



U.S. DEPARTMENT OF AGRICULTURE

Natural Resource Conservation Service EAXX-005-53-48-1295190583 August 2026

Appendix F: Environmental Assessment for the Supplemental Watershed Plan No. 3 Rehabilitation of Olmitos and Garcia Watershed Dam No. 5



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PROPOSAL INFORMATION

General Information

Proposal Name: Supplemental Watershed Plan No. 3 – for the Rehabilitation of Olmitos and Garcia Watershed Dam No. 5

Proposal Tracking #: EAXX-005-53-48-1295190583

Proposal Initiation Date: 12/11/2025

Proponent Name: Starr County Soil and Water Conservation District, Commissioners Court of Starr County, Starr County, Texas

Signing Authority: TX State Resource Conservationist

Responsible Official: Kristy Oates

Unit: Texas State Office (Engineering)

General Location of Proposal: Flood Retarding Structure No. 5 is situated at the southern end of Starr County, north of Highway 83 and east of Loma Blanco Lane in Rio Grande City.

Purpose and Need: Why do we need to act?

The problem being addressed is that Olmitos and Garcias Creek Floodwater Retarding Structure (FRS) No. 5 does not comply with current dam safety and performance criteria. The FRS was originally designed as a low hazard structure, but the presence of numerous residential and commercial structures, several residential streets, US-83, FM 1430, Old Military Road, and various minor crossings—totaling 22 roads located downstream of the dam—has resulted in the reclassification of the structure as high-hazard.

Proposed Action: What are we proposing to do?

The preferred alternative is alternative #2 which is decommissioning. The purpose of the proposed decommissioning of Olmitos and Garcias Creek FRS No. 5 is to maintain a level of flood control benefits and remove the risk of dam failure. Decommissioning of the dam will require removing the ability of the dam to impound water and reconnecting, restoring, and stabilizing the upstream reservoir area/sediment pool and downstream floodplain functions. Partial removal of the embankment would consist of excavating a breach in the dam of sufficient size to safely pass the 100-year, 24-hour flood event with no influence on the water surface profile, and the principal spillway structures would be removed. Since the 100-year inundation area would be enlarged from 1,895 acres to 3,122 acres due to the decommissioning of the dam, all downstream land and property would be acquired to maintain appropriate flood protection.

Alternatives to the Proposed Action: Are there other ways to meet the purpose and need?

Alternative No. 1 – No Federal Action/Future Without Federal Investment

Under this alternative, no additional federal funds would be expended on the project. Alternative #1 is a true no-action alternative in which no rehabilitation measures take place. The dam would remain in its current configuration with regular maintenance continuing. The current level of flood protection would remain, though the overtopping risk associated with the dam not passing the state and federal requirements would also remain. Repairs would need to be made to maintain the existing spillways and upstream and downstream slopes on an as-needed basis, on an as-needed basis, such as if significant erosion occurred and there is excessive tree and cacti vegetation in the embankment. The estimated annual probability of failure is equal to 0.055%.

Alternative No. 3 – Dam Rehabilitation

This alternative consists of replacing the existing principal spillway with a standard intake riser with a 4 by 4.25-foot conduit with an impact basin at the outlet end. The existing principal spillway needs to be replaced in order to meet requirements of the Principal Spillway Hydrograph (PSH) and facilitate the discharge of the design storm event. The auxiliary spillway will be replaced with a new 700-foot-wide roller compacted concrete (RCC) auxiliary spillway on the main embankment with a crest elevation of 199.5 feet. The top of the dam will be raised an average of 9.7 feet and the downstream slope flattened from 2.5:1 to 4:1 using fill material from the surrounding area. The dam will be lengthened by 1400 feet on the left abutment and 50 feet on the right abutment. To reduce the impacts of storm events with frequencies lower than the 100-year storm, a concrete-lined trapezoidal channel has been proposed in the downstream area to convey increased flows from the principal spillway. The channel is 27 feet wide at its base, 6 feet deep, and 2.3 miles long, with 2:1 side slopes. All disturbed areas in or adjacent to the existing embankment, abutment areas, auxiliary spillway and sediment pool will be re-vegetated using adapted and/or native species, and construction activities will require that a SWP3 be in effect.

Alternative No. 4 – Dam Rehabilitation

This alternative consists of replacing the existing principal spillway with a standard intake riser with a 4 by 4.25-foot conduit with an impact basin at the outlet end. The existing principal spillway needs to be replaced in order to meet requirements of the Principal Spillway Hydrograph (PSH) and facilitate the discharge of the design storm event. The auxiliary spillway will be replaced with a new 1000-foot-wide roller compacted concrete (RCC) auxiliary spillway on the main embankment with a crest elevation of 199.5 feet. The top of the dam will be raised an average of 4.9 feet and the downstream slope flattened from 2.5:1 to 4:1 using fill material from the surrounding area. The dam will be lengthened by 600 feet on the left abutment and 25 feet on the right abutment. To reduce the impacts of storm events with frequencies lower than the 100-year storm, a concrete-lined trapezoidal channel has been proposed in the downstream area to convey increased flows from the principal spillway. The channel is

27 feet wide at its base, 6 feet deep, and 2.3 miles long, with 2:1 side slopes. All disturbed areas in or adjacent to the existing embankment, abutment areas, auxiliary spillway and sediment pool will be re-vegetated using adapted and/or native species, and construction activities will require that a SWP3 be in effect.

Alternative No. 5 – Dam Rehabilitation

This alternative consists of replacing the existing principal spillway with a standard intake riser with a 4 by 4.25-foot conduit with an impact basin at the outlet end. The existing principal spillway needs to be replaced in order to meet requirements of the Principal Spillway Hydrograph (PSH) and facilitate the discharge of the design storm event. The existing auxiliary spillway will be maintained with the same width and crest elevation. In addition, a new 540-foot wide labyrinth auxiliary spillway with 15 cycles with a crest elevation of 199.5 feet will be constructed on the main embankment. The downstream slope will be flattened from 2.5:1 to 4:1 using fill material from the surrounding area. To reduce the impacts of storm events with frequencies lower than the 100-year storm, a concrete-lined trapezoidal channel has been proposed in the downstream area to convey increased flows from the principal spillway. The channel is 27 feet wide at its base, 6 feet deep, and 2.3 miles long, with 2:1 side slopes. All disturbed areas in or adjacent to the existing embankment, abutment areas, auxiliary spillway and sediment pool will be re-vegetated using adapted and/or native species, and construction activities will require that a SWP3 be in effect.

Alternatives Considered but Not Analyzed in Detail

A wide range of non-structural and structural measures were considered singly and in combination during the planning process. Considered alternatives included floodplain management, and liability insurance. These alternatives were eliminated either due to exorbitant costs or because they did not meet the purpose and/or need of the project.

In addition, a range of rehabilitation alternatives were considered in order to develop the final list of alternatives. Many combinations of principal spillway, auxiliary spillway, and dam raise modifications were considered and are shown in Table M and Table N.

Table A: Effects of Breach of FRS No. 5 to Downstream Properties and Crossings

Alternative ID	Principal Spillway	Auxiliary Spillway		Dam Raise (feet)
	Conduit Dim. (feet)	Total Width (feet)	Crest Elev. (feet)	
1A	4x4.25	500	198.6	12.1
1B		750		7.2
1C		1,500		0.6
2A	5x4.25	500	198.1	12.0
2B		1,000		4.1
2C		1,500		0.5
3A	6x4.25	500	197.7	11.7
3B		1,000		3.7

3C		1,500		0.2
4A	7x4.25	500	197.4	11.3
4B		1,000		3.4
4C		1,500		0

Table B: Structural Alternatives Development Matrix for Olmitos and Garcias Creek FRS No. 5

Alternative ID	Earthen Auxiliary		Structural Spillway		Dam Raise (feet)
	Total Width (feet)	Crest Elev. (feet)	Total Width (feet)	Crest Elev. (feet)	
1A	500	198.6	n/a		12.4
1B	1000				4.5
1C	1500				0.9
1D	n/a		700	199.5	9.7
1E			1000		4.9
1F			1500		0.9
1G	500	199.5	150	199.5	9.8
1H*	n/a		500 (39)	199.5	9.4
1I*			500 (16)		3.9
1J*			600 (16)		0.0
1K*	500	204.9	540 (15)	199.5	0.0

* Structural spillway is a labyrinth. Footprint width and number of cycles (in parenthesis) noted.

INTERDISCIPLINARY PROPOSAL SCREENING

Given the nature of the proposal, the responsible official is requesting documentation to demonstrate compliance with the following legal and regulatory considerations in addition to NEPA:

- ☒ Endangered Species Act (ESA)
- ☒ National Historic Preservation Act (NHPA)
- ☒ Tribal Consultation (EO 13175)
- ☐ Clean Air Act (CAA)
- ☒ Clean Water Act (CWA)
- ☒ Pertinent Executive Orders

Special Management Areas:

- ☐ Coastal Zone Management Areas
- ☐ Conservation Easements
- ☐ Coral Reefs
- ☐ Inventoried Roadless
- ☐ Marine Sanctuaries

- ☐ National Recreation Areas
- ☐ National Scenic & Historic Trails
- ☐ Research or Experimental Areas
- ☐ Wild & Scenic River Corridors
- ☐ Wilderness
- ☐ Other: Soils (including Prime Farmland), Water, Floodplain

Management, Air Quality, Vegetation (Riparian Areas, Special Status Plant Species, Invasive Plant Species), Wildlife (Terrestrial Wildlife Communities), State Protected Threatened and Endangered Species

Scope of Analysis

The following describes how the agency drew a reasonable and manageable line relating to its consideration of environmental effects from the proposed action (and action alternatives, if any) that extend outside the geographical territory of the proposal or might materialize later in time.

The FRS No. 5 project area includes approximately 61,349 acres (95.85 square miles) in Starr County, Texas. The site is located approximately 2.3 miles northeast of Garciasville and is situated about 1.7 miles northeast of the intersection of Loma Brancha Road and U.S Highway 83. Olmitos FRS No. 5 is situated on Garcia's Creek, which flows south into the Rio Grande. The approximate latitude and longitude coordinates of FRS No. 5 are 26.353°N and 98.686°W. The watershed is located within the Rio Grande River Basin as delineated by the United States Geological Survey, hydrologic unit number 13090001 (NRCS, 2011).

Agencies and Persons Consulted

Given the nature of the proposal, the responsible official consulted the following agencies, organizations, tribes, and persons during development and analysis of the proposal:

Agencies/Organizations/Businesses/Landowners

Federal:

- U.S. Army Corps of Engineers
- U.S. Department of the Interior

State:

- Texas Commission on Environmental Quality
- Texas Parks and Wildlife Department
- Texas Historical Commission

Native American Tribes

- Apache Tribe of Oklahoma
- Comanche Nation of Oklahoma
- Tonkawa Tribe of Indians of Oklahoma
- Wichita and Affiliated Tribes of Oklahoma

Individuals

- Landowners potentially impacted by construction or breach

Table 3: Applicable proposal record documentation to support agencies/persons consulted

Documentation Type	File Name (if applicable/needed)
Copies of project correspondence and public comments	Appendix A

Substantive Issues Considered for Analysis

Item/Concern	Relevant to the Proposed Action		Rationale
	Yes	No	
SOILS			
Stream Bank Erosion	X		Project is located on Garcias Creek. Stream channel reconstruction and removal of the embankment may temporarily affect stream bank stability during construction.
Sedimentation	X		Temporary increases in erosion and sedimentation may occur during construction; long-term sediment transport would be restored to pre-impoundment conditions.
Prime Farmland	X		Decommissioning would remove the availability of 357 acres of downstream prime farmlands that are currently afforded flood protection by the dam due to the acquisition of all land and property within the new 100-year floodplain.
WATER			
Surface Water Quality	X		Construction activities may temporarily increase turbidity and sedimentation. Long-term water quality may improve through reconnection of stream channel and elimination of impoundment.
Surface Water Quantity	X		Decommissioning would eliminate the impoundment (loss of open-water reservoir) and reconnect the stream channel.
Floodplain Management	X		Decommissioning would restore natural floodplain function of Garcias Creek and increase the extent of the 100-year floodplain.
Streams, Lakes, and Wetlands	X		Garcias Creek and the impoundment (reservoir) are present at the project site.
AIR			
Air Quality	X		Project may cause a temporary increase in particulate matter and other emissions. Air quality will return to pre-construction levels after project completion.

Item/Concern	Relevant to the Proposed Action		Rationale
	Yes	No	
ANIMALS			
Fish and Wildlife Resources	X		Construction would temporarily disturb wildlife habitat. Decommissioning would convert reservoir habitat to ephemeral stream channel, resulting in changes to habitat composition and wildlife use.
Threatened and Endangered Species	X		Several federally listed species potentially occur within the vicinity of the project; however, the project area does not contain potential habitat for these species. No federally designated critical habitat occurs within the project area. The project is expected to have no effects on federally listed species.
Migratory Birds/Bald Eagles/Golden Eagles	X		Potential nesting and foraging habitat for migratory birds exists in the project area.
PLANTS			
Threatened and Endangered Species	X		Several federally listed species potentially occur within the vicinity of the project; however, the project area does not contain potential habitat for these species. No federally designated critical habitat occurs within the project area. The project is expected to have no effects on federally listed species.
Invasive Plant Species	X		Invasive plant species were documented in the project area.
Natural Areas	X		Natural areas occur within the project area and may be temporarily disturbed during construction.
Riparian Areas	X		Riparian areas occur within the project area and may be temporarily disturbed during construction.
HUMANS			
Public Benefits	X		Decommissioning would eliminate dam failure risk. Local sponsors would acquire all land and property within the expanded 100-year floodplain.
Environmental Justice and Civil Rights	X		Downstream areas are identified as disadvantaged for four categories: climate change, energy, health, and workforce development. These areas are identified as EPA Inflation Reduction Act disadvantaged communities.
Flood Damages	X		Decommissioning would increase the extent of the 100-year floodplain. Acquisition of all affected land and property would eliminate risk of future flood damages to existing development.
Land Use	X		Local sponsors would acquire all affected land and property within expanded 100-year floodplain. The restored floodplain would be maintained primarily as a greenbelt.
Local and Regional Economy	X		Temporary benefit to local economy during construction.
Public Health and Safety	X		Decommissioning would eliminate risk associated with potential dam failure and remove existing development from areas subject to increased flood risk through property acquisition.

Item/Concern	Relevant to the Proposed Action		Rationale
	Yes	No	
Recreation	X		The dam and reservoir are located on private property. The property owner utilizes the lake for recreational purposes (hunting). Recreation would be permanently impacted with removal of the impoundment.

Issues Considered but Dismissed from Detailed Analysis

Item/Concern	Relevant to the Proposed Action		Rationale
	Yes	No	
SOILS			
Upland Erosion		X	No watershed problems associated with upland erosion have been identified.
WATER			
Groundwater Quantity		X	The project is located over the Gulf Coast aquifer. The project is entirely surface water-related, and groundwater quantity is not a relevant resource.
Coastal Zone Management Areas		X	The project is not located in or near a designated Coastal Zone Management Area.
Regional Water Management Plans		X	The reservoir is not used for water supply.
Sole Source Aquifers		X	Not applicable to project. No sole source aquifers were identified in the vicinity of the project per Sole Source Aquifer maps available through the EPA.
National Wild and Scenic Rivers Act		X	The project area is not located in or near designated wild or scenic rivers or Nationwide Rivers Inventory segments.
AIR			
Clean Air Act		X	Starr County is within attainment and is not within a designated Class 1 area. No permits required under Clean Air Act.
ANIMALS			
Coral Reefs		X	No coral reefs exist in proximity to the project.
Essential Fish Habitat		X	There are no designated Essential Fish Habitat areas in the project area.
Invasive Wildlife Species		X	No invasive wildlife species were reported or observed in the project area.
PLANTS			
Forest Resources		X	Forest resources are not present in the project area.
Ecologically Critical Areas		X	No ecologically critical areas in the vicinity of the project area.
HUMANS			
Cultural Resources and Historic Properties		X	No findings of historical significance.
Drought		X	The project is not used as a water supply reservoir.

Item/Concern	Relevant to the Proposed Action		Rationale
	Yes	No	
Park Lands		X	No park lands occur within the project area.
Potable Water Supply		X	Not applicable to the project.
Scenic Areas		X	Decommissioning would change the landscape from an open-water reservoir to a riparian corridor. Restored natural landscape would offset the loss of the impoundment.
Significant Scientific Features		X	No scientific resources identified through scoping.
Social/Cultural Issues		X	No significant scientific features identified through scoping.

ENVIRONMENTAL REVIEW & CONSULTATION

The following documents compliance with the National Environmental Policy Act (NEPA) and other relevant environmental laws, executive orders, and regulations.

NEPA: Consideration of Reasonably Foreseeable Impacts

Potentially Affected Environment

Topography

The project area lies on the southern edge of the South Texas Plain ecoregion. The topography of the watershed is nearly level throughout the watershed. The watershed for FRS No. 5 has an average gradient of 19.2 feet per mile. The watershed elevation ranges from 200 to 230 feet mean sea level.

Soils

The primary soil units underlying the FRS No. 5 watershed were identified using the NRCS web soil survey (NRCS, 2023). The major soil groups in the watershed include McAllen fine sandy loam, 41,035 acres (72.4%) and Zapata soils, 9,572 acres (16.9%). McAllen fine sandy loam can be described as deep, well drained, moderately permeable soils that formed in calcareous loamy sediments. These soils are generally on nearly level to gently sloping, 0-5%, uplands. Zapata soil consists of very shallow, well drained, moderately permeable soils that formed in loamy calcareous alluvium. These soils are nearly level to undulating ridges, 0-8%, on interfluvies. Additionally, there are 45,656 acres of designated Prime Farmland within the watershed (NRCS, 2023). Prime farmland soils are discussed further in the Environmental Consequences section. The sedimentation rate at FRS No. 5 was estimated based on the universal soil loss equation (USLE). The sedimentation rate was estimated to be 3.17 acre-feet per year, indicating that there is roughly 100 years of remaining life for the dam before the submerged sediment storage is filled.

Geology

The geologic development of Texas consists of a long and dynamic history of igneous activity, structural deformation, and sedimentary processes. The Pliocene Goliad Formation and Jackson Group form the bedrock in Starr County, Texas. The topography of the area includes smooth undulating to very slightly rolling upland of black-earth soils and the lowland of the Rio Grande (Johnson, 1952).

Climate

FRS No. 5 watershed lies within the South Texas Plains Ecoregion. The climate of the South Texas Plains ecoregion can be described as subtropical, experiencing mild winters and hot summers with high evaporation rates. In the winter, the average temperature ranges between 50 and 60 degrees Fahrenheit. In the summer, the average temperature ranges from the high 70 to 90 degrees Fahrenheit. The average annual rainfall for the region is 21 inches (NCEI, 2023).

Water

The dam is located on Garcia's Creek, a tributary to the Rio Grande, in Rio Grande City, Starr County, Texas. Water from the FRS No. 5 reservoir flows downstream through the Rio Grande Valley National Wildlife Refuge where it converges with the Rio Grande.

Clean Water Act

Sections 303(d) and 305(b)

Section 303(d) of the Clean Water Act (CWA) requires states, territories, and tribes to identify "impaired waters" and to establish total maximum daily loads (TMDLs). An impaired water does not meet the standards associated with its assigned use classification. The State of Texas assesses its waters every two years to meet the requirements of Sections 303(d) and 305(b) of the Clean Water Act. These assessments are published in an integrated report which is titled the "2022 Texas Integrated Report of Surface Water Quality for the Clean Water Act Sections 305(b) and 303(d)" and describes the quality of all waters in the State and contains a list of waters in good condition and those that are impaired/polluted (TCEQ, 2022).

The 2022 Texas Integrated Report of Surface Water Quality for the Clean Water Act Sections 305(b) and 303(d) was released in June 2022 and summarizes the water quality conditions in Texas over a two-year period, January 1, 2020, through December 31, 2021. Garcia's Creek is not included in the 2022 Texas Integrated Report. Stream segment 2302_06 (from Los Ebanos Ferry Crossing to the confluence of Arroyo Los Olmos), which covers the confluence of Garcia's Creek with Rio Grande River was listed as impaired for chlorophyll-a and depressed dissolved oxygen in water (TCEQ, 2022). High chlorophyll-a levels suggest excessive algal growth, often caused by nutrient enrichment in the water (such as phosphorous and nitrogen). Excessive algal growth can lead to depressed dissolved oxygen levels, which can affect a water body's ability to support aquatic life. Water quality is not presented as a watershed problem for FRS No. 5.

Sections 401 and 404

Waterbodies and wetlands that are considered Waters of the United States (WOTUS) are subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA. Under the current regulatory framework following the U.S. Supreme Court's decision in *Sackett v. EPA* (2023), WOTUS include traditional navigable waters, relatively permanent streams, rivers, lakes, and other bodies of water, as well as wetlands that have a continuous surface connection to a relatively permanent jurisdictional water such that there is no clear demarcation between the wetland and the adjacent waterbody. Section 404 of the CWA prohibits the discharge of dredged or fill material into jurisdictional WOTUS unless the activity is exempt or authorized by a permit issued by the USACE. If a CWA Section 404 permit is required, the State must issue a Section 401 Water Quality Certification to certify that the activity will not violate applicable State water quality standards.

Garcias Creek is an ephemeral stream that does not exhibit the characteristics of a relatively permanent waterbody. Therefore, Garcias Creek does not meet the current definition of a jurisdictional WOTUS under *Sackett v. EPA* (2023), and federal authorization under Section 404 of the CWA would not be required for impacts to the stream.

Section 402

Section 402 of the CWA establishes the National Pollutants Discharge Elimination System (NPDES) Program, also administered by the State. Section 402 requires any point source, including developments, construction sites, or other areas of soil disturbance, that discharges or intends to discharge to waters of the State must obtain a NPDES permit. In Texas, wastewater and stormwater state-issued permits are administered by the TCEQ through the Texas Pollutant Discharge Elimination System (TPDES) Program.

Waters of the U.S. (Including Wetlands)

The FRS No. 5 watershed contains numerous aquatic resources, including emergent and shrub/scrub wetlands, ponds/lakes, ephemeral and intermittent drainages, and riparian areas. It is NRCS policy to protect and promote wetland functions and values. Wetlands and riparian areas perform important ecological functions, including water storage, water filtration, nutrient cycling, and biological productivity. Wetlands are defined by NRCS (190-GM, Part 410, Subpart B, Section 410.26) as areas, natural or artificial, that contain hydric soils, hydrophytic vegetation, and indicators of wetland hydrology.

NRCS conducts wetland determinations and/or delineations in accordance with the Food Security Act Wetland Identification Procedures (2010) to assist the US Department of Agriculture (USDA) program participants in complying with the wetland conservation provisions of the Food Security Act (FSA) of 1985. Under the FSA, wetlands are identified based on the presence of hydric soils, wetland hydrology, and hydrophytic vegetation. Separately, the USACE regulates the discharge of dredged or fill material into WOTUS under Section 404 of the CWA. Under the current regulatory

framework following *Sackett v. EPA* (2023), only traditional navigable waters, relatively permanent waters, and wetlands with a continuous surface connection to a relatively permanent water are subject to federal jurisdiction under the CWA. Under NRCS policy and Executive Order 11990, both jurisdictional and non-jurisdictional wetlands are evaluated during the planning process because of their ecological functions and values.

Wetland locations were preliminarily identified using the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and verified during a field investigation conducted in March 2023. Approximately 35 acres of aquatic resources were identified within the watershed, including approximately 33 acres of open water associated with the existing reservoir and 2 acres of freshwater wetlands (Appendix C) (USFWS, 2023a). Because Garcias Creek is an ephemeral stream that does not exhibit the characteristics of a relatively permanent waterbody, it does not meet the current definition of a jurisdictional WOTUS under *Sackett v. EPA* (2023). Likewise, wetlands associated solely with Garcias Creek would not be considered jurisdictional unless they have a continuous surface connection to a relatively permanent jurisdictional water. Additional discussion of potential impacts to wetlands, aquatic resources, and applicable permitting requirements is provided in the Environmental Consequences section.

Floodplain Management

The NRCS policy on floodplain management reflects the requirements of Executive Order 11988 that decisions by federal agencies must recognize that floodplains have unique and significant public values (190-GM, Part 410, Subpart B, Section 410.25). The objectives of Executive Order 11988 are to avoid, to the extent possible, the long- and short- term adverse impacts associated with occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development where there is a practical alternative.

The floodplain of Garcias Creek is managed by Starr County. Starr County and Rio Grande City participate in the National Flood Insurance Program administered by FEMA. Flood hazard areas are categorized by FEMA and identified on Flood Insurance Rate Maps (FIRMs). Special flood hazard areas are defined as areas that have a one percent or greater chance of being inundated by a flood event in any given year. The one-percent annual chance flood is also referred to as the base flood or 100-year flood. FEMA FIRM Panels 48427C0725C (effective on 4/18/2010) indicates the project is located within Zone A, which includes areas subject to inundation by the 1-percent-annual-chance flood event. Additionally, Zone A indicates that no BFEs or flood depths are available for the area because hydraulic analyses have not been performed (FEMA, 2022). The project area concerning this SWP includes one additional NRCS FRS that have a common damage area with FRS No. 5 (FRS No. 6, see Appendix B). Hence, the NRCS is currently developing a separate SWP to determine the best alternative to continue providing the flood projection associated with FRS No 6.

Air Quality

Clean Air Act

The Clean Air Act (CAA) of 1970 requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The EPA established NAAQS for six criteria pollutants including carbon monoxide, nitrogen dioxide, lead, sulfur dioxide, fine particulate matter (PM₁₀ and PM_{2.5}), and ozone (O₃). The EPA categorizes individual regions or counties into two levels of compliance with the NAAQS for criteria pollutants: attainment and nonattainment. Attainment areas are that meet the NAAQS; nonattainment areas exceed the NAAQS and must have and implement a plan to meet the NAAQS. Starr County in Texas is categorized as attainment for the six criteria pollutants (EPA, 2023).

General Conformity Rule (Criteria Pollutants)

Established under the CAA, the General Conformity Rule (40 CFR Part 51, subpart 54) ensures that Federal actions conform to the Texas State Implementation Plan (SIP). To proceed with a Federally funded project, a General Conformity program requires an emissions inventory to ensure that increased air pollution from the project does not negatively affect the state's emissions budget and SIP. The General Conformity Rule are applicable to projects located in nonattainment areas. Since Starr County is categorized as attainment, a General Conformity Determination is not required (TCEQ, 2023).

Regional Haze Regulations

Haze occurs when small particulates in air pollution scatter and absorb sunlight. The hazy effect blurs and decreases visibility. Congress enacted Section 169A of the CAA to protect visibility in National Parks and Wilderness Areas (Class 1 areas). The Regional Haze Regulation calls for states to enact rules to reduce emissions of fine particle pollution and improve visibility in these areas. The Project Area is not within a designated Class 1 area and would not be bound to the Regional Haze rule.

Vegetation and Wildlife

Vegetation Communities and Habitat

The FRS No. 5 watershed lies within the South Texas Plains Ecoregion (TPWD, 2023a). This ecoregion is often referred to as South Texas Brush Country and is characterized by plains of thorny shrubs and trees with scattered patches of palms and subtropical woodlands in the Rio Grande Valley. Dominant tree species include honey mesquite (*Prosopis glandulosa*), spiny hackberry (*Celtis ehrenbergiana*), brasil (*Condalia hookeri*), anaqua (*Ehretia anacua*), great leadtree (*Leucaena pulverulenta*), and Texas ebony (*Ebenopsis ebano*). Other common vegetation includes Spanish dagger (*Yucca treculiana*), prickly pear cacti (*Opuntia* sp.), sugarberry (*Celtis laevigata*), huisache (*Vachellia farnesiana*), and desert yaupon (*Schaefferia cuneifolia*). Purple three-awn (*Aristida purpurea*), red grama (*Bouteloua trifida*), little nipple cactus (*Mammillaria heyderi*), and coyotillo (*Karwinskia humboldtiana*) are among the cacti,

grasses, and shrubs observed in the project area. Principal agricultural uses include livestock grazing and crop production (TPWD, 2023a).

The National Land Cover Dataset (NLCD), a 30-meter resolution, landscape scale, raster coverage created by satellite imagery interpretation, was used to characterize the spatial distribution of vegetation communities across the project area (USGS, 2019). The NLCD identified a total of fourteen landcover classes across the watershed of the project area. Table E lists the vegetation cover types in order of prevalence in the watershed upstream of FRS No. 5. Figure C-12 (Appendix C) depicts the spatial distribution of vegetation communities throughout the watershed.

Table D: Land Cover Types Occurring in Starr County, Texas

Land Cover Type	Drainage Area (acres)	Percent of Total Watershed Area	Breach Inundation Zone (acres)	Percent of Total
Range	42,185	74	455	13
Forest	108	0	146	4
Developed Land	906	2	264	7
Water	24	0	43	1
Pasture	12,832	23	2,245	63
Other	630	1	392	11
Total	56,685	100	3,545	100

Riparian Areas

Riparian areas are present within the project area. NRCS policy requires integration of riparian area management into all plans and alternatives (GM 190, Park 411). Although Federal Law does not specifically regulate riparian areas, wetlands and other Waters of the U.S., may be subject to Federal regulation. These riparian areas are located along the perimeter of the reservoir created by FRS No. 5. Additional riparian areas are located upstream of the dam along Garcias Creek that flows into the Olmitos FRS No. 5 reservoir. The riparian areas around the perimeter of the reservoir are dominated by Honey mesquite (*Prosopis glauca*), Colima (*Zanthoxylum fagara*), Lindheimer pricklypear (*Opuntia engelmannii* var. *lindheimeri*), Desert yaupon (*Schaefferia cuneifolia*), and shrubby blue sage (*Salvia ballotiflora*). The herbaceous layer within the watershed is dominated by Brownseed paspalum (*Paspalum plicatulum*), Texas grama (*Bouteloua rigidiseta*), and Little bluestem (*Schizachyrium scoparium*).

Invasive Species

Invasive species include species of plants and animals that have been introduced, either intentionally or accidentally, into areas outside of their natural environments. An invasive species can grow and spread rapidly and establish themselves over a large area. As a result, invasive species can cause economic and environmental damage, or harm to human health (Texas Invasives, 2023).

Typical invasive plant species within the South Texas Plains ecoregion include Guineagrass (*Urochloa maxima*), King Ranch bluestem (*Bothriochloa ischaemum* var. *songarica*), Chinese tallow tree (*Triadica sebifera*), Salt cedar (*Tamarix ramossima*), and Giant Reed (*Arundo donax*). Common invasive wildlife species include Asian clam (*Corbicula fluminea*), European Starling (*Sturnus vulgaris*), red imported fire ants (*Solenopsis invicta*), Mediterranean house gecko (*Hemidactylus turcicus*), feral pig (*Sus scrofa*), and nutria (*Myocastor coypus*) (Texas Invasives, 2023).

Additionally, TPWD recommends the following vegetation removal, revegetation, and landscaping recommendations regarding invasive species: reduce the amount of vegetation proposed for clearing if possible and minimize clearing of native vegetation, particularly of mature native trees, riparian vegetation, and shrubs to the greatest extent practicable; replacement/restoration of the native vegetation wherever practicable; remove invasive species early on while allowing the existing native plants to revegetate the disturbed areas. Invasive species management will be consistent with TPWD guidance (Appendix D).

Federally Protected Threatened and Endangered Species and Natural Areas

Section 7(a) of the Endangered Species Act (ESA) requires the NRCS, in consultation with and with the assistance of the Secretary of the Interior (USFWS) and/or National Oceanographic and Atmospheric Administration (NOAA), National Marine Fisheries Service, to advance the purposes of the ESA by implemented programs for the conservation of endangered and threatened species, and to ensure that NRCS actions and activities do not jeopardize the continued existence of threatened and endangered species or result in the destruction or adverse modification of the species' critical habitat. In accordance with Section 12 of PL 566 (as amended) requires the NRCS to notify (USFWS), in effort to provide input and/or consultation, to make surveys and investigations and prepare a report, as they deem appropriate, with recommendations concerning the conservation and development of wildlife resources, and participate, under arrangements satisfactory to the NRCS, in the preparation of a plan for works of improvement that is acceptable to the local organization and the NRCS.

Table C, which was generated from the USFWS Information for Planning and Consultation (IPaC) website (USFWS, 2025), provides a list of federally listed species which have been identified as potentially occurring in the project area within Starr County. Only species that are listed as threatened or endangered by the USFWS have complete federal protection under the ESA, however voluntary conservation efforts are encouraged for species that are proposed for listing. These include two species of mammal, three species of birds, two species of clam, one species of insect, and five

species of flowering plants. Information such as life history, and habitat requirements are provided below.

Table E: Federally Protected Species Potentially Occurring in Starr County, Texas

Common Name	Scientific Name	Federal Status ¹	Federally Designated Critical Habitat within the Project Area
MAMMAL			
Gulf Coast Jaguarundi	<i>Puma yagouaroundi cacomitli</i>	E	No
BIRDS			
Cactus Ferruginous Pygmy-owl	<i>Glaucidium brasilianum</i>	T	No
Piping Plover	<i>Charadrius melodus</i>	T	No
Red Knot	<i>Calidris canutus rufa</i>	T	No
MUSSELS			
Salina Mucket	<i>Potamilus metnecktai</i>	PE	No
Texas Hornshell	<i>Popenaias popeii</i>	E	No
INSECTS			
Monarch Butterfly	<i>Danaus plexippus</i>	PT	No
FLOWERING PLANT			
Ashy Dogweed	<i>Thymophylla tephroleuca</i>	E	No
Bushy Whitlow-wort	<i>Paronychia congesta</i>	PE	No
Star Cactus	<i>Astrophytum asterias</i>	E	No
Walker's Manioc	<i>Manihot walkerae</i>	E	No
Zapata Bladderpod	<i>Physaria thamnophila</i>	E	No

T = Threatened; E = Endangered; PE= Proposed Endangered; PT= Proposed Threatened

¹According to USFWS, 2025..

Gulf Coast Jaguarundi

The endangered Gulf Coast Jaguarundi is a medium sized wild cat that once ranged from southern Texas to eastern Mexico. The cat inhabits dense thorny shrublands or woodlands and bunchgrass pastures adjacent to dense brush or woody cover. The last confirmed sighting of a Gulf Coast Jaguarundi was in Brownsville in 1986 (TPWD, 2023c). There have been no recorded observations of Gulf Coast Jaguarundi in Starr County. Suitable habitat for the jaguarundi was not observed within the project area.

Piping Plover

The threatened Piping Plover (*Charadrius melodus*) is a small shorebird that inhabits coastal beaches and tidal flats (Haig and Elliott-Smith, 2004). Approximately 35 percent of the known global population of piping plover winters along the Texas Gulf coast, where they spend 60 to 70 percent of the year (Campbell, 2003). From September to March, Piping Plovers are typically found along the Gulf Coast shoreline using beaches, sandflats, tidal mudflats, dunes, and dredge islands as loafing and foraging areas (Haig and Elliott-Smith, 2004). eBird (2023) and TPWD (2023b) data show no observations of Piping Plover near the project area. Habitat suitable for piping plover was not observed within the project area.

Red Knot

The threatened Red Knot (*Calidris canutus rufa*) is a medium-sized, stocky, short-necked sandpiper with a short, straight bill. The rufa subspecies, one of three subspecies occurring in North America, has one of the longest distance migrations known, travelling between its breeding grounds in the central Canadian Arctic to wintering areas in South America (USFWS, 2011). It is an uncommon to common migrant along the coast, and a rare to casual inland, primarily in the eastern half of the state (USFWS, 2013a). There have been no recorded observations of Red Knots in Starr County (TPWD, 2023b). eBird (2023) data shows no observation near the project area. No suitable habitat for the Red Knot was observed within the project area.

Salina Mucket & Texas Hornshell

The Texas Hornshell and Salina Mucket are both freshwater mussels native to the Rio Grande in Texas and historically Mexico. The Texas Hornshell is medium-sized with a brown, tan or black outermost shell surface, an rhomboidal outline, and has a strong posterior ridge. The Salina Mucket is medium-sized with a brown, tan, or black outermost shell surface, an ovate outline, and has a somewhat inflated shell. Both species occur in medium to large rivers, where small-grained material, such as clay, silt or sand gathers in crevices providing suitable anchoring substrate (USFWS, 2023c) The only known remaining Texas Hornshell population occurs from the Rio Grande, downstream of its confluence with the Rio Conchos, to Lake Falcon. The only known remaining population of Salina Mucket is located in the Lower Canyons of the Rio Grande just downstream of Big Bend National Park.

Monarch Butterfly

Adult Monarch Butterflies are large with bright orange wings with black borders and white spots. During the breeding season, Monarch Butterflies lay their eggs on milkweed (*Asclepias sp.*) plants. Due to their short lifespan, there are multiple generations of Monarch Butterflies within a breeding season and along their 3,000-mile migratory route. Monarch migration begins in early spring from February to March. Due to their long migratory routes, Monarch Butterflies can be found in a variety of habitats. The eastern population of Monarch Butterflies can be found throughout Texas during its migratory season (USFWS, 2020). Individuals have been observed within the project area. Construction for the project is not expected to impact Monarch Butterfly migratory route and the monarch butterfly host plant, milkweed is not found within the project area.

Ashy Dogweed

Ashy Dogweed is a perennial short shrub plant endemic to Texas. The species inhabits grasslands and scattered shrub-dominated areas with fine, sandy loam soils (USFWS, 1984). Flower heads are bright yellow and typically bloom between March and May. Currently, Ashy Dogweed is only found in Webb and Zapata counties but has a historical occurrence in Starr County (USFWS, 2022). According to TPWD TXNDD, there are no observations of Ashy Dogweed within the project area (TPWD, 2025d). No suitable habitat was observed within the project area.

Bushy Whitlow-Wort

Bushy whitlow-wort is a perennial herbaceous plant that inhabits exposed slopes of calcareous rock and/or caliche. The plant may have several stems with woody rootstock and numerous narrow yellow leaves. Flowering occurs from April through June and August; and appears to be stimulated by recent rainfall events. According to TPWD TXNDD, there are no observations of Bushy whitlow-wort within the project area (TPWD, 2025c). According to USFWS, no suitable habitat was observed within the project area.

Star Cactus

The Star Cactus is a small, spineless dome-shaped cactus, green to brown in color, and covered with small white scales. The cactus stem is divided into eight triangular lobes when viewed from above. The flowers are yellow with orange centers and typically bloom from March-May. The species inhabit areas between thorn scrub and grasslands on gravelly clay and loam soils, typically in protected areas under brush (USFWS, 2013b). According to TPWD TXNDD, there are no observations of Star Cactus within the project area (TPWD, 2025b). According to USFWS, no suitable habitat was observed within the area.

Walker's Manioc

Walker's Manioc is a perennial plant that inhabits thorn shrublands on shallow, sandy soils often over hard caliche. The plant has leaf stalks attached to the middle of each leaf blade. Leaves are medium size with three to five deep, fiddle-shaped lobes. The

plant has an almond odor from the presence of hydrogen cyanide. Flowering occurs between April and September when white, five-lobed flowers arise from the leaf stalks (TPWD, 2023e). According to TPWD TXNDD, there are no observations of Walker's Manioc within the project area (TPWD, 2025b). According to USFWS, no suitable habitat was observed within the area.

Zapata Bladderpod

Zapata Bladderpod is a trailing perennial with a silverly-green stem which can grow between 40-80 cm tall. The species inhabit open thorn shrublands over shallow, gravelly, or sandy soils and sandstone outcrops. Flowering occurs from February to April and occasionally in the early fall after rain. The bladderpod occurs in Starr and Zapata Counties as well as in the state of Tamaulipas in Mexico (TPWD, 2023f). According to TPWD TXNDD, there are no observations of Zapata Bladderpod within the project area (TPWD, 2025b). According to USFWS, no suitable habitat was observed within the area.

State Protected Endangered and Threatened Species

Texas Parks and Wildlife Department provides an online resource for state listed species information through the TPWD Rare, Threatened, and Endangered Species of Texas by County (RTEST) website. The RTEST list for Starr County recognizes almost 100 species with the potential to occur within the county (TPWD, 2023g). TPWD's concurrence letter indicated potential suitable habitat for five state listed species may occur in the project area.

Table F: State Listed Species Potentially Occurring in Starr County, Texas

Common Name	Scientific Name	State Protection Status ¹
Amphibians		
Mexican Burrowing Toad	<i>Rhinophrynus dorsalis</i>	T
White-lipped Frog	<i>Leptodactylus fragilis</i>	T
Reptile		
Northern cat-eyed Snake	<i>Leptoderia septentrionalis septentrionalis</i>	T
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	T
Texas Tortoise	<i>Gopherus berlandieri</i>	T

¹ T= Threatened

Mexican burrowing toad and White-lipped frog

The Mexican burrowing toad prefers arid areas with loose soils, including cultivated fields, but may occur in roadside ditches, temporary ponds, arroyos or other area with friable soils. They spend most of their time in borrows, feeding on ants and termites, leaving only during rainy periods or to breed.

The white lipped frog is typically found in grassy areas near semi-permanent water bodies and in or around ditches and canals in agricultural lands. Per TPWD recommendations, erosion control BMPs will be installed during construction and staging areas and fuels or other hazardous chemicals will be located away from water bodies to avoid potential spills or leaks into adjacent aquatic areas.

Northern cat-eyed snake

Northern cat-eyed snakes are non-venomous, nocturnal snakes and inhabit brush, thorn scrub and dense vegetation bordering ponds and waterways. They are semi-arboreal and feed primarily on pond and tree frogs. Per TPWD recommendations, construction contractors will be informed of the potential for state listed snakes to occur in the project area.

Texas horned lizard

Texas horned lizards can be found in open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees. If present in the general project area, the Texas horned lizard could be impacted by ground disturbing activities. Texas horned lizards may hibernate on-site in loose soils a few inches below ground during the cooler months from September/October to March/April. Horned lizards are active above ground when temperatures exceed 75°F. Per TPWD recommendations, disturbance of the Texas horned lizard, its burrows, and colonies of its primary food source, the harvester ant (*Pogonomyrmex* sp.) will be avoided where possible during clearing and construction.

Texas tortoise

The Texas tortoise occurs primarily in thorn scrub and open woodlands and brush. It feeds primarily on fruits of prickly pear and succulent plants. Texas tortoises have low fecundity; individuals take over 10 years to reach maturity and females do not reproduce every year. Nesting occurs in spring and summer. The Texas tortoise has a home range of approximately five to ten acres. Suitable habitat for the Texas tortoise appears to occur within the project study area. Tortoises are often found near or at the base of prickly pear cactus and may seek shade by crawling under parked vehicles. Per TPWD recommendations, contractors and other staff will be made aware that in south Texas, the Texas tortoise is generally inactive from December through January and is therefore likely to be undetectable in a project area during those months. Before driving vehicles that have been parked within the project area, contractors will check underneath the vehicles to ensure no tortoises are present. Reduced speed limits will also be established and enforced in project areas.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 makes it illegal to kill, possess, transport, buy, sell, or trade any migratory bird parts, nest, or eggs unless a valid Federal permit is issued. USFWS IPaC resources has listed Eastern Meadowlark (*Sturnella magna*), Orchard Oriole (*Icterus spurius*), and Painted Bunting (*Passerina ciris*) as migratory birds with the potential to occur within the project area. All three species are considered Birds of Conservation Concern (BCCs). Birds of Conservation Concern are designated by the USFWS as species which are likely to become candidates for listing under the ESA without additional conservation action. Eastern Meadow larks are commonly found in tall grassy meadows and fields as well as savannas with grassy openings between trees. The Orchard Oriole can be found in both rural and suburban areas and most frequently next in mesquite trees, however they also use other small, scattered trees. Painted buntings prefer a heavier cover around streams or forests edges and other areas with dense understory (USFWS, 2023b). There is suitable habitat within the Project Area for all three species.

Bald and Golden Eagle Protection Act

In addition to the MBTA, all Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act and Executive Order 13186. The Act prohibits individuals without a special permit from taking eagle parts, nests, or eggs. The Act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.” In addition to those immediate impacts, the Act also covers impacts that may result from human-induced alterations around nest sites in a manner that may interfere with or interrupts normal breeding, feeding, sheltering habits, and causes injury, death, or nest abandonment. No Bald or Golden Eagles were observed within the project area during the site visit in March 2023. The TPWD TXNDD does not list any Bald or Golden Eagle nests within 2 miles of Olmitos FRS No. 5 (TPWD, 2023b).

Human Environment

Cultural Resources and Historic Properties

Section 106 of the National Historic Preservation Act (NHPA) of 1966 requires Federal Agencies to consider the impacts of their actions on historic properties and archeological sites. Consultation with the State Historic Preservation Office (SHPO), Tribal Historic Preservation Offices (THPO), and federally recognized Tribes, as appropriate, as well as other interested parties, is required when an agency action may alter the characteristics that qualify a historic property for inclusion in the NRHP.

Section 106 of the National Historic Preservation Act

The NRCS identifies the Area of Potential Effect (APE) as the geographic area or areas within which an undertaking may directly or indirectly (viewshed) cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. Temporary staging areas were considered part of the APE since they may constitute significant ground disturbance. Some existing haul roads were within the viewshed APE, but through consultation and identification

efforts, NRCS determined that the FRS No. 5 itself, despite being over 50 years old, is not eligible for listing on the National Register of Historic Places (NRHP) and that this project as proposed will have no effect on properties included in, or eligible for inclusion in the NRHP, or that merit designation as State Antiquities Landmarks (SALs).

No new permanently inundated area will result from the proposed project. The proposed decommissioning would eliminate the existing 386-acre flood pool, and FRS No. 5 will be incapable of impounding water. Flood waters will pass through an excavated portion of the embankment that is large enough to sufficiently convey the 100-year, 24-hour storm event.

A cultural resources desktop review included a search of archeological records available on the THC Texas Archeological Site Atlas (TASA) to determine if any previously recorded archeological sites or historic properties listed in the NRHP, SALs, and Recorded Texas Historic Landmarks (RTHL) were located within one kilometer of the APE. Additionally, historic and aerial topographic maps were evaluated to determine changing land use over time. The records review revealed one previously recorded archaeological survey located within one kilometer of the project. FRS No. 5 is predominately encompassed by areas of moderate potential for archeological resources.

The Texas Historical Commission (THC) who acts as the state's SHPO, concurred with NRCS' determination of eligibility and effect on November 6, 2023, and the Comanche Nation responded with "No properties" via email September 9, 2024. No other Tribal responses have been received to date. Of note, the Tribal Directory Assessment Tool (TDAT) inaccurately indicates the Wichita and Affiliated Tribes has an interest in this county, but in consultation with this Tribe, they indicated no interest in reviewing projects in Starr County, therefore, NRCS elected not to request a review. NHPA consultation documentation is summarized and documented in Appendix A.

National Historic Landmarks Program

The National Parks Services (NPS) National Historic Landmarks Program identifies nationally significant historic places or properties designated by the Secretary of the Interior and listed in the National Register of Historic Places. These places or properties possess a high degree of historic integrity, which can be defined as the ability of a place or property to convey its historical associations or attributes (NPS, 2021).

Per the NPS's National Historic Landmarks Program website, there are no National Historic Landmarks listed in Starr County, Texas. Therefore, the National Historic Landmarks Program is not applicable to the project's affected environment and will not be carried forward for impact analysis in the Environmental Consequences section.

Land Use

The National Land Cover Dataset, a 30-meter resolution, landscape scale, raster coverage created by satellite imagery interpretation, was used to characterize the spatial distribution of land use across the project area (U.W. Geological Survey 2019). The National Land Cover Dataset identified a total of 15 land use classes across the project area that were summarized into six main categories: range, forest, developed

land, water, pasture, and other. Table E shows the percentage of the dominant land use categories in the watershed. This table also lists the land use in the breach inundation zone below the dam. Potential changes to land use associated with the alternatives are discussed in the Environmental Consequences section.

Table G: Land Use FRS No. 5

Land Cover Type	Drainage Area (acres)	Percent of Total Watershed Area	Breach Inundation Zone (acres)	Percent of Total
Range	42,185	74	455	13
Forest	108	0	146	4
Developed Land	906	2	264	7
Water	24	0	43	1
Pasture	12,832	23	2,245	63
Other	630	1	392	11
Total	56,685	100	3,545	100

Scenic Beauty and Visual Resources

As described in the NRCS General Manual, Title 190, Part 410.24, contributions to scenic beauty are a normal product of NRCS work. Scenic beauty can be defined as the viewer's positive perceived value of special, unique, and memorable physical elements of a landscape. There are no designated State or National Natural and Scenic Area Preserves or river segments located within the project areas of Olmitos FRS No. 5. Therefore, Scenic Beauty is not applicable to the project's affected environment and will not be carried forward for impact analysis in the Environmental Consequences Section.

Socioeconomics

The watershed of FRS No. 5 lies within Starr County, Texas and spans across three Census Tracts, including Census Tract 9504.02, 9504.03 and 9504.04. According to the results of the dam breach modeling and inundation mapping performed in conjunction with the development of this plan, a dam failure could result in impact to at least 217 residences, 2 multi-family structures, 3 school buildings, 3 church buildings, 25 commercial structures, 45 barns/outbuildings, US-83, FM 1430, Old Military Road, and 18 other residential streets and private roads.

Table F through K summarize information provided in the 2021 5-Year Estimate from the ACS survey from the U.S. Census Bureau.

Table H: Population and Race*

Census Tracts/County	Total Population	White	Black or African	Other Racial Groups	Hispanic or Latino
Census Tract 9504.02	6,144	2.6	0.0	0.0	97.6
Census Tract 9504.03	2,483	4.4	0.0	0.0	95.7
Census Tract 9504.04	3,820	0.0	0.0	0.0	100.0
Starr County	65,568	3.2	0.1	0.4	96.3

* Percent of overall population

Table I: Age*

Geography	Mean Age	Over 65	Over 18
Census Tract 9504.02	25.9	11.2	60.0
Census Tract 9504.03	33.5	10.6	65.0
Census Tract 9504.04	38.4	7.2	71.2
Starr County	28.8	11.4	68.0
Texas	35.0	12.5	74.2
Nation	—	16.8	77.9

* Percent of overall population

Table J: Education*

Geography	High School Education or Higher - 25 Years or Older	Bachelor's Degree or Higher	Graduate or Professional Degree	Completed Some College Level Work
Census Tract 9504.02	46.9	11.2	13.0	14.1
Census Tract 9504.03	67.5	6.0	4.0	34.4

Geography	High School Education or Higher - 25 Years or Older	Bachelor's Degree or Higher	Graduate or Professional Degree	Completed Some College Level Work
Census Tract 9504.04	59.4	5.6	2.2	28.2
Starr County	58.8	12.3	3.1	20.0
Texas	85.4	31.5	11.2	21.2
Nation	88.9	33.7	13.1	20.0

* Percent of overall population

Table K: Employment/Unemployment

Geography	Population 16 Years or Older	In Labor Force Pool	Unemployment Rate (%)
Census Tract 9504.02	3,951	2,280 (57.7%)	11.1
Census Tract 9504.03	1,720	890 (51.7%)	7.5
Census Tract 9504.04	2,842	1,740 (61.2%)	7.8
Starr County	46,421	27,018 (58.2%)	12.1
Texas	—	—	5.3
Nation	—	—	5.5

Starr County has a diverse economy. According to the 2021 ACS 5-Year Estimate, there are 13 sub-sectors of the local economy that employ the civilian workforce: agriculture, forestry, fishing and hunting, and mining (5.9%); construction (11.6%); manufacturing (3.3%); wholesale trade (0.7%); retail trade (9.7%); transportation and warehousing, and utilities (8.4%); information (0.4%); finance and insurance, and real estate and leasing (2.9%); professional, scientific, and management, and administrative and waste management services (4.1%); educational services, and health care and social assistance (38.1%); arts, entertainment, and recreation, and accommodation and food services (6.3%); other services, except public administration (4.4%); public administration (4.2%).

Table L: Income and Poverty Levels

Geography	Median Household Income	Median Family Income	Per Capita Income	Population Living below Poverty Level (%)
Census Tract 9504.02	\$30,500	\$37,785	\$13,990	24.8
Census Tract 9504.03	\$45,369	\$56,719	\$14,611	34.0
Census Tract 9504.04	\$31,536	\$38,824	\$14,696	24.6
Starr County	\$33,334	\$39,752	\$16,137	32.6
Texas	\$67,321	\$67,321	\$37,255	14.0
Nation	\$69,021	\$69,021	\$37,638	12.6

Table M: Housing

Geography	Occupied	Owner Occupied	Renter Occupied
Census Tract 9504.02	91.5 (1,642)	78.1 (1,283)	21.9 (359)
Census Tract 9504.03	95.9 (699)	75.3 (526)	24.8 (173)
Census Tract 9504.04	77.8 (1,113)	90.8 (1,011)	9.2 (102)
Starr County	82.5 (18,599)	74.3 (13,817)	25.7 (4,782)
Texas	90.5	62.6	37.4
Nation	90.3	65.4	34.6

According to the results of the dam breach modeling and inundation mapping performed for the Breach studies indicate that approximately 217 residences, 2 multi-family structures, 3 school buildings, 3 church buildings, 25 commercial structures, 45 barns/outbuildings, US-83, FM 1430, Old Military Road, and many other residential streets and private roads, all totaling 22, would be at risk. The residential properties in the Block Group in which most of the inundation zone is located (Census Tract 9504.03) range between \$2,380 and \$227,190 in total value with a median value of about \$35,290. The total value of residential property (structures and contents only, excluding land values) at risk below the dam is an estimated \$21,735,100.

Recreation

The dam and reservoir are located on private property. The property owner utilizes the lake for recreational purposes (hunting). Access is not provided to the general public.

Environmental Impacts

What are the reasonably foreseeable short- and long-term and adverse or beneficial effects of the proposed action and alternatives (if any) on the environment, to public health and safety, on economics, and to the quality of life of the American people? What are the negative environmental impacts or consequences to public health and safety, economics, or the quality of life of the American people if the proposed action or alternatives (if any) are not implemented?

Special Environmental Concerns

Soils (including Prime Farmland)

Alternative No. 1 - No Federal Action/Future without Federal Investment: There would be no long-term adverse effects to soils or prime farmlands. The dam would continue to exist in its current state and would continue to provide flood prevention to 823 acres of downstream prime farmland. However, the risk of a dam breach would persist. In the event of a dam breach, floodwaters and sediment from the sediment pool (reservoir) would be released downstream which could adversely impact downstream prime farmlands.

Alternative No. 2 - Dam Decommissioning: Under Alternative #2, approximately 58,100 cubic yards of excavated materials will be placed in the present easement area of the dam. Ground disturbing activities and the movement of construction vehicles and equipment during construction would contribute to minor impacts and loss of soil. Native vegetation would be established along the disturbed areas following construction. There would be a loss of availability to 357 acres of downstream prime farmland due to land and property acquisition, and a reduction in flood protection for 466 acres of prime farmland in events larger than the 100-year, 24-hour storm event.

Alternatives No. 3, 4, 5, - Dam Rehabilitation Alternatives: Alternatives #3 and 4 involve raising the top of the dam by 9.7 feet and 4.9 feet, respectively, which would require borrow material to be taken from the project site. The acreage that will be disturbed will be determined during the design process. Alternative #5 does not involve raising the top of the dam. Ground disturbing activities and the movement of construction vehicles and equipment during the proposed actions would contribute to minor temporary impacts and loss of soil. After construction is complete, disturbed areas will be revegetated with native or adapted plant species. No long-term adverse impacts to soils or prime farmlands with any of these proposed alternatives. The dam would continue to provide flood protection to 823 acres of downstream prime farmland.

Water

Clean Water Act

Sections 303(d) and 305(b)

Alternative No. 1 - No Federal Action/Future without Federal Investment: Under this alternative, no additional federal funds would be expended on the project and the dam would remain in its current configuration with regular maintenance continuing. There would be no effects to water quality from construction activities. The risks associated with a dam breach and the dam not passing the state and federal requirements would remain. In the event of a dam breach, there would be temporary impacts to water quality downstream due to sediment releases from the sediment pool.

Alternative No. 2 - Dam Decommissioning: This alternative consists of removing the ability of the dam to impound water and reconnecting, restoring, and stabilizing the upstream reservoir area/sediment pool and downstream floodplain functions. Channel work would be performed to reconnect the stream channel through the sediment pool and vegetation would be established along the stream channel. There may be temporary impacts to water quality downstream due to the sediment release related to breaching of the dam. Erosion and sediment control measures would be implemented to minimize impacts to water quality during construction and meet the appropriate water quality standards.

Alternatives No. 3, 4, 5 - Dam Rehabilitation: There may be temporary impacts to water quality downstream due to the sediment disturbance from earth moving and construction-related activities. With the required erosion and sediment control measures in place during construction, downstream impacts to water quality should be minimal and temporary. Any water releases from the project area are expected to meet the appropriate TCEQ water quality standards as Garcia's Creek is not listed as an impaired stream. Streamflow may be temporarily impacted by dewatering activities during construction.

Sections 401 and 404

Alternative No 1. - No Federal Action/ Future without Federal Investment: Garcias Creek is an ephemeral creek that does not meet the characteristics of a relatively permanent waterbody. Therefore, Garcias Creek is likely not a jurisdictional waterbody under the current definition of WOTUS (*Sackett v. EPA, 2023*). There would be no impacts to WOTUS. However, the risk of a dam breach would persist, which would impact short-term water quality downstream of the dam with the sudden loss of the impoundment.

Alternative No. 2 - Dam Decommissioning: Garcias Creek is an ephemeral creek that does not meet the characteristics of a relatively permanent waterbody. Therefore, Garcias Creek is likely not a jurisdictional waterbody under the current definition of WOTUS (*Sackett v. EPA, 2023*). Authorization under Section 404 of the Clean Water Act would not be required for decommissioning because there would no impacts to federal jurisdictional WOTUS.

Alternatives No. 3, 4, 5 - Dam Rehabilitation: Garcias Creek is an ephemeral creek that does not meet the characteristics of a relatively permanent waterbody. Therefore, Garcias Creek is likely not a jurisdictional waterbody under the current definition of

WOTUS (*Sackett v. EPA*, 2023). Authorization under Section 404 of the Clean Water Act would not be required for rehabilitation because there would be no impacts to federal jurisdictional WOTUS.

Floodplain Management

Alternative No. 1 - No Federal Action/ Future without Federal Investment: There would be no changes to the floodplain. The dam would continue to exist in its current state. The risk of a dam breach would persist. In the event of a dam breach, there would be flooding downstream.

Alternative No. 2 - Dam Decommissioning: Under Alternative #2, the 100-year inundation area downstream would increase from 1,895 to 3,122 acres. A LOMR would be required from FEMA post-construction to revise effective FIRMs and show changes to the floodplains and/or flood elevations.

Alternatives No. 3, 4, 5 - Dam Rehabilitation: Rehabilitation activities will enlarge the 100-year inundation area downstream of the dam within the project area by 0.3%. A LOMR would be required from FEMA post-construction to revise effective FIRMs and show changes to the floodplains and/or flood elevations.

Air Quality

Alternative No. 1 – No Federal Action/Future without Federal Investment: There would be no change to air quality. Starr County would continue to be within attainment for all NAAQS.

Alternative No. 2 - Dam Decommissioning: During the decommissioning of the dam, particulate matter and air pollutant emissions from earth moving activities and operation of construction vehicles will increase. Although there would be a temporary increase in particulate matter, CO, NO_x, and other pollutants from heavy equipment, the proposed work is not expected to violate any federal, state, or local air quality standards. During construction activities, BMPs would be implemented to reduce construction-related emissions. Impacts to air quality are anticipated to be temporary and localized.

Alternative No. 3, 4, 5 - Dam Rehabilitation: During the rehabilitation of the dam, particulate matter and air pollutant emissions from earth moving activities and operation of construction vehicles will increase. Although there would be a temporary increase in particulate matter, carbon monoxide, nitrogen oxide, and other pollutants during construction, the proposed work is not expected to violate any federal, state, or local air quality standards. During construction activities, BMPs would be implemented to reduce construction-related emissions. Impacts to air quality are anticipated to be temporary and localized.

Vegetation

Riparian Areas

Alternative No. 1 – No Federal Action/Future without Federal Investment: There would be no effects to riparian areas. The dam would continue to exist in its current state. In the event of a dam breach, riparian areas downstream of the project area may be impacted by flooding.

Alternative No. 2 - Dam Decommissioning: Construction activities associated with decommissioning would temporarily disturb existing riparian vegetation surrounding the reservoir and within the construction footprint. Following construction, disturbed areas would be revegetated with native or adapted species, and the restored stream corridor would support the long-term establishment of riparian vegetation through reconnection of the stream channel and floodplain.

Alternative No. 3, 4, 5 - Dam Rehabilitation: During the rehabilitation of the dam, construction activities would be limited to the dam embankment, auxiliary spillway, and around the stilling basin of the dam. Construction will be limited to the smallest possible extent. Vegetation community and habitat along the reservoir and streambank will be temporarily affected. After the completion of construction activities, disturbed areas will be revegetated with native or adapted species. Impacts to habitat and vegetation are expected to be temporary and minor.

Special Status Plant Species

There are five known plant species protected by the ESA within Starr County. These include the Ashy Dogweed, Bushy Whitlow-wort, Star Cactus, Walker's Manioc, and Zapata Bladderpod. No critical habitat has been designated near the FRS No. 5. According to TPWD TXNDD, there are no observations of any of the plant species within or near the project area (TPWD, 20253d). Additionally, according to USFWS, no suitable habitat was observed within the project area for any of the listed species. No effects to any of the listed plant species are expected to occur as a result of the project. A copy of the TPWD and USFWS consultation letters will be included in Appendix D once concurrence has concluded.

Invasive Plant Species

King Ranch bluestem and buffelgrass, both invasive grassland species, were observed in the project area. Special care will be taken during construction to avoid the spread or introduction of invasive species. Executive Order 13112 established the National Invasive Species Council. The National Invasive Species Management Plan was developed to identify actions to prevent, eradicate, and control invasive species. Clipping and frequent mowing before seed production, prescribed burning during the summer (growing season), and herbicide application are all methods that can be used to suppress the species on a local level. Additionally, following construction, disturbed areas will be revegetated with non-invasive species.

Wildlife

Terrestrial Wildlife Communities

The reservoir and adjacent areas could potentially be utilized by several species of migratory birds for feeding, nesting, or roosting. Construction activities for Alternatives 1-5 would be limited to the dam embankment, auxiliary spillway, and around the stilling basin of the dam. Wildlife community and habitat along the reservoir and project area will be temporarily affected and may locate to adjacent properties. After the completion of construction activities, disturbed areas will be revegetated with native species. Impacts to wildlife are expected to be temporary and minor. Table R summarizes impacts to wildlife communities that would result from Alternatives #1 through 5. BMPs

or other measures are paired with each impact to reduce or eliminate negative impacts or comply with applicable laws.

Table N: Potential Impacts to Wildlife Communities from No Action, Dam Decommissioning, and Dam Rehabilitation Alternatives for Olmitos and Garcias Creek FRS No. 5

Wildlife Community	Timeframe	Impact Type	Impact Description	BMP or Measures to Comply with Applicable Laws
All	Short term	Direct	Stress, disturbance, and displacement due to construction activities and human presence.	Minimize direct disturbance impacts by completing construction of project components in the shortest practicable timeframe
All	Short term	Direct	Loss of water source	Since the pool level may be temporarily lowered during construction, the reservoir may be temporarily unavailable for use to migratory birds and other wildlife. However, there are similarly sized bodies of water throughout the region for wildlife usage.
Small mammals, reptiles, and amphibians	Short term	Direct	Direct mortality of small, ground dwelling mammals, reptiles, or amphibians in the construction area, disturbed habitat.	Limit the construction footprint to the smallest area practicable.
Nesting raptors (hawks, falcons, owls)	Short term	Direct	Potential for "take" under the MBTA (loss of eggs or young from nest abandonment) due to construction activities and human presence.	Complete construction outside of the nesting season (March 1 to September 30). If construction occurs within the nesting season, complete a nesting raptor survey and operate outside of the recommended USFWS-approved guidance on buffer distance. If nesting raptors are present within the recommended buffer zone, coordination should be initiated with the local USFWS biologist to adjust the buffer distance if warranted; otherwise, work must not proceed until nesting is complete and young chicks have fledged. Cease work if a nesting raptor is discovered within the

Wildlife Community	Timeframe	Impact Type	Impact Description	BMP or Measures to Comply with Applicable Laws
				recommended buffer distance during construction and consult the local USFWS biologist for next steps.
Bald and Golden Eagles	Short term	Direct	Potential for “take” under the MBTA (loss of eggs or young from nest abandonment) due to construction activities and human presence. Potential to interfere with an eagle’s “substantial lifestyle, including shelter, breeding, feeding” as defined by the Bald and Golden Eagle Protection Act of 1940.	Bald and Golden Eagles typically use the same nest sites year after year; consult with local USFWS biologists for the most recent understanding of the locations of active nests and operate outside of the recommended buffer distance. If operating heavy machinery inside the recommended buffer distance, operate outside of the nesting season; Bald Eagles may commence nesting as early as January.
Nesting migratory birds	Short term	Direct	Potential for “take” under the MBTA (loss of eggs or young from nest abandonment or direct destruction).	Operate outside of the primary nesting season for migratory birds (March 1 to September 30). Accomplish any vegetation clearing or grubbing prior to the nesting season. If planning on vegetation clearing or grubbing during the nesting season, the area must be surveyed by qualified biologists for active nests no more than 2 weeks prior to commencement of the work. If active nests are found during the nest surveys, establish a nest buffer in coordination with USFWS biologist. If an active nest is discovered during construction, stop work and consult the local USFWS biologist for next steps.
All	Long term	Indirect	Introduction of invasive plant species to the construction area causing habitat degradation.	Clean construction equipment and vehicles prior to bringing it onsite. Ensure that borrow material imported to the construction

Wildlife Community	Timeframe	Impact Type	Impact Description	BMP or Measures to Comply with Applicable Laws
				area is not infested with plant species. Ensure seed sources for revegetation are weed-free.

State Protected Threatened and Endangered Species

Suitable habitat for State protected Mexican Burrowing Toad, White-lipped Frog, Northern Cat Eyed Snake, Texas Horned Lizard, and Texas Tortoise exists within the project area. Construction contractors will be trained on the life history, physical description, and habitat preference of the species and follow TPWD recommendations to avoid impacts to state listed and SGCN species during construction, maintenance, and operation activities. Additional information can be found in the TPWD coordination letter found in Appendix D.

Human Environment

Local and Regional Economy

Alternative No. 1 - No Federal Action/Future without Federal Investment: There would be no beneficial or adverse effect to the local or regional economy. The dam would continue to exist in its current state. The risk of a dam breach would persist. In the event of a dam breach, the local economy could be negatively affected by flood damage.

Alternative No. 2. - Dam Decommissioning: Alternative #2 would result in temporary beneficial economic effects associated with construction activities. Acquisition of affected land and property would eliminate flood risk to existing development within the expanded floodplain.

Alternative No. 3, 4, 5 - Dam Rehabilitation: There would likely be a temporary positive effect on the local economy during construction efforts due to an increase in workers using the local businesses such as gas stations, hotels, and restaurant.

Public Health and Safety

Alternative No. 1 - No Federal Action/Future without Federal Investment: There would be no immediate effects to public health and safety. The dam would continue to exist in its current state. The risk of a dam breach and flooding downstream would remain for the public downstream of the dam.

Alternative No. 2 - Dam Decommissioning: Alternative #2 would eliminate the risk to public health and safety associated with a catastrophic dam failure by removing the dam's ability to impound water. Although the downstream 100-year floodplain would increase in extent following decommissioning, all affected land and property within the expanded floodplain would be acquired.

Alternative No. 3, 4, 5, - Dam Rehabilitation: These alternatives would structurally rehabilitate the dam using current design and safety standards to provide continued flood protection for 100 years following construction of the project. The level of flood protection provided by the dam would remain the same. The threat of loss of life and

property from failure of the dam would be greatly reduced. Access to the site will be restricted during the construction period.

Cultural and Historic Resources

Alternative No. 1 - No Federal Action/Future without Federal Investment: NRCS determined that the dam is not eligible for inclusion in the NHPA. No historic properties are present or will be affected by the project as proposed. Current dam and reservoir conditions would continue; however, threat of dam breach/failure would remain.

Alternative No. 2 - Dam Decommissioning: NRCS determined that no historic properties eligible for listing in the National Register of Historic Places occur within the APE. Therefore, Alternative #2 would have no effect on historic properties.

Alternative No. 3, 4, 5 – Dam Rehabilitation: NRCS determined that the dam is not eligible for inclusion in the NHPA. No historic properties are present or will be affected by the project as proposed. The SHPO concurred with NRCS' determination of eligibility and effect on November 6, 2023, and the Comanche Nation responded with "No properties" via email September 9, 2024. No other Tribal responses have been received to date. NHPA consultation documentation is summarized in Appendix A.

Land Use and Recreation

Alternative No. 1 – No Federal Action/Future without Federal Investment: Land use is expected to remain the same. The dam would continue to exist in its current state. Recreational opportunities for the private landowner are not expected to change. However, in the event of a dam breach the recreational use of the reservoir will be diminished.

Alternative No. 2 - Dam Decommissioning: Under Alternative #2, the dam will be breached, and the reservoir will no longer hold water. Land use is expected to change as water-based recreational activities such as hunting will be diminished. Additionally, land use downstream of the dam could change because of the loss of flood protection.

Alternative No. 3, 4, 5 - Dam Rehabilitation: Rehabilitation of the dam would involve clearing of vegetation on/around the dam and temporarily lowering of water levels in the reservoir to facilitate construction. Recreational opportunities, including hunting and fishing, may be hindered during the construction period. Following construction, the lake will be filled and no long-term impacts are anticipated to the recreational opportunities provided by the reservoir.

Cumulative Effects

To quantitatively discuss potential cumulative impacts, it is necessary to consider past, present, and reasonably foreseeable actions that did or could result in lasting impacts. In considering potential cumulative impacts associated with the proposed alternatives in conjunction with the past, present, and reasonably foreseeable actions, evaluations of cumulative impacts would be spatially bounded to the general project region and temporally bounded by approximately 5 years in the past and 5 years into the future.

To consider past, present, and reasonably foreseeable actions in the general project region within the past or future 5 years, the 2019 Starr Economic Development Plan was reviewed. In addition, the project area concerning this SWP includes five additional

NRCS FRS, including 1,2,3,4 and 6, and those FRS are also considered in this analysis. The following past, present, and reasonably foreseeable actions that were considered include:

- Development Projects
 - o Rio Grande Village mixed-use property development
 - o Starr- Camargo International Bridge and Road Expansion Plan
 - o Starr County Industrial Park
 - o Solar Farming
- Flood Risk Reduction Projects
 - o Olmitos and Garcias Creek FRS No. 6

Potential impacts of these past, present, or reasonably foreseeable projects are not readily available, so this discussion of their impacts is conceptual and qualitative. Flood risk reduction projects could improve or maintain water quality, while reducing potential flood damaged. Various commercial developments can degrade water quality and quantity through discharges, use of pesticides and fertilizers, and increased impervious cover and resultant runoff. Temporary and localized impacts for all these projects would be expected during construction, but implementation of BMPs and compliance with environmental regulations may reduce or eliminate substantial temporary impacts.

The proposed alternatives for FRS No. 5 would have different direct, indirect, and cumulative effects on environmental, social, and economic resources. The preferred alternative would result in temporary impacts to soils, vegetation, water quality, and wildlife during construction, followed by long-term restoration of the natural stream channel, floodplain, and riparian corridor. Permanent changes would include removal of the reservoir, acquisition of all land and property within the expanded 100-year floodplain, and restoration of the former impoundment to a greenbelt and riparian area. When considered in combination with other past, present, and reasonably foreseeable actions in the watershed, implementation of the preferred alternative is not expected to result in significant adverse cumulative impacts to natural resources. Temporary construction-related impacts would be minimized through implementation of BMPs and compliance with applicable environmental regulations. In combination with future flood risk reduction efforts for other floodwater retarding structures within the Olmitos and Garcias Creek Watershed, including FRS No. 6, the preferred alternative would contribute to the long-term reduction of dam safety risks while restoring natural stream and floodplain functions.

Risk and Uncertainty

Calculations in this plan are based on a 100-year period of analysis. Associated monetary flooding impacts on downstream houses and businesses were based on the Starr county appraisal district data in combination with the results of a HEC-RAS 2D hydraulic model. Actual flood damages occurring from each storm event could realistically be higher or lower, depending on soil moisture conditions at the time of a given event, associated debris flows, future development, and other factors such as changes in precipitation from various storm events. Climate change was not included in

the scope of this plan, but it is acknowledged that the magnitude, intensity, and frequency of the events evaluated may change.

The Sponsor has land rights for the structure currently for the construction, operation, and maintenance of the dam and the storage of water to the elevation two feet above the crest of the earthen spillway based on the original easements procured for the project. No new land rights upstream of the existing dam need to be acquired. Property acquisition downstream of the dam within the proposed 100-year inundation area is required to develop the preferred alternative.

The objective of this project is to eliminate the need to meet applicable NRCS and Texas dam safety standards for a high hazard potential dam. From a financing and administrative standpoint, the Sponsors have not committed to NRCS that they are able to fund the required 35% of the total project costs to complete installation of the preferred alternative. However, the Sponsors have agreed to funding 35% of the total project cost for Alternative 3.

Will the proposed action or action alternatives (if any) make an irreversible or irretrievable commitment of Federal resources?

No

How will the irreversible or irretrievable commitment of Federal resources, if any, contribute to a loss of long-term productivity for the human environment?

N/A

Endangered Species Act

The pertinent subject matter expert(s) reviewed the proposed action (and action alternatives, if any) and documented determinations for threatened, endangered, proposed and/or candidate species (TEPC) and/or critical habitat in a biological assessment. A “may affect, likely to adversely affect” determination was reached for the following species:

NRCS consulted with USFWS on the determinations of “May affect, not likely to adversely affect” for the species listed below. Conservation measures, including avoidance of migration and nesting periods and surveys to confirm species presence/absence, will be implemented during construction. Additional consultation with USFWS will also be necessary prior to construction.

Table 15: May Affect, Likely to Adversely Affect Determination for TEPC Species/Critical Habitat

Species/Habitat	Status	Proposed or Designated Critical Habitat Present?	Brief Rationale (or refer to other proposal documentation)
Gulf Coast Jaguarundi (<i>Puma yagouarundi cacomitli</i>)	Endangered	No	There have been no recorded observations of Gulf Coast Jaguarundi in Starr County. Suitable habitat for the jaguarundi was not observed within the project area.

Species/Habitat	Status	Proposed or Designated Critical Habitat Present?	Brief Rationale (or refer to other proposal documentation)
Cactus Ferruginous Pygmy-owl (<i>Glaucidium brasilianum</i>)	Threatened	No	There have been no recorded observations of Cactus Ferruginous Pygmy-owl in Starr County. Suitable habitat for the Cactus Ferruginous Pygmy-owl was not observed within the project area.
Piping Plover (<i>Charadrius melodus</i>)	Threatened	No	EBird (2023) and TPWD (2023b) data show no observations of Piping Plover near the project area. Habitat suitable for piping plover was not observed within the project area.
Red Knot (<i>Calidris canutus rufa</i>)	Threatened	No	There have been no recorded observations of Red Knots in Starr County (TPWD, 2023b). eBird (2023) data shows no observation near the project area. No suitable habitat for the Red Knot was observed within the project area.
Salina Mucket (<i>Potamilus metneckayi</i>)	Potentially Endangered	No	The only known remaining population of Salina Mucket is located in the Lower Canyons of the Rio Grande just downstream of Big Bend National Park.
Texas Hornshell (<i>Popenaias popeii</i>)	Endangered	No	The only known remaining Texas Hornshell population occurs from the Rio Grande, downstream of its confluence with the Rio Conchos, to Lake Falcon.
Monarch Butterfly (<i>Danaus Plexippus</i>)	Proposed Threatened	No	Individuals have been observed within the project area. Construction for the project is not expected to impact Monarch Butterfly migratory route and the monarch butterfly host plant, milkweed is not found within the project area.
Ashy Dogweed (<i>Thymophylla tephroleuca</i>)	Endangered	No	According to TPWD TXNDD, there are no observations of Ashy Dogweed within the project area (TPWD, 2025d). No suitable habitat was observed within the project area.
Bushy Whitlow-wort (<i>Paronychia congesta</i>)	Potentially Endangered	No	According to TPWD TXNDD, there are no observations of Bushy whitlow-wort within the project area (TPWD, 2025c). According to USFWS, no suitable habitat was observed within the project area.
Star Cactus (<i>Astrophytum asterias</i>)	Endangered	No	According to TPWD TXNDD, there are no observations of Star Cactus within the project area (TPWD, 2025b). According to USFWS, no suitable habitat was observed within the area.
Walker's Manioc (<i>Manihot walkerae</i>)	Endangered	No	According to TPWD TXNDD, there are no observations of Walker's Manioc within the project area (TPWD, 2025b). According to USFWS, no suitable habitat was observed within the area.

Species/Habitat	Status	Proposed or Designated Critical Habitat Present?	Brief Rationale (or refer to other proposal documentation)
Zapata Bladderpod (<i>Physaria thamnophila</i>)	Endangered	No	According to TPWD TXNDD, there are no observations of Zapata Bladderpod within the project area (TPWD, 2025b). According to USFWS, no suitable habitat was observed within the area.
Mexican Burrowing Toad (<i>Rhinophrynus dorsalis</i>)	Threatened	Yes	The Mexican burrowing toad prefers arid areas with loose soils, including cultivated fields, but may occur in roadside ditches, temporary ponds, arroyos or other area with friable soils. They spend most of their time in borrows, feeding on ants and termites, leaving only during rainy periods or to breed. Per TPWD recommendations, erosion control BMPs will be installed during construction and staging areas and fuels or other hazardous chemicals will be located away from water bodies to avoid potential spills or leaks into adjacent aquatic areas.
White-lipped Frog (<i>Leptodactylus fragilis</i>)	Threatened	Yes	The white lipped frog is typically found in grassy areas near semi-permanent water bodies and in or around ditches and canals in agricultural lands. Per TPWD recommendations, erosion control BMPs will be installed during construction and staging areas and fuels or other hazardous chemicals will be located away from water bodies to avoid potential spills or leaks into adjacent aquatic areas..
Northern cat-eyed Snake (<i>Leptoderia septentrionalis septentrionalis</i>)	Threatened	Yes	Northern cat-eyed snakes are non-venomous, nocturnal snakes and inhabit brush, thorn scrub and dense vegetation bordering ponds and waterways. They are semi-arboreal and feed primarily on pond and tree frogs. Per TPWD recommendations, construction contractors will be informed of the potential for state listed snakes to occur in the project area
Texas Horned Lizard (<i>Phrynosoma cornutum</i>)	Threatened	Yes	Texas horned lizards can be found in open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees. If present in the general project area, the Texas horned lizard could be impacted by ground disturbing activities. Texas horned lizards may hibernate on-site in loose soils a few inches below ground during the cooler months from September/October to March/April. Horned lizards are active above ground when temperatures exceed 75°F. Per TPWD recommendations, disturbance of the Texas horned lizard, its burrows, and colonies of its primary food source, the harvester ant (<i>Pogonomyrmex</i> sp.) will be avoided where possible during clearing and construction.

Species/Habitat	Status	Proposed or Designated Critical Habitat Present?	Brief Rationale (or refer to other proposal documentation)
Texas Tortoise (<i>Gopherus berlandieri</i>)	Threatened	Yes	The Texas tortoise occurs primarily in thorn scrub and open woodlands and brush. It feeds primarily on fruits of prickly pear and succulent plants. Texas tortoises have low fecundity; individuals take over 10 years to reach maturity and females do not reproduce every year. Nesting occurs in spring and summer. The Texas tortoise has a home range of approximately five to ten acres. Suitable habitat for the Texas tortoise appears to occur within the project study area. Tortoises are often found near or at the base of prickly pear cactus and may seek shade by crawling under parked vehicles. Per TPWD recommendations, contractors and other staff will be made aware that in south Texas, the Texas tortoise is generally inactive from December through January and is therefore likely to be undetectable in a project area during those months. Before driving vehicles that have been parked within the project area, contractors will check underneath the vehicles to ensure no tortoises are present. Reduced speed limits will also be established and enforced in project areas.

Table 16: Applicable proposal record documentation to support ESA compliance

Documentation Type	File Name (if applicable/needed)
Consultation with USFWS	Appendix A
IPaC Report	Appendix E

National Historic Preservation Act – Section 106 Review

The pertinent subject matter expert has reviewed the proposed action (and action alternatives, if any) and made the following determination:

No potential to cause effects. The proposal is a type of activity that does not have the potential to cause effects on any kind of prehistoric or historic resource, even if such resources were in the project area.

The NRCS identifies the Area of Potential Effect (APE) as the geographic area or areas within which an undertaking may directly or indirectly (viewshed) cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. Temporary staging areas were considered part of the APE since they may constitute significant ground disturbance. Some existing haul roads were within the viewshed APE, but through consultation and identification efforts, NRCS determined that the FRS No. 5 itself, despite being over 50 years old, is not eligible for listing on the National Register of Historic Places (NRHP) and that this

project as proposed will have no effect on properties included in, or eligible for inclusion in the NRHP, or that merit designation as State Antiquities Landmarks (SALs).

No new permanently inundated area will result from the proposed project. The proposed decommissioning would eliminate the existing 386-acre flood pool, and FRS No. 5 will be incapable of impounding water. Flood waters will pass through an excavated portion of the embankment that is large enough to sufficiently convey the 100-year, 24-hour storm event.

A cultural resources desktop review included a search of archeological records available on the THC Texas Archeological Site Atlas (TASA) to determine if any previously recorded archeological sites or historic properties listed in the NRHP, SALs, and Recorded Texas Historic Landmarks (RTHL) were located within one kilometer of the APE. Additionally, historic and aerial topographic maps were evaluated to determine changing land use over time. The records review revealed one previously recorded archaeological survey located within one kilometer of the project. FRS No. 5 is predominately encompassed by areas of moderate potential for archeological resources.

Table 17: Applicable proposal record documentation to support NHPA compliance

Documentation Type	File Name (if applicable/needed)
Programmatic Agreement	Appendix E
Copies of Section 106 Consultation	Appendix A

Consultation with Federally Recognized Tribes

Consultation with federally recognized tribes was conducted as follows: A cultural resources evaluation was completed by NRCS to determine if any previously recorded archeological sites or historic properties are located within a one-kilometer search radius of the APE. No historic standing structures or historic properties were identified. NRCS consulted with the SHPO and THPO. SHPO and THPO for Comanche concurred with NRCS' findings. The date of the consultation letters were sent out on 4/11/2024 for the tribes and 8/7/2023 to the SHPO and THPO. The SHPO and THPO letters are included in Appendix A.

- Apache Tribe of Oklahoma:
- Comanche Nation of Oklahoma
- Tonkawa Tribe of Indians of Oklahoma
- Wichita and Affiliated Tribes of Oklahoma
- State Historic Preservation Officer/Texas Historical Commission

Table 18: Applicable proposal record documentation to support tribal consultation

Documentation Type	File Name (if applicable/needed)
Copies of Consultation Letters and Responses	Appendix A
Programmatic Agreement	Appendix E

Clean Water Act

The pertinent subject matter expert has reviewed the proposed action (and action alternatives, if any) and made the following determination:

The project will not affect any waters, including wetlands, and no further permits or modifications are needed to ensure compliance.

Garcias Creek is an ephemeral creek that does not meet the characteristics of a relatively permanent waterbody with a hydrologic surface connection to a traditional navigable waterbody. Therefore, Garcias Creek is not a jurisdictional waterbody under the current definition of WOTUS (*Sackett v. EPA*, 2023). Authorization under Section 404 of the Clean Water Act would not be required because there would no impacts to federal jurisdictional WOTUS.

Table 19: Applicable proposal record documentation to support CWA compliance

Documentation Type	File Name (if applicable/needed)
Project Correspondence	Appendix A

Clean Air Act

The pertinent subject matter expert has reviewed the proposed action and it's alternative made the following determination:

The project will not result in permanent air emissions and no modifications or further coordination needs to occur to ensure compliance.

Special Management Area Considerations

The pertinent subject matter expert has reviewed the proposed action (and action alternatives, if any) and made the following determinations based on special management area presence, proximity, or lack of:

No activities are proposed within or in the vicinity of Special Management Areas.

Pertinent Executive Orders

The applicable subject matter experts have determined the proposed action (and action alternatives, if any) are in compliance with the following Executive Orders (EO), which were deemed pertinent based on the nature of the proposal:

EO 11988, Floodplain Management – requires determination of action occurring in a floodplain, using HUD floodplain map or more detailed map if available.

The floodplain of Garcias Creek is managed by Starr County. Starr County and Rio Grande City participate in the National Flood Insurance Program administered by FEMA. Flood hazard areas are categorized by FEMA and identified on Flood Insurance Rate Maps (FIRMs). Special flood hazard areas are defined as areas that have a one percent or greater chance of being inundated by a flood event in any given year. The one-percent annual chance flood is also referred to as the base flood or 100-year flood. FEMA FIRM Panels 48427C0725C (effective on 4/18/2010) indicates the project is located within Zone A, which includes areas subject to inundation by the 1-percent-annual-chance flood event. Additionally, Zone A indicates that no BFEs or flood depths

are available for the area because hydraulic analyses have not been performed (FEMA, 2022). The project area concerning this SWP includes one additional NRCS FRS that have a common damage area with FRS No. 5 (FRS No. 6, see Appendix B). Hence, the NRCS is currently developing a separate SWP to determine the best alternative to continue providing the flood projection associated with FRS No 6.

EO 11990, Protection of Wetlands – avoid actions within wetlands unless there are no practical alternatives, and the action includes all practicable means to minimize harm to wetlands.

Wetland locations were preliminarily identified using the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and verified during a field investigation conducted in March 2023. Approximately 35 acres of aquatic resources were identified within the watershed, including approximately 33 acres of open water associated with the existing reservoir and 2 acres of freshwater wetlands (Appendix C) (USFWS, 2023a). Because Garcias Creek is an ephemeral stream that does not exhibit the characteristics of a relatively permanent waterbody, it does not meet the current definition of a jurisdictional WOTUS under *Sackett v. EPA* (2023). Likewise, wetlands associated solely with Garcias Creek would not be considered jurisdictional unless they have a continuous surface connection to a relatively permanent jurisdictional water. Additional discussion of potential impacts to wetlands, aquatic resources, and applicable permitting requirements is provided in the Environmental Consequences section.

EO 13007, Indian Sacred Sites – avoid adversely affecting the physical integrity of these sites.

Consultation with Federally Recognized Tribes was completed as described above. No Indian Sacred Sites were identified.

EO 13112, Invasive Species – prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

TPWD recommends the following vegetation removal, revegetation, and landscaping recommendations regarding invasive species: reduce the amount of vegetation proposed for clearing if possible and minimize clearing of native vegetation, particularly of mature native trees, riparian vegetation, and shrubs to the greatest extent practicable; replacement/restoration of the native vegetation wherever practicable; remove invasive species early on while allowing the existing native plants to revegetate the disturbed areas. Invasive species management will be consistent with TPWD guidance.

EO 13186, Migratory Birds – identify actions that may have a measurable negative effect on migratory bird populations.

Operate outside of the primary nesting season for migratory birds (March 1 to September 30). Accomplish any vegetation clearing or grubbing prior to the nesting season. If planning on vegetation clearing or grubbing during the nesting season, the area must be surveyed by qualified biologists for active nests no more than 2 weeks

prior to commencement of the work. If active nests are found during the nest surveys, establish a nest buffer in coordination with USFWS biologist. If an active nest is discovered during construction, stop work and consult the local USFWS biologist for next steps.

Table 20: Applicable proposal record documentation to support EO compliance

Documentation Type	File Name (if applicable/needed)
Project Correspondence	Appendix A

Certifying Statement for EA Page Limit and Deadline

The Responsible Official certifies that this EA:

- ☒ Demonstrates the agency has thoroughly considered the factors mandated by NEPA;
- ☒ Represents the agency's good-faith effort to prioritize documentation of the substantive issues and most important considerations required by NEPA within the congressionally mandated page limits;
- ☒ Reflects the agency's expert judgment;
- ☒ Addressed briefly, or left unaddressed, any issues or considerations that were, in the agency's judgment, comparatively not of a substantive nature;
- ☒ Represents the agency's good-faith effort to fulfill NEPA's requirements within the Congressional timeline (or within the minimally extended timeline) and this effort is substantially complete; and
- ☒ Contains analysis that is adequate to inform and reasonably explain the responsible official's final decision regarding the proposed action or selected alternative.

APPENDICES

Examples of items that may be included as appendices are:

- [References](#)
- [Appendix A – Comments and Responses](#)
- [Appendix B – Project Map](#)
- [Appendix C – Support Maps](#)
- [Appendix E – Other Supporting Information](#)

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Appendix A – Comments and Responses

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NRCS RECORD OF TRIBAL CONSULTATIONS									
PROJECT/REASON FOR INITIATING CONSULTATION: Section 106 Consultation for Olmitas and Garcias Creek Watershed Flood Retarding Structures (FRS) Sites 5 and 6, Starr County									
PROGRAM: Watershed Rehabilitation Program (REHAB)									
FEDERALLY RECOGNIZED TRIBE	MAIL CONTACT(S) NAME AND ADDRESS(S)	DATE CONSULTATION INVITATION PACKAGE MAILED CERTIFIED BY NRCS (1)	DATE CONSULTATION INVITATION PACKAGE RECEIVED BY TRIBE	RESPONSE TO CONSULTATION INVITATION PACKAGE (INCLUDE FORM [LETTER, PHONE CALL, E-MAIL, ETC.], DATE, RESPONDENT NAME, AND RESPONSE)	FOLLOW-UP CONTACT NAME, E-MAIL ADDRESS, PHONE NUMBER	DATE FOLLOW-UP ATTEMPTED OR MADE	PHONE CALL NOTES	RESPONSE TO FOLLOW-UP CONTACT (INCLUDE FORM [LETTER, PHONE CALL, E-MAIL, ETC.], DATE, RESPONDENT NAME, AND RESPONSE)	DATE TRIBAL CONSULTATION COMPLETE
Apache Tribe of Oklahoma	Chairman Durell Cooper and Cultural Coordinator Darren Cisco P.O. Box 1330 Anadarko, OK 73005	4/11/2024	Certified Tracking Card received by NRCS 4/13/2024	Certified mail tracking card returned with signature of receipt, no response yet	Darrin Cisco (Cultural Coordinator) apacheculture510@yahoo.com; darrin.cisco@apachetribe.org 405-933-7701	Emailed STC Signed Invite 4/11/2024; Emailed STC Signed Determination Letter 8/7/2024 (also sent via certified mail)	7/15/2024 Contact info up-to date	No response yet to invitation to consult nor determinations.	9/7/2024
Comanche Nation of Oklahoma	Chairman Mr. Mark Woommavovah PO Box 908 Lawton, OK 73502 and THPO Ms. Martina Minthorn c/o Historic Preservation Office, Comanche Nation of Oklahoma, THPO 6 SW D Avenue Suite C Lawton, OK 73501	4/11/2024	Certified Tracking Card received by NRCS 4/13/2024	Certified mail tracking card returned with signature of receipt, no response yet	Ms. Martina Minthorn (THPO) martina.minthorn@comanchenation.com 580-492-1153	Emailed STC Signed Invite 4/11/2024; Emailed STC Signed Determination Letter 8/7/2024 (also sent via certified mail)	7/15/2024 Contact info up-to date	No response yet to invitation to consult nor determinations.	9/7/2024
Tonkawa Tribe of Indians of Oklahoma	President Russell Martin and THPO Lauren Norman-Brown c/o Historic Preservation Office 1 Rush Buffalo Road Tonkawa, OK 74653-4449	4/11/2024	Certified Tracking Card received by NRCS 4/13/2024	Certified mail tracking card returned with signature of receipt, no response yet	Lauren Norman-Brown (THPO) lbrown@tonkawatribe.com 580-628-2561 ext 214	Emailed Signed Invite 4/11/2024; Emailed STC Signed Determination Letter 8/7/2024 (also sent via certified mail)	(left a msg 7/15/2024, hope to get a call back soon)	No response yet to invitation to consult nor determinations.	9/7/2024
Wichita and Affiliated Tribes of Oklahoma	TDAT inaccurately indicates the Wichita and Affiliated Tribes has an interest in this county, but in consultation with this Tribe, they indicated no interest in Starr Co.								
State Historic Preservation Officer/Texas Historical Commission	Mark Wolfe, or Acting SHPO Texas Historical Commission P.O. Box 12276 Austin, TX 78711-2276	OG-5 8/7/2023, OG-6 8/11/2023	Certified Tracking Card received by NRCS	Certified mail tracking card returned with signature of receipt	Main: 512-463-6100 Main: thc@thc.texas.gov	Cover letter authorizing contractor identification studies and NRCS Determinations of Eligibility and Effect sent via certified mail 8/7/2024	NA	Concurrence on NRCS determinations of eligibility and effect OG5-11/06/2023 THC Tracking #202401026 OG6-10/31/2023 THC Tracking #202401032	9/7/2024

(1) Initial consultation invitation packages should be sent by certified mail, return receipt requested unless a Tribal Government official specifies otherwise. Title 190, 315.8.F(1) provides specific guidance on this issue. Return receipt requested, although not specified in 315.8.F(1), allows us to get a receipt with a date and signature. 315.8.F(1)(ii) instructs to send a pdf version of the consultation invitation package by email after the certified mail package has been sent. Although not specified, attaching a read receipt request to all official consultation emails allows us to get confirmation of receipt.

Boyer update January 23, 2023.



Natural Resources Conservation Service

U.S. DEPARTMENT OF AGRICULTURE

Texas State Office

W.R. Poage Federal Building
101 South Main Street
Temple, TX 76501

August 6, 2024

Darren Cisco, Cultural Coordinator
Apache Tribe of Oklahoma
Post Office Box 1330
Anadarko, Oklahoma 73005

Dear Mr. Cisco,

This letter is regarding consultation under Section 106 of the National Historic Preservation Act (NHPA) of 1966, Amended for the Olmitos and Garcias (OG) Watershed - Flood Retarding Structure (FRS) No. 5 and No. 6, Rehabilitation Watershed Plan and Environmental Assessment (Plan-EA), Starr County, Texas. With this letter our administrative record will reflect that NRCS used the authorized contractor's identification study and recommendations to determine the eligibility and effect regarding OG dams 5 and 6. We initiated consultation with Tribal Nations that have expressed an interest in this county on April 13, 2024, via certified mail and email, but have received no responses to date.

Both dams were originally designed and constructed as low hazard dams but have been re-classified as high hazard due to population at risk downstream. Therefore, the project sponsors, Starr County Soil and Water Conservation District (SWCD), the Starr County Commissioner Court, and NRCS-TX are preparing a Plan-EA to evaluate alternatives to meet the current performance and safety criteria.

Site 5 (THC Tracking #202401026) was constructed in 1963 by the Soil Conservation Service as a single-purpose dam (flood prevention). Site 5 consists of an earthen structure 45-feet in height with a 103-acre permeant pool. Based on consultation and an archaeological identification survey, NRCS has determined that the OG-5 dam itself, despite being over 50 years old, is not eligible for listing on the National Register of Historic Places (NRHP) and that this project as proposed will have no effect on properties included in, or eligible for inclusion in the NRHP, or that merit designation as SALs.

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Site 6 (THC Tracking #202401032) was constructed in 1961 by the Soil Conservation Service as a single-purpose dam (flood prevention). Site 6 consists of an earthen structure 40-feet in height with a 48-acre permeant pool. Based on consultation and an archaeological identification survey, NRCS has determined that the OG-6 dam itself, despite being over 50 years old, is not eligible for listing on the NRHP and that this project as proposed will have no effect on properties included in, or eligible for inclusion in the NRHP, or that merit designation as SALs.

Please reply with whether you concur with the NRCS determinations of eligibility and effect. NRCS recommends that construction should proceed without further cultural resources investigations. However, if consulting parties share areas of religious or cultural significance, or the dimensions of the project area change, additional archeological and historical investigations may be warranted.

In responding, please refer to the **Olmitos and Garcias FRS No. 5 and No. 6** project. The point of contact for reply or further information is Angela Moody, Archaeologist/Cultural Resource Specialist at angela.moody@usda.gov, 830-719-5750 or by mail to the address above within our planned review period of 30 days of receiving this letter. Your reply to this request is greatly appreciated and we thank you for your assistance.

Sincerely,



KRISTY OATES
State Conservationist



Natural Resources Conservation Service

U.S. DEPARTMENT OF AGRICULTURE

Texas State Office

W.R. Poage Federal Building
101 South Main Street
Temple, TX 76501

August 6, 2024

THPO Martina Minthom
Comanche Nation of Oklahoma
c/o Historic Preservation Office,
6 SW D Avenue Suite C
Lawton, Oklahoma 73501

Dear Ms. Minthom,

This letter is regarding consultation under Section 106 of the National Historic Preservation Act (NHPA) of 1966, Amended for the Olmitos and Garcias (OG) Watershed - Flood Retarding Structure (FRS) No. 5 and No. 6, Rehabilitation Watershed Plan and Environmental Assessment (Plan-EA), Starr County, Texas. With this letter our administrative record will reflect that NRCS used the authorized contractor's identification study and recommendations to determine the eligibility and effect regarding OG dams 5 and 6. We initiated consultation with Tribal Nations that have expressed an interest in this county on April 13, 2024, via certified mail and email, but have received no responses to date.

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Sincerely,



KRISTY OATES
State Conservationist



Natural Resources Conservation Service
U.S. DEPARTMENT OF AGRICULTURE

Texas State Office

W.R. Poage Federal Building
101 South Main Street
Temple, TX 76501

August 6, 2024

THPO Lauren Norman-Brown
Tonkawa Tribe of Indians of Oklahoma
c/o Historic Preservation Office
1 Rush Buffalo Road
Tonkawa, Oklahoma 74653-4449

Dear Ms. Norman-Brown,

This letter is regarding consultation under Section 106 of the National Historic Preservation Act (NHPA) of 1966, Amended for the Olmitos and Garcias (OG) Watershed - Flood Retarding Structure (FRS) No. 5 and No. 6, Rehabilitation Watershed Plan and Environmental Assessment (Plan-EA), Starr County, Texas. With this letter our administrative record will reflect that NRCS used the authorized contractor's identification study and recommendations to determine the eligibility and effect regarding OG dams 5 and 6. We initiated consultation with Tribal Nations that have expressed an interest in this county on April 13, 2024, via certified mail and email, but have received no responses to date.

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Sincerely,



KRISTY OATES
State Conservationist



Natural Resources Conservation Service
U.S. DEPARTMENT OF AGRICULTURE

Texas State Office

W.R. Poage Federal Building
101 South Main Street
Temple, TX 76501

August 6, 2024

Mark Wolfe
Acting State Historic Preservation Officer
Texas Historical Commission
Post Office Box 12276
Austin, Texas 78711

Dear Mr. Wolfe,

This letter is regarding consultation under Section 106 of the National Historic Preservation Act (NHPA) of 1966, Amended for the Olmitos and Garcias (OG) Watershed - Flood Retarding Structure (FRS) No. 5 and No. 6, Rehabilitation Watershed Plan and Environmental Assessment (Plan-EA), Starr County, Texas. With this letter our administrative record will reflect that NRCS used the authorized contractor's identification study and recommendations to determine the eligibility and effect regarding OG dams 5 and 6. We initiated consultation with Tribal Nations that have expressed an interest in this county on April 13, 2024, via certified mail and email, but have received no responses to date.

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Site 5 (THC Tracking #202401026) was constructed in 1963 by the Soil Conservation Service as a single-purpose dam (flood prevention). Site 5 consists of an earthen structure 45-feet in height with a 103-acre permeant pool. Based on consultation and an archaeological identification survey, NRCS has determined that the OG-5 dam itself, despite being over 50 years old, is not eligible for listing on the National Register of Historic Places (NRHP) and that this project as

proposed will have no effect on properties included in, or eligible for inclusion in the NRHP, or that merit designation as SALs.

Site 6 (THC Tracking #202401032) was constructed in 1961 by the Soil Conservation Service as a single-purpose dam (flood prevention). Site 6 consists of an earthen structure 40-feet in height with a 48-acre permeant pool. Based on consultation and an archaeological identification survey, NRCS has determined that the OG-6 dam itself, despite being over 50 years old, is not eligible for listing on the NRHP and that this project as proposed will have no effect on properties included in, or eligible for inclusion in the NRHP, or that merit designation as SALs.

Please reply with whether you concur with the NRCS determinations of eligibility and effect. NRCS recommends that construction should proceed without further cultural resources investigations. However, if consulting parties share areas of religious or cultural significance, or the dimensions of the project area change, additional archeological and historical investigations may be warranted.

In responding, please refer to the **Olmitos and Garcias FRS No. 5 and No. 6** project. The point of contact for reply or further information is Angela Moody, Archaeologist/Cultural Resource Specialist at angela.moody@usda.gov, 830-719-5750 or by mail to the address above within our planned review period of 30 days of receiving this letter. Your reply to this request is greatly appreciated and we thank you for your assistance.

Sincerely,



KRISTY OATES
State Conservationist

This Correspondence sent to Kelsey.Calvez@freese.com on 11-06-2023



Re: Project Review under Section 106 of the National Historic Preservation Act
THC Tracking #202401026

Date: 11/06/2023

Olmitos and Garcias Creek Watershed FRS No. 5 Rehabilitation
415 Loma Blanca Ln

Description: Submit revised letter to address THC questions and provide project photos.

Dear Kelsey Calvez:

Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act.

The review staff, led by Amy Borgens, Caitlin Brashear and Emily Dylla, has completed its review and has made the following determinations based on the information submitted for review:

Above-Ground Resources

- No historic properties are present or affected by the project as proposed. However, if historic properties are discovered or unanticipated effects on historic properties are found, work should cease in the immediate area; work can continue where no historic properties are present. Please contact the THC's History Programs Division at 512-463-5853 to consult on further actions that may be necessary to protect historic properties.

Archeology Comments

- No identified underwater archeological sites, historic shipwrecks, and/or significant remote-sensing targets present or affected. However, if buried cultural materials are encountered during project activities, work should cease in the immediate area; work can continue where no cultural materials are present. Please contact the THC's Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.
- No historic properties affected. However, if cultural materials are encountered during construction or disturbance activities, work should cease in the immediate area; work can continue where no cultural materials are present. Please contact the THC's Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: amy.borgens@thc.texas.gov, caitlin.brashear@thc.texas.gov, emily.dylla@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit <http://thc.texas.gov/etrac-system>.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Wolfe", is positioned above the typed name.

for Mark Wolfe, State Historic Preservation Officer
Executive Director, Texas Historical Commission

Please do not respond to this email.

April 10, 2024

Chairman Durell Cooper
Apache Tribe of Oklahoma
Post Office Box 1330
Anadarko, Oklahoma 73005

Dear Mr. Cooper:

I would like to invite your Tribe to consult over whether a proposed project on private lands might impact any of your Tribe's places of cultural or religious significance, National Historic Preservation Act historic properties, and other Tribal interests. We recognize your Tribal sovereignty and importance of your Tribe's interests on ancestral lands, including those on private lands.

This letter is to invite your tribe to consult under Section 106 of the National Historic Preservation Act of 1966, as amended for the Olmitas and Garcias Creek Watershed Flood Retarding Structure (FRS) Site 5 and Site 6 (OGC-5-6), Rehabilitation in Starr County, Texas.

We write because the project sponsors, Starr County Soil and Water Conservation District (SWCD) and the Commissioners Court of Starr County, have requested financial assistance through the Natural Resources Conservation Service (NRCS) Watershed Rehabilitation Program (REHAB) because the OGC-Sites 5 and 6, both constructed as low hazard dams, currently do not meet Federal safety standards for their reclassification as High Hazard dams. Therefore, the project sponsors and NRCS are evaluating alternatives to meet the current performance and safety criteria. Enclosed with this letter is a general project description and maps for each dam. More details can be provided upon request.

Site 5 (Coordinates 26.351758 -98.687309)

OGC-5 was built by NRCS in 1963. The dam is located on Garcias Creek, a tributary to the Rio Grande River. The proposed rehabilitation measures include construction of a new roller compacted concrete (RCC) spillway through the main embankment. The existing earthen auxiliary spillway will be blocked. Additionally, the existing principal spillway and intake tower will be replaced with a new box culvert. The proposed modifications to the principal and auxiliary spillway involve raising the top of dam elevation 9.7 feet, from 211.2 feet to 220.9 feet. No new permanently inundated area will result from the proposed project, and the normal pool elevation will remain the same as the current condition.

Site 6 (Coordinates 26.349225 -98.694126)

OGC-6 is a single purpose earthen dam constructed in 1962 on El Gato Creek, a tributary of the Rio Grande River. The proposed rehabilitation measures include 1) raising the top of dam an average 9.3 feet and lengthening the dam by 100 feet, 2) installing a 30-inch principal spillway pipe with an intake riser and impact basin, and 3) replacing the earthen auxiliary spillway with a roller compacted concrete (RCC) spillway with two stages of engagement. No new permanently inundated area will result from the proposed project, and the normal pool elevation will remain the same as the current condition.

The archeological records available on the Texas Historical Commission (THC) and the Texas Archeological Sites Atlas (TASA) were reviewed to determine if any previously recorded archeological sites or historic properties listed in the National Register of Historic Places (NRHP), State Antiquities Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL) are located within or adjacent to the proposed Area of Potential Effect (APE) within a one-kilometer radius (THC, 2023).

The records review for both dams revealed one previously recorded archeological survey that was completed in 2000. Otherwise, no historic standing structures or historic properties listed in the NRHP, SAL's, historic cemeteries, or RTHL's are located within the proposed direct or indirect APE. A current archaeological survey has not been conducted at these sites.

A review of historical topographic maps was conducted within a 300-foot radius of the proposed APE to investigate for above ground historic resources that could be indirectly impacted by the project. No historic structures should be affected by the proposed projects. The proposed APEs are situated in an area that has been previously disturbed from past construction activities associated with the construction of the existing earthen dam, auxiliary spillway, and reservoir construction.

Please reply with whether you are interested in participating in consultation regarding this project and assist us in identifying whether there are any culturally or religiously significant places, or other Tribal interests, we should be aware of that might be affected by this project. NRCS will be sure to send project updates as they occur.

In responding, please refer to the **OGC-5-6** project. The point of contact for reply or further information is Angela Moody, Archaeologist/Cultural Resource Specialist at angela.moody@usda.gov, 254-742-9834 or by mail to the address on this letterhead. Your prompt reply to this request is greatly appreciated and we thank you for your assistance.

Sincerely,



KRISTY OATES
State Conservationist

Enclosure

April 10, 2024

Darren Cisco, Cultural Coordinator
Apache Tribe of Oklahoma
Post Office Box 1330
Anadarko, Oklahoma 73005

Dear Mr. Cisco:

I would like to invite your Tribe to consult over whether a proposed project on private lands might impact any of your Tribe's places of cultural or religious significance, National Historic Preservation Act historic properties, and other Tribal interests. We recognize your Tribal sovereignty and importance of your Tribe's interests on ancestral lands, including those on private lands.

This letter is to invite your nation to consult under Section 106 of the National Historic Preservation Act of 1966, as amended for the Olmitas and Garcias Creek Watershed Flood Retarding Structure (FRS) Site 5 and Site 6 (OGC-5-6), Rehabilitation in Starr County, Texas.

We write because the project sponsors, Starr County Soil and Water Conservation District (SWCD) and the Commissioners Court of Starr County, have requested financial assistance through the National Resources Conservation Service (NRCS) Watershed Rehabilitation Program (REHAB) because the OGC-Sites 5 and 6, both constructed as low hazard dams, currently do not meet Federal safety standards for their reclassification as High Hazard dams. Therefore, the project sponsors and USDA-NRCS are evaluating alternatives to meet the current performance and safety criteria. Enclosed with this letter is a general project description and maps for each dam. More details can be provided upon request.

Site 5 (Coordinates 26.351758 -98.687309)

OGC-5 was built by NRCS in 1963. The dam is located on Garcias Creek, a tributary to the Rio Grande River. The proposed rehabilitation measures include construction of a new roller compacted concrete (RCC) spillway through the main embankment. The existing earthen auxiliary spillway will be blocked. Additionally, the existing principal spillway and intake tower will be replaced with a new box culvert. The proposed modifications to the principal and auxiliary spillway involve raising the top of dam elevation 9.7 feet, from 211.2 feet to 220.9 feet. No new permanently inundated area will result from the proposed project, and the normal pool elevation will remain the same as the current condition.

Site 6 (Coordinates 26.349225 -98.694126)

OGC-6 is a single purpose earthen dam constructed in 1962 on El Gato Creek, a tributary of the Rio Grande River. The proposed rehabilitation measures include 1) raising the top of dam an average 9.3 feet and lengthening the dam by 100 feet, 2) installing a 30-inch principal spillway pipe with an intake riser and impact basin, and 3) replacing the earthen auxiliary spillway with a roller compacted concrete (RCC) spillway with two stages of engagement. No new permanently inundated area will result from the proposed project, and the normal pool elevation will remain the same as the current condition.

The archeological records available on the Texas Historical Commission (THC) and the Texas Archeological Sites Atlas (TASA) were reviewed to determine if any previously recorded archeological sites or historic properties listed in the National Register of Historic Places (NRHP), State Antiquities Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL) are located within or adjacent to the proposed APE within a one-kilometer radius (THC, 2023).

The records review for both dams revealed one previously recorded archeological survey that was completed in 2000. Otherwise, no historic standing structures or historic properties listed in the NRHP, SAL's, historic cemeteries, or RTHL's are located within the proposed direct or indirect APE. A current archaeological survey has not been conducted at these sites.

A review of historical topographic maps was conducted within a 300-foot radius of the proposed APE to investigate for above ground historic resources that could be indirectly impacted by the project. No historic structures should be affected by the proposed projects. The proposed APEs are situated in an area that has been previously disturbed from past construction activities associated with the construction of the existing earthen dam, auxiliary spillway, and reservoir construction.

Please reply with whether you are interested in participating in consultation regarding this project and assist us in identifying whether there are any culturally or religiously significant places, or other Tribal interests, we should be aware of that might be affected by this project. NRCS will be sure to send project updates as they occur.

In responding, please refer to the **OGC-5-6** project. The point of contact for reply or further information is Angela Moody, Archaeologist/Cultural Resource Specialist at angela.moody@usda.gov, 254-742-9834 or by mail to the address on this letterhead. Your prompt reply to this request is greatly appreciated and we thank you for your assistance.

Sincerely,



KRISTY OATES
State Conservationist

Enclosure

April 10, 2024

President Russell Martin
Tonkawa Tribe of Indians of Oklahoma
c/o Historic Preservation Office
1 Rush Buffalo Road
Tonkawa, Oklahoma 74653-4449

Dear Mr. Martin:

I would like to invite your Tribe to consult over whether a proposed project on private lands might impact any of your Tribe's places of cultural or religious significance, National Historic Preservation Act historic properties, and other Tribal interests. We recognize your Tribal sovereignty and importance of your Tribe's interests on ancestral lands, including those on private lands.

This letter is to invite your tribe to consult under Section 106 of the National Historic Preservation Act of 1966, as amended for the Olmitas and Garcias Creek Watershed Flood Retarding Structure (FRS) Site 5 and Site 6 (OGC-5-6), Rehabilitation in Starr County, Texas.

We write because the project sponsors, Starr County Soil and Water Conservation District (SWCD) and the Commissioners Court of Starr County, have requested financial assistance through the Natural Resources Conservation Service (NRCS) Watershed Rehabilitation Program (REHAB) because the OGC-Sites 5 and 6, both constructed as low hazard dams, currently do not meet Federal safety standards for their reclassification as High Hazard dams. Therefore, the project sponsors and NRCS are evaluating alternatives to meet the current performance and safety criteria. Enclosed with this letter is a general project description and maps for each dam. More details can be provided upon request.

Site 5 (Coordinates 26.351758 -98.687309)

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Site 6 (Coordinates 26.349225 -98.694126)

OGC-6 is a single purpose earthen dam constructed in 1962 on El Gato Creek, a tributary of the Rio Grande River. The proposed rehabilitation measures include 1) raising the top of dam an average 9.3 feet and lengthening the dam by 100 feet, 2) installing a 30-inch principal spillway pipe with an intake riser and impact basin, and 3) replacing the earthen auxiliary spillway with a roller compacted concrete (RCC) spillway with two stages of engagement.

Russell Martin
Page 2

No new permanently inundated area will result from the proposed project, and the normal pool elevation will remain the same as the current condition.

The archeological records available on the Texas Historical Commission (THC) and the Texas Archeological Sites Atlas (TASA) were reviewed to determine if any previously recorded archeological sites or historic properties listed in the National Register of Historic Places (NRHP), State Antiquities Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL) are located within or adjacent to the proposed Area of Potential Effect (APE) within a one-kilometer radius (THC, 2023).

The records review for both dams revealed one previously recorded archeological survey that was completed in 2000. Otherwise, no historic standing structures or historic properties listed in the NRHP, SAL's, historic cemeteries, or RTHL's are located within the proposed direct or indirect APE. A current archaeological survey has not been conducted at these sites.

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Please reply with whether you are interested in participating in consultation regarding this project and assist us in identifying whether there are any culturally or religiously significant places, or other Tribal interests, we should be aware of that might be affected by this project. NRCS will be sure to send project updates as they occur.

In responding, please refer to the **OGC-5-6** project. The point of contact for reply or further information is Angela Moody, Archaeologist/Cultural Resource Specialist at angela.moody@usda.gov, 254-742-9834 or by mail to the address on this letterhead. Your prompt reply to this request is greatly appreciated and we thank you for your assistance.

Sincerely,



KRISTY OATES
State Conservationist

Enclosure

April 10, 2024

Martina Minthorn, THPO
Comanche Nation of Oklahoma
c/o Historic Preservation Office,
6 SW D Avenue Suite C
Lawton, Oklahoma 73501

Dear Ms. Minthorn:

I would like to invite your Tribe to consult over whether a proposed project on private lands might impact any of your Tribe's places of cultural or religious significance, National Historic Preservation Act historic properties, and other Tribal interests. We recognize your Tribal sovereignty and importance of your Tribe's interests on ancestral lands, including those on private lands.

This letter is to invite your tribe to consult under Section 106 of the National Historic Preservation Act of 1966, as amended for the Olmitas and Garcias Creek Watershed Flood Retarding Structure (FRS) Site 5 and Site 6 (OGC-5-6), Rehabilitation in Starr County, Texas.

We write because the project sponsors, Starr County Soil and Water Conservation District (SWCD) and the Commissioners Court of Starr County, have requested financial assistance through the Natural Resources Conservation Service (NRCS) Watershed Rehabilitation Program (REHAB) because the OGC-Sites 5 and 6, both constructed as low hazard dams, currently do not meet Federal safety standards for their reclassification as High Hazard dams. Therefore, the project sponsors and NRCS are evaluating alternatives to meet the current performance and safety criteria. Enclosed with this letter is a general project description and maps for each dam. More details can be provided upon request.

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No new permanently inundated area will result from the proposed project, and the normal pool elevation will remain the same as the current condition.

The archeological records available on the Texas Historical Commission (THC) and the Texas Archeological Sites Atlas (TASA) were reviewed to determine if any previously recorded archeological sites or historic properties listed in the National Register of Historic Places (NRHP), State Antiquities Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL) are located within or adjacent to the proposed Area of Potential Effect (APE) within a one-kilometer radius (THC, 2023).

The records review for both dams revealed one previously recorded archeological survey that was completed in 2000. Otherwise, no historic standing structures or historic properties listed in the NRHP, SAL's, historic cemeteries, or RTHL's are located within the proposed direct or indirect APE. A current archaeological survey has not been conducted at these sites.

A review of historical topographic maps was conducted within a 300-foot radius of the proposed APE to investigate for above ground historic resources that could be indirectly impacted by the project. No historic structures should be affected by the proposed projects. The proposed APEs are situated in an area that has been previously disturbed from past construction activities associated with the construction of the existing earthen dam, auxiliary spillway, and reservoir construction.

Please reply with whether you are interested in participating in consultation regarding this project and assist us in identifying whether there are any culturally or religiously significant places, or other Tribal interests, we should be aware of that might be affected by this project. NRCS will be sure to send project updates as they occur.

In responding, please refer to the **OGC-5-6** project. The point of contact for reply or further information is Angela Moody, Archaeologist/Cultural Resource Specialist at angela.moody@usda.gov, 254-742-9834 or by mail to the address on this letterhead. Your prompt reply to this request is greatly appreciated and we thank you for your assistance.

Sincerely,



KRISTY OATES
State Conservationist

Enclosure

April 10, 2024

THPO Lauren Norman-Brown
Tonkawa Tribe of Indians of Oklahoma
c/o Historic Preservation Office
1 Rush Buffalo Road
Tonkawa, Oklahoma 74653-4449

Dear Ms. Norman-Brown:

I would like to invite your Tribe to consult over whether a proposed project on private lands might impact any of your Tribe's places of cultural or religious significance, National Historic Preservation Act historic properties, and other Tribal interests. We recognize your Tribal sovereignty and importance of your Tribe's interests on ancestral lands, including those on private lands.

This letter is to invite your tribe to consult under Section 106 of the National Historic Preservation Act of 1966, as amended for the Olmitas and Garcias Creek Watershed Flood Retarding Structure (FRS) Site 5 and Site 6 (OGC-5-6), Rehabilitation in Starr County, Texas.

We write because the project sponsors, Starr County Soil and Water Conservation District (SWCD) and the Commissioners Court of Starr County, have requested financial assistance through the Natural Resources Conservation Service (NRCS) Watershed Rehabilitation Program (REHAB) because the OGC-Sites 5 and 6, both constructed as low hazard dams, currently do not meet Federal safety standards for their reclassification as High Hazard dams. Therefore, the project sponsors and NRCS are evaluating alternatives to meet the current performance and safety criteria. Enclosed with this letter is a general project description and maps for each dam. More details can be provided upon request.

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OGC-5 was built by NRCS in 1963. The dam is located on Garcias Creek, a tributary to the Rio Grande River. The proposed rehabilitation measures include construction of a new roller compacted concrete (RCC) spillway through the main embankment. The existing earthen auxiliary spillway will be blocked. Additionally, the existing principal spillway and intake tower will be replaced with a new box culvert. The proposed modifications to the principal and auxiliary spillway involve raising the top of dam elevation 9.7 feet, from 211.2 feet to 220.9 feet. No new permanently inundated area will result from the proposed project, and the normal pool elevation will remain the same as the current condition.

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The archeological records available on the Texas Historical Commission (THC) and the Texas Archeological Sites Atlas (TASA) were reviewed to determine if any previously recorded archeological sites or historic properties listed in the National Register of Historic Places (NRHP), State Antiquities Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL) are located within or adjacent to the proposed Area of Potential Effect (APE) within a one-kilometer radius (THC, 2023).

The records review for both dams revealed one previously recorded archeological survey that was completed in 2000. Otherwise, no historic standing structures or historic properties listed in the NRHP, SAL's, historic cemeteries, or RTHL's are located within the proposed direct or indirect APE. A current archaeological survey has not been conducted at these sites.

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Please reply with whether you are interested in participating in consultation regarding this project and assist us in identifying whether there are any culturally or religiously significant places, or other Tribal interests, we should be aware of that might be affected by this project. NRCS will be sure to send project updates as they occur.

In responding, please refer to the **OGC-5-6** project. The point of contact for reply or further information is Angela Moody, Archaeologist/Cultural Resource Specialist at angela.moody@usda.gov, 254-742-9834 or by mail to the address on this letterhead. Your prompt reply to this request is greatly appreciated and we thank you for your assistance.

Sincerely,



KRISTY OATES
State Conservationist

Enclosure

April 10, 2024

Chairman Mark Woommavovah
Comanche Nation of Oklahoma
Post Office Box 908
Lawton, Oklahoma 73502

Dear Mr. Woommavovah:

I would like to invite your Tribe to consult over whether a proposed project on private lands might impact any of your Tribe's places of cultural or religious significance, National Historic Preservation Act historic properties, and other Tribal interests. We recognize your Tribal sovereignty and importance of your Tribe's interests on ancestral lands, including those on private lands.

This letter is to invite your tribe to consult under Section 106 of the National Historic Preservation Act of 1966, as amended for the Olmitas and Garcias Creek Watershed Flood Retarding Structure (FRS) Site 5 and Site 6 (OGC-5-6), Rehabilitation in Starr County, Texas.

We write because the project sponsors, Starr County Soil and Water Conservation District (SWCD) and the Commissioners Court of Starr County, have requested financial assistance through the Natural Resources Conservation Service (NRCS) Watershed Rehabilitation Program (REHAB) because the OGC-Sites 5 and 6, both constructed as low hazard dams, currently do not meet Federal safety standards for their reclassification as High Hazard dams. Therefore, the project sponsors and NRCS are evaluating alternatives to meet the current performance and safety criteria. Enclosed with this letter is a general project description and maps for each dam. More details can be provided upon request.

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The archeological records available on the Texas Historical Commission (THC) and the Texas Archeological Sites Atlas (TASA) were reviewed to determine if any previously recorded archeological sites or historic properties listed in the National Register of Historic Places (NRHP), State Antiquities Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL) are located within or adjacent to the proposed Area of Potential Effect (APE) within a one-kilometer radius (THC, 2023).

The records review for both dams revealed one previously recorded archeological survey that was completed in 2000. Otherwise, no historic standing structures or historic properties listed in the NRHP, SAL's, historic cemeteries, or RTHL's are located within the proposed direct or indirect APE. A current archaeological survey has not been conducted at these sites.

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Please reply with whether you are interested in participating in consultation regarding this project and assist us in identifying whether there are any culturally or religiously significant places, or other Tribal interests, we should be aware of that might be affected by this project. NRCS will be sure to send project updates as they occur.

In responding, please refer to the **OGC-5-6** project. The point of contact for reply or further information is Angela Moody, Archaeologist/Cultural Resource Specialist at angela.moody@usda.gov, 254-742-9834 or by mail to the address on this letterhead. Your prompt reply to this request is greatly appreciated and we thank you for your assistance.

Sincerely,



KRISTY OATES
State Conservationist

Enclosure

December 6, 2022

Texas Commission on Environmental Quality
Warren Samuelson, Mail Code 177
Post Office Box 13087
Austin, Texas 78711-3087

SUBJECT: Formal request for Texas Commission on Environmental Quality (TCEQ) to be a cooperating agency on the Olmitos and Garcias Watershed for the Rehabilitation Watershed Plan and Environmental Assessment (EA) of Floodwater Retarding Structures (FRS) Sites 5 and 6 located in Starr County, Texas

In accordance with the Council on Environmental Quality regulations implementing the National Environmental Policy Act (NEPA) at 40 CFR Part 1501.6, the U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) is formally requesting that your agency become a cooperating agency in the planning and development of the Olmitos and Garcias Watershed, Rehabilitation Plan EA for Sites 5 and 6. This request is being made because your agency has been identified as having special expertise or jurisdiction related to this project. The Plan-EA is being prepared to fulfill USDA-NRCS' NEPA compliance responsibilities pertaining to our potential federal financial assistance through the Watershed Protection and Flood Prevention Program (Public Law 83-566) for this project. If permits are required from your agency, you also may have NEPA compliance responsibilities. Therefore, USDA-NRCS' preparation of this Plan-EA could assist in fulfilling environmental review requirements for your agency or other federal agencies and meet NEPA's intent of reducing duplication and delay between agencies.

The Starr County Soil and Water Conservation District (SWCD), and the Starr County Commissioner Court are the project sponsors and have received funding to develop a Plan-EA for Sites 5 and 6. Site 5 was constructed in 1963, and Site 6 was constructed in 1961 by the Soil Conservation Service as a single-purpose dam (flood prevention). It was originally designed and constructed as a low hazard dam but has been re-classified as high hazard due to population at risk downstream. Site 5 consists of an earthen structure 45-feet in height with a 103-acre permeant pool. Site 6 consists of an earthen structure 40-feet in height with a 48-acre permeant pool. Sites 5 and 6 are maintained by the Starr County Sponsors. It currently does not meet Federal safety standards for a High Hazard dam. Therefore, the project sponsors and USDA-NRCS are preparing this Plan-EA to evaluate alternatives to meet the current performance and safety criteria. The Plan-EA will consider alternatives for Sites 5 and 6 and will include: 1) No Action (future without federal funding investment), (2) Decommissioning in addition to non-structural, (3) Non-Structural (floodproofing and/or relocation of at-risk properties), and 4) Structural Rehabilitation.

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A field review of the project area was done on November 2, 2022.

A public meeting is scheduled for December 13, 2022, from 6:00-7:30 p.m. at 6163 FM1430 Rio Grande City (Election site Pavilion).

Thank you for your timely response and cooperation with this project. If you have any questions or comments, please contact Mark Northcut at mark.northcut@usda.gov or via phone at 254-742-9824.



KRISTY OATES
State Conservationist

Enclosure

Project Location Map

December 6, 2022

Texas Parks and Wildlife Department
Wildlife Habitat Assessment Program
4200 Smith School Road
Austin, Texas 78744

SUBJECT: Formal request for Texas Parks and Wildlife Department (TPWD) to be a cooperating agency on the Olmitos and Garcias Watershed for the Rehabilitation Watershed Plan and Environmental Assessment (EA) of Floodwater Retarding Structures (FRS) Sites 5 and 6 located in Starr County, Texas

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KRISTY OATES
State Conservationist

Enclosure

Project Location Map

December 6, 2022

U.S. Army Corps of Engineers – Galveston District
Regulatory Branch CESWG-PE-R
2000 Fort Point Road
Post Office Box 1229
Galveston, Texas 77553-1229

SUBJECT: Formal request for U.S. Army Corps of Engineer (USACE) to be a cooperating agency on Olmitos and Garcias Watershed for the Rehabilitation Watershed Plan and Environmental Assessment (EA) of Floodwater Retarding Structures (FRS) Sites 5 and 6 located in Starr County, Texas

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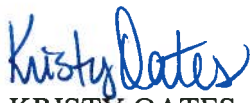
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KRISTY OATES
State Conservationist

Enclosure

Project Location Map

December 6, 2022

U.S. Department of the Interior
U.S. Fish and Wildlife Service
Alamo, Texas Ecological Services Field Office
3325 Green Jay Road
Alamo, Texas 78516

SUBJECT: Formal request for U.S. Fish and Wildlife Service (USFWS) to be a cooperating agency on the Olmitos and Garcias Watershed for the Rehabilitation Watershed Plan and Environmental Assessment (EA) of Floodwater Retarding Structures (FRS) Sites 5 and 6 located in Starr County, Texas

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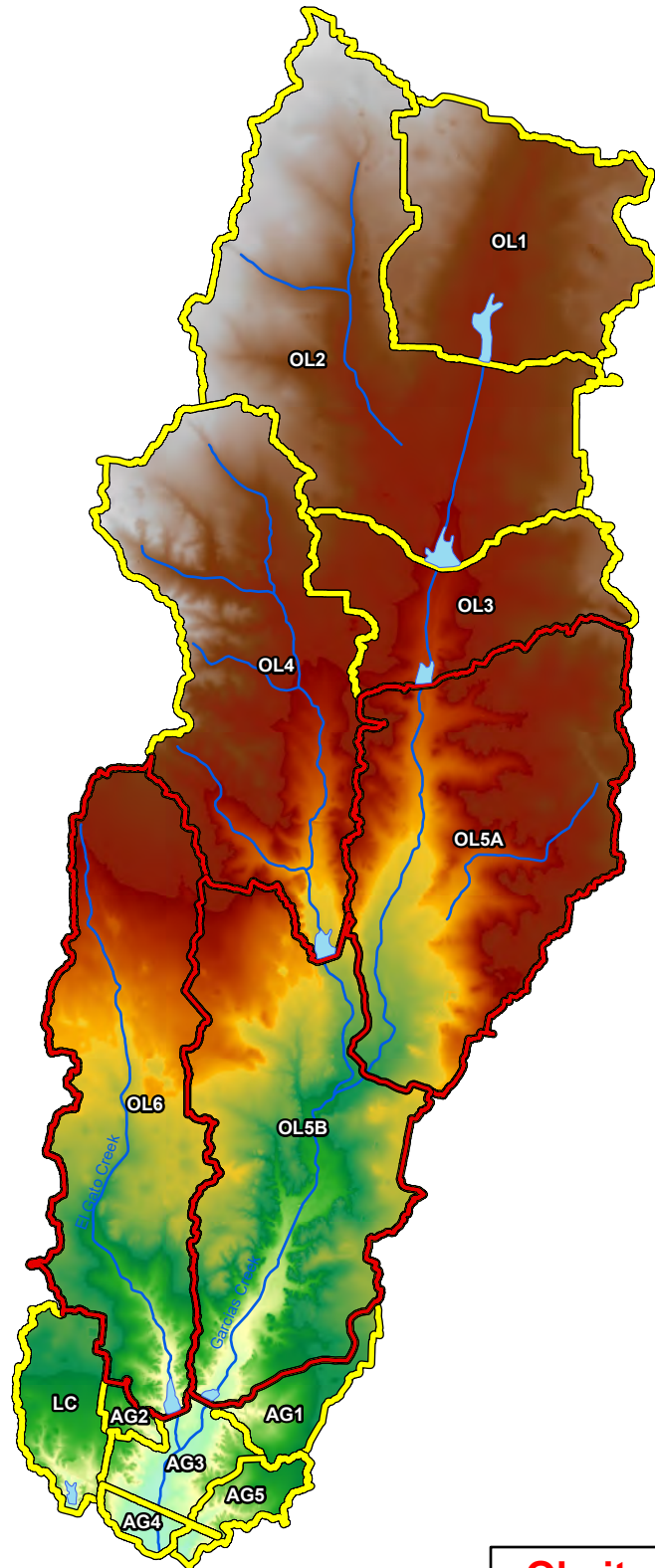
KRISTY OATES
State Conservationist
Natural Resources Conservation Service

Enclosures:
Project Location Map

Appendix B – Project Map

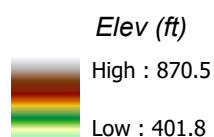
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Total Watershed Area = 103.8 square miles



ID	Name	Area (sq. mi)
OL1	Olmitos 1	10.39
OL2	Olmitos 2	20.32
OL3	Olmitos 3	6.73
OL4	Olmitos 4	16.89
OL5A	Olmitos 5 (Upper)	17.84
OL5B	Olmitos 5 (Lower)	16.40
OL6	Olmitos 6	15.23
AG1	Arroyo Garcia 1	1.68
AG2	Arroyo Garcia 2	0.45
AG3	Arroyo Garcia 3	2.05
AG4	Arroyo Garcia 4	0.62
AG5	Arroyo Garcia 5	1.26
LC	La Casita	2.81

Digital Elevation Model

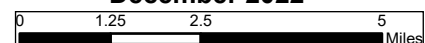


Olmitos and Garcias Sites 5 & 6

Starr County, Texas

Watershed Map

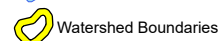
December 2022



Waterbody



Streams

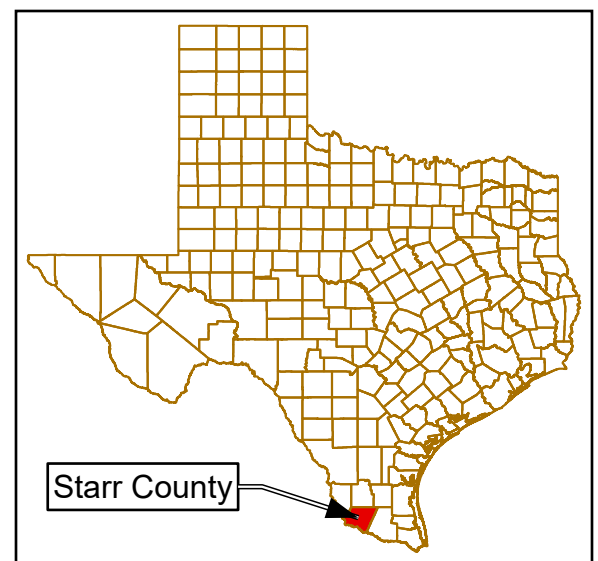
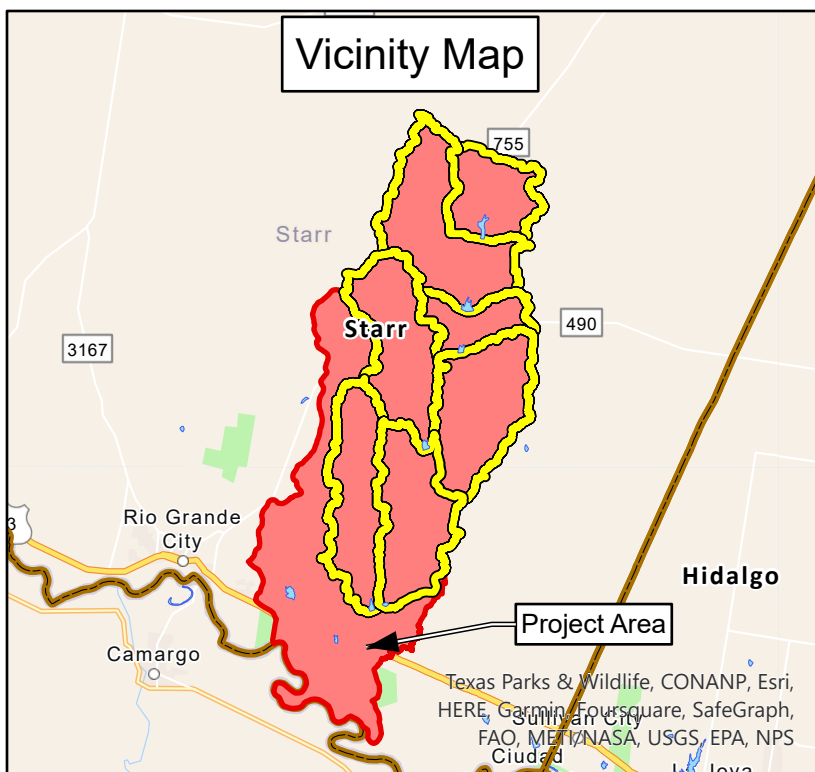
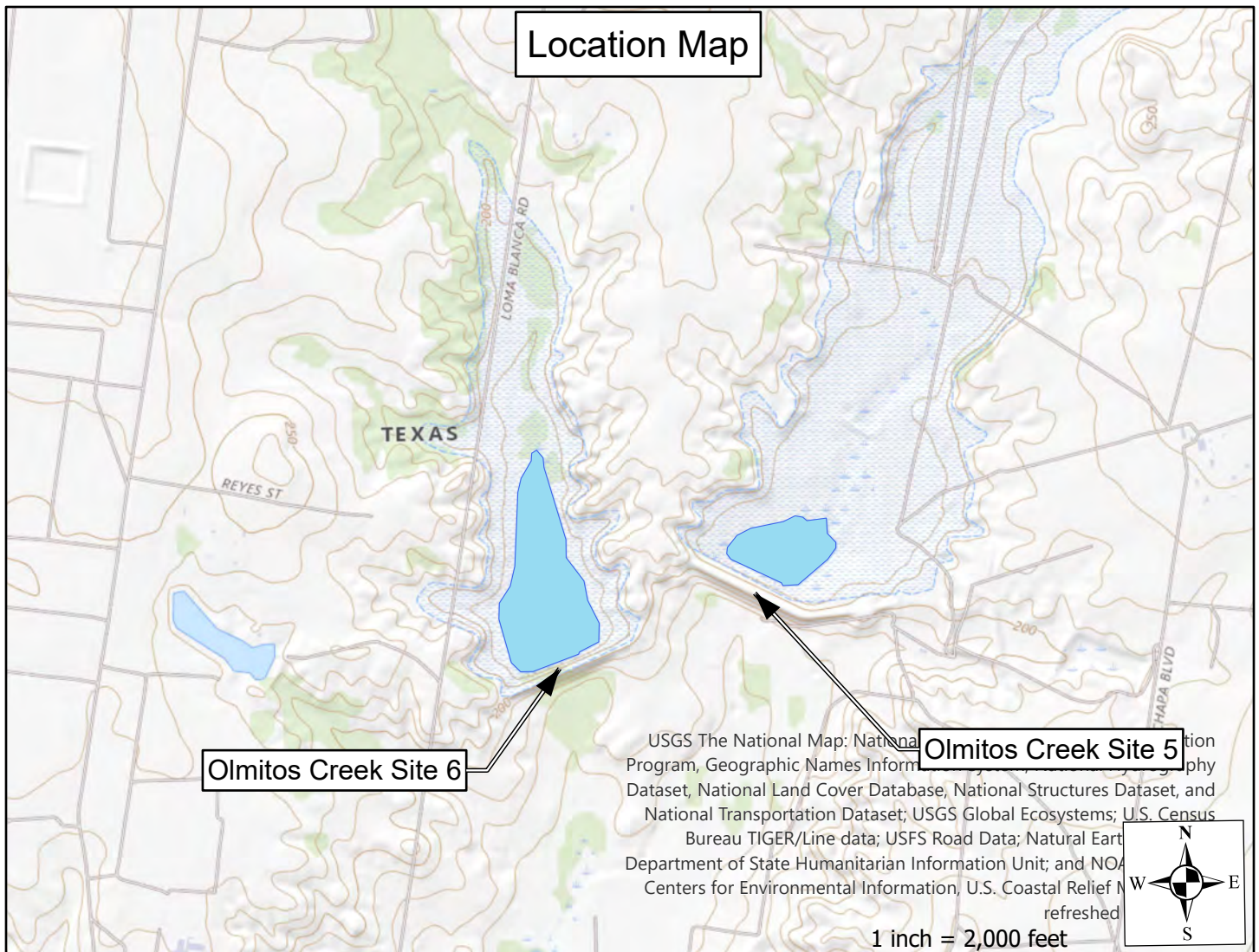


Watershed Boundaries

Appendix C – Support Maps

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C-1: Location Vicinity Map, Olmitos and Garcias Creek FRS 5



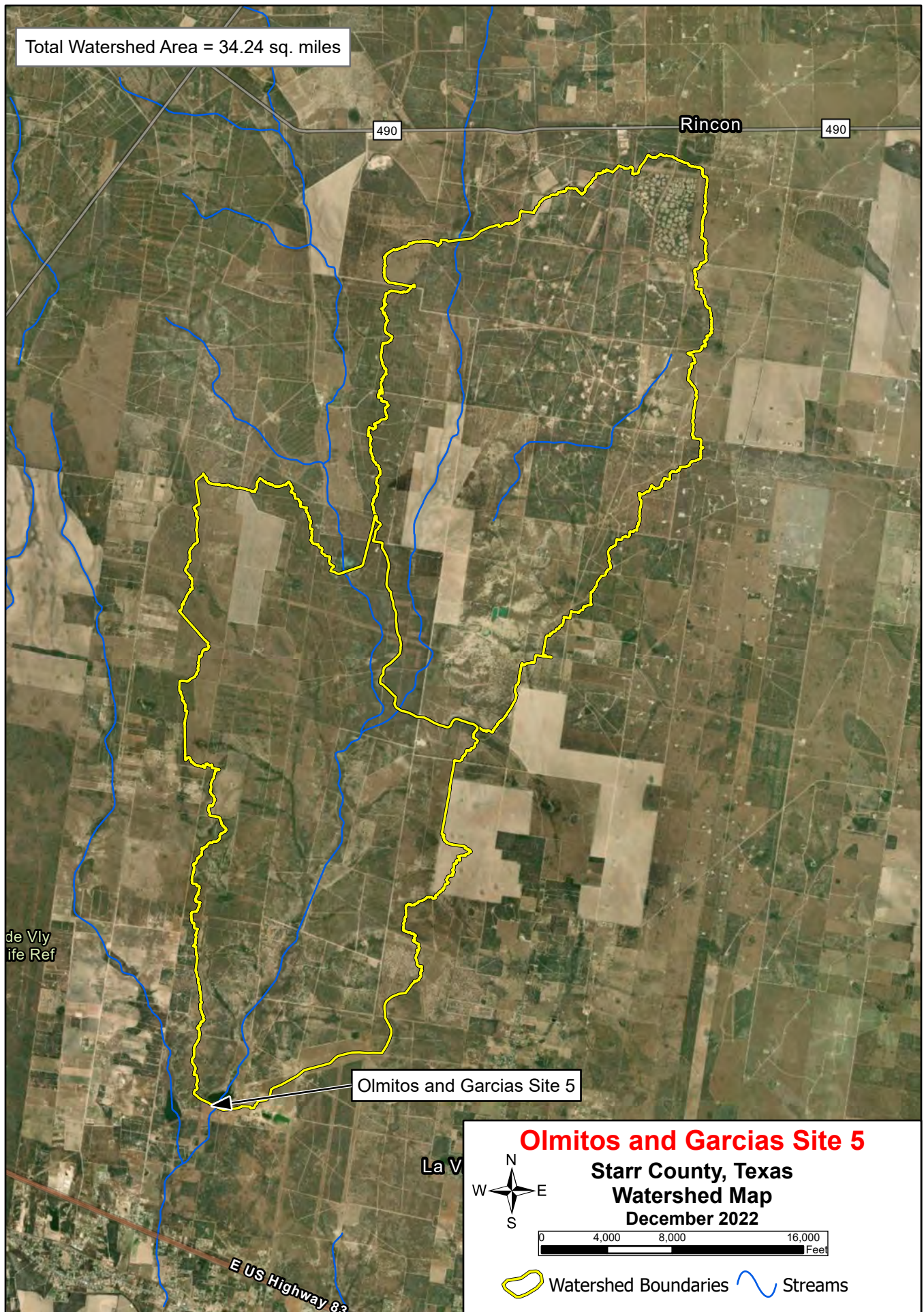
Olmitos & Garcias Site 5 & 6

Starr County, Texas

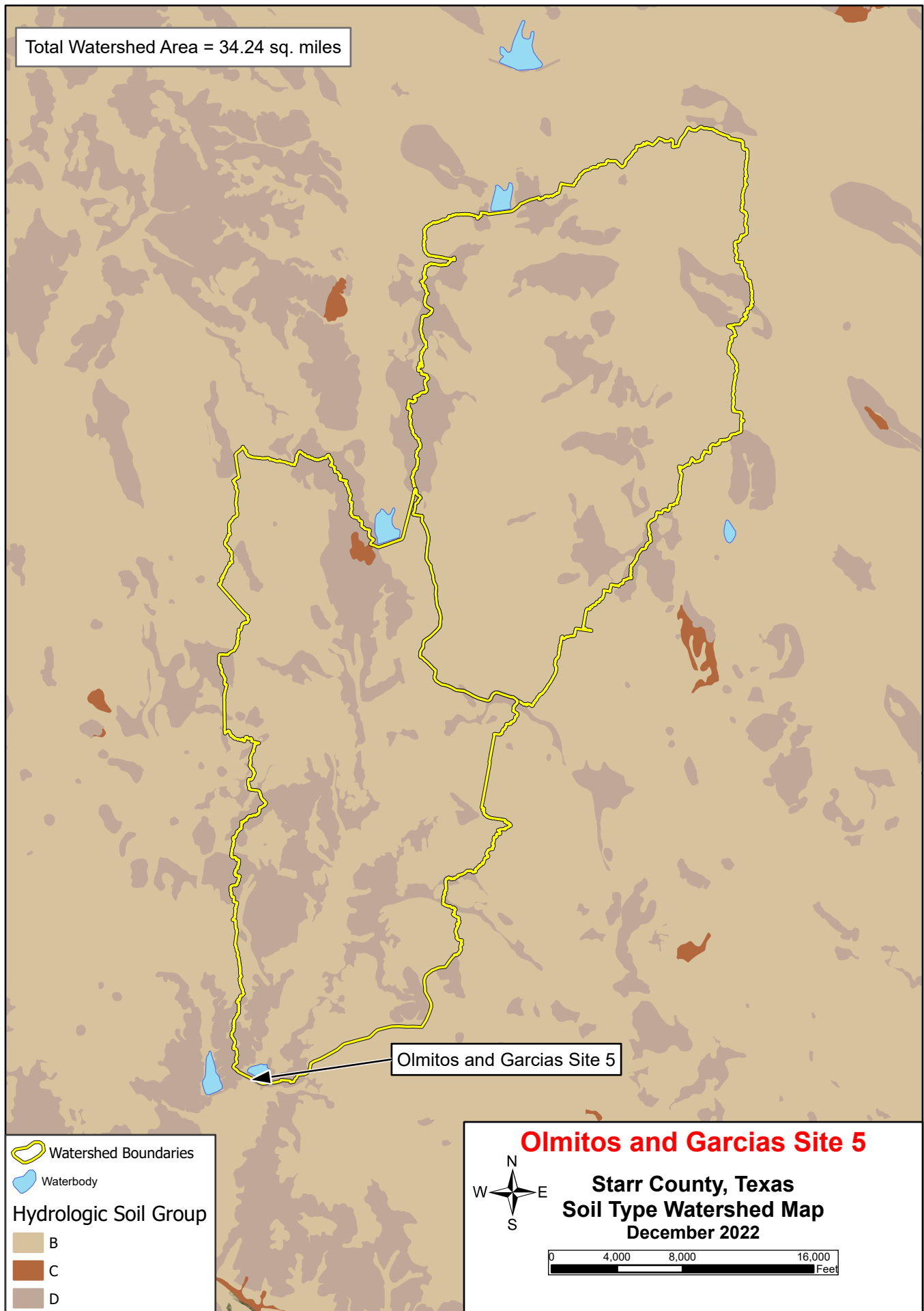
December 2022



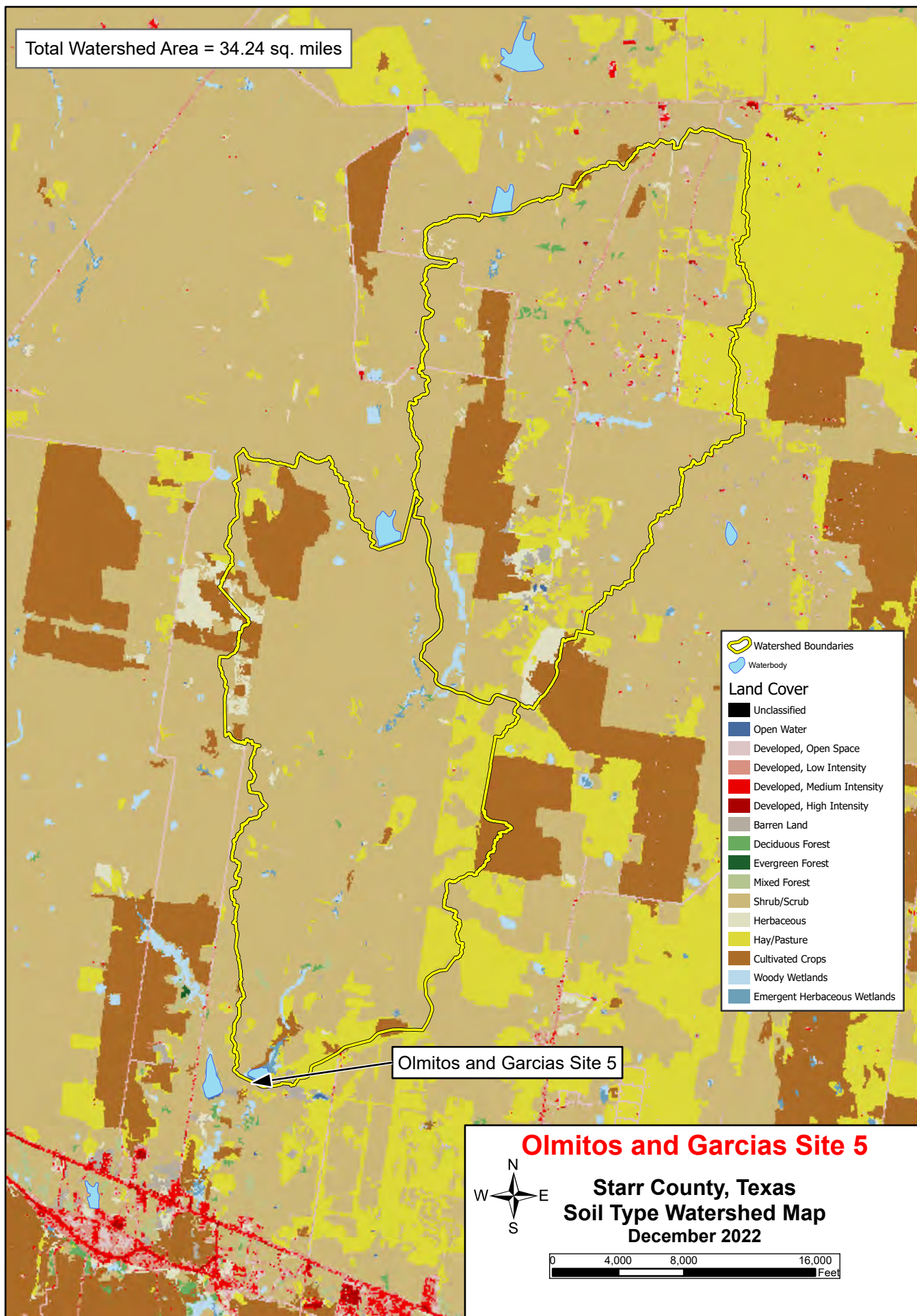
C-2: Watershed Map, Olmitos and Garcias Creek FRS 5



C-3: Soil Type Map, Olmitos and Garcias Creek FRS 5



C-4: Land Use Map, Olmitos and Garcias Creek FRS 5



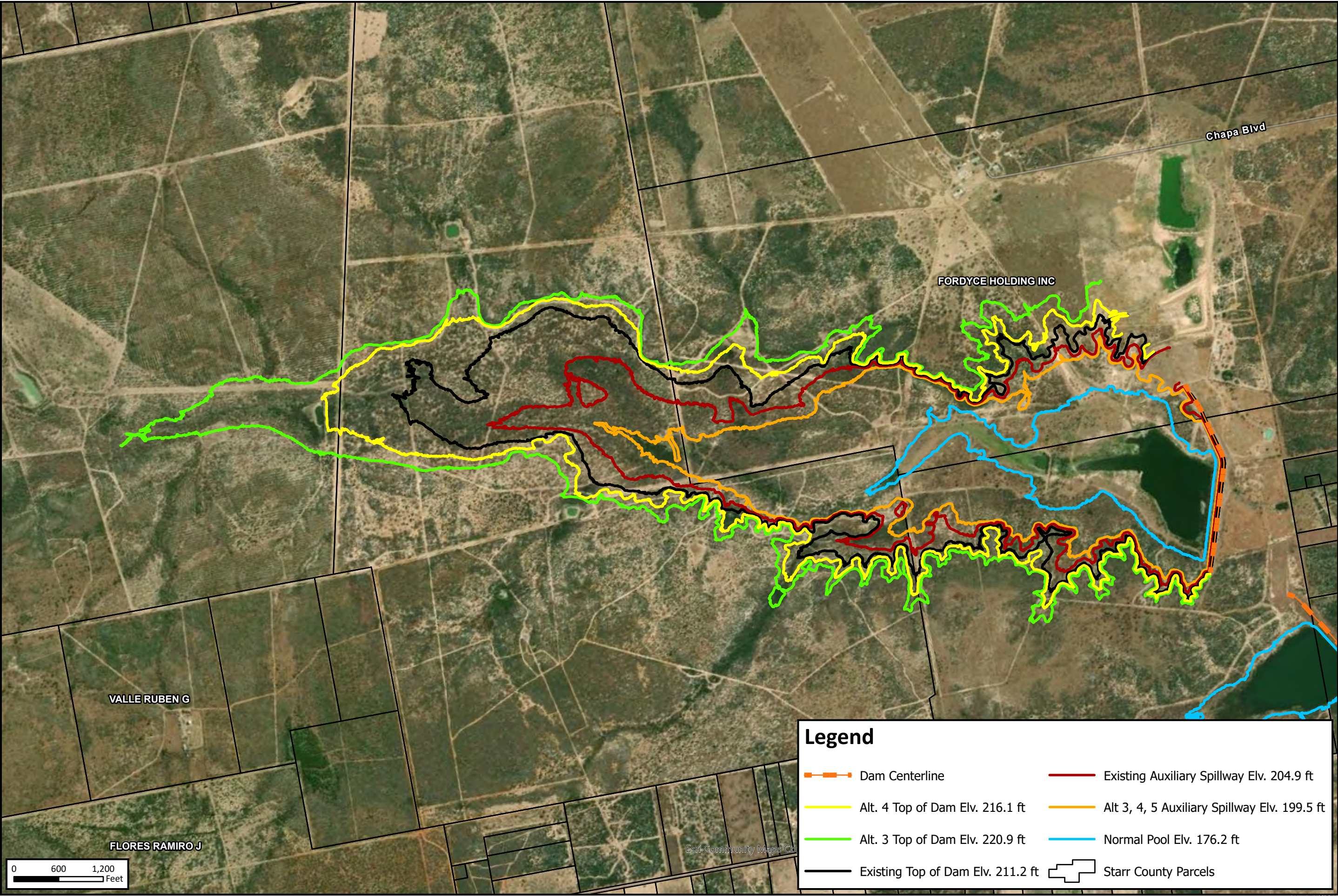
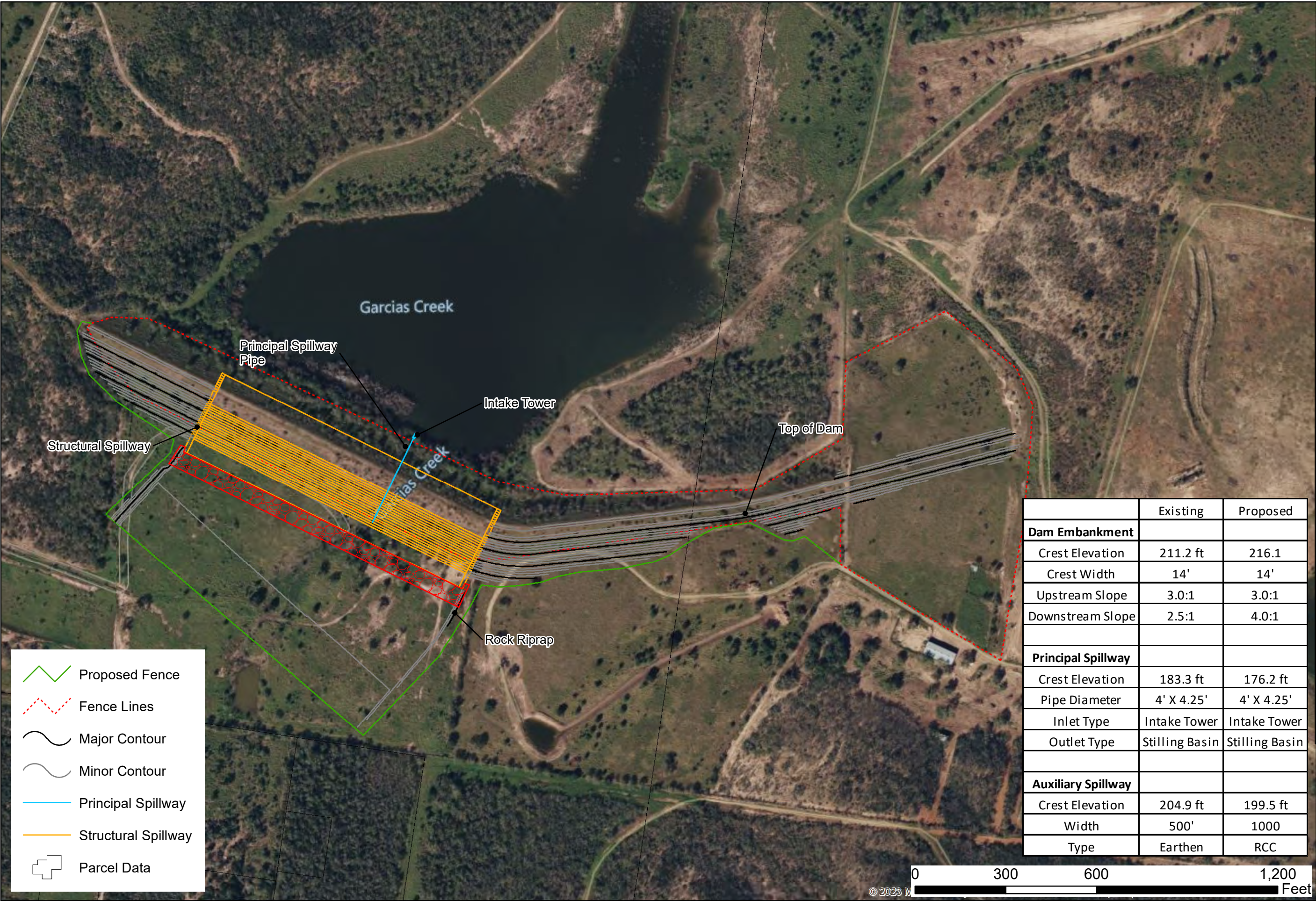


FIGURE		C-5	
		TSW22721	Olmitos6
FN JOB NO		FILE	DATE
8/31/2023		1 IN = 1,200 FT	02920
SCALE		DRAFTED	
Upstream Area Map			
Olmitos and Garcias Creek #5			
			
 801 Cherry Street, Suite 2800 Fort Worth, TX 76102 (P) 817-735-7300 (F) 817-735-7491			

C-7: Alternative 4 - Plan View, Olmitos and Garcias Creek FRS 5



	Existing	Proposed
Dam Embankment		
Crest Elevation	211.2 ft	216.1
Crest Width	14'	14'
Upstream Slope	3.0:1	3.0:1
Downstream Slope	2.5:1	4.0:1
Principal Spillway		
Crest Elevation	183.3 ft	176.2 ft
Pipe Diameter	4' X 4.25'	4' X 4.25'
Inlet Type	Intake Tower	Intake Tower
Outlet Type	Stilling Basin	Stilling Basin
Auxiliary Spillway		
Crest Elevation	204.9 ft	199.5 ft
Width	500'	1000
Type	Earthen	RCC

Figure
C-7

OLMITOS 5 ALTERNATIVE 4

SUPPLEMENTAL WATERSHED PLAN

**FRESE
NICHOLS**

2711 North Haskell Ave.
Suite 3300
Dallas, TX 75204

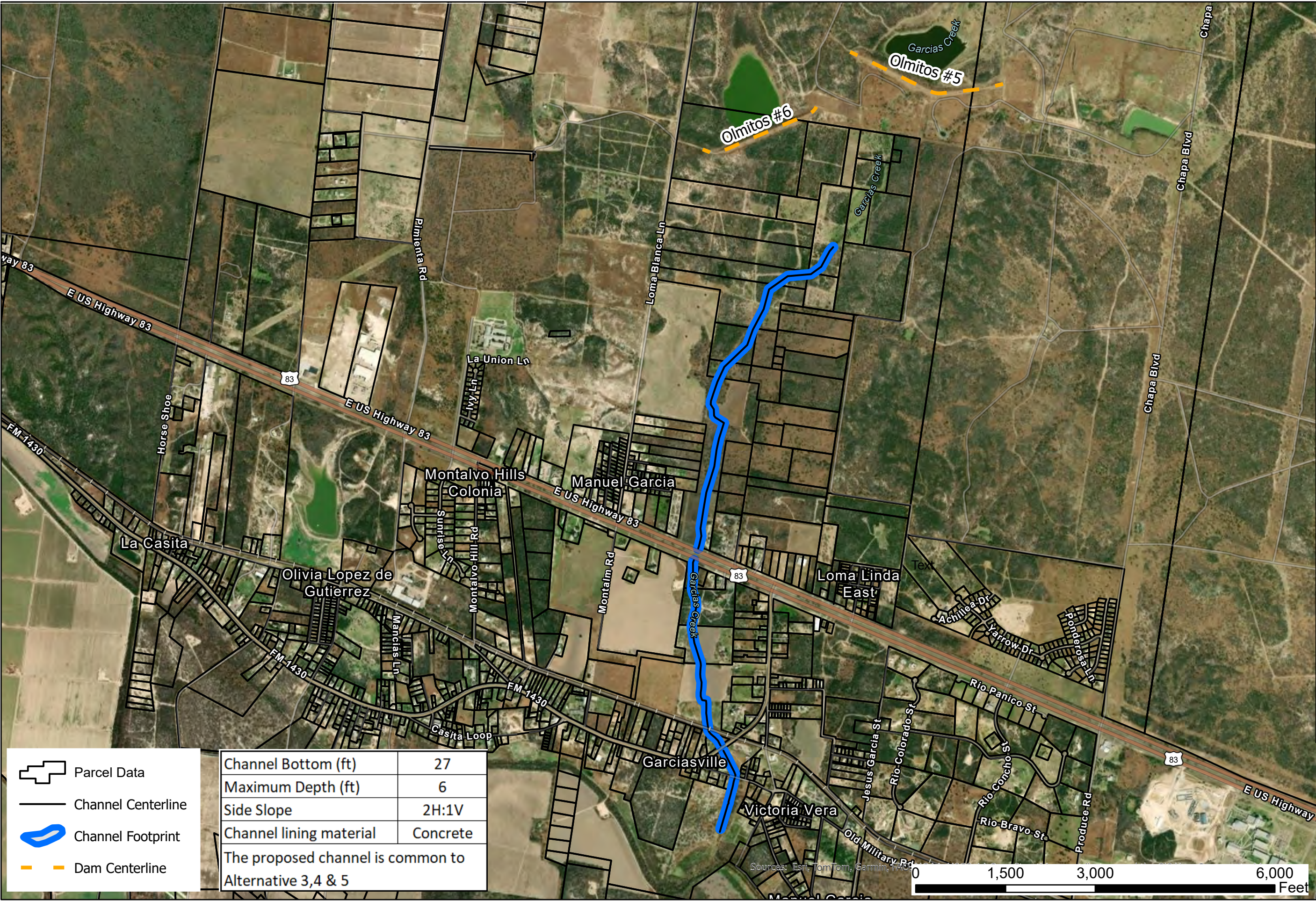
TSW22727

FILE H:\WR_DESIGN\Figure\WC2\UpstreamArea

DATUM & COORDINATE SYSTEM NAD 1983 StatePlane Texas Central FIPS 4203 Feet

DATE June 2023

PREPARED BY BET



 Parcel Data

 Channel Centerline

 Channel Footprint

 Dam Centerline

Channel Bottom (ft)	27
Maximum Depth (ft)	6
Side Slope	2H:1V
Channel lining material	Concrete
The proposed channel is common to Alternative 3,4 & 5	

Figure
C-9



OLMITOS 5 PROPOSED CHANNEL ALT 3,4&5

SUPPLEMENTAL WATERSHED PLAN

 **FRESE
NICHOLS**

2711 North Haskell Ave.
Suite 3300
Dallas, TX 75204

TSW22727

FILE
I:\NWR DESIGN\Figures\WC2\planarea

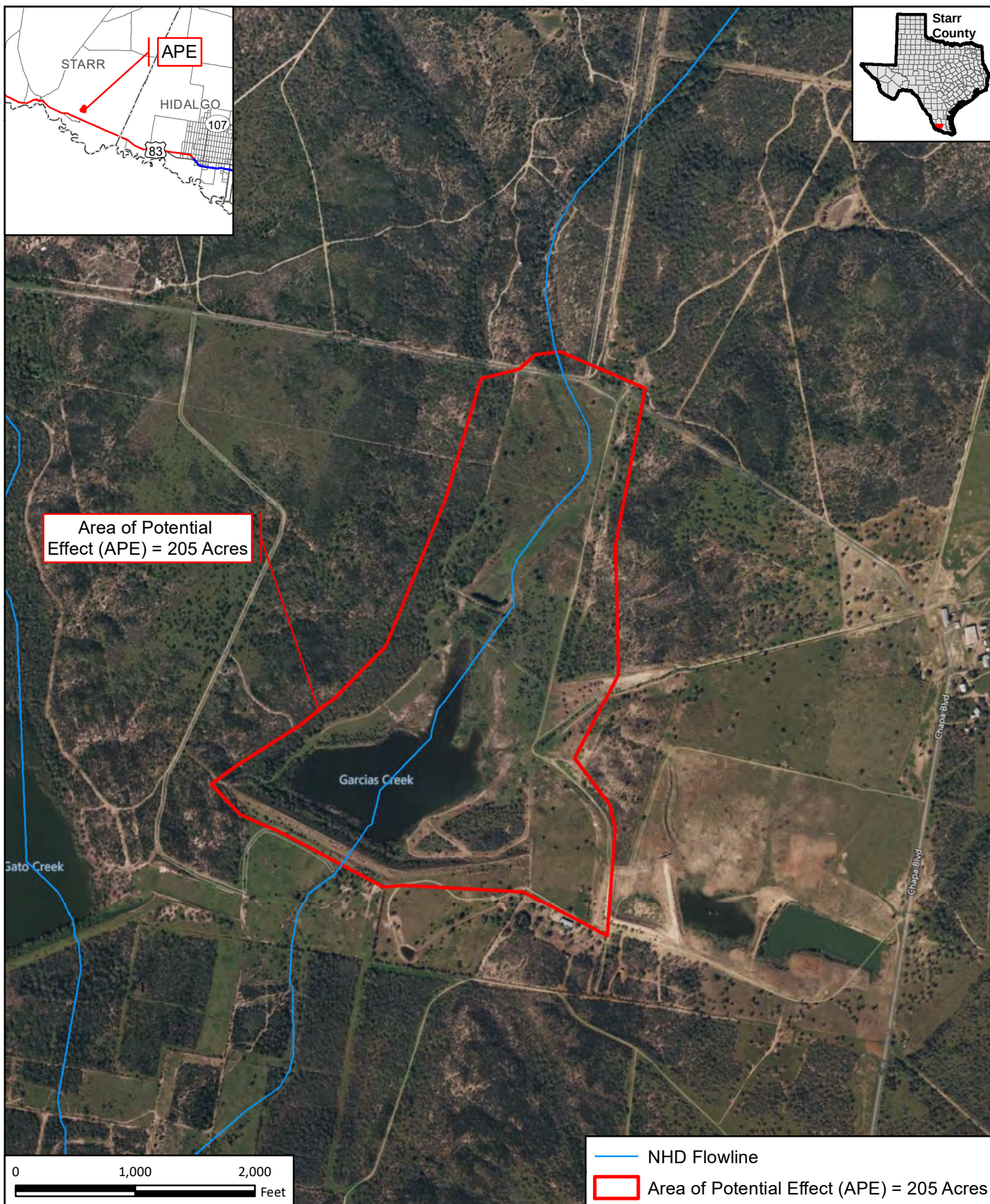
DATUM & COORDINATE SYSTEM
NAD 1983 StatePlane Texas Central FIPS 4203 Feet

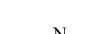
DATE
August 2025

PREPARED BY
KASH

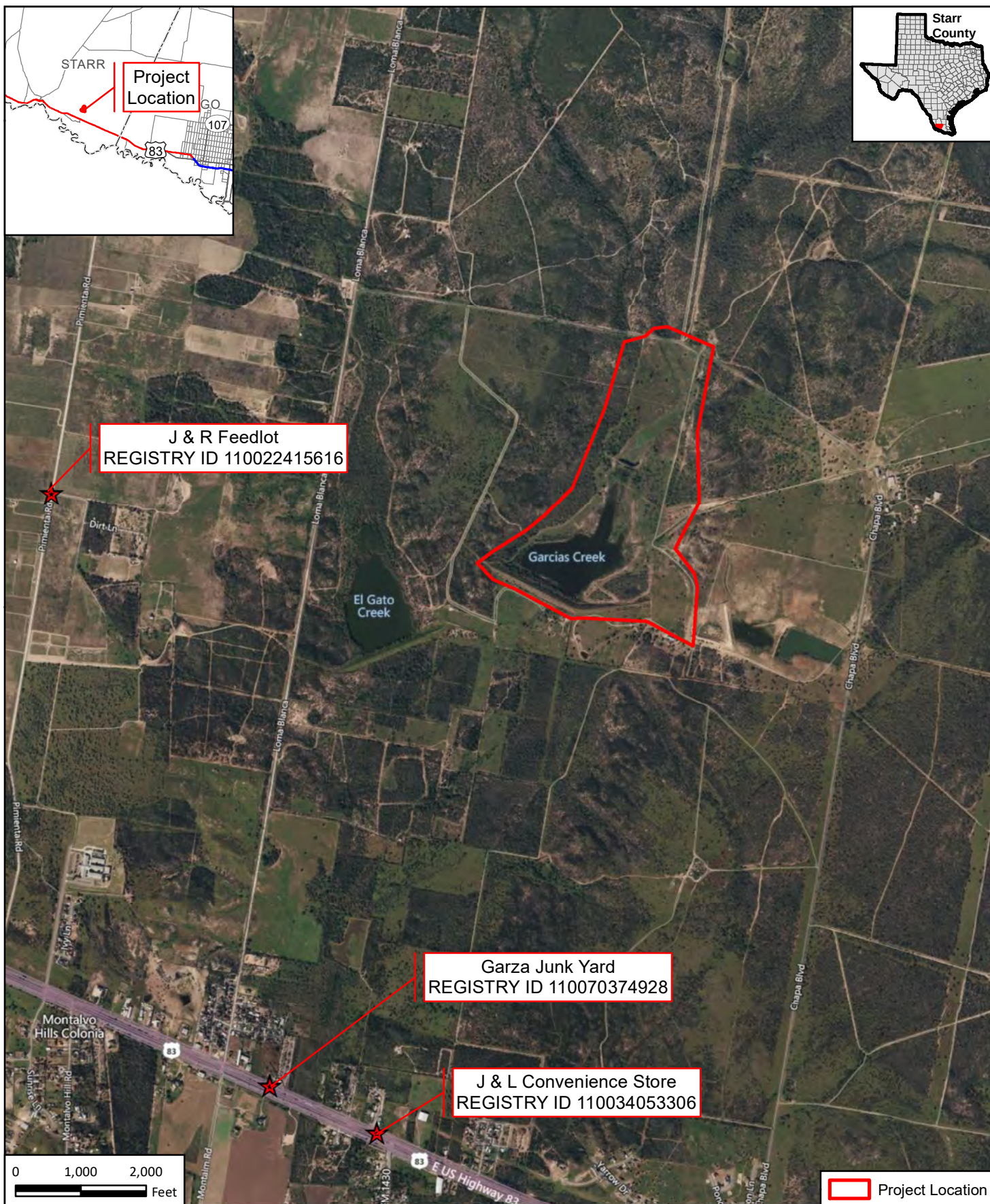
Sources: Esri, TomTom, Garmin, FRC

C-9: Area of Potential Effect Map, Olmitos and Garcias Creek FRS 5



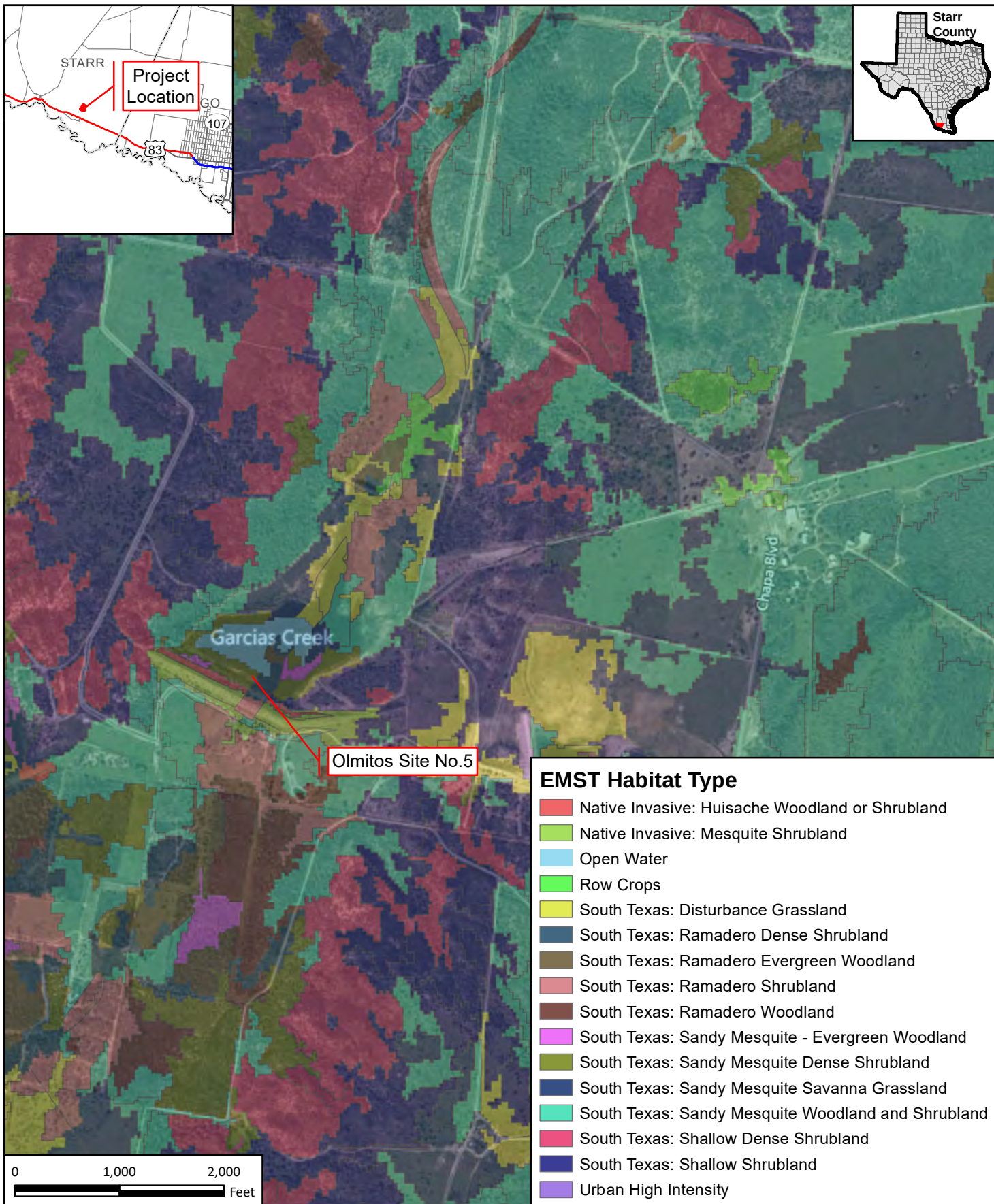
 FREASE AND NICHOLS, INC 10431 Morado Cir Ste 300, Austin, TX 78759 (512) 617-3100		Texas State Soil and Water Conservation Board		C-10
		Olmitos Site No.5		
		Aerial Map		
		FN JOB NO	TSW22727	FIGURE
		FILE NAME	Fig2_Aerial.mxd	
		DATE	12/27/2022	
		DRAFTED	CS	

C-10: Hazardous Materials Map, Olmitos and Garcias Creek FRS 5



FREES AND NICHOLS FREES AND NICHOLS, INC 10431 Morado Cir Ste 300, Austin, TX 78759 (512) 617-3100		Texas State Soil and Water Conservation Board		FN JOB NO	TSW22727	C-11 FIGURE
		Olmitos Site No.5		FILE NAME	Fig6_Hazmat.mxd	
		EPA Facilities Map		DATE	12/28/2022	
				Scale	1:24,000	
				DRAFTED	CS	

C-11: EMST Habitat Map, Olmitos and Garcias Creek FRS 5



EMST Habitat Type

- Native Invasive: Huisache Woodland or Shrubland
- Native Invasive: Mesquite Shrubland
- Open Water
- Row Crops
- South Texas: Disturbance Grassland
- South Texas: Ramadero Dense Shrubland
- South Texas: Ramadero Evergreen Woodland
- South Texas: Ramadero Shrubland
- South Texas: Ramadero Woodland
- South Texas: Sandy Mesquite - Evergreen Woodland
- South Texas: Sandy Mesquite Dense Shrubland
- South Texas: Sandy Mesquite Savanna Grassland
- South Texas: Sandy Mesquite Woodland and Shrubland
- South Texas: Shallow Dense Shrubland
- South Texas: Shallow Shrubland
- Urban High Intensity

0 1,000 2,000
Feet

FREES AND NICHOLS
FREES AND NICHOLS, INC
10431 Morado Cir Ste 300,
Austin, TX 78759
(512) 617-3100



Texas State Soil and Water Conservation Board
Olmitos Site No.5

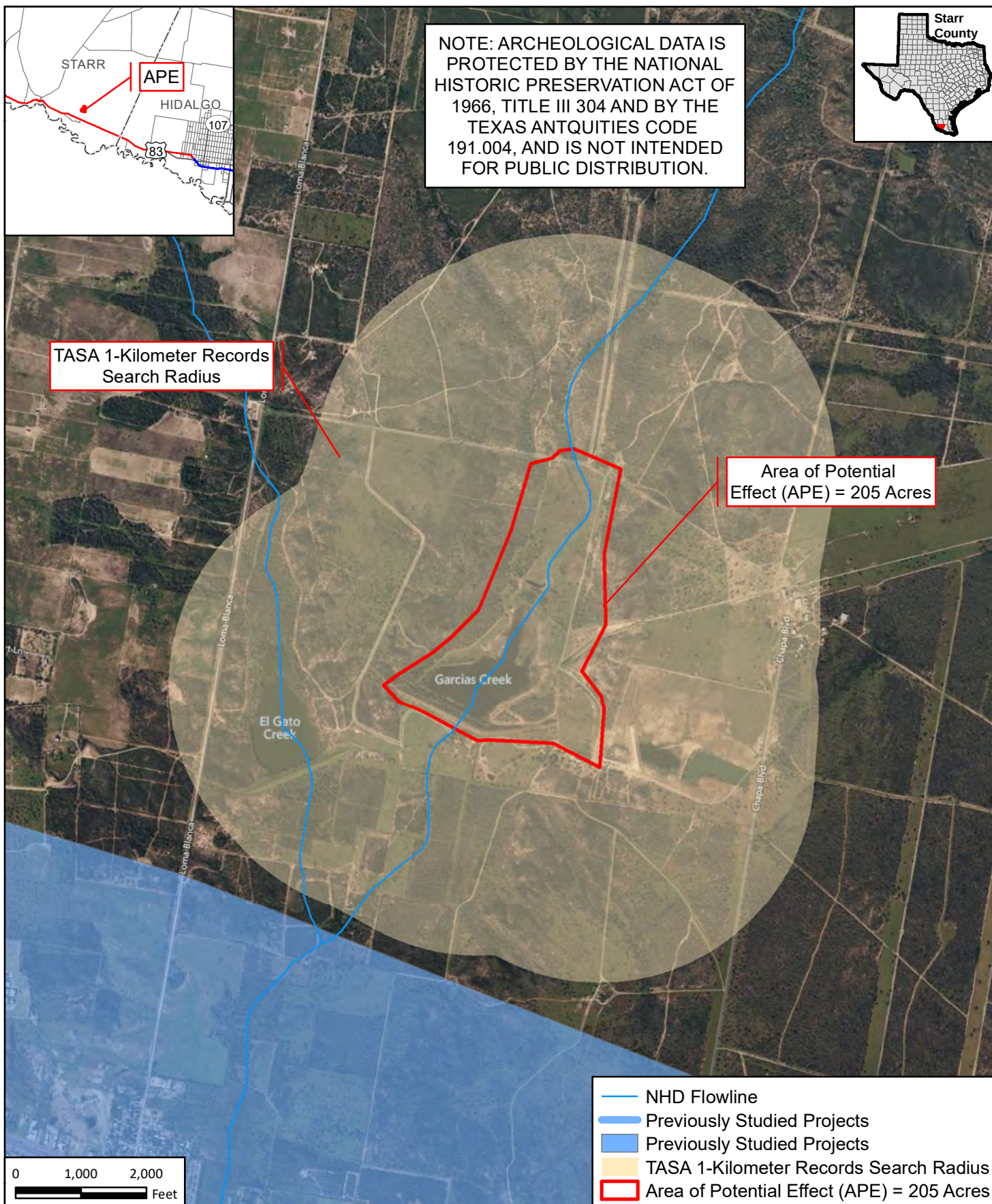
EMST Habitat Map

FN JOB NO	TSW22727
FILE NAME	Fig7_TXNDD.mxd
DATE	12/28/2022
Scale	1:15,000
DRAFTED	CS

C-12

FIGURE

C-12: TASA Atlas Review Map, Olmitos and Garcias Creek FRS 5



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 FREES AND NICHOLS, INC.
 10431 Morado Cir Ste 300,
 Austin, TX 78759
 (512) 617-3100



Texas State Soil and Water Conservation Board
 Olmitos Site No.5

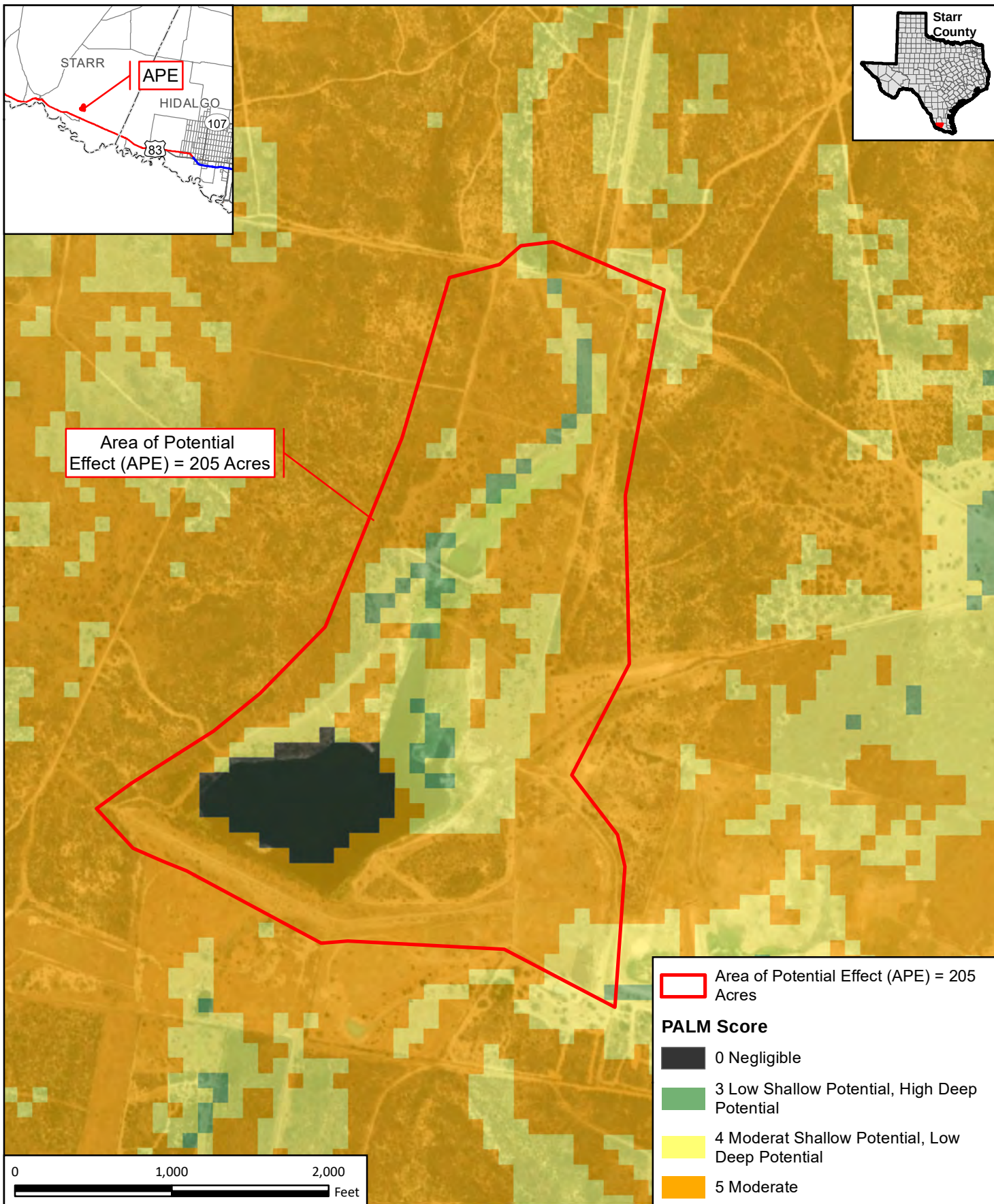
TASA Atlas Review Map

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DATE	12/27/2022
Scale	1:24,000
DRAFTED	CS

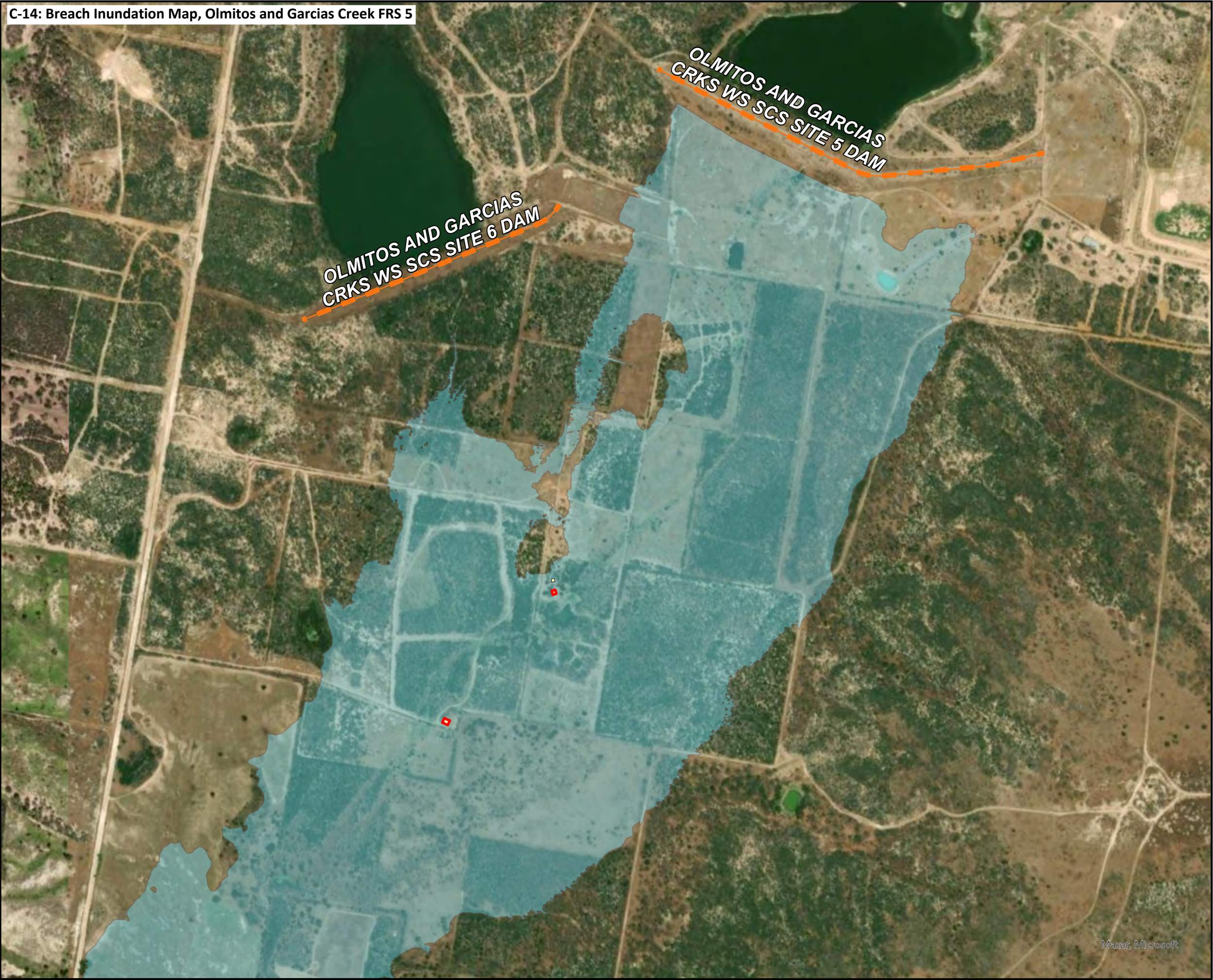
5

FIGURE

C-13: Potential Archaeological Liability Map, Olmitos and Garcias Creek FRS 5



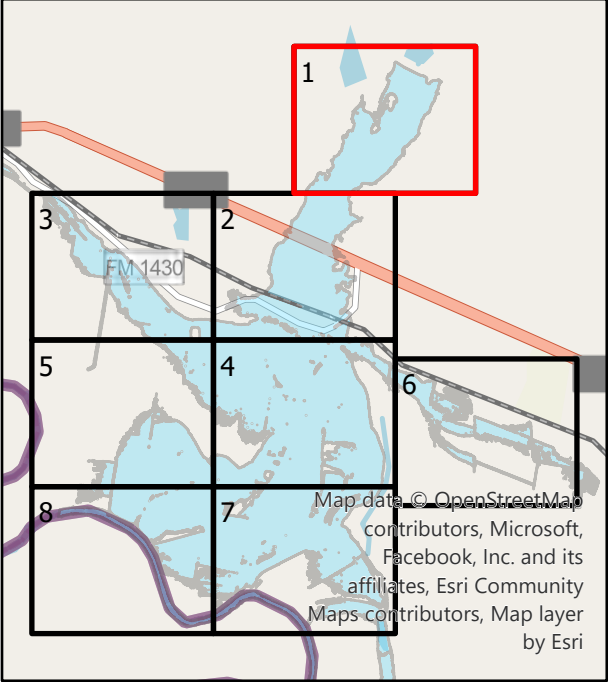
FREASE AND NICHOLS, INC. 10431 Morado Cir Ste 300, Austin, TX 78759 (512) 617-3100		Texas State Soil and Water Conservation Board Olmitos Site No.5		FN JOB NO TSW22727	C-14 FIGURE
		Potential Archeological Liability Maps (PALMs)		FILE NAME Fig5_PALMs.mxd	
				DATE 12/27/2022	
				Scale 1:10,000	
				DRAFTED CS	



**OLMITOS & GARCIAS CREEK #5
DAM FAILURE MAPPING**

Panel 1 of 8

PANEL LOCATOR

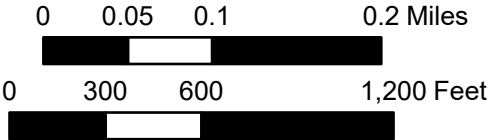


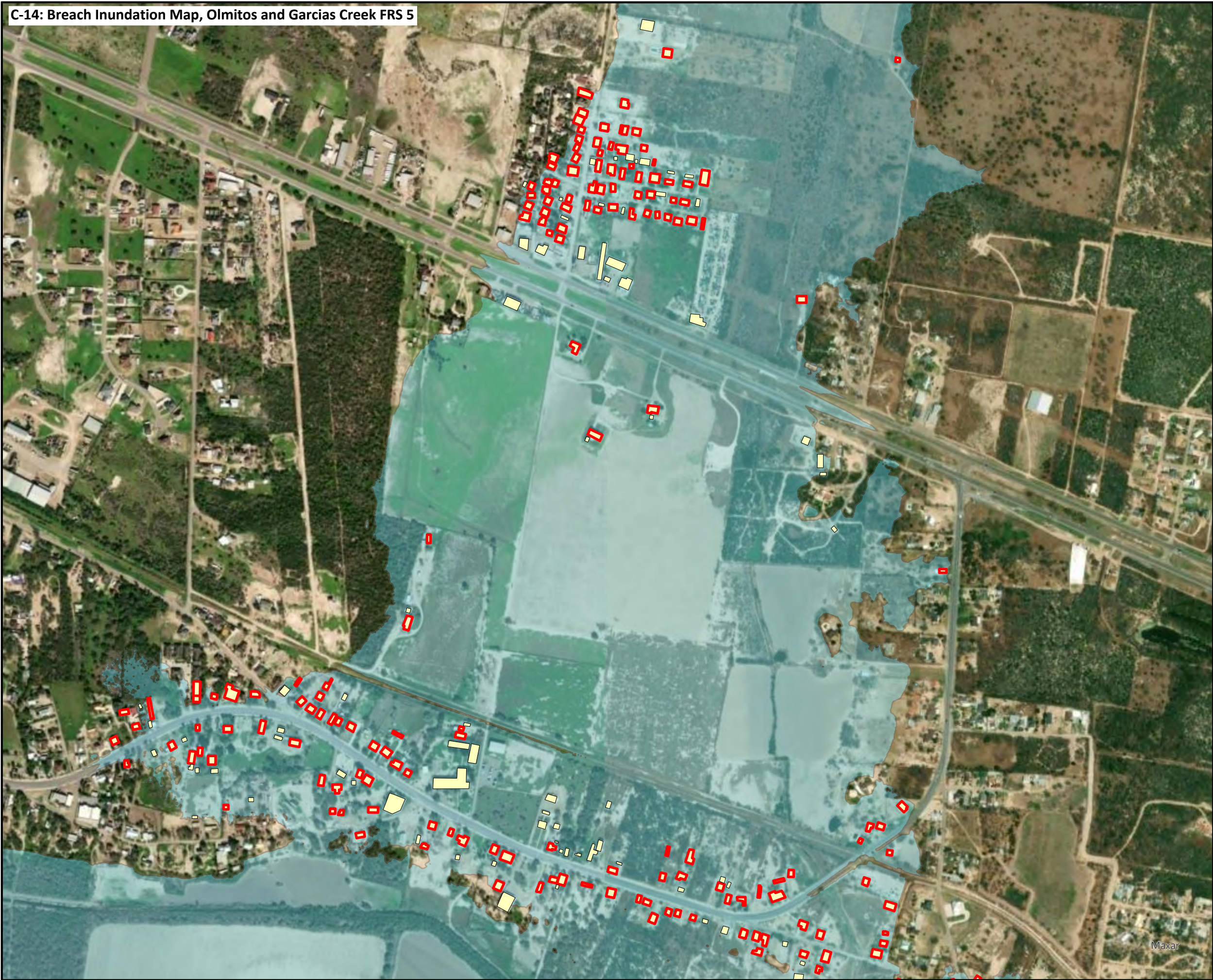
LEGEND

-  Breach Inundation
-  Dam Centerline
-  Non-habitable Structures
-  Habitable Structures

Breach flood hydrograph was computed using NRCS TR-60 methodology.

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.

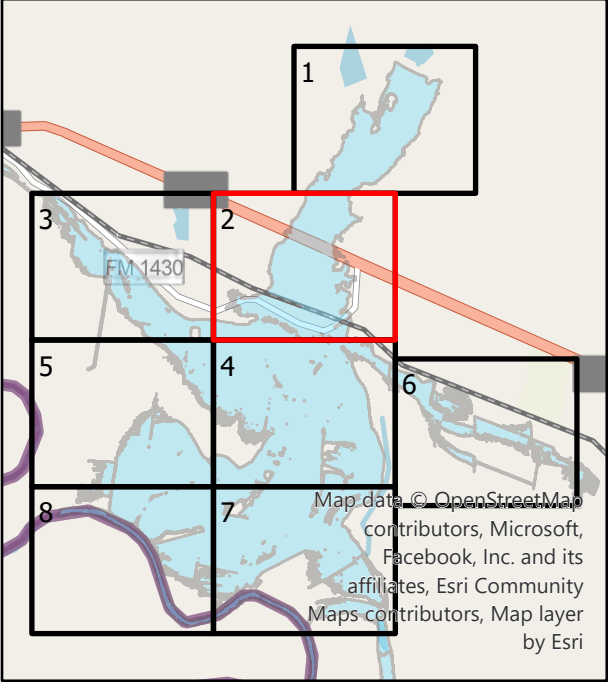




**OLMITOS & GARCIAS CREEK #5
DAM FAILURE MAPPING**

Panel 2 of 8

PANEL LOCATOR



LEGEND

-  Breach Inundation
-  Dam Centerline
-  Non-habitable Structures
-  Habitable Structures

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The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.

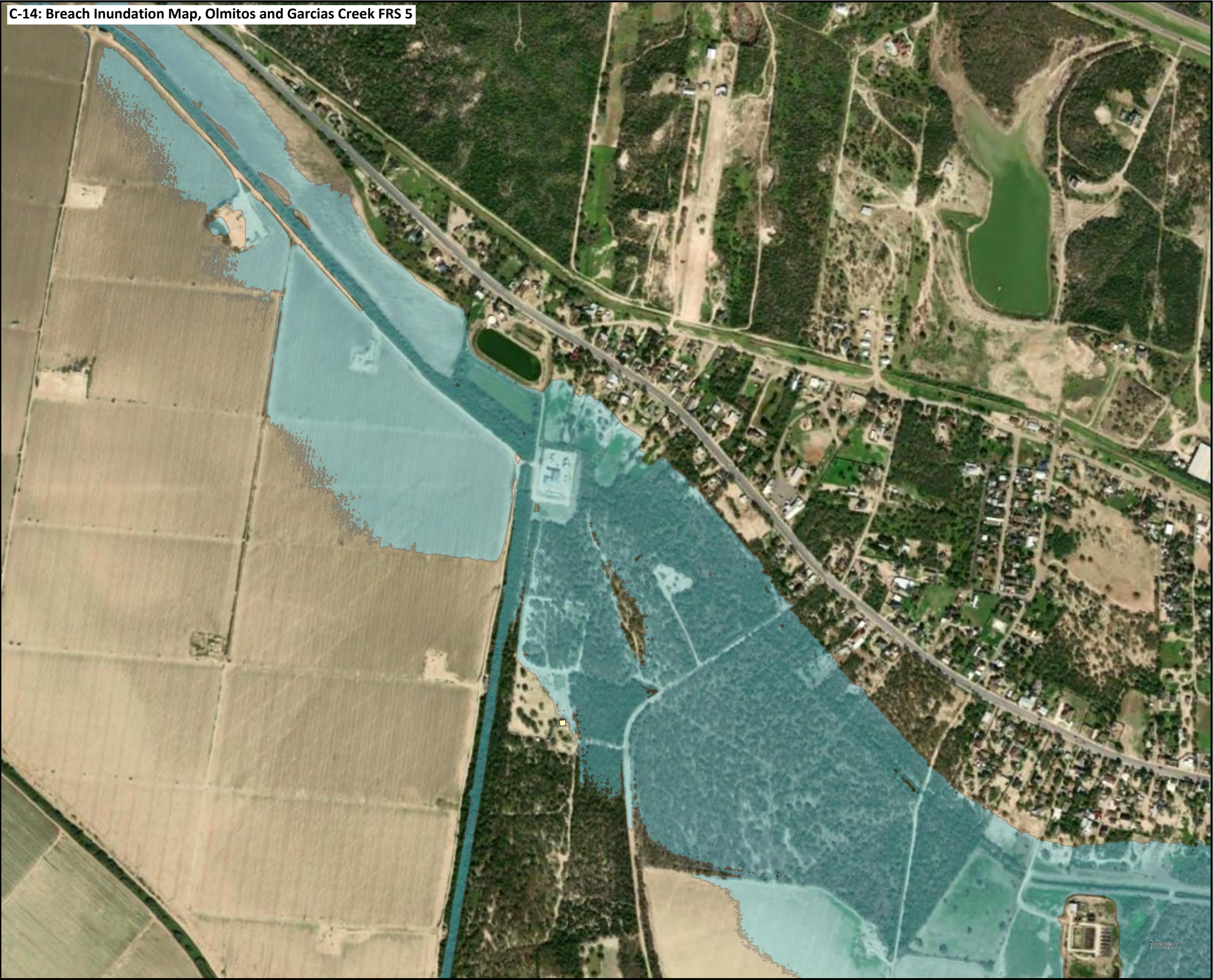


0 0.05 0.1 0.2 Miles



0 300 600 1,200 Feet

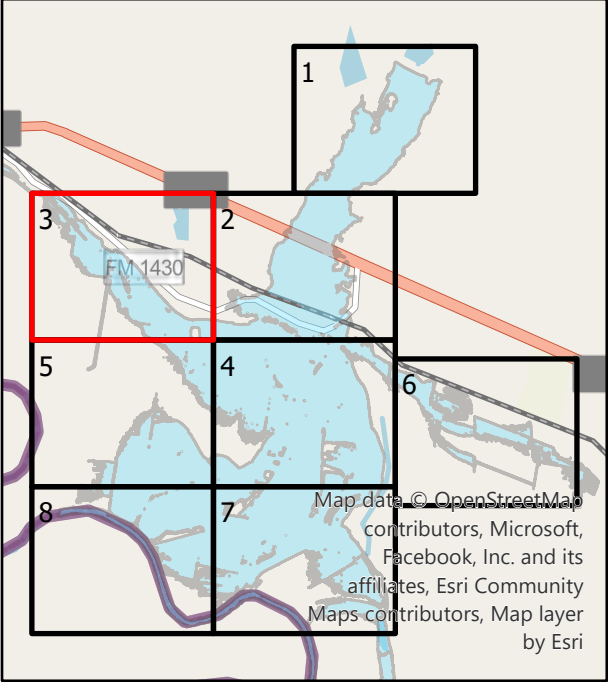




**OLMITOS & GARCIAS CREEK #5
DAM FAILURE MAPPING**

Panel 3 of 8

PANEL LOCATOR



LEGEND

-  Breach Inundation
-  Dam Centerline
-  Non-habitable Structures
-  Habitable Structures

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The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.

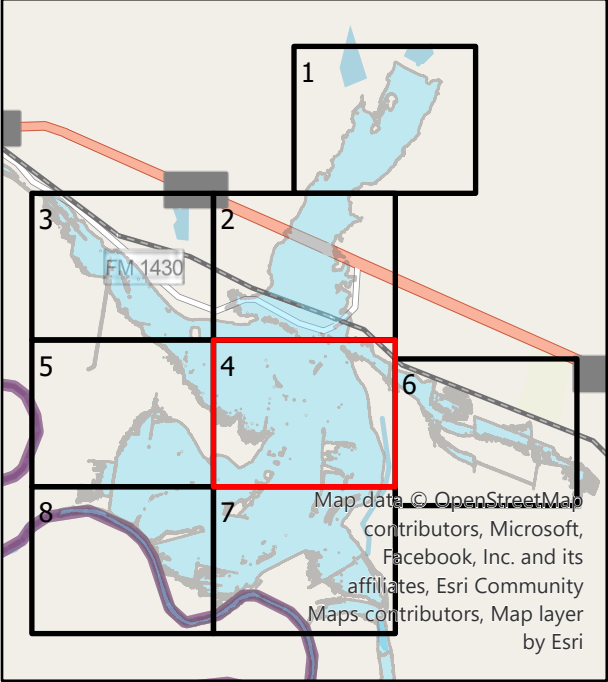




**OLMITOS & GARCIAS CREEK #5
DAM FAILURE MAPPING**

Panel 4 of 8

PANEL LOCATOR



LEGEND

- Breach Inundation
- Dam Centerline
- Non-habitable Structures
- Habitable Structures

Breach flood hydrograph was computed using NRCS TR-60 methodology.

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.

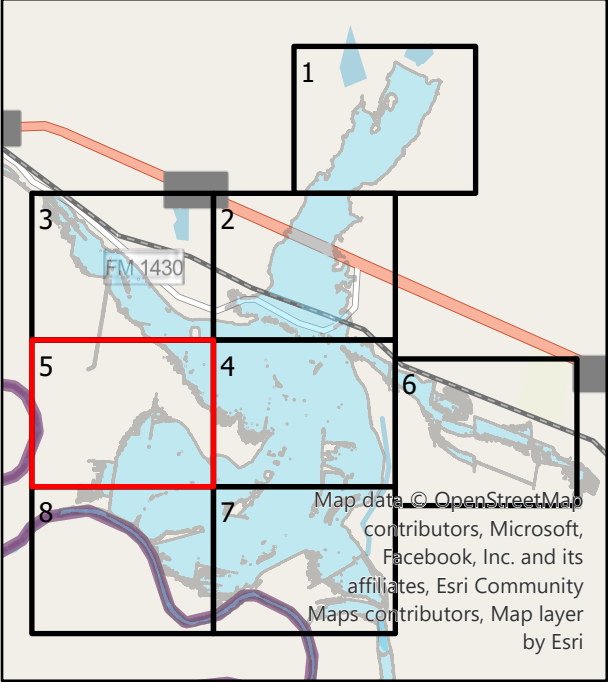




**OLMITOS & GARCIAS CREEK #5
DAM FAILURE MAPPING**

Panel 5 of 8

PANEL LOCATOR

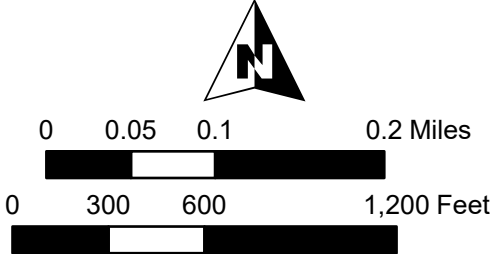


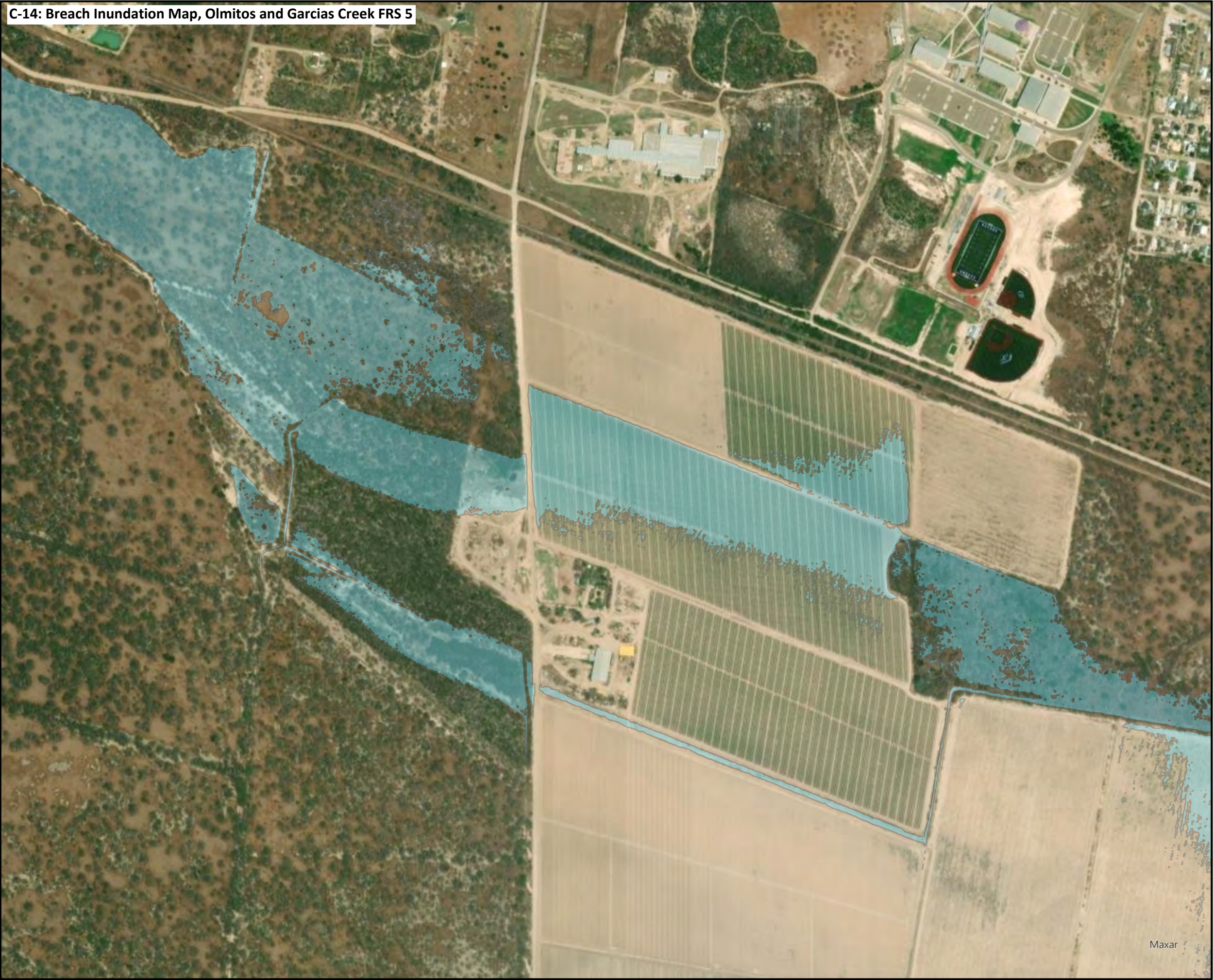
LEGEND

-  Breach Inundation
-  Dam Centerline
-  Non-habitable Structures
-  Habitable Structures

Breach flood hydrograph was computed using NRCS TR-60 methodology.

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.

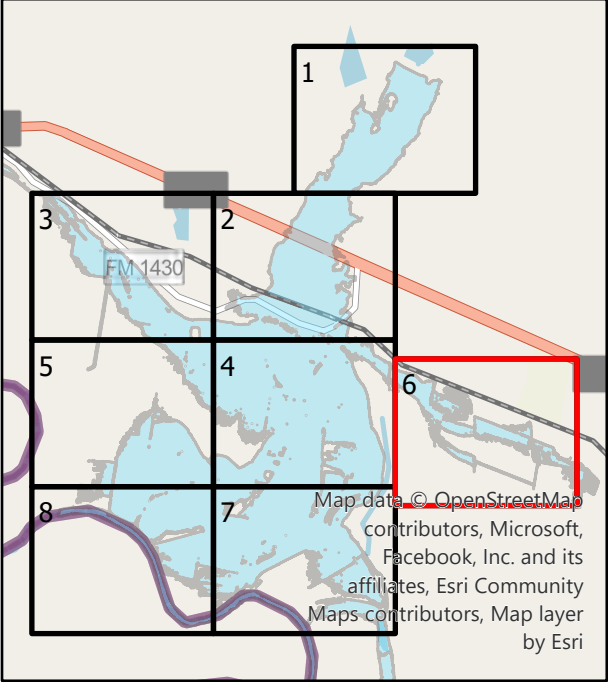




**OLMITOS & GARCIAS CREEK #5
DAM FAILURE MAPPING**

Panel 6 of 8

PANEL LOCATOR



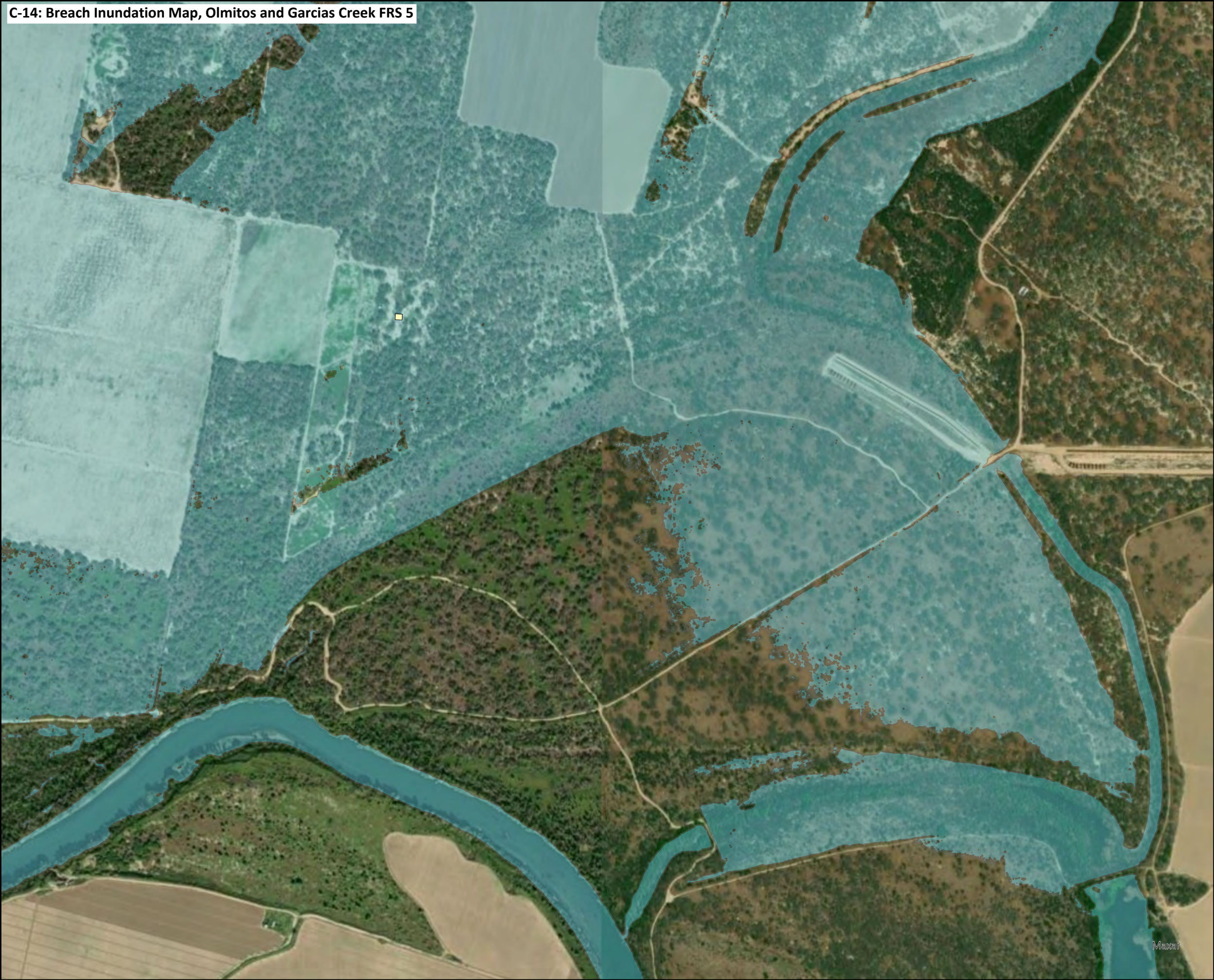
LEGEND

- Breach Inundation
- Dam Centerline
- Non-habitable Structures
- Habitable Structures

Breach flood hydrograph was computed using NRCS TR-60 methodology.

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.

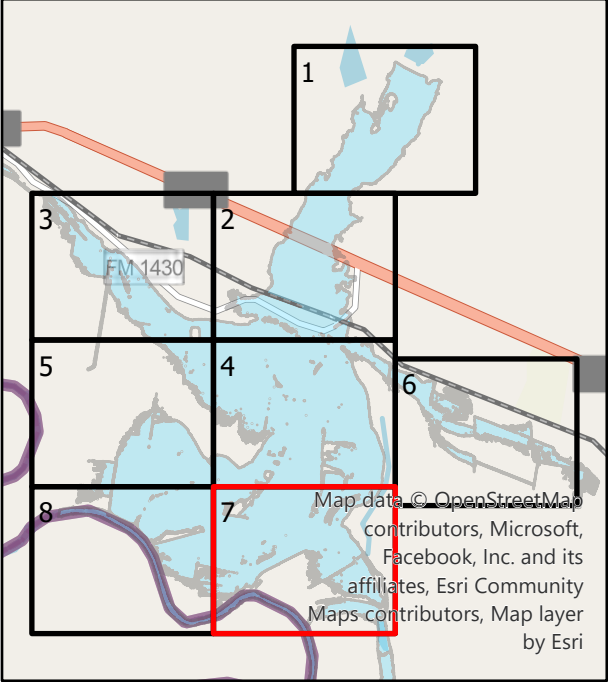




**OLMITOS & GARCIAS CREEK #5
DAM FAILURE MAPPING**

Panel 7 of 8

PANEL LOCATOR

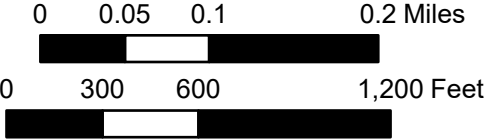


LEGEND

-  Breach Inundation
-  Dam Centerline
-  Non-habitable Structures
-  Habitable Structures

Breach flood hydrograph was computed using NRCS TR-60 methodology.

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.

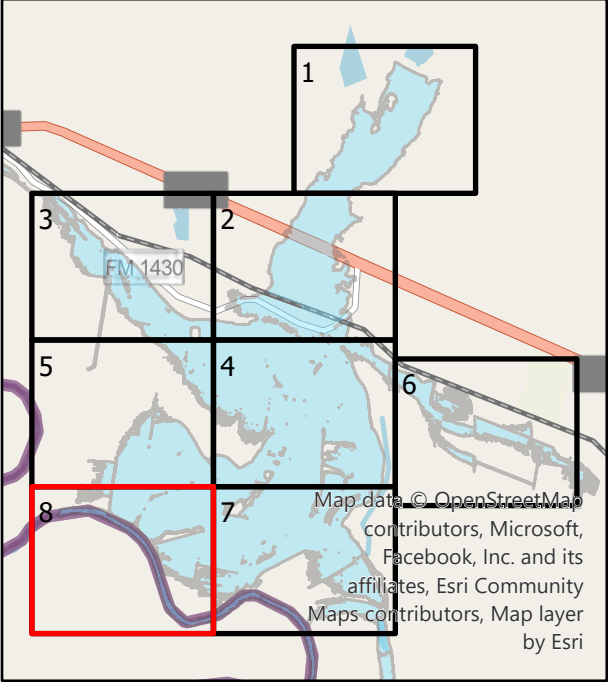




**OLMITOS & GARCIAS CREEK #5
DAM FAILURE MAPPING**

Panel 8 of 8

PANEL LOCATOR

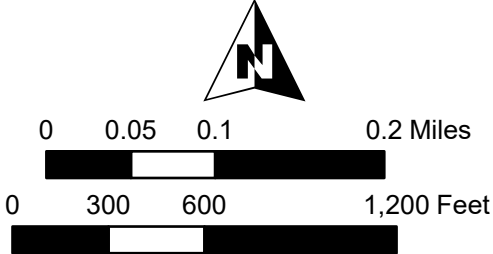


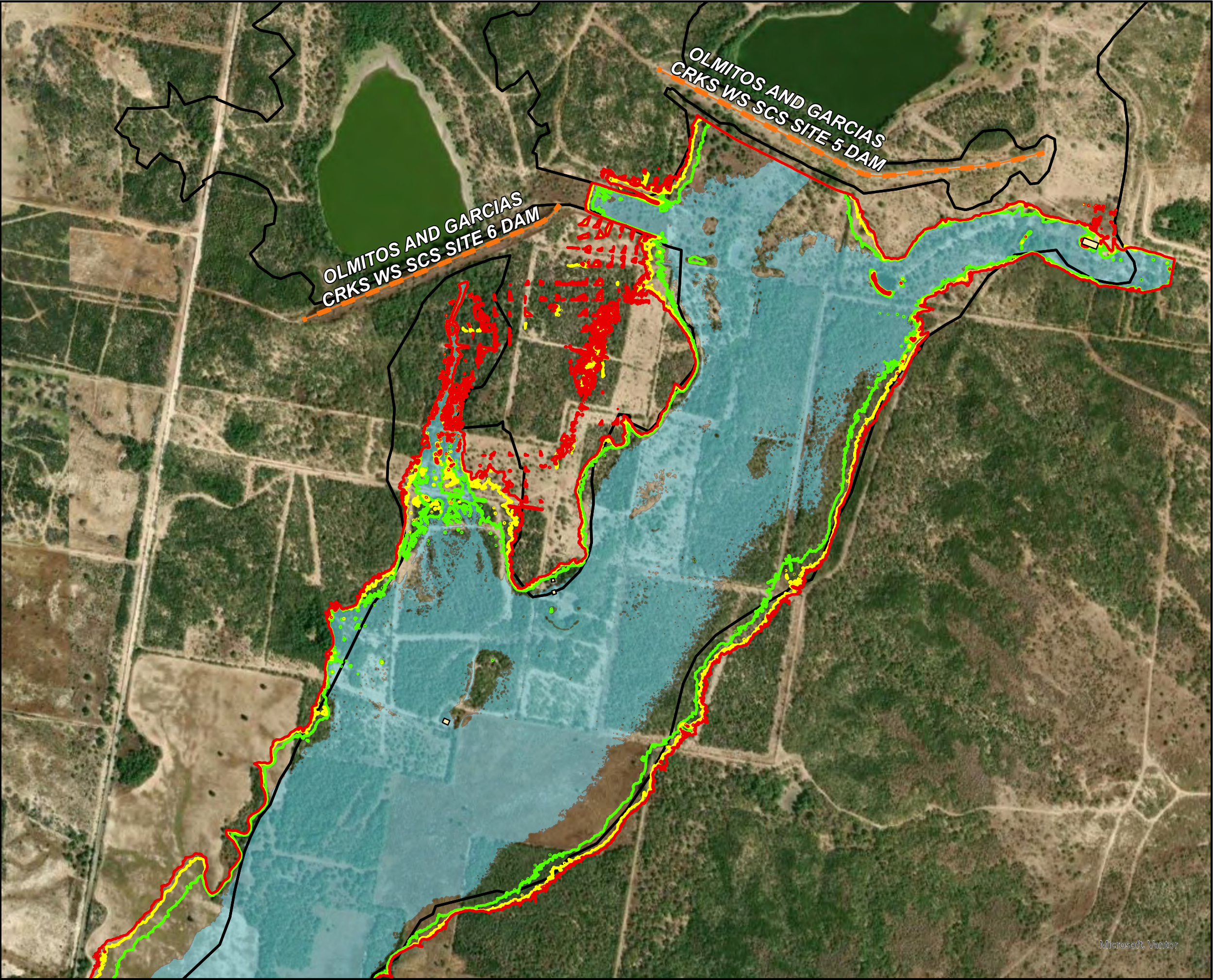
LEGEND

- Breach Inundation
- Dam Centerline
- Non-habitable Structures
- Habitable Structures

Breach flood hydrograph was computed using NRCS TR-60 methodology.

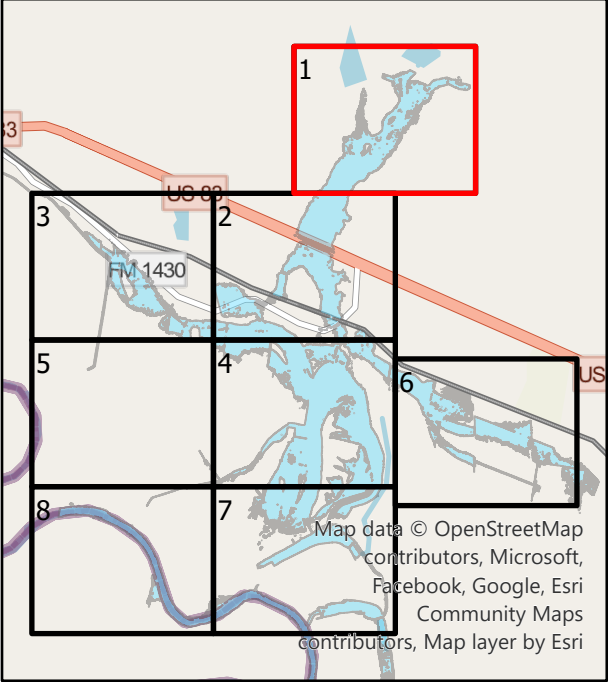
The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.





**OLMITOS & GARCIAS CREEK #5
FREQUENCY EVENTS
INUNDATION MAP**
Panel 1 of 8

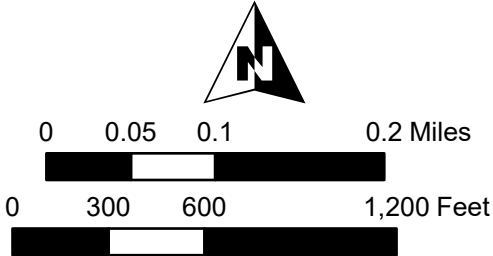
PANEL LOCATOR

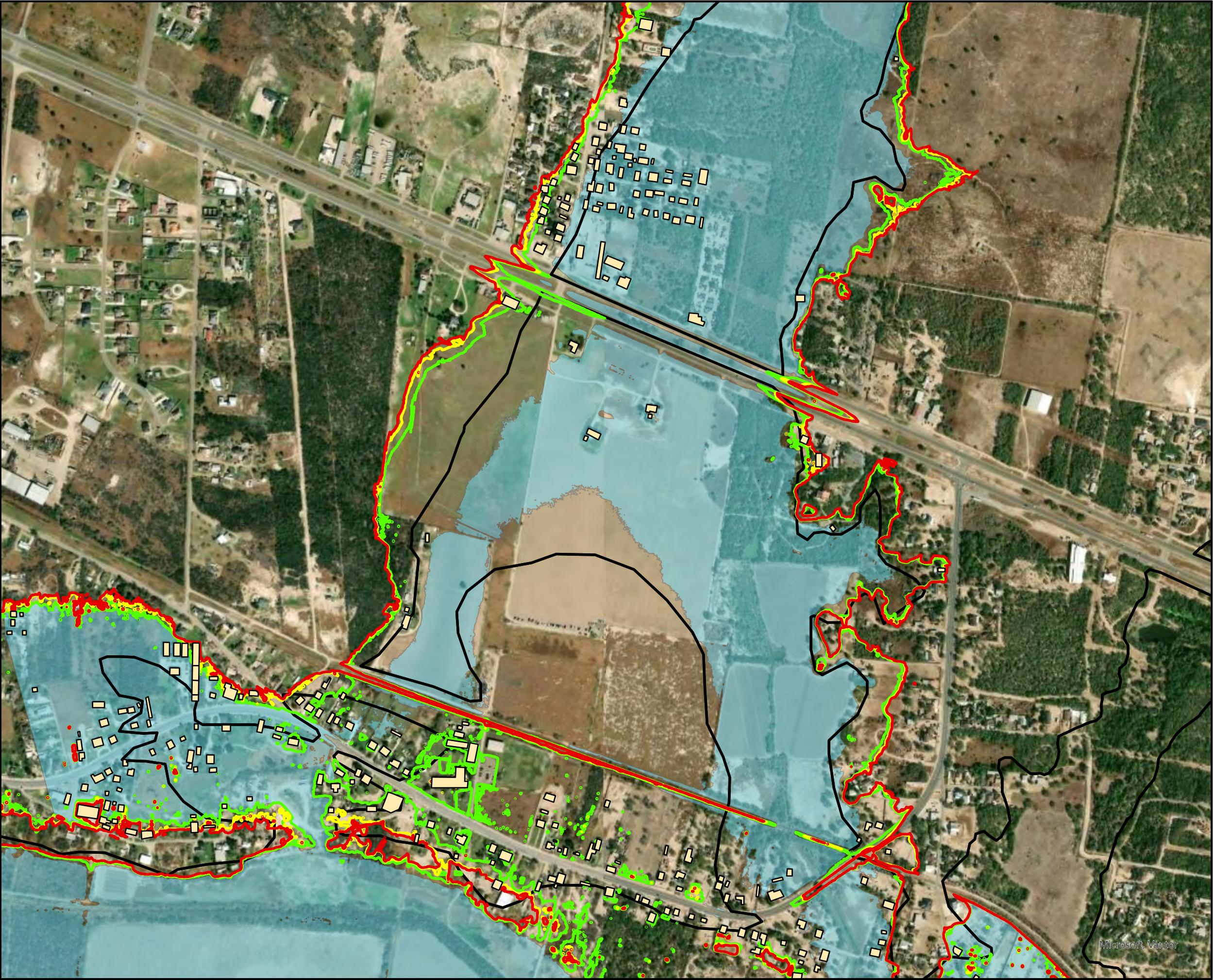


LEGEND

- Dam Centerline
- Structure Inventory
- Alt. 2 (Decom.) 1000 Year Inundation
- Alt. 2 (Decom.) 500 Year Inundation
- Alt. 2 (Decom.) 100 Year Inundation
- Regulatory FEMA Zone A & AE
- Existing 100 yr Floodplain

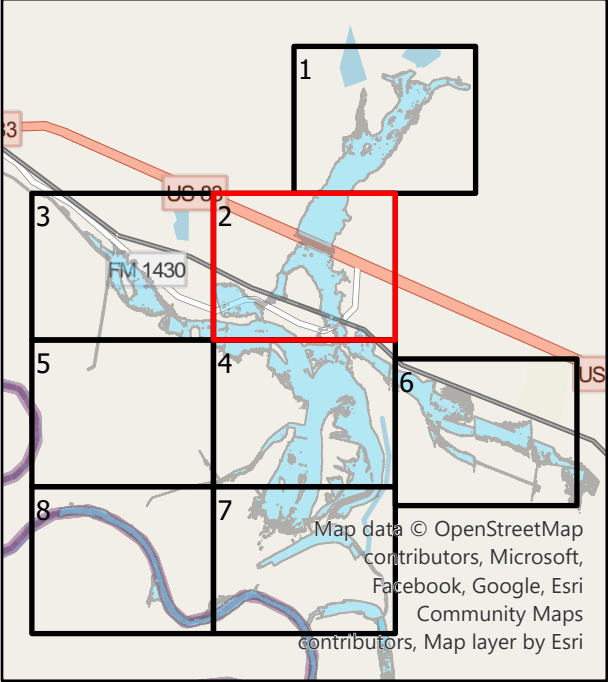
The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.





**OLMITOS & GARCIAS CREEK #5
FREQUENCY EVENTS
INUNDATION MAP**
Panel 2 of 8

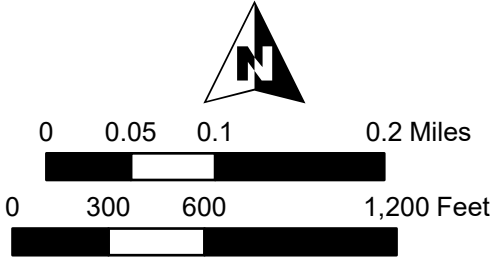
PANEL LOCATOR

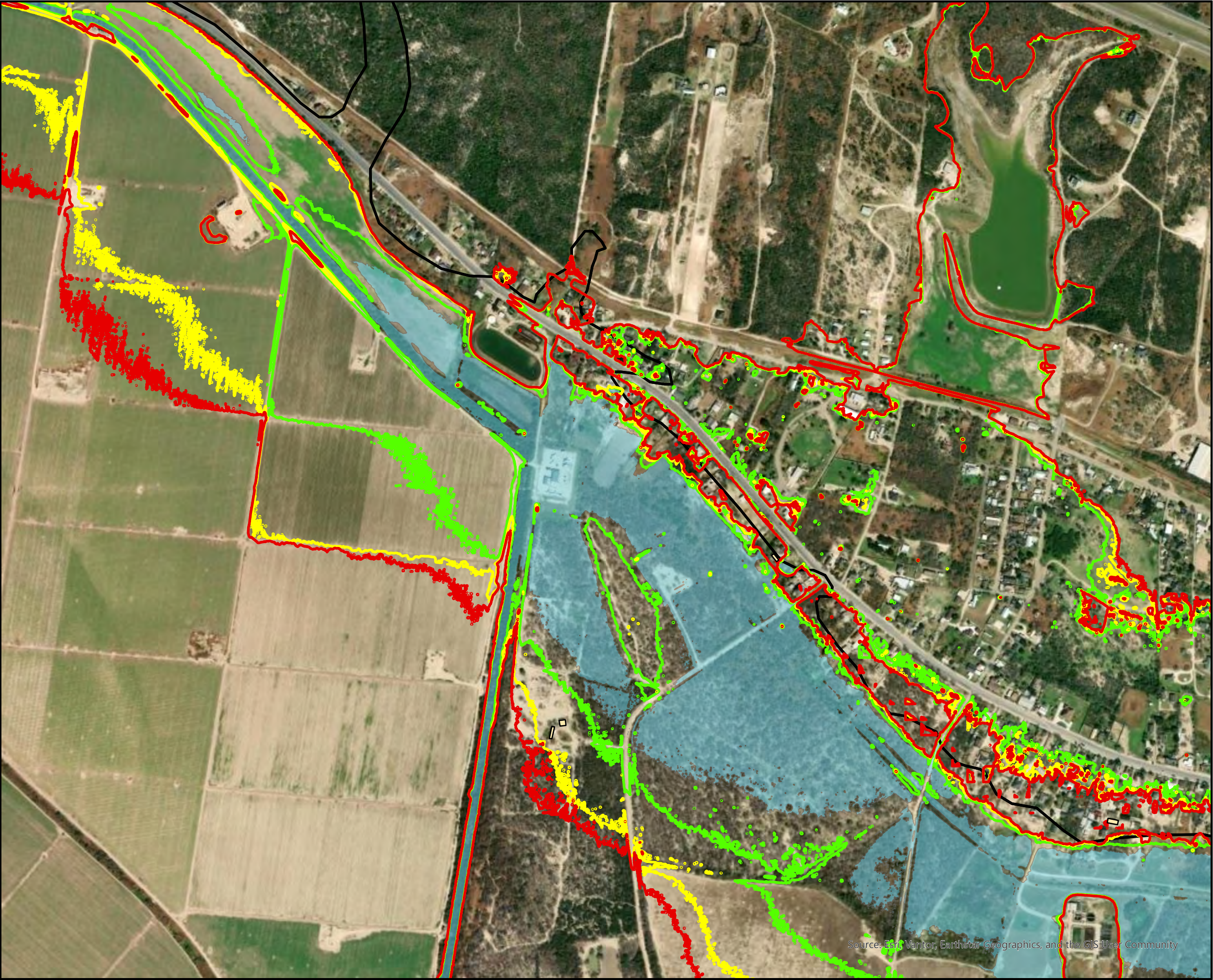


LEGEND

- Dam Centerline
- Structure Inventory
- Alt. 2 (Decom.) 1000 Year Inundation
- Alt. 2 (Decom.) 500 Year Inundation
- Alt. 2 (Decom.) 100 Year Inundation
- Regulatory FEMA Zone A & AE
- Existing 100 yr Floodplain

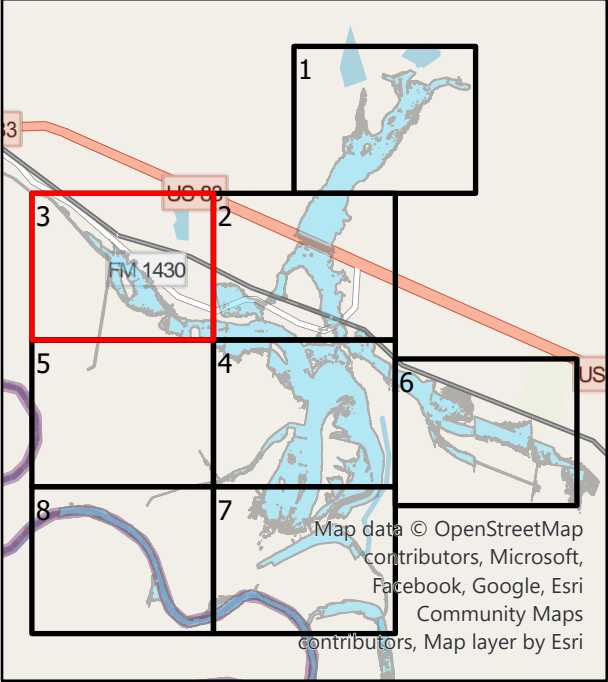
The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.





**OLMITOS & GARCIAS CREEK #5
FREQUENCY EVENTS
INUNDATION MAP**
Panel 3 of 8

PANEL LOCATOR



LEGEND

- Dam Centerline
- Structure Inventory
- Alt. 2 (Decom.) 1000 Year Inundation
- Alt. 2 (Decom.) 500 Year Inundation
- Alt. 2 (Decom.) 100 Year Inundation
- Regulatory FEMA Zone A & AE
- Existing 100 yr Floodplain

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.



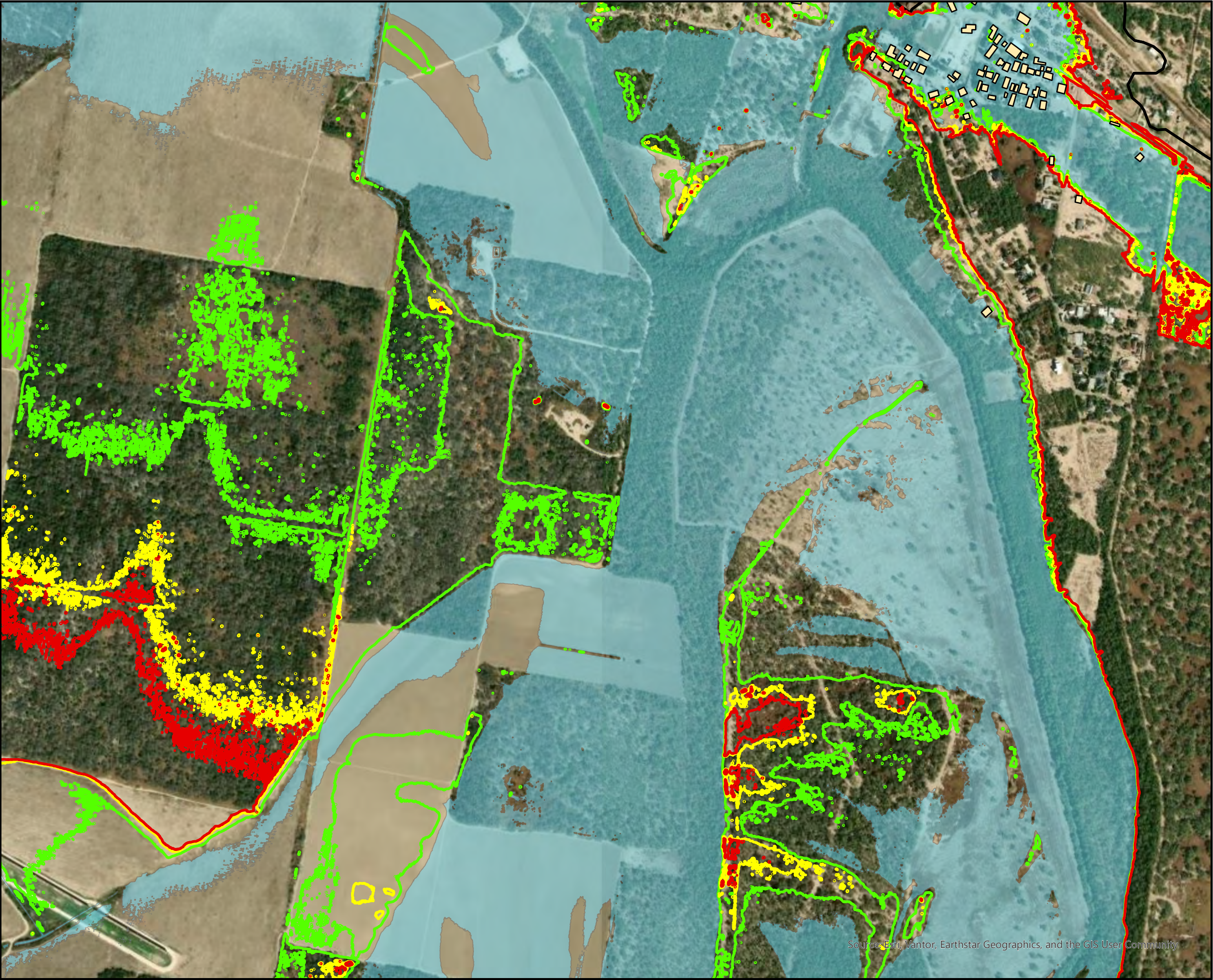
0 0.05 0.1 0.2 Miles



0 300 600 1,200 Feet

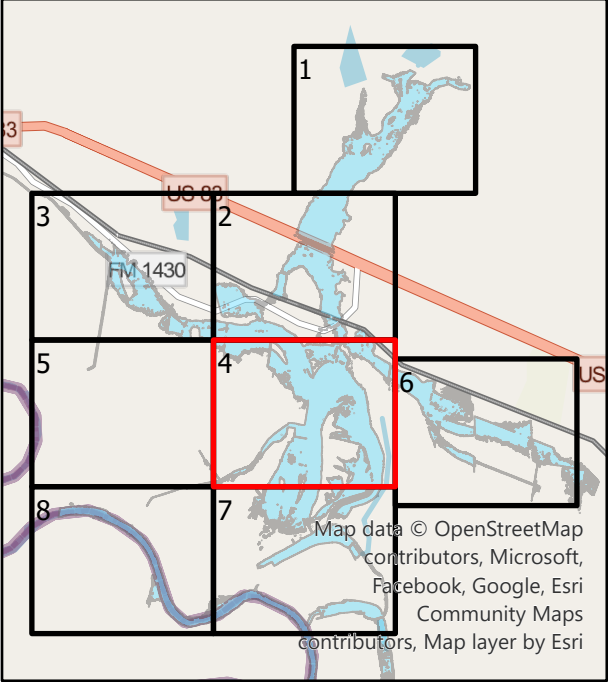


Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community



**OLMITOS & GARCIAS CREEK #5
FREQUENCY EVENTS
INUNDATION MAP**
Panel 4 of 8

PANEL LOCATOR



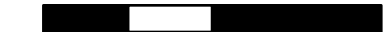
LEGEND

- Dam Centerline
- Structure Inventory
- Alt. 2 (Decom.) 1000 Year Inundation
- Alt. 2 (Decom.) 500 Year Inundation
- Alt. 2 (Decom.) 100 Year Inundation
- Regulatory FEMA Zone A & AE
- Existing 100 yr Floodplain

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.



0 0.05 0.1 0.2 Miles



0 300 600 1,200 Feet

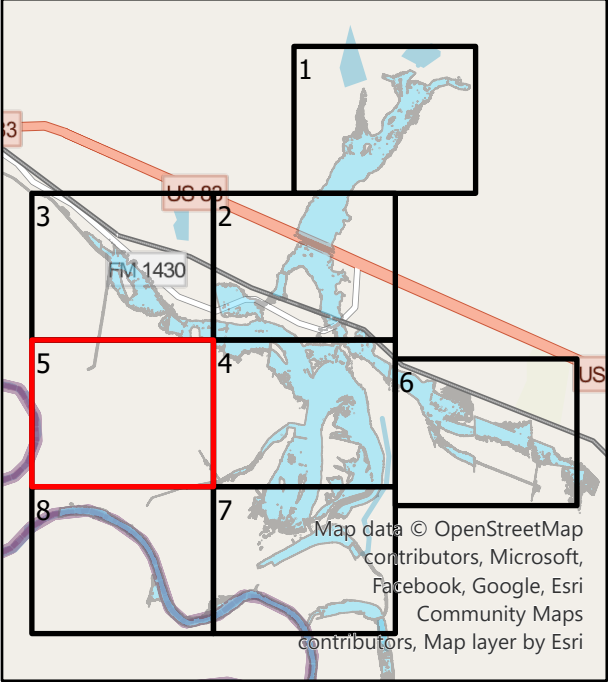


Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community



**OLMITOS & GARCIAS CREEK #5
FREQUENCY EVENTS
INUNDATION MAP**
Panel 5 of 8

PANEL LOCATOR



LEGEND

- Dam Centerline
- Structure Inventory
- Alt. 2 (Decom.) 1000 Year Inundation
- Alt. 2 (Decom.) 500 Year Inundation
- Alt. 2 (Decom.) 100 Year Inundation
- Regulatory FEMA Zone A & AE
- Existing 100 yr Floodplain

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.



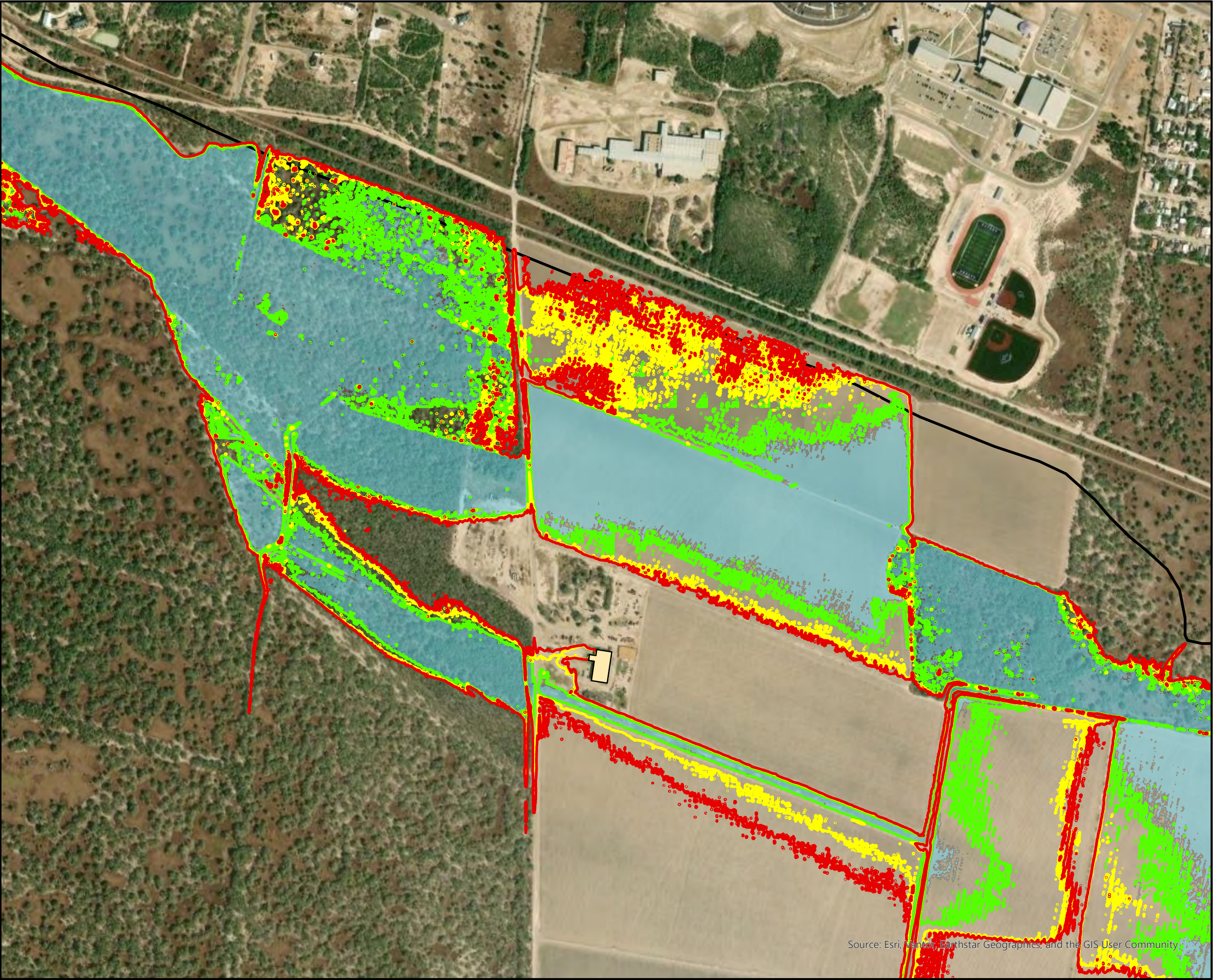
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0 300 600 1,200 Feet

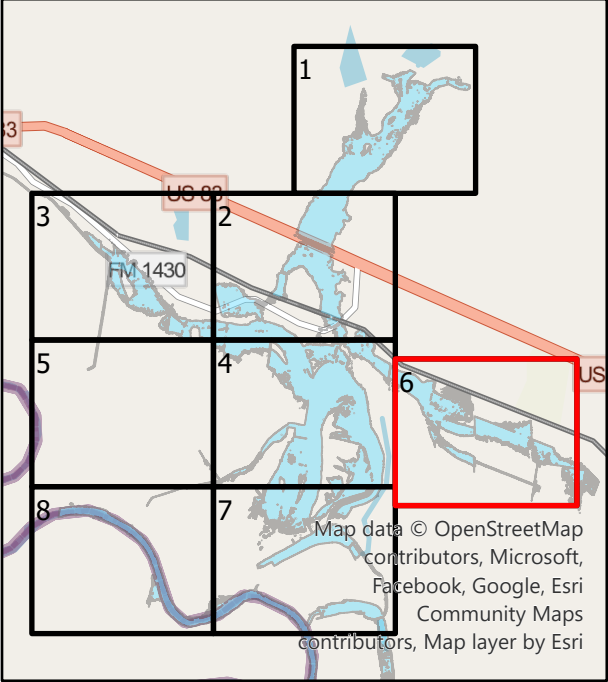


Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community



**OLMITOS & GARCIAS CREEK #5
FREQUENCY EVENTS
INUNDATION MAP**
Panel 6 of 8

PANEL LOCATOR



LEGEND

- Dam Centerline
- Structure Inventory
- Alt. 2 (Decom.) 1000 Year Inundation
- Alt. 2 (Decom.) 500 Year Inundation
- Alt. 2 (Decom.) 100 Year Inundation
- Regulatory FEMA Zone A & AE
- Existing 100 yr Floodplain

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.



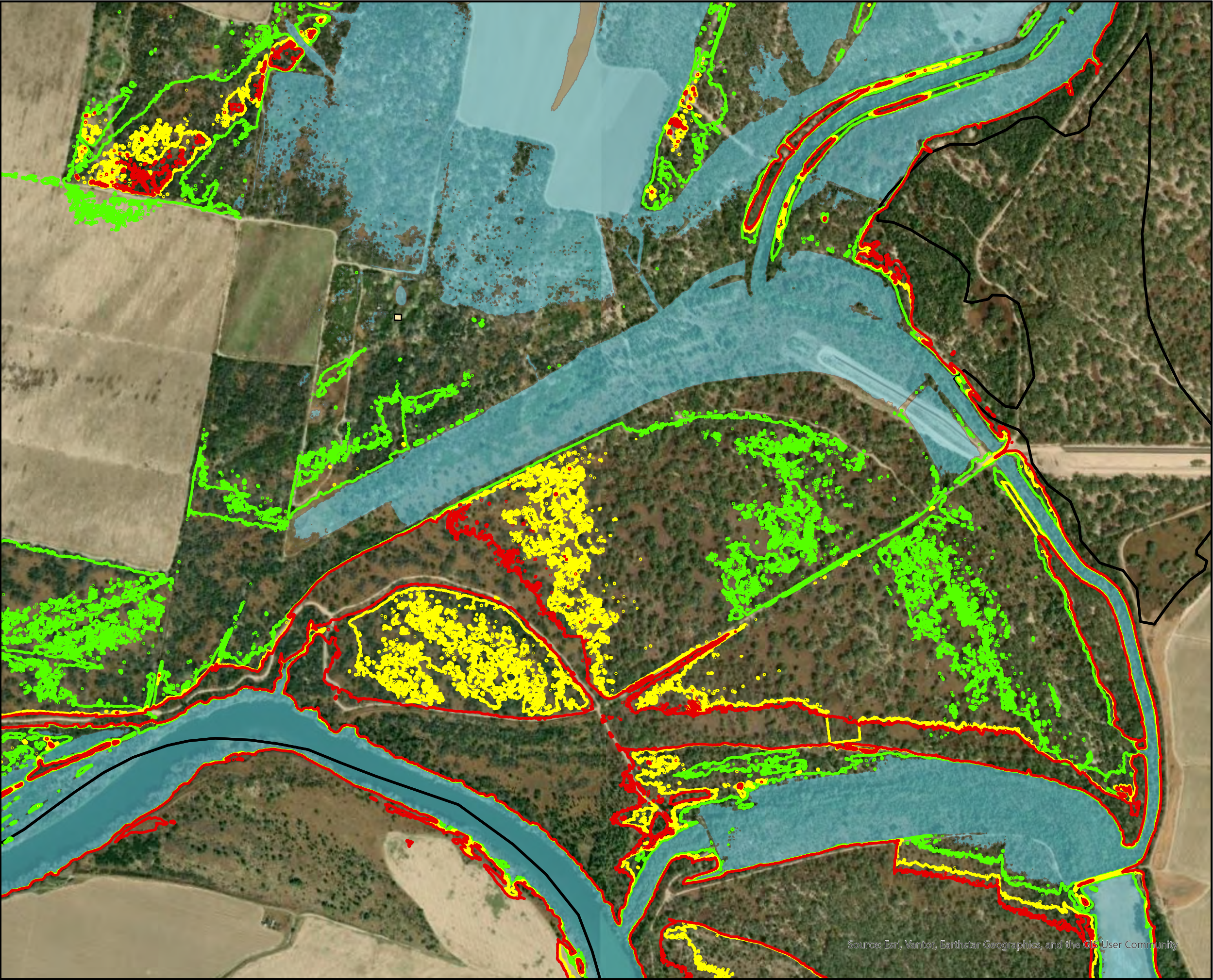
0 0.05 0.1 0.2 Miles



0 300 600 1,200 Feet

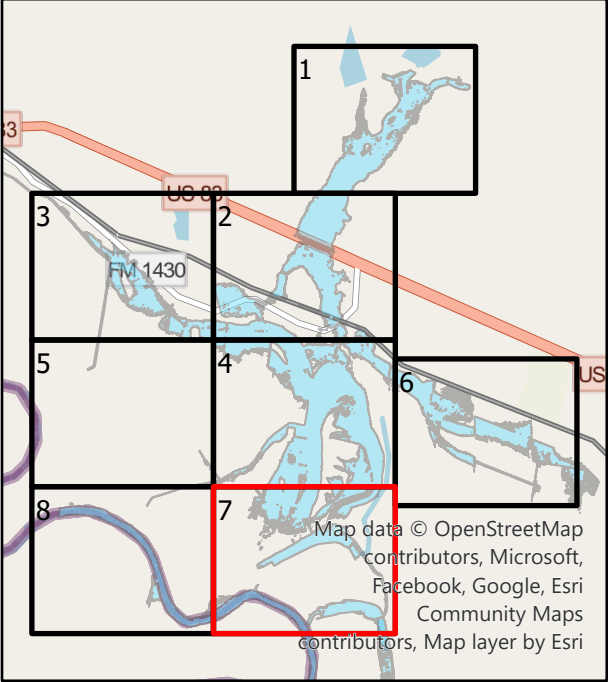


Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community



**OLMITOS & GARCIAS CREEK #5
FREQUENCY EVENTS
INUNDATION MAP**
Panel 7 of 8

PANEL LOCATOR



LEGEND

- Dam Centerline
- Structure Inventory
- Alt. 2 (Decom.) 1000 Year Inundation
- Alt. 2 (Decom.) 500 Year Inundation
- Alt. 2 (Decom.) 100 Year Inundation
- Regulatory FEMA Zone A & AE
- Existing 100 yr Floodplain

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.



0 0.05 0.1 0.2 Miles



0 300 600 1,200 Feet



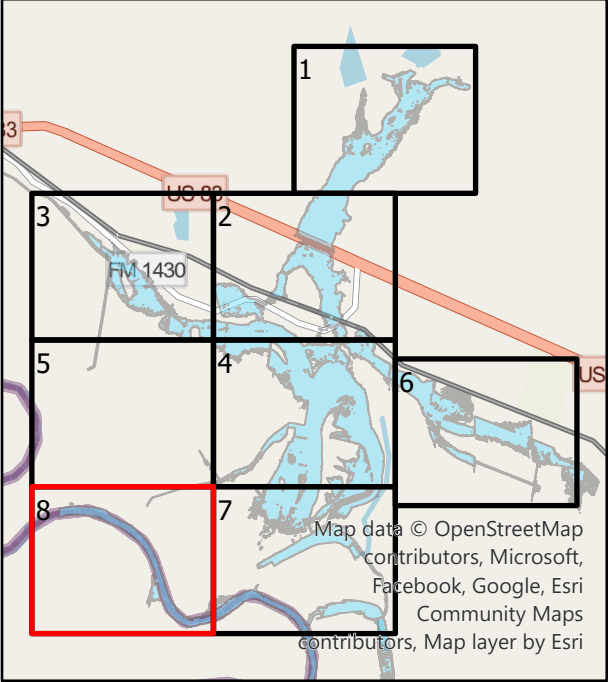
Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community



Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

**OLMITOS & GARCIAS CREEK #5
FREQUENCY EVENTS
INUNDATION MAP**
Panel 8 of 8

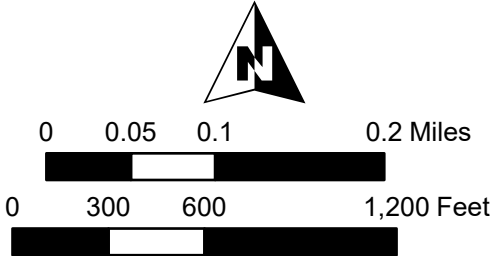
PANEL LOCATOR



LEGEND

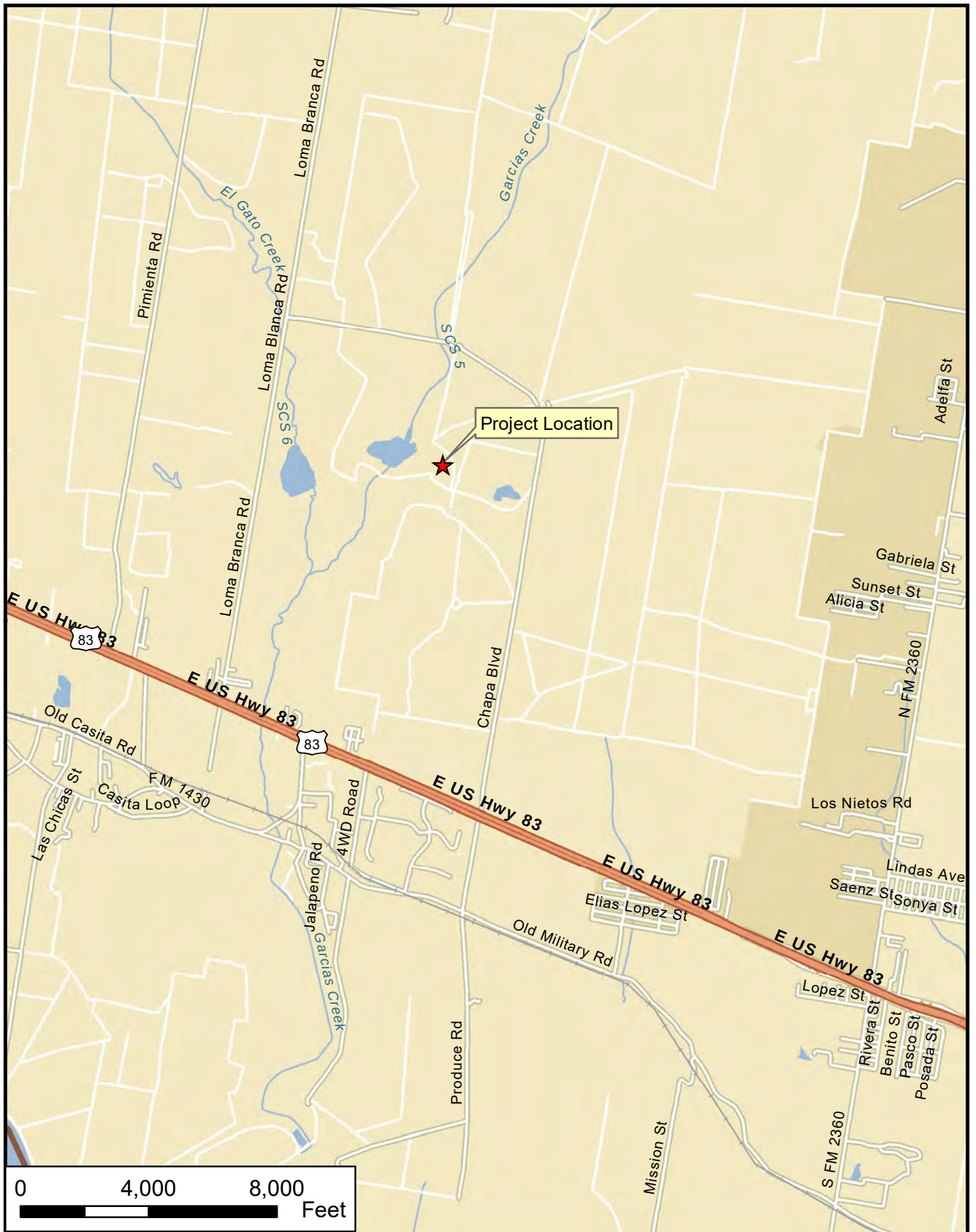
- Dam Centerline
- Structure Inventory
- Alt. 2 (Decom.) 1000 Year Inundation
- Alt. 2 (Decom.) 500 Year Inundation
- Alt. 2 (Decom.) 100 Year Inundation
- Regulatory FEMA Zone A & AE
- Existing 100 yr Floodplain

The methods used to develop inundation zones and flood wave arrival times are approximate and should only be used as guidance for establishing evacuation zones. Actual areas inundated will depend on actual failure and pre-failure hydrologic conditions and may differ significantly from information shown on maps.



Appendix E – Other Supporting Information

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801 Cherry St. Suite 2800
Fort Worth, TX 76102-6800
Phone - (817) 735 - 7300



Olmitos and Garcias Creek
Site 5

Vicinity Map

FN JOB NO	TSW22727
FILE	OLMITOS-5_VIC
DATE	11/4/2022
SCALE	1:50,000
DESIGNED	A. Brewer
DRAFTED	Z. Crossley

1

FIGURE

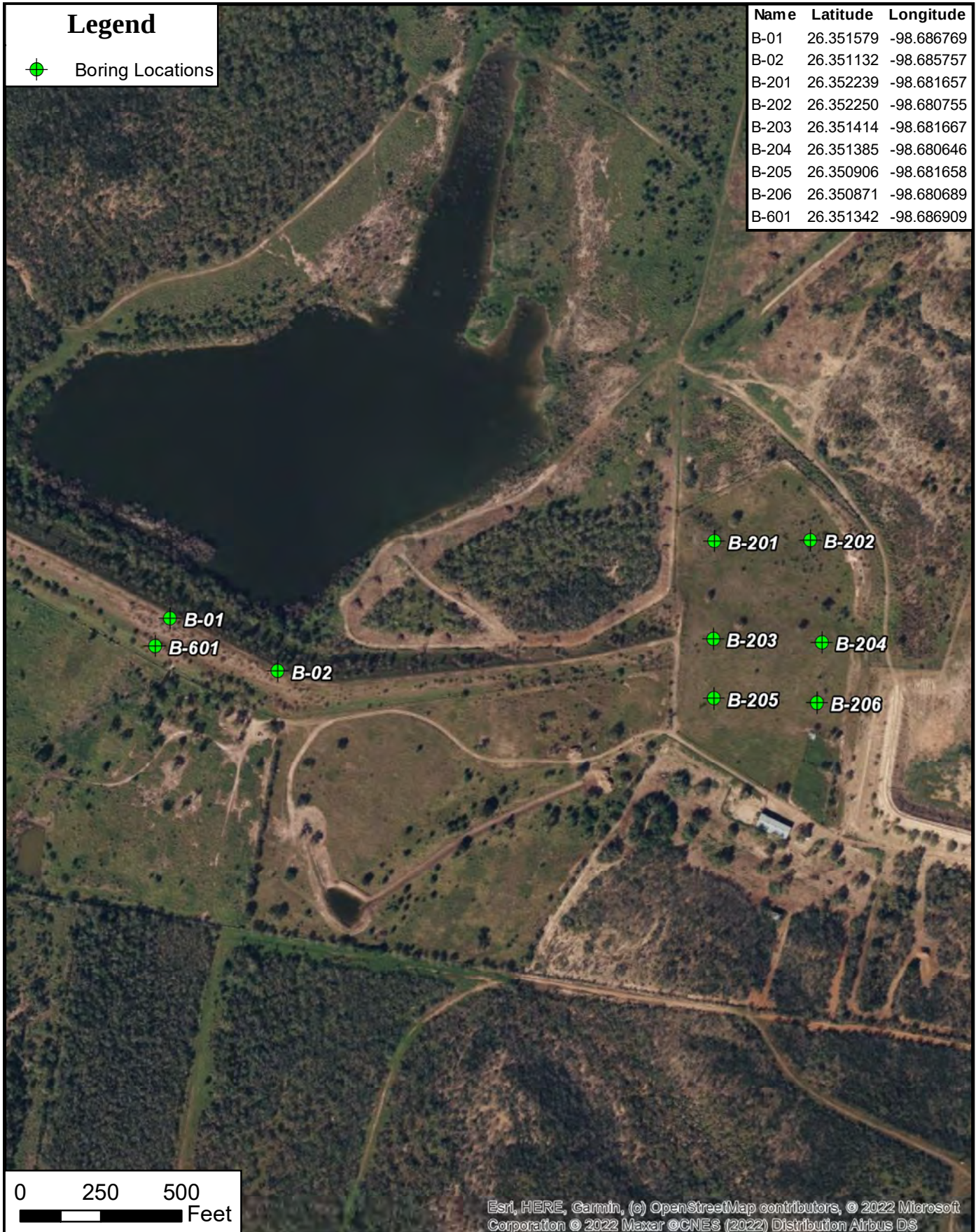
Attachment E-2: Geotechnical Information
Olmitos and Garcias Creek 5 Boring Location Map

Legend



Boring Locations

Name	Latitude	Longitude
B-01	26.351579	-98.686769
B-02	26.351132	-98.685757
B-201	26.352239	-98.681657
B-202	26.352250	-98.680755
B-203	26.351414	-98.681667
B-204	26.351385	-98.680646
B-205	26.350906	-98.681658
B-206	26.350871	-98.680689
B-601	26.351342	-98.686909



0 250 500
Feet

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801 Cherry St. Suite 2800
Fort Worth, TX 76102-6800
Phone - (817) 735-7300



Olmitos and Garcias Creek
Site 5

Boring Location Map

FN JOB NO	TSW22727
FILE	OLMITOS-5_BLM
DATE	11/4/2022
SCALE	1:5,000
DESIGNED	A. Brewer
DRAFTED	Z. Crossley

2

FIGURE

Attachment E-3: Geotechnical Information
Olmitos and Garcias Creek 5 Boring Logs

Boring Log No. B-01

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 26.351579° Longitude: -98.686769° Depth (Ft.) Elevation.: 215 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test			Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
							Test Type	Compressive Strength (tsf)	Strain (%)			LL-PL-PI	Percent Fines
1		FILL - SANDY LEAN CLAY (CL) , brown, very stiff to hard - Sandy Silty Clay (CL-ML) with gravel at 4½ feet - moderate cementation between 8½ and 15 feet - gravel at 18½ feet	10			5-7-10 N=17				19.6		30-16-14	52
						18-27-30 N=57				14.9		33-28-5	
						26-27-31 N=58				5.1		54	
						20-22-25 N=47				13.7			
						28-30-50/5" N=80/11"				18.7		43-20-23	
						16-50/5" N=50/5"				9.6			
													26
						32-40-33 N=73				9.0			
						21-26-28 N=54				9.0		30-15-15	
						14-16-15 N=31				15.6			
2		SANDY LEAN CLAY (CL) , dark gray, very stiff to hard - gravel at 48½ feet	50			2.5 (HP)				16.6			8
						14-24-43 N=67				3.2			
						50/5" N=ref/5"				29.4		73-29-44	
4		CLAYSTONE , light olive gray, strong cementation - gravel at 63½ feet	60			4.5 (HP)	UC	4.03	3.2	23.0	101		
						28-50/4" N=50/4"	16.5	85-29-56					
						4.5 (HP)	UC			1.51	2.8		40.0
						44-50/4" N=50/4"	28.4	55-20-35					
						50/4" N=ref/4"	34.5						
		Boring Terminated at 80 Feet		80									

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

Example: N=ref/2", sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

Ground elevation based on information provided by Google Earth.

Water Level Observations

- 53 feet - While drilling
- 52.5 feet - After 15 minutes

Drill Rig

Mobile B-61

Hammer Type

Rope and Cathead

Driller

Tero Drilling

Logged by

RJ

Boring Started

12-20-2022

Boring Completed

12-20-2022

Advancement Method

Dry augered from 0 to 80 feet

Abandonment Method

Boring backfilled with bentonite chips upon completion.

Boring Log No. B-02

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 26.351132° Longitude: -98.685757° Depth (Ft.) Elevation.: 215 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test			Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
							Test Type	Compressive Strength (tsf)	Strain (%)				
1		FILL - CLAYEY SAND (SC) , light brown, dense to very dense - Sandy Lean Clay (CL) to 4 feet - moderate to strong cementation between 8½ and 25 feet	10			10-16-21 N=37				10.4		29-20-9	
						33-35-41 N=76				14.2			58
						21-37-44 N=81				16.7		36-28-8	
						19-29-50/5" N=79/11"				6.5			27
						50/5" N=ref/5"				13.4			
						27-31-34 N=65				16.7		29-15-14	
						21-28-50/4" N=78/10"				11.0			
						50/5" N=ref/5"				8.7			33
						26-18-12 N=30				13.3		29-14-15	
2		SANDY LEAN CLAY (CL) , light brown, hard, moderate to strong cementation	40			20-39-50/5" N=89/11"				21.9			
						4.5 (HP)	UC	3.47	1	11.0	113		
						50/5" N=ref/5"				8.6		34-16-18	
4		CLAYSTONE , brown, strong cementation	50			4.5 (HP)	UC	7.08	2.2	25.3	98		92
						50/5" N=ref/5"				26.1		58-27-31	
						4.5 (HP)	UC	5.92	4.3	20.8	103		
						50/3½" N=ref/3½"				24.8			98
						50/4" N=ref/4"				20.3		64-23-41	
						50/3" N=ref/3"				27.8			100
						50/2" N=ref/2"				21.8		51-23-28	
		80.0 - light olive gray at 78½ feet Boring Terminated at 80 Feet	80										

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

Example: N=ref/2", sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

Ground elevation based on information provided by Google Earth.

Water Level Observations

Groundwater was not encountered

Drill Rig

Mobile B-61

Hammer Type

Rope and Cathead

Driller

Tero Drilling

Logged by

RJ

Advancement Method

Dry augered from 0 to 80 feet

Abandonment Method

Boring backfilled with bentonite chips upon completion.

Boring Started

12-21-2022

Boring Completed

12-21-2022

Boring Log No. B-201

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 26.352239° Longitude: -98.681657° Depth (Ft.) Elevation.: 207 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test			Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	Percent Fines
							Test Type	Compressive Strength (tsf)	Strain (%)			LL-PL-PI	
3		CLAYEY SAND (SC) , brown, very dense, with silt pockets - gravel at 2½ feet	6.5			10-50/5" N=50/5"				7.5		25-16-9	18
						50/5" N=ref/5"				3.6			
						6-7-30 N=37				5.6		27-26-1	
2		SILTY CLAY (CL-ML) , with sand, brown, hard, strong cementation	10			37-50/5" N=50/5"				22.9			74
						50/5" N=ref/5"				19.0		32-26-6	
						38-50/4" N=50/4"				22.4			
						50/5" N=ref/5"				22.8			
			20										
						50/5" N=ref/5"				26.2		31-24-7	
		Boring Terminated at 25 Feet	25.0										
			182										

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

Example: N=ref/2", sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.
Ground elevation based on information provided by Google Earth.

Water Level Observations

Groundwater was not encountered

Drill Rig

Mobile B-61

Hammer Type

Rope and Cathead

Driller

Tero Drilling

Logged by

RJ

Boring Started

12-16-2022

Boring Completed

12-16-2022

Advancement Method

Dry augered from 0 to 25 feet

Abandonment Method

Boring backfilled with bentonite chips upon completion.

Boring Log No. B-202

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 26.352250° Longitude: -98.680755° Depth (Ft.) Elevation.: 210 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test			Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	Percent Fines
							Test Type	Compressive Strength (tsf)	Strain (%)			LL-PL-PI	
2		SILTY CLAY (CL-ML) , with sand, brown, very stiff to hard - strong cementation below 4½ feet	10			4-9-16 N=25				19.3		37-30-7	73
						11-9-12 N=21				22.8			
						50/5"				26.0		36-29-7	
						N=ref/5"				26.6			
						33-50/5"				26.3			
						N=50/5"							
						41-50/4"							
						N=50/4"							
						50/5"				27.0		35-29-6	
						N=ref/5"							
			20			50/4"							
						N=ref/4"				25.9			
						50/4"							
						N=ref/4"				26.2			
		25.0 185											73
		Boring Terminated at 25 Feet											

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

Example: N=ref/2", sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.
Ground elevation based on information provided by Google Earth.

Water Level Observations

Groundwater was not encountered

Advancement Method

Dry augered from 0 to 25 feet

Abandonment Method

Boring backfilled with bentonite chips upon completion.

Drill Rig

Mobile B-61

Hammer Type

Rope and Cathead

Driller

Tero Drilling

Logged by

RJ

Boring Started

12-22-2022

Boring Completed

12-22-2022

Boring Log No. B-203

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 26.351414° Longitude: -98.681667° Depth (Ft.) Elevation.: 211 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test			Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	Percent Fines
							Test Type	Compressive Strength (tsf)	Strain (%)			LL-PL-PI	
3		CLAYEY SAND (SC) , brown, medium dense to very dense - strong cementation at 2½ feet - silty; non-plastic at 4½ feet 6.5 204.5	10			7-9-14 N=23 50/5"				19.1		41-29-12	30
						N=ref/5"				7.0			
2		SANDY LEAN CLAY (CL) , brown, hard, strong cementation below 6½ feet 25.0 - Silty Clay (CL-ML), with sand at 23½ feet 186 Boring Terminated at 25 Feet	20			32-30-29 N=59 14-32-50/5" N=82/11"				20.7		NP	60
						50/5"				18.2			
						N=ref/5"				18.1		36-25-11	
						50/5"							
						N=ref/5"				17.7			
						50/5"							
						28-50/5" N=50/5"				21.7			70
						44-50/5" N=50/5"				25.1		32-26-6	

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

NP=Non-Plastic
Example: N=ref/2", sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.
Ground elevation based on information provided by Google Earth.

Water Level Observations

Groundwater was not encountered

Advancement Method

Dry augered from 0 to 25 feet

Abandonment Method

Boring backfilled with bentonite chips upon completion.

Drill Rig

Mobile B-61

Hammer Type

Rope and Cathead

Driller

Tero Drilling

Logged by

RJ

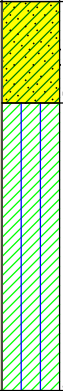
Boring Started

12-16-2022

Boring Completed

12-16-2022

Boring Log No. B-204

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 26.351385° Longitude: -98.680646° Depth (Ft.) Elevation.: 212 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test			Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	Percent Fines
							Test Type	Compressive Strength (tsf)	Strain (%)			LL-PL-PI	
2		SANDY LEAN CLAY (CL) , brown, very stiff to hard SILTY CLAY (CL-ML) , brown, hard, strong cementation	6.5	205.5		4-10-20 N=30				12.4		33-24-9	
						21-15-11 N=26				17.5			55
						18-24-27 N=51				11.8		35-23-12	
						29-50/5" N=50/5"				17.0			
						16-14-26 N=40				22.7			69
						21-50/5" N=50/5"				25.7		33-27-6	
						23-50/5" N=50/5"				26.1			
						50/5" N=ref/5"				23.1		30-26-4	
		Boring Terminated at 25 Feet	25.0	187									

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

Example: N=ref/2", sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.
Ground elevation based on information provided by Google Earth.

Water Level Observations

Groundwater was not encountered

Advancement Method

Dry augered from 0 to 25 feet

Abandonment Method

Boring backfilled with bentonite chips upon completion.

Drill Rig

Mobile B-61

Hammer Type

Rope and Cathead

Driller

Tero Drilling

Logged by

RJ

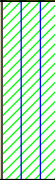
Boring Started

12-15-2022

Boring Completed

12-15-2022

Boring Log No. B-205

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 26.350906° Longitude: -98.681658° Depth (Ft.) Elevation.: 198 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test			Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	Percent Fines
							Test Type	Compressive Strength (tsf)	Strain (%)			LL-PL-PI	
3		CLAYEY SAND (SC) , brown, medium dense to very dense - silty; non-plastic at 4½ feet	10			10-10-17 N=27				13.7		34-22-12	46
						13-9-10 N=19				13.0			
						12-15-21 N=36				17.4		NP	
						13-14-20 N=34				21.7			
						16-40-38 N=78				23.5			
						18-43-50/5" N=93/11"				23.7		32-25-7	
2		SILTY CLAY (CL-ML) , with sand, brown, hard, moderate to strong cementation	20			19-40-45 N=85				24.6			81
						38-50/5" N=50/5"				22.7		30-23-7	
		Boring Terminated at 25 Feet											

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

NP=Non-Plastic
Example: N=ref/2", sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.
Ground elevation based on information provided by Google Earth.

Water Level Observations

Groundwater was not encountered

Advancement Method

Dry augered from 0 to 25 feet

Abandonment Method

Boring backfilled with bentonite chips upon completion.

Drill Rig

Mobile B-61

Hammer Type

Rope and Cathead

Driller

Tero Drilling

Logged by

RJ

Boring Started

12-15-2022

Boring Completed

12-15-2022

Boring Log No. B-206

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 26.350871° Longitude: -98.680689° Depth (Ft.) Elevation.: 201 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test			Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
							Test Type	Compressive Strength (tsf)	Strain (%)				
2		SANDY LEAN CLAY (CL) , brown, very stiff to hard, strong cementation, silt pockets to 2 feet	13.5			8-14-15 N=29				12.5		31-24-7	67
						45-50/2" N=50/2"				25.6			
						50/5" N=ref/5"				24.2		38-25-13	
						50/5" N=ref/5"				25.1			
						50/5" N=ref/5"				22.9			
						50/5" N=ref/5"							
						50/5" N=ref/5"				25.5		33-28-5	
						50/5" N=ref/5"							
						50/5" N=ref/5"				28.0			
						50/5" N=ref/5"							
			20			50/5" N=ref/5"				25.0			87
			25.0			50/4" N=ref/4"				25.0			
Boring Terminated at 25 Feet													

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

Example: N=ref/2", sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.
Ground elevation based on information provided by Google Earth.

Water Level Observations

Groundwater was not encountered

Advancement Method

Dry augered from 0 to 25 feet

Abandonment Method

Boring backfilled with bentonite chips upon completion.

Drill Rig

Mobile B-61

Hammer Type

Rope and Cathead

Driller

Tero Drilling

Logged by

RJ

Boring Started

12-21-2022

Boring Completed

12-21-2022

Boring Log No. B-601

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 26.351201° Longitude: -98.686998° Depth (Ft.) Elevation.: 173 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test			Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI	Percent Fines
							Test Type	Compressive Strength (tsf)	Strain (%)				
3		CLAYEY SAND (SC) , dark gray, loose to very dense - gravel at 2½ feet	4.5 168.5			3-3-6 N=9				15.9		33-18-15	
						23-36-38 N=74				21.9			13
2		FAT CLAY (CH) , brown, very stiff to hard				8-8-12 N=20				34.5		80-26-54	
						10-17-17 N=34	UC	3.90	2.1	29.2	93		98
			13.5 159.5			4.5 (HP)							
		CLAYSTONE , light olive gray, strong cementation				4.5 (HP)	UC	3.54	1.7	28.6	92	70-29-41	
						31-50/5" N=50/5"				24.4			
		- Fat Clay (CH); hard at 23½ feet				23-28-33 N=61				23.1		49-21-28	
4						40-50/4" N=50/4"				22.5			93
						50/5" N=ref/5"				18.9			
		- light olive green below 38½ feet				50/5" N=ref/5"				22.2		60-18-42	
						50/5" N=ref/5"				20.0			89
			50.0 123			50/4" N=ref/4"				24.9		49-19-30	
		Boring Terminated at 50 Feet	50										

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

Example: N=ref/2", sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

Ground elevation based on information provided by Google Earth.

Water Level Observations

-  27 feet - While drilling
-  26.5 feet - After 15 minutes

Drill Rig

Mobile B-61

Hammer Type

Rope and Cathead

Driller

Tero Drilling

Logged by

RJ

Advancement Method

Dry augered from 0 to 50 feet

Abandonment Method

Boring backfilled with bentonite chips upon completion.

Boring Started

12-22-2022

Boring Completed

12-22-2022

Attachment E-4: Geotechnical Information

Olmitos and Garcias Creek 5 Boring Logs
Laboratory Test Results

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING	WATER LEVEL	FIELD TESTS
 Shelby Tube  Standard Penetration Test	 Water Initially Encountered  Water Level After a Specified Period of Time  Water Level After a Specified Period of Time  Cave In Encountered Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See [Exploration and Testing Procedures](#) in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength Qu, (tsf)	Standard Penetration or N-Value Blows/Ft.
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A					Soil Classification	
					Group Symbol	Group Name ^B
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	$Cu \geq 4$ and $1 \leq Cc \leq 3$ ^E	GW	Well-graded gravel ^F	
			$Cu < 4$ and/or $[Cc < 1$ or $Cc > 3.0]$ ^E	GP	Poorly graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F, G, H}	
			Fines classify as CL or CH	GC	Clayey gravel ^{F, G, H}	
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	$Cu \geq 6$ and $1 \leq Cc \leq 3$ ^E	SW	Well-graded sand ^I	
			$Cu < 6$ and/or $[Cc < 1$ or $Cc > 3.0]$ ^E	SP	Poorly graded sand ^I	
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH	SM	Silty sand ^{G, H, I}	
			Fines classify as CL or CH	SC	Clayey sand ^{G, H, I}	
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	$PI > 7$ and plots on or above “A”	CL	Lean clay ^{K, L, M}	
			$PI < 4$ or plots below “A” line ^J	ML	Silt ^{K, L, M}	
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K, L, M, N}
			Liquid limit - not dried			Organic silt ^{K, L, M, O}
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above “A” line	CH	Fat clay ^{K, L, M}	
			PI plots below “A” line	MH	Elastic Silt ^{K, L, M}	
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K, L, M, P}
			Liquid limit - not dried			Organic silt ^{K, L, M, Q}
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat	

^A Based on the material passing the 3-inch (75-mm) sieve.

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

$$E \quad Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

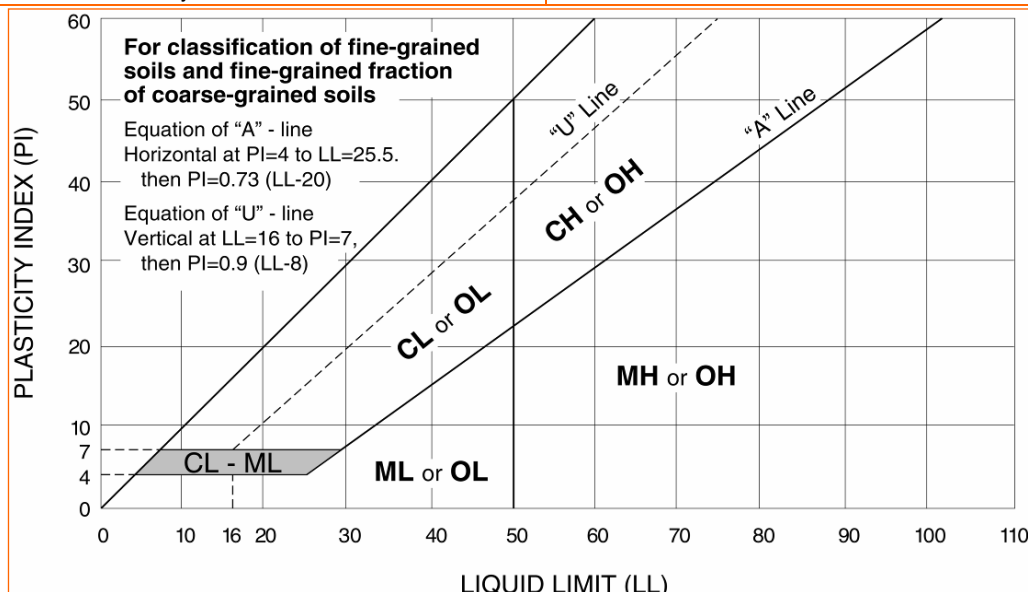
^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.


**CRUMB TEST (ASTM D6572)**

Project No.: 88225134 Project Name: Olmitos Floodwater Ret. Structure 5 Location:

Boring No.: B-11 Sample No.: Sample 1 Depth: 53½ - 55 ☒ ft ☐ m

Visual Classification: Claystone Color: Light olive gray

Moisture Content of Sample:		as-received	in situ	air-dried
Tare Number	Wet Mass + Tare (g)	Dry Mass + Tare (g)	Tare Mass (g)	Water Content (%)

Specimen Identification:	Sample 1			Specimen Identification:				Specimen Identification:			
Spec. Container Identification:				Spec. Container Identification:				Spec. Container Identification:			
Method:	☒ A (Natural)			Method:	☐ A (Natural)			Method:	☐ A (Natural)		
	☐ B (Remolded)				☐ B (Remolded)				☐ B (Remolded)		
Water Type:	☒ Distilled			Water Type:	☐ Distilled			Water Type:	☐ Distilled		
	☐ Type IV				☐ Type IV				☐ Type IV		
Initial Water Temp. (°C):	78° F			Initial Water Temp. (°C):				Initial Water Temp. (°C):			
Start Time (hh:mm:ss):				Start Time (hh:mm:ss):				Start Time (hh:mm:ss):			
Target Reading	Time Taken	Grade	Temp. (°C)	Target Reading	Time Taken	Grade	Temp. (°C)	Target Reading	Time Taken	Grade	Temp. (°C)
2 min ± 15 s		1		2 min ± 15 s				2 min ± 15 s			
1 h ± 8 min		3		1 h ± 8 min				1 h ± 8 min			
6 h ± 45 min		4		6 h ± 45 min				6 h ± 45 min			
Dispersive Classification:	Highly Dispersive			Dispersive Classification:				Dispersive Classification:			
Additional water added to remold the specimen (Method B):	☐ Y	☐ N		Additional water added to remold the specimen (Method B):	☐ Y	☐ N		Additional water added to remold the specimen (Method B):	☐ Y	☐ N	

Remarks:

Prepared By: SB
Date: 1/19/23Tested By: SB
Date: 1/19/23Input By: MR
Date: 1/25/23Reviewed By: AAS
Date: 1/26/23

**CRUMB TEST (ASTM D6572)**

Project No.: 88225134 Project Name: Olmitos Floodwater Ret. Structure 5 Location:

Boring No.: B-12 Sample No.: Sample 1 Depth: 18½ - 20 ☒ ft ☐ m

Visual Classification: Fill: Clayey Sand (SC) Color: Light Brown

Moisture Content of Sample:		as-received	in situ	air-dried
Tare Number	Wet Mass + Tare (g)	Dry Mass + Tare (g)	Tare Mass (g)	Water Content (%)

Specimen Identification:	Sample 1			Specimen Identification:				Specimen Identification:			
Spec. Container Identification:				Spec. Container Identification:				Spec. Container Identification:			
Method:	☒ A (Natural)			Method:	☐ A (Natural)			Method:	☐ A (Natural)		
	☐ B (Remolded)				☐ B (Remolded)				☐ B (Remolded)		
Water Type:	☒ Distilled			Water Type:	☐ Distilled			Water Type:	☐ Distilled		
	☐ Type IV				☐ Type IV				☐ Type IV		
Initial Water Temp. (°C):	78° F			Initial Water Temp. (°C):				Initial Water Temp. (°C):			
Start Time (hh:mm:ss):				Start Time (hh:mm:ss):				Start Time (hh:mm:ss):			
Target Reading	Time Taken	Grade	Temp. (°C)	Target Reading	Time Taken	Grade	Temp. (°C)	Target Reading	Time Taken	Grade	Temp. (°C)
2 min ± 15 s		4		2 min ± 15 s				2 min ± 15 s			
1 h ± 8 min		4		1 h ± 8 min				1 h ± 8 min			
6 h ± 45 min		4		6 h ± 45 min				6 h ± 45 min			
Dispersive Classification:	Highly Dispersive			Dispersive Classification:				Dispersive Classification:			
Additional water added to remold the specimen (Method B):	☐ Y	☐ N		Additional water added to remold the specimen (Method B):	☐ Y	☐ N		Additional water added to remold the specimen (Method B):	☐ Y	☐ N	

Remarks:

Prepared By: SB
Date: 1/19/23Tested By: SB
Date: 1/19/23Input By: MR
Date: 1/25/23Reviewed By: AAS
Date: 1/26/23

**CRUMB TEST (ASTM D6572)**Project No.: 88225134 Project Name: Olmitos Floodwater Ret. Structure 5 Location: _____Boring No.: B-203 Sample No.: Sample 1 Depth: 13½ ☒ ft ☐ mVisual Classification: Fill: Clayey Sand (SC)Color: Light Brown

Moisture Content of Sample:		as-received	in situ	air-dried
Tare Number	Wet Mass + Tare (g)	Dry Mass + Tare (g)	Tare Mass (g)	Water Content (%)

Specimen Identification:		<u>Sample 1</u>		Specimen Identification:				Specimen Identification:			
Spec. Container Identification:				Spec. Container Identification:				Spec. Container Identification:			
Method:	☒ A (Natural) ☐ B (Remolded)	Method:	☐ A (Natural) ☐ B (Remolded)	Method:	☐ A (Natural) ☐ B (Remolded)						
Water Type:	☒ Distilled ☐ Type IV	Water Type:	☐ Distilled ☐ Type IV	Water Type:	☐ Distilled ☐ Type IV						
Initial Water Temp. (°C): <u>78° F</u>		Initial Water Temp. (°C): _____		Initial Water Temp. (°C): _____							
Start Time (hh:mm:ss): _____		Start Time (hh:mm:ss): _____		Start Time (hh:mm:ss): _____							
Target Reading	Time Taken	Grade	Temp. (°C)	Target Reading	Time Taken	Grade	Temp. (°C)	Target Reading	Time Taken	Grade	Temp. (°C)
2 min ± 15 s		<u>2</u>		2 min ± 15 s				2 min ± 15 s			
1 h ± 8 min		<u>3</u>		1 h ± 8 min				1 h ± 8 min			
6 h ± 45 min		<u>4</u>		6 h ± 45 min				6 h ± 45 min			
Dispersive Classification:		<u>Highly Dispersive</u>		Dispersive Classification:				Dispersive Classification:			
Additional water added to remold the specimen (Method B): ☐ Y ☐ N		Additional water added to remold the specimen (Method B): ☐ Y ☐ N		Additional water added to remold the specimen (Method B): ☐ Y ☐ N							

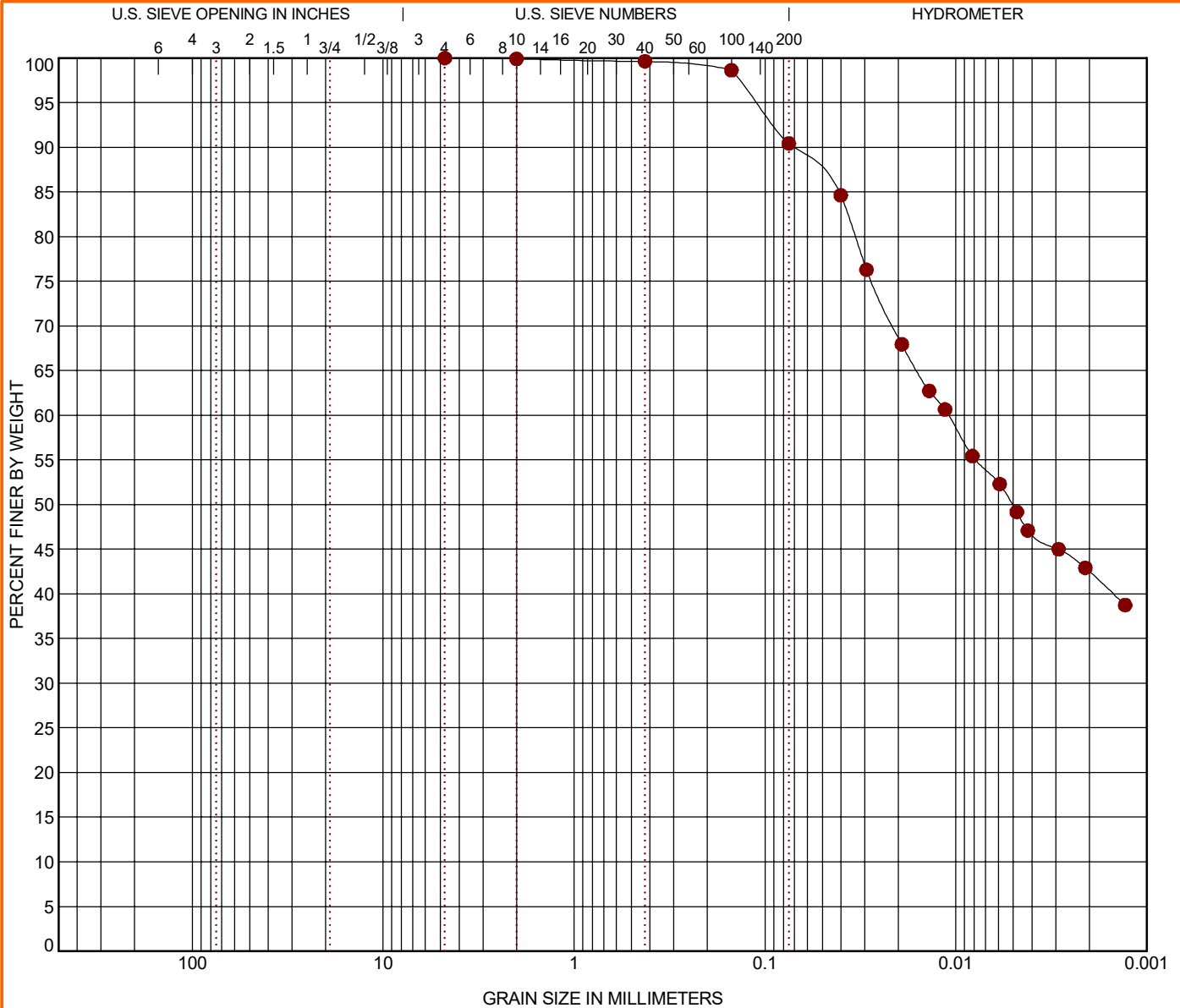
Remarks: _____

Prepared By: SB
Date: 1/19/23Tested By: SB
Date: 1/19/23Input By: MR
Date: 1/25/23Reviewed By: AAS
Date: 1/26/23

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 88225134 OLMITOS FLOODWATER GPJ TERRACON_DATATEMPLATE.GDT 2/10/23



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
B-201	0.5 - 2	LEAN CLAY (CL)	7.5	25	16	9		

Boring ID	Depth	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Cobbles	%Gravel	%Sand	%Silt	%Fines	%Clay
B-201	0.5 - 2	4.75	0.011			0.0	0.0	9.6	40.6		49.8

PROJECT: Olmitos Floodwater Retarding Structure Site 5

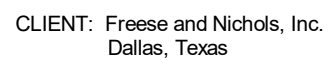
SITE: US Highway 83 and Chapa Blvd
Rio Grande City, Texas



PROJECT NUMBER: 88225134

CLIENT: Freese and Nichols, Inc.
Dallas, Texas

ASTM D422 / ASTM C136

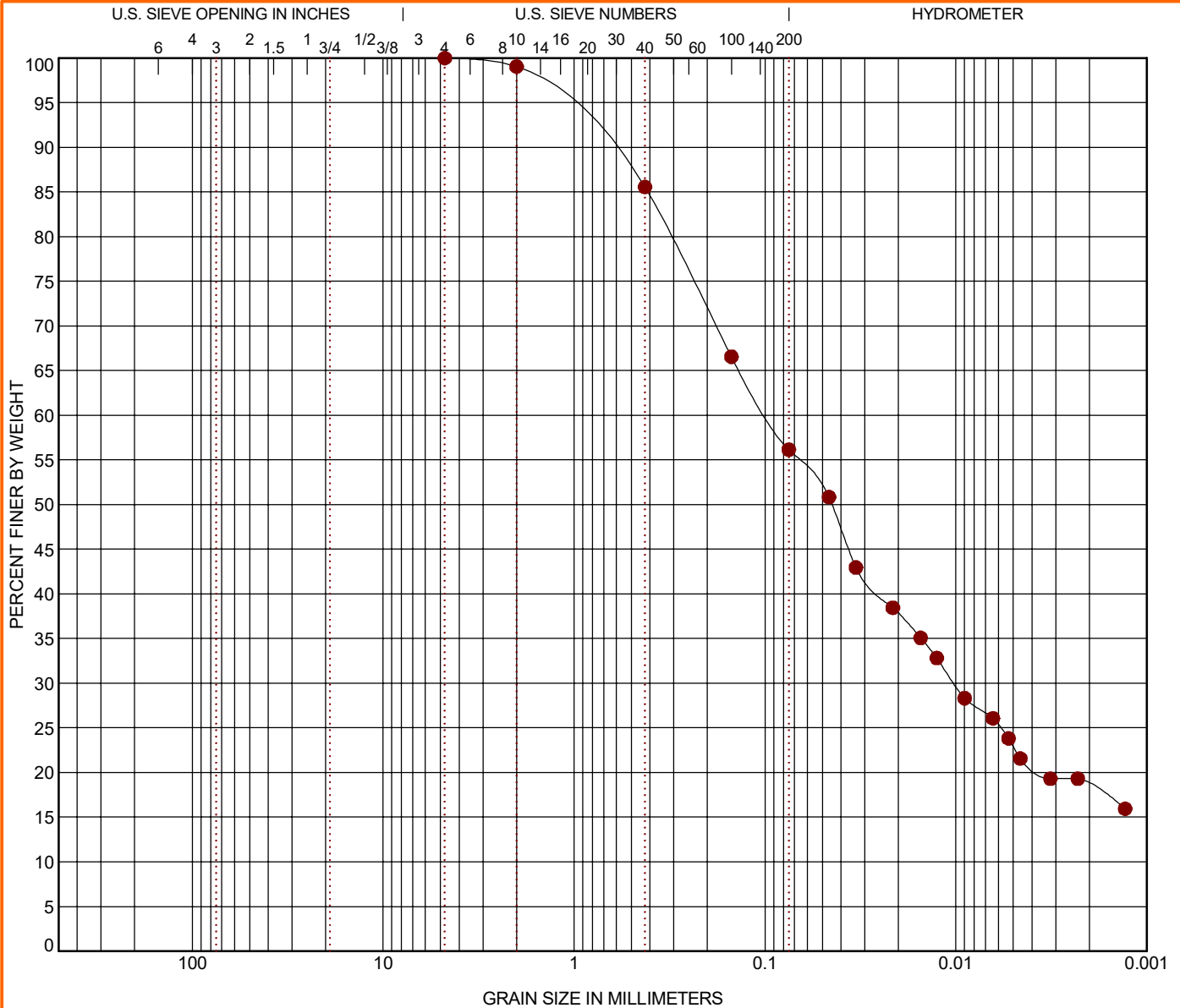


LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 88225134 OLMITOS FLOODWATE.GPJ TERRACON_DATA\TEMPLATE.GDT 2/10/23

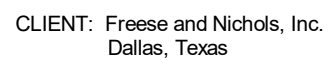
GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 88225134 OLMITOS FLOODWATER GPJ TERRACON DATATEMPLATE.GDT 2/10/23



ASTM D422 / ASTM C136



LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 88225134 OLMITOS FLOODWATE.GPJ TERRACON_DATA\TEMPLATE.GDT 2/10/23

Attachment E-5: Headcut Erodibility Index Calculation Information

Olmitos and Garcias Creek 5



Project Name:
**Olmitos and Garcia Creek Site 5
(Starr County)**

Project Number:
TSW22727

Calculation Number:
1

Calculation Title:

Headcut Erodibility Index Calculation

Date:
February 15, 2023

Page:
1 of 3

1.0 PURPOSE

Olmitos and Garcia Creek Watershed Site 5 (Site 5) is a flood control structure and water supply reservoir located in Starr County, Texas. As part of the geotechnical investigation phase, Freese and Nichols, Inc. (FNI) developed Headcut Erodibility Index (K_h) values for the existing auxiliary spillway based on NRCS, Part 628, Chapter 52 (NRCS guidance). This calculation is intended to describe the development of the K_h values for the auxiliary spillway at Site 5.

2.0 REFERENCES

- 1) Field Procedures Guide for the Headcut Erodibility Index (NRCS, Part 628, Chapter 52, 1997)
- 2) Boring Logs (Terracon, 2022) – Borings 201 through 206

3.0 GEOTECHNICAL INVESTIGATION

3.1 Field Investigation

The developed K_h values were based on the information from the boreholes (201 through 206) that were drilled in December 2022 by Terracon within the existing auxiliary spillway. The Terracon borings were drilled to a depth of 25 feet. Borings 202, 204, and 206 drilled in the western portion of the spillway encountered a layer of clay to the boring termination depths. Borings 201, 203, and 205 drilled in the western portion of the spillway encountered clayey sands to 6.5 to 13.5 feet depths below existing grade, underlain by a clay layer to the boring termination depths.

3.2 Laboratory Results

Field and laboratory data from the Terracon investigation was used for the headcut erodibility calculation.

3.3 Stratigraphy

Soils within the borings at the auxiliary spillway were mostly classified as Lean (CL) and Silty (CL-ML) clays by the Terracon in-situ testing and laboratory tests. Clayey sand (SC) was encountered within the upper 6.5 to 13.5 feet in the western portion of the spillway. The clay was encountered from the surface to the boring termination depth of 25 feet below the existing grade. The underlying rock formation was not encountered within the boring termination depths. Representative liquid limit, plasticity index, and clay fraction values were selected based on the descriptions on the boring logs and laboratory data from the borings at the auxiliary spillway and the similar materials obtained from the field investigation at Site 5. In addition, a correlation (was referred to obtain the data on the unconfined compression strengths Correlations of SPT N values with unconfined compression strengths for cohesive soils of varying plasticities (From NAVFAC). Table 1 summarizes the values selected in order to calculate K_h for the materials.

Table 1: Summary of Input Data to Calculate K_h

Layer	Description	LL (%)	PI (%)	Clay Fraction (%)	UCS (MPa)	RQD (%)
1	Lean Clay (CL)	36	11	43	0.43	--
2	Silty Clay (CL-ML)	35	6	19	0.43	--

4.0 HEADCUT ERODIBILITY INDEX

There are four components that must be evaluated in order to calculate K_h for each stratum identified along the spillway cross-section. These components are material strength number, block/particle size number, discontinuity/interparticle bond shear strength number, and the relative ground structure number. The procedures for determining the value of each component is described in the NRCS guidelines. The headcut erodibility index, K_h , represents a measure of the resistance of the earth material to erosion. The index takes the general form:

$$K_h = M_s * K_b * K_d * J_s$$

Where: M_s = material strength number of the earth material

K_b = block or particle size number

K_d = discontinuity or interparticle bond shear strength number

J_s = relative ground structure number

4.1 Material Strength Number (M_s)

The material strength number (M_s) expresses the unconfined compressive strength of an intact representative sample of the material itself without consideration of innate geologic variability within the mass. For the clays, M_s is approximated using the formula found in Table 52-3 of the NRCS guidelines, which uses the unconfined compressive strength (UCS) of the material as the variable.

4.2 Block/Particle Size Number (K_b)

The block/particle size number (K_b) refers to the mean block size of intact rock material as determined by the spacing of discontinuities within the rock mass or mean grain size for granular material. For intact, cohesive soils and coarse detritus, gravels, and boulder formations for which $D > 0.1$ -meter, $K_b = 1$. Therefore, $K_b = 1$ was used for the clays.

4.3 Discontinuity/Interparticle Bond Shear Strength Number (K_d)

K_d represents the shear strength of a discontinuity in a rock mass, or strength of interparticle bonds of the gouge (soil material) within the aperture of a discontinuity. If the material under consideration occurs as a soil mass, K_d is determined by:

$$K_d \approx \tan \Phi'_r$$

Where: Φ'_r = joint roughness number

For $\leq 20\%$ clay, $\Phi'_r = 169.58 (LL)^{-0.4925}$

For 25 - 45% clay, $\Phi'_r = 329.56 (LL)^{-0.7100}$

For $\geq 50\%$ clay, $\Phi'_r = 234.73 (LL)^{-0.6655}$

5.0 Relative Ground Structure Number (J_s)

J_s accounts for the structure of the ground with respect to streamflow. The NRCS guidelines state that soil material is considered intact (without structure), in which case $J_s = 1$. Therefore, $J_s = 1$ was used for the clay soils.

6.0 Summary

A summary of the SITES parameters developed by FNI are provided in Table 2. The values provided in the Table 2 are based on the laboratory data obtained in December 2022 by Terracon. Weathered and unweathered rock formation was not encountered within the 25 ft boring termination depths.

Table 2: Summary of SITES Input Parameters for Site 5

Layer	Description	PI (%)	Dry Density* (pcf)	Clay Fraction (%)	Representative Diameter – D_{75} (in)	Percent Passing No. 200 Sieve	Head Cut Index (K_h)
1	Lean Clay/Clayey Sand (CL/SC)	11	107	43	0.001	90	0.21
2	Silty Clay (CL-ML)	6	118	19	0.01	56	0.18

* Values are assumed based on the similar material in the area of the project site.

The proposed subsurface profile of the existing auxiliary spillway is presented in Figure 1. It is assumed that approximately the top 6.5 to 13.5 feet of the existing auxiliary spillway consists of lean (CL) and clayey sand (SC), overlying approximately 22.5 to 18.5 feet of silty clay (CL-ML).

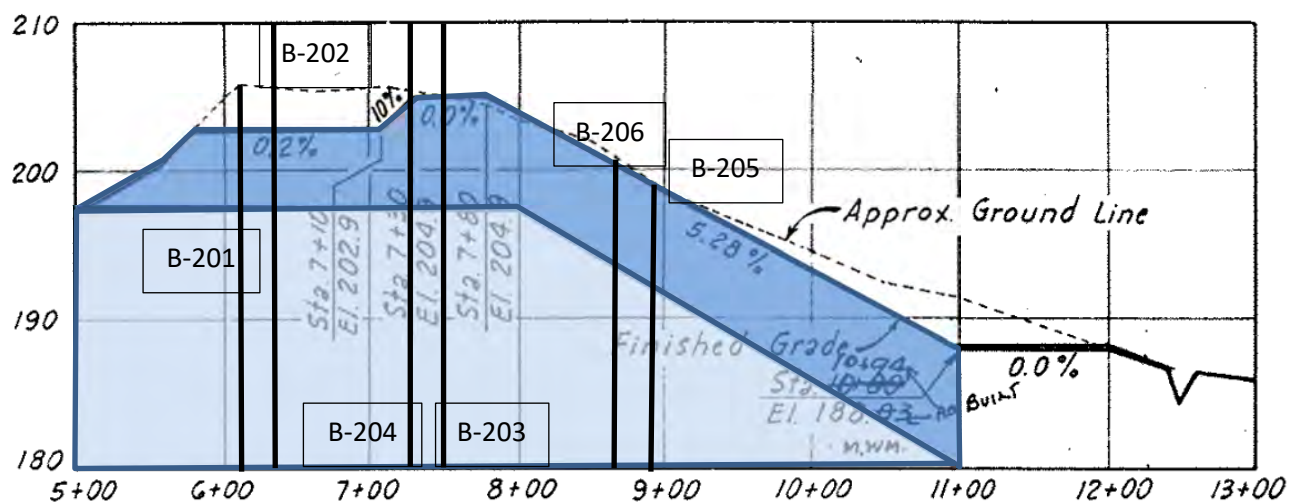


Figure 1. Generalized Stratigraphy of Auxiliary Spillway Profile

Attachment E-6: TR-60 Breach Calculations

Olmitos and Garcias 5

TR-60 Breach Calculations

Hydrologic Breach

Watershed Name	Olmitos and Garcias	Date	7-Nov-22
Site No.	1	Prepared By:	JFA

Elevations

Top of Dam	417.7 Ft msl	Top Width	12 Ft
Breach Hydrograph	417.7 Ft msl	Upstream Slope Above Berm	2.5 :1
Wave Berm	405.9 Ft msl	Upstream Slope Below Berm	2.5 :1
Average Valley Floor	400.0 Ft msl	Downstream Slope Above Berm	2.5 :1
Stability Berm	400.0 Ft msl	Downstream Slope Below Berm	2.5 :1
Length of Dam at Breach Elev	2260 Ft	Wave Berm Width	12 Ft
Volume of Breach	3262 Ac Ft	Stability Berm Width	0 Ft

Breach Discharge Computations

Volume of Breach (Vs)	3,262 Ac Ft
Height Of Breach (Hw)	18 Ft
Cross-Section Area at Breach (A)	1,066 FT ²
$T = 65(H^{0.35})/0.416$	427

If $L > T$,

$$Br = (Vs * Hw)/A \quad 54$$

$$Q_{max} = 1,100 (Br)^{1.35} \quad 240,799 \text{ CFS}$$

If $L < T$,

$$Q_{max} = 0.416 (L)(Hw^{1.5}) \quad 70,010 \text{ CFS}$$

Qmax NOT GREATER THAN

$$Q_{max} = 65(Hw^{1.85}) \quad 13,233 \text{ CFS}$$

Qmax NOT LESS THAN

$$Q_{max} = 3.2(Hw^{5/2}) \quad 4,218 \text{ CFS}$$

Breach Qmax for Hazard Classification =

13,200 CFS ←

TR-60 Breach Calculations

Hydrologic Breach

Watershed Name	Olmitos and Garcias	Date	7-Nov-22
Site No.	2	Prepared By:	JFA

Elevations

Top of Dam	394.9 Ft msl	Top Width	12 Ft
Breach Hydrograph	394.9 Ft msl	Upstream Slope Above Berm	2.5 :1
Wave Berm	378.7 Ft msl	Upstream Slope Below Berm	2.5 :1
Average Valley Floor	372.0 Ft msl	Downstream Slope Above Berm	2.5 :1
Stability Berm	373.0 Ft msl	Downstream Slope Below Berm	2.5 :1
Length of Dam at Breach Elev	4640 Ft	Wave Berm Width	12 Ft
Volume of Breach	5969 Ac Ft	Stability Berm Width	0 Ft

Breach Discharge Computations

Volume of Breach (Vs)	5,969 Ac Ft
Height Of Breach (Hw)	23 Ft
Cross-Section Area at Breach (A)	1,666 FT ²
$T = 65(H^{0.35})/0.416$	467

If $L > T$,

$$Br = (Vs * Hw)/A \quad 82$$

$$Q_{max} = 1,100 (Br)^{1.35} \quad 421,985 \text{ CFS}$$

If $L < T$,

$$Q_{max} = 0.416 (L)(Hw^{1.5}) \quad 211,526 \text{ CFS}$$

Qmax NOT GREATER THAN

$$Q_{max} = 65(Hw^{1.85}) \quad 21,311 \text{ CFS}$$

Qmax NOT LESS THAN

$$Q_{max} = 3.2(Hw^{5/2}) \quad 8,030 \text{ CFS}$$

Breach Qmax for Hazard Classification =

21,300 CFS ←

TR-60 Breach Calculations

Hydrologic Breach

Watershed Name	Olmitos and Garcias	Date	7-Nov-22
Site No.	3	Prepared By:	JFA

Elevations

Top of Dam	371.4 Ft msl	Top Width	12 Ft
Breach Hydrograph	371.4 Ft msl	Upstream Slope Above Berm	2.5 :1
Wave Berm	358.8 Ft msl	Upstream Slope Below Berm	2.5 :1
Average Valley Floor	353.0 Ft msl	Downstream Slope Above Berm	2.5 :1
Stability Berm	354.0 Ft msl	Downstream Slope Below Berm	2.5 :1
Length of Dam at Breach Elev	1960 Ft	Wave Berm Width	12 Ft
Volume of Breach	2864 Ac Ft	Stability Berm Width	0 Ft

Breach Discharge Computations

Volume of Breach (Vs)	2,864 Ac Ft
Height Of Breach (Hw)	18 Ft
Cross-Section Area at Breach (A)	1,137 FT ²
$T = 65(H^{0.35})/0.416$	433

If $L > T$,

$$Br = (Vs * Hw)/A \quad 46$$

$$Q_{max} = 1,100 (Br)^{1.35} \quad 195,271 \text{ CFS}$$

If $L < T$,

$$Q_{max} = 0.416 (L)(Hw^{1.5}) \quad 64,354 \text{ CFS}$$

Qmax NOT GREATER THAN

$$Q_{max} = 65(Hw^{1.85}) \quad 14,218 \text{ CFS}$$

Qmax NOT LESS THAN

$$Q_{max} = 3.2(Hw^{5/2}) \quad 4,647 \text{ CFS}$$

Breach Qmax for Hazard Classification =

14,200 CFS ←

TR-60 Breach Calculations

Hydrologic Breach

Watershed Name	Olmitos and Garcias	Date	7-Nov-22
Site No.	5	Prepared By:	JFA

Elevations

Top of Dam	211.2 Ft msl	Top Width	14 Ft
Breach Hydrograph	211.2 Ft msl	Upstream Slope Above Berm	3 :1
Wave Berm	182.8 Ft msl	Upstream Slope Below Berm	2.5 :1
Average Valley Floor	166.0 Ft msl	Downstream Slope Above Berm	2.5 :1
Stability Berm	182.8 Ft msl	Downstream Slope Below Berm	2.5 :1
Length of Dam at Breach Elev	2670 Ft	Wave Berm Width	18 Ft
Volume of Breach	8618 Ac Ft	Stability Berm Width	20 Ft

Breach Discharge Computations

Volume of Breach (Vs)	8,618 Ac Ft
Height Of Breach (Hw)	45 Ft
Cross-Section Area at Breach (A)	6,819 FT ²
$T = 65(H^{0.35})/0.416$	593

If $L > T$,

$$Br = (Vs * Hw)/A \quad 57$$

$$Q_{max} = 1,100 (Br)^{1.35} \quad 258,884 \text{ CFS}$$

If $L < T$,

$$Q_{max} = 0.416 (L)(Hw^{1.5}) \quad 337,530 \text{ CFS}$$

Qmax NOT GREATER THAN

$$Q_{max} = 65(HW^{1.85}) \quad 74,976 \text{ CFS}$$

Qmax NOT LESS THAN

$$Q_{max} = 3.2(Hw^{5/2}) \quad 43,954 \text{ CFS}$$

Breach Qmax for Hazard Classification =

75,000 CFS ←

TR-60 Breach Calculations

Hydrologic Breach

Watershed Name	Olmitos and Garcias	Date	7-Nov-22
Site No.	4	Prepared By:	JFA

Elevations

Top of Dam	327.7 Ft msl	Top Width	14 Ft
Breach Hydrograph	327.7 Ft msl	Upstream Slope Above Berm	2.5 :1
Wave Berm	307.5 Ft msl	Upstream Slope Below Berm	2.5 :1
Average Valley Floor	298.0 Ft msl	Downstream Slope Above Berm	2.5 :1
Stability Berm	299.0 Ft msl	Downstream Slope Below Berm	2.5 :1
Length of Dam at Breach Elev	4020 Ft	Wave Berm Width	12 Ft
Volume of Breach	4261 Ac Ft	Stability Berm Width	0 Ft

Breach Discharge Computations

Volume of Breach (Vs)	4,261 Ac Ft
Height Of Breach (Hw)	30 Ft
Cross-Section Area at Breach (A)	2,735 FT ²
$T = 65(H^{0.35})/0.416$	512

If $L > T$,

$$Br = (Vs * Hw)/A \quad 46$$

$$Q_{max} = 1,100 (Br)^{1.35} \quad 194,786 \text{ CFS}$$

If $L < T$,

$$Q_{max} = 0.416 (L)(Hw^{1.5}) \quad 270,679 \text{ CFS}$$

Qmax NOT GREATER THAN

$$Q_{max} = 65(Hw^{1.85}) \quad 34,476 \text{ CFS}$$

Qmax NOT LESS THAN

$$Q_{max} = 3.2(Hw^{5/2}) \quad 15,383 \text{ CFS}$$

Breach Qmax for Hazard Classification =

34,500 CFS ←

Attachment E-7: Opinion of Probable Construction Costs

Olmitos and Garcias 5



Innovative approaches
Practical results
Outstanding service

OPINION OF PROBABLE CONSTRUCTION COSTS

SITE NUMBER	Olmitos 5	ALTERNATIVE	Alt - Dam Decommissioning Buyouts
CLIENT	National Resources Conservation Service - Texas	DATE	7/15/2025

ESTIMATOR	CHECKED BY	FNI PROJECT NO.
Kashyap Machiraju	Jacob Adkins	TSW22727

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Mobilization & Demobilization	1	LS	\$ 155,800.00	\$ 155,800.00
2	Construction Survey	1	LS	\$ 44,600.00	\$ 44,600.00
3	Quality Control	1	LS	\$ 111,300.00	\$ 111,300.00
4	Care of Water	1	LS	\$ 111,300.00	\$ 111,300.00
5	Pollution Control	1	LS	\$ 44,600.00	\$ 44,600.00
6	Excavation - Embankment	58100	CY	\$ 15.00	\$ 871,500.00
7	Structural Buyouts (Relocation & Replacement)	1	LS	\$ 24,325,800.00	\$ 24,325,800.00
8	Land Buyouts (Land Rights)	1	LS	\$ 5,301,900.00	\$ 5,301,900.00
9	Rock Riprap - Breach	1570	CY	\$ 100.00	\$ 157,000.00
10	Gravel Bedding - Breach	790	CY	\$ 100.00	\$ 79,000.00
11	Removal of Concrete Structures	1	LS	\$ 20,000.00	\$ 20,000.00
12	Excavation - Pilot Channel	31200	CY	\$ 15.00	\$ 468,000.00
13	Reservoir Restoration	26	AC	\$ 20,000.00	\$ 520,000.00
14	Remapping of FEMA Floodplain	1	LS	\$ 110,000.00	\$ 110,000.00
Construction - Subtotal					\$ 2,693,100.00
Construction - Contingency					30%
Construction - Total					\$ 3,501,100.00
Relocation & Replacement Costs (Structures)					\$ 24,325,800.00
Land Rights Acquisition Cost (Land Parcels)					\$ 5,301,900.00
Engineering (% of Construction)					10%
Project Administration (% of Construction)					12%

PROJECT TOTAL (Construction + Engineering + Administration) \$33,899,200

AACE Class 4 Range:	-30%	\$23,729,440
	50%	\$50,848,800

NOTES:

1	Excavate through the embankment for controlled breach. Assume on-site spoil disposal.
2	Excavation has bottom width of 100 feet, with side slopes of 5H:1V. Excavation takes place near maximum section of embankment.
3	Stabilize the remaining embankment structure with rock riprap through the breach section.
4	Remove the concrete structures associated with the principal spillway.
5	Excavate pilot channel through reservoir to restore original channel. Assume on-site disposal.
6	Channel has bottom width of 20 feet with 2H:1V side slopes. Channel depth = 10 feet.
7	Restore/revegetate upstream reservoir area. Total restoration area = 26 acres.
8	Restoration will consist of vegetation plantings of trees, shrubs, and native grasses.
9	Multiple plantings assumed to achieve full survival rate. Assume drip irrigation system required for tree plantings.
10	Re-map the FEMA 100-yr flood plain in the areas affected downstream of the dam.
11	Buyouts calculated throughout the entire floodplain as the depth and inundation boundary exceeds those of existing conditions.



Innovative approaches
Practical results
Outstanding service

OPINION OF PROBABLE CONSTRUCTION COSTS

SITE NUMBER	Olmitos 5	ALTERNATIVE	Alt. No. 3 Dam Raise and RCC Spwy
CLIENT	National Resources Conservation Service - Texas	DATE	8/14/2025

ESTIMATOR	CHECKED BY	FNI PROJECT NO.
Kash Machiraju	Jacob Adkins	TSW22727

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Mobilization & Demobilization	1	LS	\$2,790,300.00	\$ 2,790,300.00
2	Construction Survey	1	LS	\$ 797,300.00	\$ 797,300.00
3	Quality Control	1	LS	\$ 1,993,100.00	\$ 1,993,100.00
4	Care of Water	1	LS	\$ 3,986,100.00	\$ 3,986,100.00
5	Pollution Control	1	LS	\$ 797,300.00	\$ 797,300.00
6	Miscellaneous Work Items	1	LS	\$3,986,100.00	\$ 3,986,100.00
7	Select Compacted Fill - Embankment	252500	CY	\$ 15.00	\$ 3,787,500.00
8	Topsoil & Seeding - Embankment	21	AC	\$ 20,000.00	\$ 420,000.00
9	Flexible Base - Embankment	1400	CY	\$ 75.00	\$ 105,000.00
10	Rock Riprap - Embankment	3650	CY	\$ 100.00	\$ 365,000.00
11	Clearing & Grubbing - Embankment	26	AC	\$ 8,000.00	\$ 208,000.00
12	Roller Compacted Concrete	43900	CY	\$ 400.00	\$ 17,560,000.00
13	Excavation - Auxiliary Spillway	71000	CY	\$ 15.00	\$ 1,065,000.00
14	Excavation - Principal Spillway	17500	CY	\$ 15.00	\$ 262,500.00
15	Select Compacted Fill - Principal Spillway	17500	CY	\$ 15.00	\$ 262,500.00
16	4'X4.25' Reinforced Concrete Box	260	LF	\$ 880.00	\$ 228,800.00
17	Reinforced Concrete - Traditional Inlet	18	CY	\$ 1,800.00	\$ 32,400.00
18	Remapping of FEMA Floodplain	1	LS	\$ 110,000.00	\$ 110,000.00
19	Excavation - Downstream Channel	104450	CY	\$ 15.00	\$ 1,566,800.00
20	Downstream Channel Lining	12020	CY	\$ 900.00	\$ 10,818,000.00
21	Culvert Replacement	1	LS	\$ 3,049,000.00	\$ 3,049,000.00
22	Removal of Concrete Structures	1	LS	\$ 20,000.00	\$ 20,000.00
Construction - Subtotal					\$ 54,210,700.00
Construction - Contingency					30% \$ 16,263,300.00
Construction - Total					\$ 70,474,000.00
Engineering (% of Construction)					10% \$ 7,047,400.00
Project Administration (% of Construction)					12% \$ 8,456,900.00
Land Acquisition				LS \$ 308,994.17	\$ 309,000.00

PROJECT TOTAL (Construction + Engineering + Administration + Easements) \$86,287,300

AACE Class 4 Range:	-30%	\$60,401,110
	50%	\$129,430,950

NOTES:

- 1 Raise crest of dam with compacted fill (Crest El. = 220.9 feet, Upstream Slope = 4H:1V, Downstream Slope = 4H:1V, Crest Width = 14 feet).
- 2 Construct new principal spillway conduit using cut and cover method (4' X 4.25' Reinforced Concrete Box).
- 3 Construct new RCC spillway. (width = 700', training wall width 12', spillway crest = 199.5 ft msl)
- 4 Construct rock riprap erosion protection downstream of labyrinth spillway (Riprap Thickness = 54 inches).
- 5 Construct 9-inch thick flexible base roadway surface on crest of dam.
- 6 Construct new traditional inlet structure for principal spillway of reinforced concrete (Crest El. = 176.2 feet-msl).
- 7 Existing easement limits were not available for this site at the time of this estimate. It was assumed that the existing fenceline matches the easement
- 8 Existing channel downstream of the dam is being expanded, includes item No. 19-21. It is 27 ft wide, 6 ft deep and trapezoidal shape 2H:1V.
- 9 The material for channel lining is concrete. Side slope length is about 13.41 ft which makes the total transverse length of the channel to 54 ft
- 10 The bridges and culverts in the new channel have been included with 100% replacement cost
- 11 Buyouts calculated using the intersection of the channel with the parcels and the associated structures. 23 Parcels and 0 structures are intersected by the new channel



Innovative approaches
Practical results
Outstanding service

OPINION OF PROBABLE CONSTRUCTION COSTS

SITE NUMBER	Olmitos 5	ALTERNATIVE	Alt. No. 4 - Dam Raise and RCC Spwy		
CLIENT	National Resources Conservation Service - Texas	DATE	8/14/2025		
ESTIMATOR		CHECKED BY	FNI PROJECT NO.		
Kash Machiraju		Jacob Adkins	TSW22727		
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Mobilization & Demobilization	1	LS	\$ 3,026,000.00	\$ 3,026,000.00
2	Construction Survey	1	LS	\$ 864,600.00	\$ 864,600.00
3	Quality Control	1	LS	\$ 2,161,400.00	\$ 2,161,400.00
4	Care of Water	1	LS	\$ 4,322,800.00	\$ 4,322,800.00
5	Pollution Control	1	LS	\$ 864,600.00	\$ 864,600.00
6	Miscellaneous Work Items	1	LS	\$ 4,322,800.00	\$ 4,322,800.00
7	Select Compacted Fill - Embankment	101000	CY	\$ 15.00	\$ 1,515,000.00
8	Topsoil & Seeding - Embankment	7	AC	\$ 20,000.00	\$ 140,000.00
9	Flexible Base - Embankment	900	CY	\$ 75.00	\$ 67,500.00
10	Rock Riprap - Embankment	4900	CY	\$ 100.00	\$ 490,000.00
11	Clearing & Grubbing - Embankment	25	AC	\$ 8,000.00	\$ 200,000.00
12	Roller Compacted Concrete	56260	CY	\$ 400.00	\$ 22,504,000.00
13	Excavation - Auxiliary Spillway	128350	CY	\$ 15.00	\$ 1,925,250.00
14	Excavation - Principal Spillway	17500	CY	\$ 15.00	\$ 262,500.00
15	Select Compacted Fill - Principal Spillway	17500	CY	\$ 15.00	\$ 262,500.00
16	4'X4.25' Reinforced Concrete Box	260	LF	\$ 880.00	\$ 228,800.00
17	Reinforced Concrete - Traditional Inlet	18	CY	\$ 1,800.00	\$ 32,400.00
18	Remapping of FEMA Floodplain	1	LS	\$ 110,000.00	\$ 110,000.00
19	Excavation - Downstream Channel	104450	CY	\$ 15.00	\$ 1,566,800.00
20	Downstream Channel Lining	12060	CY	\$ 900.00	\$ 10,854,000.00
21	Culvert Replacement	1	LS	\$ 3,049,000.00	\$ 3,049,000.00
22	Removal of Concrete Structures	1	LS	\$ 20,000.00	\$ 20,000.00
Construction - Subtotal					\$ 58,790,000.00
Construction - Contingency 30%					\$ 17,637,000.00
Construction - Total					\$ 76,427,000.00
Engineering (% of Construction)					10% \$ 7,642,700.00
Project Administration (% of Construction)					12% \$ 9,171,300.00
Land Acquisition					LS \$ 305,994.17 \$ 306,000.00

PROJECT TOTAL (Construction + Engineering + Administration + Easements) \$93,547,000

AACE Class 4 Range:	-30%	\$65,482,900
	50%	\$140,320,500

NOTES:

- Raise crest of dam with compacted fill (Crest El. = 216.1 feet, Upstream Slope = 4H:1V, Downstream Slope = 4H:1V, Crest Width = 14 feet).
- Construct new principal spillway conduit using cut and cover method (4' X 4.25' Reinforced Concrete Box).
- Construct new RCC spillway. (width = 1000', training wall width 12', spillway crest = 199.5 ft msl)
- Construct rock riprap erosion protection downstream of labyrinth spillway (Riprap Thickness = 54 inches).
- Construct 9-inch thick flexible base roadway surface on crest of dam.
- Construct new traditional inlet structure for principal spillway of reinforced concrete (Crest El. = 176.2 feet-msl).
- Existing easement limits were not available for this site at the time of this estimate. It was assumed that the existing fence line matches the easement
- Existing channel downstream of the dam is being expanded, includes item No. 19-21. It is 27 ft wide, 6 ft deep and trapezoidal shape 2H:1V.
- The material for channel lining is concrete. Side slope length is about 13.41 ft which makes the total transverse length of the channel to 54 ft
- The bridges and culverts in the new channel have been included with 100% replacement cost



Innovative approaches
Practical results
Outstanding service

OPINION OF PROBABLE CONSTRUCTION COSTS

SITE NUMBER	Olmitos 5	ALTERNATIVE	Alt. No. 5 - Slope Flattening and Labyrinth Spwy
CLIENT	National Resources Conservation Service - Texas	DATE	8/14/2025

ESTIMATOR	CHECKED BY	FNI PROJECT NO.
Kash Machiraju	Jacob Adkins	TSW22727

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Mobilization & Demobilization	1	LS	\$ 3,776,900.00	\$ 3,776,900.00
2	Construction Survey	1	LS	\$ 1,079,100.00	\$ 1,079,100.00
3	Quality Control	1	LS	\$ 2,697,800.00	\$ 2,697,800.00
4	Care of Water	1	LS	\$ 5,395,500.00	\$ 5,395,500.00
5	Pollution Control	1	LS	\$ 1,079,100.00	\$ 1,079,100.00
6	Miscellaneous Work Items	1	LS	\$ 5,395,500.00	\$ 5,395,500.00
7	Select Compacted Fill - Embankment	52000	CY	\$ 15.00	\$ 780,000.00
8	Topsoil & Seeding - Embankment	6	AC	\$ 20,000.00	\$ 120,000.00
9	Flexible Base - Embankment	825	CY	\$ 75.00	\$ 61,875.00
10	Rock Riprap - Embankment	2800	CY	\$ 100.00	\$ 280,000.00
11	Clearing & Grubbing - Embankment	9	AC	\$ 8,000.00	\$ 72,000.00
12	Structural Concrete Spillway	28600	CY	\$ 1,200.00	\$ 34,320,000.00
13	Excavation - Auxiliary Spillway	158800	CY	\$ 15.00	\$ 2,382,000.00
14	Excavation - Principal Spillway	2600	CY	\$ 15.00	\$ 39,000.00
15	Select Compacted Fill - Principal Spillway	2600	CY	\$ 15.00	\$ 39,000.00
16	4'X4.25' Reinforced Concrete Box	260	LF	\$ 880.00	\$ 228,800.00
17	Reinforced Concrete - Traditional Inlet	18	CY	\$ 1,800.00	\$ 32,400.00
18	Remapping of FEMA Floodplain	1	LS	\$ 110,000.00	\$ 110,000.00
19	Excavation - Downstream Channel	104450	CY	\$ 15.00	\$ 1,566,800.00
20	Downstream Channel Lining	12060	CY	\$ 900.00	\$ 10,854,000.00
21	Culvert Replacement	1	LS	\$ 3,049,000.00	\$ 3,049,000.00
23	Removal of Concrete Structures	1	LS	\$ 20,000.00	\$ 20,000.00
Construction - Subtotal					\$ 73,378,800.00
Construction - Contingency					30% \$ 22,013,700.00
Construction - Total					\$ 95,392,500.00
Engineering (% of Construction)					10% \$ 9,539,300.00
Project Administration (% of Construction)					12% \$ 11,447,100.00
Land Acquisition				LS \$ 299,000.00	\$ 299,000.00

PROJECT TOTAL (Construction + Engineering + Administration + Easements) \$116,677,900

AACE Class 4 Range:	-30%	\$81,674,530
	50%	\$175,016,850

NOTES:

- 1 Flatten downstream slope of dam with compacted fill (Downstream Slope = 4H:1V).
- 2 Construct new principal spillway conduit using cut and cover method (4' X 4.25' Reinforced Concrete Box).
- 3 Construct new labyrinth structural spillway. (width = 540', length = 100', 15 cycles, wall width 2.5', spillway crest = 199.5 ft msl)
- 4 Construct rock riprap erosion protection downstream of labyrinth spillway (Riprap Thickness = 54 inches).
- 5 Construct 9-inch thick flexible base roadway surface on crest of dam.
- 6 Construct new traditional inlet structure for principal spillway of reinforced concrete (Crest El. = 176.2 feet-msl).
- 7 Existing easement limits were not available for this site at the time of this estimate. It was assumed that the existing fenceline matches the easement
- 8 Existing channel downstream of the dam is being expanded, includes item No. 19-21. It is 27 ft wide, 6 ft deep and trapezoidal shape 2H:1V.
- 9 The material for channel lining is concrete. Side slope length is about 13.41 ft which makes the total transverse length of the channel to 54 ft



Innovative approaches
Practical results
Outstanding service

OPINION OF PROBABLE CONSTRUCTION COSTS

SITE NUMBER	Olmitos 5	ALTERNATIVE	STATE Alt. - Dam Raise and RCC Spwy		
CLIENT	National Resources Conservation Service - Texas	DATE	10/13/2025		
ESTIMATOR		CHECKED BY	FNI PROJECT NO.		
Tessa Charles		Jacob Adkins	TSW22721		
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Mobilization & Demobilization	1	LS	\$ 801,000.00	\$ 801,000.00
2	Construction Survey	1	LS	\$ 228,900.00	\$ 228,900.00
3	Quality Control	1	LS	\$ 572,100.00	\$ 572,100.00
4	Care of Water	1	LS	\$ 1,144,200.00	\$ 1,144,200.00
5	Pollution Control	1	LS	\$ 228,900.00	\$ 228,900.00
6	Miscellaneous Work Items	1	LS	\$ 1,144,200.00	\$ 1,144,200.00
7	Select Compacted Fill - Embankment	251100	CY	\$ 15.00	\$ 3,766,500.00
8	Topsoil & Seeding - Embankment	13	AC	\$ 20,000.00	\$ 260,000.00
9	Flexible Base - Embankment	700	CY	\$ 75.00	\$ 52,500.00
10	Rock Riprap - Embankment	4900	CY	\$ 100.00	\$ 490,000.00
11	Clearing & Grubbing - Embankment	25	AC	\$ 8,000.00	\$ 200,000.00
12	Roller Compacted Concrete	15740	CY	\$ 400.00	\$ 6,296,000.00
13	Excavation - Auxiliary Spillway	17800	CY	\$ 15.00	\$ 267,000.00
14	Remapping of FEMA Floodplain	1	LS	\$ 110,000.00	\$ 110,000.00
					\$ -
					\$ -
Construction - Subtotal					\$ 15,561,300.00
Construction - Contingency					30% \$ 4,668,400.00
Construction - Total					\$ 20,229,700.00
Engineering (% of Construction)					10% \$ 2,023,000.00
Project Administration (% of Construction)					12% \$ 2,427,600.00
Land Acquisition					16.47 AC 24000 \$ 24,000.00

PROJECT TOTAL (Construction + Engineering + Administration + Easements) \$24,704,300

AACE Class 4 Range:	-30%	\$17,293,010
	50%	\$37,056,450

NOTES:

- 1 Raise crest of dam with compacted fill (Crest El. = 219.0 feet, Upstream Slope = 4H:1V, Downstream Slope = 4H:1V, Crest Width = 14 feet).
- 2 Construct new RCC spillway. (width = 1000', training wall width 12', spillway crest = 199.5 ft msl)
- 3 Construct rock riprap erosion protection downstream of RCC spillway (Riprap Thickness = 54 inches).
- 4 Construct 9-inch thick flexible base roadway surface on crest of dam.
- 5 Existing easement limits were not available for this site at the time of this estimate. It was assumed that the existing fenceline matches the easement

Attachment E-8: Population at Risk (PAR) Calculations

Olmitos and Garcias 5

COMPUTATION OF POPULATION AT RISK (PAR) DURING DAM FAILURE						
STATE	TEXAS		BY	JFA	DATE	8/1/23
DAM	OLMITOS & GARCIAS SITE 5		CHECKED BY	CAC	DATE	8/15/23
YEAR BUILT	1963	DESIGN HAZARD CLASS	L	DRAINAGE AREA	34.24	mi ²
WORK PLAN DATE	1959	CURRENT HAZARD CLASS	H	DAM HEIGHT	45	ft
sht 1 of 3	STATIC FAILURE SCENARIO (ver. 2013-01)				NID ID	TX01703
Structures (Elevated) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=2.0 Ft.	PAR	
	Inundation Depth Above Natural Ground		Total			
	<2.0 Ft	>=2.0 Ft.				
Mobile Homes	12	8	20	3	24	
Seasonal Use RV's	0	0		2		
Other	0	0				
Structures (With Foundations) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR	
	Inundation Depth Above Natural Ground		Total			
	<1.0 Ft	>=1.0 Ft.				
Homes	50	147	197	3	441	
Seasonal Use Homes and Cabins	0	0		1.5		
Duplexes	0	0		5		
Apartments	2	0	2		0	
Commercial Buildings	6	22	28	5	110	
Schools (In Use)	0	3	3	20	60	
Schools (Not in Use)	0	0				
Hospitals	0	0				
Other	0	0				
Highways and Railroads	Number of Roads, Highways and Railways			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR	
	Road Overflow Depth		Total			
	<1.0 Ft	>=1.0 Ft.				
Main Local Roads and Minor State Highways						
FM 1430		***		2		
Old Military Road		***		2		
Major State and Minor Federal Highways						
US-83		***		4		
---				4		
Major Federal and Interstate Highways						
---				8		
---				8		
Railroads						
UPSF Freight Traffic Only				3		
Passenger Traffic				20		
TOTAL NUMBER OF PEOPLE AT RISK (PAR)					635*	

*PAR in structures only -- see next page for roads

Highways and Railroads	Number of Roads, Highways and Railways			Average Annual Daily Traffic	PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR
	Road Overflow Depth		Total			
	<1.0 Ft	>=1.0 Ft.				
Main Local Roads and Minor State Highways						
FM 1430	0	1	1	2147	53	53
Old Military Road	0	1	1	82	6	6
Major State and Minor Federal Highways						
US-83	0	1	1	23902	137	137
PAR IN STRUCTURES						635
PAR ON ROADS*						196
TOTAL NUMBER OF PEOPLE AT RISK (PAR)						831

*PAR computed based on annual average daily traffic (AADT) and depth of flow over road

Attachment E-9: Sponsor Letter



Starr County Soil & Water Conservation District #332
708 W Main St. Suite D Rio Grande City, Tx 78582

The Starr County Soil and Water Conservation District #332 would like to inform you of their alternative selection for the Dam Rehabilitation plan pertaining to Olmitos and Garcias sites 5 & 6.

The Starr County SWCD board of directors has decided that alternative three for Site 5 best suits the district's goals of rehabilitation to include the following changes;

Principal Spillway: Replace the existing principal spillway with a standard intake riser with a 4 by 4.25- foot conduit with an impact basin at the outlet end.

Auxiliary Spillway: The existing auxiliary spillway will be replaced with a new 700-foot-wide roller compacted concrete (RCC) auxiliary spillway on the main embankment with a crest elevation of 199.5 feet.

Top of Dam & Embankment: The top of the dam will be raised an average of 9.7 feet (new top of dam at elevation of 220.9 feet) and the downstream slope flattened from 2.5:1 to 4:1. The dam will be lengthened by 1400 feet on the left abutment and 50 feet on the right abutment.

Downstream Channel: To reduce the impacts of storm events with frequencies lower than the 100-year storm, a concrete-lined trapezoidal channel has been proposed in the downstream area to convey increased flows from the principal spillway. The channel is 27 feet wide at its base, 6 feet deep, and 2.3 miles long, with 2:1 side slopes.

Property Buyouts: Land acquisition would be required for the extended dam embankment and the widened concrete-lined channel.

Cost: The estimated cost to implement this alternative is \$86,287,300, which includes \$309,000 for land and property buyouts.



Starr County Soil & Water Conservation District #332
708 W Main St. Suite D Rio Grande City, Tx 78582

Additionally, the board has also decided alternative three for site 6 also

supports the district's rehabilitation goals to include the following changes

Principal Spillway: In order to not impede flows through the breached embankment, the principal spillway components would be removed.

Auxiliary Spillway: The auxiliary spillway will be replaced with a new 250-foot wide RCC auxiliary spillway with two engagement elevations, one 125-foot wide low stage at an elevation of 203.5 feet, and one 125-foot high stage at an elevation of 205.1 feet.

Top of Dam & Embankment: The top of the dam will be raised an average of 9.3 feet (new top of dam at elevation of 217.6 feet) and the downstream slope flattened from 2.5:1 to 4:1. The dam will be lengthened by approximately 100 feet.

Sediment Basin: To provide sediment storage for the next 100 years, 175,900 CY of sediment will also be removed.

Downstream Channel: To reduce the impacts of storm events with frequencies lower than the 100-year storm, a concrete-lined trapezoidal channel has been proposed in the downstream area to convey increased flows from the principal spillway. The channel is 22 feet wide at its base, 5 feet deep, and 2.3 miles long, with 2:1 side slopes.

Property Buyouts: land acquisition would be required for the extended dam embankment and the widened concrete-lined channel.

Cost: The estimated cost to implement this alternative is \$60,381,500, which includes \$295,000 for land and property buyouts.

Thank you for your attention to this matter.

SWCD #332