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HRA Gray & Pape

CULTURAL RESOURCES MANAGEMENT SURVEY AND CONSULTATION FOR THE OCCIDENTAL CHEMICAL CORPORATION INGLESIDE FRACTIONATOR SITE IN SAN PATRICIO COUNTY, TEXAS

*Lead Federal Agency:
United States Environmental Protection Agency - Region 6*

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ABSTRACT

In February of 2012, HRA Gray & Pape, LLC, of Houston, Texas was contracted to conduct agency consultation for 202 hectares (499 acres) of property in San Patricio County, Texas (the Consultation Area). The Consultation Area includes approximately 105.5 hectares (260.6 acres) of property on which Occidental Chemical Corporation plans to construct and operate the proposed Ingleside Fractionator Project (Project). Approximately 140 hectares (347 acres) of the Consultation Area was previously surveyed in 2004 by HRA Gray & Pape, LLC as part of the Vista del Sol Liquefied Natural Gas Terminal and Vista del Sol Pipeline projects. Those projects were discontinued; however, portions of the previously surveyed property have since been chosen by Occidental Chemical Corporation as part of its Project.

Survey activities within portions of the Consultation Area were performed in 2004. During those investigations, no cultural remains or features were identified. It is highly unlikely that intact, significant cultural resources are present within the Consultation Area, which has been extensively affected by industry, agriculture, dredging, and spoil deposition. Photographs as the results of environmental survey efforts within existing Occidental Chemical Corporation facilities undertaken by Tetra Tech, Inc., in February of 2012 support the conclusion that industrial development has disturbed portions of the location. Moreover, natural erosion and resultant efforts to infill has resulted in significant removal and re-deposition of soils along the La Quinta Channel. In addition, the modern ground surface adjacent to the coast contains several meters of artificially introduced fill material.

Recommendations that no further archaeological work was required and that the previously-proposed Vista del Sol Liquefied Natural Gas Terminal and Pipeline projects should be granted clearance to proceed as planned were presented to the Texas Historical Commission Division of Archeology in draft reports for each project in May of 2004 and revised drafts in October, 2004 for the pipeline and November of 2004 for the terminal. These projects were cancelled shortly thereafter. The reports were not finalized, and the Texas Historical Commission did not offer comment.

A consultation meeting regarding the current Project took place on February 7, 2012, with William Martin and Jeff Durst of the Texas Historical Commission. During that meeting it was affirmed that the work conducted to date was sufficient for the Project as currently planned with the stipulation that the 2004 draft terminal report be updated to reflect the current Project. Therefore, this report discusses the results of survey efforts as submitted in November of 2004 in the context of the current Project.

The Texas Historical Commission also stipulated that any construction phase of the Project that takes place adjacent to the coastline must be monitored archeologically and that an Inadvertent Discoveries Plan be in place prior to commencement of construction activities. Further, additional agency coordination must occur if Project plans change to incorporate additional terrestrial or marine areas.

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INTRODUCTION

Occidental Chemical Corporation (OxyChem) plans to construct a proposed natural gas liquids (NGL) fractionation plant and associated components for the proposed Ingleside Fractionator Project (Project) on approximately 105.5 hectares (260.6 acres) of property situated adjacent to and within OxyChem's existing chemical manufacturing facility near Ingleside, Texas. The Project property is located 3.2 kilometers (2 miles) west of the City of Ingleside and 4.0 kilometers (2.5 miles) southeast of Gregory in San Patricio County, Texas (Figure 1).

The Ingleside Fractionator Project includes a new NGL fractionation facility with an associated control building, an electrical switch yard, pipe racks, an on-site ethane connection to a pipeline, other utility line interconnections, two thermal oxidizers, an emergency enclosed ground flare, aboveground non-refrigerated product storage facilities, aboveground contaminated water and water stripping tanks, aboveground chemical tanks, rail siding/rail car loading inclusive of one culverted crossing of a non-jurisdictional man-made drainage ditch, a truck loading facility, and temporary construction staging areas. These facilities are completely encompassed within the 260.6 acres of property on which OxyChem plans to construct and operate the proposed Ingleside Fractionator Project. This report addresses the subject 260.6 acres of property that comprise the Ingleside Fractionator Project site.

Additionally, the Project includes an approximately 18.5-mile linear corridor that includes multiple proposed pipelines, referred to as the San Patricio Pipeline Corridor. A second report entitled: "Pedestrian Cultural Resources Survey for the Proposed Occidental Chemical Corporation San Patricio Pipeline in San Patricio County, Texas" incorporates the cultural resources survey for this second component of the Project. The two reports cumulatively address all proposed components of the overall Ingleside Fractionator Project.

In February of 2012, HRA Gray & Pape, LLC (HRA Gray & Pape), on behalf of Tetra Tech, Inc. (Tetra Tech) and their client OxyChem, were contracted to perform agency consultation regarding previous surveys performed by HRA Gray & Pape in 2004. The 2004 surveys were performed as part of a Federal Energy Regulatory Commission (FERC) filing in preparation for the Vista del Sol Liquefied Natural Gas Terminal (VdSLNG) and Vista del Sol Pipeline (VdSPL) projects. The projects were cancelled and never constructed. The results of fieldwork completed in 2004 were reported in separate draft and revised draft formats for each project to the Texas Historical Commission (THC) and the United States Army Corps of Engineers, Galveston District (USACE) in 2004. The projects were canceled before the reports were finalized. The final report for the VdSPL project was recently submitted by HRA Gray & Pape to the THC in March of 2012 in order to fulfill the requirements of the Antiquities Code of Texas Archaeological Permit (No. 3556) for that project. Portions of the abandoned VdSPL and VdSLNG project locations have since been selected for development by OxyChem as part of the current Project.

A consultation meeting regarding the current Project took place on February 7, 2012, with William Martin and Jeff Durst of the THC. During that meeting, plans were provided showing the current 105.5-hectare (260.6-acre) Project as well as a greater area that may be involved

during possible additional related projects (see Appendix B). Thus an additional 96.5 hectares (238.4 acres) was included during agency consultation. The total Consultation Area amounts to 202 hectares (499 acres). Thus, for the purpose of this report, the Consultation Area is considered the Area of Potential Effect (APE) and is shown in Figure 1 as “OxyChem Ingleside Fractionator Project Consultation Area/APE.” Approximately 140 hectares (347 acres) of the Consultation Area/APE were surveyed in 2004. THC reviewers affirmed that previous survey efforts were adequate for the Consultation Area/APE on February 7, 2012. Survey locations for the canceled VdSPL and VdSLNG projects are shown on Figure 2.

Through consultation with the THC it was agreed that an updated version of the previously submitted VdSLNG revised draft report could be submitted as a final report for the current Project. Thus, this report presents the results of survey efforts as performed in 2004 in the context of the current Project.

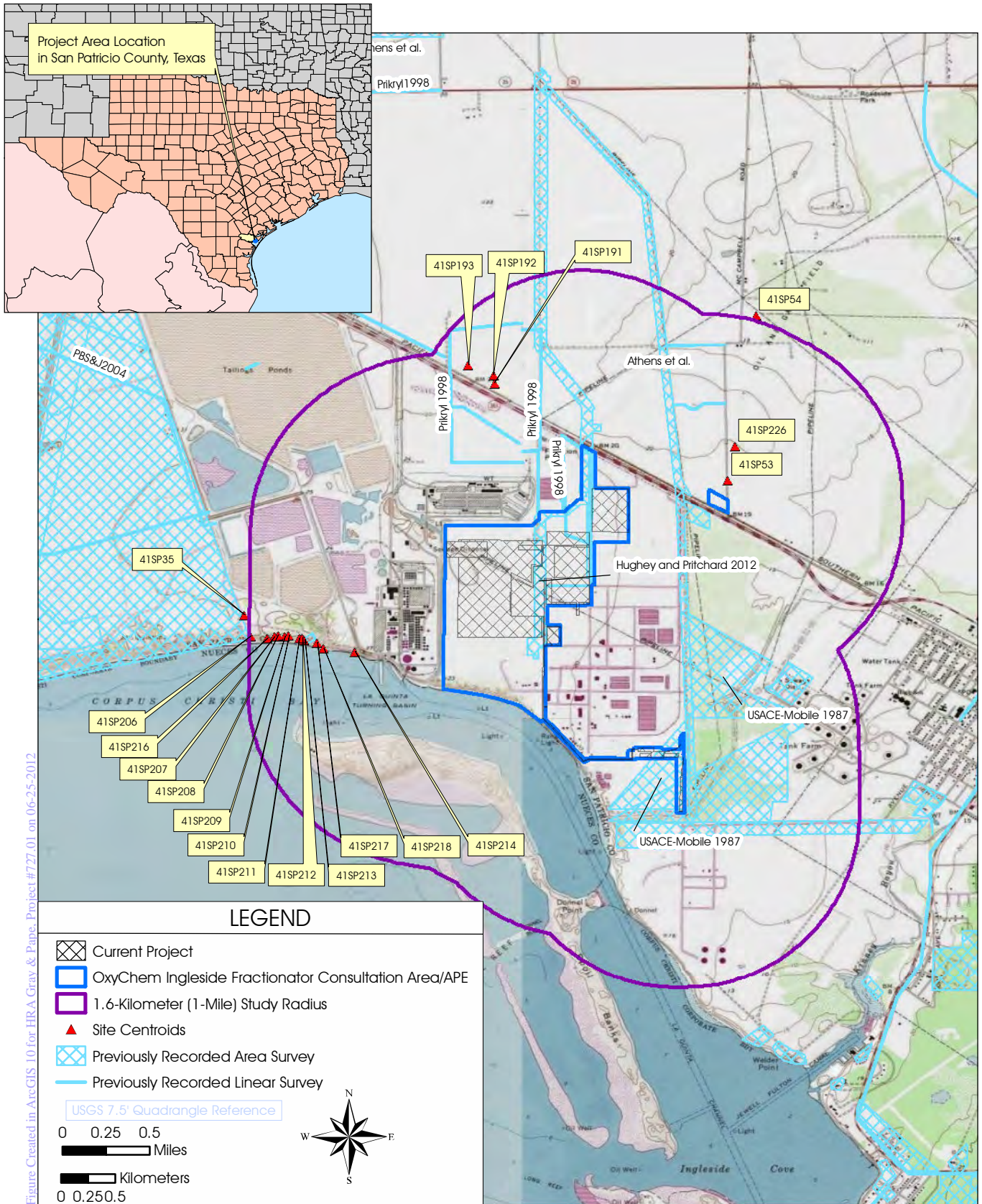
For permitting requirements, the Lead Federal Agency for the Project has been identified as the United States Environmental Protection Agency – Region 6 (USEPA), therefore the Project is considered an undertaking subject to the provisions and review process provided in Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

The Project is located on private property and is not federally funded; therefore a permit pursuant to the Antiquities Code of Texas was not required.

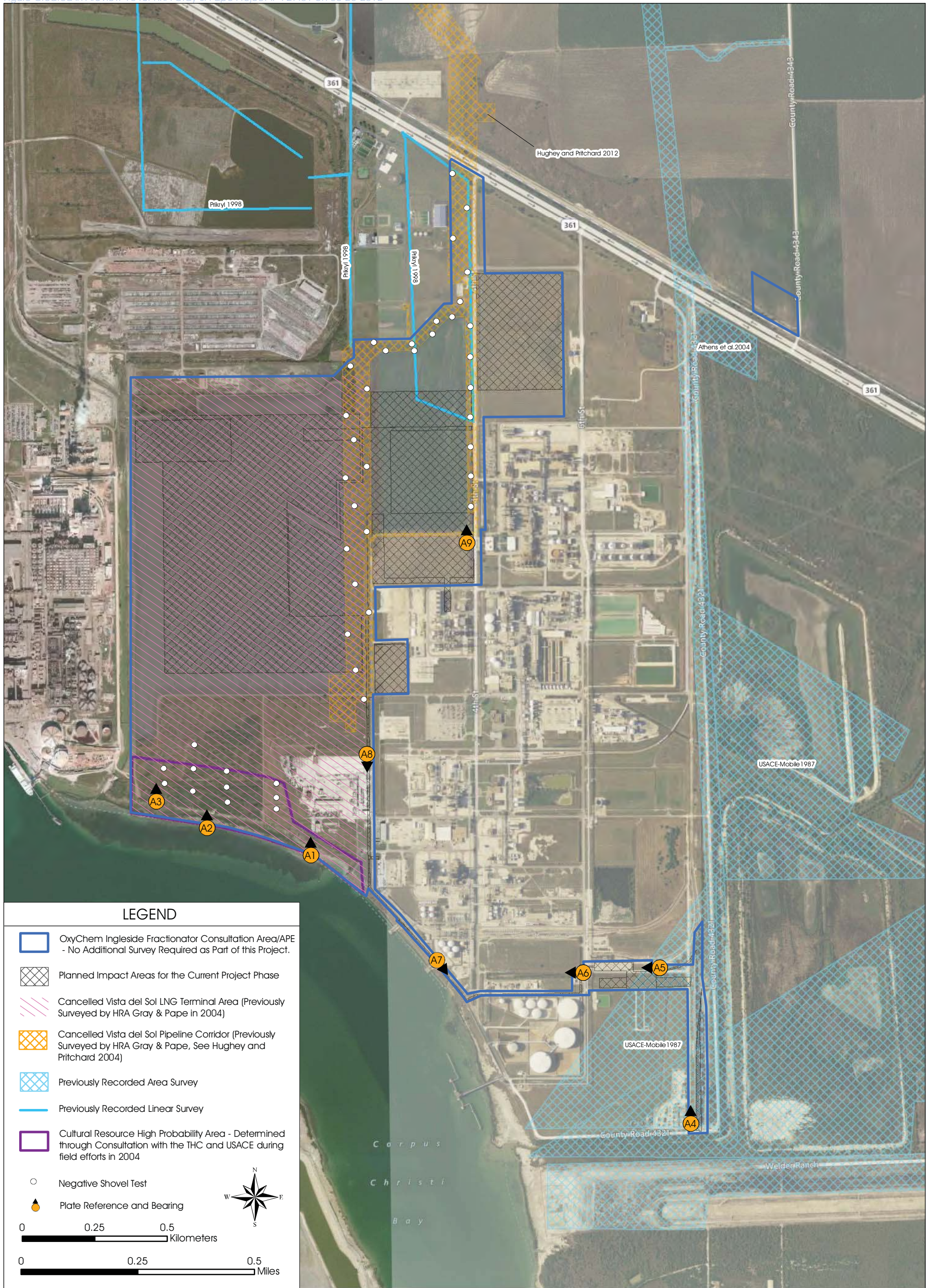
The property is bounded to the south by the La Quinta Channel. State Highway (SH) 361 serves as the primary ground access route and is north of the proposed Project location. La Quinta Channel is south of the proposed facility site and adjacent to Corpus Christi Bay. La Quinta Channel and Corpus Christi Bay are both situated in Nueces County, Texas. The planned fractionator site is located in a predominately upland area and is zoned for industrial use, but a majority of the tract is currently leased for agricultural/cropland production.

Background research was conducted in 2004 by Ann Scott and John Oswald for the VdSLNG and VdSPL projects prior to fieldwork, and again in 2012 by Tony Scott for the current Project. Research completed by HRA Gray & Pape included a review of records maintained by the Texas Archeological Research Laboratory (TARL) in Austin, Texas, and consultation with online research archives maintained by the THC. These efforts resulted in a listing of recorded cultural resources located near the Project APE.

Field activities were accomplished in 2004 and included a site visit, reconnaissance-level archaeological survey, limited shovel testing, and photo-documentation. Fieldwork was completed by HRA Gray & Pape staff: Principal Investigator James Hughey, Field Director Bob Clark, and field technicians David Kalinowski, Greg LaBudde, Matt Stotz, and Karen Belvin. Fieldwork was conducted in January and August 2004 and required 40 person hours to complete. Report text was written by James Hughey, Tony Scott, and Thomas Pickering. Tony Scott produced the report graphics. The report was reviewed by Bonnie Locking of Tetra Tech and edits were made by James Hughey and Tony Scott.



OxyChem Ingleside Fractionator Project Consultation Area/Terrestrial Area of Potential Effect in San Patricio County, Texas



Previously Surveyed Areas within the Current OxyChem Ingleside Fractionator Project Consultation Area/APE

Concurrent with fieldwork in 2004, historic and recent maps, and aerial photographs were collected and examined in order to reconstruct the land use history of the APE and adjacent area. A representative of DuPont Chemical Company, which owns and operates a chemical manufacturing facility adjacent to the existing OxyChem facility revealed that significant alteration to the areas near and adjacent to the La Quinta Channel occurred as a result of agricultural activities, erosion, dredging, and infilling (Watkins, personal communication 2004). Survey activities and an examination of historic photographs and maps support this information. This report presents the methods and results of work performed in 2004 and provides recommendations regarding future cultural resources work potentially associated with additional related projects in the area.

PREVIOUS RESEARCH

Research Within 1.6-kilometer (1-mile) of Consultation Area/APE

Nineteen previously recorded sites are located within 1.6 kilometers (1 mile) of the current Project area although none have been recorded within the APE. The previously recorded sites are shown on Figure 1 and listed in Table 1 below. Many of the sites located near the Consultation Area are documented as ephemeral prehistoric scatters or midden sites containing primarily Rangia shell, which often also contain fish otoliths and oyster shell. The majority of larger inland sites consist of sandy middens with high lithic material counts and moderate amounts of pottery located near water sources. These sites are generally considered base camps and there is a notable absence of satellite activity areas. Within the base camps, distinct activity loci are present.

Table 1. Previously identified cultural resources within a 1.6-kilometer (1-mile) radius of the Consultation Area/APE.

Trinomial	Site Type	Temporal Affiliation	NRHP Eligibility	Comments	Distance From Consultation Area/APE
41SP226	Shell Midden	Late Prehistoric / Neo-American, Late Archaic	Not evaluated	Type 2 shell midden with stone tools, flakes, burned animal bone and fired clay nodules. Several dart points in private collections	460 meters
41SP218	Shell Midden	unknown Prehistoric	Not evaluated	Highly eroded	0.5mi
41SP217	Shell Midden	unknown Prehistoric	Not evaluated	Chert flake and 4 sand-tempered ceramics; highly eroded	<1mi
41SP216	Shell Midden	unknown Prehistoric	Not evaluated	Marine shell and faunal materials.	<1mi
41SP214	Shell Midden	unknown Prehistoric	Not evaluated	-	0.5mi
41SP213	Shell Midden	unknown Prehistoric	Not evaluated	-	<1mi
41SP212	Shell Midden	unknown Prehistoric	Not evaluated	-	<1mi
41SP211	Shell Midden	unknown Prehistoric	Not evaluated	-	<1mi
41SP210	Shell Midden	unknown Prehistoric	Not evaluated	-	<1mi
41SP209	Shell Midden	unknown Prehistoric	Not evaluated	-	<1mi
41SP208	Shell Midden	unknown Prehistoric	Not evaluated	-	<1mi
41SP207	Shell Midden	unknown Prehistoric	Not evaluated	-	<1mi

Trinomial	Site Type	Temporal Affiliation	NRHP Eligibility	Comments	Distance From Consultation Area/APE
41SP206	Shell Midden	unknown Prehistoric	Not evaluated	-	<1mi
41SP193	Shell Concentration	unknown Prehistoric	Not Eligible	Shell fragments.	<1mi
41SP192	Scatter	unknown Prehistoric	Not Eligible	Shell, lithic flakes, faunal bone.	<1mi
41SP191	Scatter	unknown Prehistoric	Not Eligible	Shell and lithic flakes.	<1mi
41SP54	Shell Midden	unknown Prehistoric	Not evaluated	Shell fragments, fired clay, and lithic flakes.	1mi
41SP53	Shell Midden	Late Archaic, Late Prehistoric	Not evaluated	Lithic flakes, fired clay, several projectile points, potsherds, bone, etc.	173 meters
41SP35	Campsite	unknown Prehistoric	Not evaluated	-	<1mi

Diagnostic projectile points and ceramics are the most distinctive artifacts associated with archaeological sites in south Texas. These sites tend to be located on the coastal margins. The various types serve as hallmarks of the cultural periods for the region. These types range from the Clovis and Folsom points found in the Early Paleoindian period, to the stemmed points of the Archaic, to the dart points of Late Archaic/Early Ceramic, and finally to the arrow points of the Late Prehistoric. The projectile point technologies found in the region were influenced by adjacent regions, including the Southern Plains, Southeast Woodlands, Louisiana, and north, central, and south Texas.

As stated above, portions of the proposed Project area have been subject to previous cultural resources survey. In 2004, HRA Gray & Pape, on behalf of URS Corporation and Vista del Sol Pipeline, LP, conducted background research including a literature review, site file search, and intensive pedestrian archaeological survey for approximately 43.67 kilometers (27.15 miles) of proposed pipeline right-of-way (ROW) for the VdSPL. In total, approximately 447 hectares (1,104.50 acres) were surveyed during these investigations. The VdSPL survey area is shown on Figures 1 and 2. The pipeline project was subsequently cancelled and is no longer planned for construction. During survey activities one historic site (41SP219) and one lithic isolate were identified. Historic Site 41SP219 was restricted to the plow zone. If the project had been constructed as planned, HRA Gray & Pape would have recommended that no further work be required at Site 41SP219 or at the location of the isolate find.

Additional cultural resource studies that have taken place within 1.6 kilometers (1 mile) of the current Project area include survey-level work and archaeological site excavations. These are summarized below and shown on Figures 1 and 2.

In 2004, R. Goodwin & Associates, Inc. conducted an intensive pedestrian survey of approximately 42.2 kilometers (26.4 miles) of proposed pipeline corridor and several ancillary facilities. As a result of the survey, two historic standing structures were identified outside the

pipeline corridor. Neither structure was determined to meet the criteria necessary to be eligible for listing on the NRHP. Due to lack of access, the proposed corridor was not surveyed in its entirety; however, no further work was recommended (Athens et al. 2004).

In 1997, an archeological survey of the San Patricio Municipal Water District's proposed water system improvements project was conducted by Archeological and Environmental Consultants. The proposed project included approximately 49.07 linear kilometers (30.5 miles) of pipeline ROW, as well as 44.5 hectares (110 acres) planned for expansion of an existing water treatment plant and the construction of a water reservoir structure. Pedestrian survey, shovel testing, and backhoe trenching resulted in the identification of six archeological sites (41SP191 through 41SP196). Based on the results of the investigation, sites 41SP191 to 41SP194 did not appear to be worthy of formal designation as State Archeological Landmarks and did not meet the criteria for inclusion in the NRHP. Sites 41SP195 and 41SP196 have not been evaluated for NRHP inclusion. They were located outside of the water system improvements project areas and therefore would not be affected by that project's activities (Prikryl 1998).

In 1987, cultural resources investigations were performed on 146.5 hectares (362 acres) in preparation for a pipeline upland disposal site and wetland mitigation area. No cultural resources were found at either the upland disposal site or the wetland mitigation area. No additional cultural resource studies were recommended at either of these locations (USACE — Mobile District 1987).

Additional Research in San Patricio County

In addition to the surveys described above, several other cultural resource investigations have been conducted in San Patricio County, but outside the 1.6-kilometer (1-mile) radius of the Consultation Area/APE. These investigations resulted in the recording of a number of archaeological sites along the Corpus Christi Bay shoreline, as well as the Aransas River and its associated drainages and plains. Those investigations have resulted in a better understanding of locally defined cultural units, which include the Archaic Aransas Phase and the Ceramic Period Rockport Phase. The Aransas complex has been identified based on a suite of tools indicative of a lifestyle based on marine resources (Campbell 1958; Corbin 1974). Material culture recovered from Archaic sites within the south Texas region includes shell artifacts such as conch columella gouges, adzes, and awls. Stone projectile points recovered from Archaic sites in the region include Abasolo, Palmillas, Ensor, Refugio, and Tortugas types. Documented ceramics near the Consultation Area/APE consist of Coastal Rockport Complex wares, and bone tempered sherds suggesting a "Toyah Phase" affiliation. Major sites near the current Project area include Sites 41SP120, 41SP40, and 41SP43. These sites are discussed below, but are not depicted on the report figures.

Site 41SP120, the Holmes Site, represents a long history of prehistoric occupation. The site is situated on a bluff over Ingleside Cove in Corpus Christi, Texas, and contains deeply stratified deposits representing a late-to-terminal Archaic period underlying a distinctly separate Rockport Phase deposit (Ricklis 1996). Recovered material included Rangia shell, whelk shell, various terrestrial faunal remains, and numerous dart points, scrapers, and drills. Perdiz was the primary point type recovered. Cultural deposits were encountered near the surface to

depths of at least 3 feet (1 meter), within a dark brown to light brown sandy matrix. Numerous ceramic sherds recovered during excavation were identified with various Rockport types, including Rockport Black-on-Gray, Rockport Incised, and Rockport Crenulated (Ricklis 1996).

Site 41SP40 is recorded as a prehistoric shell midden associated with the Aransas Focus. The site was first recorded in 1963. A revisit to the site in 1983 confirmed that the site has remained essentially undisturbed. Artifacts associated with this site include lithic tools, columella gouges, a bone awl fragment, and lithic flakes. The site appears to extend to a depth of at least 3 feet (1 meter). The site is significant in part because it is relatively intact and in part because it is one of the few, if not the only, single component (Archaic) sites that have been identified in the area.

Site 41SP43 was tested by Dee Ann Story (Story 1968), and by Ricklis in 1987. Recovered material included a Matamoros dart point, Pertiz points, scrapers, various untyped points, a bone bead, and shell tools. Faunal material included terrestrial and marine species. Two distinct strata were encountered, the lower representing a late Archaic occupation and the upper representing a Rockport Phase occupation, based on dart points and ceramic materials. Analysis of this material suggested that local populations maintained an Archaic-style lifeway until as late as A.D. 1250 (Story 1968). The Rockport Phase deposit at this site better defines Karankawa seasonality and mobility (Ricklis 1996).

Several past surveys were conducted along shoreline terraces near the current Project area. Corbin (1963) identified Archaic and Late Prehistoric age sites eroding out of the topsoil on shoreline bluffs. These sites were described as representing short-term occupation sites utilized by small groups, and characterized by a low density of artifacts which included shell, burned clay nodules, lithic debitage, ceramic sherds, shell tools, and projectile points. McDonald and Dibble (1973) also identified several sites eroding from the topsoil of upland terraces. While most of these sites were heavily eroded, they argued that three of the sites (41SP103, 41SP107, and 41SP108) were at the time partially intact. Ricklis (1999) identified two sites (41SP198 and 41SP199) and revisited seven previously identified sites (41SP32, 41SP33, 41SP35, 41SP105, 41SP106, 41SP107, and 41SP108). These resources were located along an erosional margin of exposed upland adjacent to the existing shoreline, and typically consisted of small, low-density scatters of shell and cultural material eroding from the topsoil. Ricklis concluded that if significant deposits had existed in the area, they had been removed as a result of landward erosion of the bluffs along the upland margin. The low densities of cultural material along with the lack of any apparent stratification indicated that no significant archaeological resources remained at these sites. Historic Preservation Associates identified shell midden sites 41SP206 through 41SP213 to the west of the Project area in late 2003; however, a site report discussing the results of their survey is not available (Klinger, personal communication 2004).

METHODS

The literature search and site file review included an examination of archaeological site files and architectural resource files, review of published soil survey data, and review of previous cultural resource surveys conducted within an approximate 1.6-kilometer (1-mile) study radius of the Project area. Historic and modern aerial photographs and topographic maps were examined to document topographic changes that had taken place near the Project area over time.

Approximately 140 hectares (347 acres) of the Consultation Area/APE was surveyed by HRA Gray & Pape in 2004 (Figure 2). The surveys included a walkover supplemented by subsurface testing. Through coordination with the THC and USACE in 2004, it was agreed that the majority of the former VdSLNG area could be investigated by walkover with shovel tests placed on a systematic and judgmental basis within an undeveloped swath adjacent to the La Quinta Channel, an area which was considered to be a high probability area for containing intact cultural resources. This area is located in the southwest portion of the current Project and extends from the coast 200 meters (656 feet) inland (Figure 2). The VdSPL was investigated using a systematic methodology with shovel tests placed every 100 meters (330 feet), along three transects spaced 30 meters (100 feet) apart along the length of the pipeline corridor (see Hughey and Pritchard 2012). THC agreed that agricultural fields could be surveyed by pedestrian walkover; good surface visibility, impacts from agricultural use, and the relatively greater distance from the coast suggested a lower potential to contain buried, intact sites could be expected in these areas. Shovel tests were excavated in portions of the agricultural fields to supplement the pedestrian walkover effort (Figure 2).

Subsurface testing consisted of the placement of a series of 30-centimeter x 30-centimeter (11-inch x 11-inch) shovel tests excavated to a maximum depth of 1 meter (3 feet). Each shovel test was excavated in 10-centimeter (4-inches) 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. In addition, evidence of introduced fill material encountered in the soil matrix was noted on shovel test forms. Soils were screened through ¼ inch wire mesh when possible; soils with high clay content were hand sorted. Descriptions of soil texture and color followed standard terminology and the Munsell (1994) soil color charts.

Sketch maps and GPS points were used to record test locations during the survey. Mapping information supplied by GPS was recorded using a Trimble Pathfinder Pro-Xrs with TSC1. General area photographs were taken and information concerning the environmental and topographic conditions was recorded along each survey transect.

RESULTS

Site file and literature review efforts resulted in a listing of previously identified cultural resources located within the general vicinity of the proposed Project area. No previously identified State Archeological Landmarks or NRHP sites have been identified within the Consultation Area/APE or within a 1.6-kilometer (1-mile) study radius (Figure 1).

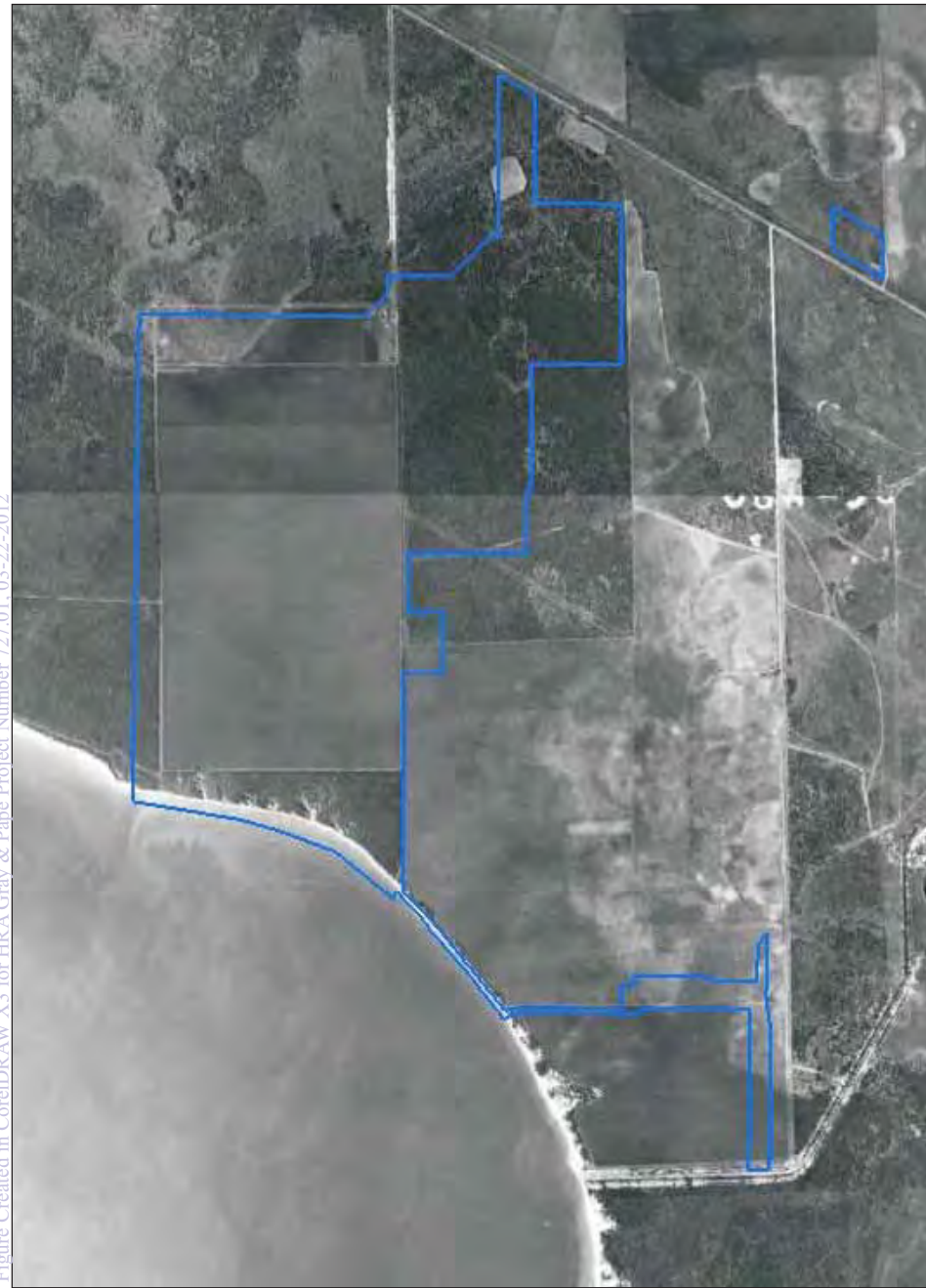
Information obtained from a DuPont Chemical Company representative in 2004 indicated that significant land alteration occurred within areas near to and adjacent to the La Quinta Channel, including episodes of severe bank erosion along the La Quinta Channel in the late 1980s. In an effort to restore this shoreline, several feet of fill material composed of asphalt, concrete, and soils dredged from the channel were deposited within the property from the La Quinta Channel shore inward approximately 200 meters (656 feet) (Watkins, personal communication 2004). The remaining acreages have been impacted by either industrial development, agricultural use, or the construction of a parking area and former contractor yard.

Reconnaissance survey efforts in 2004 supported this assessment. During a walkover survey of the shoreline a series of discrete spoil piles were encountered. These piles contained a dense vegetative understory and were separated by erosion channels; close examination showed that these piles contained a soil matrix composed of mottled silts and clays. Spoil piles along the shoreline noted during the 2004 survey were approximately 7.6 meters (25 feet) above the ground surface (Plates A1 and A2). A total of 44 shovel tests from the VdSLNG and VdSPL are located within the Consultation Area/APE (Figure 2). Of those, 11 shovel tests were excavated near the La Quinta Channel. These yielded soil profiles containing asphalt, concrete, caliche, and mottled clays with no intact soils observed in any shovel test profiles. Discrete spoil piles were also noted on uplands adjacent to the La Quinta Channel, within an area measuring between approximately 23 meters (75 feet) and 152 meters (500 feet) from the shoreline (Plate A3). These piles generally contained a soil matrix similar to the mottled silts and clays noted along the shoreline piles. Shovel tests excavated within the agricultural fields contained gleyed bluish gray (Gley 2 5/5) sticky clay to a depth of 1 meter (3 feet).

The Consultation Area/APE has been subjected to agricultural use for decades and much of the location as been developed since the 1980s as evidenced by photographs taken during environmental survey of the Project by Tetra Tech in February of 2012 (Plates A4 to A9). Historic aerial photographs were examined in an effort to support the results of the informant interview. A series of these photographs, taken from between the years 1950 and 1990, were then compiled in order to document these changes (Figure 3).

The first of the series, taken circa 1950, depicts the natural configuration of Corpus Christi Bay and the associated shoreline. By 1961, the La Quinta Channel had been constructed, resulting in significant modification to the shoreline, deposition of spoil material, and separation of Donnel Point from the landmass. Agricultural use is apparent as the plowed area is clearly demarcated by the presence of a cut line in what appears to be heavy vegetation along the channel. Despite these alterations, a series of inlets located on the southern end of

Figure Created in CorelDRAW X3 for HRA Gray & Pape Project Number 727.01.03-22-2012



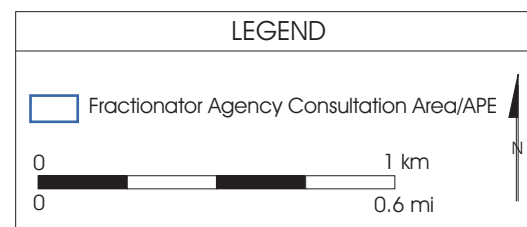
1950



1961



1990



Time Series of Aerial Photographs Showing Changes within the OxyChem Ingleside Fractionator Consultation Area/APE and Adjacent La Quinta Channel, Circa 1950 to 1990



Figure 3

the Project area appear to have remained relatively intact. By 1990, modification to the region resulted in further widening of the channel, the removal of the inlets, and the creation of a well-established dredge spoil area. In addition, the presence of the contractor's yard and parking area along with great deal of industrial development in the vicinity can be seen by this time.

RECOMMENDATIONS

Information obtained during background research, informant interview, and archaeological survey suggests that heavy and long-term alteration has taken place within the property. Specifically, land use associated with industry, agriculture, dredging, and spoil deposition, along with natural erosion and resultant efforts to infill have resulted in significant removal and redeposition of soils. In addition, the modern ground surface adjacent to the La Quinta Channel contains several meters of artificially introduced fill material.

Approximately 140 hectares (347 acres) of the 202-hectare (499-acre) Consultation Area/APE were surveyed as part of projects undertaken by HRA Gray & Pape in 2004. Those survey efforts consisted of pedestrian walkover across the entire former VdSLNG terminal location and shovel testing within the former VdSPL corridor.

Due to previously identified archaeological sites along the coastal margins in the Project vicinity, most of the concern regarding Project impacts was focused on the undeveloped high probability area located adjacent to the La Quinta Channel. While this area was subjected to shovel testing, the presence of fill material makes intensive, systematic shovel testing impractical. It is also unlikely that excavation by backhoe or other mechanical means would be practical, due to the combined action of natural erosion and resultant infilling; based on visual examination, it is estimated that approximately 4.6 meters (15 feet) to 7.6 meters (25 feet) of material has been placed on the property within approximately 183 meters (600 feet) of the shoreline.

Background investigation efforts indicate that no previously recorded cultural resources are located within the Consultation Area/APE. Field investigations in 2004 did not identify any new cultural resources within the Consultation Area/APE. Because of the disturbances discussed above, it is unlikely that deeply buried intact cultural resources exist within the Consultation Area/APE. Therefore, HRA Gray & Pape recommends and the THC has agreed that no further archaeological testing be required within the Consultation Area/APE in regard to the current Project. However, the THC has stipulated that archaeological monitoring be conducted during any construction near the coast and that an Inadvertent Discoveries Plan (IDP) be in place prior to such construction activities. Therefore, a separate IDP will be developed for the Project. Further agency coordination will take place if Project plans change to incorporate additional terrestrial or marine areas.

REFERENCES

Athens, William P., Rebecca Sick, Manny Moss, Susan Barrett, Peter Cropley, Ashley Sanders, and Martin Handly

2004 Phase I Cultural Resources Survey and Archeological Inventory of the Proposed San Patricio Pipeline Project, San Patricio County, Texas. Report produced by R. Christopher Goodwin & Associates, Inc.

Campbell, Thomas N.

1958 Probable Function of Perforated Oyster Shell in Aransas Focus Sites. *Texas Archeology* Volume 2(2):7.

Corbin, James E.

1963 Archaeological materials from the Northern Shore of Corpus Christi Bay, Texas. *Bulletin of the Texas Archaeological Society* 34:5-30.

1974 A Model of Cultural Succession for the Coastal Bend of Texas. *Bulletin of the Texas Archeological Society* Volume 45:29-54.

Hughey, James and Christy Wood Pritchard

2012 Cultural Resources Management Survey of the Proposed Vista del Sol Natural Gas Pipeline Project in San Patricio County, Texas. Prepared for URS Corporation and Vista del Sol Pipeline, LP. Prepared by HRA Gray & Pape, Houston.

Klinger, Timothy C.

2004 Personal Communication, September 24, 2004. Historic Preservation Associates, Inc.

McDonald, K.L. and D.S. Dibble

1973 An Archaeological and Historical Resource Inventory and Evaluation of a Site in San Patricio County, Texas. Research Report No. 33, Texas Archaeological Survey, The University of Texas at Austin.

Munsell Color

1994 *Munsell Soil Color Charts*. Macbeth Division of Kollomorgan Instruments Corporation, New Windsor, New York.

Prikryl, Daniel J.

1998 An archeological survey of the San Patricio Municipal Water Districts Proposed water system improvements project, San Patricio County, TX. Report of Investigations No 10. Report produced by Archeological and Environmental Consultants, Austin.

Rickliss Robert A.

1996 The Karankawa Indians of Texas; an ecological study of cultural tradition and change. University of Texas Press, Austin.

Ricklis Robert A.

1999 Archaeological Survey of Port of Corps Christi Tracts 1 and 2, North Shore of Corpus Christi Bay, San Patricio County, Texas. Report prepared for Port of Corpus Christi Authority. Report prepared by TAS, Inc. and Coastal Archaeological Research, Inc. Corpus Christi, Texas.

Story, Dee Ann

1968 Archeological Investigations at Two Central Gulf Coast Sites. Archeological Program Report 13. Austin: State Building Commission.

United States Army Corps of Engineers (USACE), Mobile District

1987 Trans American Natural Gas Company Upland Disposal Site and the Mustang Island Wetland Mitigation Area for the Corpus Christi/Ingleside, Texas, Navy Homeport Site. Report produced by USACE, Mobile District.

Watkins, Lonnie

2004 Personal communication, January 30, 2004. DuPont Chemical Company.

APPENDIX A
PLATES A1 TO A9



Plate A1. Spoil piles within the Consultation Area/APE located adjacent to the shore of La Quinta Channel. Photograph taken in January of 2004. View is to the north.



Plate A2. Spoil pile within the Consultation Area/APE located adjacent to the shore of La Quinta Channel. Photograph taken in January of 2004. View is to the north.



Plate A3. Spoil deposit within the southern section of the Consultation Area/APE. Photograph taken in January of 2004. View is to the north.



Plate A4. General overview of development within the southeastern portion of the Consultation Area/APE north of FM 4321. Photograph taken in February of 2012. View is to the north.



Plate A5. General overview of development within the southeastern portion of the Consultation Area/APE west of FM 4321. Photograph taken in 2012. View is to the west.



Plate A6. General overview of development within the southeastern portion of the Consultation Area/APE west of FM 4321. Photograph taken in February of 2012. View is to the west.



Plate A7. General overview of development and piperack located near the La Quinta Channel within the southern portion of the Consultation Area/APE. Photograph taken in February of 2012. View is to the southeast.



Plate A8. Parking lot / former contractor yard within the southern portion of the Consultation Area/APE near the La Quinta Channel. Photograph taken in February of 2012. View is to the south.



Plate A9. Example of agricultural fields within the northern portion of the Consultation Area/APE. Photograph taken in February of 2012. View is to the north.

APPENDIX B
AGENCY CONSULTATION



January 30, 2012

SENT VIA E-MAIL

Bill Martin, Assistant Team Leader, State and Federal Review Section
Texas Historical Commission
1511 Colorado, Austin, TX 78701

**RE: Proposed Ingleside Fractionator Project
Occidental Energy Ventures Corp.
Project Introduction**

Dear Bill:

Tetra Tech, Inc. (Tetra Tech) has been contracted by Occidental Energy Ventures Corp. (OEV) to obtain environmental clearances and consultations for a proposed fractionation facility and associated liquid hydrocarbon pipelines near Ingleside, TX (Ingleside Fractionator Project). Presently, the project area is confined within San Patricio County. Tetra Tech, on behalf of OEV, is requesting information regarding cultural resource constraints that may be located within the proposed project study area. We have attached a project location map for your review. Tetra Tech is requesting countywide data to accurately assess potential impacts on historic properties associated with proposed fractionation facility and various pipeline route alternatives.

Project Description

The project consists of the construction and operation of a natural gas liquids (NGL) fractionation plant with associated aboveground storage tanks, control buildings, and appurtenant facilities to produce liquid products (ethane, butane, propane, natural gasoline). Products would be shipped to market via barges at an existing barge dock, truck loading facility, rail, and pipelines. The general locations of the fractionation plant and single corridor for the NGL feedstock and three send-out product pipelines are shown on the attached general project location map.

We appreciate your assistance and look forward to your cooperation and participation in the evaluation of the proposed Project. If you have any questions or require additional information, please contact Dr. Stuart Eldridge by e-mail at stuart.eldridge@tetratech.com or by phone at 207-879-9496, ext. 246. OEV looks forward to meeting with you and THC staff on February 7, 2012 to introduce the project and confirm guidelines, scope of work, and proper methodology for cultural resource investigations for the project.

Sincerely,

A handwritten signature in black ink that reads 'Stuart A. Eldridge'.

Stuart A. Eldridge, Ph.D., RPA
Cultural Resources Task Lead

cc: Mark Evans, OxyChem
Kevin Pilkington, OEV
Jeff Hanig, OEV
Steve Compton, Tetra Tech
Jim Hughey, HRA Gray & Pape

US EPA ARCHIVE DOCUMENT

Tetra Tech, Inc.
2901 Wilcrest Drive, Suite 425, Houston, Texas 77042
Tel: 832.251.5191 **Fax:** 832.251.5170
www.tetratech.com

Tony Scott

From: Eldridge, Stuart [Stuart.Eldridge@tetrattech.com]
Sent: Friday, March 30, 2012 6:58 AM
To: Bill Martin
Cc: Jeff Durst (Jeff.Durst@thc.state.tx.us); MARK_EVANS@oxy.com; Jim Hughey; Tony Scott; Compton, Steve
Subject: 2.7.2012 Meeting Minutes OXY Ingleside Fractionator Project
Attachments: THC MEETING NOTES 2.7.2012 Final.pdf

Hi Bill,

In looking through my email strings, I appear to have been remiss in forwarding you the meeting minutes for our pre-app meeting with you all last February 7th, re: the OXY Ingleside Fractionator Project attended by yourself, Jeff, Mark, Jim, Tony, and myself. Please accept my apologies, I know it is a tad late in the sending, but good for refreshing the collective memories as the revised Fractionator report will soon be forthcoming, as agreed.

Regards,
Stu

Stuart A. Eldridge, Ph.D., RPA | Principal Investigator, Archaeology, Sci. Proj. Mgr. II
Main: 207.879.9496 ext. 246 | Fax: 207.879.9481
stuart.eldridge@tetrattech.com

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 *Print only when necessary*

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MEETING NOTES

Location: Texas Historical Commission, Austin, Texas

Date: 02/07/2012

Time: 11:00 am

Attendees: Stuart Eldridge – Tetra Tech
Mark Evans – OXY
Bill Martin – THC
Jeff Durst – THC
Jim Hughey – HRA Gray & Pape
Tony Scott – HRA Gray & Pape

Summary:

Mark Evans of OXY initiated the meeting with a brief overview of Phase 1 of the OXY Ingleside Fractionator Project (Project) consisting of proposed construction that will take place within and adjacent to the original Vista del Sol Terminal project and the existing San Patricio Pipeline alignment. Jim Hughey of HRA Gray & Pape (HRA) then established the nature of the previous archaeological survey originally conducted by HRA for the Vista del Sol Terminal project and suggested that this survey may be adequate review and compliance for the Fractionator portion of the Phase 1 of the Project. Bill Martin of the Texas Historical Commission (THC) then signified that THC wished to break out their recommendations into two separate categories, recommendations for the Fractionator portion of the Project and recommendations for the San Patricio Pipeline portion of the Project.

Project Fractionator:

Bill Martin of the THC recommended no new archaeological survey for the area originally surveyed for the Vista del Sol Terminal by HRA or for the location for the proposed fractionation area. THC recommended resubmitting the original Vista del Sol Phase I archaeological investigation report with revisions to the Abstract and Introduction and adding a cover letter that describes the currently proposed Phase 1 of the Project. Specifically the cover letter should state that there will be no adverse impacts along the shoreline and the remainder of the Project areas have had a long history of use as agricultural fields and require no new survey efforts.

Bill Martin also requested the implementation of an Unanticipated Discoveries Plan (UDP) and affirmed that aside from using standard language and format for the UDP he had no other recommendations at this juncture regarding UDP content. S. Eldridge of Tetra Tech and J. Hughey of HRA agreed to cooperate to provide proper content and adequate protocols for the UDP, subject to THC review.


THC affirmed that should any Project related activities take place in the La Quinta Channel the THC's marine archaeologist should be informed to coordinate avoidance measures that should be undertaken regarding a previously recorded anomaly located in the channel. THC recommended that background research confirm the location and nature of the previously recorded anomaly in the channel.

Finally, THC also recommended that a qualified archaeological monitor be present during any shoreline construction actions on the part of the Project, on that portion of the Project comprising the original Vista del Sol Terminal parcel.

Project San Patricio Pipeline:

Bill Martin recommended that a separate, stand-alone Phase I archaeological investigation report should be submitted regarding the associated San Patricio Pipeline construction portion of the Project. It was established at this meeting that the proposed San Patricio Pipeline alignment may have already been archaeologically surveyed for the OXY San Patricio Pipeline project in 2004 but currently it is unknown if that survey covers the entire Project proposed alignment and if the earlier survey was undertaken with the appropriate methodology. Coordination with the THC will continue and determine the amount, if any, of remaining archaeological survey to be performed for the Project San Patricio Pipeline and the appropriate methodology. THC initial assumptions are that the proposed Project San Patricio Pipeline alignment is through agricultural fields and that any new archaeological survey work would require only a pedestrian archaeological visual survey and report.

Respectfully Submitted,



Tony Scott, Principal Investigator, Archaeology
HRA Gray & Pape

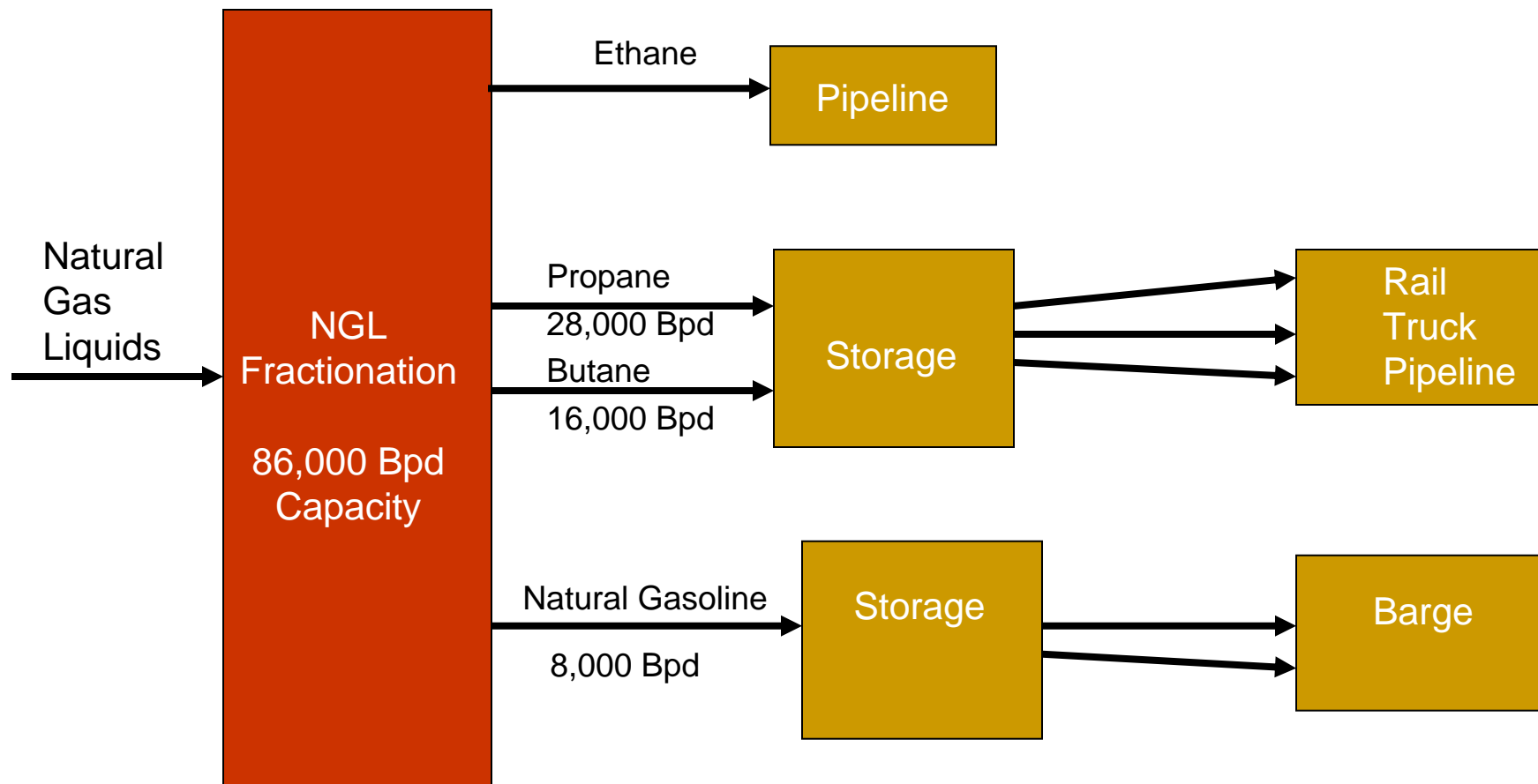


Stuart A. Eldridge, Ph.D., RPA
Tetra Tech, Inc.

Oxy Fractionation Project Ingleside, Texas

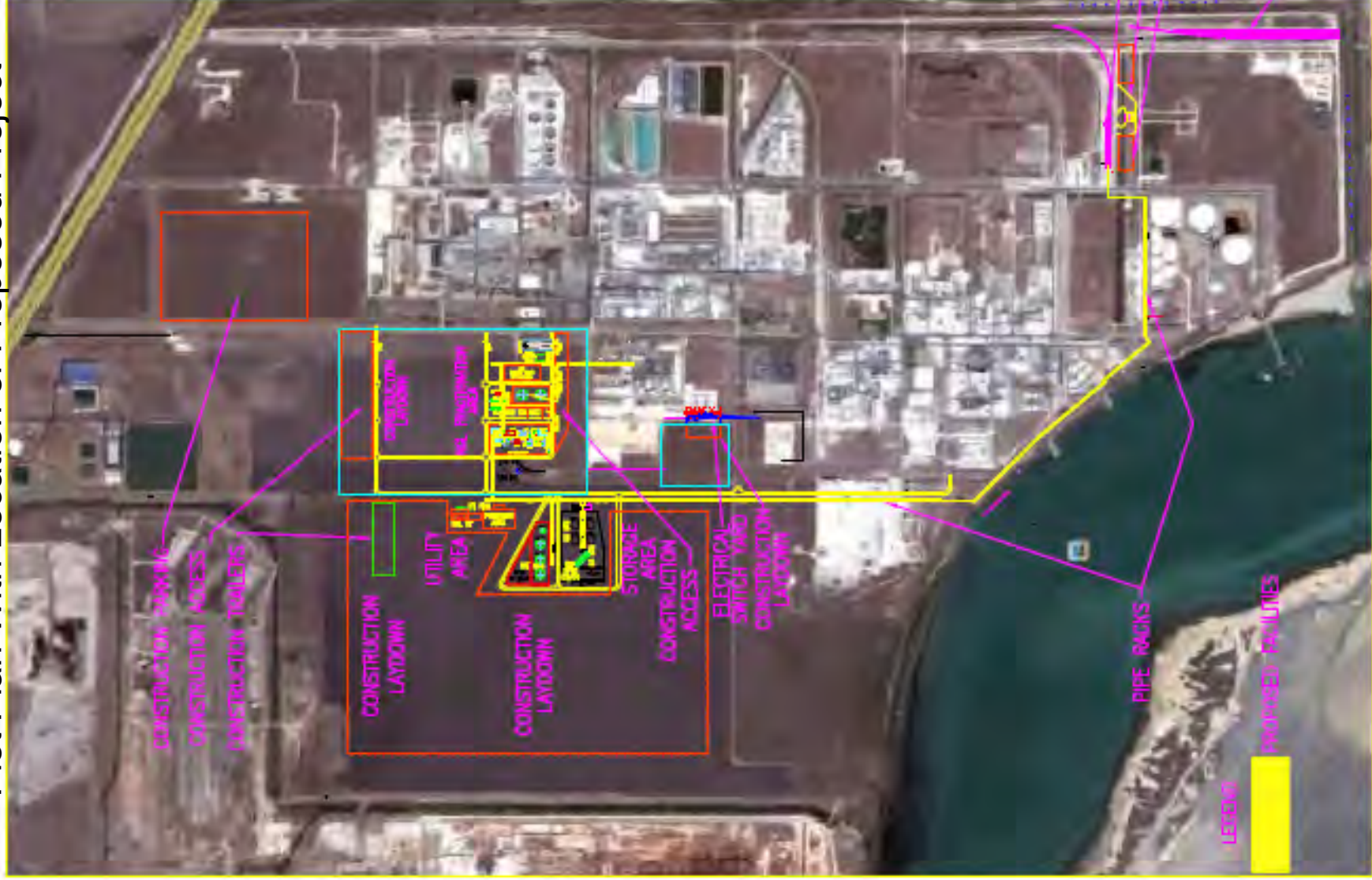
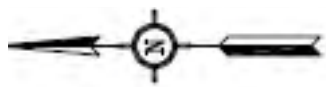
Confidential

Fractionation



Confidential

Plot Plan With Location of Proposed Project



Plot Plan at Current Time



Permits and Authorizations

- TCEQ - NSR Permit
- TCEQ - Amendment to existing TPDES permit
- EPA - GHG PSD Permit
 - Requires compliance with the ESA, NHPA, and MSFMCA
- Pipelines
 - USACE – Section 404 CWA, Nationwide Permit 12
 - USACE – Section 10 RHA, Regional Permit
 - TRRC – Section 401 WQC
 - No major impacts (T&E, cultural, hydrotest, coastal zone)

Schedule

- File permit applications by end of April 2012
- Start of construction April 2013
- Start-up by end of 2014

APPENDIX C

PRINCIPAL INVESTIGATOR CURRICULUM VITAE



JAMES HUGHEY

TITLE

Regional Manager
Archaeologist

EXPERTISE

NAGPRA Compliance
NHPA Section 106 Compliance
Southeast Prehistoric Archaeology
Historic Plantation Archaeology
Historic Urban Archaeology

EDUCATION

Master of Arts, Anthropology, 2001
University of Houston

Bachelor of Science, Cum Laude, Anthropology, 1996
University of Houston

SGA Environmental Inspection & Construction Compliance. February 2003-12.
FERC Environmental Report Preparation Seminar. June 2003.
NEPA and Transportation Decision Making, LADOT, February 2003.
OSHA Excavation Safety Training for Competent Persons.

SUMMARY OF EXPERIENCE

Mr. Hughey has over fifteen years of experience working on Phase I, II, and III archaeological survey, testing, and mitigation projects relating to the pipeline, transportation, and construction industries and has completed documentary research in various state archives associated with land use histories. Consultation with multiple State Historic Preservation Offices has resulted in a solid understanding of state and federal regulations and requirements.

Projects managed by Mr. Hughey include gas pipeline, oil pipeline, water and sewer line surveys, channel and creek widening surveys, and projects associated with the construction of detention basins and outfall structures where the Federal Energy Regulatory Agency or the United States Army Corps of Engineers serves as the lead or a consulting Federal Agency. Several of the project examples listed below outline Mr. Hughey's experience in conducting investigations throughout Texas and the United States.

Mr. Hughey also has five years of experience working in museum settings, where his duties included collections-based research, NAGPRA compliance, and the completion of curation, exhibit and interpretive duties associated with material culture from the Americas, Africa, the Middle East, and Indonesia.

SELECTED PROFESSIONAL EXPERIENCE

Principal Investigator-Data Recovery of Site 41OR85, Orange County, Texas for AMEC Paragon and Golden Pass Pipeline.

Project Manager-Archaeological modeling and assessment for the 74-Ranch Well Pad Unit in Atascosa, Live Oak, and McMullen Counties, Texas.

Project Manager-Double Eagle Pipeline, LaSalle, McMullen, Live Oak Counties, Texas. For Edge Engineering and Science and Copano Energy.

Project Manager-Archaeological modeling and assessment of the Proposed Forest Sites Well Pads in Wilson and Atascosa Counties, Texas. For Edge Engineering and Science and Marathon.

Project Manager-Assessment of the Proposed Barnhardt Sites Well Pads in Gonzales County, Texas.

Project Manager-Survey of Lake Kemp, Texas for the USACE Conservation Pool Reallocation Study for the USACE, Tulsa District.

Project Manager- Cultural Resource Management Survey for the LIT-37 Pipeline Project in De Soto Parish, Louisiana. Submitted to Gulf Engineers & Consultants, Inc.

Project Manager- Cultural Resource Management Survey for the J-113 Pipeline Project in White County, Arkansas. Submitted to Gulf Engineers & Consultants, Inc.

Project Manager- Cultural Resources Management Survey for 10 Miles of the Blue Water Highway Reconstruction Project in Brazoria County, Texas, for Berg-Oliver Associates, Brazoria County, and the Texas Department of Transportation.

Project Manager- Cultural Resources Management Survey for the Wister Lake Roads Expansion Project, Le Flore County, Oklahoma for Black & Veatch/GEC and U.S. Army Corps of Engineers, Tulsa District.

Project Manager-Ozark Atlas Pipeline Project, White, Woodruff, Monroe, St. Francis, Lee, and Phillips Counties, Mississippi, and Coahoma, Quitman, and Panola Counties Alabama, for ENSR and Ozark Gas Transmission, LLC.

Principal Investigator-Southeast Expansion Pipeline, Choctaw County Alabama and Simpson, Smith, Jasper, and Clarke Counties Mississippi, for ENSR and Gulf South Pipeline Company, LP.

Project Manager/Principal Investigator-Southern Pines Pipeline, Greene County, Mississippi, for ENSR and SG Resources Mississippi, LLC.

Project Manager/Principal Investigator-Goodrich to Koontz Clarity Pipeline, Hardin, Polk, and Liberty Counties, Texas, for URS and Enbridge.

Project Manager/Principal Investigator-Bethel to Crockett Clarity Pipeline, Houston and Anderson Counties, Texas, for URS and Enbridge.

Project Manager-Koontz to Orange Clarity Pipeline, Hardin, Jasper, and Orange Counties, Texas for URS and Enbridge.

Project Manager-National Register Evaluation of Sites 41HR293, 41HR745, 41HR809, 41HR810, and 41HR811, Harris County, Texas, for Harris County Flood Control Department.

Project Manager-Freeport LNG Expansion Survey, Brazoria County, Texas, for NRG and Freeport LNG.

Project Manager-Miller's Lake Lateral Pipeline Survey, Evangeline Parish, Louisiana, for ENSR International.

Project Manager-The Vintage 380-Acre Survey, Harris County, Texas, for V&W Partners.

Project Manager/Co-Principal Investigator-The Vintage National Register Evaluation Project (Sites 41HR997, 41HR1000, and 41HR1001, Harris County, Texas, for V&W Partners.

Project Manager-Camp Swift cultural resources survey, Bastrop County, Texas, for the University of Texas MD Anderson Cancer Research Center.

Project Manager-Catlettsburg Tri-State Pipeline Survey, Wayne County, West Virginia and Boyd County, Kentucky, for Sendero Environmental and Catlettsburg Refining, LLC.

Project Manager/Principal Investigator-Farm to Market 1484 Expansion, Montgomery County, Texas, for Texas Department of Transportation and Turner Collie & Braden, Inc.

Project Manager/Principal Investigator-Cultural Resources Assessment for the Proposed Matagorda Ship Channel Improvement Project, in

Matagorda and Calhoun Counties, Texas, for URS Corporation and the Port of Port Lavaca/Port Comfort.

Project Manager-Sabine Pass Gas Storage and Pipeline, Jefferson County, Texas, for ERM and Unocal Midstream and Trade.

Project Manager/Principal Investigator-Farm to Market Road 762, Fort Bend County, Texas, for Texas Department of Transportation and Berg Oliver Associates, Inc.

Project Manager-Ellington Field Archaeological Assessment, Harris County, Texas, for M.D. Anderson Cancer Center, University of Texas.

Project Manager-Gulf South and Trunkline Interconnect Pipeline, Calcasieu Parish, Louisiana, for ENSR International, Gulf South Pipeline, and Trunkline LNG.

Project Manager/Principal Investigator-Archaeological Assessment for the Proposed ConocoPhillips Pipeline Reroute in Tulsa and Wagoner Counties, Oklahoma, for ENSR and ConocoPhillips.

Project Manager-Golden Pass LNG Terminal/Pipeline Project, Jefferson, Newton, and Orange Counties, Texas and Calcasieu Parish, Louisiana, for ERM and Golden Pass LNG, L.P.

Project Manager-Pearl Crossing LNG Pipeline Project, Cameron and Calcasieu Parishes, Louisiana, for URS Corporation and Pearl Crossing LNG, L.P.

Project Manager/Principal Investigator-Golden Pass Pipeline Reroute survey, Jefferson, Newton, Orange, Counties Texas and Calcasieu Parish, Louisiana, for AMEC Paragon and Golden Pass Pipeline LP.

Project Manager/Principal Investigator-Vista del Sol LNG Terminal/Pipeline Project, San Patricio County, Texas, for URS Corporation and Vista del Sol LNG, L.P.

Project Manager-State Highway 87 Survey, Galveston County, Texas, for Texas Department of Transportation and Berg Oliver Associates, Inc.

Project Manager-Tennessee Gas 100-3 Pipeline Replacement Project, Harris County, Texas, for Coler & Colantonio and Tennessee Gas Pipeline Company.

Project Manager/Principal Investigator-Four Corners and Rio Brazos Service Areas Water and Sewer Systems Survey, Fort Bend County, Texas, for Berg Oliver Associates and the UDSA-RUS.

Project Manager/Principal Investigator-Kleberg County/FEMA Rechannelization Survey, Kleberg County, Texas, for URS Corporation.

Project Manager/Principal Investigator-Kenedy County/FEMA Rechannelization Survey, Kenedy County, Texas, for URS Corporation.

Project Manager/Principal Investigator-Line Replacement Survey for El Paso Natural Gas Pipeline 1107, Upton County, Texas, for Coler and Colantonio and the El Paso Corporation.

Project Manager-Phase I Cultural Resources Survey of the ANR/Nipsco-Chesterton Interconnect, Porter County, Indiana, for Coler and Colantonio and El Paso Corporation.

Project Manager-Phase I Cultural Resources Survey of the Proposed Pipeline Replacement of the Kosciusko Pipeline, Rankin County, Mississippi, for Gremminger and Associates and Gulf South Pipeline Company.

Project Manager- City of Angleton Sidewalk Categorical Exclusion Documentation, for Berg Oliver Associates, the City of Angleton, Texas and the Texas Department of Transportation.

Project Manager-Phase I Cultural Resources Survey of the Brand Lane Development Project, Fort Bend County, Texas, for Berg Oliver Associates.

Project Manager-Chain Site Survey Project, Lake Livingston, Texas, for the Houston Museum of Natural Science Anthropology Department.

Principal Investigator-Environmental Assessment/Phase I Cultural Resources Survey for the Fish Creek Thoroughfare Expansion Project in Montgomery County, Texas, for Turner, Collie, and Braden, Inc.

Principal Investigator-Houston Hike and Bikeways Categorical Exclusion Documentation/Phase I Cultural Resources Survey for the City of Houston, Texas, Klotz Associates, Berg Oliver Associates, and the Texas Department of Transportation.

Principal Investigator-Phase I Cultural Resources Survey for the ANR/Seminole Pipeline Interconnect Project, Oklahoma City, Oklahoma, for Coler & Colantonio Inc. and the El Paso Corporation.

Principal Investigator-Phase I Cultural Resources Survey for Power Plant Construction in Hidalgo County, Texas, for Malcolm Pirnie, Inc.

Principal Investigator-Site File Research for the Madisonville Pipeline Project, in Madison County, Texas, for Natural Resource Group, Inc.

Principal Investigator-Proposed Regional Detention Basin and Outfall Structure Cultural Resources Survey, in Harris County, Texas, for Berg Oliver Associates, Inc.

Principal Investigator-Phase I Cultural Resources Survey for the St. Martin Parish Business Park Property, in St. Martin Parish, Louisiana, for the St. Martin Economic Development Authority.

Principal Investigator-Woodtrace Development Cultural Resources Survey, in Montgomery County, Texas, for Berg Oliver Associates, Inc.

Field Director- Alamo Compressor Station Site Survey, in Hidalgo County, Texas, for the El Paso Corporation.

Field Director-Fiber Optic Routing Survey, in North Carolina, Georgia, and Florida for AT&T.

Field Director-Steward Creek Expansion Survey, in Conroe, Texas, for the City of Conroe.

Field Director-Anauac National Wildlife Reserve Kerr-McGee Oil Lease Survey, in Montgomery County, Texas, for Kerr-McGee and Ensource Corporation.

Field Director- Fiber Optic Regen Station Survey, Griffin, Georgia, for PFNet and AT&T.

Field Archaeologist-Phase III data recovery at the Levi Jordan Plantation, 41 BU 165, Brazoria, Texas, for the University of Houston Anthropology Department.

Field Archaeologist-Phase III data recovery at the Ballpark at Union Station, 41 HR 820, Houston, Texas, for the Houston Sports Authority.

Field Director-Phase III data recovery at the Frogmore Plantation, 38 BU 1116, St. Helena Island, South Carolina for the University of Houston Anthropology Department.

ARCHIVAL RESEARCH

Project Archaeologist or Principal Investigator on numerous projects using records in SHPO offices and state and county repositories on urban and rural land use and development projects associated with predictive modeling activities, and developing testing and mitigation strategies for NHPA eligibility studies, archaeological data recovery, and NEPA compliance.

SELECTED PUBLICATIONS

A Cultural Resources Survey of Gulf South's Proposed Southeast Expansion Natural Gas Pipeline Project in Simpson, Smith, and Clarke Counties, Mississippi and Choctaw County, Alabama (with Rebecca Sich and Kristi Soltysiak). Submitted by HRA Gray & Pape to ENSR and FERC.

Cultural Resources Survey of the Whitetail Gas Storage Project in Monroe County, Mississippi (with Rebecca Sick and Kristi Soltysiak). Submitted

by HRA Gray & Pape to Tarpon Gas Storage and FERC.

Data Recovery for Site 41OR85 Located within the Golden Pass Pipeline Construction Corridor, Orange County, Texas (report in progress, with Rebecca Mehok and Tony Scott). Submitted by HRA Gray & Pape to Amec-Paragaon, Golden Pass Pipeline, LLC and FERC.

Cultural Resource Management Survey of the Proposed Golden Pass LNG Pipeline Route in Jefferson, Orange, and Newton Counties, Texas (with Tony Scott and John Picklesimer); submitted to Federal Energy Regulatory Commission, Environmental Resources Management, Inc., and Golden Pass LNG Terminal LP.

“Culture Contact: Variability in Pre-Caddo, Caddo, and Lower Mississippi Valley Ceramics from Southwest Arkansas” in *The Arkansas Archaeologist*; Bulletin of the Arkansas Archaeological Survey, Hester Davis (ed.); University of Arkansas Press, Fayetteville.

“The Ceramic Assemblage at Fort Concho” in *Fort Concho National Historic Landmark, San Angelo, Texas: An Archaeological Investigation for Enlisted Men’s Barracks 2 Restoration*, Kathy Roland (ed.); Fort Concho National Historic Landmark, San Angelo.

A Technological Analysis of Low-Fired, Hand-Built Ceramics From the Frogmore Plantation (38BU1116), Beaufort County, South Carolina; Unpublished Master’s Thesis. Manuscript on file, University of Houston Anthropology Department, Houston, Texas.

Phase I Cultural Resources Survey of Proposed Fresh Water and Sewer Systems for the Four Corners and Rio Brazos Service Areas in Fort Bend County, Texas (with Steven Baird and Samuel Sweitz); submitted to Berg Oliver Associates, Inc. and the USDA-RUS.

Phase I Cultural Resources Survey of the Western Rim Development Project Area, Montgomery County, Texas (with Steven Baird and John

Oswald); submitted to Berg Oliver Associates, Inc. and the USACE, Galveston District.

Phase I Cultural Resources Investigations of the Greater Cleveland Regional Transit Authority's Proposed East Side Transit Center, Cleveland, Cuyahoga County, Ohio (with Harrison Stamm Gowdy, Cinder Miller, and Rita Walsh); submitted to the Greater Cleveland Regional Transit Authority and BRW, Inc.

Revised Working Document, Euclid Corridor Transportation Project, Cuyahoga County, Cleveland, Ohio, Archaeology Model Step 7 (with Cinder Miller); submitted to the Greater Cleveland Regional Transit Authority and BRW, Inc.

Phase I Cultural Resources Management Short Report of Archaeological Investigations Associated with Power Plant Construction in the City of McAllen, Hidalgo County, Texas (with John Oswald); submitted to Malcolm Pirnie, Inc.

Phase I Cultural Resources Survey of Proposed Replacement Locations Along Gulf South's Existing Kosciusko Pipeline, Rankin County, Mississippi (with John Picklesimer II); submitted to Gremminger and Associates, Inc.

A Phase I Cultural Resources Management Survey for the Proposed St. Martin Parish Business and Industrial Park St. Martin Parish, Louisiana (with Fang Barber and Maureen Meyers); submitted to the St. Martin Economic Development Authority.

Results of Phase Ia Site File Research for the Madisonville Pipeline Project, Madison County, Texas; submitted to Natural Resource Group, Inc.

Professional Organizations

Register of Professional Archaeologists

Society for American Archaeology
American Cultural Resources Association
Council of Texas Archeologists (Membership Committee Co-Chair)
Texas Archeological Society