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Archeological Survey for the Port of Victoria U.S. Army Corp of Engineers Easement Disposal, Port of Victoria, Victoria County, Texas

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ARCHEOLOGICAL SURVEY REPORT

Archeological Survey for the Port of Victoria U.S. Army Corp of Engineers Easement Disposal, Port of Victoria, Victoria County, Texas

Prepared for:

Texas Historical Commission

Texas Antiquities Permit No. 9048

&

U.S. Army Corps of Engineers – Galveston District

On Behalf of:

CivilCorp

ENGINEERS • SURVEYORS

&

PORT OF VICTORIA

Where the Gulf Intracoastal Waterway was born

December 2019

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Archeological Survey for the Port of Victoria U.S. Army Corps of Engineers Easement Disposal, Port of Victoria, Victoria County, Texas

by

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Archeological Survey Report
December 2019

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ABSTRACT

This report documents the substantive findings and management recommendations of an archeological survey conducted by Integrated Environmental Solutions, LLC (IES) in preparation for an easement disposal by the U.S. Army Corps of Engineers (USACE) Galveston District (SWG) within property owned by the Port of Victoria (POV), in Victoria County, Texas. An archeological survey was requested by the USACE as part of the overall National Environmental Policy Act (NEPA) Categorical Exclusion documentation process, which subsequently required compliance with Section 106 of the National Historic Preservation Act (NHPA). Additionally, as the POV is a political subdivision of the State of Texas, the project is subject to the provisions of the Antiquities Code of Texas (ACT). Although no ground disturbing activities are included in this undertaking, the POV seeks to conduct coordination with the Texas Historical Commission (THC) for the easement disposal areas to facilitate future development of the property. To satisfy USACE-SWG and THC requirements for the easement disposal, IES conducted an archeological inventory of the easement disposal tracts.

The proposed easement disposal tracts are located adjacent to the Pickering Basin near the northern terminus of the Victoria Barge Canal, in southern Victoria County, Texas. The project area or Area of Potential Effects (APE) encompasses the proposed easement disposal area, consisting of five tracts totaling 193.34 acres (ac). The goal of this survey was to locate archeological sites that could be adversely affected by the proposed and anticipated development, and to provide an evaluation of the eligibility potential of each identified resource for listing in the National Register of Historic Places (NRHP) or for designation as a State Antiquities Landmark (SAL). This survey was conducted between 09 and 13 September 2019. All work conformed to 36 Code of Federal Regulations 800.4 and 13 Texas Administrative Code 26, which outlines the regulations for implementing Section 106 of the NHPA and the ACT, respectively, and was conducted under Antiquities Permit No. 9048. During this survey, backhoe trenching was conducted within a 78-ac portion of the APE. Pedestrian transect survey and systematic shovel testing was conducted within a 12-ac portion of the APE. The remaining 103.34-ac portion of the APE has experienced extensive previous disturbance due to the construction, operation, and maintenance of the Victoria Barge Canal and its associated facilities.

No archeological sites were encountered within the APE during this survey. No artifacts were collected during this survey. All project-related records will be temporarily stored at the IES McKinney office and permanently curated at the Museum of the Coastal Bend in Victoria, Texas. No further archeological investigation or evaluation of the APE is recommended. However, if any archeological resources are encountered during construction, the operators should stop construction activities, and immediately contact the project environmental representative to initiate coordination with the USACE-SWG Regulatory Archeologist and the THC prior to resuming any construction activities in the vicinity of the inadvertent discovery.

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CHAPTER 1: PROJECT DESCRIPTION

This report presents the results of an archeological survey conducted by Integrated Environmental Solutions, LLC (IES), under contract to CivilCorp, LLC, for the Port of Victoria (POV). The purpose of these investigations was to conduct an inventory of archeological resources (as defined by Code of Federal Regulations, Title 36, Section 800.4 [36 CFR 800.4]) present within the area of potential effects (APE) and to evaluate identified resources for their eligibility for inclusion in the National Register of Historic Places (NRHP), as per Section 106 (36 CFR 800) of the National Historic Preservation Act (NHPA) of 1966, as amended, or for designation as State Antiquities Landmarks (SALs) under the Antiquities Code of Texas (ACT; Texas Natural Resources Code, Title 9, Chapter 191 [9 TNRC 191]) and associated state regulations (Texas Administrative Code, Title 13, Chapter 26 [13 TAC 26]). The goal of this survey was to locate, identify, and assess archeological sites within the proposed APE that may be eligible for inclusion in the NRHP or designation as SALs. This report documents the archeological survey investigations conducted in support of the proposed project. Prepared in accordance with the Council of Texas Archeologists (CTA 2002) guidelines, this report satisfies the NHPA Section 106 and the ACT requirements of the proposed project. A description of the proposed APE, environmental and historical contexts, field and analytical methods, results of the investigations, and recommendations are provided in this document.

1.1 Regulatory Framework

1.1.1 Section 106 of the National Historic Preservation Act

The NHPA (54 U.S. Code [USC] 300101), specifically Section 106 of the NHPA (54 USC 306108) requires the State Historic Preservation Officer (SHPO), represented by the Texas Historical Commission (THC), to administer and coordinate historic preservation activities, and to review and comment on all actions licensed by the federal government that will have an effect on properties listed in the NRHP, or eligible for such listing. Per 36 CFR 800, the federal agency responsible for overseeing the action must make a reasonable and good faith effort to identify cultural resources, which includes archeological sites and architectural resources. Federal actions include, but are not limited to, construction, rehabilitation, repair projects, demolition, licenses, permits, loans, loan guarantees, grants, and federal property transfers. As the proposed easement disposal is administered by the U.S. Army Corps of Engineers (USACE) – Galveston District (SWG), it is subject to the provisions of the NHPA of 1966, as amended.

1.1.2 Antiquities Code of Texas

As the project will transpire on property owned by the POV, which is a political subdivision of the State of Texas, the proposed project is also subjected to the provisions of the ACT. The ACT was passed in 1969 and requires that THC staff review actions that have the potential to disturb historic and archeological sites on public land. Actions that require review under the ACT include any project that includes ground-disturbing activities greater than 5 acres (ac) or involving 5,000-cubic yards of ground disturbance on land owned or controlled by a political subdivision of the State and include easements on private property. However, if the activity occurs inside a designated historic district, affects a recorded archeological site, or requires onsite investigations, the project review by the THC is required regardless of project size. All cultural resources encountered within a project area should be assessed for designation as a SAL under the ACT, as per 13 TAC 26. This survey was conducted under Antiquities Permit No. 9048.

1.2 Nature of the Undertaking

The purpose of the proposed project is to release certain USACE – SWG easements on property owned by the POV. In addition, although no ground disturbing activities are currently included in this undertaking, the POV is seeking to conduct coordination with the THC for the easement disposal areas to facilitate future development of the property.

1.3 Area of Potential Effects

The APE is plotted on the Bloomington 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle map and recent aerial photography (**Figures 1.1** and **1.2**). The 193.34-ac APE is comprised of four unique, non-adjoining property parcels. The largest portion of the APE is approximately 105.18 ac and contains active POV operational areas and is located along the northern and eastern bank of the Pickering Turning Basin at the northern terminus of the Victoria Barge Canal. An additional 16.61-ac portion of the APE, located between the Pickering Turning Basin and Levee Road, is comprised of otherwise undeveloped land previously used for the disposal of dredged soils and sediments during construction and maintenance of the Victoria Barge Canal. The third portion of the APE is an approximately 70.9-ac area comprised of mixed hardwood floodplain forest surrounding Blue Bayou. The final portion of the APE is approximately 2.67 miles (mi) south of the Pickering Turning Basin along the eastern bank of the Victoria Barge Canal. That parcel is the 0.65-ac portion of a concrete barge tow boat docking structure.

1.4 Administrative Information

Sponsor: POV

Review Agency(ies): USACE–SWG; THC

Principal Investigator: Kevin Stone, MA, RPA

IES Project Number: 04.319.001

Days of Field Work: 09 through 13 September 2019

Area Surveyed: 193.34 ac

Resources Recommended Eligible for NRHP Under 36 CFR 60.4: None

Resources Recommended Not Eligible for NRHP Under 36 CFR 60.4: None

Resources Recommended Eligible for SAL Under 13 TAC 26: None

Resources Recommended Not Eligible for SAL Under 13 TAC 26: None

Curation Facility: No artifacts were collected during this survey. Field notes and project records will be temporarily stored at the IES office in McKinney for the duration of this study and will be permanently curated at the Museum of the Coastal Bend in Victoria, Texas.

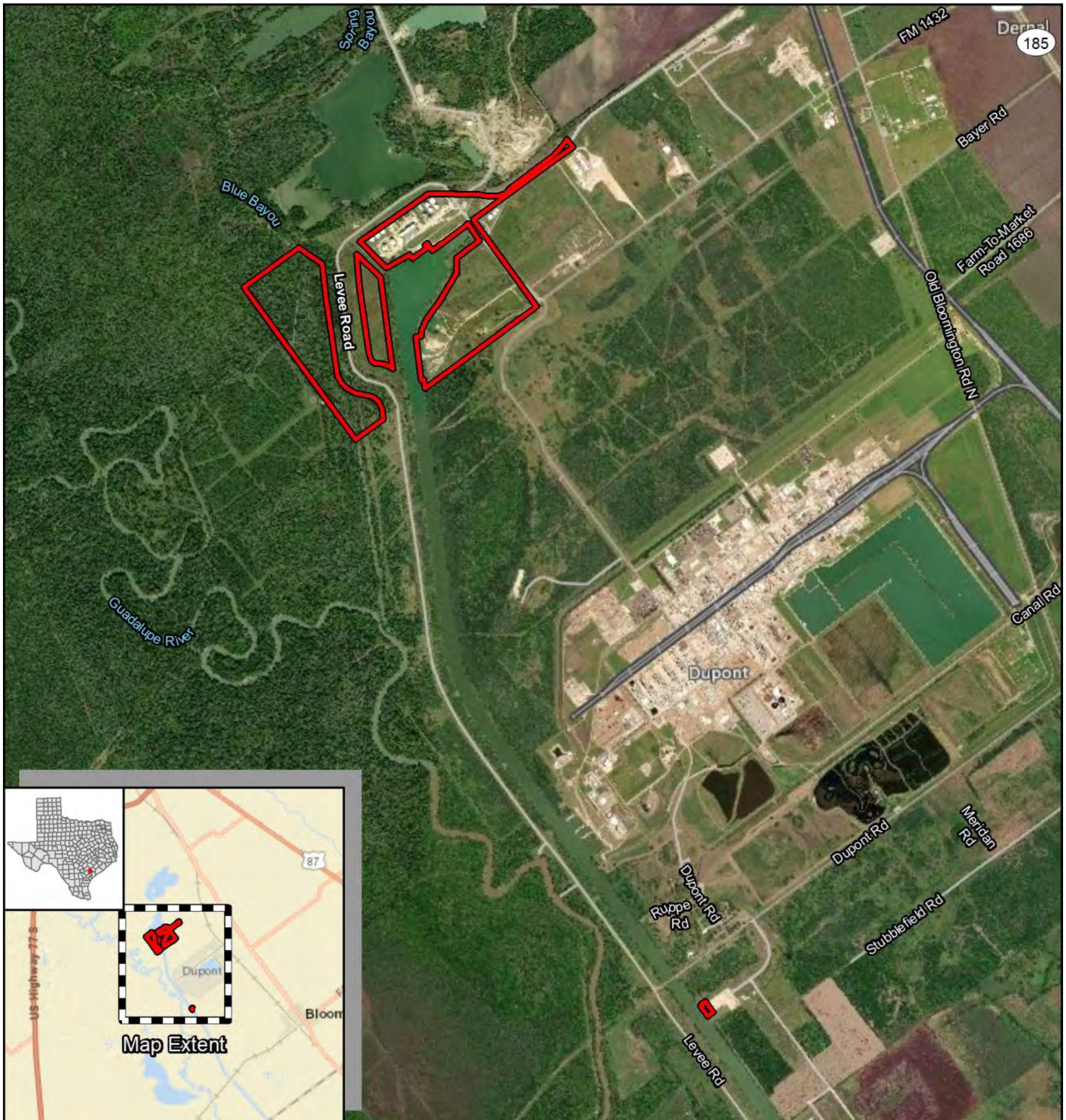

Figure 1.1
General Location Map

County: Victoria
State: Texas
Date map created: 10/4/2019
Source: (c) 2019 Microsoft Corporation and its data suppliers; ESRI 10.6 Streetmap
IES Project Ref: 04.319.001

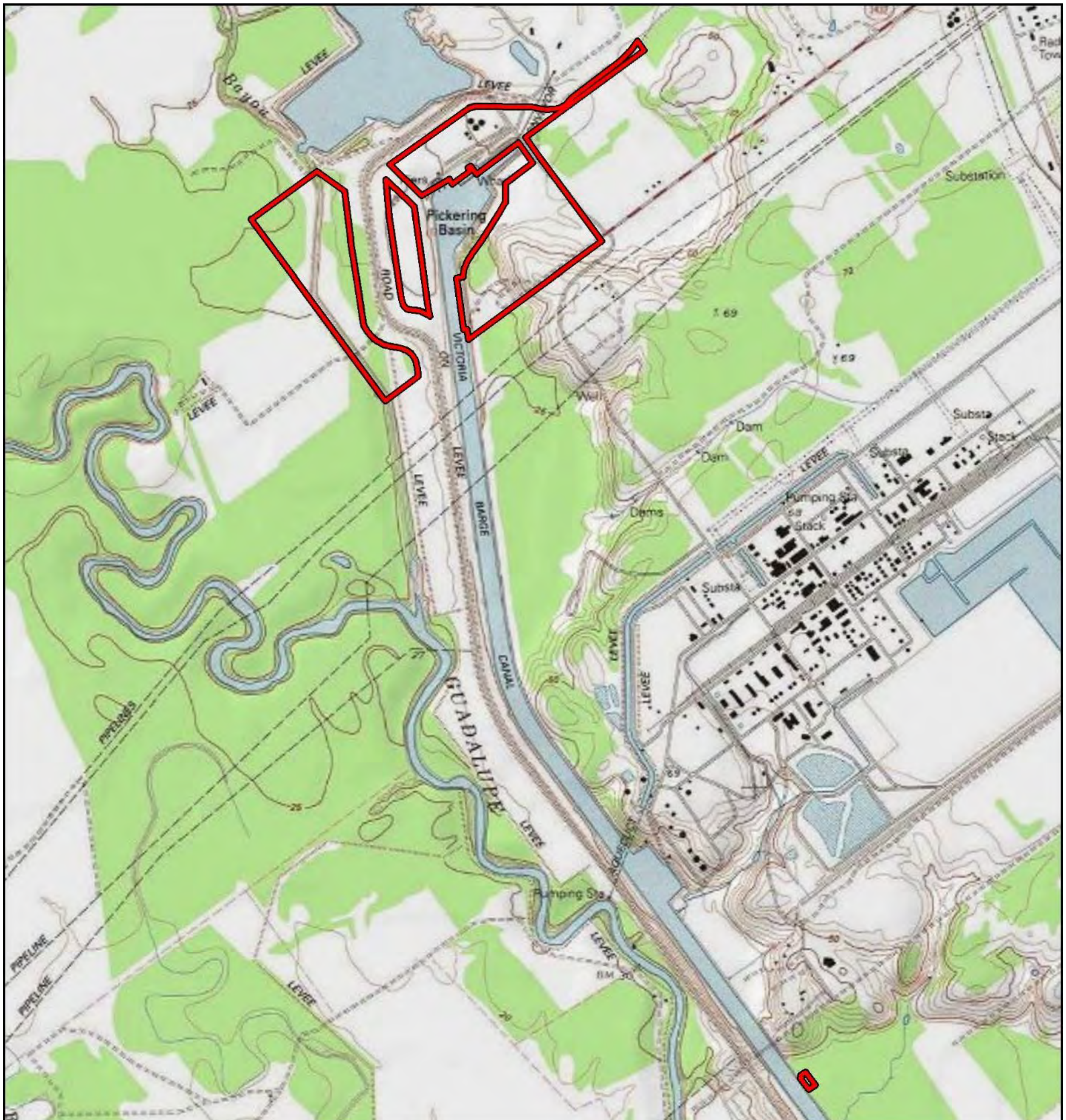

Figure 1.2
Topographic Setting

County: Victoria
State: Texas
Date map created: 10/1/2019
Source: USGS Topographic Map
7.5' Quadrangle
Bloomington1977
IES Project Ref: 04.319.001

Area of Potential Effects

N

1 inch = 2,500 ft

0 2,500 5,000 ft

CHAPTER 2: ENVIRONMENTAL BACKGROUND

2.1 Environmental Setting

2.1.1 Topography

The Bloomington 7.5-minute USGS topographic quadrangle map illustrates the APE is located within the floodplain and adjacent low terraces of the Guadalupe River valley (see **Figure 1.2**). The Guadalupe River floodplain in the vicinity of the APE is relatively level; however, some fluvial features are still evident as microtopography. The Guadalupe River valley margin is a gently to moderately sloping escarpment of Deweyville and Beaumont terrace deposits that have been dissected by several low-order ephemeral drainages. The adjacent, generally-level Pleistocene uplands occupy the Beaumont Formation. With the exception of previous efforts by Weinstein (1992), Abbott (2001), Frederick and Bateman (2012), and Goodmaster (2012), few large-scale surveys have been conducted of Guadalupe River valley geomorphology as it relates to the archeology of the region. Archeological site contexts within the coastal plain vary significantly, with factors such as paleogeography, alluvial sedimentation and erosion, eolian deposition, and colluvial deposition affecting the patterns of past human habitation of the region and the integrity of the archeological record left by those populations.

2.1.2 Geology

The APE is located partially within the Floodplains and Low Terraces subregion and the Northern Humid Gulf Coastal Prairies subregion of the Western Gulf Coastal Plain ecoregion (Griffith et al. 2007). The Floodplains and Low Terraces subregion is characterized by nearly level upland plains underlain by the unconsolidated sands and clays of the Pleistocene-aged Beaumont and Lissie formations, whereas the Guadalupe River valley is infilled with clay-rich Holocene alluvium. The Northern Humid Gulf Coastal Prairies subregion is characterized as a gently sloping coastal plain overlaying Quaternary-age deltaic sands, silts, and clays. Vegetation is comprised of mostly prairie with clusters of oak trees. A comprehensive investigation of the geological setting encompassing the APE (McGowen et al. 1976) provides a detailed interpretation of the geological deposits that occur within the lower Guadalupe River valley. The APE is underlain primarily by the Beaumont Formation (Qbs), the Deweyville Formation (Qd), and Quaternary-age alluvium (Qal; McGowen et al. 1976; USGS 2019; **Figure 2.1**). The Beaumont Formation is comprised of deposits of fine quartz sand, silt, and minor gravels that form poorly defined meander-belt ridges and mounds. The Deweyville Formation consists of deposits of sand, silt, clay, and gravel that have been indurated with calcium carbonate which forms point bars and natural levees. Quaternary-age alluvium is characterized by alluvial deposits of clay and silty clay.

The Western Gulf Coastal Plain physiographic region is characterized by nearly level upland plains underlain by the unconsolidated sands and clays of the Pleistocene-aged Beaumont (Qbc and Qbs) and Lissie formations; whereas, the Guadalupe River valley is infilled with clay-rich Holocene alluvium (Qal) with Deweyville terrace formations (Qd and Qd?) along the valley margin (Bureau of Economic Geology 1987). A comprehensive investigation of the geologic setting encompassing the APE provides a detailed interpretation of the geologic deposits that occur within the lower Guadalupe River valley (McGowen et al. 1976). In general, the APE is situated within McGowen's Holocene–Modern Fluvial System, flanked to the east by deposits derived from a Pleistocene Fluvial-Deltaic System and to the west by a Pleistocene Fluvial System (McGowen et al. 1976: Figure 4). The geological development of this region is concisely described by Abbott (2001:12), in reference to an adjacent portion of the Western Gulf Coastal Plain, as representing "a series of coalescent fluviodeltaic bodies arranged in an offlapped sequence, with interdigitated and capping eolian, littoral, and estuarine facies making up a relatively minor component of the lithology." The influential force propelling this coastal development is the infilling of the Gulf of Mexico from the Late Cretaceous period to the present, resulting in a series of generally parallel, seaward-dipping sedimentary deposits transgressing toward the shoreline. The fluvial systems of the region are largely controlled by glacioeustatic sea level changes, causing the lower reaches of coastal-bound rivers

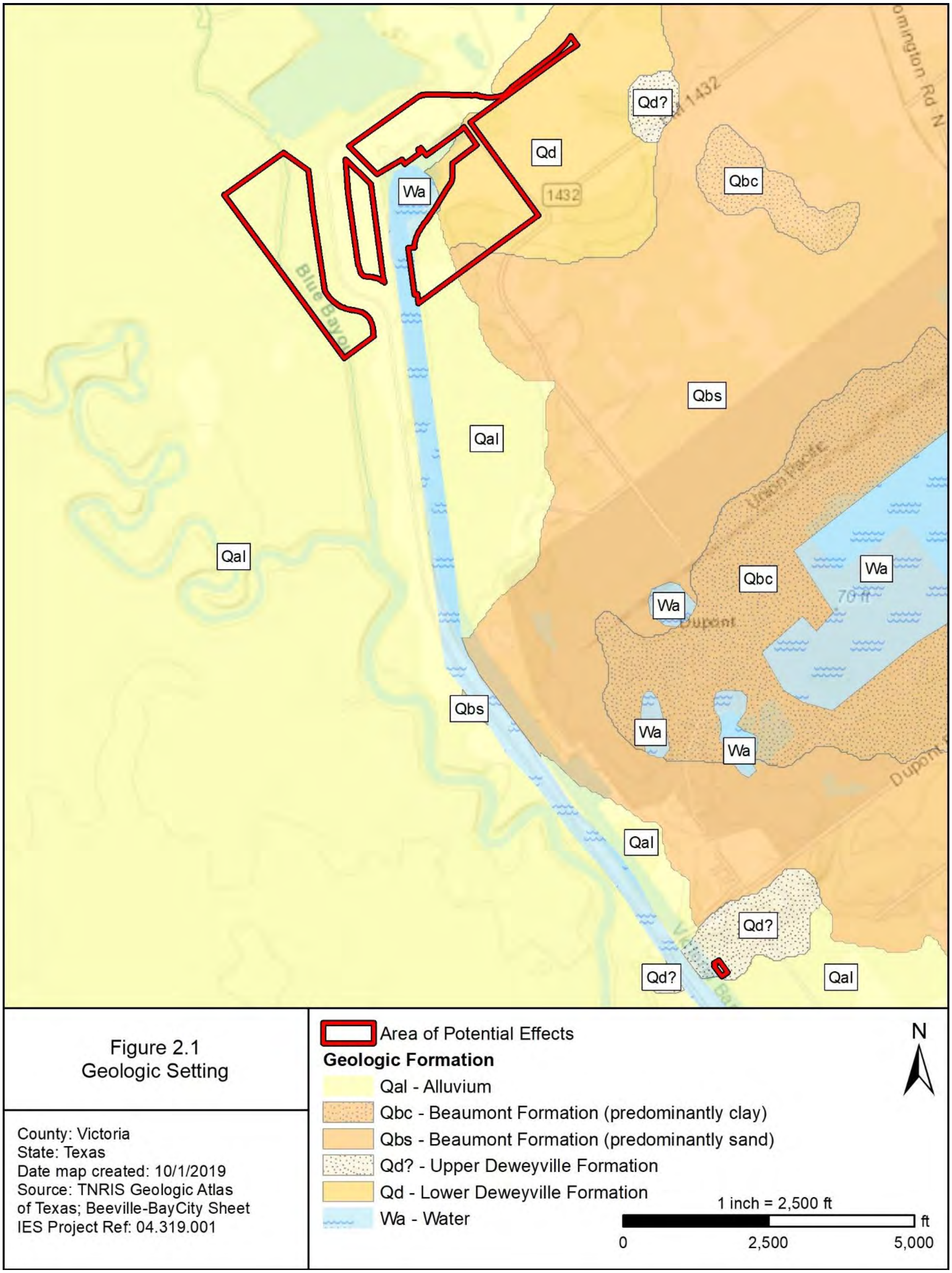

Figure 2.1
Geologic Setting

County: Victoria
State: Texas
Date map created: 10/1/2019
Source: TNRIS Geologic Atlas of Texas; Beeville-BayCity Sheet
IES Project Ref: 04.319.001

to entrench their valleys during periods of low sea levels and deposit sediments within prograding estuary environments created along the coastline during periods of high sea levels. During intervals of higher sea level, floodplains formed along inland river courses. Fluvial terraces subsequently formed by entrenchment of the channels during intervals of lower sea levels. Fluctuations in sea level were also a driving force in channel meandering and avulsion processes (Aslan and Blum 1999; Aslan et al. 2005; Makaske 2001; Slingerland and Smith 2004; Stouthamer and Berendsen 2007; Taha and Anderson 2008).

In the immediate vicinity of the APE, the underlying geology consists of the Pleistocene-aged Beaumont Formation, one of a series of coastward-dipping fluvial and fluvial-deltaic deposits that forms the generally level uplands of the Western Gulf Coastal Plain. Characterized by clay-rich deposits, relatively well-preserved relict fluvial geomorphic features, prominent vertisols, and well-developed gilgai microtopography (Nordt et al. 2006, Van Siclen 1985), the Beaumont Formation is the youngest of these Pleistocene-age deposits, attributed to fluvial-deltaic processes during an interglacial period. Although vertebrate fossils have been recovered from the Beaumont Formation, the most commonly documented fossils are marine and brackish water mollusks such as *Rangia cuneata* and *Ostrea virginica* (Deussen 1924; Sellards et al. 1932). The precise geological age of the Beaumont Formation is disputed (Aiuvalasit 2007; Aronow 1988; Birdseye and Aronow 1991:A223; Blum and Aslan 2006; Blum and Price 1998; Durbin 1999; Durbin et al. 1997; Gaston 1979; Heinrich 2007; McFarlan 1961; Nordt et al. 2006; Otvos 1971); however, all estimates predate the earliest generally accepted commencement of human inhabitation of the region. Thus, the potential for archeological site burial by depositional processes is minimal, except in specific landscape settings.

Whereas the Beaumont Formation represents alluvial deposition during periods of relatively high sea level during Pleistocene interglacial periods, alluvial deposition also occurred during periods of falling and low sea levels associated with glacial periods. The best-preserved deposits of this nature are a series of alluvial features formed during the last glacial period that are inset into and form terrace surfaces below the Beaumont Formation. First noted by Barton (1930), these terraces were formally named the "Deweyville beds" for deposits exposed along the Sabine River in southeastern Texas (Bernard 1950). Deweyville terraces exhibit relict channel dimensions considerably larger than modern river channels and are lower in elevation than the Beaumont Formation but higher than modern floodplains. Details regarding the extent, origin, and significance of the Deweyville terraces has been the subject of considerable speculation for some time, with Blum and Aslan (2006) providing the most comprehensive discussion to date.

The Deweyville streams occupied valleys incised into the Beaumont Formation, and these incision events essentially define the modern river valleys along the present-day coastal plain. Blum and Aslan (2006:191–194) note that the larger streams along the Texas coast exhibit at least three suites of Deweyville landforms/deposits representing streams that were graded to sea levels lower than the modern sea level. The deposits of the Deweyville streams are significantly different from the Beaumont Formation deposits in that they are predominantly coarse-grained, with fine-textured sediments largely confined to lenticular channel fills. Laterally extensive vertical accretion facies (fine-grained deposits) are rare, and in this regard, the Deweyville stream deposits present a stark contrast to the largely fine-grained Beaumont Formation alluvial deposits. Dating of the Deweyville deposits is ongoing, with the most recent studies suggesting ages ranging from approximately 60,000 to 16,000 years ago.

Within the Guadalupe River valley, the Deweyville terraces have been examined during several previous efforts. In a paleogeographic study of the lower Guadalupe River valley, Weinstein (1992) identified an older Deweyville 1 terrace and a younger Deweyville 2 terrace that correlate to the identification of a High Deweyville (i.e., Deweyville 1) terrace and a Low Deweyville (i.e., Deweyville 2) terrace in the proposed Victoria County Station project area (Tinsley 2010). The chronology of these deposits was long debated (Blum et al. 1995), but recent dating by optically stimulated luminescence (OSL) within the Guadalupe River valley dated the High Deweyville terrace to 50,000 to 60,000 years ago (Aiuvalasit 2007), and the Deweyville deposits at the Buckeye Knoll site (41VT98) yielded OSL dates between 49,000 to 53,000 years ago. This correlates reasonably well with an age of 52,000 years for High Deweyville terraces along the

Nueces River (Durbin et al. 1997). The ages of these deposits preclude the presence of archeological materials preserved in primary contexts within intact Deweyville terrace deposits. However, archeological materials are routinely recovered in the upper portions of Deweyville deposits where these sediments have presumably been reworked by eolian and colluvial processes (Abbott 2001), as they were at both the Buckeye Knoll (41VT98) and McNeill Ranch (41VT141) sites. A recent study of archeological site formation processes in Deweyville terrace deposits demonstrates that both localized secondary deposition during the Holocene, coupled with bioturbation processes, can bury archeological materials (Aiuvalasit 2007).

The Low Deweyville terrace forms a well-defined constructional alluvial surface below High Deweyville terrace remnants at the foot of the Guadalupe River valley margin. This surface was often incorrectly mapped as Holocene alluvium and McGowen et al. (1976) do not differentiate Deweyville terraces from Holocene-aged floodplain features (Tinsley 2010). Unlike the High Deweyville remnants that lack surficial expression as a terrace, the Low Deweyville deposits exhibit typical terrace morphology with a level tread and scarp slopes. Along the Nueces River, this terrace was identified as the "Middle Deweyville" and dated by thermoluminescence (TL) and OSL methods to 40,000 to 41,0000 years old (Durbin et al. 1997).

2.1.3 Soils

As illustrated by the *Soil Survey of Victoria County, Texas*, six soil map units are located within the APE (Miller 1982; **Table 2.1**; **Figure 2.2**). Soil data were reviewed from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (Web Soil Survey 2019). Clay soils of the Trinity and Meguin series dominate the floodplain portions of the APE and the loamy sands and fine sandy loams of the Kuy and Runge series mantle the valley margin. Approximately 80.1 percent of the APE is mantled by deep clay and silty clay soils derived from alluvium deposited by the Guadalupe River during flooding events. The remining 19.2 percent of the APE contains sandy soils characteristic of Deweyville terrace landforms and the adjacent uplands.

2.1.4 Modern Climate

The modern climate across the Western Gulf Coastal Plain is a function of proximity to the Gulf of Mexico. The climate of the region is Subtropical Humid (Bomar 1995; Larkin and Bomar 1983), characterized by warm to hot and dry summers and mild winters. Temperatures are modulated by southeasterly, warm, moisture-laden winds from the Gulf of Mexico. Cold, high-pressure Canadian air masses from the north result in cool weather and rainfall across the region in winter (Miller 1982). Average low temperatures range from approximately 15 to 21° Celsius (C; 59 to 70° Fahrenheit [F]), while average high temperatures range from 27 to 29° C (81 to 84° F). Precipitation across the region is generally bimodal, with peaks occurring in the fall (September through October) due to tropical disturbances and occasional hurricanes in the Gulf of Mexico, and as gentle rains and thunderstorms in the spring (April through June).

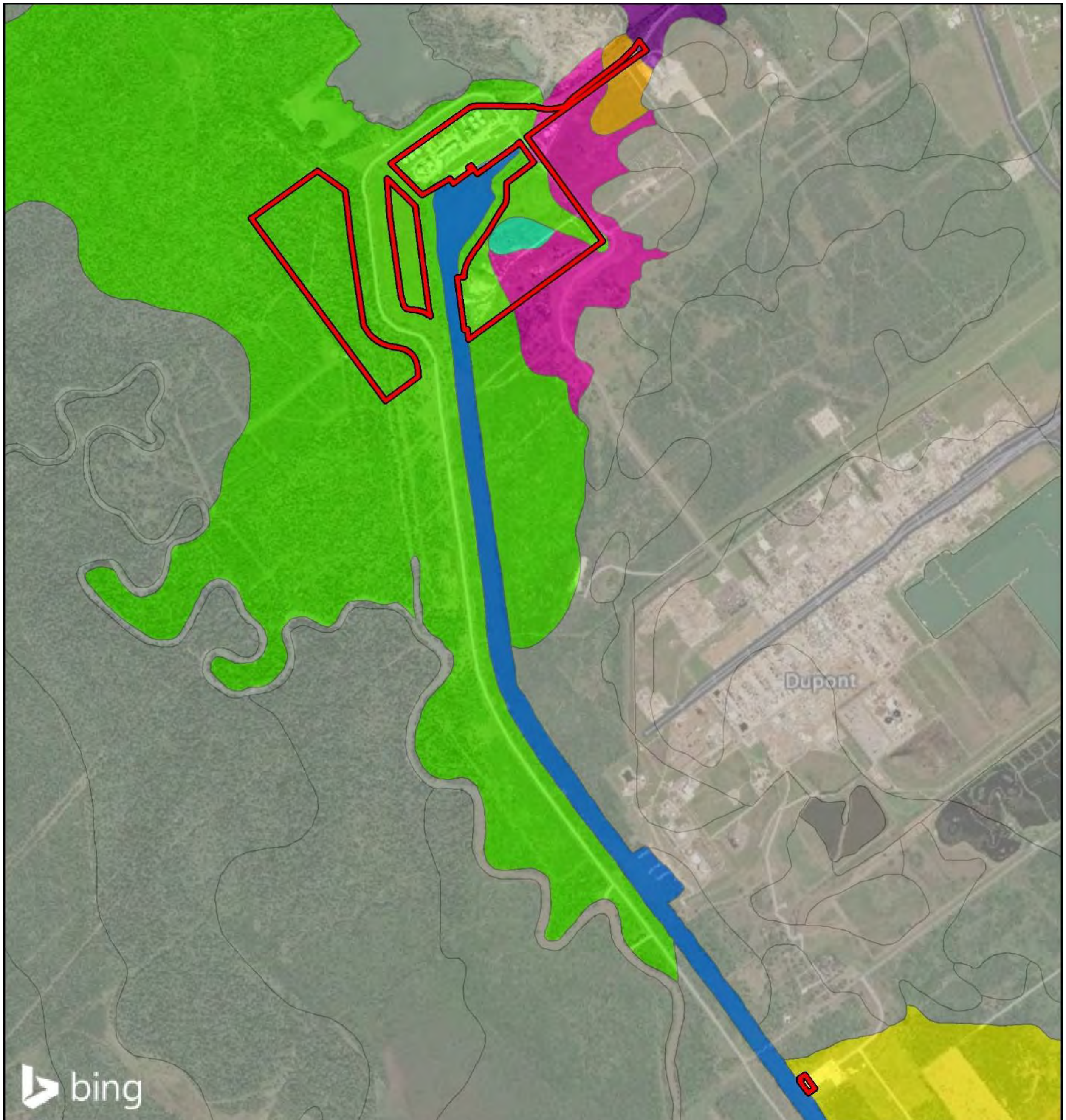

Figure 2.2
Soil Map Units Located Within and Adjacent to the APE

County: Victoria
State: Texas
Date map created: 10/1/2019
Source: 2007 USDA
NRCS Digital Soils Database
IES Project Ref: 04.319.001

Area of Potential Effects

Soil Map Unit (see Table 2.1)

KyC, Me, RaC, W, LaA, RaB, Tr, Other Value

N

1 inch = 2,500 ft

0 2,500 5,000 ft

Table 2.1: Soils within the APE

Soil Map Unit	Landform	Parent Material	Percentage of the APE	Typical Profile
Tr - Trinity clay, frequently flooded	Floodplains	Alluvium	79.7	0–15 centimeters (cm): Ap-very dark gray (5Y 3/1) clay 15–41 cm: A-very dark gray (5Y 3/1) clay with few very fine calcium carbonate ($CaCO_3$) concretions 41–191 cm: Bss-very dark gray (5Y 3/1) to dark olive gray (5Y 3/2) clay with common fine and medium $CaCO_3$ concretions
Me - Meguin silty clay, occasionally flooded	Floodplains	Alluvium	0.4	0–45 cm: A-dark gray (10YR 4/1) silty clay loam 45–155 cm: Bw-light brownish gray (10YR 6/2) to light gray (10YR 7/2) clay loam 155–203 cm: Bssb-gray (10YR 5/1) clay
KyC - Kuy sand, 0 to 5 percent slopes	Deweyville terraces	Alluvium	4.8	0–18 cm: A-brown (10YR 4/3) sand 18–132 cm: E-light gray (10YR 7/2) sand 132–150 cm: Bt-yellowish brown (10YR 5/6) sandy loam
RaC - Runge fine sandy loam, 2 to 5 percent slopes	Deweyville terraces; Upland escarpments	Alluvium	13.5	0–30 cm: A-dark reddish gray (5YR 4/2) to reddish brown (5YR 4/3) fine sandy loam 30–111 cm: Bt-light red (2.5YR 6/6) to red (2.5YR 5/6) sandy clay loam 111–152 cm: Btk-yellowish red (5YR 5/6) very fine sandy loam with fine $CaCO_3$ masses and medium $CaCO_3$ nodules
RaB – Runge fine sandy loam, 0 to 2 percent slopes	Deweyville terraces; Upland escarpments	Alluvium	0.2	0–30 cm: A-dark reddish gray (5YR 4/2) to reddish brown (5YR 4/3) fine sandy loam 30–111 cm: Bt-light red (2.5YR 6/6) to red (2.5YR 5/6) sandy clay loam 111–152 cm: Btk-yellowish red (5YR 5/6) very fine sandy loam with fine $CaCO_3$ masses and medium $CaCO_3$ nodules
LaA - Laewest clay, 0 to 5 percent slopes, eroded	Upland escarpments; Upland plains	Residuum	0.7	0–46 cm: A-black (10YR 2/1) clay 46–94 cm: Bss-very dark gray (10YR 3/1) to black (10YR 2/1) clay

CHAPTER 3: CULTURAL BACKGROUND

3.1 Previous Investigations

A file search within the Texas Archeological Sites Atlas (TASA) and the Texas Historic Sites Atlas (THSA) databases, maintained by the THC, indicates that nine previous archeological investigations have been conducted within 1 mi (1.6 kilometer [km]) of the APE (**Table 3.1**; **Figure 3.1**). In addition, several prehistoric archeological sites in the vicinity were initially documented by local vocational archeologists. As a result of these prior efforts, 11 archeological sites have been identified in the vicinity of the APE (**Table 3.2**). According to THC records, no previously-recorded National Register properties or historical markers are located within the APE.

Table 3.1: Previous Investigations within 1 Mile of the APE

Agency	ACT Permit #	Firm/Institution	Date	Type	Location (Approximate)
USACE	n/a	USACE	1982	Reconnaissance	Along Victoria Barge Canal adjacent to APE
USACE	n/a	USACE	1990	Area Survey	0.1 mi northwest of southern APE
Federal Energy Regulatory Commission (FERC)	n/a	Coastal Environments, Inc.	1991	Area Survey	0.1 mi northwest of southern APE
USACE	n/a	Prewitt and Associates, Inc.	1995–1998	Area Survey; Site Evaluation	0.2 mi south of southern APE
USACE	n/a	Coastal Environments, Inc.	2001	Data Recovery	0.1 mi northwest of southern APE
FERC	n/a	Williams Gas Pipelines-Transco	2004	Area Survey	0.7 mi south of northern APE
POV	4686	Geo-Marine, Inc.	2008	Area Survey	Overlaps southern APE
POV	6218	Geo-Marine, Inc.	2012	Area Survey	Overlaps southern APE
USACE; POV	8452	IES	2018	Area Survey	0.8 mi southeast of southern APE

Table 3.2: Previously Recorded Archeological Sites within 1 Mile of the APE

Site Trinomial	Time Period	Site Type	Site Size	Depth Extent	Cultural Materials	Topographic Setting	Reference
41VT79	Prehistoric; Historic	Artifact scatter	2,100 m^2	No data	Projectile points, chipped lithic debitage, faunal remains, burned rock, human burials, metal, glass, ceramics	Terrace	Woodrick 1980
41VT94	Prehistoric	Habitation site and cemetery	No data	No data	Projectile points, tools, chipped lithic debitage, pottery, human burials	Terrace	Woodrick 1982; Conner 1986
41VT98	Prehistoric	Habitation site and cemetery	200 x 700 m	180 cm	Chipped lithic tools and debitage, faunal remains, human remains	Terrace	Goodmaster 2012; Ricklis et al. 2012
41VT99	Prehistoric	Lithic scatter	No data	No data	Chipped lithic debitage	Floodplain	Gadus 1992
41VT103	Prehistoric	Lithic scatter	45 x 10 m	300 cm	Chipped lithic tools and debitage	Floodplain	Weinstein 1992; Gadus et al. 1993; Gadus et al. 1999
41VT113	Historic	Bridge	200 x 12 ft	n/a	Timber, concrete, and steel cable suspension bridge structure	Floodplain	Gadus et al. 1993
41VT156	Prehistoric; Historic	Lithic scatter; Domestic site	145 x 175 m	40 cm	Chipped lithic debitage; historic domestic debris	Terrace	Goodmaster 2012
41VT158	Prehistoric; Historic	Habitation site; Domestic site	300 x 150 m	20 cm	Chipped lithic debitage, shell midden faunal remains, ceramics; historic domestic debris	Floodplain	Goodmaster 2012
41VT166	Prehistoric; Historic	Lithic scatter; domestic site	90 x 100 m	90 cm	Chipped lithic debitage, chipped stone tools; historic domestic debris	Terrace	Goodmaster 2012
41VT167	Historic	Domestic site	70 x 50 m	Surface	Historic domestic debris	Floodplain	Goodmaster 2012
41VT168	Historic	Cemetery	150 x 430 ft	n/a	Monuments, fence/gate remnants	Terrace	Goodmaster 2012

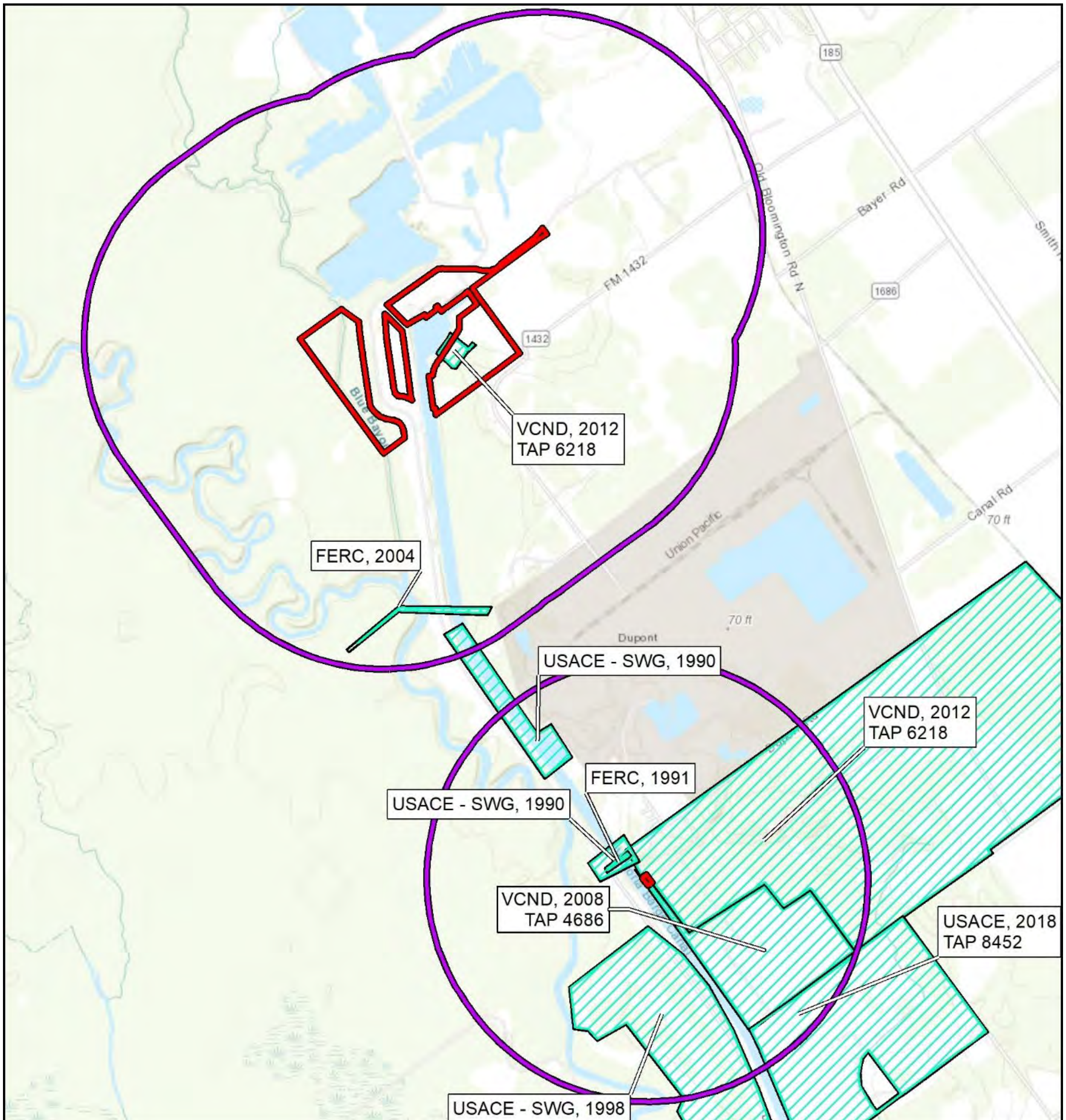

Figure 3.1
Previous Investigations Within 1 Mile of the APE

County: Victoria
State: Texas
Date map created: 10/3/2019
Source: (c) 2019 Microsoft Corporation and its data suppliers; ESRI 10.6
IES Project Ref: 04.319.001

Area of Potential Effects
Area of Potential Effects - 1-Mile Buffer
Previous Archeological Survey - Area
Previous Archeological Survey - Line

N

1 inch = 4,000 ft
0 4,000 8,000 ft

Although some important archeological sites in the Guadalupe River valley were initially documented in the early 1880s (such as Morhiss Mound [41VT1] and the Peach Knoll [41VT89] site [Rose 1883:9]), professional archeological investigations in the region were not initiated until the early 1930s. A. M. Woolsey surveyed sections of the Guadalupe River valley in 1932 (Campbell 1976; Weinstein 1992). Woolsey's work included surveys of the lower Guadalupe River from San Antonio Bay to Green Lake, recording and testing a series of shell midden sites (Weinstein 1992). At that time, Woolsey also surveyed and tested the nearby Morhiss Mound site along the Guadalupe River (Campbell 1976). Further excavation of Morhiss Mound was performed as part of a 16-month-long Works Progress Administration (WPA) project that began in 1938 (Duffen 1940). The Buckeye Knoll site (41VT98) was initially discovered in the 1960s by vocational archeologist Ed Vogt during the construction of the Victoria Barge Canal (Weinstein 1992:271). During the latter portion of the 20th century, the activities of local vocational archeologists, university graduate students and research staff, and professional cultural resources management firms have contributed to documenting archeological sites and synthesizing the history and prehistory of the region.

In 1982, as part of an archeological reconnaissance survey for the USACE–SWG, Carolyn Murphy recorded a series of sites along the Victoria Barge Canal, including formally recording the previously discovered Buckeye Knoll site. Coastal Environments, Inc. (CEI), began intensive archeological survey along approximately 16 km (10 mi) of the Victoria Barge Canal in 1998, recording six new archeological sites, including site 41VT103 in the vicinity of the current APE, and evaluating seven sites adjacent to the canal, including the nearby Buckeye Knoll site (Weinstein 1992). The Buckeye Knoll site was revisited in 1991 to assess the impacts of a pipeline relocation project and to make recommendations regarding which portions of the site should be avoided. Fifteen auger tests and one test unit were excavated in the southwestern portion of the site, confirming the significance of the archeological deposits preserved in the central site area (Weinstein 1991:28). A cultural resources survey and evaluation for proposed dredge disposal areas along the barge canal was performed by Prewitt and Associates, Inc., in 1993 and resulted in the recording of site 41VT113 (the historic-age Dalton Bridge) and revisiting nine previously recorded sites (including Buckeye Knoll and 41VT103) to determine their condition and make recommendations regarding eligibility for inclusion in the NRHP (Gadus et al. 1993). More recent work by Prewitt and Associates was conducted between 1995 and 1998 as part of the proposed widening of the Victoria Barge Canal (Gadus et al. 1999). Test excavations were carried out at six sites, including 41VT103, which was recommended not eligible for inclusion in the NRHP (Gadus et al. 1999). The Buckeye Knoll site underwent continued evaluation and mitigation excavations by CEI in 2000. The continued work at Buckeye Knoll involved the excavation of a large prehistoric cemetery (approximately 75 individuals) in addition to extensive cultural deposits dating from the Early Archaic to the Late Prehistoric periods (Ricklis et al. 2012). In January and February 2008, Geo-Marine, Inc. (GMI), conducted a cultural resources survey for the POV's proposed barge mooring facility (Meyer 2008). This survey encompassed an area of approximately 193 ac along the Guadalupe River floodplain immediately adjacent to the current APE (see **Figure 3.1**). With the exception of two historic period isolated localities, no cultural resources were encountered during the survey (Meyer 2008:47–48). In 2012, GMI conducted an archeological survey of a 1,390-ac area for the development of the POV's proposed Industrial Park South and an oil dock within the Pickering Turning Basin (Goodmaster 2012). Thirteen new archeological sites were documented during that investigation within the Industrial Park South project area. In addition, the previously recorded Buckeye Knoll site was revisited and found to encompass an additional 9.2 ac on the eastern side of the Victoria Barge Canal (Goodmaster 2012:91–95). Finally, an early-to-mid-20th-century rural family or community cemetery (41VT168) was documented within the proposed Industrial Park South property (Goodmaster 2012:95–97). The most recent previous cultural resources survey in the vicinity of the current APE was conducted in 2018 by IES for the proposed expansion of a portion of the Victoria Barge Canal and initial agency coordination of a 396-ac tract recently acquired by the Victoria County Navigation District and the POV (Goodmaster et al. 2018).

3.2 Cultural Resources Potential

In addition to a review of records administered by the THC, several additional resources were referenced to determine the overall potential for encountering cultural resources within the APE. These resources included soil survey data (NRCS 2019; Miller 1982), geologic data (McGowen et al. 1987), the Texas Historic Overlay (THO) georeferenced map database, historic and modern aerial photography and satellite imagery, and the results and recommendations of previous cultural resources surveys conducted within the vicinity (Goodmaster 2012).

3.2.1 Archeological Resources Potential

Based on the sampling strategies and geoarcheological investigations utilized during previous cultural resources investigations in the vicinity (Weinstein 1992; Frederick and Bateman 2012; Goodmaster 2012; Goodmaster et al. 2018), it is clear that prehistoric archeological site potential is highly variable across the landforms that occur within the lower Guadalupe River valley. Cross-referencing the locations of nearby previously recorded prehistoric archeological sites with geomorphic features such as landforms and soils suggests that prehistoric occupation of the area was typically confined to upland escarpments and terraces along valley margins, around lakes, and along point bar and natural levee landforms near the Guadalupe River floodplain. Based on the geomorphic positions of previously recorded prehistoric archeological sites in the region, the APE is considered to have a high potential of containing additional sites. Specifically, the Guadalupe River floodplain portion of the APE has the potential to preserve deeply buried prehistoric archeological deposits. In addition, there is a high potential for prehistoric sites to occur on landforms along the valley margin.

3.2.2 Historic Period Resources Potential

Various sources of historical and geographic data were reviewed to ascertain the likelihood of historic-age archeological sites and structural resources existing within the proposed APE. These sources include historic highway maps, topographic maps, soil surveys (which often record resources such as cemeteries, houses, and related features), and aerial photography. Based on a review of these historical records, it is evident that the region in general has experienced a dynamic history. Evaluating these sources with more recent records; however, indicates that the substantial development that has occurred in recent years has altered much of the historical landscape. Historic-period habitation within the proposed APE included a farmstead with multiple outbuildings located in the eastern quadrant of the northern APE. By 1995 the farmstead was demolished and removed, and a new building was constructed in the general area.

CHAPTER 4: METHODS

The archeological survey reported in this document was designed to identify both prehistoric and historic-age archeological sites located within the APE. Prior to fieldwork, historical and archeological records were reviewed to determine previously recorded resources within the APE and within a 1-mi (1.6-km) radius of the APE (see **Section 3.1**). Ecological, geologic, and soils data, as well as historical and modern topographic maps and aerial photography of the APE, were also reviewed prior to this survey. Due to the drastically different likelihood for encountering archeological resources across landforms within the region, this survey included the use of systematic shovel testing and backhoe trenching at varying intervals to identify and define archeological sites. Archeological fieldwork for this project was conducted from 09 through 13 September 2019. The methods utilized during this survey exceed the minimum archeological survey standards requirements for field investigations recommended by the CTA (CTA 2002), as approved by the THC.

4.1 Survey Methods

4.1.1 High Probability Area Geospatial Modeling

To develop the high probability area (HPA) model for prehistoric archeological sites, areas containing moderate to high potential for shallow and deeply-buried archeological deposits, as identified during background research, were selected within the APE. These areas consist of the Guadalupe River floodplain and adjacent Deweyville terraces. For historic-period HPA, historic-age structure locations identified within historical maps and aerial photographs were buffered to include a 1-ac area surrounding each identified structural feature. Final HPA limits, combining the prehistoric and historic-period HPA, were determined by comparing initial probability data to previously surveyed areas (see **Figure 3.1**), current land use, and prior ground disturbances. For example, portions of the Guadalupe River floodplain disturbed by the installation of buried pipelines were not considered HPA within the final model. HPA do not denote the specific limits of the intensive survey but served as a guide and were expanded and contracted depending on reconnaissance survey field observations. The HPA model identified 90 ac within the APE (**Figure 4.1**). Areas outside of the designated HPA were assessed through pedestrian reconnaissance survey and review of historic aerial photography.

4.1.2 Pedestrian Reconnaissance Survey

The pedestrian reconnaissance survey consisted of visual examination of the ground surface and existing subsurface exposures for evidence of archeological sites within the APE. The pedestrian survey was conducted in a multiple transect scheme, which was implemented across the entire APE. Transects were spaced at 50-meter (m) intervals generally orientated in northeast-to-southwest and northwest-to-southeast directions. Areas displaying high levels of modern ground disturbance, frequent inundation, and slopes greater than 30 percent were photographed to document the lack of potential to preserve intact archeological deposits.

The pedestrian survey was augmented by an unmanned aerial system (UAS) reconnaissance program consisting of transects spaced at 30-m intervals. Aerial images were taken at an altitude of 300 ft above sea level at 3-second intervals of the entire APE. Using these data, 1-in-resolution orthographic aerial imagery, digital elevation model, and 1-ft contours of the APE were produced and reviewed.

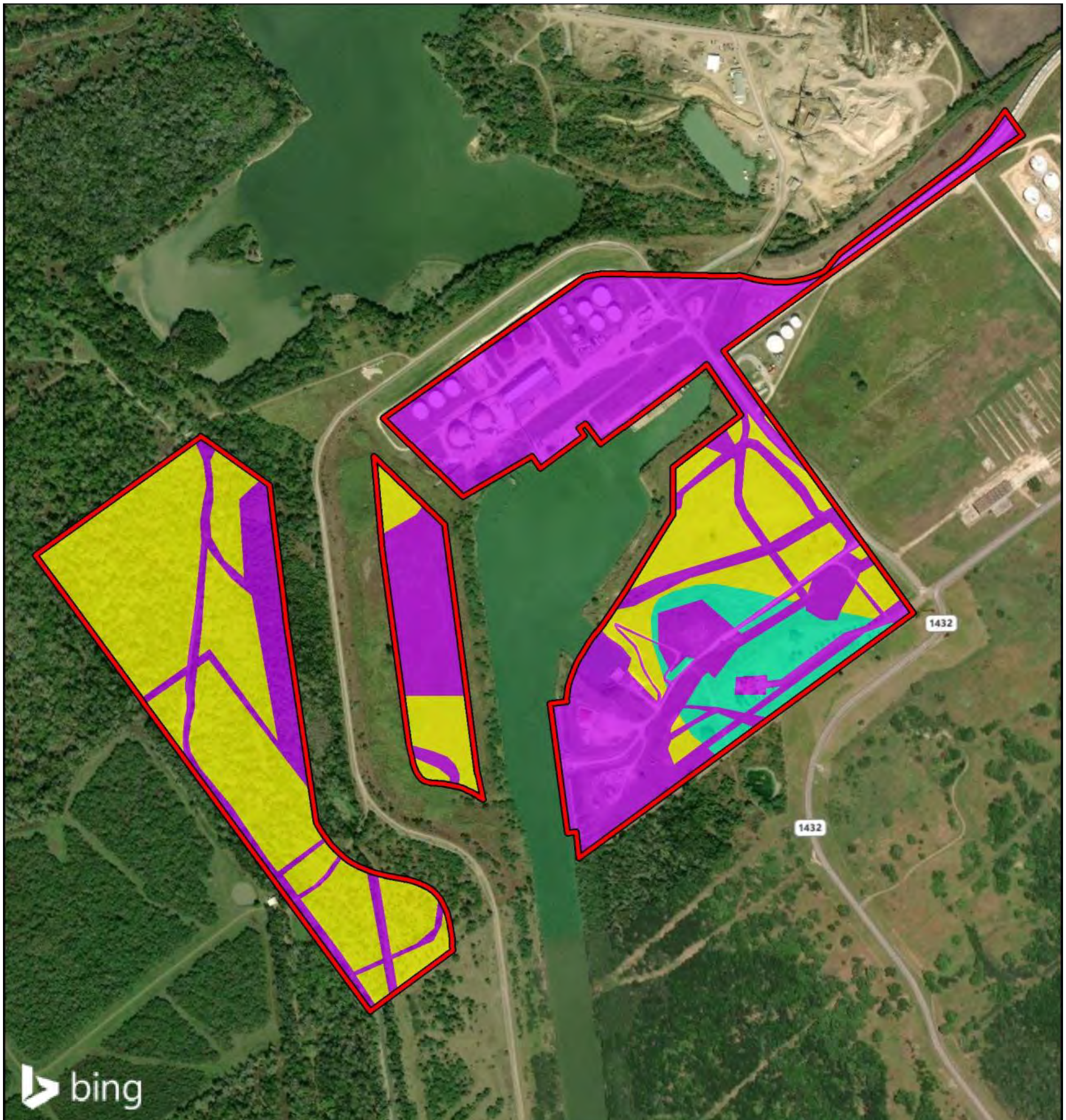

Figure 4.1
Probability Area Map

Area of Potential Effects
High Probability Area for Deeply-Buried Deposits
High Probability Area for Shallow Deposits
Area of Previous Disturbance

N

1 inch = 1,000 ft
0 1,000 2,000 ft

County: Victoria
State: Texas
Date map created: 10/4/2019
Source: (c) 2019 Microsoft Corporation and its data suppliers; ESRI 10.6
IES Project Ref: 04.319.001

4.1.3 Intensive Survey

The pedestrian survey was supplemented by the excavation of shovel tests and backhoe trenches to locate and document subsurface archeological deposits. Shovel tests were excavated at a density of 1 shovel test per acre across the Deweyville terrace landforms within the APE. Shovel tests were excavated to the top of culturally sterile deposits, typically to the argillic (Bt) subsoil horizon within terrace and upland landforms, or to depths of 100 centimeters (cm; 39 inches [in]) within the floodplain. Shovel tests were at least 30 cm (11.8 in) in diameter and were excavated in natural stratigraphic levels. Excavated soil was screened through 0.64-cm (0.25-in) hardware mesh to facilitate the recovery of buried artifacts. When high clay content soils were encountered and could not be efficiently screened, material was manually troweled and inspected for cultural deposits. Artifacts recovered within shovel tests were identified, quantified, photographed, and inventoried in 20-cm (7.9-in) arbitrary excavation levels and returned to the shovel test from which they were recovered. Additionally, the physical properties of each natural soil stratum were recorded. Investigators documented the results of each shovel test on standardized forms. All shovel test locations were recorded using handheld Global Positioning System (GPS) receivers.

Due to the potential for deeply-buried archeological deposits within the floodplain setting, this survey included backhoe trenching within the previously unsurvey 78-ac portion of the APE with the potential for deeply buried cultural materials. Backhoe trenches averaged 6 m (16 ft) in length and were excavated to depths not exceeding 3.8 m (12.5 ft). When each trench had been excavated to a depth of approximately 1.5 m (5 ft), an Occupational Safety and Health Administration (OSHA) competent field supervisor assessed the stability of the trench prior to recording soil stratigraphic data. In instances of low soil stability, the trenches were widened through benching or limited to a safe depth for detailed recording of the soil profile. After each trench was recorded, excavation continued to the maximum depth. Backhoe trench profiles and excavated fill were monitored for the presence of archeological materials. A representative soil sample from each stratigraphic layer was screened through 0.64-cm (0.25-in) hardware mesh or manually troweled and inspected for cultural materials. The remaining excavated soil was visually inspected as it was placed on the spoil pile. Investigators documented the results of each backhoe trench on standardized forms. All backhoe trench locations were recorded using a handheld GPS receiver.

4.2 Curation

No artifacts were observed on the ground surface or recovered within excavations during this survey. Project-related records, field notes, photographs, forms, and other documentation will be included in the curation package. These documents and photographs will be organized and catalogued according to Texas Archeological Laboratory curation standards. All project records will be temporarily stored at the IES office and will be permanently curated at the Museum of the Coastal Bend in Victoria, Texas.

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CHAPTER 5: RESULTS

The archeological APE for this project encompasses five tracts totaling 193.34 ac owned by the POV being prepared for an easement disposal by the USACE – Galveston District. During this survey, the APE was subjected to pedestrian survey transects and a systematic intensive survey. Pedestrian transects were conducted across portions of the APE to identify landforms, confirm the extent of prior ground disturbances, and assess the likelihood of encountering archeological resources. Intensive survey was conducted across portions of the APE with the potential to contain buried archeological resources. A total of 30 backhoe trenches were excavated within a 78-ac portion of the APE that occupies a floodplain setting. An additional 12-ac portion of the APE within terrace landforms was surveyed via pedestrian survey transects with excavation of systematic shovel tests. The remaining 103.34 ac within the APE have been previously surveyed or have been extensively disturbed by previous infrastructure. No archeological resources were encountered within the APE during this survey.

5.1 Archeological Survey

5.1.1 Survey Design

Two geomorphic landforms, consisting of the Guadalupe River floodplain and Deweyville terrace landforms were identified within the APE. Each of these areas were differentially sampled during this survey. Previously undisturbed portions of Deweyville terrace landforms within the APE were considered to have a high potential for containing prehistoric and historic archeological deposits within the shallow subsurface (i.e., within the upper 1 m [3 ft]). Accordingly, these landforms were investigated through pedestrian survey augmented by intensive survey with systematically placed shovel tests at a sampling interval of 1 shovel test per acre. The Guadalupe River floodplain was considered to have a high potential for containing deeply-buried (i.e., depths greater than 1 m [3 ft]) prehistoric archeological deposits. The portion of the floodplain within the APE was investigated through the use of systematically placed backhoe trenches.

5.1.2 Pedestrian Reconnaissance Survey

In addition to TASA records, a review of historical maps, aerial photographs, and archival records was conducted prior to field survey to help focus survey efforts. Through this review, it was determined that the majority of the project area was used for pastoral and agricultural purposes since the late 19^{th} century. Prior to 1968, the eastern and western portions of the APE featured a series of agricultural fields (**Figure 5.1**). Wooded growth was prevalent between Blue Bayou and the Deweyville terrace landforms to the east. A farmstead was located within the southeastern portion of the APE. Construction of the Victoria Barge Canal channel was completed in 1968 (**Figure 5.2**). By that time, the farmstead had been removed, Blue Bayou was channelized to its current course, and the levee and Pickering Turning Basin road systems were constructed. A dredged material storage area was prevalent within the central portion of the APE since the time of the Victoria Barge Canal construction. Since the 1990s, the eastern portion of the APE has experienced further development. In 2013, the southern portion of the APE was developed to accommodate a dock adjacent to a barge mooring facility. At the time of survey, most of the eastern portion of the APE was developed with infrastructure related to the Victoria Barge Canal (**Appendix A, Photographs 1** through **10**). The central portion of the APE was overgrown with tall reeds (**Appendix A, Photograph 11** through **15**). The western portion of the APE featured a mature hardwood floodplain forest with dense undergrowth in limited areas (**Appendix A, Photograph 16** through **25**). The western portion also featured an elevated secondary levee road that terminated within the APE (**Appendix A, Photograph 26**).

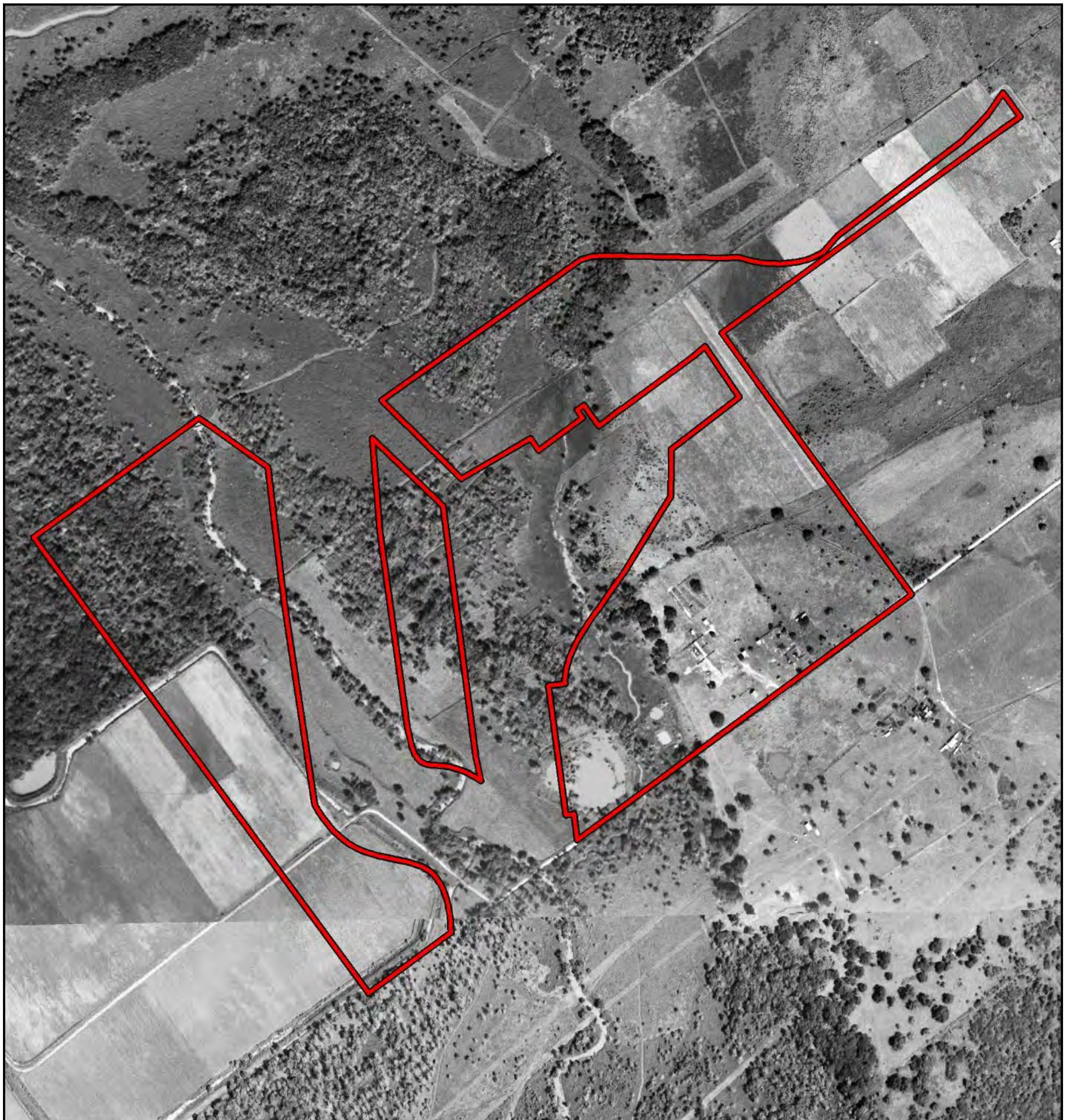

Figure 5.1
1960 Aerial Imagery

County: Victoria
State: Texas
Date map created: 10/3/2019
Source: (c) 2009 Microsoft Corporation and its data suppliers; ESRI 10.5
IES Project Ref: 04.319.001

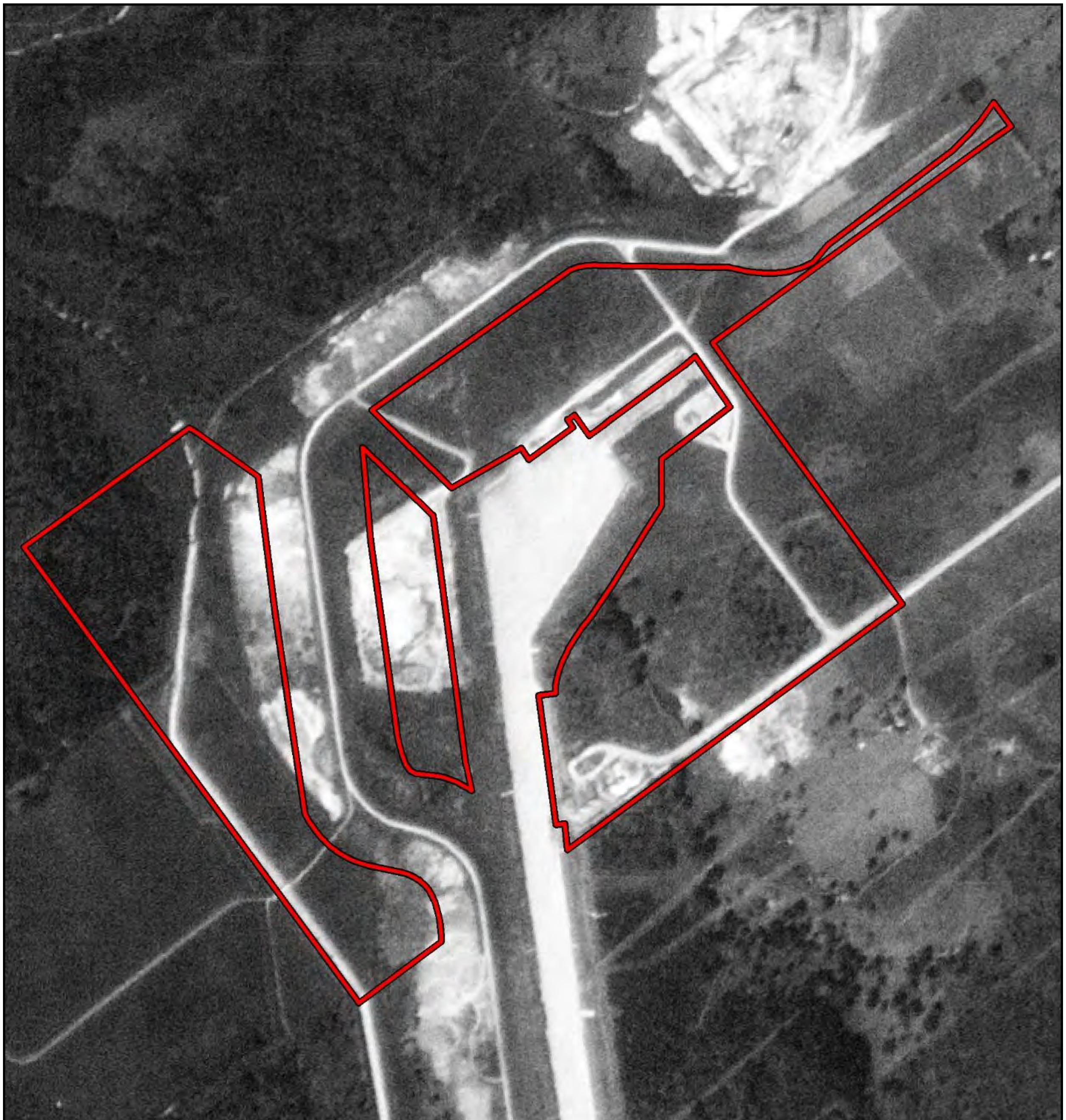

Figure 5.2
1970 Aerial Imagery

Area of Potential Effects - Direct

N

County: Victoria
State: Texas
Date map created: 10/3/2019
Source: (c) 2009 Microsoft Corporation
and its data suppliers; ESRI 10.5
IES Project Ref: 04.319.001

1 inch = 1,000 feet

0 1000 2000 ft

5.1.4 Intensive Survey Results

During this survey effort, the entire APE was investigated. Thirty backhoe trenches and 10 shovel tests were excavated within the previously undisturbed portions of the APE (**Figures 5.3** through **5.5**). Shovel tests were conducted within portions of the APE with potential to contain buried archeological deposits within the shallow subsurface, which pertained to the Deweyville terrace landforms along the Guadalupe River valley margin. During the intensive survey, 10 negative shovel tests were excavated within previously undisturbed portions of the APE. Soils exposed within shovel tests generally revealed a profile of dark brown (10YR 3/2) to dark grayish brown (10YR 4/2) sandy loam that extended to a depth of approximately 30 cmbs with significant quantities of river gravel. This surface stratum was underlain by a light brownish gray (10YR 6/2) loamy sand. Shovel testing on the transition from the Deweyville terraces and the Guadalupe River floodplain featured a truncated soil profile absent of the surface stratum.

Due to the potential for the preservation of deeply-buried archeological deposits in alluvial settings, backhoe trenching was conducted within the undisturbed portions of the APE that occupied the Guadalupe River floodplain. Thirty backhoe trenches were excavated within the APE (**Figures 5.1** through **5.3**), resulting in the excavation of 1 trench per 2.6 ac of potentially undisturbed floodplain landform identified during the background review for this project. Overall, backhoe trenching exposed varied soil profiles across the APE. Three general soil profiles were present within the APE. These included undisturbed soils surrounding Blue Bayou (Trenches 2 and 3, 6 through 12, 21, and 25 through 30), extensively disturbed soils west of Levee Road (Trenches 4, 5, and 13), and moderately disturbed soils east of Levee Road and east of the Pickering Turning Basin (Trenches 1, 14 through 20, and 22 through 24). Excavation within undisturbed areas reached sterile soils with calcium carbonate ($CaCO_3$) inclusions at an average depth of 170 cmbs. Disturbance within moderately disturbed areas extended to an average depth of 120 cmbs, with sterile soils and $CaCO_3$ inclusions typically encountered at 230 cmbs. Trench profile summaries are provided below and detailed stratigraphic descriptions of each trench profile is provided in **Appendix C**.

5.1.4.1 Trench 1

Trench 1 was excavated approximately 200 m east of the barge channel within the eastern portion of the APE. The soil profile exposed within Trench 1 consisted of a surface layer of yellowish brown (10YR 5/4) sandy loam to a depth of 110 cmbs with frequent gravel inclusions. This stratum likely represents disturbed deposits formed during USACE dredging and dredge material disposal conducted between 1959 and 1970. Soils clearly transitioned to very dark brown (10YR 2/2) massive clay that extended to a depth of 230 cmbs. Exceeding 230 cmbs, soils transitioned to dark brown (10YR 3/3) massive clay with yellowish brown (10YR 4/4) mottling (**Appendix B, Photograph 1**).

5.1.4.2 Trench 2

Trench 2 was excavated approximately 100 m west of the Levee Road within the western portion of the APE. The soil profile exposed within Trench 2 consisted of massive, very dark brown (10YR 2/2) clay loam to a depth of 90 cmbs. Soils transitioned to dark gray (10YR 4/1) sandy clay loam to a depth of 175 cmbs. This stratum gradually transitioned to dark yellowish brown (10YR 4/4) sandy loam with common $CaCO_3$ inclusions (**Appendix B, Photograph 2**).

5.1.4.3 Trench 3

Trench 3 was excavated 130 m south of Trench 2. Trench 3 featured a thin surface layer of very dark gray (10YR 3/1) clay loam. The soil transitioned to pale brown (10YR 6/3) sandy clay loam with frequent gravels to a depth of 30 cmbs which transitioned to very dark brown (10YR 2/2) clay loam that extended to a depth of 110 cmbs. Beneath that stratum, dark brown (10YR 3/2) sandy clay loam was observed to a depth of 200 cmbs. This was underlain by gray (10YR 6/1) sandy clay loam with yellowish brown (10YR 5/6) mottling and frequent $CaCO_3$ inclusions (**Appendix B, Photograph 3**).

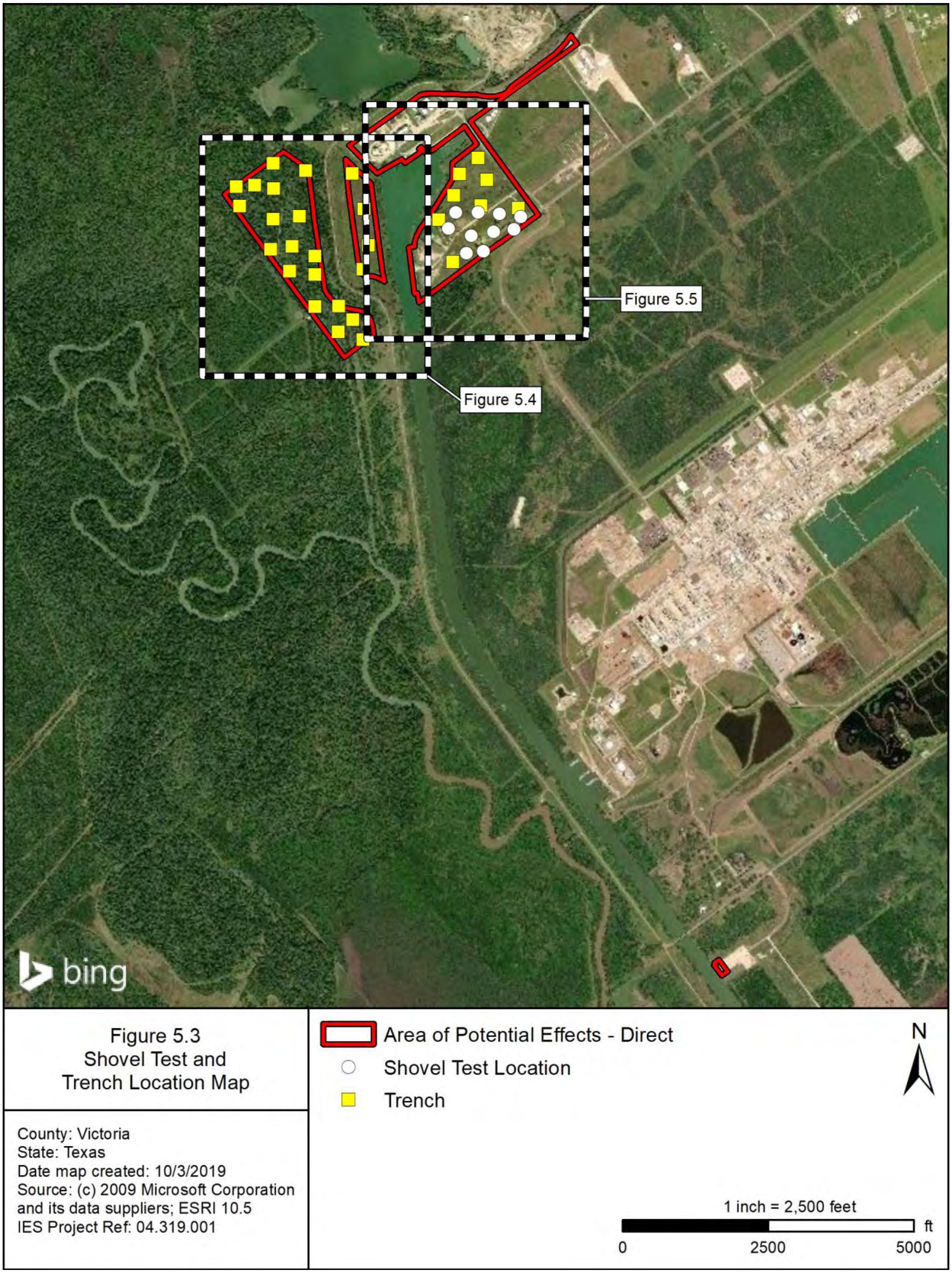

Figure 5.3
Shovel Test and
Trench Location Map

County: Victoria
State: Texas
Date map created: 10/3/2019
Source: (c) 2009 Microsoft Corporation and its data suppliers; ESRI 10.5
IES Project Ref: 04.319.001

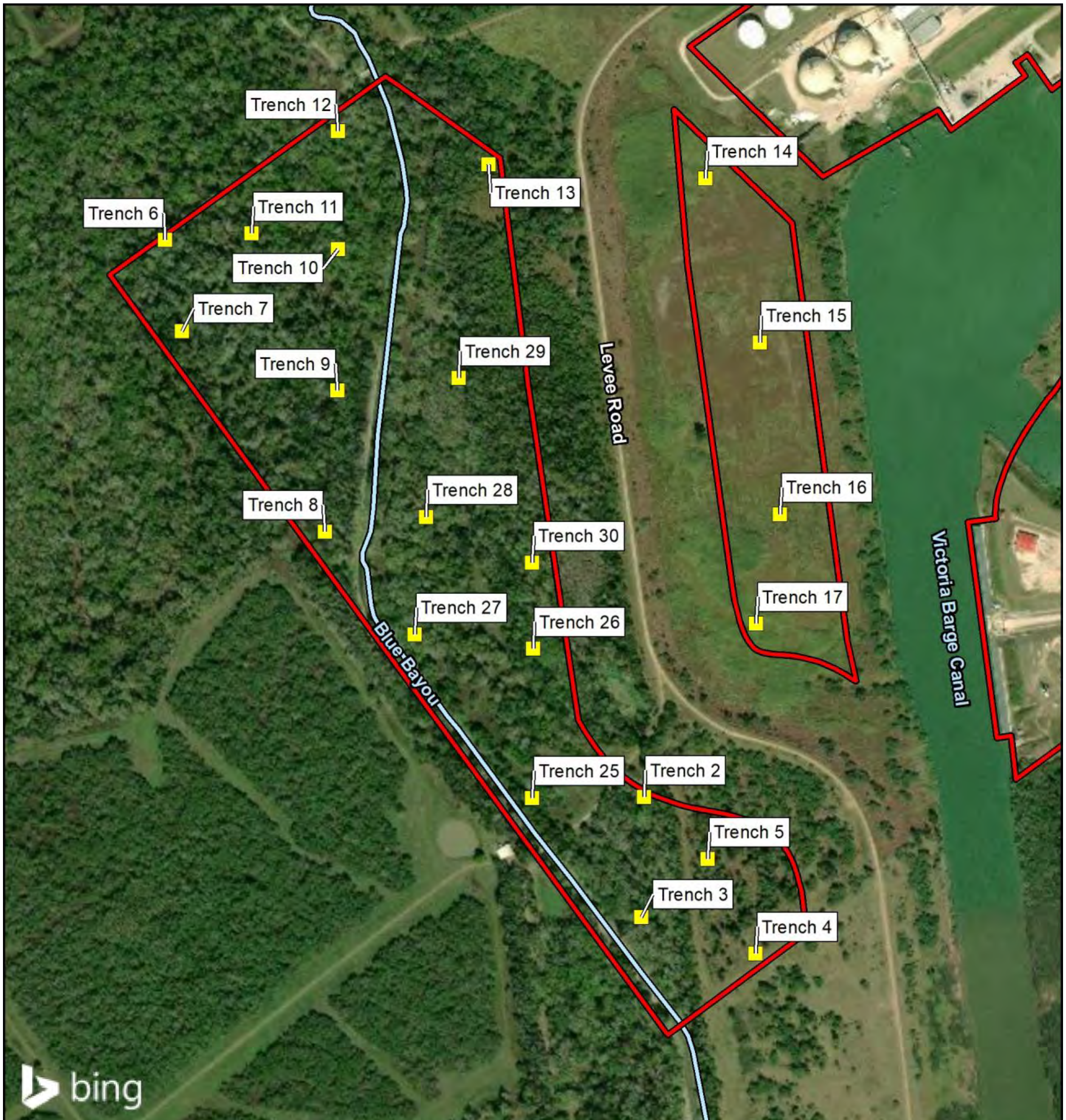

Figure 5.4
Shovel Test and
Trench Location Map

County: Victoria
State: Texas
Date map created: 10/3/2019
Source: (c) 2009 Microsoft Corporation and its data suppliers; ESRI 10.5
IES Project Ref: 04.319.001

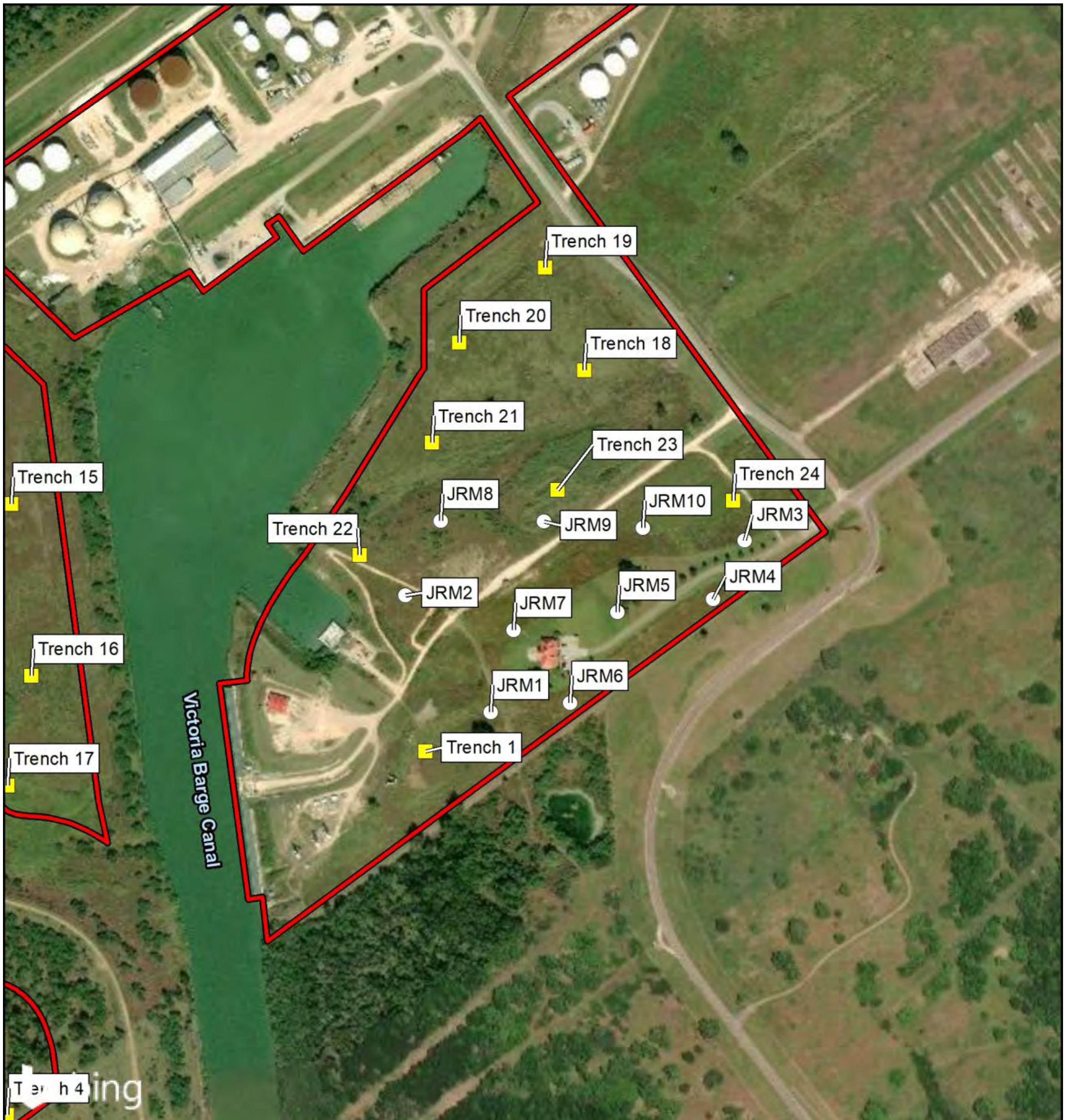

Figure 5.5
Shovel Test and
Trench Location Map

County: Victoria
State: Texas
Date map created: 10/3/2019
Source: (c) 2009 Microsoft Corporation
and its data suppliers; ESRI 10.5
IES Project Ref: 04.319.001

Area of Potential Effects - Direct
Shovel Test Location
Trench

N

1 inch = 600 feet
0 600 1200 ft

5.1.4.4 Trenches 4 and 5

Trenches 4 and 5 were excavated 100 m southeast of Trench 2 on the eastern side of the barge canal levee. These trenches featured a thin surface layer of dark gray (10YR 4/1) sandy loam overlying a sequence of sandy loams with clear stratigraphic boundaries and frequent gravel inclusions. These strata were indicative of disturbance by canal dredging conducted between 1959 and 1970 (**Appendix B, Photographs 4** and **5**).

5.1.4.5 Trenches 6 through 12

Trenches 6 through 12 were excavated within relatively undisturbed areas west of Blue Bayou. These soils consisted of a thick surface layer of black (10YR 2/1) clay loam to depths ranging from 80 to 175 cmbs. Trenches along the western border (Trenches 6 through 9) featured a second stratum of dark yellowish brown (10YR 4/6) sandy clay loam between 90 and 160 cmbs. Soils transitioned to dark yellowish brown to yellowish brown (10YR 4/4 to 10YR 5/6) sandy clay loam with yellowish red mottling and frequent $CaCO_3$ inclusions to depths exceeding 185 cmbs (**Appendix B, Photographs 6** through **12**).

5.1.4.6 Trench 13

Trench 13 was excavated between Blue Bayou and Levee Road. The soil profile exposed in Trench 13 consisted of black (10YR 2/1) clay loam to a depth of 160 cmbs. The soils gradually transitioned to dark yellowish brown (10YR 4/4) sandy clay loam with yellowish red mottling and common $CaCO_3$ inclusions (**Appendix B, Photograph 13**).

5.1.4.7 Trenches 14 through 17

Trenches 14 through 17 were excavated within the central portion of the APE between the barge channel and Levee Road. These trenches represented disturbed deposits resulting from barge canal dredging conducted between 1959 and 1970. These trenches consisted of a thin surface layer of pale brown (10YR 6/3) sand intermixed with river gravel to a depth ranging from 150 to 190 cmbs. This surface layer was underlain by very dark brown (10YR 2/2) massive clay that exceeded depths of 280 cmbs (**Appendix B, Photographs 14** through **17**). Trench 16 featured a sequence of sandy loam deposits with clear stratigraphic boundaries indicative of disturbance by mid-20th century dredging activities which had taken place within this portion of the APE (**Appendix B, Photograph 16**).

5.1.4.8 Trenches 18 through 24

Trenches 18 through 24 were excavated within the eastern portion of the APE between the barge channel and Farm-to-Market Road (FM) 1432. These trenches featured a thin surface layer of dark grayish brown (10YR 4/2) clay loam to depths between 10 to 50 cmbs. Soils transitioned to pale brown (10YR 6/3) sandy loams with frequent river gravels to depths not exceeding 110 cmbs. This stratum represented disturbed deposits altered through barge canal dredging conducted between 1959 and 1970. Beneath the disturbed soil strata, very dark brown (10YR 2/2) clay loam was observed to depths of 170 to 280 cmbs. This was underlain by very dark gray (10YR3/1) clay loam with frequent $CaCO_3$ inclusions (**Appendix B, Photographs 18** through **24**). The surface layer was absent from Trench 24 (**Appendix B, Photograph 24**).

5.1.4.9 Trenches 25 through 30

Trenches 25 through 30 were excavated between Blue Bayou and Levee Road. Soils within this area were undisturbed and moderately deep. The soil profiles exposed within these trenches consisted of very dark brown (10YR 2/2) clay loam to depths ranging from 130 to 240 cmbs. Soils gradually transitioned to dark yellowish brown (10YR4/4) sandy clay loam with frequent $CaCO_3$ inclusions (**Appendix B, Photographs 25** through **30**).

CHAPTER 6: SUMMARY AND RECOMMENDATIONS

This survey was undertaken to assess for the presence of archeological resources within POV property that are proposed for a USACE-SWG easement disposal. The entire 193.34-ac APE was inspected through pedestrian reconnaissance and intensive survey methods. Ten shovel tests and 30 backhoe trenches were excavated within the APE. All shovel tests and backhoe trenches were negative for artifacts or other archeological deposits or features. No archeological sites were encountered during this survey.

Based on these results, it is the recommendation of IES that the USACE-SWG easement disposal be permitted to continue without the need for further archeological investigations. If areas outside the APE defined within this report are to be impacted by future development within the currently-defined APE, additional field investigations may be required. In addition, if any archeological resources are encountered during future construction activities, the operators should immediately stop construction activities in the area of the inadvertent discovery. The project cultural resources consultant should then be contacted to initiate further consultation with the THC prior to resuming construction activities.

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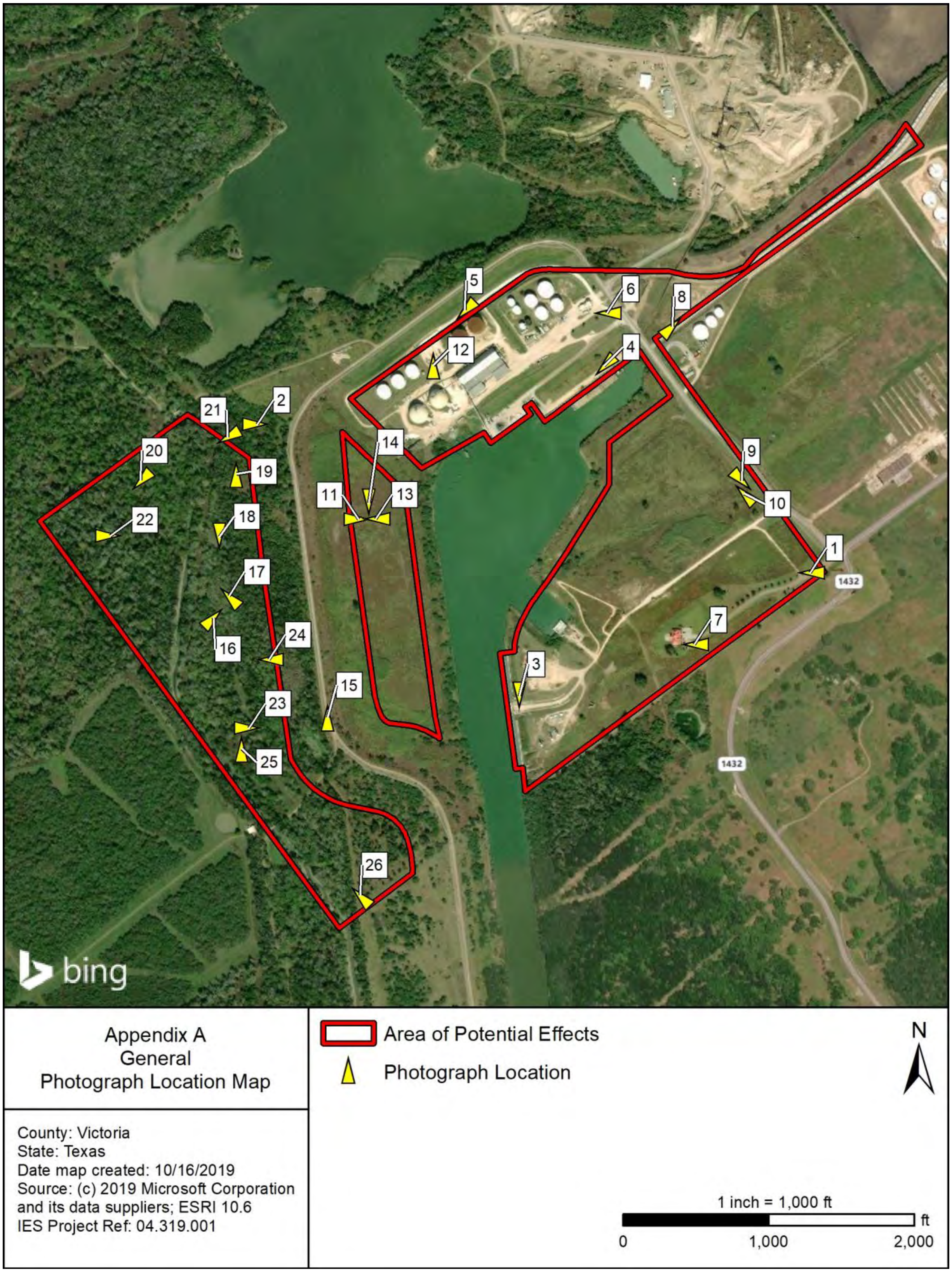
Appendix A
Photograph Location Map and Photographs



General Project Area Photographs

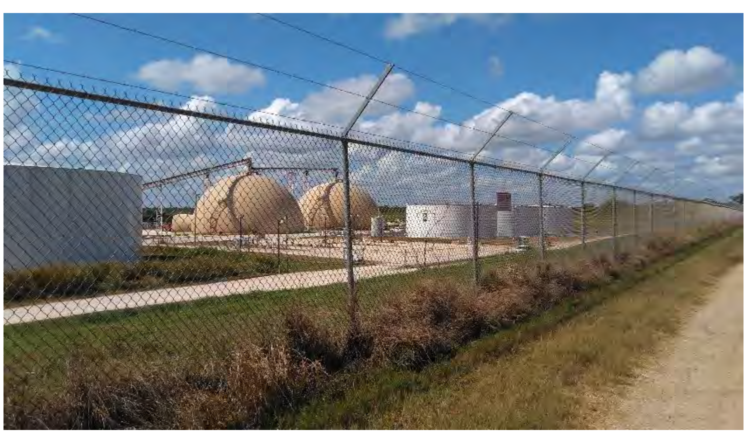
Photograph Setting	Photograph Range
Eastern Portion of the APE	1 through 10
Central Portion of the APE	11 through 15
Western Portion of the APE	16 through 26


Photograph 1 – Eastern portion of the APE, view to the west.


Photograph 2 – Central and eastern portion of APE, view to the east.


Photograph 3 - Eastern portion of the APE, view to the south.


Photograph 4 - Eastern portion of the APE, view to the southwest.


Photograph 5 - Eastern portion of the APE, view to the southwest.


Photograph 6 - Eastern portion of the APE, view to the west.


Photograph 7 - Eastern portion of the APE, view to the west.


Photograph 8 - Eastern portion of the APE, view to the northeast.


Photograph 9 - Eastern portion of the APE, view to the southeast.


Photograph 10 - Eastern portion of the APE, view to the northwest.


Photograph 11 - Central portion of the APE, view to the east.


Photograph 12 - Central portion of the APE, view to the north.


Photograph 13 - Central portion of the APE, view to the west.


Photograph 14 - Central portion of the APE, view to the south.


Photograph 15 - Central portion of the APE, view to the north.


Photograph 16 - Western portion of the APE, view to the northeast.


Photograph 17 - Western portion of the APE, view to the northwest.


Photograph 18 - Western portion of the APE, view to the south.


Photograph 19 - Western portion of the APE, view to the north.


Photograph 20 - Western portion of the APE, view to the southwest.


Photograph 21 - Western portion of the APE, view to the west.


Photograph 22 - Western portion of the APE, view to the east.


Photograph 23 - Western portion of the APE, view to the east.


Photograph 24 - Western portion of the APE, view to the west.


Photograph 25 – Western portion of the APE, view to the north.


Photograph 26 – Western portion of the APE, view to the northwest.

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APPENDIX B
Trench Photographs

Trench Photograph Numbers

Trench Number	Photograph Range
Trench 1	1
Trench 2	2
Trench 3	3
Trench 4	4
Trench 5	5
Trench 6	6
Trench 7	7
Trench 8	8
Trench 9	9 and 10
Trench 10	11
Trench 11	12
Trench 12	
Trench 13	13
Trench 14	14
Trench 15	15
Trench 16	16
Trench 17	17
Trench 18	18
Trench 19	19
Trench 20	20
Trench 21	21
Trench 22	22
Trench 23	23
Trench 24	24
Trench 25	25 and 26
Trench 26	27
Trench 27	28
Trench 28	29
Trench 29	30
Trench 30	-

Photograph 1 – Trench 1, west profile.

Photograph 2 - Trench 2, east profile.

Photograph 3 - Trench 3, west profile.

Photograph 4 - Trench 4, west profile.

Photograph 5 – Trench 5, south profile.

Photograph 6 – Trench 6, southwest profile.


Photograph 7 – Trench 7, southwest profile.


Photograph 8 – Trench 8, southeast profile.

Photograph 9 – Trench 9, southwest profile.

Photograph 10 – Trench 9, example of inclusions within soil matrix.


Photograph 11 – Trench 10, west profile.


Photograph 12 – Trench 11, south profile.


Photograph 13 – Trench 13, south profile.


Photograph 14 – Trench 14, east profile.


Photograph 15 – Trench 15, east profile.


Photograph 16 – Trench 16, east profile.


Photograph 17 – Trench 17, east profile.


Photograph 18 – Trench 18, northeast profile.

Photograph 19 - Trench 19, southeast profile.

Photograph 20 - Trench 20, east profile.

Photograph 21 - Trench 21, southeast profile.

Photograph 22 - Trench 22, south profile.


Photograph 23 – Trench 23, north profile.


Photograph 24 – Trench 24, southwest profile.

Photograph 25 – Trench 25, west profile.

Photograph 26 – Trench 25, west profile.

Photograph 27 – Trench 26, west profile.

Photograph 28 – Trench 27, west profile.

Photograph 29 – Trench 28, southeast profile.

Photograph 30 – Trench 29, west profile.

APPENDIX C
Trench Profile Descriptions

Trench No.	Landform	Soil Profile	Artifacts
1	Floodplain	0 - 110 cmbs: yellowish brown (10YR 5/4) sandy loam with frequent rootlets; fine granular structure with few gravel inclusions; clear smooth boundary 110 - 230 cmbs: very dark brown (10YR 2/2) clay; massive structure; gradual smooth boundary 230 - 260 cmbs: dark brown (10YR 3/3) clay with dark yellowish-brown mottling; massive structure	None
2	Floodplain	0 - 90 cmbs: very dark brown (10YR 2/2) clay loam; massive structure; diffuse smooth boundary 90 - 175 cmbs: dark gray (10YR 4/1) sandy clay loam; fine subangular blocky structure; gradual smooth boundary 175 - 207 cmbs: dark yellowish brown (10YR 4/4) sandy loam with common $CaCO_3$ inclusions; fine subangular blocky structure	None
3	Floodplain	0 - 10 cmbs: very dark gray (10YR 3/1) clay loam with frequent rootlets; coarse subangular blocky structure; clear wavy boundary 10 - 30 cmbs: pale brown (10YR 6/3) sandy clay loam; fine granular structure; clear smooth boundary 30 - 110 cmbs: very dark brown (10YR 2/2) clay loam; fine subangular blocky structure; gradual smooth boundary 110 - 200 cmbs: dark brown (10YR 3/3) sandy clay loam; fine subangular blocky structure; gradual smooth boundary 200 - 220 cmbs: gray (10YR 6/1) sandy clay loam with yellowish brown mottling and common $CaCO_3$ inclusions; fine granular structure	None
4	Floodplain	0 - 310 cmbs: very dark gray (10YR 3/1) sandy loam with very pale brown mottling; fine granular structure	None
5	Floodplain	0 - 25 cmbs: dark gray (10YR 4/1) sandy loam; fine subangular blocky structure; clear smooth boundary 25 - 150 cmbs: gray (10YR 5/1) loam; fine granular structure; diffuse smooth boundary 150 - 300 cmbs: dark yellowish brown (10YR 4/4) sandy clay loam; fine subangular blocky structure	None
6	Floodplain	0 - 90 cmbs: black (10YR 2/1) clay loam; coarse subangular blocky structure; gradual smooth boundary 90 - 150 cmbs: dark grayish brown (10YR 4/2) sandy clay loam; fine subangular blocky structure; diffuse smooth boundary 150 - 185 cmbs: dark yellowish brown (10YR 4/6) sandy clay loam; fine granular structure; 20% 5YR 4/6; 20% $CaCO_3$	None
7	Floodplain	0 - 10 cmbs: black (10YR 2/1) clay loam; medium subangular blocky structure; diffuse smooth boundary 10 - 160 cmbs: dark yellowish brown (10YR 4/6) sandy clay loam; coarse subangular blocky structure; diffuse smooth boundary 160 - 190 cmbs: yellowish brown (10YR 5/6) sandy clay loam; fine granular structure; 5YR 5/6 and $CaCO_3$ 20%	None
8	floodplain	0 - 80 cmbs: black (10YR 2/1) clay loam; medium subangular blocky structure; diffuse smooth boundary 80 - 170 cmbs: dark yellowish brown (10YR 4/6) sandy clay loam; coarse subangular blocky structure; diffuse smooth boundary 170 - 185 cmbs: yellowish brown (10YR 5/6) sandy clay loam with yellowish red mottling and frequent $CaCO_3$ inclusions; fine granular structure	None
9	Floodplain	0 - 110 cmbs: very dark brown (10YR 2/2) clay loam; coarse subangular blocky structure; diffuse smooth boundary 110 - 160 cmbs: dark yellowish brown (10YR 4/4) sandy clay loam with yellowish red mottling and frequent $CaCO_3$ inclusions; fine granular structure	None
10	Floodplain	0 - 200 cmbs: very dark brown (10YR 2/2) clay loam with very pale brown mottling; medium subangular blocky structure; diffuse smooth boundary 200 - 250 cmbs: dark yellowish brown (10YR 4/4) sandy clay loam with yellowish red mottling and common $CaCO_3$ inclusions; fine granular structure	None
11	Floodplain	0 - 180 cmbs: very dark brown (10YR 2/2) clay loam with pinkish white mottling; medium subangular blocky structure; diffuse smooth boundary 180 - 220 cmbs: dark grayish brown (10YR 4/2) sandy clay loam with light reddish-brown mottling and few $CaCO_3$; fine granular structure	None

Trench No.	Landform	Soil Profile	Artifacts
12	Floodplain	0 - 175 cmbs: black (10YR 2/1) clay loam with very pale brown mottling; medium subangular blocky structure; diffuse smooth boundary 175 - 230 cmbs: dark grayish brown (10YR 4/2) sandy clay loam reddish yellow mottling and few $CaCO_3$ inclusions; fine granular structure	None
13	Floodplain	0 - 160 cmbs: black (10YR 2/1) clay loam; medium subangular blocky structure; diffuse smooth boundary 160 - 240 cmbs: dark yellowish brown (10YR 4/4) sandy clay loam reddish yellow mottling and few $CaCO_3$ inclusions; fine granular structure	None
14	Floodplain	0 - 190 cmbs: pale brown (10YR 6/3) sand with river gravel; medium granular structure; clear smooth boundary 190 - 280 cmbs: very dark brown (10YR 2/2) clay loam; massive angular blocky structure	None
15	Floodplain	0 - 160 cmbs: pale brown (10YR 6/3) loamy sand with common river gravel; medium granular structure; clear smooth boundary 160 - 290 cmbs: very dark brown (10YR 2/2) clay loam; medium subangular blocky structure	None
16	Floodplain	0 - 40 cmbs: very dark brown (10YR 2/2) clay loam; medium angular blocky structure; clear smooth boundary 40 - 50 cmbs: dark yellowish brown (10YR 4/6) loamy sand; medium granular structure; clear smooth boundary 50 - 130 cmbs: pale brown (10YR 6/3) loamy sand river gravel; medium granular structure; clear smooth boundary 130 - 180 cmbs: dark brown (10YR 3/3) loamy sand river gravel; coarse granular structure; clear smooth boundary 180 - 320 cmbs: very dark brown (10YR 2/2) clay loam; medium angular blocky structure	None
17	Floodplain	0 - 150 cmbs: pale brown (10YR 6/3) loamy sand with river gravel; medium granular structure; clear smooth boundary 150 - 290 cmbs: very dark brown (10YR 2/2) clay loam; medium angular blocky structure	None
18	Floodplain	0 - 40 cmbs: dark gray (10YR 4/1) clay loam with river gravel; coarse granular structure; gradual smooth boundary 40 - 120 cmbs: very dark brown (10YR 2/2) sandy clay; medium angular blocky structure; clear smooth boundary 120 - 150 cmbs: dark gray (10YR 4/1) sandy clay with frequent $CaCO_3$ inclusions; coarse angular blocky structure	None
19	Terrace	0 - 15 cmbs: dark gray (10YR 4/1) clay loam; medium angular blocky structure; clear irregular boundary 15 - 110 cmbs: pale brown (10YR 6/3) loamy sand with river gravel inclusions; medium granular structure; clear smooth boundary 110 - 170 cmbs: very dark brown (10YR 2/2) clay loam; medium angular blocky structure; clear smooth boundary 170 - 220 cmbs: gray (10YR 5/1) sandy clay loam with red mottling; medium granular structure	None
20	Terrace	0 - 10 cmbs: dark grayish brown (10YR 4/2) loamy sand; medium angular blocky structure; clear irregular boundary 10 - 20 cmbs: pale brown (10YR 6/3) loamy sand; medium granular structure; river gravel; clear smooth boundary 20 - 130 cmbs: very dark brown (10YR 2/2) clay loam; medium angular blocky structure; clear smooth boundary 130 - 150 cmbs: very dark gray (10YR 3/1) clay loam with significant quantities of $CaCO_3$; medium angular blocky structure	None
21	Terrace	0 - 130 cmbs: very dark brown (10YR 2/2) clay loam; medium subangular blocky structure; clear smooth boundary 130 - 150 cmbs: very dark gray (10YR 3/1) clay loam with significant quantities of $CaCO_3$; medium angular blocky structure	None
22	Floodplain	0 - 40 cmbs: brown (10YR 5/3) sand; medium granular structure; clear wavy boundary 40 - 80 cmbs: very dark brown (10YR 2/2) clay loam; medium angular blocky structure; clear smooth boundary 80 - 140 cmbs: light gray (10YR 7/2) clay with red mottling; medium angular blocky structure	None

Trench No.	Landform	Soil Profile	Artifacts
23	Terrace	0 - 50 cmbs: dark grayish brown (10YR 4/2) loamy sand; medium angular blocky structure; clear smooth boundary 50 - 180 cmbs: pale brown (10YR 6/3) loamy sand; medium granular structure; river gravel; clear smooth boundary 180 - 210 cmbs: yellowish brown (10YR 5/8) clay loam; medium angular blocky structure; clear smooth boundary 210 - 280 cmbs: very dark brown (10YR 2/2) clay loam with strong brown mottling; medium angular blocky structure	None
24	Terrace	0 - 100 cmbs: pale brown (10YR 6/3) loamy sand with river gravel; medium granular structure; clear smooth boundary 100 - 290 cmbs: very dark brown (10YR 2/2) clay loam; medium angular blocky structure; gradual smooth boundary 290 - 380 cmbs: greenish gray (GLEY 1 6/10Y) clay; medium structure	None
25	Floodplain	0 - 130 cmbs: very dark brown (10YR 2/2) clay loam; medium subangular blocky structure; diffuse smooth boundary 130 - 190 cmbs: brown (10YR 5/3) clay loam with common $CaCO_3$ inclusions; fine subangular blocky structure	None
26	Floodplain	0 - 140 cmbs: very dark brown (10YR 2/2) clay loam; coarse subangular blocky structure; diffuse smooth boundary 140 - 160 cmbs: dark yellowish brown (10YR 4/4) sandy clay loam with common CaCO3 inclusions; fine granular structure	None
27	Floodplain	0 - 240 cmbs: very dark brown (10YR 2/2) clay loam; fine subangular blocky structure; diffuse smooth boundary 240 - 270 cmbs: dark yellowish brown (10YR 4/4) clay loam with common CaCO3 inclusions; coarse granular structure	None
28	Floodplain	0 - 200 cmbs: very dark brown (10YR 2/2) clay loam; medium subangular blocky structure; diffuse smooth boundary 200 - 220 cmbs: dark yellowish brown (10YR 4/4) clay loam with common CaCO3 inclusions; medium granular structure	None
29	Terrace	0 - 200 cmbs: very dark brown (10YR 2/2) clay loam; medium angular blocky structure; gradual smooth boundary 200 - 380 cmbs: very dark gray (10YR 3/1) clay; medium angular blocky structure	None
30	Floodplain	0 - 140 cmbs: very dark brown (10YR 2/2) clay loam; coarse subangular blocky structure; diffuse smooth boundary 140 - 160 cmbs: dark yellowish brown (10YR 4/4) sandy clay loam with common CaCO3 inclusions; fine granular structure	None