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Pedestrian Cultural Resources Survey For The Proposed Iellc 8-Inch Pipeline Project In San Patricio, Refugio, Aransas, Calhoun, Victoria, Jackson, And Matagorda Counties, Texas

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HRA Gray & Pape

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Lead Federal Agency:
United States Army Corps of Engineers, Galveston District - Corpus Christi Regulatory Office

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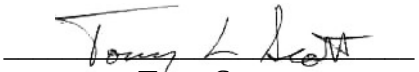

Tony Scott
Principal Investigator

ABSTRACT

In March, May, and June of 2013, and June, July, and August of 2014, HRA Gray & Pape, LLC, of Houston, Texas, completed pedestrian cultural resources survey and limited shovel testing on a proposed 185-kilometer (115.2-mile) alignment in preparation for a new 20.3-centimeter (8-inch) diameter ethylene pipeline to be located in San Patricio, Refugio, Aransas, Victoria, Calhoun, Jackson, and Matagorda Counties, Texas. The Phase I survey was conducted on behalf of Tetra Tech, Inc. of Buffalo, New York, under contract with Ingleside Ethylene, LLC and Occidental Chemical Corporation. Over the course of the project (Project) permitting requirements have involved the United States Environmental Protection Agency, Region 6, and the United States Army Corps of Engineers, Galveston District. The issuances of federal permits were considered undertakings subject to the provisions and review process provided in Section 106 of the National Historic Preservation Act of 1966, as amended.

To date, all 185 kilometers (115.2 miles) of the Project have been investigated. This final report serves as a consolidation of information previously submitted to your office between 2013 and 2015. Field efforts consisting of several mobilizations were completed and the results were submitted in three previously submitted draft documents including a revised draft report and a succession of draft addenda and letter correspondences (Balakirova and Scott 2013, Perrine et al. 2014, Scott 2014). Portions of the Project were also previously documented in an earlier report for another project (Scott et al. 2013). A fourth draft document was submitted this year in 2015 (Scott 2015) and received concurrence on February 18, 2015. That document was associated with 7.6 kilometers (4.72 miles) of proposed pipeline reroute and two small workspaces totaling 1.5 hectares (3.8 acres). The 2015 survey resulted in negative findings and was not synthesized into this final report but the current Project footprint is represented in Appendix A and the 2015 addendum is included in Appendix E for your reference. All submitted documentation has received concurrence from your office and the lead federal agencies at the time of the report submittals (see report Appendix E). In addition to the pipeline workspace, approximately 21.4 kilometers (13.3 miles) of access roads was also surveyed. The total area surveyed for the Project amounts to approximately 260.8 kilometers (162.1 miles), or 1,560.2 hectares (3,855.4 acres) of survey coverage, including the current Area of Potential Effects, as well as surveyed areas that are no longer in consideration for the Project.

Fieldwork conducted in 2013 and 2014 was completed over six separate mobilizations. The first wave of mobilizations consisted of three separate mobilizations from March 6 to 26, May 15 to 29, and June 17 to 21, 2013. The second wave of survey also consisted of three mobilizations and was carried out from June 3 to 13, July 9 to 11, and August 25 to 27, 2014, after alignment changes were made to the original plan. As described above, two additional mobilizations took place, one in December of 2014, and one in January of 2015. In addition to work conducted in 2013, 2014, and 2015, a 4.2-kilometer (2.6-mile) portion of the Project was previously surveyed by HRA Gray & Pape, LLC in 2011 and reported on in a separate document (Scott et al. 2013). Field investigation was conducted entirely on privately owned properties and consisted of walkover and limited shovel testing within the Project area. During this investigation 36 cultural resources were identified or confirmed. These include 19 new

archaeological sites, one historic structure, five loci isolates of three to 10 historic artifacts, six isolated finds, and five previously recorded sites (41SP256, 41RF51, 41RF52 41RF53, 41RF54). No evidence for previously recorded Site 41JK111 was identified within the Project's Area of Potential Effects.

In general, cultural resources identified as the result of field efforts consisted of prehistoric shell middens and campsites, historic occupations and trash dumps, and historic and prehistoric isolate finds. In regard to the current Project, no further work is recommended for any of the 37 investigated resources as they are either confined to the plow zone, are now outside of the Project area, offer little information to add to the understanding of the history of the area, or will be avoided by horizontal directional drilling. Of those sites identified, Sites 41SP267, 41SP268, 41SP269, 41RF51, 41RF52, 41RF54, 41RF149, and 41CL97 have an undetermined but potential eligibility for listing on the National Register of Historic Places or as State Antiquities Landmarks. These sites consist of prehistoric occupations and shell middens (Sites 41RF51, 41RF52, 41RF54, 41RF149 41SP268, and 41SP269) and historic scatters (41SP267 and 41CL97). HRA Gray & Pape, LLC, recommended efforts to avoid these eight sites and as a result the Project alignment was either rerouted around them or they will be avoided by horizontal directional drilling. The remaining 28 resources identified during survey are considered ineligible for listing on the National Register of Historic Places or as State Antiquities Landmarks. These recommendations were concurred with by the Texas Historical Commission on April 29, September 29, and October 15, 2014, and by the United States Environmental Protection Agency on March 28 and May 23, 2014.

All artifacts were recovered from private property and are in the process of being returned to the landowners. This concludes the cultural resource management requirements in regard to the Project as it is currently planned. Further, HRA Gray & Pape, LLC. has reviewed recent Project plans and verified that they contain exclusion zones for sensitive cultural resources as agreed upon and documented in the report. Should Project plans change to involve areas located outside of previous survey coverage, additional work may be necessary. The need for additional work will be consulted with the appropriate agencies on a case by case basis.

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1.0 INTRODUCTION

This report presents the results of pedestrian walkover survey and assessments conducted by HRA Gray & Pape, LLC. (HRA Gray & Pape) of Houston, Texas on behalf of Tetra Tech, Inc. (Tetra Tech) of Buffalo, New York, under contract with Ingleside Ethylene, LLC (IELLC) for the installation of the proposed IELLC 8-Inch Pipeline, formerly known as the OxyChem Markham Ethylene Pipeline. The proposed pipeline consists of 185 kilometers (115.2 miles) of survey corridor in San Patricio, Refugio, Aransas, Calhoun, Victoria, Jackson, and Matagorda Counties, Texas (Figure 1). To date, all 185 kilometers (115.2 miles) of the Project have been investigated. Of those, 180.6 kilometers (112.2 miles) have been surveyed and approximately 6 kilometers (3.7 miles) of Project centerline or 36 hectares (89 acres) of workspace were not recommended for survey as field observations indicated that they are comprised of inundated marsh (Appendix A: Figures A19, A20, A27, A28, and A29). Including reroutes and additional workspaces, HRA Gray & Pape has investigated a total of 260.8 kilometers (162.1 miles), or hectares (3,855.4 acres), of proposed right-of-way (ROW) for this project. HRA Gray & Pape also surveyed an additional 21.4 kilometers (13.3 miles) of access roads.

During the first wave of mobilizations in 2013, HRA Gray & Pape completed survey of approximately 171.6 kilometers (106.6 miles) of proposed pipeline ROW. Of the portions not surveyed in 2013, 3.6 kilometers (2.2 miles) were due to a lack of access permission by the landowner and 3.2 kilometers (2 miles) were inaccessible due to inundated and marshy conditions. This surveyed length in addition to former Project alignments no longer in consideration for the Project amounts to approximately 1,399.8 hectares (3,459 acres) of surveyed area. Approximately 93.5 percent of the proposed pipeline centerline was surveyed during the first three mobilizations in 2013. During the 2013 work the Lead Federal Agency was identified as the United States Environmental Protection Agency (EPA), Region 6.

During the second wave of mobilizations in 2014, a total of 67.8 kilometers (42.1 miles) of previously unsurveyed proposed pipeline ROW, reroutes, and revised workspace footprints were surveyed. This included many reroutes that closely paralleled or overlapped survey performed in 2013. During the second wave of mobilizations the Lead Federal Agency was identified as the United States Army Corps of Engineers (USACE), Galveston District. The supplemental survey also covered tracts where access had previously been denied. Survey of three of these skipped tracts and the manner in which they were to be surveyed were stipulated within a Programmatic Agreement (PA) between the EPA, Occidental Chemical Corporation (OxyChem), and the Texas Historical Commission (THC) signed April 14, 2014 (Appendix E). Roughly 0.2 kilometers (0.1 mile) of the 2014 Project area was determined to be inundated marsh and was not recommended for survey. Two additional mobilizations took place, one in December of 2014, and one in January of 2015. Those results are included in Appendix E. Otherwise; all remaining portions of the pipeline ROW were surveyed during the supplemental survey efforts, along with all revised workspaces and access roads. Over the course of the Project permits were required through both the EPA and the USACE; therefore, the issuances of federal permits were considered undertakings subject to the provisions and

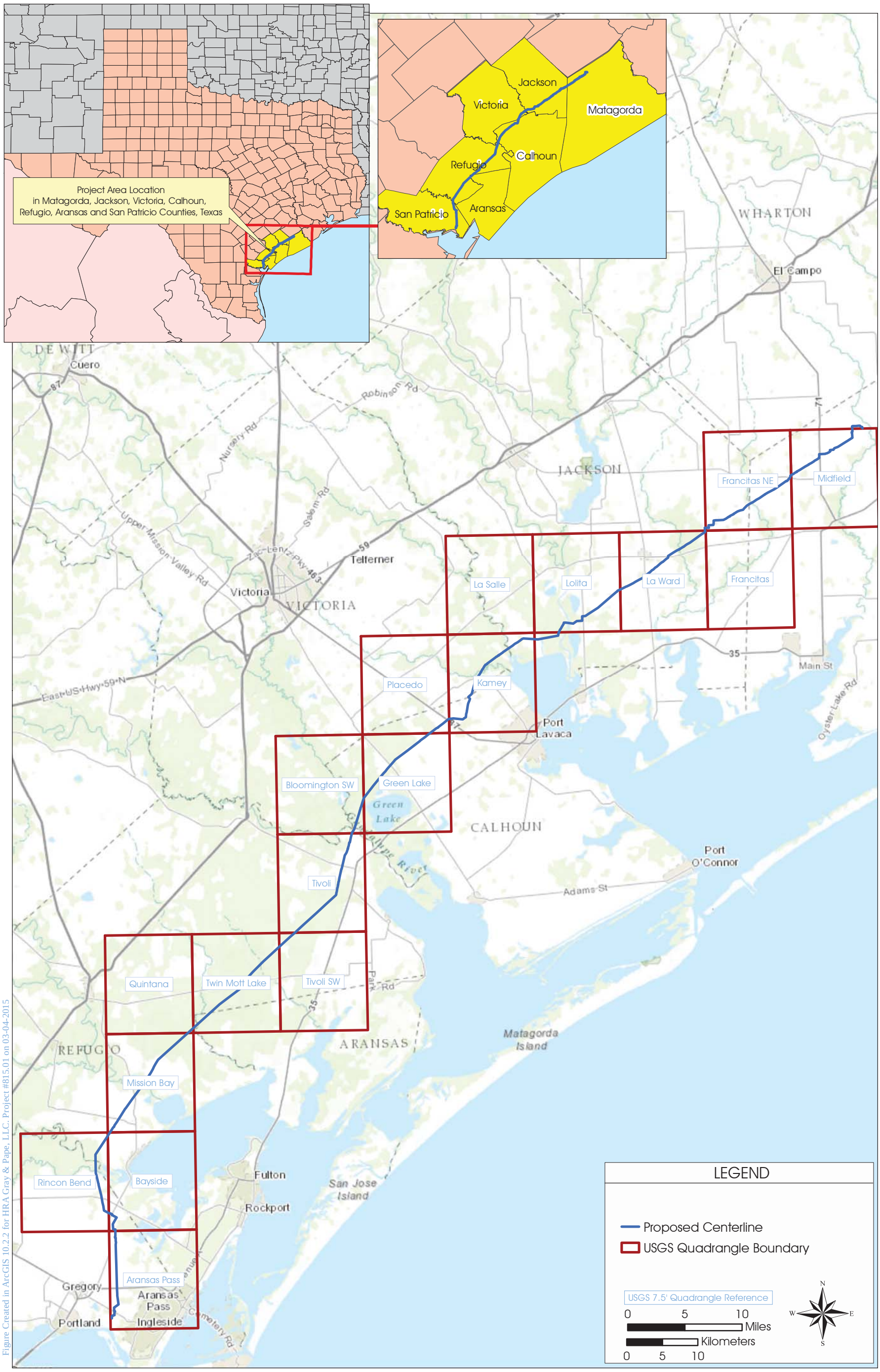

Figure Created in ArcGIS 10.2.2 for HRA Gray & Pape, LLC. Project #815.01 on 03-04-2015

Proposed IELLC 8-Inch Pipeline Project Location in San Patricio, Refugio, Aransas, Victoria, Calhoun, Jackson, and Matagorda Counties, Texas

Figure 1

HRA Gray & Pape LLC.

review process provided in Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. All fieldwork and reporting activities were completed with reference to state regulations (the Antiquities Code of Texas [THC 1969, as amended 1997]) and comply with federal (NHPA 1966; United States Department of the Interior, National Park Service [USDI, NPS] 1981, 1983) law and guidance for conducting cultural resources surveys pursuant to Section 106 of the NHPA (Advisory Council on Historic Preservation [ACHP] 2004). The Project is privately funded and entails privately-owned property; therefore, a Texas Antiquities Permit was not required from the THC Division of Archeology prior to conducting the archaeological survey.

1.1 Project and Project Area Description

IELLC proposes to construct, own, and operate an approximately 185-kilometer (115.2-mile) long, 20.3-centimeter (8-inch) diameter ethylene pipeline. The proposed alignment begins at the existing Ingleside Facility located approximately 3.6 kilometers (2.3 miles) west of Ingleside, San Patricio County, Texas, and traverses northeast to the Markham Storage Hub located approximately 0.64 kilometers (0.40 miles) west of Clemville in Matagorda County, Texas. The pipeline traverses (from southwest to northeast) San Patricio, Refugio, Aransas, Victoria, Calhoun, Jackson, and Matagorda Counties, Texas (Figure 1). The majority of the pipeline alignment follows and partially overlaps existing pipeline ROW. Typically the survey corridor measures approximately 60 meters (200 feet) wide with 30 meters (100 feet) on each side of the proposed pipeline centerline. This defines the Project's Area of Potential Effects (APE). Several realignments or reroutes were surveyed expanding the survey corridor in some areas. For much of the proposed alignment an existing 15-meter (50-foot) wide permanent pipeline ROW parallels the proposed pipeline and is within the 60-meter (200-foot) wide survey corridor. The proposed ROW has gone through a number of realignments and workspace shifts, which required additional survey efforts. Thus, many of the supplemental survey workspaces involved long stretches of Project footprint where the centerline shifted to the opposite side of the existing pipeline corridor as well as polygons of small dimension (< 0.4-hectare [1-acre]) to be used for drill sites or pull strings.

The proposed survey corridor crosses multiple major waterways and drainages. Major waterways include Aransas River which comprises the boundary between San Patricio and Refugio Counties, Mission River which drains Refugio County, Guadalupe River which drains Victoria County and serves as a boundary between Victoria and Calhoun Counties, Garcitas Creek between Victoria and Jackson Counties, Lavaca River and West Carancahua Creek in Jackson County. Project plans for pipeline installation at a number of waterways will be accomplished by horizontal directional drilling (HDD) (Appendix A). The parcels that intersect the survey corridor are almost entirely composed of agricultural fields. The corridor intersects very little area that contains ground cover but these areas likely have been previously plowed and/or disturbed by livestock use and construction associated with existing pipeline corridors.

1.2 Organization of the Report

This report is organized into seven numbered chapters and five lettered appendices. Chapter 1.0 provides an overview of the Project. Chapter 2.0 presents the environmental setting of the area. Chapter 3.0 discusses the cultural history of the region. Chapter 4.0 presents the research design and field methods developed for this survey. The results of research and survey activities are presented in Chapter 5.0. Chapter 6.0 presents the investigation summary and conclusions. A list of professional references cited is provided in Chapter 7.0. Graphics illustrating survey coverage and field survey results are provided in Appendix A. Newly recorded and revisited site sketch maps are provided in Appendix B. Plates are provided in Appendix C. A log of a sample of shovel test profiles is provided in Appendix D. Agency correspondence is documented in Appendix E.

1.3 Acknowledgements

Fieldwork entailed approximately 1,822 person hours and was conducted in six mobilizations by field crews comprised of Field Director David Treichel, Archaeological Crew Chiefs Catherine Cael, Jeremiah Hull, Rachel Perrine, Amanda Simmons, and Vincent Valenti, Archaeological Field Technicians Martin Boratin, David Ingleman, and David Witt of Tetra Tech, and Kody Dobecka, Charles William Fee, Cesario Guerra, Jacob Hilton, Larkin Kennedy, and Alesha Marcum-Heiman of HRA Gray & Pape. Fieldwork and reporting were performed under the supervision of Project Manager James Hughey, Principal Investigator Tony Scott, and Archaeologists David Bruner and Chris Baltz. Archival research was performed by Deborah Dobson-Brown, Erica Howard, and Melinda Mendoza-Scott.

Contents of the report were prepared by Julia E. Balakirova, Tony Scott, Rachel Perrine, and David Treichel with contributions by Melinda Mendoza-Scott, Catherine Cael, Charles William Fee, and David Bruner. Julia E. Balakirova and Duncan Hughey prepared the report graphics. Jessica Bludau and Bonnie Locking reviewed and edited the report.

Special thanks are due to Mark Evans of Occidental Chemical Corporation, Bonnie Locking, Peggy Grant, Trey Towers, and Steve Compton of Tetra Tech; Mark Hebert, Brad Shillings, Mark Shillings, Steve Shillings, Johnathan Forest, Brad Lauterbach, Mike McKnight, Rob Schultz, and Brenda Schroeder with Contract Land Staff, LLC (CLS); and William Martin and Jeff Durst of the THC. Their professional skills were invaluable in allowing the Project to run smoothly and their positive attitudes made it a great experience to be a part of the team.

2.0 NATURAL SETTING

2.1 Physiography and Geomorphology

The Project APE falls within Western Gulf Coastal Plains ecoregion and within Texas Coastal Prairie Province of the larger Gulf Coastal Plains (University of Texas, Bureau of Economic Geology [UT-BEG] 1996, 2010). This is a low, level to gently sloping region extending from Florida to Mexico. The Texas Coastal Prairie reaches as far north as the Ouachita uplift in Oklahoma, and as far west as the Balcones Escarpment in central Texas. The basic geomorphological characteristics of the Texas coast and associated inland areas resulted from depositional conditions influenced by the combined action of sea level changes from glacial advance in the northern portions of the continent and subsequent down cutting and variations in the sediment load capacity of the region's rivers. Regional Pleistocene formations, such as the Lissie and Beaumont, are the result of these processes (Abbott 2001; Van Siclen 1991).

2.2 Soils

The majority of the soils recorded within the Project APE are clayey or loamy soils with parental material of Pleistocene age fluviomarine deposits or Holocene age alluvium (Table 1). Hydrological conditions of the recorded soils vary based on the locations. Coastal counties crossed by the APE have an abundance of natural resources, with soils being one of them. These soils are generally good for croplands, pastures, and rangelands (Guckian 1988; Guckian and Garcia 1979; Hyde 2002; Miller 1997, 1982; Mowery and Bower 1978). The table below provides general summery of all the soil types within the Project APE and their characteristics.

Table 1. Soils Recorded within the Project APE

SYM	Name/Complex	Parental Material	Location	Land Use	Drainage	County
At	Austwell silty clay, high bottom	Clayey alluvium of Holocene age	Flood plains on delta and coastal plains	Rangeland and wildlife habitat	Poorly drained	Calhoun
Au	Austwell clay	Clayey alluvium of Holocene age	Flood plains on delta and coastal plains	Rangeland and wildlife habitat	Poorly drained	Calhoun
Be	Bacliff clay, 0 to 1 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on depressions on flats on coastal plains	Cropland and pasture	Poorly drained	Calhoun
Dc	Dacosta-Contee complex, 0 to 1 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Cropland and Rangeland	Poorly to moderately drained	Calhoun
Dn	Dacosta-Contee complex, 1 to 3 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Cropland and Rangeland	Poorly to moderately drained	Calhoun
Ke	Kuy sand (old Kenney) 1 to 5 percent slopes	Loamy and sandy alluvium of Pleistocene age	Terraces, coastal plains, and river valleys	Rangeland	Moderately well drained	Calhoun
La	Laewest clay clay, 0 to 1 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on flats on coastal plains	Cropland and Rangeland	Moderately well drained	Calhoun

SYM	Name/Complex	Parental Material	Location	Land Use	Drainage	County
Mb	Dacosta clay loam, 0 to 1 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on flats on coastal plains	Cropland and Rangeland	Moderately well drained	Calhoun
Mc	Dacosta clay loam, low	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on flats on coastal plains	Cropland and Rangeland	Moderately well drained	Calhoun
Md	Contee-Dacosta complex	Clayey fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Cropland and Rangeland	Poorly to moderately well drained	Calhoun
Te	Telferner very fine sandy loam	Loamy fluviomarine deposits of Late Pleistocene age	Meander scrolls on coastal plains	Cropland, Rangeland, and pasture	Moderately well drained	Calhoun
Ar	Aransas clay	Clayey alluvium of Holocene age	Flood plains on river valleys on coastal plains	Pasture and wildlife habitat	Poorly drained	Calhoun, Victoria
DvC	Dacosta and Telferner soils, 2 to 5 percent slopes, eroded	Clayey fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Rangeland	Moderately well drained	Victoria
LaD	Laewest clay, 3 to 8 percent slopes, eroded (old Lake Charles Clay)	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on flats on coastal plains	Pasture and Wildlife habitat	Moderately well drained	Victoria
Pe	Placedo silty clay loam, frequently flooded	Clayey over loamy alluvium of Holocene age	Flood plains on delta plains on coastal plains	Rangeland and Wildlife habitat	Very poorly drained	Victoria
TeA	Telferner fine sandy loam, 0 to 1 percent slopes	Loamy fluviomarine deposits of Late Pleistocene age	Meander scrolls on coastal plains	Cropland, pasture, and rangeland	Moderately well drained	Victoria
Tr	Trinity clay, frequently flooded	Clayey alluvium of Holocene age	Flood plains on river valleys on coastal plains	Rangeland	Moderately well drained	Victoria
BaA	Bacliff clay, 0 to 1 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on depressions on flats on coastal plains	Cropland and pasture	Poorly drained	Matagorda
ExA	Edna-Cieno complex, 0 to 1 percent slopes	Loamy fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Rangeland	Poorly drained	Matagorda
FoB	Fordtran loamy fine sand, 0 to 2 percent slopes	Loamy and sandy alluvium of Pleistocene age	River valleys, terraces, and coastal plains	Rangeland and wildlife habitat	Moderately well drained	Matagorda
KaB	Katy fine sandy loam, 0 to 2 percent slopes	Loamy fluviomarine deposits of Early Pleistocene age	Flats on coastal plains	Cropland, rangeland, pasture, and wildlife habitat	Moderately well drained	Matagorda
LaB	Laewest clay, 1 to 3 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on flats on coastal plains	Rangeland and wildlife habitat	Moderately well drained	Matagorda
LtA	Livco-Dacosta complex, 0 to 1 percent slopes	Loamy alluvium of Quaternary age	Flats and coastal plains	Pasture and rangeland	Moderately well drained	Matagorda
TfA	Telferner very fine sandy loam, 0 to 1 percent slopes	Loamy fluviomarine deposits of Late Pleistocene age	Meander scrolls on coastal plains	Rangeland, pasture, and cropland	Moderately well drained	Matagorda
DaA	Dacosta sandy clay loam, 0 to 1 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Cropland, Rangeland, and pasture	Moderately well drained	Jackson, Matagorda, Victoria
LaA	Laewest clay, 0 to 1 percent slopes	Clayey fluviomarine deposits of	Gilgai on flats on coastal plains	Cropland, pasture, and	Moderately well drained	Jackson, Matagorda,

SYM	Name/Complex	Parental Material	Location	Land Use	Drainage	County
		Late Pleistocene age		Rangeland		Victoria
EdA	Edna fine sandy loam, 0 to 1 percent slopes	Loamy fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Rangeland and cropland	Poorly drained	Jackson, Matagorda
FaB	Fordtran loamy fine sand, 0 to 2 percent slopes	Loamy and sandy alluvium of Pleistocene age	Terraces, coastal plains, river valleys	Rangeland and pasture	Moderately well drained	Jackson
LaD3	Laewest clay, 3 to 8 percent slopes, eroded	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on flats on coastal plains	Rangeland and pasture	Moderately well drained	Jackson
LvA	Livco fine sandy loam, 0 to 1 percent slopes	Loamy alluvium of Quaternary age	Flats on coastal plains	Rangeland, cropland, and pasture	Moderately well drained	Jackson
MaC	Marcado sandy clay loam, 3 to 8 percent slopes	Loamy fluviomarine deposits of Pleistocene age	Flats on coastal plains	Rangeland and pasture	Well drained	Jackson
Pd	Placedo clay, frequently flooded	Clayey over loamy alluvium of Holocene age	Flood plains on delta and coastal plains	Rangeland and wildlife habitat	Very poorly drained	Jackson
Sw	Swan clay, frequently flooded	Loamy alluvium of Quaternary age	Flood plains on delta and coastal plains	Rangeland and wildlife habitat	Very poorly drained	Jackson
TxA	Texana-Cieno complex, 0 to 1 percent slopes	Loamy fluviomarine deposits of Early to Late Pleistocene age	Meander scrolls, coastal plains	Cropland and Rangeland	Poorly to moderately well drained	Jackson
BT	Barrada-Tatton association	Loamy fluviomarine deposits of Holocene Age	Undulating low coastal tidelands	Wildlife habitat	Poorly drained	San Patricio
MoD	Monteola clay, 5 to 8 percent slopes	Clayey fluviomarine deposits	Circular Gilgai on interfluves on coastal plains	Rangeland	Moderately well drained	San Patricio
Od	Odem fine sandy loam	Loamy Alluvium of Holocene Age	Flood plains on river valleys and coastal plains	Cropland, pasture, and rangeland	Well drained soil	San Patricio
Os	Orelia sandy clay loam	Clayey fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Cropland, pasture, and wildlife habitat	Poorly drained	San Patricio
PaA	Papalote fine sandy loam, 0 to 1 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Cropland and pasture	Moderately well drained	San Patricio
RaA	Raymondville clay loam, 0 to 1 percent slopes	Loamy fluviomarine deposits of Late Pleistocene age	Meander scrolls on coastal plains	Cropland and wildlife habitat	Moderately well drained	San Patricio
RaB	Raymondville clay loam, 1 to 3 percent slopes	Loamy fluviomarine deposits of Late Pleistocene age	Meander scrolls on coastal plains	Cropland and wildlife habitat	Moderately well drained	San Patricio
Or	Orelia fine sandy loam	Loamy fluviomarine deposits of Pleistocene age	Flats on coastal plains	Cropland, pasture, and wildlife habitat	Poorly drained	San Patricio/ Refugio
Na	Narta fine sandy loam	Clayey fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Rangeland and wildlife habitat	Poorly drained	San Patricio/ Refugio
MoC	Monteola clay, 3 to 5 percent slopes	Clayey fluviomarine deposits	Circular Gilgai on interfluves on coastal plains	Rangeland and cropland	Moderately well drained	San Patricio/ Refugio
Ec	Edroy clay	Loamy fluviomarine deposits of Late Pleistocene age	Open depressions on coastal plains	Rangeland	Poorly drained	San Patricio/ Refugio
Ed	Edroy clay,	Loamy fluviomarine	Open depressions on	Rangeland	Poorly	San Patricio/

SYM	Name/Complex	Parental Material	Location	Land Use	Drainage	County
	depressional	deposits of Late Pleistocene age	Coastal Plains		drained	Refugio
Af	Aransas clay, frequently flooded	Loamy fluviomarine deposits of Holocene age	Flood plains on river valleys on coastal plains	Rangeland and wildlife habitat	Poorly drained	San Patricio/ Refugio
As	Aransas clay, saline	Clayey alluvium of Holocene age	Flood plains on river valleys on coastal plains	Rangeland and wildlife habitat	Poorly drained	San Patricio/ Refugio
VcA	Victoria clay, 0 to 1 percent slopes	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on flats on coastal plains	Cropland	Well drained	San Patricio/ Refugio
VcB	Victoria clay, 1 to 3 percent slopes	Loamy fluviomarine deposits of Late Pleistocene age	Gilgai on flats on coastal plains	Cropland	Well drained	San Patricio/ Refugio
Vd	Victoria clay, depressional	Clayey over loamy fluviomarine deposits of Late Pleistocene age	Gilgai flats on coastal plains	cropland	Well drained	San Patricio/ Refugio
Ac	Aransas clay, occasionally flooded	Clayey alluvium of Holocene age	Flood plains on river valleys	Pasture and wildlife habitat	Poorly drained	Refugio
Ba	Barrada clay	Clayey over loamy alluvium and storm washover sediments of Holocene age	Wind tidal flats on barrier islands	Wildlife habitat and recreation	Very poorly drained	Refugio
Co	Copano fine sandy loam	Loamy fluviomarine deposits of Late Pleistocene age	Flats on coastal plains	Rangeland	Poorly drained	Refugio
Fd	Faddin fine sandy loam	Loamy fluviomarine deposits of Late Pleistocene age	Meander scrolls on coastal plains	Rangeland	Moderately well drained	Refugio
Mo D4	Monteola clay, 5 to 8 percent slopes, gullied	Clayey fluviomarine deposits	Low hills on coastal plains	Rangeland	Moderately well drained	Refugio
PaB	Papalote loamy fine sand, 0 to 3 percent slopes	Loamy fluviomarine deposits	Hills on coastal plains	Rangeland and pasture	Moderately well drained	Refugio
PtA	Papalote fine sandy loam, 0 to 1 percent slopes	Loamy fluviomarine deposits	Flats on coastal plains	Rangeland, cropland, and pasture	Moderately well drained	Refugio
Va	Victine clay	Clayey fluviomarine deposits of Late Pleistocene age	Gilgai on flats on coastal plains	Pasture and wildlife habitat	Poorly drained	Refugio
Vr	Vidauri fine sandy loam	Loamy fluviomarine deposits of Early Pleistocene age	Flats on coastal plains	Livestock grazing and pastureland	Poorly drained	Refugio

2.3 Climate

The Project area is located within an area consisting of a humid subtropical climate subject to coastal weather conditions, which means prevailing southeasterly winds from the Gulf of Mexico generally regulate temperatures and greatly reduce the potential for wild temperature swings. The average high temperature in summer is 96 degrees Fahrenheit (F) and the average low in winter is 46 degrees F. Peak rainfall occurs in September and October and again in the months of April through June (Guckian and Garcia 1979).

2.4 Land Use

The parcels containing the survey corridor are mostly agricultural fields occasionally intermingled with pasturelands, wooded areas, and some wetland type areas. Woods and wetlands are typically located adjacent to waterways and confluences. Portions of some agricultural fields also show the remains of gas well pads (Texas General Land Office [TxGLO] 2012).

Typical disturbances within the Project APE include plowed soils, planted crops, utility lines and previous pipeline construction, utility access roads, county roads, long-term use as pastureland for livestock, and creek and drainage channelization. Agricultural activities within the counties associated with the supplemental Project areas have been dominant since the late-twentieth century (Guthrie 2014c; Hardin 2014; Kleiner 2014a,b; Leffler 2014; Long 2014; Roell 2014).

3.0 PREHISTORIC SETTING

3.1 Cultural Periods

Researchers have identified four archaeological time periods associated with Native Americans in south and south central Texas; in general, these include the Paleoindian, Archaic (with Early, Middle, and Late subdivisions), Late Prehistoric, and Historic Indian. The Paleo-Indian stage of south Texas has been dated to be between 9,000-6,000 B.C. The Archaic period is believed to have started around 6,000 B.C. and ending sometime around A.D. 800 (Prewitt 1981, 1985; Story 1985; Black 1989). The Late Prehistoric began at the end of the Archaic phase circa 800 A.D. After the Late Prehistoric, the Historic Indian stage began circa 1600 A.D. with the exposure of native populations to European travelers. The chronologies developed by researchers are based primarily on changes in projectile point technologies within the region and the introduction of new technologies. It is generally recognized that a broad-based hunting and gathering lifestyle was utilized throughout all time periods.

3.1.1 Paleoindian Period

Evidence is sparse for Paleoindian habitation; much of what is known about the period in the area comes from a compilation of materials gathered from around the state of Texas and across North America. At the close of the Pleistocene, large game hunters crossed the Bearing Strait, and within a few millennia had penetrated into South America (Culberson 1993; Newcomb 1961). The Paleoindian people traveled in small bands and were mega-fauna hunter-gathers with the bulk of their meat protein derived from mammoths, mastodons, giant bison, and giant sloths (Culberson 1993). In the Texas Gulf Coastal Plains, it is highly likely that these small bands migrated from the plains and prairies to the coastal river bottoms in order to obtain new resources (Campbell 1988; McGraw and Hindes 1987). These groups carried with them an easily recognizable stone tool material culture, though little is known about their wooden or bone tools or their clothing types. Diagnostic points such as fluted Clovis, Folsom, and Plainview points can be used to identify the Paleoindian component of a site and the nature of these points demonstrate the nature of the hunting style. These points are large and designed to be attached to a spear. No evidence of bow and arrow hunting has been found associated with this period (Culberson 1993; Newcomb 1961).

3.1.2 Archaic Period

After the Pleistocene, the Gulf of Mexico started a transgression onto the Texas coast creating estuaries along the shoreline. The formation of these estuaries gave the Archaic people of the Texas coast a strong emphasis on marine resources (Jurgens 1989). This shift in food supply is seen as the pivotal transition point between the Paleo and Archaic periods (Biesaart et al. 1985; Culberson 1993; Newcomb 1961). Within the boundaries of the south Texas coast, Corbin (1974) has termed the Archaic period, the Aransas complex. Most of the material culture recovered from Archaic sites within the south Texas region consists of shell artifacts such as Conch columella gouges, adzes, hammers, and awls. There are three progressive stages recognizable during the Archaic period: the Early, Middle, and Late.

Early Archaic people relied on hunter-gathering subsistence and organized in small, isolated bands that remained in relatively restricted regions (Aten 1984). Many researchers (Black 1989; Prewitt 1981, 1985; Story 1985) believe that the Early Archaic tradition in this area began around 6,000 B.C. and is really a continuation of the Paleoindian lifeway. With the loss of the mega-fauna as a food source, the Early Archaic peoples adopted the hunting of smaller game such as bison and deer and increased their reliance on foraging (Culberson 1993). The material record fits the transitional makeup of this period because there was a dramatic shift from the large spear points of the Paleoindian period to a reliance on smaller "Dart" type points. Diagnostic designs for this period are Dalton, San Patrice, Angostura, Golondrina, Merserve, Scottsbluff, Wells, Hoxie, Gower, Uvalde, Martindale, Bell, Andice, Baird, and Taylor. These points are much more crudely made than their Paleo precursors, but remain designed for use on a spear shaft.

The Middle Archaic is believed have started around 3,000 B.C. (Black 1989; Prewitt 1981, 1985; Story 1985) and has the largest growth in technology and in the number of stone tools utilized. Specialized tools appeared for the milling of wild plant foodstuffs (Culberson 1993) along with a large assortment of tools for food preparation and procurement. Many researchers believe there was an increased reliance on plant resources during the Middle Archaic. Gravers, scrapers, axes and choppers, knives, drills, and polished stone tools also known as ground stone tools, began to appear in large quantities (Newcomb 1961). Diagnostic points such as Gary, Kent, Palmillas, Nolan, Travis, Belvedere, Pedernales, Marshall, Williams, and Lange dominate the spectrum of dart points from the Middle Archaic period (Turner and Hester 1993; see also the Edwards Plateau Aspect [Newcomb 1961]). The advent of the spear-throwing device, the atlatl, also seems to be placed within this period (Culberson 1993).

The Late Archaic period is thought to have begun around 400 B.C. (Prewitt 1981, 1985; Story 1985; Black 1989) at which time there is a dramatic increase in the population densities of Native American groups. Human habitation of areas rich in diverse flora and fauna intensified, as did the variety of materials and artifacts (Culberson 1993; Aten 1984). Late Archaic peoples began relying heavily on foraging tubers, berries, and nuts and hunting small game such as deer, rabbits, raccoons, fish and shellfish, and birds. Groups became socially more complex than earlier periods and the result was an increasing intercommunication with neighboring groups. Culberson (1993:55) states that a "Lapidary Industry" developed in which stone artifacts were made from exotic materials (jasper, hematite, quartz, shale, slate, etc.) acquired from sources great distances away. These materials were fashioned into an increasingly complex array of household goods such as celts, plummets, banner stones, mortars and pestles, and pendants; also during this period, there is an increase in the occurrence of sandstone bowls (Culberson 1993). Diagnostic points of this period are difficult to distinguish from those of the Middle Archaic. Points such as Marcos, Montell, San Gabriel, Mahomet, Fairland, and Castroville also appear at times.

3.1.3 Late Prehistoric Period

The Late Prehistoric continues from the end of the Archaic period (circa 800 A.D.) to the Historic period (circa 1500 A.D.) ushered in by the Spanish Missions and Anglo-American settlers. During the Late Prehistoric period in south Texas, two cultural complexes appear to

have existed. The first complex, located further east on the coast, is characterized by ceramics that appear similar to the Goose Creek ceramics found farther north (Jurgens 1989; Ricklis 2004). The second and later complex has been called the Rockport complex, and has been associated with the Karankawa groups (Newcomb 1961; Ricklis 2004).

Within south Texas there were two dominate cultural groups that extended south of Galveston Bay down to the Rio Grande and as far west as present-day San Antonio. The coastal group was known as the Karankawas and the inland group was known as the Coahuiltecans (Ricklis 1996). The Karankawas, whose language is in the Hokan group, occupied an area that extended from Galveston Bay southwestward as far as the present site of Corpus Christi Bay (Aten 1984). As described by Newcomb (1961:59), seven proper names are associated with the culture. Researchers subdivide these names into five distinct groups based on geography. The Capoques and the Hans lived in the area between Galveston Bay and the Brazos River. The Kohanis lived south of the Capoques and the Hans at the mouth of the Colorado River. The Karankawa proper (which included the Korenkake, Clamcoets, and Carancaguacas) lived in the region of Matagorda Bay. Along Copano Bay and St. Joseph Island were the Kopanos (Newcomb 1961).

In the seventeenth and eighteenth centuries, the Spanish and French relied heavily on interaction with Native American groups in the area to further their own interests (Newcomb 1961). Most destructive for all native groups in the region was the influx of European diseases. When Euro-American settlers began moving into the area in mass around the 1850s, disease and warfare had decimated the groups to near extinction.

3.1.4 Protohistoric Period to the Post-Contact

Although archaeological evidence suggests the Karankawas migrated to the Texas Gulf Coast from the Caribbean in the early 1400s, it is unknown exactly how early these Native Americans roamed the Texas Gulf Coast area. The first written account of this tribe came from the diary of Alvar Nunez Cabeza de Vaca in the early 1500s (Guthrie 1986).

The Karankawa tribe living in the San Patricio County region was made up of several bands. The Copanos (also spelled Cobane, Coopane, Kopano) lived along Copano Bay and St. Joseph Island, the Coahuiltecan inhabited the areas south of the Corpus Christi Bay and Mustang Island, and the main Karankawa band lived around the central section of the Texas coast known as the coastal prairie (Campbell 2013). In 1986, archaeologists uncovered a Karankawa campsite at Round Lake near San Patricio, Texas that appeared to have been inhabited year-round from as early as 1410 (Guthrie 1986).

The Karankawas disappeared from the San Patricio area in the mid-1800s. In the early 1830s, clashes with white settlers forced many Karankawas into Mexico where they were eventually killed or died out. Any remaining Karankawas fled to Mexico to face the same end following the 1852 battle against William Kuykendall at Hyness Bay in Refugio County, Texas (Guthrie 1986).

3.1.5 Historic Period

The Project APE falls within seven counties along Texas coast (San Patricio, Refugio, Aransas, Calhoun, Victoria, Jackson, and Matagorda). This area has a rich and complex history and each of the seven counties experienced certain unique events. In general, the history of the region was influenced by complicated geo-political events of the different time periods. To understand better the overall history of the reviewed counties it is important to remember key chronological events of the general history of Texas. Further discussion is framed within the general chronology divided into following periods: early European explorations (early 1500s-1716), Spanish rule period (1716-1821), Mexican rule period and Texas War of Independence (1821-1836), Republic of Texas (1836-1845), Mexican War (1846-1848), pre-Civil War period (1848-1861), Civil War period (1861-1865), post-Civil War period to the twentieth century.

Early European Explorations (1515-1716)

Typical historic period discussion of the area starts with early Spanish and French explorers dating back to early 1500s and 1600s. This is a period of a complex and competing relationship between the two nations.

In 1519, Alonzo Álvarez de Pineda commanded a Spanish expedition along the Gulf of Mexico charting its coastline (Weddle 2013a). However, Álvar Núñez Cabeza de Vaca is the first known historian of Texas. Originally a member of the larger ill-fated Spanish expedition led by Pánfilo Narváez from Spain to the Gulf Coast (Chipman 2013a), he was one of the few survivors that landed along the Texas coast between Galveston Island and the Matagorda Peninsula. De Vaca lived and travelled among the natives for several years before reaching colonial Mexico in 1536 (Chipman 2013a). The name Cabeza De Vaca is mentioned in the early histories of Matagorda (Kleiner 2014b), Jackson (Hardin 2014), Victoria (Roell 2014), and Refugio (Leffler 2014) Counties.

In 1558, Guido de Lavazares landed in Matagorda Bay while surveying the northern Gulf Coast (Kleiner 2014b) and made a formal claim to the land in the name of King Charles V (Kleiner 2014b; Weddle 2013b). One of his vessels shipwrecked on Padre Island earlier in 1554 (Weddle 2013b). Spaniards largely ignored this region until the French, under the command of René Robert Cavelier, Sieur de La Salle landed in 1685 near Powderhorn Lake within the boundaries of the future Calhoun County (Kleiner 2014a; Weddle 2013c). The French established the first European settlement in Texas, known as Fort St. Louis, on Garcita Creek within the boundaries of the future Victoria County, or as some claimed within the future Jackson County (Hardin 2014; Long 2014; Weddle 2013d). Upon settling in the Fort, La Salle continued to explore the surrounding country, possibly reaching as far as the Rio Grande (Weddle 2013d). French presence in the region sparked a renewed Spanish interest and the Spanish government dispatched an expedition led by Alonzo De Leon to find and destroy the French.

Alonzo De Leon led the total of four expeditions into Texas between 1689 and 1691 looking for traces of French settlements on the northern Gulf Coast (Chipman 2013b; Guthrie 2014). While on a mission to find and destroy French settlements of La Salle, he probably entered

Aransas Pass while sailing up and down the coast (Guthrie 2014). De Leon found ruins of a French fort within future Calhoun County in 1689 (Kleiner 2013b). Later that year De Leon discovered and named the Guadalupe River within the future Victoria County (Roell 2013a).

Following De Leon's expedition and subsequent discovery of the French fort remains, the Llanos-Cárdenas Expedition was organized as a follow up and in 1690 Manuel José de Cárdenas y Magaña mapped Matagorda within the present day Matagorda County (Kleiner 2014b; Weddle 2013e).

Other explorations in the regions continued long after De Leon's and La Salle's expeditions. Between 1718 and 1719, the Alarcon expedition passed through the territories of the future Matagorda County (Kleiner 2014b). In 1712 and 1718, another French party came ashore on St. Joseph Island (Guthrie 2014). In 1766, Diego Ortiz Parrilla explored the Gulf Coast, naming future Copano Bay within the present day Aransas County as Santo Domingo, and future St. Joseph Island as Culebra Island (Long 2014; Weddle 2013f).

Spanish Colonial Period (1716-1821)

As mentioned earlier, the first European settlement in Texas was the French settlement of La Salle established within the future Victoria County. However, it was the Spanish who eventually colonized the area. The first settlers arriving in the area were Hispanic missionaries and colonists subjects of Spanish crown. As the era of the early explorations was winding down, a new period of cultural absorption began. This period can be characterized by the Texas Native Americans beginning to acquire Hispanic cultural elements at first indirectly and then directly from Spaniards themselves (Chipman 2013c). Establishment of a mission was one of the instruments used to incorporate indigenous population into the Spanish colonial empire (Wright 2013).

In 1722, Nuestra Señora del Espíritu Santo de Zúñiga Mission (known as La Bahía Mission) was established at the present site of Goliad within the boundaries of the original Refugio County, now the present day Victoria County (Roell 2014). The mission cemented Spanish presence in the region with a number of ranchos steadily growing around it, and laid a foundation to cattle raising industry in region (Leffler 2014; Roell 2014). Throughout this period, the constant threat of Indian attacks persisted; failed attempts were made to establish settlements in the lower Nueces River valley (Long 2014). In 1794, La Bahia Mission was raided by the Indians and subsequently moved to a different location (Leffler 2014; Roell 2014).

In 1793, the Nuestra Señora Del Refugio Mission was founded by the Franciscans in an attempt to bring the local coastal population under Spanish control. This was the last Spanish Mission founded in Texas. The original location chosen for the mission was on Goff Bayou in modern day Calhoun County, north of Mission Lake and half a mile the town of Long Mott. In 1794, the Mission was moved further north in a better protected location near the confluence of the San Antonio and Guadalupe Rivers and in 1795 it was moved one more time to the site of the present day town of Refugio in Refugio County. The mission functioned for approximately 30 years. By the time Irish settlers moved into the area during the 1830s it was no longer operational (Benowitz 2013).

In Aransas County, a small Spanish fort was established on the west bank of San Antonio Bay at Live Oak Point by the end of the late colonial period. The fort was named Aránzazu. Any additional attempts to establish settlement in the area were repelled by Native American attacks (Long 2014). In Calhoun County no further permanent settlements were made until the Anglo-American colonization (Kleiner 2014a). The Native Americans dominated the area of the future Jackson County raiding Spanish ranches to the south (Hardin 2014).

It is worth noting that only a small portion of Texas was known as Spanish Texas, or Spanish province, stretching above the Nueces River into Louisiana, and divided into four provinces of the Colonial Mexico over time (Chipman 2013c). Due to the extent of the province it was difficult for the colonial powers to populate successfully the area while fighting the resistance of the Native Americans. Presented with such difficulties, the Spanish crown started to look for other ways to colonize further the region. The earliest land grants in Texas can be traced back to 1700s and were made by the Spanish crown to Spanish colonists (Lang and Long 2013). While Hispanic settlers were slowly moving into the regions along and north of the Rio Grande and into the southern Texas, the Spanish government was trying to entice Anglo-settlers to populate other parts of the province. In 1820, the Spanish government opened Texas to anyone who would respect and obey the laws. Therefore, the first Anglo-American empresario in Texas was Moses Austin, succeeded by his son Stephen F. Austin. Moses Austin was promised a contract to land along the Brazos River in 1821 in exchange for bringing 300 Catholic families from Louisiana. The contract had to be negotiated after the Mexican War of Independence ended in 1821.

Mexican Colonial Period (1821-1836), Anglo-American Colonization

Overall, uninterrupted Spanish rule over Texas lasted from 1716 until 1821. The Mexican War of Independence (1810-1821) finally undermined the Spanish crown authority in the colonies establishing Mexico as an independent constitutional monarchy (De la Teja 2013). Territories of Texas, once subjects of colonial Spain, now formed part of the Coahuila y Texas province of newly established Mexico.

Six families of the early Anglo-American colonists brought down by Stephen F. Austin settled within the boundaries of the future Jackson County (Hardin 2014). Fifty-two families originally received land grants from Austin within the future Matagorda County around 1822 with another 300 allowed by the newly established Mexican government to be settled along the coastal areas in 1827 (Kleiner 2014b). Many of the early Austin's colonists came from Alabama and by the 1830s the newly formed municipality within future Jackson County became known as the "Alabama Settlement" (Hardin 2014).

The newly formed Mexican government started to issue its own land grants in the province under the newly passed Mexican Colonization Laws of 1825 (Barker 2013; Lang and Long 2013). This law and the state law of Coahuila y Texas affected all the future contracts with colonists except Austin's first contract (Barker 2013). In 1828, John McMullen and James McGloin obtained the contract from the Mexican government, which allowed them to bring 200 Irish families the future San Patricio County (Guthrie 2014). The first group of families landed at El Cópano and Matagorda in 1829 followed by two other groups shortly thereafter. The newly arrived colonists moved to the north side of the Nueces River (future San Patricio

County) where as per the contract with the Mexican government they received land grants on the east bank of the river and established a new settlement named after the patron saint San Patricio de Hibernia (Guthrie 2014; Long 2013). An additional group of colonists arrived in San Patricio in 1834 turning the settlement into a thriving community of 500 by 1836. The original contract called for 200 families to be settled along the Nueces River, however, a total of only 84 titles had been issued by the start of the Texas Revolution in 1836 (Guthrie 2014; Long 2013). All of the land grants issued by the Mexican government were recognized by the Republic of Texas after the Revolution and the descendants of some of the original colonists still reside in the area (Long 2013).

In Refugio and Aransas counties, Anglo-American colonization was restricted until after 1836 due to the Colonization Law of 1825. According to the law no land could be granted within 10 leagues (roughly 48 kilometers or 30 miles) of the coast or within 20 leagues (roughly 97 kilometers or 60 miles) of the international boundary without federal executive authorities' approval (Barker 2013). The Power and Hewetson Contract of 1828 (further supplemented in 1829 and 1831), was an exception. Under the original contract, empresarios James Power and James Hewetson were granted 10 littoral leagues between the Lavaca and Guadalupe rivers. In the supplement to the contract issued in 1829, granted territory was extended from the Guadalupe to the Nueces River and in the 1831 supplement empresarios received former lands of the abandoned Refugio Mission (Leffler 2014; Long 2014; The Texas State Historical Association [TSHA] 2013). The new colony was settled by Irish and Mexican catholic families. The majority of the colonist moved further inland, only a few settlers stayed within future Aransas County leaving it sparsely settled (Long 2014).

In Calhoun and Victoria counties, Anglo-American colonization started as early as 1824. Mexican aristocrat Martín De León brought 41 families into the area founding De Leon colony and establishing a ranch near the former site of La Salle's fort in present day Victoria County. The newly founded settlement was named Guadalupe Victoria after the first president of Mexico. De León's colony was the only mostly Mexican colony in Texas; the empresario and the colonists were given more advantages and fewer restrictions than the foreign agents. The boundaries of the colony were declared in 1828 and included Matagorda Bay on the south, Mission Valley on the north, the Lavaca River on the east, and Coleto Creek on the west. Eventually, De León's colonists settled in both Victoria and Calhoun counties' territory and in part in Lavaca, Jackson, and DeWitt counties as well (Kleiner 2014a; Roell 2013a,b). Mexican colonists were not the only settlers in the area. A few Anglo settlers were already living in the area, with a number of Irish immigrants arriving shortly after (Roell 2013b). The first Anglo settlement in Calhoun County was founded in 1831 by John J. Linn at the site of Linnville approximately 4.8 kilometers (3 miles) north from present day Port Lavaca. The settlement was burned down in 1840 by a raiding party of Comanche Indians (Kleiner 2014a).

Future San Patricio, Refugio, Victoria, Jackson, and Matagorda Counties, originally encompassing larger territories, became municipalities within the Mexican state of Coahuila y Texas between 1834 and 1835 (Guthrie 2014; Hardin 2014; Kleiner 2014b; Leffler 2014; Roell 2014).

Texas War for Independence and the Republic of Texas (1836-1845)

Mexican rule over Texas lasted approximately 15 years until 1836, when Texas gained its independence as a result of what became known as Texas Revolution, or the Texas War of Independence (October 1835-April 1836). San Patricio County was the only county along the coastline that experienced direct military incidents. In 1835, Fort Lipatitlan surrendered to the McMullen-McGloin colonists and in February 1836 a detachment of the Texans under command of Francis W. Johnson was massacred at San Patricio (Guthrie 2014; Hendrix 2013). In south-central Jackson County a community that became known as Texana served as a port, military post, campsite, and training grounds for the volunteers from the United States and later for the Army of the Republic of Texas. Citizens of the Jackson County mostly fled the area in the Runaway Scrape upon learning about massacres at the Alamo and Goliad and Santa Anna's advances. As the citizens fled, Mexican troops under the command of Jose de Urrea occupied parts of the county burning many Anglo-American settlements (Hardin 2014).

Confrontations between Texans and Mexicans continued for some time after the Declaration of Texas Independence of 1836 and different incidents occurred throughout the area until as late as 1842. San Patricio and Victoria Counties were raided by Mexican forces under command of the General Ráfael Vásquez as late as 1842 (Guthrie 2014; Roell 2014). Depleted of population, Refugio County withstood numerous raids by Mexican forces as well (Leffler 2014). Mexican bandits raided Aransas City within future Aransas County in 1838, 1839, and 1841 (Long 2014).

After the war, the Congress of the Republic of Texas formed 23 counties from already existing municipalities. Many of those original counties would be further divided and many counties had their boundaries changed several times. San Patricio, Refugio, Victoria, Jackson and Matagorda Counties were among the original counties of the Republic. Future Aransas County was part of the newly formed Refugio County until 1871. Future Calhoun County was part of the Victoria, Jackson, and Matagorda counties until 1846. The modern boundaries of Victoria County were defined in 1846 and the boundaries of Jackson County constantly changed through late 1840s (Guthrie 2014; Hardin 2014; Kleiner 2014a,b; Leffler 2014; Long 2014; Roell 2014).

Demographics and the economy of each county were affected differently by the war. San Patricio and Refugio were depopulated in part due to continuous raids by the Mexican forces. Interior parts of Aransas County remained largely undeveloped for a time being with the land titles issued by the Mexican government to the Power and Hewetsons' colonists being disputed and eventually void. In the early 1840s, a series of German and Polish communities were established in Calhoun County. Other settlers in Calhoun County came from the southern states such as Louisiana, Georgia, Mississippi, Tennessee, and Alabama. The De Leon colony in Victoria and Calhoun counties was the only primarily Mexican colony in Texas. De Leon colonists largely supported the revolution against de Santa Anna, but despite their support they were forced off of their lands immediately following the end of the revolution in 1836 and the area was resettled by Anglo-Americans (Guthrie 2014; Hardin 2014; Kleiner 2014a,b; Leffler 2014; Long 2014; Roell 2014).

In Jackson County the citizens returned to their lands after the Runaway Scrape to find much of their property destroyed by the Urrea's troops. Despite the following hardships, the old Alabama Settlement rebuilt itself and continued to grow during the Republic of Texas period. Texana remained as an important military post and was named the county seat in 1836. Matagorda County's population was not radically affected by the war and remained predominantly of the southern background. Matagorda became the county seat in 1836 and grew into the second largest seaport and the port of entry for immigrants between 1840 and 1865 (Guthrie 2014; Hardin 2014; Kleiner 2014a,b; Leffler 2014; Long 2014; Roell 2014).

Mexican War (1846-1848)

The Independent Republic of Texas existed until 1845 when Texas was annexed by the United States of America and became its twenty-eighth state (Nance 2013; Neu 2013). The annexation of Texas prompted a new conflict, which became known as Mexican War (1846-1848) (Bauer 2013). This time played out conflict was over the boundaries between two countries, with Texas becoming disputed territory. In 1846, General Zachary Taylor's army marched through San Patricio, Refugio, and Aransas counties advancing to the Rio Grande where it defeated the Mexicans in the Battle of Palo Alto and Resaca de la Palma (Bauer 2013). The southern counties were stabilized and the region was slowly repopulated following the end of the war (Guthrie 2014; Leffler 2014; Long 2014). During this time period, the Native American threat was mostly removed from the region further enticing settlement.

Pre-Civil War Period (1848-1861)

The Pre-Civil war period in the history of the coastal region of Texas is characterized by the growth of ranching and farming communities, with ranching being the leading industry. Each one of the coastal counties experienced the growth at different rates with the growth in the southern counties typically slower than in the northern ones.

San Patricio County experienced slow growth in crop production with corn being the primary crop predominantly grown in the southern part of the county. During this period a series of ranches were established providing the area's main source of income. Between 1850 and 1860, the county's population increased from 200 to 620, with the total of 51 farms and ranches operating in the area by 1860 (Guthrie 2014). Refugio County had a slightly higher population density during this time period. Population grew from 288 in 1850 to 1,748 in 1860 with almost 156,209 hectares (386,000 acres) of land used for farming and ranching. Cattle ranching dominated the economy and corn was the main crop. The cattle industry was operated by stock ranchers with many Mexican Americans owning small spreads of land and relying on free ranging (Leffler 2014). Aransas County continued to be scarcely populated during this time period with a few ports developing along the coastal line. The new port, St. Mary's of Aransas, on Copano Bay became the largest lumber producing center in western Texas (Long 2014).

Calhoun County had been largely dominated by ranching, which at first developed based on the Spanish model and later continued by the Anglo-American colonists. The Indianola Railroad was built in Calhoun County in the early 1850s. In 1852, Indianola became the new county seat. The county was active with trade and commerce exporting, among other things

cattle, cotton and pecans. Another railroad line, Lavaca-to-Victoria, was completed by 1861. The population grew between 1850 and 1860 from approximately 1,100 to 2,642 (Kleiner 2014a). Victoria County had the highest value of cattle stock in the region and cotton was the primary crop before the Civil War largely supported by the use of a relatively extensive slave labor. Corn was the second most important crop. The population of Victoria County increased from 2,019 to 4,170 between 1850 and 1860 with many residing in Victoria (Roell 2014).

Similarly in Jackson County, the cattle industry was the leading industry with only 1,228 hectares (3,034 acres) of land cleared for crops by 1850s. However, the population of Jackson County experienced the increase between 1850 and 1860 from 996 inhabitants to 2,612 with nearly half being black. Such a sharp increase in number of slaves signifies the growth of the plantation economy. Cultivated lands increased to 10,214 hectares (25,240 acres) by the 1860s and cotton and sugarcane were the primary crops. Cattle ranching remained the leading industry nevertheless (Hardin 2014).

Between 1850 and 1855, a number of slaves were brought to Matagorda County to work on the large plantations between the Colorado River and Caney Creek. This region became known as "Old Caney". Cotton and sugar were the typical crops produced in the plantation economy. By 1860, the population of the county was estimated at 3,454 including 2,107 slaves, by far the largest number comparing to its southern neighbors (Kleiner 2014b).

Civil War Period (1861-1865)

The American Civil War (1861-1865) brought further changes into the region. Parts of Texas, particularly the southern counties, became a smuggling route during the blockade of the South by the Union. All of the southern counties supported the Confederacy and many local citizens served in the Confederate Army.

San Patricio and Victoria Counties were positioned on the "Cotton Road" to Matamoros, Mexico, a major center for cotton smuggling (Guthrie 2014; Roell 2014). As a consequence, the federate raiding parties would periodically come ashore harassing the local population and confiscating the livestock. Further upland in San Patricio County, the bands of rustlers plagued the area while Victoria County was eventually occupied by the Union forces (Guthrie 2014; Roell 2014). The Refugio County area was periodically raided by the federal forces and the population of the county dramatically dropped as a result (Leffler 2014). Aransas County served as one of the battlegrounds during the Civil War with several engagements occurring between the Union and Confederate forces. Similarly, to its southern neighbors the area experienced destruction and economic disruptions (Long 2014).

Calhoun County supported the Confederacy just as the rest of the counties. It did, however, feat the most brunt of the war. Many of the wharves, warehouses, and road infrastructures were destroyed by federal troops who occupied the county by the end of the war (Kleiner 2014a). Finally, Matagorda County experienced extensive activities by the Confederate forces and was the only county where no Union troops entered during the war. The economy of Matagorda County was nevertheless devastated by the Union's blockade and the further emancipation of the slaves (Kleiner 2014b).

Post-Civil War – The Twentieth Century

San Patricio County experienced immediate growth in population following the end of the war, especially in the southern part. New immigrants were searching for cheap lands. Ranching continued to dominate the area and crop cultivation was on the rise with corn being the dominating crop. The 18-month drought of 1878-1879 devastated ranching communities, dropping down both cattle and ranch numbers. The largest cattle firm in Texas, Coleman-Fulton and Mathis, was dissolved and a new partnership was formed. In 1880, the Coleman-Fulton Company established its headquarters at Rincon 14 kilometers (9 miles) north from the present day Gregory. The million-acre ranch, which subsumed much of San Patricio County, eventually became known as the Taft Ranch after Charles Phelps Taft, half-brother of President William Howard Taft, who took over management in 1900. The United States Census of 1880 recorded only 36 farms and ranches in the area. The development of the area picked up after 1885 when the new railroad was constructed. By the end of the nineteenth century the land value went up, while the population still remained relatively low. The United States Census of 1900 estimated 1,312 people living in the county with 190 farms and ranches covering 41,277 hectares (102,000 acres) of land. Further development in the county continued through the early-twentieth century when the land agents began to advertise the county lands to prospective farmers. Cotton production largely replaced corn crops and many ranches were converted to croplands (Guthrie 2014a).

Following the war, Refugio County experienced dramatic drops both in population and the cattle numbers and the cotton farming almost ceased to exist by the 1870s. Land-holding patterns changed from small cattle ranging to larger land ownerships. Thomas O'Connor, the youngest veteran of the Battle of San Jacinto and perhaps the largest individual landowner in Texas at the time, also called Refugio County home. His landholdings eventually comprised more than 202,343 hectares (500,000 acres) that spanned multiple counties (O'Connor 2013). The Bonnie View Ranch was another large landholding that at one time stretched from Copano Bay to Woodsboro, Texas. Bonnie View was created by another veteran of the Battle of San Jacinto, Major John H. Wood. The ranch reached 8,093 hectares (20,000 acres) under Wood's son Tobias before it was sold to Johnson and Pugh for a subdivision in 1906 (Huson 1955). At the same time, Mexican Americans experienced racial hostilities by Anglo residents. By the early-twentieth century, area demographics completely changed. The area opened for further development with the new railroad built in 1905. Ranches were turned into farmlands similar to those in San Patricio County. Cotton became the dominating crop (Leffler 2014).

Aransas County area recovered relatively fast after the Civil War. While some of the old ports were destroyed, new ones were founded including Fulton and Rockport. The cattle industry dominated the area and new ports were used as shipping and processing points. Aransas County was formed in 1871 with Rockport becoming the county seat. San Antonio and Aransas Pass Railroad reached the area in 1888, but the population remained relatively low. In 1880, population was recorded at 996 and the number of farms grew from six to 47 between 1890 and 1900 (Long 2014).

Calhoun County recovered relatively fast after the Civil War as well. Population increased from 2,642 to 3,443 between 1860 and 1870, but dropped down dramatically to 1,739 by 1880. The population decline was caused by a series of disasters including an 1867 fire in

Indianola followed by a yellow fever epidemic. In 1875, a Gulf storm was followed by a tidal wave nine years later in 1886 which completely destroyed the community of Indianola. Since the majority of the county's' population lived in either Lavaca or Indianola, the devastation in Indianola had a direct impact on the population numbers. While the population number was declining, the value of the land in Calhoun County was on the rise between 1870 and the early-twentieth century. Within that time frame one of the larger landowners in the county, John James Welder, took over his family's estate. Welder held ranch lands in multiple counties but including Calhoun County and possessed one of the largest herds in South Texas (Welder 2014). By the beginning of the twentieth century, mortgage loans were offered at a low interest rate attracting small farmers. Newly arrived immigrants included Swedes, Germans, Czechs, Irish, and Scotts. Cattle ranching remained the leading industry until the Great Depression when tenant farming took over (Kleiner 2014a).

Compared to its southern neighbors, Victoria and Jackson Counties were affected differently by the War due to property value tied to the number of slaves held. Slavery was the main force behind the cotton and sugar production in the region and after the War its decline was inevitable. Victoria County was a leader in the cattle industry before and after the Civil War. When the economy transformed from the cotton production to cattle industry and manufacturing the cattle industry thrived. By the 1930s, Victoria County held the most cattle than any other county in Texas. Similarly, in Jackson County the cattle production grew rapidly turning the county into the leading producer of beef by 1880. Cattle ranching declined in Jackson County towards 1920 due to overgrazing and falling prices. Cotton and corn production picked up in Victoria in Jackson Counties by 1900 and by the 1930s cotton dominated the crops. A railroad went through Victoria County by 1873 connecting it with the coast, and another line built by 1882 stretched towards Rosenberg. The later was built primarily by Italian immigrants, many of whom remained in Victoria County. In Jackson County, the New York, Texas and Mexican Railway was constructed by the early 1880s turning the county into an important point for cattle shipping (Hardin 2014; Roell 2014). Just like in Calhoun County, German influence remained strong in Victoria County, but the number of immigrants from Mexico was gradually increasing (Roell 2014). In Jackson County, population growth was fueled by farmers moving in from the Old South and introducing large-scale farming into the area (Hardin 2014).

Similarly to Victoria and Jackson Counties, the economy of Matagorda County suffered as a result of the emancipation of the slaves. Add to that the financial difficulties of the local government; the economy was slow to recover. Cotton and sugar production immediately fell after the war, while cattle ranching temporarily took over. In 1870, a total of 93,000 cattle were reported in the county, with the number declining to 27,000 by 1890. Cotton production began to recover slowly after 1870 and the agricultural economy accelerated in 1890s. A fourth of the farms were operated by tenants by the end of the nineteenth century. An additional influx of immigrants increased the land value, but impaired the ranching. By 1900, the population increased to 6,097. Following the attack on the cotton fields by the boll weevil beetle in the early 1900s, agricultural production shifted to rice. The construction of railroad lines in Matagorda County started in early the 1900s and by 1913 many new communities grew along the lines. Water and road transportation developments helped to further improve the economy of the area (Kleiner 2014b).

The economy of the region was further diversified with the discovery of oil and gas between 1901 and 1936. In Matagorda County, gas was discovered at Big Hill in 1901. In Refugio County, gas explorations began around 1910. Similarly, in San Patricio County, oil and gas discoveries were made during the 1910s and 1920s. In Victoria County, the first commercial oil and gas wells were struck in 1930 at McFaddin. In Jackson County, oil was discovered in 1934. In Calhoun County, natural gas was discovered near Port Lavaca in 1934 and oil in 1935. In Aransas County, oil was discovered in 1936 (Guthrie 2014; Hardin 2014; Kleiner 2014a,b; Leffler 2014; Long 2014; Roell 2014).

4.0 METHODOLOGY

4.1 Site File and Literature Review

The site file research and literature review was performed in order to identify all previously recorded archaeological sites and previous investigations within a 1.6-kilometer (1-mile) radius of the Project APE (Figure 1; Appendix A). This work was conducted by reviewing online data available on the THC Online Archeological Sites Atlas, an online resource maintained by the THC, as well as an online database of the National Register of Historic Places (NRHP) (NRHP 2013; THC 2013). This work was used to provide a historic context to the archaeological survey.

Literature review was conducted in order to provide an understanding of the development and history of the Project APE and the surrounding area in general. This research then was used to prepare an overview history of the region and provide an understanding of the contextual framework of the prehistory and history of the counties crossed by the Project APE. A large number and variety of historic maps were consulted as part of this historical research. These included maps from the collection of David Rumsey (2003), historic maps maintained by TxGLO (2012), historic topographic maps provided by Perry-Castañeda Map Collection (2013) maintained by The University of Texas at Austin, historic county maps available through The Portal to Texas History (2013a-e, 2014a-f), and published historic United States Maps (Burr 1839; United States General Land Office [US GLO] 1867). Historic aerial imagery from Google Earth was also consulted (Google, Inc. 2014a-f).

Local repositories including libraries, museums, and offices of the County Clerk were researched for deeds, titles, and local histories. Specifically, historical records and archives at San Patricio County Clerk's Office, San Patricio Public Library, Calhoun County Clerk's Office, Calhoun County Public Library, Refugio County Courthouse, Refugio County Public Library, and Refugio County Museum were investigated. Census and tax records were also reviewed in an effort to gain insight on specific properties. Additionally, local landowners were contacted in an effort to gain insight on local history and the history of specific parcels.

4.2 Field Methods

The archaeological investigations associated with the current undertaking were designed to identify and record the existence of cultural resources, including prehistoric and historic archaeological sites and aboveground historic-age resources, within the Project APE. Because the pipeline will be below ground, the APE for direct and indirect effects is defined as the survey corridor and associated footprint of ancillary areas required for the Project.

4.2.1 Pedestrian Reconnaissance Survey

Consultation with the THC on February 13, 2013, confirmed the methodology of intensive pedestrian reconnaissance survey coverage with limited shovel testing within the study area. Survey of the Project area consisted of 100 percent pedestrian reconnaissance, photo-

documentation, and judgmental shovel testing. A handheld Global Positioning System (GPS) receiver capable of sub-meter accuracy data recording was used to assist in survey. Property tracts, or parcels, were used to facilitate record keeping and to measure survey progress. Subsurface testing was predominantly focused around major waterways and areas of previously recorded sites within or immediately adjacent to the Project APE. Subsurface testing, photos, and field notes were all referenced to the associated tract numbers.

Pedestrian walkover survey were conducted along two to four transects placed along the length of the survey corridor. Because the bulk of the APE consisted of 100 percent surface visibility, shovel tests were performed on a judgmental basis and typically focused on natural waterways, areas associated with previously recorded sites, landforms, mounds, or other areas of topography considered containing a high probability for buried cultural resources. Shovel tests were not excavated in areas containing planted crops, existing roads, roadside ditches, standing water, areas directly above underground utilities installations, or where previous ground disturbance was evident. Instead, disturbed areas were photodocumented. Shovel testing consisted of 30- by 30-centimeter (11- by 11-inch) diameter holes. Tests were typically excavated to a maximum depth of 100 centimeters (39 inches) into the underlying substratum except when placed within the existing pipeline corridor to verify disturbance. Safety regulations require that tests excavated within existing pipeline corridors do not exceed 40 centimeters (16 inches) in depth. Vertical control was maintained by excavating each shovel test in 10-centimeter (4-inch) levels. One wall of each shovel test was profiled and the walls and floor of each shovel test were inspected for color or texture change potentially associated with the presence of cultural features. Soils were screened through quarter-inch wire mesh and descriptions of soil texture and color followed standard terminology and the Munsell Color (2005) charts. Additional information concerning soils observed within the Project APE was recorded on standardized shovel test forms for each excavation. Historic-age structures and objects within or immediately adjacent to the Project APE, if encountered, were photographed and plotted on project maps.

4.2.2 Site Definition

Newly identified cultural resources were broken into three categories based on the number and type of the recorded cultural material, as well as the general area, content, and cultural and environmental settings surrounding finds: isolates, sites, and loci isolates. Isolates consisted of isolated surface finds comprised of either one prehistoric artifact or one or two historic artifacts. In contrast, sites were categorized as resources with more than one prehistoric find or more than 10 historic finds at one location. Loci isolates were typically found in disturbed areas. The Project crosses properties that have been in use as ranch land or agriculture since at least the mid-nineteenth century. The majority of the Project corridor has experienced some disturbance due to plowing, previous pipelines, wind erosion, and flooding from hurricanes and tropical storms. Taking these disturbances into account and in an effort to refrain from muddying the site record in the affected counties, some clusters of historic artifacts were recorded as Loci isolates rather than sites. Loci isolates were defined as clusters of historical artifacts consisting of at least three to 10 finds, generally found at the surface level and lacking subsurface deposits within agricultural plowed fields and away from any standing structures or structures identified on historical imagery. These items were classified as loci isolates due to the isolated nature of those finds, lack of a historical context, and likely artifact displacement

caused by nearly continuous agricultural activities. Additionally, loci isolates frequently contained fragments of a limited number of material classes (such as only glass), and many of the same color, thickness, and markings suggesting a limited number (one to three) of items were represented and thus were treated as isolates and no state-issued trinomials were requested. Since the Project APE is only 60 meters (197 feet) wide and co-located with existing pipelines, newly recorded low-density loci isolates may indicate the presence of larger sites in the general area. In most cases larger, more complex clusters of historic artifacts were identified in the vicinity of loci isolates. These larger and/or more complex historic artifact clusters (containing more than 10 artifacts) were recorded as sites.

For each identified cultural resource, photographs were taken of the general vicinity and of any visible features. An attempt was made to record environmental settings as accurately as possible, since the newly recorded sites were not delineated outside of the survey corridor. A sketch map was prepared showing site limits, feature locations, permanent landmarks, topographic and vegetational variation, and sources of disturbance. Sufficient information was included on each map to permit relocation of the site. In addition, a GPS point was taken to aid in later site relocation efforts. A description of the materials observed was recorded and, if present, potential diagnostic materials were collected. Given that the Project APE is nearly entirely composed of actively plowed agricultural fields with 100 percent surface visibility, it was not uncommon to find isolated or small amounts of cultural materials. Many surface scatters of isolated or sparse amounts of historic artifacts such as bottle glass or historic ceramic fragments were recorded as isolates or surface scatters until shovel testing or further investigations could confirm the nature and substance of materials. Identified sites were delineated to state standards within the Project APE, unless documentary evidence was available to determine the nature and time frame of deposits.

4.3 Laboratory and Curation

Generally, non-diagnostic artifacts were not collected during the intensive pedestrian survey of the Project; instead, attributes describing these materials and their archaeological context were recorded in the field. On occasion, questionable non-diagnostics and samples of cultural material were collected. All diagnostic artifacts were collected. Initial processing of recovered artifacts included washing and sorting according to raw material category and provenience. Provenience was maintained throughout the process by the use of a computerized field specimen log, which in turn generated an inventory of materials recovered.

The initial steps in artifact analysis involved cataloging each assemblage. Data recorded on each artifact include form, material, functional classification, manufacturing technology, and attributes that are chronologically diagnostic. Material classifications are subdivided to afford greater flexibility and detail of inclusive data. The attributes category in the inventory provides additional information on individual size, condition, or completeness of each artifact.

In general, analyses of prehistoric cultural materials was conducted with the following objectives: (1) identification of artifacts recognized as diagnostic of specific cultures or time periods (Justice 1987; Turner and Hester 1993); (2) identification of reduction sequences represented by the lithic debitage (Bradley and Sampson 1986; Callahan 1979; Newcomer

1971; and Newcomer and Karlin 1987); (3) identification of utilized and/or retouched debitage (Bordes 1961; Frison 1974; Tixier et al. 1980); (4) identification of raw materials represented among the tools and debitage (Luedtke 1992:63-77); and (5) identification of recovered ceramic types (Aten and Bollich 1969; Ricklis 2004; Story 1990). Faunal materials recovered during the Project were generally fragmentary, and less than 1 centimeter (0.4 inches) in length; however, an effort was made to determine if the material had been heated or burned.

Identified historic cultural materials were categorized according to material type. The artifacts have been subjected to agricultural activities for decades and thus were highly fragmentary making further categorization difficult. When possible, items such as nails (Tremont Nail Company 2012; Wellikoff 1984; Wells 1998); and other hardware (Wellikoff 1984) were identified beyond the general classification of metal fragment. When possible, glass artifacts were categorized by color, shape or morphology, finish, and markings if present (Bureau of Land Management 2013; University of Utah, Department of Anthropology 1992; Society for Historical Archaeology 2013a,b). For most late-nineteenth century white earthenware ceramic artifacts identified during the Project, an attempt was made to identify them as "whiteware," "pearlware," and "ironstone"; however, due to the difficulty in separating these items under the best of circumstances and the fragmentary nature of the artifacts, ware type identification was not accomplished for all sherds. Thus, many of the historic white earthenware ceramic sherds were simply recorded under the generic type "whiteware." Miller (1980, 1991) has noted that classification by ware type is complicated by variations in nomenclature, fluctuations in consumer taste, and the changes within the English ceramic industry that took place after the mid- to late-eighteenth century. Thus, historic ceramics were primarily classified by paste, decoration, and, when possible, maker's mark and vessel form (Coyish 1971; Hume 1972; Kovel 1953; Miller 1980, 1991).

All collected cultural materials have been temporarily housed at the HRA Gray & Pape office in Houston, Texas. Because the Project entails private property, the artifacts will be returned to the associated landowner(s) upon completion of fieldwork and the submission of the final report.

5.0 RESULTS OF INVESTIGATIONS

The primary purposes of this investigation were to: 1) determine if any previously identified cultural resources or eligible or listed NRHP properties were located within a 1.6-kilometer (1-mile) radius of the Project area; 2) determine if any previous cultural resource investigations had been conducted in or near the Project APE; 3) determine whether or not any previously unidentified and intact cultural resources were present within the Project area by conducting an intensive pedestrian survey; and 4) provide management recommendations based on the research and survey activities.

5.1 Results of Site File Research

5.1.1 Previously Recorded Sites

A review of the THC Online Archeological Sites Atlas, an online resource maintained by the THC, identified one previously recorded site located within the current Project APE: 41SP256 (THC 2013). A total of 29 previously recorded archaeological sites are located within the 1.6-kilometer (1-mile) study radius of the Project APE (Table 2). Maps showing previously recorded site locations within and near the Project APE are provided in Appendix A.

Table 2. Previously Recorded Cultural Resources within a 1.6-Kilometer (1-Mile) Radius of the Project Area.

Trinomial	Resource Type	Cultural Affiliation	Size	Deposit Depth	Recorded Contents	Figure
41SP191	Prehistoric Scatter	Unknown Prehistoric	10x15 meters	Surface	Shell fragments and lithic debitage	A2
41SP192	Prehistoric Scatter	Unknown Prehistoric	20x20 meters	Surface	Shell fragments and lithic debitage	A2
41SP256	Shell Midden	Unknown Prehistoric, Possibly Archaic	30x50 meters	40-50 centimeters below surface	Stone tools, lithic debitage, faunal bone fragments, various shell, and burned rock	A2/ B1
41SP54	Shell Midden	Unknown Prehistoric	Unknown	Unknown	Lithic debitage, fire hardened clay, and shell	A2
41SP112	Prehistoric/ Historic	Archaic/ Unknown Historic	Unknown	Unknown	Stone tools, lithic debitage, faunal, musket ball, and glass	A5
41RF129	Open Campsite	Unknown Prehistoric	10x40 meters	Surface	Shell	A8
41RF126	Open Campsite	Unknown Prehistoric	15x50 meters	Surface	Lithic debitage, marine shell	A8

Trinomial	Resource Type	Cultural Affiliation	Size	Deposit Depth	Recorded Contents	Figure
41RF127	Campsite	Unknown Prehistoric	5x5 meters	Surface	Lithic debitage, marine shell	A9
41RF137	Open Campsite	Unknown Prehistoric	15x30 meters	Surface	Lithic biface fragment, marine shell, burnt clay	A8
41RF51	Shell Midden	Unknown Prehistoric	5x30 meters	Surface	Shell, faunal bone	A9/ B11
41RF52	Shell Midden/ Open Campsite	Unknown Prehistoric	10x10 meters	Surface	Shell, burnt clay	A9/ B11
41RF53	Open Campsite/ Shell Midden	Unknown Prehistoric	5x5 meters	Surface	Lithic debitage, marine shell	A9/ B11
41RF54	Shell Midden/ Hearth	Late Prehistoric / Neo-American	10x10 meters	Surface	Pottery, lithic debitage, faunal, marine shell	A9/ B11
41RF55	Shell Midden	Unknown Prehistoric	15x15 meters	Surface	Lithic debitage, faunal, marine shell	A9
41RF56	Shell Midden	Unknown Prehistoric	10x10 meters	0-30 centimeters below surface	Lithic debitage, marine shell, burnt clay	A9
41CL63	Shell Midden	Prehistoric Archaic/ Historic	20x152 meters	85 centimeters below surface	Historic metal, chipping debris and shell	A20
41CL74	Shell Midden, Campsite, Short-Term Occupation	Unknown Prehistoric	200 meters (diameter)	< 40-80 centimeters below surface	Shell, lithic flakes, animal bones	A20
41VT37	Prehistoric Scatter	Unknown Prehistoric	15x25 meters	Unknown	Lithic debitage, shell	A27
41JK129	Shell Midden	Possible Archaic	Triangle with approx. 183 meters on each side	Unknown	Lithic debitage, stone tools	A29
41JK137	Shell Midden Lens	Unknown Prehistoric	Approx. 15 meters long	30-43 centimeters below surface	Lithic debitage, Shell	A29
41JK138	Campsite	Unknown Prehistoric	Approx. 90x140 meters	Unknown	Lithic debitage, pottery, shell	A29
41JK139	Campsite	Unknown Prehistoric	Approx. 20x35 meters	Unknown	Lithic debitage, marine shell	A29
41JK111	Prehistoric Shell and Flint Concentration	Unknown Prehistoric	Approx. 30x30 meters	Unknown	Lithic, faunal, shell, pottery	A30

Trinomial	Resource Type	Cultural Affiliation	Size	Deposit Depth	Recorded Contents	Figure
41JK110	Open Campsite	Unknown Prehistoric	30x 45.7 meters	Unknown/ Thin	Rangia and oyster shell	A30
41JK112	Campsite	Unknown Prehistoric	Approx. 60x60 meters	Thin	Lithic, ceramics, charcoal, shell, baked clay	A30
41MG51	Unknown	Prehistoric Archaic (?)	Unknown	Unknown	Lithic debitage, chert	A40
41MG131	Historic Scatter	Early- to Mid-Twentieth Century	45x65 meters	0-30 centimeters below surface	Ceramics, glass, metal fragment, pottery	A41
41MG132	Historic Scatter	Early- to Mid-Twentieth Century	30x60 meters	Surface	Bottles, tin cans, metal hook, milled board, wood, concrete	A41
41MG133	Historic Earthworks	Possibly Twentieth Century	25x125 meters	Surface	Two parallel berms	A41

Most of the recorded sites consist of temporally non-diagnostic lithic scatters, thin subsurface deposits and shell middens, or suggest the presence of multiple cultural components within a mixed context. Historic sites near the Project area typically consist of farms or homesteads dating to the late-nineteenth or early-twentieth centuries. Prehistoric sites in the area generally consist of shell middens located near existing or former water sources. These sites are generally considered seasonally occupied campsites and contain occupational refuse consisting of marine shell, lithic debris and tools, burned clay and animal bone, bone and shell tools, and pottery (Mercado-Allinger et al. 1996; Ricklis 1996, 1999).

Site file research revealed mapped locations of six previously recorded sites (41RF51, 41RF52, 41RF53, 41RF54, 41SP256, and 41JK111) within or adjacent to at least one version of the surveyed Project APE. Due to project realignment and avoidance measures, Sites 41RF51, 41RF52, 41RF53, 41RF54, and 41JK111 are no longer located within the current Project APE and will not be impacted by construction. The site information for each of these is summarized below. Results of investigations at each site are provided in Section 5.2.5 of this report.

Site 41RF51

Site 41RF51 was originally recorded as a prehistoric midden consisting of a surface scatter of shell and mammal bone with shell deposits continuing to 30 centimeters (12 inches) below ground surface (Warren 2009a) (Appendix A: Figure A9; Appendix B: Figure B11). Observed shell included oyster and whelk. The site is located on a raised landform on the edge of the Mission River floodplain. The Mission River itself is located approximately 800 meters (0.5 miles) to the southwest and a tributary creek, Melon Creek, is located 90 meters (300 feet) to the southwest. A small manmade pond is located 90 meters (300 feet) to the northwest. According to historic aerials and topographic maps, the pond was created in the 1970s

(Nationwide Environmental Title Research, LLC [NETR] 2014a,b). The site boundary was reported as measuring 30 by 5 meters (98 by 16 feet) northwest to southeast. The site was recorded as being disturbed by bioturbation, erosion, and bulldozing activities. At the time of the original survey, however, the midden itself was intact and therefore the site was recommended as potentially eligible for the SAL designation. NRHP eligibility status for Site 41RF51 was not determined (Warren 2009a). This site is no longer located within the current Project APE and will not be impacted by construction.

Site 41RF52

Site 41RF52 is located on the southern edge of the same dry pond associated with Site 41RF51 (Appendix A: Figure A9; Appendix B: Figure B11). The originally recorded dimensions for the site were 10 meters (33 feet) north to south by 10 meters (33 feet) east to west. It was originally recorded in 2009 as a shell midden and/or possible open campsite of unknown prehistoric origin (Warren 2009b). In the 2009 investigation, six shovel tests were excavated inside the site boundaries which produced numerous oyster and whelk shell fragments, as well as a few fire hardened/burnt clay fragments. The site was recorded as being zero percent intact, with obvious and extensive disturbances from agricultural activities, bioturbation, and erosion (Warren 2009b). This site is no longer located within the current Project APE and will not be impacted by construction.

Site 41RF53

Site 41RF53 is located 400 meters (0.25 miles) north-northeast of Melon Creek on the edge of a cultivated field beside a gulley that drains into the creek (Appendix A: Figure A9; Appendix B: Figure B11). The site was recorded as a shell scattering that is about 5 meters (16 feet) in diameter with only a single piece of debitage originally recorded (Warren 2009c). Bioturbation, erosion, and plowing are the main causes for disturbances to the site. In addition, a majority of this site has been disturbed by continuous agricultural practices. The site was recommended as not eligible for the NRHP (Warren 2009c). This site is no longer located within the current Project APE and will not be impacted by construction.

Site 41RF54

Prehistoric Site 41RF54 is located on top of a bluff above Melon Creek in a plowed field (Appendix A: Figure A9; Appendix B: Figure B11). The site was originally recorded as a shell midden consisting of surface scatter and subsurface deposition of cultural materials including various types of shell, lithic debitage, stone tool fragments, pottery, faunal remains, and intact subsurface features (Warren 2009d). The site boundary was recorded approximately 10 meters (33 feet) north to south by 10 meters (33 feet) east to west with the depth of the deposits ranging between 0 to 65 centimeters (26 inches) below the ground surface as determined by shovel testing. The surface of the site was recorded as disturbed by natural processes (bioturbation) and unnatural processes (farming). The site is anticipated to be disturbed through the continuation of farming; however, most of the site (roughly 70 percent) is believed to be intact below the surface.

Cultural materials observed on the surface included various species of shell (oyster, whelk, rangia), faunal remains, lithics (biface dart distal tips, utilized flake, chert and quartzite debitage), and a sandy paste pottery. Shovel testing revealed artifactual deposition in addition to intact buried features consisting of a shell midden above a clay hearth. The shell midden was recorded extending from the surface to 50 centimeters (20 inches) below the ground surface and consisting of various species of shell (oyster, whelk, and scallop), pottery, lithic debitage, and burnt and unburnt faunal remains (mammal and fish otoliths).

The hearth was recorded below the shell midden extending to 65 centimeters (26 inches) below the ground surface. Materials recorded in the hearth consisted of burnt clay, charcoal, ashes, shell (mostly oyster), lithic debitage, and faunal remains. The majority of Site 41RF54 appeared to be located below the surface where intact features were present. Therefore, the site was reported as having potential to be eligible for the NRHP. Due to the high research value of intact features, further excavation was recommended (Warren 2009d). This site will be avoided by HDD and, thus, will not be impacted by construction.

Site 41SP256

Site 41SP256 is located along a former estuarine channel that now consists of a thoroughly plowed field (Appendix A: Figure A2; Appendix B: Figure B1). This site was originally identified by HRA Gray & Pape in 2011 (Scott et al. 2013). As it was originally recorded, 14 to 15 meters (46 to 49 feet) of the northwestern portion of the site appears within the current Project APE. This prehistoric site consists of a surface scatter of fragments of shell representing multiple species including oyster, conch, and whelk. Also observed were burned rock and clay nodules, a variety of medium-size and small burned faunal bones, lithic debitage including heat-treated micro-debitage, and tools. A small, possible adze was recorded and collected along with a worked flake. When it was recorded, the site boundary measured approximately 30 meters (98 feet) north to south and 50 meters (164 feet) east to west within an empty field that appeared to have been tilled prior to the original survey. Based on the results of shovel testing, the entirety of Site 41SP256 appeared to be located on the surface and confined to the plowed zone within an existing pipeline corridor, indicating that no portion of the site remained intact. The site was recommended as not eligible for the NRHP and no further work was recommended for this site (Scott et al. 2013).

Site 41JK111

Site 41JK111 was originally recorded as a shell and flint concentration. It is located on a terrace slope roughly 275 meters (900 feet) east of the Lavaca River, separated from the river by marsh (Appendix A: Figure A30). Site 41JK111 was originally described as a shell (primarily oyster) and flint surface concentration roughly 30 meters (100 feet) in diameter found on a mud beach washed out of a low slope line bordering the eastern edge of the river marsh (Fritz and Comstock 1972). When it was recorded, 36 flakes, 2 pottery sherds, and 3 bone fragments were collected. Both oyster and rangia shells were observed. It was noted when it was recorded that the artifacts seemed to derive mostly from erosional wash and were not in situ. The potential eligibility of this site for the NRHP is unknown (Fritz and Comstock 1972).

5.1.2 Previously Recorded Surveys

A total of 18 previously conducted surveys, nine area and nine linear, were recorded within the 1.6-kilometer (1-mile) study area in the vicinity of the Project APE (Table 3). For the most part, surveys depicted on the THC Texas Archeological Sites Atlas contained very sparse or no information regarding the projects themselves (THC 2013). The earliest survey recorded within the study area dates back to 1927 and the most recent recorded survey was done in 1997. Site forms for the previously recorded sites within the study area indicate that other surveys might have been conducted in the study area; however, those surveys were not depicted on the THC Texas Archeological Sites Atlas at the time of the site file review and therefore are not discussed in this report.

Of particular importance to the current Project is a survey conducted by HRA Gray & Pape in San Patricio County in 2011. That survey overlaps approximately 2.7 kilometers (1.7 miles) of the current Project's southern portion, beginning near the existing Ingleside Facility (Appendix A: Figure A2). The survey resulted in the identification of three sites and a single surface scatter. One site identified during the 2011 survey, Site 41SP256 (discussed above), is within the current Project APE (Scott et al. 2013).

Table 3. Previously Recorded Area and Linear Surveys within 1.6-Kilometer (1-Mile) Study Area

Survey Type	Investigating Firm/ Agency	Field Work Date	TAC Permit Number	Report Author	Sponsoring Agency	Report at THC	Figure
Area	Navy Hmport	04/1987	N/A	Unknown	Unknown	Unknown	A2
Area	HRA Gray & Pape	2011	N/A	Scott et al. 2013	EPA	2013	A2-A3
Area	HRA Gray & Pape	2004	3556	Hughey and Pritchard 2012	N/A	2012	A2-A3
Linear	Archeological & Environmental Consultants	12/1997	1924	Unknown	San Patricio Municipal Waste Dist. (SPMWD)	3/1/1998	A2
Area	Unknown	08/1927	Unknown	Martin and Potter 1930	Witte Museum, San Antonio	4/10/1996	A5-A6
Linear	USACE	10/1990	Unknown	Unknown	Unknown	Unknown	A20
Area	EPA	03/1978	Unknown	Unknown	Unknown	Unknown	A20-A22
Linear	Texas Department of Transportation (TxDOT)	03/1996	Unknown	Unknown	Unknown	Unknown	A24

Survey Type	Investigating Firm/ Agency	Field Work Date	TAC Permit Number	Report Author	Sponsoring Agency	Report at THC	Figure
Linear	USACE	07/1985	Unknown	Unknown	Unknown	Unknown	A25
Linear	USACE	06/1975	Unknown	Unknown	Unknown	Unknown	A26-A27
Area	Coastal Environment Inc.	01/1992	1027	Pearson et al. 1993	USACE, Galveston District	Unknown	A29
Area	USACE	06/1975	Unknown	Unknown	Unknown	Unknown	A30
Area	Goodwin	1/2004	Unknown	Athens et al. 2004	Federal Energy Regulatory Commission (FERC)	10/19/2004	A30
Linear	Bureau of Reclamation (BR)	1990	Unknown	Unknown	Unknown	Unknown	A30
Area	USACE	02/1982	Unknown	Unknown	Unknown	Unknown	A34
Linear	USACE	06/1975	Unknown	Unknown	Unknown	Unknown	A34
Linear	Department of Energy (DOE)	03/1975	Unknown	Unknown	Unknown	Unknown	A39-A40
Linear	Lower Colorado River Authority (LCRA)	11/1997	Unknown	Unknown	Unknown	Unknown	A41

5.2 Results of Field Investigations

Fieldwork was completed in six mobilizations over two years and required 1,822 person hours to complete. The first mobilization was carried out from March 6 to March 26, 2013, the second mobilization was carried from May 15 to May 29, 2013, and the third mobilization took place from June 17 to June 21, 2013. The fourth mobilization took place from June 3 through June 13, the fifth from July 9 through July 11, and the sixth from August 27, 2014. The southern end of the Project APE was previously surveyed by HRA Gray & Pape in 2011 as part of the San Patricio Pipeline Project (Scott et al. 2013) and therefore was not resurveyed in 2013. Maps showing survey results are supplied in Appendix A.

The total area surveyed for the Project amounts to approximately 260.8 kilometers (162.1 miles), or 1,560.2 hectares (3,855.4 acres) of survey coverage, including the current Project APE, as well as surveyed areas that are no longer in consideration due to Project alignments. An attempt was made to survey 100 percent of the Project APE; however, it became clear during fieldwork that pedestrian survey was not possible for approximately 6 kilometers (3.7

miles) of Project centerline or 36 hectares (89 acres) of workspace consisting of inundated marsh (Appendix A: Figures A19, A20, A27, A28, and A29). The remainder of the Project APE was surveyed using a combination of pedestrian reconnaissance, photodocumentation, and judgmental shovel testing. Subsurface testing was predominantly focused around major waterways and areas of previously recorded sites within or immediately adjacent to the Project APE. Pedestrian walkover survey was conducted along one to three transects placed along the length of the rerouted survey corridor, revised workspaces, and access roads. Shovel tests were not excavated in areas containing existing roads or roadside ditches, inundated areas, areas with planted crops, areas directly above underground utilities installations, or where previous ground disturbance was evident.

A total of approximately 525 shovel tests were excavated during the 2013 and 2014 survey efforts. The shovel tests were excavated to depths between 20 and 100 centimeters (8 to 39 inches) below ground surface. Most of the shovel tests were negative for buried cultural material, with the exception of roughly 38 shovel tests, all of which were excavated in association with previously recorded and newly identified cultural resources.

Due to high levels of disturbance, shovel test stratigraphy varied considerably across the survey area. Soils most commonly (though not exclusively) consisted of dark compact clays. Five stratigraphy types occurred most often in shovel tests excavated across the entire Project APE (See Appendix D for examples of soil profiles spanning the Project's length). The first type consisted of very dark gray (10YR3/1), very compact clay beginning at the ground surface and continuing until the termination of the shovel test, which was typically 30 centimeters (12 inches) below ground surface (Munsell Color 2005). Another type consisted of very dark gray (10YR3/1) compact clay loam from 0 to 30 centimeters (12 inches) below ground surface followed by black (10YR2/1) compact clay extending from 30 centimeters (12 inches) to the termination of the shovel test, which was typically around 50 centimeters (20 inches) below ground surface. Also common were shovel tests containing very dark grayish brown (10YR3/2) clay (sometimes with light carbonate inclusions) from 0 to 20 centimeters (8 inches) below ground surface and black (10YR2/1) compact clay from 20 centimeters (8 inches) below ground surface to the termination of the shovel test, which generally was 30 centimeters (12 inches) below ground surface. A fourth common soil stratigraphy type consisted of dark gray (10YR4/1) compact silty clay from 0 to 20 or 30 centimeters (8 or 12 inches) below ground surface and black (10YR2/1) or very dark gray compact clay (10YR3/1) (occasionally with light carbonate inclusions) from 20 or 30 centimeters (8 or 12 inches) to the termination of the shovel test, which was generally between 40 and 50 centimeters (16 and 20 inches) below ground surface. Lastly, and slightly less common, were shovel tests with dark yellowish brown (10YR3/4) compact silty clay loam from 0 to 20 centimeters (8 inches) below ground surface followed by very dark grayish brown (10YR3/2) compact clay with light iron staining from 20 centimeters (8 inches) to the termination of the shovel test around 40 centimeters (16 inches) below ground surface.

Years of agricultural use within the properties containing the Project's survey corridor have likely disturbed the upper several centimeters of soil below the ground surface. Typical disturbances observed include plowed soils, planted crops, utility lines and previous pipeline construction, graveled gas well pads and wind turbine construction, utility access roads,

county road and bridge construction, long-term use as pastureland for livestock, and creek and drainage channelization. Agricultural activities within the county have been dominant since late-twentieth century (Guthrie 2014c; Hardin 2014; Kleiner 2014a,b; Leffler 2014; Long 2014; Roell 2014). Available historic topographic maps and aerial imagery have verified that portions of the survey corridor have been farmed for nearly 100 years. Despite the disturbances, field survey resulted in the identification of a total of 19 new archaeological sites, one historic structure, five historic loci isolates, six isolated finds. Due to Project realignments, only 12 newly recorded archaeological resources are located within the Project APE (Table 4). A total of six previously recorded archaeological sites were also revisited during survey, only one of which is located within the current Project APE. All results are discussed in detail in the following subsections of Chapter 5.2.

Table 4. Newly Identified Cultural Resources

Resource Number/ Name	Type	Materials Observed and/or Collected	Cultural Affiliation	Size	Deposit Depth	Location Relative to Project APE	Figure
41SP264	Site	Glass, ceramic	Historic	15x25 meters	Surface scatter	Outside Project APE	A3/B2
SP-009-L-1	Locus	Two flat window glass fragments, two amethyst bottle necks, one clear glass fragment	Historic	10x15 meters	Surface scatter	Outside Project APE	A3
SP-011-I-1	Isolate	Bottle base (no maker's mark)	Historic	Not Applicable (N/A)	Surface find	Outside Project APE	A3
SP-012-I-1	Isolate	Historic ceramic	Historic	N/A	Surface find	Outside Project APE	A3
SP-014-I-1	Isolate	Bottle neck fragment	Historic	N/A	Surface find	Outside Project APE	A3/A4
SP-015-L-1	Locus	Six colorless glass fragments and two brown glass fragments	Historic	6 meters (diameter)	Surface find	Outside Project APE	A4
41SP265	Site	Metal, glass, ceramic	Historic	20x26 meters	Surface scatter	Within Project APE	A4/B3

Resource Number/ Name	Type	Materials Observed and/or Collected	Cultural Affiliation	Size	Deposit Depth	Location Relative to Project APE	Figure
SP-016-L-1	Locus	Two ironware, two glass fragments	Historic	10x10 meters	Surface scatter	Outside Project APE	A4
SP-017-S-1	Historic Structure	Structure (possibly early-twentieth century)	Historic	45x50 meters	Standing structure	Outside Project APE	A4/B4
Field Site SP-019	Site	Shell road	Historic	30x21 meters	Surface	Within Project APE	A4/B5
41SP266	Site	Three glass fragments, two whiteware	Historic	15x15 meters	Surface scatter	Outside Project APE	A5/B6
41SP267	Site	Glass, ceramic, brick, nails, ironstone	Historic	60x160 meters	Surface Scatter	Outside Project APE	A5/B6
SP-029-I-1	Isolate	Two Coke bottles (early-to mid-twentieth century)	Historic	1 meter (diameter)	Surface find	Outside Project APE	A5
SP-033-L-1	Locus	Two intact bottles and one bottle fragment	Historic	3 meters (diameter)	Surface find	Outside Project APE	A5
41SP268	Site	One projectile point, 13 pieces of debitage, bone, possible shell midden	Prehistoric	45x60 meters	Shell Midden/Surface scatter	Within Project APE (Avoided by HDD)	A5/B7
41SP269	Site	Shell midden with surface scatter artifacts (debitage, quartz projectile point, bone fragments)	Prehistoric	33x43 meters	Surface scatter; 30-50 centimeters below surface	Within Project APE (Avoided by HDD)	A6/B8
41RF147	Site	Two flakes and two glass fragments, backed clay	Multi-component	15x50 meters	Surface find	Within Project APE	A8/B9

Resource Number/ Name	Type	Materials Observed and/or Collected	Cultural Affiliation	Size	Deposit Depth	Location Relative to Project APE	Figure
41RF148	Site	Glass, 15 historic stoneware pieces, one whiteware, one porcelain piece, one marble, brick pieces, basalt stone	Historic	40x70 meters	Surface scatter	Within Project APE (Avoided by HDD)	A8/B10
RE-019-I-1	Isolate	One brown glass bottle base	Historic	1x1 meter	Surface	Outside Project APE	A9
41RF149	Site	Shell scatter/ midden	Prehistoric	21x17 meters	Surface scatter; 0-30 centimeters below surface	Outside Project APE	A12/B12
41CL96	Site	Glass, ornamented ceramic and porcelain fragments, square nails, metal fragments, ornamental cast iron motif	Historic	43x195 meters	Surface scatter; 0-15 centimeters below surface	Within Project APE	A23/B13
41CL97	Site	Glass, whiteware, personal and household items, Rockingham ware	Historic	100x108 meters	Surface scatter; 0-14 centimeters below surface	Within Project APE (Avoided by HDD)	A24/B14
CA-023-L-1	Locus	Three olive green glass fragments, two aqua color fragments, four brown glass fragments; modern glass fragments	Historic	35 meters (diameter)	Surface find	Within Project APE	A25
41VT171	Site	Buried shell, baked earth	Unknown/ Prehistoric	35x100 meter	Surface scatter; 25-35 centimeters below surface	Outside Project APE	A26/B15

Resource Number/ Name	Type	Materials Observed and/or Collected	Cultural Affiliation	Size	Deposit Depth	Location Relative to Project APE	Figure
41VT172	Site	17 flakes	Prehistoric	16x20 meters	Surface scatter	Outside Project APE	A26/B16
41VT173	Site	Projectile point base, around 30 flakes	Prehistoric	13x42 meters	Surface scatter	Within Project APE	A27/B17
41VT174	Site	Two lithics, three ceramics	Prehistoric	Unknown	0-42 centimeters below surface	Within Project APE	A27/B18
41JK194	Site	Five tertiary flakes	Prehistoric	5x15 meters	Surface scatter	Outside Project APE	A27/B19
41JK195	Site	Five tertiary flakes	Prehistoric	5x10 meters	Surface scatter	Outside Project APE	A27/B20
41JK196	Site	Seven debitage pieces, historic glass fragments	Multi-Component	10x20 meters	Surface scatter	Outside Project APE	A29/B21
JA-006-I-1	Isolate	One biface fragment	Prehistoric	N/A	Surface find	Outside Project APE	A32

5.2.1 Newly Recorded Archaeological Sites

A total of 19 newly recorded archaeological sites were identified during the survey. Nine of the newly identified sites were recorded as prehistoric, eight were identified as historic, and two were identified as multi-component. A total of 12 of these newly recorded sites are located within the current Project APE. Sites 41SP265, 41SP266, 41SP267, 41RF147, and 41CL97 were originally identified by HRA Gray & Pape in 2013 and were revisited during supplemental survey efforts in 2014. Sites 41RF149 and Field Site SP-019 were both identified in 2014 during supplemental survey efforts.

Site 41SP264

Site 41SP264 is a historic surface scatter located at the edge of a plowed agricultural field bordering State Highway (TX) 35 in San Patricio County, Texas (Appendix A: Figure A3; Appendix B: Figure B2). The site is located on the *Aransas Pass, TX,* United States

Geological Survey (USGS) Topographic Quadrangle. The site elevation is estimated at 6.7 meters (22 feet) above the Mean Sea Level (MSL). The site extends from the east to the west and lies adjacent to, but outside of the Project APE. An agricultural turn-row passes immediately adjacent to the site location going north to south. The site measures approximately 15 meters (49 feet) north to south and 25 meters (82 feet) east to west and consists of a surface scatter of historic ceramics and glass fragments, including one green glass, one clear glass, one porcelain, two ironstone, and two stoneware, and 10+ badly corroded metal fragments (likely round nails) (Appendix C: Plates 1 and 2).

The mapped soil within the site area is Victoria clay, depressional (Vd), with parental material consisting of the fluviomarine deposits (Guckian and Garcia 1979; Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture [SSS NRCS USDA] 2014). Two judgmental shovel tests were placed within the site boundary. Tests resulted in one clear glass, one amber glass, one whiteware, 10+ unidentifiable metal (likely round nails), one shell fragment, and one fragment of chert cortex all within the upper 18 centimeters (7 inches) of the test. The scatter was not dense and shovel testing indicates that it does not extend beneath the plow zone (the plow zone typically between reaches depths of 25 to 30 centimeters [10 to 12 inches]). Typical soils encountered were dark gray (10YR4/1) silty clay from the surface to a depth of 50 centimeters (20 inches).

The earliest available aerial imagery dates back to 1950 and has no indication of any structures in the area (Google, Inc. 2014c). A review of topographic maps dating to between 1925 and 1977 likewise show no structures in the location (USGS 2014a). Landowner August Guettler Jr. recalled the historic material had been present for "a long time" and thought he had seen maps with a barn dating to the 1930s or 1940s (August Guettler,Jr., personal communication 2014). Deed research at the San Patricio County Clerk's Office showed land ownership beginning in 1874 with Joseph W. Page. The property passed from Page to J.D. Willis in 1914, from J.D. to G.D. Willis in 1957 and from G.D. Willis to Edith Willis in 1999. The property's last transfer took place in 2005 from Edith Willis to the current landowner, August Guettler, Jr. Another local resident and property owner Billy Wendland, Jr. recalled several cotton gins were located in the greater vicinity, one every mile or so to aid in the processing of cotton, which in the early part of the twentieth century was hauled by mule and wagon (Billy Wendland, Jr., personal communication 2014). Given the site's proximity to the TX 35, this could have been a gin location or as Guettler suggested a barn.

Site 41SP265

Site 41SP265 is a historic surface scatter located in a plowed agricultural field approximately 836 meters (0.52 miles) east of McKamey Road in San Patricio County, Texas (Appendix A: Figure A4; Appendix B: Figure B3). The site can also be located on *Aransas Pass, TX*, USGS Topographic Quadrangle. The site elevation is estimated at 6 meters (21 feet) above MSL. The easternmost part of the site overlaps with the current Project APE. An agricultural turn-row passes through the western portion of the site boundary going north to south. The approximated site boundary is 26 meters (85 feet) north-south by 20 meters (66 feet) east-west. Artifacts recorded on the surface consist of one stoneware fragment, glass fragments including six colorless and two brown, and one indeterminate metal hardware fragment.

Original soils in the area were recorded as composed of Raymondville clay loam (RaA), 0 to 1 percent slopes with fluviomarine deposits of Late Pleistocene age as parental material (Guckian and Garcia 1979; SSS NRCS USDA 2014). Two judgmental shovel tests were excavated within the area of the scatter. Both shovel tests were negative for cultural resources. Typical soils encountered were very dark gray (10YR3/1) silty clay from the surface to a depth of 50 centimeters (20 inches) below ground surface. In addition to subsurface testing, the site was visually delineated, as the ground surface visibility was 100 percent.

Earliest available imagery dates back to 1950 (Google, Inc. 2014c). No structures were observed in the area around that time. The earliest available topographic quadrangle (1925) revealed no additional structures in the area however three oil tanks and an oil well appear nearby on maps dating to 1956, 1964, and 1966 (USGS 2014a). Deed research at the San Patricio County Clerk's Office showed land ownership beginning in 1861 with Marcelo Garcia. The property was then subsumed by the Coleman-Fulton Pasture Company (locally known as Taft Ranch) in 1877 (Guthrie 2014a). The ranch was liquidated in 1929. The land changed owners several times since the ranch dissolved until the current property owner's family, the McCampbells, purchased the land in March 1983. Local resident and property owner Billy Wendland, Jr. recalled several cotton gins were located in the greater vicinity, with one placed roughly every mile to aid in the processing of cotton, which in the early part of the twentieth century was hauled by mule and wagon (Billy Wendland, Jr., personal communication 2014).

This site was revisited in 2014 during the supplemental survey. It was noted that sorghum crops had been recently planted but had not grown so much that surface visibility was significantly obscured. In spite of good surface visibility, no artifacts were observed. It is likely that the recent farming activity has completely destroyed the site.

Field Site SP-019

Field Site SP-019 was identified as a concentration of oyster shell on and below the ground surface in open pastureland, approximately 120 meters (394 feet) northwest of a private residence and associated fenced-in yard, 110 meters (361 feet) northwest of two large agriculture-related structures (possibly barns), and 45 meters (148 feet) northwest of a fenced livestock pen with an attached small structure. Given their proximity, the agricultural structures and pen are probably associated with the private residence. It is located on the *Aransas Pass, TX* USGS Topographic Quadrangle approximately 0.8 kilometers (0.5 miles) east of Farm-to-Market (FM) 136 and 0.2 kilometers (0.1 miles) north of CR 1432/McCampbell Road in San Patricio County (Appendix A: Figure A4; Appendix B: Figure B5). The cultural resource is not particularly close to major waterways, lying approximately 6.5 kilometers (4 miles) west of Port Bay and 2.5 kilometers (2 miles) east of an unnamed creek that connects to Mud Flats to the north and Copano Bay to the northeast. The elevation is estimated at 5 meters (17 feet) above MSL. The cultural resource extends from the north to the south and most of the surface shell scatter falls inside the Project APE with roughly 5 meters (16 feet) falling outside of it to the southeast and 7 meters (23 feet) falling outside of it to the northwest. The cultural resource boundaries can be approximated based on the surface scatter of shell, although tall grasses limited surface visibility to about 50 percent. The cultural

resource is irregular in shape with dimensions of approximately 35 meters (115 feet) north to south and 18 meters (60 feet) east to west at its widest point.

The mapped soil within the cultural resource area is Papalote fine sandy loam (PaA), 0 to 1 percent slopes, with parental material consisting of the clayey fluviomarine deposits (Guckian and Garcia 1979; SSS NRCS USDA 2014). One judgmental shovel test was excavated within the resource boundaries where there was shell observed on the surface to determine the depth of the deposit. The soils encountered were very dark gray (10YR3/1) compact silty clay occurring between 0 and 25 centimeters (0 and 10 inches) below ground surface, dark grayish brown (10YR4/2) compact silty loam extending from 25 to 40 centimeters (10 to 16 inches) below ground surface, and dark gray (10YR4/1) very compact silty clay subsoil with iron staining occurring at 40 centimeters (16 inches) below ground surface and continuing to the bottom of the shovel test (Munsell Color 2005). The shovel test contained a dense layer of oyster shell extending from 0 to 40 centimeters (16 inches) below ground surface and ending where the strata transitioned from 10YR4/2 silty loam to the 10YR4/1 clay subsoil. The soils did not appear to be disturbed. The shell from the shovel test was collected as a sample.

Field Site SP-019 is located in open pastureland, which, though currently undeveloped, may have been impacted by livestock and/or the construction of nearby buildings and roads, or structures no longer standing. The earliest available aerial imagery, which dates to 1950 and 1951, does show two structures inside the resource boundaries with an unpaved road leading up to them from the south (Google, Inc. 2014c; NETR 2014a). There is a small structure located in the east-central portion of the cultural resource within the current Project APE and a larger structure located in the northwestern portion that sits on either side of the APE. In aerial imagery from 1961, 1967, and 1968, the smaller structure is no longer visible and only the larger structure in the northwestern part and a faint outline of the dirt road remains (Google, Inc. 2014c; NETR 2014a). Structures existing southeast of the resource and outside of the Project APE show up on the available historic topographic maps, which date to 1925, 1945, 1956, 1964, 1966, and 1977, indicating that the structures existing within the boundaries of Field Site SP-019 in the 1950s and 1960s were not residences but smaller outbuildings (NETR 2014b). The later available aerial images, which span from 1995 to 2011, show no structures within the resource boundaries (Google, Inc. 2014a-f; NETR 2014a). The current residential structure located 120 meters (394 feet) southeast of the resource shows up on aerial imagery between 1961 and 2011, and there are various other structures visible to the southeast in the same general area from 1950 to 2011. The two large agricultural structures that exist southeast of the resource outside of the Project APE today show up in the aerial imagery starting in 1995 and the livestock pen in 2003. The aerial imagery also shows a distinct line of trees spanning north to south from the southeastern boundary almost to the northwest corner of the fenced-in yard around the residential structure from 1995 to 2006. It is possible that the trees were lining a dirt road or fence, although it is not clear from the images.

Based on the results of historical research and fieldwork, Field Site SP-019 is likely associated with the former road that existed within the resource boundaries during the mid-twentieth century. There are no archaeological data linking Field Site SP-019 to prehistoric occupations as no artifacts were identified on the ground surface or in the judgmental shovel test excavated within the resource boundaries, and Field Site SP-019 is not located near any waterways or

other previously recorded archaeological sites. Furthermore, shell roads were not uncommon in Texas during the first half of the twentieth century (Benefield 2014). The correlation between the historic road visible in aerials dating to the 1950s and 1960s and the location of Field Site SP-019, as well as their corresponding north-south orientations, suggests the cultural resource and the road are one in the same. Due to its low research potential as a likely twentieth century road, a state-issued trinomial was not sought for Field Site SP-019.

Site 41SP266

Site 41SP266 is a small historic surface scatter located in a plowed agricultural field in the northeastern corner of the intersection of FM 136 and CR 96 in San Patricio County, Texas (Appendix A: Figure A5; Appendix B: Figure B6). The site is located on the *Bayside, TX,* USGS Topographic Quadrangle. The site elevation is estimated at 6 meters (21 feet) above MSL. As a result of Project realignments, the site is no longer within the Project APE and will not be impacted. When it was recorded, the site was visually delineated as surface visibility was 100 percent and no subsurface testing occurred. Surface findings at the site were limited to three pieces of historic glass, including one clear, one blue, and one cobalt, and two whiteware sherds scattered within an area spanning 15 meters (49 feet) in diameter. The artifacts were confined to a small, recently plowed area immediately adjacent to County Road 96.

The small number of artifacts found within a disturbed context would, in other circumstances, place this cultural resource into the category of locus, as defined for the purposes of this report. This location, however, has a strong association with Site 41SP267, another newly recorded site identified approximately 250 meters (820 feet) to the northwest (see description for Site 41SP267 below). Both sites were recorded surrounding a residential property about 55 meters by 185 meters (180 feet by 607 feet) at the northwestern corner of the intersection of FM 136 and CR 89.

According to the earliest aerial imagery, dating to 1950, Site 41SP266 is in the former location of a small standing structure (Google, Inc. 2014c). Deed research at the San Patricio County Clerk's Office revealed that property ownership began with William G. Burgess in 1879 from a survey conducted by D.C. Barrett. The property was then subsumed by the Coleman-Fulton Pasture Company/Taft Ranch in 1877 (Guthrie 2014a). At that time the property was within or adjacent to a smaller established ranch known as Rincon Ranch (Guthrie 2014b). A historical marker for the Rincon Ranch is located 2.4 kilometers (1.5 miles) to the south. By 1937 the Coleman-Fulton Company had liquidated most of its holdings and Rincon Ranch was parceled out into private farms. The piece of the Rincon Ranch property associated with Site 41SP266 passed into the ownership of D.W. Taylor in 1929 or 1930 when the Coleman-Fulton/Taft Ranch was liquidated (Guthrie 2014a,b). The property was then sold from Taylor to W.B. Ray in 1937. It was then handed through several members of the Ray family until purchased by the current owner, John T. Curlee, in 1996. Local landowner Billy Wendland, Jr. recalls a small house on the property which doubled as a grocery store (Billy Wendland, Jr., personal communication 2014). The structure was replaced by a newer residence in 1962, which was razed prior to 1995. The actual age of the former residence is currently unknown, but judging by the type of the artifacts found at the site it likely dates to the 1930s when the Rincon Ranch property was parceled out for individual purchase.

When the site was revisited in 2014 as part of the supplemental cultural resource survey, surface visibility was limited due to the 0.5 to 1-meter (2 to 3-foot) tall sorghum plants, and no artifacts were identified. The intensive farming activity has most likely impacted the site.

Site 41SP267

Historic Site 41SP267 (Appendix A: Figure A5: Appendix B: Figure B6) is located at the edge of a plowed field north of CR 96. The site is located on the *Bayside, Texas,* USGS Topographic Quadrangle in San Patricio County. The site elevation is estimated at 6 meters (21 feet) above MSL. As a result of Project realignments, the site is no longer within the Project APE and will not be impacted. This site was delineated by visual observation as ground visibility was 100 percent. The site dimensions were estimated to be 60 meters (197 feet) southwest to northeast by 160 meters (525 feet) northwest to southeast, stretching along the western and northern fence lines of a modern residential property. It was recorded in an L-shape, lying adjacent to the current Project APE.

Contents originally recorded within the site consisted of numerous glass fragments including 100+/- colorless, 25 green, 15 cobalt, 10 milk, five rose (pink), and 10 amber (Appendix C: Plate 3), 20+/- ironstone and whiteware fragments (Appendix C: Plate 4), 10+/- square cut and round wire nails, and 10+/- brick fragments (Appendix C: Plate 5). None of the observed brick had maker's marks. Most of the artifacts were recorded along the western boundary of the existing property line. The scatter of 10+/- brick and brick fragments was recorded along the northern perimeter of the property. In addition to visual survey inspection, three shovel tests were excavated within the site boundaries. Two of the subsurface tests were positive for buried cultural material. In total these two tests produced two colorless and one amber glass shards, and five +/- unidentified metal fragments recorded between 0 to 25 centimeters (10 inches) below ground surface. General soils in the area were recorded as Victoria clay (VcA), 0 to 1 percent slopes and the fluviomarine deposits of Late Pleistocene age (Guckian and Garcia 1979; SSS NRCS USDA 2014).

Most of the artifacts were recorded along the western boundary of the existing property line. The scatter of 10+ brick and brick fragments was recorded along the northern perimeter of the property. None of the observed brick had maker's marks. The boundaries of this site were extended to include all of the recorded historic content. The approximated size of the adjacent property is 52 by 175 meters (171 by 574 feet). In addition to visual survey inspection, three shovel tests were excavated within site boundaries. Two of the subsurface tests were positive for buried cultural material. In total these two tests produced two colorless and one amber glass, and five plus unidentified metal fragments recorded between 0 to 25 centimeters (0 to 9.8 inches) below ground surface.

The earliest available aerial imagery dates to 1950 and shows a larger structure and a group of smaller structures clustered in the southeast corner of the parcel, adjacent to CR 96 (Google, Inc. 2014c). All of the original structures were removed sometime in the 1960s and replaced by a modern residential house by the mid-1990s (Google, Inc. 2014c,f). The cultural material observed at Site 41SP267 is most likely associated with the original historic structures. This site, like its neighbor Site 41SP266, falls within the Rincon Ranch area of the Coleman-Fulton

Pasture Company (Guthrie 2014a,b). Deed research at the San Patricio County Clerk's Office traced the property from William G. Burgess in 1879 from a survey conducted by D.C. Barrett. The property was then subsumed by the Coleman-Fulton Pasture Company/Taft Ranch in 1880 and became part of the million-acre ranch. When the Coleman-Fulton Company had liquidated most of its holdings in 1930, ownership of the property associated with Site 41SP267 passed into the hands of the Federal Land Bank (San Patricio County Clerk's Office). From there ownership passed from the bank to Mrs. Fern L. North in 1934. Mrs. North sold the property to Robert Easley et al. in 1944. In 1968 the property passed from Easley to W.P. Woodland and from Woodland to its current owner Billy Wendland, Jr., in 1987.

Based on the artifacts found at the site and the recollections of the current landowner, Mr. Wendland, the structure dated to the early-twentieth century. More specifically, it is likely that the structure dates to the 1930s when Rincon Ranch and other land owned by the Coleman-Fulton Pasture Company was parceled out to individuals and largely converted to farmland (Billy Wendland, Jr, personal communication 2014). When questioned about Site 41SP267, Mr. Wendland mentioned that there used to be a cotton gin in the same general location. According to Mr. Wendland, the gin as well as several other structures in the vicinity were destroyed by the numerous hurricanes and floods that have hit the area, one of which (Hurricane Celia in 1970) destroyed thousands of buildings (Dunn 2014). Mr. Wendland suggested that continuous agricultural activities may have resulted in the movement of cultural materials into the adjacent fields.

Site 41SP267 was revisited in 2014 as part of supplemental survey for Project realignments. At the time of revisit, the site was partially covered by planted, mature cotton crops, but surface visibility was high (90 percent) as a large part of the site was a fallow plowed area within the agricultural field. Historic ceramics including whiteware and porcelain were observed on the ground surface, as well as green, blue, amethyst, and clear bottle glass fragments, milk glass fragments, and brick fragments. Because they were found outside of the Project APE, none of the artifacts were collected. From the disturbed state of the ground surface, it was obvious that the area had been plowed and part of the surface scatter had been driven over by a tractor or truck during recent farming activities.

Site 41SP268

Prehistoric Site 41SP268 is a shell midden with an associated surface scatter. It is located 620 meters (0.4 miles) south of CR 92, and 50 meters (164 feet) north of the mudflat drainage surrounding an unnamed tributary of the Aransas River (Appendix A: Figures A5; Appendix B: Figure B7). This site can be located on the *Bayside, Texas,* USGS Topographic Quadrangle in San Patricio County. The site elevation is estimated at 4 meters (13 feet) above MSL. The area of the site measures approximately 45 by 60 meters (148 by 197 feet) with the shell concentration located in the middle of the site. The shell concentration which contains oyster and whelk measures approximately 7 by 5 meters (23 by 16 feet). The site is partially located with the current Project APE, with a majority of it spanning east of the APE. As a result of Project realignments, an additional area was surveyed to the west of the site as part of the Project APE that is no longer under consideration. No cultural material was recorded within the surveyed area to the west therefore confirming the western site boundary. An existing

pipeline runs north to south approximately 20 meters (66 feet) to the west and parallel to the western edge of the site. The site is located in a grove of acacia trees and cacti where the ground was heavily worn by cattle, making visibility of the surface approximately 80 percent. The site area slopes approximately 0 to 3 percent to the south. The mapped soil for the area is composed of Edroy Clay with parental material of loamy fluviomarine deposits (SSS NRCS USDA 2014).

Artifacts found on the surface included 13 pieces of chert debitage and one broken projectile point. The broken projectile point measures approximately 3 centimeters (1.2 inches). It is missing the distal end and, when complete, most likely around 4 to 4.5 centimeters (1.6 to 1.8 inches) in length. It is roughly triangular in shape and has a slightly concave base. Overall it appears similar in shape to a small/modified Dalton or Scottsbluff point (Turner and Hester 1993: 99-100; 183-184). Several (10+) pieces of fire hardened/baked clay were also noted on the surface.

A shovel test was placed within the center of the site and resulted in the identification of buried cultural material deposited between 15 and 26 centimeters (6 and 10 inches) below ground surface. This material consisted of more than five oyster shells, two snail shells (*Rabdotus*), one scallop shell (*Argopectin*), two burnt faunal material fragments, and three fire hardened clay pieces. The amount of shell observed was indicative of a midden. The site was delineated with seven shovel tests placed in four cardinal directions on each side of the surface scatter extent. Recorded soil profiles consisted of a surface layer of silty light brownish gray (10YR6/2) clay to approximately 40 centimeters (16 inches) below ground surface followed by a more compact hardened dark brown (10YR3/2) clay (Munsell Color 2005). The delineation shovel tests were negative for additional cultural materials. Although a portion of the site has been impacted by previous pipeline installation, initial field observations suggest that the site has not been plowed and contains subsurface deposits.

Site 41SP269

Prehistoric Site 41SP269 is an extensive shell midden with associated surface scatter located 225 meters (740 feet) south of Chiltipin Creek (Appendix A: Figure A6; Appendix B: Figure B8). The site can be found on the *Rincon Bend, Texas,* USGS Topographic Quadrangle in San Patricio County. The site elevation is estimated at 2 meters (7 feet) above MSL. The site area measures 33 by 43 meters (110 by 140 feet) and is located on a northern exposure of a curvilinear elevated landform south of the Chiltipin floodplain. The site lies adjacent to but outside of the current Project APE. As a result of Project realignments, an additional area was surveyed to the west of the site as part of the Project APE that is no longer under consideration. No cultural material was recorded within the surveyed area to the west therefore confirming western site boundary. An existing pipeline corridor cuts north-south and a two-track road cuts east-west through the site.

The shell midden is clearly visible on the ground surface. The site was delineated both visually within the Project APE, as the surface visibility was 50 percent, and by shovel testing adjacent to the existing pipeline corridor. A total of 12 shovel tests were excavated in order to determine the site extent. Eight of the 12 tests contained large amounts of shell (up to 80 percent of the shovel test contents). Three of the shovel tests were positive for buried cultural

material other than shell. Depth of the buried cultural material ranged between approximately 30 centimeters (12 inches) to 55 centimeters (22 inches) below ground surface. Buried material contained shell mixed with lithic debitage pieces and one modified quartz projectile point of unidentified type similar to a Morhiss type (Turner and Hester 1993: 158) (Appendix C: Plate 6). Prehistoric artifacts identified on the surface included biface fragments, lithic debitage, and bone fragments. Although a portion of the site has been impacted by previous pipeline installation and a two-track access road, initial field results suggest that the site contains intact subsurface deposits.

The mapped soil for the area is composed of Monteola clay, 5 to 8 percent slopes, with parental material of clayey fluviomarine deposits (Guckian and Garcia 1979; SSS NRCS USDA 2014). A typical soil profile recorded during the survey is represented by dark grayish brown (10YR4/2) sandy loam from the surface level to approximately 10 centimeters (4 inches) below surface, followed by brown (10YR4/3) silty clay to the depth of approximately 30 centimeters (12 inches), finally followed by grayish brown (10YR5/2) compact silt to the base of the shovel test (Munsell Color 2005).

Site 41RF147

Multicomponent Site 41RF147 is a surface scatter located within a plowed field approximately 1 kilometer (0.65 mile) north of FM 1360 and 200 meters (700 feet) south of Mullens Bayou (Appendix A: Figure A8; Appendix B: Figure B9). The site can be located on the *Mission Bay, Texas,* Topographic Quadrangle in Refugio County. The site elevations range between 6 to 7 meters (21 to 23 feet) above MSL. The site is positioned 10 meters (33 feet) to the southeast of an existing pipeline at the edge of a small landform and approximately 180 meters (590 feet) southwest of Mullens Bayou. The mapped soil for this area is composed of Victoria clay (VcA), 0 to 1 percent slopes, with clayey fluviomarine deposits of Late Pleistocene age parental material (Guckian 1988; SSS NRCS USDA 2014). The south half of the site is located within the proposed Project APE.

Six shovel tests were excavated to delineate the site boundary. The shovel tests were negative for buried cultural material. Surface finds identified within the Project APE when the site was recorded consisted of three burnt clay and two shell fragments. A landform believed to be the site center and an additional surface scatter of cultural materials were visible approximately 65 meters (213 feet) to the southeast and outside of the Project APE. Observed cultural material included five debitage pieces, one broken biface fragment, one shell, three pieces of baked clay, and one piece of brown glass. In general, the site contains a sparse amount and type of cultural materials and appears to be confined to the surface with no indication of deeply buried deposits. Thus, the observed surface scatter is likely the result of a combination of colluvial movement of the materials and redeposition from agricultural activities.

Site 41RF147 was revisited during supplementary survey efforts in 2014. At the time of revisit, mature planted sorghum covered the site, reaching roughly 0.5 to 1 meter (2 to 3 feet) in height, and partially obscured surface visibility. A few shells were visible between the plants on the surface, but no other artifacts were observed or collected. The surface scatter appears to have been impacted (and possibly destroyed) by farming activity.

Site 41RF148

Historic Site 41RF148 is located within a plowed field 90 meters (300 feet) north of FM 136 and 300 meters (1,000 feet) west of FM 2678 (Appendix A: Figure A8; Appendix B: Figure B10). The site can be located on the *Mission Bay, Texas,* USGS Topographic Quadrangle in Refugio County. The site elevation is estimated at 9.5 meters (31 feet) above MSL. The site area measures 70 meters (230 feet) north to south and 40 meters (130 feet) east to west and mostly consists of a historic surface scatter. It is centered on and covers the Project APE, extending both north and south of the APE. The soils recorded for the area are composed of Victoria clay (VcA), 0 to 1 percent slopes, with parental material of clayey fluviomarine deposits of Late Pleistocene age (Guckian 1988; SSS NRCS USDA 2014). Typical soil profiles encountered in shovel tests is represented by a very dark gray (10YR3/1) loamy clay and clay to a depth of 15 centimeters (6 inches) below ground surface, followed by very dark grayish brown clay (10YR3/2) to a depth of approximately 40 to 50 centimeters (16 to 20 inches) below ground surface.

When Site 41RF148 was recorded, a total of six shovel tests were excavated to determine the site boundaries. Shovel tests were excavated in four cardinal directions around a surface find, represented by a possible prehistoric vesicular basalt wedge shaped stone that could have been used as an abrader (Appendix C: Plate 7). Only one of the six excavated shovel tests was positive for cultural material. It contained a small piece of flat colorless glass at a depth of 15 centimeters (6 inches) below ground surface. In addition to shovel tests, the site was visually delineated, as ground visibility was 100 percent. Surface inspection yielded an assortment of historic-age material including 46 pieces of glass fragments. Among these were two green, 13 amethyst (purple), two aqua, 15 colorless, two amber, and two indigo (blue). Also present were 15 pieces of stoneware, one whiteware, two pieces of a crock lid, one piece of porcelain, one ceramic marble, a concentration of five brick-size sandstone blocks, two concrete fragment, one shellcrete fragment, and two cylindrical pieces of what appears to be a dark colored porous stone similar to soapstone (Appendix C: Plates 8-10). Outside of the sandstone block and concrete concentration the artifact density ranged from one artifact every 10 meters (32 feet) to three artifacts every 1 meter (3 feet).

Aerial imagery for this area dating from 1951 to 2011 does not show any structures in the location of or immediately adjacent to the site (Google, Inc. 2014b-f; NETR 2014a). Additionally, topographic map dating from 1956 to 2013 do not depict any structures at or near the location of the site. The nearest standing structure in the general area depicted on those topographic maps and aerial images is located approximately 340 meters (1,115 feet) southwest of the site boundary.

A search of the TxGLO historic county maps dating to between 1851 and 1921 (The Portal to Texas History 2014a-f) show the property was originally granted by Mexico to Thomas and Antonio Galan in 1832-1833. Deed and title research at the Refugio County Courthouse showed the property was passed from Galan to Thomas Westen in 1835 and from Westen to Jonathan Scott in 1874 when the property was subsumed by the sprawling Bonnie View Ranch belonging to Tobias Wood. By 1907, the property was purchased and was parceled out by developers W.C. Johnson and George P. Pugh (Huson 1955; Leffler 2014). A map of the

Johnson and Pugh purchase dated to 1907 shows no structures in the vicinity of the site location.

Artifactual evidence suggests a historic late-nineteenth to early-twentieth century occupation site or trash dump. The purple or amethyst colored glass collected at the site is also known as "desert glass" and has high manganese content, which after exposure to ultraviolet rays turns otherwise colorless glass into rich shades of purple (Bureau of Land Management 2013) (Appendix C: Plates 9 and 10). The intensity of the purple depends upon the amount of the manganese content and the length and intensity of the exposure. Manganese use in bottle production was most common between 1880 and 1914 (Kendrick 1966). This date range is compatible with the clay marble found at the site. Clay marbles were first mass produced in the United States in the 1890s (Carskadden and Gartley 1990). The date range of these artifacts is consistent with the time frame in which Johnson and Pugh were promoting settlement of the vicinity. Other than the stone axe head, no evidence was found to suggest that the site contains a prehistoric component. The nature of the identified basalt wedge or cylindrical stones has not been determined (Appendix C: Plate 7). Based on the high concentration of historic material surrounding it, the basaltic stone wedge was likely out of context and may have been collected by the historic occupants of the location.

Site 41RF149

Site 41RF149 was identified as a concentration of oyster shell on and below the ground surface located in a clearing inside the tree line and bordering an existing pipeline corridor to the northwest (Appendix A: Figure A12; Appendix B: Figure B12). The site was identified in Refugio County during the supplementary survey efforts in 2014. It is located on the *Twin Mott Lake, Texas* USGS Topographic Quadrangle approximately 2 kilometers (1 mile) south of FM 774 and 1 kilometer (0.6 miles) east of Winsor Road. The land surrounding the site is largely undeveloped with the exception of pipeline corridors and dirt roads crossing the property. The site is approximately 3.5 kilometers (2 miles) east of Copano Creek and 5 kilometers (3 miles) west of the northern offshoot of Cavasso Creek, which drain into Capano Bay and Saint Charles Bay respectively. The site elevation is estimated at 8.5 meters (28 feet) above MSL. The site extends from the northwest to the southeast with most of the surface shell scatter occurring within the Project APE and roughly only 2 meters (7 feet) falling outside of its borders to the south. The site boundaries could be delineated fairly well based on the surface scatter of shell, as surface visibility was relatively high (between 70 and 80 percent). The site appears to be irregular in shape with dimensions measuring approximately 21 meters (69 feet) north to south and 17 meters (56 feet) east to west at its widest point.

The mapped soil within the site area is Narta fine sandy loam (Na), poorly drained, with parental material consisting of fluviomarine deposits (SSS NRCS USDA 2014). Two judgmental shovel tests were excavated within the site boundaries where there was shell surface scatter and two were excavated outside of the surface scatter to the south to determine if the site boundaries extended beyond the surface scatter. In both cases, typical soils encountered were dark grayish brown (10YR3/2) silty clay between 0 and 20 to 30 centimeters (8 to 12 inches) below ground surface and black (10YR2/1) clay subsoil beginning at 20 to 30 centimeters (8 to 12 inches) below ground surface, which continued to the bottom of the shovel test (Munsell Color 2005). The shovel tests excavated within the surface scatter

contained a dense layer of oyster shell extending to between 20 and 30 centimeters (8 and 12 inches) below ground surface, which ended at the transition from 10YR3/2 silty clay to the 10YR2/1 clay subsoil. The shovel tests excavated outside of the surface scatter contained only light concentrations of shell found in a thin layer at the interface of the silty clay and the clay subsoil. This suggests that the shell found in the shovel tests outside of the surface scatter may have eroded or washed out of the site and is probably not part of the original deposit associated with the site.

No evidence was found linking the site to historical occupations, but it is possible that the site may be associated with (or disturbed by) oil drilling/pipeline activities in the latter half of the twentieth century. The earliest available aerial imagery dates to 1951 and has no indication of any historic structures in the area (Google, Inc. 2014f; NETR 2014a). Additionally, there is no evidence of structures in more recent aerial imagery (Google, Inc. 2014b-e). A review of topographic maps dating to between 1978 and 2013 and historic county maps dating between 1851 and 1921 likewise show no structures in the location (NETR 2014b; The Portal to Texas History 2014a-f; TxGLO 2014b; USGS 2014f). Older aerials and topographic maps do show evidence of a dirt road coming from the west and leading up to the area around the site in 1972 (NETR 2014a,b). Additionally, TxGLO Geographic Information Systems (GIS) Maps and a record of wells in Refugio County published by the Works Progress Administration (WPA) in 1938 provide evidence that an oil well was located near the site during the early- to mid-twentieth century (WPA 1938; TxGLO 2014a). Although the site is located within the tree line adjacent to the pipeline corridor, the area is fairly open with tall grass and scattered trees, which suggests that the area may have been cleared in the past. Based on the historic imagery and maps, it is plausible that the shell concentration may have originated with activities associated with road and oil well construction and use. The dense concentration of shell resembles a prehistoric midden, but no artifacts were identified and the shell deposits appeared to be relatively shallow. More research is needed to determine the origins of the shell concentration and confirm or disprove its identity as a midden.

Site 41CL96

Site 41CL96 is a historic scatter recorded in a plowed field between TX 185 and US 80. The site can be located on the *Green Lake, Texas,* USGS Topographic Quadrangle in Calhoun County (Appendix A: Figure A23; Appendix B: Figure B13). The site elevation is estimated at 13 meters (43 feet) above MSL. The site area measures approximately 43 by 195 meters (141 by 640 feet) and consists of a surface scatter adjacent to the remains of a large (4-meter [15-foot] diameter) circular water trough that is pipe-fed from two cylindrical water tanks. Originally the site was identified during the survey of a former alignment that is no longer in consideration. The Project alignment has since shifted approximately 25 meters (82 feet) to the south leaving most of the site outside of the proposed Project APE. The site is oriented southwest to northeast, with its southeast boundary paralleling and slightly overlapping with the Project APE.

The site was visually delineated as ground visibility was 100 percent and a total of three subsurface tests were excavated within the site's boundaries. All shovel tests were negative for buried cultural material. Artifacts identified on the surface included an assortment of historic glass fragments including nine light lavender, one dark olive green, six aqua, and three amber,

as well as eight porcelain fragments, four additional ceramic fragments or various types, one pipe bowl fragment, three square nails, and an ornamental cast iron motif (Appendix C: Plates 11-14). A surface scattering of approximately 20+ brick fragments of at least four different types was observed extending south of the trough within an area of approximately 45 by 60 meters (148 by 197 feet). Soils recorded for the area consist of Laewest clay (La), 0 to 1 percent slopes, with clayey fluviomarine deposits of Late Pleistocene age parental material (Mowery and Bower 1978; SSS NRCS USDA 2014). Typical soils encountered in shovel tests were very dark grayish brown (10YR3/2) loamy clay to a depth of 56 centimeters (22 inches) (Munsell Color 2005).

Property records show J. J. Poindexter as the earliest grantee of the tract in 1890 (TxGLO 2014a). John J. Welder and his wife, Eliza, eventually acquired the tract when they began purchasing property in the counties of Victoria, Calhoun, San Patricio, Refugio, and Bee Counties starting in 1890. The property was then subsumed within the multi-acre Welder "Green Lake" Ranch in the early 1900s and largely stayed within the Welder family until the present day. A deed transferring the land from John J. Welder to his wife on November 15, 1923 was found in the property records associated with the tract. The property has been sold, gifted, leased, and transferred from family member to family member until present day.

Earliest available aerial imagery for this area dates to 1990 and the earliest available topographic map dates to 1952 (Google, Inc. 2014c; USGS 2014b). Neither the map nor the aerial imagery indicates the presence of any residences in the area although the 1952 map shows a "flowing well" and an outbuilding in the location and several access roads. A search of the name of property owner Welder produced a report from the State Board of Water Engineers. In 1941 an inventory was made on the wells constructed in Calhoun County (State Board of Water Engineers 1941). Well Number 3, located on the property of P.H. Welder, is shown to have been completed in 1922 in the inventory. A search of the TxGLO and historic county maps dating between 1839 and 1911 show no structures located in the vicinity of the site location, however, a county map dating to 1852 (The Portal to Texas History 2013a) does show a road leading to Indianola in the vicinity of Site 41CL96. Currently, several oil and gas wells, both functioning and abandoned, are located in the area and there are water tanks located immediately adjacent to the site.

Artifactual evidence suggests a historic trash dump, which could be associated, at least in part, to a nearby well and outbuilding dating to around the 1920s (State Board of Water Engineers 1941). Although the small amount of brick at the site would not account for a structure its possible they are associated with the wells in the area. Shovel test results do not suggest intact subsurface deposits and judging by the location of an existing pipeline the site has been impacted at least once by pipeline installation. The presence of amethyst glass among the collected artifacts suggests that site contents could date as early as the late 1800s. Bricks present at the site include four different stamps: "SECO," "LAREDO BRICK CO," "ST JOE," and another that is too fragmented to identify any lettering other than "EB." Those with SECO stamped into them indicate they were made at Seco Pressed Brick in D'Hanis, Texas (Odintz 2014). The Seco factory wasn't built until 1910. The St. Joe Brick Works was founded in 1891 in Slidell, Louisiana and has continued to operate to the present day (St. Joe Brick Works, Inc. 2010). The Laredo Brick Company was also present beginning around the turn of the century

(Cook 1998). The combination of temporal information from the bricks, the square nails, the pipe bowl fragment, and the historic glass suggests that the site may have been in use from the 1880s or 1890s to around the 1920s.

Site 41CL97

Site 41CL97 is a historic scatter recorded in a plowed corn field approximately 20 meters (65 feet) southwest of US 87 and 635 meters (2,083 feet) northeast of Chocolate Bayou. The site is located on the *Placedo, TX* USGS Topographic Quadrangle in Calhoun County (Appendix A: Figure A24; Appendix B: Figure B14). The site elevation is estimated at 10 meters (34 feet) above MSL. When it was recorded, the site area measured approximately 100 by 108 meters (328 by 354 feet). The current Project APE cuts through the northwest part of the site at an angle, running southwest to northeast. A majority of the site lies outside of the Project APE with roughly 20 meters (66 feet) extending outside of the Project APE to the north-northwest and nearly 100 meters (328 feet) extending outside of the APE to the south-southeast.

The site consists of a high concentration (between 1,000 and 2,000 artifacts) of mid-nineteenth to early-twentieth century artifacts, including whiteware, Rockingham ware and ironstone ceramics, diagnostic bottle finishes and fragments of red, amber, blue, green, and amethyst colored glass, hand wrought and square cut nails, indeterminate metal hardware fragments, and personal/household artifacts such as two marbles, a copper spoon, a belt buckle, and an earring fragment (Appendix C: Plates 15-20). As part of the site recording process, a total of five shovel tests were excavated within or around the approximated site boundary in 2013. Three of the excavated shovel tests were positive for buried cultural material. These tests produced a total of seven colorless glass fragments, one brown glass fragment, one amber glass fragment, one porcelain sherd, one whiteware sherd, and more than five unidentified metal fragments (likely nails). The depth of the buried deposits, however, was very shallow extending approximately 14 centimeters (5.5 inches) below the ground surface. This was well within the plow zone. In addition to subsurface testing, the site was visually delineated, as surface visibility was 100 percent. Based on the field observations, majority of the artifacts on the surface were concentrated within the southern portion of the recorded site boundaries, which extends outside the Project APE.

The mapped soil for the area is composed of Laewest clay (La), 0 to 1 percent slopes, with clayey fluviomarine deposits of Late Pleistocene age parental material (Mowery and Bower 1978; SSS NRCS USDA 2014). Typical soils encountered in the shovel tests were very dark gray (10YR4/1) silty clay loam to a depth of 14 centimeters (5.5 inches), followed by very dark gray (10YR3/1) clay loam to the depth of approximately 25 centimeters (10 inches) (Munsell Color 2005).

Historical and archival research conducted to uncover the origins of Site 41CL97 provided limited information. The earliest available aerial imagery for this area dates to 1990, and the earliest available topographic map dates to 1952 (Google, Inc. 2014c; USGS 2014d). While aerial imagery does not show the presence of any structures within the Project APE, the 1953 and 1976 topographic quadrangles show one structure located approximately 120 meters (394 feet) southeast from the recorded site boundary (USGS 2014d). A search of the TxGLO and historic county maps dating between 1852 and 1919 show no structures located in the vicinity

of the site location, however, a county map dating to 1852 does show a road leading to Port Lavaca potentially near the vicinity of the site (The Portal to Texas History 2013a). The San Antonio & Mexican Gulf Railroad line runs near the site on the 1882 county map. By 1911, the county map shows the community of Kamey centered approximately 1.3 kilometers (0.8 miles) to the southeast on US 87. William McMinn Nuner, who became the property owner in 1851, is the earliest known grantee of the tract (TxGLO 2013a). The 1851 deed includes a small map but makes no mention of a structure on the property. Ownership of the property after Nuner is unclear. At some point the tract came under the ownership of the Willis family. A Partition Deed found at the Calhoun County Clerk's Office dated to August 22, 1934 shows owner Inez Willis dividing her land up amongst her siblings and spouses. The property stayed in that family until it was purchased by the Kopecky family in 1972 (Calhoun County Clerk's Office).

This site was revisited in 2014 as part of supplemental survey. At the time of the revisit, the corn crop had been recently planted, but was not tall enough to completely obscure surface visibility. A strip approximately 20 meters (65 feet) wide, located adjacent to US 87, was plowed but left fallow. Artifacts recorded during the revisit correspond to the previous site description and the previously drawn site boundaries were confirmed. A high quantity of historic artifacts was visible on the surface, though it was clear that the artifacts had been impacted by farming activity.

Artifactual and historical evidence suggest a historic mid- to late-nineteenth to early-twentieth century occupation site or trash dump possibly associated with a homestead near the historic town site of Kamey. A portion of the site has been previously impacted by an existing pipeline and agricultural turn-row. The material concentration has likely migrated toward the road and the existing pipeline corridor where there is frequent tractor activity. Because this site is located in a heavily disturbed plow zone and available archival data indicate the oldest recorded historic structure more than 100 meters (328 feet) from the site boundary, it is most likely that the cultural materials have been displaced as a result of continuous agricultural activities. Furthermore, the site's greatest concentration extends outside of the Project corridor to the south and east alongside the road and is separated by the Project by an existing pipeline.

Site 41VT171

Site 41VT171 is a shell and baked/fire hardened earth concentration recorded at the confluence of Placedo Creek and Agula Creek in Victoria County. The site can be found on the *Kamey,* USGS Topographic Quadrangle (Appendix A: Figure A26; Appendix B: Figure B15). Its elevation is estimated at 3 meters (9 feet) above MSL. The site extends southwest to northeast, paralleling but not overlapping with the Project APE. This site is located on a small landform on the west side of and above the Agula Creek within a maintained pipeline corridor between two 16.8-centimeter (6.6-inch) diameter liquefied petroleum gas pipelines. Site 41VT171 consists of two features, one is a surface concentration of baked/fire hardened earth, and the second is a buried shell lens.

The concentration and scatter of baked/fire hardened earth is comprised of roughly 100+ pieces of baked earth fused with tiny fragments of shell creating an appearance similar to slag (Appendix C: Plate 21). The approximated area of the baked/fire hardened earth scatter is 35

by 100 meters (115 by 328 feet) stretching within the northern portion of the survey corridor from southwest to northeast. Five shovel tests were placed in the vicinity of the baked/fire hardened earth surface scatter, three of which contained a stratigraphic layer of baked earth between 0 to 20 centimeters (0 to 8 inches) below ground surface. The remaining two shovel tests were negative for any kind of subsurface deposits.

The second feature was identified by a surface scatter of oyster shell observed on the lowest terrace located approximately 2 meters (6.5 feet) west from the marsh associated with Agula Creek. The shell was exposed as the result of an animal burrow. Two shovel tests placed between existing pipelines and adjacent to the exposed shell revealed a 10-centimeter (4-inch) thick layer of oyster shell concentration at the approximate level of 25 to 35 centimeters (10 inches to 14 inches) below ground surface.

In addition to subsurface testing, the area was subjected to pedestrian walkover. Surface visibility was approximately 50 percent with half of the Project APE covered with heavy vegetation of mixed hardwoods at the top of the bluff, and the marsh vegetation at the bottom of the landform. The area with clear surface visibility falls within an existing pipeline corridor collocated with the proposed route.

The mapped soil for the area consists of Laewest clay (LaD), 3 to 8 percent slopes eroded, with clayey fluviomarine deposits of Late Pleistocene age parental material (Miller 1982; SSS NRCS USDA 2014). Soils encountered in the shovel tests on top of the landform consisted of very dark gray (10YR3/1) loam from the surface level to approximately 8 centimeters (3 inches) below ground surface with a narrow lens of a baked/fire hardened earth, followed by yellowish brown (10YR5/6) sand to the depth of approximately 20 centimeters (8 inches) below ground surface, and ending with a very dark brown (10YR2/2) clay-loam down to the base of the tests at approximately 40 to 50 centimeters (16 to 20 inches) below ground surface (Munsell Color 2005).

Historical background research provided little additional information on Site 41VT171. Earliest available aerial imagery for this area dates to 1990 and the earliest available topographic map dates to 1952 (Google, Inc. 2014c; USGS 2014c). Neither the map nor the aerial imagery indicates the presence of any structures in the area although the 1952 map shows a “flowing well” southwest of and in the vicinity of the site. The earliest land grant associated with the tract on file with the TxGLO shows Martín de León acquiring the tract between 1832 and 1833 (TxGLO 2013b). A search of the TxGLO and historic county maps dating to between 1858 and 1895 show no structures located in the vicinity of the site; however, an old well site is visible located approximately 50 meters (164 feet) from the site boundaries (USGS 2014c).

Due to the lack of diagnostic materials observed, it is currently unclear if Site 41VT171 represents a prehistoric, historic, or natural site. The baked/fire hardened earth concentration may be associated with a cultural thermal feature; however, its size, depth, and spread over the surface suggests it may be either a secondary deposit as a result of pipeline construction or is associated with a long duration fire event such as burning pushpiles. Because of the adjacent pipelines the location would have been ideal for a pipeline workspace, perhaps resulting in a

fire causing the baked/fire hardened earth. The buried shell layer is consistent with a prehistoric occupation shell deposit. It is important to note that the site as a whole is within existing pipeline corridor between existing pipelines. Additional testing was not possible due to buried pipelines and no testing was pursued outside of the Project corridor. Based on the initial investigation, the material located within the survey corridor does not offer any additional incentive for investigation as no definitive cultural materials have been identified by subsurface testing within the undisturbed space surrounding these features.

Site 41VT172

Site 41VT172 is a prehistoric surface scatter located outside the Project APE at the margin of tidal flats off of the east bank of Agula Creek at the confluence with Placedo Creek in Victoria County (Appendix A: Figure A26; Appendix B: Figure B16). The site can be found on the *Kamey,* USGS Topographic Quadrangle. The site elevation is estimated at 1 meter (4 feet) above MSL.The site boundaries measure approximately 16 by 20 meters (53 by 66 feet) and are confined to a small area at the bottom of a landform that extends to the east-northeast with the flatland marshes surrounding Agula Creek bordering the site to the west. Cultural materials observed and recorded at the site consisted of a single primary flake, six secondary flakes, and nine tertiary flakes.

A total of five shovel tests were excavated in the area surrounding the site. All shovel tests were negative for buried cultural material. In addition to subsurface testing the area was visually delineated, as surface visibility was 100 percent. The recorded surface scatter was confined to a small circular area within an existing pipeline corridor composed of a stony surface barely covered with vegetation, with a deer feeder placed right in the middle of it and narrow game trails running outward in different directions. The characteristics of the location are potentially indicative of a former pipeline workspace. The mapped soil for the area consists of Trinity clay (Tr) with clayey alluvium of Holocene age as parental material (SSS NRCS USDA 2014). A typical recorded shovel test profile is represented by very dark grayish brown (10YR3/2) sandy clay extending from the surface level to approximately 35 centimeters (14 inches) below ground surface, followed by dark gray (10YR4/2) compact clay extending to the base of the shovel tests at approximately 50 centimeters (20 inches) below ground surface (Munsell Color 2005).

Site 41VT173

Site 41VT173 is a prehistoric surface scatter located inside the Project APE at the margin of a wetland on the west margin of Garcitas Creek (Appendix A: Figure A27; Appendix B: Figure B17). The site can be found on the *Kamey,* USGS Topographic Quadrangle. This site was originally recorded in March 2013 during the first mobilization and revisited in May 2013. At the time of the revisit most of the area was inundated. Site elevation is estimated at 0.6 meters (2 feet) above MSL, while the top of the landform observed to the southwest is estimated at 8 meters (25 feet) above MSL. The Project APE covers a large portion of the western and southern portions of the site. Artifacts observed, recorded, and/or collected consist of 35 lithic flakes, one projectile point base (possible Scallorn [Late Prehistoric 500 A.D to 1800 A.D.]), and one biface tip (Appendix C: Plate 22).

The site spans 13 by 42 meters (43 by 138 feet), with a majority of it located within an existing pipeline corridor. It was visually delineated as surface visibility was 100 percent and the area was largely stripped of vegetation. A total of six judgmental shovel tests were excavated around the surface scatter. While the majority of the shovel tests were plotted to confirm previous ground disturbance within the existing 35-meter (115-foot) wide pipeline corridor, two were placed within a less disturbed area on the edge of the existing pipeline corridor south of the surface scatter boundaries. All shovel tests were negative for buried cultural material. The mapped soil for the area consists of Placedo silty clay loam (Pe) with clayey over loamy alluvium of Holocene age as parental material (Miller 1982; SSS NRCS USDA 2014). A typical recorded shovel test profile consisted of very dark grayish brown (10YR3/2) sandy clay extending from the surface down to approximately 35 centimeters (14 inches) below ground surface, followed by dark gray (10YR4/2) compact clay extending to the base of the shovel tests at approximately 50 centimeters (20 inches) below ground surface.

The site location is depressed and shows indications of erosion as a result of previous ground disturbances. The cultural materials visible on the ground surface were likely exposed and washed downward as the result of previous pipeline construction which appears to have been installed by open cut trenching.

Site 41VT174

Prehistoric Site 41VT174 was identified on the top of a small landform above the western margin of Garcitas Creek inside the Project APE (Appendix A: Figure A27; Appendix B: Figure B18). The site can be found on the *Kamey*, USGS Topographic Quadrangle. Its elevation is estimated at 7 meters (24 feet) above MSL. Site 41VT174 consists of three lithic debitage pieces and three prehistoric pottery fragments.

The size of the site measures approximately 7 by 10 meters (23 by 33 feet) and is located at the top of a small landform situated approximately 85 meters (279 feet) west-southwest of the newly recorded Site 41VT173. A total of 10 shovel tests were excavated at the site. Site 41VT174 was identified during the survey after a judgmentally placed shovel test was positive for two debitage pieces and three pottery fragments. Another positive shovel test was located approximately 10 meters (33 feet) to the north, yielding one additional tertiary flake. Prehistoric cultural materials were recorded between 0 to 42 centimeters (16.5 inches) below ground surface. All other delineation shovel tests were negative for buried cultural materials.

The mapped soil for the area consists of Laewest clay (LaD), 3 to 8 percent slopes, with clayey fluviomarine deposits of Late Pleistocene age as parental material (Miller 1982; SSS NRCS USDA 2014). Soils recorded within the positive shovel tests consisted of very dark gray (10YR3/1) sandy clay extending from the surface to approximately 42 centimeters (16.5 inches) below ground surface, followed by black (10YR2/1) clay to the base of the shovel tests at approximately 52 centimeters (20.5 inches) below ground surface.

Considering the proximity of this site to the newly identified Site 41VT173 and the possible disturbances associated with the construction of the existing pipeline in both site locations, it is possible that both sites were once a part of a larger site located on a landform to the southwest of the Garcitas Creek and outside of the Project APE. However, based on the site's

small size and disturbances in the area associated with construction of existing pipelines, it is unlikely that much of the original site remains intact within the current Project APE.

Site 41JK194

Site 41JK194 is a prehistoric surface scatter located at the margin of tidal flats on the east side of Garcitas Creek (Appendix A: Figure A27; Appendix B: Figure B19). The site can be found on the *Kamey,* USGS Topographic Quadrangle, in Jackson County. Its elevation is estimated at 0.6 meters (2 feet) above MSL. The approximated site area measures only 5 by 15 meters (16 by 49 feet) and falls northwest and outside of the Project APE. Observed cultural material consisted of five tertiary flakes.

The site area was visually delineated, as surface visibility was 100 percent with the site area exhibiting a sandy shoreline at the bottom of a small landform. The area is located approximately 35 meters to 40 meters (115 feet to 131 feet) east-northeast from the Garcitas Creek, and falls at the juncture of the creek's floodplain. The site location and the nature of the associated cultural finds indicate the possibility of artifacts being potentially either eroded or washed off from a landform located on higher ground to the southeast and outside of the Project APE. Two judgmental shovel tests were excavated to the north and to the southeast of the surface scatter area. Subsurface tests were negative for buried cultural material. The mapped soil for the area consists of Placedo clay (Pd), frequently flooded, clayey over loamy alluvium of Holocene age as parental material (Miller 1997; SSS NRCS USDA 2014). Soils recorded within delineation shovel tests consisted of light yellowish brown (10YR6/4) sandy loam from the surface level to the depth of 26 centimeters (10 inches) below ground surface, followed by dark gray (10YR4/1) sandy clay to the depth of approximately 45 centimeters (18 inches) below ground surface, finally followed by strong brown (7.5YR5/8) silty clay to the base of the shovel tests at approximately 58 centimeters (23 inches) below ground surface.

The site location is depressed and shows indications of erosion as a result of previous ground disturbances. The materials were likely exposed and washed downward as the result of previous pipeline construction which appears to have been installed by open cut trenching. The site's cultural material appears to have come to rest in the location by colluvial processes from a landform outside the Project APE. In addition, several pipelines underlie the site and are located between the site and the Project centerline.

Site 41JK195

Site 41JK195 is a prehistoric surface scatter located at the margin of tidal flats on the east side of Garcitas Creek in Jackson County (Appendix A: Figure A27; Appendix B: Figure B20). The site can be found on the *Kamey,* USGS Topographic Quadrangle. Its elevation is estimated at 1.5 meters (5 feet) above MSL. The site area measures approximately 5 by 10 meters (16 by 33 feet) and falls within an existing pipeline corridor northwest and outside of the Project APE. Observed cultural material consisted of five tertiary flakes.

The area is located approximately 550 meters (1804 feet) east-northeast from the actual Garcitas Creek shoreline and falls within the creek's floodplain. The surrounding area and the type and number of artifacts found at the site indicate that the cultural material may have

either eroded or washed off from a landform located on higher ground to the north and outside of the Project APE. The location and condition of the site did not warrant subsurface testing because the site is located on a sandy shoreline. Instead, the site area was visually delineated, as surface visibility was 100 percent. The mapped soil for the area consists of Laewest clay (LaD3), 3 to 8 percent slopes, with clayey fluviomarine deposits of Late Pleistocene age as parental material (Miller 1997; SSS NRCS USDA 2014).

As with the nearby Site 41JK194, the location of Site 41JK195 is slightly depressed and shows indications of erosion as a result of previous ground disturbance. The materials were likely exposed and washed downward as the result of previous pipeline construction which appears to have been installed by open cut trenching. The site's cultural material appears to have moved to its current location by colluvial processes from a landform existing outside of the Project APE to the north.

Site 41JK196

Site 41JK196 is a multi-component surface scatter located at the bottom of a landform on the edge of a wetland area surrounding Venado Lakes and Venado Creek (Appendix A: Figure A29; Appendix B: Figure B21). It lies approximately 200 meters (656 feet) west of the northern lake's contour line channel and can be found on the *Lolita,* USGS Topographic Quadrangle, in Jackson County. The site falls completely outside of the Project APE. Its elevation is estimated at 0.9 meters (3 feet) above MSL. The site consists of one flake possibly modified as a unifacial tool, six debitage fragments, a turtle shell, and an unspecified number of modern bottle glass fragments.

Site 41JK196 was recorded across a small elevated landform situated between Venado Creek to the east and creek's tributary to the west. The site was visually delineated as surface visibility was 100 percent and the approximated area of the surface scatter measures 10 by 20 meters (33 by 66 feet). A series of shovel tests were placed across the landform at 10- to 20-meter (33- to 66-foot) intervals and three additional shovel tests were excavated within the scatter in an attempt to find evidence for buried cultural material. All tests were negative for buried cultural materials. The location of the site near the floodplain suggests the possibility that additional cultural materials may have eroded or washed away from the landform by high waters.

The mapped soil for the area consists of Dacosta (DaA) sandy clay loam, 0 to 1 percent slopes, with clayey fluviomarine deposits of Late Pleistocene age as parental material (Miller 1997; SSS NRCS USDA 2014). Soils recorded in the shovel tests placed within the scatter area consisted of very dark gray (10YR3/1) mottled with light brownish gray (10YR6/2) and black (10YR2/1) sand from the surface level to 9 centimeters (3.5 inches) below ground surface, followed by gray (10YR5/1) sandy clay with manganese inclusions to the depth of 38 centimeters (15 inches) below ground surface, followed by dark gray (10YR4/1) sandy clay to the bottom depth of the shovel tests at 60 centimeters (24 inches) below ground surface.

The site location shows indications of erosion as a result of previous ground disturbance. Site 41JK196's proximity to existing pipelines suggests the materials were likely exposed and washed out as the result of previous pipeline installation.

5.2.2 Newly Recorded Historic-Age Structure

Historic-Age Structure SP-017-S-1

The historic structure recorded as SP-017-S-1 is a homestead located 180 meters (590 feet) south of McCampbell Road in San Patricio County (Appendix A: Figure A4; Appendix B: Figure B4). The homestead can be found on the *Aransas Pass,* USGS Topographic Quadrangle. The approximate size of the homestead is 45 meters (148 feet) north-south by 50 meters (164 feet) east-west and its elevation is estimated at 6 meters (20 feet) above MSL. The proposed Project route is planned to bypass the homestead to the east and will not have an immediate impact on the standing structures.

Historical research produced limited information on the homestead. According to the available historical aerial images and topographic maps, the homestead has been on the property since the 1950s. Two structures are visible on the earliest available aerial imagery dating to 1950, but not on historic topographic maps dating to 1925 and 1945 (Google, Inc. 2014c; NETR 2014b; USGS 2014a). The homestead remains visible on aerial images and topographic maps from the 1950s to the present (Google, Inc. 2014a-f; NETR 2014a,b; USGS 2014a).

5.2.3 Newly Recorded Loci Isolates

A total of five historic loci isolates were identified during the survey. These loci isolates generally contain 3 to 10 fragments of a limited number of material classes (such as only glass), and many of the same color, thickness, and markings suggesting a limited number (1 to 3) of items are represented and thus are treated as though they are isolated finds. All of the finds were located in plowed fields removed from any standing or historic structures, and therefore are considered to be out of context. Further, many loci isolates were recorded during investigation of a former survey corridor no longer in consideration for the Project and are not currently in danger of direct impact from the Project.

Locus SP-009-L-1

Locus SP-009-L-1 is a small historic surface scatter located partially within the Project APE in a plowed agricultural field approximately 830 meters (0.5 miles) east of Richardson Road in San Patricio County (Appendix A: Figure A3). This locus can be located on the *Aransas Pass, TX*, USGS Topographic Quadrangle. The scatter area measures approximately 10 by 15 meters (33 by 49 feet). A north to south agricultural turn-row passes immediately adjacent to the locus. An 11.4-centimeter (4.5-inch) diameter ethylene/cyclohexane pipeline also passes immediately adjacent to the locus to the east. Artifacts within the scatter consist of three glass fragments (one undefined clear-colored and two fragments of flat very light-blue window glass) and two light amethyst-colored bottle necks. The mapped soil for the area consists of Victoria Clay (VcA), 0 to 1 percent slopes, with clayey fluviomarine deposits of Late Pleistocene age as parental material (Guckian and Garcia 1979; SSS NRCS USDA 2014).

The earliest available aerial imagery dates to 1950 (Google, Inc. 2014c) showing the closest standing structure located approximately 765 meters (2,510 feet) northwest of the site boundary. The earliest available topographic map dates to 1925 and contains no indication of

any structure in the vicinity of the site although an unimproved road does pass the location (USGS 2014a). A review of more recent aerial images and topographic maps dating to between 1950s and the present likewise show no structures in the location (Google, Inc. 2014a-f; NETR 2014a,b; USGS 2014a).

The locus was visually delineated, as ground surface visibility was 100 percent. No subsurface testing was conducted due to limited number of artifacts observed and agricultural field disturbances dominating the area. The artifacts likely represent a historic trash scatter composed of a small number of items. These may have then been redeposited by plowing and the continuous use of the turn-row by agricultural machinery.

Locus SP-015-L-1

Locus SP-015-L-1 is a small historic surface scatter located in a plowed agricultural field approximately 825 meters (2,707 feet) east of FM 136 (McKamey Road) in San Patricio County (Appendix A: Figure A4). This locus can be located on the *Aransas Pass,* USGS Topographic Quadrangle. A north-south agricultural turn-row now passes immediately adjacent to the locus. An 11.4-centimeter (4.5-inch) diameter ethylene/cyclohexane pipeline also passes immediately adjacent to the locus to the east. As a result of Project realignments, it is no longer within the Project APE. The mapped soil for the area consists of Raymondville clay loam (RaA), 0 to 1 percent slopes, with loamey fluviomarine deposits of Late Pleistocene age as parental material (Guckian and Garcia 1979; SSS NRCS USDA 2014). Artifacts within the scatter consist of eight glass fragments within a 6-meter (20-foot) area. Two of the fragments are of a colorless ribbed glass, two are brown glass with moderate patina, and four pieces are thick colorless glass containing bubble imperfections as a result of the manufacturing process.

The earliest available aerial imagery dates to the 1950s and show no structures in the vicinity of the locus (Google, Inc. 2014c; NETR 2014a). The same is true of the earliest topographic maps dating to the 1925 and 1945 (NETR 2014b; USGS 2014a). No structures were visible on the more recent aerial imagery and topographic maps spanning the 1950s to the present (Google, Inc. 2014a-f; NETR 2014a,b; USGS 2014a); however, three oil tanks and an oil well located approximately 400 meters (1300 feet) northeast of the locus are shown on topographic maps dating to 1956, 1964, 1966, and 1977 (NETR 2014b; USGS 2014a).

The locus was visually delineated, as ground surface visibility was 100 percent. No subsurface testing was conducted due to the limited number of artifact types and agricultural field disturbances. The items likely represent a historic trash scatter composed of a small number (likely no more than 3) of items. While the cultural material could be associated with nearby Historic Site 41SP265, there is not enough data to confirm a correlation. The artifacts may have then been redeposited by plowing and the continuous use of the turn-row by agricultural machinery.

Locus SP-016-L-1

Locus SP-016-L-1 is a historic surface find located in a plowed agricultural field approximately 835 meters (2,740 feet) east of FM 136 (McKamey Road) in San Patricio

County (Appendix A: Figure A4). This locus can be located on the *Aransas Pass,* USGS Topographic Quadrangle. As a result of Project realignments, the locus is no longer within the Project APE. A north-south agricultural turn-row passes immediately adjacent to the locus. An 11.4-centimeter (4.5-inch) diameter ethylene/cyclohexane pipeline also passes immediately adjacent to the locus to the east. The scatter consists of one stoneware fragment and two glass fragments distributed within a 10- by 10-meter (33- by 33-foot) area.

The mapped soil for the area consists of Raymondville clay loam (RaA), 0 to 1 percent slope, with parental material of loamy fluviomarine deposits of Late Pleistocene age (Guckian and Garcia 1979; SSS NRCS USDA 2014). One judgmental shovel test was excavated and the site was visually delineated, as the ground surface visibility was 100 percent. Soils encountered in the shovel tests consisted of dark gray (7.5YR4/1) silty clay from the surface to the base of the tests at a depth of 30 centimeters (12 inches) below ground surface. The shovel test was negative for cultural resources.

The earliest available aerial imagery dates to the 1950s and show no structures in the location of the locus, but a group of structures can be observed within a half-mile radius to the north, and another group to the west of the locus (Google, Inc. 2014c; NETR 2014a). The earliest available topographic maps dating to 1925 and 1945 do not depict any structures within or immediately adjacent to the locus (NETR 2014b; USGS 2014a). No structures were visible on the more recent aerial imagery and topographic maps spanning the 1950s to the present (Google, Inc. 2014a-f; NETR 2014a,b; USGS 2014a).

The entirety of the scatter appears to be located on the surface and confined to the plow zone. The items likely represent a historic trash scatter composed of a small number of items. While the cultural material could be associated with nearby Historic Site 41SP265, there is not enough data to confirm a correlation. The artifacts may have then been redeposited by plowing and the continuous use of the turn-row by agricultural machinery.

Locus SP-033-L-1

Locus SP-033-L-1 is a historic surface find located on the north margin of the mud flats 3.2 kilometers (2 miles) south of Chiltipin Creek (Appendix A: Figure A5). The locus can be located on the *Rincon Bend,* USGS Topographic Quadrangle. An existing 21.8-centimeter (8.6-inch) diameter natural gas pipeline runs immediately adjacent to the east of the locus. As a result of Project realignments, this locus is no longer within the Project APE. The locus consisted of two intact early- to mid-twentieth century glass bottles and one bottle fragment discovered within a 3-meter (10-foot) area.

In addition to the excavation of eight judgmental shovel tests placed at 10-meter (33-foot) intervals nearby, the area was visually delineated, as the ground surface visibility was 100 percent. Typical soils encountered were dark gray (7.5YR4/1) silty clay from the surface to the base of the tests at a depth of 30 centimeters (12 inches) below ground surface. The shovel tests produced no additional cultural resources. Mapped soils in the area consist of Willacy series loamy soils, ranging from 0 to 5 percent slopes (Guckian and Garcia 1979; SSS NRCS USDA 2014).

The earliest available aerial imagery dates to 1950 and shows structures located almost 1 mile (1.6 kilometers) to the northwest of the locus (Google, Inc. 2014c). These structures disappear in aerial imagery in 1995. No other historic structures are visible in the vicinity of the locus. The earliest topographic map dates to 1956 and shows no structures being located nearby (NETR 2014b).

There are several reasons to conclude that this find is out of context. The locus lacks any intact buried cultural deposits. There are no confirmed historical structures within the immediate vicinity of the find. Further, the locus is located within tidal flats and on the edge of a continuously plowed agricultural field.

Locus CA-023-L-1

Locus CA-23-L-1 is a historic surface scatter located in a plowed field just north of Foester Road and 250 meters (820 feet) southwest of the intersection of an unnamed dirt road and Foester Road (Appendix A: Figure A25). This locus is located on the *Kamey,* USGS Topographic Quadrangle in Calhoun County. It falls within the Project APE. The mapped soil for the area is Laewest clay (La), 0 to 1 percent slopes, with clayey fluviomarine deposits of Late Pleistocene age parental material (Mowery and Bower 1978; SSS NRCS USDA 2014). The surface scatter consists of historic and modern glass body fragments spread over a 35-meter (115-foot) area. Recorded historic glass fragments included three pieces of olive green glass, two fragments of light aqua glass, and four fragments of brown glass. None of the fragments had patina. In addition to the nine historic glass fragments, more modern glass was observed including clear, green, and brown glass fragments. Modern glass was not counted.

The earliest available aerial imagery dates to 1990 and shows no structures located in the immediate vicinity (Google, Inc. 2014c). The earliest topographic map dates to 1953 and shows no structures located nearby (NETR 2014b).

The items likely represent a historic trash dump composed of a small number of items. The area was visually delineated as surface visibility was 100 percent and therefore, no subsurface testing was conducted.

5.2.4 Newly Recorded Isolated Finds

A total of six isolated finds were recorded during the survey. One of the isolated finds was is prehistoric and the others are as historic. All isolates were recorded on the surface in disturbed contexts. Because of the limited number of artifacts and the limited information that can be discerned from them no state-issued trinomials will be sought for these isolates.

Isolate SP-011-I-1

Isolate SP-011-I-1 is a historic surface find located in a plowed agricultural field between McCampbell Road/CR 93 and McKamey Road/CR 104 (Appendix A: Figure A3). It can be found on the *Aransas Pass,* USGS Topographic Quadrangle, in San Patricia County. As a result of Project realignments, this isolated find is no longer within the Project APE. A north-south agricultural turn-row passes immediately adjacent to the isolate's location. An 11.4-

centimeter (4.5-inch) diameter ethylene/cyclohexane pipeline also passes immediately adjacent to the isolate to the east. The isolate consists of a single glass bottle base. The area was visually delineated, as ground surface visibility was 100 percent. No subsurface testing was performed. The mapped soil for the area is composed of Raymondville clay loam (RaA), 0 to 1 percent slopes, with loamy fluviomarine deposits of Late Pleistocene age parental material (Guckian and Garcia 1979; SSS NRCS USDA 2014).

The earliest available aerial imagery dates to 1950 shows a few standing structures within a 1-mile (1.6-kilometer) radius, but no structures within close proximity to the find (Google, Inc. 2014c). Topographic quadrangles dating between 1925 and 1977 were also reviewed but contain no indication of any structure in the immediate vicinity of the isolate (USGS 2014a).

Isolate SP-012-I-1

Isolate SP-012-I-1 is a historic surface find located in a plowed agricultural field between McKamey Road/CR 104 and McCampbell Road/CR 93 (Appendix A: Figure A3). It can be found on the *Aransas Pass,* USGS Topographic Quadrangle, in San Patricio County. As a result of Project realignments, this locus is no longer within the Project APE. A north-south agricultural turn-row passes immediately adjacent to the isolate's location and an 11.4-centimeter (4.5-inch) diameter ethylene/cyclohexane pipeline also passes immediately adjacent to the isolate to the east. The isolate consists of two fragments of historic ironware. The isolate was visually delineated, as ground surface visibility was 100 percent. Visual inspections revealed no additional artifacts in the area. The mapped soil for the area is composed of Raymondville clay loam (RaA), 0 to 1 percent slopes, with loamy fluviomarine deposits of Late Pleistocene age parental material (Guckian and Garcia 1979; SSS NRCS USDA 2014).

The earliest available aerial imagery dates to 1950 and shows few standing structures within a 1-mile (1.6-kilometer) radius, but no structures in the vicinity of the find (Google, Inc. 2014c). Topographic quadrangles dating between 1925 and 1977 were also reviewed but contain no indication of any structure in the immediate area of the isolate's location (USGS 2014a).

Isolate SP-014-I-1

Isolate SP-014-I-1 is an historic surface find located in a plowed agricultural field between McKamey Road/CR 104 and McCampbell Road/CR 93. It can be found on the *Aransas Pass,* USGS Topographic Quadrangle, in San Patricio County (Appendix A: Figure: A4). As a result of Project realignments, this isolate is no longer within the Project APE. A north-south agricultural turn-row passes immediately adjacent to the isolate's location and an 11.4-centimeter (4.5-inch) diameter ethylene/cyclohexane pipeline also passes immediately adjacent to the isolate to the east. The soil is composed of Raymondville clay loam (RaA), 0 to 1 percent slopes with loamy fluviomarine deposits of Late Pleistocene age parental material (Guckian and Garcia 1979; SSS NRCS USDA 2014). The isolate consists of a single fragment of a pale blue historic glass bottle neck-crown finish. The fragment was covered with moderate to heavy patina and contained bubbles within the glass. The area surrounding the isolate was visually delineated, as ground surface visibility was 100 percent. Visual inspection revealed no additional cultural material in the vicinity.

The earliest available aerial imagery, dating to 1950, shows a few standing structures within a 1-mile (1.6-kilometer) radius of the isolate, but no structures within close proximity to the find (Google, Inc. 2014c). The reviewed historic topographic quadrangles, which date to between 1925 and 1977, contain no indication of any structure in the immediate vicinity of the isolate (USGS 2014a).

Isolate SP-029-I-1

Isolate SP-029-I-1 was a surface find consisting of two historic glass Coca-Cola bottles. The bottles were identified during the pedestrian walkover survey in a plowed field approximately 300 meters (1,000 feet) south of TX-188 (Appendix A: Figure A5). The isolate find can be located on the *Rincon Bend,* USGS Topographic Quadrangle Map in San Patricio County. The isolate includes one intact aqua blue Coca-Cola bottle and another similar bottle in fragments. The bottles are embossed with the makers' marks of the Vicksburg, Mississippi Bottling Company. The general shape and style of the bottles date to between 1916 and the 1970s (Society for Historical Archaeology 2013b).

The area around the find was visually delineated, as ground visibility was 100 percent and no additional cultural materials were observed. Surface finds were confined to an area of approximately 1 by 1 meter (3 by 3 feet). No subsurface testing was performed. The mapped soil in the area is Victoria clay (VcA), 0 to 1 percent slopes with clayey fluviomarine deposits of Late Pleistocene age parent material (Guckian and Garcia 1979; SSS NRCS USDA 2014).

The earliest available aerial imagery dates to 1950 and shows a small cluster of standing structures roughly 400 meters (0.25 miles) northeast of the find (Google, Inc. 2014c). According to the aerial imagery, structures have remained at that location to the present day. The aerials also show a few other standing structures located to the southeast and west within a 1-mile (1.6-kilometer) radius of the find; however, there is no evidence of structures located in close proximity to the find. Topographic maps dating from 1956 to 1987 were also reviewed, but contain no indication of any structure in the immediate vicinity of the isolate (NETR 2014b; USGS 2014e). A review of data available on the TxGLO GISWEB Viewer indicated that several pipelines exist in the area including natural gas, ethane, brine, and ethylene/cyclohexane (TxGLO 2014a).

Isolate RE-019-I-1

Isolate RE-019-I-1 consists of a single historic surface find in the form of a brown bottle base. It was discovered during pedestrian survey, 5 meters (16 feet) east of a major bend in Melon Creek and 3 kilometers (1.9 miles) northeast of FM 2678 (Appendix A: Figure A9). The isolate can be located on the *Mission Bay*, USGS Topographic Quadrangle Map in Refugio County. The isolate is located outside of the Project APE.

The immediate area surrounding the isolate was visually delineated as surface visibility was 100 percent. No additional cultural materials were found. Three delineation shovel tests were excavated, but all were negative for buried cultural material. Recorded soils consisted of dark gray (10YR4/1) clay heavily mottled with light brownish gray (10YR6/2), yellowish brown

(10YR5/6), and very dark grayish brown (10YR3/2) clay throughout (Munsell Color 2005). The mapped soil for the area is Aransas clay, saline (As) with clayey alluvium of Holocene age parent material (Guckian 1988; SSS NRCS USDA 2014).

A review of aerial imagery dating to 1951, 1952, and 1972 and topographic maps dating to 1956, 1968, and 1979 provide no evidence of any structures in the immediate vicinity of the isolate or within a 1-mile (1.6-kilometer) radius of the find (NETR 2014a,b). A review of data available on the TxGLO GISWEB viewer revealed that several pipelines exist in the location including ethane and ethylene/cyclohexane (TxGLO 2014a).

Isolate JA-006-I-1

Isolate JA-006-I-1 is a single prehistoric surface find recorded at the edge of a plowed field on the east side of Keller Creek outside of the Project APE (Appendix A: Figure A32). The find is located on the *La Ward,* USGS Topographic Quadrangle in Jackson County. The find consists of a broken biface, which is most likely a projectile point distal fragment, made from mottled dark red chert. The area was visually inspected as ground visibility was 100 percent and two judgmental shovel tests were placed around the find. Surface inspection and subsurface testing yielded no additional cultural material.

The mapped soil for this area is Dacosta sandy clay (DaA) loam 0 to 1 percent slope, with clayey fluviomarine deposits of Late Pleistocene age as parental material (Miller 1997; SSS NRCS USDA 2014). Typical soils recorded in the shovel tests consisted of dark gray (10YR4/1) silty clay loam from the surface level to approximately 42 centimeters (16.5 inches) below ground surface, followed by very dark gray (10YR3/1) silty clay to a depth of 55 centimeters (22 inches) below ground surface.

5.2.5 Investigations at Previously Identified Sites

A total of six previously recorded archaeological sites were mapped within or adjacent to at least one of the multiple proposed versions of the Project APE at the time of survey. These consist of Sites 41SP256, 41RF51, 41RF52, 41RF53, 41RF54, and 41JK111. Due to project realignment and avoidance measures, only Site 41SP256 is still located within the current proposed Project APE. A discussion of the results from all the revisits of previously recorded sites is provided below.

Investigation at Previously Identified Site 41SP256

Site 41SP256 is located along a former estuarine channel that now consists of a thoroughly plowed field with planted cotton in the northern part of Tract TX-SP-003.000 in San Patricio County (Appendix A: Figure A2; Appendix B: Figure B1). It can be located in the *Aransas Pass,* USGS Topographic Quadrangle. The elevation of the site is estimated at 6 meters (20 feet) above MSL. This site was identified by HRA Gray & Pape in 2011 (Scott et al. 2013). As the boundaries were originally recorded, 14 to 15 meters (46 to 49 feet) of the northwestern portion of the site falls within the current Project APE. It was recorded as a prehistoric artifact surface scatter, which contained multiple species of shell including oyster, conch, and whelk, as well as burned rock and clay nodules, a variety of medium-sized and small burned faunal

bones, lithic debitage including heat-treated micro-debitage, and tools. A small possible adze was recorded and collected along with a worked flake. When it was recorded, the site boundary measured approximately 30 meters (98 feet) north to south and 50 meters (164 feet) east to west within an empty field that appeared to have been tilled prior to the survey. Based on the results of shovel testing, Scott et al. (2013) suggested that the entirety of Site 41SP256 was confined to the plow zone, indicating that no portion of the site remained intact. Thus, the site was originally recommended as not eligible for the NRHP and no further work was recommended (Scott et al. 2013).

Site 41SP256 was revisited during the 2014 supplemental survey. At the time of revisit, the site was covered by mature cotton plants, but surface visibility was high as the crop rows and the plants themselves were spaced roughly 0.3 to 1 meter (1 to 3 feet) apart. Various species of shell, including oyster, conch, and whelk, were once again observed on the surface, but no other artifacts were identified. Four shovel tests were excavated within the recorded site boundaries in between the crop rows. Only one of the shovel tests contained shell (primarily oyster) below the ground surface and the shell was found in a light concentration extending from 0 to 30 centimeters (12 inches) below ground surface. The shell from that shovel test was collected as a sample. Soils encountered in the shovel tests consisted of either dark gray (10YR4/1) compact clay from the surface to the termination of the shovel test at 30 centimeters below (12 inches) below ground surface or grayish brown (10YR5/2) sandy loam from 0 to 10 centimeters (4 inches) below ground surface followed by dark grayish brown (10YR4/2) or dark gray (10YR4/1) compact clay to the termination of the shovel test at 30 centimeters below (12 inches) below ground surface (Munsell Color 2005). Mapped soils for the area include Raymondville clay loam (RaA), 0 to 1 percent slopes, with loamy fluviomarine deposits of Late Pleistocene age parental material, Orelia sandy clay loam (Os) with clayey fluviomarine deposits of Late Pleistocene Age parental material, and Papalote fine sandy loam (PaA), 0 to 1 percent slopes, with clayey fluviomarine deposits of Late Pleistocene Age (Guckian and Garcia 1979; SSS NRCS USDA 2014).

The revisit indicated that the site now extends beyond the previously defined boundaries, likely due to surficial disturbance. There were multiple areas with particularly dense concentrations of shell on the surface, so the site centroid could not be relocated. The site has clearly been impacted by farming activities and the larger size of the shell surface scatter observed during the revisit is probably due to plowing and other disturbances moving and scattering the contents of the original surface concentration over a larger area.

Investigation at Previously Identified Site 41RF51

Site 41RF51 is a prehistoric surface scatter and a potential shell midden that was originally recorded in 2009 (Warren 2009a) (Appendix A: Figure A9; Appendix B: Figure B11). The site is in the southwestern region of Tract TX-RE-018.000 and can be found on the *Mission Bay,* USGS Topographic Quadrangle in Refugio County. Its elevation is estimated at 4 meters (12 feet) above MSL. The site falls outside of the Project APE and is located on a raised landform on the edge of the Mission River floodplain. The Mission River itself is located approximately 0.8 kilometers (0.5 miles) to the southwest and a tributary creek, Melon Creek, is located roughly 100 meters (330 feet) to the southwest. A small manmade pond is located 90 meters (300 feet) to the northeast. According to historic aerials and topographic maps, the pond was

created in the 1970s (NETR 2014a,b). The site occupies a wooded area between these bodies of water with a cleared pipeline ROW to the west and a cleared pasture to the east.

The site was originally recorded as a prehistoric midden consisting of a surface scatter of shell and mammal bone with shell deposits continuing to 30 centimeters (12 inches) below ground surface. Observed shell included oyster and whelk. The site boundary was reported as measuring 30 by 5 meters (98 by 16 feet) northwest to southeast. The site was recorded as being disturbed by bioturbation, erosion, and bulldozing activities. At the time of the original survey, however, the midden itself was intact and therefore the site was recommended as potentially eligible for the SAL designation. NRHP eligibility status for Site 41RF51 was not determined (Warren 2009a).

Site 41RF51 was revisited twice during the IELLC Pipeline survey. The first revisit occurred during the initial survey efforts in 2013. HRA Gray & Pape's 2013 field observations identified cultural material within 30 meters (98 feet) of the centroid recorded in 2009. The observation of debitage visible on the surface leading towards the originally mapped centroid location, as well as material types consistent with those originally recorded at the site centroid suggested that the observed artifact scatter was in fact a continuation of Site 41RF51. The artifact scatter identified in 2013 occupied a 35-meter (115-foot) wide maintained pipeline corridor which was bordered by a marshy floodplain to the west and a wooded area to the east (where the original recorded location of Site 41RF51 was mapped in 2009). The observed area measured approximately 55 by 30 meters (181 by 98 feet) and was located on a slightly elevated landform overlooking the immediate surroundings and floodplains of Melon Creek to the south-southwest. Based on the field observations the western portion of the site has been impacted by the previous construction of an existing pipeline, whereas the intact part of the site extends further to the east starting at the treeline and continues outside of the surveyed corridor.

During the first revisit, the site was visually delineated within the survey corridor, as surface visibility was 100 percent. Immediately present was a shell scatter measuring approximately 60 meters (197 feet) in diameter. Recorded shell included large oyster, whelk, clam and gastropod. A shovel test was placed in the middle of the scatter area and was positive for buried cultural material. Recorded artifacts were distributed between 0 to 50 centimeters (20 inches) below ground surface and consisted of five debitage pieces, one broken biface tool, shell (17 pieces collected), 10 faunal fragments, and several small pieces of burnt clay. In addition, two debitage flakes and two faunal fragments were located on the surface 5 meters (16 feet) west of the positive shovel test. Although site delineation was attempted during the 2013 investigation, full delineation was not possible due to wet ground conditions at the time of survey and buried pipelines within the existing pipeline corridor. Therefore, only two additional delineation subsurface tests were excavated at 25-meter (82-foot) intervals. The delineation shovel tests were negative for buried cultural material. Typical soil profiles recorded during the survey consisted of grayish brown (10YR5/2) clay loam extending from the ground surface and transitioning into a damp dark grayish brown (10YR4/3) clay at 15 centimeters (6 inches) below the ground surface (Munsell Color 2005). The mapped soil for this area consists of Victoria clay (VcB), 1 to 3 percent slopes with clayey fluviomarine deposits of Late Pleistocene age as parental material (Guckian 1988; SSS NRCS USDA 2014).

The second revisit of Site 41RF51 occurred during the supplemental survey efforts in 2014, due to Project alignment changes. At that time, the pond located northeast of the site was completely dry. A small manmade drainage with a damaged concrete culvert was observed between the site and the dry pond to the northeast, which served as the northern site boundary. The culvert may have impacted the site itself in the past. A dirt road was also noted that bisected the site and had shell and some lithic materials exposed on the surface. During the second revisit, the previously recorded site boundaries were confirmed. The current Project APE comprises most of the eastern portion of the site with a large part of the site falling outside of the APE. Roughly 66 meters (217 feet) of the site spans west of the APE.

During the 2014 revisit, two shovel tests were excavated within the site boundary during the revisit were positive for buried cultural material. One shovel test was located in a densely wooded area with mesquite and prickly pear cactus. It contained a concentration of shell to a depth of 30 centimeters (12 inches) along with 1 chert tertiary flake at 20 centimeters (8 inches). The other shovel test was placed approximately 30 meters (98 feet) south of the first shovel test and similarly had shell to a depth of 30 centimeters (12 inches), along with 3 flakes and 1 faunal tooth fragment. A third and fourth shovel test were excavated approximately 30 meters and 60 meters (98 feet and 197 feet) east of the second positive shovel test and contained some shell, but it was not as densely concentrated and no lithic or other cultural materials were encountered. In all positive shovel tests, the soil containing cultural materials was composed of very dark grayish brown (10YR3/2) clay loam to a depth of 30 centimeters (12 inches) (Munsell Color 2005). The sterile subsoil was composed of pale brown (10YR6/3) compact clay with calcium carbonate inclusions. In areas outside of the site, the subsoil was black (10YR2/1) clay, indicating that the presence of shell may be affecting the soil. In addition to shovel testing, surface reconnaissance was also used to relocate the boundaries of the site. Artifacts were visible on the surface within the site boundary and the surface scatter accurately distinguished the extent of the site. Although a portion of the site has been impacted by previous pipeline installation, these field results suggest that the east edge of the existing pipeline corridor contains intact subsurface deposits.

Investigation at Previously Identified Site 41RF52

Site 41RF52 is located approximately 100 meters (300 feet) northeast of Site 41RF51. The site is also in the southwestern region of Tract TX-RE-018.000 and can be found on the *Mission Bay, TX*, USGS Topographic Quadrangle in Refugio County (Appendix A: Figure A9; Appendix B: Figure B11). Its elevation is estimated at 6.4 meters (21 feet) above MSL. The current Project APE cuts diagonally through the northwest portion of the site, running southwest-to-northeast. The site falls outside of the Project APE. It is located on the southern edge of the same dry pond associated with 41RF51. The mapped soil associated with the site is Victoria clay (VcB), 1 to 3 percent slopes, with loamy fluviomarine deposits of Late Pleistocene age (Guckian 1988; SSS NRCS USDA 2014).

The site was originally recorded in 2009 as a shell midden and/or possible open campsite of unknown prehistoric origin (Warren 2009b). The recorded dimensions for the site are 10 meters (33 feet) north-to-south by 10 meters (33 feet) east-to-west. In the 2009 investigation six shovel tests were excavated inside the site boundaries which produced numerous oyster

and whelk shell fragments, as well as a few baked/burnt clay fragments. The site was recorded as being zero percent intact, with obvious and extensive disturbances from agricultural activities, bioturbation, and erosion (Warren 2009b).

Site 41RF52 was revisited during the 2014 supplementary survey efforts. At the time of revisit, field observations revealed that the site is currently limited to the edge of the landform extending approximately 50 meters (164 feet) from the bank of the dry pond. To the east, the landform continues, covered with overgrown pastureland. Faint traces of a road are evident along the southern edge of the dry pond, along with a channelized drainage and concrete culvert. This area borders the northern boundary of the site. During the revisit, three shovel tests were excavated in association with Site 41RF52. One shovel test was placed at the northern edge of the previously recorded site boundary. Though some shell was recorded, the soils in that shovel test were disturbed and mixed, likely due to construction and activities associated with road and culvert. A second shovel test was placed near the center of the site and contained a very dense concentration of shell to a depth of 30 centimeters (12 inches) below ground surface. A third shovel test was placed outside of the eastern site boundary. This shovel test was negative for all cultural materials, including shell. As with Site 41RF51, shell was visible scattered on the surface and served as an accurate representation of the site boundaries. Shell was also visible eroding out of the steep bank of the dry pond. Soils in this site were similar to the soils observed during the revisit of Site 41RF51, and were composed of a cultural layer consisting of very dark grayish brown (10YR4/2) or very dark gray (10YR3/1) clay followed by either black (10YR2/1) or grayish brown (10YR5/2) clay subsoil with calcium carbonate inclusions. Shell was the only cultural material recorded during the revisit; however, based on surface inspection and the shovel test results, the site boundaries were extended north to include the shell eroding out of the bank of the pond. Based on the investigation conducted during the revisit, it is evident that this site has been impacted by farming activities; however, despite previous observations to the contrary, the site appeared to be largely intact.

Investigation at Previously Identified Site 41RF53

Site 41RF53 is a prehistoric lithic scatter and shell concentration originally recorded in 2009 (Warren 2009c). It is located on Tract TX-RE-018.000, 400 meters (0.25 mile) north-northeast of Melon Creek on the edge of a cultivated field beside a gulley that drains into the creek (Appendix A: Figure A9; Appendix B: Figure B11). The site can be found on the *Mission Bay, TX*, USGS Topographic Quadrangle in Refugio County. Its elevation is estimated at 8.5 meters (28 feet) above MSL. The original mapped centroid placed the site within an agricultural field at the treeline bordering, but outside of the Project APE. The site was recorded as a shell scatter that was about 5 meters (16 feet) in diameter with only a single piece of debitage originally recorded. Bioturbation, erosion, and plowing were recorded as the main causes for disturbances to the site and it was recommended as not eligible for the NRHP (Warren 2009c).

Mapped soils for Site 41RF53 consist of two types of Victoria clay (VcA and VcB), 0 to 1 percent slopes and 1 to 3 percent slopes respectively, with clayey fluviomarine deposits and loamy fluviomarine deposits of Late Pleistocene age parental materials (Guckian 1988; SSS NRCS USDA 2014).

The site was revisited during the 2013 survey work. Delineation was performed within what was the Project APE at the time. A total of seven shovel tests spaced 25 meters (82 feet) apart were excavated, of which only one was positive for buried cultural material. The positive shovel test contained a single piece of debitage located approximately 15 centimeters (6 inches) below the ground surface. The remaining six delineation tests were negative for buried cultural material. Typical shovel test profiles included dark grayish brown (10YR4/2) dry clay loam extending from the surface and transitioning into a very dark grey (10YR3/1) compact clay at 20 centimeters (8 inches) below the ground surface (Munsell Color 2005). Shovel tests were excavated to the average depth of 50 centimeters (20 inches) below ground surface. In addition to subsurface testing, the site was visually delineated as the surface visibility ranged from 10 to 80 percent

A previously undocumented portion of the site was identified during the revisit when survey of a Project alignment that is no longer in consideration for the Project was conducted. Field survey identified cultural materials consistent with those originally recorded for the site located approximately 60 meters (197 feet) to the east of the site's originally mapped centroid. The site boundaries were revised to include this finding, bringing the site size to approximately 65 by 90 meters (213 by 295 feet). It should be noted that at the time of the revisit the Project APE did not include the originally recorded centroid location of Site 41RF53. Thus, previously recorded portions of the site falling outside of the Project APE were not revisited as part of field efforts. The extension of the site is located on the side of a hill within a wooded area of mesquite and cat claw acacia bounded to the west by an agricultural field (containing the originally mapped location of Site 41RF53) and to the east by two existing pipeline corridors. A review of the data available on the TxGLO GISWEB Viewer revealed the presence of an existing 40-centimeter (16-inch) diameter ethane pipeline immediately adjacent to the eastern edge of the site (TxGLO 2014a). A series of small landforms resembling mima or pimple mounds were observed measuring approximately 15 meters (49 feet) in diameter and 1 meter (3 feet) tall.

The newly identified portions of the site included two shell concentrations. One shell concentration was recorded northeast of the previously recorded site centroid, along the revised southern boundary of the site and adjacent to delineation Shovel Test 25S, while the other shell concentration was recorded southeast of the previously recorded centroid on a small landform in the northern end of the site at the location of delineation Shovel Test 50N (Appendix B: Figure: B11). Observed shell within both locations primarily consisted of gastropod and mussel. Along the revised southeastern boundary of the site, approximately 5 meters (16 feet) south of positive Shovel Test A7 and 20 meters (66 feet) north of the shell concentration around Shovel Test 25S, two prehistoric debitage pieces were identified on the surface. In addition, two burned earth fragments were observed within the vicinity of the debitage, as well a single historic glass button, indicating a historical presence in the area.

The identified cultural materials appear to be remnants of a larger site that has been truncated to the east and west by agricultural disturbances. While two distinct loci seem to be represented by the shell concentrations, it is unclear if the observed materials are intact because of the amount of disturbance from agricultural activities and pipeline construction in the immediate area. The observed landforms could suggest a natural landscape; however, the

shovel test data include the observation of grayish brown (10YR5/2) clay inclusions within the upper stratum, which suggests disturbance. Moreover, the lone subsurface artifact was well within the range of the plow zone (typically 25 to 30 centimeters [10 to 12 inches] below ground surface) and the button discovered at the site may also be evidence of historic or more recent disturbance of the location.

The site was not revisited during the 2014 supplementary survey efforts because the Project APE has returned to a previous alignment that was surveyed in 2013. Although current Project plans will have the Project APE coming close to the originally recorded site centroid, the summation of previous field results suggest that the site is heavily disturbed and does not contain intact subsurface deposits or diagnostic artifactual materials.

Investigation at Previously Identified Site 41RF54

Originally recorded in 2009 as a prehistoric shell midden, Site 41RF54 is located 60 meters (197 feet) north of Melon Creek (Warren 2009d). The site can be located on the *Mission Bay,* USGS Topographic Quadrangle in Refugio County (Appendix A: Figure A9; Appendix B: Figure B11). It is within Tract TX-RE-018.00. The northern half of the site is located within a plowed field whereas the southern half is occupied by a grove of acacia. The ground slopes 5 percent toward Melon Creek. Its elevation is estimated at 7.6 meters (25 feet) above MSL. The original site boundaries were recorded as spanning 10 meters (33 feet) in diameter, but were extended as a result of Project field efforts in 2013 to measure approximately 55 by 55 meters (180 by 180 feet) and include subsurface deposits as well as a surface scatter. The current Project APE falls within the eastern half of the site, but avoidance by HDD is planned.

Soils mapped for the site are composed of four types: Aransas clay (As), saline, with clayey alluvium of Holocene age parental material; Victoria clay (VcA), 0 to 1 percent slopes, with clayey fluviomarine deposits of Late Pleistocene age parental material; Victoria clay (VcB), 1 to 3 percent slopes, with loamy fluviomarine deposits of Late Pleistocene age parental material; and Monteola clay (MoD4), 5 to 8 percent slopes, gullied, with Clayey fluviomarine deposits parental material (Guckian 1988; SSS NRCS USDA 2014).

The original documented cultural features of Site 41RF54 included a shell midden and a hearth made of burnt clay. Associated with these features were chert, burnt clay, bone, and oyster shell debris scattered on the surface throughout the vicinity. The cultural material contents of the site were confirmed when the site was revisited during the 2013 survey efforts; however, the actual shell midden and hearth were not relocated. Revisit efforts resulted in a total of 13 shovel tests excavated at the site of which eight were positive for buried cultural material. Subsurface tests were performed in cardinal directions from the first positive test at 10-meter (33-foot) intervals. Depth of the recorded cultural material ranged from 0 to 55 centimeters (22 inches) below ground surface. A typical soil profile within the site consisted of a dark gray (7.5YR4/1) clay loam extending from the ground surface to roughly 30 centimeters (12 inches) below ground surface, followed by a very dark gray (7.5YR3/1) clay from 30 centimeters (12 inches) below the ground to the termination of the shovel test surface with a mottled light yellowish brown (10YR6/4) clay scattered throughout (Munsell Color 2005). Cultural materials recorded in the shovel tests consisted of shell, bone, debitage, and pottery fragments.

In addition to subsurface testing, the site was subjected to surface inspection. A total of 40+ artifacts were observed on the surface. Surface scatter artifacts included approximately 37 debitage, one utilized flake, one biface fragment, five fragments of pottery, one broken projectile point (possible Gary or similar contracting stemmed type), seven faunal material fragments (some burned), and a large number of shell fragments. The extent of the artifact surface scatter included the hilltop within the plowed field and the lower slightly sloping grounds within the overgrown area along the northern bank of Melon Creek (Appendix B: Figure B11).

Field results indicated that Site 41RF54 possesses a high density and wide assortment of cultural materials as well as intact deposits extending below the plow zone. The site also has the potential to contain intact features.

Investigation at Previously Identified Site 41JK111

Site 41JK111 was originally recorded as a shell and flint concentration. It is located within Tract TX-JA-004.000 on a terrace slope roughly 275 meters (900 feet) east of the Lavaca River, separated from the river by marsh (Appendix A: Figure A30). The site can also be located on the *Lolita,* USGS Topographic Quadrangle in Jackson County. Its elevation is estimated at 2.4 meters (8 feet) above MSL. The site was originally recorded in 1972 by Gayle Fritz and Doug Comstock during a Matagorda Bay survey. Site 41JK111 was originally described as a shell (primarily oyster) and flint surface concentration roughly 30 meters (100 feet) in diameter found on a mud beach washed out of a low slope line bordering the eastern edge of the Lavaca River marsh (Fritz and Comstock 1972). When it was recorded, 36 flakes, two pottery sherds, and three bone fragments were collected. Both oyster and rangia shells were observed. The recorders noted that the artifacts seemed to derive mostly from erosional wash and were not in situ. The site was recorded roughly 200 meters (650 feet) south of Site 41JK112, a prehistoric campsite with shell, flint, and pottery, and 400 meters (1,300 feet) northeast of Site 41JK110, a shell concentration of unknown origins.

The mapped centroid location of Site 41JK111 was revisited during the 2014 supplemental survey efforts as part of the fieldwork associated with previous survey skips. At the time of revisit, no evidence of the site was observed within the Project APE. An intensive surface inspection was conducted and five shovel tests were excavated within a 100-meter (330-foot) radius around the site and inside the Project APE. Based on the mapped centroid location, at least a portion of the originally recorded site would have been located within the Project APE. Two shovel tests, X1 and X2, were excavated to the north of the site centroid and three shovel tests, X3, X4, and X5, were excavated close to the site centroid. All shovel tests were excavated at 30-meter (100-foot) intervals. They were negative for cultural material and no artifacts were observed or collected within the Project APE. A few shells were noted on the ground surface but were not found in any noticeable concentrations and their presence appeared to be natural and associated with the adjacent river marsh.

The mapped location of Site 41JK111 falling within the Project APE is largely cleared and covered with tall grasses. A stand of mesquite trees and shrubs lines the southern survey area boundary close to the centroid of the site. Although there does not seem to be evidence of

extensive modern disturbances to the landscape, the portion of the Project APE near the mapped site location displays a significant terrace slope and it is likely that the cultural material observed in 1972 has now eroded away and/or has been washed down towards the marsh and Lavaca River. Based on field results, it appears that no intact part of Site 41JK111 currently exists with the Project APE. No investigation of the site was conducted outside of the Project APE, as was the preference of the landowner.

6.0 CONCLUSIONS AND RECOMMENDATIONS

On behalf of Tetra Tech and IELLC, this report presents the findings of an archaeological background literary review and a pedestrian cultural resources survey with limited shovel testing for a proposed 185-kilometers (115.2-mile) pipeline corridor in San Patricio, Refugio, Aransas, Calhoun, Victoria, Jackson, and Matagorda Counties, Texas.

Prior to fieldwork, initial investigation consisted of a background literature and site file search to identify the presence of previously recorded sites within a 1.6-kilometer (1-mile) radius of the Project area. Mapped locations of six previously recorded sites (41SP256, 41RF51, 41RF52, 41RF53, 41RF54, and 41JK111) fell within at least one version of the surveyed Project APE. Due to Project realignment, previously recorded Sites 41RF51, 41RF52, and 41RF53 are no longer located within the Project APE and Site 41RF53 will be avoided by HDD. No evidence for Site 41JK111 was found within the Project APE. A total of 23 other previously recorded sites are located within a 1.6-kilometers (1-mile) radius of the Project's survey corridors. Each of these additional 23 sites is at a sufficient distance from the proposed Project's APE to ensure that there will be no impacts to these cultural resources.

The survey corridor consisted mostly of agricultural fields with surface visibility ranging between 50 and 100 percent depending on whether crops are actively growing. Field methodology consisted of intensive pedestrian reconnaissance survey coverage with limited shovel testing within the study area. Fieldwork was conducted within six mobilizations between March 6 to 26, 2013; May 15 to 29, 2013; June 17 to 21, 2013; June 3 to 13, 2014; July 9 to 11, 2014; and August 27, 2014. In addition, a 4.2-kilometer (2.6-mile) portion of the project was previously surveyed by HRA Gray & Pape in 2011 as part of the San Patricio Pipeline Project, reported on in a separate document (Scott et al. 2013), and concurred with by the THC in October 2013.

Fieldwork was conducted in two waves in 2013 and 2014, each consisting of three separate mobilizations. During the first wave of mobilizations in 2013, HRA Gray & Pape completed survey of approximately 171.6 kilometers (106.6 miles) of proposed pipeline ROW. Of the portions not surveyed in 2013, 3.6 kilometers (2.2 miles) were due to a lack of access permission by the landowner and 3.2 kilometers (2 miles) were inaccessible due to inundated and marshy conditions. Approximately 93.5 percent of the proposed pipeline centerline was surveyed during the first three mobilizations in 2013. During the second wave of mobilizations in 2014, a total of 67.8 kilometers (42.1 miles) of previously unsurveyed proposed pipeline ROW, reroutes, and revised workspace footprints were surveyed. This included many reroutes that closely paralleled or overlapped survey performed in 2013. The supplemental survey also covered survey skips on tracts where access had previously been denied. Roughly 0.2 kilometers (0.1 miles) of the 2014 Project area was determined to be inundated marsh and was not required for survey. Otherwise, all remaining portions of the pipeline ROW were surveyed during the supplemental survey efforts, along with all revised workspaces and access roads.

To date, 185 kilometers (115.2 miles), of Project alignment, or 100 percent of the Project, has been investigated. Of those, 180.6 kilometers (112.2 miles) have been surveyed and

approximately 6 kilometers (3.7 miles) of Project centerline or 36 hectares (89 acres) of workspace were not recommended for survey as field observations indicated that they are comprised of inundated marsh (Appendix A: Figures A19, A20, A27, A28, and A29). An additional 21.4 kilometers (13.3 miles) of access roads were also surveyed. The total amount of surveyed Project area, in addition to surveyed areas no longer in consideration for the Project, amounts to approximately 260.8 kilometers (162.1 miles), or 1560.2 hectares (3855.4 acres) of survey coverage.

Field investigation consisted of walkover and judgmental shovel testing within the survey corridor. During the six mobilizations, a total of approximately 525 shovel tests were excavated. Most of the shovel tests were negative for buried cultural material, with the exception of roughly 38 shovel tests, all of which were excavated in association with previously recorded and newly identified cultural resources.

Years of agricultural use within the properties containing the Project's survey corridor have likely disturbed the upper several centimeters of soil below the ground surface. Typical disturbances observed include plowing, crop planting, farm equipment traffic, previous utility line and pipeline construction, roads, long-term livestock use, and creek/drainage channelization. No deep testing is recommended for any portion of the Project APE. Although Holocene-age soils are mapped within the Project APE, these are generally located in marshy floodplains that are typically inundated. Further, because the Project alignment is collocated with existing pipelines these areas are within or immediately adjacent to existing pipeline alignments with visible signs of disturbance verified through shovel testing.

Field efforts resulted in the discovery of 19 new sites, one historic structure, five historic loci isolates, six isolate finds, and confirmation of five previously recorded sites (41SP256, 41RF51, 41RF52, 41RF53, 41RF54). All resources identified contained surface scatters and nearly all were limited to only the surface. The majority of the resources identified appear to represent short-term late prehistoric campsites and historic late-nineteenth to mid-twentieth century occupations or trash scatters. Because the Project is collocated to previous pipelines, artificial impacts from agriculture and previous pipeline installations in addition to natural impacts from flooding and erosion and have disturbed all of the resources to varying degrees.

Of all sites identified or revisited, only Sites 41SP267, 41SP268, 41SP269, 41RF51, 41RF52, 41RF54, 41RF149, and 41CL97 are the result of longer term occupation or appear to retain subsurface deposits. Their potential to add to the knowledge of the prehistory and history of the area suggests these resources are potentially eligible for listing in the NRHP or as a SAL. All of the potentially eligible sites either exist outside of the Project APE or will be avoided by HDD as discussed below.

Newly recorded Site 41RF149 consisted of a shell concentration visible on the surface and extending to 30 centimeters (12 inches) below ground surface at its deepest point (Appendix B: Figure B1). No cultural materials other than oyster shell were observed on the surface or in the two judgmental shovel tests excavated within the site boundaries. No evidence was found linking the site to historical occupations either, but, based on data collected from maps, aerials, and other historical documents, it is possible that the site may be associated with (or disturbed

by) road construction and use, as well as oil drilling/pipeline activities throughout the twentieth century (WPA 1938; NETR 2014a; The Portal to Texas History 2014a-f; TxGLO 2014a,b; USGS 2014b). More research is needed to identify the origins of the shell concentration and, thus, the eligibility of Site 41RF149 for inclusion in the NRHP remains undetermined. Until eligibility testing of the site can take place HRA Gray & Pape recommends avoidance of this site. Plans for avoidance of the site were discussed with William Martin of the THC on July 1, 2014 (William Martin, personal communication 2014). Per that discussion, the following avoidance was developed. Prior to construction, IELLC will install an exclusion zone fence and signage to encompass a 30-meter (100-foot) buffer zone to the west and east of the site, and along the southern edge of the permanent ROW boundary (to the north of the site) to protect the site, as shown in Appendix B, Figure B1. An Environmental Inspector will monitor initial vegetation clearing and initial grading activities to ensure proper establishment and integrity of this exclusion zone. The exclusion zone fencing and signage will be maintained and the area monitored by an Environmental Inspector during the remainder of construction activities to ensure continued avoidance of the site. Following completion of construction, an Environmental Inspector will perform a final inspection and photodocument avoidance of the site.

Project plans have already accounted for avoidance of the remaining seven potentially eligible sites through HDD and pipeline realignments and/or revised workspace footprints. Sites 41SP268, 41SP269, 41RF54, and 41CL97 will be avoided by HDD, whereas 41SP267, 41RF51, and 41RF52 are located outside of the Project APE as a result of Project realignments. Sites 41SP268, 41SP269, and 41RF54 are prehistoric shell middens and are likely to contribute significant data and information about prehistory of the area, particularly because of the rarity of finding such midden sites in an intact context. Project plans are for Site 41SP268 to be avoided by HDD with the drill workspace to be placed at least 94 meters (308 feet) to the north of the site, while Site 41SP269 will be avoided by HDD with the drill workspace to be placed at least 126 meters (413 feet) to the south of the site. Site 41RF54, another prehistoric shell midden, is also planned for avoidance by HDD, with the proposed HDD workspace to be located approximately 34 meters (111 feet) from the site to the north. Historic Site 41SP267 is potentially eligible for listing in the NRHP under Criterion D as it is possible the site could contribute to a better understanding of early homestead settlement and agriculture in the area. However, because of Project realignments the site is now outside of the Project APE and no impacts are anticipated. Prehistoric Sites 41RF52 and 41RF52, potential shell middens, are likely to contribute significant data and information about the prehistory of the area. Further testing is required to determine the eligibility of either site for listing in the NRHP. Project realignments and revised workspace footprints have resulted in the avoidance of both sites.

Excluding the eight undetermined/potentially eligible sites discussed above, there are seven newly identified sites (41SP265, Field Site SP-019, 41RF147, 41RF148, 41CL96, 41VT173, and 41VT174) and one previously recorded site (41SP256) that now lie within the path of the Project alignment. These sites require no further work as they do not fall with the Project APE, have little research potential, are heavily disturbed (in some cases to the degree that no evidence of the site currently exists), or have some combination of those three characteristics. Therefore, avoidance measures are not necessary. However, because HDD will occur during

pipeline installation at major water crossings, the sites located near these waterways (41RF148, 41VT173, and potentially 41VT174) will generally be avoided during the Project.

No further work is recommended for the newly recorded historic structure, the five historic loci isolates, or the six isolated finds. The NRHP eligibility of the newly identified historic-age structure identified during survey efforts, Structure SP-017-S-1, remains undetermined; however, the proposed Project route is planned to bypass the homestead to the east and will not have an immediate impact on the standing structures. None of the historic loci isolates or isolated finds are considered eligible for listing in the NRHP or as SALs and state-issued trinomials will not be sought for them. Further, many loci isolates were recorded during investigation of a former survey corridor no longer in consideration for the Project and are not currently in danger of direct impact from the Project.

Through HDD, rerouting, and revised workspace footprints, the plans for the IELLC 8-Inch Pipeline construction will sufficiently avoid negative impacts to the potentially eligible previously recorded and newly identified archaeological sites. Therefore, HRA Gray & Pape recommends that no further cultural resources survey work is necessary and that the Project can proceed forward as planned. These recommendations were concurred with by the THC on April 29, September 29, and October 15, 2014, and by the EPA on March 28 and May 23, 2014 (Appendix E).

All artifacts were recovered from private property and are in the process of being returned to the landowners. This concludes cultural resource management requirements in regard to the Project as it is currently planned. Further, HRA Gray & Pape has reviewed recent Project plans and verified that they contain exclusion zones for sensitive cultural resources as agreed upon and documented in the report. Should Project plans change to involve areas located outside of previous survey coverage additional work may be necessary. The need for additional work will be consulted with the appropriate agencies on a case by case basis.

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APPENDIX A:
Survey Results for the Proposed IELLC 8-Inch Pipeline Project
(Figures A1 – A41)

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APPENDIX B:
Overview Plan Maps of Newly Recorded and Revisited Sites
(Figures B1 – B21)

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APPENDIX C:
Figure Plates with Representative Artifacts Photos
(Plates 1-22)

Plate 1. Sample of historic ceramic collected at Site 41SP264.

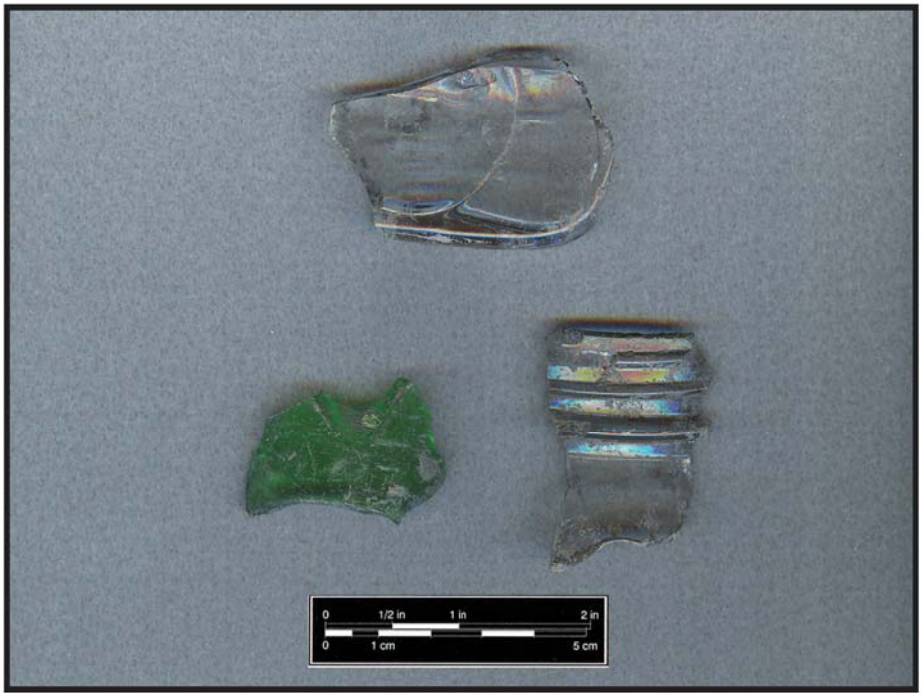

Plate 2. Sample of historic glass collected at Site 41SP264.

Plate 3. Sample of assorted glass recorded at Site 41SP267.

Plate 4. Sample of assorted ceramic and porcelain fragments recorded at Site 41SP267

Plate 5. Sample of brick and iron fragments recorded at Site 41SP267.

Plate 6. Quartz projectile point collected at Site 41SP269.

Plate 7. Vesicular basalt wedge collected at Site 41RF148.

Plate 8. Representative historic ceramic fragments and marble collected at Site 41RF148.

Plate 9. Representative historic glass fragments collected at Site 41RF148.

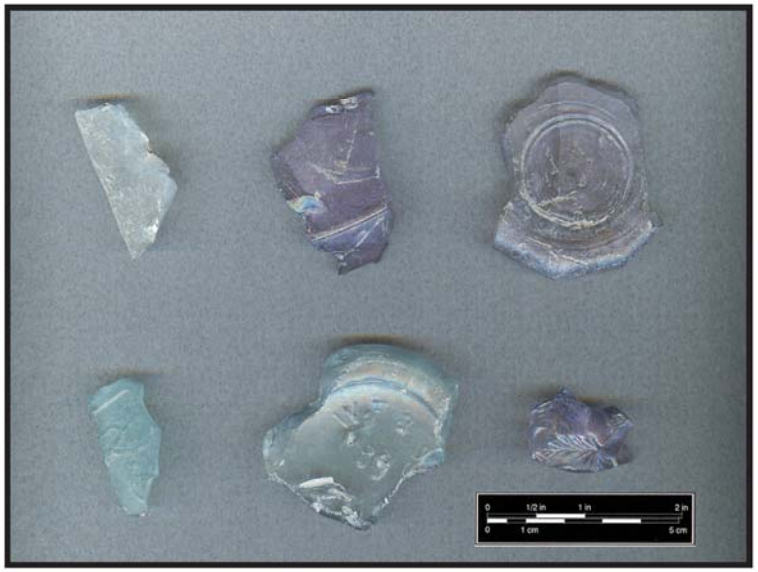

Plate 10. Representative historic glass fragments collected at Site 41RF148.

Plate 11. Sample of assorted glass collected at Site 41CL96.

Plate 12. Sample of assorted ceramic and porcelain fragments collected at Site 41CL96.

Plate 13. Sample of ceramic fragments and square nails collected at Site 41CL96.

Plate 14. Ornamental cast iron motif collected at Site 41CL96.

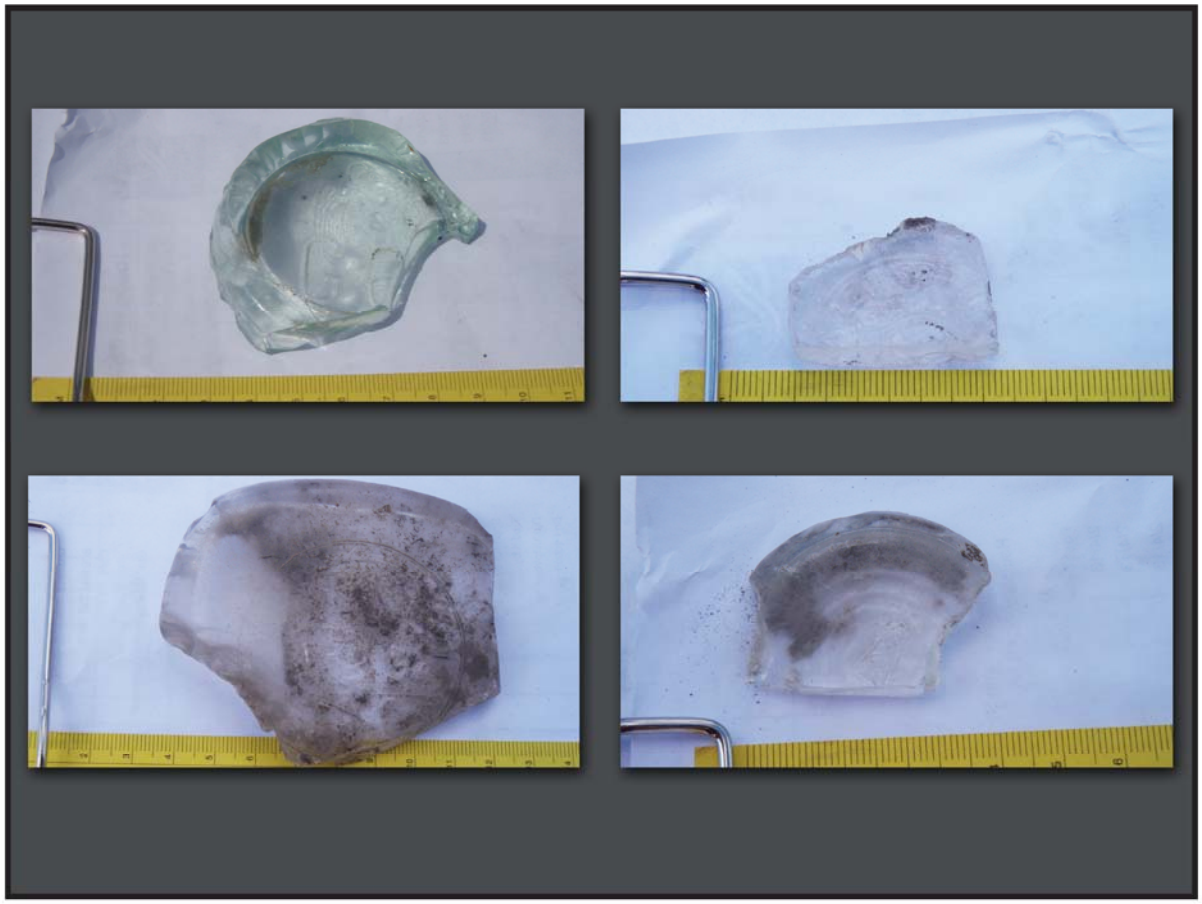

Plate 15. Sample of historic glass recorded at Site 41CL97.

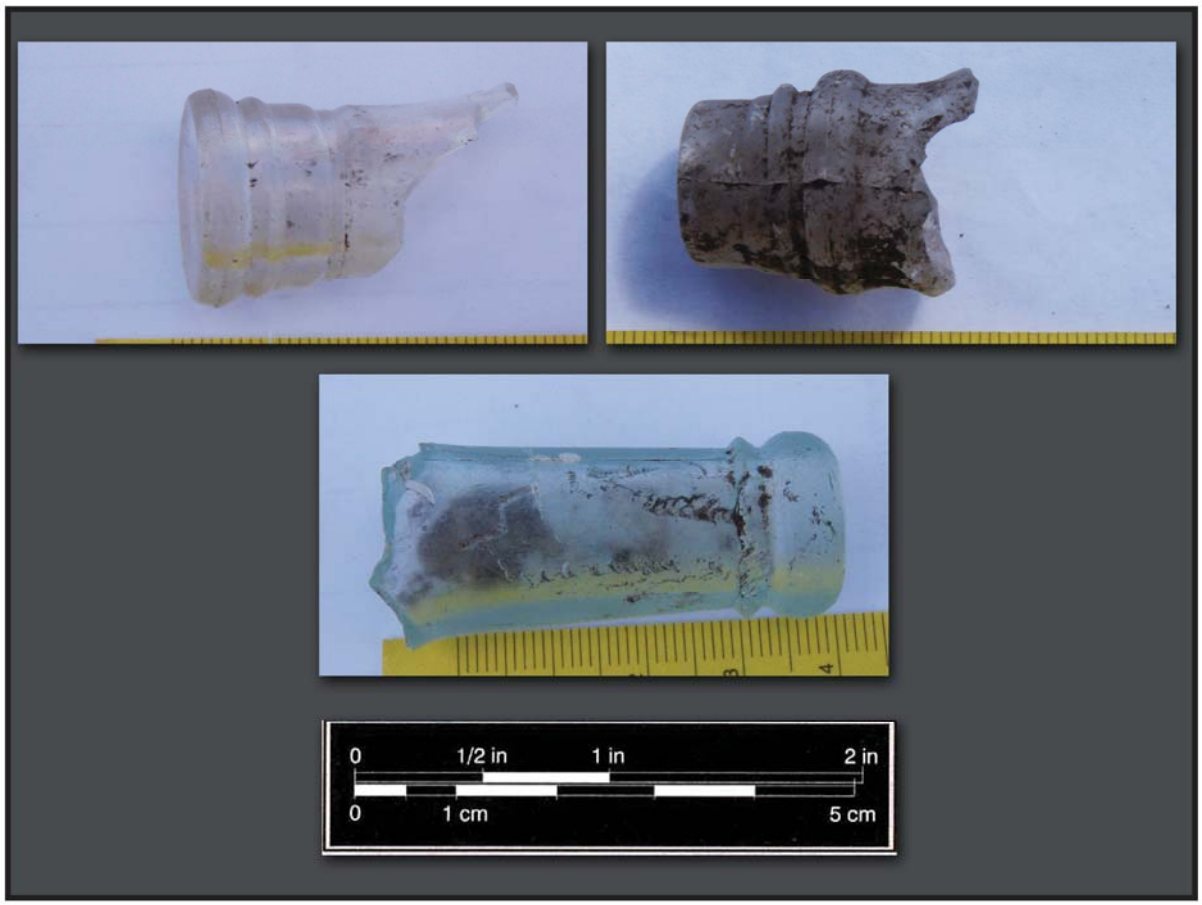

Plate 16. Sample of historic glass recorded at Site 41CL97.

Plate 17. Sample of historic glass fragments recorded at 41CL97.

Plate 18. Sample of historic ceramic fragments recorded at Site 41CL97.

Plate 19. Historic rockingham ceramic recorded at Site 41CL97.

Plate 20. Personal/household items recorded at Site 41CL97.

Plate 21. Example of a baked earth concentration observed at 41VT171.

Plate 22. Lithic artifacts collected at Site 41VT173.

APPENDIX D:
Log of Selected Shovel Tests Providing Examples of Soil Profiles Spanning the Project's Length

APPENDIX E:
Agency Correspondence

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