Lake Meter station would impact about 170.4 acres of NMSLO land. Prior to completing cultural resources studies on NMSLO lands, Double E submitted and received a Right of Entry Application/Permit. NMSLO would require Double E to obtain an easement to allow for construction and operation of the Project. Double E is consulting with the NMSLO regarding the Project to determine the guidelines and criteria to be used by NMSLO in its decision whether to issue an easement, and the possible general terms and conditions required.

The TXUL manages the surface and mineral interests of 2.1 million acres of land across 19 counties in west Texas for the benefit of Texas' Permanent University Fund. The University Fund is one of the largest university endowments in the United States and benefits more than twenty education and health institutions across both the University of Texas System and Texas A&M University System. The TXUL administers leases for a variety of activities, including pipeline easements. Its mission is to optimize the revenues from the University Fund by managing the land and activities to sustain the productivity of the lands.

The Line T200 pipeline crosses TXUL land for about 3.8 miles. Prior to initiating cultural resources studies on TXUL property, Double E obtained an Antiquities Permit for the subject land parcels. Ultimately, Double E would obtain a Pipeline Easement Contract for construction and operation of the Project. Double E is consulting with the TXUL regarding the Project to determine the guidelines and criteria to be used by the TXUL in its decision whether to issue a Pipeline Easement Contract, and the possible general terms and conditions required.

The Project would not cross or be within 0.25 mile of areas designated for study for inclusion in the National Wild and Scenic Rivers System, the National Trails System, or Coastal Zone Management Areas or Programs, wilderness areas designated under the Wilderness Act, or registered national monuments.

A portion of the Line L100 in Eddy, New Mexico (approximate MP 14.5) would cross a segment of the Carlsbad Irrigation Project (National Park Service, 2019), a historic property that the USDOI designated as a National Historic Landmark District in 1964. The pipeline would cross the segment referred to as the Carlsbad Irrigation District Distribution System, Main (Southern) Canal, on privately owned land. Double E is proposing a conventional bore below the canal to avoid adverse effects to the historic property. Additional information pertaining to this National Historic Landmark District can be found in section B.7.

Line L100 also crosses a parcel owned/managed by the Village of Loving (approximate MP 14.6) and a parcel owned/managed by the County of Eddy (approximate MP 14.7). Double

E would coordinate and cooperate with Village/County officials for easement agreements, prior to construction. These areas are not presently identified for public recreation.

5.7 Landfill and Hazardous Waste Sites

A comprehensive environmental database search for contaminated or hazardous waste sites was conducted within 0.25 mile of the Project (Environmental Data Resources, 2019). No Federal National Priority List Superfund Sites, delisted Priority Superfund sites or brownfields were found within 0.25 mile of the Project's right-of-way or construction footprint. No federal or state-listed landfills/solid waste or hazardous waste/contaminated sites are within 0.25 mile of the Project in New Mexico or Texas.

Incidents involving leaking underground tanks or reported spills have been removed or closed and are beyond the construction limits. No impacts are anticipated from facilities that generate industrial or small quantity hazardous waste due to their location beyond the construction right-of-way. However, if contaminated or suspect soils are identified during trenching operations, the applicable agencies would be notified. Work in this area would be stop until the type and extent of contamination is determined.

As discussed previously in section B.1.2, five active mining operations (potash) are within 0.25 mile of the Project facilities, and assets of two mining companies are crossed by the Project.

5.8 Residential Land and Commercial Development

No existing residential or commercial buildings are within 50 feet of any Project right-of-way. Local planning agencies' documents and county offices were consulted to identify planned residential developments or commercial projects that would be crossed by or are within 0.25 mile of the construction work areas. Presently, no planned residential and/or commercial developments (aside from the abundant oil and gas development) are anticipated within 0.25 mile of the Project.

5.9 Visual Resources

The Project is in an area characterized by extensive oil and gas development. A system of pipelines, compressor stations, meter stations, oil/gas wells, and access roads are commonly visible in the surrounding landscape along with cattle guards, fences, and water facilities associated with grazing. No residences exist in the immediate vicinity of the Project, and the pipeline routes do not cross designated scenic areas or recreational areas. Potential visual impacts on culturally sensitive areas are further discussed in section B.7.

The Project has potential to cause some short-term and long-term visual impacts on the natural landscape. Short-term impacts occur during construction prior to reclamation and include the presence of construction equipment vehicle traffic. Recontouring and revegetating disturbed areas would limit the extent and duration of these impacts.

Long-term impacts would be visible to the casual observer throughout the life of the Project. Long-term impacts include the maintained vegetation along the centerline of the

pipeline, aboveground facilities such as mainline valves, and new permanent roads, which cause visible contrast to form, line, color, and texture. Removal of vegetation due to construction exposes bare soil lighter in color and smoother in texture than the surrounding vegetation. The surfacing of roads and aboveground facilities with caliche materials would cause further contrasts.

The BLM maintains a Visual Resource Management (VRM) classification system which involves inventorying scenic values and establishing management objectives for those values through the resource management planning process. The Project pipeline crosses VRM areas in four locations; however, no VRM areas are within a 0.25-mile buffer of the proposed aboveground facilities or mainline valves.

Short- and long-term impacts are minimized in VRM areas by best management practices such as color selection, reducing cut and fill, screening facilities with natural features and vegetation, reclamation and contouring roads along natural changes in elevation. Earth disturbance associated with the pipeline installation would be recontoured and revegetated, and no aboveground facilities, appurtenances or new permanent access roads are proposed within 0.25-mile of the designated VRM areas, thereby avoiding effects within these areas. Double E consulted with the BLM for VRM areas and no mitigation, other than what is described below for aboveground facilities, is anticipated.

Visual impacts from the construction of aboveground facilities would be consistent with the adjacent viewshed given the existing oil and gas facilities located throughout the Project area. The BLM requires that aboveground facilities and appurtenances within VRM areas to be low profile (less than 8 feet in height) and exceptions must be approved by the BLM Authorized Officer prior to implementation. Additionally, aboveground facilities that are not subject to safety requirements are painted in a flat non-reflective paint color that harmonizes with the landscape, specifically Shale Green from the BLM Standard Environmental Color Chart. The Project would not involve the placement of any aboveground facilities within VRM areas. Double E has would paint its aboveground facilities in a manner that harmonizes with the landscape.

Based on our review, visual impacts would be minimized to the extent practicable given the Project would be located in an area of high development of oil and gas facilities.

6. Socioeconomics and Environmental Justice

6.1 Population, Employment, and Housing

As previously described, the Project area is undergoing rapid development of oil and gas facilities, with attending increases in population and associated infrastructure. Population data for the Project area is provided in table B-5. The population increased in all counties crossed by the Project between 2010 and 2017. Transient residents, such as those that live in temporary housing (RV camps, travel trailers, hotels, worker lodges, etc.), however, are not included in the overall population estimate. Due to the growth of the oil and gas industry in the counties crossed by the Project, it can be assumed that the number of people working and living in the counties

crossed by the Project is far larger than is estimated in table B-5 due to the influx of temporary construction workers in the oil and gas and related industries.

Impacts on the local population from the Project would primarily result from the short-term influx of temporary employees during construction (anticipated to occur for about 12 months, currently planned from September 2020 through December 2021). The peak workforce is estimated to be 600 workers, with an average workforce of 500 workers. Six full-time equivalent personnel would be hired to operate and maintain the Project facilities. New permanent personnel would be stationed at one or more of Summit Midstream's existing Lane Processing Plant, the new Poker Lake Meter Station (including the Regional Office Building) or at the Waha Receiver and Separation Site. Double E estimates that that about 85 percent of the construction contractor labor pool would originate outside the Project area, and 15 percent would come from the local workforce.

TABLE B-5
Population and Employment in the Project Area

State/ County	2017 Population Estimate [1]	2010 Population Density [2]	Population Change 2010-2017 (percent)	Per Capita Income (USD)[3]	Civilian Labor Force [4]	Unemployment Rate (percent)[5]	Top Two Major Industries [3]
New Mexico	2,084,828	17.0	1.2	25,257	961,698	5.0	1) Educational Services/Health Care/ Social Assistance 2) Retail Trade
Lea County, NM	68,759	14.7	6.2	24,507	30,939	3.8	1) Agriculture/Forestry/ Fishing and Hunting/Mining 2) Educational Services/Health Care/Social Assistance
Eddy County, NM	56,997	12.9	5.9	28,419	32,689	3.2	1) Educational Services/Health Care/ Social Assistance 2) Agriculture/ Forestry/Fishing and Hunting/Mining
Texas	27,419,612	96.3	9.0	28,985	14,066,138	3.7	1) Educational Services/Health Care/ Social Assistance 2) Retail Trade
Loving County, TX	134	0.1	63.4	35,350	99	4.0	1) Agriculture/Forestry/ Fishing and Hunting/Mining 2) Wholesale Trade
Ward County, TX	11,472	12.8	7.6	26,860	5,941	2.8	1) Agriculture/Forestry/ Fishing and Hunting/Mining 2) Educational Services/Health Care/Social Assistance
Reeves County, TX	15,281	5.2	10.9	18,992	8,197	2.0	1) Educational Services/Health Care/ Social Assistance 2) Agriculture/ Forestry/Fishing and Hunting/Mining
Pecos County, TX	15,634	3.3	0.8	19,088	6,336	3.5	1) Agriculture/Forestry/ Fishing and Hunting/Mining 2) Educational Services/Health Care/Social Assistance

1 U.S. Census Bureau, 2017 and 2017 Population Estimate.
2 U.S. Census Bureau, 2010 and 2010 Census. Population Density is not available in the 2017 Population Estimate or the 2013-2017 American Community Survey.
3 U.S. Census Bureau, 2017. 2013-2017 American Community Survey 5-year Estimates.
4 U.S. Department of Labor. December 2018 (Preliminary) BLS Data Viewer.

Local workforces support other oil and natural gas facilities under construction in the Delaware and Permian Basins and, depending on the prospective contractor and the timing of other projects, a substantial portion of the construction workforce may already reside permanently or temporarily in the Project area. Several larger ongoing projects in the area would be finishing construction prior to the start of the proposed Project. With the current civilian workforce and the steady turnover of regional projects being started and completed, it is not anticipated the Project would have a measurable impact on Project-area population levels or significantly contribute to long-term employment in the Project area.

Table B-6 shows the estimated population impacts due to the Project workforce. Based on the small populations in the counties in which the Project is located, the influx of construction personnel would result in notable increases in the workforce in some counties, particularly Loving County, Texas; however, as noted above some of these workers may already be present in the area working on other similar infrastructure projects and not included in official population estimates. Additionally, not all construction personnel would be in the same county at the same time. The influx of construction workers may also generate increased work opportunities in local service industries (e.g., restaurants, drop-off laundry services, cleaning services, etc.). Because only six permanent employees would be hired to maintain and operate the Project facilities, permanent or long-term impacts on employment are anticipated to be negligible.

TABLE B-6
Estimated Population Impacts in the Project Area

State	County	Total civilian labor force [1]	Construction Personnel			Additional Operations Personnel	
			Average Number	Peak Number	Percent Change [2]	Number	Percent Change [3]
NM	Lea	30,939	500	600	1.9	6	0.0
	Eddy	32,689			1.8		0.02
TX	Loving	99			606.1		0.0
	Ward	5,941			10.1		0.0
	Reeves	8,197			7.3		0.07
	Pecos	6,336			9.5		0.0

1 U.S. Department of Labor. December 2018 (Preliminary) BLS Data Viewer.
2 Percent change based on peak number of construction personnel – for these purposes it is assumed that all construction personnel would be working in the same county at the same time.
3 Percent Change for additional operations personnel is 0.0 except for Eddy, NM and Reeves, TX because permanent personnel would be stationed at the Lane Processing Plant, the Poker Lake Meter Station (both in Eddy, NM) or the Waha Receiver and Separation Site (Reeves, TX).

Due to the length of the Project construction period (approximately 1 year) construction workers relocating to the area would seek temporary housing. Table B-7 provides an overview of the housing characteristics within areas potentially affected by the Project. The number of housing units varies across the counties depending on the presence of an urban area and the county population.

TABLE B-7 Housing Characteristics in the Project Area						
State	**County**	**Housing Units 2017[1]**			**Number of Sites for Seasonal, Recreational, or Occasional Use (RV Parks, Campgrounds, etc.)[2]**	**Number of Hotels and Motels [3]**
		Housing Units	**Vacant Housing Units for Rent**	**Rental Vacancy Rate (percent)**		
NM	Lea	25,937	3,908	12.8	217	37
	Eddy	24,011	2,738	4.2	234	51
TX	Loving	59	28	0	1	2
	Ward	4,755	801	5.3	39	9
	Reeves	4,629	898	4.5	170	25
	Pecos	5,645	1,225	3.5	106	17

1 U.S. Census Bureau, 2017. 2013-2017 American Community Survey 5-Year Estimates.
2 U.S. Census Bureau, 2010. 2010 Census
3 Within a one-hour drive from the Project area. Google Earth and Google Maps. January 2019.

Based on the 2010 Census:

- In Lea County (the most populated county), about 68 percent of the housing units were in Hobbs, about 42 miles west, and Lovington, about 40 miles north, of the Project area.
- In Eddy County, in the northern portion of the Project's location, about 71 percent of the housing units were in Carlsbad, about 18 miles west, and Artesia, about 35 miles northwest, of the Project area.
- In Ward County, about 63 percent of the housing units were in Monahans, about 20 miles from the Project area.
- In Reeves County, about 76 percent of the housing units were in Pecos, about 15 miles to the west of the Project area.
- In Pecos County, the Project's southern region and terminus, about 56 percent of the housing units were in Fort Stockton, about 30 miles south of the Project area.
- There are no cities or densely populated areas in Loving County.

Typically, construction workers opt for temporary accommodations such as short-term rental units (hotels, motels, and apartments), trailers, recreational vehicles, and campgrounds rather than rental of houses. The availability of temporary housing may also vary seasonally and on location and distance from the worksites. The six counties combined have almost 9,600 vacant housing units and over 750 RV or camping sites available as of 2017. There are about 141 motels/hotels within a 1-hour drive from the Project area.

The Carlsbad Department of Development estimates that there would be an approximate 1,800 to 2,300 deficit in the number of housing units by 2020 in the Carlsbad area, and is therefore working to attract an additional 1,000 housing units per year (2017). West Texas is also experiencing a housing shortage; however, Monahans Economic Development is developing additional apartment buildings with more than 100 units and homes, anticipated to come online

in the next year or two. The Pecos Economic Development Corporation is also developing new homes and apartment complexes. Many private developers are also expanding, such as Permian Lodging, which is currently constructing two dormitory-style lodges in West Texas with a total of almost 1,300 beds. As another example, Target Lodging opened the 400-bed Carlsbad Lodge at the end of 2019 about 9 miles north of Line L100. In addition, Orla recently opened 3 housing facilities outside of Orla, Texas, (about 9 miles west of Line 200 in Reeves County), totaling 615 beds.

Construction may temporarily increase the local population; however, rental vacancy rates range widely in the counties crossed by the Project. Some areas may experience a strain on housing availability due to other construction projects in the area and seasonal tourists in the Carlsbad area. Short-term housing is available primarily in Carlsbad, Eddy County, New Mexico for the northern portions of the Project and in Pecos and Fort Stockton, Reeves and Pecos Counties, Texas for the portion of the Project near the southern terminus. However, non-local workers may reside all along the proposed 118.9-mile-long trunk lines and 16.3-mile-long lateral due to the overall linear nature of the Project. The total number of available housing units (9,600), within the six counties crossed by the Project, number of temporary housing locations (908 - RV parks, campgrounds, motels and hotels), and number of housing units coming online in the next year are anticipated to be sufficient for the Project. Therefore, we expect that the Project would have a minor impact on local housing availability.

6.2 Economy

The Project is expected to provide mostly positive short-term impacts on the local economy, primarily, but not limited to, the leisure and hospitality sector, which would receive additional revenues from the temporary construction workers. Most workers are not expected to be accompanied by their families. The Project's contribution to the existing localized pressures upon consumer goods and services supply and demand would be small and short-term.

Also, given the steady turnover of both large and small projects, it is unlikely the Project would register a notable economic impact relative to the magnitude of oil and gas related spending in the region. The Project is not expected to induce growth, displace businesses or permanent residences, or significantly contribute to long-term employment in the Project area. During Project construction, it is assumed that purchases would be made locally for vehicle fuel, a wide variety of construction materials, and other miscellaneous expenses. In addition, non-local workers would spend part of their income locally on fuel, lodging, and food.

The Project crosses public lands, including those managed by the BLM, the NMSLO, and the Texas University System. The Project crosses BLM lands for about 46.1 miles. The BLM manages land for multiple uses across regions and landscapes for several purposes including land conservation, cultural resource preservation, energy production, grazing, recreation, and fish and wildlife habitat conservation. The Carlsbad Field Office administers over 2 million acres of surface estate and 3 million acres of mineral estate in the southeastern portion of New Mexico. The Field Office is located within the Permian Basin, a prolific oil basin in the United States, and one of the oldest oil fields in the nation, having been in operation since the 1920s. In addition to land being leased for oil and gas development, lands are also used by the public for recreation in the rolling limestone foothills of the Guadalupe Mountains and Chihuahuan Desert.

The Project crosses NMSLO lands for about 9.4 miles. Lease funds paid to the NMSLO would benefit the state land trust, which includes schools, universities, hospitals and other important institutions. The Project also crosses Texas University System lands for a total of about 3.6 miles. Lease funds paid to the Texas University System would go into the Permanent University Fund, which benefits more than 20 education and health institutions across both the University of Texas and Texas A&M University Systems.

Most purchases are taxable at the general sales tax rate in each state and county. The general sales tax rate for New Mexico is 5.125 percent and for Texas is 6.25 percent. Project facilities would be subject to state, county, and local property taxes upon completion of construction. Double E would also compensate landowners for siting facilities on their property in accordance with the terms of the right-of-way agreements.

Double E estimates it would spend about $486 million on labor, equipment, materials, acquisition, and other services to develop and construct the Project facilities, of which $256 million is expected to be spent in Texas and $230 million to be spent in New Mexico. These expenditures would generate economic activity and support employment and income elsewhere in the economy through the multiplier effect, as initial changes in demands ripple through the local economy and support indirect and induced impacts. Double E estimates that the local spend multiplier would be between 1.0 and 2.0.

During construction in the years 2020-2021, the Project would generate a local spend total of $35 million, which includes amounts paid for employees of local contractors and their associated employer taxes, benefits, temporary lodging, meals and other minor associated costs. Of the $35 million, $18 million would be spent in Texas and $17 million would be spent in New Mexico. The New Mexico gross receipt tax on the local spending is estimated at $5.5 million. The Texas sales tax receipts are estimated at $10.0 million. Annual property taxes are estimated by Double E to be about $5.1 million in total, about $3.5 million in Texas and $1.6 million in New Mexico. Applicable county tax rates and annual receipts on infrastructure/real property are identified in table B-8 below.

TABLE B-8
Estimated Annual Property Taxes in the Project Area

State	County	2018 Tax Rate	Annual Amount (millions)
NM	Lea [1]	N/A	N/A
	Eddy	0.7458%	$1.59
TX	Loving	1.8110%	$1.69
	Ward	1.8650% or 1.9279%	$1.42
	Reeves	1.8685%	$0.39
	Pecos	1.8735%	$0.01
Total			$5.10

1 No pipeline facilities subject to property taxes in Lea County.

6.3 Public Services

Construction of the Project could result in temporary increased demand on local public services, such as medical, fire, police and educations services (see table B-9). Temporary

impacts on services could include traffic-related incidents, medical emergencies, injuries, or illnesses; increases in traffic violations; and issuances of permits for construction vehicles subject to load and width restrictions. During construction, up to 600 workers would be present during peak construction periods. Non-local workers would likely obtain housing in the surrounding communities; however, it is unlikely that all personnel would locate into a single community. Temporary immigration of non-local workers into the Project area would be short term, limited to the 1-year construction time period, and is not anticipated to affect the levels of service provided by medical, law enforcement, or fire protection personnel. During operation, public service requirements of the Project are expected to be negligible. Most construction workers are not likely to be accompanied by their families; therefore, few school-age children are anticipated to relocate and impact public school or child care facilities. Police assistance may potentially be required to help traffic flows during road crossings and Double E would work with local police personnel to coordinate as necessary to minimize impacts.

Double E would establish an incident planning program as part of an *Emergency Response Plan*[17] so that physicians, medical consultants, hospitals, and ambulance services in the area can efficiently work together to respond in case of an emergency. The use of public services such as fire, police, or medical services, would be temporary and limited to the construction phase of the Project; therefore, should an accident occur, we do not anticipate the Project would result in an undue burden on public services.

In addition, Double E has met with First Responders in the Project area and regularly attends meetings with those critical service providers proximal to their ongoing operations in the area. At minimum, this coordination/communication would continue throughout the construction phase of the Project, and as required by PHMSA regulations.

[17] Double E's *Emergency Response Plan* was included as appendix 11-A to Resource Report 11 in its July 31, 2019, application. The *Emergency Response Plan* can be viewed on the FERC website at http://www.ferc.gov. Using the "eLibrary" link, select "Advanced Search" from the eLibrary menu and enter 20190731-5124 in the "Numbers: Accession Number" field.

TABLE B-9
Public Services in the Project Area and Surrounding Communities

State	County	Number of Public Schools[1]	Number of Police Departments[2,3,4,5]	Number of Fire and Rescue Departments[3,4,5,6,7]	Number of Hospitals/Beds[5,8,9,10,11,12]
NM	Lea	35	6	5	2/226
	Eddy	25	5	13	1/115
TX	Loving	0	1	1	0
	Ward	7	2	1	1/25
	Reeves	5	2	1	1/25
	Pecos	9	2	1	1/27

1. Public Schools K12. 2011. Accessed January 2019. http://publicschoolsk12.com/all-schools/tx/.
2. USA Cops. 2018. Texas and New Mexico. Accessed January 2019. https://www.usacops.com/.
3. Loving County Sheriff's Office. 2019. Accessed January 2019.
4. https://www.lovingcountytxsheriff.org/sheriff.
5. City of Monahans. 2019. Accessed January 2019.
6. https://www.cityofmonahans.org/index.asp?SEC=90D002D7-3B98-4CBA- 959A6CF9750E6067&Type=B_BASIC.
7. Pecos, TX. 2019. Accessed January 2019. https://www.pecostx.gov/government/departments/firedepartment.
8. Eddy County, NM. 2019. Accessed January 2019. https://www.co.eddy.nm.us/161/Fire-Service.
9. USA Fire & Rescue. 2018. Accessed January 2019. https://www.usafireandrescue.com/.
10. Reeves County Hospital. 2019. Accessed January 2019. http://www.reevescountyhospital.com/.
11. Carlsbad Medical Center. 2019. Accessed January 2019. https://www.carlsbadmedicalcenter.com/.
12. Nor-Lea Hospital District. 2019. Accessed January 2019. https://www.nor-lea.org/about-us.
13. US Hospital Finder. 2019. Accessed January 2019. http://www.ushospitalfinder.com/.
14. Lea Regional Medical Center. 2019. Accessed January 2019. http://www.learegionalmedical.com/.

As discussed above, the cycle of projects commencing and concluding in the area is continuous, and that trend is expected to remain unchanged throughout the Project's construction phase. During construction and restoration, it is reasonable to expect temporal fluctuations in oil- and gas-related personnel in the Project region. However, within the context of this region and the ongoing oil and gas activity, we do not expect that the Project would have a measurable impact on public services.

6.4 Traffic and Transportation

The proposed Project is predominantly within rural areas, but would cross several larger, well-traveled roads including: Hobbs Highway (NM Highway 180/U.S. Highway 62), Jal Highway (NM Highway 128), State Highway 302/Ranch Road 1211, Interstate 20 East and West, and Pecos Highway (U.S. Highway 285). Also, paved and marked, but less-traveled roads in the Project area would be used. Numerous unpaved access roads used for oil and gas production would also be crossed as would several railroads. Traffic in the vicinity of the Project area has increased substantially since 2015 due to the expansion of oil and gas exploration, production, and transportation in the Delaware and Permian Basins.

The Project area would mainly be accessed by use of existing public and private roads. Temporary and permanent access roads would be required to access the right-of-way along the proposed Line L100, Line L200, and Line L300 and the Line L100 lateral. About 22 permanent and 31 temporary access roads are proposed for use during construction. Short-term impacts on roads and highways are anticipated during construction of the Project. Federal and state roads would be crossed by conventional bore. Interstate 20 and the Union Pacific Railroad would be

crossed by HDD. Little or no disruption of traffic is anticipated during construction at these bored or HDD crossings.

Some local roads may be open cut; however, Double E proposes to maintain one lane of access along with the appropriate safety signage and/or traffic control staff. Roads crossed by open trenching would be restored to pre-construction conditions or better. If an open-cut road requires extensive construction time and it is not feasible to maintain access, provisions would be made for temporary detours or other measures to allow safe traffic flow during construction. Where required by the landowner, a temporary bridge or bypass could be established on private roads or driveways. Prior to closing roads, a road closure schedule would be arranged with the appropriate transportation authority, if applicable, as well as any oil and gas facilities that could be affected by the closures. Law enforcement agencies would also be notified.

The movement of construction equipment and materials from contractor and pipe storage yards to the construction work area would result in short-term impacts on the transportation network. Several construction-related trips would be made each day (to and from the job site) on each spread. Construction activities are planned to be spaced throughout each construction spread. The level of traffic would remain constant throughout the construction period and would typically occur at off-peak early morning and evening hours. Local workers would commute to the Project from residences, and most non-local workers would likely commute from the various metropolitan areas, depending upon where temporary accommodations are secured.

As described in section A.6.2 and shown on figure 2, construction activities would proceed in sequence in an assembly-line fashion along the right-of-way from clearing until final restoration. As a result, workers would be dispersed along the pipeline spreads and at the separate construction work sites at the points of receipt and delivery, thereby reducing congestion in any one area. The meter station contractors would fabricate the receipt and delivery meter locations at one of the two/contractor yard areas or proposed facility workspaces, which would minimize travel to the receipt and delivery meter locations.

To maintain safe conditions, Double E would direct its construction contractors to comply with vehicle weight and width restrictions, and to remove excess soil that is left on the road surface by the crossing of construction equipment. In addition, when it is necessary for equipment to move across paved roads, mats, or other appropriate measures would be used to prevent damage to the road surface. Contractors would employ the appropriate traffic control measures in accordance with all permits and local regulations at high-traffic roadway crossings and at any other crossings where deemed necessary either due to other conditions and/or by local authorities. At all road crossings, flaggers would direct traffic and appropriate construction notification signage would be displayed. Detours or obstructions in traffic flow due to large vehicles or construction of pipeline road crossings may require short-term assistance from local police agencies. Due to the sequential nature of construction activities, traffic flow impacts would be temporary on each section of roadway; therefore, traffic is not expected to be significantly impacted by construction of the Project facilities.

The Project would not have any measurable impacts on road congestion during operation as the six new permanent pipeline workers would represent an insignificant increase in the amount of vehicle traffic in the Project area.

6.5 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make the achievement of environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The Executive Order further stipulates that agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participating in them, denying persons the benefits of them, or subjecting persons to discrimination because of their race, color, or national origin.

Data from the U.S. Census Bureau and the EPA's Environmental Justice Screening and Mapping Tool (EJSCREEN) were used to identify demographics in the Project area. The affected environment was established in accordance with guidance from the CEQ's Environmental Justice Guidance Under NEPA (1997), and the Federal Interagency Working Group's Promising Practices for Environmental Justice Methodologies in NEPA Reviews (2016).

For the purposes of this analysis, the affected environment in EJSCREEN was reviewed to identify potential environmental justice concerns (i.e., impacts on minority and low income communities). The affected environment was generated by inputting the approximate Project location into EJSCREEN and generating a 1-mile buffer on either side of the Project facilities within the boundary of each county (for a polygon 2 miles wide around the Project facilities). Census blocks were not used due to the sparse population in the Project area. For each demographic indicator, EJSCREEN averages the value over all residents within the 1-mile buffer.

The CEQ guidance further recommends that minority and low-income populations in an affected area should be identified using data on income and poverty from the U.S. Census Bureau. An area is considered to be an environmental justice community when more than 50 percent of the residents are minority or when the level of minority residents is more than 10 percentage points higher than a reference population. Low-income populations are populations where households have an annual household income below the poverty threshold, which is currently $24,600 for a family of four. For the purposes of our analysis, we compared the population within the Project area to the county as a whole.

A summary of the race and income characteristics for the Project's affected environment is presented in table B-10.

Minority and low-income residents in the Project area may be affected by the construction and operation of the Double E Pipeline. In general, the Project is in a rural, low density area with only a few, scattered residences near the construction corridor. As shown in Table B-10, there are only slightly more than 400 people within the entire Project area. Within this 1-mile affected environment there were no people in Lea County, New Mexico; 38 people in Loving County, 2 people in Ward County, and 1 person in Reeves County, Texas.

Based on U.S. Census Bureau 2013-2017 American Community Survey 5-Year Estimates, the New Mexico state percentage for minority population is 61.8 percent, the Texas state percentage is 57.1 percent, and the U.S. percentage is 38.5 percent (2017). As shown in table B-10, both the Project area within Ward, Reeves, and Pecos counties and each county as a whole have minority percentages greater than 50 percent. As discussed above, due to the low-density nature of the area, very few residents live in the Project area, and any potential effect would be limited to a small number of persons.

TABLE B-10
Demographics in Affected Environment

County Reference	Total Minority (%)	Persons Below Poverty Level (%)	Double E Project Area[1]	Total Number of Persons in Project Area	Total Minority in Project Area (%)	Persons Below Poverty Level in Project Area (%)
Lea County Total	62.8	16.1	Lea County Project Area	0	0	0
Eddy County Total	51.5	14.6	Eddy County Project Area	338	41.0	42.0
Loving County Total	25.7	17.1	Loving County Project Area	38	28.0	34.0
Ward County Total	58.6	11.6	Ward County Project Area	2	84.0	62.0
Reeves County Total	81.8	13.2	Reeves County Project Area	1	84.0	62.0
Pecos County Total	74.1	11.5	Pecos County Project Area	40	69.0	32.0

1 Defined as within a 1-mile radius of the Project and as used in the EJSCREEN analysis.

Source: U.S. Census Bureau, 2017

Low-income populations within the affected environment greater than the county percentages were found throughout the Project area. Based on U.S. Census Bureau 2013-2017 American Community Survey 5-Year Estimates, the New Mexico state percentage of low-income population is 20.6 percent, Texas state percentage is 16.0 percent and the U.S. percentage is 14.6 percent (2017). The low-income population in the Project area was higher than the state and U.S. percentages. Percentagewise, the Project area contains a meaningfully greater population of residents living below the poverty line than in the reference counties.

The types of impacts that could affect the environmental justice communities within these census tracts include air quality, noise impacts, and aesthetics. Air quality impacts from construction of the Projects would result in a short period of minor impacts to local ambient air quality, mainly due to exhaust from the larger construction equipment, as well as fugitive particulates from earthmoving and trenching activities, as well as traffic. These impacts are typically small and localized, generally occurring within 0.25 mile, as these emissions will be very near to or at ground level. Additionally, these impacts would only occur for a short period. Double E would comply with the FERC Plan and with state regulations that address fugitive dust

impacts from construction activities. See section B.8.5 for a discussion of construction-related air quality impacts.

Noise from on-site construction activities that may occur near these environmental justice communities would be limited to short durations over a period of 3 to 4 weeks at any one location based on the nature of right-of-way construction sequencing. There are no residences within 50 feet of the construction work area. The noise impacts from the Project would be minimized by restricting construction activities to daylight hours; equipping vehicles and equipment with mufflers; and maintaining vehicles and equipment in accordance with manufacturers' recommendations. Environmental justice communities in these counties would not be disproportionately impacted by noise. See section B.9.3 for a discussion of construction-related noise.

Aesthetically, the Double E Pipeline is unlikely to be visible from any residence (whether part of an environmental justice community or not) long term, as the pipeline would be buried and the ground surface would be restored, thus not creating a new visual element in the landscape. Because none of the crossed land is forested, no forest clearing would be required; thus, there would be no visible "scar" through wooded areas. Six mainline block valves would be spaced about 15 to 20 miles apart along the pipeline route. These aboveground valve facilities would be fenced and would be visible to residents or passersby. The new Poker Lake Meter Station would be on BLM land in an area where there are no residents. The other Project meter and regulating stations would be constructed coincident or adjacent to other existing natural gas facilities and would be consistent with these uses.

Property would be restored to pre-existing conditions after construction, and landowners would be compensated for property damage or economic losses, if applicable. In addition, oil and gas exploration, production and transportation facilities have been in operation in the vicinity of the Project area for decades and the new facilities would be collocated with existing utility rights-of-way to the greatest extent possible.

In conclusion, the Project facility locations are dictated by the contracted points of receipt and delivery. The facilities have not been sited in a manner that targets environmental justice communities or places an otherwise avoidable or inordinate impact upon minority or low income populations. The Project would not have a significant adverse impact on the individuals living the counties affected by construction or operation of the Project. We conclude that the Project would not have a disproportionately high adverse environmental or human health impact on minority or low-income residents.

7. Cultural Resources

Section 106 of the NHPA requires the FERC to take into account the effect of its undertakings on properties listed, or eligible for listing, on the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation an opportunity to comment. Double E, as a non-federal party, is assisting the FERC in meeting its obligations under Section 106 and its implementing regulations at 36 CFR 800.

7.1 Cultural Resources Investigations

7.1.1 New Mexico

Cultural resource survey for the New Mexico portion of the Project through September 2019 included about 3,667 acres of the pipeline route and aboveground facilities, and 26.1 miles of proposed access roads. The survey corridor was generally 325 feet wide for the pipelines, and 100 feet wide for new access roads. The area studied for indirect effects included a 50-foot buffer from the project footprint, and a 100-foot buffer from aboveground facilities. The resulting report (SEARCH 2019) was provided to the FERC, New Mexico State Historic Preservation Office (SHPO), BLM, and NMSLO. As of November 2019, cultural resources surveys have been completed for 100 percent of the proposed Project in New Mexico.

A total of 58 resources and 158 isolated finds were investigated for this study in New Mexico. Of the 58 resources, 37 are previously recorded while the remaining 21 are newly discovered sites. The majority of the resources (n = 34) contain precontact components, 21 sites contain historic components, and 3 contain both historic and precontact components. Most of those prehistoric archaeological sites are lithic artifact scatters of an unknown cultural affiliation, followed in frequency by sites with Jornada Mogollon components, and with only a few containing identified pre-ceramic components. Historic resources include several examples of the built environment consisting mostly of irrigation canals but also include historic transmission lines. One of the canals (NHL 66000476/HCPI 46350/SR-7) is a contributing element of the Carlsbad Irrigation District, Main (Southern) Canal, National Historic Landmark.

Double E plans to avoid disturbing the Southern Canal via a direct bore. The avoidance plan was submitted to the SHPO and FERC for review in November 2019. In a letter dated December 10, 2019, the SHPO concurred with the plan. In addition, the Project crosses near the boundary of the NRHP-eligible Maroon Cliffs Archaeological District (MCAD) but this resource lies outside of the direct area of potential effect (APE) and thus would not be affected. Of the remaining sites, 22 are eligible for the NRHP, 6 are unevaluated, and 29 are not eligible for the NRHP. Eight of the eligible sites and two of the unevaluated sites are avoided by the Project and require no further work. Double E has provided *Avoidance or Treatment Plans* to the FERC, SHPO, BLM, and NMSLO for the remaining 16 eligible and 4 unevaluated resources. In its letter of December 10, 2019, the SHPO concurred with the eligibility recommendations, and most of the Avoidance and Treatment Plans. Remaining agency comments on the plans are pending.

Thirty-three of the cultural resources and 91 isolated finds are situated on BLM-managed lands; they include 9 newly discovered sites, 23 previously recorded sites, and the MCAD. Twelve of the sites are prehistoric artifact scatters that can be attributed to the Jornada Mogollon, while 14 of the other precontact sites either are of unknown affiliation or multicomponent. One site contains both precontact and post-contact material. Five of the resources are historic in age, including the Carlsbad to Monument and Knowles Road (HCPI-46531/LA132493) and an early twentieth century coaxial cable. Site HCPI-46531/LA132493 was determined eligible for the NHRP in consultation with the BLM and New Mexico SHPO. Double E proposes to bore beneath the road and use protective matting to reduce the effect of vehicular traffic. While these treatments would minimize effects to the road, the BLM indicated that the use of matting would

nonetheless result in an adverse effect. Double E proposes to develop a historic context for the resource and transportation corridors in Eddy and Lea Counties.

One site within the boundaries of the MCAD was documented during the cultural resources inventory. That site, LA152362, is considered eligible for the NRHP and a contributing property to the MCAD. While the site was intersected by the study area buffer zone, it is not located within the direct APE and the Project would avoid the site (the site is approximately 184 feet from the direct APE).

Three archaeological sites on BLM-managed lands and one site that is on land managed both by BLM and NMSLO are recommended eligible for the NRHP. These are located within the direct APE: LA112766, LA20241, LA131202, and LA38597, respectively. These resources would be adversely affected by the Project; therefore, mitigation is required. Treatment Plans were submitted in November 2019. Double E proposes full data recovery at all sites. In its December 10, 2019 letter, the SHPO concurred with the plans for sites LA112766, LA20241, and LA131202, and provided comments on the plan for site LA38597. Double E provided a revised plan but has not yet provided the SHPO's comments on the revised plan to FERC. BLM and NMSLO comments are pending.

Four archaeological sites and one linear resource require site-specific avoidance plans: LA110595; LA110596; LA112933; LA193340; and HCPI 46531/LA 132493. Site-specific avoidance plans for the four archaeological sites were submitted the SHPO and FERC in November 2019. Double E proposes to protect the integrity of HCPI 46351/LA132493 (Carlsbad to Monument Road) and its character-defining features by crossing the road via conventional bore. A formal avoidance plan and a contingency treatment plan, prepared in case if the bore fails, were submitted to the SHPO for review in November 2019. If the approved site-specific avoidance plan is implemented during construction, no Project impacts on HCPI 46351/LA132493 are expected. In its December 10, 2019 letter, the SHPO concurred with the plan.

Eight eligible sites located on BLM-managed lands are over 100 feet from the direct APE; therefore, these sites are considered far enough outside of the APE that they would not be affected by the Project, and no further work is recommended. Fourteen of the archaeological sites on BLM-managed lands (including one site that intersects both BLM and private land holdings) are recommended not eligible and no additional work is recommended. On August 19, 2019, the BLM commented on the report. In a letter dated September 12, 2019, the SHPO concurred with most of the recommendations in the report, with the exception of eligibilities for three sites. Double E provided a final report addressing the BLM's and SHPO's comments. We have reviewed these materials and agree with the BLM and SHPO.

Seven sites and 34 isolated finds were located on NMSLO-managed lands. Two of the sites are newly recorded, while the remainder consist of previously recorded sites. Three of the sites are artifact scatters of unknown affiliation. The other sites include one attributed to the Jornada Mogollon and two that are historic in age. One site contains both historic and prehistoric components. Two additional sites have boundaries that extend across land ownership boundaries including NMSLO-managed land. One of those sites is the aforementioned LA38597

which is located on both BLM and NMSLO managed lands. The other site is LA179387 which is situated on both NMSLO-managed lands and private land.

As noted above, Site LA38597 is recommended eligible for the NRHP. Site LA184288 (located within the direct APE) is recommended eligible. Both sites would be adversely affected and require mitigation. Treatment plans for these sites were submitted to the SHPO, BLM, NMSLO, and the FERC in November 2019. In its December 10, 2019 letter, the SHPO commented on the plans. Double E provided revised plans but has not yet provided the SHPO's comments on the revised plans. BLM and NMSLO comments on the plans are pending. Four of the sites are not eligible for the NRHP, and one is unevaluated and would be avoided. On October 28, 2019, the NMSLO concurred with the recommendations of NRHP eligibility for sites located wholly or in part on trust land. In its September 12, 2019 letter, the SHPO concurred with most of the recommendations in the report with the exception of the eligibility for one site. Double E provided a final report addressing the SHPO's comments. We have reviewed these plans and agree with the NMSLO and SHPO.

Twenty-two cultural resource sites are situated on privately owned lands. As mentioned above, Site LA179387 extends across the boundary between private and state-owned holdings and Site LA193333 is situated on both private and BLM land. Thirteen of the sites are newly discovered, while the remaining nine are previously recorded sites. Historic period sites comprise the majority of the resources and include a railroad grade and multiple irrigation canals and ditches. One of the canals is part of the Carlsbad Irrigation District Main (Southern Canal) National Historic Landmark noted above. The Southern Canal, on private land, would be avoided via conventional bore. The avoidance plan was submitted for review in November 2019. In its December 10, 2019 letter, the SHPO concurred with the plan.

A railroad grade (HCPI 42114/LA193775) associated with the Pecos Valley Railway Company Line would also be crossed by the Project. The resource is eligible for listing in the NRHP. Double E proposes to avoid the railway by crossing with a conventional bore. The HDD associated with the Pecos River would avoid eligible archaeological site LA191431. The avoidance plans for these two resources were submitted to the SHPO and FERC for review in November 2019. In its December 10, 2019 letter, the SHPO concurred with the plans.

Two of the archaeological sites on private land have been recommended as eligible and are in the direct APE: LA193381 and LA193321. These sites would be adversely affected by the Project and will require mitigation. Treatment plans for these resources were submitted to the SHPO for review in November 2019. In its December 10, 2019 letter, the SHPO commented on the plans. Double E provided revised plans to the FERC but has not yet provided the SHPO's comments on the revised plans.

Four linear resources would be crossed: HCPI 40428/LA152227, HCPI 46534, HCPI 45461, and HCPI 46353. These resources are considered unevaluated, and are assumed potentially eligible; therefore, the Project would adversely affect all four resources, and mitigation is required. Treatment Plans for these four resources were submitted to the SHPO and FERC for review in November 2019. The mitigation plan called for the drafting and production of a historic context document for historic irrigation practices and programs in the local region. In its December 10, 2019 letter, the SHPO concurred with the plans. The remaining 13 sites are

recommended not eligible for the NRHP. In its September 12, 2019 letter, the SHPO concurred with most of the recommendations in the report with the exception of the eligibility for four resources. Double E provided a final report addressing the SHPO's comments. We have reviewed these materials and agree with the SHPO.

7.1.2 Texas

Cultural resource survey for the Texas portion of the Project through September 2019 included about 4588.7 acres of the pipeline route and aboveground facilities, and 75.5 miles of access roads. The survey corridor was 325 to 500 feet wide for the pipeline, and 100 feet wide for new access roads. The area studied for indirect effects extended 300 feet in each direction beyond the permanent easement, with a 0.25-mile buffer for aboveground facilities. Double E provided the resulting initial Phase I report (King et al., 2019a), four addendum reports (King et al., 2019c; Melendez et al., 2019a; Gallison et al., 2019; Melendez et al., 2019b), and two reports for University of Texas lands (King et al., 2019b; Cleland et al., 2019) to the FERC, Texas SHPO, and University of Texas (for University of Texas lands). As of November 2019, cultural resources surveys have been completed for 100 percent of the proposed Project in Texas.

Initial cultural resource studies in Texas were conducted between 2018 to May 2019. Those studies recorded 72 archaeological resources: 51 archaeological sites and 21 isolated finds. The archaeological sites include: 45 precontact archaeological sites, 5 post-contact archaeological sites, and 1 site with both pre- and post-contact components. Cultural resource studies resumed from June 2019 to September 2019. That work resulted in the identification and documentation of 35 new archaeological sites, 22 isolated finds, and 1 historic resource.

Of the 72 archaeological resources identified in the 2018 and early 2019 work, 46 sites and the 21 isolated finds are recommended not eligible for the NRHP. Three sites were recommended for Phase II evaluation testing, and two would be avoided. In letters dated May 17, August 12, August 21, and September 4, 2019, the SHPO concurred with these recommendations. We concur also. Of the 35 sites identified during the June-September 2019 surveys (documented in an Addendum 4 report), 33 are recommended as not eligible for the NRHP. The single historic resource and the 22 isolated finds are also recommended as not eligible. Two sites (41LV154 and 41LV170) were recommended for Phase II evaluation testing. In a letter dated December 19, 2019, the SHPO concurred. We concur also.

Double E conducted Phase II evaluation testing at three prehistoric sites, 41WR123, 41WR5/41WR8, and 41LV121, considered at the time to have been potentially eligible for inclusion in the NRHP. Phase II testing resulted in the recommendation that sites 41WR123 and 41WR5/41WR8 were eligible for the NRHP. The testing determined that the portion of Site 41LV121 located in the study corridor was not eligible for the NRHP, and no further work is recommended for the portion of the site investigated during the Phase II evaluation testing. In a letter dated September 4, 2019, the SHPO concurred. We concur also.

Double E provided a treatment plan to the FERC and SHPO for Sites 41WR123 and 41WR5/41WR8. Double E proposes to reduce the width of the construction corridor in the vicinity of each site to minimize impacts on these sites; and to complete data recovery excavations in the portions of each site that remain in the construction corridor that would be

directly affected. In its December 19, 2019 letter, the SHPO commented and requested a revised plan. Double E provided a revised plan but has not yet provided the SHPO's comments on the revised plan to FERC.

Additional Phase I study identified Sites 41LV154 and 41LV170. The sites appeared to be potentially NRHP eligible and were recommended for Phase II evaluation. The testing determined that the portion of Site 41LV170 located in the study corridor was not eligible for the NRHP, and no further work is recommended for the portion of the site investigated during the Phase II evaluation testing. Phase II evaluation testing found two areas of Site 41LV154 NRHP eligible. An avoidance and contingency treatment plan was submitted to the FERC and SHPO in November 2019. In a letter dated January 3, 2020, the SHPO concurred that site 41LV170 was ineligible. We concur with the SHPO. In its December 19, 2019 letter, the SHPO concurred that site 41LV154 was eligible, and concurred with the treatment plan. We concur also.

Big Valley Canal (41WR75) is an irrigation canal dating from the late nineteenth to early twentieth centuries. Double E would avoid the Big Valley Canal via conventional bore beneath the resource. An avoidance plan and a contingency treatment plan (should the bore fail during construction) was submitted to the FERC and SHPO in November 2019. In its December 19, 2019 letter, the SHPO concurred that the canal was eligible, and concurred with the treatment plan. We concur also.

7.2 Native American Consultation

We sent our NOI and follow-up letters (September 16, 2019) to the following federally-recognized Native American Tribes identified as potentially having an interest in the Project: Absentee Shawnee Tribe of Oklahoma; Alabama-Coushatta Tribe of Texas; Alabama Quassarte Tribal Town; Apache Tribe of Oklahoma; Caddo Nation of Oklahoma; Cherokee Nation of Oklahoma; Choctaw Nation of Oklahoma; Comanche Nation of Oklahoma; Coushatta Tribe of Louisiana; Delaware Nation of Oklahoma; Hopi Tribe; Jicarilla Apache Nation; Keetoowah Band of Cherokee Indians; Kialegee Tribal Town; Kickapoo Traditional Tribe of Texas; Kickapoo Tribe of Oklahoma; Kiowa Tribe; Mescalero Apache Tribe; Muscogee (Creek) Nation; Osage Nation; Poarch Band of Creek Indians; Quapaw Tribe of Oklahoma; Seminole Nation of Oklahoma; Tesuque Pueblo; Thlopthlocco Tribal Town; Tonkawa Tribe of Oklahoma; Tunica-Biloxi Tribe of Louisiana; Wichita and Affiliated Tribes; and Ysleta del Sur Pueblo. In response to our NOI, the Hopi (letter dated December 18, 2018) requested continuing consultation, and copies of the cultural resources survey report, draft environmental assessment, and any treatment plan. The Hopi Tribe has been provided with the reports, unanticipated discovery plan, and the treatment plans. The Alabama-Coushatta Tribe (letter dated January 30, 2019) and Choctaw Nation of Oklahoma (letter dated January 24, 2019) both indicated the Project was beyond its scope of interest. No other responses to our NOI were received, and no responses to our follow-up letters were received.

Double E sent letters to the same tribes listed above on July 25, 2018 and August 13, 2018. For those tribes that did not respond to the August 13, 2018 letter, Double E conducted follow-up phone calls in October 2018. During a follow-up telephone call the Jicarilla Apache Nation indicated that the Project is south of its area of interest. In letters dated April 12, 2019, Double E provided updated Project information and copies of Texas and New Mexico survey

reports documenting 2018 results to the three tribes who requested them: the Absentee Shawnee Tribe of Oklahoma, the Hopi Tribe, and Ysleta del Sur Pueblo. Addendum reports were sent to the interested tribes in April 2019, and revised reports were sent on July 31, and November 27, 2019.

In letters dated April 18, August 12, and November 25, 2019, the Hopi Tribe acknowledged the receipt and review of the Texas and New Mexico survey reports, and of the Project Plan for Unanticipated Discoveries of Historic Properties and Human Remains, and of the treatment plans submitted in November 2019. The Hopi Tribe requested continued consultation on the Project. On October 17, 2019, Double E sent a letter and a copy of the Unanticipated Discovery Plan to Mr. Bernard Mora, Tribal Historic Preservation Officer Pueblo of Tesuque, for review and comment. Double E would file any additional comment letters received.

Federally recognized tribes were contacted regarding the Project by letter by Double E. In response letters the Quapaw Tribe of Oklahoma, Alabama-Coushatta Tribe of Texas, and The Choctaw Nation of Oklahoma stated that they had determined the Project to be outside their areas of interest.

In a letter dated August 31, 2018, the Ysleta del Sur Pueblo stated it did not have any comments on the Project but requested consultation if any human remains or artifacts are found during the Project that fall under Native American Graves Protection and Repatriation Act guidelines. On April 25, 2019, the Ysleta del Sur Pueblo acknowledged the receipt and review of updated Project mapping, and of the Project Plan for Unanticipated Discoveries of Historic Properties and Human Remains, and indicated that the tribe did not have any comments on these documents.

In a letter dated October 3, 2018, the Absentee Shawnee Tribe of Oklahoma requested further coordination on the Project under the Section 106 review process. In November 2019, Double E submitted copies of the most recent cultural resources reports and treatment plans to the Absentee Shawnee Tribe of Oklahoma. In addition, the Comanche Nation, in a letter dated October 19, 2018, indicated that no previously recorded properties located within the Project vicinity were identified. During a follow-up telephone call on October 16, 2019, the Caddo Nation of Oklahoma requested an electronic version of the Project information, which was sent on August 13, 2018. A follow-up email was sent on October 16, 2018, but no response has been received to date.

During a follow-up telephone call on October 19, 2018, Ms. Kimberly Penrod, Delaware Nation Director of Cultural Resources/Section 106, requested an electronic version of the Project information that was previously mailed on August 13, 2018. The email was sent to Ms. Penrod on October 19, 2018, but no response has been received to date.

7.3 Unanticipated Discoveries Plan

Double E provided Plans for Unanticipated Discovery of Cultural Resources or Human Remains to the FERC, BLM, the New Mexico and Texas SHPOs, and interested tribes. This plan would be implemented in the event that previously unreported archaeological sites or

human remains are encountered during construction. The BLM provided comments on the plan in an email dated July 11, 2019. Double E addressed these comments in a revised plan. The Texas SHPO concurred with the plan on September 4, 2019. The New Mexico SHPO concurred with the plan on September 12, 2019. We have reviewed the plan and found it acceptable.

7.4 Compliance with the NHPA

Cultural resources surveys are complete for both New Mexico and Texas. However, consultation is ongoing. Double E has not yet provided the Texas SHPO's comments on the revised treatment plan for Sites 41WR123 and 41WR5/41WR8, or the New Mexico SHPO's, BLM's, and NMSLO's comments, as appropriate, on the revised avoidance and treatment plans for sites in New Mexico. Therefore, we **recommend that**:

- **Double E should <u>not begin</u> construction of facilities and/or use of staging, storage, or temporary work areas, and new or to-be-improved access roads <u>until</u>:**
    a. **Double E files with the Secretary:**
        (1) the Texas SHPO's comments on the revised treatment plan for Sites 41LV154 and 41LV170;
        (2) any comments on the most recent filed final cultural resources reports from the New Mexico SHPO, NMSLO, and BLM, as appropriate; and
        (3) comments on the revised avoidance/treatment plans from the New Mexico SHPO, NMSLO, and BLM, as appropriate.
    b. **the Advisory Council on Historic Preservation is afforded an opportunity to comment if historic properties would be adversely affected; and**
    c. **FERC staff reviews and the Director of OEP approves the cultural resources reports and plans and notifies Double E in writing that treatment plans/mitigation measures (including archaeological data recovery) may be implemented and/or construction may proceed.**

    All materials filed with the Commission containing <u>location, character, and ownership information</u> about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "<u>CUI//PRIV - DO NOT RELEASE</u>."

8. Air Quality

Air quality would be affected by construction and operation of the Project. During construction, short-term emissions would be generated by heavy equipment use, land disturbance, and increased traffic from worker and delivery vehicles for all locations. Operational emissions associated with the Project would be minimal and mainly result from fugitive component leaks and other pipeline blowdown events.

8.1 Local Climate

The Project area in New Mexico is in a region classified as a semi-arid steppe climate zone. This climate zone is characterized by dry weather during the winter, early summer seasons, and a monsoon induced wet season that occurs in late summer and early autumn. Extreme weather events in the region include occasional severe thunderstorms, flash flooding

events, and extreme hot and cold temperature events. Occasionally, this region is affected by tropical systems originating in the Gulf of Mexico or the eastern Pacific Ocean. Wind patterns in the region are characterized by predominately westerly winds during the winter and southerly winds during the summer months.

The Project area in Texas is located in semi-arid and desert climate zones within the Chihuahuan Desert. This region is characterized by year-round dry weather, with a short rainy summer rainy season. Annual rainfall rarely exceeds 16 inches and average high temperatures range from 60 °F in January to 98 °F in July. Wind patterns in the region are characterized by year-round south-easterly winds and the highest wind speeds generally occur during the spring.

8.2 Existing Environment

Ambient air quality is protected by federal and state regulations. Under the Federal Clean Air Act and its amendments, the EPA has established National Ambient Air Quality Standards (NAAQS) for the criteria pollutants carbon monoxide (CO), nitrogen dioxide (NO_2), ground-level) ozone, particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), sulfur dioxide (SO_2), and lead for both short-term (acute) and long-term (chronic) exposures. The NAAQS include primary standards, which are designed to protect human health, including the health of sensitive subpopulations such as children and those with chronic respiratory problems. The NAAQS also include secondary standards designed to protect public welfare, including economic interests, visibility, vegetation, animal species, and other concerns not related to human health.

Ground-level ozone is produced through a photochemical reaction between oxygen, nitrogen oxides (NO_x), and volatile organic compounds (VOCs) in the presence of sunlight. Resultantly, NO_X and VOCs are considered ozone precursors and regulated to control potential ground-level ozone formation. VOCs, often also classified as hazardous air pollutants (HAPs), are emitted by many industrial processes and produced during fossil fuel combustion.

Air quality control regions (AQCR) are areas established by the EPA and local agencies for air quality planning purposes, in which State Implementation Plans describe how the NAAQS would be achieved and maintained. The AQCRs are intra- and interstate regions such as large metropolitan areas where improvement of the air quality in one portion of the AQCR requires emission reductions throughout the AQCR. Each AQCR, or smaller portion within an AQCR (such as a county), is designated based on compliance with the NAAQS on a pollutant by-pollutant basis.

Areas in compliance or below the NAAQS are designated as attainment, while areas not in compliance or above the NAAQS are designated as nonattainment. Areas previously designated as nonattainment that have since demonstrated compliance with the NAAQS are designated as maintenance for that pollutant. Maintenance areas may be subject to more stringent regulatory requirements to ensure continued attainment of the NAAQS. Areas that lack sufficient data to determine attainment status are designated unclassifiable and treated as attainment areas. New Mexico and Texas have each adopted the NAAQS requirements through implementation of their respective State Implementation Plans for Designated Areas of non-attainment. The Project in Eddy and Lea Counties, New Mexico are part of the Pecos-Permian

Basin Intrastate AQCR 155, which is in attainment for all pollutants. The Project in Loving, Reeves, and Ward Counties, Texas is part of the Odessa-Midland-San Angelo Region AQCR 218, which is also in attainment for all pollutants (EPA, 2019).

8.3 Greenhouse Gases

Greenhouse gases (GHG) occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. GHGs are gases that absorb infrared radiation in the atmosphere, and an increase in emissions of these gasses has been determined by the EPA to endanger public health and welfare by contributing to global climate change. The most common GHGs emitted from fossil fuel combustion are carbon dioxide (CO_2), methane, and nitrous oxide. Emissions of GHGs are typically expressed in terms of CO_2 equivalents (CO_2e), where the potential of each gas to increase heating in the atmosphere is expressed as a multiple of the heating potential of CO_2 over a specific timeframe, or its global warming potential (GWP). The 100-year GWP of CO_2 is 1, methane is 28 to 34, and nitrous oxide is 265 to 298 (Myhre et al., 2013). During construction and operation of the Project, these GHGs would be emitted from non-electrical construction equipment as well as from fugitive methane leaks along the pipeline. There are no NAAQS or other significance thresholds for GHGs.

8.4 Regulatory Requirements

The EPA promulgates various regulatory requirements to establish emission limits and fuel, monitoring, notification, reporting, and recordkeeping requirements for stationary source types or categories that cause or contribute significantly to air pollution. No new stationary emission sources would be constructed as part of the Project that fall under these categories.

8.4.1 General Conformity

According to Section 176(c)(1) of the Clean Air Act (40 CFR 51.853), a federal agency cannot approve or support an activity that does not conform to an approved State Implementation Plan. Therefore, a conformity analysis to determine whether a project would conform to an approved State Implementation Plan is required when a federal action would generate emissions exceeding conformity threshold levels of pollutants for which an air basin is designated as nonattainment or maintenance. A conformity applicability determination requires that direct and indirect emissions of nonattainment or maintenance pollutants (or precursors) resulting from the federal action be compared with general conformity applicability emissions thresholds. If the thresholds are exceeded, general conformity applies and a conformity determination is required.

The lead federal agency must conduct a conformity analysis if a federal action would result in the generation of emissions that would exceed the conformity threshold levels of the pollutant(s) for which a county is designated nonattainment or maintenance.

The Project site is entirely within counties classified as being in attainment for all criteria pollutants. Therefore, the Project is not subject to a general conformity determination.

8.4.2 Methane Challenge Program

In August 2016, the EPA officially approved the "Our Nation's Energy Future" (ONE Future) Commitment Option under the Natural Gas STAR Methane Challenge Program. Natural gas pipeline companies may opt to participate in the Methane Challenge Program through the ONE Future Option. As part of this program, companies implement techniques and practices included in the company's *Methane Challenge Implementation Plan* to reduce transmission pipeline blowdown (methane) emissions to the extent feasible while maintaining pipeline safety and integrity and minimizing adverse customer impacts. Double E does not participate in the Natural Gas STAR Methane Challenge Program; however, Double E would implement measures to reduce methane releases from Project facilities as discussed in section B.8.5 below.

8.4.3 State Air Quality Requirements

Based on the anticipated Project emissions, air permitting would not be required for Project components in New Mexico. The Waha Receiver and Separation Site, Valve Sites, and Launcher/Receiver Sites in Texas would each qualify to be authorized under Permit by Rule (PBR) Title 30 TAC Section 106.355 – Pipeline Metering, Purging, and Maintenance (Effective Date November 1, 2001). Although PBR 106.355 does not require Double E to register with the Texas Commission on Environmental Quality, Double E would maintain documentation onsite in accordance with the general requirements of PBR 106.4 – Requirements for Permitting by Rule and PBR 106.8 - Recordkeeping. Because only sweet (low-sulfur) natural gas would be vented from the Project pipelines, the Project facilities in Texas are exempt from paragraphs (1), (2), and (5) of the rule. In addition, operators would not vent gas in areas of known or suspected ignition sources.

8.5 Construction Emissions Impacts and Mitigation

Construction of the Project would result in short-term increases in emissions of some pollutants from the use of fossil fuel-fired equipment and the generation of fugitive dust from earthmoving activities. Some temporary indirect emissions, attributable to construction workers commuting to and from work sites during construction and from on-road and off-road construction vehicle traffic, could also occur. Large earth-moving equipment and other mobile equipment would be sources of combustion-related emissions, including criteria pollutants, HAPs, VOCs, and GHGs. Double E would not conduct open burning operations at any time during Project construction.

Double E and its contractors would ensure that each piece of construction equipment meets all air quality regulations and emission standards, maintain the equipment in accordance with the manufacturer's recommendations, and minimize idling time of engines to reduce exhaust emissions. Construction is proposed to take place between September 2020 and December 2021. A summary of potential emissions from Project construction is provided in table B-11. Construction-related air emission estimates were based on a typical construction equipment list, hours of operation, and vehicle miles travelled by the construction equipment and supporting vehicles for each Project emission source. Double E prepared air emission calculations using the EPA's MOVES 2014b model for on-road and non-road sources in Eddy

County, New Mexico, as well as Compilation of Air Pollutant Emission Factors, Volume I, Fifth Edition, where appropriate (EPA, 2014).

Double E proposes to implement its *Fugitive Dust Control Plan*[18] to reduce emissions of fugitive dust from vehicular traffic and soil disturbance, which we reviewed and find acceptable. A summary of potential fugitive dust emissions associated with Project construction activities is provided in table B-11. The air quality impacts of Project construction would be considered short-term and minimized by Double E's implementation of the following fugitive dust control measures described in its *Fugitive Dust Control Plan*:

- utilize existing public and private roads and pipeline right-of-way for access during construction wherever possible;
- apply water to active construction areas as needed, as well as disturbed surfaces during periods of inactivity;
- reduce vehicle speeds on all unpaved roads and set speed limits if needed;
- clean up track-out and/or carry-out areas on paved roads at a minimum of once every 48 hours; and
- cover all haul truckloads of loose material (e.g., sand, gravel, or solid trash) or maintain at least 6 inches of freeboard space in each cargo compartment.

Based on Double E's commitments to control fugitive dust and minimize the use of equipment, the temporary nature of construction, and the intermittent nature of construction emissions, the emissions from construction-related activities for the Project would not be expected to cause a violation of any applicable ambient air quality standard, or significantly affect local or regional air quality.

[18] Double E's Fugitive Dust Control Plan was included as appendix 9-3 to Resource Report 9 in its July 31, 2019, Application. http://www.ferc.gov. Using the "eLibrary" link, select "Advanced Search" from the eLibrary menu and enter 20190731-5124 in the "Numbers: Accession Number" field.

TABLE B-11 Potential Emissions from Project Construction								
Project Component	**Emissions in Tons Per Year**							
	NO_x	**CO**	**VOCs**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**Total HAP**	**CO_2e**
Pipeline								
2020 (equipment)	5.33	.74	0.27	0.35	0.34	0.0197	0.12	2,753
2021 (equipment)	1.21	.20	0.079	0.07	0.08	0.08	0.027	1,129
2020 (fugitive dust)	-		-	18.07	2.25	-	-	-
2021 (fugitive dust)	-		-	6.06	0.77	-	-	-
Meter Stations, Mainline Valve Sites, Launcher/Receiver Sites								
2020 (equipment)	38.54	21.61	1.85	2.55	2.47	0.114	0.83	15,507
2021 (equipment)	15.32	10.91	0.075	0.88	1.10	1.06	0.36	10,617
2020 (fugitive dust)	--	-	-	59.96	9.54	-	-	-
2021 (fugitive dust)	-	-	-	22.34	4.42	-	-	-
Total	**60.40**	**37.46**	**2.20**	**110.3**	**20.97**	**0.27**	**1.34**	**30,006**

8.6 Operational Emissions Impacts and Mitigation

Operational emissions, presented in table B-12, would be limited to equipment fugitive component leaks, pigging operations, and infrequent pipeline blowdowns.

TABLE B-12 Estimated Potential Emissions from Project Operation (Fugitive Emission Releases)				
Facility	**VOCs (tons per year)**		**CO_2e (metric tons per year)**	
	NM	TX	NM	TX
Meter Stations	68.0	17.0	2,992.0	748.0
Mainline Valves	1.19	0.34	1,890	540.0
Pig Launchers/Receivers	3.15	0.63	135.0	27.0
Waha Receiver and Separator Site	--	7.61	--	507.0
Total	**72.34**	**25.58**	**5,017.00**	**1,822.00**

Double E would minimize operational emissions through the following measures:

- installation of no-bleed pneumatic controllers;
- implementation of annual testing of pressure release valves for leakage; and
- use of pipeline pump-down techniques to lower line pressure before maintenance.

Double E proposes to install no-bleed pneumatic controllers and would implement annual testing of pressure release valves for leakage as part of its preventative maintenance program. In

addition, Double E would use pipeline pump-down techniques to lower line pressure before maintenance activities occur.

After completion of the Project, no sources of operational emissions are anticipated other than fugitive leaks and blowdown operations. We conclude that construction and operation of the Project would not result in a significant impact on local or regional air quality.

9. Noise

Construction of the Project would temporarily affect noise levels in the immediate vicinity of Project facilities during active construction. Due to the lack of significant aboveground facilities (e.g., a compressor station), operation of the Project would not result in long-term noise impacts.

The ambient sound level of an area is defined by the normal or existing level of sound generated within that specific environment and is usually comprised of natural and artificial sounds. Noise is generally defined as sound with intensity greater than the ambient or background sound level.

Noise is expressed as levels of sound intensity, which are measured in decibels. The A-weighted decibel scale (dBA) is used to account for the sensitivity of the human ear by de-emphasizing very low and high frequencies. The human ear's threshold for perceiving a change in noise is considered to be 3 dBA. Five dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise (Bies and Hansen, 1988). The magnitude and frequency of environmental noise in an area may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetation cover. Two types of measurements that compare time-varying environmental noise to its known effect on people are: the 24-hour equivalent sound level (L_{eq}) and the day-night average sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same energy as the instantaneous sound levels measured over a specific time period. Because noise levels are perceived differently, depending on length of exposure and time of day, the L_{dn} takes into account the duration and time the noise is encountered. Specifically, the L_{dn} is the L_{eq} plus a 10 dBA penalty added to account for people's greater sensitivity to sound levels during late evening and early morning hours (between the hours of 10:00 pm and 7:00 am).

9.1 Federal and State Noise Regulations

In 1974, the EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, which provides information for state and local governments to use in developing their own ambient noise standards (EPA, 1974). The EPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential noise impacts from the Project at noise sensitive areas (NSA). NSAs are defined as homes, schools, churches, or any other location where people reside or gather. FERC requires that the noise attributable to construction activities occurring on 24-hour-per-day basis (e.g., HDDs) not exceed an L_{dn} of 55 dBA at any NSA.

During Double E's initial consultation with the BLM, the BLM specified that noise limitations apply for emission sources sited on BLM-administered lands if the emission sources are located within an area where environmental noise sensitivities may exist, such as habitat for noise sensitive wildlife species (i.e., LPC and migratory birds). Based upon a meeting in June 2019 between Double E and the BLM, filed information from July 2019, and our own consultations, the BLM determined that the Project does not intersect any noise restricted areas; therefore, no noise mitigation measures or restrictions would apply.

No state, county, or municipal noise regulations have been identified for construction or operation of the Project.

9.2 Ambient Noise Conditions

The Project would be located primarily in remote areas of New Mexico and Texas, amidst a mixture of open land, utility rights-of-way, industrial/commercial land, and rangeland. Table B-13 presents the population centers (i.e., census designated places that could contain NSAs) within 3 miles of Project facilities. All other proposed Project facilities, including meter stations and mainline valves, are more than 3 miles from population centers.

TABLE B-13
Population Centers near the Project

Population Center	Project Facility	Distance and Direction from Project
Loving, NM	Pipeline right-of-way	1 mile north
Loving, NM	Receipt meter location at MP 15 on L100	1.5 miles northwest
Malaga, NM	Pipeline right-of-way	1.5 miles south
Malaga, NM	Receipt and Operations Site on L100	3 miles southeast
Coyanosa, TX	Point of Delivery meters at MP 116 on T300	2.8 miles southeast

Isolated NSAs outside of population centers within 1 mile of proposed HDD entry and exit points were identified due to the potential for HDD activities to occur outside of Double E's 12-hour work day. Although Double E does not anticipate implementing nighttime construction during HDD activities, extended work hours for the HDD operation could be necessary if unexpected site conditions and/or equipment issues are encountered. HDD noise occurring on 24-hour-per-day basis typically has the potential to impact nearby NSAs out to a distance of 0.5 mile. Only one NSA, a residence, was determined to be within 0.5 mile of any of the Project's HDD locations, and is approximately 0.5 mile from the proposed Line T200 HDD entry (MP 97.2) and exit (MP 96.9) pits.

9.3 Construction Noise Impacts and Mitigation

Noise would be generated during construction of the Project. With the potential exception of noise from HDD operations (previously discussed and below), typical construction activities would be intermittent and would generally occur during daylight hours. On-site noise

generated during construction of the Project would occur mainly from the use of heavy-duty construction equipment (e.g., trucks, backhoes, excavators, loaders, and cranes). Generally, nighttime noise is not expected to increase during construction because most construction activities would be limited to daylight hours. An increase in noise in the immediate vicinity of typical construction activities is anticipated, but this impact would be temporary and local. Due to the limited number of NSAs in the Project area, we conclude that construction noise impacts from typical construction activities would be minimal and temporary.

9.3.1 HDD Noise

Double E would conduct HDD operations at five locations as previously described. The expected drilling duration for each HDD location would be approximately 30 to 45 days. HDD operations would be conducted on a 6-day per week, 12-hour per day work schedule excluding any unexpected issues that would require extended hours. Most of the equipment required would be staged at the HDD entry points and would include HDD drilling rig and auxiliary support equipment, including mud pumps, portable generators, cranes, mud mixing, cleaning equipment, forklifts, loaders, trucks, and portable light sets.

To ensure that noise impacts from the Line T200 HDD are not significant, **we recommend that**:

- **Prior to construction of the Line T200 HDD at MPs 96.9 and 97.2, Double E should file with the Secretary a HDD noise analysis identifying the existing and projected noise levels at the NSA within 0.5 mile of the HDD entry and exit site. If noise attributable to the HDD is projected to exceed an L_{dn} of 55 dBA at any NSA, Double E should include with the noise analysis a mitigation plan to reduce the projected noise levels, for review and written approval by the Director of OEP. During drilling operations, Double E should implement the approved plan, monitor noise levels and report them in the biweekly construction status reports, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSAs.**

Because of the temporary nature of construction activities and the distance of identified NSAs from the Project, no significant noise impacts are anticipated from construction of the Project.

9.4 Operational Noise Impacts and Mitigation

Because no new sources of operational noise are proposed that would generate operational noise (i.e., no compression) with this Project, no significant operational noise impacts are expected once the Project facilities are placed in service and are fully operational. However, some ambient noise generated from the Project's aboveground and ancillary facilities during operation, such as the pig launcher/receivers and meter stations, may emit audible noise potentially on a continuous basis. Blowdowns (release of gas through venting) at the Project's mainline valves and meter stations would also emit abrupt bursts of noise over short periods of time, typically lasting between 1 and 5 minutes. Blowdown events occur when pressure within the pipeline or meter station piping must be released in a controlled manner. Blowdown events

may be necessary during initial construction/testing, operational startup and shutdown, maintenance activities, or for emergency purposes. During normal operations of the Project facilities, blowdown events would be infrequent. Due to the noise characteristics of the Project facilities and the distance of these facilities from the nearest NSAs, these facility noise levels would likely not be significant at any NSA. We conclude that noise from operation of the Project would have negligible impacts on nearby NSAs.

10. Reliability and Safety

Transportation of natural gas through pipeline infrastructure and pressurization at compressor stations pose some incremental threats to the public by the unintended release of natural gas. The greatest public threat is potential fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is a colorless and odorless gas that occurs abundantly in nature. Although not toxic, it is a simple asphyxiate and oxygen deficiency can result in serious injury or death if methane is inhaled in high concentration. The chemical composition of methane results in an auto-ignition temperature of approximately 1,000 °F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. An unconfined mixture of methane and air is not explosive; however, it may ignite and burn if there is an ignition source. Although methane is generally stable, a flammable concentration of the gas in an enclosed space in the presence of an ignition source can be explosive. Methane disperses rapidly in air, as it is buoyant at normal atmospheric temperatures.

10.1 Safety Standards

The USDOT is mandated under Title 49, U.S. Code Chapter 601 to prescribe minimum safety standards to protect the human environment against risk hazards posed by pipeline and above ground facilities failures. PHMSA administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials transported by pipeline. PHMSA develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities.

Many of these regulations are written as performance standards which set the level of safety that allow pipeline operators to implement the latest technologies to achieve safety. PHMSA's safety mission is to ensure that people and the environment are protected from the risk of pipeline incidents and failures. This work is shared with state agency partners and others at the federal, state, and local levels.

Section 5(a) of the Natural Gas Pipeline Safety Act (promulgated in Title 49, U.S. Code Chapter 601) provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards. Section 5(b) allows a state agency that does not qualify under Section 5(a) to perform certain inspection and monitoring functions. A state may also act as the USDOT's agent to inspect interstate facilities within its boundaries; however, the USDOT is responsible for enforcement actions.

Measures to protect to the public from undue pipeline, facility or natural hazards are discussed in the sections below.

The USDOT pipeline design standards are published in 49 CFR 190-199. These standards must be adhered to for the design, construction, operation, and maintenance of pipelines and aboveground facilities in accordance with the USDOT Minimum Federal Safety Standards in 49 CFR 192, which are intended to provide protection for the public and prevent natural gas accidents. These standards specify material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

The USDOT has the authority to promulgate federal safety standards on Natural Gas Transportation Facilities under a January 15, 1993 Memorandum of Understanding with FERC. Section 157.14(a)(9)(vi) of the FERC's regulations require that an applicant would certify, design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plan for maintenance and inspection. If the applicant cannot implement these requirements, it must certify that it has been granted a waiver of the safety standards by the USDOT in accordance with section 3(e) of the Natural Gas Pipeline Safety Act. FERC accepts this certification and does not impose additional safety standards. In accordance with the Memorandum, FERC must promptly notify the USDOT when it becomes aware of an existing or potential safety problem.

Additionally, 49 CFR 192 requires a pipeline operator to write an emergency plan that describes procedures to minimize emergency hazards. To implement the emergency plan procedures, the USDOT identifies class location based on population densities for areas near pipelines. A higher measure of safety is required for densely populated areas. A class location unit is defined as an area that extends 220 yards on either side of the pipeline centerline for any continuous 1-mile length of pipeline. There are four levels class location units described below. Class locations within densely populated areas require a higher level of pipeline safety, design, testing, and operation.

- Class 1: Location with 10 or fewer buildings intended for human occupancy.
- Class 2: Location with more than 10 but less than 46 buildings intended for human occupancy.
- Class 3: Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period. The days and weeks need not be consecutive.
- Class 4: Location where buildings with four or more stories aboveground are prevalent.

The entire Project (combined 135 miles) of the proposed trunk and lateral pipelines are within Class 1 location areas. Pipelines constructed within a Class 1 location must be placed at least 30 inches below ground surface in native soil and 18 inches below ground surface where consolidated rock exists. Also, Class location units specify the maximum distance to a sectionalizing block valve. For Class 1 locations the length is 10.0 miles. Pipe wall thickness and pipeline design pressures; hydrostatic test pressures; maximum allowable operating pressure;

inspection and testing of welds; and frequency of pipeline patrols and leak surveys must conform to the appropriate class location. All proposed meter stations would have the capability to shut down the pipeline remotely or manually in case of emergencies.

The USDOT Pipeline Safety Regulations require operators to develop and implement a written integrity management program that contains all elements outlined in 49 CFR 192.911 and applies to all high consequence areas (HCA). HCAs are areas where natural gas pipeline accidents could significantly harm people and their property, creating the need for an integrity management program to minimize potential accidents or pipeline failures. Two definitions describe an HCA:

- Existing Class 3 and 4 locations; Class 1 or 2 locations where the potential impact radius[19] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle[20] ; or
- any area in Class 1 or 2 where the potential impact circle includes an identified site. An identified site is:
    - an outside area or open structure occupied by 20 or more people for at least 50 days in any 12-month period;
    - a building that is occupied by 20 or more persons for at least 5 days a week for any 10 weeks in any 12-month period; or
    - a facility that is occupied by persons who are confined, are of mobility impaired, or would be difficult to evacuate.
    - any area within a potential impact circle which contains 20 or more buildings intended for human occupancy, or an identified site.

Once a pipeline operator has identified HCAs along its pipeline it must implement its integrity management program on those pipeline segments. USDOT regulations specify the requirements for the integrity management plan at section 192.911. The HCAs have been determined based on the relationship of the pipeline centerline to other nearby structures and identified sites.

No HCAs currently are present within the Project area. If Double E identifies future structures and/or HCAs during operation of its trunkline and laterals, it would be required by 49 CFR 192, Subpart O to conduct a HCA assessment every 7 years, as described in the above requirements.

The USDOT prescribes minimum standards for operating and maintaining pipeline facilities, including having a written plan that oversees operation and maintenance activities. Each pipeline operator is also required to implement an emergency plan that minimizes pipeline emergency hazards. Key elements of the plan include:

[19] The potential impact radius is calculated as the product of 0.69 and the square root of the maximum allowable operating pressure of the pipeline in psig multiplied by the square of the pipeline diameter in inches.
[20] The potential impact circle is a circle of radius equal to the potential impact radius.

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency system shutdown and safe restoration of service;
- making personnel, equipment, and materials available at emergency sites; and
- protecting people and property and safeguarding them from potential hazards.

The USDOT requires pipeline and facility operators develop and maintain liaison with emergency first responders throughout the planning, construction and operation of the pipeline to discuss and coordinate the responsibilities of respective organizations responding to natural gas emergencies. The pipeline/facility operator must establish an ongoing education program that enables customers and agency stakeholders on how to recognize potential emergencies and convey critical information to emergency first responders. Accordingly, operating personnel would be thoroughly trained to perform their activities in accordance with Double E's established operating policies and procedures, which would be established and reviewed periodically by the USDOT. Double E would provide training to local first responders before the pipeline is placed in service.

10.2 Pipeline Accident Data

The USDOT requires all operators of natural gas transmission pipelines to notify the USDOT of significant incidents and to submit report within 30 days of the incident. Significant incidents are defined as leaks that:

- caused a death or personal injury requiring hospitalization; or
- involve property damage of more than $50,000 (1984 dollars)[21].

During the 20-year period between 1999 and 2018, 1,372 significant incidents were reported to the USDOT for more than 300,000 miles of national gas transmission line nationwide. The cause of significant incidents is listed in table B-14, Natural Gas Transmission Pipeline Significant Incidents by Cause.

Most pipeline significant incidents resulted from the type of pipeline material, weld or equipment failure, and corrosion. The percentage of these significant incidents totals 53.2 percent. Natural forces, outside factors and incorrect operations accounted for 22.3 percent. All other causes accounted for 10.2 percent of the remaining significant incidents.

[21] $50,000 in 1984 dollars is approximately $126, 273.80 as of October 2019 (Bureau of Labor Statistics, 2020).

TABLE B-14
Natural Gas Transmission Pipeline Significant Incidents by Cause

Cause[1]	Number of Incidents	Percentage
Pipeline material, weld, or equipment failure	411	30.0
Corrosion	319	23.3
Excavation	195	14.2
All other causes	140	10.2
Natural forces	155	11.3
Outside force	94	6.9
Incorrect operation	58	4.2
Total	**1,372**	**100**

1Data gathered from PHMSA's Oracle BI Interactive Dashboard website for Significant Transmission Pipeline Incidents, https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Go. Site visited October 17, 2019.

TABLE B-15
Outside Forces Incidents by Cause (1999 – 2018)

Cause[1]	Number of Incidents	Percent of All Incidents
Operator excavation damage	48	2.3
Previous excavation damage	14	0.7
Third-party excavation damage	275	13.0
Unspecified excavation damage	3	0.1
Earth movement	38	1.8
Heavy rains/floods	103	4.9
High winds	15	0.7
Lightning	26	1.2
Temperature	31	1.5
Natural force damage (unspecified/other)	16	0.7
Electrical arcing from other equipment/facility	4	0.2
Fire/explosion	16	0.8
Fishing or maritime activity	8	0.4
Intentional damage	5	0.2
Maritime equipment or vessel adrift	2	0.1
Other outside force	15	0.7
Previous mechanical damage	9	0.4
Unspecified outside force	1	0.0
Vehicle (not engaged with excavation)	88	4.2
Total	**717**	**33.8**

1 Excavation, Outside Force, and Natural Force. PHMSA, 2019

The physical condition of pipelines varies with age, material, diameter, and level of corrosion. Older pipelines are subject to frequent damage because their locations are not well documented. In addition, older pipelines may have smaller diameters which are easily damaged by construction activities. Since 1982, pipeline operators have been required to participate in the "One Call" public utility program. The program is used by public utilities and some private sector companies (e.g., oil pipelines and cable television) to locate buried pipes, cables, and culverts to avoid damaging them. Pipeline stress, strain and corrosion leading to pipeline failures are a time-dependent process. Therefore, the frequency of significant incidents increases over time, whether induced by human activities or caused by a natural event. Double E would use an external protective coating and a cathodic protection system[22] to reduce the corrosion rate to protect its pipeline infrastructure.

Construction equipment (bulldozers, backhoes, etc.) encroaching into Project areas, combined with adverse meteorological conditions (winds, storms, and thermal strains) and other external causes (soil settlement, washouts, or willful vandalism), has damaged pipeline infrastructure. Table B-15 summarizes Natural Gas Transmission Pipeline Incidents by External Force.

Double E is a participant in the New Mexico One-Call program and the Texas One-Call program. A call would be made on a dedicated One Call telephone number to alert utility companies of a pending construction activity. Exceptions to One-Call notification are specified in New Mexico Statutes Chapter 62 Article 14 sections 62-14-4 and 62-14-7.1, as well as Texas Utilities Code Title 5, Chapter 251, sections 251.155 and 251.156. Both states allow excavation exceptions to persons who own or leases mineral interests in areas where the planned activity occurs and operates all underground facilities. Texas Code allows further exceptions for activities listed in section 251.156, which include routine railroad maintenance within 15 feet on both sides of the railroad centerline. The exception applies when earth disturbing maintenance activities are less than 18 inches below ground surface and includes operations associated with the exploration or production of oil or gas not conducted within an underground facility easement or right-of-way.

10.3 Impact on Public Safety

Table B-16, (Injuries and Fatalities – Natural Gas Transmission Pipelines by Cause) presents the annual injuries and fatalities that occurred on natural gas transmission lines from incidents for the 5-year period between 2014 and 2018. Most fatalities from pipelines are due to local distribution pipelines not regulated by FERC. These are natural gas pipelines that distribute natural gas to homes and businesses after transportation through interstate natural gas transmission pipelines. In general, these distribution lines are smaller diameter pipes and/or plastic pipes which are more susceptible to damage. Local distribution systems do not have large rights-of-way and pipeline markers common to the FERC regulated natural gas transmission pipelines. Therefore, incident statistics inclusive of distribution pipelines are inappropriate to use when considering natural gas transmission projects.

[22] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline through the use of an induced current or a sacrificial anode (like zinc) that corrodes at faster rate to reduce corrosion.

TABLE B-16 Injuries and Fatalities – Natural Gas Transmission Pipelines by Cause (2014-2018)		
Cause[1]	**Number of Fatalities**	**Number of Injuries**
Pipeline material, weld, or equipment failure	4	28
Corrosion	0	4
Excavation	10	64
All other causes	16	78
Natural forces	10	56
Outside force	1	5
Incorrect operation	8	54
Total	58	350
1Data gathered from PHMSA's Oracle BI Interactive Dashboard website for Significant Transmission Pipeline https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Go. Site visited October 17, 2019.		

The available data indicate that natural gas transmission pipelines provide a safe and reliable method of energy transportation. The number of significant incidents, injuries, and fatalities associated with natural gas transmission pipelines in recent history shows the low risk associated with natural gas transmission pipelines, particularly when considered in context with the over 300,000 miles of natural gas transmission infrastructure in place and operating across the country. Given the statistics on modern natural gas transmission pipeline safety and reliability and the safety standards outlined in this assessment, the operation of the Project would represent a slight increase in risk to the public in close proximity.

11. Cumulative Impacts

Cumulative impacts may result when the environmental effects associated with the Double E's proposed Project are superimposed on or added to impacts associated with past, present, and reasonably foreseeable future actions. The Project is within the Delaware sub-basin of the Permian Basin in west Texas and eastern New Mexico, an area characterized by extensive ongoing commercial oil and gas development activities. The Permian Basin encompasses an area of Texas and New Mexico approximately 300 miles long and 250 miles wide.

The number of new drilling permits issued in Texas quadrupled from 2009 to 2017 (from 3,323 to 12,600 permits) (Drilinginfo, 2015; Railroad Commission of Texas, 2018a). The number of new drilling permits issued annually in New Mexico (including on BLM lands) has risen steadily (1,415 in 2009 to 1,434 in 2017; and 1,771 in 2018) (EMNRD, 2018a and 2018b). However, 2018 saw a large increase in permit submittals in New Mexico -the Carlsbad BLM Office alone received over 1,500 Applications for Permit to Drill and over 1,600 realty permit applications in 2018 (Carlsbad BLM, 2018).

Ongoing construction projects in the Project area related to this ongoing energy development involve the development new oil and gas wells and associated infrastructure including well pads, pipelines, residue lines, powerlines, access roads, communication towers, sand mines, compressor stations, truck terminals, and processing facilities such as cryogenic natural gas processing plants. It is within this context that we evaluate potential cumulative impacts associated with the Double E Pipeline Project.

Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. The Project-specific impacts are discussed in detail in the rest of section B of this EA. The purpose of this section is to identify and describe cumulative impacts that would potentially result from implementation of the Double E Pipeline Project along with other projects that could affect the same resources in the same approximate timeframe.

Inclusion of other actions is based on identifying commonalities of impacts from other actions along with those of the Project. An action must meet the following criteria:

- affect a resource also potentially affected by the Project;
- cause the impact within all, or part of, the Project areas defined by the resource-specific geographic scope; and
- cause the impact within all, or part of, the time span of the Project's estimated impacts.

Existing or reasonably foreseeable actions that would affect similar resources during similar periods as the Project were considered. To evaluate potential cumulative impacts, we considered recently completed (one year prior to construction of the Project), current, and reasonably foreseeable future projects within the vicinity of the Project. We attempted to identify major projects, which include infrastructure construction, FERC jurisdictional and non-jurisdictional pipeline projects, commercial and residential developments, and large industrial facilities construction and operation. Actions outside the proposed Project's geographic scope, as defined below, and timeframe were generally not evaluated because their potential to contribute to a cumulative impact would diminish with increasing distance and time from the Project.

Double E identified past, present, and reasonably foreseeable future actions within each of the resource-specific geographic scopes through review of publicly accessible federal, state, and local agency and municipal websites and direct communications; permit applications; and paid and free-access database searches. Table B-17 summarizes the resource-specific geographic boundaries considered in this analysis, and the justification for each. Actions outside of these boundaries were not evaluated because their potential to contribute to cumulative impacts diminishes with increasing distance from the Project.

Table C-9 in appendix C summarizes recent past, current, and reasonably foreseeable actions and affected resources potentially falling within one or more geographic scopes identified in table B-17. Double E obtained the information about present and future planned actions by consulting federal, state, and local agency and municipality websites. We also did our own independent review of projects in the area.

As discussed in preceding sections of this EA, wild or scenic rivers, recreation areas, national parks and wildlife areas, residential areas and coastal zone management areas would not be affected by the Project. In addition, no permanent aboveground facilities that would emit operational air emissions or noise impacts are proposed. As such, these resources are not evaluated further in our cumulative impact analysis below.

TABLE B-17
Resource-Specific Geographic Scope for Determining Cumulative Impacts of the Projects

Resource(s)	Cumulative Impact Geographic Scope	Justification for Geographic Scope	Temporal Scope
Geology and Soils	Area of disturbance of the Project and other activities that would be overlapping or abutting each other; the geographic scope for mining activities was set at 0.5 mile	Project impacts on geology and soils would be highly localized and limited to the immediate areas of disturbance during active construction. Cumulative impacts on geology and soils would only occur if construction of other projects were geographically overlapping or abutting Double E's Project. Impact consideration for mining or other resource extraction activities was extended to a 0.5-mile radius scope from the Project construction limits.	Construction through successful revegetation
Surface Water. Wetlands, and Groundwater	HUC-12 watershed boundary	Impacts on surface waters can result in downstream contamination or turbidity; therefore, the geographic scope we used to assess cumulative impacts on waterbodies is the HUC-12 watershed crossed by the Project. We believe this scope would be the reasonable scope in which cumulative impacts could occur on surface waterbodies.	Construction through revegetation
Vegetation and Wildlife	HUC-12 watershed boundary	Vegetation clearing can temporarily reduce or permanently eliminate wildlife habitat; affecting both resident and transient species. The geographic scope we used to assess cumulative impacts on vegetation and wildlife are the HUC-12 watersheds the Project occupies. Watersheds can serve as a geographic proxy for impacts on vegetation and wildlife and provides a natural boundary, as recommended by CEQ.	Construction through revegetation; except areas of permanent conversion of vegetation
Cultural Resources	APE of the Project	Project impacts on cultural resources would be highly localized and limited to the immediate areas of disturbance during active construction.	Limited to construction duration unless unanticipated permanent impacts on cultural resources (buried or visual) occur
Land Use and Visual Resources	1.0 mile from the Project workspaces	Project impacts on general land uses would be restricted to the construction workspaces. Land use in the project areas is mainly range and open land. Therefore, we considered a 1.0-mile distance from the projects for the geographic scope because this would cover any land use impacts that could be incremental to the Project. Visual qualities of the Project landscape are influenced by existing linear infrastructure such as roadways, pipelines, and oil and gas well aboveground facilities.	Limited to construction except for areas of permanent land use and visual landscape conversion
Socioeconomics - Traffic	Affected counties	Due to the Project's limited scope and the short construction duration, the geographic scope for assessing contributions to cumulative impacts on socioeconomics and traffic were evaluated on a county-wide basis.	Limited to construction duration
Air Quality – Construction	0.25 mile from all active construction (pipeline, road crossing, aboveground facilities)	Since construction emissions are localized, the geographic scope used to assess potential cumulative impacts on air from construction activities was set at 0.25 mile from either project area.	Limited to construction duration
Noise – Construction	NSAs within 0.25 mile of conventional construction activities and 0.5 mile of HDD activities.	The geographic scope for assessing potential cumulative impacts on construction noise was determined to be areas within proximity to the construction activities.	Limited to construction duration

11.1 Geology and Soils

We considered the cumulative impacts on geology and soils that may occur as a result of the Project and other projects in the vicinity of the Project area. Impacts on soils would be highly localized to the Project footprint during active construction and for 1 to 2 years following construction and successful revegetation may extend for several years due to arid climate following Project completion; therefore, the geographic scope for soils is the Project footprint. Cumulative impacts on soils would only occur if other geographically overlapping or abutting projects were constructed at the same time as the Project. For mining and related resources, the geographic scope for cumulative impact analysis includes the area within 0.5 mile of the Project to encompass potential oil and gas well development activities. The Project's impact on geology would be restricted to shallow excavations and facility foundations within the Project work area.

The past, present, and reasonably foreseeable future actions located within this 0.5-mile buffer area are shown in table C-9. Potential impacts on geology and soils would occur during excavation activities required for pipeline trenches and appurtenant and auxiliary facilities. However, these impacts would be localized and temporary. Pending oil/gas well projects could be under construction while Double E's construction would take place. The other projects with potentially concurrent construction periods that could affect geology and soils consist of the following:

- All 13 non-jurisdictional facilities projects listed in table C-9; and
- Devon Gnome Road Drill Islands Project, which is located west of T100 between MPs 25.4 and 26.2.

The non-jurisdictional projects would be constructed adjacent to Project facilities and would consist of minor electric grid additions and improvements with limited footprints that would not significantly add to cumulative soil and geology impacts. Cumulative impacts from mineral resource development would only occur if other projects are constructed at the same time and place as the proposed facilities. However, because there are no anticipated adverse impacts on mineral resources associated with the proposed Project, the Project is not anticipated to contribute meaningfully to any potential cumulative impacts on mineral resources.

With the implementation of BMPs and the measures in the FERC Plan, the cumulative effect on geology and soils is anticipated to be negligible. BMPs would include the installation of erosion control devices, returning the site to preexisting topography, and re-establishing vegetative cover to minimize potential soil impacts during construction activities. The proponents of the previously identified projects that may affect geology and soils would likely implement similar BMPs to limit erosion and sedimentation. Therefore, we conclude that construction and operation of the Project would not significantly contribute to cumulative impacts on geology and soil when considered in conjunction with other past, present, and reasonably foreseeable projects in the geographic scope.

11.2 Water Resources

Surface Water and Wetlands

The geographic scope used to assess cumulative impacts on surface water and wetlands includes the HUC-12 watersheds crossed by the Project. We assumed that all projects would comply with state and federal permits in order to minimize impacts on water resources and wetlands.

Pending oil/gas well projects could be under construction while Double E's proposed construction would take place. The other projects with potentially concurrent construction periods that could affect surface water and wetland resources include:

- All 13 non-jurisdictional facilities projects listed in table C-9;
- Sendero Carlsbad Gateway, LLC Gateway Project, which is adjacent to the northernmost terminus of the Project and associated facilities south of L100 at MP 16.5;
- Natural Gas Pipeline Company of America, LLC Lockridge Extension Project, which crosses the Project at MP 99 and parallels the Project approximately 130 feet west of the T200 for approximately 3 miles;
- Western Refining project;
- Devon Gnome Road Drill Islands Project;
- Texas Department of Transportation (TXDOT) State Highway 302/Ranch Road 1211 Roadway Rehabilitation, which is crossed by T200 at MP 71.5;
- TXDOT I-20 Facility Upgrades, which may occur where I-20 crosses T200 at MP 96.1;
- TXDOT Highway FM 1450 Preventative Maintenance, which is crossed by T200; and
- TXDOT Highway FM 1776 Seal Coat, which is located approximately 2.5 miles northeast from the trunkline terminus.

Construction and operation of the Project as well as past, present, and reasonably foreseeable future actions located within the geographic scope have the potential to directly impact surface water quality and wetlands. However, Project construction would primarily result in short-term, temporary impacts on surface water and wetland resources. These impacts, such as increased turbidity, would return to baseline conditions over a period of days or weeks following construction. Longer-term impacts could also occur until adjacent disturbed areas are stabilized through revegetation. Impacts on wetlands, such as removal of wetland vegetation, would return to baseline conditions over a period of 1-3 years following construction.

Double E would minimize these effects by implementing specific wetland and waterbody construction and mitigation measures, including temporary and permanent erosion controls contained in the FERC Procedures, SPCC Plan, and HDD Inadvertent Return Contingency Plan. Double E would also comply with its applicable federal and state permitting requirements. Oil and gas production wells are typically sited outside of surface waterbodies and wetlands.

However, if they were to impact wetlands or streams, a permit from the USACE would be required. Additionally, these projects would likely implement BMPs similar to those proposed by Double E to minimize impacts on wetlands and waterbodies.

Temporary impacts associated with wetland and waterbody crossings include loss of vegetation; wildlife habitat disruption; soil disturbance associated with grading and trenching; sedimentation and turbidity increases; and hydrological profile and wetland function changes. Many natural gas pipelines in the United States are permitted by way of the USACE Nationwide Permit (NWP) 12. NWP 12 authorizes "activities for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States…" and largely complies with NEPA. Per the Draft Decision Document Nationwide Permit 12, NWP 12 is issued when a project has "minimal individual and cumulative adverse environmental effects" (USACE, 2012). Double E would implement crossing procedures as outlined in our Procedures and would obtain and follow NWP 12 for the surface water crossings as well as follow state permit guidelines, to further minimize impacts.

The projects listed in table C-9 would primarily result in temporary impacts on surface water during construction activities that require stream crossings and/or result in temporary erosion and sedimentation of exposed soils. In addition, it is assumed that all projects would be required to comply with state and federal permits in order to minimize impacts on water resources and wetlands. Wetlands identified for Double E's Project mostly consist of riparian zones associated with the two Pecos River crossings, which would be avoided via HDD method, as described in section B.3.3. Direct wetland impacts would be less than 2 acres total for the Project.

Therefore, we anticipate that Double E's Project, when combined with these other projects, would only have a minor and temporary contribution to cumulative impacts on surface waters and wetlands. All FERC-regulated natural gas projects are held to similar robust standards for construction across wetlands and waterbodies; erosion control; and measures for avoiding, containing, and cleaning up of spills of hazardous materials. Non-FERC-regulated projects would also be expected to comply with the NWP 12 and state and local National Pollutant Discharge Elimination System requirements, at a minimum. Therefore, the Project's impacts on surface water resources and wetlands, when added to other past, present and reasonably foreseeable actions is minimal both individually and cumulatively.

11.3 Groundwater

The geographic scope used to assess cumulative impacts on groundwater includes the HUC-12 watersheds crossed by the Project. We assumed that all projects would comply with state and federal permits in order to minimize impacts on groundwater. The other projects with potentially concurrent construction periods that could affect groundwater are the same as those listed above for surface water and wetland resources.

The Project, as well as the other projects in the geographic scope, overlay one major aquifer, the Pecos Valley Aquifer. As discussed in section B.3.1, above, direct Project impacts on groundwater resources could occur during the construction period through use of groundwater for hydrostatic testing or during dewatering of the pipeline trench. Construction of the Project

may also result in minor and temporary impacts on groundwater infiltration due to tree, herbaceous vegetation, or scrub-shrub vegetation clearing. Any potential impacts that may result from vegetation clearing would likely be limited to short-term reduced infiltration.

The Project and all the projects listed in table C-9 would temporarily affect the infiltration of precipitation into the soil during the construction period. These effects would be short term and the amount of land permanently converted to an impervious condition would be minor in the context of the land area within the HUC-12 watershed. The Project and the pipeline facilities listed in table C-9 would require substantial sources of hydrotest water. This water would likely be obtained from a commercial or municipal source that may utilize existing groundwater sources. Following completion of the testing, the test water would be recycled to another project or discharged back to the ground where it would recharge the water table.

All the projects listed in table C-9 present a potential for groundwater contamination from fuel, lubrication oil, or hydraulic oil spills during construction. State and federal laws require the development of spill control and countermeasure plans to prevent or minimize the potential for spills of fuels, lubricants, or other hazardous materials during construction. Such spills would be infrequent and would be cleaned up in accordance with requirements that apply to those projects. For these reasons, we conclude that any cumulative impact on groundwater from the Project would be negligible.

11.4 Vegetation and Wildlife

Cumulative impacts on vegetation and wildlife resources (primarily due to temporary loss of habitat from vegetation clearing and grading and from direct and indirect impacts on wildlife) could extend beyond of the Project workspaces, but would likely be contained to the HUC-12 watershed. Therefore, past, present, and reasonably foreseeable actions within the HUC-12 watersheds noted above are within the geographic scope for cumulative impacts for vegetation and wildlife and are considered in this cumulative impact analysis.

The other projects with potentially concurrent construction periods that could affect vegetation and wildlife include:

- All 13 non-jurisdictional facilities projects listed in table C-9;
- Sendero Carlsbad Gateway, LLC Gateway Project, which is adjacent to the northernmost terminus of the Project and associated facilities south of L100 at MP 16.5;
- Natural Gas Pipeline Company of America, LLC Lockridge Extension Project, which crosses the Project at MP 99 and parallels the Project approximately 130 feet west of the T200 for approximately 3 miles;
- Western Refining project;
- Devon Gnome Road Drill Islands Project;
- Texas Department of Transportation (TXDOT) State Highway 302/Ranch Road 1211 Roadway Rehabilitation, which is crossed by T200 at MP 71.5;

- TXDOT I-20 Facility Upgrades, which may occur where I-20 crosses T200 at MP 96.1;
- TXDOT Highway FM 1450 Preventative Maintenance, which is crossed by T200; and
- TXDOT Highway FM 1776 Seal Coat, which is located approximately 2.5 miles northeast from the trunkline terminus.

Overlapping construction schedules could result in greater area of disturbance and subsequent impacts on vegetation and wildlife. While the acreages of impacts from the applicable projects in table C-9 are unavailable, construction activities associated with clearing, grading, removal of habitat, and the potential for the establishment of invasive plant species occurring during the same timeframe and area can result in cumulative impacts.

As a result of Project construction, wildlife may be directly impacted or may temporarily be displaced to nearby suitable habitat. Where construction schedules overlap, increased noise, lighting, and human activity could also disturb wildlife in the area. Special status species could also be cumulatively impacted. However, given the minimal impact expected on wildlife from the Project and other projects listed in table C-9, we conclude that cumulative impacts would be minor as well. We also note that federally listed species potentially impacted by these other projects would be consulted on separately between the project sponsor (or action agency) and the USFWS. State-sensitive species would likely be included in state agency mitigation discussions.

Vegetation clearing from construction of the applicable projects listed in table C-9 could result in changes in vegetation communities over the short- and long term, and introduce the spread of invasive species. Construction and operation of the Project would primarily impact mesquite and mixed desert shrublands, grasslands, and creosote bush scrub/shrub. Impacts on these lands would generally be short-term and the areas would be expected to return to preconstruction conditions within 2 to 5 years after restoration is complete. Species using these areas would be displaced, but would be able to return upon the completion of construction activities and when revegetation is complete in 2 to 5 years.

Multiple projects occurring in the same area would further reduce available habitat on a short-term basis and could cumulatively increase the chance for introduction and spread of invasive or noxious plants. To prevent further spread of noxious weeds that may occur during the Project, Double E would implement BMPs and adhere to the erosion control measures in FERC's Plan and Procedures during construction and operation. Double E would also ensure that seed mixes are weed-free and include native plant species based on the recommendations of the NMSLO, NRCS, TPWD, TXUL, and NMDGF. Furthermore, the majority of the proposed Project (72 percent) would be parallel and adjacent to existing pipeline and utility rights-of-way, where vegetation has been disturbed and habitat is reduced. This Project, as well as the other projects listed in table C-9, would implement BMPs that include measures to avoid direct impacts on wildlife, revegetate disturbed areas, and stabilize post-construction site conditions, which would further minimize cumulative impacts.

As a result, the Project would not significantly contribute to cumulative impacts on vegetation and wildlife (including special status species) when considered in conjunction with other past, present, and reasonably foreseeable projects.

11.5 Land Use and Visual Resources

Impacts from the Project on general land uses would be restricted to the construction workspaces and the immediate surrounding vicinity. Impacts on visual resources include the surrounding area from where a new facility or construction activity would be visible. Therefore, we defined the geographic scope for land use and visual resources as 1 mile from Project facilities. The projects listed in table C-9 within the geographic scope used to evaluate cumulative impacts on land use and/or visual resources include the following:

- All 13 non-jurisdictional facilities projects;
- Sendero Carlsbad Gateway, LLC Gateway Project;
- Transwestern Pipeline Company, LLC Malaga Lateral Project, which is located approximately 1.4 miles east of T200 at MP 33.8;
- Natural Gas Pipeline Company of America, LLC Lockridge Extension Project;
- Western Refining project;
- Devon Gnome Road Drill Islands Project;
- TXDOT State Highway 302/Ranch Road 1211 Roadway Rehabilitation;
- TXDOT I-20 Facility Upgrades; and
- TXDOT Highway FM 1450 Preventative Maintenance, which is crossed by T200.

The activities associated with these projects have occurred in the past or are currently ongoing and are expected to continue into the future. As a result, these projects and the proposed Project would contribute on a cumulative basis to the continued permanent conversion of herbaceous, shrub, open, undeveloped or range land to pipeline right-of-way and industrial land uses. However, the resulting impacts of the Project would not be significant relative to the highly modified landscape that characterizes much of the Project area, which is dominated by extensive oil and gas exploration, production, and transmission infrastructure that is converting open and rangeland to utility and oil and natural gas uses.

Furthermore, the majority of the proposed Project (72 percent) would be parallel and adjacent to an existing pipeline and utility rights-of-way, which would not alter the landscape compared to the existing setting. This Project, as well as the other projects listed in table C-9, would also implement BMPs that include measures to minimize potential erosion, revegetate disturbed areas, and stabilize post-construction site conditions, which would further minimize cumulative impacts. Therefore, no significant cumulative impacts on land use or visual resources would occur.

11.6 Traffic

As described in section B.5.5, traffic impacts from Project construction are expected to be minimal. Traffic levels and congestion in Project area may be affected during the 11-month construction period due to the transportation of personnel, materials and equipment. Therefore, if Project construction occurs during the same time period as other active projects listed in table C-9, a cumulative impact on local traffic could occur. However, the Project's contribution to cumulative traffic impacts on local roads would be dispersed along the approximately 130-mile

length of the Project route and would cease following completion of construction. Although traffic impacts resulting from Project construction could temporarily increase congestion on local and regional roadways during the 11-month Project construction period, we do not expect that the Project's contribution to cumulative impacts on local traffic to be significant. In addition, the projects listed in table C-9 that involve considerable use of local road systems are expected to be subject to traffic management plans and result in impacts that would be short term and minor. Therefore, we conclude that the Project would contribute to a minimal cumulative impact on traffic within the geographic scope.

11.7 Cultural Resources

Cumulative impacts would occur if the Double E's Project and another project were to result in overlapping effects on a cultural resource. Any projects from table C-9 defined as "federal actions" would have to adhere to Section 106 of the NHPA and include mitigation measures designed to avoid or minimize additional impacts on cultural resources. The projects from the table that are non-federal actions would need to comply with mitigation measures required by the affected states. Because Double E would be required to implement treatment measures if historic properties or cultural resources were adversely affected, impacts on cultural resource would be minimized and would not contribute to significant cumulative impacts on cultural resources.

11.8 Socioeconomics and Environmental Justice

Table C-9 lists a number of jurisdictional and non-jurisdictional natural gas projects that could be under construction within the geographic scope at the same time as the proposed Project. The projects listed in table C-9 within the geographic scope used to evaluate cumulative impacts on socioeconomics and environmental justice include the following:

- All 13 non-jurisdictional facilities projects;
- Sendero Carlsbad Gateway, LLC Gateway Project;
- Transwestern Pipeline Company, LLC Malaga Lateral Project, which is located approximately 1.4 miles east of T200 at MP 33.8;
- Natural Gas Pipeline Company of America, LLC Lockridge Extension Project;
- Western Refining project;
- Devon Gnome Road Drill Islands Project;
- NMDOT Highway US 285 Corridor Phase I:
- TXDOT Highway US 285 Roadway Rehabilitation:
- TXDOT State Highway 302/Ranch Road 1211 Roadway Rehabilitation;
- TXDOT I-20 Facility Upgrades;
- TXDOT FM 1776 Seal Coat; and
- TXDOT Highway FM 1450 Preventative Maintenance, which is crossed by T200.

All of the above projects require a qualified labor force during construction, along with housing and other infrastructure to support these workers. As previously discussed, oil and associated natural gas facilities are being constructed throughout the larger Permian Basin; and housing, infrastructure, public facilities such as schools and police and fire stations are being built to accommodate the influx of temporary and permanent residents. The proposed Project, and the Sendero Carlsbad Gateway, Transwestern Pipeline, Natural Gas Pipeline Company, Western Refining, and Devon Gnome projects could result in new workers from outside the region relocating on a temporary basis to the Project area, adding to the ongoing growth in the regional economy, and pressure on existing housing and public facilities. The impact of the Project construction workforce on socioeconomic conditions would be temporary and restricted to the 1-year construction period and would be partly met by workers already within the region.

Table C-9 also identifies the non-jurisdictional electric lines serving the M&R stations as projects that may have socioeconomic effects within the geographic and temporal scope of the Project. These electric power distribution lines would be constructed by local electric utilities using staff or contract line workers who already reside in the Project area, and whose effect on socioeconomic conditions is already accounted for in the baseline housing, economic, public services, and infrastructure conditions. Similarly, the NMDOT and TXDOT are sponsoring or permitting a number of roadway projects that may occur within the geographic and temporal scope of the Project. We expect that these projects would be constructed by area-based highway and related construction companies, and other firms specializing in the particular projects planned. To the extent that these specialized workers reside in the Project area, their effect on socioeconomic conditions is already accounted for in the baseline housing, economic, public services, and infrastructure conditions.

As concluded in section B.6, while substantial growth in the region is ongoing due to increased oil and associated natural gas production, the socioeconomic impacts from Project construction and operation are expected to be minor. Therefore, we conclude that the Project would not result in a significant cumulative impact on socioeconomics or a disproportionately high adverse environmental or human health impact on minority or low-income residents within the Project's geographic scope.

11.9 Air Quality

Based on the localized air emissions generated by construction equipment, the geographic scope used to assess potential cumulative impacts on air from construction activities was set at 0.25 mile from the Project area. Construction of the Project would result in short-term, intermittent, and temporary impacts on air quality in the vicinity of the Project area. Most of the projects listed in table C-9 would be expected to utilize heavy equipment that would generate emissions of air contaminants, fugitive dust, and noise during construction. Construction of these projects would also result in temporary and short-term air emissions, which are not likely to significantly affect long-term air quality in the region. Although construction of the Project may occur concurrently with construction of multiple projects listed in table C-9, impacts would be short-term and temporary. Therefore, impacts resulting from the Project are not expected to significantly contribute to cumulative impacts on air quality during construction.

11.10 Noise

The geographic scope for assessing potential cumulative impacts on noise was determined to be 0.25 mile from general construction areas and 0.5 mile from HDD workspaces. Depending on the timeframe, construction of one or more of the projects identified in table C-9 may occur during Project construction within the defined 0.25- to 0.5-mile geographic scope for construction noise impacts.

Depending on the timing of construction, one or more of the projects identified in table C-9 may overlap with the Pipeline Project's construction within the defined 0.25-mile geographic scope for construction noise impacts and result in cumulative noise impacts on nearby receptors. However, most impact from construction of the Projects would be minor and temporary and persist only for time periods that active construction of the Project and other projects were simultaneously taking place.

As stated in section B.9.3, noise from the proposed HDDs associated with the Project may affect areas up to 0.5 mile from the Project on a 12 hour per day basis. Therefore, noise from the HDD operations, if occurring simultaneously with noise from construction of projects on table C-9, could result in cumulative noise impacts at nearby NSAs, particularly if any of these projects were to contribute nighttime noise impacts.

However, as previously discussed, construction of these projects, as well as Double E's Project, would result in only short-term and temporary noise impacts within the defined scope. In addition, the projects under consideration are generally located in remote areas with a limited number of NSAs. Based on the short-term and temporary nature of construction-related activities, impacts from the Project are not expected to significantly contribute to cumulative impacts on noise levels during construction.

C. Alternatives

In accordance with NEPA and Commission policy, we evaluated alternatives to the Project to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives included the no-action alternative, system alternatives, and routing alternatives. Regarding potential aboveground facility site alternatives, because all of the aboveground and other associated facilities would be completed within or immediately adjacent to new or existing utility and rights-of-way boundaries, our review of the Project found no significant environmental impacts that would drive an evaluation of additional aboveground facility alternatives. We also did not receive any alternative aboveground facility site requests from stakeholders during our scoping and review process.

The evaluation criteria used for developing and reviewing alternatives include the following:

- ability to meet the Project's stated objective;
- technical and economic feasibility and practicality; and
- significant environmental advantage over the proposed action.

Through environmental comparison and application of our professional judgment, each alternative was considered to a point where it become clear if the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, geographic information system data, aerial imagery) and assume the same general workspace requirements.

1. No-Action Alternative

Under the no-action alternative, Double E would not construct or operate the Double E Pipeline Project, and none of the impacts associated with the Project would occur. However, the Project objective, which is to provide pipeline shippers and gas producers in the North Delaware Basin an outlet to the Waha Hub (described in more detail in section A.2, Purpose and Need) would not be met. Double E's customers would not be able to ship the proposed 1.35 billion cubic feet of natural gas per day from existing processing plants located in the Delaware Basin in New Mexico and Texas, to the various delivery points in Reeves and Pecos Counties, Texas.

Although a Commission decision to deny the proposed action would avoid the environmental impacts addressed in this EA, other natural gas projects could be constructed and provide a substitute for the natural gas transportation services offered by Double E. Such alternative projects would require the construction of additional and/or new facilities in the same or other locations to meet the Project objectives. These alternatives would result in their own set of specific environmental impacts that could be greater or equal to those associated with the current proposal. Therefore, we have dismissed this alternative as a reasonable alternative to meet the Project objectives.

2. System Alternatives

System alternatives would make use of other existing, modified, or proposed pipeline systems to meet the objectives of the Project. Implementation of a system alternative would make it unnecessary to construct all or part of the Project, although some modifications or additions to existing or proposed pipeline systems may be required. These modifications or additions could result in environmental impacts that are less than, similar to, or greater than those associated with construction and operation of the Project. The purpose of identifying and evaluating system alternatives is to determine whether the environmental impacts associated with construction and operation of the Project could be avoided or reduced by using another pipeline system, while still meeting the objectives of the Project.

The increased oil and gas production and substantial demand, particularly in the Gulf Coast states, is largely due to anticipated liquefied natural gas export, which is in need of additional pipeline infrastructure facilities to transport the newly available natural gas out of the Permian basin. Other transmission systems in the region include Kinder Morgan's El Paso Natural Gas Company and Natural Gas Pipeline Company of America, and Energy Transfer's Transwestern Pipeline systems. The existing transmission pipeline systems in the region of the proposed Project do not directly connect to Double E's proposed markets and delivery points and would require additional construction of facilities to serve the Project's customers. The modification or expansion of another existing or new pipeline system that does not connect at or near the specified receipt and delivery points would likely require construction of pipeline and aboveground facilities with similar or greater environmental impact than Double E's proposal.

We considered Sendero Carlsbad Gateway, LLC's[23] Gateway Project as a potential system alternative to the proposed Project. The Gateway Project recently began construction in October 2019 with a capacity of 400 million cubic standard feet from Gateway's newly expanded Carlsbad cryogenic gas processing plant to the Agua Blanca interstate pipeline owned by White Water Midstream, LLC. The Project consists of 23 miles of 24-inch-diameter pipeline, a meter station, and appurtenant facilities in Eddy County, New Mexico and Culberson County, Texas. Similar to Double E's Project purpose, the Gateway Project will alleviate natural gas supply delivery constraints in southeast New Mexico. The Gateway Project will provide transportation capacity for residue gas from Sendero Midstream LLC's existing and expanded processing operations. Since this Sendero new pipeline is fully subscribed, it has no further capacity to transport the gas volumes as proposed for the Double E Pipeline Project. To consider the Gateway Project as an alternative, Gateway would require substantial construction of pipeline laterals or looping,[24] along with new pipeline laterals extending to Double E's proposed delivery points. Thus, we removed the Gateway's Pipeline Project as a system alternative from further consideration. Further, no other FERC jurisdictional projects are available or proposed to bring natural gas supplies from the Delaware Basin to the Waha Hub. Therefore, we did not find that expansion of another existing pipeline system or new pipeline proposal could meet the

[23] Sendero Carlsbad Gateway, LLC is a subsidiary of Sendero Midstream, LLC.

[24] A loop is a segment of pipe that is installed adjacent to an existing pipeline and connected to it at both ends. A loop generally allows more gas to move through the system.

Project objectives without construction with similar or greater environmental impacts than the proposed Project.

The Project has a firm purchaser commitment and can meet the demand sooner than a hypothetical project not yet planned or committed. Further, the proposed Project route was selected to minimize environmental impacts to the greatest extent possible while routing along existing rights-of-way to limit the need for construction on undisturbed lands.

3. Route Alternatives and Route Variations

Route alternatives include those that deviate from the proposed route for a significant distance and provide a substantially different pathway from the source area to the delivery area. Major route alternatives would involve a new pipeline route that would still interconnect with the same existing pipeline systems, potentially at different locations. Minor route variations typically involve minor shifts in the pipeline alignment to avoid a site-specific resource issue or concerns and are generally smaller in scale and shorter than major route alternatives.

As discussed in detail in section A.4 (and table A-1) of this EA, during the pre-filing process, Double E made multiple modifications and line shifts to the originally considered or planned pipeline route and aboveground components to address agency and landowner concerns, as well as to avoid or minimize impacts on resources, such as waterbodies, cultural resource sites, or sensitive wildlife or plant species. The majority of the route changes were made to avoid conflicts with existing or planned land uses or to increase the distance of the pipeline route from sensitive resources or other infrastructure. These changes were subsequently made part of Double E's proposed route when it filed its FERC application. As such, these are considered part of the proposed Project and included in our environmental evaluation of the Project in section B of this EA.

In addition, in a supplement filed on November 6, 2019, Double E identified additional route variations/modifications that were incorporated into the proposed route since the July 31, 2019 filing. These are modifications are identified in table A-1, and include Route Alternative T200-R1 from MPs 61.6 through 69.8 in Loving County, Texas. We evaluated these and found them acceptable.

Double E plans to locate about 72 percent of the pipeline parallel and adjacent to existing utility (pipeline, public/lease roads, and electric transmission) rights-of-way/corridors along the route. Further, we did not receive any site-specific comments or concerns from stakeholders regarding the Project site or route alternatives subsequent to the revisions made by Double E and discussed above and in section A.4.

4. Alternatives Conclusion

Our review of the proposed Project found that most environmental impacts associated with the Project have been adequately avoided or minimized with measures proposed by Double E. Double E has incorporated multiple modifications and line shifts to the proposed pipeline routes and aboveground facilities to address agency and landowner concerns, as well as to avoid or minimize impacts on resources, such as waterbodies, cultural resource sites, or sensitive wildlife or plant species. We have made additional recommendations, as warranted, to further

reduce environmental impacts associated with the Project. The BLM has done likewise. With the measures outlined in this EA, along with our recommended mitigation measures identified in section E, we find that the Double E's Project as currently proposed, is the preferred alternative that can meet the Project's objectives.

D. BLM Conclusions and Recommendations

The Double E Pipeline Project traverses about 46.1 miles of federal lands managed by the BLM in New Mexico. The BLM staff has received an application from Double E for a federal Right-of-Way Grant. BLM staff has also received from Double E numerous environmental reports, including cultural resources, karst geological conditions, soils, and habitat and species surveys pertaining to the resources that would be affected on BLM-managed federal lands.

Additional measures may be required as a condition of the decision to approve a Right-of-Way Grant, as well as incorporated into the Project implementation plans. The BLM's final decision does not authorize Double E to commence construction of any Project facilities or proceed with other ground-disturbing activities in connection with the Project on federal lands until the BLM, in accordance with 43 CFR 2807.10, issues a written Notice to Proceed, which would consist of separate work authorizations (issued as separate Notices to Proceed). Before the BLM issues a Notice to Proceed, Double E would prepare, among other items, a final Project Plan of Development that includes final engineering and design drawings. The Project Plan of Development would need to demonstrate satisfaction of the required mitigation identified in the BLM's Decision and consistent with mitigation guidance and application of the mitigation hierarchy identified by the CEQ (40 CFR 1508.20). Measures considered to avoid, minimize, or mitigate potential environmental and cultural resource impacts include Double E's committed environmental protective measures developed through the NEPA process.

The BLM and Double E have been consulting on the proposed Project, and Double E has committed to taking a number of measures to avoid or minimize impacts to land, facilities, and species on BLM-managed land. However, in the course of developing this EA, BLM staff identified the following additional recommendations to minimize impacts on permitted uses of the managed land, and on species:

1. Where the Project crosses a grazing allotment, Double E must contact the allotment holder prior to construction to identify the location of any livestock water pipelines. Double E must take measures to protect the water pipeline from compression or other damages its during construction activities. If the water pipeline is damaged as a result its oil and gas activity, Double E is responsible for repairing the pipeline immediately. Double E must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any Project-related damage occurs to structures that provide water to livestock.
2. In order to protect shorebirds during nesting, no construction should take place from May 1st to August 31st within 200 meters of any salt playas.

E. FERC Staff Conclusions and Recommendations

Based on the analysis presented in this EA, we conclude that if Double E constructs and operates the proposed facilities in accordance with its application and supplements, and our recommended mitigation measures, approval of this proposal would not constitute a major federal action significantly affecting the quality of the human environment. We recommend that the FERC Order contain a finding of no significant impact and include the mitigation measures listed below as conditions to any Certificate FERC may issue.

1. Double E shall follow the construction procedures and mitigation measures described in its application and supplements, including responses to staff data requests and as identified in the EA, unless modified by the Order. Double E must:
    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
    b. justify each modification relative to site-specific conditions;
    c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
    d. receive approval in writing from the Director of OEP **before using that modification**.

2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the Project. This authority shall allow:

    a. the modification of conditions of the Order;
    b. stop work authority; and
    c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from project construction and operation.

3. **Prior to any construction**, Double E shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EI, and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EA, as supplemented by filed alignment sheets. **Before the start of construction**, Double E shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

Double E's exercise of eminent domain authority granted under NGA section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Double E's right of eminent domain granted under NGA section 7(h) does not authorize it to increase the size of its natural gas pipelines to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Double E shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

   This requirement does not apply to extra workspace allowed by the Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan* and/or minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

   Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

   a. implementation of cultural resources mitigation measures;
   b. implementation of endangered, threatened, or special concern species mitigation measures;
   c. recommendations by state regulatory authorities; and
   d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of the authorization and before construction begins**, Double E shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. Double E must file revisions to the plan as schedules change. The plan must identify:

   a. how Double E will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;
   b. how Double E will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
   c. the number of EIs assigned per spread, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;

d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
e. the location and dates of the environmental compliance training and instructions Double E will give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change), with the opportunity for OEP staff to participate in the training session(s);
f. the company personnel (if known) and specific portion of Double E's organization having responsibility for compliance;
g. the procedures (including use of contract penalties) Double E will follow if noncompliance occurs; and
h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

(1) the completion of all required surveys and reports;
(2) the environmental compliance training of onsite personnel;
(3) the start of construction; and
(4) the start and completion of restoration.

7. Double E shall employ a team of (i.e., two or more or as may be established by the Director of OEP) EIs per construction spread. The EIs shall be:

a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition (6) above) and any other authorizing document;
c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
d. a full-time position, separate from all other activity inspectors;
e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, Double E shall file updated status reports with the Secretary on a **biweekly** basis until all construction and restoration activities are complete. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports must include:

a. an update on Double E's efforts to obtain the necessary federal authorizations;
b. the construction status of each spread, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally-sensitive areas;
c. a listing of all problems encountered and each instance of noncompliance observed by the EI(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);

d. a description of the corrective actions implemented in response to all instances of noncompliance;
e. the effectiveness of all corrective actions implemented;
f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
g. copies of any correspondence received by Double E from other federal, state, or local permitting agencies concerning instances of noncompliance, and Double E's response.

9. Double E must receive written authorization from the Director of OEP **before commencing construction of any project facilities**. To obtain such authorization, Double E must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. Double E must receive written authorization from the Director **of OEP before placing the Project into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas affected by the Project are proceeding satisfactorily.

11. **Within 30 days of placing the authorized facilities in service**, Double E shall file an affirmative statement with the Secretary, certified by a senior company official:
    a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
    b. identifying which of the conditions in the Order Double E has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

12. **Prior to construction**, Double E shall file with the Secretary and the BLM project-specific justification for its plan to pack segregated topsoil along the right-of-way to minimize wind erosion. Double E shall address the potential for topsoil mixing if decompaction measures are necessary. Double E **shall not** pack segregated topsoil piles **unless** it has received written approval from the Director of OEP to incorporate this measure into its E&SC Plan.

13. **Prior to any HDD construction**, Double E shall file with the Secretary, for review and written approval by the Director of OEP, a listing of all drilling fluid additives that may be used during HDD activities, along with their respective safety data sheets, and indicate the ecotoxicity of each additive to the identified toxicity for relevant biotic receptors (e.g., fish). Double E shall also identify whether the additives are non-petrochemical-based, non-hazardous, and NSF International/American National Standards Institute (NSF/ANSI) 60 Drinking Water Treatment Chemicals – Health Effects compliant.

14. Double E shall **not begin** construction activities **until**:

a. FERC staff receives comments from the USFWS regarding the proposed action;
b. FERC staff completes ESA consultation with the USFWS; and
c. Double E has received written notification from the Director of OEP that construction or use of mitigation may begin.

15. Double E shall **not begin** construction of facilities and/or use of staging, storage, or temporary work areas, and new or to-be-improved access roads **until**:
    a. Double E files with the Secretary:
        (1) the Texas SHPO's comments on the revised treatment plan for 41LV154 and 41LV170;
        (2) any comments on the most recent filed final cultural resources reports from the New Mexico SHPO, NMSLO and BLM, as appropriate; and
        (3) comments on the revised avoidance/treatment plans from the New Mexico and Texas SHPOs, NMSLO, and BLM, as appropriate.
    b. the Advisory Council on Historic Preservation is afforded an opportunity to comment if historic properties would be adversely affected; and
    c. FERC staff reviews and the Director of OEP approves the cultural resources reports and plans, and notifies Double E in writing that treatment plans/mitigation measures (including archaeological data recovery) may be implemented and/or construction may proceed.

    All materials filed with the Commission containing **location, character, and ownership information** about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "**CUI//PRIV - DO NOT RELEASE**."

16. **Prior to construction of the Line T200 HDD at MPs 96.9 and 97.2**, Double E shall file with the Secretary a HDD noise analysis identifying the existing and projected noise levels at the NSA within 0.5 mile of the HDD entry and exit site. If noise attributable to the HDD is projected to exceed an L_{dn} of 55 dBA at the NSA, Double E shall file with the noise analysis a mitigation plan to reduce the projected noise levels, for review and written approval by the Director of OEP. **During drilling operations**, Double E shall implement the approved plan, monitor noise levels and report them in the biweekly construction status reports, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSA.

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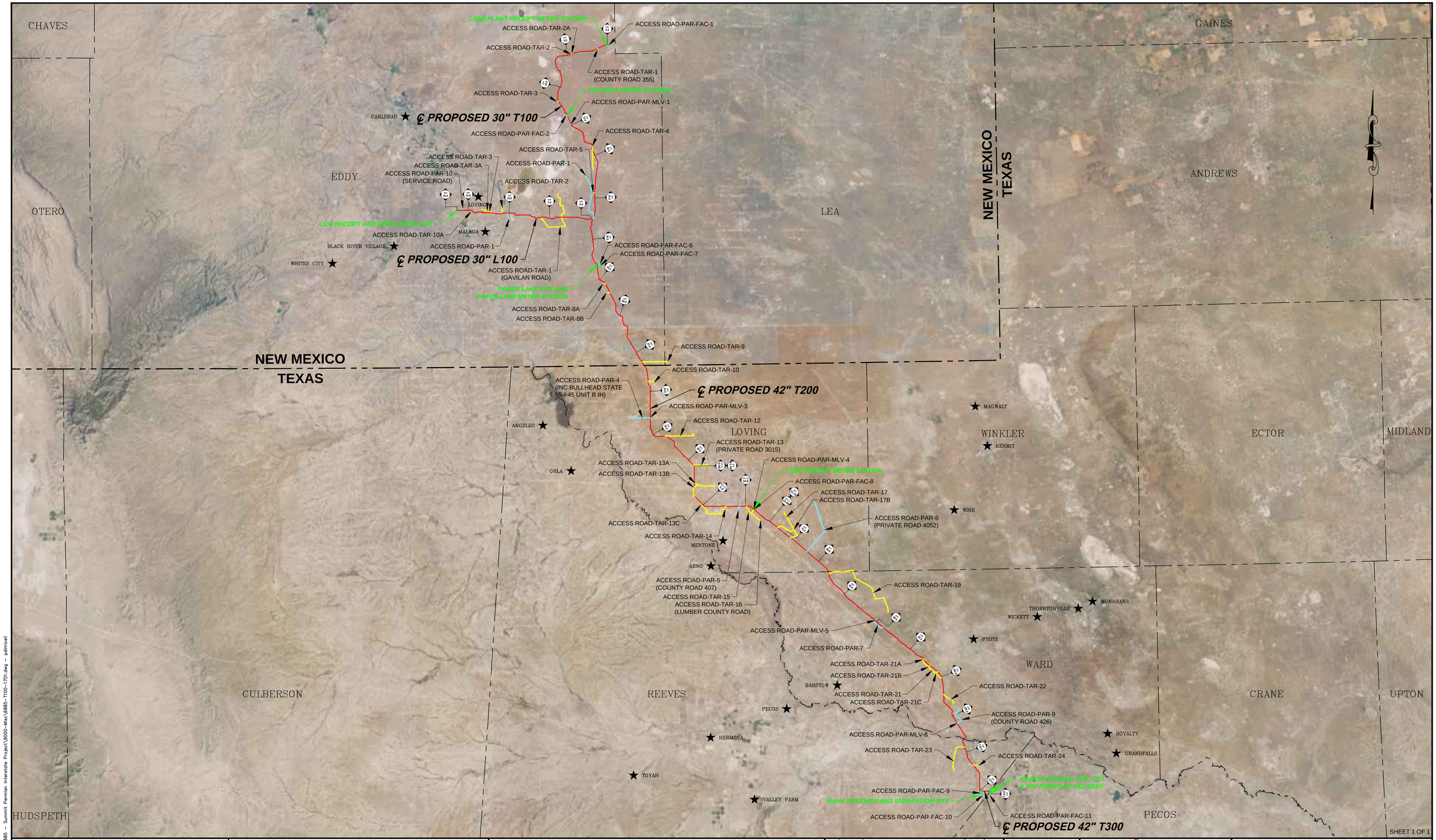
McCormick Taylor, Insignia Environmental, Caddis Environmental and R.C. Goodwin and Associates are a third-party contractor team assisting the Commission staff in reviewing the environmental aspects of the project application and preparing the environmental documents required by NEPA. Third-party contractors are selected by Commission staff and funded by project applicants. Per the procedures in 40CFR 1506.5(c) third party contractors execute a disclosure statement specifying that they have no financial or others 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.

Appendix A
Detailed Maps and Figures



SHEET 1 OF 1

September 20 2019 - 1:16pm - Z:\6885 - Summit Permian Interstate Project\9000-Misc\6885-T100-1701.dwg - pdinicell

MATERIAL SUMMARY

NO.	DESCRIPTION	QTY.
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REFERENCE DRAWINGS

DWG. NO	DRAWING TITLE

LEGEND

- ACCESS ROAD
- X — FENCE
- FOC — FIBER OPTIC CABLE
- FOREIGN PIPELINE
- LIMITS OF DISTURBANCE
- E — OVERHEAD ELECTRIC
- P — OVERHEAD POWER
- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED PIPELINE
- STREAM
- W — WATER LINE
- ADDITIONAL TEMPORARY WORKSPACE
- TEMPORARY WORKSPACE
- TR - NO. TRACT NUMBER
- WETLANDS
- HDD ENTRY / EXIT
- INDUCTION BEND
- MAINLINE VALVE
- MILE POST
- PI
- TL TEST STATION
- WS WARNING SIGN

NO.	DATE	REVISION	BY	APPD.
A	02/01/19	ISSUED FOR INFORMATION	CLR	JWE
B	07/31/19	ISSUED FOR FERC	DM	JWE
C	09/30/19	SUPPLEMENTAL FILING FOR FERC	DM	JW

EnSite USA
3100 SOUTH GESSNER RD.
SUITE 400 HOUSTON, TX
77063 TEL: (713) 456-7880
www.ensiteusa.com

DOUBLE E PIPELINE

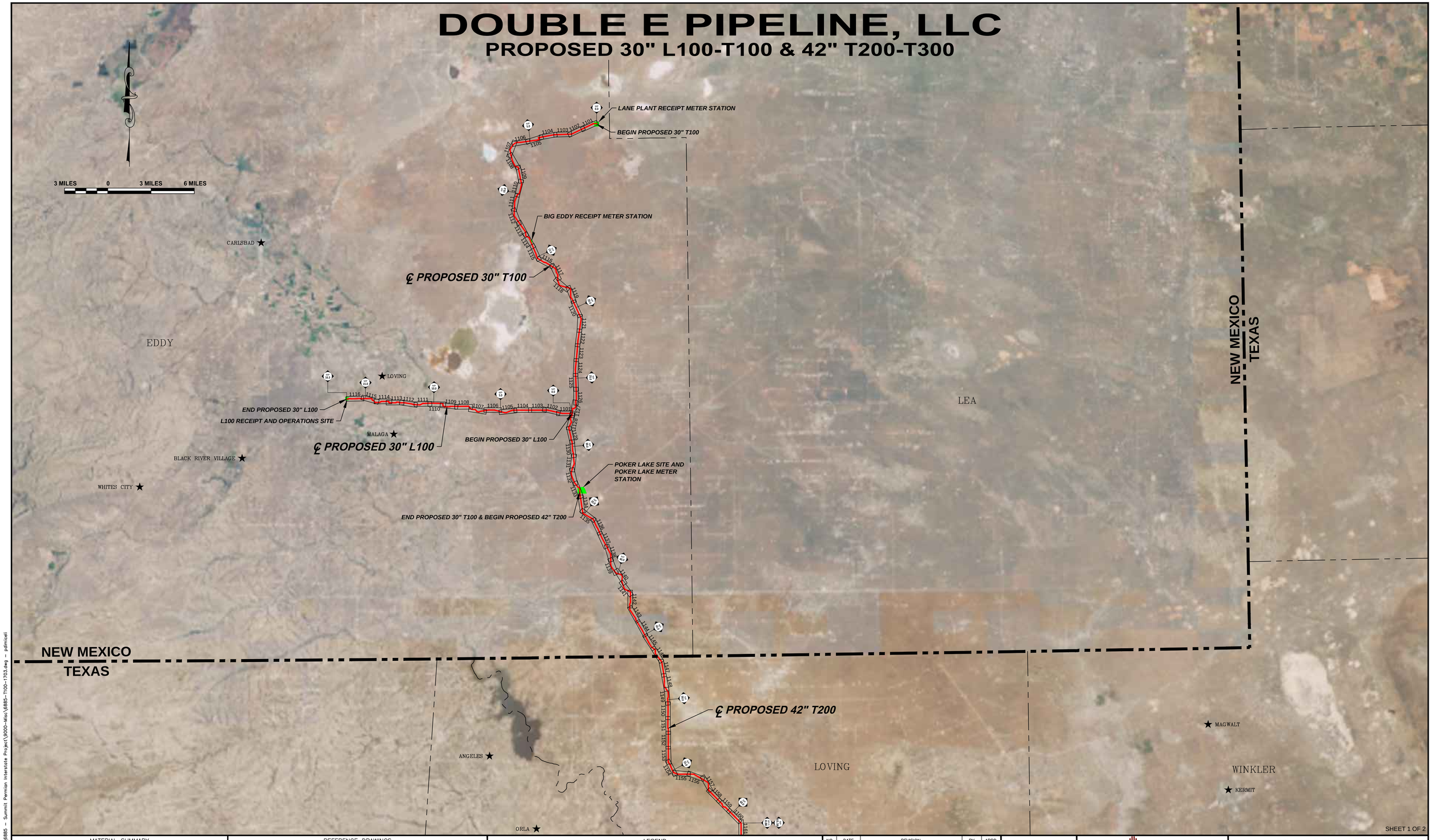
DRAWN BY:	ENSITEUSA	DATE:	02/01/2019
CHECKED BY:	CLR	DATE:	02/01/2019
APPROVED BY:	JWE	EPO APPROVAL:	
SCALE:	1" = 5 MILES		

DOUBLE E PIPELINE, LLC
PROPOSED 30" L100 & T100, & 42" T200 & T300
OVERALL ACCESS ROAD MAP
M.P. 0.00 TO M.P. 118.89
EDDY COUNTY, NEW MEXICO &
LOVING, WARD, REEVES & PECOS COUNTIES, TEXAS

DRAWING NO:	REV.
6885-T100-1701	C

DOUBLE E PIPELINE, LLC

PROPOSED 30" L100-T100 & 42" T200-T300



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SHEET 1 OF 2

MATERIAL SUMMARY		
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6885-T100-1700	DRAWING INDEX
6885-T100-1704	OVERALL ROUTE MAP SHEET 2 OF 2

LEGEND

- ACCESS ROAD
- X FENCE
- FOC FIBER OPTIC CABLE
- FOREIGN PIPELINE
- LIMITS OF DISTURBANCE
- E OVERHEAD ELECTRIC
- P OVERHEAD POWER
- PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED PIPELINE
- STREAM
- W WATER LINE
- ADDITIONAL TEMPORARY WORKSPACE
- TEMPORARY WORKSPACE
- TR - NO. TRACT NUMBER
- WETLANDS
- HDD ENTRY / EXIT
- INDUCTION BEND
- MAINLINE VALVE
- MILE POST
- PI
- TL TEST STATION
- WS WARNING SIGN

NO.	DATE	REVISION	BY	APPD.
A	10/30/19	ISSUED FOR INFORMATION	DM	JW

EnSiteUSA
3100 SOUTH GESSNER RD
SUITE 400 HOUSTON, TX
77063 TEL: (713) 456-7880
www.ensiteusa.com

DOUBLE E PIPELINE

DRAWN BY:	ENSITEUSA	DATE:	10/30/2019
CHECKED BY:	DM	DATE:	10/30/2019
APPROVED BY:	JW	EPO APPROVAL:	
SCALE:	1" = 3 MILES		

DOUBLE E PIPELINE, LLC
PROPOSED 30" L100-T100 & 42" T200-T300
OVERALL ROUTE MAP
EDDY COUNTY, NEW MEXICO &
LOVING, WARD, REEVES & PECOS
COUNTIES, TEXAS

DRAWING NO:	REV.
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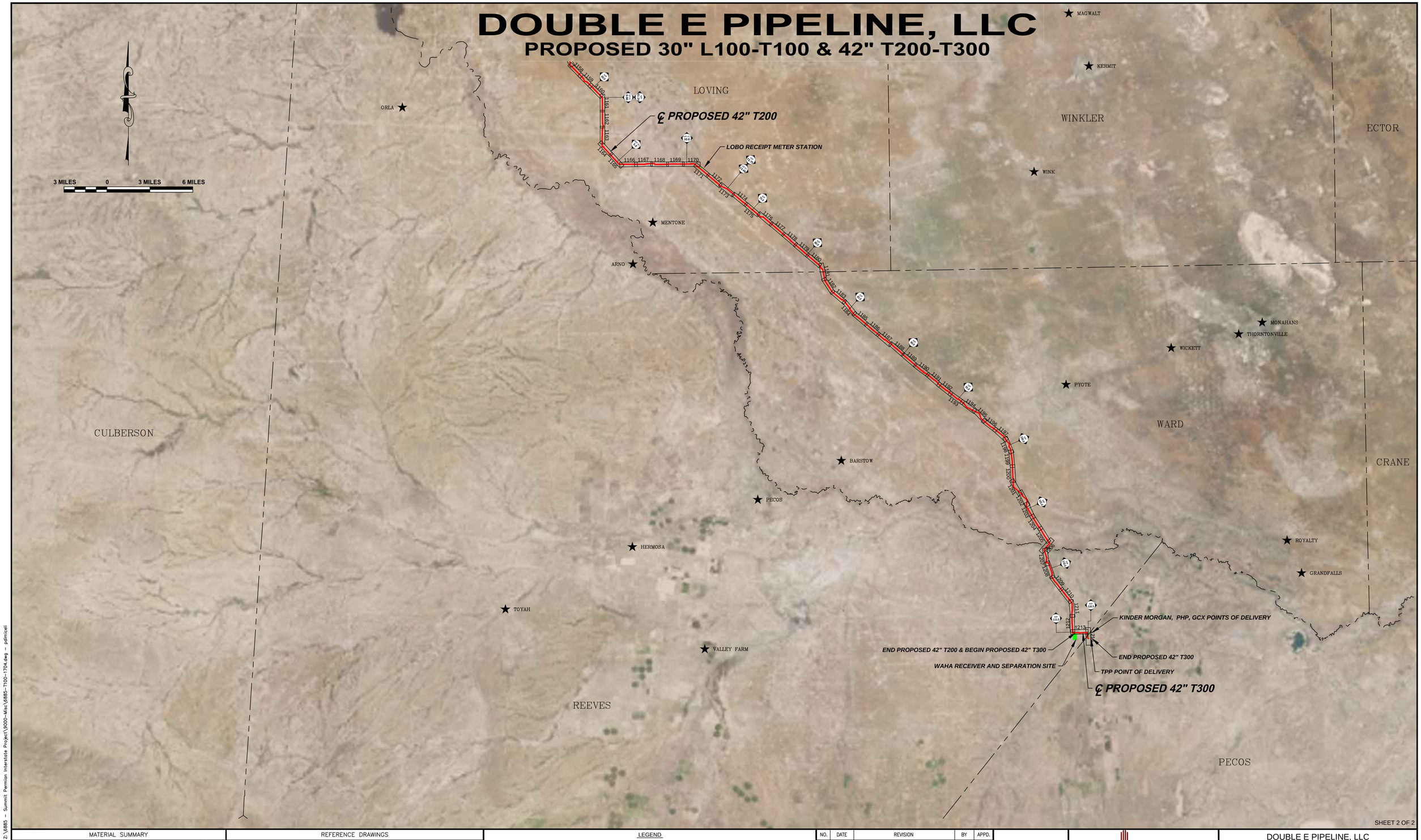
DOUBLE E PIPELINE, LLC

PROPOSED 30" L100-T100 & 42" T200-T300



SHEET 2 OF 2

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MATERIAL SUMMARY

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6885-T100-1700	DRAWING INDEX
6885-T100-1703	OVERALL ROUTE MAP SHEET 1 OF 2

LEGEND

- ACCESS ROAD
- X — FENCE
- FOC — FIBER OPTIC CABLE
- FOREIGN PIPELINE
- LIMITS OF DISTURBANCE
- E — OVERHEAD ELECTRIC
- P — OVERHEAD POWER
- ℄ — PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED PIPELINE
- STREAM
- W — WATER LINE
- ADDITIONAL TEMPORARY WORKSPACE
- TEMPORARY WORKSPACE
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- WETLANDS
- HDD ENTRY / EXIT
- INDUCTION BEND
- MAINLINE VALVE
- MILE POST
- PI
- TL TEST STATION
- WS WARNING SIGN

NO.	DATE	REVISION	BY	APPD.
A	10/30/19	ISSUED FOR INFORMATION	DM	JW

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DOUBLE E PIPELINE

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APPROVED BY:	JW	EPO APPROVAL:	
SCALE:	1" = 5 MILES		

DOUBLE E PIPELINE, LLC
PROPOSED 30" L100-T100 & 42" T200-T300
OVERALL ROUTE MAP
EDDY COUNTY, NEW MEXICO &
LOVING, WARD, REEVES & PECOS
COUNTIES, TEXAS

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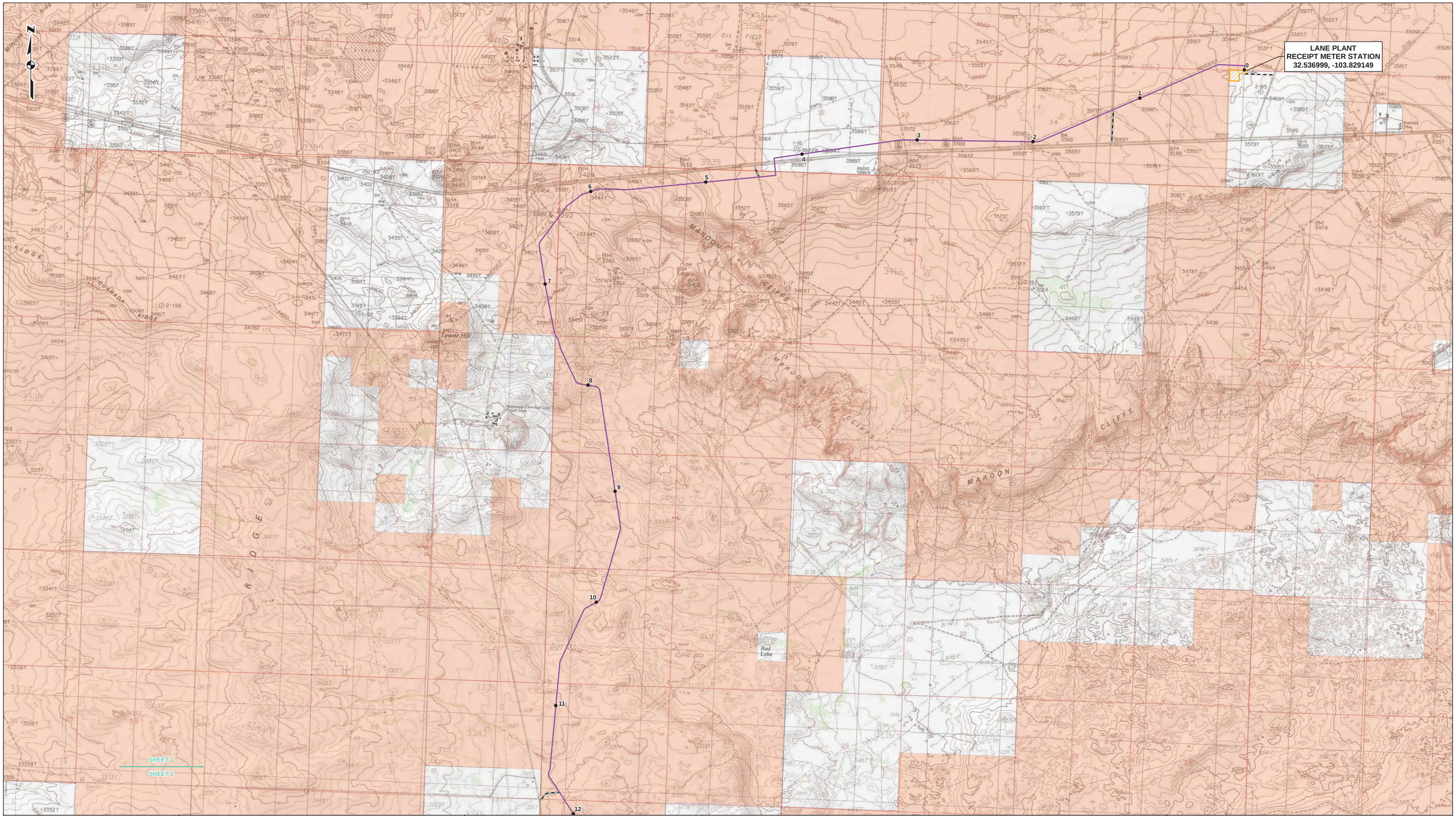

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

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FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 1 OF 17

gai consultants

DOUBLE E
PIPELINE, LLC

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DATE: 7/12/2019
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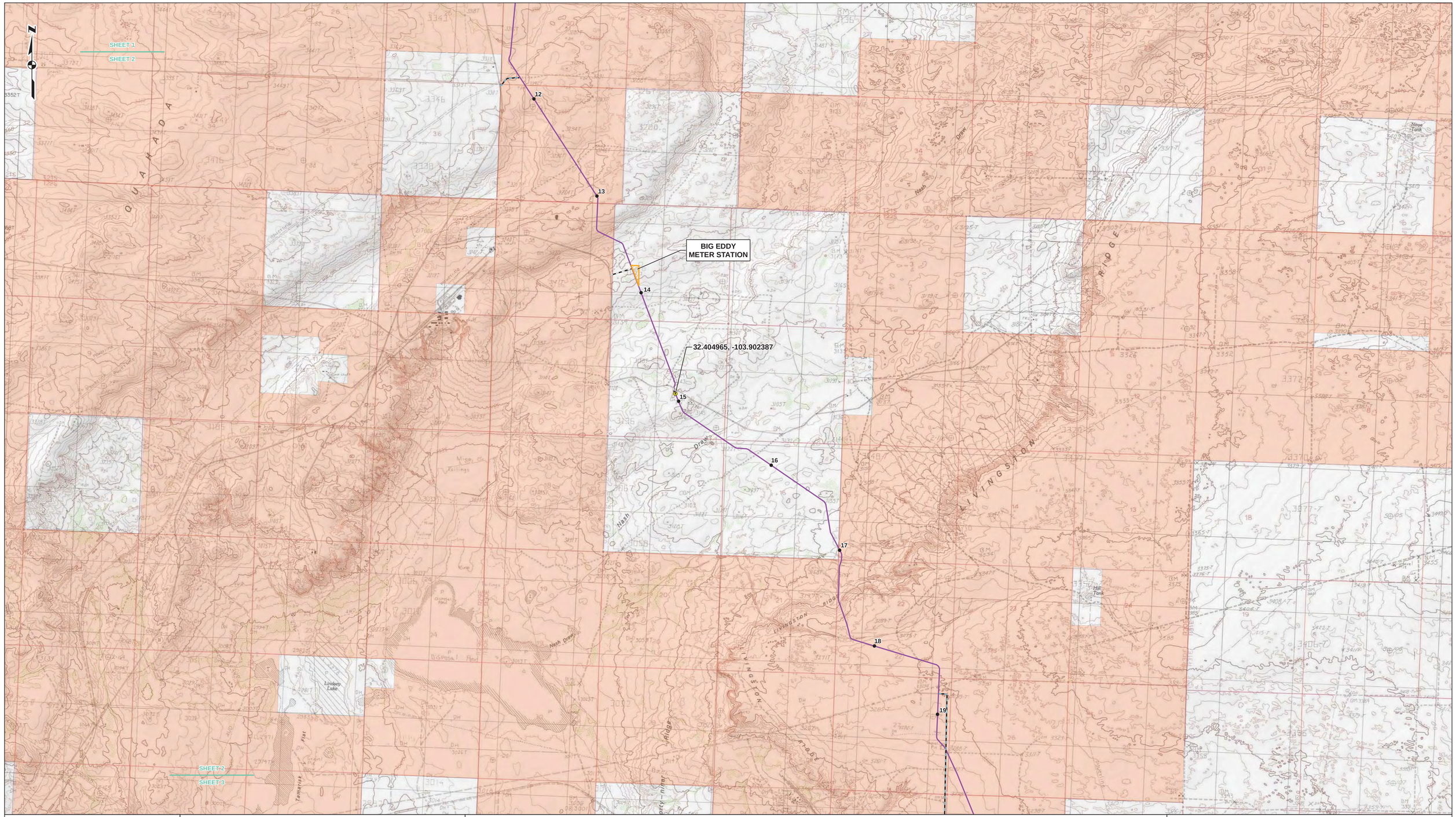

PROJECT LOCATION

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FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 2 OF 17

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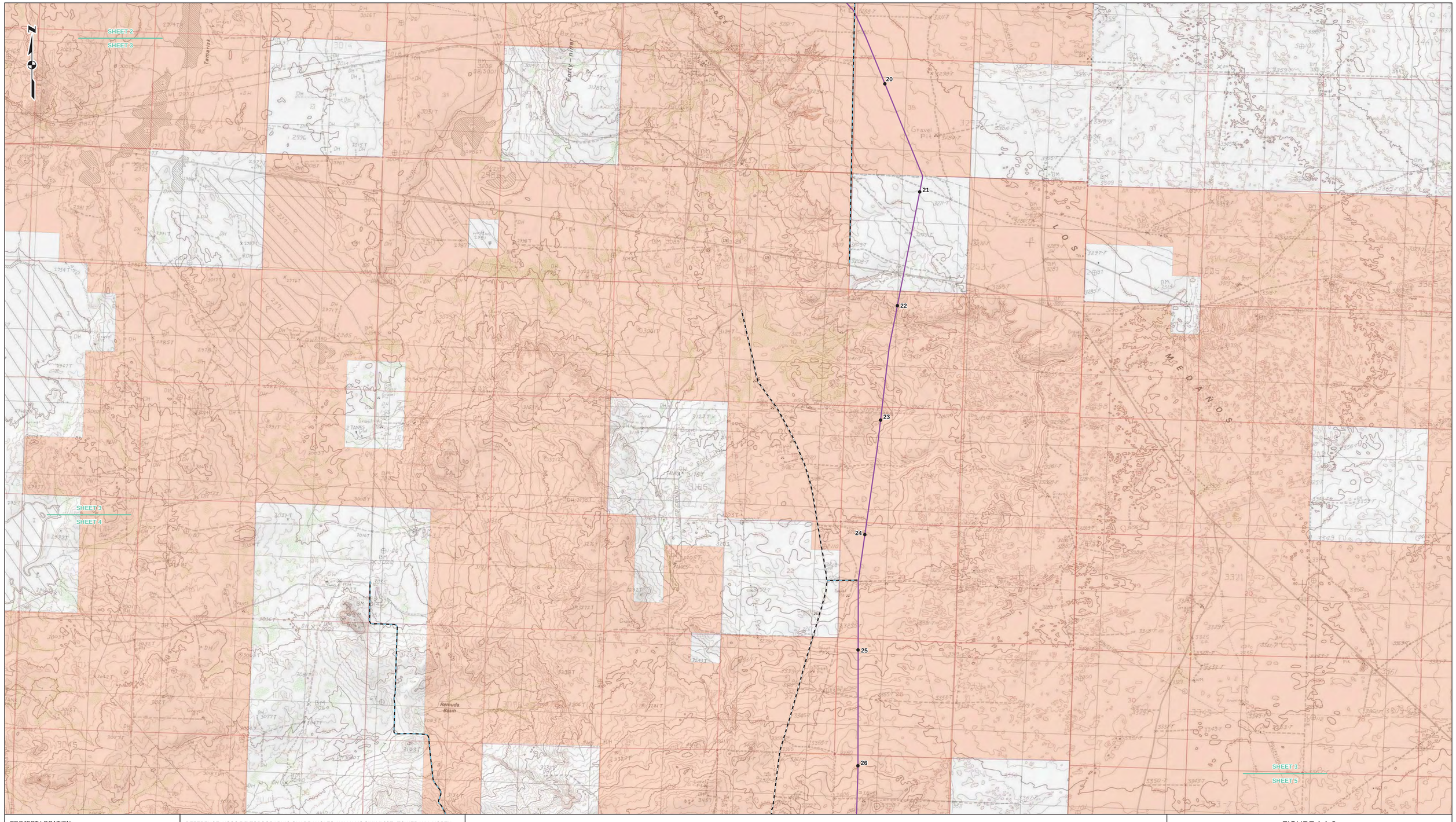

PROJECT LOCATION

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- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
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FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 3 OF 17

gai consultants

DOUBLE E
PIPELINE, LLC

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APPROVED: AML

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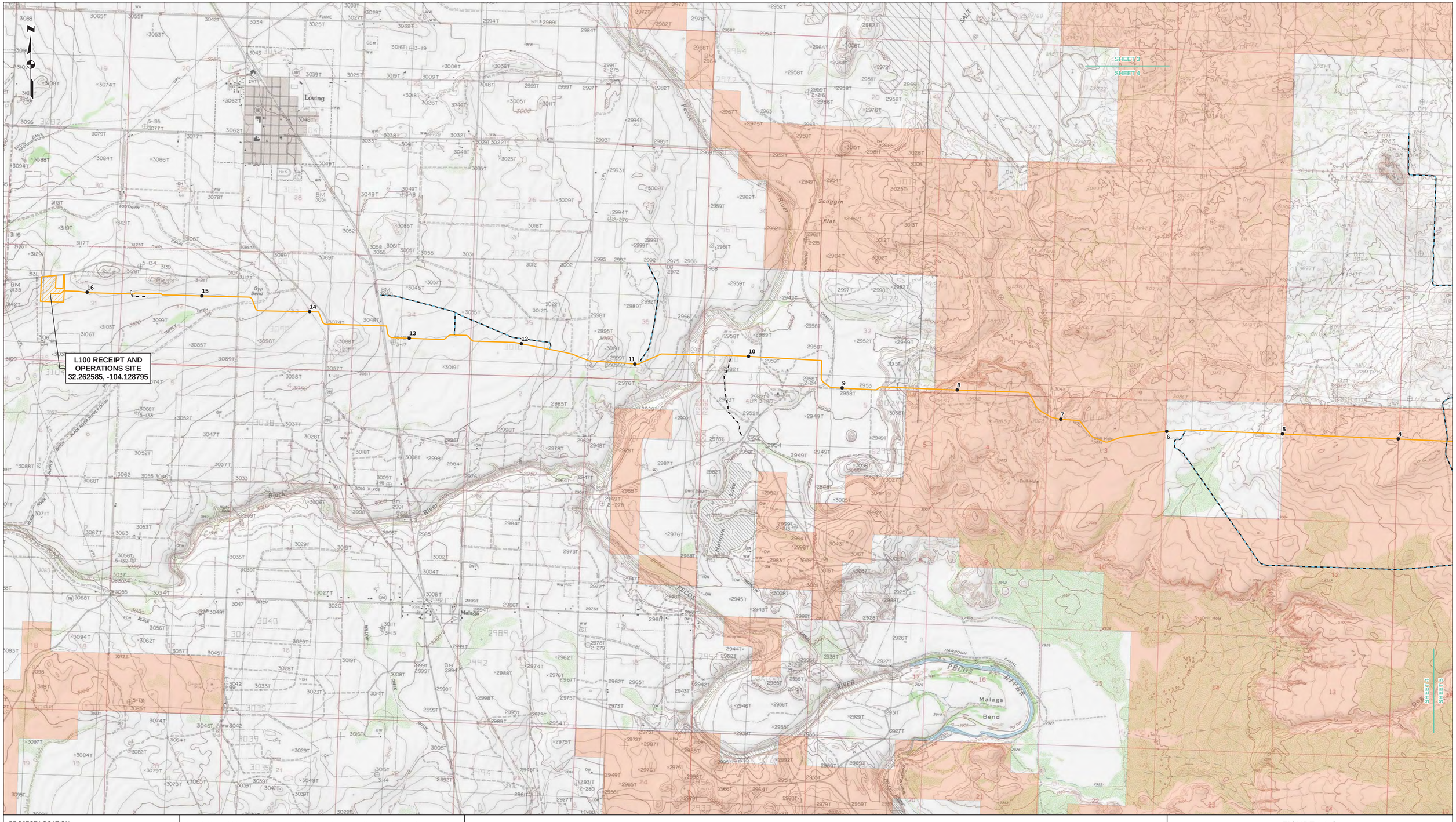

PROJECT LOCATION

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- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

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FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 4 OF 17

gai consultants

DOUBLE E
PIPELINE, LLC

DRAWN BY: KJB
CHECKED: SWW

DATE: 7/12/2019
APPROVED: AML

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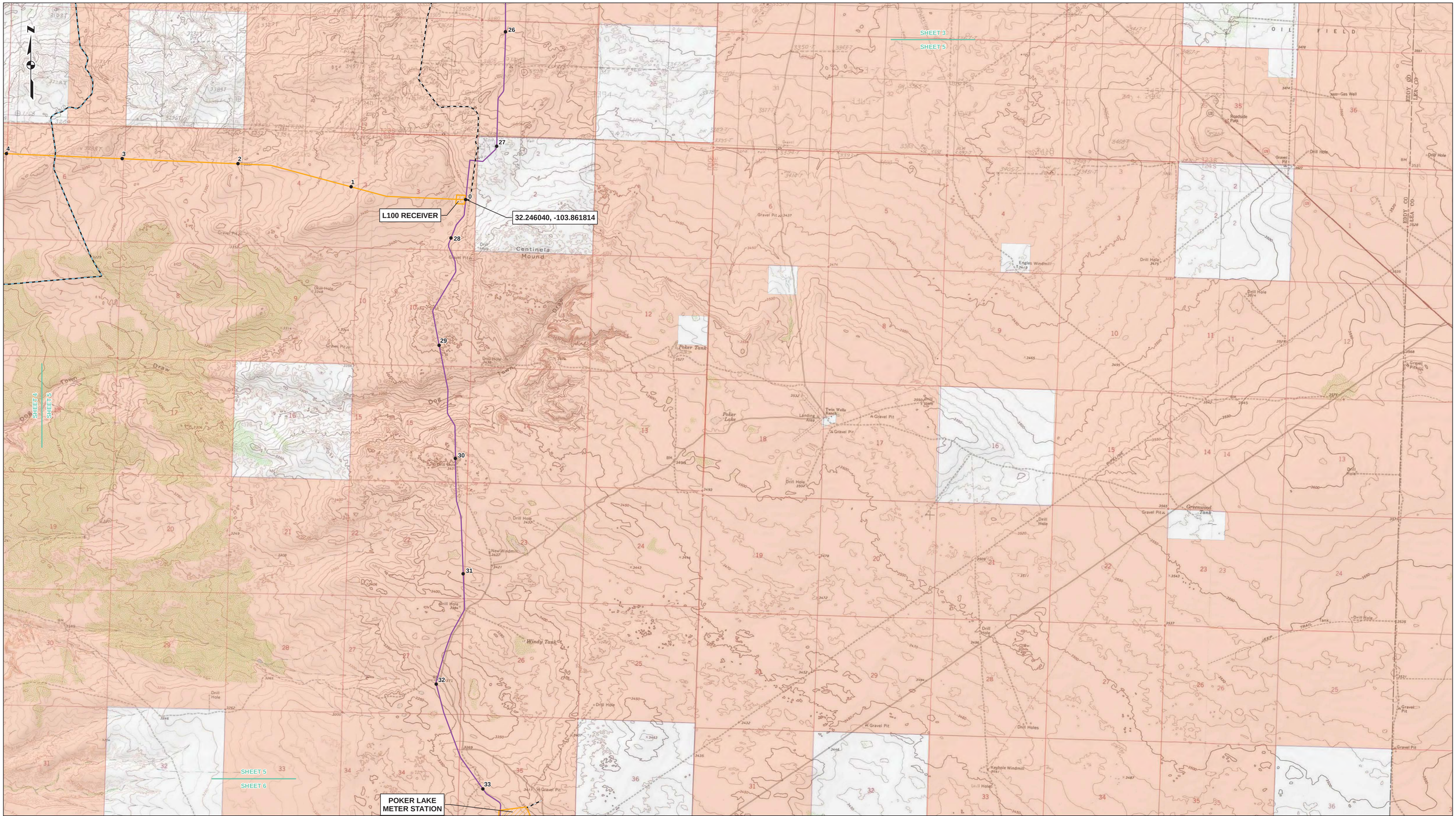

PROJECT LOCATION

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- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 5 OF 17

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DOUBLE E
PIPELINE, LLC

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POKER LAKE METER STATION

33

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SHEET 5

SHEET 6

SHEET 6

SHEET 7

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 6 OF 17

gai consultants

DOUBLE E
PIPELINE, LLC

DRAWN BY: KJB
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DATE: 7/12/2019
APPROVED: AML

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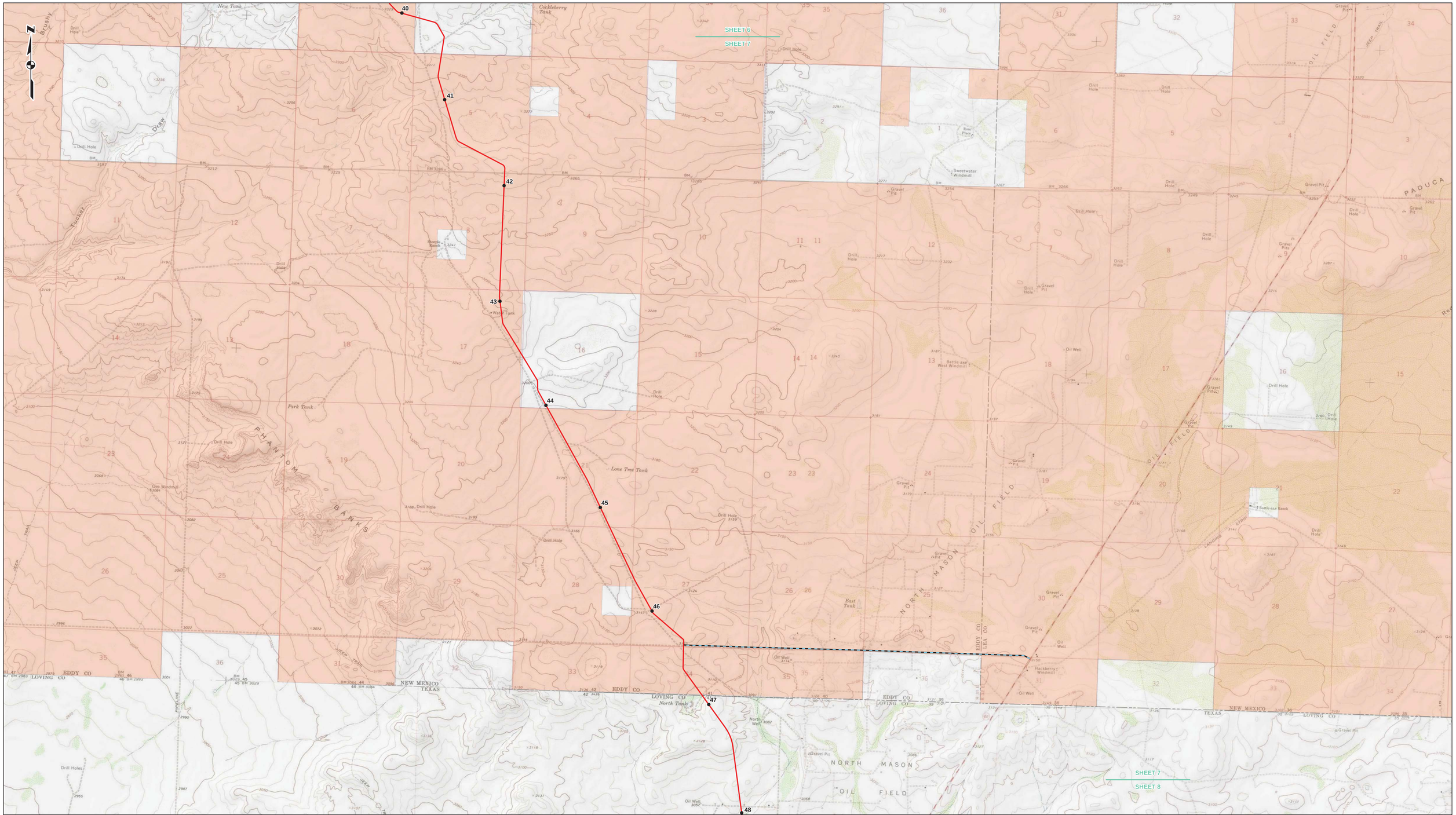

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 7 OF 17

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DOUBLE E
PIPELINE, LLC

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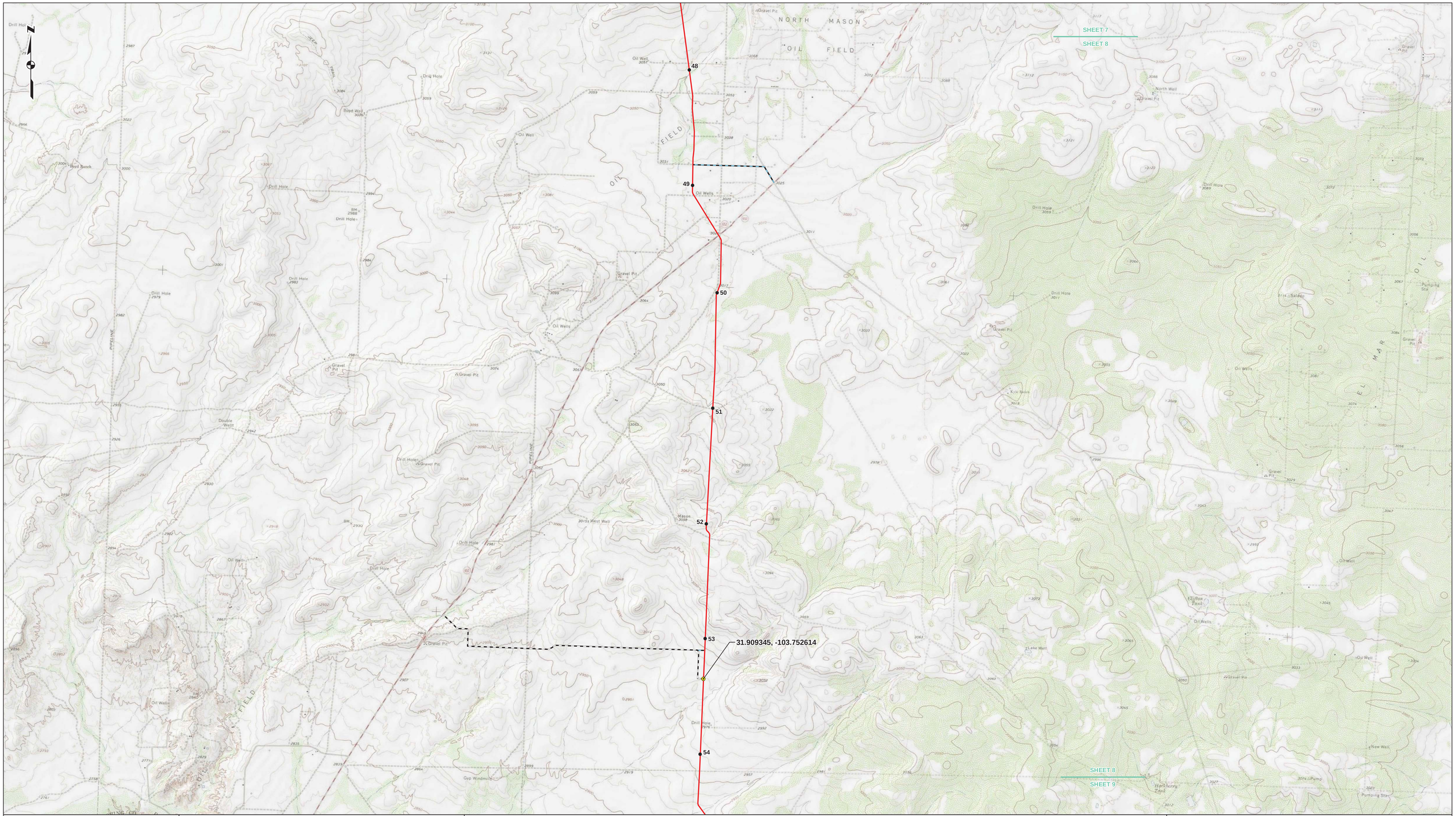

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 8 OF 17

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DOUBLE E
PIPELINE, LLC

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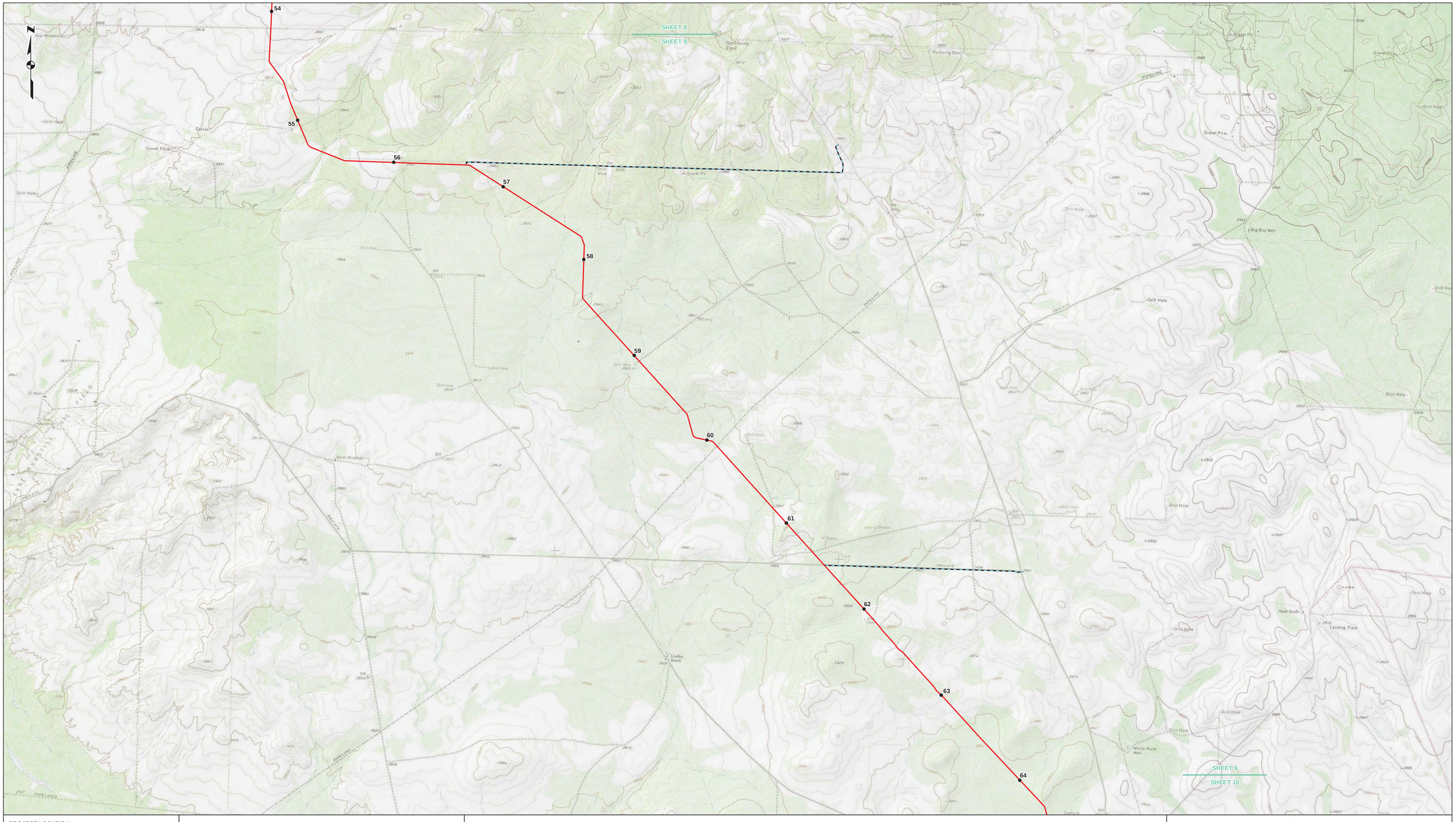

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 9 OF 17

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DOUBLE E
PIPELINE, LLC

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64
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72
73
74
75
31.741312, -103.530656
LOBO RECEIPT METER STATION
SHEET 9
SHEET 10
SHEET 10
SHEET 11
WHEAT OIL FIELD
WHEAT OIL FIELD
Rudd Draw
Rudd Draw
Beacon Light Lake
Rondo Well
Wharff Well
High Lonesome Well
Shallow Water Windmill
West Brookfield Windmill
PECOS
PIPELINE

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 10 OF 17

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DOUBLE E
PIPELINE, LLC

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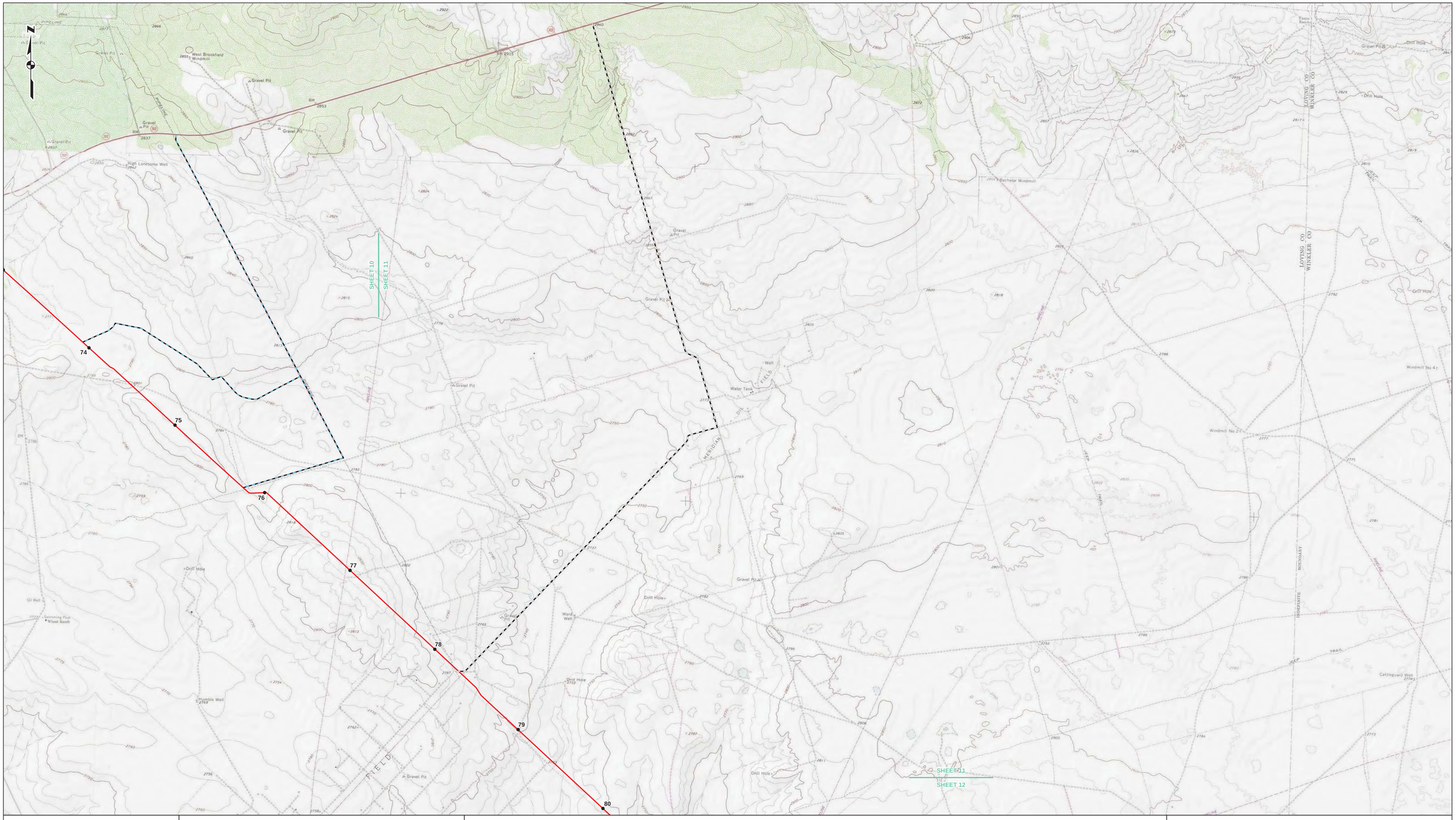

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1995), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 11 OF 17

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DOUBLE E
PIPELINE, LLC

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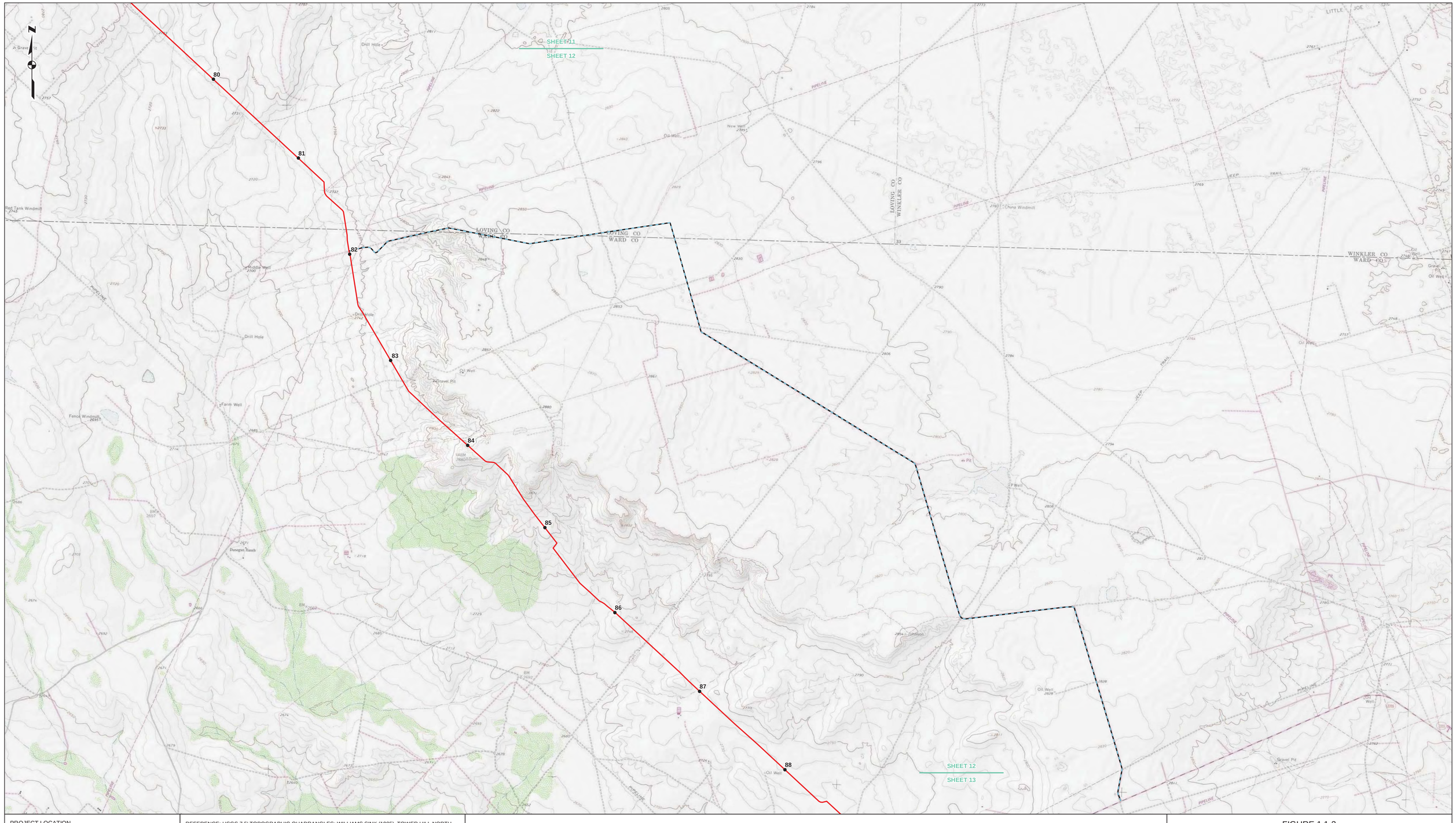

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 12 OF 17

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DOUBLE E
PIPELINE, LLC

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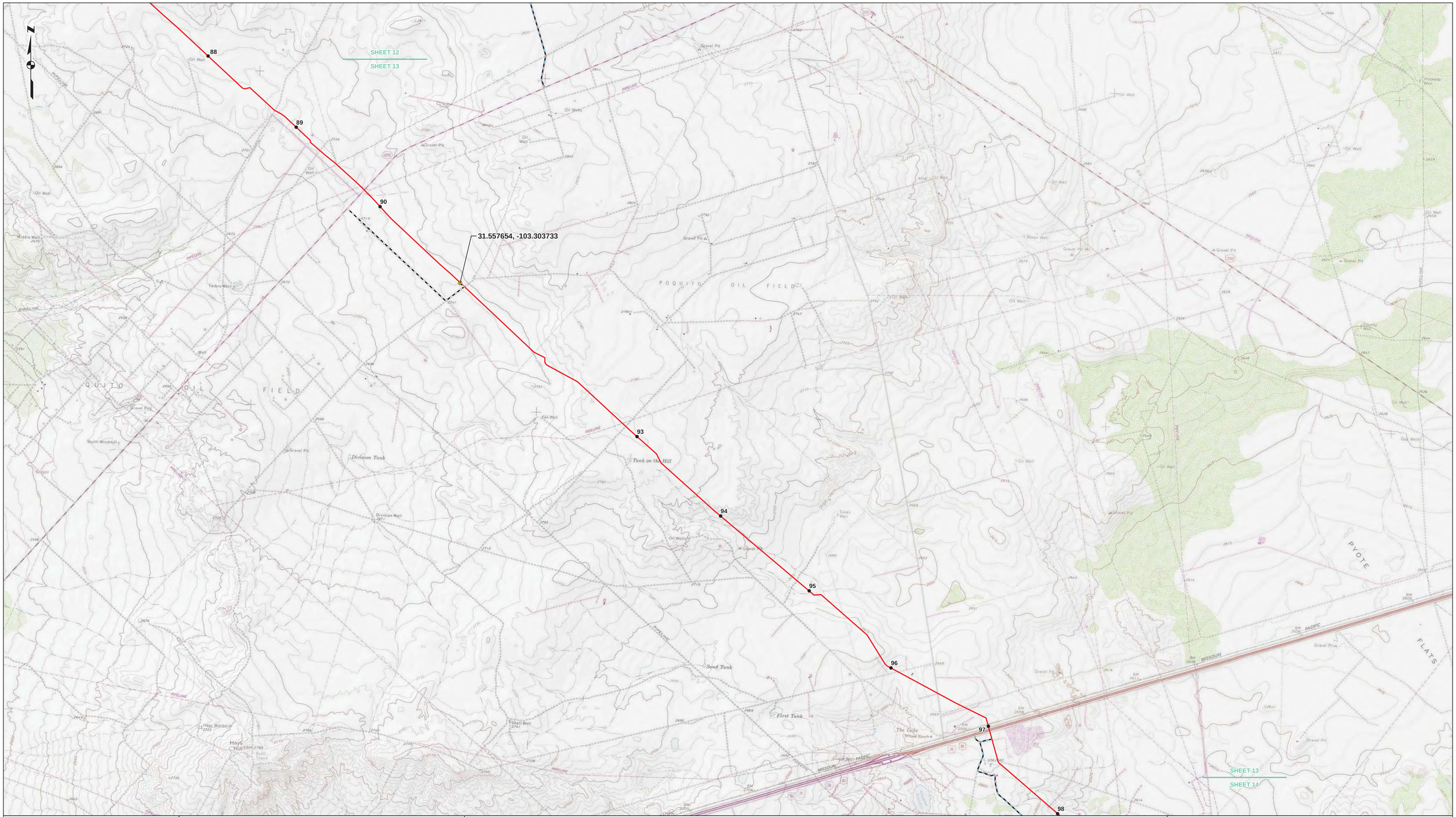

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 13 OF 17

gai consultants

DOUBLE E
PIPELINE, LLC

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DATE: 7/12/2019
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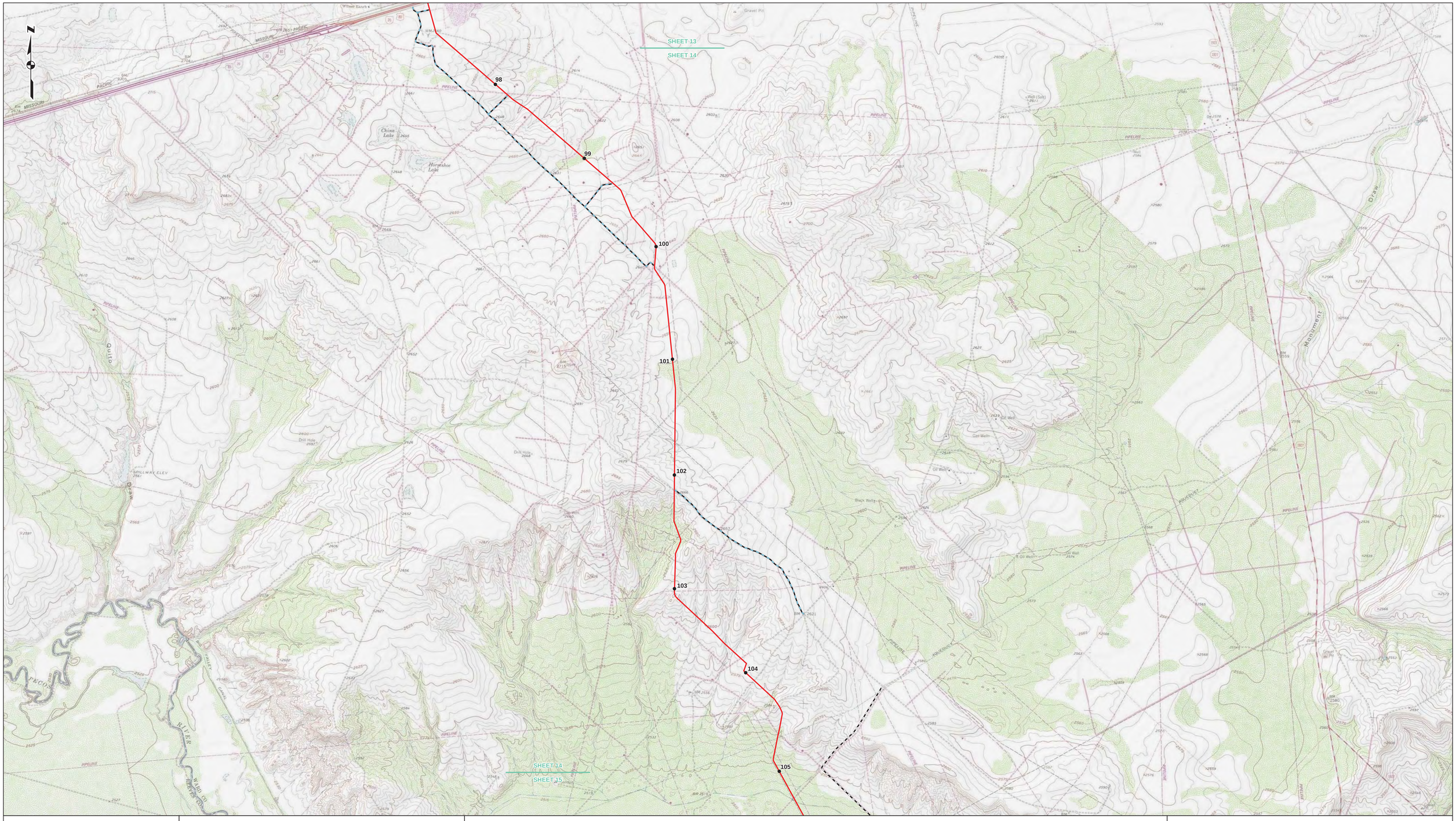

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 14 OF 17

gai consultants

DOUBLE E
PIPELINE, LLC

DRAWN BY: KJB
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DATE: 7/12/2019
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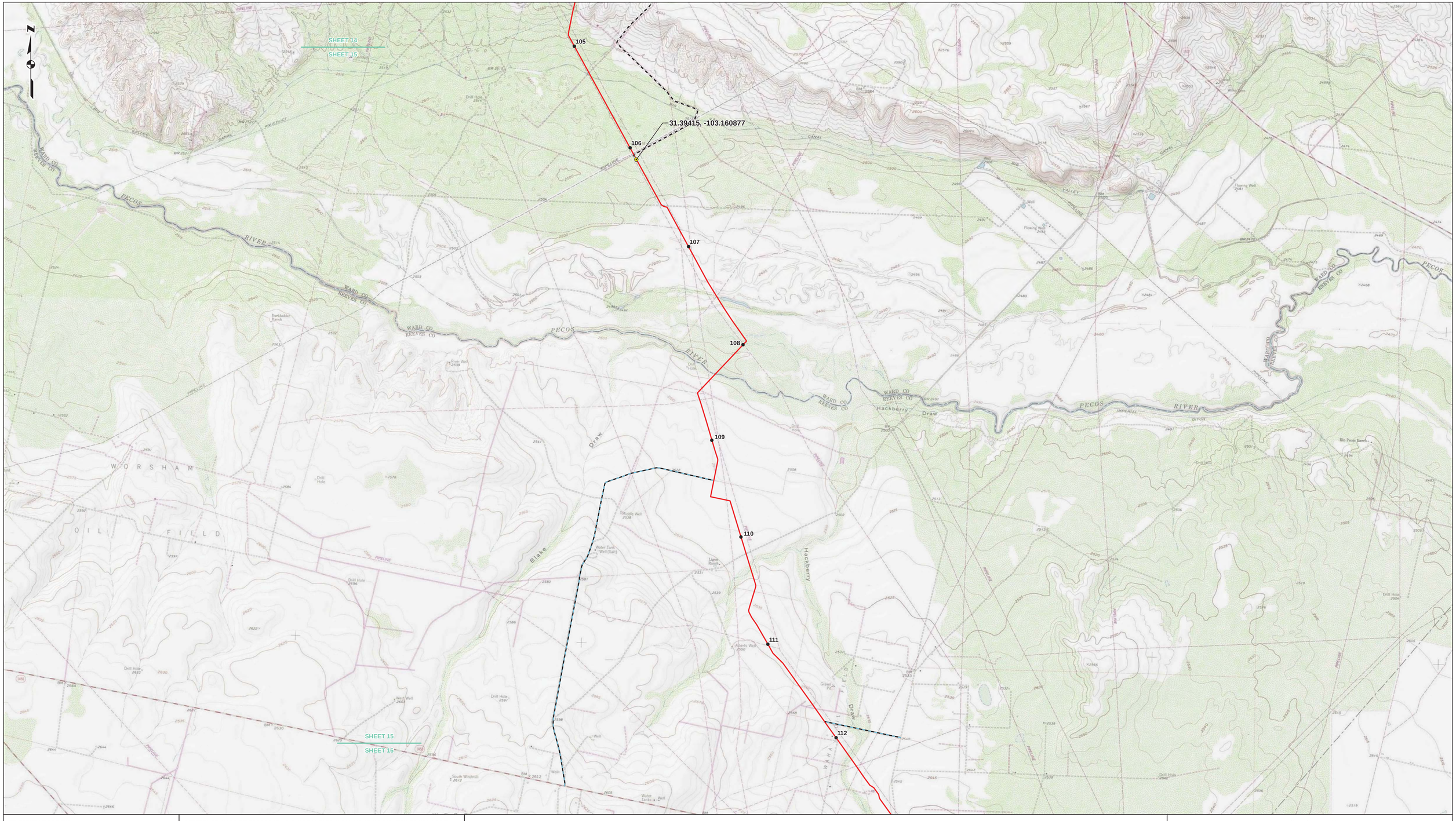

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 15 OF 17

gai consultants

DOUBLE E
PIPELINE, LLC

DRAWN BY: KJB
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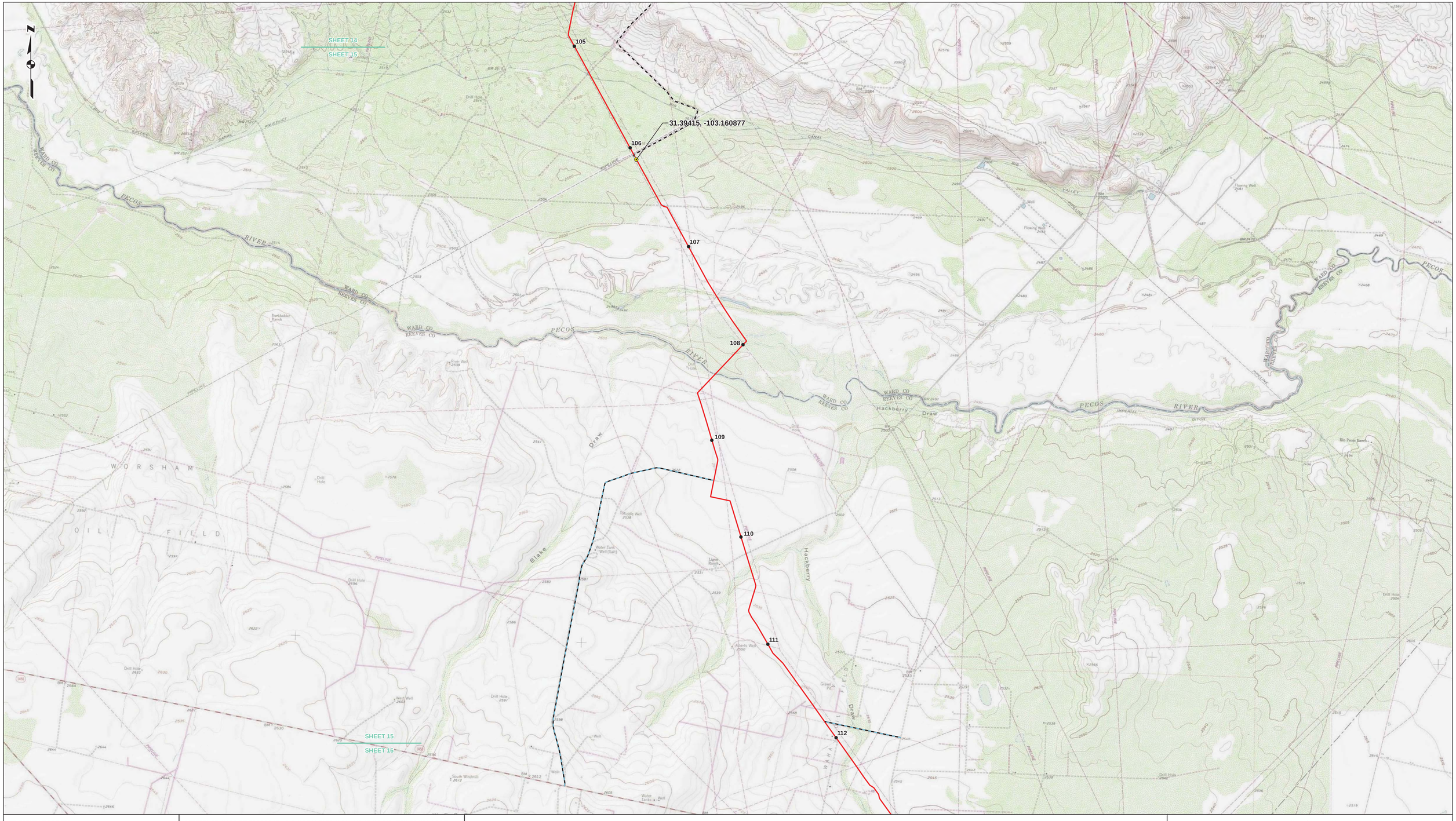

PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 15 OF 17

gai consultants

DOUBLE E
PIPELINE, LLC

DRAWN BY: KJB
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DATE: 7/12/2019
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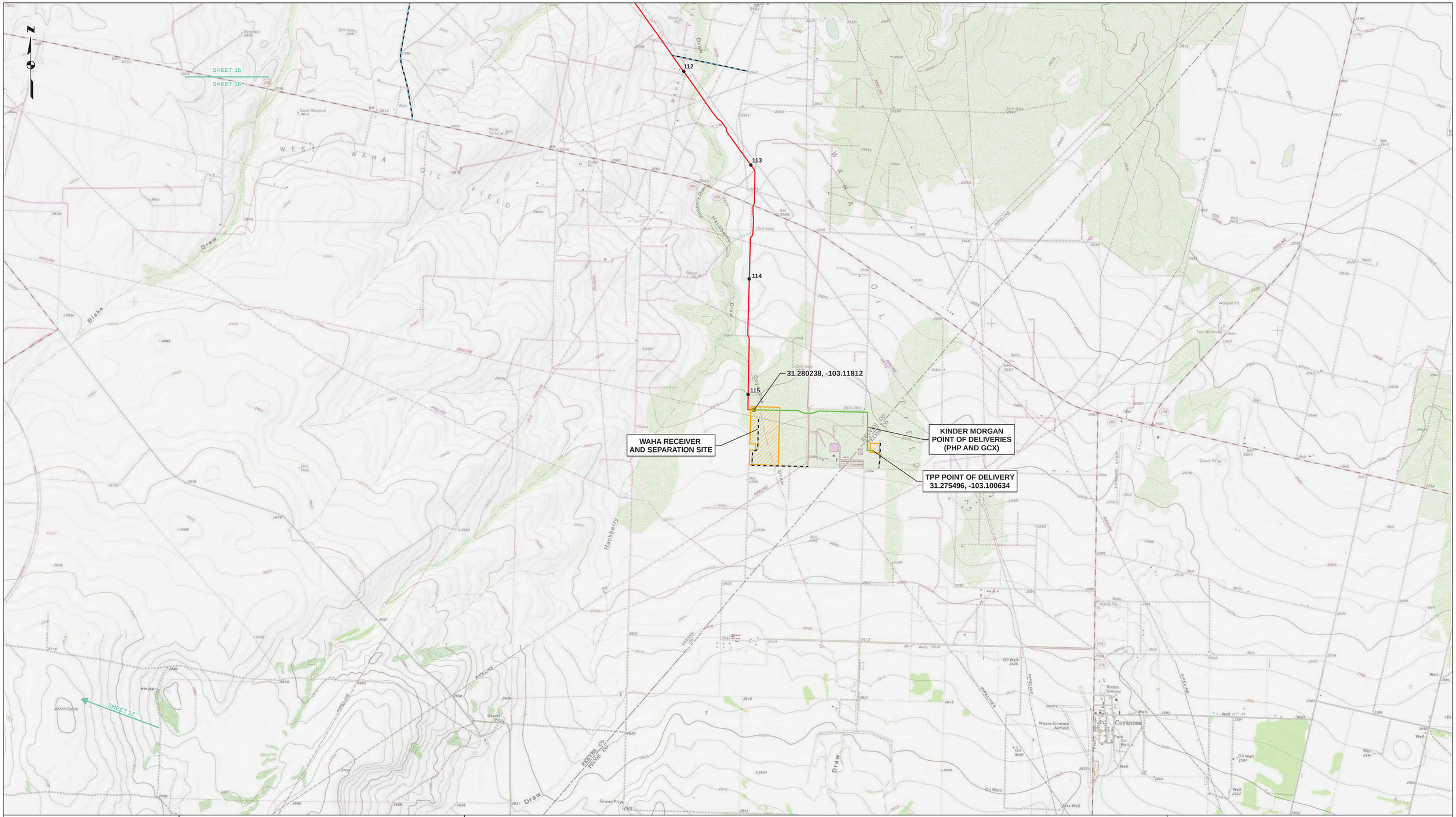


PROJECT LOCATION

EDDY COUNTY, NEW MEXICO AND
LOVING, WARD, PECOS, AND REEVES COUNTIES, TEXAS

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLES: WILLIAMS SINK (1985), TOWER HILL NORTH (1985), TOWER HILL SOUTH (1994), REMUDA BASIN (1985), LOS MEDANOS (1985), PIERCE CANYON (1968), LOVING (1985), OTIS (1985), BIG SINKS (1968), PHANTOM BANKS (1968), AND PADUCA BREAKS WEST (1973), NEW MEXICO, AND ORLA NE (1968), KYLE RANCH (1969), LINDLEY RANCH (1961), RUDD DRAW (1981), MENTONE (1981), CHEYENNE DRAW SW (1979), SODA LAKE NW (1981), SODA LAKE NE (1981), SODA LAKE (1981), SODA LAKE SE (1981), PYOTE WEST (1981), CHINA LAKE (1981), CHINA LAKE NE (1981), LIGON RANCH (1981), AND RIO PECOS RANCH (1981), TEXAS, OBTAINED THROUGH ESRI USA TOPO MAPS, NATIONAL GEOGRAPHIC TOPO AND USGS, ACCESSED 07/2019.

LEGEND

- MILEPOST
- VALVE SITE
- PERMANENT ACCESS ROAD
- TEMPORARY ACCESS ROAD
- LATERAL 100
- TRUNK-LINE 100
- TRUNK-LINE 200
- TRUNK-LINE 300
- FACILITIES
- LAYDOWN YARD
- BLM LAND
- COUNTY BOUNDARY
- STATE BOUNDARY

0 1,000 2,000 4,000 Feet

FIGURE 1.1-2
PROJECT LOCATION MAP
SHEET 16 OF 17

gai consultants

DOUBLE E
PIPELINE, LLC

DRAWN BY: KJB
CHECKED: SWW
DATE: 7/12/2019
APPROVED: AML

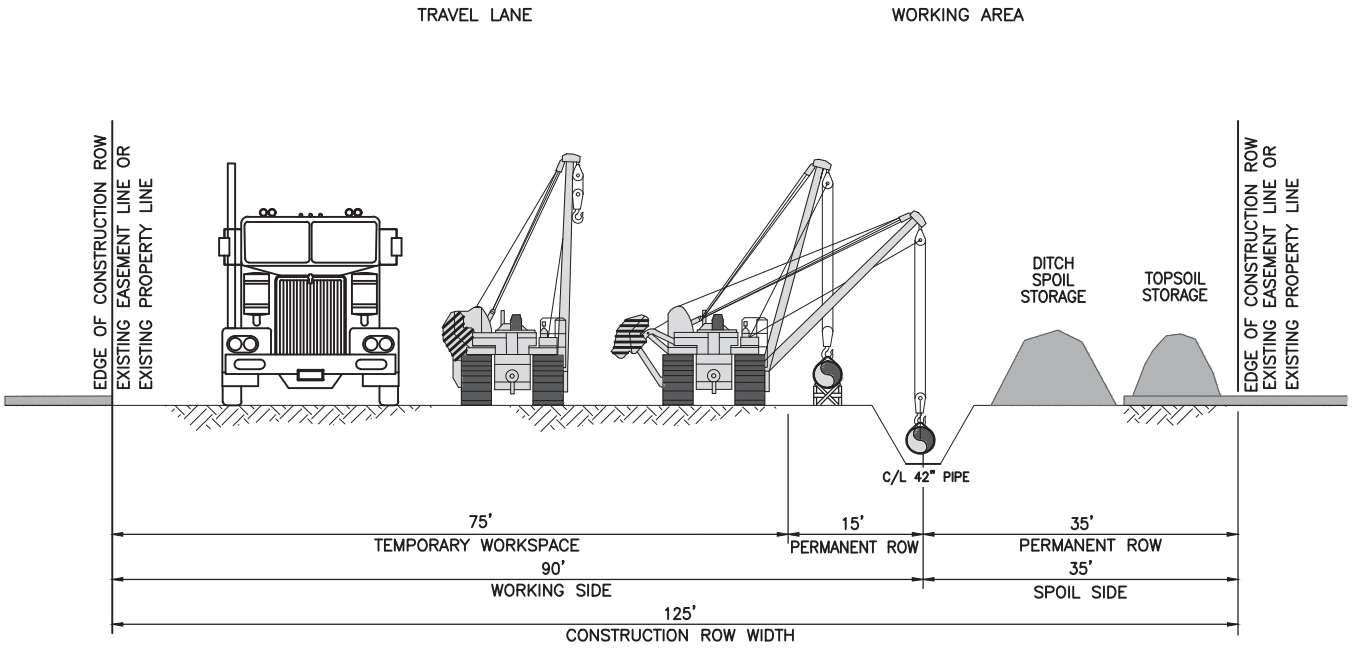
Z:\Energy\2017\E171414.00 - Summit Midstream - Confid\Working Docs\GIS\MXD\FERC\Project_Location_Map_2019_06_25.mxd

Appendix B

Construction Diagrams

DETAIL 31

CONFIGURATION OF 50' PERMANENT EASEMENT FOR 42" PIPELINE



NOTES:

1. THE ENTIRE WORKSPACE, EXCEPT THAT NEEDED FOR TOPSOIL STORAGE, WILL BE STRIPPED TO A DEPTH OF UP TO 12 INCHES.
2. THIS TYPICAL DOES NOT INCLUDE LOCATIONS WHERE ADDITIONAL TEMPORARY WORKSPACE IS REQUIRED FOR CROSSINGS OR P.I.'s.

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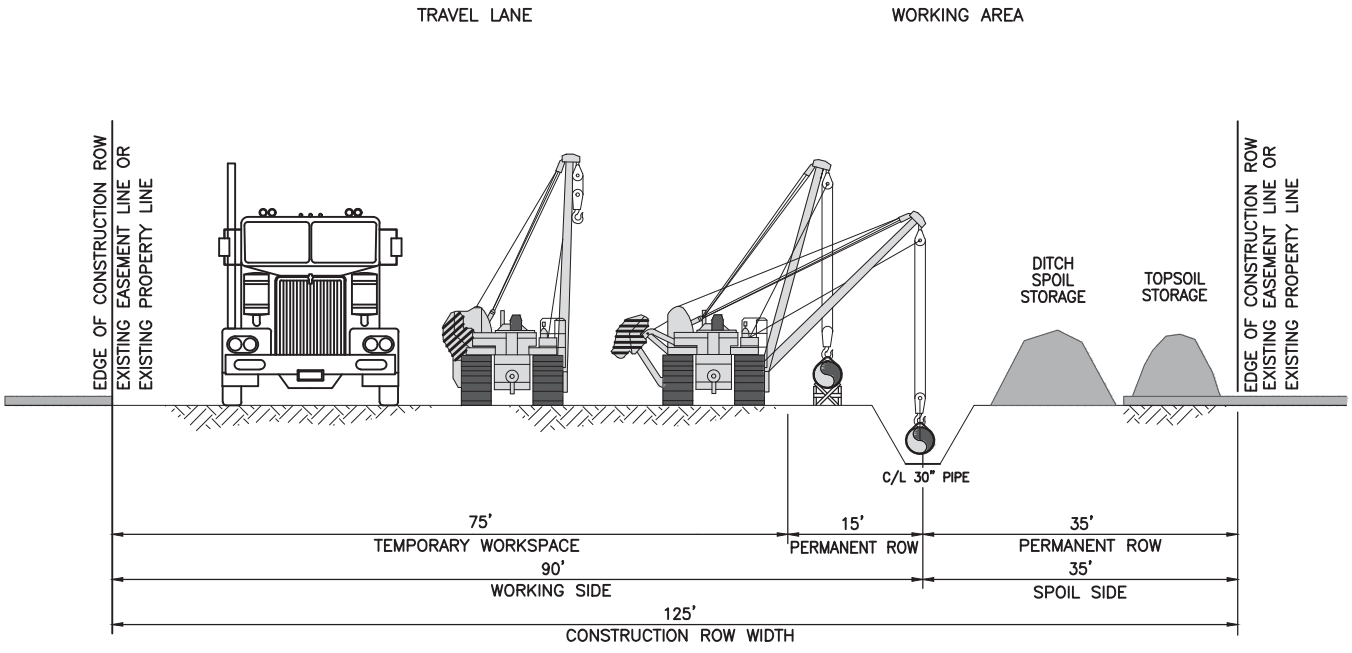
SCALE: N.T.S.		

DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
CONFIGURATION OF 50' PERMANENT EASEMENT FOR 42" PIPELINE
NEW MEXICO AND TEXAS

DRAWING NO:	REV.
6885-T100-9031	A

DETAIL 32

CONFIGURATION OF 50' PERMANENT EASEMENT FOR 30" PIPELINE



NOTES:

1. THE ENTIRE WORKSPACE, EXCEPT THAT NEEDED FOR TOPSOIL STORAGE, WILL BE STRIPPED TO A DEPTH OF UP TO 12 INCHES.
2. THIS TYPICAL DOES NOT INCLUDE LOCATIONS WHERE ADDITIONAL TEMPORARY WORKSPACE IS REQUIRED FOR CROSSINGS OR P.I.'s.

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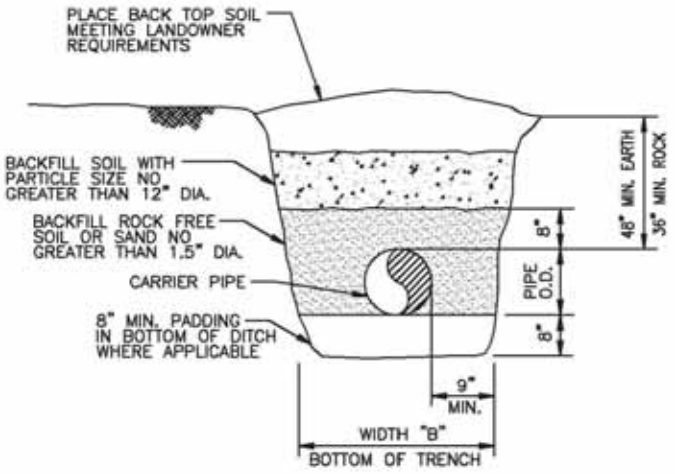
CONFIGURATION OF 50' PERMANENT EASEMENT FOR 30" PIPELINE
NEW MEXICO AND TEXAS

DRAWING NO:	REV.
6885-T100-9032	A

DETAIL 28

TRENCH AND BACKFILL REQUIREMENTS



NOMINAL PIPE SIZE (INCHES)	REQUIRED DIMENSIONS (INCHES) FOR PIPE INSTALLATION IN:			
	EARTH		CONSOLIDATED ROCK	
	WIDTH "B"	DEPTH*	WIDTH "B"	DEPTH*
30"	48"	78"–86"	48"	74"
42"	60"	90"–98"	60"	86"

*UNLESS GREATER DEPTH REQUIRED BY PERMIT R.O.W. AGREEMENT.
*DEPENDENT ON PADDING REQUIREMENTS

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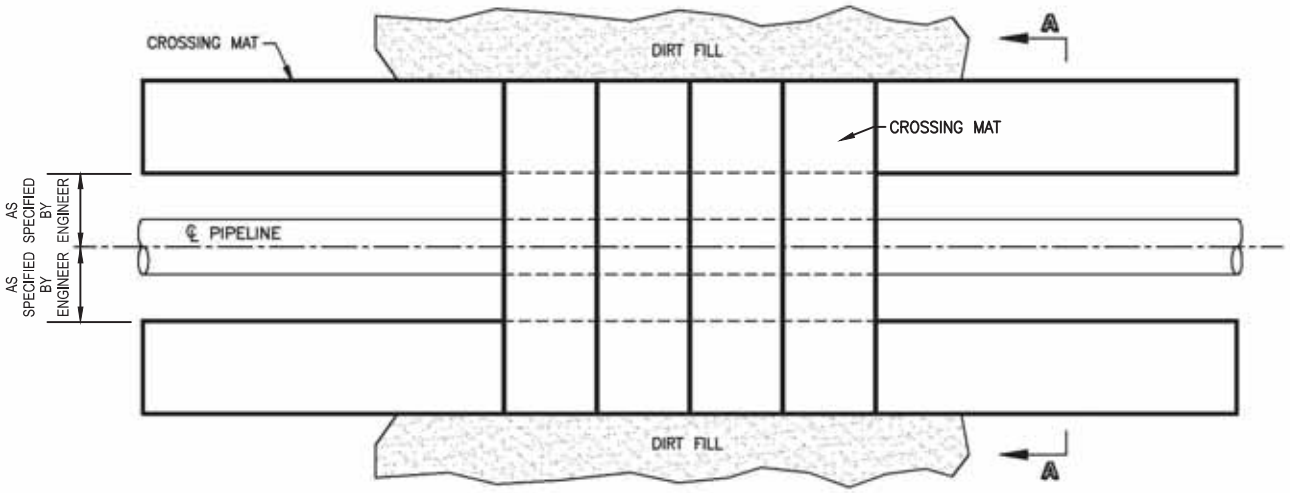
DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAIL
TRENCH AND
BACKFILL REQUIREMENTS
NEW MEXICO AND TEXAS

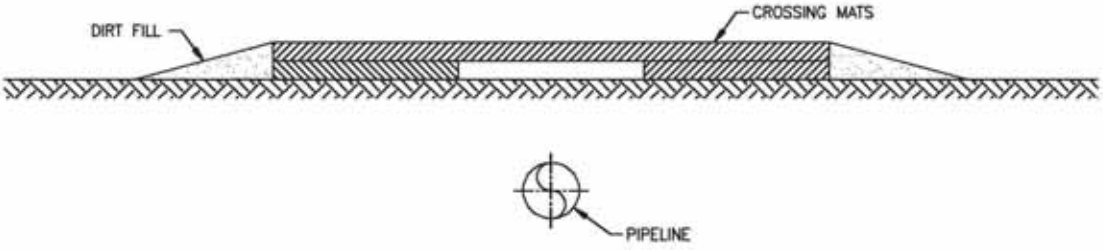
DRAWING NO:	REV.
6885-T100-9028	A

DETAIL 39
TYPICAL PIPELINE AIR BRIDGE



PLAN

(AS REQUIRED – FOR PIPELINE X–INGS)



SECTION "A-A"

NOTES:

1. WIDTH OF AIR BRIDGE WILL DEPEND ON NUMBER OF PIPELINES AND PIPELINE OWNER'S PREFERENCES ON A CASE BY CASE BASIS.

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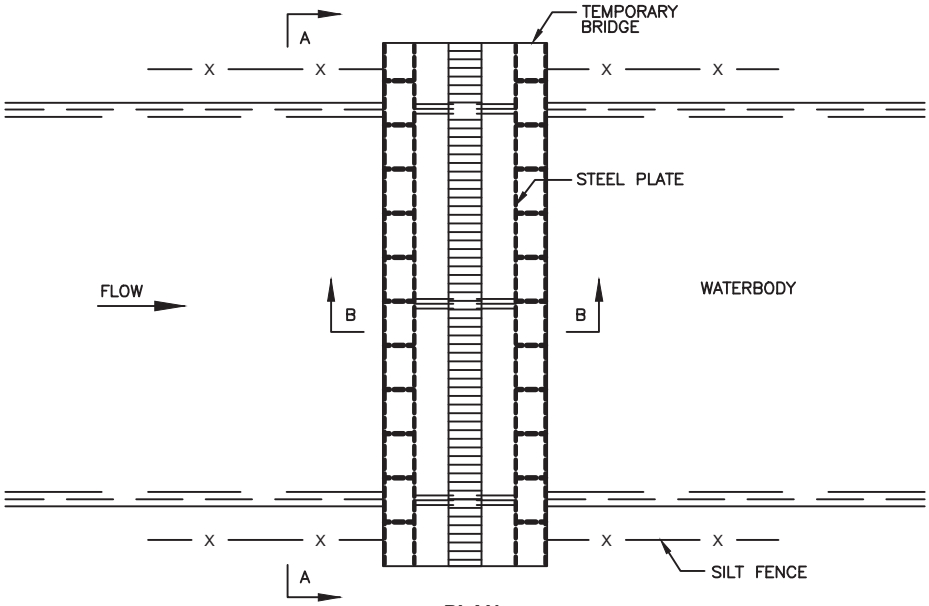
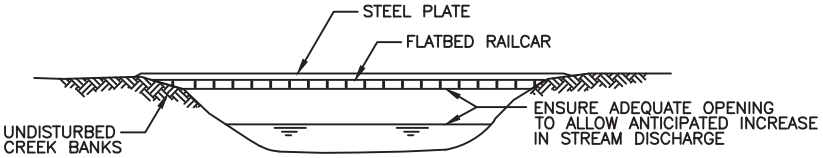
DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
TYPICAL
PIPELINE AIR BRIDGE
NEW MEXICO AND TEXAS

DRAWING NO:	REV.
6885-T200-9042	A

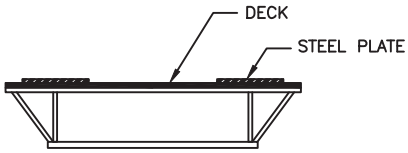
DETAIL 16
TYPICAL RAILCAR BRIDGE CROSSING



PLAN
N.T.S.



SECTION "A-A"
N.T.S.



SECTION "B-B"
N.T.S.

NOTES:

1. THIS TYPICAL DRAWING PROVIDES FOR RAILCAR BRIDGE EQUIPMENT CROSSING.
2. BRIDGE SHOULD BE A MINIMUM OF 12 FEET LONGER THAN BANK TO BANK WIDTH.
3. BEST MANAGEMENT PRACTICES UTILIZING EROSION CONTROL DEVICES, SUCH AS HAY BALES AND SILT FENCE ARE REQUIRED TO PREVENT SEDIMENTATION OF THE STREAM. EROSION PROTECTION SHALL BE PLACED ON THE STREAM BANKS.

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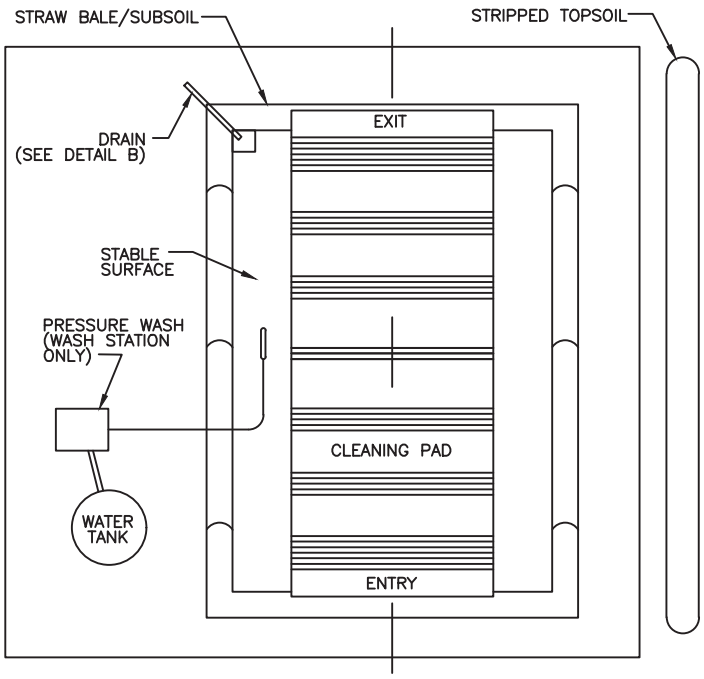
DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
TYPICAL RAILCAR
BRIDGE CROSSING
NEW MEXICO AND TEXAS

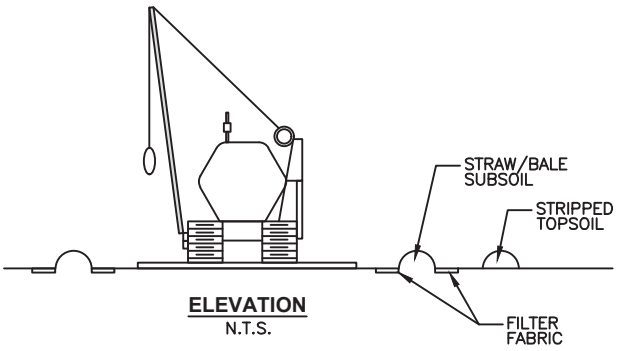
DRAWING NO:	REV.
6885-T100-9016	A

DETAIL 13

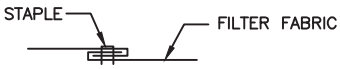
EQUIPMENT CLEANING STATION



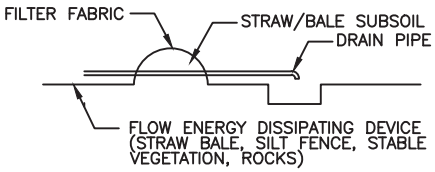
PLAN
N.T.S.



ELEVATION
N.T.S.



DETAIL "A"
N.T.S.



DETAIL "B"
N.T.S.

NOTES:

1. EQUIPMENT MOVED FROM A WEED INFESTED AREA AS DETERMINED BY WEED INVENTORY MUST BE WASHED OR OTHERWISE CLEANED PRIOR TO MOBILIZATION.
2. DURING NON-FROZEN SOIL CONDITIONS, CONSTRUCT CLEANING STATIONS FOR HIGH PRESSURE WATER CLEANING AT APPROVED LOCATIONS BY STRIPPING TOPSOIL AND CONSTRUCTION CONTAINMENT BERMS OUT OF SUBSOIL.
3. CONTAINMENT BERMS WILL NOT BE REQUIRED WHEN CLEANING WILL BE DONE USING COMPRESSED AIR AND SHOVELS INSTEAD OF HIGH PRESSURE WATER.
4. CLEANING SHALL BE CARRIED OUT UNDER THE SUPERVISION AND TO SATISFACTION OF THE ENVIRONMENTAL INSPECTOR.
5. STATION TO BE EQUIPPED WITH TIMBER MATS, SKID PADS OR RACKS TO ELEVATE EQUIPMENT TRACKS/TIRES SO THAT SOIL AND WEEDS WILL BE CONTAINED IN THE STATION BASIN.
6. FILTER FABRIC TO BE INSTALLED AS A CONTINUOUS PIECE AND PLACED OVER THE TOP AND TO THE OUTSIDE EDGE OF THE BERM AND FIRMLY FASTENED IN PLACE. THE EDGES OF PARALLEL PIECES SHALL BE OVERLAPPED A MINIMUM OF 12 INCHES (SHINGLE STYLE), AND FOLDED OVER (SEE DETAIL"A"). STAPLE THROUGH THE OVERLAPPED AREA EVERY 12 INCHES.
7. FILTER FABRIC SHALL BE NON-WOVEN POLYPROPYLENE WITH AN APPARENT OPENING SIZE OF 70 TO 100 (U.S. SIEVE), 200 LB. GRAB STRENGTH, AND 8 OUNCES PER YARD UNTIL WEIGHT, OR BETTER IN AREAS THAT ARE NOT ROCKY. CONTRACTOR MAY CHOOSE TO USE NON-WOVEN POLYPROPYLENE, 160 LB. GRAB STRENGTH, AND 6 OUNCES PER YARD OF UNIT WEIGHT.
8. WATER USED FOR CLEANING SHALL NOT BE ALLOWED TO FLOW INTO ANY WATERBODY, WETLAND OR IRRIGATION CANAL/DITCH.
9. EQUIPMENT IS TO CONSISTENTLY ENTER AT ONE END AND EXIT AT ANOTHER.
10. SKIDS ARE TO BE CLEANED BETWEEN WASHING INDEPENDENT PIECES OF EQUIPMENT.
11. THE DEPRESSION WILL NOT BE BACKFILLED WITH BERMED MATERIAL AND SOILS CONTAMINATED BY PETROLEUM BASED OR OTHER UNDESIRABLE MATERIALS FROM CLEAN OFF STATIONS SHALL BE REMOVED IN ACCORDANCE WITH APPLICABLE REQUIREMENTS. TOPSOIL WILL BE RETURNED AND THE AREA RECLAIMED.
12. CLEANING SITES WILL BE MONITORED DURING THE POST CONSTRUCTION MONITORING PROGRAM AND WEEDS CONTROLLED AS REQUIRED.

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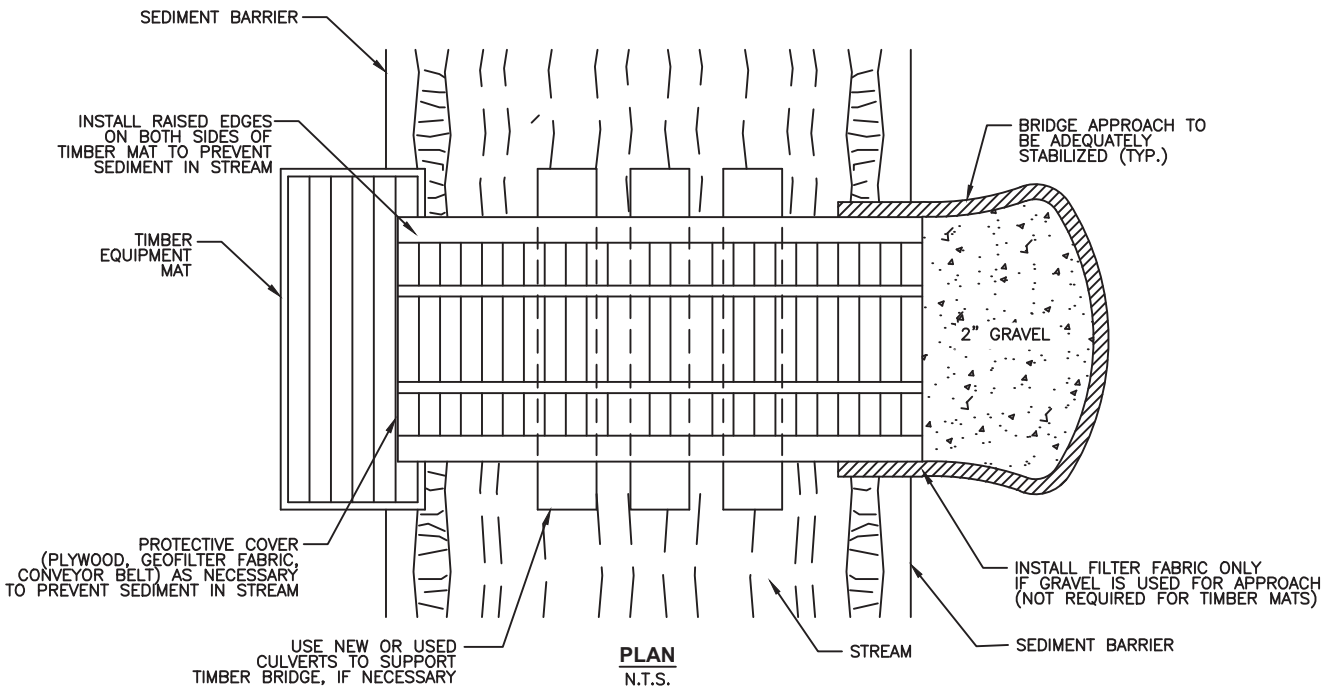
DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
EQUIPMENT
CLEANING STATION
NEW MEXICO AND TEXAS

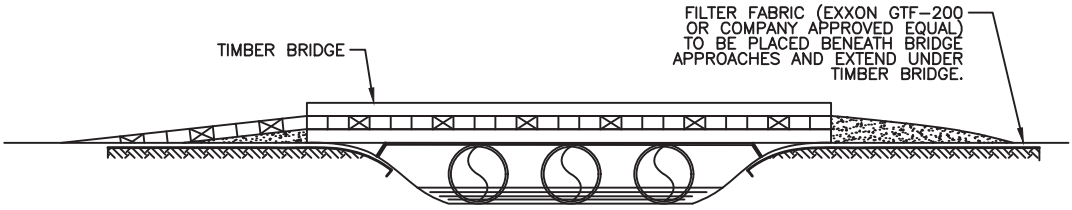
DRAWING NO:	REV.
6885-T100-9013	A

DETAIL 14

WATERBODY CROSSING TYPICAL
PORTABLE BRIDGE CROSSING WITH CULVERTS



PLAN
N.T.S.



PROFILE
N.T.S.

NOTES:

1. TIMBER BRIDGES SHALL BE ADEQUATELY ANCHORED AT ONE END.
2. PERIODICALLY CHECK BRIDGE INSTALLATION AND REMOVE BUILD-UP OF SEDIMENT OR DEBRIS ON BRIDGE.
3. BRIDGE APPROACHES SHALL BE EITHER COARSE AGGREGATE OR TIMBER EQUIPMENT MATS.
4. MATERIALS PLACED ALONG STREAM CHANNEL SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN-UP. REMOVAL OF THIS STRUCTURE IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.
5. CULVERTS SHALL BE USED TO SUPPORT THE TIMBER BRIDGE TO PREVENT SETTLEMENT OF THE BRIDGE IF NECESSARY. WHERE CULVERTS/PIERS ARE USED TO SUPPORT BRIDGES THEY SHALL HAVE SUFFICIENT STRENGTH TO SUPPORT ALL ANTICIPATED LOADS. THE TIMBER BRIDGE SHALL REMAIN ABOVE THE WATER SURFACE ELEVATION AT ALL TIMES.
6. CONTRACTOR MAY USE MANUFACTURED PORTABLE BRIDGES OR RAILCAR BRIDGES AS SUBSTITUTES FOR THE MEASURES SHOWN, IF APPROVED BY COMPANY REPRESENTATIVE.
7. SUPPORT CULVERTS/PIERS SHALL NOT RESTRICT FLOW AND SHALL BE DESIGNED TO WITHSTAND AND PASS THE HIGHEST FLOW THAT WOULD OCCUR WHILE THE BRIDGE IS IN PLACE.
8. SEDIMENT AND DEBRIS SHALL NOT ENTER WATERBODY. PROVIDE RAISED EDGES ON BOTH BRIDGE EDGES AND PROTECTIVE COVER (PLYWOOD, GEOFILTER FABRIC, CONVEYOR BELT), AS NECESSARY, TO PREVENT SEDIMENT IN STREAM.

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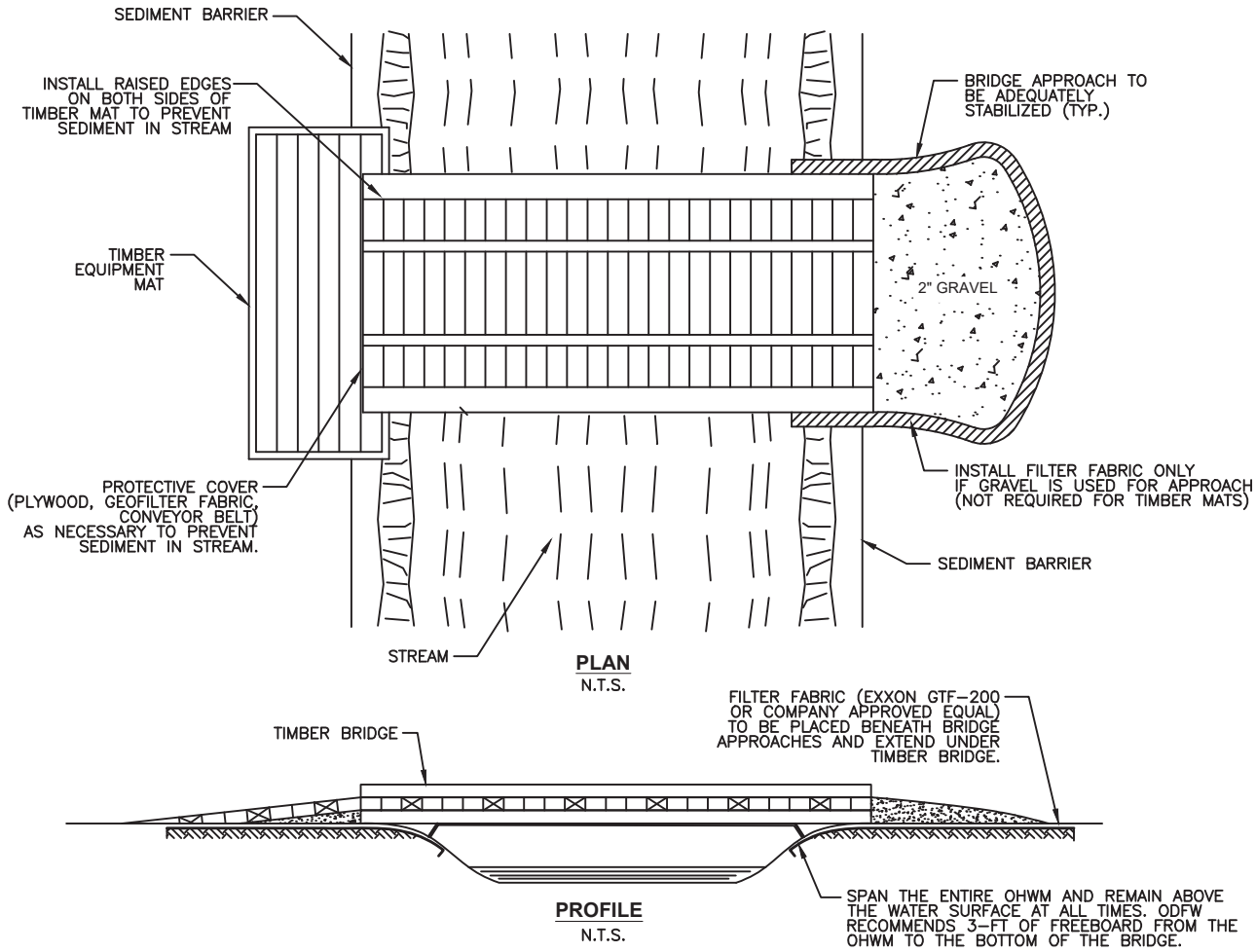
DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
WATERBODY CROSSING TYPICAL PORTABLE BRIDGE CROSSING WITH CULVERTS
NEW MEXICO AND TEXAS

DRAWING NO:	REV.
6885-T100-9014	A

DETAIL 15

WATERBODY CROSSING TYPICAL
PORTABLE BRIDGE CROSSING WITHOUT CULVERTS



NOTES:

1. TIMBER BRIDGES SHALL BE ADEQUATELY ANCHORED AT ONE END.
2. BRIDGE APPROACHES SHALL BE EITHER COARSE AGGREGATE OR TIMBER EQUIPMENT MATS.
3. SEDIMENT AND DEBRIS SHALL NOT ENTER WATERBODY. PROVIDE RAISED EDGES ON BOTH BRIDGE EDGES AND PROTECTIVE COVER (PLYWOOD, GEOFILTER FABRIC, CONVEYOR BELT), AS NECESSARY, TO PREVENT SEDIMENT IN STREAM.
4. PERIODICALLY CHECK BRIDGE INSTALLATION AND REMOVE BUILD-UP OF SEDIMENT OR DEBRIS ON BRIDGE.
5. MATERIALS PLACED ALONG STREAM CHANNEL SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN-UP. REMOVAL OF THIS STRUCTURE IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.
6. CONTRACTOR MAY USE MANUFACTURED PORTABLE BRIDGES OR RAILCAR BRIDGES AS SUBSTITUTES FOR THE MEASURES SHOWN, IF APPROVED BY COMPANY REPRESENTATIVE.

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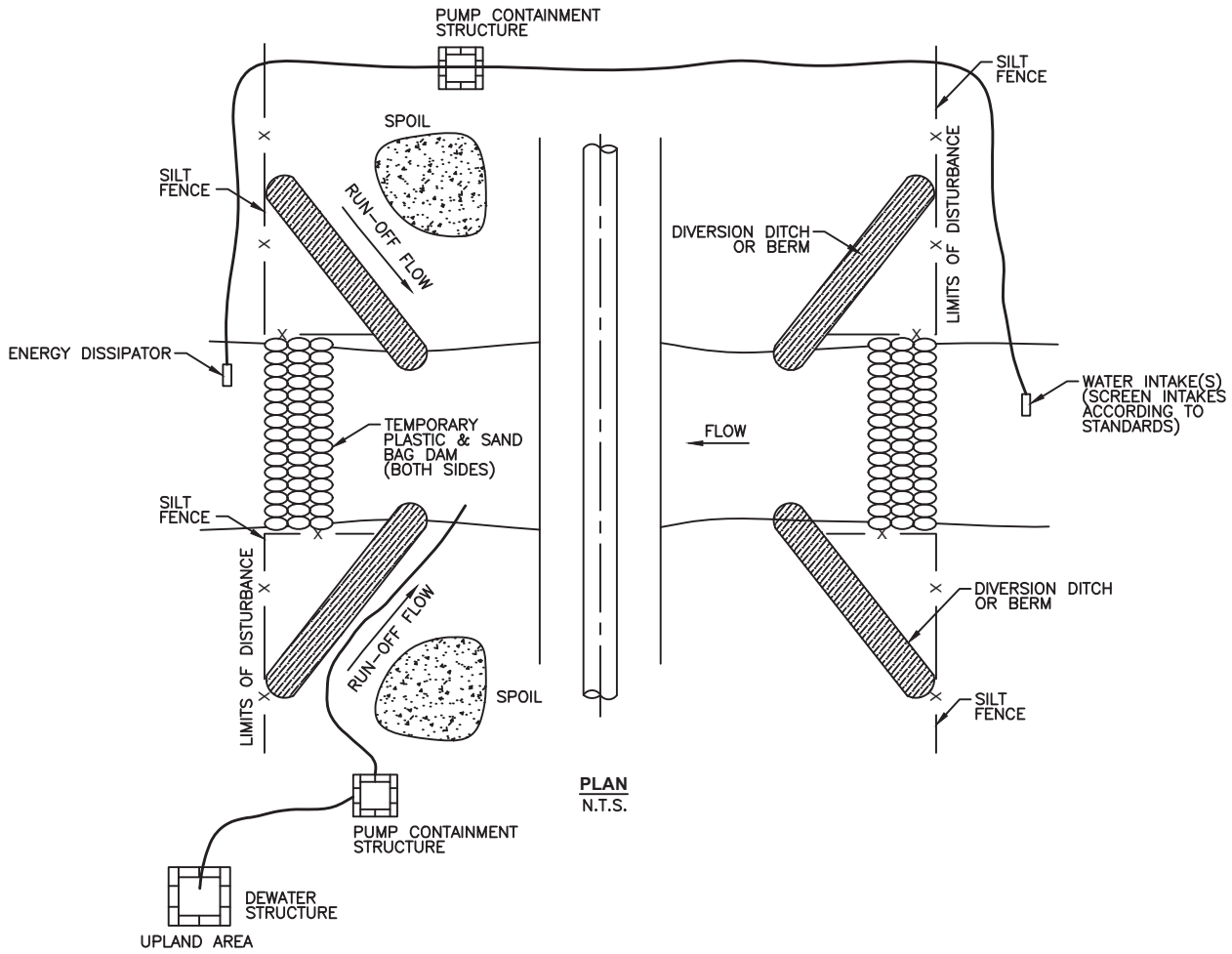
DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
WATERBODY CROSSING TYPICAL PORTABLE BRIDGE CROSSING WITHOUT CULVERTS
NEW MEXICO AND TEXAS

DRAWING NO:	REV.
6885-T100-9015	A

DETAIL 6

TYPICAL WATERBODY CROSSING DAM & PUMP



NOTES:

1. TRENCH WIDTH WILL VARY DUE TO SOIL CONDITIONS WHICH ARE NOT KNOWN UNTIL ACTUAL CONSTRUCTION TAKES PLACE.
2. EXTRA WORKSPACE WILL BE LOCATED 50 FEET FROM EDGE OF WATERBODY UNLESS A VARIANCE IS GRANTED. FOR EXTRA WORKSPACE LOCATIONS AND DIMENSIONS SEE CONSTRUCTION ALIGNMENT SHEETS.
3. TEMPORARY EROSION CONTROL MEASURE MUST BE REPLACED AT THE END OF EACH WORKING DAY.
4. CONFIGURATION THROUGH WATERBODIES WITH ASSOCIATED WETLANDS IS VARIABLE, BUT WILL NOT EXCEED 75 FEET IN WIDTH UNLESS A VARIANCE IS GRANTED.

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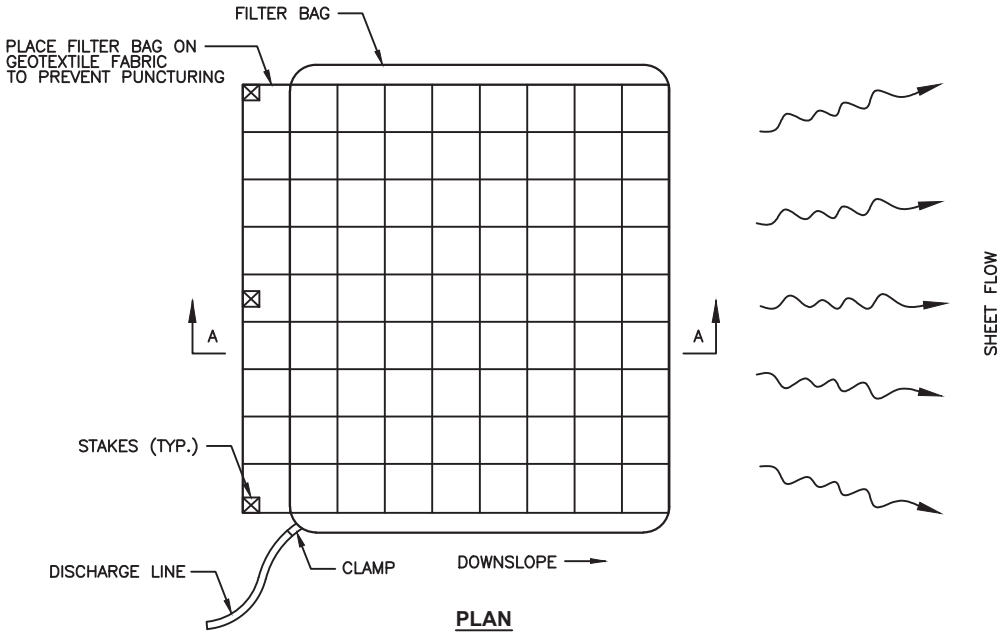
SCALE:	N.T.S.		

DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
TYPICAL WATERBODY
CROSSING DAM & PUMP
NEW MEXICO AND TEXAS

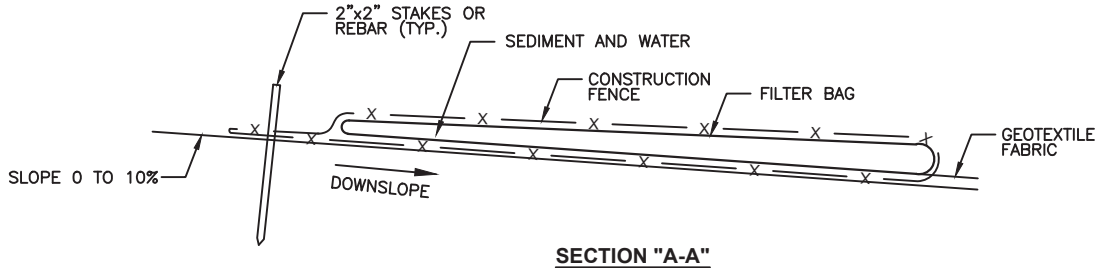
DRAWING NO:	REV.
6885-T100-9006	A

DETAIL 4

TYPICAL DEWATERING FILTER BAG



PLAN
N.T.S.



SECTION "A-A"
N.T.S.

NOTES:

1. MANUFACTURED NON-WOVEN (FELT) FILTER BAGS ARE A SUITABLE ALTERNATIVE TO STRAW BALE STRUCTURES FOR TRENCH DEWATERING. FILTER BAGS SHALL BE INSTALLED AS SPECIFIED BY THE MANUFACTURER.
2. INSTALLATION SPECIFICATIONS TO BE MODIFIED AS NECESSARY TO SUIT ACTUAL SITE CONDITIONS.

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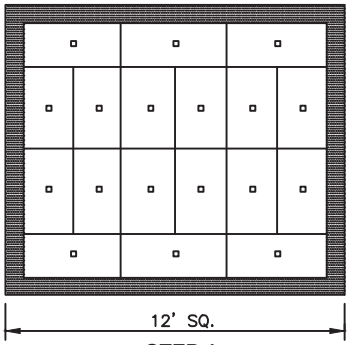
SCALE:	N.T.S.		

DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
TYPICAL DEWATERING
FILTER BAG
NEW MEXICO AND TEXAS

DRAWING NO:	REV.
6885-T100-9004	A

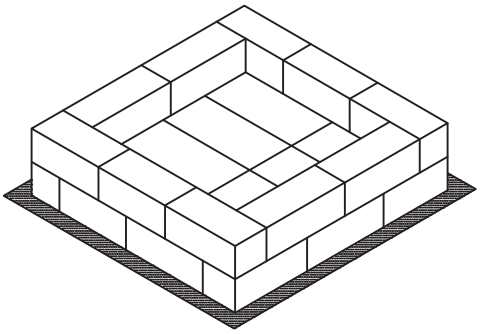
DETAIL 5

TYPICAL TRENCH DEWATERING STRUCTURE



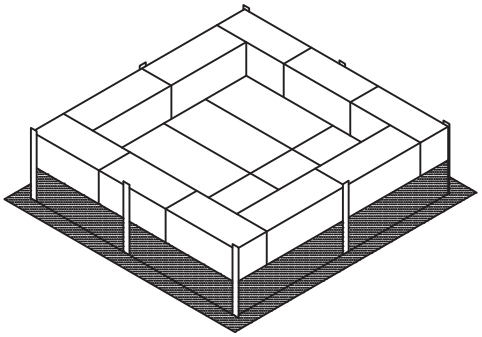
STEP 1

ARRANGE HAY BALES OVER FILTER FABRIC ON LEVEL LAND TIGHTLY PACKED AS SHOWN TO COVER AN AREA APPROXIMATELY 12'x12'. SECURE EACH HAY BALE IN PLACE BY DRIVING REBAR OR A WOODEN STAKE THROUGH EACH OF THE HAY BALES



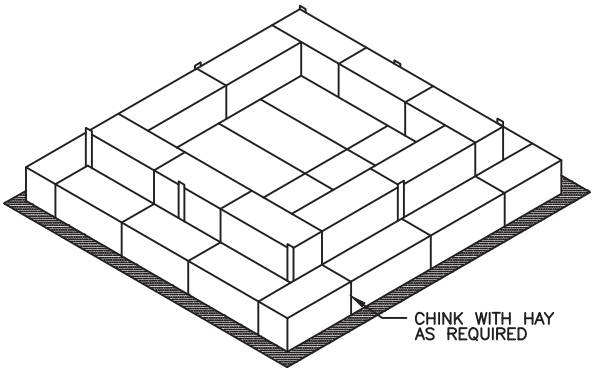
STEP 2

INSTALL ANOTHER LAYER OF HAY BALES ON THE OUTER EDGE AS SHOWN



STEP 3

INSTALL FILTER FABRIC ALL AROUND HAY BALE STRUCTURE AS SHOWN



STEP 4

INSTALL ANOTHER LAYER OF HAY BALES ON THE OUTSIDE OF THE FILTER FABRIC AND SECURE IN PLACE BY DRIVING REBAR OR A WOODEN STAKE THROUGH EACH OF THE OUTER HAY BALES

NOTES:

1. WHERE POSSIBLE, STRUCTURE SHALL BE PLACED ON A LEVEL, WELL VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM THE STRUCTURE AND ANY WORK AREAS, WATERBODIES OR WETLANDS.
2. THIS MEASURE SHALL BE REMOVED UPON COMPLETION OF THE PROJECT. REMOVAL IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION. MATERIAL FROM BALES MAY BE SCATTERED ON RIGHT OF WAY.
3. CONTRACTOR SHALL USE CERTIFIED NOXIOUS WEED FREE HAY OR STRAW FOR STRUCTURE.

NO.	DATE	REVISION	BY	APPD.
A	2/01/19	ISSUED FOR USE	AB	JWE

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SUITE 400 HOUSTON, TX
77063 TEL: (713) 456-7880
www.ensiteusa.com

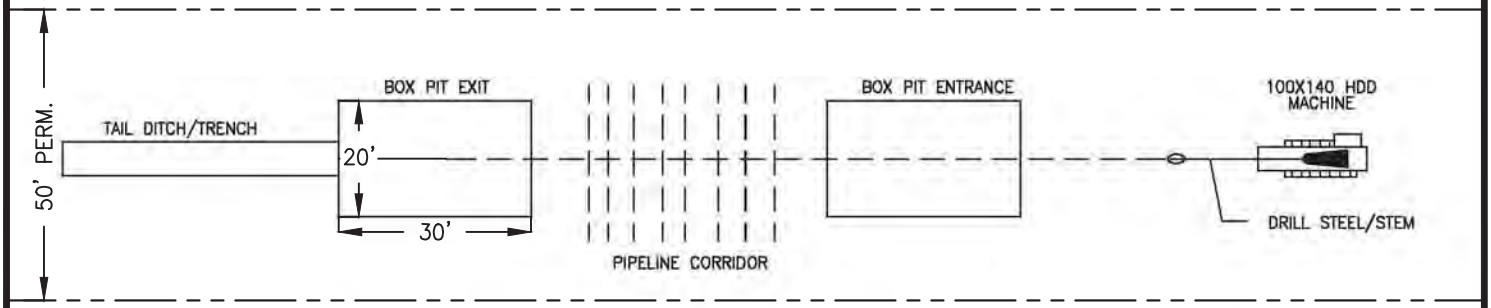
DRAWN BY: ENSITEUSA	DATE: 12/15/18	
CHECKED BY: CLR	DATE: 12/19/18	
APPROVED BY:	EPO APPROVAL:	
SCALE: N.T.S.		

DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
TYPICAL STRAW BALE
DEWATERING STRUCTURE
NEW MEXICO AND TEXAS

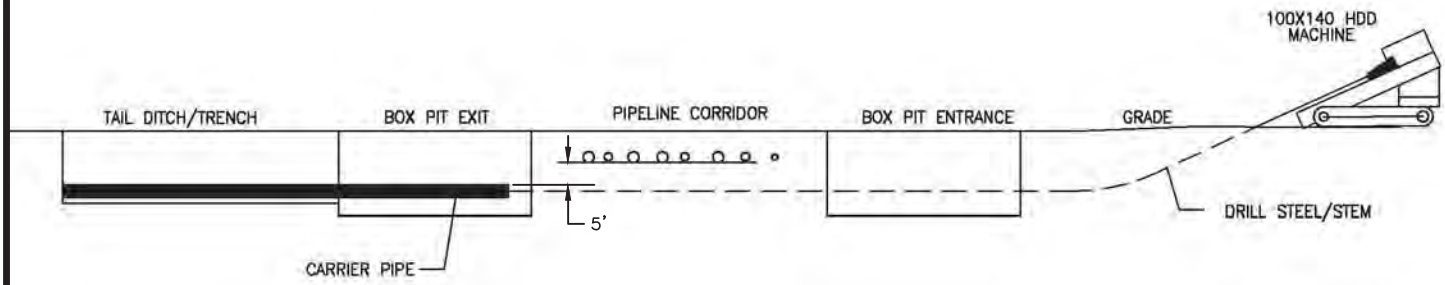
DRAWING NO:	REV.
6885-T100-9005	A

DETAIL 41

TYPICAL BOX TO BOX GUIDED BORE PLAN ANY DIAMETER ANY LENGTH



PLAN
N.T.S.



PROFILE
N.T.S.

NOTES:

1. THE BORE METHOD UTILIZED WITH THIS BORE PLAN IS WIRE LINE GUIDED BORE.
2. THE OVER CUT OF THE BORE WILL BE 2".
3. DRILLING FLUIDS WILL ONLY BE UTILIZED IF SUB SURFACE CONDITIONS WARRANT IT'S USE.

NO.	DATE	REVISION	BY	APPD.
A	09/30/19	ISSUED FOR USE	AB	JW

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SUITE 400 HOUSTON, TX
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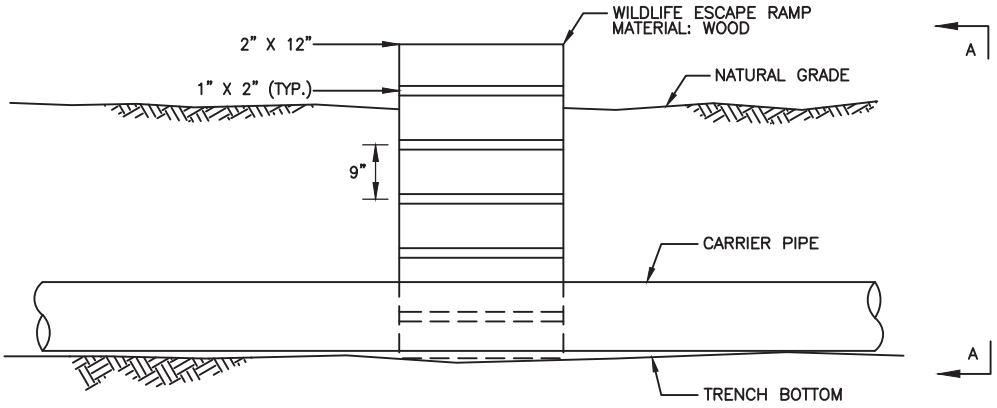
DOUBLE E PIPELINE

DRAWN BY:	ENSITEUSA	DATE:	09/23/19
CHECKED BY:		DATE:	
APPROVED BY:	JW	EPO APPROVAL:	
SCALE:	N.T.S.		

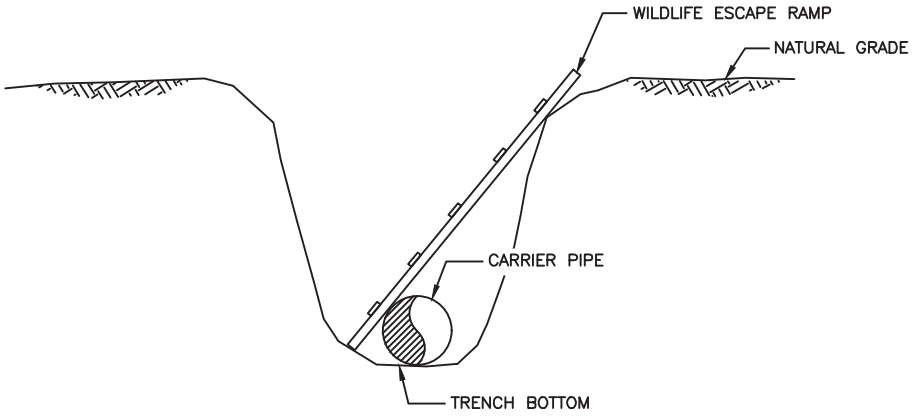
DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
TYPICAL BOX TO BOX GUIDED BORE
PLAN ANY DIAMETER ANY LENGTH
NEW MEXICO AND TEXAS

DRAWING NO:	REV.
6885-T200-9044	A

DETAIL 42
TYPICAL WILDLIFE ESCAPE RAMP



ELEVATION
N.T.S.



SECTION "A-A"
N.T.S.

NOTES:

1. WILDLIFE ESCAPE RAMPS SHALL BE MADE FROM 2" X 12" TREATED LUMBER WITH 1" X 2" TREATED PLACED EVERY 9"± ACROSS 2" X 12". 2" X 12" SHALL BE LONG ENOUGH TO BE PLACED FROM BOTTOM OF TRENCH TO NATURAL GRADE (8'-0"±) AS NEEDED.
2. WILDLIFE ESCAPE RAMPS SHALL BE PLACED APPROXIMATELY EVERY 500 LINEAR FEET ALONG OPEN EXCAVATION / TRENCH. ALTERNATE TO EACH SIDE OF TRENCH WHEN PLACING.
3. WILDLIFE ESCAPE RAMPS SHALL BE LEFT IN PLACE AS LONG AS EXCAVATED TRENCH IS OPEN. THE RAMPS MAY BE REMOVED PRIOR TO BACKFILL.

NO.	DATE	REVISION	BY	APPD.
A	9/30/19	ISSUED FOR USE	AB	JW

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SUITE 400 HOUSTON, TX
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DOUBLE E PIPELINE

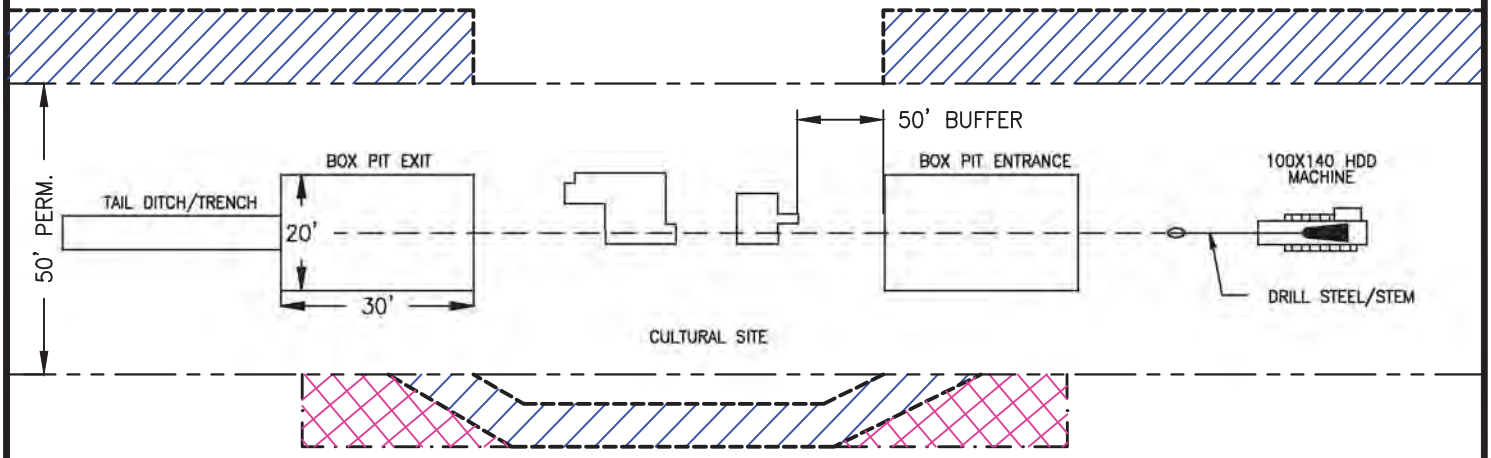
DRAWN BY:	ENSITEUSA	DATE:	09/24/19
CHECKED BY:	JW	DATE:	
APPROVED BY:	JW	EPO APPROVAL:	
SCALE:	N.T.S.		

DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
TYPICAL TRENCH
WILDLIFE ESCAPE RAMP
NEW MEXICO AND TEXAS

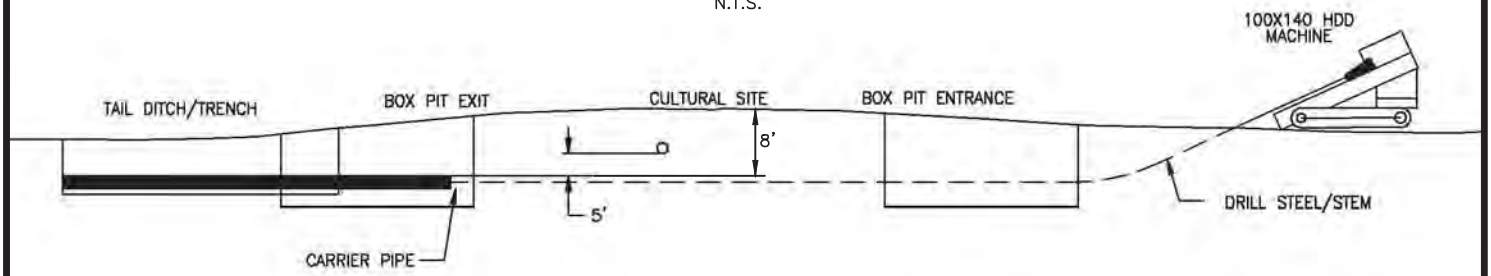
DRAWING NO:	REV.
6885-T100-9045	A

DETAIL 42

SITE SPECIFIC GUIDED BORE PLAN FOR MP 73.3



PLAN
N.T.S.



PROFILE
N.T.S.

NOTES:

1. THE BORE METHOD UTILIZED WITH THIS BORE PLAN IS WIRE LINE GUIDED BORE.
2. THE OVER CUT OF THE BORE WILL BE 2".
3. DRILLING FLUIDS WILL ONLY BE UTILIZED IF SUB SURFACE CONDITIONS WARRANT IT'S USE.

NO.	DATE	REVISION	BY	APPD.
A	09/30/19	ISSUED FOR USE	ED	JW

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www.ensiteusa.com

DOUBLE E PIPELINE

DRAWN BY:	ENSITEUSA	DATE:	09/27/19
CHECKED BY:	ED	DATE:	
APPROVED BY:	JW	EPO APPROVAL:	
SCALE:	N.T.S.		

DOUBLE E PIPELINE, LLC
PIPELINE CROSSING DETAILS
SITE SPECIFIC GUIDED BORE
PLAN FOR MP 73.3
NEW MEXICO AND TEXAS

DRAWING NO:	REV.
6885-T200-9046	A

Appendix C

Tables C-1 through C-9

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
MP Begin	**MP End**	**Owner/Type of ROW**	**Location**	**Position Related to Proposed Pipeline**
T100 - MP 0.0 to MP 33.3				
0.0	0.3	Foreign Pipeline	Parallel	East & North
0.3	1.9	Water Line	Parallel	North
1.3	--	XTO Gas Pipeline (3.6' COV[2].)	Intersection	Crossed
1.3	--	DCP Gas Pipeline (3.2' COV.)	Intersection	Crossed
2.0	--	Water Line (5.3' COV.)	Intersection	Crossed
3.6	--	Overhead ("O/H") Powerline (35'± CLR.)	Intersection	Crossed
4.3	--	Fiber Optic Cable (UNK[2]. COV.)	Intersection	Crossed
4.3	--	O/H Powerline (30'± CLR.)	Intersection	Crossed
4.3	--	Water Line (9.0' COV.)	Intersection	Crossed
4.3	--	Fiber Optic Cable (UNK. COV.)	Intersection	Crossed
4.3	--	Water Line (5.7' COV.)	Intersection	Crossed
4.4	--	O/H Electric Line (120'± CLR.)	Intersection	Crossed
4.4	--	O/H Electric Line (120'± CLR.)	Intersection	Crossed
4.4	--	Fiber Optic Cable (UNK. COV.)	Intersection	Crossed
4.4	4.9	O/H Powerline	Parallel	North
4.4	5.7	Fiber Optic Line	Parallel	North
5.8	--	AT&T Fiber Optic Cable (3.9' COV.)	Intersection	Crossed
5.9	6.1	O/H Powerline	Parallel	North
6.0	--	AT&T Fiber Optic Cable (3.9' COV.)	Intersection	Crossed
6.6	--	Westminster Crude Oil Pipeline (5.4' COV.)	Intersection	Crossed
6.7	7.6	Western Refining Pipeline	Parallel	East
6.8	--	New Mexico Gas Pipeline (UNK. COV.)	Intersection	Crossed
7.2	--	O/H Electric Line (30'± CLR.)	Intersection	Crossed
7.2	--	O/H Electric Line (30'± CLR.)	Intersection	Crossed
9.3	10.0	Western Refining Pipeline	Parallel	East
11.2	--	XTO Pipeline (UNK. COV.)	Intersection	Crossed
11.6	--	Western Refining Crude Oil Pipeline (5.8' COV.)	Intersection	Crossed
11.6	13.0	Western Refining Pipeline	Parallel	Southwest
11.7	--	DCP Pipeline (3.1' COV.)	Intersection	Crossed
11.7	--	Transwestern Pipeline (4.6' COV.)	Intersection	Crossed
12.9	--	DCP Pipeline (3.8' COV.)	Intersection	Crossed
12.9	--	O/H Electric Line (116'± CLR.)	Intersection	Crossed
12.9	--	O/H Electric Line (116'± CLR.)	Intersection	Crossed
13.0	--	Western Refining Pipeline (5.5' COV.)	Intersection	Crossed
13.0	--	O/H Electric Line (100'± CLR.)	Intersection	Crossed
13.0	--	O/H Electric Line (100'± CLR.)	Intersection	Crossed
13.5	--	O/H Electric Line (124'± CLR.)	Intersection	Crossed
13.5	--	O/H Electric Line (124'± CLR.)	Intersection	Crossed
13.5	--	Western Refining Pipeline (5.5' COV.)	Intersection	Crossed
13.5	15.6	Western Refining Pipeline	Parallel	Northeast
14.2	--	O/H Powerline (25'± CLR.)	Intersection	Crossed
15.7	--	XTO Pipeline (UNK. COV.)	Intersection	Crossed
15.7	16.3	Foreign Pipeline	Parallel	Northeast
16.6	17.8	Western Refining Pipeline	Parallel	Southwest
17.1	--	O\H Powerline (30'± CLR.)	Intersection	Crossed
17.1	--	Water Line (EXPOSED)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
17.1	--	Western Refining Crude Oil Pipeline (4.9' COV.)	Intersection	Crossed
17.5	17.8	Foreign Pipeline	Parallel	Southwest
18.7	18.8	2 Foreign Pipelines	Parallel	Southwest
18.7	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
18.8	--	O/H Powerline (25'± CLR.)	Intersection	Crossed
18.8	--	Water Line (EXPOSED)	Intersection	Crossed
18.8	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
18.8	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
19.0	--	XTO Pipeline (UNK. COV.)	Intersection	Crossed
19.0	--	XTO Pipeline (UNK. COV.)	Intersection	Crossed
19.0	--	Water Line (EXPOSED)	Intersection	Crossed
19.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
19.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
19.0	--	Water Line (EXPOSED)	Intersection	Crossed
19.2	24.4	Western Refining Pipeline	Parallel	West
19.3	--	Water Line (EXPOSED)	Intersection	Crossed
19.6	20.6	Foreign Pipeline	Parallel	West
19.6	--	GPM Gas Pipeline (4' COV.)	Intersection	Crossed
20.2	--	Water Line (EXPOSED)	Intersection	Crossed
20.2	--	Water Line (EXPOSED)	Intersection	Crossed
20.9	--	O/H Electric Line (101'± CLR.)	Intersection	Crossed
21.0	--	O/H Electric Line (101'± CLR.)	Intersection	Crossed
21.7	--	Water Line (EXPOSED)	Intersection	Crossed
21.7	--	Water Line (POLY) (EXPOSED)	Intersection	Crossed
21.7	--	Water Line (EXPOSED)	Intersection	Crossed
21.7	--	Water Line (EXPOSED)	Intersection	Crossed
21.7	--	Water Line (EXPOSED)	Intersection	Crossed
22.0	24.0	Foreign Pipeline	Parallel	West
22.4	--	Water Line (EXPOSED)	Intersection	Crossed
23.4	--	Water Line (EXPOSED)	Intersection	Crossed
23.9	--	Foreign Pipeline (4.4' COV.)	Intersection	Crossed
24.4	--	Water Line (EXPOSED)	Intersection	Crossed
24.4	--	Water Line (EXPOSED)	Intersection	Crossed
24.4	--	O/H Powerline	Intersection	Crossed
24.8	--	XTO Pipeline (UNK. COV.)	Intersection	Crossed
25.8	--	O/H Powerline	Intersection	Crossed
25.8	--	Water Line (EXPOSED)	Intersection	Crossed
26.9	--	O/H Powerline	Intersection	Crossed
26.9	--	Water Line (UNK. COV.)	Intersection	Crossed
26.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
26.9	--	Water Line (EXPOSED)	Intersection	Crossed
27.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
27.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
27.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
27.2	--	Water Line (UNK. COV.)	Intersection	Crossed
27.2	--	O/H Powerline	Intersection	Crossed
27.2	--	Water Line (EXPOSED)	Intersection	Crossed
27.2	--	Water Line (EXPOSED)	Intersection	Crossed
27.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
27.3	30.4	Western Refining Pipeline	Parallel	East

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
27.5	--	Water Line (EXPOSED)	Intersection	Crossed
28.1	--	O/H Powerline (30'± CLR.)	Intersection	Crossed
28.1	--	Water Line (4.9' COV.)	Intersection	Crossed
28.1	--	XTO High Pressure Crude Pipeline (5.9' COV.)	Intersection	Crossed
28.1	--	Water Line (UNK. COV.)	Intersection	Crossed
30.2	--	Water Line (UNK.)	Intersection	Crossed
30.2	--	O/H Powerline	Intersection	Crossed
30.2	30.4	Water Line	Parallel	East
30.6	--	O/H Powerline	Intersection	Crossed
30.6	--	Water Line (EXPOSED)	Intersection	Crossed
30.6	--	BOPCO LP Water Line (6' COV.)	Intersection	Crossed
30.6	--	XTO Crude Oil Pipeline (6' COV.)	Intersection	Crossed
30.6	--	XTO Crude Oil Pipeline (7' COV.)	Intersection	Crossed
30.6	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
30.7	--	BOPCO LP Crude Oil Pipeline (7' COV.)	Intersection	Crossed
30.7	--	LUCID Gas Pipeline (6.6' COV.)	Intersection	Crossed
30.7	--	Water Line (EXPOSED)	Intersection	Crossed
30.7	--	Water Line (EXPOSED)	Intersection	Crossed
30.7	--	Water Line (EXPOSED)	Intersection	Crossed
30.7	--	Enterprise Pipeline (6.4' COV.)	Intersection	Crossed
30.7	--	Enterprise Pipeline (4.7' COV.)	Intersection	Crossed
31.1	--	Water Line (EXPOSED)	Intersection	Crossed
31.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
31.2	--	Foreign Pipeline & Fiber Optic Cable (UNK. COV.)	Intersection	Crossed
31.2	--	Centurion Oil Pipeline (7' COV.)	Intersection	Crossed
31.2	--	O/H Powerline	Intersection	Crossed
31.2	--	Water Line	Intersection	Crossed
31.3	--	Water Line (EXPOSED)	Intersection	Crossed
31.3	--	Water Line (EXPOSED)	Intersection	Crossed
31.3	--	Water Line (EXPOSED)	Intersection	Crossed
31.3	--	Water Line (EXPOSED)	Intersection	Crossed
31.3	--	BOBCO Water Line (3' COV.)	Intersection	Crossed
31.3	--	ETC Gas Pipeline (2.3' COV.)	Intersection	Crossed
31.3	31.9	Water Line	Parallel	West
31.4	31.5	Western Refining Pipeline	Meandering	West
32.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
32.2	--	O/H Powerline	Intersection	Crossed
32.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
32.6	32.7	O/H Powerline	Parallel	East
32.6	32.7	Water Line	Parallel	East
33.1	--	O/H Powerline	Intersection	Crossed
T200 – MP 33.3 to MP 115.2				
33.5	--	Enterprise Pipeline (UNK. COV.)	Intersection	Crossed
33.8	--	O/H Powerline	Intersection	Crossed
33.9	--	O/H Powerline	Intersection	Crossed
33.9	--	O/H Powerline	Intersection	Crossed
33.9	--	O/H Powerline	Intersection	Crossed
33.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
33.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
33.9	--	Water Line (EXPOSED)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
33.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
34.1	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
34.4	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
34.5	--	Water Line (EXPOSED)	Intersection	Crossed
34.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
34.7	--	Water Line (UNK.)	Intersection	Crossed
34.7	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
34.7	--	Water Line (UNK. COV.)	Intersection	Crossed
34.7	--	Water Line (UNK. COV.)	Intersection	Crossed
34.7	--	O/H POWERLIINE	Intersection	Crossed
35.4	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
35.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
35.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
35.5	--	O/H Powerline	Intersection	Crossed
35.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
35.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
35.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
35.7	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
35.8	37.2	Enterprise Pipeline	Parallel	West
35.8	--	DCP Pipeline (3.4' COV.)	Intersection	Crossed
35.9	--	O/H Powerline	Intersection	Crossed
35.9	--	BOPCO LP Pipeline (UNK. COV.)	Intersection	Crossed
35.9	--	ETC Pipeline (5.5' COV.)	Intersection	Crossed
37.0	--	O/H Powerline	Intersection	Crossed
37.0	--	XTO Crude Oil Pipeline (4.9' COV.)	Intersection	Crossed
37.0	--	BOPCO Saltwater Disposal Pipeline (6.2' COV.)	Intersection	Crossed
38.5	--	O/H Powerline	Intersection	Crossed
38.5	--	Water Line (EXPOSED)	Intersection	Crossed
38.9	--	Foreign Pipeline	Intersection	Crossed
39.3	39.9	2 Enterprise Pipelines	Parallel	West
40.1	--	O/H Powerline	Intersection	Crossed
40.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
40.3	40.8	Foreign Pipeline	Parallel	West
40.4	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
40.4	--	O/H Powerline	Intersection	Crossed
40.4	--	Water Line (EXPOSED)	Intersection	Crossed
40.8	41.3	2 Enterprise Pipelines	Parallel	West
41.8	--	Water Line (UNK. COV.)	Intersection	Crossed
41.8	--	Water Line (EXPOSED)	Intersection	Crossed
41.8	--	O/H Powerline	Intersection	Crossed
41.9	--	Foreign Crude Oil Pipeline (UNK. COV.)	Intersection	Crossed
41.9	--	Foreign Gas Pipeline (UNK. COV.)	Intersection	Crossed
41.9	--	Foreign SOUR Gas Pipeline	Intersection	Crossed
41.9	--	Foreign SOUR Gas Pipeline	Intersection	Crossed
41.9	--	Foreign SOUR Gas Pipeline	Intersection	Crossed
41.9	--	Water Line (EXPOSED)	Intersection	Crossed
41.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
41.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
41.9	--	Foreign Gas Pipeline (UNK. COV.)	Intersection	Crossed
41.9	--	O/H Powerline	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
41.9	--	Foreign Crude Oil Pipeline (UNK. COV.)	Intersection	Crossed
41.9	--	Foreign Crude Oil Pipeline (UNK. COV.)	Intersection	Crossed
42.0	--	Water Line (EXPOSED)	Intersection	Crossed
42.0	--	O/H Powerline	Intersection	Crossed
43.5	--	Water Line	Intersection	Crossed
44.3	--	Foreign Pipeline (UNK. COV)	Intersection	Crossed
45.2	--	Water Line (UNK. COV.)	Intersection	Crossed
46.4	--	Foreign Pipeline	Intersection	Crossed
46.4	--	Foreign Pipeline	Intersection	Crossed
46.4	--	Water Line (3.3' COV.)	Intersection	Crossed
46.4	--	Delaware Basin Midstream Gas Pipeline (3.8' COV.)	Intersection	Crossed
46.4	--	Kinder Morgan Gas Pipeline (3.9' COV.)	Intersection	Crossed
46.4	--	O/H Powerline	Intersection	Crossed
46.9	--	Water Line (2) (EXPOSED)	Intersection	Crossed
47.0	--	Plains Oil Pipeline (UNK. COV.)	Intersection	Crossed
47.0	--	Delaware G&P High Pressure Gas Pipeline (UNK. COV.)	Intersection	Crossed
47.5	--	Water Line (EXPOSED)	Intersection	Crossed
47.9	--	Water Line (EXPOSED)	Intersection	Crossed
47.9	--	Water Line (EXPOSED)	Intersection	Crossed
47.9	--	O/H Powerline	Intersection	Crossed
48.2	--	O/H Powerline	Intersection	Crossed
48.2	--	Water Line (EXPOSED)	Intersection	Crossed
48.2	--	Water Line (EXPOSED)	Intersection	Crossed
48.2	--	Water Line (EXPOSED)	Intersection	Crossed
48.2	48.9	O/H Powerline	Parallel	East
48.3	--	O/H Powerline	Intersection	Crossed
48.8	--	O/H Powerline	Intersection	Crossed
48.8	--	Water Line (EXPOSED)	Intersection	Crossed
48.8	--	RKI Exploration & Production LLC Water Line (6.9'	Intersection	Crossed
48.8	--	RKI Exploration & Production LLC Gas Pipeline (6.2'	Intersection	Crossed
48.8	--	O/H Powerline	Intersection	Crossed
48.8	--	Stateline Crude Oil Pipeline (7.3' COV.)	Intersection	Crossed
48.8	--	Stateline Crude Oil Pipeline (6.5' COV.)	Intersection	Crossed
48.9	--	O/H Powerline	Intersection	Crossed
49.0	--	Stateline Crude Oil Pipeline (4.0' COV.)	Intersection	Crossed
49.1	--	O/H Powerline	Intersection	Crossed
49.1	--	Water Line (EXPOSED)	Intersection	Crossed
49.1	--	Stateline Crude Oil Pipeline (3.8' COV.)	Intersection	Crossed
49.2	--	Water Line (EXPOSED)	Intersection	Crossed
49.2	--	Delaware Basin Midstream Pipeline (7.3' COV.)	Intersection	Crossed
49.2	--	Anadarko Petroleum Gas Pipeline (6.2' COV.)	Intersection	Crossed
49.2	--	Water Line (EXPOSED)	Intersection	Crossed
49.3	--	Aluminum Water Line (EXPOSED)	Intersection	Crossed
49.3	--	DCP Midstream Pipeline (1.2' COV.)	Intersection	Crossed
49.3	--	O/H Powerline	Intersection	Crossed
49.5	--	O/H Powerline	Intersection	Crossed
49.5	--	Enter Driveway (Asphalt)	Intersection	Crossed
49.5	--	O/H Powerline	Intersection	Crossed
49.5	49.9	O/H Powerline	Parallel	East
49.7	--	O/H Electric Line	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
50.0	--	O/H Powerline	Intersection	Crossed
50.0	--	Anadarko Petro Pipeline (5.7' COV.)	Intersection	Crossed
50.0	--	Anadarko Petro Pipeline (7.2' COV.)	Intersection	Crossed
50.1	--	O/H Powerline	Intersection	Crossed
50.1	--	Anadarko Petro Pipeline (7.4' COV.)	Intersection	Crossed
51.2	--	Water Line (EXPOSED)	Intersection	Crossed
51.2	--	Anadarko Petroleum Pipeline (5.0' COV.)	Intersection	Crossed
51.2	--	Anadarko Petroleum Pipeline (5.0' COV.)	Intersection	Crossed
51.3	52.0	DCP Midstream Pipeline	Parallel	West
51.8	--	Anadarko Petroleum Pipeline (6.1' COV.)	Intersection	Crossed
52.1	--	DCP Midstream Pipeline	Intersection	Crossed
52.1	54.1	DCP Midstream Pipeline	Parallel	West
52.9	--	Anadarko Pipeline (2) (Exposed New Construction)	Intersection	Crossed
52.9	--	Anadarko Pipeline (7.8' COV.)	Intersection	Crossed
53.1	--	O/H Powerline	Intersection	Crossed
53.1	--	Anadarko Pipeline (6.8' COV)	Intersection	Crossed
53.1	--	Anadarko Pipeline (4.5' COV.)	Intersection	Crossed
53.1	--	Anadarko Pipeline (6.3' COV.)	Intersection	Crossed
53.1	53.2	Water Line	Parallel	West
53.1	--	Water Line (EXPOSED)	Intersection	Crossed
53.4	--	O/H Powerline	Intersection	Crossed
53.8	--	PLAINS Pipeline (7.0'COV.)	Intersection	Crossed
54.1	--	Water Line (EXPOSED)	Intersection	Crossed
54.1	--	DCP Midstream Pipeline (1.3' COV.)	Intersection	Crossed
54.4	--	Delaware BASIN Midstream Pipeline (7.2' COV.)	Intersection	Crossed
55.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
55.0	--	Water Line (UNK. COV.)	Intersection	Crossed
55.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
55.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
55.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
55.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
55.0	--	O/H Powerline	Intersection	Crossed
55.6	55.8	Easement Only	Parallel	East
55.9	56.6	Easement Only	Parallel	East
56.6	56.9	Delaware Midstream Pipeline	Parallel	East
56.9	57.8	Delaware Midstream Pipeline	Parallel	East
57.4	--	O/H Powerline	Intersection	Crossed
57.8	58.0	ORYX Midstream Pipeline	Parallel	East
57.9	--	O/H Powerline	Intersection	Crossed
57.9	--	Anadarko Pipeline	Intersection	Crossed
57.9	--	Anadarko Pipeline (UNK. COV.)	Intersection	Crossed
57.9	--	Anadarko Pipeline (UNK. COV.)	Intersection	Crossed
58.0	58.3	ORYX Midstream Pipeline	Parallel	East
58.4	--	ORYX Midstream Pipeline (6.3' COV.)	Intersection	Crossed
58.4	58.6	Anadarko Pipeline	Parallel	East
58.4	59.9	Plains Pipeline	Parallel	East
58.6	--	Water Line (EXPOSED)	Intersection	Crossed
58.6	--	Water Line (EXPOSED)	Intersection	Crossed
58.6	59.4	Anadarko Pipeline	Parallel	East
58.6	--	Anadarko Pipeline (5.5' COV.)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
58.6	--	O/H Powerline	Intersection	Crossed
59.3	--	O/H Powerline	Intersection	Crossed
59.3	--	Water Line (EXPOSED)	Intersection	Crossed
59.3	--	MESQUITE SWD INC WATER (5.1' COV.)	Intersection	Crossed
59.3	--	Anadarko Pipeline (5.1' COV.)	Intersection	Crossed
59.3	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
59.4	59.6	Anadarko Pipeline	Parallel	East
59.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
60.0	60.1	Anadarko Pipeline	Parallel	East
60.1	60.8	Anadarko Pipeline	Parallel	East
60.1	--	Pipeline Under Construction (EXPOSED)	Intersection	Crossed
60.1	--	Foreign Pipeline (10.1' COV.)	Intersection	Crossed
60.1	--	Pipeline Under Construction (EXPOSED)	Intersection	Crossed
60.5	--	Anadarko Pipeline (5.6' COV.)	Intersection	Crossed
60.8	--	O/H Powerline	Intersection	Crossed
60.8	61.5	Anadarko Pipeline	Parallel	East
61.5	--	SHELL Pipeline (2.3' COV.)	Intersection	Crossed
61.5	62.2	Anadarko Pipeline	Parallel	East
61.5	--	O/H Powerline	Intersection	Crossed
61.5	--	Delaware BASIN Pipeline (8' COV.)	Intersection	Crossed
61.5	--	Enterprise Pipeline (6.3' COV.)	Intersection	Crossed
61.7	--	O/H Powerline	Intersection	Crossed
62.2	--	O/H Powerline	Intersection	Crossed
62.2	--	Water Line (1.6' COV.)	Intersection	Crossed
62.2	63.0	Anadarko Pipeline	Parallel	East
62.4	--	Shell Western E&P Pipelines (3.4' COV.)	Intersection	Crossed
62.9	--	Anadarko Petro Pipeline (5.0' COV.)	Intersection	Crossed
62.9	--	Anadarko Petro Pipeline (5.3' COV.)	Intersection	Crossed
63.0	63.5	Anadarko Pipeline	Parallel	East
63.0	--	Anadarko Pipeline (5.4' COV.)	Intersection	Crossed
63.6	64.3	Easement Only	Parallel	East
64.6	--	Foreign Pipelines (2) UNK. COV.)	Intersection	Crossed
64.6	--	Foreign Pipelines (2) (UNK. COV.)	Intersection	Crossed
64.9	--	Anadarko Gas Pipeline (4.1' COV.)	Intersection	Crossed
64.9	--	Anadarko Gas Pipeline (5' COV.)	Intersection	Crossed
64.9	65.3	Anadarko Pipeline	Parallel	East
65.0	--	O/H Powerline	Intersection	Crossed
65.1	--	Anadarko Gas Pipeline (5.5' COV.)	Intersection	Crossed
65.4	--	Anadarko Gas Pipeline (4.2' COV.)	Intersection	Crossed
65.5	65.6	Anadarko Pipeline	Parallel	East
65.5	--	DCP Midstream Pipeline (1.5' COV.)	Intersection	Crossed
65.6	65.7	Anadarko Pipeline	Parallel	East
65.7	66.1	Anadarko Pipeline	Parallel	East
66.1	--	Anadarko Pipeline (6.8' COV.)	Intersection	Crossed
66.2	--	Western Refining Pipeline (6.8' COV.)	Intersection	Crossed
66.2	--	HOLLY Pipeline (3.9' COV.)	Intersection	Crossed
66.2	--	EL PASO Pipeline (6.8' COV.)	Intersection	Crossed
66.2	--	Kinder Morgan Pipeline (3' COV.)	Intersection	Crossed
66.3	--	Enterprise Pipeline (2.9' COV.)	Intersection	Crossed
66.3	--	O/H Powerline	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
66.3	--	DCP Pipeline (2.9' COV.)	Intersection	Crossed
66.3	--	DCP Pipeline (6' COV.)	Intersection	Crossed
66.3	--	Shell Water Line (4.6' COV.)	Intersection	Crossed
66.3	--	Crestwood Pipeline (3.9' COV.)	Intersection	Crossed
66.3	--	TARGA Pipeline (4.6' COV.)	Intersection	Crossed
66.3	--	Enterprise Pipeline (6.2' COV.)	Intersection	Crossed
66.3	--	Anadarko Pipeline (4.6' COV.)	Intersection	Crossed
66.4	--	Midstream Pipeline (5.9' COV.)	Intersection	Crossed
66.4	--	Enterprise Pipeline (4.9' COV.)	Intersection	Crossed
66.4	67.7	Anadarko Pipeline	Parallel	East
66.4	--	Midstream Pipeline (3.9' COV.)	Intersection	Crossed
66.4	--	O/H Powerline	Intersection	Crossed
66.6	--	Anadarko Pipeline (6.3' COV.)	Intersection	Crossed
66.8	--	O/H Powerline	Intersection	Crossed
67.5	--	Shell Western E&P (6.8' COV.)	Intersection	Crossed
67.9	--	Anadarko Pipeline (5.8' COV.)	Intersection	Crossed
67.9	--	Energy Transfer Pipeline (4.1' COV.)	Intersection	Crossed
68.0	68.2	Anadarko Pipeline	Parallel	East
68.1	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
68.2	68.6	Easement Only	Parallel	East
69.0	69.4	Easement Only	Parallel	East
69.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
69.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
69.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
69.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
69.5	--	Water Line (EXPOSED)	Intersection	Crossed
69.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
69.8	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
69.8	70.3	Easement Only	Parallel	East
69.8	70.3	Foreign Pipeline	Parallel	East
70.2	70.2	Foreign Pipeline	Parallel	East
70.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
70.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
70.8	--	Water Line (EXPOSED)	Intersection	Crossed
71.2	--	Water Line (EXPOSED)	Intersection	Crossed
71.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
71.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
71.2	--	Water Line (EXPOSED)	Intersection	Crossed
71.2	--	O/H Powerline (25'± CLR.)	Intersection	Crossed
71.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
71.8	--	Foreign Pipeline (EXPOSED)	Intersection	Crossed
71.8	--	Utility Power Copper (1.5' COV.)	Intersection	Crossed
71.9	--	O/H Powerline (25'± CLR.) & EDGE ROAD	Intersection	Crossed
72.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
72.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
72.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
72.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
72.1	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
73.2	74.3	Crestwood Permian Basin Pipeline	Parallel	West
73.7	--	Anadarko Pipeline (6.5' COV.)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
73.9	--	Water Line (EXPOSED)	Intersection	Crossed
73.9	--	O/H Powerline	Intersection	Crossed
74.0	--	Anadarko Pipeline (3.2' COV.)	Intersection	Crossed
74.3	75.2	Easement Only	Parallel	East
75.2	75.8	Crestwood Permian Basin Pipeline	Parallel	East
75.3	--	Anadarko OIL Pipeline (7.7' COV.)	Intersection	Crossed
75.3	--	Water Line (4.6' COV.)	Intersection	Crossed
75.3	--	Water Line (4' COV.)	Intersection	Crossed
75.3	--	O/H Powerline	Intersection	Crossed
75.4	--	Anadarko OIL Pipeline (6' COV.)	Intersection	Crossed
75.4	--	Anadarko OIL Pipeline (6' COV.)	Intersection	Crossed
75.4	--	Anadarko OIL Pipeline (6.1' COV.)	Intersection	Crossed
75.9	--	Crestwood Permian Basin Gas Pipeline (5.5' COV.)	Intersection	Crossed
75.9	--	Anadarko Pipeline W/F.O.C. (6.7' COV.)	Intersection	Crossed
75.9	--	O/H Powerline	Intersection	Crossed
75.9	--	Enterprise Products Gas Pipeline (4'COV.)	Intersection	Crossed
76.0	--	Williams Gas Pipeline (7'-8' COV.)	Intersection	Crossed
76.0	81.3	Whitewater Midstream Pipeline	Parallel	West
76.1	--	Water Line (EXPOSED)	Intersection	Crossed
76.1	--	Anadarko Pipeline (5' COV.)	Intersection	Crossed
76.1	--	Water Line (UNK. COV.)	Intersection	Crossed
76.3	--	O/H Powerline	Intersection	Crossed
76.4	--	Anadarko Pipeline (5.5' COV.)	Intersection	Crossed
76.7	--	PLAINS OIL Pipeline (8.6' COV.)	Intersection	Crossed
77.0	--	Anadarko Pipeline (5.3' COV.)	Intersection	Crossed
77.0	--	O/H Powerline	Intersection	Crossed
77.9	--	Water Line (EXPOSED)	Intersection	Crossed
78.0	--	Water Line (EXPOSED)	Intersection	Crossed
78.1	--	Water Line (EXPOSED)	Intersection	Crossed
78.1	--	O/H Powerline	Intersection	Crossed
78.1	--	Water Line (EXPOSED)	Intersection	Crossed
78.1	--	Water Line (EXPOSED)	Intersection	Crossed
78.3	--	Water Line (EXPOSED)	Intersection	Crossed
78.3	--	Water Line (EXPOSED)	Intersection	Crossed
78.3	--	O/H Powerline	Intersection	Crossed
78.4	--	Water Line (EXPOSED)	Intersection	Crossed
78.5	--	Water Line (EXPOSED)	Intersection	Crossed
78.6	--	O/H Powerline	Intersection	Crossed
78.7	--	Enterprise Oil Pipeline (4.8' COV.)	Intersection	Crossed
78.8	--	Foreign Gas Pipeline (UNK.) (5.9' COV.)	Intersection	Crossed
81.3	--	Whitewater Midstream Gas Pipeline (UNK. COV.)	Intersection	Crossed
81.4	81.5	Whitewater Midstream Pipeline	Parallel	West
81.4	81.5	Foreign Pipeline	Parallel	West
81.5	--	2 Water Lines (UNK. COV.)	Intersection	Crossed
81.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
81.5	--	2 Foreign Pipelines (UNK. COV.)	Intersection	Crossed
81.6	--	Shell Western Pipeline (6.5' COV.)	Intersection	Crossed
81.8	--	SHELL Pipeline (5.4' COV.)	Intersection	Crossed
82.0	--	TARGA Pipeline (2.9' COV.)	Intersection	Crossed
82.1	--	Energy Transfer Pipeline (4.5' COV.)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
83.2	--	Water Line (EXPOSED)	Intersection	Crossed
83.3	83.9	Whitewater Midstream Pipeline	Parallel	East
83.4	--	Anadarko Gas Pipeline (4' COV.)	Intersection	Crossed
83.6	--	Anadarko Gas Pipeline (6' COV.)	Intersection	Crossed
83.9	84.2	Whitewater Midstream Pipeline	Parallel	East
84.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
84.3	85.1	Whitewater Midstream Pipeline	Parallel	East
84.8	--	O/H Powerline	Intersection	Crossed
84.8	--	Water Line (EXPOSED)	Intersection	Crossed
84.8	--	Water Line (EXPOSED)	Intersection	Crossed
85.1	--	Water Line (EXPOSED)	Intersection	Crossed
85.2	--	Whitewater Midstream Pipeline (8.1' COV.)	Intersection	Crossed
85.2	85.7	Whitewater Midstream Pipeline	Parallel	East
85.3	--	UNKNOWN Pipeline (UNK. COV.)	Intersection	Crossed
85.3	--	TARGA Midstream Pipeline (UNK. COV.)	Intersection	Crossed
85.7	--	O/H Powerline	Intersection	Crossed
85.7	88.4	Whitewater Midstream Pipeline	Parallel	East
86.3	--	O/H Powerline	Intersection	Crossed
86.4	--	O/H Powerline	Intersection	Crossed
87.2	--	O/H Powerline	Intersection	Crossed
87.6	--	Water Line (EXPOSED)	Intersection	Crossed
87.6	--	O/H Powerline	Intersection	Crossed
88.4	--	Whitewater Midstream Pipeline (6.3' COV.)	Intersection	Crossed
88.4	88.7	Whitewater Midstream Pipeline	Parallel	East
88.6	--	Energy Transfer Gas Pipeline (5.1' COV.)	Intersection	Crossed
88.6	--	Foreign Pipeline (UNK.) (UNK. COV.)	Intersection	Crossed
88.7	89.1	Whitewater Midstream Pipeline	Parallel	West
90.1	91.5	Easement Only	Parallel	West
91.5	91.9	Whitewater Midstream Pipeline	Parallel	West
91.5	--	TARGA Midstream Pipeline (3.6' COV.)	Intersection	Crossed
91.6	--	O/H Powerline	Intersection	Crossed
91.9	--	White Water Midstream Pipeline (7.7' COV.)	Intersection	Crossed
92.0	93.2	Whitewater Midstream Pipeline	Parallel	East
92.1	--	TARGA Midstream Pipeline (4.1' COV.)	Intersection	Crossed
92.9	93.2	Foreign Pipeline	Parallel	East
92.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
92.9	--	Water Line (UNK. COV.)	Intersection	Crossed
93.3	94.6	Easement Only	Parallel	West
93.9	--	Callon Petro Water Line (4.7' COV.)	Intersection	Crossed
93.9	--	BRAZOS Gas Pipeline (6' COV.)	Intersection	Crossed
93.9	--	O/H Powerline	Intersection	Crossed
93.9	--	Medallion Crude Oil Pipeline (5' COV.)	Intersection	Crossed
93.9	--	O/H Powerline	Intersection	Crossed
94.6	95.0	Whitewater Midstream Pipeline	Parallel	West
94.8	--	O/H Powerline	Intersection	Crossed
94.9	--	ORYX Midstream Crude Oil Pipeline (6.5' COV.)	Intersection	Crossed
95.1	--	Whitewater Pipeline (6.1' COV.)	Intersection	Crossed
95.1	96.9	Whitewater Midstream Pipeline	Parallel	West
95.2	--	O/H Powerline	Intersection	Crossed
95.2	--	Energy Transfer Pipeline (6.1' COV.)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
95.2	--	O/H Powerline	Intersection	Crossed
95.2	--	O/H Powerline	Intersection	Crossed
95.4	--	Water Line (EXPOSED)	Intersection	Crossed
95.5	--	Water Line (EXPOSED)	Intersection	Crossed
95.5	--	O/H Powerline, Enterprise Pipeline (4.7' COV.)	Intersection	Crossed
95.6	--	Enterprise Pipeline (4.7' COV.)	Intersection	Crossed
95.6	--	Water Line (EXPOSED)	Intersection	Crossed
95.6	--	Water Line (EXPOSED)	Intersection	Crossed
95.6	--	Devon Pipeline (2.7' COV.)	Intersection	Crossed
95.7	--	Water Line (EXPOSED)	Intersection	Crossed
95.7	--	O/H Powerline	Intersection	Crossed
95.7	--	Water Line (EXPOSED)	Intersection	Crossed
95.8	--	TARGA Pipeline (2.1' COV.)	Intersection	Crossed
95.8	--	Foreign Pipeline (UNK.) (UNK. COV.)	Intersection	Crossed
96.0	--	Foreign Pipeline (UNK.) (7.8' COV.)	Intersection	Crossed
96.0	--	O\H Electric Line	Intersection	Crossed
96.0	--	Callon Petroleum Pipeline (7' COV.)	Intersection	Crossed
96.0	--	Water Line (EXPOSED)	Intersection	Crossed
96.0	--	Water Line (EXPOSED)	Intersection	Crossed
96.0	--	O/H Powerline, POLE 9.4' LT.	Intersection	Crossed
96.0	--	Cimarex Pipeline (4.9' COV.)	Intersection	Crossed
96.0	--	O/H Powerline, POLE 27.8' RT.	Intersection	Crossed
96.1	--	O/H Powerline, POLE 5' RT.	Intersection	Crossed
96.2	--	O/H Powerline	Intersection	Crossed
96.2	--	Water Line (EXPOSED)	Intersection	Crossed
96.2	--	Water Line (EXPOSED)	Intersection	Crossed
96.2	--	Water Line (EXPOSED)	Intersection	Crossed
96.4	--	Water Line (EXPOSED)	Intersection	Crossed
96.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
96.5	--	Water Line (EXPOSED)	Intersection	Crossed
96.5	--	Water Line (EXPOSED)	Intersection	Crossed
96.6	--	Water Line (EXPOSED)	Intersection	Crossed
96.6	--	O/H Powerline	Intersection	Crossed
96.7	--	Texas Gas Services Pipeline (1.1' COV.)	Intersection	Crossed
96.7	--	O/H Powerline	Intersection	Crossed
96.8	--	Water Line (EXPOSED)	Intersection	Crossed
96.9	97.0	Whitewater Midstream Pipeline	Parallel	East
96.9	--	Fiber Optic Cable	Intersection	Crossed
97.0	--	Fiber Optic Cable	Intersection	Crossed
97.0	97.2	Whitewater Midstream Pipeline	Parallel	East
97.1	--	Water Line (EXPOSED)	Intersection	Crossed
97.2	--	Callon Petroleum Gas Pipeline (UNK. COV.)	Intersection	Crossed
97.2	--	Water Line (EXPOSED)	Intersection	Crossed
97.2	--	Water Line (EXPOSED)	Intersection	Crossed
97.2	--	O/H Powerline	Intersection	Crossed
97.3	--	Whitewater Midstream Pipeline (UNK. COV.)	Intersection	Crossed
97.3	98.0	Whitewater Midstream Pipeline	Parallel	East
97.3	--	O/H Powerline	Intersection	Crossed
97.3	--	O/H Powerline	Intersection	Crossed
97.4	--	Water Line (EXPOSED)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
97.5	--	Water Line (EXPOSED)	Intersection	Crossed
97.5	--	O/H Powerline	Intersection	Crossed
98.0	98.5	Whitewater Midstream Pipeline	Parallel	East
98.0	--	Salt Creek Midstream Pipeline (8.2' COV.)	Intersection	Crossed
98.1	--	Water Line (EXPOSED)	Intersection	Crossed
98.1	--	CALLON PETROLEUM Water Line (5.1' COV.)	Intersection	Crossed
98.1	--	Enterprise Oil Gas Pipeline (5.3' COV.)	Intersection	Crossed
98.1	--	Water Line (EXPOSED)	Intersection	Crossed
98.1	--	O/H Powerline	Intersection	Crossed
98.1	--	O/H Powerline	Intersection	Crossed
98.1	--	Goodnight Salt Water Pipeline (EXPOSED)	Intersection	Crossed
98.2	--	MEDALLON Pipeline (8.3' COV.)	Intersection	Crossed
98.4	--	Water Line (EXPOSED)	Intersection	Crossed
98.4	--	Water Line (EXPOSED)	Intersection	Crossed
98.5	--	Water Line (EXPOSED)	Intersection	Crossed
98.5	98.8	Whitewater Midstream Pipeline	Parallel	East
98.5	--	Water Line (EXPOSED)	Intersection	Crossed
98.5	--	Water Line (EXPOSED)	Intersection	Crossed
98.6	--	Water Line (EXPOSED)	Intersection	Crossed
98.6	--	Water Line (EXPOSED)	Intersection	Crossed
98.6	--	Water Line (EXPOSED)	Intersection	Crossed
98.7	--	Energy Transfer Pipeline (1.8' COV.)	Intersection	Crossed
98.8	--	O/H Powerline	Intersection	Crossed
98.8	99.0	Whitewater Midstream Pipeline	Parallel	East
98.9	--	ETC Pipeline (1.9' COV.)	Intersection	Crossed
98.9	--	Water Line (EXPOSED)	Intersection	Crossed
98.9	--	Water Line (EXPOSED)	Intersection	Crossed
98.9	--	Water Line (EXPOSED)	Intersection	Crossed
98.9	--	Water Line (EXPOSED)	Intersection	Crossed
99.0	99.4	Whitewater Midstream Pipeline	Parallel	East
99.0	--	Enterprise Pipeline (6.3' COV.)	Intersection	Crossed
99.0	--	CIMAREX Energy Pipeline (1.9' COV.)	Intersection	Crossed
99.0	--	O/H Powerline	Intersection	Crossed
99.1	--	Water Line (EXPOSED)	Intersection	Crossed
99.2	--	O/H Powerline	Intersection	Crossed
99.2	--	O/H Powerline	Intersection	Crossed
99.3	--	Water Line (UNK. COV.)	Intersection	Crossed
99.3	--	Water Line (UNK. COV.)	Intersection	Crossed
99.4	--	O/H Powerline	Intersection	Crossed
99.5	--	Energy Transfer Gas Pipeline (4.3' COV.)	Intersection	Crossed
99.5	--	Water Line (EXPOSED)	Intersection	Crossed
99.6	--	Water Line (EXPOSED)	Intersection	Crossed
99.9	--	O/H Powerline	Intersection	Crossed
99.9	--	Southern UNI Sour Gas Pipeline (3' TO 4' COV.)	Intersection	Crossed
100.0	100.2	Southern Union Pipeline	Parallel	East
100.1	--	Water Line (EXPOSED)	Intersection	Crossed
100.2	--	Water Line (EXPOSED)	Intersection	Crossed
100.3	101.4	Whitewater Midstream Pipeline	Parallel	East
100.4	--	O/H Powerline	Intersection	Crossed
100.8	--	Waterbridge Pipeline (15.6' COV.)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
100.8	--	Magellan Pipeline (7.2' COV.)	Intersection	Crossed
100.8	--	Water Line (EXPOSED)	Intersection	Crossed
101.1	--	Water Line (EXPOSED)	Intersection	Crossed
101.4	101.7	Whitewater Midstream Pipeline	Parallel	East
101.4	--	Kinder Morgan Pipeline (4.1' COV.)	Intersection	Crossed
101.4	--	O/H Powerline	Intersection	Crossed
101.7	--	Energy Transfer Pipeline (5.6' COV.)	Intersection	Crossed
101.7	102.4	Whitewater Midstream Pipeline	Parallel	West
102.2	--	TARGA Sour Gas Pipeline (4.1' COV.)	Intersection	Crossed
102.4	--	White Water Midstream Pipeline (7.1' COV.)	Intersection	Crossed
102.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
102.6	--	O/H Electric Line	Intersection	Crossed
102.6	--	Water Line (EXPOSED)	Intersection	Crossed
102.7	--	Energy Transfer Pipeline (UNK. COV.)	Intersection	Crossed
102.7	103.0	Whitewater Midstream Pipeline	Parallel	West
102.7	--	Water Line (EXPOSED)	Intersection	Crossed
102.7	--	Water Line (EXPOSED)	Intersection	Crossed
102.7	--	Energy Transfer Pipeline (UNK. COV.)	Intersection	Crossed
102.9	--	O/H Powerline	Intersection	Crossed
103.0	--	Energy Transfer Pipeline (4.9' COV.)	Intersection	Crossed
103.0	--	Energy Transfer Pipeline (4.1' COV.)	Intersection	Crossed
103.1	103.9	Medallion Pipeline	Parallel	East
103.1	103.9	Pioneer Pipeline	Parallel	East
103.5	--	O/H Powerline	Intersection	Crossed
103.5	103.9	O/H Powerline	Parallel	West
103.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
103.9	--	O/H Powerline	Intersection	Crossed
103.9	--	PIONEER Pipeline (3.9' COV.)	Intersection	Crossed
104.0	104.4	Pioneer Pipeline	Parallel	East
104.0	--	O/H Powerline	Intersection	Crossed
104.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
104.4	--	O/H Powerline	Intersection	Crossed
104.5	104.9	Easement Only	Parallel	East
104.6	--	Water Line (EXPOSED)	Intersection	Crossed
104.6	--	Water Line (4.6' COV.)	Intersection	Crossed
104.6	--	O/H Powerline	Intersection	Crossed
104.6	--	CITY OF PECOS Water Line (6.4' COV.)	Intersection	Crossed
104.6	--	CHEVRON Pipeline (1.2' COV.)	Intersection	Crossed
104.8	--	Foreign Pipeline (UNK.) (1.8' COV.)	Intersection	Crossed
104.9	--	Water Line (EXPOSED)	Intersection	Crossed
104.9	--	Water Line (EXPOSED)	Intersection	Crossed
105.7	--	OXY Water Line (6.2' COV.)	Intersection	Crossed
105.8	106.5	Oneok Pipeline	Parallel	West
106.0	--	Energy Transfer Gas Pipeline (7.1' COV.)	Intersection	Crossed
106.0	--	Energy Transfer Gas Pipeline (6.5' COV.)	Intersection	Crossed
106.0	--	Energy Transfer Gas Pipeline (4.5' COV.)	Intersection	Crossed
106.2	--	EL PASO Pipeline (7.6' COV.)	Intersection	Crossed
106.3	--	ORYX Midstream Pipeline (3.1' COV.)	Intersection	Crossed
106.5	--	O/H Powerline	Intersection	Crossed
106.6	--	Oneoak Pipeline (4.5' COV.)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
106.6	107.9	Oneok Pipeline	Parallel	West
106.9	--	Energy Transfer Pipeline (2.8' COV.)	Intersection	Crossed
106.9	--	Petroleum Company Pipeline (2.0' COV.)	Intersection	Crossed
107.0	--	REGENCY Pipeline (UNK. COV.)	Intersection	Crossed
107.5	--	Foreign Pipeline (6.5' COV.)	Intersection	Crossed
107.9	108.3	Diamonback Pipeline	Parallel	East
107.9	--	Oneoak Gas Pipeline (4.2 COV.)	Intersection	Crossed
108.3	108.4	Easement Only	Parallel	East
108.4	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
108.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
108.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
108.6	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
108.6	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
108.6	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
108.6	109.1	Easement Only	Parallel	East
108.6	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
109.0	--	O/H Powerline	Intersection	Crossed
109.3	--	Water Line (EXPOSED)	Intersection	Crossed
109.3	--	O/H Powerline	Intersection	Crossed
109.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
109.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
109.6	--	Energy Transfer Pipeline (4.7' COV.)	Intersection	Crossed
109.7	110.2	Enterprise Pipeline	Parallel	East
109.9	--	Energy Transfer Pipeline (4.9' COV.)	Intersection	Crossed
109.9	--	O/H Powerline	Intersection	Crossed
110.2	110.6	Easement Only	Parallel	East
110.4	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
110.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
110.5	--	Energy Transfer Gas Pipeline (4.1' COV.)	Intersection	Crossed
110.5	--	Timber Sharp Drilling Pipeline (9.4' COV.)	Intersection	Crossed
110.6	--	O/H Powerline	Intersection	Crossed
110.6	113.0	Enterprise Pipeline	Parallel	East
110.6	--	O/H Powerline	Intersection	Crossed
110.6	--	Water Line (EXPOSED)	Intersection	Crossed
110.6	--	Foreign Pipeline (UNK.) (3.6' COV.)	Intersection	Crossed
110.6	--	Water Line (EXPOSED)	Intersection	Crossed
111.0	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
111.3	--	O/H Powerline	Intersection	Crossed
111.4	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
111.4	--	ORYX Midstream Gas Pipeline (5.5' COV.)	Intersection	Crossed
111.4	--	Foreign Pipeline (UNK.) (5' COV.)	Intersection	Crossed
111.4	--	Water Line (EXPOSED)	Intersection	Crossed
111.6	--	Anadarko Gas Pipeline (7.5' COV.)	Intersection	Crossed
111.7	--	O/H Powerline	Intersection	Crossed
112.0	--	O/H Powerline	Intersection	Crossed
112.0	--	Water Line (EXPOSED)	Intersection	Crossed
112.1	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
112.2	--	O/H Powerline	Intersection	Crossed
112.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
112.3	--	Energy Transfer Gas Pipeline (4.2' COV.)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
112.4	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
112.4	--	Water Line (EXPOSED)	Intersection	Crossed
112.7	--	O\H Powerline	Intersection	Crossed
112.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
113.0	--	BRAZOS Midstream Gas Pipeline (7.1' COV.)	Intersection	Crossed
113.0	--	O\H Powerline	Intersection	Crossed
113.3	--	Energy Transfer Pipeline (4.7' COV.)	Intersection	Crossed
113.3	--	O/H Powerline	Intersection	Crossed
113.3	--	O/H Powerline	Intersection	Crossed
113.5	--	Energy Transfer Gas Pipeline (2.1' COV.)	Intersection	Crossed
113.5	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
113.6	--	ORYX Midstream OIL Pipeline (5.1' COV.)	Intersection	Crossed
113.6	--	Noble Midstream OIL Pipeline (5.2' COV.)	Intersection	Crossed
113.6	--	EPC Consolidated Oil Pipeline (5.9' COV.)	Intersection	Crossed
113.6	--	Water Line (UNKNOWN COV.)	Intersection	Crossed
113.6	--	Regency Gas Services Gas Pipeline (3.2' COV.)	Intersection	Crossed
114.0	--	Sid Richardson Sour Gas Pipeline (4.2' COV.)	Intersection	Crossed
114.3	--	Energy Transfer Gas Pipeline (4.8' COV.)	Intersection	Crossed
114.3	--	Energy Transfer Gas Pipeline (1.1' COV.)	Intersection	Crossed
114.3	--	Energy Transfer Pipeline (3'COV.)	Intersection	Crossed
114.4	--	TARGA Midstream SOUR Gas Pipeline (2.4' COV.)	Intersection	Crossed
114.4	--	O\H Electric Line	Intersection	Crossed
T200 - MP 33.3 to MP 115.2 (Continued)				
114.5	--	O\H Electric Line	Intersection	Crossed
114.5	--	White Water Midstream Gas Pipeline (6.8' COV.)	Intersection	Crossed
114.5	--	Brazos Midstream Gas Pipeline (4.6' COV.)	Intersection	Crossed
114.6	--	Enterprise Gas Pipeline (3.8' COV.)	Intersection	Crossed
114.6	--	Vaquero Permian Gathering Gas Pipeline (8' COV.)	Intersection	Crossed
114.6	--	OXY Gas Pipeline (6.1' COV.)	Intersection	Crossed
114.6	--	O/H Powerline	Intersection	Crossed
114.8	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
T300 - MP 115.2-116.5				
115.6	115.7	Enterprise Pipeline	Parallel	South
115.6	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
115.6	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
115.6	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
115.6	--	O/H Powerline	Intersection	Crossed
115.7	--	O\H Powerline	Intersection	Crossed
115.9	--	2 Foreign Pipelines (UNK. COV.)	Intersection	Crossed
115.9	--	Enterprise Pipeline (UNK. COV.)	Intersection	Crossed
115.9	--	Enterprise Pipeline (UNK. COV.)	Intersection	Crossed
115.9	--	Enterprise Pipeline (UNK. COV.)	Intersection	Crossed
115.9	--	Enterprise Pipeline (UNK. COV.)	Intersection	Crossed
115.9	--	Enterprise Pipeline (UNK. COV.)	Intersection	Crossed
115.9	--	Enterprise Pipeline (UNK. COV.)	Intersection	Crossed
116.0	--	TARGA Midstream Pipeline (UNK.COV.)	Intersection	Crossed
116.1	116.5	Oxy Pipeline	Parallel	South
116.3	--	EL PASO Gas Pipeline (4.7' COV.)	Intersection	Crossed
116.4	--	EL PASO Gas Pipeline (7.1' COV.)	Intersection	Crossed
116.5	--	OXY Pipeline (UNK. COV.) 0	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
L100 - MP 0.0 to MP 16.3				
1.1	--	Water Line (EXPOSED)	Intersection	Crossed
1.1	--	Water Line (EXPOSED)	Intersection	Crossed
1.1	--	O/H Powerline	Intersection	Crossed
1.5	--	O/H Powerline	Intersection	Crossed
1.5	--	Water Line (UNK. COV.)	Intersection	Crossed
1.5	--	Foreign Gas Pipeline (UNK. COV.)	Intersection	Crossed
1.5	--	Foreign Oil Pipeline (UNK. COV.)	Intersection	Crossed
2.8	--	Water Line (UNK. COV.)	Intersection	Crossed
2.8	--	Water Line (EXPOSED)	Intersection	Crossed
2.8	--	Foreign Crude Oil Pipeline (UNK. COV.)	Intersection	Crossed
2.8	--	Water Line (UNK. COV.)	Intersection	Crossed
3.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
3.6	--	Water Line (EXPOSED)	Intersection	Crossed
3.6	--	Water Line (EXPOSED)	Intersection	Crossed
3.6	--	Foreign Gas Pipeline (EXPOSED)	Intersection	Crossed
3.6	--	XTO Water Line (UNK. COV.)	Intersection	Crossed
3.6	--	O/H Powerline	Intersection	Crossed
3.7	--	Foreign Gas Pipeline (UNK. COV.)	Intersection	Crossed
3.7	--	Foreign Gas Pipeline (UNK. COV.)	Intersection	Crossed
3.7	--	Water Line (EXPOSED)	Intersection	Crossed
3.7	--	Water Line (EXPOSED)	Intersection	Crossed
3.7	--	Water Line (EXPOSED)	Intersection	Crossed
3.7	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
3.7	--	Foreign Gas Pipeline (UNK. COV.)	Intersection	Crossed
3.8	--	O/H Powerline	Intersection	Crossed
3.8	--	Water Line (EXPOSED)	Intersection	Crossed
5.7	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
5.7	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
5.7	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
5.8	--	Water Line (EXPOSED)	Intersection	Crossed
5.8	6.5	Enterprise Pipeline	Parallel	South
5.8	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
5.8	--	Water Line (EXPOSED)	Intersection	Crossed
6.1	--	Water Line (EXPOSED)	Intersection	Crossed
6.1	--	O\H Electric Line	Intersection	Crossed
6.5	--	Water Line (EXPOSED)	Intersection	Crossed
6.5	--	Occidental Permian LTD Pipeline (3.4' COV.)	Intersection	Crossed
6.5	7.4	Yates Pipeline	Parallel	South
6.5	7.4	Foreign Pipeline	Parallel	South
6.5	6.9	O/H Powerline	Parallel	South
6.8	--	Water Line (UNK. COV.)	Intersection	Crossed
6.8	--	Water Line (UNK. COV.)	Intersection	Crossed
6.8	6.9	2 Foreign Pipelines	Parallel	South
7.0	--	Centurion Pipeline (6' COV.)	Intersection	Crossed
7.0	--	Enterprise Pipeline (3.2' COV.)	Intersection	Crossed
7.0	--	Enterprise Pipeline (9.2' COV.)	Intersection	Crossed
7.1	--	Water Line (EXPOSED)	Intersection	Crossed
7.1	7.4	Water Line	Parallel	South
7.4	--	Water Line (EXPOSED)	Intersection	Crossed

TABLE C-1 Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]				
7.4	--	O/H Powerline	Intersection	Crossed
7.4	7.9	Water Line	Parallel	South
7.4	7.9	O/H Powerline	Parallel	South
8.1	8.7	Yates Pipeline	Parallel	South
8.1	8.7	Water Line	Parallel	South
8.1	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
8.7	9.4	Foreign Pipeline	Parallel	South
8.7	--	Water Line (UNK. COV.)	Intersection	Crossed
9.1	--	Energy Transfer Pipeline (UNK. COV.)	Intersection	Crossed
9.2	--	O/H Powerline	Intersection	Crossed
9.2	9.3	O/H Powerline	Parallel	South
9.2	9.3	Russet Trunkline Pipeline	Parallel	South
9.4	10.0	Russet Trunkline Pipeline	Parallel	South
9.4	--	O\H Electric Line	Intersection	Crossed
9.4	9.9	Foreign Pipeline	Parallel	South
10.0	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
10.1	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
10.1	--	Water Line (EXPOSED)	Intersection	Crossed
10.1	--	Water Line (EXPOSED)	Intersection	Crossed
10.2	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
10.3	--	Water Line (EXPOSED)	Intersection	Crossed
10.8	12.4	Lucid Energy Pipeline	Parallel	South
11.0	--	Enterprise Pipeline (2.2' COV.)	Intersection	Crossed
11.2	--	DCP Pipeline (5.1' COV.)	Intersection	Crossed
11.4	--	O\H Electric Line	Intersection	Crossed
11.7	--	Water Line (EXPOSED)	Intersection	Crossed
11.8	--	Enterprise Pipeline (7' COV.)	Intersection	Crossed
12.0	--	Mewbourne Pipeline (2.4' COV.)	Intersection	Crossed
12.0	--	Mewbourne Pipeline (1.3' COV.)	Intersection	Crossed
12.1	12.4	Enterprise Pipeline	Parallel	South
12.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
12.3	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
12.3	--	Mewbourne Pipeline (3.9' COV.)	Intersection	Crossed
12.3	--	Mewbourne Pipeline (2.1' COV.)	Intersection	Crossed
12.4	--	Water Line (EXPOSED)	Intersection	Crossed
12.6	--	O\H Electric Line	Intersection	Crossed
12.6	--	Water Line (UNKNOWN COV.)	Intersection	Crossed
12.6	--	Water Line (EXPOSED)	Intersection	Crossed
12.6	--	Water Line (EXPOSED)	Intersection	Crossed
12.6	--	Water Line (EXPOSED)	Intersection	Crossed
12.6	--	DCP Midstream Pipeline (3.3' COV.)	Intersection	Crossed
12.6	--	DCP Midstream Pipeline (3.3' COV.)	Intersection	Crossed
12.7	13.0	3 Water Lines	Parallel	West
12.7	13.0	O/H Powerline	Parallel	West
12.7	13.0	Enterprise Pipeline	Parallel	South
12.7	13.2	Lucid Energy Pipeline	Parallel	South
12.8	--	Water Line (UNKNOWN COV.)	Intersection	Crossed
12.8	--	Water Line (UNKNOWN COV.)	Intersection	Crossed
12.8	--	Water Line (UNKNOWN COV.)	Intersection	Crossed
13.1	--	Enterprise Pipeline (3.2' COV.)	Intersection	Crossed

TABLE C-1

Existing Utility ROWs Crossed/Adjacent to the Pipeline[1]

13.2	13.3	O/H Powerline	Parallel	South
13.3	13.6	Foreign Pipeline	Parallel	South
13.3	--	O/H Powerline	Intersection	Crossed
13.3	--	Foreign Pipeline (EXPOSED)	Intersection	Crossed
13.5	13.6	O/H Powerline	Parallel	South
13.8	--	O/H Powerline	Intersection	Crossed
13.8	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
13.8	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
13.9	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
14.5	--	O/H Powerline	Intersection	Crossed
14.7	--	O\H Electric Line	Intersection	Crossed
14.7	--	O\H Electric Line	Intersection	Crossed
14.8	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
14.8	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
15.0	15.3	Foreign Pipeline	Parallel	South
15.3	15.6	Foreign Pipeline	Parallel	South
15.6	16.2	Foreign Pipeline	Parallel	South
15.6	--	Water Line (UNK. COV.)	Intersection	Crossed
15.7	--	Foreign Pipeline (UNKNOWN COV.)	Intersection	Crossed
15.7	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
15.7	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
15.7	--	O/H Powerline	Intersection	Crossed
15.9	--	O/H Powerline	Intersection	Crossed
16.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
16.2	--	Foreign Pipeline (UNK. COV.)	Intersection	Crossed
16.2	--	Foreign Pipeline	Intersection	Crossed
16.2	--	O\H Electric Line	Intersection	Crossed
12.3	12.6	O/H Power UNK	Parallel	West
13.0	13.2	O/H Power UNK	Parallel	West
13.1	13.2	Foreign Pipeline	Parallel	Crossed
13.2	15.5	Foreign Pipeline	Intersection	Crossed
13.3	--	O/H Power UNK	Intersection	Crossed
13.3	13.7	O/H Power UNK	Parallel	South
15.4	16.0	Foreign Pipeline	Parallel	South
16.0	--	Foreign Pipeline	Intersection	Crossed

Note:

1 Based on field surveys and review of aerial photography.

2 UNK = Unknown; COV = depth of cover over utility; (--) = none

TABLE C-2
Existing and Proposed Access Roads

Approximate MP[1]	County/State	Access Road ID[2]	Type (Existing /New)	Surface Material of Existing Access Road	Existing Land Use	Existing Access Road Dimensions (feet)		New Access Road Dimensions (feet)	
						Length	Width	Length	Width
T100									
0.0	Eddy, NM	PAR-FAC-1	Existing	Caliche	Commercial/Industrial	1,436	30	--	--
1.4	Eddy, NM	TAR-1	Existing	Caliche	Commercial/Industrial	1,482	30	--	--
4.5	Eddy, NM	TAR-2A	New	N/A[3]	Rangeland/ Commercial/Industrial	--	--	955	30
11.8	Eddy, NM	TAR-3	Existing	Caliche	Commercial/Industrial	1,032	30	--	--
13.8	Eddy, NM	PAR-FAC-2	New	N/A	Rangeland/ Utility ROW	--	--	1,012	30
14.9	Eddy, NM	PAR-MLV-1	New	N/A	Rangeland	--	--	278	30
18.8	Eddy, NM	TAR-4	Existing	Caliche	Commercial/Industrial	14,287	30	--	--
24.4	Eddy, NM	TAR-5	Existing	Caliche	Commercial/Industrial	1,398	30	--	--
33.2	Eddy, NM	PAR-FAC-6	New	N/A	Rangeland/ Commercial/Industrial/ Utility ROW	--	--	755	30
T200									
33.4	Eddy, NM	PAR-FAC-7	New	N/A	Rangeland/ Commercial/Industrial/ Utility ROW	--	--	520	30
35.9	Eddy, NM	TAR-8A	Existing	Caliche	Commercial/Industrial	1,616	30	--	--
37.0	Eddy, NM	TAR-8B	Existing	Caliche	Commercial/Industrial	2,031	30	--	--
46.4	Lea, NM	TAR-9	Existing	Caliche	Commercial/Industrial	2,219	30	--	--
46.4	Eddy, NM	TAR-9	Existing	Caliche	Commercial/Industrial	13,540	30	--	--
48.8	Loving, TX	TAR-10	Existing	Caliche	Commercial/Industrial	4,091	30	--	--
53.1	Loving, TX	PAR-MLV-3	Existing	Caliche	Open Land/Commercial/Industrial	174	30	--	--
53.4	Loving, TX	PAR-4	Existing	Caliche	Commercial/Industrial	13,039	30	--	--
56.6	Loving, TX	TAR-12	Existing	Caliche	Commercial/Industrial	18,650	30	--	--
61.5	Loving, TX	TAR-13	Existing	Caliche	Commercial/Industrial	9,063	30	--	--
R1 2.0	Loving, TX	TAR-13A	Existing	Caliche	Commercial/Industrial	1,928	***30***	--	--
R1 2.5	Loving, TX	TAR-13B	Existing	Caliche	Commercial/Industrial	19,764	***30***	--	--
R1 4.7	Loving, TX	TAR-13C	Existing	Caliche	Commercial/Industrial	16,974	***30***	--	--
R1 7.7	Loving, TX	TAR-14	Existing	Caliche	Commercial/Industrial	4,797	***30***	--	--
R1 9.3	Loving, TX	PAR-5	Existing	Caliche	Commercial/Industrial	2,647	***30***	--	--
R1 10.1	Loving, TX	TAR-15	Existing	Caliche	Commercial/Industrial	6,716	***30***	--	--
70.4	Loving, TX	PAR-MLV-4	New	N/A	Open Land/Commercial/Industrial	--	--	161	30
71.9	Loving, TX	TAR-16	Existing	Caliche	Commercial/Industrial	10,440	30	--	--
73.9	Loving, TX	TAR-17B	Existing	Caliche	Commercial/Industrial	11,642	30	--	--
75.8	Loving, TX	TAR-17	Existing	Caliche	Commercial/Industrial	21,368	30	--	--
78.3	Loving, TX	PAR-6	Existing	Caliche	Commercial/Industrial	35,992	30	--	--
T200 (Continued)									
82.0	Ward, TX	TAR-19	Existing	Caliche	Commercial/Industrial	46080	30	--	--

TABLE C-2
Existing and Proposed Access Roads

Approximate MP[1]	County/State	Access Road ID[2]	Type (Existing /New)	Surface Material of Existing Access Road	Existing Land Use	Existing Access Road Dimensions (feet)		New Access Road Dimensions (feet)	
						Length	Width	Length	Width
82.0	Loving, TX	TAR-19	Existing	Caliche	Commercial/Industrial	7435	30	--	--
89.8	Loving, TX	PAR-MLV-5	New	N/A	Open Land/ Utility ROW	--	--	124	30
91.0	Ward, TX	PAR-7	Existing	Caliche	Commercial/Industrial	7,175	30	--	--
97.1	Ward, TX	TAR-21A	Existing	Caliche	Commercial/Industrial	528	30	--	--
98.1	Ward, TX	TAR-21B	Existing	Caliche	Commercial/Industrial	1,127	30	--	--
99.3	Ward, TX	TAR-21C	Existing	Caliche	Commercial/Industrial	1,701	30	--	--
100.2	Ward, TX	TAR-21	Existing	Caliche	Commercial/Industrial	17,202	30	--	--
102.1	Ward, TX	TAR-22	Existing	Caliche	Commercial/Industrial	8,463	30	--	--
106.1	Ward, TX	PAR-MLV-6	New	N/A	Open Land	--	--	212	30
106.1	Ward, TX	PAR-9	Existing	Caliche	Commercial/Industrial	13,215	30	--	--
109.4	Reeves, TX	TAR-23	Existing	Caliche	Commercial/Industrial	19,213	30	--	--
111.8	Reeves, TX	TAR-24	Existing	Caliche	Commercial/Industrial	3,539	30	--	--
T300									
115.2	Reeves, TX	PAR-FAC-9	New	N/A	Rangeland/ Commercial/Industrial/ Utility ROW	--	--	1,734	30
115.2	Reeves, TX	PAR-FAC-10	New	N/A	Commercial/Industrial	--	--	3,289	30
116.6	Pecos, TX	PAR-FAC-11	Existing	Caliche	Commercial/Industrial	1,297	30	--	--
L100									
0	Eddy, NM	PAR-1	Existing	Caliche	Commercial/Industrial	31,681	30	--	--
3.6	Eddy, NM	TAR-1	Existing	Caliche	Commercial/Industrial	42,332	30	--	--
10.2	Eddy, NM	PAR-1	Existing	Caliche	Commercial/Industrial	4,004	30	--	--
10.9	Eddy, NM	TAR-2	Existing	Caliche	Commercial/Industrial	4,831	30	--	--
11.8	Eddy, NM	TAR-3	Existing	Caliche	Commercial/Industrial	8,419	30	--	--
12.6	Eddy, NM	TAR-3A	Existing	Caliche	Commercial/Industrial	997	30	--	--
R2 0.7	***Eddy, NM***	***TAR-10A***	***Existing***	***Caliche***	***Commercial/Industrial***	1,115	***30***	--	--
15.6	Eddy, NM	PAR-10	Existing	Caliche	Commercial/Industrial	1,241	30	--	--
					Totals	**438,305 (83.0 miles)**	--	**9,040 (1.7 miles)**	--

TABLE C-2
Existing and Proposed Access Roads

Approximate MP[1]	County/State	Access Road ID[2]	Type (Existing /New)	Surface Material of Existing Access Road	Existing Land Use	Existing Access Road Dimensions (feet)		New Access Road Dimensions (feet)	
						Length	Width	Length	Width

Notes:

1 MP is based on where the access road enters into the nominal corridor.

2 PAR indicates a permanent access road, TAR indicates a temporary access road, FAC indicates a facility access road and MLV indicates a mainline block valve access road.

N/A = not applicable; (--) = None

Table C-3 Summary of Land Requirements for the Project			
Facility	**County, State**	**Land Affected During Construction (acres)**	**Land Affected During Operation (acres)**
Pipeline			
T100	Eddy County, NM	497.3	202.4
T200	Eddy County, NM	199.9	82.1
	Loving County, TX	560.9	225.5
	Ward County, TX	394.2	161.1
	Reeves County, TX	100.6	40.3
T300	Reeves County, TX	17.0	7.1
	Pecos County, TX	1.3	0.8
L100	Eddy County, NM	235.4	98.8
ATWS[3]			
T100	Eddy County, NM	49.0	0.0
T200	Eddy County, NM	26.3	0.0
	Loving County, TX	48.9	0.0
	Ward County, TX	48.1	0.0
	Reeves County, TX	21.5	0.0
T300	Reeves County, TX	1.7	0.0
	Pecos County, TX	0.5	0.0
L100	Eddy County, NM	37.3	0.0
Other Work Areas			
Temporary Access Roads[4]	Eddy County, NM	93.3	0.0
	Lea County, NM	1.5	0.0
	Loving County, TX	127.3	0.0
	Ward County, TX	66.0	0.0
	Reeves County, TX	19.1	0.0
Permanent Access Roads[4]	Eddy County, NM	28.2	28.2
	Lea County, NM	0.0	0.0
	Loving County, TX	35.8	35.8
	Ward County, TX	14.3	14.3
	Reeves County, TX	3.5	3.5
	Pecos County, TX	0.9	0.9
Pecos Laydown Yard	Reeves County, TX	31.5	0.0
Lane Laydown Yard	Eddy County, NM	38.1	0.0
T100 Aboveground Facilities			
30-Inch Pig Launcher	Eddy County, NM	0.0	0.0
Point of Receipt (POR) 1 (Lane Plant Receipt Meter Station)[2]	Eddy County, NM	6.4	0.7 (Existing Site)
POR 2 (Big Eddy Meter Station)	Eddy County, NM	3.7	1.7
Mainline Block Valves[6]	Eddy County, NM	0.0	0.0
Poker Lake Meter Station	Eddy County, NM	37.4	30.1
30-Inch Receiver[6]	Eddy County, NM	0.0	0.0
POR 3 (XTO Receipt Meter)[6] (Poker Lake Meter Station)	Eddy County, NM	0.0	0.0
T200 Aboveground Facilities			

Table C-3 Summary of Land Requirements for the Project			
42-Inch Pig Launcher[6]	Eddy County, NM	0.0	0.0
Mainline Block Valves[6]	Eddy County, NM	0.0	0.0
POR 4 (Lobo Receipt Meter Station)	Loving County, TX	6.5	2.2
T300 Aboveground Facilities			
42-Inch Pig Receiver[6]	Reeves County, TX	0.0	0.0
Mainline Block Valve[6]	Reeves County, TX	0.0	0.0
Waha Receiver and Separation Site	Reeves County, TX	76.7	3.2
Kinder Morgan Point of Delivery (PHP and GCX)	Pecos County, TX	1.1	1.1
TPP Point of Delivery	Reeves County, TX	4.2	2.3
L100 Aboveground Facilities			
Mainline Block Valve[6]	Eddy County, NM	0.0	0.0
30-inch Pig Launcher[6]	Eddy County, NM	0.0	0.0
30-inch Pig Receiver (L100 Receiver)	Eddy County, NM	3.2	0.7
L100 Receipt and Operations Site[7]	Eddy County, NM	24.3	24.3
Totals[5]		**2,862.9**	**967.1**

Notes:

1 Land affected during construction includes both temporary and permanent work areas.

2 Represents a 125-foot-wide construction ROW, including a 50-foot-wide permanent ROW and 75-foot-wide temporary workspace.

3 Extra work areas at waterbody, wetland, and road crossings, etc.

4 Based on a 30-foot-wide access road.

5 Totals may not equal the sum of the column due to rounding.

6 Land required for mainline block valves, receipt meters, and pig launchers and receivers, is located within the permanent 50-foot ROW or other identified aboveground facilities and has been included in Table 1.2-1, as applicable.

7 L100 Receipt and Operations Site includes POR 5 (Matador Receipt Meter), POR 6 (Sendero Receipt Meter), and POR 7 (Lucid Roadrunner Receipt Meter).

TABLE C-4

Waterbodies Crossed by the Project

Feature ID[1]	MP	Waterbody Name[2]	Flow Regime[3]	OHWM Crossing Width (feet)	FERC Waterbody Type	County, State	Crossing Method
L100							
SNM-TMA-070	R2 0.8	UNT to Pecos River	E	1	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-071	R2 1.0	UNT to Pecos River	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-072	R2 1.0	UNT to Pecos River	E	1	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-JRM-001	5.4	UNT to Pecos River	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-049	6.6	UNT to Pecos River	E	5	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-050	7	UNT to Pecos River	E	4	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-005	8.2	Unnamed Stream	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-006	8.2	Unnamed Stream	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-008	8.3	Unnamed Stream	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-DAD-010	8.3	Unnamed Stream	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-DAD-007	8.3	Unnamed Stream	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-DAD-008	8.3	Unnamed Stream	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-DAD-009	8.3	Unnamed Stream	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-051	8.3	Unnamed Stream	E	1	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-052	8.3	Unnamed Stream	E	1.5	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-053	8.3	Unnamed Stream	E	1.5	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-054	8.3	Unnamed Stream	E	1	Minor	Eddy, NM	Timbermat
SNM-DAD-011	8.4	Unnamed Stream	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-047	8.4	Unnamed Stream	E	3	Minor	Eddy, NM	Timbermat
SNM-TMA-048	8.4	Unnamed Stream	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-DAD-013	10.5	Pecos River	P	415		Eddy, NM	HDD
SNM-KAC-069	11	UNT to Pecos River	E	4	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-070	11.1	UNT to Pecos River	E	1.5	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-056	11.6	UNT to Pecos River	E	4	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-057	11.6	UNT to Pecos River	E	3	Minor	Eddy, NM	Timbermat
SNM-TMA-058	13.5	UNT to Black River	E	8	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
DNM-JRM-005-EXT	R3 0.1	Unnamed Canal	I	4	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-DAD-006	14.5	Southern Canal	E	20	Intermediate	Eddy, NM	Bore
SNM-TMA-015	15.3	Unnamed Stream	E	2	Minor	Eddy, NM	Bore
T100							
SNM-TMA-055	8.9	UNT to Red Lake	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-017	13.3	Unnamed Stream	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-JRM-006	15.3	UNT to Nash Draw	E	2	Minor	Eddy, NM	Timbermat
SNM-DAD-002	16.8	UNT to Nash Draw	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-DAD-003	16.9	UNT to Nash Draw	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-014	17	UNT to Nash Draw	E	4	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-067	17	UNT to Nash Draw	E	2	Minor	Eddy, NM	Timbermat
SNM-KAC-015	17.1	UNT to Nash Draw	E	20	Intermediate	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-018	17.1	UNT to Nash Draw	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-018	17.1	UNT to Nash Draw	E	1	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-019	17.1	UNT to Nash Draw	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-017	17.1	UNT to Nash Draw	E	4	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-068	17.1	UNT to Nash Draw	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-063	17.1	UNT to Nash Draw	E	3	Minor	Eddy, NM	Timbermat
SNM-TMA-064	17.1	UNT to Nash Draw	E	3	Minor	Eddy, NM	Timbermat

TABLE C-4

Waterbodies Crossed by the Project

SNM-TMA-069	17.1	UNT to Nash Draw	E	2	Minor	Eddy, NM	Timbermat
SNM-KAC-023	17.2	UNT to Nash Draw	E	3	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-DAD-001	17.2	UNT to Nash Draw	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-021	17.2	UNT to Nash Draw	E	1	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-020	17.2	UNT to Nash Draw	E	1	Minor	Eddy, NM	Timbermat
SNM-TMA-021	17.2	UNT to Nash Draw	E	2	Minor	Eddy, NM	Timbermat
SNM-TMA-060	17.2	UNT to Nash Draw	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-024	17.3	UNT to Nash Draw	E	1	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-025	17.3	UNT to Nash Draw	E	5	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-019	17.3	UNT to Nash Draw	E	20	Intermediate	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-027	17.8	UNT to Nash Draw	E	8	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-022	18	UNT to Nash Draw	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-033	22.1	Unnamed Stream	E	4	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-034	22.2	Unnamed Stream	E	8	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-003	29.5	Dog Town Draw	E	115	Major	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-004	29.5	UNT to Dog Town Draw	E	100	Intermediate	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-001	32.4	UNT to Dog Town Draw	E	1	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
T200							
SNM-KAC-080	37.2	UNT to Big Seep Tank	E	4	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-TMA-059	37.4	UNT to Big Seep Tank	E	2	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
SNM-KAC-081	37.6	UNT to Big Seep Tank	E	6	Minor	Eddy, NM	Dry Open Cut; and Timbermat[4]
STX-TMA-002	48	Unnamed Stream	E	25	Intermediate	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-WJW-009	50.7	UNT to Pecos River	E	5	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-WJW-008	50.9	UNT to Pecos River	E	55	Intermediate	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-WJW-007	51.4	UNT to Pecos River	E	100	Intermediate	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-WJW-005	51.8	UNT to Pecos River	E	5	Minor	Loving, TX	Timbermat
STX-WJW-006	51.8	UNT to Pecos River	E	12	Intermediate	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-WJW-004	51.9	UNT to Pecos River	E	4	Minor	Loving, TX	Timbermat
STX-WJW-001	52	UNT to Pecos River	E	3	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-WJW-003	52	UNT to Pecos River	E	3	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-001	52.1	Unnamed Stream	E	2	Minor	Loving, TX	Timbermat
STX-TMA-006	52.6	Unnamed Stream	E	12	Intermediate	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-021	52.8	Unnamed Stream	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-022	52.8	Unnamed Stream	E	2	Minor	Loving, TX	Timbermat
STX-TMA-023	52.8	Unnamed Stream	E	2	Minor	Loving, TX	Timbermat
STX-TMA-003	53.5	Unnamed Stream	E	8	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-004	54.5	Unnamed Stream	E	6	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-002	54.7	Unnamed Stream	E	1	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-003	54.7	Unnamed Stream	E	2	Minor	Loving, TX	Timbermat
STX-DAD-004	55	Unnamed Stream	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-WJW-017	57.3	UNT to Pecos River	E	8	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-011	61.2	Unnamed Stream	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-012	61.2	Unnamed Stream	E	1.5	Minor	Loving, TX	Timbermat
STX-TMA-013	61.3	Unnamed Stream	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-WJW-018	61.5	UNT to Pecos River	E	7	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-021	R1 0.5	UNT to Pecos River	E	3	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-022	R1 0.7	UNT to Pecos River	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]

TABLE C-4

Waterbodies Crossed by the Project

STX-DAD-023	R1 0.7	UNT to Pecos River	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-024	R1 1.4	UNT to Pecos River	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-029	R1 3.0	UNT to Pecos River	E	3	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-025	R1 3.2	UNT to Pecos River	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-026	R1 3.2	UNT to Pecos River	E	1	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-027	R1 3.3	UNT to Pecos River	E	1	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-028	R1 3.5	UNT to Pecos River	E	5	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-032	R1 3.5	UNT to Pecos River	E	3	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-031	R1 3.6	UNT to Pecos River	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-034	R1 3.7	UNT to Pecos River	E	4	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-036	R1 3.8	UNT to Pecos River	E	4	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-038	R1 3.8	UNT to Pecos River	E	3	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-040	R1 4.6	UNT to Pecos River	E	3	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-041	R1 6.4	UNT to Pecos River	E	1	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-042	R1 8.0	UNT to Pecos River	E	4	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-043	R1 8.0	UNT to Pecos River	E	3	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-014	81.4	Unnamed Stream	E	4	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-015	81.7	Unnamed Stream	E	2	Minor	Loving, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-023	82.2	UNT to Soda Lake	E	12	Intermediate	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-022	82.7	UNT to Soda Lake	E	6	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-JRM-005a	83.1	Unnamed Stream	E	2	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-JRM-005b	83.1	Unnamed Stream	E	4	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-JRM-005c	83.1	Unnamed Stream	E	4	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-021	83.2	UNT to Soda Lake	E	6	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-005	83.3	Unnamed Stream	E	2	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-006	83.3	Unnamed Stream	E	2	Minor	Ward, TX	Timbermat
STX-MMF-020	83.4	UNT to Soda Lake	E	8	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-007	83.5	UNT to Soda Lake	E	1.5	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-JRM-001	83.6	UNT to Soda Lake	E	4	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-008	83.6	UNT to Soda Lake	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-009	83.6	UNT to Soda Lake	E	2	Minor	Ward, TX	Timbermat
STX-MMF-019	83.7	UNT to Soda Lake	E	8	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-010	83.7	UNT to Soda Lake	E	4	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-011	84	UNT to Soda Lake	E	2	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-012	84.3	UNT to Soda Lake	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-018	84.4	UNT to Soda Lake	E	4	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-JRM-006a	84.5	Unnamed Stream	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-JRM-006b	84.5	Unnamed Stream	E	2	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-JRM-007a	84.5	Unnamed Stream	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-JRM-007b	84.6	Unnamed Stream	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-013	84.6	Unnamed Stream	E	1	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-014	84.9	Unnamed Stream	E	2	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-015	85.1	Unnamed Stream	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-016	85.2	Unnamed Stream	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-017	85.8	UNT to Soda Lake	E	20	Intermediate	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-015	86.4	UNT to Soda Lake	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-016	86.4	UNT to Soda Lake	E	5	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]

TABLE C-4

Waterbodies Crossed by the Project

STX-DAD-019	87	Unnamed Stream	E	2	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-014	94.2	UNT to Quito Draw	E	6	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-DAD-020	102.2	Unnamed Stream	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-011	102.2	Unnamed Stream	E	2	Minor	Ward, TX	Timbermat
STX-TMA-018	102.7	Unnamed Stream	E	2	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-012	103.4	Unnamed Stream	E	3	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-009	104.3	Unnamed Stream	E	2	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-010	104.7	Unnamed Stream	E	4	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
Canal[5]	105.3	Big Valley Canal	NA	NA	NA	Ward, TX	Bore
STX-MMF-008	106.8	UNT to Pecos River	E	8	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-016	107.5	UNT to Pecos River	E	100	Intermediate	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-017	107.5	UNT to Pecos River	E	100	Intermediate	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-MMF-004	108	UNT to Pecos River	E	2	Minor	Ward, TX	Dry Open Cut; and Timbermat[4]
STX-TMA-024	108.4	Pecos River	P	25	Intermediate	Ward, TX	HDD
STX-MMF-001	112.2	Hackberry Draw	E	4	Minor	Reeves, TX	Dry Open Cut; and Timbermat[4]

Notes:

1 Map Designation - the unique code designated to the waterbodies identified during the field surveys. A unique identifier was also assigned to NHD streams that are used to supplement field delineations on properties that lack access permission or in areas that are pending studies. Project facilities not listed do not impact streams. Based on USGS National Hydrography Dataset, 2004. Based on US Fish and Wildlife Service ("USFWS") NWI data, 2014a.

2 Waterbody names based on NHD and NWI review.

3 Flow regime based on onsite field review. I - Intermittent; E - Ephemeral; and P - Perennial.

4 If flowing water during time of construction, will construct using a dam and pump or flume method.

5 Feature is the historic Big Valley Canal with Section 106 implications (along with the Southern Canal); therefore, it was left in the crossing table. As shown in the WDSIR, a Non-Water Point was collected by the field team, because the feature appears to no longer convey water due to lack of OHWM indicators and vegetation overgrowth.

Table C-5
Vegetation Communities and Developed Areas Affected by Construction and Operation of the Project (in acres)[1,2]

Facility/ County, State	Shinnery Oak Shrublands		Barren		Mesquite and Mixed Desert Shrublands[3]		Grasslands[4]		Creosote Bush Scrub/Shrub[5]		Herbaceous Upland		Desert Grassland[6]		Agricultural/Urban Low Intensity		Wetland/ Riparian[7]		Totals[8]	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O	C	O
T100																				
Eddy, NM	100.8	38	0	0	322.1	117.9	0	0	36.2	13.5	1.3	0.5	74.5	28.3	0	0	0	0	**534.9**	**198.2**
T200																				
Eddy, NM	0	0	0	0	192	69.5	0	0	0	0	0	0	31.6	11.4	0	0	0.1	0.1	**223.7**	**81**
Loving, TX	0	0	0	0	178	65.1	358.2	131.7	51.2	17.6	0	0	0.4	0.1	0	0	0	0	**587.8**	**214.5**
Reeves, TX	0	0	0.3	0	82.1	26.6	3.3	0.9	29.2	10.3	0	0	0	0	0	0	0	0	**115**	**37.8**
Ward, TX	0	0	1.5	0.5	190.6	70.3	163.4	57.8	72.3	27.3	0	0	5.3	1.7	0	0	0	0	**433.1**	**157.6**
T300																				
Pecos, TX	0	0	0	0	1.1	0.5	0.7	0.3	0	0	0	0	0	0	0	0	0	0	**1.8**	**0.8**
Reeves, TX	0	0	0	0	11.1	3.7	7.2	3.3	0	0	0	0	0	0	0	0	0	0	**18.3**	**7**
L100																				
Eddy, NM	31.1	11.6	0	0	212	76.4	0	0	0	0	0	0	0	0	22.9	8	1.5	0.2	**267.5**	**96.2**
Big Eddy Meter Station																				
Eddy, NM	0	0	0	0	3.7	1.7	0	0	0	0	0	0	0	0	0	0	0	0	**3.7**	**1.7**
Lane Plant Receipt Meter Station																				
Eddy, NM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Poker Lake Meter Station																				
Eddy, NM	0	0	0	0	37.4	30.1	0	0	0	0	0	0	0	0	0	0	0	0	**37.4**	**30.1**
Lobo Receipt Meter Station																				
Loving, TX	0	0	0	0	4.3	1.7	1.7	0.4	0	0	0	0	0	0	0	0	0	0	**6**	**2.1**
Waha Receiver and Separation Site																				
Reeves, TX	0	0	0	0	21.4	0.7	51.7	2.6	0	0	0	0	0	0	0	0	0	0	**73.1**	**3.3**
Trans Pecos Pipeline Point of Delivery																				
Pecos, TX	0	0	0	0	4.2	2.2	0	0	0	0	0	0	0	0	0	0	0	0	**4.2**	**2.2**
Kinder Morgan Point of Delivery (Permian Highway Pipeline (“PHP”) and Gulf Coast Express Pipeline (“GCX”)]																				
Reeves, TX	0	0	0	0	1.1	1.1	0	0	0	0	0	0	0	0	0	0	0	0	**1.1**	**1.1**
L100 Receiver																				
Eddy, NM	3.2	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3.2**	**0.7**
L100 Receipt and Operations Site																				
Eddy, NM	0	0	0	0	24.3	24.2	0	0	0	0	0	0	0	0	0	0	0	0	**24.3**	**24.2**
Pecos Laydown Yard																				
Reeves, TX	0	0	0	0	15.6	0	15.9	0	0	0	0	0	0	0	0	0	0	0	**31.5**	**0**
Lane Laydown Yard																				
Eddy, NM	0	0	0	0	38.1	0	0	0	0	0	0	0	0	0	0	0	0	0	**38.1**	**0**
New Access Roads	0	0	0	0	6.23	6.23	0	0	0	0	0	0	0	0	0	0	0	0	**6.23**	**6.23**
Totals	**135.1**	**50.3**	**1.8**	**0.5**	**1301**	**491.7**	**602.1**	**197**	**188.9**	**68.7**	**1.3**	**0.5**	**111.8**	**41.5**	**22.9**	**8**	**1.6**	**0.3**	**2410.9**	**864.7**
Other Work Areas (Non-vegetated)																				

Table C-5
Vegetation Communities and Developed Areas Affected by Construction and Operation of the Project (in acres)[1,2]

Existing Access Roads	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**383.7**	**76.4**
Open Water and Industrial/ Commerical	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**68.6**	**25.4**
Total Non-vegetated Areas	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**452.3**	**101.8**
TOTAL PROJECT LAND REQUIREMENT																			**2863.2**	**966.5**

Source: TPWD Texas Ecological Analytical Mapper (TEAM), 2019; NM Biological Conditions Report Field Observations, 2019.

1 Construction and operation impacts are based on a 125-foot-wide construction ROW and a 50-foot-wide permanent ROW for the pipeline and 30-foot wide ROW for roads.

2 C= construction; Construction impacts include all impacts during construction, including those within the proposed permanent ROW and ATWS. O = Operation

3 Mesquite and Mixed Desert Shrubland: Includes from the Biological Conditions Reports; Acacia Shrubland, Mesquite Shrubland, and Mixed Desert Shrubland community for New Mexico, and Mesquite Shrub, Mesquite - Creosotebush Shrubland, Tobosa / Mesquite Shrubland, Salty Desert Scrub, Desert Wash Shrubland, Gyp Shrubland (less than 1 percent), Desert Deep Sand and Dune Shrubland (less than 1 percent), Mixed Desert Shrubland, Desert Wash Barren (less than 1 percent), and Desert Pavement communities for Texas

4 Grasslands: Includes Tobosa Grassland, Loamy Plains Grassland, Sandy Desert Grassland, and Gyp Grassland (less than 1 percent) communities for Texas

5 Creosote Bush Scrub/Shrub: Includes Creosote Bush Shrublands community for New Mexico and Cresotebush Scrub and Sparse Creosotebush Scrub communities for Texas

6 Desert Grassland: Includes Desert Grasslands for New Mexio and Desert Wash Grassland and Salty Desert Grassland communities for Texas

7 Wetland acreages are based on wetland acreages in Resource Report 2, Table 2.3.1-1. Only wetlands undergoing open cut were included. Construction ROW would be reduced to a 75-foot width at these locations; operation ROW would be 50 feet wide.

8 The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends in all cases.

TABLE C-6

Birds of Conservation Concern that Are Identified for the BCR Areas that the Project Area Lies In (USFWS 2008)

Common Name	BCR Area[1]	Potentially Present in Project Area [or Observed]
Baird's Sparrow (nb)	35	Yes, during migration
Bald Eagle (b)	18, 35	No
Bell's Vireo (c)	18, 35	No
Bendire's Thrasher	35	Yes
Black-chinned Sparrow	35	Yes
Burrowing Owl	18, 35	Yes, observed
Cassin's Sparrow	35	Yes
Chestnut-collard Longspur (nb in 35)	18, 35	Yes, during migration
Colima Warbler	35	No
Common Black-Hawk	35	No
Elf Owl	35	No
Ferruginous Hawk (nb)	35	Yes
Flammulated Owl	35	No
Golden Eagle	18, 35	Yes
Grace's Warbler	35	No
Gray Vireo	35	No
Lark Bunting (nb in 35)	18, 35	Yes
Lesser Prairie Chicken (a)	18	Yes, observed
Lewis's Woodpecker	18	No
Loggerhead Shrike	35	Yes, observed
Long-billed Curlew (nb in 35)	18, 35	No
Lucifer Hummingbird	35	No
McCown's Longspur (nb in 35)	18, 35	Yes, primarily winter
Mountain Plover	18, 35	Yes, during migration
Painted Bunting	35	Yes
Peregrine Falcon (b)	35	Yes, primarily migration
Prairie Falcon	18	Yes, observed
Red-faced Warbler	35	No
Snowy Plover (c)	18, 35	Yes, ROW 0.8 mile from nesting habitat
Sprague's Pipit (nb)	18, 35	Yes, in winter
Upland Sandpiper	18	No
Varied Bunting	35	No
Virginia Warbler	35	No

TABLE C-6

Birds of Conservation Concern that Are Identified for the BCR Areas that the Project Area Lies In (USFWS 2008)

Common Name	BCR Area[1]	Potentially Present in Project Area [or Observed]
Willow Flycatcher (c)	18	Yes, during migration
Yellow Warbler (ssp. sonorana)	35	No
Yellow-billed Cuckoo (w. US DPS) (listed)	35	No

[1] BCR 18 = Shortgrass Prairie, BCR 35 = Chihuahuan Desert, U.S. portion only

(a) ESA candidate, (b) ESA delisted, (c) non-listed subspecies or population of threatened or Endangered species, (d) MBTA protection uncertain or lacking, (nb) non-breeding in this BCR.

Source: USFWS 2008 BCC list, NMDGF Special Status Animal Species within 1 Miles of Project Area table from October 31, 2018 communication (Resource Report 3).

TABLE C-7

Double E Pipeline Project Special Status Species Summary List

Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
INSECTS							
Monarch Butterfly (*Danaus plexippus*)	Under review[4]	Sensitive	-	-	Monarch butterflies are found across North America and migrate between Canada and Mexico with multiple generations living and dying along the migration route. Adults feed on a variety of flowering plants, but only lays eggs and pupates on milkweeds *(Asclepias* spp.). This species was observed during biological surveys.	Direct impacts to this species could occur if adults or caterpillars are crushed, forage plants are damaged, or habitat is destroyed during construction. Reseeding mixes used in disturbed Project areas would be composed of native species as suggested by the appropriate agencies. It is expected that flowering plants that provide habitat and foraging for the Monarch would re-establish when restoration activities are complete.	Implementation of proposed reclamation procedures would adequately minimize potential adverse impacts on the butterfly.
Horn's tiger beetle (*Cicindela hornii*)	-[3]	-	-	Rare	Grassland/herbaceous habitats; burrows in soil; dry areas on hillsides or mesas where soil is rocky or loamy and covered with grasses. The species is most active for several days after heavy rains. Larvae often burrow in soils for a period of at least two years.	Suitable habitat for this species could occur in the Project area and construction could result in direct mortality to the species. Texas actively promotes the conservation of rare species. Texas Parks and Wildlife Department (TPWD) considers it important to evaluate and minimize impacts to rare species and their habitat. TPWD encourages reporting all encounters of rare, state-listed, and federally listed species to the Texas Natural Diversity Database (TXNDD) according to the data submittal instructions found on the TXNDD website.	If present, any direct impacts would be short-term and limited to time of construction. Minimal impacts are likely.
FISH							
Pecos bluntnose shiner (*Notropis simus pecosensis*)	Threatened	-	Endangered	-	Main channel areas of the Pecos River (>1-foot deep) with sandy substrates. Known habitat primarily exists upstream from the Project.	Occurs upstream from Project area in the Pecos River. Indirect impacts may occur during a potential inadvertent release of mud.	A potential inadvertent release of mud *may affect, but is not likely to adversely affect* the shiner. Implementation of the proposed measures in Double E's HDD Inadvertent Release Plan would adequately minimize effects to the species.
Bigscale logperch (*Percina macrolepida*)	-	Sensitive	Threatened	-	Pecos River drainage in and below Sumner Lake in DeBaca County and between Lake McMillan (now Brantley Lake) and the Texas state line. Preferred habitat consists of strong, non-turbulent flows, but the species is also found in impoundments. Preferred substrate varies from silt to rubble on which the species spends much of its time resting.	May occur in the Project area along the Pecos River. The Pecos River would be crossed via horizontal directional drilling (HDD). Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to avoidance of the Pecos River via HDD.

TABLE C-7

Double E Pipeline Project Special Status Species Summary List

Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
Blue sucker (*Cycleptus elongatus*)	-	Sensitive	Endangered	Threatened	Pecos River downstream of Lake McMillan (now Brantley Lake) including the lower Black River. The species occurs in deep river channels with runs and riffles and is believed to be extirpated in Texas.	May occur in the Project area along the Pecos River, which would be crossed via HDD. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to avoidance of the Pecos River via HDD.
Gray redhorse (*Moxostoma congestum*)	-	Sensitive	Endangered, Species of Greatest Conservation Need (SCGN)	-	The species formerly existed in the Rio Grande but is now restricted to the Pecos River below Lake McMillan and the Black River. It is primarily found in the Carlsbad Municipal Reservoir and at the confluence of the Pecos and Black Rivers. Typical habitat consists of low-gradient streams with warm, clear waters. Adults most often occupy medium to large pools with cobble, gravel, silt, or sand bottoms. The young and juveniles tend to seek riffles and gravely runs and avoid densely vegetated areas.	May occur in the Project area along the Pecos River, which would be crossed via HDD. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to avoidance of the Pecos River via HDD.
Greenthroat darter (*Etheostoma lepidum*)	-	Sensitive	Threatened	-	This species is native to the Pecos River drainage in Chaves and Eddy Counties. It is known to occur at Blue Spring and its outflow stream, the Pecos River between Lake McMillan and Avalon Reservoir, the Rio Peñasco, Cottonwood Creek, and Bitter Lake National Wildlife Refuge (NWR). It exists in swift-flowing streams and springs, especially vegetated riffle areas with gravel and rubble substrates. It also occurs in clear ponded-water habitats, including sinkholes and littoral areas of other lentic systems with wave action and aquatic vegetation rooted in a gravel substrate.	May occur in the Project area along the Pecos River, which would be crossed via HDD. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to avoidance of the Pecos River via HDD.
Mexican tetra (*Astyanax mexicanus*)	-	Sensitive	Threatened	-	Generally restricted to the Blue Spring and Delaware River but is occasionally found in the Pecos River below Lake McMillan (now Brantley Lake) in pools and eddies.	May occur in the Project area along the Pecos River, which would be via HDD. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to avoidance of the Pecos River via HDD.
Pecos pupfish (*Cyprinodon pecosensis*)	Under review	Sensitive	Threatened	Threatened	Occurs in saline springs and gypsum sinkholes at the Bitter Lake NWR and Bottomless Lakes State Park. Elsewhere, it is present irregularly in the Pecos River south of these areas to the Texas state line. It was formerly observed in the Laguna Grande in Eddy County. Typical habitat consists of saline springs, desert streams, and gypsum sinkholes. The species may occur in low salinity waters, but is most abundant in highly saline habitats that support relatively few species. It can survive in water among gravel where there is no surface water. The known distribution extends to small reaches of the Pecos River and	May occur in the Project area along the Pecos River, but unlikely. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to avoidance of the Pecos River via HDD.

TABLE C-7

Double E Pipeline Project Special Status Species Summary List

Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
					tributaries in Chaves and Eddy Counties, New Mexico; in scattered sinkholes, lakes, and saline springs in New Mexico; and in the upper reaches of the Salt Creek drainage in Culberson and Reeves Counties, Texas.		
Rio Grande chub (*Gila pandora*)	-	Sensitive	-	-	Rio Grande and Pecos River basins. Found in impoundments and pools of small to moderate streams and is frequently associated with aquatic vegetation.	May occur in the Project area along the Pecos River. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to avoidance of the Pecos River via HDD.
Rio Grande sucker (*Catostomus plebeius*)	-	Sensitive	SGCN	-	Pecos River and Rio Grande River basins. Found in pools with riffles over gravel or cobble.	May occur in the Project area along the Pecos River. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to the avoidance of the Pecos River via HDD.
Headwater catfish (*Ictalurus lupus*)	-	-	-	Rare	Originally found throughout streams of the Edwards Plateau and the Rio Grande basin and is currently limited to the Rio Grande drainage, including the Pecos River basin. It occurs in springs, sandy and rocky riffles, runs, and pools of clear creeks and small rivers.	May occur in the Project area along the Pecos River, which would be crossed via HDD. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to avoidance of the Pecos River via HDD.
REPTILES AND AMPHIBIANS							
Desert massasauga (*Sistrurus catenatus edwardsii*)	Under review	Sensitive	SGCN	-	This species is found in Chihuahuan desert shrublands and grasslands, juniper savannas, and sand scrub/shinnery oak habitats. Other massasauga species were observed during biological habitat surveys conducted in 2018 and 2019.	This species occurs in the Project area direct impacts could occur during construction. Per the New Mexico Department of Game and Fish's (NMDGF's) recommendation, surveys for the desert massasauga would be conducted in suitable habitat in the Project footprint if construction occurs between April 1 and September 30. If desert massasauga are detected, Double E would relocate at least 0.5-mile from construction areas into appropriate habitat.	Implementation of the proposed mitigation measures would adequately minimize potential impacts. No long-term effects are anticipated. In addition, BLM may add requirements to any Right-of-Way Grant approval for mitigation on BLM sensitive species.
Eastern barking frog (*Craugastor augusti latrans*)	-	Watch	SGCN	-	Creosote flats with friable soil suitable for burrowing in proximity to riverine systems, such as those along the Pecos River near Bitter Lakes NWR and along the Black River (Ryan et al. 2015).	The Pecos River would be crossed using HDD, thus suitable habitat is expected to be avoided. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to the avoidance of the Pecos River via HDD.
Rio Grande cooter (*Pseudemys gorzugi*)	-	Sensitive	Threatened, SGCN	-	Confined to the Pecos River drainage, including the Pecos, Black, and Delaware Rivers below Brantley Dam in Eddy County. It is primarily a stream species that occurs at elevations between 2,953 and 3,610 feet	May occur in the Project area along the Pecos River and Black River Supply Ditch. Indirect impacts could occur during a potential	No long-term adverse impacts are anticipated due to the avoidance of the Pecos River via HDD.

TABLE C-7

Double E Pipeline Project Special Status Species Summary List

Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
					above mean sea level (amsl), and prefers waters with slow to moderate current, firm bottoms, and abundant aquatic vegetation. It also inhabits stock tanks, ponds, large ditches, and even brackish tidal marshes. In New Mexico, most records are from streams with relatively clear water and rocky or sandy bottoms. Nests of this species are located in sandy soil, usually within 100 feet of the water.	inadvertent release of mud.	
Western narrow-mouthed toad (*Gastrophryne olivacea*)	-	Watch	Endangered, SGCN	-	Occurs marginally in the northeast, southeast, and southwest parts of New Mexico, primarily in Eddy County. It is found in moist areas in desert grasslands, including tobosa grasslands or woods.	Two palustrine emergent locations, including the Pecos River, would be crossed using HDD and as a result, no impacts are anticipated. Two other areas (WNM-TMA-002 and WNM-TMA-001) would be open cut and direct impacts could occur.	No long-term adverse impacts are anticipated due to the avoidance of the Pecos River via HDD.
Plain-bellied water snake (*Nerodia erythrogaster*)	-	-	Endangered	-	Permanent bodies of water in and along the Pecos and Black Rivers.	May occur in the Project area along the Pecos River and Black River Supply Ditch. Indirect impacts may occur during a potential inadvertent release of mud.	No long-term adverse impacts are anticipated due to the avoidance of the Pecos River via HDD.
Spot-tailed earless lizard (*Holbrookia lacerate*)	Under review	-	-	Rare	Moderately open prairie bushland as well as flat areas free of vegetation or other obstructions, including disturbed areas. TPWD has a record for the spot-tailed earless lizard approximately 5 miles from the pipeline.	Potential direct effects could occur during construction. Double E would have a biological monitor on site during construction in suitable habitat and move lizards off site if necessary.	Implementation of the proposed mitigation measures would adequately minimize potential impacts. No long-term effects are anticipated.
Texas horned lizard (*Phrynosoma cornutum*)	-	-	-	Threatened	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees in soils that vary in texture from sandy to rocky. It may exist near harvester ant nests. Texas horned lizards were observed during biological surveys conducted in 2019 and 2019.	The Texas horned lizard could be directly impacted by ground-disturbing activities. If the Project cannot avoid suitable habitat, a permitted biological monitor be present during clearing and construction to identify and relocate Texas horned lizards, if necessary. Double E would also provide contractor training and mark harvester ant mounds for avoidance. Double E has committed to adopt these provisions into its Project.	No long-term adverse impacts are anticipated with adoption of mitigation measures.
BIRDS							

TABLE C-7

Double E Pipeline Project Special Status Species Summary List

Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
Aplomado falcon (*Falco femoralis septentrionalis*)	Listed as endangered in the New Mexico portions of the Project area and in Texas	-	Endangered	Endangered	Open grassland or savannah with large yucca and/or trees/shrubs. NMDGF has identified a known occurrence of this species within 1 mile of proposed Project ROW.	If species is present in the Project area it could be affected by Project construction, including direct effects on nests, eggs, and young. Double E would complete nest surveys prior to clearing if construction would occur within the bird nesting season (March 15 to September 15). If active nests or breeding behavior are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged.	*May affect, but is not likely to adversely affect.*
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Endangered	-	Endangered	Endangered	Habitat includes riparian and wetland thickets, generally of willow, tamarisk, boxelder, or Russian olive. Many migrants occur in riparian habitats or patches of riparian vegetation that would be unsuitable for nest placement. In these drainages, migrating flycatchers may use a variety of riparian habitats, including ones dominated by native or exotic plant species.	Migrating individuals may occur in the Project area near the Pecos River. Construction activities may affect behavior of this species and cause them to temporarily avoid the Project area during migration. Riparian habitat would be avoided via HDD.	*May affect but is not likely to adversely affect.*
Western snowy plover (*Charadrius alexandrinus nivosus)*	Threatened	-	-	Rare	Breeds and nests on salt playas near the Project area.	The species may pass through the Project area during migration and foraging flights. Construction activities may temporarily modify behavior and cause this species to avoid the construction area. Double E would complete nest surveys prior to clearing if construction would occur within the bird nesting season (March 15 to September 15). If active nests or breeding behavior are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged.	*May affect but is not likely to adversely affect.*

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Double E Pipeline Project Special Status Species Summary List

Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
Chestnut-collared longspur (*Calcarius ornatus*)	-	Sensitive	-	-	Migrant in the Project area during the winter season in shortgrass prairie or grazed/burned prairies.	This species prefers more extensive grasslands than the Project area has to offer but may still migrate through the Project area. The species may modify its behavior during migration to avoid pipeline construction activities.	Because this species is likely migrant only, the Project would not significantly impact the longspur in the long-term.
Common ground-dove (*Columbina passerina*)	-	Watch	Endangered	-	Native shrublands and weedy areas, particularly in riparian areas. It occurs in open stands of creosote bush and large succulents (*Ferocactus pringlei, Echinocactus platyaconthus*) in southern New Mexico and southwest Texas. It may occur along the Pecos River.	If the species is present in the Project area it could be affected by Project construction, including direct effects to nests, eggs, and young. Double E would complete nest surveys prior to clearing if construction occurs within the bird nesting season (March 15 to September 15). If active nests or breeding behavior are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged.	No long-term adverse impacts are anticipated with implementation of Double E's avoidance measures.
Lesser prairie-chicken (LPC) (*Tympanuchus pallidicinctus*)	Under review	Sensitive	-	-	Upland, grassland, open, relatively flat rangeland in different stages of plant succession that includes native, short- to mid- height grasses and wildflowers interspersed with low-growing shrubby cover. Portions of the Project ROW are located in crucial habitat category 3 as identified by NMDGF. One adult LPC was observed near the northern extent of the Project ROW during biological surveys.	Construction could disturb nesting LPC and cause potential direct disturbance to eggs and young. NMDGF recommends restricting construction activities between 3 a.m. and 9 a.m. if the Project area is located within 1.25 miles of a lek that has been recorded as active within the previous five years. No leks recorded as active are within 1.25 miles of the Project area. NMDGF also recommends conducting LPC surveys per the protocols in the LPC range-wide conservation plan if construction occurs in suitable habitat between March 1 and July 15.	Implementation of the proposed mitigation measures would adequately minimize potential impacts. No long-term effects are anticipated. Double E would to continue to work with the agencies regarding LPC. BLM may add requirements to any Right-of-Way Grant approval for mitigation on BLM sensitive species.
McCown's Longspur (*Rhynchophanes mccownii*)	-	Sensitive	-	-	Occurs in southern New Mexico as a migrant or winter resident in shortgrass prairie or heavily grazed pastures, plowed fields, or dry lake beds.	No individuals were observed during field surveys, but suitable habitat may exist in the Project area during winter months. The species may occur in the Project area in heavily grazed areas or plowed fields during the winter. The species may modify its behavior during migration to avoid pipeline construction activities.	Because this species is likely migrant only, the Project would not significantly impact the longspur in the long-term.

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Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
Mountain plover (*Charadrius montanus*)	-	Watch	-	Rare	Semi-arid plains, grasslands, plateaus. Favors areas of very short grass and bare soil. Nests mostly in short-grass prairie, including overgrazed pasture and very arid plains. Nests may occur on barren ground in large prairie-dog towns. Winter habitats include desert flats and plowed fields.	If the species is present in the Project area it could be affected by Project construction, including direct effects to nests, eggs, and young. It is primarily expected to occur during migration. Double E would complete nest surveys prior to clearing if construction would occur within the bird nesting season (March 15 to September 15). If active nests or breeding behavior are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged.	Project would not significantly impact the plover and no long-term adverse impacts are anticipated.
Peregrine falcon (*Falco peregrinus*)	-	Watch	Threatened, SGCN	Threatened	Year-round resident and local breeder in west Texas; nests in tall cliff eyries; also, migrant from northern breeding areas in U.S. and Canada; and winters along the coast and further south. It occupies a wide range of habitats during migration, including urban areas, coastal areas, and barrier islands.	Species may modify its behavior during migration to avoid pipeline construction activities.	Project would not significantly impact the falcon and no long-term adverse impacts are anticipated.
Sprague's pipit (*Anthus spragueii*)	-	Sensitive	-	Rare	Sporadic winter resident. Its distribution in the state is not well known, but includes the lower Pecos River valley, Otero Mesa, and the Animas Valley. It is associated with southern desert grasslands. The species prefers dry, open grasslands.	Construction activities may result in behavioral changes of wintering individuals that could cause them to temporarily avoid Project area. Double E would complete nest surveys prior to clearing if construction would occur within the bird nesting season (March 15 to September 15). If active nests or breeding behavior are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged.	Project would not significantly impact the pipit and no long-term adverse impacts are anticipated. BLM may add requirements to any Right-of-Way Grant approval for further mitigation on BLM sensitive species.

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Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
Western burrowing owl (*Athene cunicularia hypugaea*)	Species of Concern	Sensitive	Species of Greatest Conservation Need	Rare	Ground-dwelling uses burrows of prairie dogs and other fossorial animals for nesting and roosting. They have also been found nesting in storm drains, drainage pipes, cement culverts, on banks, along irrigation canals, under asphalt or wood debris piles, and within openings under concrete pilings or asphalt. Burrowing owls were observed during biological surveys conducted in 2018 and 2019.	Burrowing owls could be affected by Project construction, including direct effects to burrows, eggs, and young. Double E would complete nest surveys prior to clearing if construction would occur within the bird nesting season (March 15 to September 15). If active nests or breeding behavior are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged.	No long-term adverse impacts are anticipated with implementation of Double E's avoidance measures. BLM may add requirements to any Right-of-Way Grant approval for mitigation on BLM sensitive species.
Harris's hawk (*Parabuteo unicinctus*)	-	-	Species of Management Concern	-	Semi-open desert scrub, savanna, grassland, and wetland habitats with tall perching points. This species was observed during Double E's biological surveys in 2018 and 2019. One nest site in the study area was identified.	This species is particularly sensitive to disturbance and could be affected by Project construction, including direct effects on nests, eggs, and young. Double E would complete nest surveys prior to clearing if construction would occur within the bird nesting season (March 1 to September 15). If active nests or breeding behavior are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged.	No long-term adverse impacts are anticipated with implementation of Double E's avoidance measures.
Baird's sparrow (*Ammodramus bairdii*)	-	-	-	Rare	Winters in extreme southern New Mexico, in dense and expansive grasslands with a minor shrub component. May pass through the Project area during migration.	This species prefers more extensive grasslands than the Project area has to offer but may still migrate through the Project area. The species may modify its behavior during migration to avoid pipeline construction activities.	No long-term adverse impacts are anticipated with implementation of Double E's avoidance measures.
Ferruginous hawk (*Buteo regalis*)	-	-	-	Rare	This species occurs in open country, prairies, plains, and badlands and nests in tall trees along streams or on steep slopes, cliff ledges, river-cut banks, hillsides, and power line towers. It is a year-round resident in northwestern high plains and winters throughout the western two thirds of Texas.	If the species is present in the Project area it could be affected by Project construction, including direct effects to nests, eggs, and young. Double E would complete nest surveys prior to clearing if construction would occur within the bird nesting season (March 15 to September 15). If active nests or breeding behavior are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged.	No long-term adverse impacts are anticipated with implementation of Double E's avoidance measures.

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Double E Pipeline Project Special Status Species Summary List

Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
Prairie falcon (*Falco mexicanus*)	-	-	-	Rare	Open, mountainous areas, plains and prairies; nests on cliffs. Adults were observed during biological surveys conducted in 2018 and 2019.	Construction activities may cause individuals to temporarily avoid Project area. If eyries are located within 0.25 mile of the ROW, disturbance to nesting falcons could occur and result in the abandonment of eggs or young. Double E would complete nest surveys prior to clearing if construction would occur within the bird nesting season (March 15 to September 15). If active nests or breeding behavior are detected during these surveys, a buffer zone (i.e., fence barrier or flagging barrier) would be established wherein clearing and construction would not take place until the chicks have fledged.	No long-term adverse impacts are anticipated with implementation of Double E's avoidance measures.
MAMMALS							
Black-tailed prairie dog (*Cynomys ludovicianus*)	-	Sensitive	-	Rare	Dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle. Suitable habitat may be present within the Project area. Burrows have a volcano-like ring that surrounds the burrow entrance/exit.	No prairie dog colonies were identified within the Project footprint; however, no protocol surveys were completed within 0.25 mile of proposed ROW.	Minimal impacts likely. In the rare event that colonies are discovered, Double E would follow the TPWD recommendations in its November 7, 2018 response letter. In addition, the BLM may add requirements to any Right-of-Way Grant approval for further mitigation on BLM sensitive species.
North American least shrew (*Cryptotis parva*)	-	Watch	Threatened, SGCN	-	Open country with dense herbaceous vegetation. Brushy areas, forest edges, and sometimes salt and freshwater marshes. Damp, mesic areas, including the borders of streams or lakes within relatively arid habitat. This species may occur in the Pecos River drainage.	Construction actions could result in damage to burrows and direct mortality of adults and young. Indirect impacts would be limited to a potential inadvertent release of mud during HDD at the Pecos River.	No impacts expected. Implementation of measures would minimize potential impacts. BLM may add requirements to any Right-of-Way Grant approval for further mitigation on BLM sensitive/watch species.
Townsend's pale big-eared bat (*Corynorhinus townsendii*)	-	Sensitive	-	Rare	Found in scrub grassland, desert scrub, semidesert shrublands, chaparral, saxicoline brush, tundra, open montane forests, mixed hardwood-conifer, oak woodlands, and forests. The species is roosts in large caves and does not prefer to roost in crevices.	Karst features in the Project area may provide adequate roosting space if no other larger caves are available. However, because no significant open caves or mines have been identified and disturbed areas would be reseeded with native seed mixes, no direct impacts to this species are anticipated.	No long-term adverse impacts are anticipated. BLM may add requirements to any Right-of-Way Grant approval for mitigation on BLM sensitive species.

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Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect
Kit fox (*Vulpes macrotis*)	-	-	-	Rare	Open desert, shrubby or shrub-grass habitat. The TPWD has a record of a kit fox occurring about 5 miles from the proposed pipeline.	Construction actions could result in damage to burrows and a potential loss of young. The TPWD recommends that precautions be taken to avoid impacts on the kit fox.	Minimal impacts likely. Double E would take precautions to avoid impacts.
Pecos River muskrat (*Ondatra zibethicus ripensis*)	-	-	-	Rare	Creeks, rivers, lakes, drainage ditches, and canals. The species prefers shallow, fresh water with clumps of marshy vegetation such as cattails, bulrushes, and sedges.	Construction could result in damage to burrows and direct mortality of adults and young. Indirect impacts would be limited to a potential inadvertent release of mud during HDD at the Pecos River.	No long-term adverse impacts are anticipated with implementation of Double E's avoidance measures.
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	-	-	-	Rare	Semi-arid desert grasslands; roosts in caves, cliff crevices, and under building roof tiles.	Foraging behavior may be altered during construction if this bat species occurs in the Project area.	Minimal impacts are expected since no suitable habitat exists in the project area.
PLANTS							
Scheer's pincushion cactus (*Coryphantha scheeri* var. scheeri); also commonly named Scheer's Beehive Cactus (*Coryphantha robustispina* ssp. Scheeri)	-	Sensitive	Endangered	-	Pecos River drainage and Big Bend areas (Chaves and Eddy Counties, New Mexico; and Reeves and Brewster Counties, Texas). It occurs on nearly level areas in desert grassland and Chihuahuan desert scrub; gravelly or silty soils; occasionally on rocky benches or bajadas on limestone or gypsum; common at elevations between 3,300 and 3,600 feet (amsl). Four individuals were observed during protocol surveys in 2018 and 2019.	Three of the four individuals identified were avoided with reroutes and would not be impacted. One individual is present within the Project area. Double E is consulting with the BLM regarding mitigation for this individual, which may include potential transplanting. The BLM has indicated that they would develop and require transplanting protocols prior to the initiation of construction.	Avoidance or transplant protocols for the individual would ensure that Project impacts on the cactus are adequately minimized. BLM may add requirements to any Right-of-Way Grant approval for mitigation on BLM sensitive species.
Tharp's blue star (*Amsonia tharpii*)	Under review	Sensitive	Endangered	-	Limestone and gypsum hills in Chihuahuan desert scrub communities (between 3,100 and 3,500 feet amsl). It is also present in shortgrass grasslands or shrublands. The nearest population occurs near Cedar/Pierce Canyon, approximately 4.3 miles south of L100.	Because of the limited population extent of this species, the negative results during protocol surveys, and the distance between recorded populations and the Project area, no direct impacts are anticipated.	Project's effects on the Tharp's blue star would not be significant in the long-term. BLM may add requirements to any Right-of-Way Grant approval for further mitigation on BLM sensitive/watch species.
Wright's marsh thistle (*Cirsium wrightii*)	Candidate[5]	Sensitive	Endangered	-	Wet, alkaline soils in spring seeps and marshy edges of streams and ponds; occurs between 3,450 and 8,500 feet amsl. It is known to inhabit wetlands that may occur in the Project area, including the Pecos River.	The Pecos River would be crossed via HDD, thus avoiding the plant if it occurs.	Project impacts would not be significant in the long-term.

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Wright's water willow/Wright's justiciar (*Justicia wrightii*)	-	Sensitive	Rare	-	Fine, clay soils in rocky, cobbly, gravelly, flat to gently sloping limestone benches in Chihuahuan desert scrub. BLM data indicated that it could occur along the Pecos River drainage. It occurs approximately 3,200 to 3,900 feet amsl within Eddy County, New Mexico and along the western edge of the Edwards Plateau, Texas. The nearest known population is approximately 5.4 miles north of the Project area. This species is often partially submerged in water.	Although the habitat range of this species is not well known, it requires an aquatic habitat and could occur along the Pecos River. The Pecos River would be crossed using HDD; therefore, avoidance of impact is anticipated.	No impacts expected. Implementation of measures would minimize potential impacts.
Bushy wild-buckwheat (*Eriogonum suffruticosum*)	-	-	-	Rare	Texas endemic; occurs on sparsely vegetated rocky limestone slopes, low hills, clay flats, and on gypsiferous soils; flowers March through April.	If present during construction, the species could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on sensitive and rare plant species.
Correll's green pitaya (*Echinocereus viridiflorus var correllii*)	-	-	-	Rare	Texas endemic; occurs among grasses on rock crevices and low hills in desert or semi-desert grassland; found on novaculite or limestone; flowers March through May.	If present it could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on sensitive and rare plant species.
Dwarf broomspurge (*Euphorbia jejuna*)	-	-	-	Rare	Grama-grass prairie on caliche uplands, dry caliche slopes, and limestone hills; flowers late March through July.	If present, it could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on sensitive and rare plant species.
Grayleaf rock-daisy (*Perityle cinerea*)	-	-	-	Rare	Texas endemic; crevices in dry limestone caprock of mesas; flowers spring through fall.	If present, it could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on sensitive and rare plant species.
Gyp locoweed (*Astragalus gypsodes*)	-	-	-	Rare	Gypsum or stiff gypseous clay soils on gypsum flats; low, gullied rolling hills, at elevations in the middle Pecos River valley. The species primarily exists on the Castile Formation (Permian) and flowers March through June. Potential habitat is present in the Pecos River drainage.	If present, it could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on sensitive and rare plant species.
Hester's cory cactus (*Escobaria hesteri*)	-	-	-	Rare	Texas endemic; grasslands on novaculite hills, limestone hills, and alluvial fans; pine-oak-juniper woodlands on igneous substrates; flowers April through early June; fruits June through August.	If present, it could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on sensitive and rare plant species.

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Irion County wild-buckwheat (*Eriogonum nealleyi*)	-	-	-	Rare	Texas endemic; grasslands and shallow stony soils over limestone and indurated caliche; sparsely vegetated roadsides where limestone or caliche is exposed on hilltops; flowers June through September.	If present, it could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on sensitive and rare plant species.
Longstalk heimia (*Nesaea longipes*)	-	-	-	Rare	Moist or sub irrigated alkaline or gypsiferous clayey soils along unshaded margins of springs and other wetlands; occurs sparingly on an alkaline, somewhat saline silt loams on terraces of spring-fed streams in grassland; commonly occurs in moderately alkaline clays along perennial streams and sub-irrigated wetlands atop poorly-defined spring systems; occurs in low, wetland areas along highways; flowers May through September.	The species could potentially occur along the Pecos River. The use of HDD at the Pecos River would avoid potential impacts.	Minimal impact likely, no long-term adverse impacts are anticipated due to the avoidance of the Pecos River and riparian vegetation via HDD.
Two-bristle rock-daisy (*Perityle bisetosa var bisetosa*)	-	-	-	Rare	Texas endemic; crevices in limestone exposures on bluffs and other rock outcrops; flowers late summer to fall.	If present, it could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on rare species.
White column cactus (*Escobaria albicolumnaria*)	-	-	-	Rare	Creosote bush or lechuguilla canyon shrublands primarily on nearly level terrain; rolling hills on thin, gravelly soils or limestone bedrock of the Santa Elena, Glen Rose, Boquillas, and Telephone Canyon formations; occurs at lower elevations between 1,800 and 5,000 feet amsl in the Chihuahuan Desert; flowers early March through May.	If present, it could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on rare plant species.
Wright's trumpets (*Acleisanthes wrightii*)	-	-	-	Rare	Open semi-desert grasslands and shrublands on shallow, stony soils over limestone on low hills and flats; perennial; flowers spring through fall and after rainfall.	If present, it could be crushed during construction activities and habitat could be fragmented.	Consultation is on-going. The EA recommends further consultation with TPWD for Project impacts on rare plant species.

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Common Name (*Scientific Name*)	Federal Status	BLM Status[1]	NM State Status	TX State Status	Habitat[2]	Anticipated Project Impacts/Mitigation	Double E Pipeline Project Determination of Effect

Notes:

1 BLM species included on the most recent BLM Sensitive species lists found at: https://www.blm.gov/programs/fish-and- wildlife/threatened-and-endangered/state-te-data/new-mexico.

2 Sources: USFWS Environmental Conservation Online System Search. https://ecos.fws.gov/ecp/; Cornell Ornithology Lab Search. https://www.allaboutbirds.org/.; NatureServe Explorer Plants and Animals Search. http://explorer.natureserve.org/index.htm.; NMDGF, 2007b.; New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), 2017; TPWD, 2019c; New Mexico Rare Plant Technical Council. 1999; BISON-M 2019; NM EMNRD, 2013.

3 "-" indicates that there is no applicable listing status for this species for this agency.

4 These species are on a five-year review utilizing the best available scientific and commercial data on a species to determine whether its status has changed since the time of its listing or its last status review. Upon completion of a five-year review, the FWS would either retain the same Threatened or Endangered status or revise it based on supporting evidence and recommendations. Species "under review" still are required to be addressed. A five-year review does not automatically change a species' protection or status (https://www.fws.gov/endangered/what-we-do/index.html, accessed 01-15-2020).

5 Candidate and proposed species are currently being studied to assess the need to list them under the ESA as threatened or endangered. Candidate and proposed species are not federally protected under the ESA; however, potential impacts to these species should be considered. Avoiding impacts to these species now may prevent them from being listed as either threatened or endangered in the future (https://www.fws.gov/endangered/what-we-do/index.html, (accessed 01-15-2020).

TABLE C-8
Public Lands Crossed by the Project[1]

MP Begin	MP End	County, State	Name	Crossing Length (miles)	Area Affected by Construction (acres)
T100					
0.0	3.3	Eddy, NM	BLM Land	3.3	52.9
3.3	4.4	Eddy, NM	NMSLO Land	1.0	15.9
4.4	7.4	Eddy, NM	BLM Land	3.1	153.9
7.4	13.5	Eddy, NM	BLM Land	6.0	153.9
13.5	17.0	Eddy, NM	NMSLO Land	3.5	59.9
17.0	20.9	Eddy, NM	BLM Land	3.9	68.0
20.9	21.9	Eddy, NM	NMSLO Land	1.0	17.2
21.9	26.9	Eddy, NM	BLM Land	5.0	81.5
26.9	27.2	Eddy, NM	NMSLO Land	0.3	6.2
27.2	33.3	Eddy, NM	BLM Land	6.1	108.7
T200					
33.3	33.4	Eddy, NM	BLM Land	3.3	52.9
33.4	34.5	Eddy, NM	NMSLO Land	0.1	0.7
34.5	40.1	Eddy, NM	BLM Land	1.0	18.6
40.1	40.6	Eddy, NM	NMSLO Land	5.7	96.3
40.6	43.5	Eddy, NM	BLM Land	0.5	9.8
43.5	44.0	Eddy, NM	NMSLO Land	2.9	46.8
44.0	46.9	Eddy, NM	BLM Land	0.5	10.1
46.9	46.9	Loving, TX	BLM Land	2.8	47.0
46.9	75.9	Loving, TX	TXUL	<0.1	0.3
75.9	77.7	Loving, TX	TXUL	1.2	20.1
77.7	78.2	Loving, TX	TXUL	0.5	7.6
78.2	79.7	Loving, TX	TXUL	1.1	18.2
79.7	89.4	Loving, TX	TXUL	0.8	12.6
89.4	89.5	Ward, TX	TXUL	0.2	3.3
L100					
0.0	5.0	Eddy, NM	BLM Land	5.0	80.2
R2 0.8	6.1	Eddy, NM	NMSLO Land	1.0	18.0
6.0	8.2	Eddy, NM	BLM Land	2.2	37.5
14.9	15.7	Eddy, NM	NMSLO Land	0.8	11.0
Lane Plant Receipt Meter Station					
N/A	N/A	Eddy, NM	BLM Land	N/A	<0.1
Big Eddy Receipt Meter Station					
N/A	N/A	Eddy, NM	NMSLO Land	N/A	3.7
Poker Lake Meter Station					
N/A	N/A	Eddy, NM	BLM Land	N/A	37.3
N/A	N/A	Eddy, NM	NMSLO Land	N/A	<0.1
L100 Receiver					
N/A	N/A	Eddy, NM	BLM Land	N/A	3.2
			BLM Land Subtotals	**46.1**	**968.2**
			NMSLO Land Subtotals	**9.6**	**170.4**
			TXUL Subtotals	**3.8**	**61.8**
			Totals	**59.5**	**1200.4**

[1] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends in all cases.

TABLE C-9
Projects with Potential Cumulative Impacts on Resources Within the Study Area

Project	County/State	Distance and Direction from Project	Description	Construction and Operation Timeframe	Potentially Affected Environmental Resources
Non-Jurisdictional Facilities					
Xcel Energy	Eddy County, NM.	Directly abutting the Poker Lake Meter Station	Electric service for the Poker Lake Meter Station.	Construction estimated to start in Spring 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources and Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
Texas-New Mexico Power Company (TNMP)	Reeves County, TX	Adjacent to Pecos Laydown Yard	Electric service (power drop) for Pecos Laydown Yard	Construction estimated to start in Spring 2020	Soils and Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
TNMP	Reeves County, TX	Adjacent to Waha Receiver and Separation Site	Electric service (power drop) for the Waha Receiver and Separation Site	Construction estimated to start in Spring 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
Electric Feed	Eddy County, NM	Adjacent to L100 Receiver Site	Electric service will be brought in from existing infrastructure for the L100 Receiver Site	Construction estimated to start in Spring 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
Summit Permian Midstream POR 1 (Lane Plant Receipt Meter)	Eddy County, NM	Adjacent to MP 0.0 at T100	Power for the receipt meter will be supplied by the current facility, which is a 60 MMcfd Cryo Processing Plant	Construction planned for 2021	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
XTO Energy POR 2 (Big Eddy Meter Station)	Eddy County, NM	Adjacent to MP 13.8 at T100	Construction of a Cryo Plant, new power infrastructure, and a residue line.	Construction underway, anticipated to be operational by 2021	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
L100 Receipt and Operations Site	Eddy County, NM	Adjacent to MP 16.3 at L100	Electric service will be brought in from existing infrastructure for the L100 Receipt and Operations Site	Construction estimated to start in Spring 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
Lucid Energy Group/Midstream POR 7 (Lucid Road Runner Receipt Meter	Eddy County, NM	MP 16.3 at L100. Lucid Cryo Plant is located adjacent to receipt meter location	New power infrastructure for the receipt meter	Construction planned for 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
Sendero Midstream Partners, LP POR 6 (Sendero Receipt Meter)	Eddy County, NM	Adjacent to MP 16.3 at L100	Construction of an approximately 0.1-mile residue line to the receipt meter and a 220 MMcfd Cryo plant	Cryo plant operational in July 2019, construction of the residue line planned in 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
Matador Resources/ San Mateo Midstream POR 5 (Matador Receipt Meter)	Eddy County, NM	Adjacent to MP 16.3 at L100	Construction of an approximately 0.25-mile residue line to the receipt meter and a 200 MMcfd Cryo plant.	Construction planned for 2019/2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resource, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
XTO Energy POR 3 (XTO Receipt Meter) (Poker Lake Meter Station)	Eddy County, NM	Adjacent to MP 33.3 at T100	Construction of an approximately 1.4-mile residue line to the Poker Lake Meter Station and a Cryo plant	Construction underway for the Cryo plant, construction of the residue line planned in 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice

Enlink Midstream POR 4 (Lobo Receipt Meter Station)	Loving County, TX	Adjacent to MP 72.3 at T200	Construction of an approximately 1.4-mile residue line to the Lobo Receipt Meter Station and expansion of the current Cryo plant to 350 MMcfd	Expansion of the Cryo plant planned in 2019/2020, construction of the residue line planned in 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
TPP POD (POD 3)	Reeves County, TX	Adjacent to MP 116.6 at T300	Construction of a delivery meter and residue line	Construction planned for 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
Kinder Morgan Point of Deliveries (POD 1 and POD 2)	Reeves County, TX	Abuts MP 116 at T300	Construction of delivery meter/meter stations	Construction planned for 2020	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife, Cultural Resources, Land Use, Visual, Noise, Air Quality, Socioeconomics, Environmental Justice
Commission - Regulated Energy Projects					
Sendero Carlsbad Gateway, LLC Gateway Project CP18-538-000	Eddy County, NM, and Culberson County, TX	Adjacent to the northernmost terminus and meter station (including a pig launcher and mainline block valve) located south of L100 at MP 16.5. The Gateway Project pipeline continues parallel to the south of the proposed L100 approximately 18 miles to the west of T100.	Construction of a new 23-mile pipeline and appurtenant facilities.	Construction planned for November 2019	Groundwater, Wetlands, Vegetation, Wildlife, Surface Water Resources, Cultural Resources, Land Use, Socioeconomics, Environmental Justice
Transwestern Pipeline Company, LLC WT-1 Compressor Station CP18-47-000	Lea County, NM	Approximately 1.0-mile east of the existing Loving Processing Plant and T100 at MP 0.0.	Modification of an existing compressor station (replacing wheels) to increase efficiency. This project will create an incremental year-round capacity of up to 130,000 MMscfd between the WT-1 Station and Compressor Station 9 on the West Texas Lateral.	Construction completed in April 2018	Air Quality – Operations, Socioeconomics
El Paso Natural Gas Company, LLC Permian North Project CP18-522-000	Winkler and Yoakum Counties, TX, and Eddy and Lea Counties, NM.	Approximately 12 miles to the west of the Pecos Compressor Station and T200 at MP 43.	Installation of valves, actuators, station yard piping, and other auxiliary equipment at the Keystone, Pecos River, Eunice B & C, and Plains Compressor Stations and Ramsey North Meter Station.	Construction completed in February 2019	Air Quality – Operations, Socioeconomics
Transwestern Pipeline Company, LLC Malaga Lateral Project CP16-11-000	Eddy and Lea Counties, NM	Approximately 1.4-miles east of T200 at MP 33.8.	Construction of approximately 14.67 miles of new 16-inch pipeline, one-meter station, pig launcher and receiver facilities, and other ancillary facilities in Eddy and Lea Counties, NM, to receive up to 200,000 MMscfd of natural gas from the new Enterprise Products Partners L.P. cryogenic natural gas processing plant under construction in Eddy County, NM (“Enterprise Plant”).	The project was placed in service on March 31, 2016.	Groundwater, Wetlands, Vegetation, Wildlife, Surface Water Resources, Land Use, Cultural Resources, Air Quality, Socioeconomics, Environmental Justice
Delaware Basin Midstream Pipeline Ramsey North Residue Line CP15-537-000	Eddy County, NM and Reeves and Culberson Counties, TX	Approximately 15.7 miles west of T200 at MP 45.	Construction of nine miles of new 20-inch diameter gas residue pipeline and facilities, with a maximum capacity of 459,000 dekatherms per day. The residue line connects the Ramsey Gas Plant to a Kinder Morgan transmission line.	Construction completed in 2016	Air Quality – Operation, Socioeconomics
Natural Gas Pipeline Company of America, LLC Lockridge Extension Pipeline CP19-52-000	Ward, Reeves, and Pecos Counties, TX	Crosses the Project at MP 99 on T200 and parallels the Project approximately130 feet to the west of T200 for approximately 3 miles from MP 99. The Lockridge Extension Pipeline terminates approximately 0.13-mile southwest of the Project terminus.	Construction of approximately 16.84 miles of 30-inch diameter natural gas pipeline, a new interconnect, and appurtenant and auxiliary facilities.	Construction planned for March 2020 with an anticipated in-service date in the fourth quarter 2020	Groundwater, Wetlands, Vegetation, Wildlife, Surface Water Resources, Land Use, Cultural Resources, Air Quality – Operation, Socioeconomics, Visual, Noise – Construction, Air Quality – Construction, Socioeconomics Environmental Justice
Non –FERC Regulated Energy Projects					

Western Refining	Eddy County, NM	Approximately 0.3-mile to the north of L100	Construction of an 8-inch steel line north of the proposed L100 alignment.	No public information is available regarding project construction and completion	Groundwater, Wetlands, Vegetation, Wildlife, Surface Water Resources, Land Use, Socioeconomics, Air Quality – Operation, Environmental Justice
Devon Gnome Road Drill Islands	Eddy County, NM	West of T100 between MP 25.4 and 26.2	Construction of new well pads, drill islands, and multi-use areas	No public information is available regarding project construction and completion	Soils, Geology, Groundwater, Wetlands, Vegetation, Surface Water Resources, Wildlife Cultural Resources, Land Use, Visual, Noise – Construction, Air Quality – Construction, Socioeconomics, Environmental Justice
Road Improvement Projects					
NMDOT Highway US 285 Corridor Phase I	Eddy County, NM.	Approximately 14.5 miles west of T200 MPs 37 to 46.	Rehabilitation of US 285.	Construction planned for 2020 with a completion date in 2021	Socioeconomics
TXDOT State Highway 302/Ranch Road 1211 Roadway Rehabilitation	Loving County, TX.	State Highway 302 is crossed by T200 at MP 71.5.	Rehabilitation of State Highway 302.	Construction anticipated to be complete between 2018 and 2022	Groundwater, Wetlands, Vegetation, Wildlife, Surface Water Resources, Cultural Resources, Land Use, Socioeconomics, Environmental Justice
TXDOT Highway US 285 Roadway Rehabilitation	Reeves County, TX	Approximately 15 miles to the west of the T200 at MPs 81 to 103.	Widening of a major highway and bridge structure rehabilitation or replacement (including box culverts).	Construction anticipated to be complete between 2018 and 2022	Socioeconomics
TXDOT Interstate 20 Facility Upgrades (Several Projects)	Ward County, TX	Interstate 20 is crossed by the T200 at MP 96.1.	Construction of facility upgrades to meet highway standards.	Construction anticipated to be complete between 2018 and 2022	Groundwater, Wetlands, Vegetation, Wildlife, Surface Water Resources, Cultural Resources - Land Use, Socioeconomics, Environmental Justice
TXDOT Highway Farm to Market Road (FM) 1450 Preventative Maintenance (Several Projects)	Reeves County, TX	FM 1450 is crossed by T200 at MP 113.4.	Preventative maintenance from a location eight miles east of US 285 to the Pecos County line (approximately 15.7 miles) and preventative maintenance from the Pecos County line southeast to FM1776 (approximately 1.8 miles).	Construction is underway or begins soon. A completion date has not been determined.	Groundwater, Wetlands, Vegetation, Wildlife, Surface Water Resources, Cultural Resources, Land Use, Socioeconomics, Environmental Justice
TXDOT Highway FM 1776 Seal Coat (Several Projects Also Completed in 2018)	Pecos County, TX	Approximately 2.5 miles northeast from the trunk line terminus	This project involves the rehabilitation of Highway FM 1776.	Construction is underway or begins soon. A completion date has not been determined.	Groundwater, Wetlands, Vegetation, Wildlife, Surface Water, Socioeconomics