APPENDIX 12-A: HISTORICAL ASSESSMENT AND ARCHEOLOGICAL RESOURCES TECHNICAL MEMORANDUM

Page Intentionally Left Blank

Tesoro Anacortes Clean Products Upgrade Project Historical Assessment for Built Environment Resources (NWS-2015-167)

PREPARED FOR:	Rebecca Spurling, Tesoro Refining & Marketing Company LLC (Tesoro)
COPY TO:	Rachel Chang/CH2M
PREPARED BY:	Marcia Montgomery/CH2M
DATE:	February 8, 2016 (WHR Eligibilty text added June 14, 2016)
PROJECT NUMBER:	650121.03.CR

Introduction

This technical memorandum presents the results of a cultural resources assessment for built environment resources associated with the Tesoro Clean Products Upgrade Project (CPUP). Tesoro is proposing the CPUP (File # NWS-2015-167 and PL 15-0302) to improve the company's capability to deliver cleaner local transportation fuels and global feedstock (primarily for polyester), making the Anacortes refinery a stronger, more economically viable member of the communities it serves. The locations where improvements will occur within the refinery are illustrated in Figure 1.

Included in the proposed CPUP are plans to complete the following:

- Build an Aromatics Recovery Unit (ARU) capable of producing 15,000 barrels per day of mixed xylenes, a feedstock used to make clothing, film for medical x-rays, plastics, cleaners, and many other products the public uses every day (Figure 2). Increased production will require the construction of more storage tanks (Figure 3).
- Install a new Marine Vapor Emission Control (MVEC) System that will reduce emissions of volatile organic compounds (VOCs). The MVEC System will control hydrocarbon emissions from marine vessels during loading operations (Figure 4). The components of the MVEC System include a Dock Safety Unit (DSU) located on the wharf, a new 3-inch natural gas line located on the wharf/causeway structures, and a new Vapor Combustion Unit (VCU) located onshore in the refinery.
- Expand the Naphtha Hydrotreater (NHT) to process 46,000 barrels of naphtha per day. This will allow Tesoro to further reduce the sulfur content in gasoline, as required by the new federal Tier 3 regulations (Figure 5).
- Install a new Isomerization (Isom) Unit to increase the amount of octane available to the refinery. Coupled with the NHT expansion project, this provides more flexibility for production of gasoline (Figure 5).
- Add a 3-inch pipeline to the along wharf/causeway (over 0.5 mile long) that extends over Fidalgo/Padilla Bay (Figure 6).

The proposed updates to the refinery involve obtaining a U.S. Army Corps of Engineers (USACE) Section 10 permit authorization. This federal involvement triggers compliance with Section 106 of the National Historic Preservation Act, which requires consideration of effects to resources that are listed in or eligible for the National Register of Historic Places (NRHP). This report identifies and evaluates historic built environment resources within the project's Area of Potential Effects (APE), defined as individual areas where new construction or updates within the refinery would occur. A separate report has been prepared for archaeological resources (McClintock, 2015).

Project Description

The proposed CPUP, as described above, consists of four individual smaller components that are aimed at improving the company's capability to deliver cleaner local transportation fuels and global feedstock. The following subsections summarize each of these components, and their locations are marked on Figure 1.

Xylene Production and Storage

Tesoro proposes to build an ARU that will be capable of producing 15,000 barrels per day of mixed xylenes. The new ARU will be constructed in the western portion of the facility north of 8th Street. The ARU will be constructed on existing industrial use land that is already impervious, and the runoff will continue to be routed through the facility's wastewater treatment plant (WWTP).

The increased production will require additional storage. Therefore, three new storage tanks will need to be constructed next to the existing storage tanks just south of 8th Street (New Tanks Area). Approximately 18 acres of land will be converted to impervious surface as a result of the construction of these three new storage tanks and their associated pumps, containment, and access roads.

Marine Vapor Emissions Control System

Displaced vapors associated with refinery marine loading activities, including vapors from existing operations and the new project, will be routed to a new MVEC System to control VOC emissions. The displaced marine loading vapors will be collected by vapor hoses routed to a Dock Safety Unit (DSU) consisting of two, skid-mounted units positioned on the wharf structure. The DSU is an essential piece of the overall MVEC System that ensures the highest level of safety for the marine vessels and the overall MVEC System. Included in those safety requirements is a new 3-inch natural gas supply line to the DSU, supplied via an existing natural gas source from within the refinery. The vapors exiting the DSU will be routed through an existing line available on the wharf/causeway structure, to the new Vapor Combustion Unit (VCU) located in the refinery outside of the 200-foot shoreline buffer, adjacent to the WWTP.

Sulfur Reduction in Gasoline Production

The project will expand the NHT process to be able to process 46,000 barrels of gasoline per day. This facility will allow Tesoro to reduce the sulfur content in gasoline as required by the new federal Tier 3 regulations. The NHT unit is located to the east of the ARU facility. Like the ARU facility, the expanded NHT facility will be located on existing industrial impervious surface, from which the stormwater runoff will be routed through the facility's WWTP. No new impervious surface will be generated by this facility.

Increase in Octane for Gasoline Production

Tesoro will install a new Isom Unit to increase the amount of octane available to the refinery. This unit will be located directly to the east of the NHT facility. Coupled with the NHT expansion project, the Isom Unit will allow the plant to have more flexibility in the production of grades of gasoline it processes. As with the ARU and the NHT facilities, the Isom Unit will not increase impervious surface, as it will be built on existing impervious surface, from which the stormwater runoff will be routed through the WWTP.

Tesoro will need to obtain permits from state and federal agencies during construction. These permits would contain stipulations to avoid or minimize construction impacts and would have the bulk of the impact avoidance and minimization measures incorporated in them. Specifically, Tesoro will obtain the following:

- Section 10 permit from the USACE for work at the wharf and causeway
- Shoreline Substantial Development Permit from Skagit County
- Hydraulic Project Approval from the Washington Department of Fish and Wildlife
- NPDES Construction Stormwater General Permit

In addition, the contractor will be required to develop and follow a Temporary Erosion and Sedimentation Control Plan (TESC), a Spill Prevention Control and Countermeasures (SPCC) Plan, and a Stormwater Pollution Prevention Plan (SWPPP). These permits and plans will include all the provisions Tesoro will follow to avoid, minimize, or mitigate potential impacts to aquatic resources that may occur during construction (and operation) of the project.

Area of Potential Effects

Figure 7 shows the project APE for historical buildings and structures on a United States Geological Survey (USGS) map. The APE consists of the locations where new construction or updates within the refinery would occur. Because of the industrial nature of this site, the potential for visual effects to nearby resources was not considered, since heavy industrial operations are an existing condition of the site, and the updates will be of a similar type.

Methodology and Research Results

Methodology

CH2M historian Marcia Montgomery reviewed the Department of Archaeology and Historic Preservation's (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD) database for previously inventoried buildings and structures within the APE. She also communicated with Steve Berentson, who is knowledgeable about the history of the refinery and its development. Berentson provided historical photographs, plans, and articles regarding the development of the refinery.

On September 3, 2015, Montgomery, Berentson and Rebecca Spurling of Tesoro toured the refinery grounds by automobile. During this site visit, Montgomery obtained additional information about the development of the site and took photographs of the overall refinery. Research was conducted to develop a context for the development of refineries in Washington State. This research included reviewing published materials and online sources related to the history of oil refineries in Washington, Shell Oil (Shell), and Anacortes. Though the APE is limited to specific areas where construction will occur, this study considered the potential of the overall complex to be eligible as a NRHP historical district. This study took into consideration a project build-out period of 5 years; therefore, it evaluated resources within the APE that are over 55 years old or constructed in 1960 or before. Review of historical maps, plans, and lists of refinery improvements indicate that the wharf is the only portion of the APE that was constructed prior to 1960. A Washington State Historic Property Inventory Form has been prepared for the wharf and is included as Attachment 1.

Research Results

In 1979, as part of a community cultural resources survey, a single historical property inventory form was prepared for both the historical Shell (currently owned by Tesoro) and Texaco (currently owned by Shell) refineries located on March Point. This was a community inventory that did not result in determinations of eligibility for the NRHP for the refineries, which at that time were less than 50 years old. It included a statement describing that the refineries brought economic improvement and a surge of optimism to Anacortes. No other buildings or structures have been inventoried within the APE.

Though cultural resources studies have occurred on March Point, the Tesoro Refinery has not been previously evaluated for NRHP eligibility.

Historical Context

Oil Refining in the United States and Washington

Today, there are a total of 137 operating oil refineries in the United States (US Energy Information Administration, 2015). In 1859, two unrelated events contributed to the development of this robust industry. In Titusville, Pennsylvania, Colonel Edwin Drake drilled the first oil well, and the French engineer J.J. Etienne Lenoir made the first dependable internal combustion engine powered by gasoline. Technological innovations during the next 40 years led to improved engines and better oil production and refining techniques. In 1862, an oil refinery using atmospheric distillation to create kerosene made gasoline as a byproduct, which would become the most important refinery product in the subsequent decades. In 1913, refiners began using thermal cracking to produce more gasoline from oil in an effort to keep up with oil demand as car ownership increased. Throughout the years, refiners continually improved on the production process to maximize the output generated from oil sources.

During World War I, coal-powered ships were being replaced by oil-fueled warships, as well as tanks and air planes. United States oil companies joined forces with the Federal Fuel Administration in 1917 in an effort to maintain an adequate supply of oil for the Allied Forces. After the war, the United States transportation infrastructure improved, and car ownership became more common: by 1930, approximately 26.7 million people owned cars. Once again, the oil industry grew, resulting in more refineries that were constantly improving thermal-cracking to produce higher quality products. During World War II, high octane fuel allowed for high performing engines in American fighter planes. The war also spurred the development of long distance pipelines for crude oil, replacing train shipments which could be vandalized and interrupted.

After World War II, the United States economy boomed. The refinery business expanded with the increase of car ownership and use of commercial jets. By the 1960s, Americans were purchasing an impressive 8 million cars per year. It was during this period of post-World War II growth that Shell Oil built its refinery on March Point (Arabe, 2003).

Between the end of World War II and 1971, the oil industry built six refineries in Washington, decreasing an earlier need for shipping oil from California. Each of these refineries was built on the coast to take advantage of shipping products by water. In 1954, General Petroleum built Washington's first refinery in Ferndale, and it remains the oldest continually operated refinery in the state (and is run today by Phillips 66). In 1955, Shell built this current Tesoro refinery in Anacortes, and United States Oil & Refining built a refinery in Tacoma. By 1958, Texaco built a refinery directly south of Shell's plant in Anacortes. In the following decades, Sound Refining built an asphalt refinery in Tacoma that used crude oil as feedstock (1967), and British Petroleum built the state's largest refinery at Cherry Point (1971) (Washington Oil Marketers Association, 2015). In 1998, the Sound Refining refinery in Tacoma ceased refining and became a tank farm (Washington Department of Ecology, 2015).

Development of the Historical Shell Refinery (currently owned by Tesoro) in Anacortes

The Shell Oil Company constructed and operated this refinery until 1998 when it was sold to Tesoro. The history of the Shell Oil Company in the United States dates to 1912, when the Royal Dutch Shell Group founded the American Gasoline Company to sell gasoline on the Pacific Coast. By 1915, Shell built its first United States refinery in Martinez, California. This was the country's first continuous process refinery, shut down only occasionally for cleaning, and it became a model refinery for the nation. Until the 1940s, Shell's operations focused on California. After World War II, the need for more oil led to Shell's development of oil fields in Texas and Louisiana. Soon thereafter, the company expanded its refinery operations to Anacortes, Washington (Shell, 2015).

In 1953, Shell committed to the development of a refinery located 1 mile east of and across Fidalgo Bay from Anacortes, Washington, on land formerly known as March Point. Surrounded by water on three sides, this location primarily consisted of forested or agricultural lands. Reportedly, “the decision to build the new refinery in the Pacific Northwest was made so that Shell… can continue to hold its position as a leading supplier of oil products along the West Coast” (Berentson n.d:1). A Shell publication further describes that there were two reasons the company decided to build a refinery in Anacortes: the rapid growth of the Northwest, and the proximity to crude oil supplies in Canada. The Anacortes site was chosen over a dozen other sites, because it could receive crude via ship at its natural deep water port. It also received crude by the Transmountain Oil Pipeline from Canada (Shell n.d.a). The arrival of big industry improved the economy of Anacortes, which had been based on the lumber industry, fishing, and canning (Carter, 2011).

The first manager of the refinery, R.W. McOmie, came from Shell’s Wilmington Refinery to oversee the $75 million construction of the refinery, which would produce 50,000 barrels of oil per day. The 800-acre March Point site was chosen for its large size, access to a deep water harbor, distance from populated areas, and accessibility to a skilled workforce. Contractor Bechtel started construction on the refinery in May 1954, employing 3,200 locals, transients, and Bechtel specialists. By September 1955, Shell had the Crude Unit on stream (Berentson n.d.:1; Shell n.d.a and Shell n.d.b.).

The refinery is laid out in what appears to be a conventional refinery pattern with paved streets in a grid-like pattern, though the squares of the grid vary in size based on the equipment and processes that occur in each “block.” The north-south streets are lettered and the east west streets are numbered. The complex includes administrative and personnel offices, with parking and landscaped areas on the publicly accessible north side of these buildings. South of the office buildings, the complex is fenced to limit access to the processing units, tanks, railroad and truck loading racks, various utilitarian buildings, and an effluent treatment plant. At the north end of March Point is the original deep water wharf, at more than 0.5 miles in length; southwest of the wharf is the neighboring refinery’s wharf. The refinery largely produces gasoline, but also makes jet fuel, diesel fuel, industrial fuel oil, and propane. The general configuration of the refinery places most of the operating units and industrial facilities to the north, with the tanks to the south and undeveloped land on either side of the tanks. Finished products are transported to the Seattle and Portland areas by pipeline or carried by tanker, barge, rail, and truck. Figure 8 provides a recent aerial photograph of the refinery, and Figure 9 is a site plan circa 1955 showing the locations where different processes occur.

Determination of Eligibility

To be eligible for inclusion in the NRHP, a property must meet the requirements of at least one of the four primary NRHP criteria, as follows (National Park Service, 1997):

> The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:
>
> a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b) That are associated with the lives of persons significant in our past; or
>
> c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> d) That have yielded or may be likely to yield, information important in prehistory or history.

In addition, properties must retain enough integrity to demonstrate their significance under the criteria. The NRHP recognizes seven aspects of integrity: setting, feeling, association, location, materials, design, and workmanship. Even if a property meets the criteria, it must retain sufficient integrity to convey that significance in order to be eligible for listing in the NRHP. Generally, properties must be at least 50 years old to be eligible for the NRHP, unless they are proven to have exceptional importance.

Completed in 1955, the Tesoro Refinery (originally built by Shell) is 60 years old. This study evaluated the refinery for potential NRHP eligibility as a historical district. Resources within the APE 55 years old or older were also inventoried individually for their potential for NRHP eligibility. Because the areas where proposed construction would occur are either undeveloped or modern, only the wharf was inventoried. It was constructed as part of the original refinery build-out in 1955.

National Register of Historic Places Eligibility of Refinery as a Historic District

The refinery does not appear eligible under NRHP Criterion A for its association with events that have made a significant contribution to the broad patterns of our history. In the post-World War II era, when industry surged, oil companies built numerous refineries along the Washington shorelines, decreasing the need for shipping oil from California refineries. Built by Shell in 1955, this site is currently owned and operated by Tesoro Corporation and is one of five oil extant refineries in Washington State. It reflects a trend of refinery development in the Pacific Northwest during the period of post-World War II economic expansion. It is neither the oldest nor the largest plant in the state. The oldest of the Shell refineries in the United States was built in 1915 in Martinez, California. Based on this analysis, the Tesoro refinery does not meet NRHP eligibility requirements for its role in the development of refineries on the West Coast or the state of Washington.

The development of the Shell refinery in Anacortes had an economic impact on the Anacortes community. In the 1950s, Anacortes' population neared 7,000, and its economy was based on lumber, fishing, and canning industries. The construction of the refinery brought 475 new jobs and an annual payroll of $4,000,000; over 400 new homes were constructed in the first year the refinery operated (Tales of Trails and Triumphs n.d.; Foss, 1979). It is important to note that the economic benefit to Anacortes that came from the refinery business is shared between this refinery and the nearby Texaco refinery (currently owned by Shell), also developed in the mid-1950s. The Tesoro Refinery is part of a general post-World War II shift toward refinery development, rather than the sole reason for economic expansion of Anacortes. Therefore, the Shell (Tesoro) Refinery does meet NRHP Criterion A for its contributions to the growth of Anacortes.

The refinery does not have associations with individuals that would make it eligible under NRHP Criterion B. Shell hired Bechtel to develop the site. These large companies are made up of many individuals who contributed to the building and operation of the site. No specific person stands out as having strong associations with this site.

The evaluation of the refinery as a historic resource under NRHP Criterion C included considering the plant for its architectural and engineering significance. The administrative and personnel building complex at the north end of the refinery is the public face of the refinery. The buildings are set at angles, and circulation routes and landscaped areas are defined by curved roads common to mid-century developments. The reflection pond and totem pole carved by Dudley Carter in front of the administrative building provide a strong regional emphasis and have some cultural value (Berentson n.d.:5). The buildings and overall layout of the site, however, are unremarkable midcentury office buildings. Research did not identify the architect who designed the buildings. The administration building is a two-story brick building with a rectangular plan and a flat roof. The longer northwest-facing façade and southeastern elevation are faced with smooth concrete. The upper story on both of these elevations is wrapped by a protruding extension of the wall that matches the length of the overhanging roof. This defining feature provides a horizontal emphasis by punctuating the long length of the building which is divided into nine window bays separated by concrete columns. Each bank of windows includes five aluminum frame windows with four horizontal lights. The main entrance is centered on the façade. The one-story rectangular Personnel Building is located west of the Administration Building and shares a similar mid-century design featuring a flat roof, brick and concrete walls, and aluminum windows. Many of the original windows have been replaced with tinted windows. Representative photographs of the administration buildings and other buildings and structures within the refinery complex are included as Attachment 2.

The industrial operations south of the administrative complex do not possess engineering significance that would make them eligible for the NRHP under Criterion C. Developed in the midst of the post-World War II refinery building boom, the plant reflects the use of standard equipment and layout. The processing, storage, and transportation infrastructure of the site reflects common refinery building design. The Tesoro Refinery does not appear to meet eligibility requirements for listing in the NRHP as a historic property under Criterion C. Furthermore, the site does not possess significance under NRHP Criterion D, because it is unlikely to yield important architectural or engineering information related to the history of the refining process.

Numerous modifications have occurred to the plant over time. Figure 10 is a timeline excerpted from a Shell publication that shows improvements to the site until 1998 when the refinery was sold to the Tesoro Corporation. Additionally, numerous improvements have been made since 1990 to current- time operation (2015) that includes new and revised process units that have reduced sulfur and benzene in motor fuels, facility emission reduction projects to reduce overall refinery emissions (CCU wet gas scrubber, refinery fuel gas sulfur treatment, flare gas recovery , furnace burner replacements to emit lower nitrogen oxide emissions). Additionally a new ROSE® process unit was installed in 2002 that serves the purpose to extract more light hydrocarbons for the residuum/heavy oil. Close analysis of historical aerial photographs and maps shows the infill that has occurred to the refinery since construction in 1955.

In summary, the Tesoro Refinery is not eligible for the NRHP as a historic district. This refinery is one of many refineries in Washington constructed during a period of rapid expansion of the oil refining business. It does not meet the NRHP criteria and has undergone numerous modifications.

National Register of Historic Places Eligibility of Wharf

This wharf is located at the northern end of March Point, north of the refinery complex (Figure 11). It is located roughly 1,400 feet east of the longer wharf of the neighboring refinery. It includes an approximately 2,950-foot-long asphalt road measuring 16 feet wide. Flanking the road to the east is a 25-foot-wide piperack for carrying pipes delivering crude and other materials to the refinery from marine vessels and transporting materials from the refinery to load into marine vessels. The dock platform measures 850 feet long and 100 feet wide. The wooden substructure of the wharf is made up of a repeating arrangement of four regularly spaced posts connected with cross bracing.

The wharf is the only resource within the APE constructed before 1960. It was constructed as part of the original design of the refinery in 1955. As noted above, the refinery does not appear eligible for the NRHP as a historical district; therefore, the wharf does not qualify as a contributing resource to a historical district. Individually, the wharf lacks associations with broad patterns of history (NRHP Criterion A), individuals (Criterion B), or information potential (Criterion D) that would make it eligible for listing in the NRHP. NRHP Criterion C considers a resource’s architectural or engineering significance. This wharf is noteworthy for its considerable length, but is located next to an even longer structure of a similar design. The wharf underwent a modernization between 1976 and 1978 and does not reflect the historical period. It does not meet eligibility requirements for listing in the NRHP under Criterion C. In summary, the wharf does not meet the NRHP eligibility criteria and underwent modernization during 1976 to 1978 (Figure 10).

Washington Heritage Register Eligibility

Since 1971 the Department of Archaeology and Historic Preservation has maintained the Washington Heritage Register (WHR), which is an official listing of historically significant districts, sites, buildings, structures, and objects that have been identified and documented as being significant in local or state history, architecture, archaeology, engineering or culture. This study includes a historic assessment of the Tesoro Wharf, which is the only historical resources located within the APE, and the overall Refinery, reviewed as a potential historic district. These resources do not meet the Washington Heritage Register (WHR) criteria. WHR guidance describes, “A building complex such as a factory or mill would be considered buildings or structures, not a district, because its parts originated from a common source and have interdependent functions” (DAHP 2011). Therefore, the Tesoro Refinery is not eligible for the Washington Heritage Register as a historic district and the wharf does not meet the WHR criteria and has lost integrity due to its modernization in the 1970s.

Finding of Effect

The APE was surveyed for historic buildings and structures, and the overall refinery site was assessed for its eligibility as a NRHP-eligible historic district. The results of the survey and inventory indicate that the refinery is not eligible for the NRHP as a historic district and that no historic resources individually eligible for the NRHP are located within the APE. The project has no potential for indirect effects to historic buildings or structures. This project would have no effect on historic properties.

Regulatory Summary

Under Section 106 of the National Historic Preservation Act projects with federal involvement are required to consider effects to historic properties, in compliance with Section 106 of the National Historic Preservation Act, this project included reviewing the historic significance of resources within the APE and assessing the significance of the Tesoro Refinery as a potential historic district. The refinery does not meet the eligibility criteria for listing in the NRHP as a historic district, and no historic properties are located within the APE. The results of this study conclude that the CPUP will have no effect on historic properties.

References

Arabe, Katrina. 2003. “How Oil Refining Transformed US History & Way of Life”. http://news.thomasnet.com/imt/2003/01/17/how_oil_refining. Accessed on September 24, 2015.

Berentson Public Relations. No date. *Anacortes Refinery: An Era of Excellence*. Hemlock Printing, Anacortes, Washington.

Carter, Phil. 2011. “Anacortes Bulletin announces on June 2, 1953 that Shell Oil chooses to locate a refinery in Anacortes”. Historylink.org. Accessed on September 25, 2015.

Department of Archaeology and Historic Preservation (DAHP), 2011. Washington Heritage Register Guidebook, accessed April 28, 2016, http://www.dahp.wa.gov/sites/default/files/WHR%20APPLICATION%20COMPLETEguide.pdf

Foss, Kim. 1979. *Community Cultural Resources Survey, Survey Inventory Form for March Point*. On file at DAHP, Olympia, Washington.

Funk, Wallie. 2015. *Pictures of the Past: Celebrating 125 years of Anacortes History*. Anacortes Museum Foundation, Anacortes, Washington.

McClintock, Robin. 2015. *Tesoro Clean Products Upgrade Cultural Resources Technical Memorandum*. Prepared by CH2M HILL Engineers, Inc. Portland, Oregon.

Shell Oil Company (Shell). 2015. *The History of Shell Oil Company*. http://waoil.org/washington-refineries. Accessed on September 24, 2015.

Shell Oil Company (Shell). No date (n.d.a). “Welcome to Shell’s Anacortes Refinery.” Article from Shell publication provided electronically by Tesoro to Marcia Montgomery, September 2015.

Shell Oil Company (Shell). No date (n.d.b). “As construction changes landscape, locals learn terms such as ‘cat cracker.’” Article from Shell publication provided electronically by Tesoro to Marcia Montgomery, September 2015.

Washington Oil Marketer Association. 2015. *Washington Refineries*. http://waoil.org/washington-refineries. Accessed September 24, 2015.

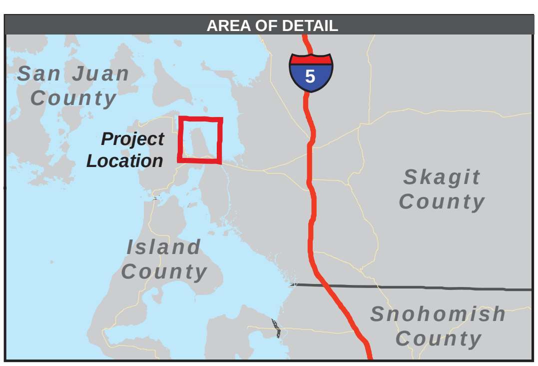
Washington Department of Ecology, 2015, “Targa Sound Terminal (formerly Sound Refining), http://www.ecy.wa.gov/programs/swfa/industrial/oil_soundrefing.html, accessed January 26, 2016.

Figures

Attachments

Attachment 1 Historic Property Inventory Form Summaries
Attachment 2 Representative photographs of the refinery complex

Figures



New 3" Natural Gas Line

Project Areas

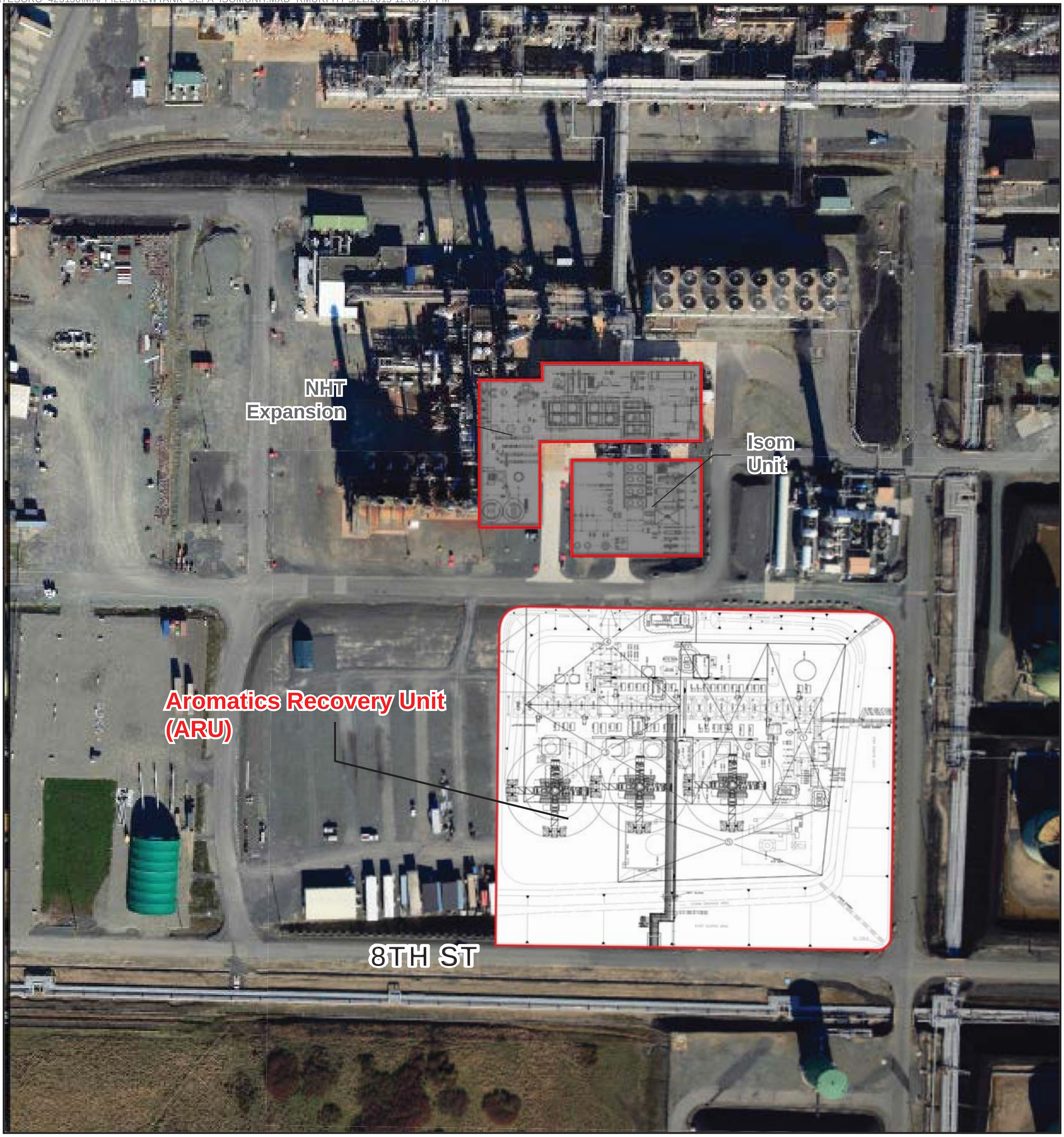
Source: NAIP Imagery (10/2013)

N

0 0.25 0.5 Miles

Figure 1
Vicinity Map
Clean Products Upgrade Project

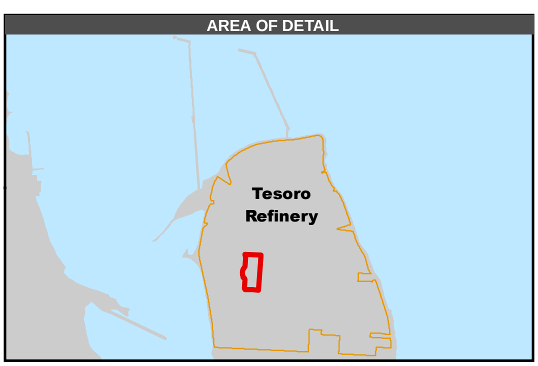
R:\TESORO_423130\MAPFILES\NEWTANK_SEPA_ISOMUNIT.MXD RMURPHY 5/22/2015 12:08:57 PM



Project Area

Figure 2
Aromatics Recovery Unit (ARU)
Clean Products Upgrade Project

R:\TESORO_423130\MAPFILES\BUILTENVIRONMENT_SEPA_NEWTANK_LAYOUT.MXD RGRABAREK 9/30/2015 12:54:17 PM



Project Area

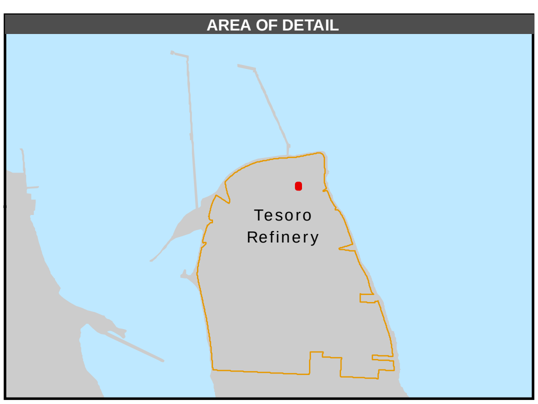
Source: NAIP Imagery (10/2013)

N

0 150 300 Feet

Figure 3
New Tanks Area Layout
Clean Products Upgrade Project

R:\TESORO_423130\MAPFILES\BUILTENVIRONMENT_SEPA_VAPOREMISSIONCONTROLSYSTEM.MXD RGRABAREK 6/10/2015 9:49:32 PM



Project Area

Note: Vapor Combustion Unit (VCU) is part of the Marine Vapor Emission Control (MVEC) System

N

Figure 4
Vapor Combustion Unit (VCU)
Clean Products Upgrade Project

R:\TESORO_423130\MAPFILES\NEWTANK_SEPA_ISOMUNIT.MXD RMURPHY 5/22/2015 12:08:57 PM

Project Area

N

Figure 5
Isomerization (Isom) Unit and
Naphtha Hydrotreater (NHT) Expansion
Clean Products Upgrade Project

R:\TESORO_423130\MAPFILES\BUILTENVIRONMENT_SEPA_DOCKSAFETYUNITS.MXD RGRABAREK 6/10/2015 9:14:04 PM

AREA OF DETAIL

3-inch Natural Gas Line

Project Area

Note: Dock Safety Unit (DSU) is part of the Marine Vapor Emission Control (MVEC) System

Source: Google (2015).

N

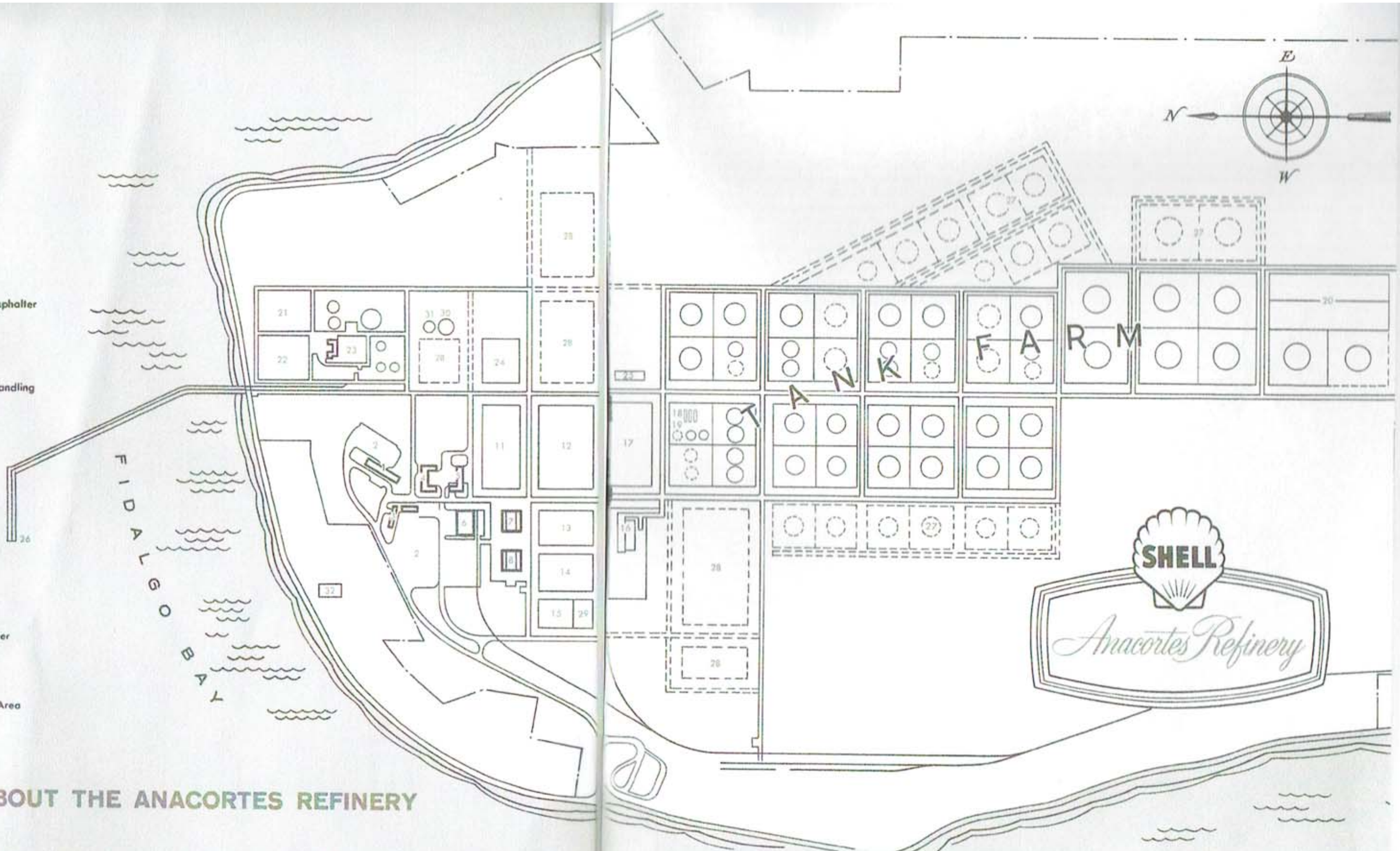
0 25 50 Feet

Figure 6
Dock Safety Unit (DSU)
Clean Products Upgrade Project

Figure 5 is redacted per RCW 42.56.300.

Figure 8 Aerial photograph taken of Tesoro Refinery in August 2015 (courtesy of Steve Berentson)

1 Administration
2 Parking
3 Personnel
4 Laboratory
5 Auto Shop
6 Stores Bldg.
7 Machine Shop
8 Weld Shop
9 Tank Truck Loading
10 Tank Car Loading
11 Boilers
12 Catalytic Cracking and Polymerization Units
13 Vacuum Flasher and Deasphalter
14 Crude Distillation Unit
15 Platformer
16 Cooling Tower
17 Blending and Chemical Handling
18 Propane Storage
19 Butane Storage
20 Water Reservoirs
21 Retention Pond
22 Surge Pond
23 Effluent Treating
24 Alkylation
25 Shipping Pumps
26 Wharf
27 Future Tankage
28 Future Process Units
29 Catalytic Feed Hydrotreater & Distillate Hydrotreater
30 Olefin Feed Storage
31 Isobutane Storage
32 SERA Building and Picnic Area



FACTS ABOUT THE ANACORTES REFINERY

The refinery site of about 800 acres on March's Point includes area for further expansion. About 250 acres were developed in the initial construction.

About 475 people are employed in processing 65,000 barrels—2,730,000 gallons—of crude oil on an average day.

The crude oil can be supplied to the refinery either from ocean-going tankers or through the Trans Mountain Oil Pipeline which brings the crude oil more than 700 miles from fields near Edmonton, Alberta.

To make its products the refinery burns about 260,000 gallons of fuel a day—equal to the consumption in 60,000 average homes.

It uses as much electricity as a city of 20,000 homes.

Every day about 2,000,000 gallons of water flows into the refinery—equal to the daily requirements of a city of 8,000.

The refinery's tank farm storage capacity is about 100,000,000 gallons of crude oil and petroleum products.

Outgoing refined products are shipped by ocean-going tanker to Seattle and Portland for redistribution in the Northwest.

These ocean-going tankers are loaded from a wharf that extends 3,400 feet into the bay.

Figure 9
Original (1955) Layout Plan for the Anacortes Refinery (courtesy of Tesoro)

Significant Projects In Anacortes Refinery History

May 1954	Started construction
Aug. 1955	Started up some facilities
Sept. 1955	Crude unit on stream
1956	CCU unit on stream
1957	Alkylation plant (two reactors)
1958	New alkylation unit began ATF (jet fuel) manufacturing
1961	Catalytic feed hydrotreater and distillate hydrotreater
1963	Crude unit expansion (F-103, SR Debut)
1964	New BI unit and solutizer treater, Alkylation expansion (Stratco 314), CO Boiler No. 2
1965	Olympic Pipeline -- Seattle/Portland, finished products
1969	Alkylation expansion (Stratco 5 & 6 J-902), shutdown poly units, CWT-2
1972	New catalytic reformer and NHT
1973	Energy conservation program (F-102/F-201 air preheaters, flare gas compressor, insulation, CCU fractionator revisions
1976-78	Raw materials receiving facilities (60MB crude shore tanks, wharf modernization, butane T/C expansion
1980	Heavy crude processing facilities (metallurgy upgrade, desalter brine deoiler, H2S recovery debottlenecking)
1986	Crude/VF heat integration project also included second crude desalter (for heavy crude capability), crude/vacuum flasher metallurgy upgrades to run higher sulfur/higher TAN crudes
1994-95	Clean fuels project (this project allowed the refinery to manufacture CARB gasoline blendstock)
1995	UOP butamer replaces molten metal catalyst BI reaction section
1997	Increase high sulfur diesel/furnace oil production capability
1998	Expand sulfur plant, start road asphalt production

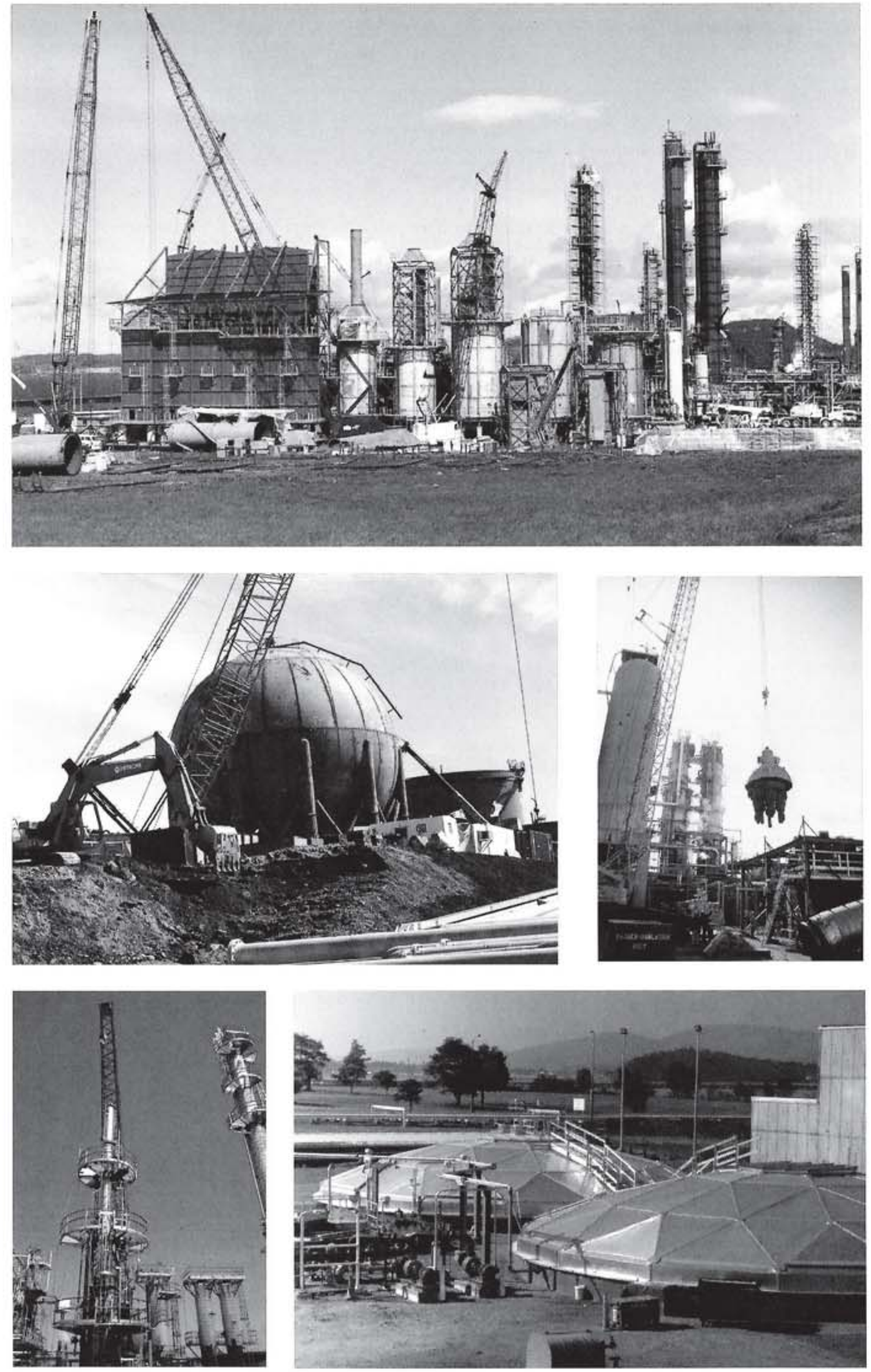


Figure 10
Anacortes Refinery Timeline for Significant Projects (excerpted from Shell Oil Publication)

Figure 11. Tesoro Refinery Wharf facing northwest (2015)

Attachment 1
Historic Property Inventory Form Summaries

(Complete forms available on DAHP Wisaard database)

Tesoro (Formerly Shell) Refinery

Statement of Significance

The Shell Oil Company constructed this refinery in 1955. The history of the Shell Oil Company in the United State dates to 1912, when the Royal Dutch Shell Group founded the American Gasoline Company to sell gasoline on the Pacific Coast. By 1915, Shell built its first US refinery in Martinez California. This was the country's first continuous process refinery shut down only occasionally for cleaning. Until the 1940s, Shell Oil Company's operations focused on California. After World War II the need for more oil led to Shell's development of oil fields in Texas and Louisiana. Soon thereafter, the company expanded its refinery operations to Anacortes, Washington (Shell 2015).

In 1953, Shell Oil committed to the development of a refinery located one mile east from Anacortes across Fidalgo Bay from Anacortes, Washington on a land form known as March's Point. Surrounded by water on three sides, this location primarily consisted of forested or agricultural lands. Reportedly, "the decision to build the new refinery in the Pacific Northwest was made so that Shell… can continue to hold its position as a leading supplier of oil products along the West Coast" (Berentson n.d:1). A Shell publication further describes that there were two reasons the company decided to build a refinery in Anacortes, the rapid growth of the Northwest and proximity to crude oil supplies in Canada. The Anacortes site was chosen over a dozen other sites because it could receive crude via ship at its natural deep water port. It also received crude by the Transmountain Oil Pipeline from Canada (Shell n.d.a). The arrival of big industry improved the economy of Anacortes, which had been based on the lumber industry, fishing and canning (Carter 2011).

The first manager of the refinery, R.W. McOmie, came from Shell's Wilmington Refinery to oversee the $75 million construction of the refinery, which would produce 50,000 barrels of oil per day. The 800 acre March's point site was chosen for it large size, access to a deep water harbor, distance from populated areas and accessibility to a skilled workforce. Contractor Bechtel started construction on the refinery in May 1954, employing 3,200 locals, transients and Bechtel specialists. By September 1955, Shell had the Crude Unit on stream (Berentson n.d.:1 and Shell n.d.a). Just three years later, Texaco built a refinery directly south of Shell's plant on March's Point.

The historical Shell refinery (owned and operated by Tesoro since 1998) is not eligible under NRHP Criterion A for its association with events that have made a significant contribution to the broad patterns of our history. In the post-World War II era when industry surged, oil companies built numerous refineries along the Washington shorelines decreasing the need for shipping oil from California refineries. Built by Shell Oil in 1955, this site is one of five extant oil refineries in Washington State. It reflects a trend of refinery development in the Pacific Northwest during the period of post-World War II economic expansion. It is not the oldest nor the largest plant in the state. The oldest of the Shell Oil Company's refineries in the United States was built in 1915 in Martinez, California. Based on this analysis the refinery does not meet NRHP eligibility requirements for its role in the development of refineries on the West Coast or the state of Washington

The development of the Shell Oil refinery in Anacortes had an economic impact on the community. These economic benefits to Anacortes came during a regional period of growth after the war and locally could be attributed to both the refineries constructed at March's Point rather than just the Shell (Tesoro) refinery. This refinery does not appear eligible for the NRHP as a historic district under Criterion

A. The refinery does not have associations with individuals that would make it eligible for NRHP Criterion B. This administrative and industrial site does not possess architectural or engineering significance that would make it eligible for the NRHP under Criterion C. This site has undergone numerous modifications, updates related to growth or safety and environmental requirements.

Description of Physical Appearance

The refinery is laid out in what appears to be a conventional refinery pattern with paved streets in a grid-like pattern, though the squares of the grid vary in size based on the equipment and processes that occur in each "block." The north-south streets are lettered and the east west streets are numbered. The complex includes administrative and personnel offices, with parking and landscaped areas on the publicly accessible north side of these buildings. South of the office buildings the complex is fenced limiting access to the processing units, tanks, railroad and truck loading racks, various utilitarian buildings, and an effluent treatment plant. At the north end of March's Point is the original over one-half-mile-long deep water wharf.

The refinery consists of five primary types of resources: 1) buildings supporting administrative, personnel and maintenance staff; 2) processing units; 3) storage tanks; 4) transportation infrastructure and 5) landscape/ recreational elements. The southern half of the refinery is dominated by tanks and the northern half is where the processing units and buildings are located. Below is a brief description of each type of resource.

1) Buildings - The refinery includes buildings to support administrative, maintenance and operational functions. The administration, personnel and laboratory buildings are located at the north end of the refinery and share a similar design. Research did not identify the architect who designed the buildings. Bechtel served as the contractors for the construction of the site and would have been responsible for construction of the buildings. The administration building is the public face of the refinery. Only the administration and personnel buildings are accessible without needing to pass into the fenced portion of the refinery. Behind these buildings are additional personnel and laboratory office buildings that share a similar design.

2) Processing Units - The processing units are clustered together between Fourth and Eighth Streets and between C and F Streets. The Alkylation and Butane Isomerization Units are just outside this area east of F Street. Physically the processing units consist of stacks, boilers, piping, tanks and other industrial elements. Crude enters the refinery and is first processed through the Crude Distilling Unit, which separates the oil into products such as gasoline, jet fuel, diesel fuel, industrial fuel oil, and propane. Hydrotreaters then remove sulfur from products. The Catalytic Cracking Unit converts heavy oils to lighter products (LPG/gasoline/diesel) using a chemical reaction using a circulating catalyst. A wet gas scrubber was installed in 2005 to control air emissions. The Catalytic Reformer (CR) Unit increases the octane in gasoline by a chemical reaction using a platinum catalyst. The Alkylation Unit produces gasoline by reacting/combining smaller-sized hydrocarbons using a sulfuric acid catalyst. Associated with these operations are other support operations including cooling towers, shipping pumps and a wastewater treatment plant. Because of technological changes and increased demands, the refinery's processing units have been continuously updated and added to since construction in 1955. Some of the updates that have occurred include a new Alkylation unit added to produce jet fuel (1958), the Crude Distilling Unit was expanded (1963), Olympic Pipeline connected the site to Portland/Seattle (1965), New Catalytic Reformer and Hydrotreater (1972) was installed, the energy conservation program introduced air preheaters and other improvements, and the heavy crude processing facilities upgrade and new construction (1980). Additionally, numerous improvements have been made since 1990 to current- time operation (2015) that includes new and revised process units that have reduced sulfur and benzene in motor fuels, facility emission reduction projects to reduce overall refinery emissions (CCU wet gas scrubber, refinery fuel gas sulfur treatment, flare gas recovery, furnace burner replacements to

emit lower nitrogen oxide emissions). Additionally a new ROSE® process unit was installed in 2002 that serves the purpose to extract more light hydrocarbons for the residuum/heavy oil.

3) Tanks - The southern portion of the refinery is defined by a long section of large metal storage tanks stretching from Seventh Street south to North Texas Road and from C Street west to E Street. The tanks are laid out in an orderly pattern. Generally, tanks in this area are grouped in blocks of two or four tanks and date to the original period of construction. Two tanks have been added east of C Street and one tank has been added west of E street. Additional tanks are located in the northwest corner of the refinery. These are of a much larger size and were added sometime prior to 1979. Some tanks are insulated and have what appears to be corrugated material on their exterior. The tanks at this refinery are painted green which was an outcome from a community agreement at the time of original construction to blend with the surroundings.

4) Transportation - The transportation infrastructure within the site includes the wharf, railroad and roads. The wharf is located at the north end of March Point, north of the refinery complex. It is located roughly 1,400 feet east of the longer wharf of the neighboring refinery. It includes an approximately 2,950 foot-long road measuring 16 feet wide. Flanking the road to the east is a 25 foot-wide piperack for carrying pipes delivering crude and other material to the refinery from marine vessels and transporting materials from the refinery to load into marine vessels. The dock platform measures 850 feet long and 100 feet wide. The wooden substructure of the wharf is made up of a repeating arrangement of four regularly spaced posts connected with cross bracing. In 1976-78 the wharf underwent a modernization project.

The Burlington Northern and Santa Fe Railroad (BNSF) includes a spur line that travels up the west side of March Point flanking the east side of Shell Avenue with lines extending into the refinery along Sixth Street between E and F streets to the location where tank cars deliver crude and pick up processed product. The train also has a track entering the refinery from the west just north of Fifth Street providing access to the storage and maintenance area. Truck loading via a truck tank loading rack also occurs. The roads within the industrial portions of the refinery are organized in a uniform grid like pattern, while the northwestern portions of the refinery where the administrative and recreational areas are the roads are curved.

5) Landscape/Recreational elements – The most noteworthy landscape element within the refinery is the reflection pool and 43 foot totem pole located in front of the Administration Building. Dudley Carter a local carver created the pole commonly known as “Cedar Sam.” The pole is located at the east end of a small rectangular reflection pool within roughly triangular shaped island of grass surrounded by parking areas and roads. The nearby administration, personnel and laboratory buildings include small grass lawns with shrubs and small trees close to the buildings with sidewalks connecting them. Behind the personnel building is a safety memorial reminding employees of the importance of personal and process safety. Due to the scenic location near Fidalgo Bay, the refinery includes an employee association recreational area northwest of the administration building in a grassy and wooded location near the shore. The employee recreation area includes gable roofed board and batten rectangular building, a basketball court, play equipment, a lean to shelter and a wooded area with recreational vehicle parking. A baseball diamond has been removed in recent years.

Tesoro Refinery Wharf

Statement of Significance

This Tesoro Refinery Wharf was constructed in 1955 by the Shell Oil Company as part of its refinery. In 1953, Shell Oil committed to the development of a refinery located one mile east from Anacortes across Fidalgo Bay from Anacortes, Washington on a land form known as March's Point. Surrounded by water on three sides, this location primarily consisted of forested or agricultural lands. Reportedly, "the decision to build the new refinery in the Pacific Northwest was made so that Shell… can continue to hold its position as a leading supplier of oil products along the West Coast" (Berentson n.d:1). A Shell publication further describes that there were two reasons the company decided to build a refinery in Anacortes, the rapid growth of the Northwest and proximity to crude oil supplies in Canada. The Anacortes site was chosen over a dozen other sites because it could receive crude via ship at its natural deep water port. It also received crude by the Transmountain Oil Pipeline from Canada (Shell n.d.a). The arrival of big industry improved the economy of Anacortes, which had been based on the lumber industry, fishing and canning Carter 2011).

The first manager of the refinery, R.W. McOmie, came from Shell's Wilmington Refinery to oversee the $75 million construction of the refinery, which would produce 50,000 barrels of oil per day. The 800 acre March's point site was chosen for it large size, access to a deep water harbor, distance from populated areas and accessibility to a skilled workforce. Contractor Bechtel started construction on the refinery in May 1954, employing 3,200 locals, transients and Bechtel specialists. By September 1955, Shell had the Crude Unit on stream (Berentson n.d.:1 and Shell n.d.a). In 1998, Shell sold the refinery to the Tesoro Corporation.

The refinery is not eligible for listing in the NRHP as a historic district, therefore, this wharf does not contribute to a historic district. Individually, it has no associations with broad patterns of history that qualify it for the NRHP. Constructed for a large company by a large construction firm, this structure has no associations with individuals that qualify it for the NRHP under Criterion B. It is constructed of common materials and design. It is noteworthy for its considerable length, but is located next to an even longer structure of a similar design. It is not an early example of a wharf and it does not meet eligibility requirements for listing on the NRHP under Criterion C. It does not have the potential to provide information about refining or maritime activities. In summary, the Tesoro Refinery Wharf does not meet NRHP criteria.

Description of Physical Appearance

The refinery is laid out in what appears to be a conventional pattern for refineries with paved streets in a grid-like pattern, though the squares of the grid vary in size based on the equipment and processes that occur included in each "block." The north-south streets are lettered and the east west streets are numbered. The complex includes administrative and personnel offices with parking and landscaped areas on the publicly accessible north side of these buildings. South of the office buildings the complex is fenced limiting access to the processing units, tanks, railroad and truck loading racks, various utilitarian buildings and an effluent treatment plant. At the north end of March's Point is the original over one-half-mile-long deep water wharf and southwest of it is another wharf added later.

This wharf is located at the northern end of March Point, north of the Tesoro Refinery complex. The timber structure stretches from a point south of March's Point Road (and west of the refinery's effluent pond) due north 350 feet. From this point the wharf angles northwest approximately 20 degrees for 2950 feet to a dock almost at a right angle to the wharf. The orientation of the roughly 850 foot-long dock lines up with another dock 1,400 feet to the west. The width of the dock is approximately 100 feet. The wharf leading to the dock consists of an approximately 16 foot-wide road flanked to the west by a 25 foot-wide piperack of pipes carrying crude and other materials to the refinery from marine vessels and transporting materials from the refinery to load into marine vessels. The substructure of the wharf is made up of a repeating arrangement of regularly spaced posts connected with cross bracing.

Attachment 2
Representative Photographs of the Refinery Complex

Administration Building (west facing façade)

Administration Building (east elevation)

Totem pole and reflection pool in front of Admin. Bldg

Safety Memorial

Cafeteria Building (north facing façade)

Locker Room Building (north elevation)

Laboratory (north facing facade)

Warehouse Building

Welding and Fabrication Shop

Machine and Instrumentation/Electriclal Shop

Utility Boilers

Catalytic Cracking Unit (CCU)

Catalytic Reforming (CR) Unit

Alkylation Unit

Example of small- and medium-sized tanks

Example of large tanks

Crude Unit (CU)

TESORO

Tesoro Refining & Marketing Company LLC
P. O. Box 700
Anacortes, WA 98221

March 30, 2016

Environmental & Cultural Resources Branch
Seattle District, US Army Corps of Engineers
PO Box 3755
Seattle, WA 98124-3755

Subject: NWS-2015-167 - Tesoro Clean Products Upgrade Project

Attention: Mr. Lance Lundquist

Tesoro Refining & Marketing Company LLC (Tesoro) is proposing the Clean Products Upgrade Project (CPUP) to improve the company's capability to deliver cleaner local transportation fuels and global feedstock primarily for polyester, making the Anacortes refinery a stronger, more economically viable member of the communities it serves. As part of the Section 106 evaluation, a Cultural Resources Technical Memorandum was initially submitted to the US Army Corps of Engineers on August 18, 2015.

In response to your email dated August 18, 2015, Tesoro conducted a field investigation and a historic built environment assessment to further evaluate the potential presence of archeological and historic resources. The results of these investigations have been documented in the following:

- Tesoro Anacortes Clean Products Upgrade Project Archaeological Resources Technical Memorandum (NWS-2015-167) Technical Memorandum dated March 30, 2016

- Tesoro Anacortes Clean Products Upgrade Project Historical Assessment for Built Environment Resources (NWS-2015-167) Technical Memorandum dated February 8, 2016

The results of these two studies demonstrate that the construction and the operation of the CPUP will have no effect on archeological and historical resources. We look forward to your review of these documents.

Please contact me at (360) 293-1664 if you have any questions.

Thank you for your time and consideration.

Respectfully,

Rebecca Spurling
Lead Environmental Engineer

Enclosures

Cc: Erin Legge

Tesoro Anacortes Clean Products Upgrade Project Archaeological Resources Technical Memorandum (NWS-2015-167)

PREPARED FOR:	Rebecca Spurling, Tesoro Refining & Marketing Company LLC (Tesoro)
COPY TO:	Rachel Chang/CH2M
PREPARED BY:	Robin McClintock/CH2M
	David Sheldon/CH2M
DATE:	March 30, 2016
PROJECT NUMBER:	650121.04.CR

Introduction

This technical memorandum presents the results of the background archaeological investigation and an archaeological field investigation for the proposed Tesoro Refining & Marketing Company LLC (Tesoro) Anacortes Refinery's Clean Products Upgrade Project (CPUP) (File # NWS-2015-167) in unincorporated Skagit County, Washington. The purpose of the background investigation was to evaluate whether archaeological resources are likely to be present within the project footprint. The background investigation included background research consisting of a literature and site record review, cartographic research, and examination of geotechnical information. Evaluation of the Built Environment is provided in a separate technical report.

Proposed Project

Tesoro is proposing the CPUP to improve the company's capability to deliver cleaner local transportation fuels and global feedstock primarily for polyester, making the Anacortes refinery a stronger, more economically viable member of the communities it serves.

Included in the proposed CPUP are plans to complete the following:

- Build an Aromatics Recovery Unit (ARU) capable of producing 15,000 barrels per day of mixed xylenes, a feedstock used to make clothing, film for medical x-rays, plastics, cleaners and many other products the public uses every day.
- Install a new Marine Vapor Emission Control (MVEC) System that will reduce emissions of volatile organic compounds (VOCs). The MVEC System will control hydrocarbon emissions from marine vessels during loading operations. The components of the MVEC System include a Dock Safety Unit (DSU) located on the wharf, a new 3-inch natural gas line located on the wharf/causeway structures, and a new Vapor Combustion Unit (VCU) located onshore in the refinery.
- Expand the Naphtha Hydrotreater (NHT) to process 46,000 barrels of naphtha per day. This will allow Tesoro to further reduce the sulfur content in gasoline, as required by the new federal Tier 3 regulations.
- Install a new Isomerization (Isom) Unit to increase the amount of octane available to the refinery. Coupled with the NHT expansion project, this provides more flexibility for production of gasoline.

- Three new storage tanks will be constructed in the 18-acre area identified as the New Tanks Area adjacent to the existing tankage area of the refinery to support receiving feedstock and shipping of the mixed xylenes product (Figures 1 through 3). Two of these vertical, cylindrical tanks will be about 384,000 barrels (gross volume). The third tank will be approximately 193,000 barrels (gross volume). The bottom of the tanks are expected to exist about 8 feet below the current ground surface (Figure 4). The new tanks area will be cleared of vegetation and top soil by heavy equipment. The area immediately adjacent and west of the new tanks is being permitted as a tentative and temporary construction staging area.

Project Setting

The proposed CPUP is located on March Point, part of Fidalgo Island, in unincorporated Skagit County, Washington. It is in Sections 21, 28 and 33, Township (T) 35 North (N), Range (R) 2 East (E) (Figure 1). Elevation ranges between 20 and 60 feet above sea level at the two parcels. The City of Anacortes, also part of Fidalgo Island, is about 2.8 miles northwest of the CPUP. Fidalgo Bay separates March Point from Anacortes on the west, while Padilla Bay separates March Point from the mainland on the east.

The project area that is the subject of this updated file and background search is located in the central portion of the Tesoro project and located on the west side of existing storage tanks noted as the New Tanks Area (Figure 1). Other project areas including the ARU, Isom Unit, NHT Expansion, and the MVEC System are located within previously developed areas of the refinery.

Environmental Overview

The CPUP area is situated in the northern section of the Puget Lowland, an elongated basin trending north to south from the Fraser River in Canada to near Centralia, Washington. It extends from the crest of the Cascade Range on the east to the Olympic Mountains and the Strait of Juan de Fuca on the west. The current topography and geomorphology of the Puget Lowland were formed primarily by Pleistocene glaciation. Between about 15,000 and 13,500 years ago, a lobe of the Cordilleran Ice Sheet covered the region from Canada to near present-day Olympia, Washington (Easterbrook and Rahm, 1970). Topography and associated sediments made up of glacial till, sand, and gravel in the CPUP area consist largely of material deposited by the Vashon Stade, the last major episode of continental glaciation in the region. During the warmer and drier conditions of the Late Pleistocene, meltwater from this glacier produced outwash in the form of sands and gravels as far south as Centralia, Washington. As the glacier retreated, the Pacific Ocean advanced into and partially submerged what is now Puget Sound and the Straits of Georgia, an area that had not previously contained marine embayments. Today, the Puget Lowland consists primarily of flat glacial drift plains between 200 and 600 feet above sea level (Morgan and Jones, 1995). The lower elevations of Fidalgo Island are mantled with deposits of Everson Interstade glaciomarine outwash, drift, and till, with the underlying Vashon till occasionally exposed in marine bluffs (Dragovich et al., 2000).

The Puget Lowland is within the western hemlock vegetation zone as defined by Franklin and Dyrness (Franklin and Dyrness, 1973). While western hemlock may be the dominant species in most areas, Douglas-fir, western red cedar, and grand fir are almost as common. Smaller numbers of red alder, bigleaf maple, madrone, and chinkapin are found throughout. Understory vegetation in wetter areas includes swordfern, oxalis, and skunk cabbage, while dryer areas contain oceanspray and salal. Oregon grape, huckleberry, Oregon oak, and non-native Scot's broom also occur in the Puget Lowland. Logging in the early 1900s and subsequent agricultural and industrial development have since cleared most of this region of its native vegetation.

Prairies are included in the Puget Lowland vegetational mosaic. Prior to Euro-American settlement, these prairies included wetlands, grasslands, and Oregon oak and conifer stands (Chappell et al., 2001). The origin and perpetuation of prairies is thought to be the result of the presence of droughty soils that formed in glacial outwash along with lower summer precipitation, as well as management by prehistoric Native Americans using fire. Naturally occurring fires also affected the prairies (Franklin and Dyrness, 1973; Leopold and Boyd, 1999; Norton, 1979).

Soils mapped in the CPUP include Bow gravelly loam (low precipitation, 0 to 3 percent slopes); and Coveland gravelly loam (0 to 3 percent slopes). Both of these soils are found in the proposed parking lot expansion area, while Bow gravelly loam (low precipitation, 0 to 3 percent slopes) is found in the wetland mitigation area.

Bow gravelly loam (low precipitation, 0 to 3 percent slopes) is found on glacially modified remnant terraces and hills. This very deep soil formed in gravelly glacial drift over glaciolacustrine material mantled with volcanic ash (Klungland and McArthur, 1989). It has a perched water table.

In general, the uppermost 5 inches are dark-brown gravelly loam that overlies brown gravelly loam to about 8 inches below the surface. Between about 8 and 22 inches is dark grayish-brown clay loam, with gray silty clay to a depth of 60 inches or more (Klungland and McArthur, 1989).

Coveland gravelly loam (0 to 3 percent slopes) is a very deep, somewhat poorly drained soil found in swales on hills. It formed in glaciolacustrine material. The surface layer is black and dark-brown gravelly loam, 9 inches thick. The subsurface layer is dark grayish-brown, very gravelly sandy loam, 5 inches thick. The subsoil is olive-gray, gray, and dark-gray silty clay, 38 inches thick. The substratum to a depth of 60 inches or more is olive-gray silty clay. In some areas, the surface layer is gravelly silt loam or is thin gravelly loam and has properties associated with weathered volcanic ash; and in other areas, the subsoil is loamy.

Ethnographic Overview

CPUP lands are within the ethnographic territory of the Coast Salish peoples, who spoke various dialects of the Salishan language family. The March Point area has been placed within the traditional lands of the of the Central Coast Salish, specifically that of the Northern Straits speakers, who occupied lands from Vancouver Island on the north to Deception Pass on the south (Suttles and Lane, 1990).

While significant local cultural variation existed between Coast Salish groups, all shared certain broad characteristics. Perhaps the most significant and well documented of these was a reliance on anadromous fish as a dietary staple, procuring various species of salmon as well as steelhead. Other important economic resources were land mammals, shellfish, and vegetal resources, all of which were acquired on a seasonal basis (Suttles and Lane, 1990).

The Coast Salish lived in permanent winter villages generally located at the mouth of streams or in river valleys. Villages were composed of plank houses, specifically shed-roof houses, although gambrel and gable-roofed houses were sometimes used. Plank houses were shared by families that each occupied one part of the house (Suttles and Lane, 1990). The wealthiest head of a household functioned as a leader of the village, although there was no formal "chief." Other shared cultural characteristics include an emphasis on personal wealth and status, multifamily households, and a complex exchange systems (Matson and Coupland, 1995).

Resource properties could be held by extended families who passed the use of these lands through their descendants. Such properties consisted of productive root beds, fishing and hunting ranges, and shorelines where clams, seals, or other resources were abundant. Non-family individuals could be, and often were, granted permission to access and use these areas. Family members needed no permission, and part of their seasonal round included visiting related extended families who also used these locations (Thom, 2000). Other resource territories were held in common by the community and were available to each member of a village, regardless of family. However, individuals with ritual and technical knowledge of resources usually had some level of control or administration of these communal properties (Thom, 2000).

The earliest Euro-American settlers in the vicinity of what is today the CPUP study area arrived in the 1850s, drawn by the agricultural potential, timber resources, and abundant salmon of the region (Kirk and Alexander, 1995; Ficken, 2000). In response to the influx of settlers, Isaac Stevens, the first governor of Washington Territory, negotiated treaties with most of the native inhabitants of Puget Sound in 1854 and 1855, including those in the vicinity of the CPUP. The treaties stipulated that these peoples would cede their traditional territories and agree to be relocated (Ruby and Brown, 2010).

The ensuing loss of traditional lands and removal to reservations, as well as Euro-American possession of the tribes' native lands and the delay in ratifying treaties, led to what is known today as the Puget Sound War of 1855 to 1856. The duration of the war was brief and, by the spring of 1856, the conflict had subsided, and Governor Stevens had established new reservations throughout western Washington. While many Coast Salish peoples were removed to these reservations, a few refused to leave their native lands. Eventually these people either relocated to reservations or were at least partly assimilated into Euro-American culture.

Archaeological Overview

Cultural Chronology

The CPUP is located in the Northwest Coast culture area of North America. The Northwest Coast culture area extends from Alaska's Copper River delta on the Gulf of Alaska to just north of the California-Oregon state line. Inland, the Northwest Coast culture area ranges from the Chugach and Saint Elias mountain ranges of Alaska through the Coast Range of British Columbia, and includes the area between the coast and the Cascade Range in Washington and Oregon (Suttles and Lane, 1990).

The prehistoric peoples of this region shared a broad array of cultural characteristics. Perhaps the dominant trait was an emphasis on personal wealth and status, as well as an economy based on intensive harvesting and preserving of natural resources (particularly of salmon), multifamily households, and complex exchange systems (Matson and Coupland, 1995). Northwest Coast peoples also developed a distinctive woodworking technology that produced plank houses, canoes, and numerous items of everyday domestic use, as well as items of spiritual and ceremonial use. Artwork associated with this culture area is quite distinctive and includes carvings and textiles in wood, fiber, horn, shell, and antler, among other media.

The cultural sequences proposed by Ames and Maschner (Ames and Maschner, 1999) and Morgan (Morgan et al, 1998) are used here to provide a general overview of the Northwest Coast region, which includes CPUP lands. Five broad chronological periods are used in this report to define cultural change over time. These are the Paleo Indian, prior to about 12,500 years before the present (B.P.); the Archaic Period, from about 12,500 to 6,400 years B.P.; the Early Pacific Period, around 6,400 to 3,800 years B.P.; the Middle Pacific Period, about 3,800 to between 1,800 and 1,500 years B.P.; and the Late Pacific Period, between about 1,800 to 1,500 years B.P. to 225 years B.P.

Paleo Indian Period, prior to about 12,500 Years B.P.

The earliest migrations of people to North America across the Bering land bridge and the Pacific Northwest coast represent the Paleo Indian period. The first such migration may have occurred around 15,000 to 16,000 years ago, or earlier, as glacial retreat along the coastline of western North America exposed the shoreline. Pollen analyses and other investigations suggest that food resources and firewood were present along the coast and would have been available for use by the early coastal explorers (Ames and Maschner, 1999).

Archaeological evidence documenting these migrations is relatively scarce, the result of rising sea levels following deglaciation at the end of the Pleistocene. As sea levels rose, the shoreline that had been exposed during early episodes of migration became inundated, and thus precluded the discovery of archaeological sites dating to this period. A second migration is thought to have occurred about 13,000 and 12,000 B.P. Within the Northwest Coast cultural region, sites dating to this period have been found in Alaska, although the best known and most completely studied sites are associated with the Clovis culture, which occurs throughout North America. Clovis sites date to approximately 12,500 B.P. and are characterized by the eponymous projectile point, which is large, fluted, and unique to the period. While isolated finds of surficial Clovis points are recorded across the Pacific Northwest, sites containing other Clovis materials are quite rare.

Paleo Indian sites are rare, and those that have been recorded and studied tend to occur along the coastline and in river valleys, often on higher terraces. Artifact assemblages in such sites usually contain a variety of stone tools as well as tools made of bone, antler, and other materials where alkaline soil conditions preserve such materials. The similarity of these Paleo Indian tool kits and the wide distribution of sites across the region suggest a lifeway of generalized hunting, fishing, and gathering.

Archaic Period, about 12,500 to 6,400 Years B.P.

Few sites correlating with the Archaic Period have been excavated in the Northwest Coast culture area; consequently, this period is not well known. The paucity of Archaic Period sites, especially on the coast, can be at least partly attributed to rising sea levels following the end of the Pleistocene. Coastal sites dating to this period were situated on now-submerged shorelines following the addition of glacial meltwater to the world's oceans and the subsequent rise of sea levels. Inland sites are thought likely to exist, but few have been found. This period is characterized by extensive environmental changes and the development of early subsistence economies that preceded the rise of permanent settlements, resource intensification, and complex social organizations.

Perhaps the archetypal site of the Archaic Period is the Glenrose Cannery site on the Fraser River in British Columbia, just south of Vancouver. R.G. Matson excavated the site and classified its components, dating to circa (ca.) 9,000 to 6,300 B.P., as "Old Cordilleran." Artifacts associated with the Old Cordilleran include leaf-shaped lanceolate bifaces, cobble and cobble-flake tools, and antler wedges (Ames and Maschner, 1999). Two sites (45WH83 and 25WH84) recorded near Cherry Point on the coast northwest of Bellingham, Washington, (Morgan et al., 1998) date to the Archaic Period and may be associated with the Olcott phase, a variation of the Old Cordilleran.

The Olcott phase is similar to the Cascade phase of the interior Pacific Northwest. Representative Olcott tools and artifacts include "pebble" (cobble) tools and folate (Cascade-style) points. A microblade tradition and the use of contracting stemmed points is shown at the end of the phase (Carlson, 1990b) Attributes of the Olcott phase include sites located on upland, non-marine terraces, and few organic materials (such as bone or shell, groundstone tools, and domestic features such as hearths). Instead, there is a focus on the use of scrapers and choppers, Cascade-style points, and use of coarse-grained lithic toolstone such as basalt and argillite (Morgan et al., 1998). Olcott peoples were likely ancestral to the ethnographic Coast Salish.

Early Pacific Period, about 6,400 to 3,800 Years B.P.

By 6,400 B.P., sea levels were within 6 to 10 feet of their present levels (Ames and Maschner, 1999). Prehistoric peoples at this time began to intensively exploit littoral environments and coastal habitats. Concurrently, these peoples became more sedentary. Their resource base was focused on the shallow coastal waters and beaches, "although terrestrial and riverine habitats were also important" (Ames and Maschner, 1999).

Bone tools began to dominate artifact assemblages of Early Pacific coastal sites, most commonly in the form of unilaterally and bilaterally barbed harpoon heads. Groundstone slate was used for lance points and incised and decorated ground-slate objects. Adze blades, made of slate and marine shell, suggest a new focus on woodworking and processing of woodstuffs. Labrets, flaked stone drills, pendants, and abraders also appeared during this period (Ames and Maschner, 1999). Bone, antler, and groundstone tools appeared at this time, and their technological variability may represent the beginnings of distinct ethnic patterns that continued to the ethnographic period (Matson and Coupland, 1995; Morgan et al., 1998).

Middle Pacific Period, about 3,800 Years B.P. to between 1,800 to 1,500 Years B.P.

Sea levels were stable at modern levels during this period. Archaeological evidence for the use of plank houses and villages and social stratification based on wealth or prestige appeared at this time. Storage methods designed to preserve foodstuffs over the winter were developed, and resource use began to focus on salmon. The use of food storage techniques, as well as increases in technological efficiency, may have resulted in increased population growth (Morgan et al., 1998).

As tools and other technologies of this period became more sophisticated, focus on seasonal resources increased. Numerous and varied bone tools such as toggle harpoons were perfected, indicating an increasing use of shallow coastal waters and beaches. Canoes, groundstone net sinkers, and wooden fish weirs became common.

Middle Pacific Period sites have been temporally and technologically divided by archaeologists into the Locarno Beach phase (ca. 3,500 to 2,600 years B.P.) and the Marpole phase (ca. 2,600 to 1,500 years B.P.). During the Locarno Beach phase, people used stemmed points and pebble and cobble tools, as well as microblade cores and blades (Ames and Maschner, 1999). Groundstone tools include ground slate points and blades, adzes, labrets, net sinkers, manos, and abraders. Bone and antler were used to make unilaterally and bilaterally barbed harpoon points, harpoon heads, and wedges, often decorated with incised zoomorphic and geometric designs (Ames and Maschner, 1999). Other artifacts that appear at this time include cordage, basketry, and hats.

Many items of personal adornment (such as stone and shell beads and items made of native copper) are associated with this period and indicate increased differentiation in social status. In the Gulf of Georgia/Puget Sound region, this phase is characterized by winter villages made of large plank houses, extensive use of storage, seasonal use of specialized resource locations, and sophisticated art (Morgan et al., 1998). Unique stone and antler sculpture also occur in the Marpole phase (Ames and Maschner, 1999).

Late Pacific Period, between about 1,800 to 1,500 Years B.P. to 250 Years B.P.

The Late Pacific Period represents the ethnographic culture type and shows evidence of cultural continuity. Permanent plank houses and associated fortifications (such as ditches and embankments, located in winter villages) are used. A salmon-based economy, extensive use of storage techniques, and ascribed social status are now common (Morgan et al., 1998). Regional differences appear in artifact types and art, which may relate to functional needs as well as to cultural or ethnic differences among the groups of the Northwest Coast area. Coastal populations at this time may have peaked by about 1,000 years B.P. before diminishing as a result of introduced diseases and other factors.

Historical Overview

The earliest Euro-American ventures into the March Point region were carried out by Captain George Vancouver of the British Navy. He and his crew mapped the lands around the Strait of Georgia and northern Puget Sound during his expedition of 1792. By 1848, the Hudson's Bay Company had become established in the region, with Fort Langley on the Fraser River and Fort Victoria on Vancouver Island.

The earliest Euro-Americans to permanently settle on Fidalgo Island staked claims on March Point between 1850 and 1870. Fidalgo Island was given its name by the Spaniard Francisco Eliza, in 1791, during a mapping expedition. In 1841, Charles Wilkes was the first to recognize that this landform was an island. Although he named it Perry's Island, the name was later changed back to Fidalgo Island in 1847 by British surveyor Henry Kellett (Brokenshire, 1993).

The first settlers on March Point included Enoch Compton, Jack Carr, William Munks, William Bonner, Charles and Robert Beale, James Kavanaugh, Henry Barkhousen, John and Almira Griffin, and Hiram March, for whom the point was named (Anacortes Chamber of Commerce, 2010).

In 1860, William Munks, who came from Ohio, established Munks Landing on the west side of March Point, where he built a wharf and a store. Hiram March established a farm on the tip of the peninsula in 1865, and additional permanent Euro-American settlement soon followed. The backgrounds of these early settlers ranged from hunting and trapping to surveying and prospecting. Many of them became farmers on Fidalgo Island, harvesting fruit, cabbage, and hops, as well as raising livestock.

James Kavanaugh was an Irishman who came to America during the potato famine. He arrived at the port of New Orleans circa 1849. At least one brother and a sister with her husband and family are thought to have come over with him. James left New Orleans for California to try his luck in the gold fields of California. Not having had a great deal of success in this venture, he and Hiram March relocated to Washington; in about 1865, Kavanaugh moved to March Point, next to Hiram March homestead. Kavanaugh and March planted orchards on their property, including apples (Jeffcott, 1949). James, who later became a sheriff in Whatcom County, married Caroline Kavanaugh, born Tol Stola, the daughter of a Swimomish headman. James and Tol Stola had four children: Samuel, Sarsfield, Francis, and Laughlin, who died as an infant (Van Voorst, 2010). James and Tol Stola lived on March Point for the remainder of their lives. James died in 1885, and Tol Stola died in 1906 (Jeffcott, 1949; Van Voorst, 2010)."

According to the Friends of Skagit Beaches (Friends, 2014), "In 1928, inspired by Charles Lindbergh's historic 1927 transatlantic flight, the Kiwanis Club leased land on March [sic] Point for a 2,000-foot airstrip, making Anacortes among the first cities to embrace air travel. In 1947, the first direct airmail service took off from March [sic] Point on a DC-3 Scenic Liner." Lunsford (2009) also mentions the March Point airfield, which he notes was inaugurated in 1928. The former airfield was located at the northern tip of March Point where the Kiwanis Club had leased the land from Fred March, son of early pioneer Hiram March (Anacortes Museum, 2014).

Shell Oil (Shell) began development of its large-scale refinery on March Point in 1953, and the refinery was operational in 1955. This facility is now owned by Tesoro. A Texaco refinery, now owned by Shell, was built to the south in 1958.

File Search and Cartographic Research

A file search was conducted on April 23, 2015, for an area within 1 mile of the proposed CPUP. The search was carried out using the Washington Department of Archaeology and Historic Preservation's (DAHP's) online Washington Information System for Architectural and Archaeological Records Data (WISAARD) database. The file search was used to determine if previously recorded precontact and historical era sites are within or near the study area and to determine whether any part of the study area had been surveyed previously for cultural resources. A total of seven archaeological surveys or investigations have taken place within 1 mile of the study area. Table 1 lists the previous investigations and their results. Figure 5 shows the locations of previous investigations and sites.

Table 1. Results of Previous Archeological Investigations

Report	Location	Description	Results	Reference
An Intensive Archaeological Reconnaissance in the Northern Puget Sound Region	March Point and elsewhere	Pedestrian survey	Recorded sites 45SK44 and 45SK45, both shell middens	Bryan, 1955

Table 1. Results of Previous Archeological Investigations

Report	Location	Description	Results	Reference
Archaeological Investigation Report: West March Point Beach Nourishment Project, Skagit County, Washington	About 1 mile west of the Project's proposed Gate 20 Parking Lot Expansion Area	Pedestrian survey and shovel testing	Rerecorded site 45SK45, a prehistoric and historical shell midden	Smart and Rollins, 2010
Proposed Tesoro Crude Railcar Unloading Facility, Cultural Resources Report	About 0.54 mile southwest of the CPUP's proposed Gate 20 Parking Lot Expansion Area	Pedestrian survey and shovel testing	Recorded historical debris sites 45SK478 and 45SK479, and historical debris isolates 45SK480 and 45SK481	Sharpe and McClintock, 2011
Archaeological Monitoring for the Tesoro Crude Railcar Unloading Facility, Anacortes, Washington	About 0.54 mile southwest of the CPUP's proposed Gate 20 Parking Lot Expansion Area	Archaeological monitoring during construction	Recorded historical debris that was deemed to be associated with the former Munk family homestead, but no Smithsonian number was assigned	Baldwin, 2012
Cultural Resources Inventory Report – Shell Puget Sound Refinery Crude by Rail East Gate Project, Anacortes, Skagit County, Washington	About 0.45 mile south of the Project's proposed East March Point Wetland Mitigation Site	Pedestrian survey and shovel testing	No archaeological sites or isolates recorded	Stegner et al., 2013
Archaeological Investigation of the Tesoro Anacortes Refinery's Proposed Gate 20 Parking Expansion and Wetland Mitigation Project, Skagit County, Washington	About 0.5 mile east of the CPUP on the east side of March Point	Pedestrian survey and shovel testing	Recorded two historical era archaeological sites 45SK525 and 45SK526	Wilt, 2014
Archaeological Survey and Assessment of the Proposed March Point Beach Nourishment Project, Anacortes, Washington	About 0.75 mile north of the CPUP on the shoreline of March Point	Pedestrian survey and shovel testing	No sites or isolates recorded	Camille A. Mather and Ed P. Arthur. 2014

Summary of Background Research

The background research indicates that the surrounding areas have been used extensively for several millennia. No previously recorded archaeological sites are known to exist in the CPUP area; however, the file search shows that several archaeological sites have been located within a 1 mile radius of the project area. Several of the precontact archaeological sites identified contained buried subsurface components. As such, there is the potential that buried archaeological deposits may exist within the New Tanks Area beneath a layer of fill associated with the construction of the Tesoro refinery.

Field Investigation

The new MVEC System (including the DSU located on the wharf and the 3-inch natural gas line located on the wharf/causeway structures), the NHT Expansion Area, the ARU Area and the Isom Unit are all located within previously developed portions of the Tesoro Refinery (Figure 3). Thus, construction in these areas is unlikely to have an effect on archaeological resources.

Given that construction activities will likely include excavation through the documented fill in the New Tanks Area, there is a potential for subsurface archaeological deposits to exist within the excavation footprint of the three proposed tanks. A field investigation was conducted to evaluate the presence or absence of potential resources within the New Tanks Area in February of 2016.

Methods

The geotechnical borings located within the New Tanks Area (Figure 4) suggest that there is 5 to 7 feet of fill overlying native soils. As such, hand excavated shovel testing would not be able to expose the buried native soils. Trenching with heavy equipment was determined the most practicable means of removing the fill material and exposing native soils. Field investigations consisted of the excavation of six trenches measuring approximately 4 feet wide, by 10 feet long, by 8 feet deep (below ground surface) within the footprint of the three proposed new tanks. Prior to beginning of excavation, the archaeologist and the equipment operator met to discuss the workplan, appropriate safety precautions, and areas of avoidance. During excavation, the monitoring archaeologist did not enter the trench beyond a depth of approximately 3 feet. The archaeologist monitored the removal of sediments and sample screened portions of it through ¼-inch mesh screen to determine whether cultural deposits were present below the level of fill. A wall profile was drawn of a sidewall of each trench. Following completion of archaeological data collection, the excavated trenches were backfilled by Tesoro's equipment operator.

Results

CH2M HILL archaeologist David Sheldon, M.S., met with Tesoro subcontractors Andy Jackson and Patrick Blau on Monday February 29, 2016. Andy Jackson acted as the equipment operator and also as Transportation Worker Identification Credential (TWIC) escort for Mr. Sheldon.

The landform on which the proposed tanks will be constructed is a flat bench with a gradual west-facing slope toward Fidalgo Bay. It is currently fenced and utilized as a cattle pasture. Vegetation within the area consisted of short grass stubble. All three tank footprints fall predominantly on the flat bench, although small portions of the western edge of each tanks extend across the slope.

Mr. Jackson escorted Mr. Blau and Mr. Sheldon to the fenced project area where a track hoe with a 36-inch bucket was staged. The weather was partly cloudy, breezy, with temperature in the 50s. Excavation commenced at 8:00 AM, with each trench taking a little over an hour to excavate, document, and backfill.

Two trenches were mechanically excavated within the footprint of each of the three proposed tank locations, for a total of six trenches (Figure 2). Once excavated, the exposed profiles were photographed, and notes and measurements for stratigraphic profiles were recorded. After this documentation, the spoils placed to the side of the excavation were used to fill the trench and compacted to grade to avoid uneven terrain in the cattle pasture.

Trench 1

Trench 1 was excavated in the northernmost tank footprint and was oriented east to west. The trench was 4 feet wide, 10 feet long and 8 feet deep. A profile drawing was constructed from field notes, measurements, and photographs of the open excavation (Figure 6).

Stratums I and II compare favorably to what was interpreted as “Stratum 1b cohesive fill” in the borehole data shown in Figure 4, with the only difference between the two being the increased presence of large subrounded cobbles and gravels in Stratum II. Stratum III, first observed at just over 6 feet below ground surface (bgs), is interpreted as native soils. No cultural resources were observed within Trench 1.

Trench 2

Trench 2 was excavated in the northernmost tank footprint and was oriented north to south. Trench 2 was 4 feet wide, 10 feet long and 8 feet deep. A profile drawing was constructed from field notes, measurements, and photographs of the open excavation (Figure 7).

Stratums I through VI show alternating stratums of silty clay that compare favorably with what the borehole data show in Figure 4 as “Stratum 1b cohesive fill.” Stratum VI, first observed at 6.5 feet bgs, is interpreted as native soils. It was differentiated from the previous strata by a lighter color, increased compaction, and the relative absence of gravels and cobbles.

Portions of the excavated material from the bottom of Stratum VI and the top of Stratum VII were screened through 1/4-inch mesh screen in an effort to identify cultural resources. No cultural resources were observed within Trench 2.

Trench 3

Trench 3 was excavated in the middle tank location and was oriented east to west. Trench 3 was 4 feet wide, 10 feet long and 8 feet deep. A profile drawing was constructed from field notes, measurements, and photographs of the open excavation (Figure 8).

Stratums I and II compare favorably to what was interpreted as “Stratum 1b cohesive fill” in the borehole data shown in in Figure 4, with the only difference between the two being the increased presence of large subrounded cobbles and gravels in Stratum II. Stratum IIa consisted of a dark brownish layer of decomposing organic material. Stratum III, first observed at between 5 feet bgs, is interpreted as native soils. It was differentiated from the previous strata by a lighter color, increased compaction, and the relative absence of gravels and cobbles.

Portions of the excavated material from the bottom of Stratum II, IIa, and the top of Stratum VII were screened through 1/4-inch mesh screen in an effort to identify cultural resources. No cultural resources were observed within Trench 3.

Trench 4

Trench 4 was excavated in the middle tank location and was oriented north to south. Trench 4 was 4 feet wide, 10 feet long and 8 feet deep. A profile drawing was constructed from field notes, measurements, and photographs of the open excavation (Figure 9).

Stratums I through IV compare favorably to what was interpreted as “Stratum 1b cohesive fill” in the borehole data shown in in Figure 4. Strata V and VI compare favorably to Stratum 2 and 3b from the borehole data (Figure 4) respectively. Stratum V, first observed at 6.5 feet bgs, and Stratum VI are interpreted as native soils.

Portions of the excavated material from the bottom of Stratum IV and the top of Stratum V were screened through 1/4-inch mesh screen in an effort to identify cultural resources. No cultural resources were observed within Trench 4.

Trench 5

Trench 5 was excavated in the southern tank location and was oriented east to west. Trench 5 was 4 feet wide, 10 feet long and 9 feet deep. A profile drawing was constructed from field notes, measurements, and photographs of the open excavation (Figure 10).

Stratums I through IV compare favorably to what was interpreted as “Stratum 1b cohesive fill” in the borehole data shown in in Figure 4. Strata V and VI compare favorably to Stratum 2 and 3b from the borehole data (Figure 4) respectively. Stratum V, first observed just over 5 feet bgs, and Stratum VI are interpreted as native soils.

Portions of the excavated material from the bottom of Stratum IV and the top of Stratum V were screened through 1/4-inch mesh screen in an effort to identify cultural resources. No cultural resources were observed within Trench 5.

Trench 6

Trench 6 was excavated in the southern tank location and was oriented north to south. Trench 6 was 4 feet wide, 10 feet long and 8 feet deep. A profile drawing was constructed from field notes, measurements, and photographs of the open excavation (Figure 11).

Stratums I through IV compare favorably to what was interpreted as “Stratum 1b cohesive fill” in the borehole data shown in in Figure 4. Strata V and VI compare favorably to Stratum 2 and 3b from the borehole data (Figure 4) respectively. Stratum V, first identified approximately 6.5 feet bgs was interpreted as native soils.

Portions of the excavated material from Stratum IV were screened through 1/4-inch mesh screen in an effort to identify cultural resources. No cultural resources were observed within Trench 6.

Conclusions

Previous surface survey on the perimeter of the New Tanks Area did not identify any cultural resources (Sharpe and McClintock, 2011). Construction of the original tanks resulted in grading and filling of the surfaces in the New Tanks Area. Two geotechnical borings within the New Tanks Area indicate that cohesive fill of uncertain origin is present to a depth of 5 to 7 feet below ground surface. As shown in Figure 4, construction of all three new tanks will occur at depths of up to 8 feet, exceeding the fill depth. Thus, native soil surfaces may be impacted by construction of the new tanks. Given the depth of fill, shovel testing was not an appropriate technique to determine if subsurface archaeological deposits were present within the construction footprint.

Archaeological trenching was conducted within the footprint of the three tanks to expand on the borehole data and also to sample the subsurface strata to identify any buried archaeological deposits that may exist. A total of six trenches were excavated to depths between 8 and 9 feet. Portions of the excavated material were screened through ¼-inch mesh screen. Soil conditions observed during trenching support the earlier geotechnical findings that native soil surfaces are covered with 5 to 7 feet of imported fill materials. No cultural resources were observed above or below the fill in any of the trench sidewalls or excavated materials.

In summary, results of the background archaeological investigation and the archaeological field investigation conducted at the New Tanks Area indicate that it is unlikely that construction and operation of the CPUP will affect archaeological resources.

References

Ames, K.M., and H.D.G. Maschner (Ames and Maschner). 1999. *Peoples of the Northwest Coast: Their Archaeology and Prehistory*. Thames and Hudson, London.

Anacortes Chamber of Commerce. 2010. The History of Anacortes. Electronic document, accessed May 4, 2014: http://www.anacortes.org/history.cfm.

Anacortes Museum. 2014. Photo WF 2096, Opening of March Point airfield. Electronic document from the Museum's online database. http://anacortes.pastperfect-online.com/36474cgi/mweb.exe?request=advanced;_tkeyword=air field;_t1102=;_t1103=;_t1104=;_t1105=;_t1106=;_t1107=march point;_t1108=;_t1109=;_t1110=;_t1111=;_t1114=;_t1115=;_>1091=;_<1092=;dtype=d Accessed on July 29, 2014.

Baldwin, Garth L. 2012. *Archaeological Monitoring for the Tesoro Crude Railcar Unloading Facility, Anacortes, Washington*. Drayton Archaeological Research, Bellingham, Washington.

Brokenshire, Doug. 1993. *Washington State Place Names: From Alki to Yelm*. The Caxton Printers Limited, Caldwell, Idaho.

Bryan, Alan L. 1955. An Intensive Archaeological Reconnaissance in the Northern Puget Sound Region. Unpublished M.A. Thesis in Anthropology, University of Washington, Seattle.

Carlson, R.L. 1990. "Cultural Antecedents". In *Northwest Coast*, pp. 60-69. Edited by Wayne Suttles. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Chappell, C.B., M.S. Mohn Gee, B. Stephens, R. Crawford, and S. Farone (Chappell et al.). 2001. "Distribution and Decline of Native Grasslands and Oak Woodlands in the Puget Lowland and Willamette Valley Ecoregions, Washington". In *Conservation of Washington's Rare Plants and Ecosystems*. Reichard, S. H., P.W. Dunwiddie, J.G. Gamon, A.R. Kruckeberg, and D.L. Salstrom, editors. Pp 124-139. Washington Native Plant Society, Seattle, Washington.

Dragovich, Joe D., Minda L. Troost, David K. Norman, Garth Anderson, Jason Cass, Lea A. Gilbertson, and Donal T. McKay, Jr. (Dragovich et al.). 2000. Geologic Map of the Anacortes South and La Conner 7.5-Minute Quadrangles, Skagit and Island Counties, Washington. Washington Division of Geology and Earth Resources, Plate 1, Open File Report 2000-6. Washington State Department of Natural Resources, Olympia.

Easterbrook, Don J., and David A. Rahm (Easterbrook and Rahm). 1970. *Landforms of Washington: The Geologic Environment*. Western Washington State College, Bellingham, Washington.

Ficken, Robert E. 2000. *Washington Territory*. Washington State University Press, Pullman, Washington.

Franklin, J.F., and C.T. Dyrness (Franklin and Dyrness). 1973. *Natural Vegetation of Oregon and Washington.* Oregon State University Press, Corvallis, Oregon.

Friends of Skagit Beaches (Friends). 2014. "March Point: Ancient Fern Prairie". *Trail Tales: A Journey of Discovery*. Friends of Skagit Beaches electronic document. http://www.skagitbeaches.org/history/march-point-ancient-fern-prairie.html. Accessed on May 5, 2014.

Jeffcott, Percival Robert. 1949. *Nooksack tales and trails*. Sedro-Woolley Courier-Times, Ferndale, Washington.

Kirk, R., and C. Alexander (Kirk and Alexander). 1995. *Exploring Washington's Past: A Road Guide to History*. Revised edition. University of Washington Press, Seattle.

Klungland, Michael W., and Michael McArthur (Klungland and McArthur). 1989. *Soil Survey of Skagit County Area, Washington*. United States Department of Agriculture, Soil Conservation Service, Washington, D.C.

Leopold, E., and R. Boyd (Leopold and Boyd). 1999. "An Ecological History of Old Prairie Areas in Southwestern Washington". In *Indians, Fire and the Land in the Pacific Northwest.* Robert Boyd, editor. Oregon State University Press. Corvallis, Oregon.

Lunsford, Bret. 2009. *Images of America: Anacortes*. Arcadia Publishing, Charleston, South Carolina.

Mather, Camille A., and Ed P. Arthur. 2014. *Archaeological Survey and Assessment of the Proposed March Point Beach Nourishment Project, Anacortes, Washington.*

Matson, R.G., and G. Coupland (Matson and Coupland). 1995. *The Prehistory of the Northwest Coast*. Left Coast Press, Walnut Creek, California.

McClintock, Robin. 2011a. State of Washington Archaeological Site Inventory Form, 45SK480. On file at the Washington State Department of Archaeology and Historic Preservation, Olympia, Washington.

McClintock, Robin. 2011b. State of Washington Archaeological Site Inventory Form, 45SK481. On file at the Washington State Department of Archaeology and Historic Preservation, Olympia, Washington.

Morgan, D.S., and J.L. Jones (Morgan and Jones). 1995. *Numerical Model Analysis of the Effects of Ground-Water Withdrawal on Discharge to Streams and Springs in Small Basins Typical of the Puget Sound*. Open-File Report 95-470: U.S. Geological Survey.

Morgan, V.E., G. Hartmann, S. Axton, and C. Holstine (Morgan et al.). 1998. "Cultural Context". In *The Sequim Bypass Archaeological Project: Draft Report*. V.E. Morgan, editor. Eastern Washington University Reports in Archaeology and History 100-108. Archaeological and Historical Services, Cheney, Washington.

Norton, H.H. 1979. "The Association between Anthropogenic Prairies and Important Food Plants in Western Washington". *Northwest Anthropological Research Notes* 13(2):175-200.

Ruby, R.A., and J.A. Brown (Ruby and Brown). 2010. *A Guide to the Indian Tribes of the Pacific Northwest.* Third edition. University of Oklahoma Press, Norman, Oklahoma.

Sharpe, James J., and Robin McClintock (Sharpe and McClintock). 2011. *Proposed Tesoro Crude Railcar Unloading Facility, Cultural Resources Report. CH2M, Portland, Oregon.*

Smart, Tamela S., and Alyson M. Rollins (Smart and Rollins). 2010. *Archaeological Investigation Report: West March Point Beach Nourishment Project, Skagit County, Washington. Equinox Research and Consulting International Inc., Concrete, Washington.*

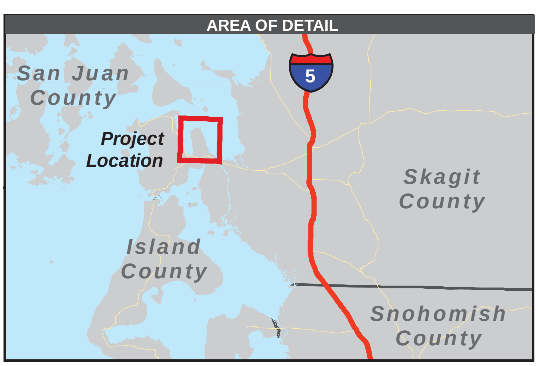
Stegner, Michelle, Genavie Thomas, and Anisa Becker (Stegner et al.). 2013. *Cultural Resources Inventory Report – Shell Puget Sound Refinery Crude by Rail East Gate Project, Anacortes, Skagit County, Washington. URS, Portland, Oregon.*

Wilt, Julie. 2014. *Archaeological Investigation of the Tesoro Anacortes Refinery's Proposed Gate 20 Parking Expansion and Wetland Mitigation Project, Skagit County, Washington.* CH2M, Portland, Oregon.

Figures

Figures

R:\TESORO_423130\MAPFILES\BUILTENVIRONMENT_SEPA_VICINITYMAP_CPO.MXD RGRABAREK 9/30/2015 1:01:59 PM



New 3" Natural Gas Line

Project Areas

Source: NAIP Imagery (10/2013)

N

0 0.25 0.5 Miles

Figure 1
Vicinity Map
Clean Products Upgrade Project

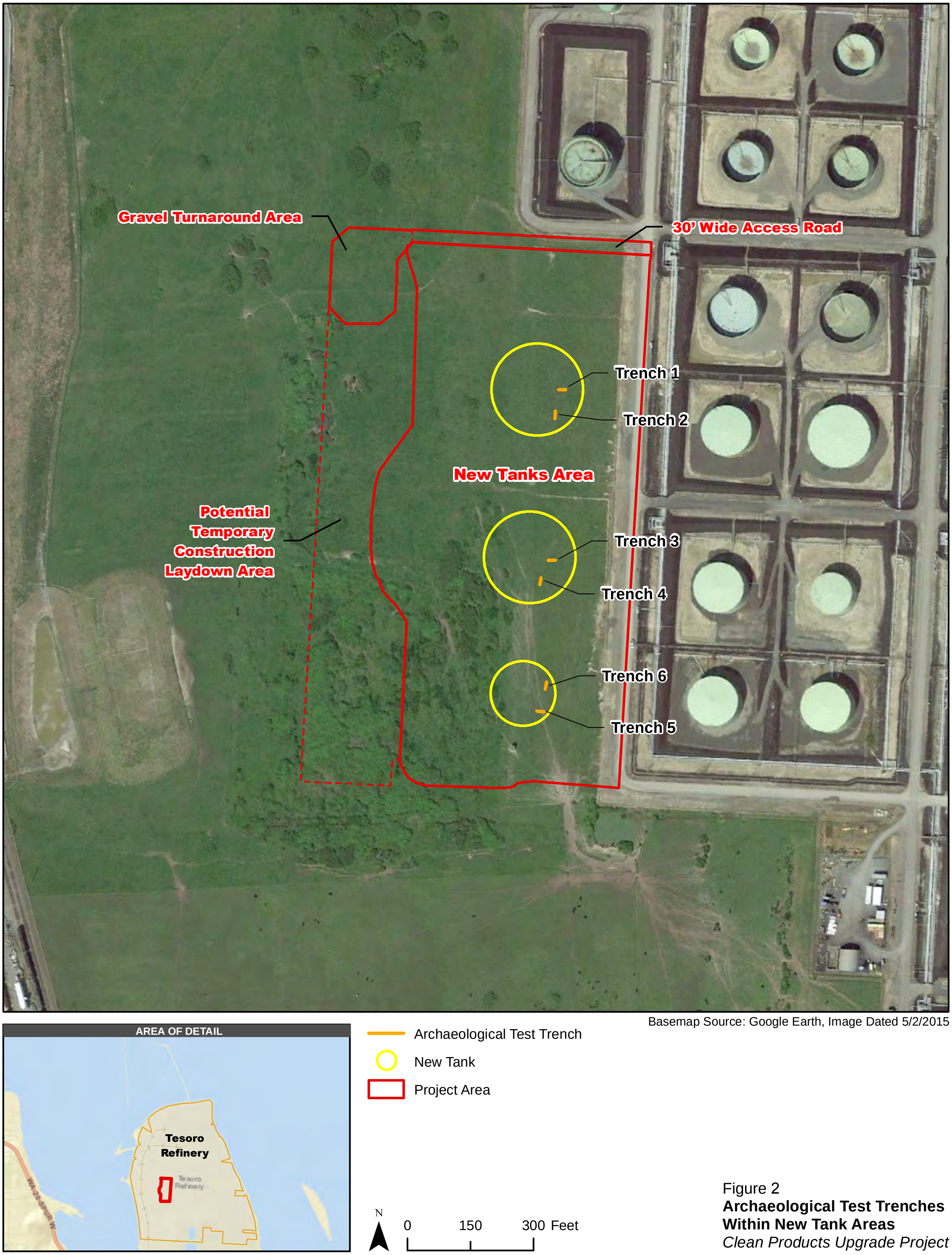


Figure 2
Archaeological Test Trenches Within New Tank Areas
Clean Products Upgrade Project

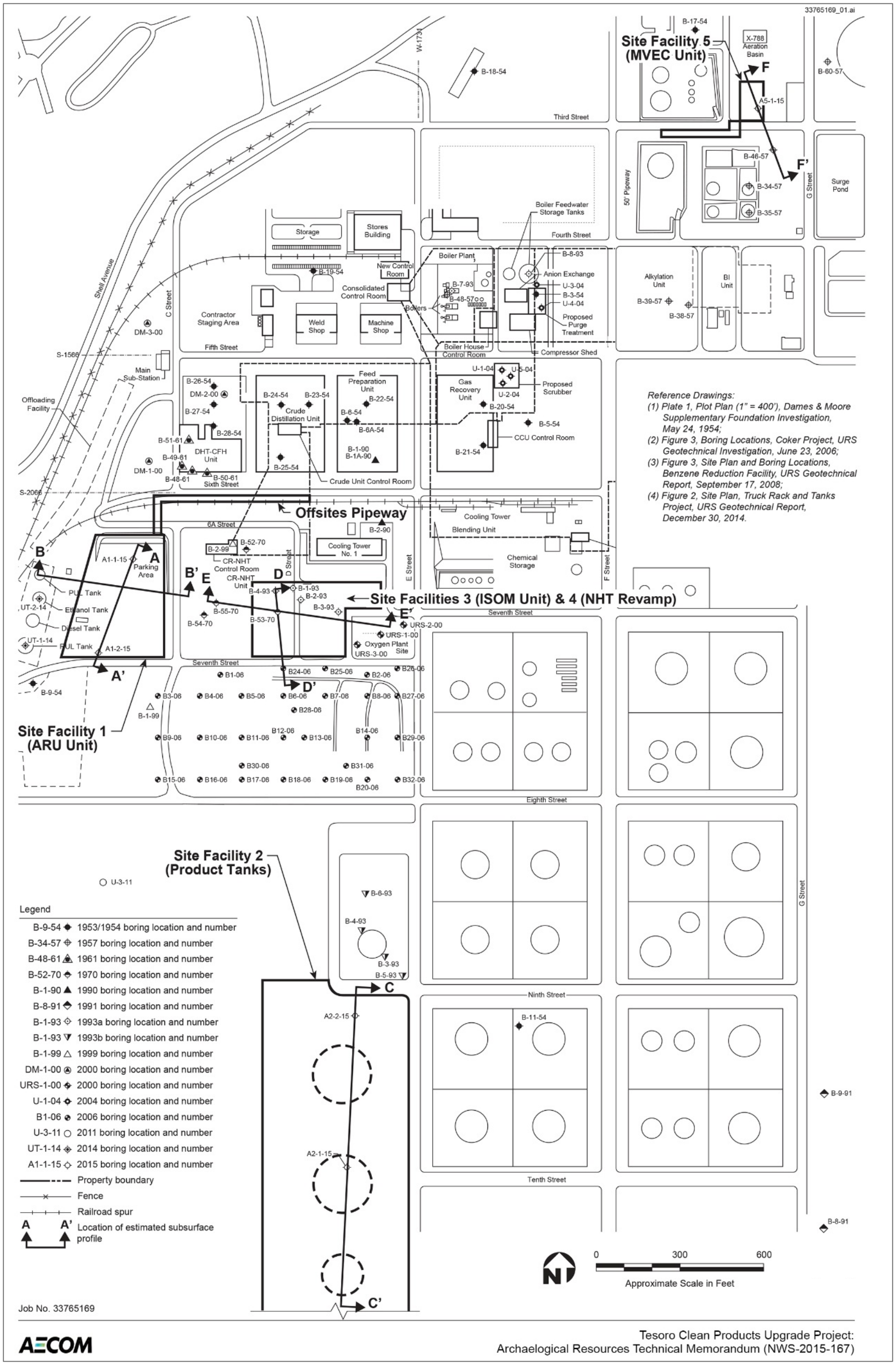
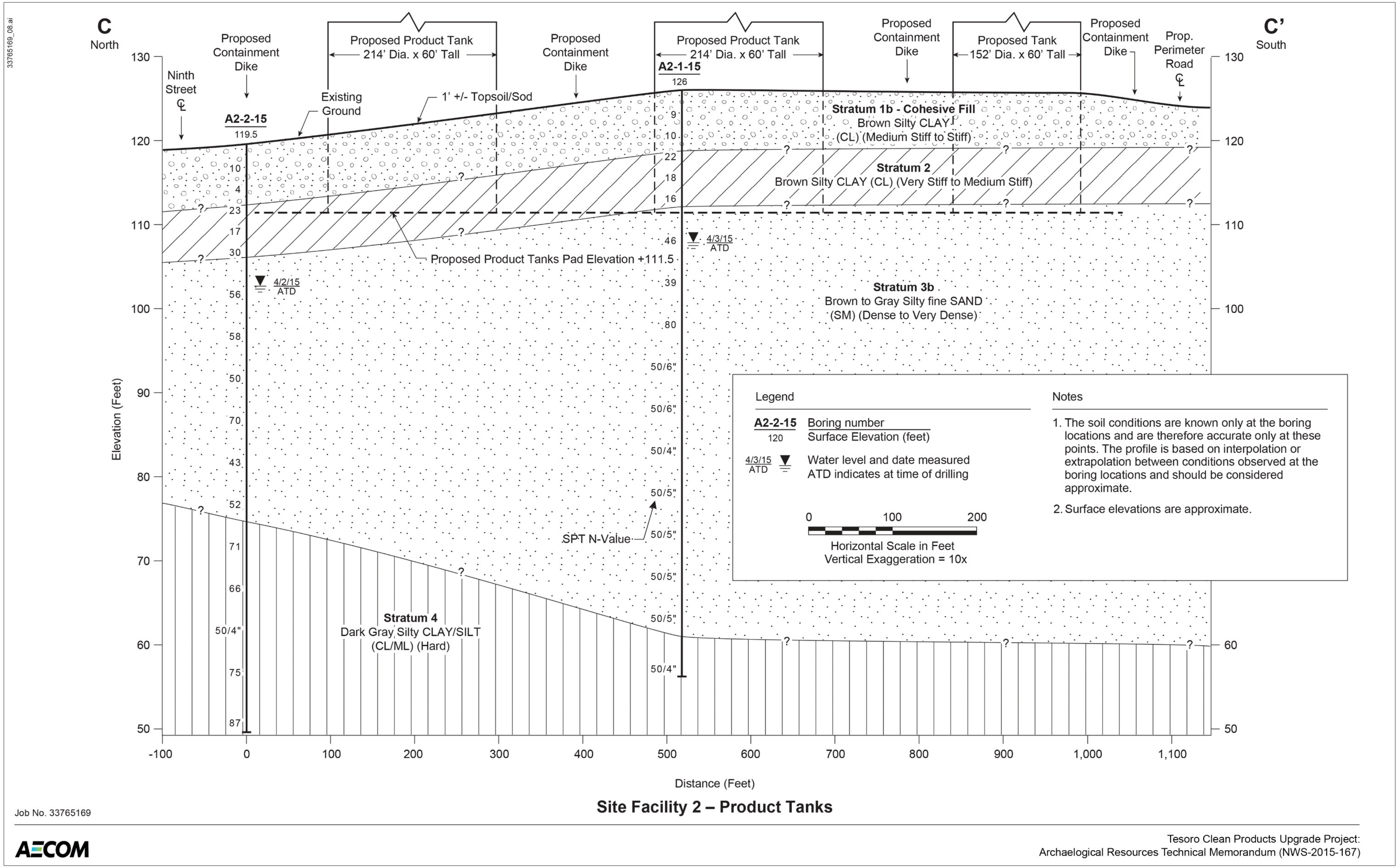


Figure 3

Geotechnical Investigation Site Plan

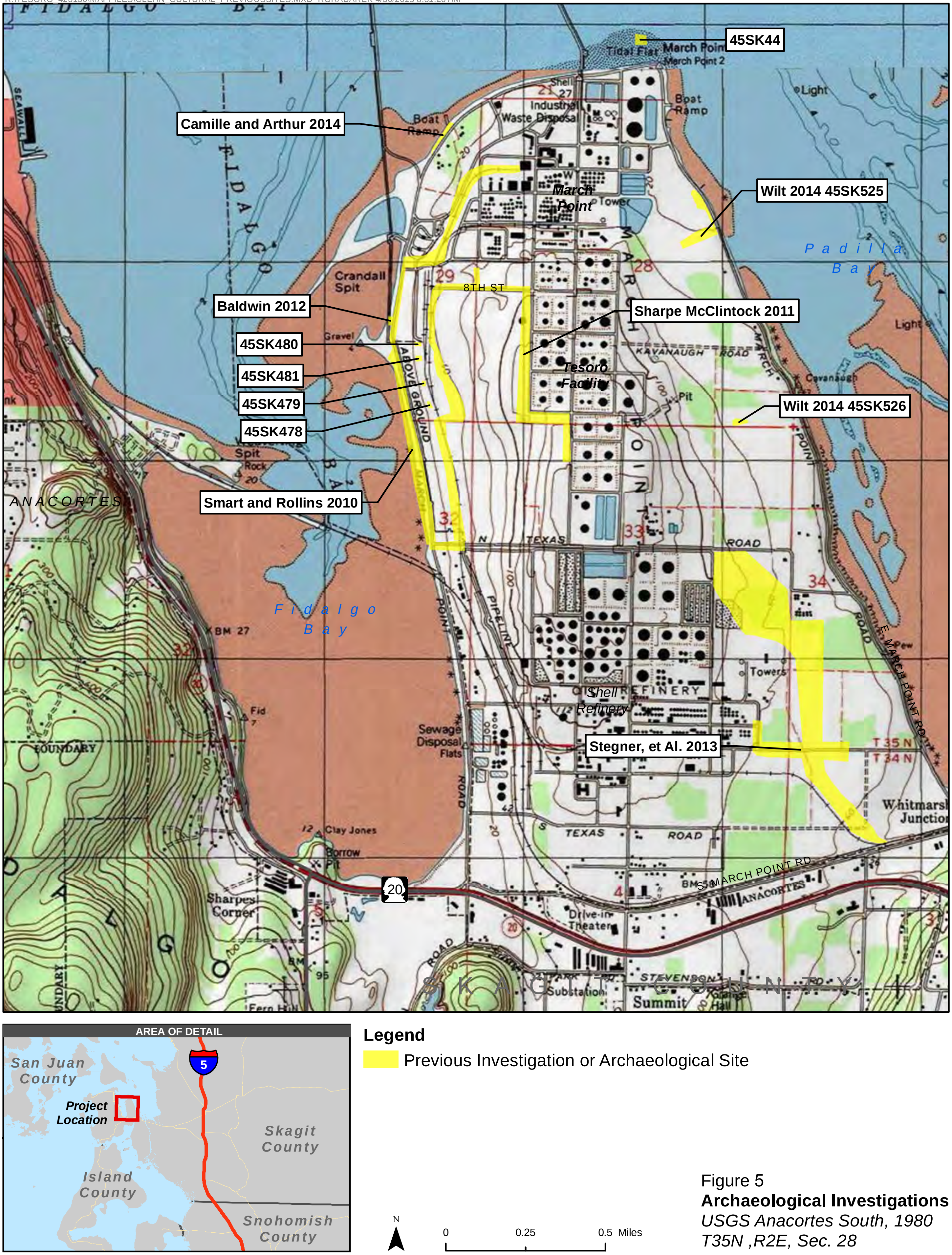
Source: "Mixed Xylenes Project, Tesoro Refinery - Report of Geotechnical Investigation" (AECOM Job No.60394663)



Source: "Mixed Xylenes Project, Tesoro Refinery - Report of Geotechnical Investigation" (AECOM Job No.60394663)

Figure 4
Estimated Subsurface Profile for the New Tanks Area

R:\TESORO_423130\MAPFILES\CLEAN_CULTURAL_PREVIOUSSITES.MXD RGRABAREK 4/30/2015 8:31:20 AM



Legend

Previous Investigation or Archaeological Site

N

0 0.25 0.5 Miles

Figure 5
Archaeological Investigations
USGS Anacortes South, 1980
T35N ,R2E, Sec. 28

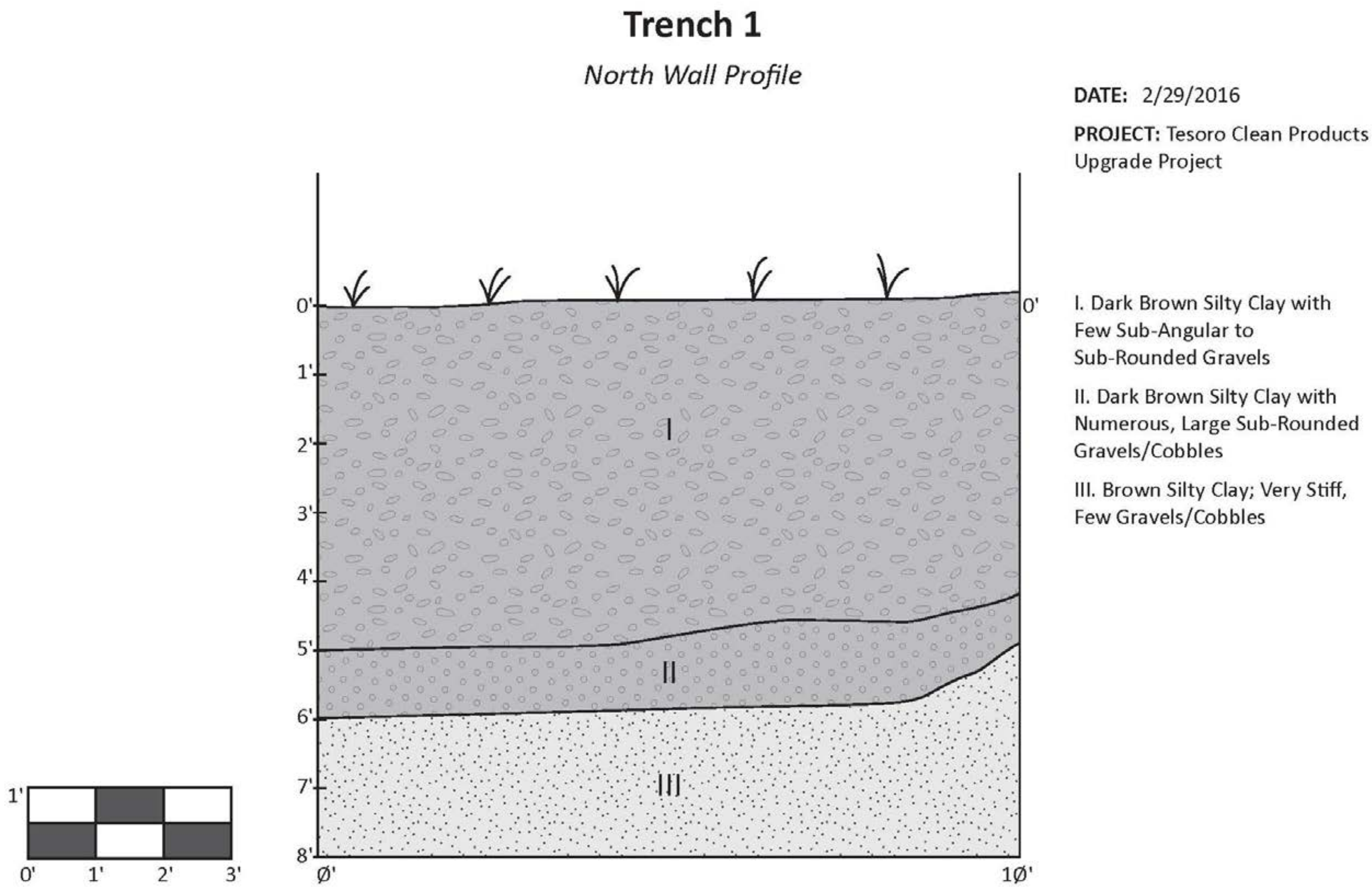


Figure 6. Trench 1 North Wall Profile.

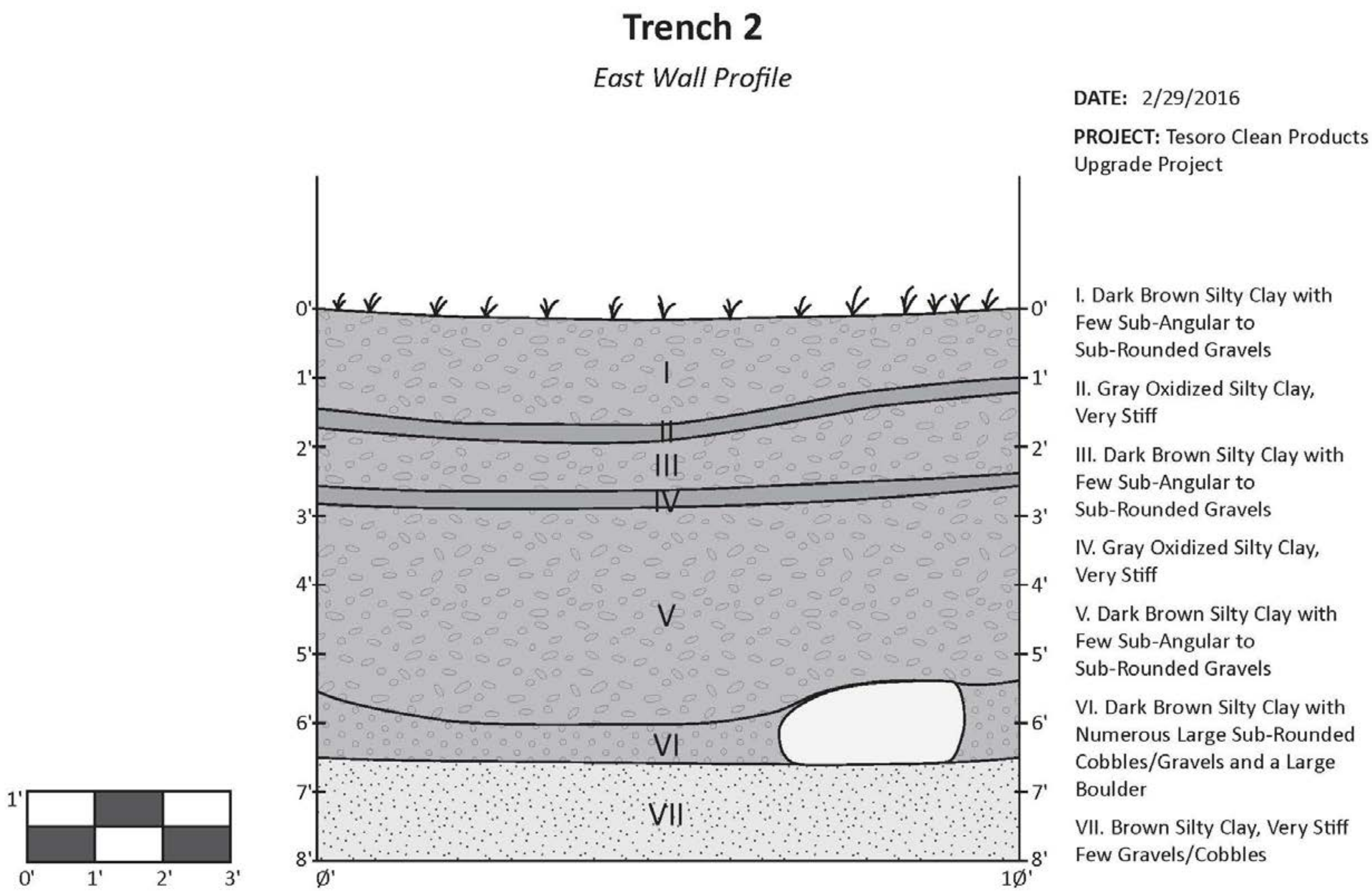


Figure 7. Trench 2 East Wall Profile

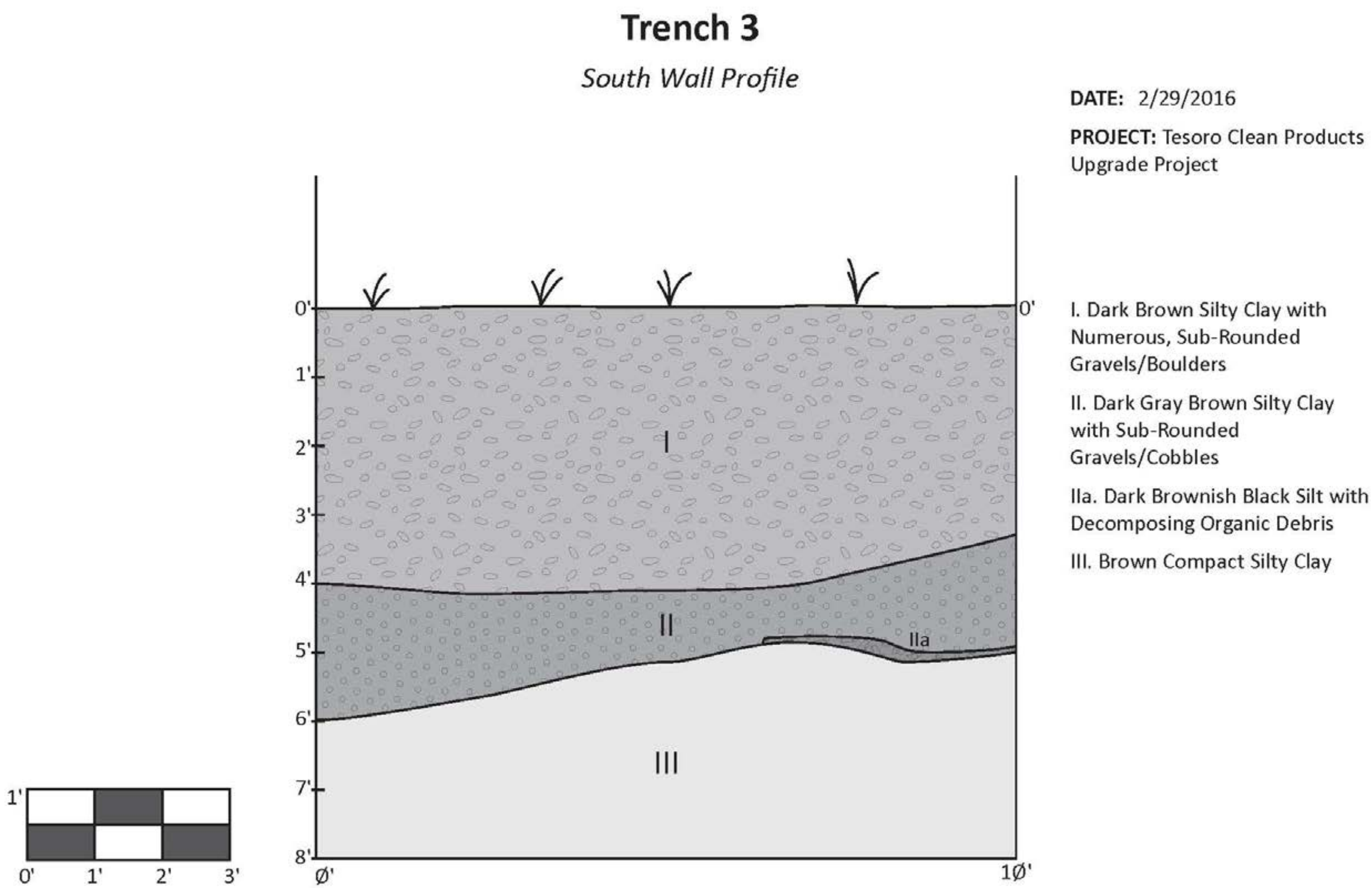


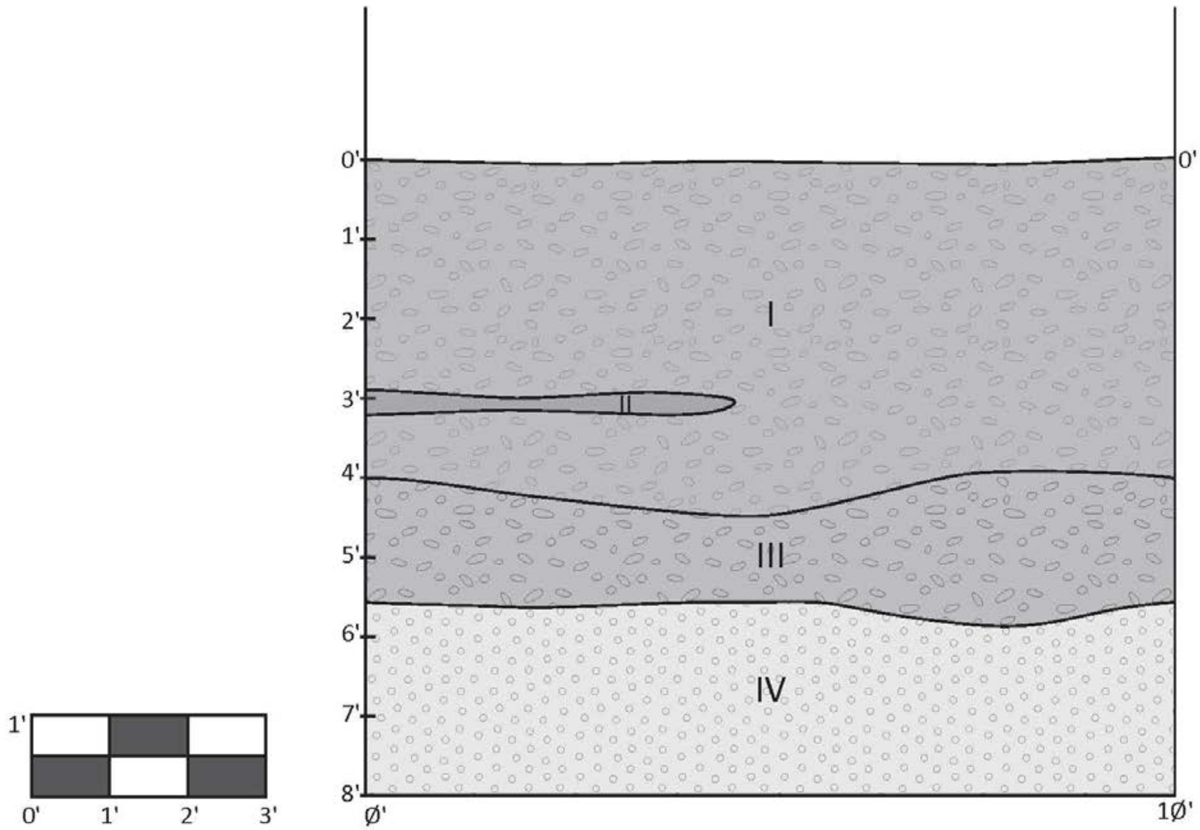
Figure 8. Trench 3 North Wall Profile.

Trench 4

East Wall Profile

DATE: 2/29/2016

PROJECT: Tesoro Clean Products Upgrade Project



I. Dark Brown Silty Clay with Few Sub-Rounded Gravels/Boulders

II. Dark Gray Silt Clay

III. Dark Brown Silty Clay with Numerous Sub-Rounded Cobbles and Gravels, Decomposing Organic Material

IV. Brown Silty Clay with Few Cobbles

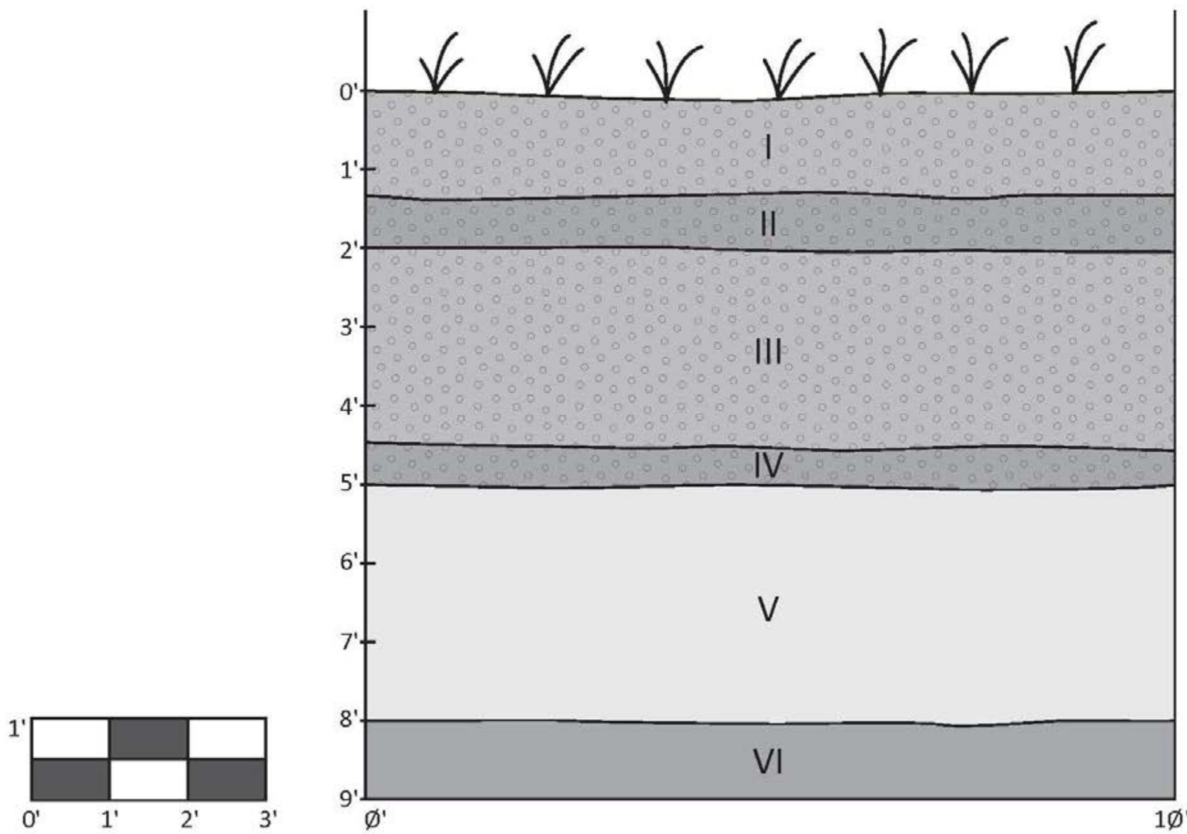
Figure 9. Trench 4 East Wall Profile.

Trench 5

North Wall Profile

DATE: 2/29/2016

PROJECT: Tesoro Clean Products Upgrade Project



I. Brown Silty Clay with Few Sub-Rounded Gravels

II. Gray Brown Sandy Silt, Few Sub-Rounded Gravels

III. Brown Silty Clay, Few Sub-Rounded Gravels

IV. Gray Brown Sandy Silt, Few Sub-Rounded Gravels

V. Light Brown Silt Clay

VI. Gray Brown Sandy Silt

Figure 10. Trench 5 North Wall Profile.

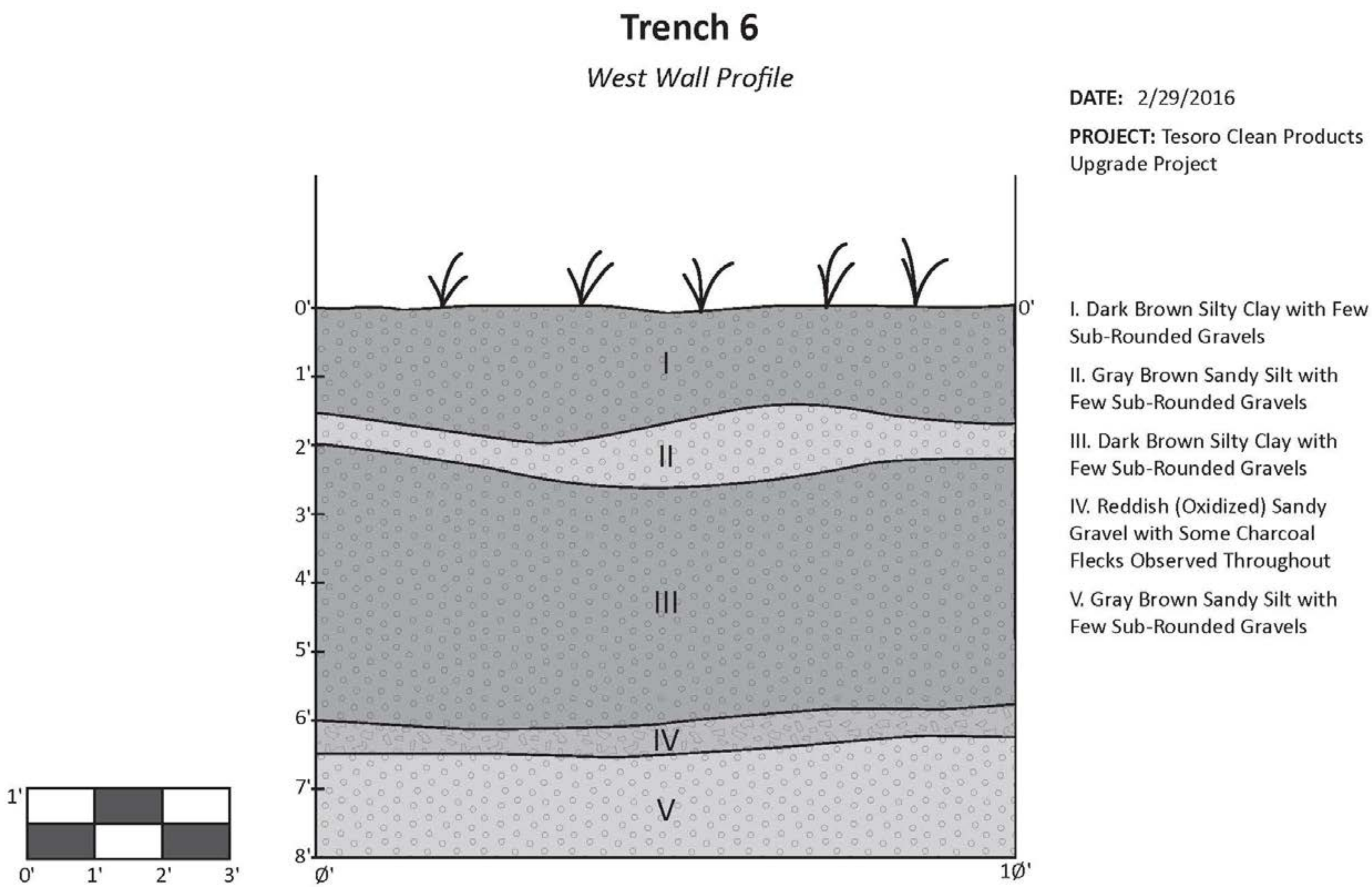


Figure 11. Trench 6 West Wall Profile.

Figure 12. Overview of New Tanks Area near the location of Trench 1. Aspect southeast.

Figure 13. Overview of the New Tanks Area near the location of Trench 6. Aspect: northeast.

Page Intentionally Left Blank