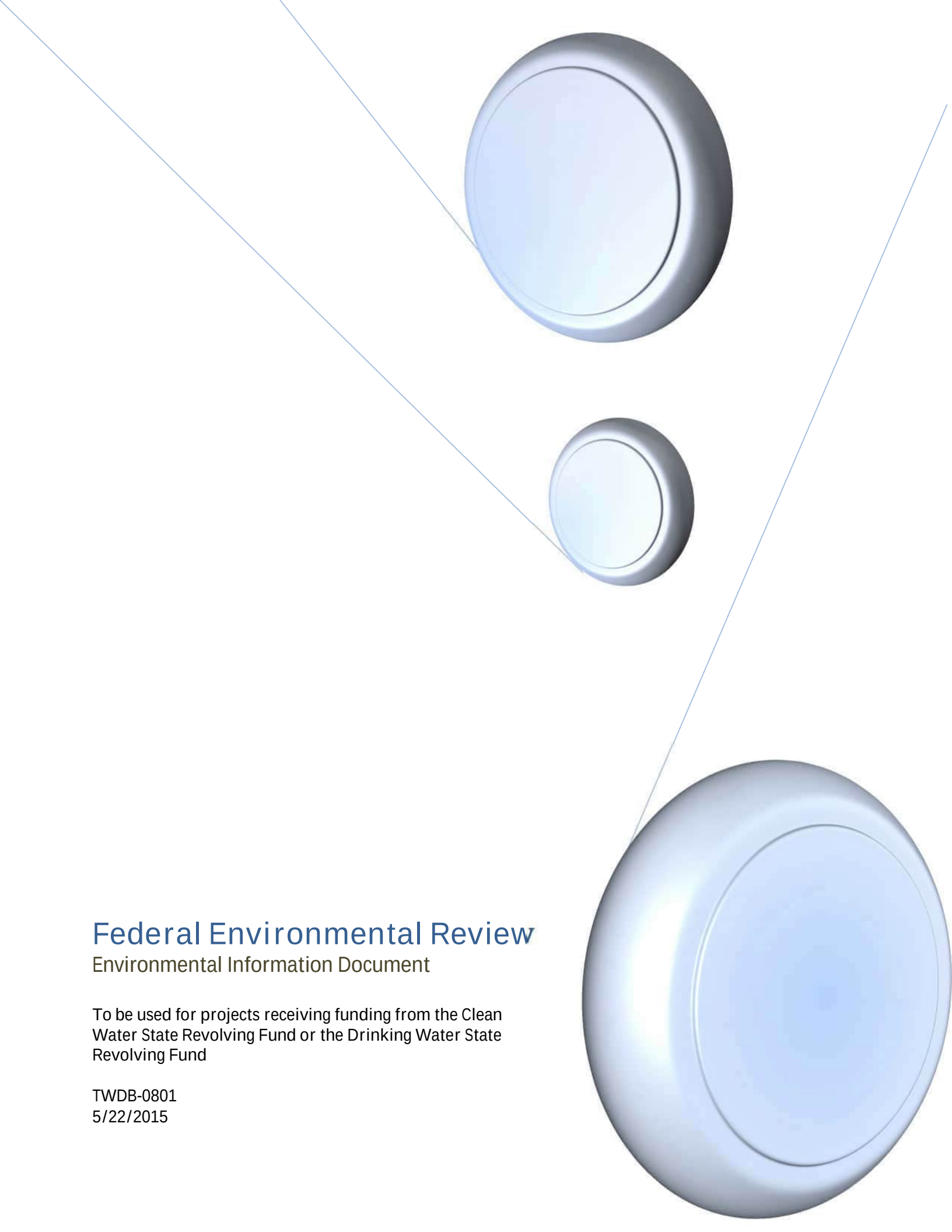

Federal Environmental Review

Environmental Information Document

To be used for projects receiving funding from the Clean Water State Revolving Fund or the Drinking Water State Revolving Fund

TWDB-0801
5/22/2015

Introduction: Full Environmental Review

When federal loan program funds are spent on a construction project, the project must be assessed for environmental impacts. The Environmental Information Document (EID) allows the Water Supply and Infrastructure Division, as well as other review agencies, to make determinations about the degree of impacts that can reasonably be expected to occur as a result of construction of a proposed project. For additional information about different types of impacts, see the scope of impacts section on the following page. Each sheet in the following template is intended to address a specific requirement needed to comply with the National Environmental Policy Act (NEPA). Information included in this template represents baseline information pertinent to the majority of projects. This template does not replace the necessity to submit a regulatory permit application to the U.S. Army Corps of Engineers (when applicable). Regulatory agencies and the TWDB may require additional information to determine project specific mitigation and permitting requirements as well as issue an environmental finding. Projects seeking funding through the Clean Water State Revolving Fund (CWSRF) or the Drinking Water State Revolving Fund (DWSRF) are subject to NEPA requirements. A full explanation of TWDB environmental requirements is provided in 31 TAC §375, Subchapter E (CWSRF), and 31 TAC §371, Subchapter E (DWSRF).

Timing

Preparation of the EID is conducted during the planning phase of the project after a loan commitment has been secured. Please note that issuance of an environmental determination by TWDB environmental staff is required prior to TWDB approval of the Engineering Feasibility Report and release of design and/or construction funds. From beginning to end, this process can be completed in as few as 4 months but typically takes 8 to 10 months for most projects.

Example timeline for the preparation of an EID:

- Variable: Preparation of the base document (time varies by consultant).
- 2-3 months: Agency coordination & public meeting (agency coordination does not need to be complete prior to the public meeting).
- 1 month: Preliminary review of the EID by TWDB staff. After review, the TWDB will send a list of deficiencies to the consultant identifying any additional information required.
- Variable: Submission of supplemental information by the consultant as required by TWDB comments (time varies by consultant).
- 1 month: TWDB approval of the EID and issuance of an environmental determination.
- 1 month: 30-day public comment period.
- Board: Next available Board date for an affirmation of the original loan commitment.

Report Structure

The structure of the EID is crucial in allowing for an efficient review of the document. Adhering to the provided structure will allow for ease of use by the project reviewer and others who may be unfamiliar with the project. For projects that contain multiple components, the EID must be prepared in a manner that addresses each component in an orderly fashion.

Submission

Once completed, the EID, as well as any questions regarding the preparation of the document or review process, should be submitted to:

Environmental Reviewer
Texas Water Development Board, Regional Water Planning & Development
P.O. Box 13231, Austin, Texas 78711-3231
Telephone: (512) 936-0938

Scope of Impacts

When constructing a project, three types of impacts must be documented in the EID. These impacts are as follows:

- Direct impacts
- Secondary impacts
- Cumulative impacts

Benefits – Environmental impacts that result in a positive outcome

Secondary and cumulative impacts are often assessed jointly. Environmental impacts can be both positive (hereafter known as benefits) and negative (hereafter known as impacts). The EID should include a discussion of both impacts and benefits. When considering cumulative impacts under NEPA, review and implement the information in *Considering Cumulative Effects Under the National Environmental Policy Act*, which is published by the Council of Environmental Quality.

Direct Impacts

Direct impacts are effects on the environment that occur at the same time and place as the project. They are the most certain and predictable of the impacts and are typically the easiest to identify. Direct impacts include impacts from construction-related activities as well as impacts related to operation of a newly constructed or modified facility upon completion of construction. Construction impacts include such things as air emissions from construction vehicle traffic, soil disturbance, sedimentation and erosion, and land clearing activities. Operational impacts include such things as increased noise from generators or other equipment in use after construction is completed, odors associated with pump stations, and increased effluent discharge to a stream from a plant expansion.

Direct Impacts – Effects on the environment that occur at the same time and place as the project.

Examples of direct impacts include the following:

- Displacement of wildlife due to vegetation clearing associated with construction projects
- Air emissions from open burning during construction
- Aquatic habitat degradation from installation of a sewer pipe crossing a stream
- Increased nutrient loading in a river from a wastewater treatment plant discharge
- Odors from a wastewater treatment plant

Secondary Impacts

Secondary impacts are effects to the environment and natural resources that are removed in time and distance from a project's construction and operation activities. Secondary impacts are also called "indirect impacts" and are often thought of as chain reaction processes where one action or result leads to another action or result. Guidelines for implementing NEPA (40 CFR §1508.8) broadly define secondary impacts as:

Secondary impacts (indirect impacts) – Effects to the environment and natural resources that are more removed in time and distance from a project's construction and operation activities.

> *…indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.*

Secondary impacts associated with infrastructure projects are often related to residential, commercial, and industrial growth that the infrastructure project supports. For example, after sewer service is extended into

an unsewered area, a subdivision might be built. The paved roads and other impervious services in the new subdivision may increase the level of pollutants in a nearby stream due to runoff. The decreased water quality that results in the stream is not directly related to the construction or operation of the sewer system, but it is indirectly related to the project because the expanded sewer system supported development of the new subdivision.

Cumulative Impacts

Cumulative impacts are effects that result from the project's direct impacts when added together with impacts from other past, present, and future projects that can be reasonably predicted. NEPA regulations define cumulative impacts as "environmental impacts which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Cumulative impacts – Effects that result from the project's direct impacts added together with impacts from other past, present, and future projects that can be reasonably predicted.

Evaluating cumulative impacts requires analysis of the "big picture" in terms of time and space. Consider the following example: run-off from parking areas surrounding a single shopping center might not be a significant stressor to the receiving stream, but the combined run-off from multiple shopping centers located in the same watershed can become a significant stressor. Another example would be where a combination of wastewater infrastructure projects in the same river basin could create nutrient issues downstream. Note: In some cases, cumulative impacts may be positive. For example, if, in a watershed, several stream and wetland restorations are implemented in the headwaters of the watershed, then nutrient loadings and siltation may be reduced downstream. Cumulative impacts are an issue that must be considered any time that growth is anticipated in the project area, even if that growth is not facilitated by or connected to the proposed project. If impacts from a proposed project are minor and limited to construction only, they are less likely to contribute to cumulative impacts in the broader project area.

Cumulative impacts must be considered and discussed for any project that takes place in an area experiencing growth and development, even if the proposed project is not an expansion project.

Environmental Information Document

The following pages, beginning with the Table of Contents, contain the template EID. The following nine (9) sections should be completed to the maximum extent practicable. To expedite the review of this document, please provide all requested information in a clear and concise manner. If a section does not apply to the project, please indicate that it does not apply by writing "Not Applicable" in the space provided.

Sections 1, 3, 4, and 5 request specific information regarding the proposed project; alternatives considered; the environmental setting of the project; potential direct, secondary, and cumulative impacts; and proposed mitigation. Section 2 provides a list of attachments that should be included in Section 9 of the EID. As noted in Section 2, documents lacking required attachments will not be accepted. Section 6 describes the public participation process and the materials that must be submitted by the applicant after a public meeting has occurred. In order to facilitate agency coordination, Section 7 provides a rubric for the applicant to determine whether agency coordination is required. Example coordination and notification letters are conveniently provided within the document. Section 8 contains a certification statement whereby the applicant confirms that the information contained in this document is accurate and complete to the applicant's knowledge, and that this document describes the complete project.

***To update the Table of Contents: (1) Click on Table, (2) Choose Update Table, (3) Select Update Entire Table**

Table of Contents

Section 1: General Information

Authority (Loan Applicant):	East Rio Hondo Water Supply Corporation
TWDB Project No:	21884, 63009
Project Name:	**North Cameron Water Transmission Line** (TWDB Project No. 21884) and **North Cameron Reverse Osmosis Plant Expansion** (TWDB Project No. 63009)
Counties where project activities will occur:	Cameron County

Funding Source/ Loan Number:	Drinking Water State Revolving Fund / L1002176 / /	
Total Estimated Project Costs:	$17,104,167.00	
TWDB Funded Phases:	☒ Planning ☒ Acquisition ☒ Design ☒ Construction	
Other Funding Source(s):	Bureau of Reclamation	
Consultant Project Name/Number (if applicable):	ERHWSC/NCRWTP Expansion / 57988.001 ERHWSC/North Cameron Water / 58613.001	
Primary Contact for questions concerning the EID:	Company:	Halff
	Contact Person:	Peter Van Zandt
	Mailing Address:	13620 Briarwick Drive, Bldg. C, Suite 100, Austin, TX 78729
	Phone:	737-270-8711
	Email:	pvanzandt@halff.com
Project Engineer:	Company:	Halff
	Contact Person:	Michael Salinas
	Mailing Address:	1075 Paredes Line Rd, Suite B, Brownsville, TX 78521
	Phone:	936-697-7103
	Email:	michael.salinas@halff.com

List of Preparers:

1. Peter Van Zandt
2. Mason Flood
3. Samantha Mashburn
4.
5.

Section 2: List of Attachments

Documents lacking required attachments will not be accepted

Identify the project footprint on all maps.
Maps must have adequate resolution and be at an appropriate scale.
Example project maps are provided online at:
http://www.twdb.texas.gov/financial/instructions/doc/TWDB-1800.pdf

Many of the resources required by the following list of attachments can be acquired for free online. If you are unfamiliar with the resources identified below or are not sure where to find them, please contact your environmental reviewer for assistance.

Map(s): Show existing structures, potential location(s) of new or upgraded structure(s), and areas(s) that will be disturbed by the project, including construction staging area(s). Provide a scale bar, north arrow, and legend.

Label and Describe: Potentially-impacted environment(s) and site feature(s) (e.g., public/private property, developed or landscaped areas, roads, historic properties, wetlands, forested areas, rivers, streams, 100-year floodplain, prime farmland, wild and scenic rivers, protected areas, above and below-ground utilities, U.S. EPA designated sole source aquifer areas, etc.)

Appendix A: Standard Maps

Regional Location Map	Page: A-1
USGS Topographic Map(s) for Preferred Alternative	Page: A-2
Project footprint or plans/plats	Page: A-3
Geologic Map	Page: A-4
FEMA Floodplain Map(s)	Page: A-5
National Wetlands Inventory Map(s)	Page: A-6

Appendix B: Environmental Setting, Impacts and Mitigation Attachments

Appendix B1 Soils & Prime and Important Farmland (Section 5.3) Page: B-1	NRCS Soil Survey for Proposed Project Area of Interest (Required) ☒ Map + Table of Soils (Series level) ☒ Map + Table of Hydric Soils ☒ Map + Table of Prime & Important Farmlands NRCS Farm Impact Rating (If Applicable) Farm Impact Rating Form	Attached ☐	N/A ☒
Appendix B2 Wetlands, Streams & Waters of the U.S (Section 5.6) Page: B-2	Wetland & Streams Impacts Map (If Applicable) Wetland & Streams Impacts Map Wetland Delineation Report (If Applicable) Wetland Delineation Report	Attached ☒ Attached ☒	N/A ☐ N/A ☐

Section 2: List of Attachments **Documents lacking required attachments will not be accepted**	
Appendix B3 Biological Resources (Section 5.7) Page: B-3	County List of Rare, Candidate, Threatened and Endangered Species (Required) ☒ USFWS: County List of Federal Candidate, Threatened and Endangered Species ☒ TPWD: County List of State and Federal Rare, Threatened and Endangered Species ☒ Potential Impacts Table
Appendix B4 Cultural Resources (Section 5.8) Page: B-4	Cultural Resources Report (If Applicable) Cultural Resources Report Attached ☒ N/A ☐
Appendix B5 Hazardous Materials (Section 5.9) Page: B-5	Hazardous Materials (If Applicable) Formal Site Assessment Attached ☒ N/A ☐
Appendix B6 Social Implications & Environmental Justice (Section 5.10) Page: B-6	All maps & reports should be generated through the EPA's EJ View Website (Required) ☒ EJ View Map (add a 0.5 mile buffer around the construction area) ☒ ACS Summary Report ☒ Census Summary Report ☒ Environmental Report Census QuickFacts Summary (Required) ☒ City vs. State ☒ County vs. State
Appendix B7 Public Meeting (Section 6) Page: B-7	Public Meeting Documentation ☒ Publisher's affidavit and a copy of the Public Meeting Notice ☒ Statement signed by applicant - meeting was held in conformance with the Public Meeting Notice. ☒ List of witnesses ☒ Written summary of the meeting

Section 3: Project Description
Preferred Action Alternative

For the purposes of this document the project site includes all areas that will be disturbed by the project, including construction staging area(s). The project area includes surrounding areas which may, directly or indirectly, be impacted by the project.

1. Background: Briefly describe the existing system (e.g., treatment processes, capacity of treatment plant, annual average and peak demand flows, etc.).

The East Rio Hondo Water Supply Corporation (ERHWSC) owns and operates the North Cameron Regional Water Treatment Plant (RWTP), a brackish groundwater reverse osmosis (RO) facility located west of Combes, Texas. In response to projected population growth and increasing water demand in the region, ERHWSC is planning a phased expansion of the RWTP's production capacity from 2.3 million gallons per day (MGD) to 10.0 MGD.

Due to population growth in the area, water demand is expected to increase dramatically in the next decade. Without a reliable surface water source and without groundwater water production redundancy, ERHWSC does not have sufficient capacity to meet future challenges. For these reasons, the ERHWSC is planning to expand the total production capacity of the North Cameron RWTP from 2.3 MGD to 7.5 MGD capacity. To transport this volume of water from the treatment plant to the distribution system, ERHWSC proposes to construct a 20-inch water transmission line from the corner of Templeton Road and Bouldin Road to an existing 16-inch waterline at the corner of FM 106 and FM 1595 (within the Port of Harlingen).

2. Project Location: Briefly describe the project location (e.g., new undeveloped site, existing treatment plant site, undeveloped portion of an existing site, site adjacent to existing facilities, currently owned, acquisition required, etc.).

North Cameron Reverse Osmosis Plant Expansion

Site Location: Raw water line project limits from Orphanage Road at the north to Johnson Road at the southern project limits, an approximate length of 11 miles (82 acres). Plant improvements at 14995 State 107, Harlingen, TX 78552.
Latitude/Longitude: 26.2655° , -97.78888°
Project Address (if applicable): N/A

North Cameron Water Transmission Line

Site Location: Along Farm-to-Market (FM) 508 from the US-77 Frontage Road to 0.1-mile north of FM 1595, and along Bouldin Road from FM 508 to Templeton Road, an approximate length of 11 miles (182 acres).
Latitude/Longitude: 26.2458° , -97.65691°
Project Address (if applicable): N/A

Section 3: Project Description
Preferred Action Alternative

3. Project Need & Purpose: What need does the project address? (e.g., improve water quality, increase capacity, inadequate system or system components, increase treatment due to more stringent effluent limits, linear work, etc.)

Because of population growth in the area, water demand is expected to increase dramatically in the next decade. Without a reliable surface water source and without groundwater water production redundancy, ERHWSC does not have sufficient capacity to meet future challenges. For these reasons, the ERHWSC is planning to expand the total production capacity of the North Cameron RWTP from 2.3 MGD to 7.5 MGD. To transport this treated water to ERHWSC's existing distribution system, the existing transport system will be supplemented with multiple water transmission line projects.

Is the proposed project being pursued in response to a compliance order? No

4. Project Description: Description should include project costs, design year and design population.

The plant expansion project would improve the plant to increase capacity from 2.3 MGD to 7.5 MGD in Phase's 1 and 2 and ultimately to 10.0 MGD in Phase 3. The project includes new groundwater wells, new raw water transmission lines and plant upgrades to the existing treatment system. New reverse osmosis (RO) equipment will be added to the existing plant including new cartridge filters, RO pumps, and RO trains. Post treatment systems within the facility and high-service pumping capacity will also be expanded.

The transmission line project would improve the water distribution system by replacing approx. 10 miles of the existing 10" water main with 20" DR 25 Class 165 PVC pipe. The existing 10" water main experiences frequent breaks due to poor material condition and pipe age. This new transmission main will not only have the capacity to convey up to 5.5 million gallons per day (MGD) of treated water from the North Cameron Regional Water Treatment Plant (NCRWTP) to users on the east side of ERHWSC's system but will also alleviate high pressures and excessive water losses due to main breaks on the 10" water main.

Is the proposed project part of a larger project? ☐ Yes ☒ No

If the proposed project is one phase of a larger project, describe the duration and purpose of the larger project.

5. Waste Disposal: Does the project require sludge/soil/waste disposal? ☐ Yes ☒ No

If yes, identify the location(s) and method(s) of disposal:

Section 3: Project Description
Preferred Action Alternative

6. Project Components: Provide a bulleted list (e.g. install 1,000 linear feet of new 6-8 inch pipeline in existing ROW and easements from the outfall structure in Lake X to the WTP, install new 300,000 gallon ground storage tank at the WTP, demolish existing chemical storage building, etc.).

- Groundwater Wells
- Raw Water Transmission Lines
- Pretreatment Filtration System
- Antiscalant Feeding System
- Reverse Osmosis Trains
- Reverse Osmosis Feed Pumps
- Blending System
- High Service Pumps
- Potable Water Transmission Lines

7. Project Magnitude:

i. Current population of service area: 34,315
ii. Anticipated population of service area in 20 years: 50,989
iii. Will the proposed project service the entire population increase? ☒ Yes ☐ No

8. Project Schedule:

05/31/2025 Estimated date of funding request approval

12/31/2025 Estimated date for closing of commitment

02/28/2026 Estimated date to submit environmental planning documents (EID).

02/28/2026 Estimated date to submit engineering planning documents

05/15/2026 Estimated date of TWDB issuance of a Finding of no Significant Impact (FONSI)

06/30/2026 FNSI Public Review Period Ends

07/15/2026 TWDB approval of Engineering Feasibility Report

08/01/2026 Estimated date for completion of design (plans & specs)

10/01/2026 Estimated date of P&S review and approval

01/01/2027 Estimated Construction Notice to Proceed

06/01/2028 Estimated Construction Completion Date

12/31/2028 Estimated Project Close-Out

Section 3: Project Description
Preferred Action Alternative

9. Project Costs: Provide an estimate of the cost of the project.	$79,578,117.00

10. Other Projects: Provide a description of any other projects in progress that may be affected by the proposed project (e.g., TxDOT plans for Road Construction, etc.).

No other proposed projects are known.

Section 4: Alternative Analysis

No-Action Alternative

Environmental Impact Description

Provide a qualitative description of the environmental impacts of the no-action alternative and compare the impacts to that of the preferred alternative. (e.g., WTP would remain out of compliance with TCEQ primary drinking water standards, leaky on-site septic systems would continue to contaminate surface water, etc.)

No construction of new wastewater infrastructure would compromise the needs of the future generations of Harlingen. The current age, capacity and other operational issues of the current system will not be able to the handle the growth Harlingen will experience. A no build scenario will only increase the power and maintenance cost. The cost to replace the current collection system will increase in future cost as well.

Environmental Impact Analysis

Please indicate whether the direct impacts of the no-action alternative on the following resources are greater than, less than or the same as the direct impacts of the preferred alternative on the same resource.

Land Use						
Change in land use and land cover is:	☐	Greater	☒	Less	☐	Same
Prime and Important Farmland						
Impacts to prime and important farmland are:	☐	Greater	☒	Less	☐	Same
Water Resources						
Impacts to surface water quality are:	☐	Greater	☐	Less	☒	Same
Impacts to groundwater quality and quantity are:	☐	Greater	☐	Less	☒	Same
Impacts to floodways or floodplains are:	☐	Greater	☐	Less	☒	Same
Impacts to wetlands are:	☐	Greater	☐	Less	☒	Same
Vegetation and Habitat						
Impacts to trust resources are:	☐	Greater	☐	Less	☒	Same
Impacts to wildlife are:	☐	Greater	☐	Less	☒	Same
Impacts to native vegetation is:	☐	Greater	☐	Less	☒	Same
Impacts to endangered species habitat are:	☐	Greater	☐	Less	☒	Same
Cultural Resources						
Impacts to cultural resources or historic properties are:	☐	Greater	☐	Less	☒	Same
Air Quality						
Effects on air quality are:	☐	Greater	☐	Less	☒	Same
Environmental Justice						
Impacts to Low-income or Minority Populations are:	☐	Greater	☐	Less	☒	Same

Section 4: Alternative Analysis

No-Action Alternative

Secondary and Cumulative Impacts: Considering resources that the no-action alternative will impact, identify any past, present or reasonably foreseeable future projects which impact these same resources. This answer will provide important contextual information.

The Region of Influence for the water line infrastructure, plant expansion improvements, and groundwater well installation covers approximately 406 square miles and has approximately 8,350 retail water meters and an additional 787 meters served through three wholesale accounts. ERHWSC also provides water to the North Alamo Water Supply Corporation (NAWSC). The planned expansion will continue to serve both the ERHWSC and the NAWSC. The improvement and replacements would occur both within the existing rights of way and land owned by ERHWSC. No other projects are proposed; however, new commercial facilities (i.e., restaurants, boutique shops) could be constructed with the Region of Influence because improved service and increased capacity would be available. Based upon current population trends, additional residential areas are not anticipated to be constructed nor required.

The projects have the potential to increase noise temporarily during site activities and the disturbance of soil during proposed construction activities would be minimal and temporary. With the increased efficiency of the drinking water infrastructure, less water could be lost due to breaks within the line decreasing the quantity of drinking water withdrawn. Under the No-Action Alternative, water supply would not be met for future development in the region; however, the past, present, or reasonably foreseeable future projects would not have a cumulative effect.

Acceptance/Rejection

Alternative: ☐ Accepted ☒ Rejected

Rationale for Acceptance/Rejection

Discuss the rationale for acceptance/rejection of the no-action alternative, including financial, engineering and environmental considerations (e.g. cost comparison, reliability of alternative, complexity of alternative, significant environmental effects, legal or institutional constraints, etc.):

The No-Action Alternative is not feasible because it would not allow for growth or additional areas to be serviced adequately by the Region of Influence.

Section 4: Alternative Analysis
No-Action Alternative

Section 4: Alternatives Analysis
Alternative Not Selected

Attach additional alternative sheets as necessary

Description

Please provide a description of this alternative:

Limited alternatives to the proposed expansions of the RWTP were considered. Due to the original design incorporating modular, future expansion of the RO trains within the RWTP's existing footprint, the only other alternatives considered were expansions to existing surface water treatment facilities. This would require water rights acquisition for the surface water and would continue to risk the reliance on the Rio Grande River. The proposed expansion of the North Cameron RWTP with additional RO trains is expected to be within the same cost range yet provides ERHWSC with a more drought-resilient water source than the Rio Grande River and does not require water rights. The "do-nothing" alternative is infeasible due to the projected growth that is forecasted within the service area compared against existing production capacities. For these reasons, the proposed expansion alternative was selected.

The location of existing distribution system tie-in points and ERHWSC utility easements limits the route alternatives for the proposed RWTP transmission main. The proposed route for Phase 1 of the RWTP Transmission Main will follow Bouldin Road, FM 508 and FM 106. Therefore, the alternatives considered for this report only considers the pipe diameter sizing required to provide the required pressures and volumes from the RWTP to ERHWSC distribution system. Phase 2 and 3 of the RWTP Transmission Main improvements will be required when the RWTP treatment volumes are expanded in the future.

For the purposes of this report, three pipe diameters were evaluated to provide the potable water flow to meet the TCEQ Chapter 290.45 required pressures within the distribution and accommodate the RWTP production volumes. Following the route shown in Figure 2.1, 16, 20 and 24-inch DR 25 Class 165 PVC pipe diameters were evaluated using ERHWSC's WaterCAD® distribution system hydraulic model for the RWTP Phase 1 transmission main. A summary of the modeling results is discussed below.

Section 4: Alternatives Analysis

Alternative Not Selected

Attach additional alternative sheets as necessary

Alternative No. 1 – 16-inch Pipe Diameter

Assuming a 16-inch pipe diameter, the WaterCAD® hydraulic model calculations show that a high hydraulic pressure is required to overcome the friction head losses to transport water from the tie-in point at the intersection of Templeton and Bouldin Road to the termination point at the intersection of FM 106 and FM 1595. This hydraulic limitation restricts the volume of water that can be pumped from the RWTP to the termination point. So, this alternative was not considered for this project. The cost of constructing this transmission main alternative is estimated at $15,150,855.

Alternative No. 2 – 20-inch Pipe Diameter

Model results for a 20-inch pipe diameter provides the hydraulic pressure and volumes needed to transport water from the transmission line tie-in point to the termination point. The cost of constructing this transmission main alternative is estimated at $17,115,167.

Alternative No. 3 – 24-inch Pipe Diameter

Similar results as the 20-inch pipe diameter, the model results show that for a 24-inch pipe diameter provides the hydraulic pressure and water volumes needed to transport water from the transmission line tie-in point to the termination point. The cost of constructing this transmission main alternative is estimated at $19,558,161. In addition to the higher capital construction costs, oversizing distribution mains creates additional future operational and maintenance costs for ERHWSC. Therefore, this alternative was not considered for this project.

Considering the existing distribution system conditions (domestic demands, pipe locations, required operating pressures and other factors), ERHWSC's WaterCAD® distribution system hydraulic model results show the ideal water transmission main is a 20-inch. Larger pipe diameters provide the same results however, the initial capital costs and future additional operational costs are not an economically responsible option for ERHWSC.

Phase 1 will be constructed with TWDB DWSRF Program funds and future RWTP Transmission Main phases will be funded through other state, federal or private funding sources. ERHWSC has selected a traditional Design-Bid-Build project delivery method to complete Phase 1 of the RWTP Transmission Main.

Alternative still in consideration? ☐ *Yes ☒ No

**If yes, please note that the level of detail provided for this alternative should be commensurate with the level of detail provided for the preferred alternative presented in this document. Please work with your Environmental Reviewer to scope this document appropriately in order to prevent project delays.*

Section 4: Alternatives Analysis

Alternative Not Selected

Attach additional alternative sheets as necessary

Environmental Impact Description
Provide a qualitative description of the environmental impacts (adverse and beneficial) of this alternative and compare the impacts to that of the preferred alternative. Specify temporary versus permanent impacts.
The alternatives would have similar environmental impacts to that of the preferred alternative. One of the constructability issues with this alternative is the lack of public ROW, due to the service area mainly being in the rural areas north of Harlingen. Also, due to the rural location of the project, there are many irrigation lines, although significant portions of the interceptor are expected to be placed more deeply, many of the irrigation lines may prove unable to withstand the disturbance associated with construction, given their brittle and aging condition. Like the preferred alternative, groundwater was detected in major construction areas making groundwater intrusion a concern for this project.

Section 4: Alternatives Analysis

Alternative Not Selected

Attach additional alternative sheets as necessary

Environmental Impact Analysis

Please indicate whether the direct impacts of the alternative not selected on the following resources are greater than, less than or the same as the direct impacts of the preferred alternative on the same resource.

Land Use						
Change in land use and land cover is:	☐	Greater	☒	Less	☐	Same
Prime and Important Farmland						
Impacts to prime and important farmland are:	☐	Greater	☒	Less	☐	Same
Water Resources						
Impacts to surface water quality are:	☐	Greater	☐	Less	☒	Same
Impacts to groundwater quality and quantity are:	☐	Greater	☐	Less	☒	Same
Impacts to floodways or floodplains are:	☐	Greater	☐	Less	☒	Same
Impacts to wetlands are:	☐	Greater	☐	Less	☒	Same
Vegetation and Habitat						
Impacts to trust resources are:	☐	Greater	☐	Less	☒	Same
Impacts to wildlife are:	☐	Greater	☐	Less	☒	Same
Impacts to native vegetation is:	☐	Greater	☐	Less	☒	Same
Impacts to endangered species habitat are:	☐	Greater	☐	Less	☒	Same
Cultural Resources						
Impacts to cultural resources or historic properties are:	☐	Greater	☐	Less	☒	Same
Air Quality						
Effects on air quality are:	☐	Greater	☐	Less	☒	Same
Environmental Justice						
Impacts to Low-income or Minority Populations are:	☐	Greater	☐	Less	☒	Same

Section 4: Alternatives Analysis

Alternative Not Selected

Attach additional alternative sheets as necessary

Secondary and Cumulative Impacts: Considering resources that this alternative will impact, identify any past, present or reasonably foreseeable future projects which impact these same resources. This answer will provide important contextual information.

The secondary and cumulative impacts would be similar to those of the preferred alternative because the alternative would occur generally within the same footprint and due to the distribution would impact the same resources.

Acceptance/Rejection

Alternative: ☐ Accepted ☒ Rejected

Rationale for Acceptance/Rejection

Discuss the rationale for acceptance/rejection of this alternative, including financial, engineering and environmental considerations:

One of the constructability issues with this alternative is the lack of public ROW, due to the service area mainly being in the rural areas north of Harlingen. Also, due to the rural location of the project, there are many irrigation lines, although significant portions of the interceptor are expected to be placed more deeply, many of the irrigation lines may prove unable to withstand the disturbance associated with construction, given their brittle and aging condition. Like the preferred alternative, shallow groundwater may be present in major construction areas making groundwater intrusion a concern for this project.

The “do-nothing” plant expansion alternative and potable water transmission alternatives are infeasible due to the projected growth that is forecasted within the service area compared against existing production capacities. For these reasons, the preferred alternative was selected.

Section 4: Alternatives Analysis

Alternative Not Selected

Attach additional alternative sheets as necessary

Section 4: Alternatives Analysis

Selection of the Preferred Action Alternative

Discuss the rationale for why the proposed project was chosen as the preferred alternative:

The Preferred Alternative was selected because it met the budget, footprint and schedule while having similar potential impacts to resources as the alternatives not selected. Additionally, the Preferred Alternative would achieve the production capacities needed for projected growth in the Region of Influence. For this reason, the other alternatives were rejected.

Section 5: Environmental Settings, Impacts and Mitigation

5.1: Land Use

Existing Conditions	
Will the project require land use conversion?	☐ Yes ☒ No
If yes, explain: The majority of the project would be constructed utilizing trenchless construction methods within road right-of-way and existing water utility right-of-way; however, some portions of the project would be constructed in undeveloped and vacant parcels of land.	
Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. The project area is currently utilized as right-of-way, rural residential, and agricultural land. The surrounding area is generally rural residential and agricultural land. There have been little to no changes in land use within and adjacent to the project area since 1995. Due to the nature of the project, there would be no impact to land use.	
Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? ☐ Yes ☒ No	
If yes, describe additional services needed:	
Impacts	
Describe direct impacts of the project (adverse and beneficial) on land use. Specify temporary versus permanent impacts.	
The project area is currently utilized as right-of-way, rural residential, and agricultural land. The surrounding area is generally rural residential and agricultural land. Direct land use impacts would be minor and temporary in nature and would not change surrounding permanent land use.	
Mitigation Measures	
Mitigation Measures for Project Environmental Impacts? If yes, list all mitigation measures in Section 5.14.	☐ Yes ☒ Not applicable

Section 5: Environmental Settings, Impacts and Mitigation

5.2: Geology

Existing Conditions			
Physiographic Province:	☒ Gulf Coast Plains	☐ Central Texas Uplift	☐ Grand Prairie
	☐ Edwards Plateau	☐ North-Central Plains	☐ High Plains
	☐ Basin and Range		

Are there faults within the project's area of interest?	☐ Yes ☒ No
Is the project located in a Karst or Pseudo-Karst Zone?	☐ Yes ☒ No

Include the names and brief descriptions of the geologic formations in the project's area of interest.

According to the U.S. Geological Survey's Texas Geology Web Map Viewer, the study areas are located over the Alluvium (Qal), Muddy Floodplain Alluvium (Qam), Silt and Sand Floodplain Alluvium(Qas), and Beaumont Formation (Qb). Alluvium undivided is described as clay, silt, sand (mostly quartz), gravel, and organic matter. Gravel along Rio Grande consists of Cretaceous and Tertiary sedimentary and igneous rock clasts. Muddy floodplain alluvium is described as floodplain deposits in lowland streams and rivers primarily consisting of mud. Silt and sand floodplain alluvium is described floodplain deposits in low floodplains consisting primarily of silt and sand. Located in floodplains of adjacent rivers, associated with higher velocity flows and floods. The Beaumont Formation is composed of clay, sand, silt, and gravel in older stream channels, point bars, natural levees, or backswamp deposits. Located primarily in ancient floodplains and meander belts of major rivers or predecessor rivers.

Discuss any relevant topographical and geological features (e.g. salt domes, sink holes, shallow limestone formations, karst conditions, cave systems, etc.).

There are no relevant topographical or geological features within the project area.

Impacts

Describe direct impacts of geology on the proposed project. Please elaborate on all items checked "Yes" above:

Under the proposed action, there will be no adverse direct impacts to geology with the proposed project. Cameron County is located in the Gulf Coast Plains zone. All impacts will occur within Alluvium and the Beaumont Formation.

Mitigation Measures

Mitigation Measures for Project Environmental Impacts? ☐ Yes ☒ Not applicable

If yes, list all mitigation measures in Section 5.14.

Section 5: Environmental Settings, Impacts and Mitigation

5.3: Soils & Prime and Important Farmland

Soils

Is soil contamination present?	☐ Yes ☒ No
Does soil type present any constraints to the project?	☐ Yes ☒ No

If yes to either above, explain (if redundant with information provided in the Hazardous Materials section reference that section):

Will soil be moved offsite? ☐ Yes ☒ No	If yes, how will it be disposed of?
Will soil become contaminated as a result of the proposed project? ☐ Yes ☒ No	If yes, explain:

Prime and Important Farmland

Does the project area contain prime and important farmlands?	☒ Yes ☐ No

If yes, does either of the following exemptions apply?

☐ Exempt – corridor subsurface project (e.g., buried water, sewage, and/or electric lines).

☒ Exempt – previously converted site (e.g., existing water and wastewater treatment plant sites).

If the project area contains prime and important farmlands and does not qualify for the exemptions listed above, include a completed version of the NRCS' Farmland Conversion Impact Rating Form AD-1006

☐ Attach Form AD-1006 to Appendix B1

Impacts

Will prime and important farmland be directly impacted by the project?	☒ Yes ☐ No

Describe direct impacts of the project on prime and important farmland:

The proposed site may involve areas of Prime Farmland. Coordination with the NRCS on provisions of FPPA is ongoing.

Mitigation Measures

Mitigation Measures for Project Environmental Impacts? ☒ Yes ☐ Not applicable

If yes, list all mitigation measures in Section 5.14.

Section 5: Environmental Settings, Impacts and Mitigation

5.4: Water Resources

Existing Conditions		
What river basin(s) is the proposed project located in? Nueces-Rio Grande Coastal Basin		
What major/minor aquifers are located in the greater project area? Upper Pilot Channel – Laguna Madre / Lower Arroyo Colorado		
Are any of these a sole source aquifer?		☐ Yes ☒ No
Water supply(ies):	Surface water(s): Arroyo Colorado Groundwater(s): Brackish Groundwater in the Gulf Coast Aquifer, Lower Rio Grande Valley. Groundwater depths in the area are approximately 20 feet below ground surface.	
Water Well Projects		
Does the project involve the installation of any water wells?		☐ Yes ☒ No
If yes, provide the depth to ground water, duration and quantity of water to be extracted, and potential affects to the public water supply:		
Will the project require test wells?		☐ Yes ☒ No
Will any existing water well(s) be abandoned?		☐ Yes ☒ No
If yes, discuss best management practices that will be used to abandon the existing well(s):		
Impacts to Water Resources		
Will water resources be directly impacted by the project?		☐ Yes ☒ No
Describe direct impacts (adverse and beneficial) to surface water quality and groundwater quality/quantity (surface water runoff, erosion, sedimentation, temporary loss of vegetation cover, etc.). Specify temporary versus permanent impacts.		
Will the project include new or relocated discharge site(s)?		☐ Yes ☒ No
Will the project require an amendment to an existing TCEQ discharge permit?		☐ Yes ☒ No
If yes, discuss the nature of the permit changes:		

Section 5: Environmental Settings, Impacts and Mitigation

5.4: Water Resources

If the project requires a new permit or a permit amendment, list all stream segment(s) found at and immediately downstream of the proposed discharge sites. Source: TCEQ list of stream segments and water quality data.

Stream Segment ID	Classification	Impaired?	Reason for Impairment
2202	Classified freshwater stream	☒ Yes ☐ No	Bacteria in water (recreational use) Mercury in edible tissue PCBs in edible tissue
2201C	Unclassified freshwater stream	☐ Yes ☒ No	
		☐ Yes ☐ No	

Mitigation Measures

Mitigation Measures for Project Environmental Impacts? ☐ Yes ☒ Not applicable

If yes, list all mitigation measures in Section 5.14.

Section 5: Environmental Settings, Impacts and Mitigation

5.5: Topography and Floodplains

Topography	
Minimum Elevation in Project Area (MSL):	Maximum Elevation in Project Area (MSL):
0 feet	45 feet

Briefly describe the topography in the project area (e.g., gently rolling hills, dominant drainage to the west via tributaries to the Brazos River):

Gently sloped plains, dominant drainage to the southwest via Arroyo Colorado.

Discuss any relevant topographical features (e.g. playa lakes).

Most of the project area is adjacent to drainage ditches and irrigation canals, and the study areas are west of Arroyo Colorado.

Floodplains & Floodways

Is the project site located in a 100-year floodplain?	☐ Yes ☐ No ☒ Partial

If yes, list all streams with floodplains in project area. Specify whether the project will be located within the 100-year floodplain and/or floodway(s) of these streams.

Stream	Project in 100-year floodplain?	Project in floodway?
Arroyo Colorado	☐ Yes ☐ No	☐ Yes ☐ No
	☐ Yes ☐ No	☐ Yes ☐ No

Do the communities (cities and/or counties) in which the project will be constructed participate in the National Flood Insurance Program?	☒ Yes ☐ No ☐ Partial

List all participating cities and counties	List all non-participating cities and counties
Cameron County, Texas	

Impacts

Will floodplains or floodways be directly impacted by the project?	☐ Yes ☒ No

Describe direct impacts of the project (adverse and beneficial) on floodplains and floodways. Specify temporary versus permanent impacts:

Mitigation Measures

Mitigation Measures for Project Environmental Impacts? ☐ Yes ☒ Not applicable

If yes, list all mitigation measures in Section 5.14.

Section 5: Environmental Settings, Impacts and Mitigation

5.6: Wetlands, Streams, and Waters of the United States

Information included in this template represents baseline information pertinent to the majority of projects. Regulatory agencies, including the USACE, may require additional information to determine permitting or mitigation requirements.

List all applicable U.S. Army Corps of Engineers permits for the project (general and/or individual):

No permit required.

Will any of the applicable permits require pre-construction notification? ☐ Yes ☐ No

If yes, which one(s):

Are streams present on the project site or in the project area (perennial, ephemeral, intermittent)?

☒ Yes ☐ No

If yes, list all streams in the project area.

Irrigation canals and drainage ditches.

Are wetlands present on the project site or in the project area? ☐ Yes ☒ No

If yes, discuss the type and quality of wetlands (e.g., forested palustrine, emergent riverine):

Section 5: Environmental Settings, Impacts and Mitigation

5.6: Wetlands, Streams, and Waters of the United States

Has a site wetlands/waters delineation or jurisdictional determination been performed using the applicable USACE Wetland Delineation Manual*, including regional supplements**?

☒ Yes: If Yes, has it been verified by the USACE? ☐ Yes ☒ No
☐ No

*Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual". Technical Report Y-87-1. U.S. Army Engineers Waterways Experimental Station, Vicksburg, MS.

**The manual is to be used with the appropriate regional supplement. These supplements and the manual can be found on the following website:
http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/reg_supp.aspx

If yes, summarize the findings below and attach a copy of the field survey to Appendix B2. If no, describe the basis for above statements regarding presence or absence of wetlands and waters of the U.S..

A delineation of aquatic resources was completed on November 19, 2025 and identified excavated drainage ditches, excavated irrigation canals, and an open water pond within the study areas, all of which would likely be considered jurisdictional WOTUS by USACE.

Impacts			
Will wetlands be impacted?	☐ Yes ☒ No	Will streams be impacted?	☐ Yes ☒ No
Are any of the impacted wetlands/streams in the project area tidally influenced?			☐ Yes ☒ No

Describe direct impacts of the project (adverse & beneficial) on streams and wetlands (e.g., fill, dredging, dewatering, surface water runoff, other pollutants, etc.). Specify temporary versus permanent impacts.

N/A

Section 5: Environmental Settings, Impacts and Mitigation

5.6: Wetlands, Streams, and Waters of the United States

Stream/Wetland Impacts (if applicable) *add rows if needed

This section must be accompanied by a Stream/Wetland Impact Map:
The map must include a topographic background with footprint of the project overlain. Assign a number to each stream/wetland in the project footprint and label each on the map (e.g., S1, S2, W1, W2).
Attach the map to Appendix B2

Stream Impacts:
Include all streams in project footprint even if impact is zero feet

# Keyed to Map (S1, S2,...)	Temporarily impacted		Permanently impacted	
	All Streams [linear ft]	Potential Waters of U.S. (streams only) [linear ft]	All Streams [linear ft]	Potential Waters of U.S. (streams only) [linear ft]
Total Stream Impacts (feet):				

Wetland Impacts:
Include all wetlands in project footprint even if impact is zero acres.

# Keyed to Map (W1, W2,...)	Temporarily impacted		Permanently impacted	
	All Wetlands [ac]	Potential Waters of U.S. (wetlands only) [ac]	All Wetlands [ac]	Potential Waters of U.S. (wetlands only) [ac]
Total Wetland Impacts (acres):				

Mitigation Measures

Mitigation Measures for Project Environmental Impacts? ☐ Yes ☒ Not applicable
If yes, list all mitigation measures in Section 5.14.

Section 5: Environmental Settings, Impacts and Mitigation

5.7: Biological Elements

Ecoregion:			
	☐ Arizona/New Mexico Mtns.	☐ Central Great Plains	☐ Texas Blackland Prairies
	☐ Chihuahuan Deserts	☐ Cross Timbers	☐ East Central Texas Plains
	☐ High Plains	☐ Edwards Plateau	☒ Western Gulf Coastal Plain
	☐ Southwestern Tablelands	☐ Southern Texas Plains	☐ South Central Plains

Using USFWS and TPWD County Lists of Rare, Candidate, Threatened and Endangered Species, create a table of potential impacts with the following columns:

(1) Species (common and scientific names), (2) State/federal protection status, (3) Habitat, (4) Presence of Critical Habitat, (5) Project Site Suitability, and (6) Potential Impacts of Project

Attach the Potential Impacts Table to Appendix B3

Has a biological field survey been performed?	☒ Yes	☐ No

If yes, summarize the finding below. Attach report to Appendix B3, if applicable – exclude report from publicly available documents to protect location sensitive information.

Halff biologists conducted a biological field survey on November, 2025, concurrent with the field wetland delineation. The project area consists of and observed two terrestrial habitat types (upland herbaceous and upland scrub-shrub) and two aquatic habitat types (excavated ditches/canals and one open water pond).

The study area may contain suitable habitat for the tricolored bat (*Perimyotis subflavus*) and the monarch butterfly (*Danaus plexippus*) which have been proposed as federally endangered and threatened species, respectively. Degradation or removal of woodland habitat in the study area that may be utilized by tricolored bat is not proposed or needed for project. Additionally, no milkweed was identified within the study areas during the onsite habitat assessment, which is an obligate host plant where monarch butterfly eggs are laid and larvae feed. Therefore, the proposed project would likely have no effect on these species.

Are any parks, recreational areas, forest preserves, grassland preserves, wildlife refuges, wild or scenic rivers, karst faunal regions or zones, or nature preserves (federal, state or local; public or private) in or near the project area?	☐ Yes	☒ No

If yes, list and describe proximity to project site:

Briefly describe the vegetation and wildlife, including aquatic species, present in the project site and project area.

* Do not include protected species addressed in the potential impacts table.

The upland herbaceous/maintained grassland is the most prevalent habitat type that consists of maintained bermudagrass (*Cynodon dactylon*), Johnsongrass (*Sorghum halepense*), switchgrass (*Panicum virgatum*), impervious surface, an irrigation canal, and drainage ditches. The upland scrub-shrub vegetation community was dominated by honey mesquite (*Prosopis glandulosa*), Jerusalem thorn (*Parkinsonia aculeata)*, lotebush *(Ziziphus obtusifolia)*, and brasil (*Condalia hookeri).*

In addition, two aquatic habitat types occur within the study area: excavated ditch/canal and open water pond. At the time of the field investigation, the excavated ditches/canals consisted of standing water with moderate

Section 5: Environmental Settings, Impacts and Mitigation
5.7: Biological Elements

depths or were dry in the study areas. Substrate composition of ditches/canals or the pond were not observed during the field investigation but is likely comprised of loamy clay substrates based on USDA Web Soil Survey data. Vegetation along the excavated canals and ditches was dominated by maintained bermudagrass (*Cynodon dactylon*) and Johnsongrass (*Sorghum halepense*).

Impacts

Discuss potential impacts (adverse and beneficial) to trust resources, wildlife and natural vegetation, including habitat. Provide information about the nature, extent, duration and location of the impacts. Specify temporary versus permanent impacts.

* Do not include protected species already addressed in the potential impacts table.

N/A

If present in or near the project area, discuss potential impacts to any parks, recreational areas, forests preserves, grasslands preserves, wildlife refuges, wild or scenic rivers, karst faunal regions or zones, or nature preserves (federal, state or local; public or private):

N/A

Mitigation Measures

Mitigation Measures for Project Environmental Impacts? ☒ Yes ☐ Not applicable

If yes, list all mitigation measures in Section 5.14.

Section 5: Environmental Settings, Impacts and Mitigation

5.8: Cultural Resources

Have you notified the State Historic Preservation Officer (SHPO) at the Texas Historical Commission that you intend to use the NEPA process to comply with Section 106 of the National Historic Preservation Act?	☒ Yes ☐ No

Identify parties that were consulted regarding cultural resources, including Tribal Historic Preservation Officers (THPO), the federal Advisory Council on Historic Preservation (ACHP), local governments, or any other interested parties.

THC

Has an archeologist and/or an architectural historian performed a desktop review of the proposed project?	☒ Yes ☐ No

Identify cultural resources/historic properties (included in or eligible for inclusion in the National Register of Historic Places) within the proposed project's area of impact.

N/A

Has an archeological and/or architectural survey been conducted?	☐ Yes ☒ No

If Yes, briefly summarize the results of the report(s) and attach them to Appendix B4, if applicable – exclude report from publicly available documents to protect location sensitive information.

Two Official Texas Historical Markers (OTHMs) are located approximately 20 m (66 feet) east of the transmission line study area, they are commemorative in nature and do not represent known archeological sites or contain features that would indicate subsurface cultural deposits. The historical map review revealed a low potential for direct effects to above ground historic structures.

For the raw water line study area, potential for buried deposits is moderate to low over roughly two-thirds of the study area, the remainder is of high-moderate to high potential for archaeological deposits, particularly within the northern extent of the study area.

Does the project have the potential to affect significant cultural resources/historic properties?	☐ Yes ☒ No

If you have determined that historic properties will not be impacted, explain how this conclusion was reached.

Coordination with THC is ongoing to determine impacts or if further evaluation of cultural resources are required.

Describe direct impacts (adverse and beneficial) of the project on cultural resources/historic properties. Specify temporary versus permanent impacts.

N/A

Mitigation Measures

Mitigation Measures for Project Environmental Impacts? ☐ Yes ☒ Not applicable

If yes, list all mitigation measures in Section 5.14.

Section 5: Environmental Settings, Impacts and Mitigation

5.9: Hazardous Materials

The TWDB does not fund the testing, remediation, removal, disposal, or related work for contaminated or potentially contaminated material.

Is there a Superfund Site in the project area or in an area associated with the proposed work (e.g., Superfund site upstream of project activities in a floodplain)?	
No	
Was a site assessment conducted?	☒ Yes ☐ No
If a formal site assessment was conducted please attach the report and/or data search to Appendix B5.	☒ Attached ☐ Not Applicable
If an informal site assessment was conducted, please briefly describe methods and results. Make sure to identify any potential environmental hazards located on the site due to past site uses (e.g. soil contamination or proximity to nearby hazardous liquid or gas pipelines) :	
N/A	
Mitigation Measures	
Mitigation Measures for Project Environmental Impacts? If yes, list all mitigation measures in Section 5.14.	☐ Yes ☒ Not applicable

Section 5: Environmental Settings, Impacts and Mitigation

5.10: Social Implications & Environmental Justice

Social Implications		
Will land acquisition for the project require the use of eminent domain?		☐ Yes ☒ No
If yes, describe:		
Will people or businesses be relocated as a result of this project?		☐ Yes ☒ No
If yes, describe the extent and nature of the relocations.		
Will the project cause an increase in resident's monthly service rates?		☒ Yes ☐ No
If yes, provide an estimate of an average monthly residential bill and the anticipated monthly residential increase required to finance the debt.	Average Monthly User Rate: $66.90 Anticipated Increase: $101.20	
Will the project require an increase in taxes to finance the debt?		☐ Yes ☒ No
If yes, provide an estimate of the increase required:		

Environmental Justice			
Area	Population	% Minority	% Below the Poverty Level/ Per Capita Income
State	30,503,301		14%/$37,514
County: Cameron	426,710		22.6%/$21,440
City: Harlingen	71,510		26%/$24,363
Project Area (0.5 mile buffer)	21,687	89%	58%/$20,890
Does the project area have a portion of the population, greater than the city, county or state average, who are members of a racial/ethnic minority category or who have incomes less than or equal to the state's official poverty level?			☐ Yes ☒ No

Impacts	
Will the project disproportionally impact low-income or minority populations?	☐ Yes ☒ No
Please explain: N/A	

Mitigation Measures	
Mitigation Measures for Project Environmental Impacts? If yes, list all mitigation measures in Section 5.14.	☐ Yes ☒ Not applicable

Section 5: Environmental Settings, Impacts and Mitigation

5.11: Other Potential Impacts or Requirements

1. Air Quality: Is the project in a maintenance or non-attainment area for any priority air pollutant under the federal Clean Air Act?	☐ Yes ☒ No
If yes, describe the impact the project will have on ambient air quality.	
2. Scenic Views: Will the project impact scenic views or vistas during construction or operation?	☐ Yes ☒ No
If yes, indicate which scenic views or vistas will be impacted and discuss adverse impacts. Specify temporary versus permanent impacts.	
3. Traffic: Will construction of this project involve rerouting or controlling traffic?	☐ Yes ☒ No
If yes, describe traffic changes and how long traffic will be disrupted:	
4. Other Potential Impacts: If the project may cause any adverse impacts not addressed by items 1-3, identify and discuss them here (e.g., odor, prevailing winds, noise, blasting, night work, etc.):	
Under the preferred action, no other potential impacts are anticipated to occur.	
Mitigation Measures	
Mitigation Measures for Project Environmental Impacts? If yes, list all mitigation measures in Section 5.14.	☐ Yes ☒ Not applicable

Section 5: Environmental Settings, Impacts and Mitigation

5.12: Secondary and Cumulative Impacts

Considering resources that your project will impact, identify any past, present or reasonably foreseeable future projects which impact these same resources. This answer will provide important contextual information.

The construction associated with the proposed action is planned to occur over seven months beginning in 2027, and the operational life of the new system is anticipated to be a minimum of 25 years.

Because the Region of Influence for the Proposed Action is in a rural area north of Harlingen, known past and present, or reasonably foreseeable future projects within the rural areas are analyzed. Within the study areas, future projects include improving and replacing small water lines throughout the area would occur primarily within the existing right of ways. No other projects are proposed for the current project; however, new commercial facilities may be constructed within the study areas because improved service and capacity would be available. Based upon current population trends, additional residential areas are anticipated to be constructed. It can be anticipated that infrastructure projects related to transportation or other development could occur.

The projects have the potential to increase noise temporarily during site activities and the disturbance of soil during utility replacement (transmission lines, plant expansion improvements, groundwater wells, and construction workspaces) would be minimal and temporary. These projects would not have a negative environmental impact, or alter the environmental baseline; thus, a cumulative effect from the Preferred Alternative and future actions is not present.

Mitigation Measures

Mitigation Measures for Project Environmental Impacts? ☐ Yes ☒ Not applicable

If yes, list all mitigation measures in Section 5.14.

Section 5: Environmental Settings, Impacts and Mitigation

5.13: Standard Mitigation, Precautionary Measures and Best Management Practices

Describe any standard mitigation, precautionary measures and best management practices to be used during project construction (e.g., storm water pollution prevention plan, re-vegetation, dust and siltation control, establish original grades in floodplains, etc.).

There are no known required mitigation activities associated with the Preferred Alternative; however, best management practices can be incorporated with the construction. Best management practices would be designated as part of the overall engineering plans and included in a Stormwater Pollution Prevention Plan (SWP3). These areas to be addressed within the SWP3 would include the staging/storage area and where the area designated for the new equipment (project area). In addition to installing the best management practices (BMPs) (such as silt fence), the BMPs would also be properly maintained and repaired if required during construction and until stabilization of the soil is achieved (e.g. revegetation using a native seed grass-mix).

NRCS encourages the use of acceptable erosion control methods during the construction of the project.

Section 5: Environmental Settings, Impacts and Mitigation

5.14: Mitigation Measures

Provide a list of potential adverse impacts of the proposed project and a description of how those impacts will be avoided, minimized, or mitigated. This list will be used to develop conditions for the environmental determination issued by the TWDB. Please ensure the information is consistent with what was provided to regulatory agencies and incorporates applicable agency recommendations. When responding to recommendations provided by regulatory agencies, identify which are feasible and which will not be implemented.

Impact:	Recommended/Required by What Entity? (if applicable)	Mitigation Measures Description:
Example: *Loss of 5 acres of forested wetland*	*Example:* *USACE*	*Example:* *Purchase 10 credits from ABC Wetland Bank*
Potential impacts to wildlife	Texas Parks and Wildlife Department	Coordination with TPWD is ongoing.
Potential impacts to migratory birds	Texas Parks and Wildlife; U.S. Fish and Wildlife Service	Coordination with TPWD is ongoing.
Potential impacts to prime farmland	U.S. Department of Agriculture Natural Resources Conservation Service	Coordination with NRCS is ongoing.

Section 5: Environmental Settings, Impacts and Mitigation

5.15: References

U.S. Geological Survey, Texas Geology Web Map Viewer (accessed December 2025). Available at: https://tx.usgs.gov/texasgeology/

Texas Commission on Environmental Quality, Water Well Report Viewer (accessed December 2025). Available at: https://gisweb.tceq.texas.gov/waterwellpublicAGO/search.html?type=DI&gridTxId=40222#

United States Department of Agriculture. 2025. Web Soil Survey Viewer. Available at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

United States Environmental Protection Agency. 2025. Environmental Justice Screening and Mapping Tool. Available at: https://ejscreen.epa.gov/mapper/

Texas Parks and Wildlife Department. 2025. Rare, Threatened, and Endangered Species of Texas Mapper. Available at: http://tpwd.texas.gov/gis/rtest/

United States Fish and Wildlife Service. 2026. Information for Planning and Consultation. Available at: https://ecos.fws.gov/ipac/

Texas Historical Commission Atlas, 2025. Available at: https://atlas.thc.state.tx.us/Map

Section 6: Public Participation

PUBLIC MEETING

1. Does the project or activities involve a probable or known public controversy? ☐ Yes ☒ No
   If yes, please contact your TWDB environmental reviewer for the public hearing guidance.

2. Notify the Public: Public participation is required to inform the public of potential social, economic or environmental impacts of the proposed project. The applicant must notify the public of the meeting by advertisement in a newspaper of general circulation within the project area at least thirty (30) days prior to the date of the meeting. The 30-day period may count either the day of the advertisement or the day of the meeting, but not both.

3. Notify requisite agencies and interested parties: A written notice of the meeting should be sent to any state, federal or local agency, government, organization or individual that has an interest in the proposed project.

4. Floodplain/Wetland: If the proposed action is located in a wetland and/or the 100-year floodplain (500-yr floodplain for critical actions), you are required to notify the public and involve the affected and interested public in the decision making process. Incorporate a discussion of alternatives to construction in the floodplain/wetlands, potential impacts and proposed mitigation measures into the public meeting.

5. Public Meeting Notice Includes:
   - ☒ Published 30 days in advance of meeting
   - ☒ Date, time and place of meeting
   - ☒ Brief description of project & floodplain/wetland notice (if applicable)
   - ☒ Cost, including estimated monthly bill and any connection fee, tax or surcharge
   - ☒ Convenient local source for EID (available at least 30 days prior to meeting)
   - ☒ Statement of Purpose: "One of the purposes of this meeting is to discuss the potential environmental impacts of the project and alternatives to it."

Example Public Meeting Notice:

A public meeting is being held on _____(day, date)_____at ___(time)___ at_____(location, address)_____ to discuss the _____city/district_____'s proposed project to _____(project description)_____ at _____(project location)_____ . One of the purposes of this hearing is to discuss the potential environmental impacts of the project and alternatives to it. The total estimated cost of the project is $_____. The estimated monthly bill for a typical resident is currently_____. A user rate increase of _____will be required to finance this project. *In addition, a connection fee/tax/surcharge/other fee of $_____will be required.* An application for financial assistance for the project has been *(will be)* filed with the Texas Water Development Board, P.O. Box 13231, Austin, Texas, 78711-3231. An Environmental Information Document for the project has been prepared which will be available for public review at _____(city hall/district offices)___ at_____(address)____between the hours of _____(hours)____for 30 days following the date of this notice. Written comments on the proposed project may be sent to _____(address)_____or to the Texas Water Development Board.

Floodplain/Wetland: Incorporate into Public Meeting Notice for projects in a floodplain or wetland
This project involves construction (a) of a critical facility in the 500-year floodplain, (b) in the 100-year floodplain, or (c) construction located in a wetland. Alternatives to construction in a floodplain/wetland, potential impacts on floodplains/wetlands and proposed mitigation measures will be addressed during the public meeting.

6. Public Meeting Documentation
   - ☐ Publisher's affidavit and a copy of the notice
   - ☐ Statement signed by applicant: meeting was held in conformance with the Public Meeting Notice.
   - ☐ List of witnesses
   - ☐ Written summary of the meeting

7. Were adverse comments about any aspect of the project received? ☐ Yes ☐ No
   If yes, describe how they were resolved: Public meeting scheduled for March 11, 2026.

Section 7: Agency Coordination

When coordinating with an agency, send hard copies by public carrier with delivery confirmation requested. Retain copies of those confirmations. When a response is not received from an agency, documentation of the delivery must be included with the coordination materials submitted to the TWDB. All agency coordination should be included in Appendix C and should be presented in the same order as the following table.

Mailing addresses for the following agencies are provided online at:
http://www.twdb.texas.gov/financial/instructions/doc/addresses.pdf

Uniform Project Notification Requirements		
Bureau of Reclamation	☐ Sent ☐ *Response* (Not required)	Page: C-
Bureau of Land Management	☐ Sent ☐ *Response* (Not required)	Page: C-
Intergovernmental Review: Depending on the nature and location of the proposed project, notification should be sent to the City Mayor, County Judge or both.	☐ Sent ☐ *Response* (Not required)	Page: C-

Uniform Agency Coordination Requirements		
Texas Historical Commission	☒ Sent ☐ Response	Page: C-
U.S. Army Corps of Engineers	☐ Sent ☐ Response	Page: C-
Texas Parks and Wildlife Department Wildlife Habitat Assessment Program	☒ Sent ☐ Response ☐ Response to TPWD recommendations indicating which recommendations will be implemented.	Page: C-

Circumstantial Requirements

Use the following questions to determine if coordination is required regarding potential impacts to the resource identified. If Yes, provide the page number for coordination materials.

Will the project adversely affect federally listed threatened or endangered species or their critical habitat? ☒ No effect (no coordination required) ☐ Not likely to adversely affect ☐ Likely to adversely affect	U.S. Fish and Wildlife Service Division of Ecological Services If not likely, concurrence that adverse effects have been adequately mitigated recommended If likely, formal Section 7 consultation required Page: C-
Will the project impact prime and important farmlands? ☐ Yes ☐ No ☐ Exempt (pipeline project, existing site)	U.S. Department of Agriculture Natural Resources Conservation Service If Yes, Page: C-

Section 7: Agency Coordination	
Is the project located within or directly adjacent to a national forest or grasslands? Does the project share a surface water connection that may impact these resources? ☐ Yes ☒ No	U.S. Forest Service National Forest or Grasslands If Yes, Page: C-
Is the project located within or directly adjacent to National Park Service Lands? Does the project share a surface water connection that may impact these resources? Does the proposed project have the potential to impact view sheds, natural sounds, night skies, or air quality of any NPS units or National Historic Landmarks? ☐ Yes ☒ No	National Park Service Environmental Quality Division If Yes, Page: C-
Wild and Scenic Rivers: coordination is required for all projects located in one of the following counties: El Paso, Brewster, Crane, Crocket, Culberson, Edwards, Hudspeth, Jeff Davis, Loving, Pecos, Presidio, Reeves, Schleicher, Sutton, Terrell, Upton, Val Verde, Ward and Winkler. ☐ Yes ☒ No	National Park Service Big Bend National Park, Rio Grande Wild & Scenic River If Yes, Page: C-
Is the project site within the floodplain or adjacent to the channel of the Rio Grande River OR located in, or directly adjacent to, the IBWC's flood control projects in Texas? ☐ Yes ☒ No	International Boundary and Water Commission (U.S. Section) Environmental Management Division If Yes, Page: C-
Is the project located within the contributing zone (stream flow source) or recharge zone of the Edwards Aquifer? ☐ Yes ☒ No	Environmental Protection Agency Groundwater/UIC Section (6WQ-SG) If Yes, Page: C-
Is the project located in, or directly adjacent to, tidal waters or tidally influenced wetlands? ☐ Yes ☒ No	National Marine Fisheries Service Habitat Conservation Division If Yes, Page: C-
Is the project located in a coastal management zone? ☐ Yes ☒ No	General Land Office If Yes, Page: C-
Will the proposed project affect any known organizations or private entities? ☐ Yes ☒ No	Coordination with the affected party(s) is required. If Yes, Page: C-

Section 7: Agency Coordination

<u>For communities that participate in the NFIP:</u> Is the project is located in the 100-year floodplain (1% chance of flooding)? ☒ Yes ☐ No Does the project involve construction of a critical facility (WTP, WWTP,etc.) in the 500-year floodplain (0.2% chance of flooding)? ☐ Yes ☒ No **Any construction in the 100-year floodplain and construction of critical facilities in the 500-year floodplain requires a Floodplain Development Permit. Floodplain Development Permits must be acquired prior to TWDB approval of engineering plans and specifications and release of construction funds.	National Flood Insurance Program Local Floodplain Administrator If Yes, Page: C-
<u>For communities that DO NOT participate in the NFIP:</u> Does the project involve construction in the 100-year floodplain or construction of a critical facility in the 500-year floodplain? ☐ Yes ☐ Exempt: strictly pipeline installation ☐ No ☐ Undetermined: no maps available to make determination **If the project is not exempt and is (a) located in the 100 year floodplain, (b) involves construction of a critical facility in the 500-year floodplain or (c) no floodplain maps are available for the project area, a Flood Risk Assessment must be prepared.	<u>Flood Risk Assessment</u> The assessment should include an elevation study, risk of flooding determination, and recommendation (build, no build, special accommodations). The assessment must be sealed by a licensed engineer. If Yes, Page: C-

Section 7: Agency Coordination

Sample Agency Notification Letter

DATE

CONTACT NAME
ADDRESS
See section 7 for agency contact information

RE: Project Notification: Please Review - No Response Required

Dear CONTACT:

The APPLICANT is pursuing federal funding through the Texas Water Development Board's FUNDING PROGRAM for the proposed PROJECT NAME (TWDB PROJECT NUMBER). The purpose of this notification is to identify if the proposed project will have any potential conflicts with projects being implemented by your agency.

Attached to this letter is a document containing general contact information, project description and project maps. A copy of the full Environmental Information Document (EID), which includes background environmental information and a robust analysis of potential impacts, is available upon request.

If you have any questions or need additional information, please contact me at (tel:)_____ or by e-mail at _____.

Sincerely,
APPLICANT/CONSULTANT

Enclosure: Section 1 (General Information), Section 3 (Project Description) and Appendix A (Standard Maps) from the EID.

Section 7: Agency Coordination

Sample Agency Coordination Letter

DATE

CONTACT NAME
ADDRESS
See section 7 for agency contact information

RE: NEPA Review Requested for Federally Funded Project
Environmental Information Document Available
Consultation#_____, Date_____
_____(Project Name)__ _____
_____(Applicant)_____
_____(Project Location)_____

Dear CONTACT:

The APPLICANT is pursuing federal funding through the Texas Water Development Board's FUNDING PROGRAM for the proposed PROJECT NAME (TWDB PROJECT NUMBER). The purpose of this coordination is to identify potential environmental and permitting issues: specifically, permits or mitigative measures required to ensure compliance with environmental regulations specific to your agency's area of jurisdiction.

The attached Environmental Information Document (EID) provides a project description, project maps, background environmental information, a robust analysis of potential impacts and a list of all agencies with whom we are coordinating. Sections particularly relevant to your agency include: (use the table of relevant sections by agency provided on the next page to complete this section).

Include a brief description of mitigation measures that will be implemented to reduce impacts to resources under the agency's area of jurisdiction.

Recommended or required actions identified through this coordination, including permits, will be considered for inclusion as conditions in the TWDB's environmental determination. Please cite the relevant authority (statue/regulation) for recommendations.

We request your concurrence with our determination that_____. If you have any questions or need any additional information, please contact me at (tel:)_____ or by e-mail at _____.

Sincerely,
APPLICANT

Enclosure: EID (access to the EID may also be provided by including a link where the EID can be downloaded).

Section 7: Agency Coordination

Relevant Sections by Agency

(for the purposes of this EID, not intended to be all inclusive)

Uniform Project Notification Requirements	
Bureau of Reclamation, Bureau of Land Management, and Local Council of Governments	Section 1: General Information Section 3: Project Description Appendix A: Standard Maps
Uniform Agency Coordination Requirements	
Texas Historical Commission	Section 1: General Information Section 3: Project Description Section 5.8: Cultural Resources Appendix A: Standard Maps Appendix B4: Cultural Resources Report (if applicable)
U.S. Army Corps of Engineers	Section 1: General Information Section 3: Project Description Section 5.4: Water Resources Section 5.5: Topography and Floodplains Section 5.6: Wetlands, Streams and Waters of the U.S. Appendix A: Standard Maps Appendix B2: Wetlands, Streams and Waters of the U.S. (if applicable)
Texas Parks and Wildlife Department & U.S. Fish and Wildlife Service	Section 1: General Information Section 3: Project Description Section 5.1: Land Use Section 5.4: Water Resources Section 5.6: Wetlands, Streams and Waters of the U.S. Section 5.7: Biological Resources Appendix A: Standard Maps Appendix B3: Biological Resources
Circumstantial Requirements	
U.S. Department of Agriculture Natural Resources Conservation Service	Section 1: General Information Section 3: Project Description Section 5.1: Land Use Section 5.3: Soils & Prime and Important Farmlands Appendix A: Standard Maps Appendix B1: Soils & Prime and Important Farmlands

Section 7: Agency Coordination

Relevant Sections by Agency

(for the purposes of this EID, not intended to be all inclusive)

U.S. Forest Service National Forest or Grasslands	Section 1: General Information Section 3: Project Description Section 5.5: Topography and Floodplains Section 5.6: Wetlands, Streams and Waters of the U.S. Section 5.7: Biological Resources Appendix A: Standard Maps Appendix B3: Biological Resources
National Park Service Environmental Quality Division	Section 1: General Information Section 3: Project Description Section 5.4: Water Resources Section 5.5: Topography and Floodplains Section 5.6: Wetlands, Streams and Waters of the U.S. Section 5.7: Biological Resources Appendix A: Standard Maps Appendix B3: Biological Resources
National Park Service Big Bend National Park	Section 1: General Information Section 3: Project Description Section 5.5: Topography and Floodplains Section 5.6: Wetlands, Streams and Waters of the U.S. Section 5.7: Biological Resources Appendix A: Standard Maps Appendix B3: Biological Resources
International Boundary and Water Commission (U.S. Section) Environmental Management Division	Section 1: General Information Section 3: Project Description Section 5.4: Water Resources Section 5.5: Topography and Floodplains Section 5.6: Wetlands, Streams and Waters of the U.S. Appendix A: Standard Maps
Environmental Protection Agency Groundwater/UIC Section (6WQ-SG)	Section 1: General Information Section 3: Project Description Section 5.5: Topography and Floodplains Section 5.6: Wetlands, Streams and Waters of the U.S. Section 5.7: Biological Resources Appendix A: Standard Maps Appendix B3: Biological Resources

Section 7: Agency Coordination Relevant Sections by Agency (for the purposes of this EID, not intended to be all inclusive)	
National Flood Insurance Program Local Floodplain Administrator & Texas Water Development Board Flood Mitigation Planning Division	Section 1: General Information Section 3: Project Description Section 5.5: Topography and Floodplains Appendix A: Standard Maps
National Marine Fisheries Service Habitat Conservation Division	Section 1: General Information Section 3: Project Description Section 5.5: Topography and Floodplains Section 5.6: Wetlands, Streams and Waters of the U.S. Section 5.7: Biological Resources Appendix A: Standard Maps Appendix B3: Biological Resources
General Land Office	Section 1: General Information Section 3: Project Description Appendix A: Standard Maps

Section 8: Certification

CERTIFICATION

I hereby certify that the information contained in this document is accurate and complete to the best of my knowledge, and that this document describes the complete project. There are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions.

Signature____Peter Van Zandt_____ Date___Febuary 9, 2026_____

Title_____Environmental Project Manager_____

Section 9: Appendices

Environmental Technical Memorandum

North Cameron Water Transmission Line (TWDB Project No. 21884)

and

North Cameron Reverse Osmosis Plant Expansion (TWDB Project No. 63009)

Cameron County, Texas

Prepared for

East Rio Hondo Water Supply Corporation

206 Industrial Pkwy
Rio Hondo, Texas 78583

Prepared by

Halff

13620 Briarwick Drive
Building C Suite 100
Austin, Texas 78729

AVO 57988.001
February 2026

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1.0 INTRODUCTION

Halff was retained by the East Rio Hondo Water Supply Corporation (ERHWSC) to complete an Environmental Technical Memorandum for the proposed North Cameron Water Transmission Line and the North Cameron Reverse Osmosis Plant Expansion projects in Cameron County, Texas.

Table 1: Project Summary Table

North Cameron Reverse Osmosis Plant Expansion	
Site Location:	Raw water line project limits from Orphanage Road at the north to Johnson Road at the southern project limits, an approximate length of 11 miles (82 acres). Plant improvements at 14995 State 107, Harlingen, TX 78552 (**Figure 1.1**).
Description:	The plant expansion project would improve the plant to increase capacity from 2.3 MGD to 7.5 MGD in Phase's 1 and 2 and ultimately to 10.0 MGD in Phase 3. The project includes new groundwater wells, new raw water transmission lines and plant upgrades to the existing treatment system. New reverse osmosis (RO) equipment will be added to the existing plant including new cartridge filters, RO pumps, and RO trains. Post treatment systems within the facility and high-service pumping capacity will also be expanded.
North Cameron Water Transmission Line	
Site Location:	Along Farm-to-Market (FM) 508 from the US-77 Frontage Road to 0.1-mile north of FM 1595, and along Bouldin Road from FM 508 to Templeton Road, an approximate length of 11 miles (182 acres) (**Figure 1.2**).
Description:	The transmission line project would improve the water distribution system by replacing approx. 10 miles of the existing 10" water main with 20" DR 25 Class 165 PVC pipe. The existing 10" water main experiences frequent breaks due to poor material condition and pipe age. This new transmission main will not only have the capacity to convey up to 5.5 million gallons per day (MGD) of treated water from the North Cameron Regional Water Treatment Plant (NCRWTP) to users on the east side of ERHWSC's system but will also alleviate high pressures and excessive water losses due to main breaks on the 10" water main.

The purpose of this memorandum is to summarize environmental compliance and permitting requirements for the proposed projects based on desktop research of local, state, and federal natural and cultural resources databases and field investigations.

Reviewed data sources include U.S. Fish and Wildlife Service (USFWS), USFWS National Wetland Inventory (NWI), Federal Emergency Management Agency (FEMA), Texas Parks and Wildlife Department (TPWD), TPWD Texas Natural Diversity Database (TXNDD), COA GIS Data, Natural Resource Conservation Service (NRCS), Railroad Commission of Texas (RRC), Texas Commission on Environmental Quality (TCEQ), U.S. Environmental Protection Agency (US EPA), Texas Department of Transportation (TxDOT), United States Geological Survey (USGS), USGS National Hydrography Database (NHD), Texas Archeological Research Laboratory (TARL), and Texas Historical Commission (THC).

Halff conducted a field investigation of the study areas on November 19, 2025 to determine the extent of aquatic features with the potential to be regulated as jurisdictional waters of the United States (WOTUS); to evaluate potential habitat for state and federally listed threatened and endangered species; for assessment of hazardous materials concerns within the study areas. Archeological surveys are anticipated to be required by THC for the proposed project but were not completed at the time of this assessment.

Table 2 provides an overview of the environmental constraints evaluated for the project and outlines potential regulatory compliance requirements and coordination needs with applicable federal, state, and local agencies. The required environmental permit(s) and agency coordination will depend upon the extent of proposed impacts to natural and cultural resources based on the final proposed design.

2.0 SUMMARY OF ENVIRONMENTAL FINDINGS

Table 2: Environmental Constraints within the Study Areas

RESOURCE TYPE	PERMIT/ACTION/DATA	SOURCE	WITHIN PROJECT LIMITS	NEXT STEPS
Water Resources	Floodplain Development Permit	Cameron County, FEMA	Project is within the 100-Year and 500-Year floodplains.	Compliance with FEMA floodplain regulations and local ordinances will be required, along with potential coordination with local floodplain administrator(s).
	Edwards Aquifer Protection Program	TCEQ	None mapped within project limits.	N/A
	Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP) TXR150000	TCEQ	Discharges from construction activities that result in a total land disturbance of 5 acres or greater and sites less than 1 acre but are part of a common plan of development or sale.	The project would impact approximately 274 acres. Therefore, the project will require a Storm Water Pollution Protection Plan (SWPPP), Notice of Intent (NOI), and Notice of Termination (NOT).
	Water Wells	TWDB	None registered within project limits.	N/A
	Clean Water Act (CWA) Section 404/Section 10 Permit	NWI, NHD, USGS, Halff	The delineation of aquatic resources completed on November 19, 2025 identified excavated drainage ditches, excavated irrigation canals, and an open water pond within the study areas, all of which would likely be considered jurisdictional WOTUS by USACE.	The proposed project will consist entirely of trenchless construction methods (i.e., HDD boring, auger bore, or jack and bore) underneath all aquatic resources identified in the study areas. Through avoidance, the proposed project is not subject to Section 404 or Section 10, provided that the project is constructed above the OHWM of all aquatic resources. Therefore, trenchless construction activities for the project do not require a USACE permit.
Biological Resources	Endangered Species Act of 1973, as amended (ESA)	USFWS, SWCA	The IPaC Official Species List identified 13 federally listed threatened and endangered species or species proposed to be listed whose geographic ranges may include the study area.	The proposed project would utilize primarily trenchless construction methods; however, any ground disturbing activities associated with the project would be temporary in nature and would not result in permanent removal, modification, or degradation of suitable habitat. Therefore, federally listed threatened or endangered species are not likely to be affected by the proposed project.
	Critical Habitat	USFWS, SWCA	None mapped within project limits.	N/A
	Bald and Golden Eagle Protection Act of 1940, as amended (BGEPA)	USFWS	IPaC data indicates that no eagles have been observed in the study areas.	N/A
	Migratory Bird Treaty Act of 1918, as amended (MBTA)	USFWS	Birds protected by the MBTA have potential to occur in the study areas.	Follow TPWD beneficial management practices and general construction recommendations. A good faith effort to avoid and minimize impacts to migratory birds should be made. Onsite workers should be trained on migratory birds and active nests and impacts to migratory birds should be avoided or minimized whenever possible.
	Texas Parks and Wildlife Code (Chapters 67 & 68) and 31 Texas Administrative Code (TAC) §§65.171–65.176	TPWD	Low potential for presence of state-listed species within the study areas. Three state-listed threatened bird species may migrate through area, but preferential stopover or foraging habitat was not identified for these species. Therefore, the proposed project will not impact state-listed species and coordination with TPWD is not required.	Schedule any necessary vegetation clearing or trampling to occur outside of the March 15 September 15 migratory bird nesting season. For proposed clearing activities during nesting season, conduct surveys for birds, nests, and eggs no more than 5 days prior to ground disturbing activities or mechanical clearing of brush and trees. USFWS recommends leaving a buffer of vegetation at least 100 feet around songbird nests detected during surveys until young have fledged or the nest is abandoned.

RESOURCE TYPE	PERMIT/ACTION/DATA	SOURCE	WITHIN PROJECT LIMITS	NEXT STEPS
Cultural Resources	Antiquities Code of Texas (Title 9, Chapter 191 of the Texas Natural Resources Code)	THC, Halff, SWCA	Two OTHMs are located approximately 20 m (66 feet) east of the transmission line study area, they are commemorative in nature and do not represent known archeological sites or contain features that would indicate subsurface cultural deposits. The historical map review revealed a low potential for direct effects to above ground historic structures. For the raw water line study area, potential for buried deposits is moderate to low over roughly two-thirds of the study area, the remainder is of high-moderate to high potential for archaeological deposits, particularly within the northern extent of the study area.	The Atlas and historic map review findings support a recommendation against an intensive archeological survey of the transmission line study area. For the raw water line study area, the absence of previously recorded cultural resources within and adjacent to the study area supports a recommendation for an intensive archeological survey. The historical map review revealed a low potential or direct effects to above ground historic structures and a potential for visual effects to such resources in the indirect APE. As such, a historic resources survey is not recommended.
Hazardous Materials	Soil/Groundwater Contamination, Industrial & Hazardous Waste Sites, Municipal Solid Waste/Landfill Sites, Municipal Setting Destinations, Superfund Site Boundaries/Sites, Landfill Inventory, Leaking Petroleum Storage Tank Sites	EPA, TCEQ, Halff	Field reconnaissance conducted November 19, 2025, did not reveal evidence (e.g., stained soil, stressed vegetation, noxious odors) of a past release of hazardous substances. No dump sites of any significant volume were observed and what little trash was observed could be disposed of as encountered. The hazardous materials assessment two natural gas pipelines and one refined liquid product pipeline were identified within the raw water line study area. Two natural gas pipelines, one refined liquid product pipeline, and three PSTs were identified adjacent to the transmission line study area. Two of these PSTs were listed in the TCEQ Central Registry as leaking petroleum storage tank (LPST) sites. The pipeline crossings and non-leaking PST are not considered to be an environmental concern for the proposed project based on one or more of the following rationale: absence of reported releases, regulatory status, separating distance relative to the study areas, nature/extent of the hazardous waste sites, and/or presumed hydrologic gradient relative to the study areas.	The hazardous materials sites identified in regulatory databases are not considered to be an environmental concern for the project based on based on one or more of the following rationale: absence of reported releases, regulatory status, separating distance relative to the study areas, presumed hydrogeologic gradient relative to the study areas, and/or nature/extent of contamination.

3.0 ENVIRONMENTAL SETTING

3.1 USGS TOPOGRAPHIC MAP DESCRIPTION

Halff assessed recent USGS topographic 7.5-minute quadrangle maps for “Santa Rosa, Texas”, “Willamar SW, Texas”, “Paso Real, Texas”, “Rio Hondo, Texas”, “Harlingen, Texas”, and “La Feria, Texas” dated 1956 and 2022 to identify development, elevation contours, and drainage patterns associated with the study areas.

Based on the 1956 topographic map, landcover within and surrounding the raw water line study area is depicted primarily as cropland, pastureland, orchards (depicted by dotted green polygons), and undeveloped herbaceous land. The city of Santa Rosa is depicted west of the raw water line study area. Several rural roads are depicted intersecting various portion of the raw water line study area, including Thompson Road, and North Pomelo Road. Several drainage ditches and canals intersect various portions of the raw water line study area (depicted by solid blue lines), all of which are labeled “Elevated Ditch”. The Texas and New Orleans Railroad intersects the central portion of the raw water line study area. One freshwater pond (depicted by blue shaded polygons) is located adjacent to the northern portion of the raw water line study area. The raw water line study area is generally flat and is depicted at a generally static elevation of 45-46 feet (see **Figure 2.1**).

Based on the 1956 topographic map, landcover surrounding the transmission line study area is primarily cropland, pastureland, orchards (depicted by dotted green polygons), and undeveloped herbaceous land. The city of Combes is adjacent to the western terminus of the transmission line study area. Several drainage ditches and canals intersect various portions of the transmission line study area including Canal Number 7 and an unnamed tributary to the Colorado River (depicted by solid blue lines). McCloud Hood Reservoir (depicted by shaded blue polygon) is depicted north of the transmission line study area and Cullen-Thompson Reservoir is depicted south of the transmission line study area along FM 508. The Colorado River (depicted by solid blue polygons) is depicted flowing north to south adjacent to the eastern project terminus. Wetlands (depicted by blue plant marks) are located within the transmission line study area along FM 508 west of Road 839. The transmission line study area is depicted as generally flat with an average elevation of 30 feet above mean sea level (see **Figure 2.2**).

Based on the 2022 topographic map, the features within the raw water line study area and land surrounding it are generally similar to the 1956 topographic map save for increased residential and roadway development. Five drainage ditches are depicted to intersect various portions of the raw water line study area, particularly along Diamond Drive to the north and Combes Santa Rosa Road to the south. Roadway and residential development are depicted to intensify surrounding west of the raw water line study area, with surrounding lands primarily depicted as undeveloped herbaceous lands and croplands. The adjacent freshwater pond depicted in the 1965 topographic map is now depicted as a drainage ditch. San Pedro Cemetery is located east of the raw water line study area (see **Figure 2.3**)

Based on the 2022 topographic map, the features within land surrounding the transmission line study area appear similar to the 1956 topographic map, save for increased residential and roadway development. Six canals are depicted to intersect various portions of the transmission line study area, including Canal Number 7, and an unnamed tributary flowing from Abott Reservoir through the study area into the Colorado River and Montogomery Reservoir. Roadway and residential development appear to intensify surrounding the transmission line study area, but surrounding lands remain dominated by undeveloped herbaceous

lands and croplands with pockets of woodlands (depicted by green shading) surrounding drainage ditches and canals. Rio Hondo is depicted east of the eastern project limits (see **Figure 2.4**)

3.2 AERIAL IMAGERY MAP DESCRIPTION

Aerial imagery from 2025 was reviewed to assess the study areas. The raw water line study area is comprised primarily as maintained right of way adjacent to several rural roadways, including Orphanage Road, Bass Boulevard, Tamm Lane, Thompson Road, Bryan Long Lane, State Highway (SH) 107, Bass Boulevard, and North Pomelo Road. Cropland, residential developments, rural roadways, and undeveloped herbaceous land surround the raw water line study area. Several excavated drainage features intersect various portions of the raw water line study area (see **Figure 3.1**).

The transmission line study area is comprised primarily as maintained right of way adjacent to Combes Rio Hondo Road and Bouldin Road. Cropland, residential developments, rural roadways, and undeveloped woodland surrounding drainage features surround the transmission line study area. Several canals and drainage features intersect various portions of the transmission line study area, including Number 7 Canal. The transmission line study area intersects Santa Elena Colonia, just north of the Valley international Airport. The Laguna Escondida Colonia and Laguna Escondida Heights Number 2 Colonia are located approximately 0.5-mile north of the western project limits of the transmission line study area. The Colorado River is depicted east of the eastern project terminus of the transmission line study area. (see **Figure 3.2**).

3.3 WATER RESOURCES

Water resources include surface water features (e.g., wetlands, tributaries, rivers, impoundments, and other potential WOTUS, floodplains and groundwater features. Wetlands are identified as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Water resources within the study area were evaluated to identify local, state, and/or federal permitting requirements that may be associated with construction of the proposed project.

NWI and NHD maps were reviewed to identify potential wetland areas and other aquatic resources within the study areas. Within the raw water line study area, two freshwater emergent wetland features, and five riverine features were identified, as depicted on NWI maps (see **Figure 4.1**). Five canal/ditch NHD features are depicted intersecting various portions of the raw water line study area, coinciding with NWI features. Within the transmission line study area, one freshwater pond feature, four freshwater emergent wetland features, and five riverine features were identified (see **Figure 4.2**). Seven canal/ditch and one stream/river NHD features intersect various portions of the transmission line study area, which coincide with the NWI features discussed above. On November 19, 2025, Halff conducted a delineation of aquatic features and identified several excavated drainage ditches and canals within and adjacent to the study areas, which coincide with mapped NWI and NHD features.

FEMA national flood hazard (NFHL) floodplain data were reviewed to evaluate the location of the mapped floodplains in relation to potential water resources located within the study areas. According to the FEMA National Flood Hazard Layer (NHFL) dataset portions of the study areas are located within the 500-year flood plain (0.2 percent annual chance flood hazard) and the 100-year flood plain (1.0 percent annual chance flood hazard). The FEMA NFHL is depicted in **Figure 5.1** and **Figure 5.2**.

3.4 BIOLOGICAL RESOURCES

The USFWS Information for Planning and Consultation (IPaC) report for the study area includes 13 federally listed threatened and endangered species and proposed to be listed species that may occur within the study area (see **Appendix A**). Critical habitats are specific geographic areas that contain features essential for the conservation of a threatened or endangered species and that may require special management and protection. There are no USFWS-designated critical habitats located within the study area. **Table 2** summarizes the federally listed species, suitable habitat descriptions, and effect determinations.

Table 3: Summary of Federally-listed Threatened and Endangered Species

Species	Habitat Description	Federal Status	State Status	Effect Determination	Explanation for Effect Determination
MAMMALS					
Gulf Coast Jaguarundi *Puma yagouaroundi cacomitli*	This species is extinct in Texas and is primarily found in northern Mexico as well as portions of central and south America. Similar to the ocelot, this species is restricted to dense, thorny shrublands with dense mixed brush.	E	-	No Jeopardy	The study areas contain portions of wooded and herbaceous habitat, but does not contain suitable dense thorny shrublands. Furthermore, the species is currently extinct in Texas. Therefore, species presence within the study areas is unlikely, making is unlikely for the proposed project to jeopardize the species.
Ocelot *Leopardus pardalis*	Restricted to mesquite-thorn scrub and live-oak mottes; avoids open areas. Dense mixed brush below four feet; thorny shrublands; dense chaparral thickets; breeds and raises young June-November.	E	E	No Jeopardy	The study areas contains portions of wooded and herbaceous habitat, but does not contain suitable dense thorny shrublands. Therefore, the proposed project is unlikely to jeopardize the species.
Tricolored bat *Perimyotis subflavus*	In Texas, tricolored bats may be found year-round. In the spring, summer, and fall they primarily nest on leaves or bark of live and dead trees, or epiphytic vegetation such as Spanish moss (*Tillandsia usneoides*). They may	PE	-	No Jeopardy	Suitable roosting habitat may be present in the upland woodland habitat adjacent to the study areas. However, significant degradation or removal of potential roosting trees observed in wooded areas of the study area is not

Species	Habitat Description	Federal Status	State Status	Effect Determination	Explanation for Effect Determination
	also roost among ferns and crevices on limestone and sandstone bluffs and cliffs during this time. From late winter to early spring, they may roost in culverts, abandoned buildings, and large hollow trees.				proposed or needed for the project. Additionally, this species has not been documented to occur in the vicinity of the study area (iNaturalist, 2026). Therefore, the proposed project is not likely to jeopardize this species.
BIRDS					
Cactus Ferruginous Pygmy-owl *Glaucidium brasilianum cactorum*	This bird is found in lowland subtropical and semi-arid woodlands and shrublands. Suitable woodlands are dominated by live oak, honey mesquite, hackberry, and Texas ebony woody species over sandy coastal plain soils.	T	-	No Jeopardy	The study areas primarily contain croplands, but are adjacent to undeveloped lands. However, this species has no documented occurrences in Texas. Therefore, the proposed project is not likely to jeopardize this species.
Northern Aplomado Falcon *Falco femoralis septentrionalis*	This bird prefers open savannas and woodlands, but can be found in barren areas. Grassy plains and valleys with scattered mesquite, yucca, and cacti are suitable for the species. Nests in old stick nests of other bid species.	E	E	No Jeopardy	The study areas primarily contain croplands, but contain portions of wooded undeveloped lands. However, this species has no documented occurrences in the vicinity of the study area. Therefore, the proposed project is not likely to jeopardize this species.
Piping plover *Charadrius melodus*	This bird is a wintering migrant along the Texas Gulf Coast. It inhabits beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Algal flats appear to be the highest quality habitat as they have continuous	T	T	No Effect	This species only needs to be considered for wind energy projects, and the necessary open sandy habitat is not present within the study areas. Therefore, the proposed project would have no effect on this species.

Species	Habitat Description	Federal Status	State Status	Effect Determination	Explanation for Effect Determination
	availability throughout all tidal conditions.				
Rufa Red knot *Calidris canutus rufa*	This species primarily occurs along seacoasts on tidal flats and beaches, herbaceous wetland, and shoreline. They migrate long distances in flocks northward through the contiguous U.S. mainly April-June, southward July-October. In rare inland encounters, red knots can use mudflats.	T	T	No Effect	This species only needs to be considered for wind energy projects, and mudflats or open sandy/coastal habitat is not present within the study areas. Therefore, the proposed project would have no effect on this species.
REPTILES					
Green Sea *Chelonia mydas*	Restricted to tropical, subtropical, and temperate ocean waters worldwide, including the Gulf of Mexico.	T	T	No Effect	The proposed project is inland and will not affect any coastal or oceanic habitats. Therefore, the proposed project would have no effect on this species.
Hawksbill Sea Turtle *Eretmochelys imbricata*	Restricted to tropical, subtropical, and temperate ocean waters worldwide, including the northwestern Atlantic Ocean and the Gulf of Mexico. .	E	E	No Effect	The proposed project is inland and will not affect any coastal or oceanic habitats. Therefore, the proposed project would have no effect on this species.
CLAMS					
Salina Mucket *Potamilus metnecktayi*	This clam occurs in medium to large rivers in various substrates including sand, mud, gravel, and cobble. The species prefers slow to moderate current velocities and is most stable in littoral habitats dominated by boulder or bedrock habitat. The	PE	T	No Effect	No rivers occur within or adjacent to the study area. Therefore, the proposed project would have no effect on this species.

Species	Habitat Description	Federal Status	State Status	Effect Determination	Explanation for Effect Determination
	species is not known to inhabit reservoirs.				
INSECTS					
Monarch Butterfly *Danaus plexippus*	Adults are found in a variety of habitats including native prairies, pastures, open woodlands and savannas, desert scrub, roadsides, and other habitats with abundant nectar plants, including urbanized areas. Milkweed (primarily *Asclepias* spp.) is an obligate host plant where eggs are laid and larvae feed.	PT	-	No Jeopardy	Nectar-bearing flowering plant species may occur within the study areas; no milkweed was observed during the field investigations. Based on the lack of an abundance of milkweed and their isolated occurrence in the study area, the proposed project would not jeopardize this species.
RARE PLANTS					
South Texas Ambrosia *Ambrosia cheiranthifolia*	This rare plant species prefers grasslands and mesquite shrublands over heavy clays to lighter sandy loams, particularly over the Beaumont Formation. The species is known to inhabit modified unplowed developed areas including railroad or highway right of ways, cemeteries, and mowed fields.	E	E	No Jeopardy	The western portion of the study areas are located over the Beaumont Formation, and contains suitable clay loam and sandy loam soils. The eastern portion of the study areas are located primarily within developed right of way adjacent to FM 508. Therefore, suitable habitat may be present within the study area, however, this species has not been documented to occur in the vicinity of the study area (iNaturalist, 2026). Therefore, the proposed project is not likely to jeopardize this species.

Species	Habitat Description	Federal Status	State Status	Effect Determination	Explanation for Effect Determination
Texas Ayenia *Ayenia limitaris*	This species if found in subtropical thorn woodlands or tall shrublands on loamy soils of the Rio Grande Delta. Known occurrences were found over well drained, calcareous, sandy clay loams and find sandy loams. Can also be found under taller shrubs in thorn woodlands and shrublands.	E	E	No Jeopardy	The study areas do not contain subtropical thorn woodlands or shrublands. Furthermore, the study areas are not located within the Rio Grande Delta. Therefore, the proposed project would have no effect on this species.

Key to species status abbreviations used:
E = Federally-listed endangered
T = Federally-listed threatened
PE = Proposed federally-listed endangered
PT = Proposed federally-listed threatened

Source: USFWS IPaC (December 2025)

On December 1, 2025, Halff acquired a list of rare, threatened, and endangered species whose geographic range may include Cameron County. A review of the TPWD RTEST by County lists identified a total of 189 species, with 66 species designated as threatened or endangered and 181 as Species of Greater Conservation Need (SGCN) (see **Appendix B**). Species designated as SGCN are defined as species in decline or are rare and need attention to recover the population or prevent the need to list under state or federal regulation. Species designated as SGCN do not have regulatory protection and will not be discussed further.

A TXNDD search was also completed on November 25, 2025. The TXNDD search identified one element occurrence record (i.e., records of sightings of rare or endangered species) listed as SGCN within the raw water line study area. Three total occurrences were documented within one mile of the raw water line study area for three species, including large selenia, Runyon's water-willow, and Vasey's adelia. One occurrence for large Selenia, an SGCN species, is located within the raw water line study area. This species was last documented in 1936 (see **Figure 6.1**).

Two element occurrence records listed as SGCN within were recorded within the transmission line study area. Seven total occurrences were documented within one mile of the transmission line study area for five species, including Bailey's ballmoss, Buckley's spiderwort, large selenia (2), lila de los Llanos, and Vasey's adelia. Two occurrences are located within the western portion of the transmission line study area, including Buckley's spiderwort, an SGCN species, and large Selenia, an SGCN species. Both occurrences were last documented in 2014 (see **Figure 6.2**).

3.5 GEOLOGY

Surface geology data derived from the USGS Texas Geology database were reviewed to identify rock units within the study areas (see **Figure 7**). **Table 3** describes the characteristics of the geologic unit identified within the study areas.

Table 4: Summary of Geologic Units

Group, Formation	Description	System	Thickness (feet)
Alluvium (Qal)	Clay, silt, quartz sand, gravel, and organic matter with gravel along the Rio Grande. Gravel consists of Cretaceous and Tertiary sedimentary and igneous rocks, including side stream alluvial gravels consisting or chert and Tertiary rock clasts.	Holocene	5 - 30
Muddy Floodplain Alluvium (Qam)	Floodplain deposits in lowland streams and rivers primarily consisting of mud. Fine-grained silt and clay deposits are located in overbank depositional zones.	Holocene	5 - 30
Silt and Sand Floodplain Alluvium (Qas)	Floodplain deposits in low floodplains consisting primarily of silt and sand. Located in floodplains of adjacent rivers, associated with higher velocity flows and floods.	Holocene	5 - 30
Beaumont Formation (Qb)	Composed of clay, sand, silt, and gravel in older stream channels, point bars, natural levees, or backswamp deposits. Located primarily in ancient floodplains and meander belts of major rivers or predecessor rivers.	Pleistocene	100

3.6 SOIL SURVEY

Halff reviewed soil data for Cameron County, Texas from the NRCS Web Soil Survey, which is derived from the U.S. Department of Agriculture (USDA) Soil Survey (see **Figure 8.1-8.4**). **Table 4** describes the characteristics of soil types within the study areas.

Table 5: Soil Map Unit Descriptions

Soil Unit Symbol	Map Unit Name	Landform	Drainage Class	Frequency of Ponding	Hydric Components	Prime Farmland Class
DE	Delfina fine sandy loam, 0 to 2 percent slopes	High Stream Terraces	Moderately well drained	None	No	Prime farmland if irrigated
HGA	Hidalgo fine sandy loam, 0 to 1 percent slopes	Terraces	Well drained	None	No	Prime farmland if irrigated
HO	Hidalgo sandy clay loam, 0 to 1 percent slopes	Terraces	Well drained	None	No	Prime farmland if irrigated
LR	Delfina fine sandy loam, warm, 0 to 2 percent slopes	High stream terraces	Moderately well drained	None	No	Prime farmland if irrigated
MEA	Mercedes clay, 0 to 1 percent slopes	Delta plains	Moderately well drained	None	No	Prime farmland if irrigated

MEB	Mercedes clay, 1 to 3 percent slopes	Delta plains	Moderately well drained	None	No	Prime farmland if irrigated
OR	Orelia clay loam, clayey subsoil variant, occasionally ponded	Flats	Somewhat poorly drained	Frequent	Yes	Not prime farmland
RA	Racombes sandy clay loam, 0 to 1 percent slopes	Terraces	Well drained	None	No	All areas are prime farmland
RE	Raymondville clay loam	Delta plains	Moderately well drained	None	No	Prime farmland if irrigated
RG	Raymondville clay loam, saline	Delta plains	Moderately well drained	None	No	Not prime farmland
RO	Rio clay loam, ponded	Closed depressions	Somewhat poorly drained	Frequent	Yes	Prime farmland if irrigated
TC	Tiocano clay, 0 to 1 percent slopes, occasionally ponded	Closed depressions	Somewhat poorly drained	Occasional	No	Not prime farmland
WAA	Willacy fine sandy loam, 0 to 1 percent slopes	Delta plains	Well drained	None	No	All areas are prime farmland
WAB	Willacy fine sandy loam, 1 to 3 percent slopes	Delta plains	Well drained	None	No	All areas are prime farmland

3.7 HAZARDOUS MATERIALS

Table 5 below contains a summary of potential hazardous materials concerns within and adjacent to the study areas based on data provided in the TCEQ Central Registry, and EPA Envirofacts online databases. Based on a review of GIS data downloaded from the RRC, two natural gas pipelines and one refined liquid product pipeline intersect the eastern portion of the raw water line study area (see **Figure 9**.1). Two natural gas pipelines and one refined liquid product pipeline intersect the eastern portion of the transmission line study area. Additionally, three petroleum storage tanks (PST) were identified adjacent to the transmission line study area (see **Figure 9.2**). No oil and gas wells were identified within or adjacent to the study areas. No hazardous materials concerns were identified within or adjacent to the study areas during field investigations in November, 2025.

Table 6: Hazardous Materials Sites Within and Adjacent to Study Areas

Site Information	Database Listing(s)	Environmental Concern Summary	Additional Investigations Warranted?
Natural Gas Pipeline	Natural Gas Pipeline	This natural gas pipeline is operated by Texas Gas Service Company (T4 Permit Number 00534) and is part of the Rio Grande Valley system. The pipeline intersects the study area at the intersection of SH 107 and Thompson Road.	No
Natural Gas Pipeline	Natural Gas Pipeline	This natural gas pipeline is operated by the Brownsville Public Utilities Board and is part	No

		of the Cross Valley Pipeline System (T4 Permit Number 09388). The pipeline intersects the study area adjacent to the intersection of Thompson Road and Orphanage Road. No incidents are reported for this pipeline.	
Refined Liquid Product Pipeline	Refined Liquid Product Pipeline	This refined liquid product pipeline is operated by Nustar Logistics L.P (T4 Permit Number 07568) and is the Edignburg to Harlingen segment of the Brownsville Pipeline System. The pipeline intersects the study area adjacent to the east bound lanes of Orphanage Road. No incidents are reported for this pipeline.	No
7-Eleven Store 40705 *21469 US Expressway 77, Harlingen TX 78552*	PST	This site contains an actively regulated PST (Tank ID 79216). The site is not listed as a leaking PST site and was last inspected for compliance on December 18, 2025.	No
JC Mini Mart *21073 FM 508, Harlingen TX 78550-1800*	PST, LPST	This site contains an inactive PST (Tank ID 47457). This site is listed in the TCEQ leaking petroleum storage tank remediation database, and is listed as an active cleanup site since August 18, 2021.	Yes
508 Kountry Korner *22531 FM 508, Harlingen TX 78550-1626*	PST, LPST	This site contains an inactive PST (Tank ID 46150). This site is listed in the TCEQ leaking petroleum storage tank remediation database, and is listed as an active cleanup site since October 27, 2022.	Yes
Natural Gas Pipeline	Natural Gas Pipeline	This natural gas pipeline is operated by Valley Crossing LLC (T4 Permit Number 09611). The pipeline intersects the study area approximately 0.32 miles east of the intersection of Retama Road and FM 508. No incidents are reported for this pipeline.	No
Natural Gas Pipeline	Natural Gas Pipeline	This natural gas pipeline is operated by the Brownsville Public Utilities Board and is part of the Cross Valley Pipeline System (T4 Permit Number 09388). The pipeline intersects the study area approximately 0.33 miles east of the intersection of Retama Road and FM 508. No incidents are reported for this pipeline.	No
Refined Liquid Product Pipeline	Refined Liquid Product Pipeline	This refined liquid product pipeline is operated by Nustar Logistics L.P (T4 Permit Number 07568) and is the Edignburg to Harlingen segment of the Brownsville Pipeline System. The pipeline intersects the study area approximately 0.12 miles east of the intersection of Schmoker Road and FM 508. No incidents are reported for this pipeline.	No

3.8 CULTURAL RESOURCES

Because the project is being developed by the East Rio Hondo Watter Supply Corporation, a political sub-entity of the State of Texas, construction activities would fall under purview of the Antiquities Code of Texas (Title 9, Chapter 191 of the Texas Natural Resources Code), which requires the THC to review actions that have the potential to impact archeological historic properties within the public domain.

Halff conducted a desktop review to determine if the study areas contain archeological historic properties eligible for listing on the National Register of Historic Places (NRHP) or State Antiquities Landmark (SAL) designation. The Texas Archeological Sites Atlas (Atlas) maintained by the THC and TARL was reviewed on January 26, 2026, to determine whether any cultural resources, including archeological historic properties, NRHP properties/districts, SALs, or cemeteries, are documented within or adjacent to the study area and whether the study area have undergone any previous cultural resources surveys. In addition, Halff performed a review of the Potential Archeological Liability Map (PALM) data published by the TxDOT Austin district to evaluate the potential for undocumented archeological historic properties within the study area and surrounding vicinity. The PALM data helps identify areas where natural processes may preserve archaeological sites, but the data are not suitable for areas where pre-contact sites have been intentionally excavated. While other site types like caches and storage cists could be present, pre-contact cemeteries are the most common sites, often containing numerous interments.

The review of Atlas records revealed that no previously recorded resources are located within the study areas. However, two cultural resources are documented within a 1-kilometer (km [0.6-mile]) radius of the raw water line study area, consisting of two cemeteries (see **Table 6**). The Atlas review revealed that the northern portion of the raw water line study area has been previously surveyed, but the majority has not been previously surveyed. Five cultural resources are documented within a 1-kilometer radius of the transmission line study area, consisting of three cemeteries and two historical markers (see **Table 6**). The majority of the transmission line study area has not been previously surveyed. A map showing the cultural resources sites and surveys documented in the Atlas search area is provided in **Figure 10.1** and **Figure 10.2**.

The PALM data, coupled with the lack of disturbed areas within the study areas, indicates the potential for the study area to contain buried archaeological resources. A map displaying the Atlas and PALM data for the study areas can be found in **Figure 10.1** and **Figure 10.2**. Additionally, **Table 6** below provides a list of previously documented cultural resources within a 1-km radius of the study area.

Table 7: Atlas Data (THC 2025)

Resource ID	Resource Type	Atlas Record Summary	NRHP/SAL Eligibility
CF-C081	Cemetery	El Pie Cemetery (Orphanage Road Cemetery) is located northeast of the study area at the intersection of Interstate 69 East and El Pie.	Undetermined
CF-C072	Cemetery	Hinojosa Cemetery is located southwest of the study area along High Canal Road, west of Pomelo Road.	Undetermined

CF-C065	Cemetery	Combes Cemetery located NW of Combes Community off of Business Highway 77, north of Fam-to-Market (FM) 107 .	Undetermined
2724	Historical Marker	James Henry Dishman commemorative historical marker located at Dishman Elementary School.	Undetermined
CF-C068	Cemetery	El Muerto Cemetery located on FM 508 on Goodwin Road in the La Lazana Community.	Undetermined
CF-C067	Cemetery	Ashland memorial Park Cemetery (also name Loma Linda Cemetery) located off FM 508 on Goodwin Road and Hoening Road.	Undetermined
4337	Historical Marker	Rogers massacre commemorative historical marker located at FM 1420 in the city of Rio Hondo. This marker was reported missing in August of 2003.	Undetermined
5094	Historical Marker	Stagecoach to the Rio Grande, C.S.A. historical marker located at the northwest corner of FM 1420 and FM 508.	Undetermined

4.0 CONCLUSIONS AND RECOMMENDED ACTIONS

Based on the assessment of potential environmental constraints within the study areas, additional actions regarding potential environmental impacts are recommended. If federal funds will be used for the proposed project, environmental review and appropriate documentation would be required in accordance with the National Environmental Policy Act of 1969.

4.1 WATER AND BIOLOGICAL RESOURCES

The USACE administers and enforces Section 404 of the CWA and Section 10 of the Rivers and Harbors Act of 1899. Under the CWA, a permit is required for the discharge of dredged or fill material into WOTUS. Waterbodies and wetlands within the study areas are considered WOTUS and would be subject to the USACE regulatory authority.

The proposed project will consist entirely of trenchless construction methods (i.e., HDD boring, auger bore, or jack and bore) underneath all aquatic resources identified in the study areas. Through avoidance, the proposed project is not subject to Section 404 or Section 10, provided that the project is constructed above the OHWM of all aquatic resources. Therefore, trenchless construction activities for the project do not require a USACE permit.

To demonstrate compliance with the ESA, Halff conducted a threatened and endangered species and habitat assessment within the study area, which includes an evaluation of federal and state-listed

threatened and endangered species for Cameron County. Based on a field investigation, desktop analysis of the study areas, and suitable habitat descriptions for federally listed species, it is Halff's opinion that suitable habitat for the federally listed threatened and endangered species is not present within the study areas. Therefore, the proposed project is not likely to impact federally listed species and consultation with USFWS is not required at this time.

Similarly, no suitable habitat for state-listed threatened and endangered species is present within the study areas. Therefore, the proposed project is not likely to impact state-listed species and early coordination with TPWD is not required at this time. However, implementation of species-appropriate BMPs is recommended for SGCN species before any construction activities begin.

4.2 CULTURAL RESOURCES

Based on Halff's desktop evaluation of the study area, future ground disturbing activity would likely not impact any known NRHP properties/districts, OTHMs, or SALs. Although the soil, geologic, and PALM data identify moderate to high potential within portions of the study areas, local land use information indicates that the study areas is largely defined by existing roadways, ROW, drainage ditches, and limited portions of plowed agricultural fields and residential yards. These conditions reflect substantial prior disturbance from construction, grading, and landscaping activities, which likely reduces the integrity of any potential archeological deposits and limits the likelihood of encountering intact resources within the study areas.

The Atlas review revealed that small sections of the study areas have been previously surveyed, though the most recent survey was conducted in 2014. Although two OTHMs are located approximately 20 m (66 feet) east of the study areas, they are commemorative in nature and do not represent known archeological sites or contain features that would indicate subsurface cultural deposits. The historical map review revealed a low potential for direct effects to above ground historic structures. Together, the Atlas and historic map review findings support a recommendation against an intensive archeological survey of the PA. Given the study areas highly disturbed setting, confined areas available for potential excavation along the road shoulders, and trenchless construction methods proposed within public ROW, Halff recommends that no archeological survey be conducted for the project, as buried cultural deposits are unlikely to be encountered or intact. Halff respectfully requests THC comment on the above recommendation for no further TAC and Section 106 consultation requirements for the proposed project.

4.3 HAZARDOUS MATERIALS

A hazardous materials review of state and federal databases was completed by Halff in order to identify possible constraints related to hazardous materials, oil and gas infrastructure, and water wells in the study areas. Field reconnaissance conducted November 19, 2025, did not reveal evidence (e.g., stained soil, stressed vegetation, noxious odors) of a past release of hazardous substances. No dump sites of any significant volume were observed and what little trash was observed could be disposed of as encountered. The hazardous materials assessment two natural gas pipelines and one refined liquid product pipeline were identified within the raw water line study area. Two natural gas pipelines, one refined liquid product pipeline, and three PSTs were identified adjacent to the transmission line study area. Two of these PSTs were listed in the TCEQ Central Registry as leaking PSTs, and may require further evaluation. The pipeline crossings and non-leaking PST are not considered to be an environmental concern for the proposed project based on one or more of the following rationale: absence of reported releases, regulatory status, separating distance relative to the study areas, nature/extent of the hazardous waste sites, and/or presumed hydrologic gradient relative to the study areas.

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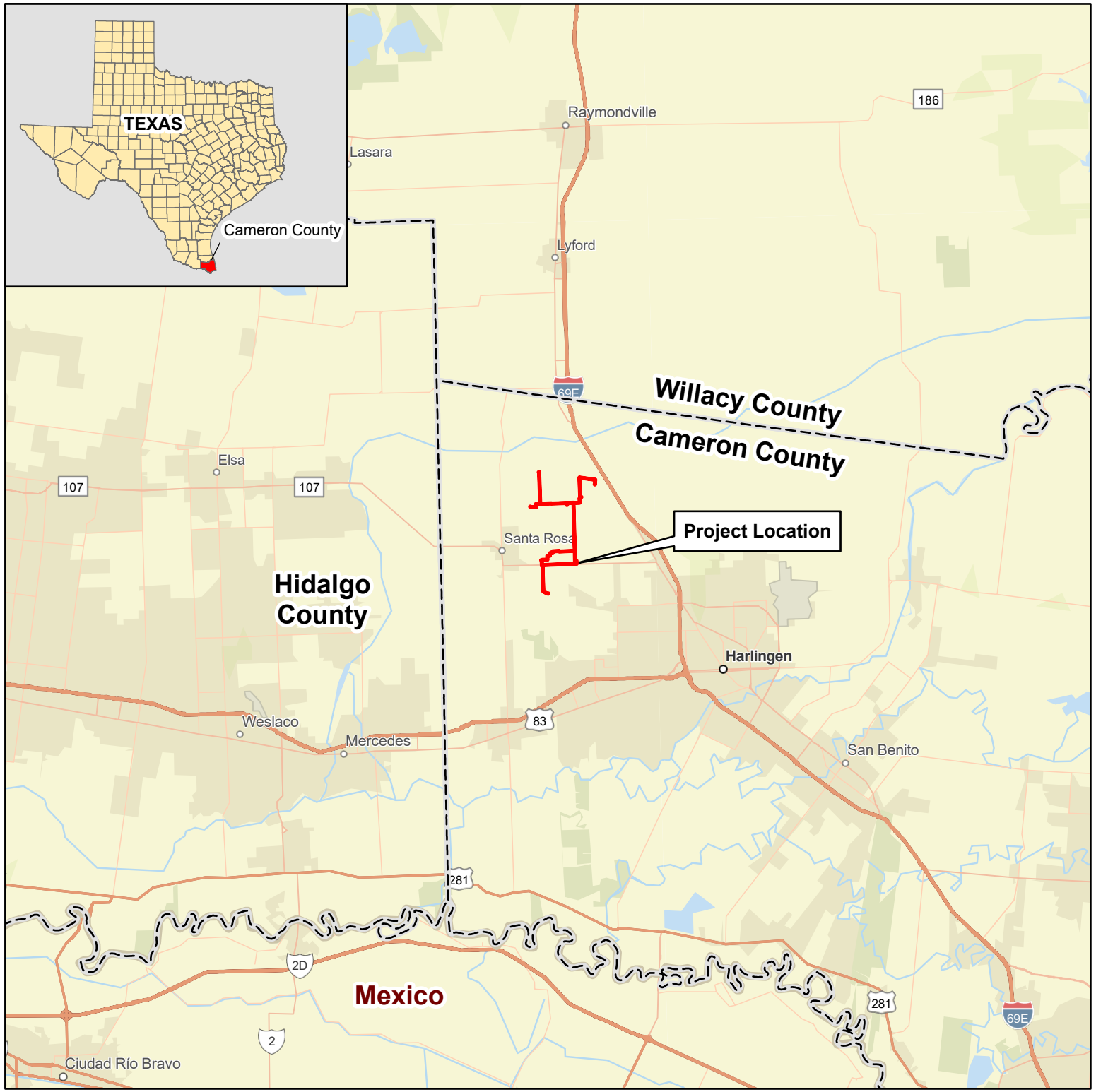
Figures



N

0 2.5 5 10

Miles

Legend

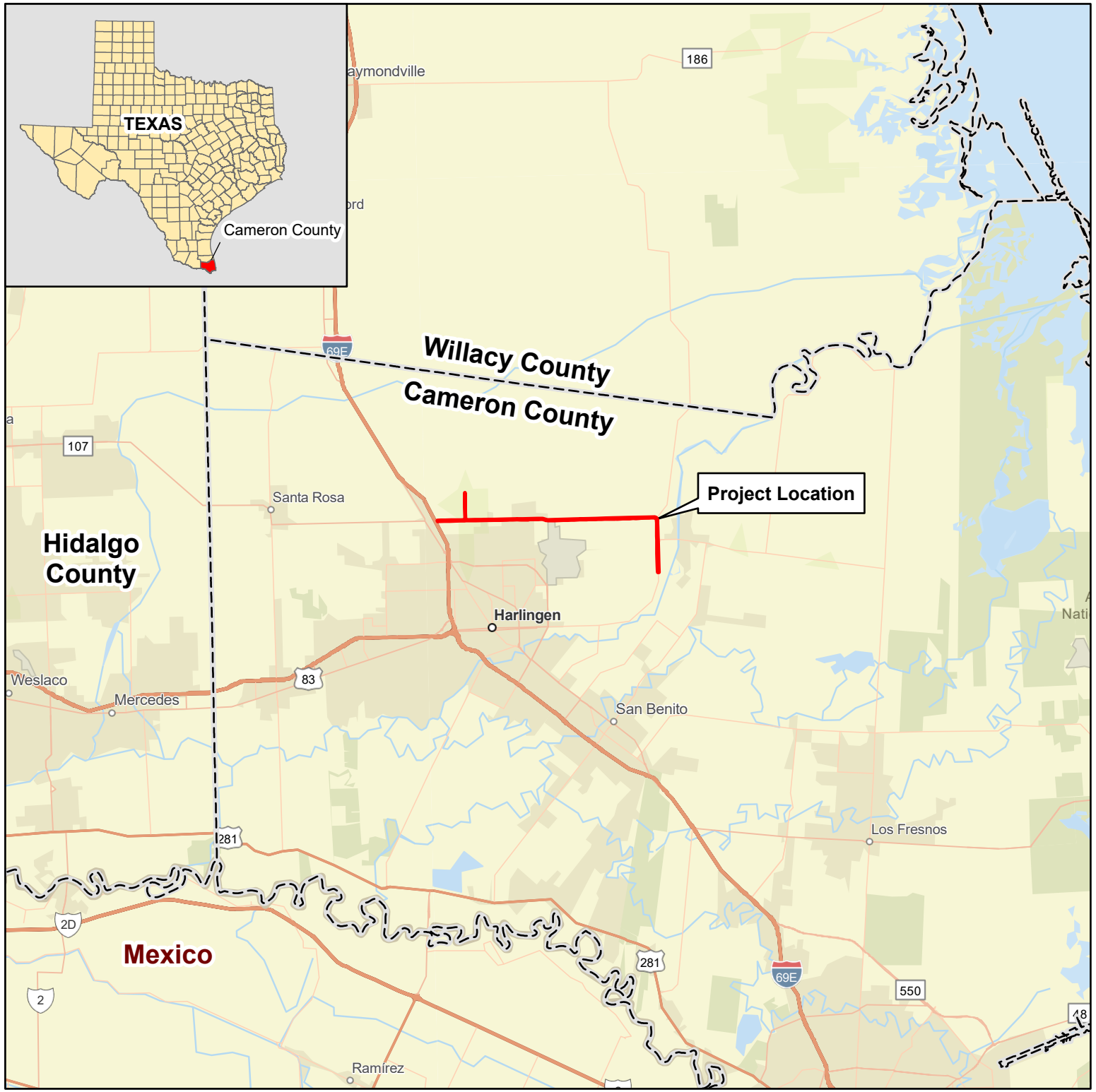
- Study Area
- County Boundary

Notes:
1. Map Center: 97.7982°W 26.25833°N
2. World Street Map: Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/26/2026

Figure 1.1
Location Map

halff



Legend

- Study Area
- County Boundary

Notes:
1. Map Center: 97.66193°W 26.23347°N
2. World Street Map: Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/20/2026

Figure 1.2
Location Map

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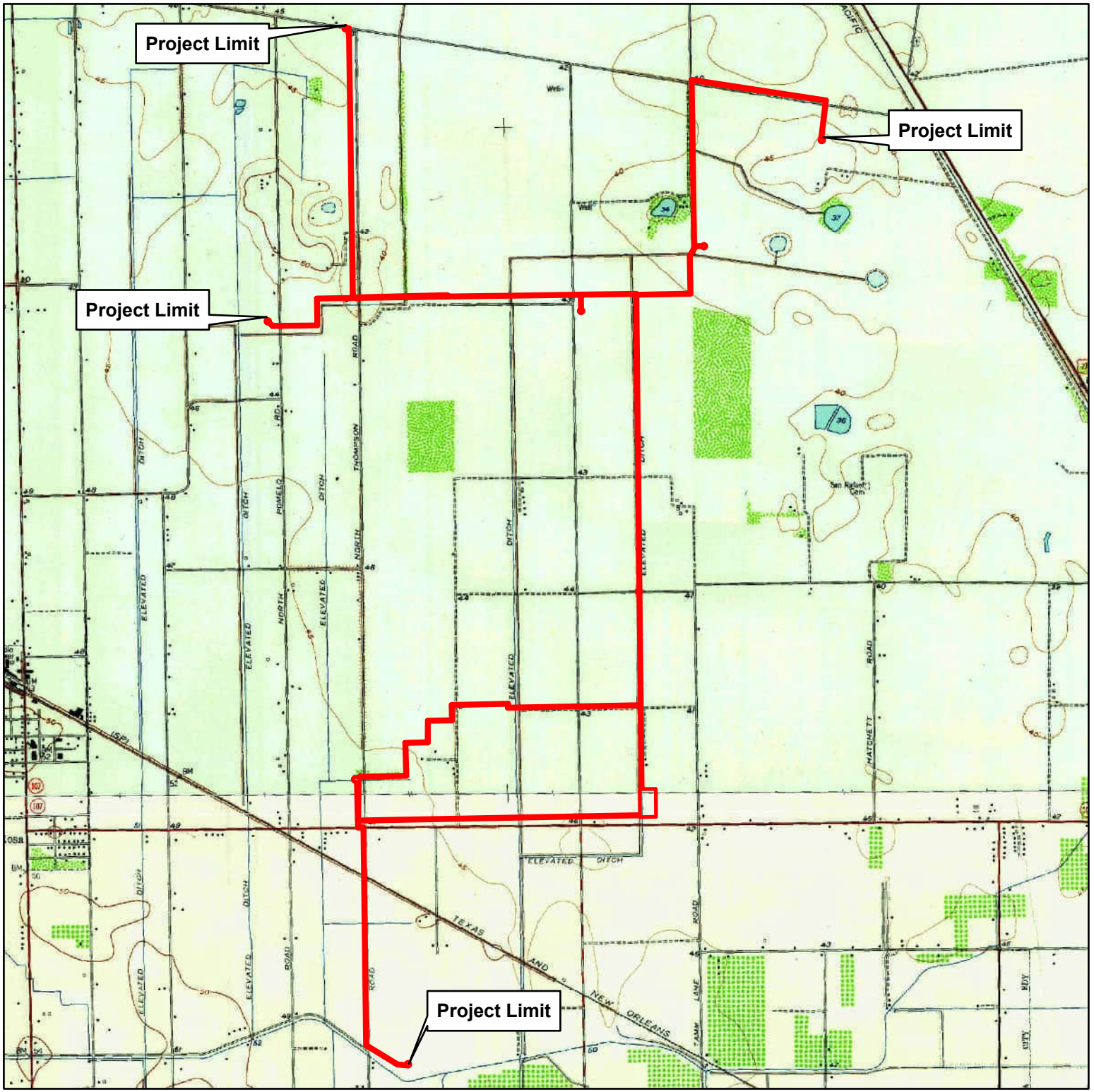


N

0 1,500 3,000 6,000

Feet

Legend

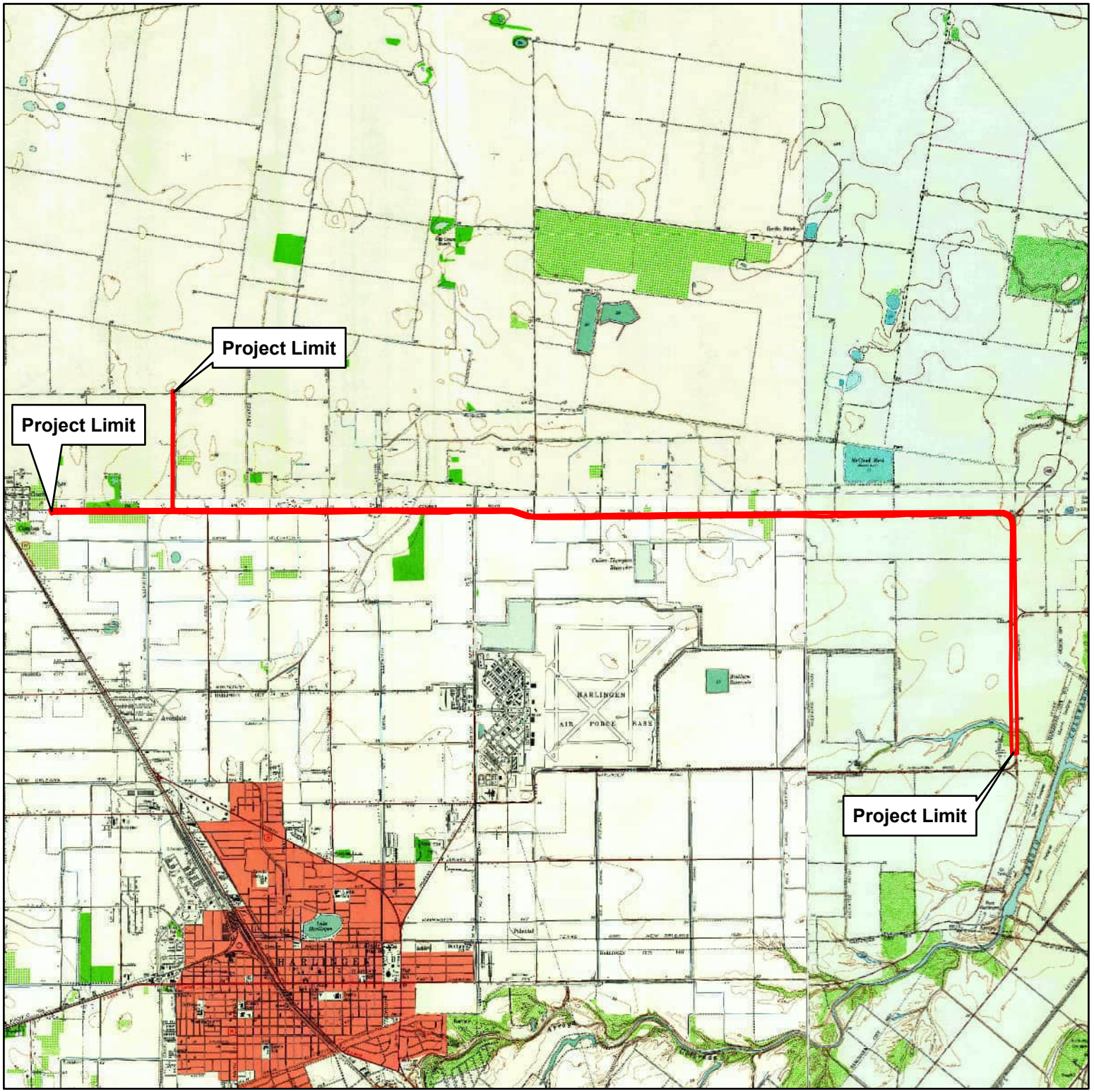
Study Area

Notes:
1. Map Center: 97.78888°W 26.2655°N
2. USGS topoView: "Santa Rosa, Texas" 1956 (1958 edition), "La Feria, Texas" 1956 (1959 edition) 7-5-minute quadrangles

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/28/2026

Figure 2.1
USGS 1956 Topographic Map

halff



N

0 3,000 6,000 12,000

Feet

Legend

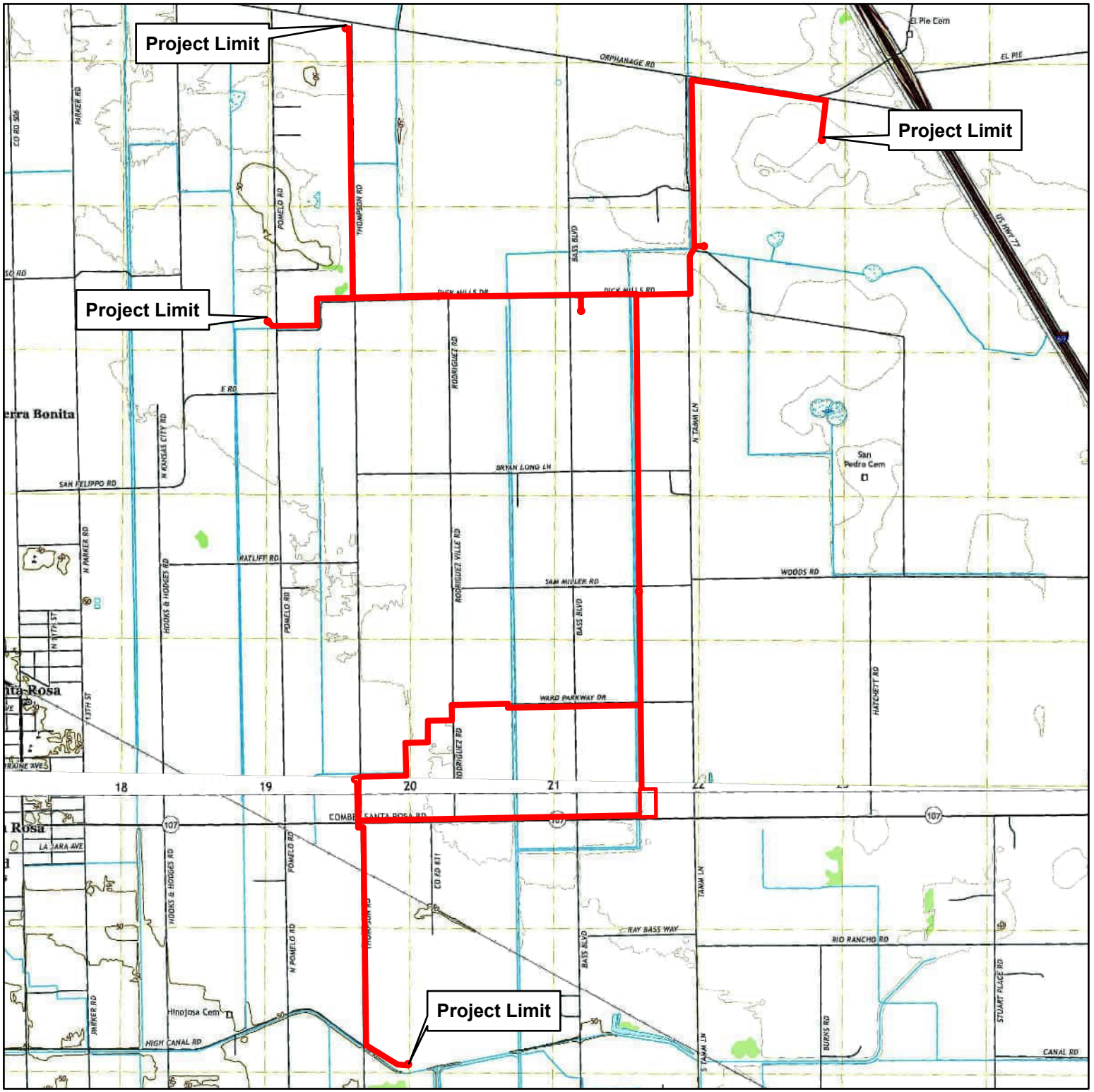
Study Area

Notes:
1. Map Center: 97.66004°W 26.24381°N
2. USGS topoView: "Harlingen, Texas" 1956 (1959 edition), "Willamar SW, Texas" 1956 (1959 edition), "Paso Real, Texas" 1956 (1959 edition), "Rio Hondo, Texas" 1956 7-5-minute quadrangles

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/26/2026

Figure 2.2
USGS 1959 Topographic Map

halff



0 1,500 3,000 6,000

Feet

Legend

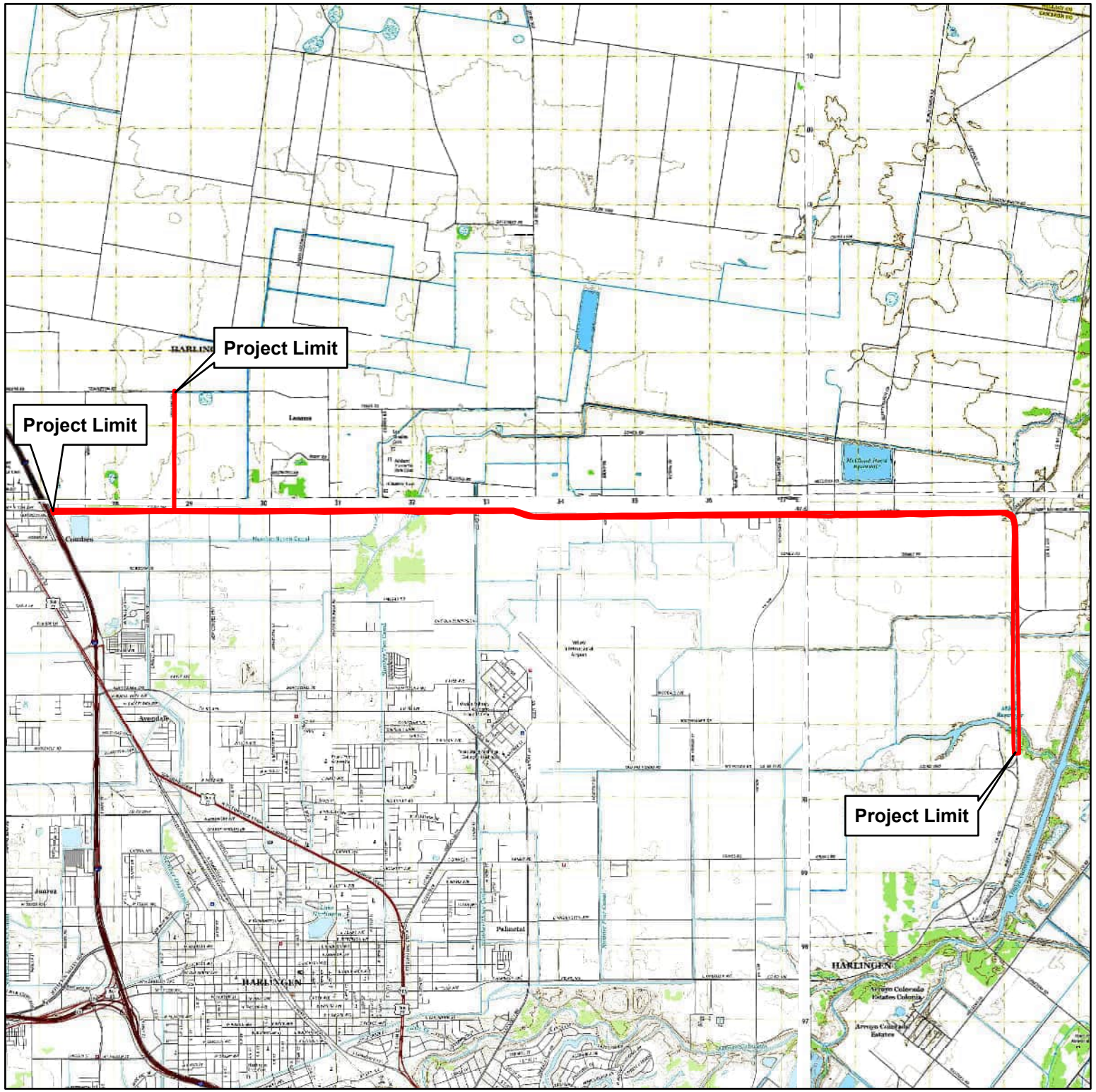
Study Area

Notes:
1. Map Center: 97.78888°W 26.2655°N
2. USGS topoView: "Santa Rosa, Texas" 2022, "La Feria, Texas" 2022 7-5-minute quadrangles

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/28/2026

Figure 2.3
USGS 2022 Topographic Map

halff



N

0 3,000 6,000 12,000

Feet

Legend

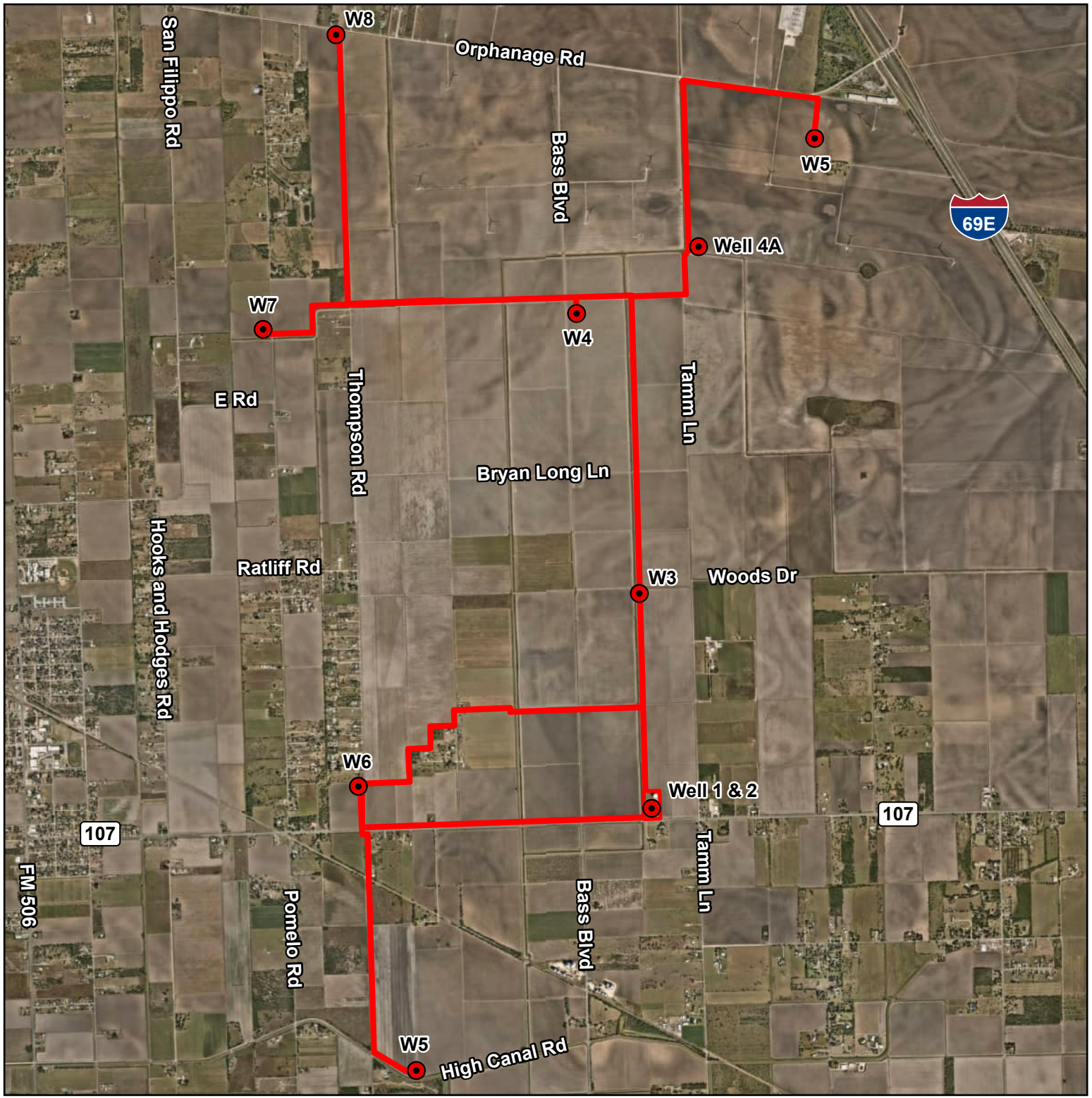
Study Area

Notes:
1. Map Center: 97.66004°W 26.24381°N
2. USGS topoView: "Harlingen, Texas" 2022, "Willamar SW, Texas" 2022, "Paso Real, Texas" 2022, "Rio Hondo, Texas" 2022 7-5-minute quadrangles

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/26/2026

Figure 2.4
USGS 2022 Topographic Map

halff



N

0 1,500 3,000 6,000

Feet

Legend

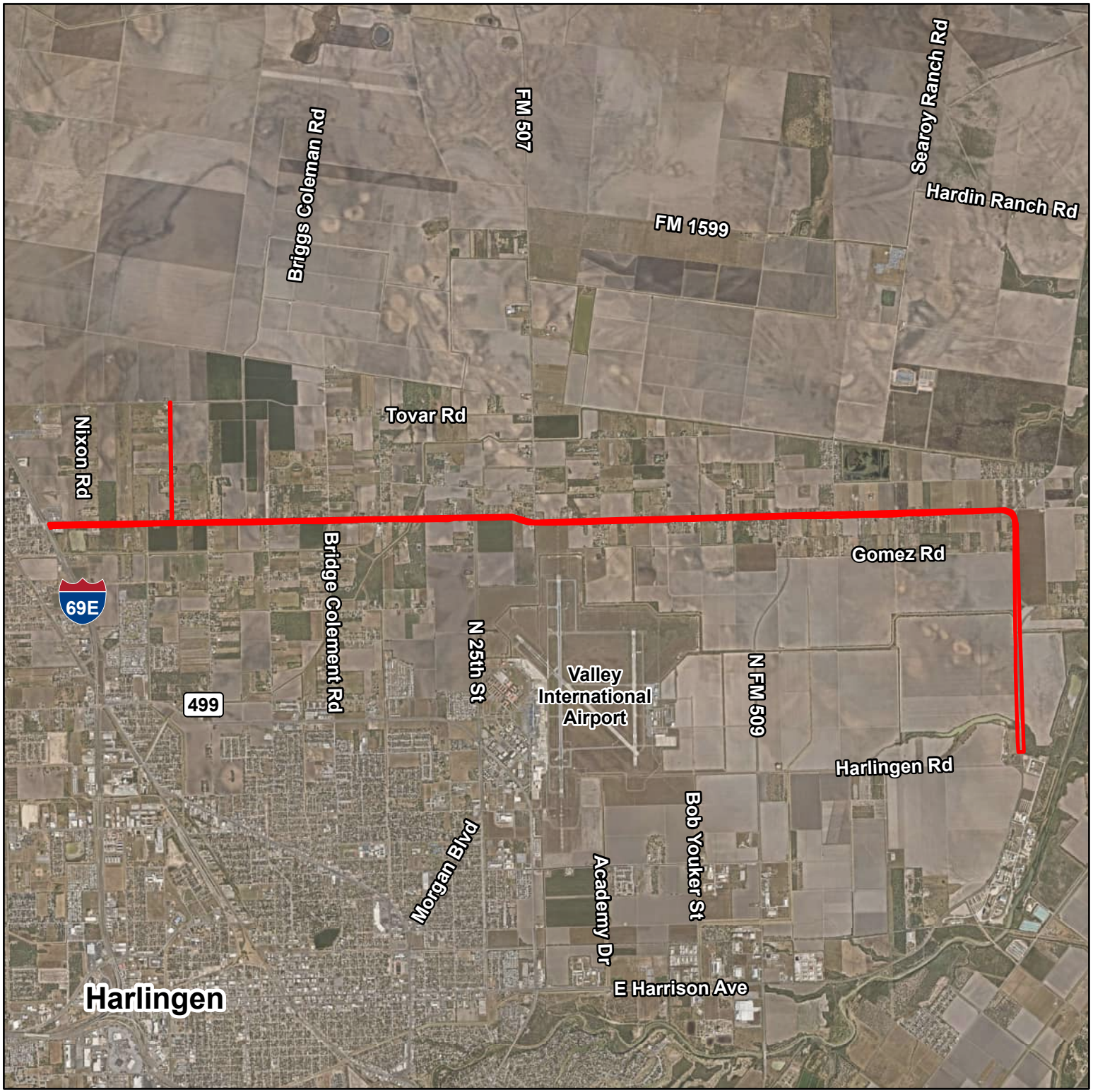
- Study Area
- Proposed Groundwater Well

Notes:
1. Map Center: 97.78888°W 26.2655°N
2. World Imagery: Vantor
Nearmap WMS Server: 2025

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/30/2026

Figure 3.1
Aerial Imagery Map

halff



N

0 3,000 6,000 12,000

Feet

Legend

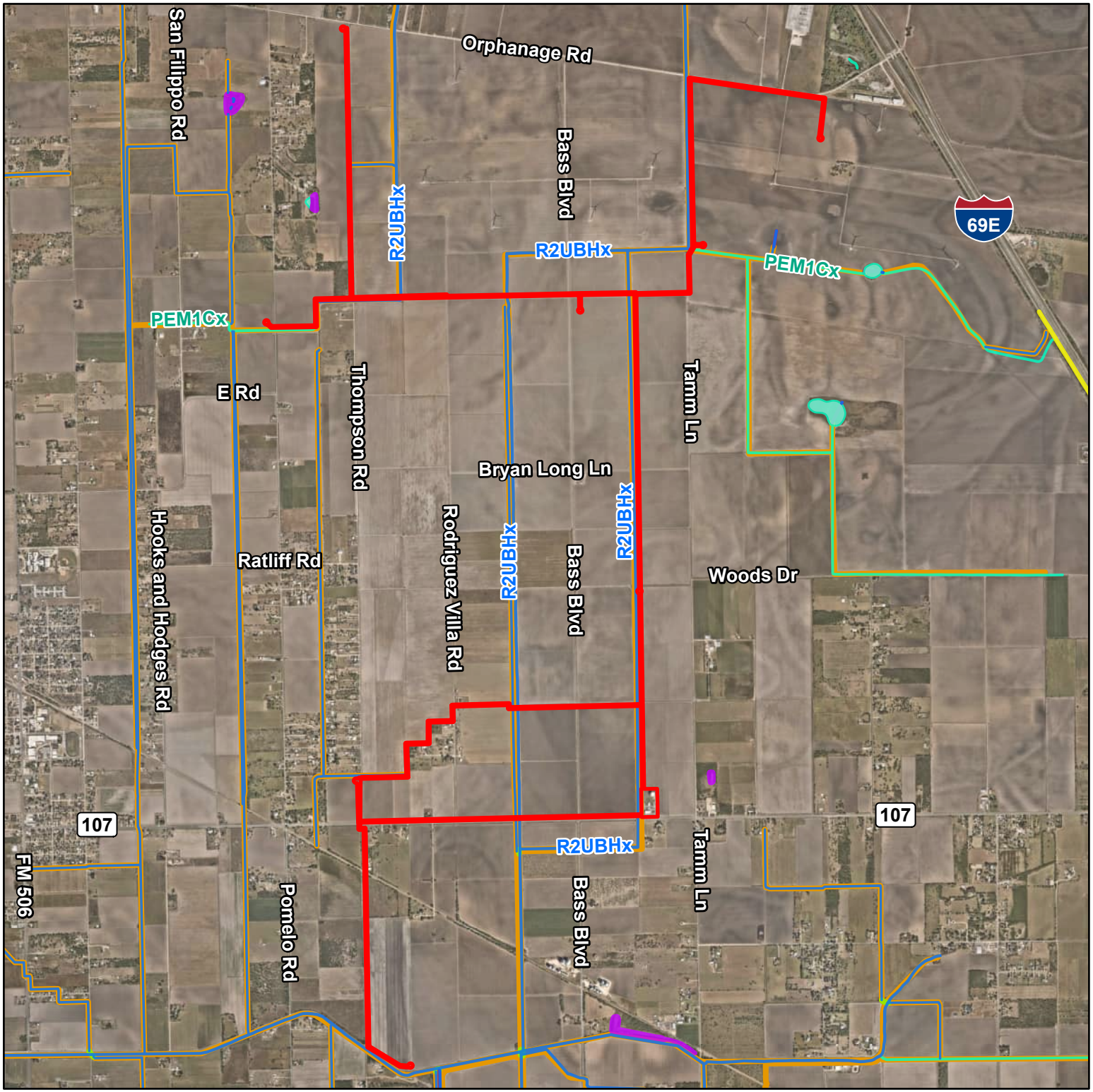
Study Area

Notes:
1. Map Center: 97.66015°W 26.24451°N
2. Nearmap WMS Server: 2025

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/20/2026

Figure 3.2
Aerial Imagery Map

halff



N

0 1,0002,000 4,000

Feet

Legend

Study Area

NWI Feature Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

NHD Feature Type

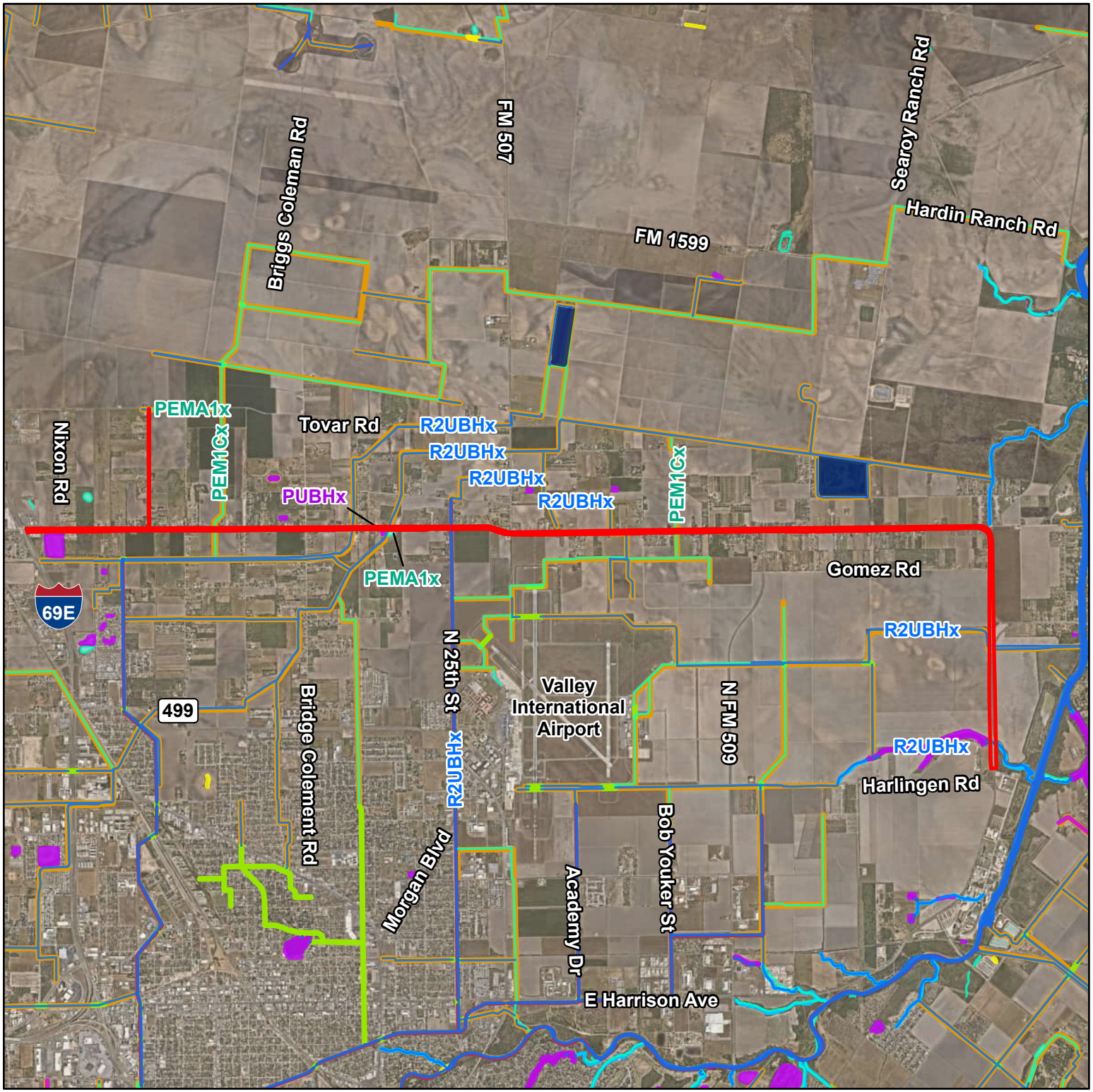
- Canal/Ditch
- Pipeline
- Artificial Path

Notes:
1. Map Center: 97.78888°W 26.2655°N
2. Nearmap WMS Server Current: 2025
3. USFWS National Wetland Inventory

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/28/2026

Figure 4.1
NWI and NHD Map

halff



N

0 3,000 6,000 12,000

Feet

Legend

Study Area

NHD Feature Type

- Canal/Ditch
- Pipeline
- Stream/River
- Artificial Path

NWI Feature Type

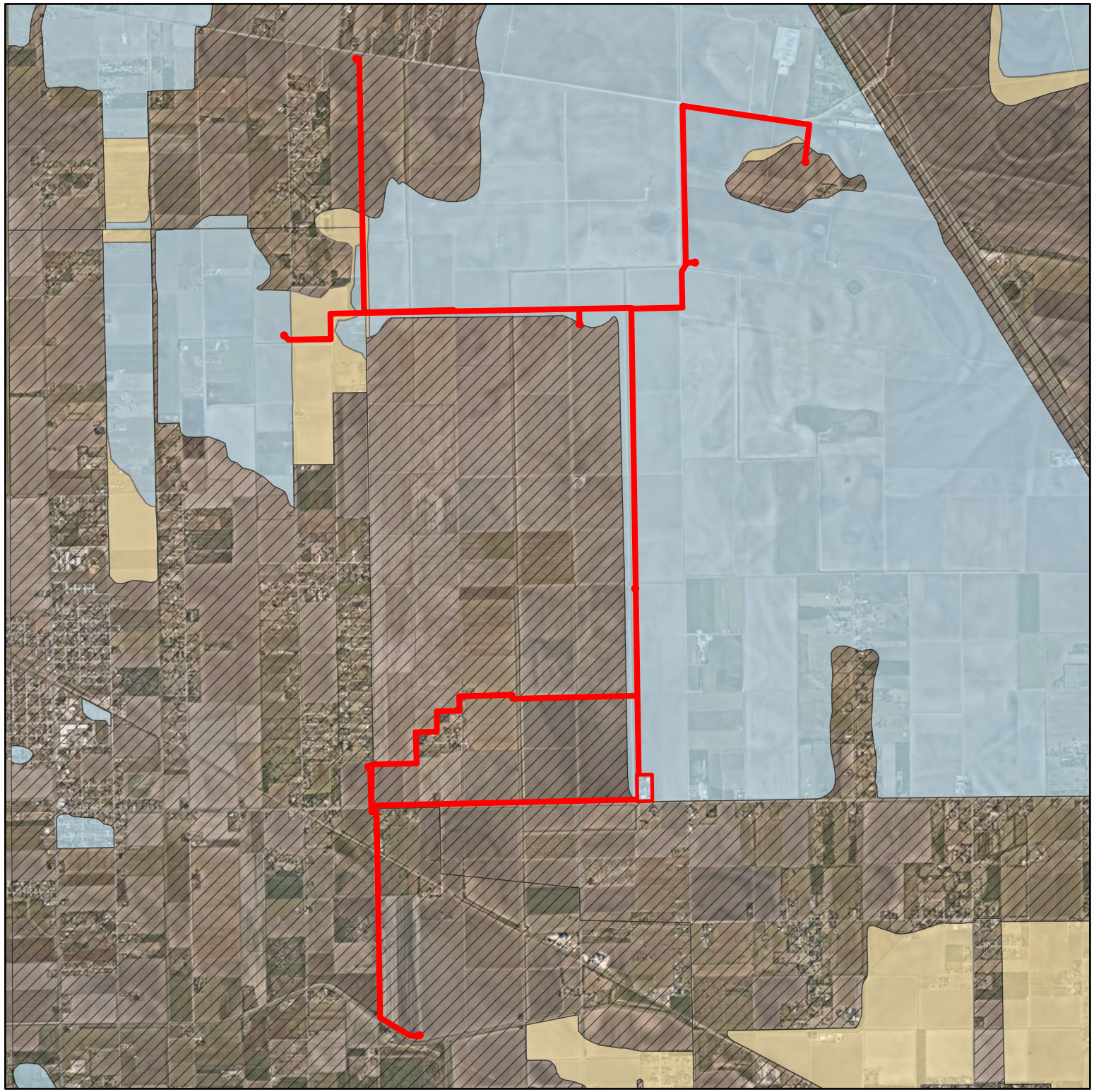
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

Notes:
1. Map Center: 97.65691°W 26.2458°N
2. Nearmap WMS Server Current: 2025
3. USFWS National Wetland Inventory

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/20/2026

Figure 4.2
NWI and NHD Map

halff



N

0 1,500 3,000 6,000

Feet

Legend

Study Area

FEMA Flood Zone

Area of Minimal Flood Hazard

500-Year Floodplain (0.2% Annual Chance Flood Hazard)

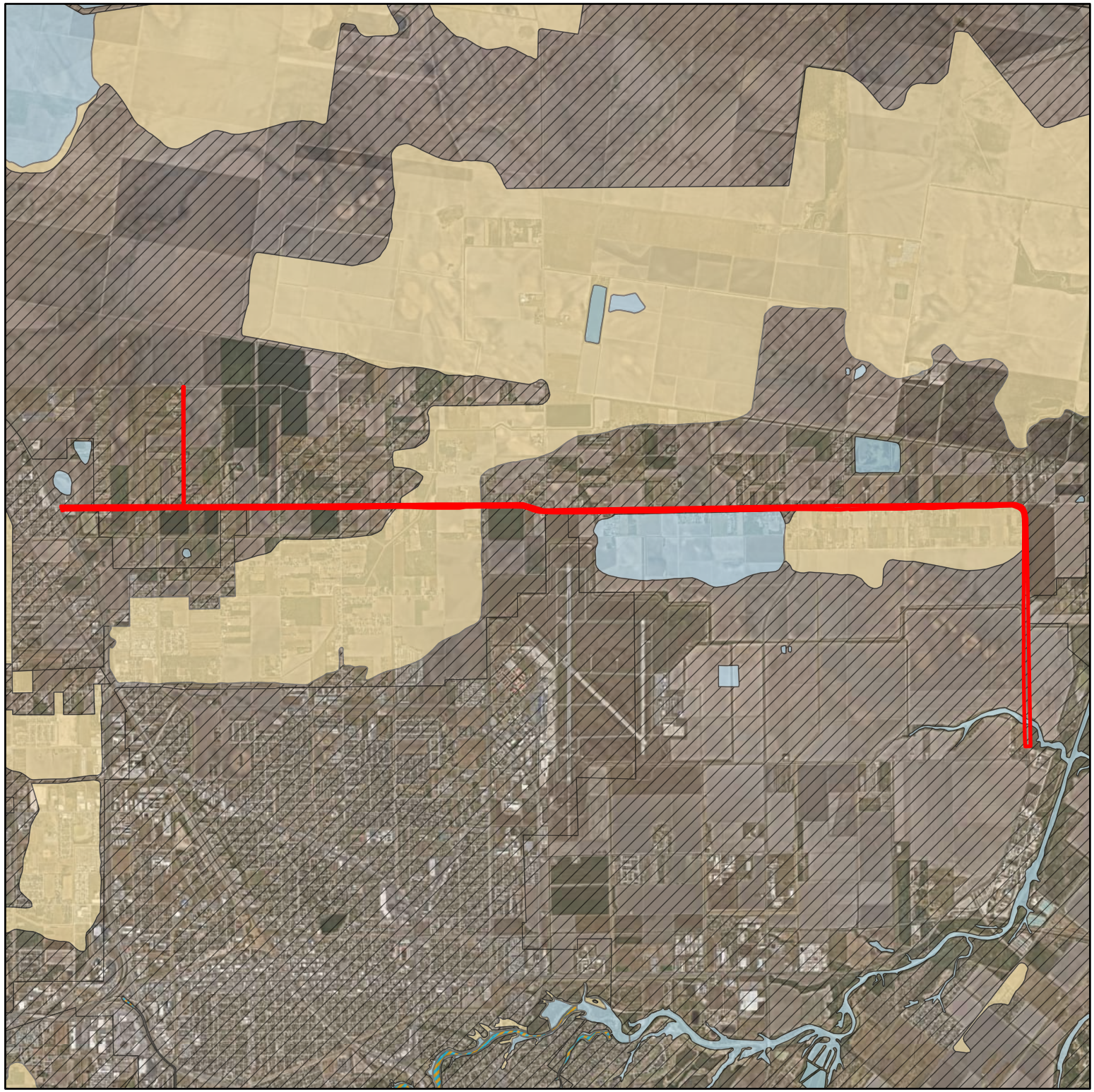
100-Year Floodplain (1.0 % Annual Chance Flood Hazard)

Notes:
1. Map Center: 97.78888°W 26.2655°N
2. Nearmap WMS Server Current: 2025
3. FEMA National Flood Hazard Layer

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/29/2026

Figure 5.1
FEMA Floodplain Map

halff



N

0 3,000 6,000 12,000

Feet

Legend

Study Area

FEMA Flood Zone

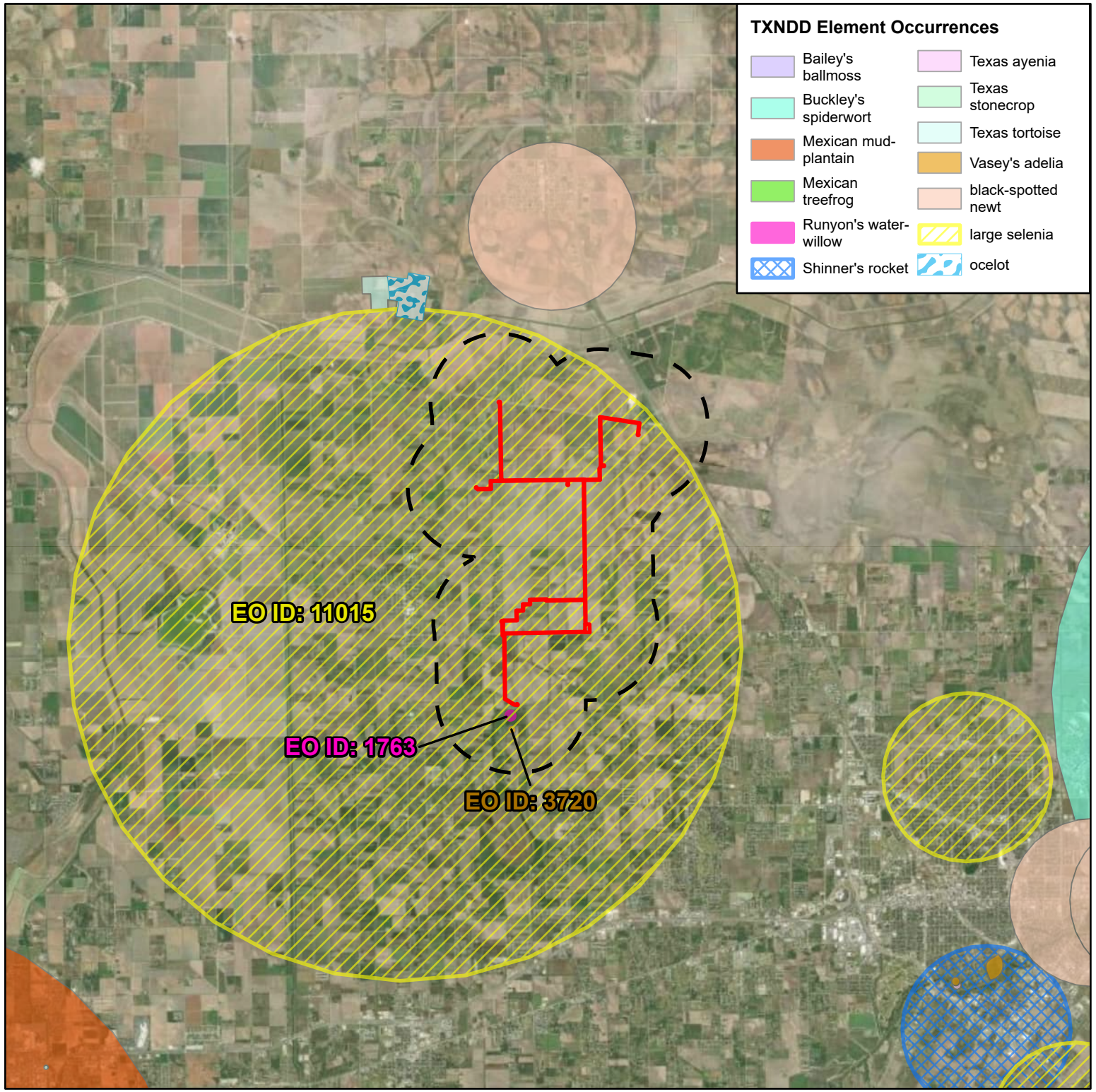
- Area of Minimal Flood Hazard
- 500-Year Floodplain (0.2% Annual Chance Flood Hazard)
- 100-Year Floodplain (1.0 % Annual Chance Flood Hazard)
- Regulatory Floodway

Notes:
1. Map Center: 97.66143°W 26.24315°N
2. Nearmap WMS Server Current: 2025
3. FEMA National Flood Hazard Layer

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/20/2026

Figure 5.2
FEMA Floodplain Map

halff



N

0 1 2 4

Miles

Legend

Study Area

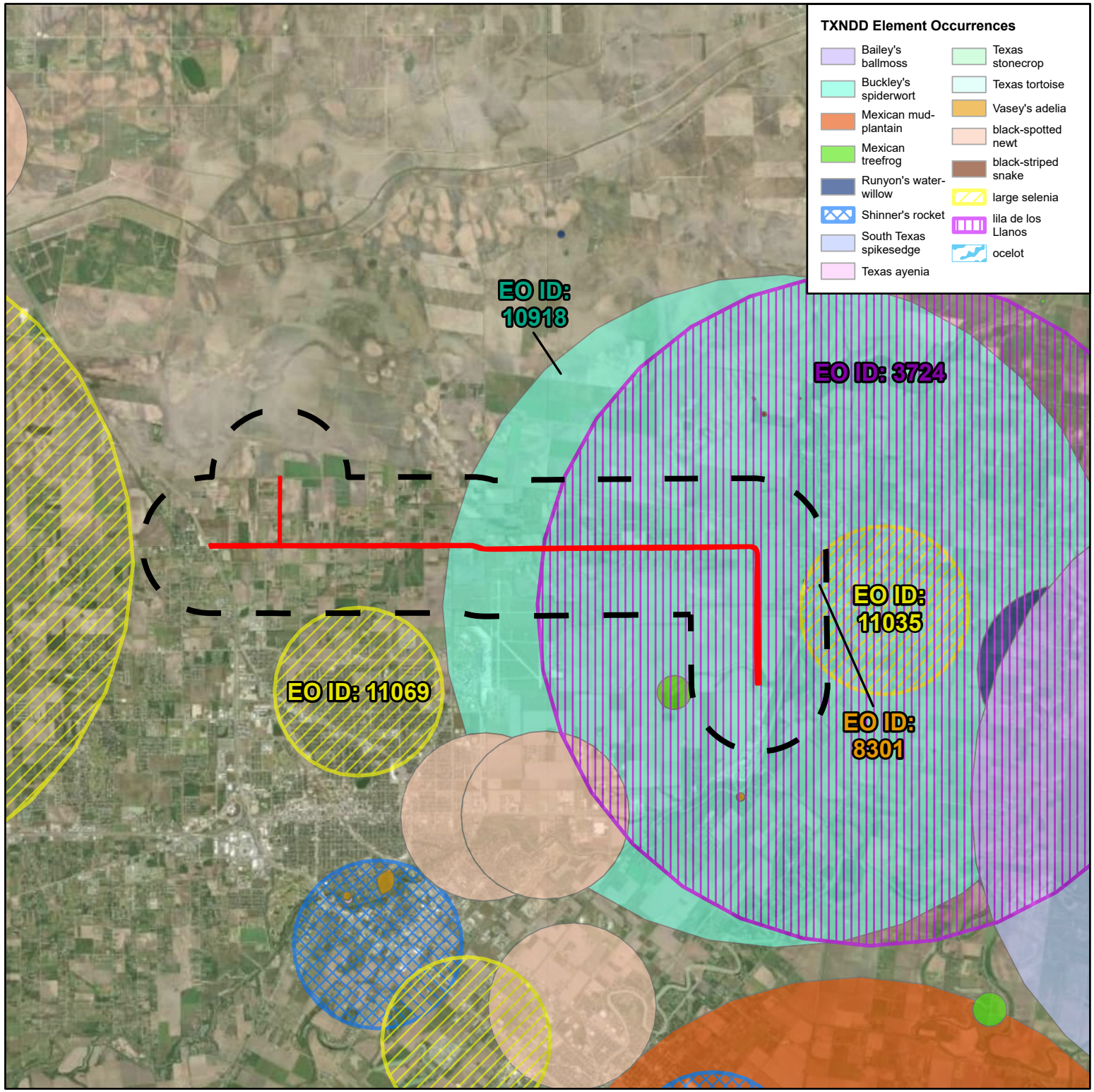
1-Mile Buffer

Notes:
1. Map Center: 97.79118°W 26.26702°N
2. TPWD Natural Diversity Database

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/29/2026

Figure 6.1
TXNDD Element Occurrence Map

halff



N

0 1.25 2.5 5

Miles

Legend

Study Area

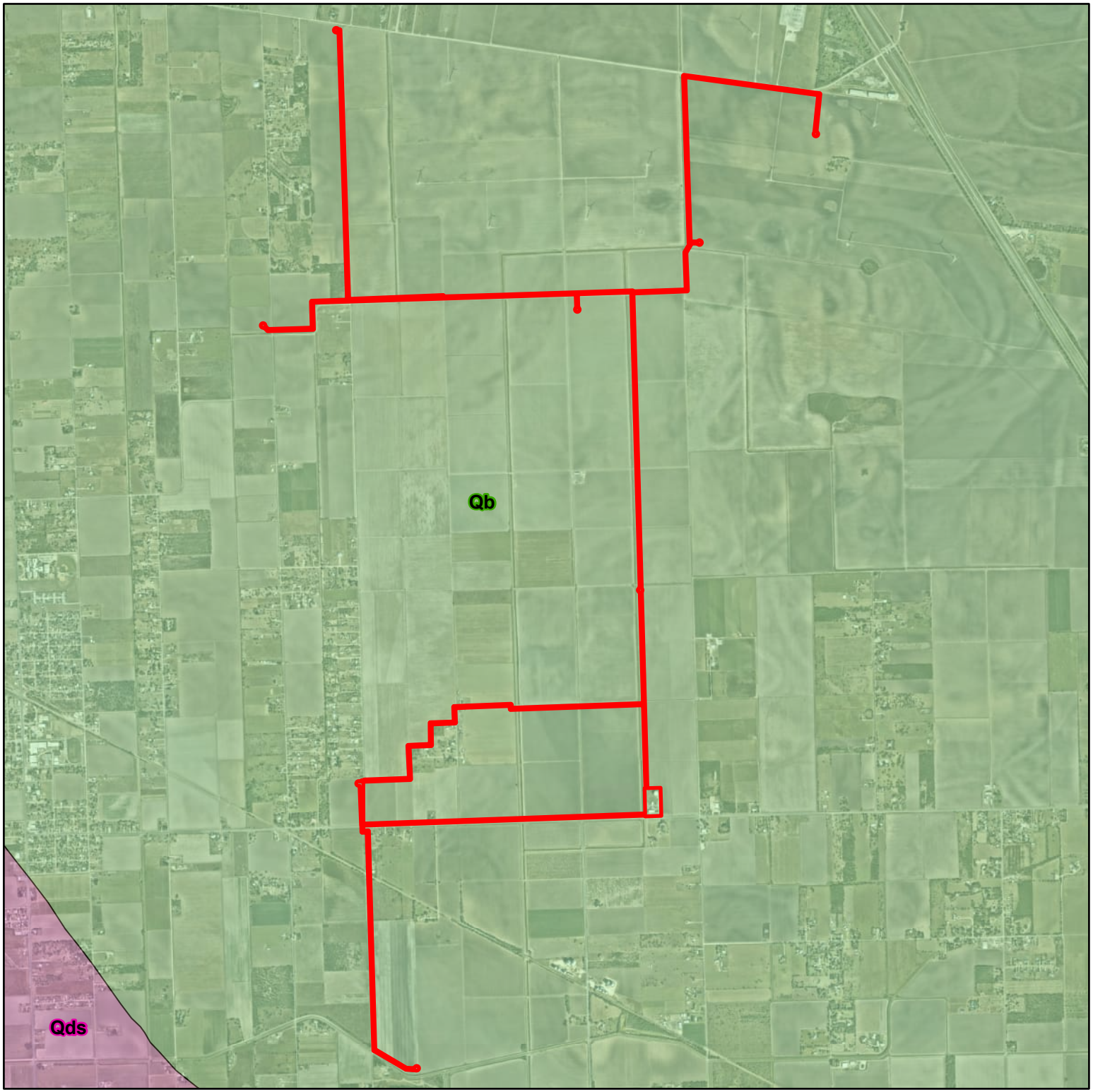
1-Mile Buffer

Notes:
1. Map Center: 97.64681°W 26.2479°N
2. TPWD Natural Diversity Database

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/20/2026

Figure 6.2
TXNDD Element Occurrence Map

halff



N

0 1,500 3,000 6,000

Feet

Legend

USGS Geologic Unit

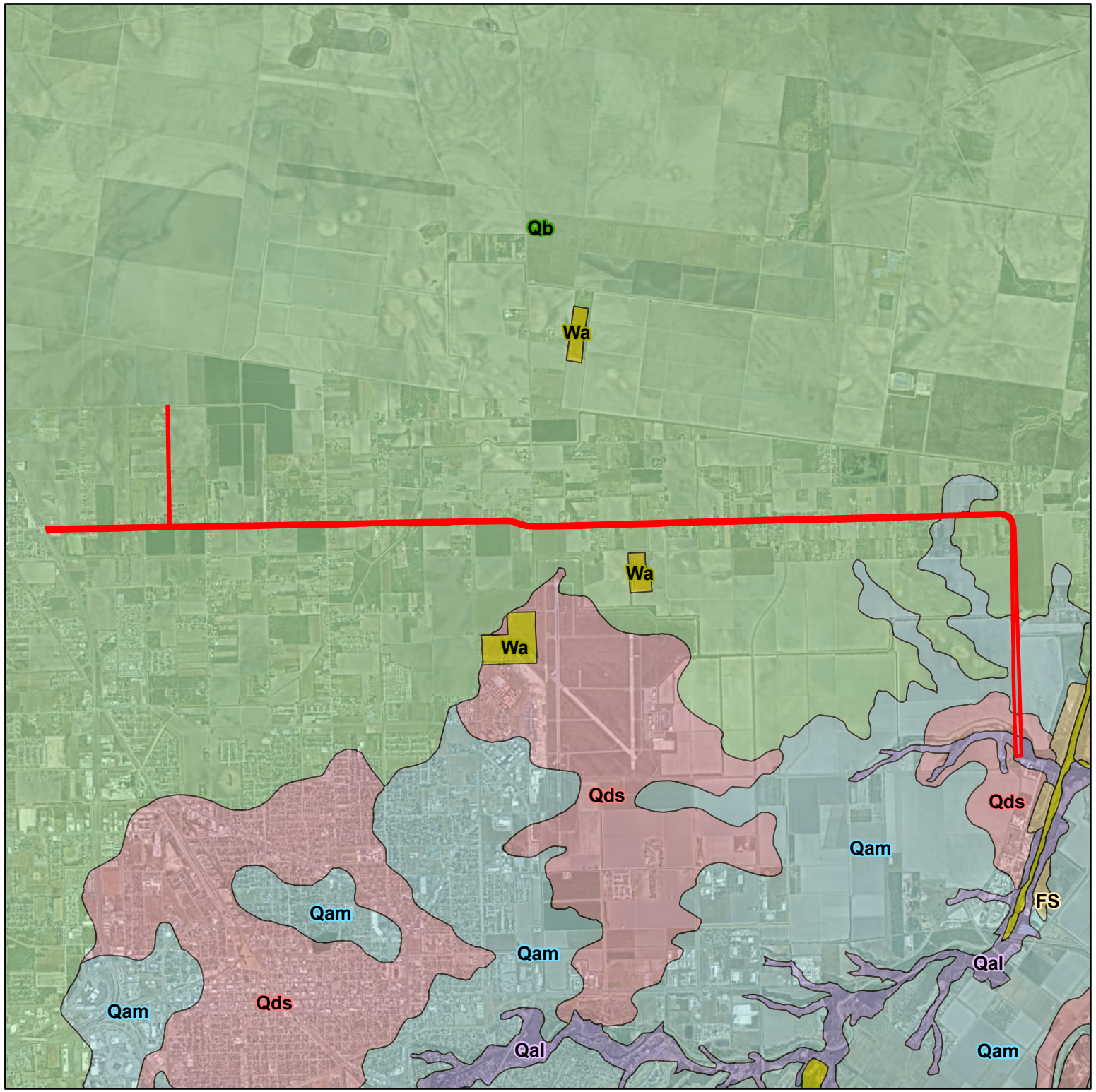
- Qb - Beaumont Formation
- Qds - Sand Dunes

Notes:
1. Map Center: 97.78888°W 26.2655°N
2. Nearmap WMS Server: 2025

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/29/2026

Figure 7.1
Geology Map

halff



N

0 3,000 6,000 12,000

Feet

Legend

Study Area

USGS Geologic Unit

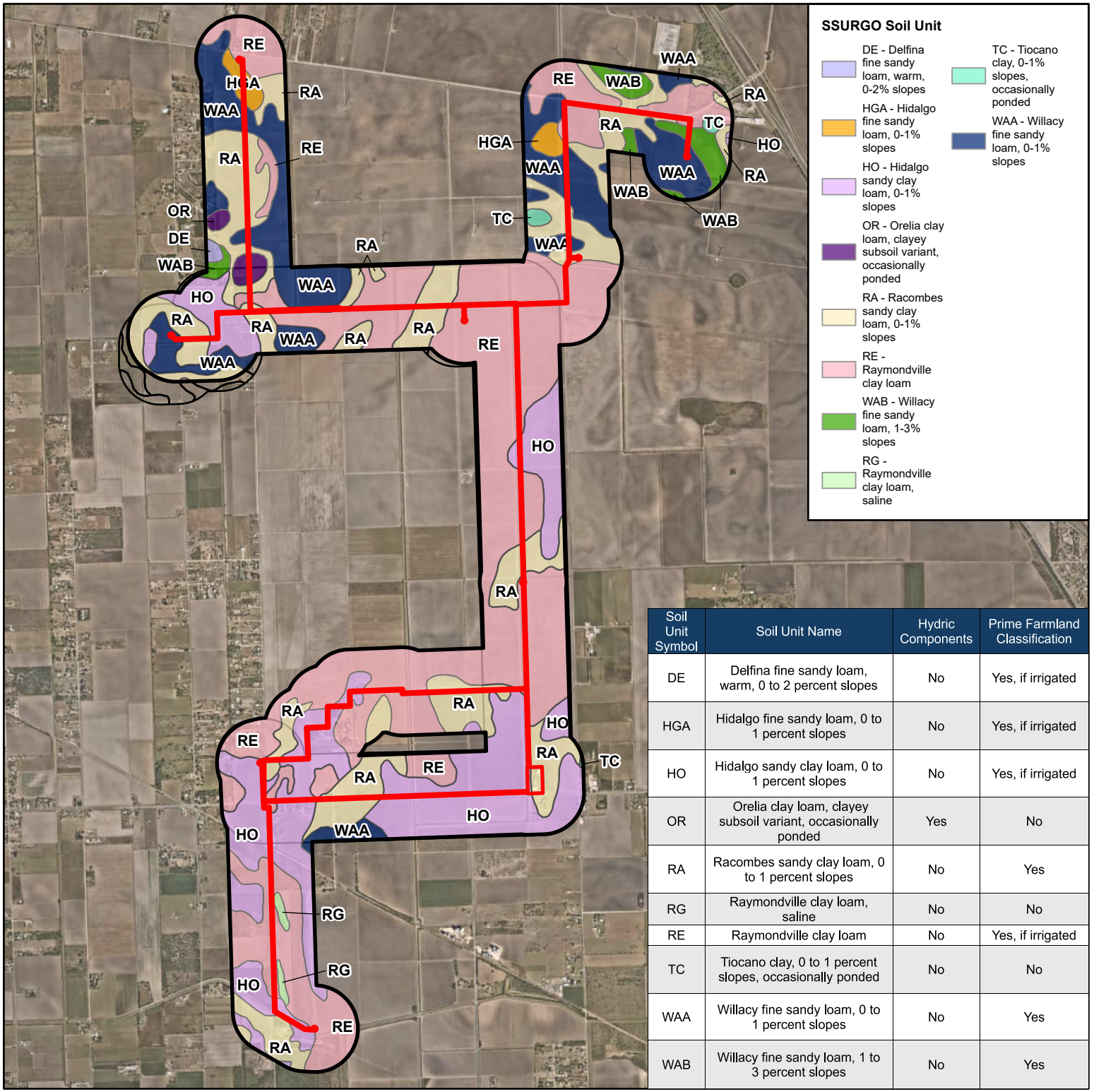
- FS - Artificial Soil
- Qal - Alluvium
- Qam - Muddy Floodplain Alluvium
- Qas - Silty and Sandy Floodplain Alluvium
- Qb - Beaumont Formation
- Wa - Open Water

Notes:
1. Map Center: 97.65963°W 26.24496°N
2. Nearmap WMS Server: 2025
3. USGS Geologic Database of Texas

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/20/2026

Figure 7.2
Geology Map

halff



Soil Unit Symbol	Soil Unit Name	Hydric Components	Prime Farmland Classification
DE	Delfina fine sandy loam, warm, 0 to 2 percent slopes	No	Yes, if irrigated
HGA	Hidalgo fine sandy loam, 0 to 1 percent slopes	No	Yes, if irrigated
HO	Hidalgo sandy clay loam, 0 to 1 percent slopes	No	Yes, if irrigated
OR	Orelia clay loam, clayey subsoil variant, occasionally ponded	Yes	No
RA	Racombes sandy clay loam, 0 to 1 percent slopes	No	Yes
RG	Raymondville clay loam, saline	No	No
RE	Raymondville clay loam	No	Yes, if irrigated
TC	Tiocano clay, 0 to 1 percent slopes, occasionally ponded	No	No
WAA	Willacy fine sandy loam, 0 to 1 percent slopes	No	Yes
WAB	Willacy fine sandy loam, 1 to 3 percent slopes	No	Yes

N

0 1,500 3,000 6,000

Feet

Legend

Study Area

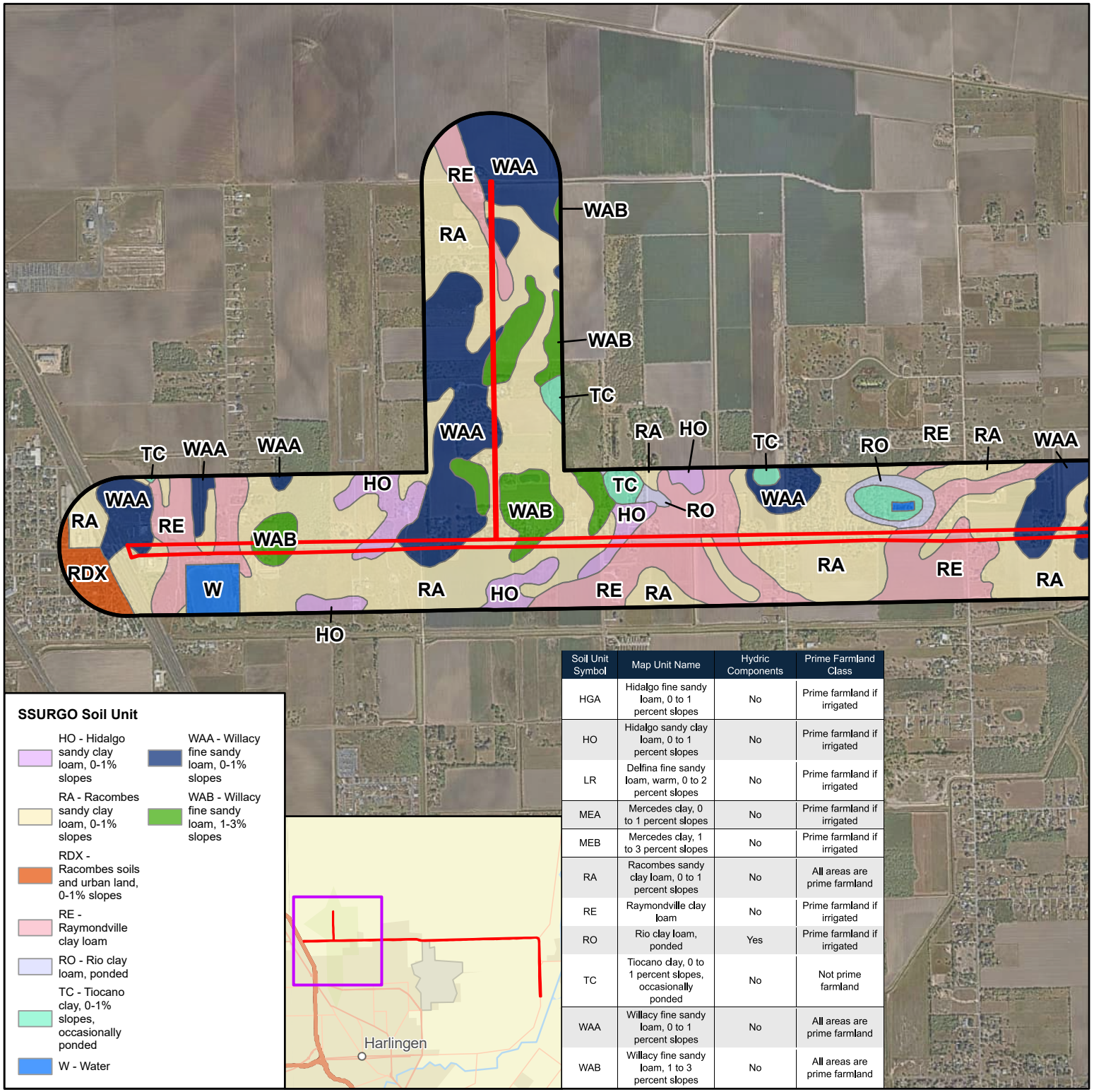
1,000-Foot Buffer

Notes:
1. Map Center: 97.7807°W 26.265°N
2. Nearmap WMS Server: 2025
3. USDA SSURGO Web Soil Survey

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/29/2026

Figure 8.1
Soil Map

halff



Legend

- Study Area
- 1,000-Foot Buffer

SSURGO Soil Unit

- HO - Hidalgo sandy clay loam, 0-1% slopes
- RA - Racombes sandy clay loam, 0-1% slopes
- RDX - Racombes soils and urban land, 0-1% slopes
- RE - Raymondville clay loam
- RO - Rio clay loam, ponded
- TC - Tiocano clay, 0-1% slopes, occasionally ponded
- W - Water
- WAA - Willacy fine sandy loam, 0-1% slopes
- WAB - Willacy fine sandy loam, 1-3% slopes

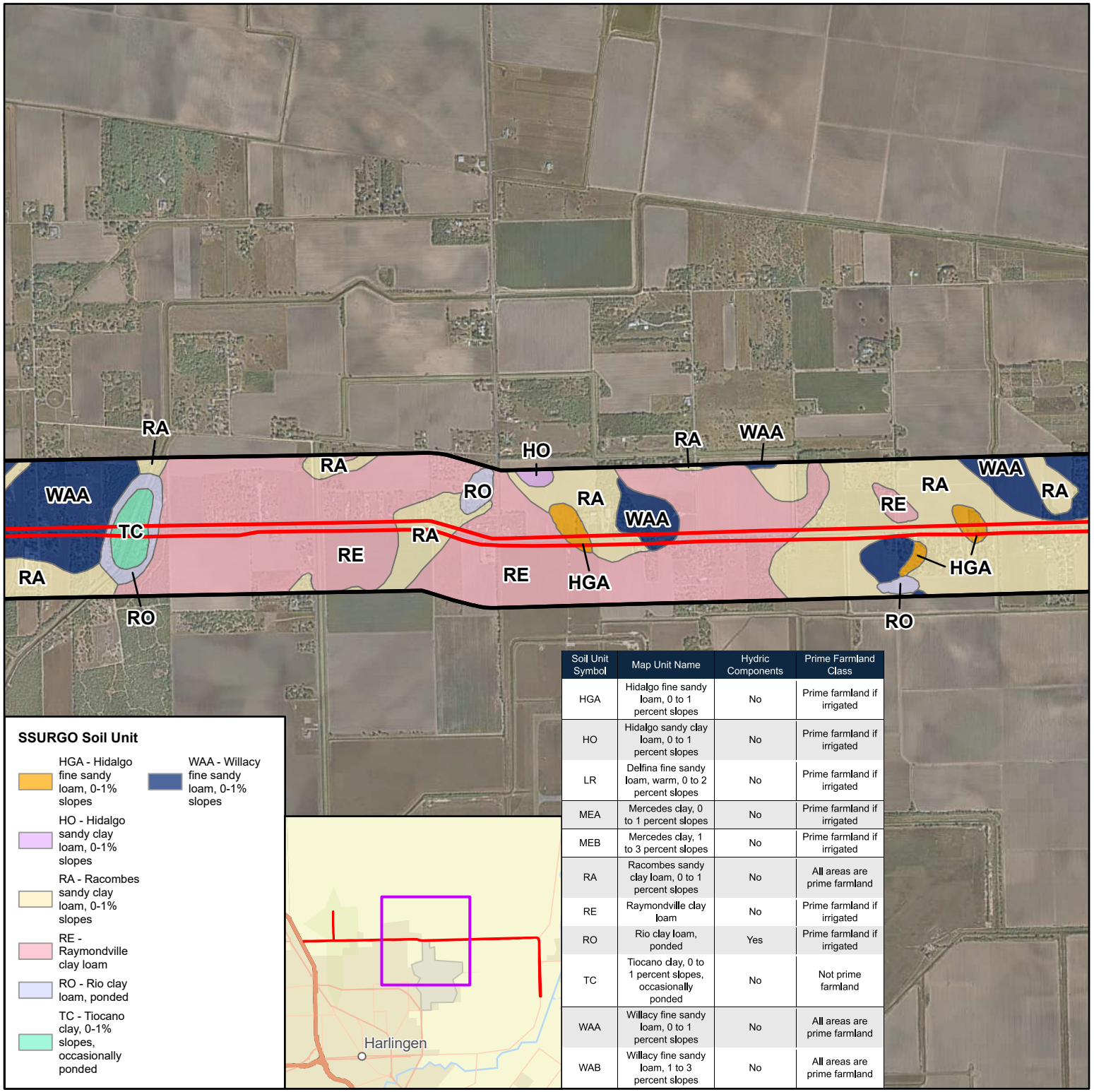
Soil Unit Symbol	Map Unit Name	Hydric Components	Prime Farmland Class
HGA	Hidalgo fine sandy loam, 0 to 1 percent slopes	No	Prime farmland if irrigated
HO	Hidalgo sandy clay loam, 0 to 1 percent slopes	No	Prime farmland if irrigated
LR	Delfina fine sandy loam, warm, 0 to 2 percent slopes	No	Prime farmland if irrigated
MEA	Mercedes clay, 0 to 1 percent slopes	No	Prime farmland if irrigated
MEB	Mercedes clay, 1 to 3 percent slopes	No	Prime farmland if irrigated
RA	Racombes sandy clay loam, 0 to 1 percent slopes	No	All areas are prime farmland
RE	Raymondville clay loam	No	Prime farmland if irrigated
RO	Rio clay loam, ponded	Yes	Prime farmland if irrigated
TC	Tiocano clay, 0 to 1 percent slopes, occasionally ponded	No	Not prime farmland
WAA	Willacy fine sandy loam, 0 to 1 percent slopes	No	All areas are prime farmland
WAB	Willacy fine sandy loam, 1 to 3 percent slopes	No	All areas are prime farmland

Notes:
1. Map Center: 97.70817°W 26.24822°N
2. World Street Map: Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS
Nearmap WMS Server: 2025
3. USDA SSURGO Web Soil Survey

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/29/2026

Figure 8.2
Soil Map

halff



SSURGO Soil Unit

- HGA - Hidalgo fine sandy loam, 0-1% slopes
- HO - Hidalgo sandy clay loam, 0-1% slopes
- RA - Racombes sandy clay loam, 0-1% slopes
- RE - Raymondville clay loam
- RO - Rio clay loam, ponded
- TC - Tiocano clay, 0-1% slopes, occasionally ponded
- WAA - Willacy fine sandy loam, 0-1% slopes

Soil Unit Symbol	Map Unit Name	Hydric Components	Prime Farmland Class
HGA	Hidalgo fine sandy loam, 0 to 1 percent slopes	No	Prime farmland if irrigated
HO	Hidalgo sandy clay loam, 0 to 1 percent slopes	No	Prime farmland if irrigated
LR	Delfina fine sandy loam, warm, 0 to 2 percent slopes	No	Prime farmland if irrigated
MEA	Mercedes clay, 0 to 1 percent slopes	No	Prime farmland if irrigated
MEB	Mercedes clay, 1 to 3 percent slopes	No	Prime farmland if irrigated
RA	Racombes sandy clay loam, 0 to 1 percent slopes	No	All areas are prime farmland
RE	Raymondville clay loam	No	Prime farmland if irrigated
RO	Rio clay loam, ponded	Yes	Prime farmland if irrigated
TC	Tiocano clay, 0 to 1 percent slopes, occasionally ponded	No	Not prime farmland
WAA	Willacy fine sandy loam, 0 to 1 percent slopes	No	All areas are prime farmland
WAB	Willacy fine sandy loam, 1 to 3 percent slopes	No	All areas are prime farmland

N

0 1,000 2,000 4,000

Feet

Legend

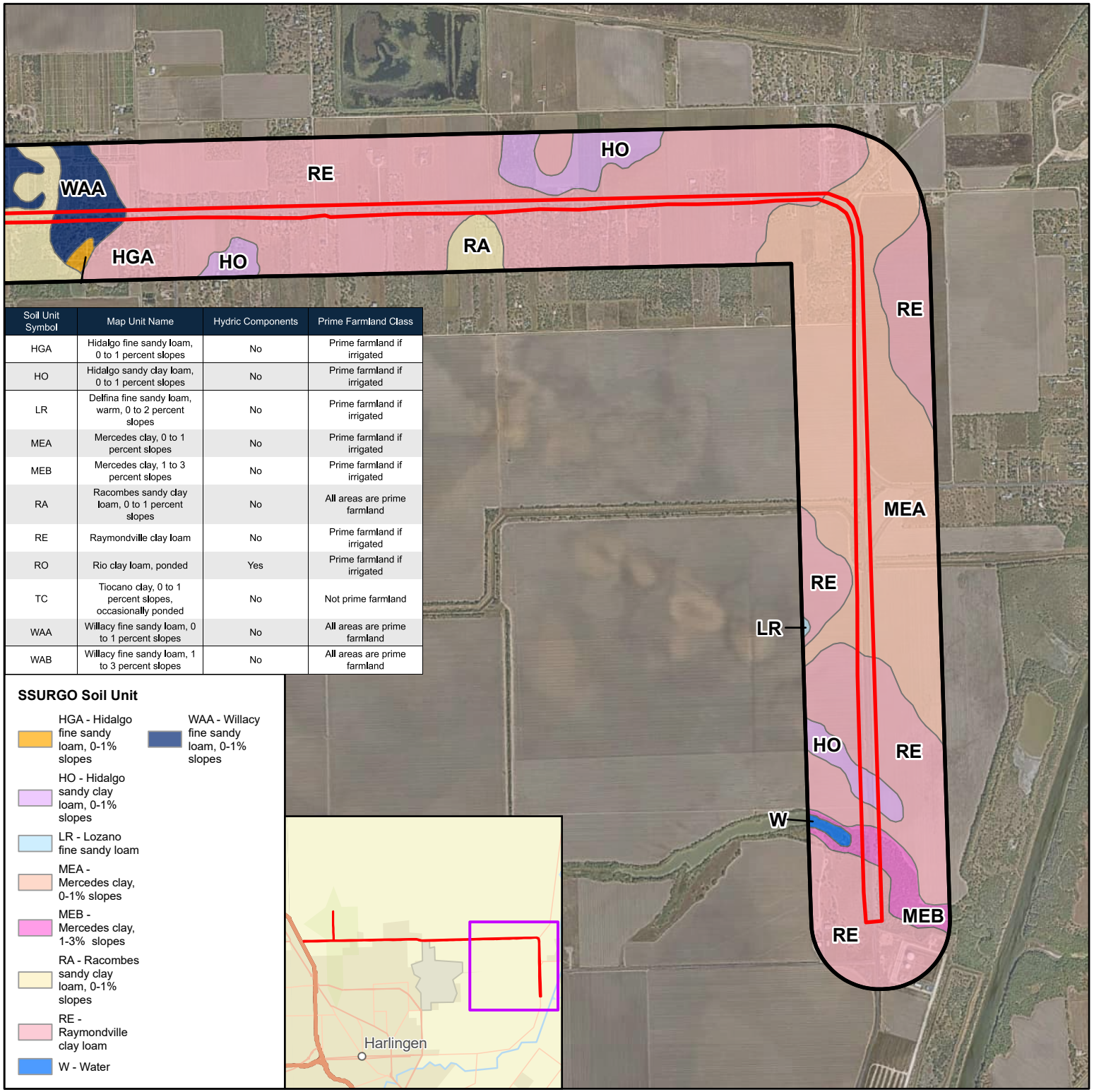
- Study Area
- 1,000-Foot Buffer

Notes:
1. Map Center: 97.65949°W 26.2472°N
2. World Street Map: Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS Nearmap WMS Server: 2025
3. USDA SSURGO Web Soil Survey

North Cameron Potable Water Transmission Line
Cameron County, Texas Date: 1/29/2026

Figure 8.3
Soil Map

halff



Soil Unit Symbol	Map Unit Name	Hydric Components	Prime Farmland Class
HGA	Hidalgo fine sandy loam, 0 to 1 percent slopes	No	Prime farmland if irrigated
HO	Hidalgo sandy clay loam, 0 to 1 percent slopes	No	Prime farmland if irrigated
LR	Delfina fine sandy loam, warm, 0 to 2 percent slopes	No	Prime farmland if irrigated
MEA	Mercedes clay, 0 to 1 percent slopes	No	Prime farmland if irrigated
MEB	Mercedes clay, 1 to 3 percent slopes	No	Prime farmland if irrigated
RA	Racombes sandy clay loam, 0 to 1 percent slopes	No	All areas are prime farmland
RE	Raymondville clay loam	No	Prime farmland if irrigated
RO	Rio clay loam, ponded	Yes	Prime farmland if irrigated
TC	Tiocano clay, 0 to 1 percent slopes, occasionally ponded	No	Not prime farmland
WAA	Willacy fine sandy loam, 0 to 1 percent slopes	No	All areas are prime farmland
WAB	Willacy fine sandy loam, 1 to 3 percent slopes	No	All areas are prime farmland

SSURGO Soil Unit

- HGA - Hidalgo fine sandy loam, 0-1% slopes
- WAA - Willacy fine sandy loam, 0-1% slopes
- HO - Hidalgo sandy clay loam, 0-1% slopes
- LR - Lozano fine sandy loam
- MEA - Mercedes clay, 0-1% slopes
- MEB - Mercedes clay, 1-3% slopes
- RA - Racombes sandy clay loam, 0-1% slopes
- RE - Raymondville clay loam
- W - Water

N

0 1,000 2,000 4,000

Feet

Legend

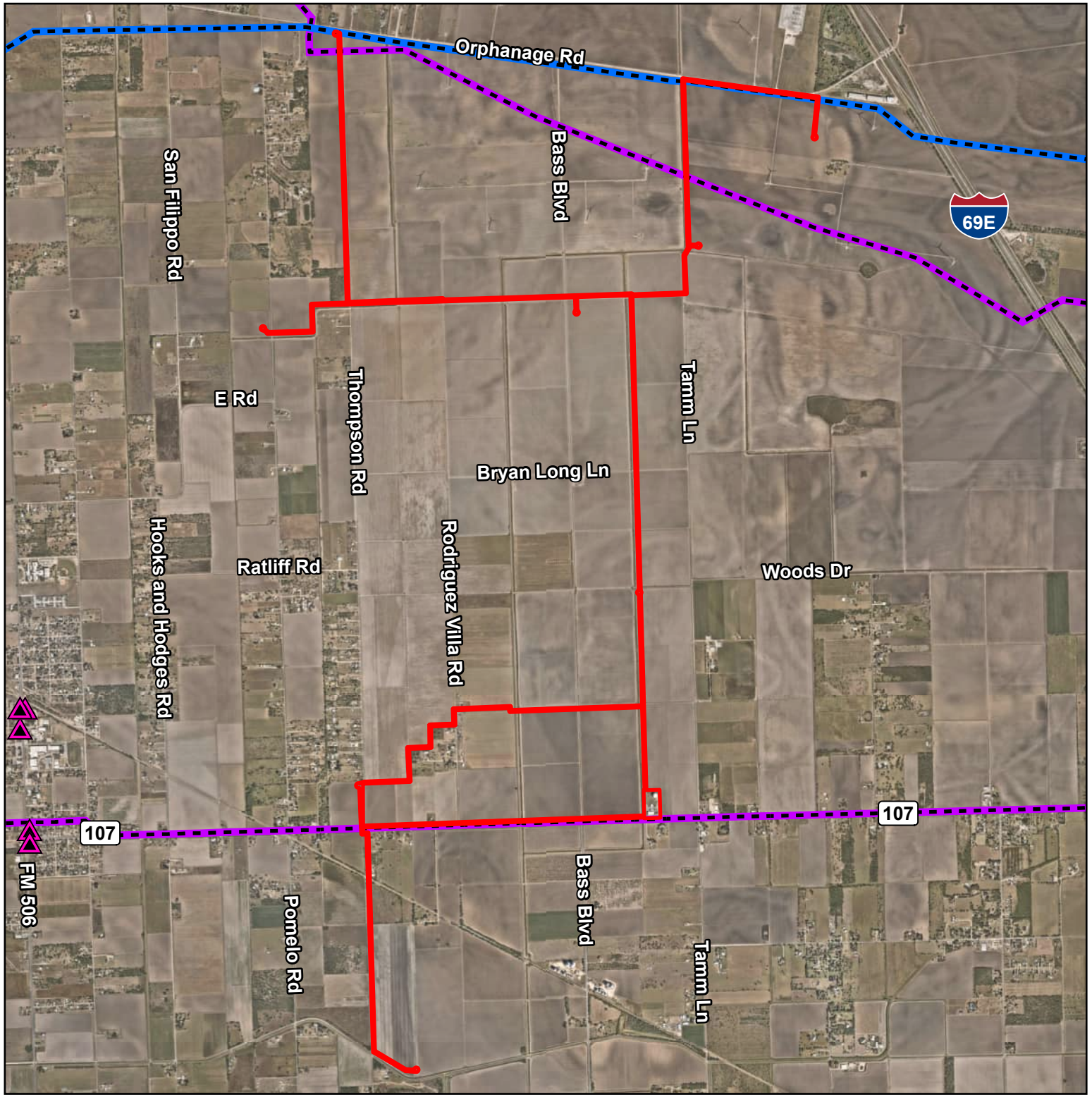
- Study Area
- 1,000-Foot Buffer

Notes:
1. Map Center: 97.61126°W 26.23366°N
2. World Street Map: Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS Nearmap WMS Server: 2025
3. USDA SSURGO Web Soil Survey

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/29/2026

Figure 8.4
Soil Map

halff



N

0 1,0002,000 4,000

Feet

Legend

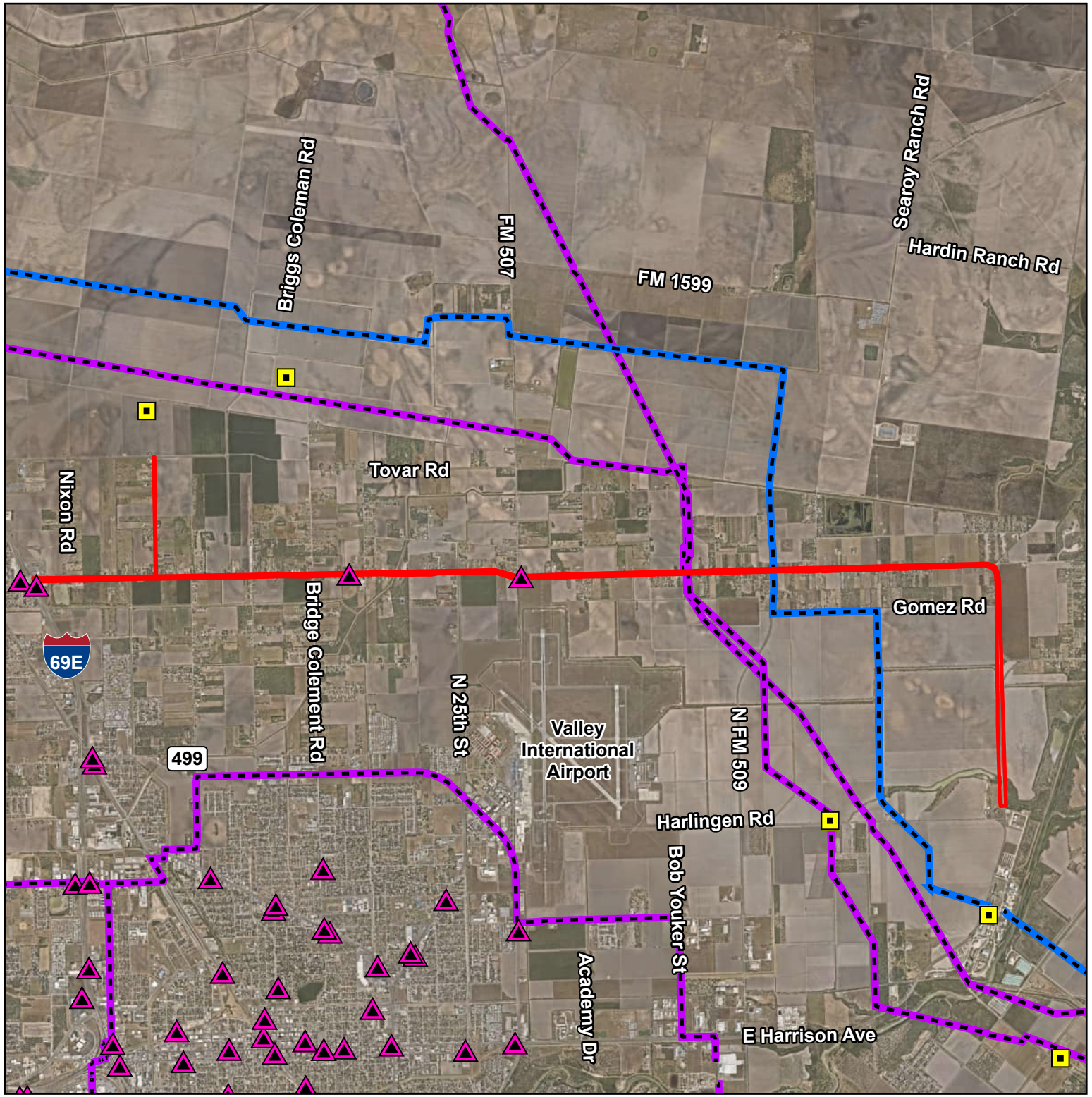
- Petroleum Storage Tank
- Natural Gas Pipeline
- Refined Liquid Product Pipeline

Notes:
1. Map Center: 97.78888°W 26.2655°N
2. Nearmap WMS Server: 2025
3. TCEQ GIS Data Hub
4. Texas Railroad Commission Oil and Gas Database

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/29/2026

Figure 9.1
Hazardous Materials Map

halff



N

0 3,000 6,000 12,000

Feet

Legend

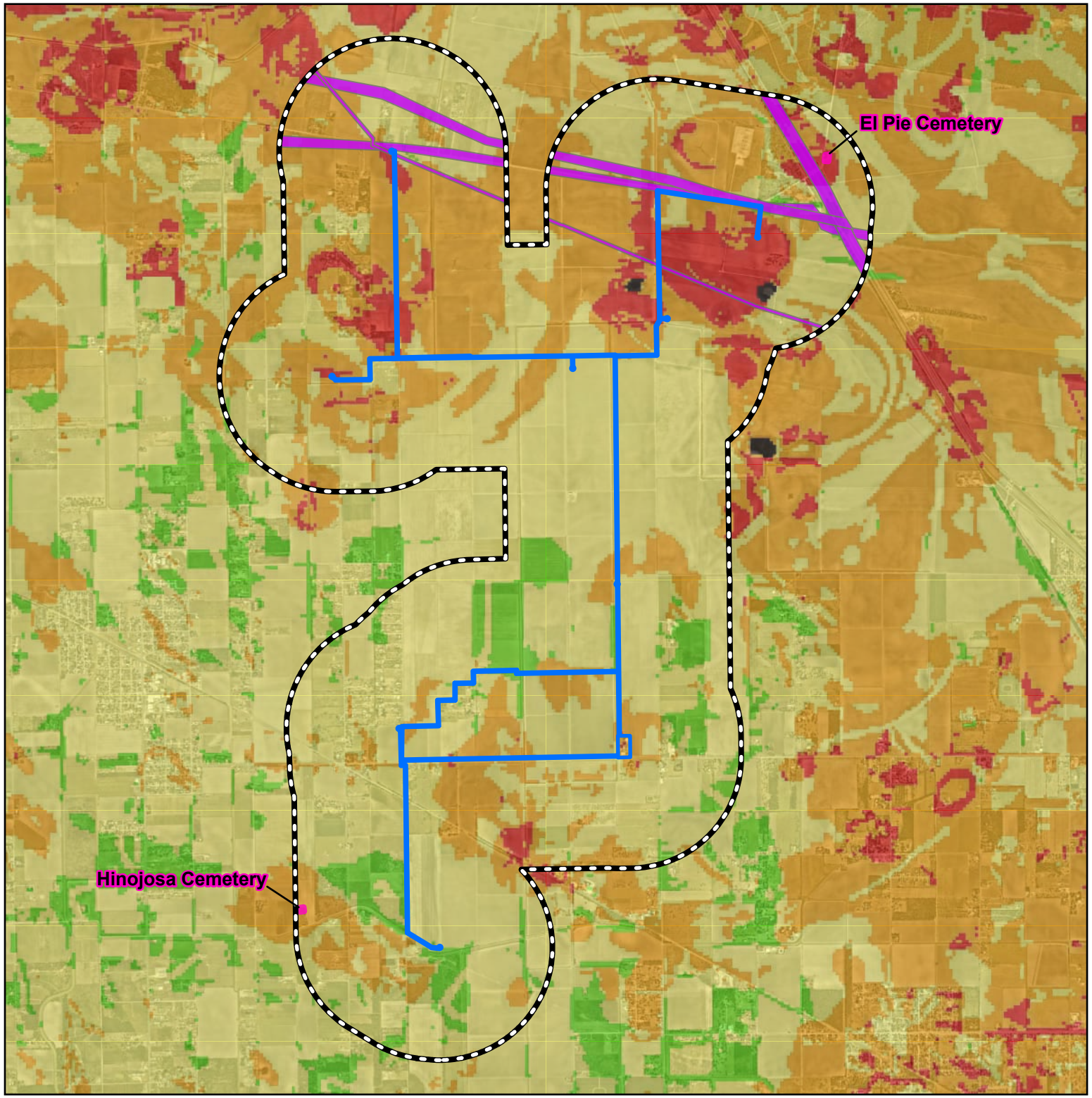
- Study Area
- Oil / Gas Well
- Petroleum Storage Tank
- Natural Gas Pipeline
- Refined Liquid Product Pipeline

Notes:
1. Map Center: 97.6578°W 26.25076°N
2. Nearmap WMS Server: 2025
3. TCEQ GIS Data Hub
4. Texas Railroad Commission Oil and Gas Database

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/20/2026

Figure 9
Hazardous Materials Map

halff



N

0 2,000 4,000 8,000

Feet

Legend

- Study Area
- 1-Kilometer Buffer
- Previously Surveyed Area
- Cemetery

PALM

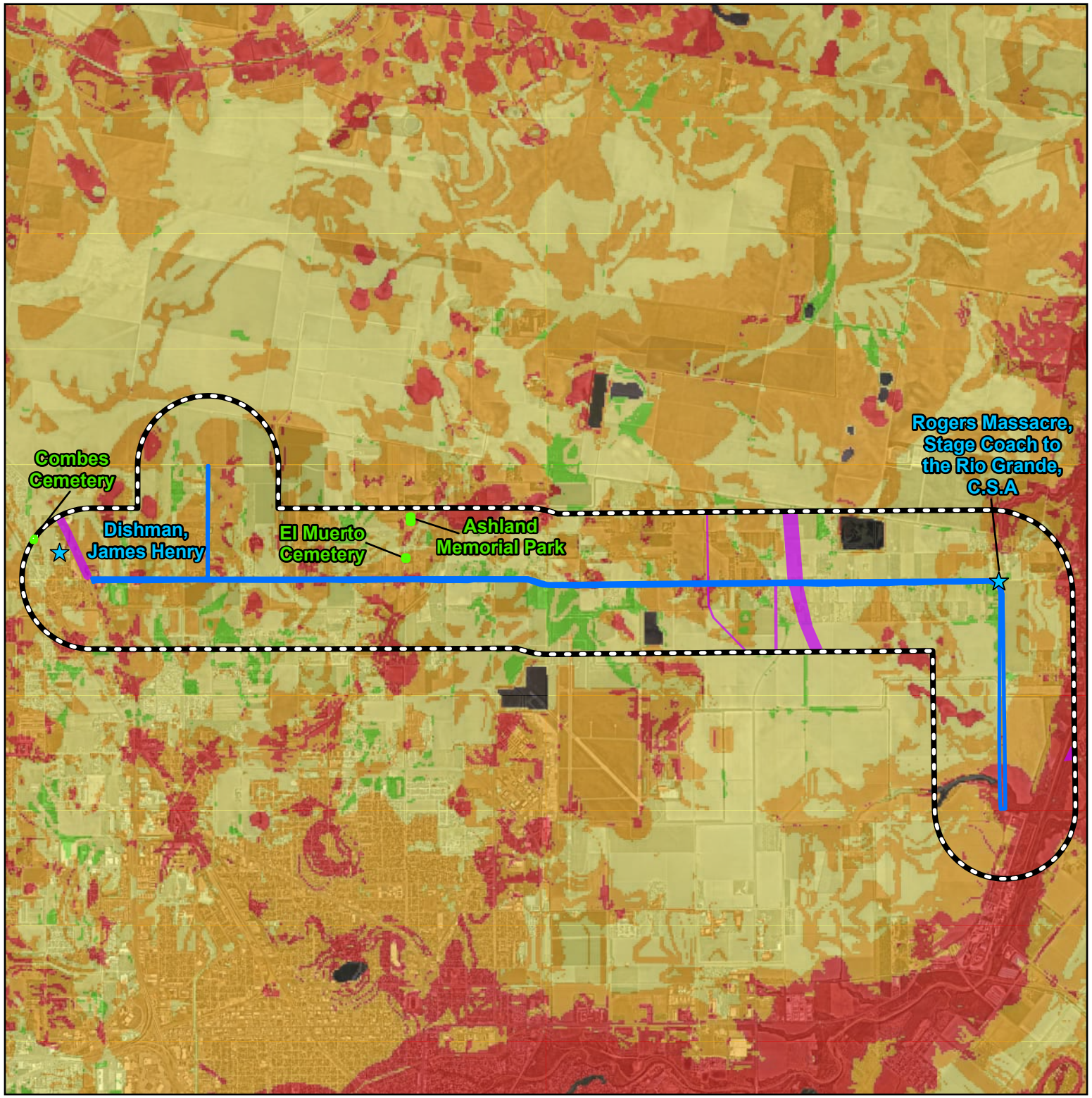
- 0 - negligible potential
- 2 - low-moderate potential
- 3 - moderate potential
- 4 - high-moderate potential
- 5 - high potential

Notes:
1. Map Center: 97.78888°W 26.2655°N
2. Nearmap WMS Server Current: 2025
3. Texas Historical Commission Atlas
4. TXDOT PALM Dataset - Pharr District

North Cameron Reverse Osmosis Plant Expansion
Cameron County, Texas
Date: 1/29/2026

Figure 10.1
THC Atlas and PALM Data Map

halff



N

0 3,000 6,000 12,000

Feet

Legend

- 1-Kilometer Buffer
- Historical Marker
- Cemetery
- Previously Surveyed Area

PALM

- 0 - negligible potential
- 2 - low-moderate potential
- 3 - moderate potential
- 4 - high-moderate potential
- 5 - high potential

Notes:
1. Map Center: 97.66206°W 26.25202°N
2. Nearmap WMS Server Current: 2025
3. Texas Historical Commission Atlas
4. TXDOT PALM Dataset - Pharr District

North Cameron Water Transmission Line
Cameron County, Texas Date: 1/29/2026

Figure 10.2
THC Atlas and PALM Data Map

halff

Appendix A: USWFS IPaC List

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Cameron County, Texas

Local office

Texas Coastal & Central Plains Esfo

(281) 286-8282
(281) 488-5882

MAILING ADDRESS
17629 El Camino Real, Suite 211
Houston, TX 77058-3051

PHYSICAL ADDRESS
17629 El Camino Real
Houston, TX 77058-3051

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Gulf Coast Jaguarundi Puma yagouaroundi cacomitli Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3945	Endangered
Ocelot Leopardus (=Felis) pardalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4474	Endangered
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Birds

NAME	STATUS
Cactus Ferruginous Pygmy-owl Glaucidium brasilianum cactorum Wherever found There is **final** critical habitat for this species. https://ecos.fws.gov/ecp/species/1225	Threatened

Northern Aplomado Falcon Falco femoralis septentrionalis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1923	Endangered
Piping Plover Charadrius melodus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Rufa Red Knot Calidris canutus rufa Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1864	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle Chelonia mydas There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6199	Threatened
Hawksbill Sea Turtle Eretmochelys imbricata Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3656	Endangered

Clams

NAME	STATUS
Salina Mucket Potamilus metnecktayi Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8753	Proposed Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Flowering Plants

NAME	STATUS
South Texas Ambrosia Ambrosia cheiranthifolia Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3331	Endangered
Texas Ayenia Ayenia limitaris Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4942	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect: it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Brownsville Curve-billed Thrasher Toxostoma curvirostre oberholseri This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Feb 15 to Aug 15
Chihuahuan Raven Corvus cryptoleucus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 1 to Aug 31
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Meadowlark Sturnella magna This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 31

Gull-billed Tern Gelochelidon nilotica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31
King Rail Rallus elegans This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Long-billed Curlew Numenius americanus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/5511	Breeds elsewhere
Mountain Plover Charadrius montanus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3638	Breeds elsewhere
Orchard Oriole Icterus spurius This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Jun 10 to Aug 15
Painted Bunting Passerina ciris This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 15
Pectoral Sandpiper Calidris melanotos This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Sprague's Pipit Anthus spragueii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8964	Breeds elsewhere
Wilson's Plover Charadrius wilsonia This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Aug 20

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in

week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

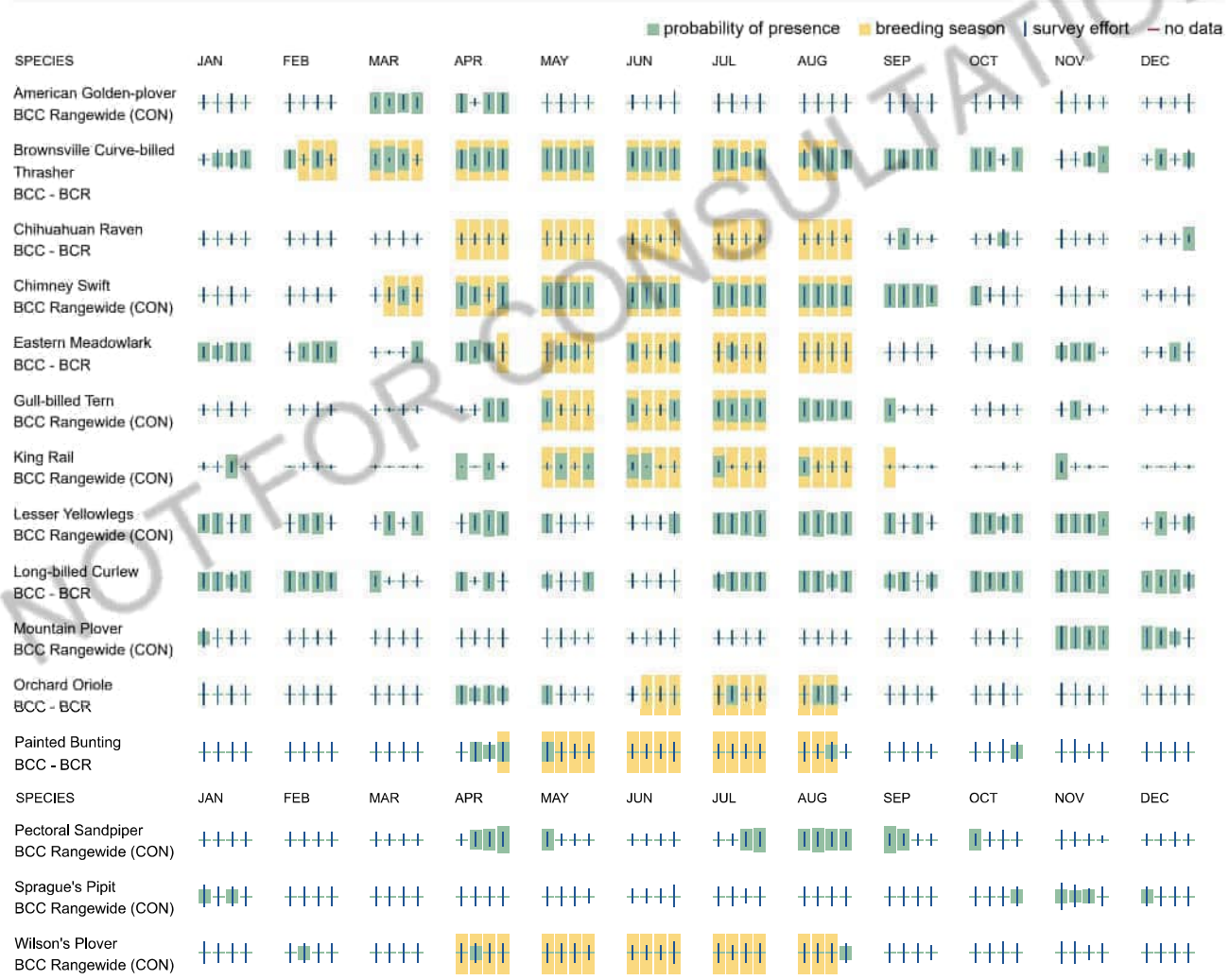
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

LAND	ACRES
LOWER RIO GRANDE VALLEY NATIONAL WILDLIFE REFUGE	89,907.83 acres

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix B: Representative Photographs

Photograph 1. View of western raw water line terminus at the intersection of Dick Mills Road and Pomelo Road. View is to the east.

Photograph 2. View of excavated drainage ditch adjacent to the intersection of Dick Mills Road and Pomelo Road. View is to the east.

Photograph 3. View of excavated drainage ditch within the study area adjacent to the intersection to Thompson Road and Diamond Drive. View is to the north.

Photograph 4. View of excavated drainage ditch within the study area adjacent to Diamond Drive. View is to the west.

Photograph 5. View of Adams Gardens Main Canal flowing beneath diamond drive through a concrete box culvert. View is to the north.

Photograph 6. View of excavated drainage ditch adjacent to the intersection of Bass Boulevard and Diamond Drive. View is to the south.

Photograph 7. View of excavated drainage ditch adjacent to the study area and Diamond Drive. View is to the south.

Photograph 8. View of excavated drainage ditch flowing beneath SH 107 adjacent to the proposed Well Sites 1 and 2. View is to the east.

Photograph 9. View of concrete-lined drainage ditch adjacent to the proposed well sites 1 and 2 and SH 107. View is to the north.

Photograph 10. View of cultivated agricultural fields at the proposed well site 6. View is to the southwest.

Photograph 11. View of western transmission line terminus at the intersection of Combes Rio Hondo Road and Interstate 69 East. View is to the east.

Photograph 12. View of excavated drainage ditch adjacent to the intersection of Templeton Road and Bouldin Road. View is to the west.

Photograph 13. View of excavated drainage ditch adjacent to the intersection of Templeton Road and Bouldin Road. View is to the west.

Photograph 14. View of excavated drainage ditch flowing beneath Combes Rio Hondo Road within the study area. View is to the south.

Photograph 15. View of Number 7 Canal flowing beneath Combes Rio Hondo Road within the study area adjacent to Godwin Road. View is to the north.

Photograph 16. View of excavated drainage ditch flowing beneath a concrete bridge within the study area beneath Combes Rio Hondo Road. View is to the southwest.

Photograph 17. View of vegetated drainage ditch within existing right of way at the intersection of Combes Rio Hondo Road and FM 507. View is to the west.

Photograph 18. View of wooded and herbaceous vegetation within existing right of way of Combes Rio Hondo Road. View is to the east.

Photograph 19. View of Combes Rio Hondo Road within the study area. View is to the east.

Photograph 20. View of Combes Rio Hondo Road within the study area. View is to the west.

Photograph 21. View of the intersection of Combes Rio Hondo Road and FM 1420. View is to the northeast.

Photograph 22. View of cultivated agricultural fields adjacent to the study area and FM 106. View is to the east.

Photograph 23. View of on channel pond adjacent to the study area and FM 106. View is to the east.

Photograph 24. View of concrete box culvert beneath FM 106 at the edge of adjacent on channel pond feature. View is to the northwest.

Photograph 25. View of existing right of way adjacent to FM 106 at the western transmission line terminus. View is to the north.

Appendix C: Cultural Resources Assessment

Cultural Resources Background Review

North Cameron Water Transmission Line Project, Cameron County, Texas

Prepared for

East Rio Hondo Water Supply Corporation

Prepared by

Halff

Annie Carter, MS, Principal Investigator

AVO 57988.001

January 29, 2026

Introduction

The East Rio Hondo Water Supply Corporation (ERHWSC) has contracted with Halff to conduct a cultural resources background review for the proposed North Cameron Water Transmission Line Project in Cameron County, Texas (**Attachment A, Figure 1**). The proposed project covers circa (ca.) 181.7 acres and involves the installation of an approximately 11-mile (17.7-kilometer [km]) long potable water transmission line. Planned construction within the public right-of-way (ROW) will primarily use trenchless methods (e.g., horizontal directional drilling, auger bore, or jack and bore). The majority of the project area is oriented east–west and is located along Farm-to-Market Road (FM) 508 (Combes Rio Hondo Road) in Harlingen, Texas (**Attachment A, Figure 2**).

Because the project is being developed by ERHWSC, a political sub-entity of the State of Texas, it falls under purview of the Texas Antiquities Code (TAC) (Title 9, Chapter 191 of the Texas Natural Resources Code), which requires that the Texas Historical Commission (THC) review actions that have the potential to impact archeological and above ground historic resources within the public domain. In addition, the project would be federally funded by the Environmental Protection Agency (EPA) through the Drinking Water State Revolving Fund (Project No. 63009), which is considered a federal action requiring compliance with Section 106 of the National Historic Preservation Act (Section 106). The TAC Project Area (PA) and the Section 106 Area of Potential Effects (APE) coincide and encompass the same 181.7-acre project limits. The PA and APE are collectively referenced as PA in the remainder of this document unless denoted otherwise. Typical proposed construction depths are less than 3 feet (0.9 meter [m]).

This document summarizes the results of the background research performed for the proposed project and provides a recommendation regarding potential effects to archeological and historic properties.

Environmental Setting

Regionally, the project is mapped within the Nueces River drainage basin (TWDB 2026) and the Western Gulf Coastal Plain ecoregion of Texas (TPWD 2026). Locally, the PA follows FM 508 east from its terminus at the US-77 Expressway (**Attachment A, Figures 3.1–3.3**). At the intersection with FM 1420, the PA continues along FM 508 as it turns south for approximately 2 miles (3.2 km), ending just north of County Road (CR) 1595. Additionally, an offshoot of the PA extends about 1 mile (1.6 km) north from the intersection of FM 508 and Bouldin Road.

According to the USGS 2022 Harlingen, Texas Topographic Quadrangle Map and recent aerial photography, the PA includes a mix of existing roadways and associated shoulders, established ROW, drainage ditches, residential yards, and cropland. The local topography is generally flat, with elevations ranging from 30 to 40 feet above mean sea level. The nearest natural waterway is the Arroyo Colorado, located approximately 611 m (0.4 mile) east of the PA. The Arroyo Colorado is shown as a perennial stream on the topographic quadrangle map and flows generally northeast for ca. 22 miles (35 km) before emptying into the Lower Laguna Madre. The nearest manmade water source, Abbott Reservoir, intersects the PA at its southeastern terminus. Land use in the surrounding area is devoted to residential development and agriculture.

Soils and Geology

A review of the Natural Resource Conservation Service Web Soil Survey (NRCS 2026) revealed that the PA is composed of ten soil units, which are described below in **Table 1**. A map showing the soil unit distribution is provided in **Attachment A, Figures 4.1–4.3**. According to the Geologic Atlas of Texas (USGS

2026a), the underlying geology is composed of four geologic units, which are listed and described below in **Table 2** and mapped in **Attachment A, Figure 5**. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map data, a small section of the PA is within a FEMA-designated floodplain (see **Attachment A, Figure 4.3**).

Table 1: Soil Map Unit Descriptions and Frequencies (NRCS 2026).

Map Unit Symbol	Map Unit Name	General Characteristics	Potential for Buried Holocene-age Deposits if Undisturbed	Acres / %
HGA	Hidalgo fine sandy loam, 0 to 1 percent slopes	Landform: terraces Surface texture: fine sandy loam Parent material: calcareous loamy alluvium	Yes	2.2 acres / 1.2%
HO	Hidalgo sandy clay loam, 0 to 1 percent slopes	Landform: terraces Surface texture: sandy clay loam Parent material: calcareous loamy alluvium	Yes	5.1 acres / 2.8%
MEA	Mercedes clay, 0 to 1 percent slopes	Landform: delta plains Surface texture: clay Parent material: calcareous clayey alluvium	No	27.6 acres / 15.2%
MEB	Mercedes clay, 1 to 3 percent slopes	Lanform: delta plains Surface texture: clay Parent material: calcareous clayey alluvium	No	3.1 acres / 1.7%
RA	Racombes sandy clay loam, 0 to 1 percent slopes	Landform: terraces Surface texture: sandy clay loam Parent material: calcareous loamy alluvium	Yes	42.4 acres / 23.3%
RE	Raymondville clay loam	Landform: delta plains Surface texture: clay loam Parent material: calcareous clayey alluvium	No	80.2 acres / 44.2%
RO	Rio clay loam, ponded	Landform: closed depressions Surface texture: clay loam Parent material: clayey alluvium	No	0.8 acre / 0.4%
TC	Tiocano clay, 0 to 1 percent slopes, occasionally ponded	Landform: closed depressions Surface texture: clay Parent material: clayey alluvium	No	1.8 acres / 1.0%
WAA	Willacy fine sandy loam, 0 to 1 percent slopes	Landform: delta plains Surface texture: fine sandy loam Parent material: loamy alluvium	No	15.2 acres / 8.3%

Map Unit Symbol	Map Unit Name	General Characteristics	Potential for Buried Holocene-age Deposits if Undisturbed	Acres / %
WAB	Willacy fine sandy loam, 1 to 3 percent slopes	Landform: delta plains Surface texture: fine sandy loam Parent material: loamy alluvium	No	3.3 acres / 1.9%
Totals				181.7 acres / 100.0%

Table 2: Geologic Map Unit Descriptions and Frequencies (USGS 2026a).

Map Unit Symbol	Map Unit Name	Period / Epoch	Potential for Buried Holocene-age Deposits	Acres / %
Qal	Alluvium	Quaternary / Holocene	Yes	5.0 acres / 2.7%
Qam	Alluvium	Quaternary / Holocene	Yes	24.7 acres / 13.6%
Qas	Alluvium	Quaternary / Holocene	Yes	5.6 acres / 3.1%
Qb	Beaumont Formation	Quaternary / Holocene, Pleistocene	Yes	146.4 acres / 80.6%
Totals				181.7 acres / 100.0%

Potential Archeological Liability Map Data

The Texas Department of Transportation (TxDOT) Potential Archeological Liability Map (PALM) for the Pharr District was reviewed to evaluate the potential for shallow and deeply buried archeological deposits with integrity. A breakdown of the PALM data for the PA is below in **Table 3** and a map showing the Map Unit distribution is provided in **Attachment A, Figures 6.1–6.3**.

Table 3: PALM Unit Descriptions and Frequencies.

Map Unit	Map Unit Description	Acres / %
2	Low-moderate potential	9.5 acres / 5.2%
3	Moderate potential	76.0 acres / 41.8%
4	High-moderate potential	65.2 acres / 35.9%
5	High potential	31.0 acres / 17.1%
Total		181.7 acres / 100.0%

Cultural Setting

Archeological Sites Atlas Review

A review of the Texas Archeological Sites Atlas maintained by the THC and Texas Archeological Research Laboratory (Atlas) was conducted on January 23, 2026. The Atlas review revealed that the PA contains no previously recorded cultural resources sites. Seven resources are documented within a 1-km (0.6-mile) radius of the PA, including four cemeteries – none of which are designated as Historic Texas Cemeteries (HTCs) – and four Official Texas Historical Markers (OTHMs) (**Table 4**). In addition, the Atlas review revealed that small sections of the PA have been previously surveyed and two additional surveys have been conducted within a 1-km (0.6-mile) radius (**Table 5**). A map showing the cultural resources sites and surveys documented in the Atlas search area is provided in **Attachment A, Figure 7**.

Table 4: Atlas Data (THC 2026).

Resource ID	Resource Type	Atlas Record Summary	NRHP / SAL Eligibility, HTC Designation	Distance from Project (km/m)	Year(s) Recorded
CF-C065	Cemetery	Combes Cemetery	Non-HTC	900 m	Information not available
CF-C066	Cemetery	Los Olmales Cemetery	Non-HTC	846 m	Information not available
CF-C067	Cemetery	Ashland Memorial Park Cemetery (Loma Linda Cemetery)	Non-HTC	800 m	Information not available
CF-C068	Cemetery	El Muerto Cemetery	Non-HTC	280 m	Information not available
2724	OTHM	James Henry Dishman (February 22, 1858-July 30, 1934)	N/A	560 m	1992
4337	OTHM	Rogers Massacre (commemorative)	N/A	20 m	1994
5094	OTHM	Stagecoach to the Rio Grande, C.S.A. (travel route)	N/A	18 m	1965

OTHM 5094: Stagecoach to the Rio Grande, C.S.A

Located approximately 18 m (59 feet) east of the PA, the Stagecoach to the Rio Grande, C.S.A. OTHM (No. 5094) marks a crucial corridor for Confederate logistics and international trade during the American Civil War. Approximately 10 miles (16 km) east of this location sat Paso Real, a ferry crossing on the Arroyo Colorado that predated the war, with stagecoach activity documented as early as 1846 (THM 2026). The name *Paso Real*, meaning "The King's Pass," suggests its longstanding role as a critical crossing point.

By the 1860s, Paso Real had gained international importance as part of the Cotton Road, a Confederate trade route that circumvented Union blockades by funneling cotton through Matamoros, Mexico (Waymarking 2015). In return, the Confederacy received essential wartime goods such as guns, ammunition, medicine, shoes, cloth, and blankets, all of which helped sustain their war effort. The ferry and

accompanying stage line at Paso Real became indispensable not only for material exchange but also for the movement of diplomats, government agents, foreign businessmen, soldiers, and civilians (THM 2026).

OTHM 4337: Rogers Massacre

The Rogers Massacre OTHM (No. 4337) is located 20 m (66 feet) east of the PA and commemorates a tragic and pivotal incident that unfolded on May 1, 1846. Taking place just days before the opening battles of the U.S.–Mexican War, the event illustrates the violent tension along the South Texas frontier during a volatile moment of contested sovereignty.

Following the U.S. annexation of Texas in December 1845, American military forces under General Zachary Taylor pushed beyond the Nueces River, establishing a garrison at Fort Brown along the Rio Grande and a supply base at Point Isabel. To support this advance, a civilian supply convoy was organized by Roswell D. Denton, with contracts awarded to Patterson Rogers and his sons, Anderson W. and William L. Rogers, to transport military goods from Corpus Christi to the front lines (THC 2026).

On April 25, 1846, the Rogers family and a group of nine other men, three women, and four children departed Corpus Christi. On May 1, they were ambushed by a group of Mexican bandits led by Juan Ballí (stxmaps 2026). Though initially promised prisoner-of-war protections upon surrender, the bandits betrayed that agreement. Two men were executed immediately, and the remaining prisoners were bound and led to a bluff above the Arroyo Colorado, where they were brutally murdered—throats slashed and bodies discarded into the water below. The women and children were also killed (THC 2026).

William L. Rogers, the sole survivor, managed to travel over 40 miles (64.4 km) on foot to a ranch near Fort Brown (stxmaps 2026). His survival and testimony brought widespread attention to the atrocity. Rogers later recovered and became a prominent citizen in South Texas, but the massacre left a lasting scar and became a symbol of the chaotic and violent prelude to the full outbreak of war.

Although the marker has reportedly been missing since August 2003, the site remains significant for its role in signaling the transition from borderland instability to open conflict between the United States and Mexico.

Table 5: Previous Investigations (THC 2026).

Permit Number	Investigating Firm	Sponsor Agency	Distance from Project (km/m)	Year(s) Surveyed
5036	Blanton & Associates	TxDOT	82 m	2009
Information not available	Information not available	Federal Highway Administration	0 m	1981
6643	Atkins	USACE Galveston District	0 m	2014
Information not available	Horizon	Federal Energy Regulatory Commission	0 m	2004
Information not available	Information not available	USACE Galveston District	861 m	1983

Historical Map Review

A summary of the historic topographic quadrangle maps (USGS 2026b) and aerial photographs (NETR 2026) reviewed for the project are summarized below in **Table 6**.

Table 6: Historic Map Review Summary.

Map name and year	Historic structures/features mapped in the PA	General land use depicted
USGS 1956 Rio Honda, 1958 Willamar, 1959 Paso Real and Harlingen, Texas Topographic Quadrangle (**Attachment A, Figures 8.1–8.3**)	Many structures scattered along FM 508 adjacent to PA; greatest concentration toward western terminus. Abbott Dam and Reservoir mapped at southeastern project terminus. Valley International Airport located south of PA and McCloud Reservoir to the north.	Rural, agricultural
Aerial photography from 1934	Few scattered structures visible adjacent to PA. FM 508 and US-77 Bus visible in their modern alignments. Possible channelization associated with Abbott Reservoir at southeastern terminus.	Rural, agricultural
Aerial photography from 1953	Conditions consistent with previous aerial with addition of Valley International Airport appearing south of the PA.	Rural, agricultural
Aerial photography from 1960 and 1962	Conditions consistent with previous aerial with a housing boom during this period; higher density near west terminus of PA. McCloud Reservoir appears north of PA.	Rural, agricultural
Aerial photography from 1970	Conditions consistent with previous aerials with additional residential growth adjacent to mid-section of the PA and the appearance of US-77 Expressway at western terminus.	Rural, agricultural

The PA has remained largely unchanged with the exception of intermittent scattered residential development and another housing boom around 2002 concentrated adjacent to the western portion. Several nearby reservoirs have also appeared over time. Because FM 508 is located within the PA and has existed since 1934, and the remainder of the PA consists primarily of disturbed ROW, pastureland, and residential yards, the potential for historic resources within the PA is considered low. In addition, the steady degree of land development depicted in the PA over time points to a low potential for buried and intact archeological deposits.

Abbott Dam and Reservoir

Abbott Dam was built between 1927 and 1928 as part of the Lake McQueeney and Abbott Dam Project, a series of hydroelectric developments on the Guadalupe River designed to impound river flows and generate electricity for the surrounding area (TSHA 2026). Impoundment began shortly after construction was completed. Originally sponsored by the TWDB, the dam later became part of the Guadalupe-Blanco River Authority system and today also supports water conservation and recreational activities at Lake McQueeney. A review of the Atlas and the TxDOT Historic Resources Aggregator (2026) indicates that neither the dam nor the associated reservoir have been previously surveyed for cultural resources, and no

historic designations or eligibility determinations have been recorded. Beyond the information provided by the TSHA, no historical accounts or water resources board records have been identified.

Summary and Recommendation

The PA is characterized by delta plain soils, particularly Raymondville clay loam (Unit RE) and Mercedes clay (Units MEA and MEB), which together account for the majority of the mapped acreage. These clay-rich delta plain settings generally exhibit low potential for preserving buried Holocene-age deposits due to minimal aggradation and frequent ponding. Terrace-associated soils with greater potential for buried Holocene deposits are primarily represented by Racombes sandy clay loam (Unit RA), which comprises ca. 23 percent of the PA.

The geologic setting within the PA is dominated by the Beaumont Formation (Qb), which accounts for more than 80 percent of the mapped area. While the Beaumont Formation is broadly assigned to Quaternary age, it commonly represents older, stable surfaces with low potential for preserving buried Holocene-age deposits. Holocene-age alluvium units (Qal, Qam, and Qas) that exhibit higher potential for buried Holocene deposits are present in the PA but occur in relatively small, localized areas.

The PALM data indicate that the majority of the PA falls within Units 3 and 4 (moderate to high-moderate potential), representing approximately 78 percent of the mapped acreage. High-potential areas (Unit 5) occur in more confined and discontinuous portions of the PA, while low-moderate potential areas are minimal.

Although the soil, geologic, and PALM data identify moderate to high potential within portions of the PA, local land use information indicates that the PA is largely defined by existing roadways, ROW, drainage ditches, and limited portions of plowed agricultural fields and residential yards. These conditions reflect substantial prior disturbance from construction, grading, and landscaping activities, which likely reduces the integrity of any potential archeological deposits and limits the likelihood of encountering intact resources within the PA.

The Atlas review revealed that small sections of the PA have been previously surveyed, though the most recent survey was conducted in 2014. Although two OTHMs are located approximately 20 m (66 feet) east of the PA, they are commemorative in nature and do not represent known archeological sites or contain features that would indicate subsurface cultural deposits. The historical map review revealed a low potential for direct effects to above ground historic structures. Together, the Atlas and historic map review findings support a recommendation against an intensive archeological survey of the PA.

Given the PA's highly disturbed setting, confined areas available for potential excavation along the road shoulders, and trenchless construction methods proposed within public ROW, Halff recommends that no archeological survey be conducted for the project, as buried cultural deposits are unlikely to be encountered or intact. Halff respectfully requests THC comment on the above recommendation for no further TAC and Section 106 consultation requirements for the proposed project.

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2026b TopoView. Electronic document, https://ngmdb.usgs.gov/topoview/viewer/#4/40.01/-100.06, accessed January 23, 2026.

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2015 The Cotton Road – Uvalde Texas in *Ancient Traces and Roads*. Electronic document, https://www.waymarking.com/waymarks/wmPJT9_The_Cotton_Road_Uvalde_TX?utm, accessed January 23, 2026.

Attachment A: Map Figures

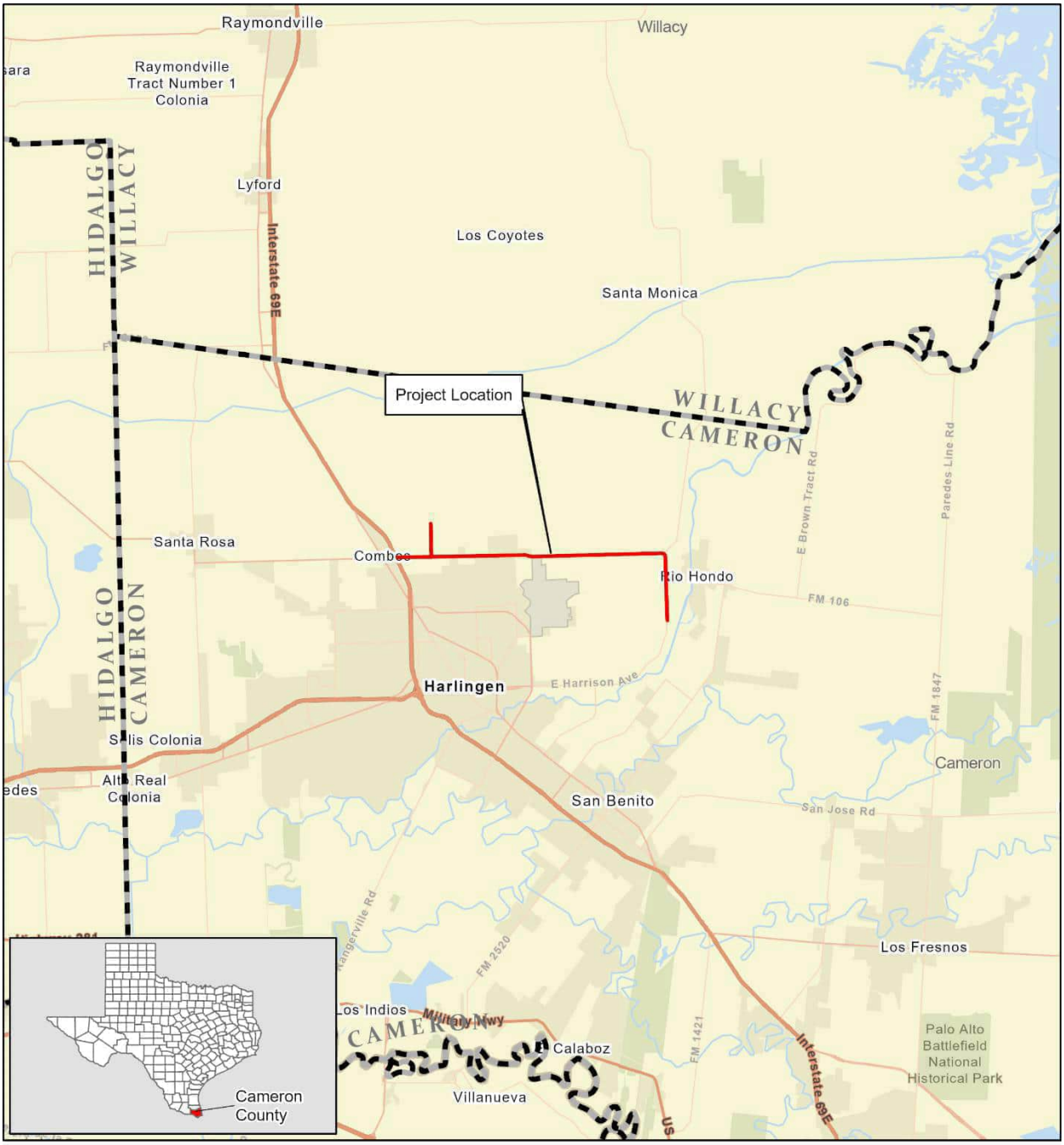


Figure 1: Project Location Map.

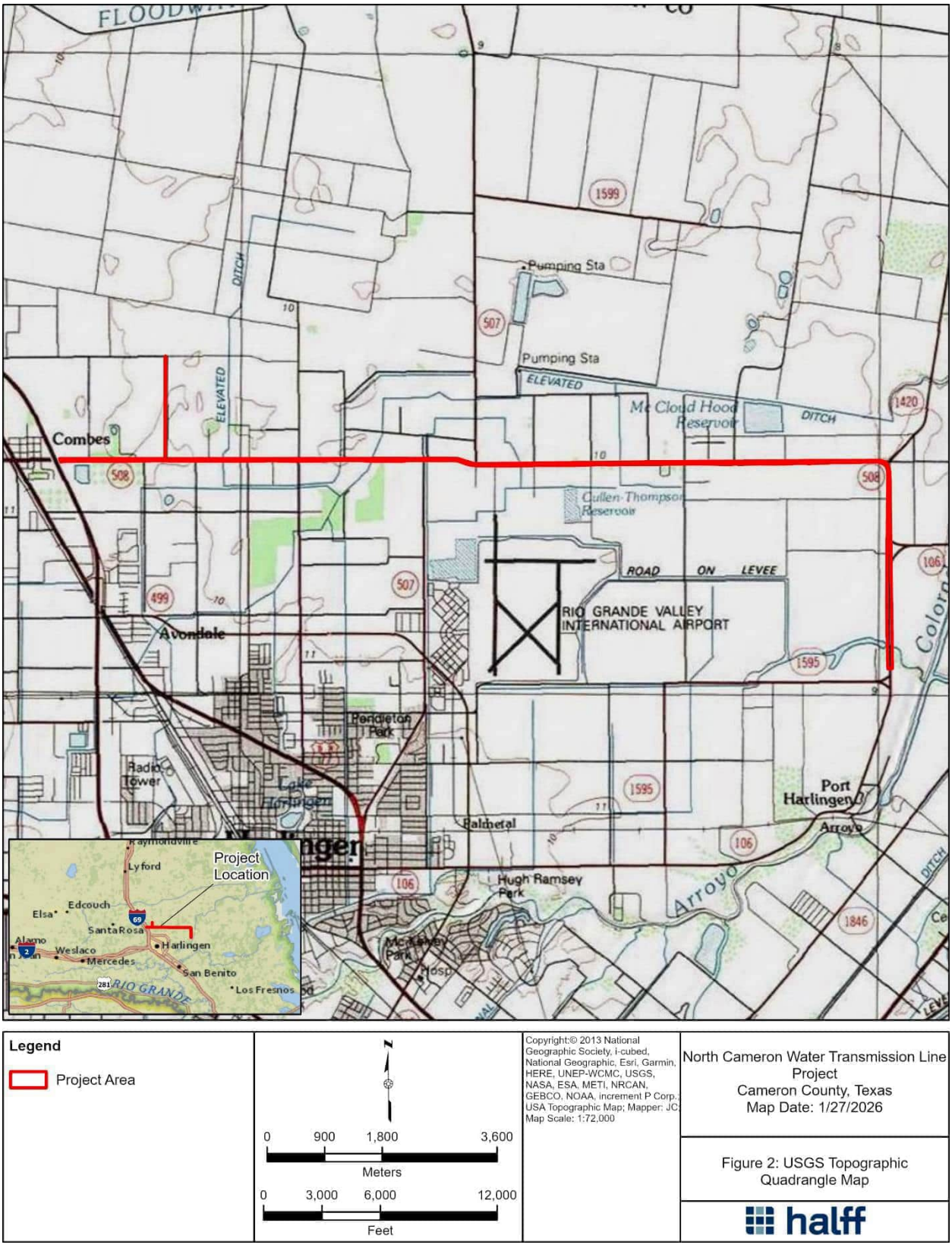


Figure 2: USGS Topographic Quadrangle Map.

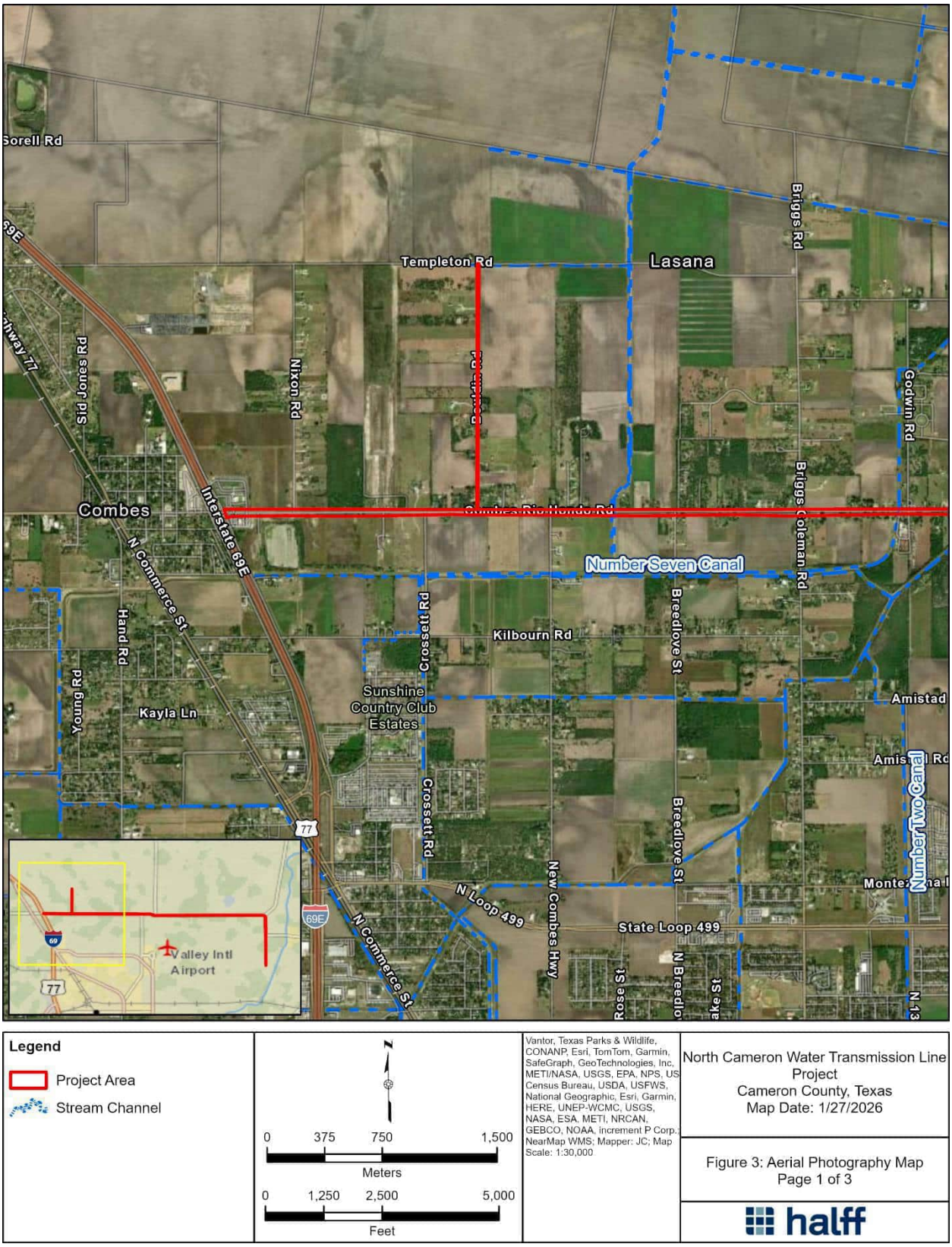


Figure 3. 1: Aerial Photography Map.

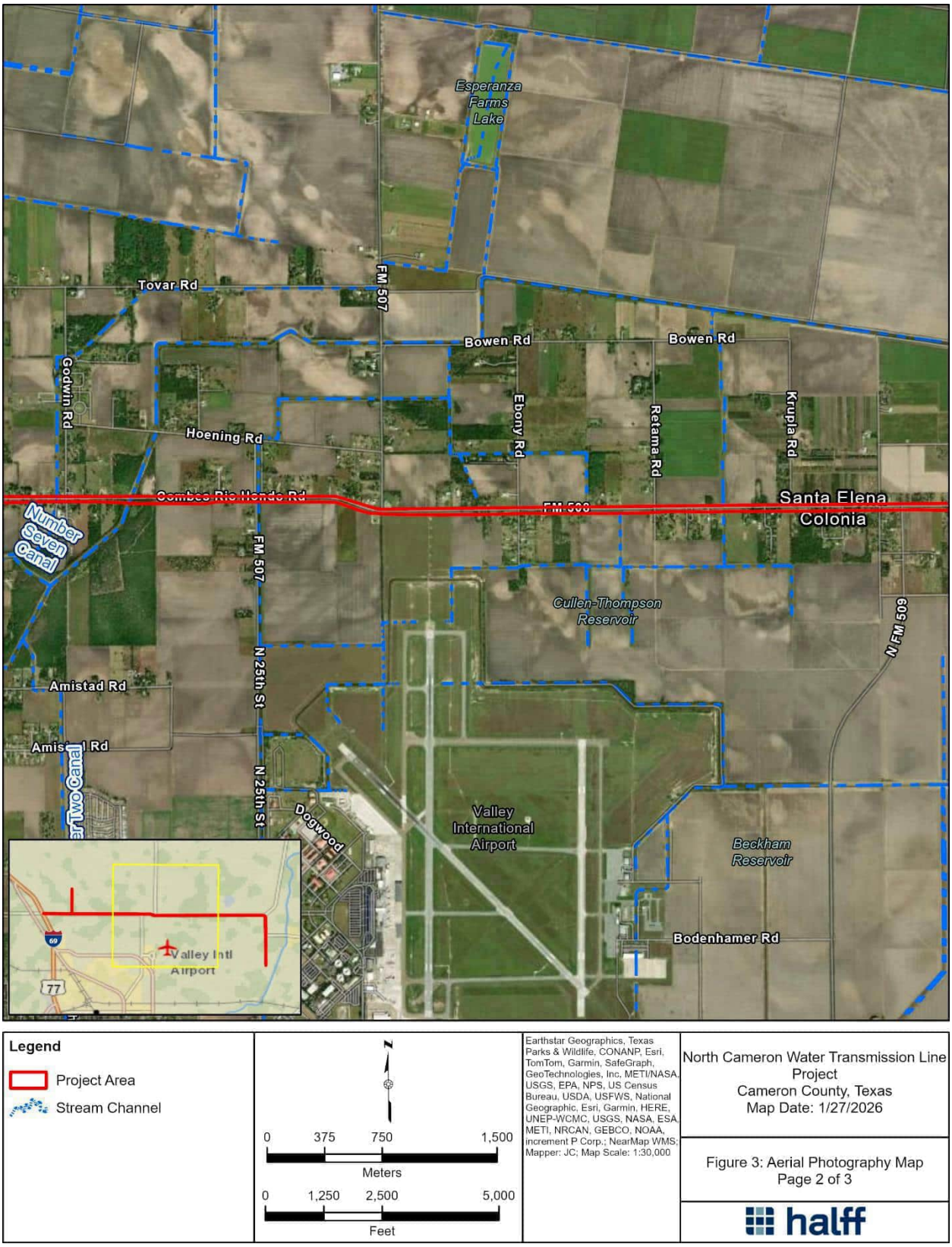


Figure 3. 2: Aerial Photography Map.

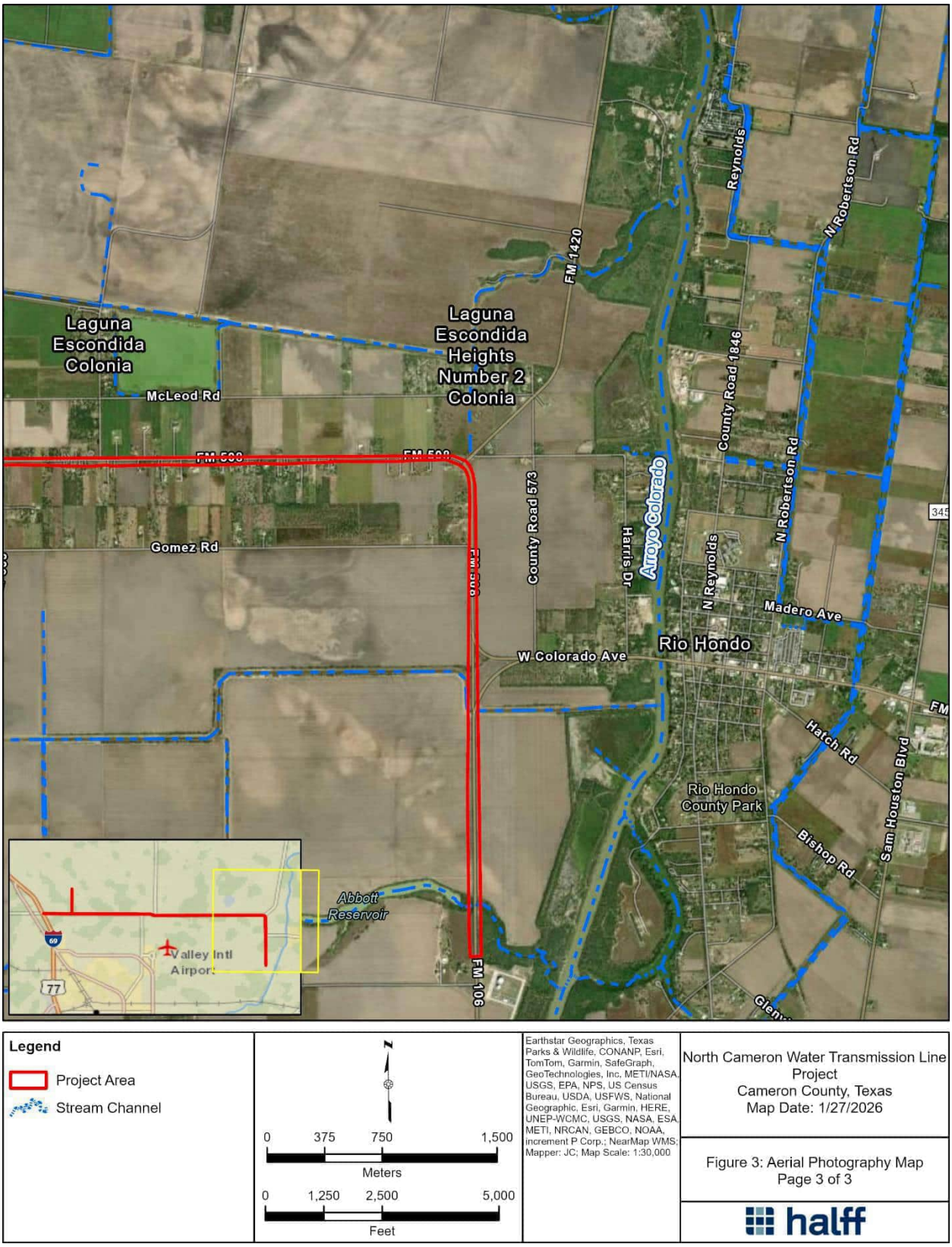


Figure 3. 3: Aerial Photography Map.

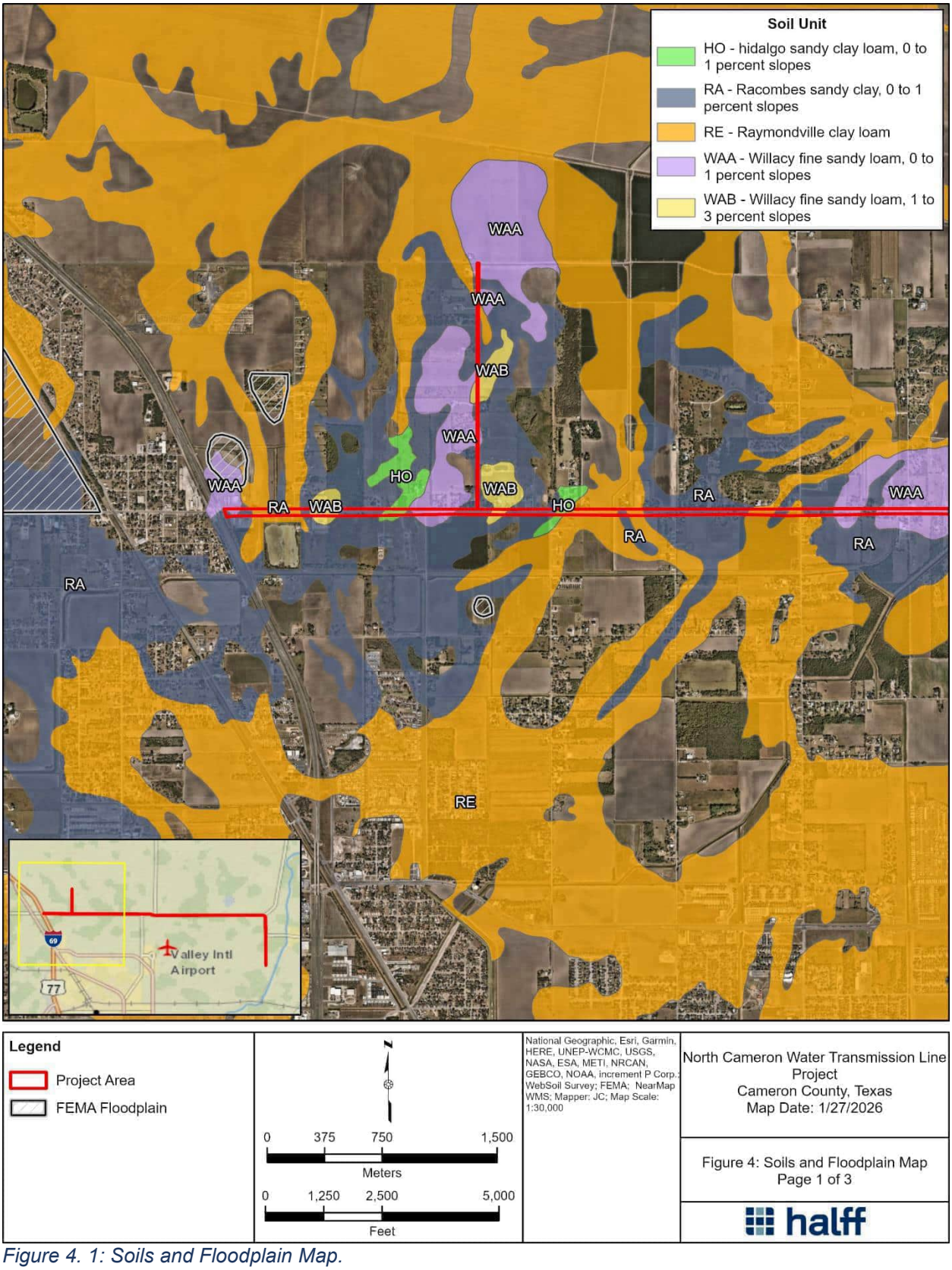


Figure 4. 1: Soils and Floodplain Map.

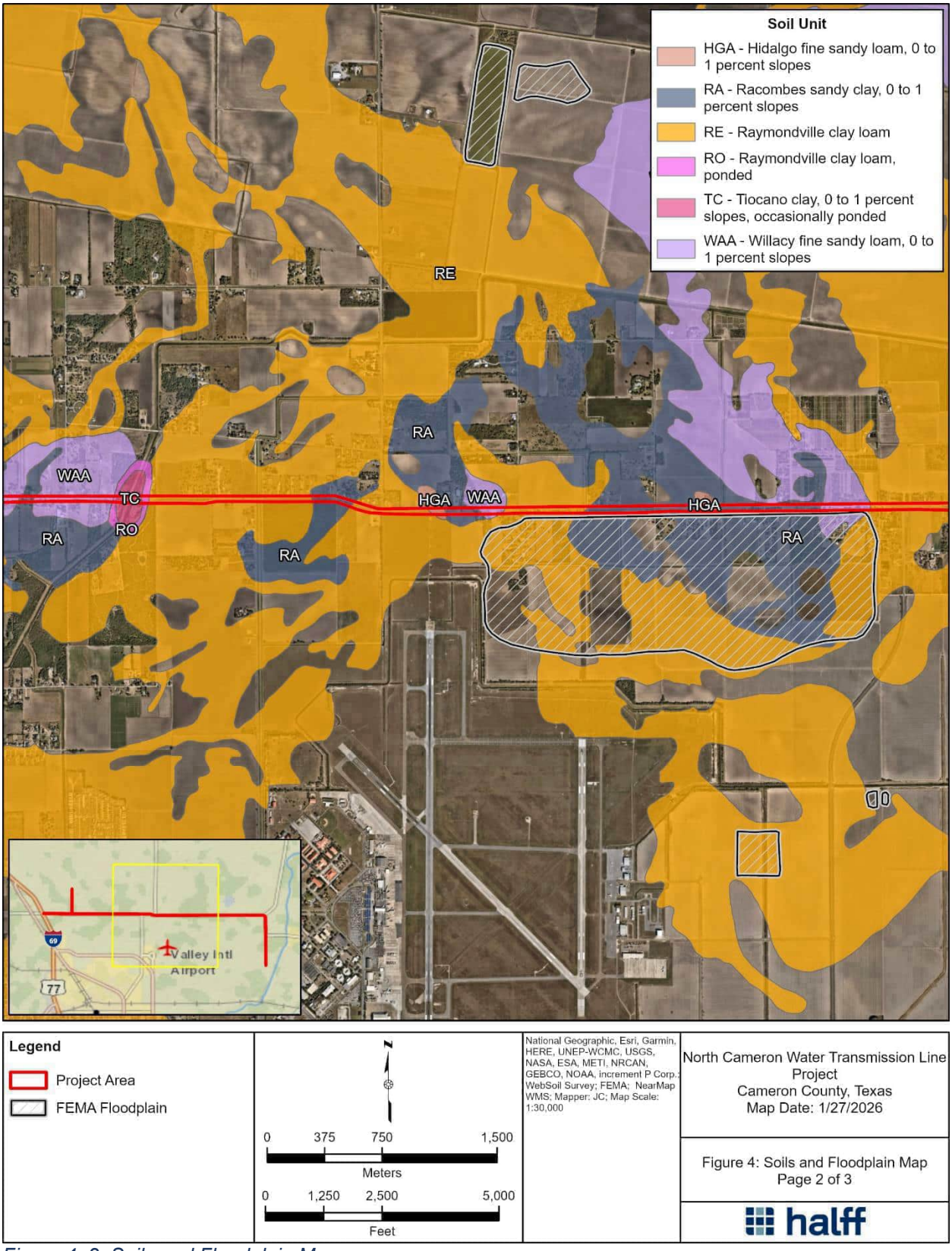


Figure 4. 2: Soils and Floodplain Map.

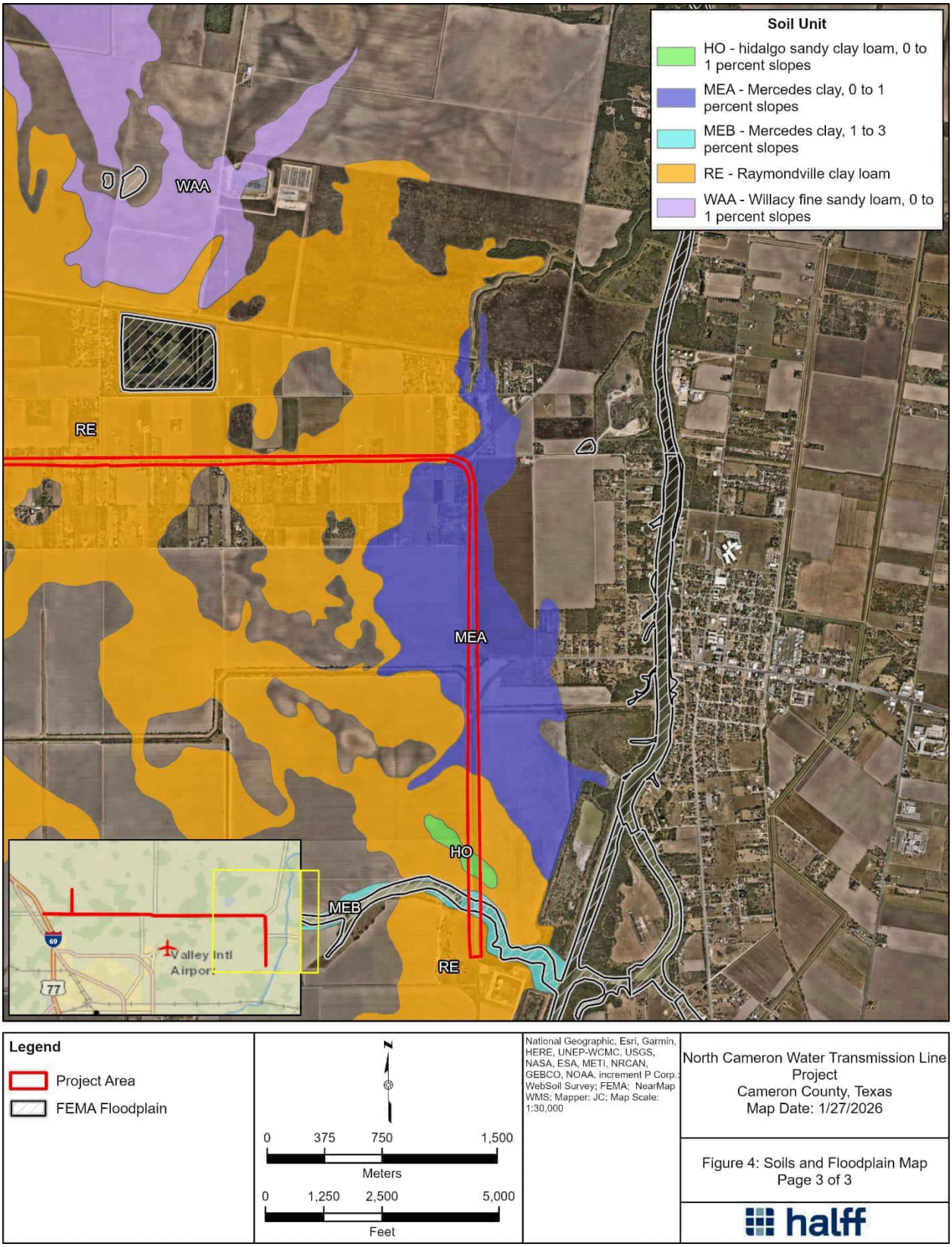


Figure 4. 3: Soils and Floodplain Map.

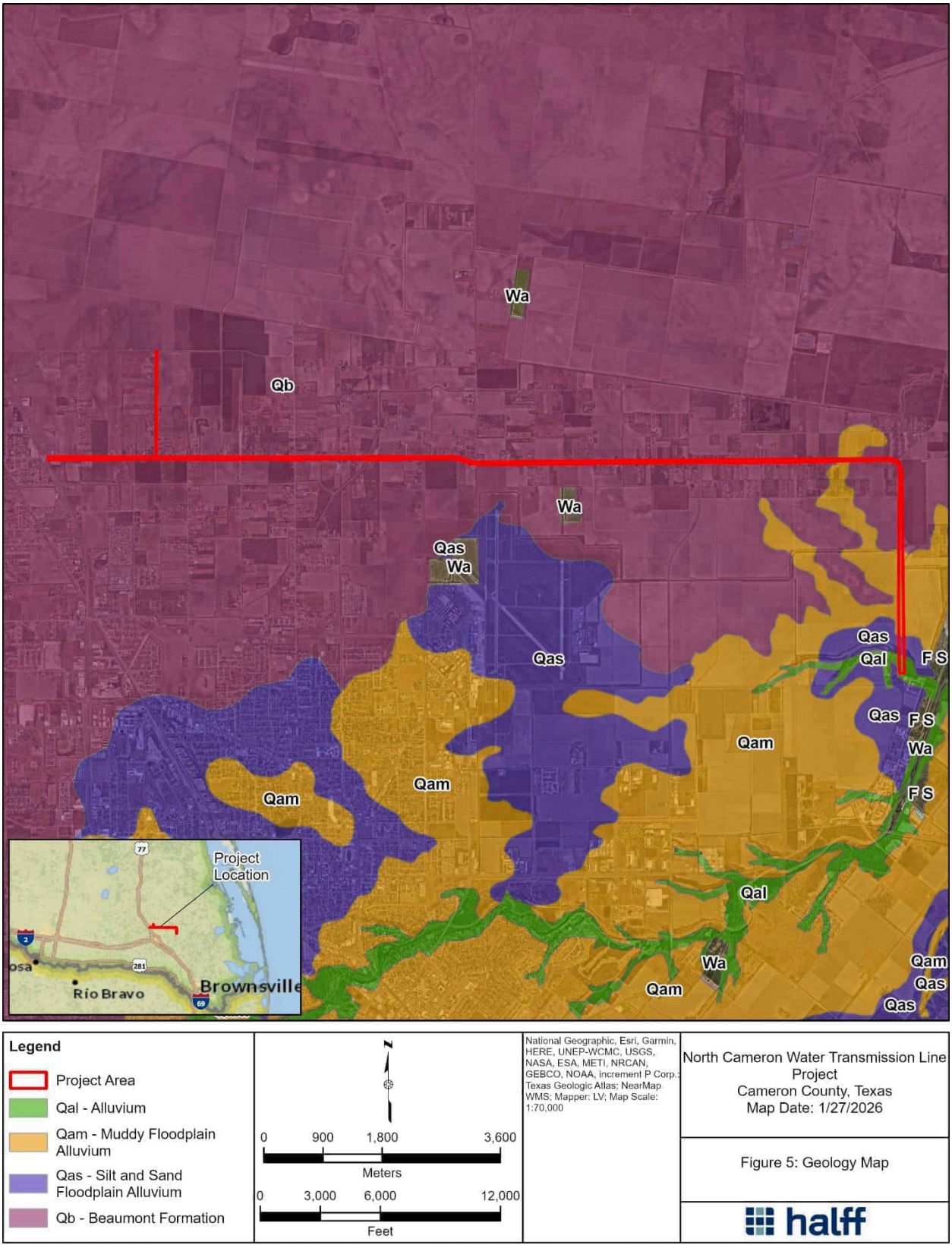


Figure 3: Geology Map.

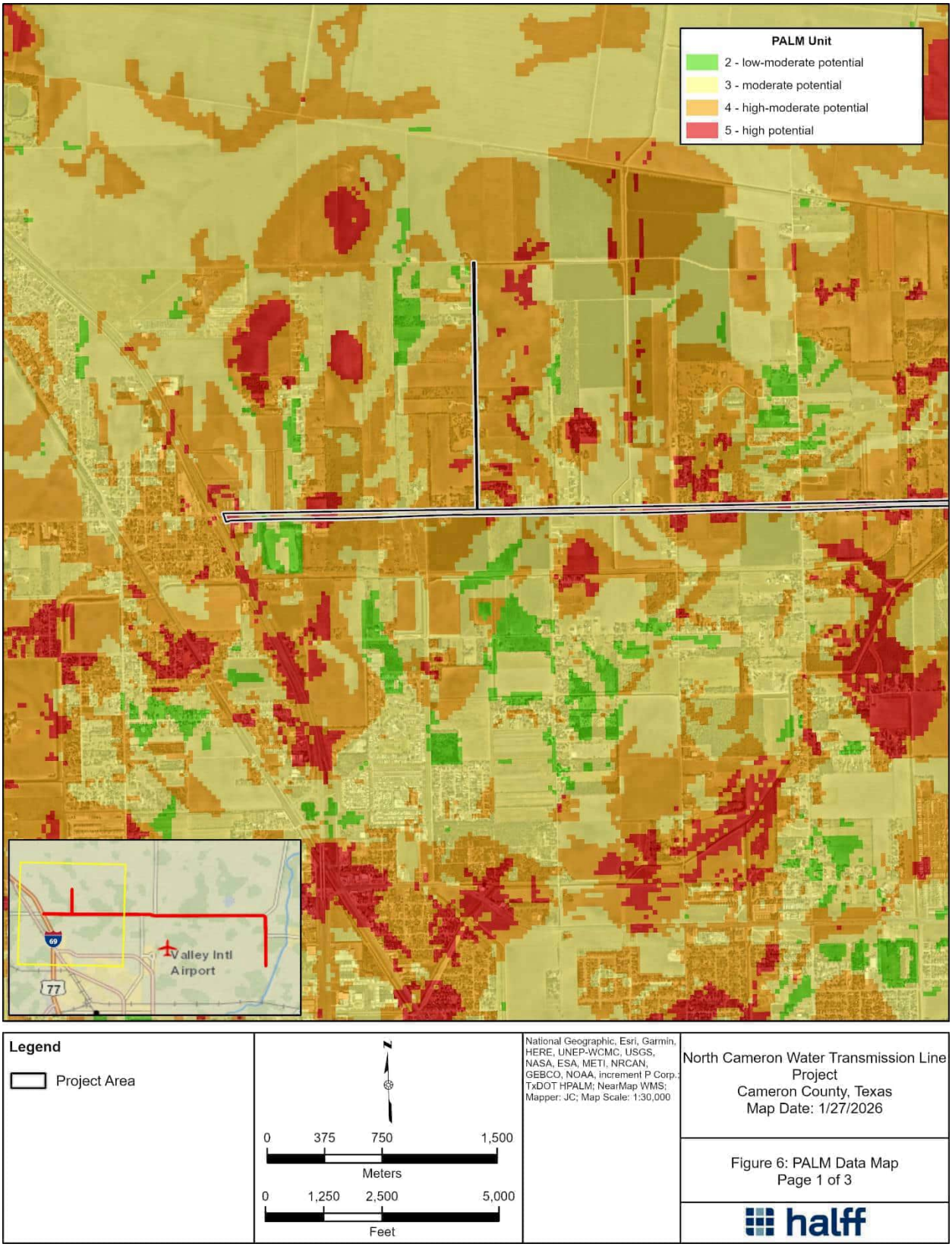


Figure 6. 1: PALM Data Map.

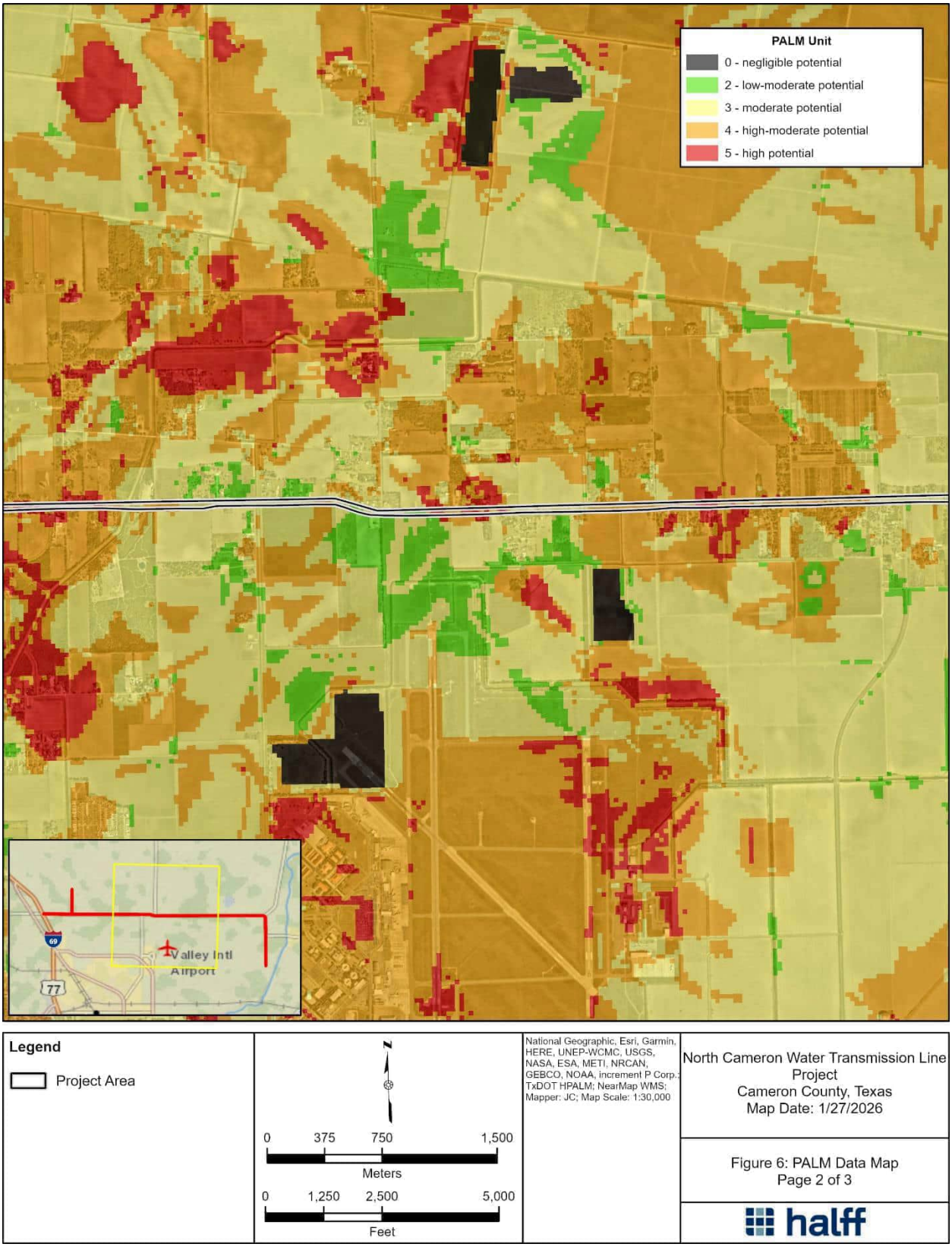


Figure 6. 2: PALM Data Map.

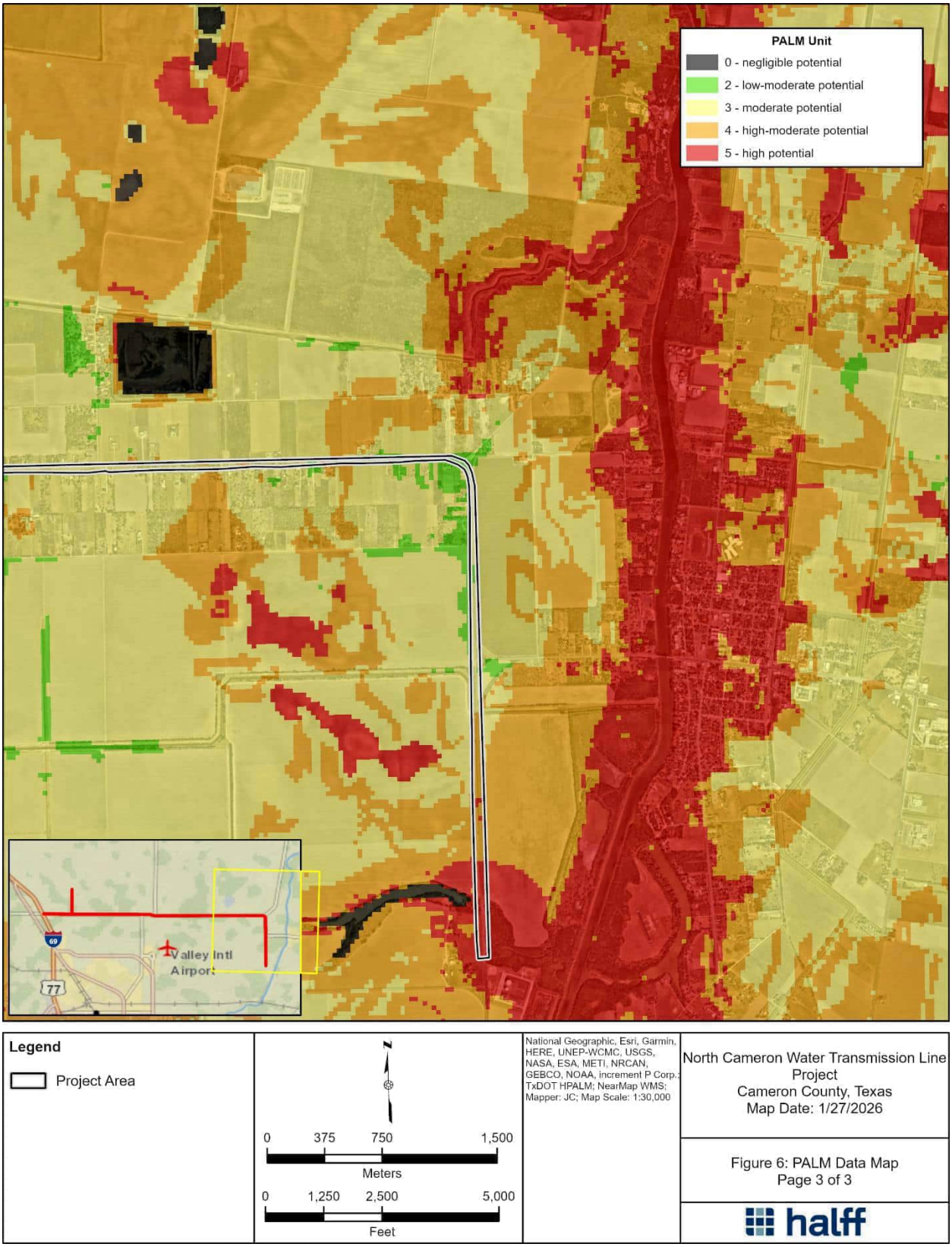


Figure 6. 3: PALM Data Map.

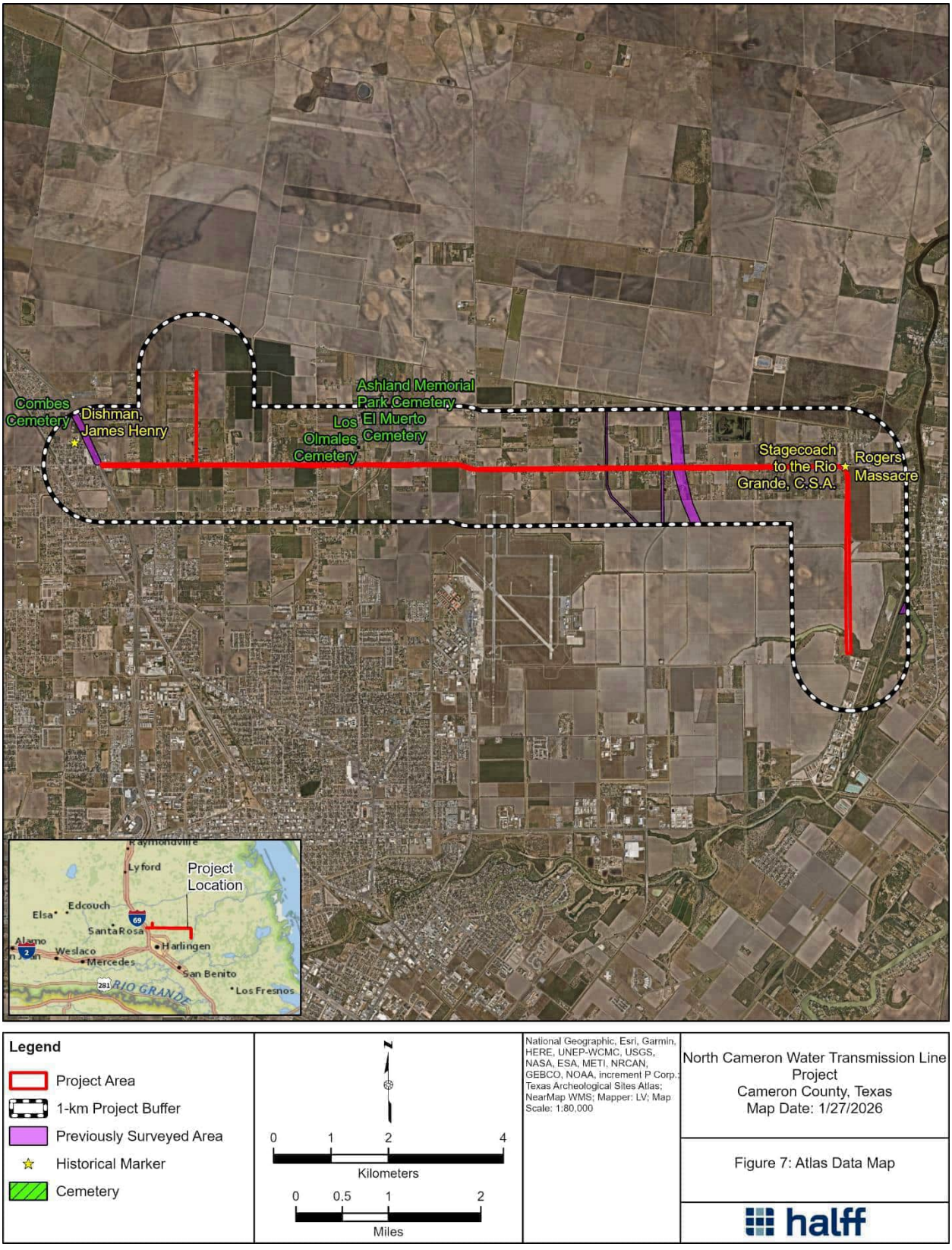


Figure 4: Atlas Data Map.

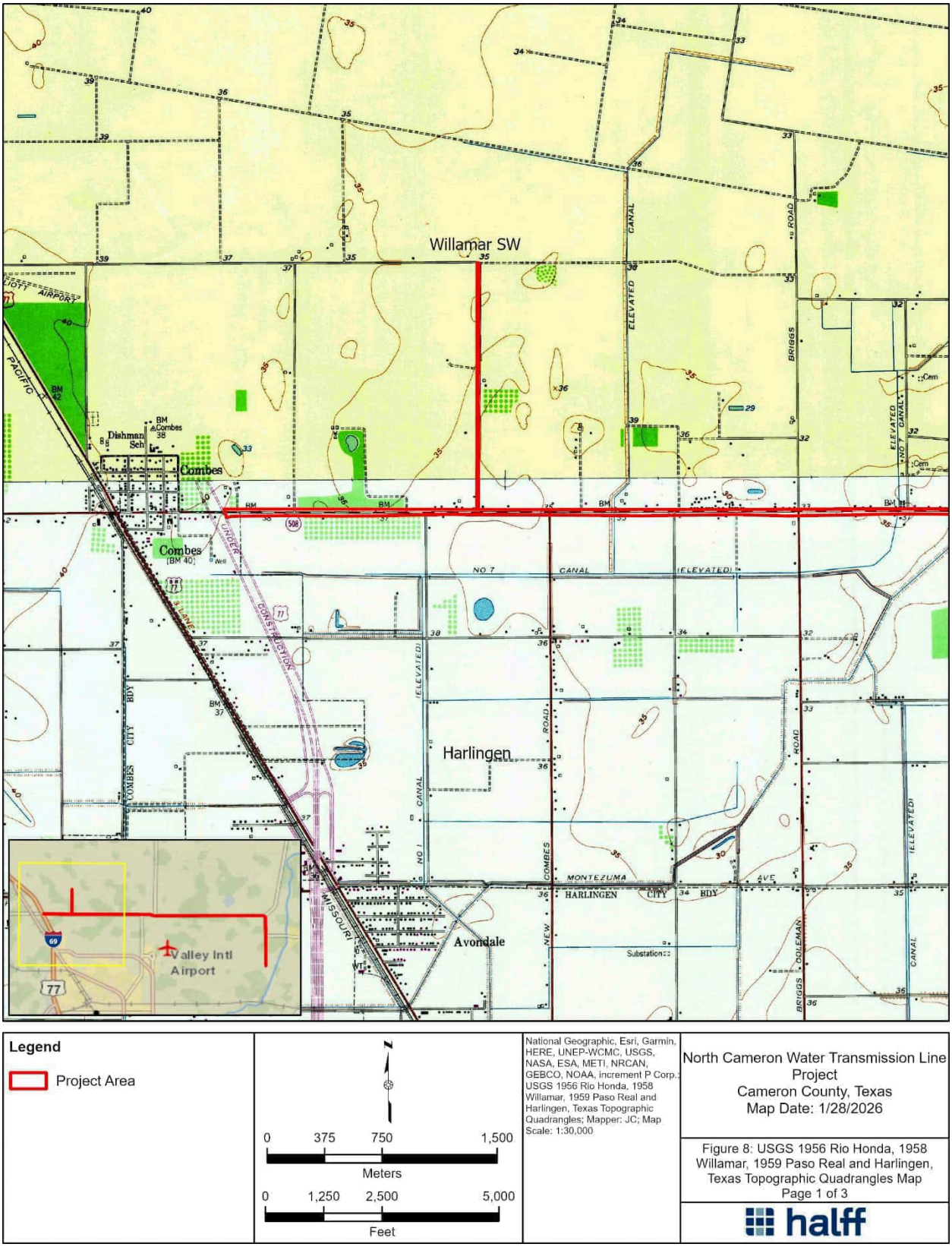
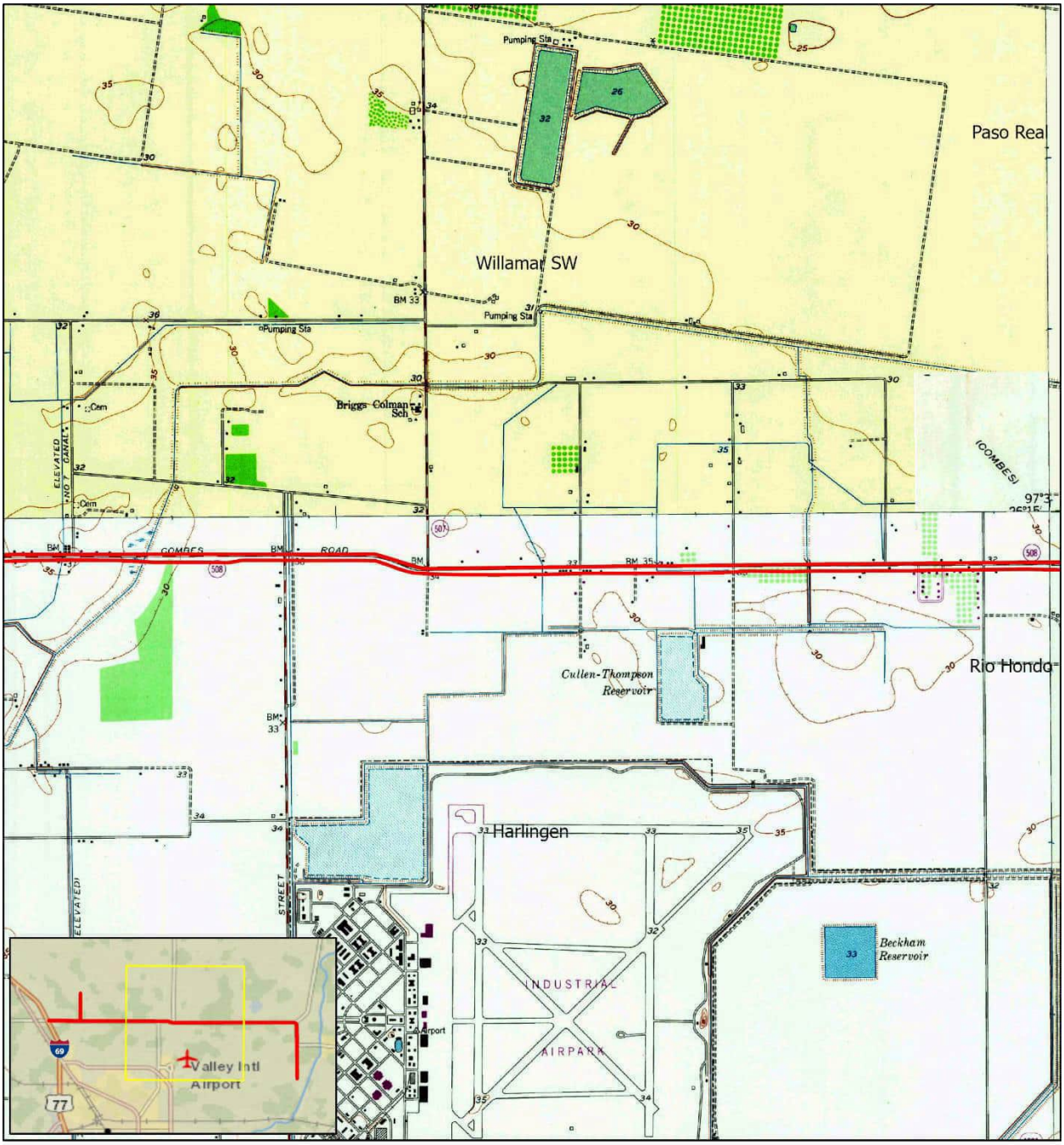


Figure 8. 1: USGS 1956 Rio Honda, 1958 Willamar, 1959 Paso Real and Harlingen, Texas Topographic Quadrangle Map.



Legend

Project Area

0 375 750 1,500
Meters

0 1,250 2,500 5,000
Feet

National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.; USGS 1956 Rio Honda, 1958 Willamar, 1959 Paso Real and Harlingen, Texas Topographic Quadrangles; Mapper: JC; Map Scale: 1:30,000

North Cameron Water Transmission Line Project
Cameron County, Texas
Map Date: 1/28/2026

Figure 8: USGS 1956 Rio Honda, 1958 Willamar, 1959 Paso Real and Harlingen, Texas Topographic Quadrangles Map
Page 2 of 3

halff

Figure 8. 2: USGS 1956 Rio Honda, 1958 Willamar, 1959 Paso Real and Harlingen, Texas Topographic Quadrangle Map.

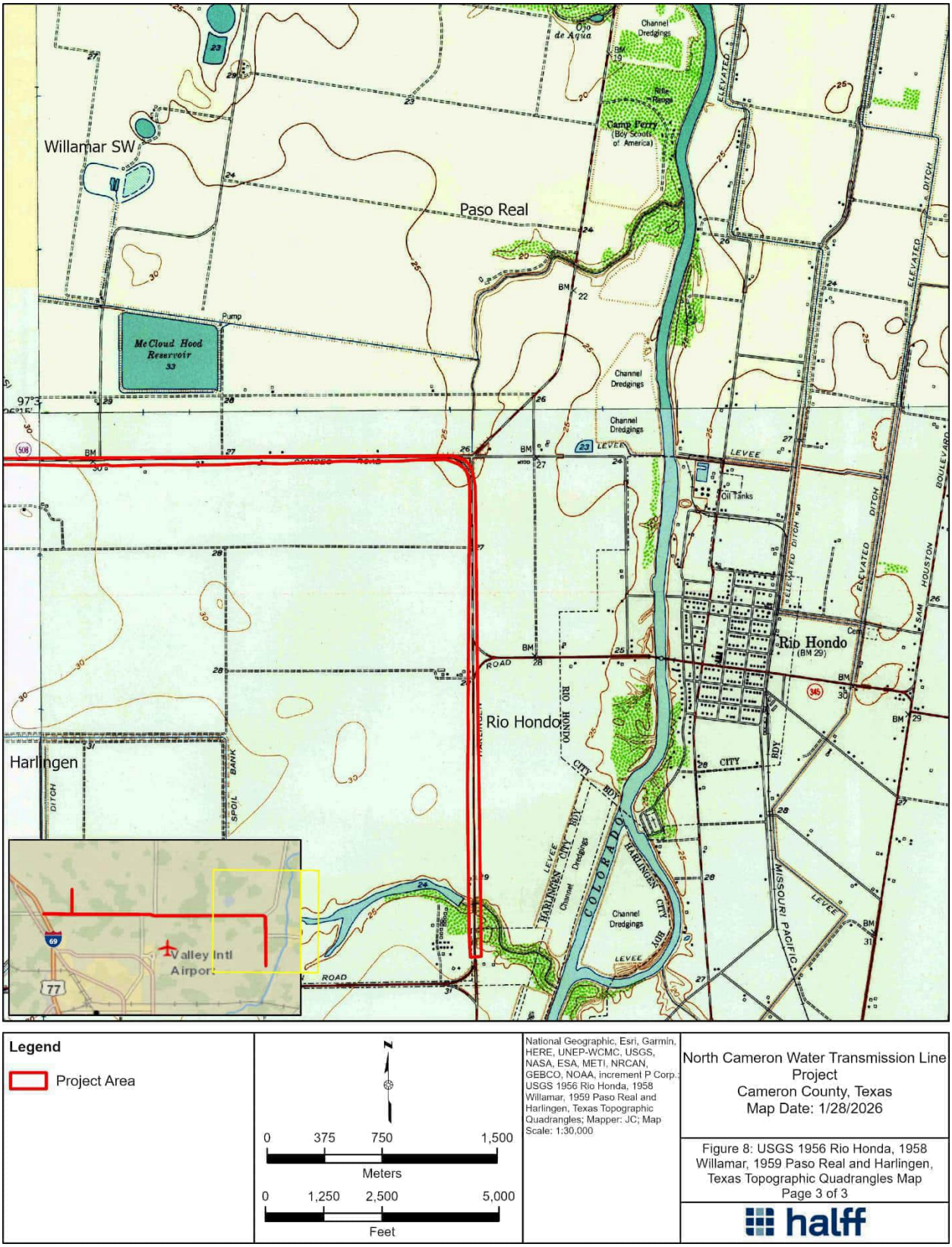


Figure 8. 3: USGS 1956 Rio Honda, 1958 Willamar, 1959 Paso Real and Harlingen, Texas Topographic Quadrangle Map.

Cultural Resources Background Review

North Cameron Reverse Osmosis Plant Expansion, Cameron County, Texas

TWDB Project No. 63009

Prepared for

East Rio Hondo Water Supply Corporation

Prepared by

Halff

Angela McComb, M.A., Project Archaeologist

AVO 57988.001

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Introduction

The East Rio Hondo Water Supply Corporation (ERHWSC) has contracted with Halff to conduct a cultural resources background review for the proposed North Cameron Potable Raw Water Lines and Well Sites Project in Cameron County, Texas (**Attachment A, Figure 1**). The proposed project consists of a circa (ca.) 68.4 acres. The project proposes to install potable water line along segments of Orphanage Road, Thompson Road, Diamond Drive, Ward Parkway Drive, High Canal Road, and adjacent to the Adams Gardens Main Canal. Additionally, ten (10) wells will be installed throughout the PA at eight sites. The PA is roughly bound by Orphanage Road to the north, Pomelo Road to the west, the Adams Gardens Main Canal to the east, and the drainage ditch along High Canal Road to the south (**Attachment A, Figure 2**).

Because the project is being funded by Texas Water Development Board (TWDB), a political sub-entity of the State of Texas, it falls under purview of the Texas Antiquities Code (TAC) (Title 9, Chapter 191 of the Texas Natural Resources Code), which requires that the Texas Historical Commission (THC) review actions that have the potential to impact archeological and above ground historic resources within the public domain. The project is utilizing funds provided by the Environmental Protection Agency via the Drinking Water State Revolving Fund, which is considered a federal action requiring compliance with Section 106 of the National Historic Preservation Act (Section 106).

The TAC Project Area (PA) and APE comprise the full 68.4-acre project limits. Proposed typical construction depths will be 4 ft. deep (0.9m). The PA and APE are collectively referenced as PA in the remainder of this document unless denoted otherwise.

This document summarizes the results of the background research performed for the proposed project and provides a recommendation regarding potential effects to archeological and historic properties.

Environmental Setting

Regionally, the project is mapped within the Nueces-Rio Grande River drainage basin (TWDB 2026) and the Western Gulf Coastal Plain ecoregion of Texas (TPWD 2026). Locally the project is situated in an area bisected by several canals, running north-south (**Attachment A, Figure 3**). One canal runs roughly-east-west, parallel to High Canal Road in the southern portion of the PA. Although largely open agricultural use, residential neighborhoods are present along the western edge of the PA; particularly, the settlement of La Kinina Colonia is located to the west of Well Site 6. A rail line cuts through the south, and the larger settlement of Santa Rosa is located to the west of the PA, while the land east of the PA is dedicated to agriculture. According to the USGS 2022 La Feria, Texas and the USGS 2022 Santa Rosa, Texas Topographic Quadrangle Maps, the majority of the PA is comprised of a mix of existing roadways and appurtenances, drainage ditches, residential plots and agricultural land. The local topography is relatively flat with elevations ranging from 46 to 50 feet above mean sea level. The nearest waterways are a series of north-south-running irrigation canals and drainage ditches, scattered throughout the PA; these ditches are mapped as ephemeral streams on the topographic quadrangle map. Recent aerial photography depicts the PA as primarily agricultural land with some residential development to the west of the PA; a rail line and State Highway 107 (Combes Santa Rosa Road) cut through the south and several roadways are present. Land use in the surrounding area is devoted to residential or agricultural use.

Soils and Geology

A review of the Natural Resource Conservation Service Web Soil Survey (NRCS 2026) revealed that the PA is composed of seven soil units, which are described below in **Table 1**. A map showing the soil unit

distribution is provided in **Attachment A, Figure 4**. According to the Geologic Atlas of Texas (USGS 2026a), the underlying geology is composed of Beaumont Formation, a Pleistocene-era deposit formed in clayey sediments, which is mapped in **Attachment A, Figure 5**. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map data, the PA is mapped within a FEMA-designated special flood hazard area (see **Attachment A, Figure 4**)

Table 1: Soil Map Unit Descriptions and Frequencies (NRCS 2026).

Map Unit Symbol	Map Unit Name	General Characteristics	Potential for Buried Holocene-age Deposits if Undisturbed	Acres / %
HGA	Hidalgo fine sandy loam, 0 to 1 percent slopes	Landform: terraces Surface texture: fine sandy loam Parent material: calcareous loamy alluvium	Yes	1.2 acres / 1.7%
HO	Hidalgo sandy clay loam, 0 to 1 percent slopes	Landform: terraces Surface texture: sandy clay loam Parent material: calcareous loamy alluvium	Yes	17.8 acres / 26.1%
OR	Orelia clay loam, clayey subsoil variant, occasionally ponded	Landform: flats Surface texture: clay loam Parent material: loamy fluviomarine deposits of early pleistocene age	Yes	0.9 acre / 1.3%
RA	Racombes sandy clay loam, 0 to 1 percent slopes	Landform: terraces Surface texture: sandy clay loam Parent material: calcareous loamy alluvium	Yes	15.1 acres / 22%
RE	Raymondville clay loam	Landform: delta plains Surface texture: clay loam Parent material: calcareous clayey alluvium	Yes	27.7 acres / 40.5%
WAA	Willacy fine sandy loam, 0 to 1 percent slopes	Landform: delta plains Surface texture: fine sandy loam Parent material: Loamy alluvium	Yes	5.3 acres / 7.8%
WAB	Willacy fine sandy loam, 1 to 3 percent slopes	Landform: delta plains Surface texture: fine sandy loam Parent material: loamy alluvium	Yes	0.4 acre / 0.6%
Totals				68.4 acre(s) / 100%

Potential Archeological Liability Map Data

The Texas Department of Transportation (TxDOT) Potential Archeological Liability Map (PALM) for the Pharr District was reviewed to evaluate the potential for shallow and deeply buried archeological deposits

with integrity. A breakdown of the PALM data for the PA is below in **Table 2** and a map showing the Map Unit distribution is provided in **Attachment A, Figure 6.**

Table 2: PALM Unit Descriptions and Frequencies.

Map Unit	Map Unit Description	Acres / %
2	Low-moderate potential	4 acres / 5.8%
3	Moderate potential	36.3 acres / 53%
4	High-moderate potential	22.2 acres / 32.5%
5	High potential	5.9 acres / 8.7%
Total		68.4 acres / 100%

Cultural Setting

Archeological Sites Atlas Review

A review of the Texas Archeological Sites Atlas maintained by the THC and Texas Archeological Research Laboratory (Atlas) was conducted on February 2, 2026. The Atlas review revealed that the PA contains no previously recorded cultural resources sites. Two resources are documented within a 1-km (0.6-mile) radius of the PA, consisting of two cemeteries (**Table** 3) In addition, the Atlas review revealed that the PA has not been previously surveyed and four surveys have been conducted in a 1-km (0.6-mile) radius (**Table 4)**. A map showing the cultural resources sites and surveys documented in the Atlas search area is provided in **Attachment A, Figure 7**.

Table 3: Atlas Data (THC 2026).

Resource ID	Resource Type	Atlas Record Summary	NRHP / SAL Eligibility	Distance from Project (km/m)	Year(s) Recorded
CF-C081	Cemetery	El Pie Cemetery, aka Orphanage Road Cemetery.	Undetermined	729 m	N/A
CF-C072	Cemetery	Hinojosa Cemetery, 28 graves dating to c. 1884	Undetermined	954 m	N/A

Table 4: Previous Investigations (THC 2026).

Permit Number	Investigating Firm	Sponsor Agency	Distance from Project (km/m)	Year(s) Surveyed
3381	Blanton and Associates	Lower Colorado River Authority		2004
6643	Atkins	USACE – Galveston District		2014
0	Horizon	Federal Energy Regulatory Commission		2004

Permit Number	Investigating Firm	Sponsor Agency	Distance from Project (km/m)	Year(s) Surveyed
3810	SWCA	Texas Department of Transportation		2007

Historical Map Review

A summary of the historic topographic quadrangle maps (USGS 2026b) and aerial photographs (NETR 2026) reviewed for the project are summarized below in **Table 5**.

Table 5: Historic Map Review Summary.

Map name and year	Historic structures/features mapped in the PA	General land use depicted
USGS 1958 Santa Rosa,Texas Topographic Quadrangle (**Attachment A, Figure 8**)	<list structures and/or features in the PA/APE and/or indirect APE>	[Rural, Agricultural, Commercial, Urban]
USGS 1959 La Feria, Texas Topographic Quadrangle		
Aerial photography from 1934, 1953, 1960, 1962, 1970	<list structures and/or features in the PA/APE and/or indirect APE>	[Rural, Agricultural, Commercial, Urban]

The major canals and rail lines are present by 1929, with some roadways and trails marked. The PA is relatively unchanged into the modern era.

The historical map review indicates a high potential for historic resources in the [PA/APE] and a low potential for historic structures in the indirect APE. In addition, the low degree of land development depicted in the PA over time points to a high potential for buried and intact archeological deposits.

Summary and Recommendation

The local soils are clay loams with some fine sand or sandy loams with potential for buried, intact Holocene age deposits. The local geology is entirely Beaumont Formation, a Pleistocene-era formation with low potential to hold cultural materials. Local land use information suggests that the soil and geologic units mapped in the PA have not been significantly disturbed, indicating a high potential for buried and intact archeological deposits. The PALM data indicates a high level of geoarchaeological potential in the northern portion of the PA, particularly between Well 4A and Well 5, and near Well 8. The PA has been relatively lightly developed for agricultural or residential use.

Although the potential for buried deposits is moderate to low over roughly two-thirds of the PA, the remainder is of high-moderate to high potential for archaeological deposits, particularly within the northern extent of the PA. The local soil, geologic and PALM data support a recommendation for an archeological survey of the PA.

The Atlas review revealed that the PA has not been sufficiently investigated during prior cultural resources surveys. Four surveys were conducted in proximity to the PA but do not sufficiently cover the area under investigation. The absence of previously recorded cultural resources within and adjacent to the PA supports a recommendation for an intensive archeological survey. The historical map review revealed a low potential

for direct effects to above ground historic structures and a potential for visual effects to such resources in the indirect APE. As such, a historic resources survey is not recommended.

Halff respectfully requests [THC / USACE] to comment on the above recommendation for further TAC and/or Section 106 consultation requirements for the proposed project.

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2026 Historic Aerials. Electronic document, https://www.historicaerials.com/viewer, accessed February 2, 2026.

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2026 Web Soil Survey. Electronic document, https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm, accessed February 2, 2026.

Texas Historical Commission (THC)
2026 Texas Archeological Sites Atlas. Electronic document, https://atlas.thc.state.tx.us/ accessed February 2, 2026.

Texas Parks and Wildlife Department (TPWD)
2026 Texas Ecoregions. Electronic document, https://tpwd.texas.gov/education/hunter-education/online-course/wildlife-conservation/texas-ecoregions, accessed February 2, 2026.

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2026 River Basins. Electronic document, https://www.twdb.texas.gov/surfacewater/rivers/river_basins/index.asp, accessed February 2, 2026.

U.S. Geological Survey (USGS)
2026a Geologic Atlas of Texas Viewer. Electronic document, https://txpub.usgs.gov/txgeology/, accessed February 2, 2026.
2026b TopoView. Electronic document, https://ngmdb.usgs.gov/topoview/viewer/#4/40.01/-100.06, accessed February 2, 2026.

Attachment A: Map Figures

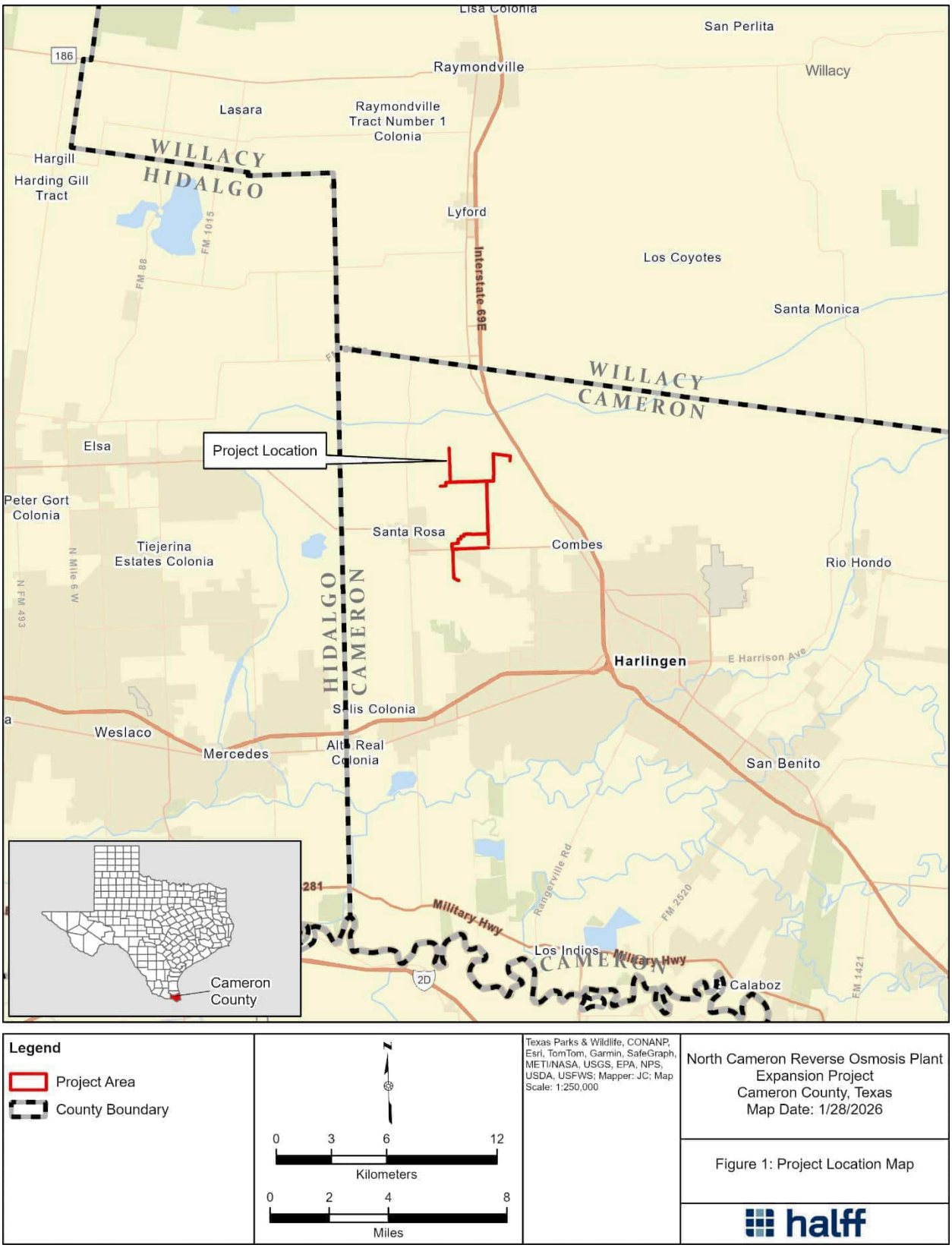

Figure 1: Project Location Map.

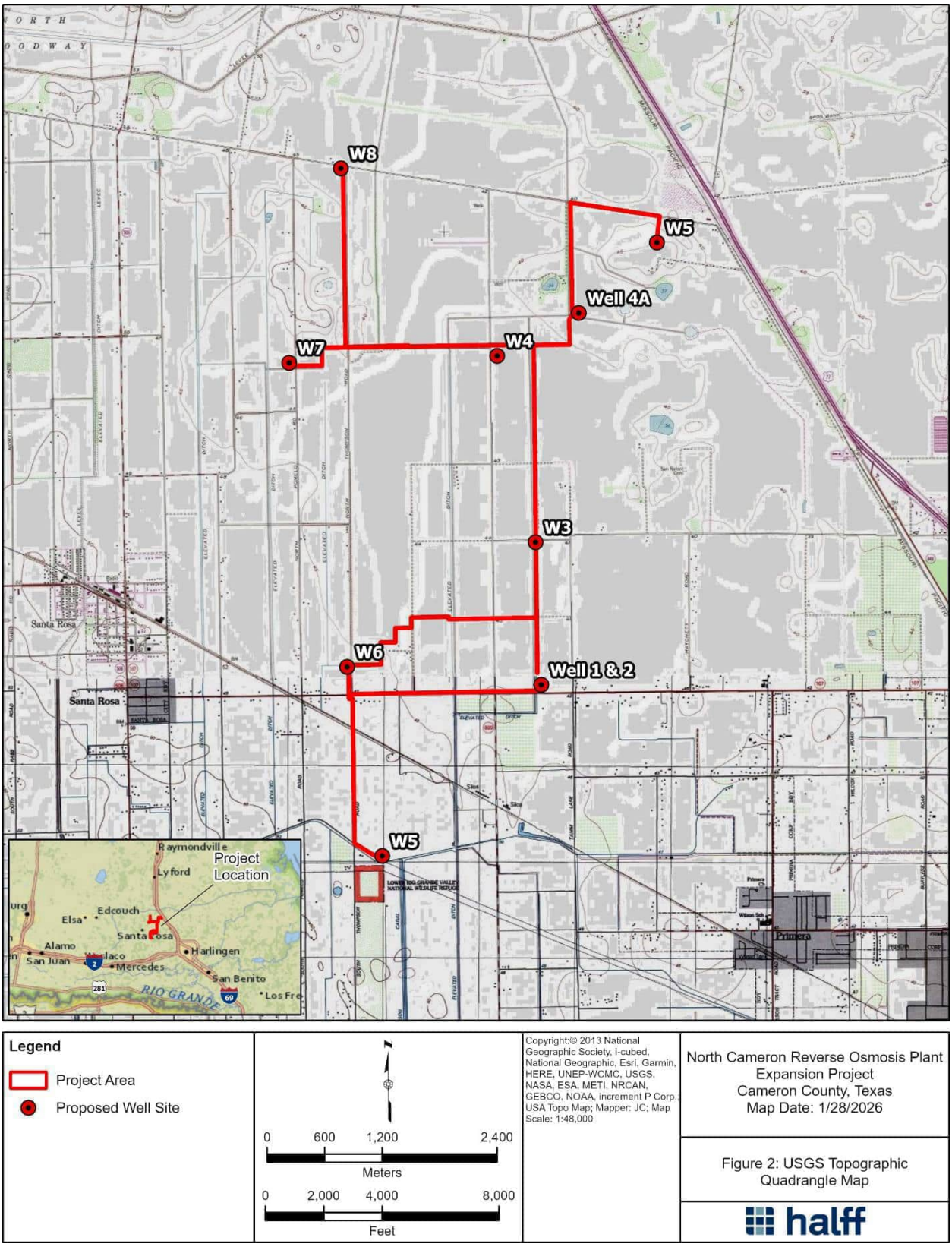

Figure 2: USGS Topographic Quadrangle Map.

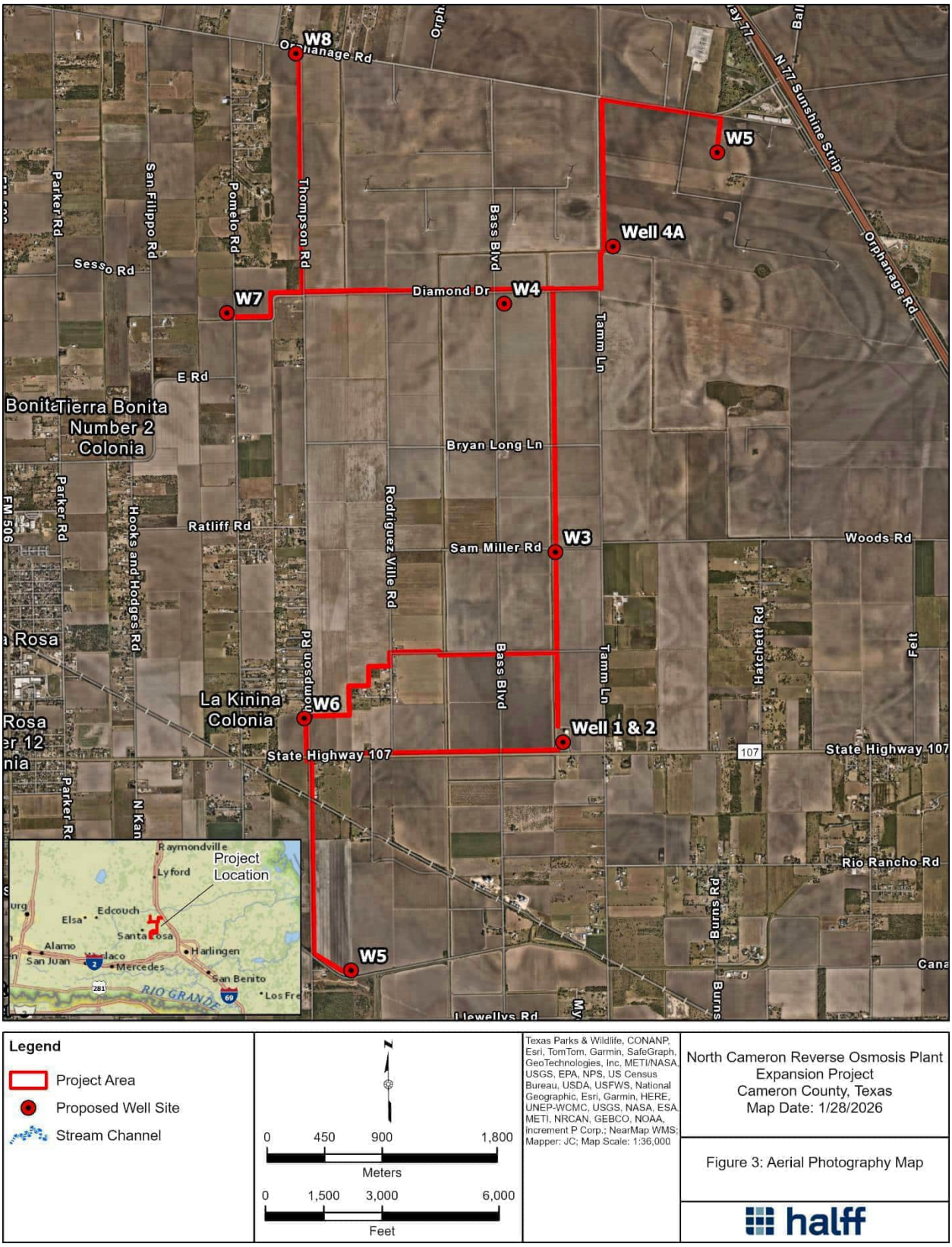

Figure 3: Aerial Photography Map.

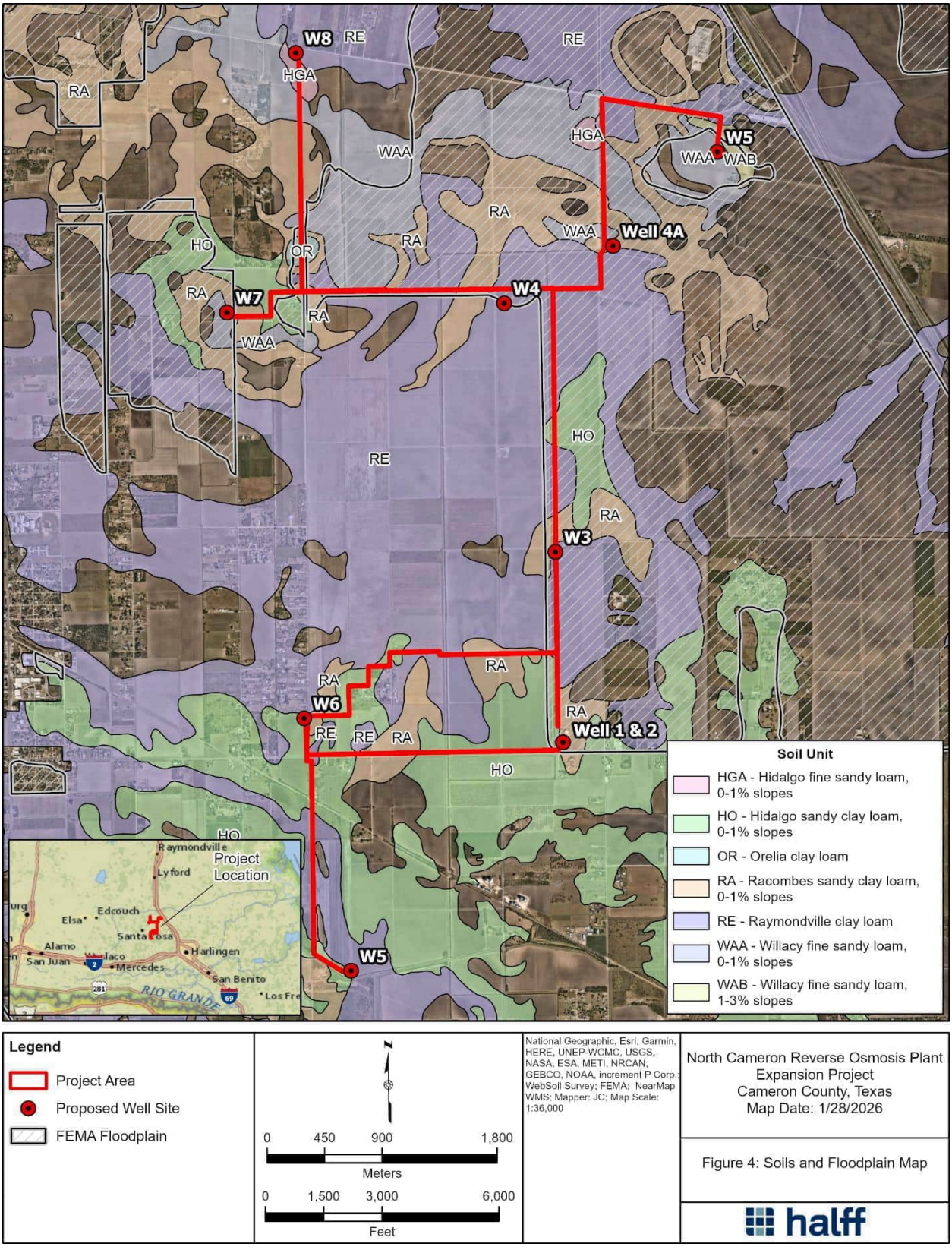

Figure 4: Soils Map.

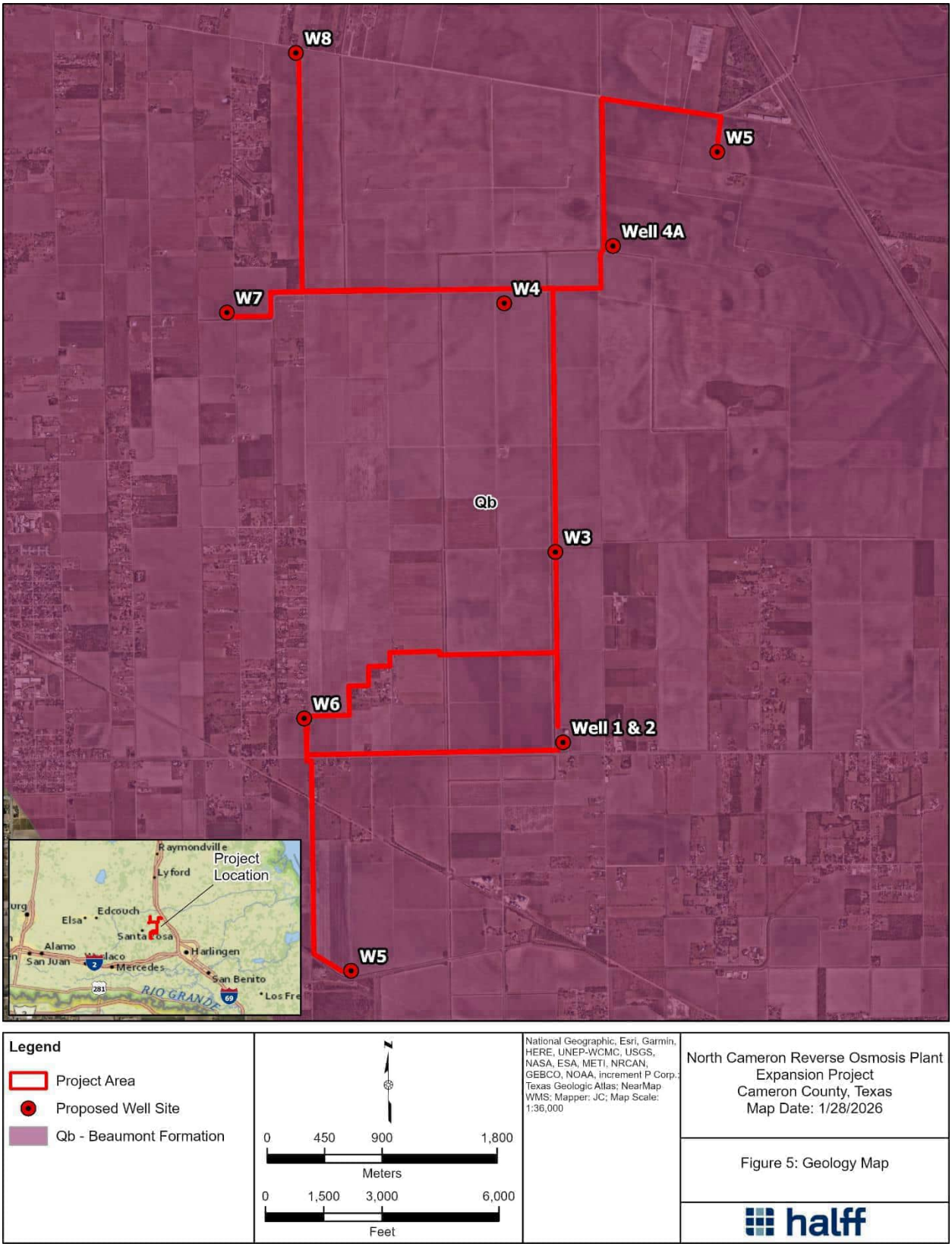

Figure 5: Geology Map.

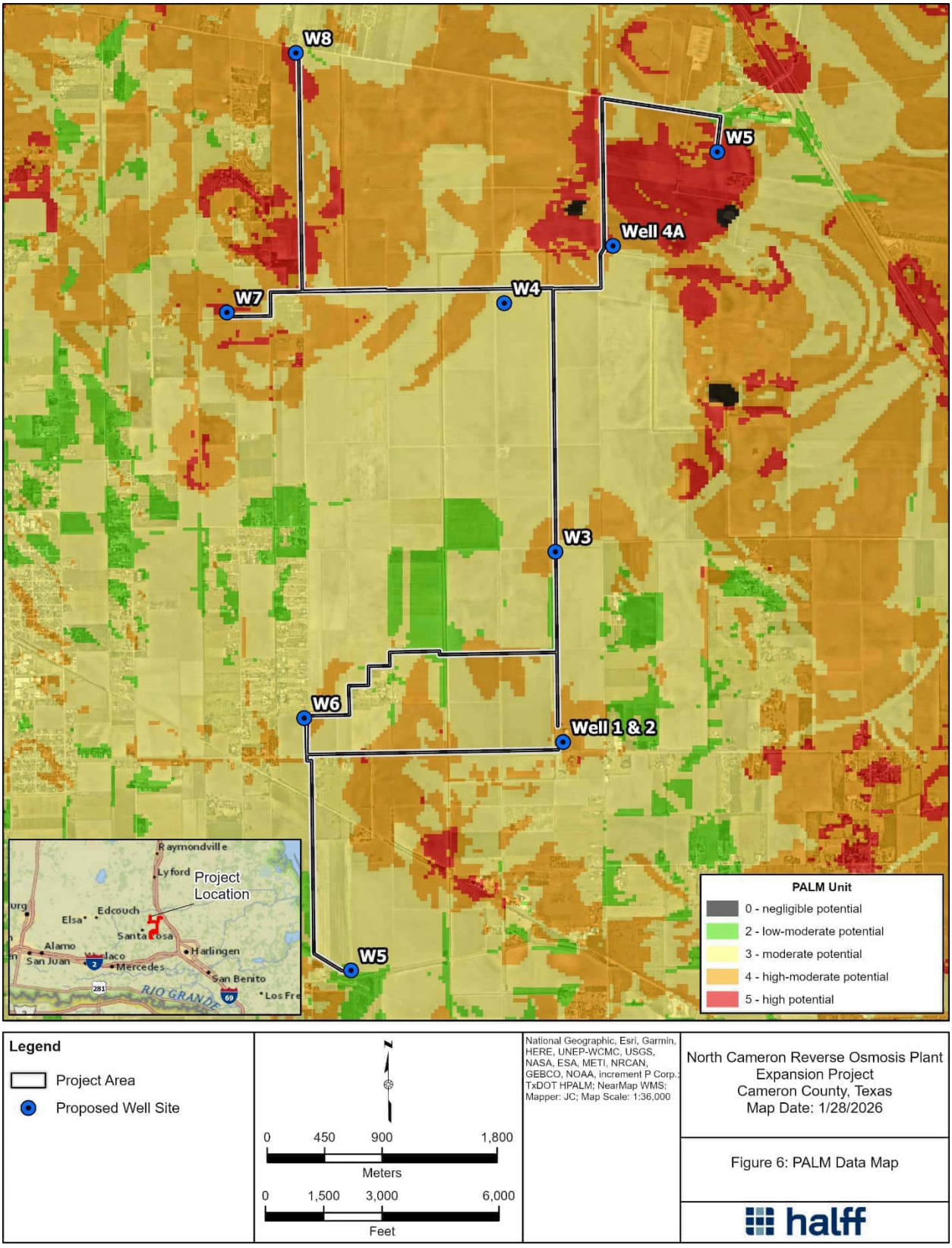

Figure 6: PALM Data Map.

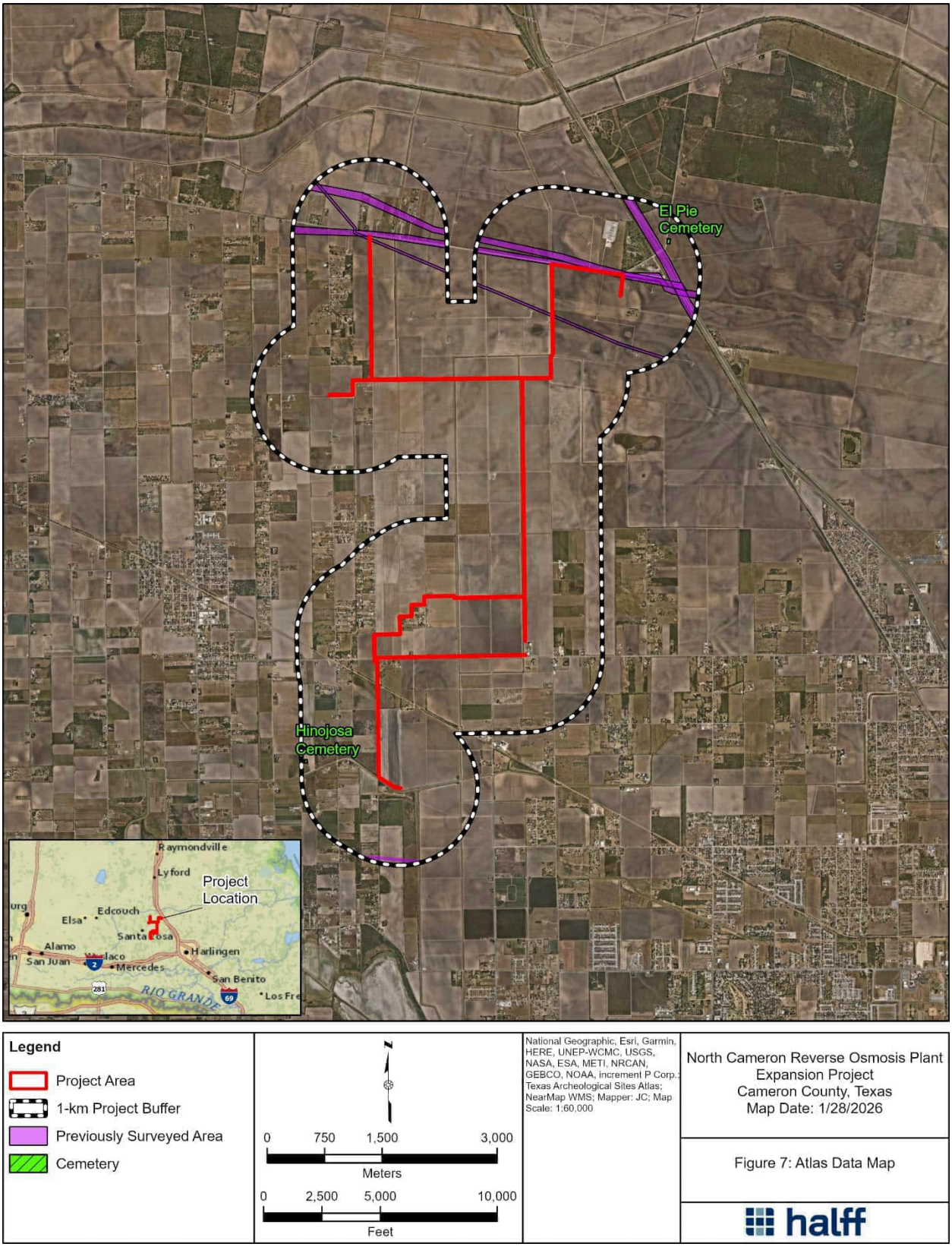

Figure 7: Atlas Data Map.

Figure 8: USGS (Year Quadrangle), Texas Topographic Quadrangle Map.