CULTURAL RESOURCES REPORT COVER SHEET

DAHP Project Number: 2020-12-07564 (Please contact the lead agency for the project number. If associated to SEPA, please contact SEPA@dahp.wa.gov to obtain the project number before creating a new project.)

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Title of Report: Cultural Resource Assessment for West Bay Yards Project: Amendment 1, Olympia, Thurston County, Washington

Date of Report: February 14, 2023

County(ies): Thurston Section: 10 Township: 18 North Range: 2 West
Quad: Tumwater, WA

PDF of report submitted (REQUIRED) ☒ Yes

Historic Property Inventory Forms to be Approved Online? ☐ Yes ☒ No

Archaeological Site(s)/Isolate(s) Found or Amended? ☒ Yes ☐ No

TCP(s) found? ☐ Yes ☒ No

Replace a draft? ☐ Yes ☒ No

Satisfy a DAHP Archaeological Excavation Permit requirement? ☐ Yes # ☒ No

Were Human Remains Found? ☐ Yes DAHP Case # ☒ No

DAHP Archaeological Site #:
Historic Sawmill Site (TSN: TH2022-1101)
Shell Matrix Site (TSN: TH2022-1102)
Northern Pacific Tumwater Branch Spur (TSN: TH2022-1103)

- Submission of PDFs is required.
- Please be sure that any PDF submitted to DAHP has its cover sheet, figures, graphics, appendices, attachments, correspondence, etc., compiled into one single PDF file.
- Please check that the PDF displays correctly when opened.

Attachment 12.B

Cultural Resources Assessment for the West Bay Yards Project: Amendment 1 Olympia, Thurston County, Washington

ATCRC Report # TH-09-21
February 14, 2023

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INTRODUCTION

Aqua Terra Cultural Resource Consultants (ATCRC) was contracted by West Bay Development Group, LLC to provide a cultural resource assessment for the West Bay Yards Project: Amendment 1 located in Olympia, Thurston County, Washington. The project intends to build a mixed-use space consisting of commercial and residential facilities with underground parking and a seawall. The project is subject to the State Environmental Protection Act (SEPA).

In 2020, ATCRC conducted a baseline scan and pedestrian survey for this project (DeVry et al. 2021). After completion of the baseline scan, the Squaxin Island Tribe (SIT) recommended preparation of a research design to guide deep testing to identify potential cultural materials and/or deposits below the modern and historic fill layers. SIT also requested that the pier in the water to the east of the API be recorded and that an Inadvertent Discovery Plan (IDP) be provided. An inventory of the pier was also requested by the Washington State Department of Archaeology and Historic Preservation (DAHP) and the United States Army Corps of Engineers (USACE). In 2022, ATCRC prepared a work plan to develop a deeper understanding of the historical context, land use patterns, and previously identified sites within the project area (Viloudaki 2022).

Based on Viloudaki (2022), ATCRC conducted a cultural resources assessment for this project that consisted of background review and field investigation. Background review determined that the project area was previously used as a sawmill for lumber production starting as early as 1891. Field investigation included drilling direct-push bores and excavating trenches across the project area to assess the presence or absence of buried cultural resources. Results of the assessment identified a Historic Mill Site (Temporary Site Number [TSN]: TH2022-1101), a Shell Matrix Site (TSN: TH2022-1102), and the Northern Pacific Tumwater Branch Spur (TSN: TH2022-1103). In accordance with DAHP, each site was inventoried and, in accordance with SEPA, each were evaluated for listing on the National Register of Historic Places (NRHP): the Historic Mill Site (TSN: TH2022-1101) was recommended not eligible for the NRHP due to lack of integrity; the Shell Matrix Site (TSN: TH2022-1102) was recommended eligible for the NRHP under Criterion D; and, the Northern Pacific Tumwater Branch Spur (TSN: TH2022-1103) was recommended eligible for the NRHP under Criteria A and D.

ATCRC understands that the project intends to disturb subsurface deposits as a result of prepping the landform and, installing foundations and a seawall. Additionally, all piles and concrete foundations will be removed from the in-water portion of the project area. As such, ATCRC has determined that the project will cause impacts to cultural resources. If impacts to these sites cannot be avoided, mitigation efforts such as further archaeological study will likely be required. ATCRC also recommends that cultural resource monitoring occurs during any and all ground-disturbing activities within the project area to ensure that no significant cultural resources are disturbed during construction. ATCRC also recommends that a Memorandum of Agreement (MOA) or

Programmatic Agreement be prepared prior to the commencement of construction. The MOA or Programmatic Agreement should be agreed upon by all involved parties.

REGULATORY

This project was conducted to satisfy the regulatory requirements of SEPA. SEPA requires that impacts on cultural resources be considered during the public environmental review process. Under SEPA, the DAHP is the sole agency with technical expertise regarding cultural resources. It provides formal opinions to other state agencies and local governments regarding a property's significance and the potential impact of proposed projects upon such properties.

According to DAHP (n.d.), under SEPA, "resources on the subject or adjacent property, should be evaluated for their eligibility at the local, state and/or national register level." DAHP (n.d.) also notes that "DAHP will only review eligibility determination for State and [NRHP] listing" and clarified that "eligibility for local listing is done through a city or county preservation program."

SEPA does not define "eligibility" or "significance" and, as such, the de facto is to use the National Register Criteria for Evaluation (National Park Service [NPS] 1995). These guidelines state that to be eligible for listing in the NRHP, a property must be significant in American history, architecture, archaeology, engineering, or culture and must meet one or more of the four NRHP criteria:

A. be associated with events that have made a significant contribution to the broad patterns of our history; or
B. be associated with the lives of persons significant in our past; or
C. 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. have yielded, or may be likely to yield, information important in prehistory or history.

Additionally, to be eligible for the NRHP a resource must retain integrity. According to NPS (1995), integrity is the ability of a Historic Property to convey its significance. Integrity must be evident through historic qualities, which may include location, design, setting, materials, workmanship, feeling, and association.

In addition, the State of Washington requires compliance with the cultural resources management laws and regulations under the Revised Code of Washington (RCW) 27.53 Archaeological Sites and Resources, RCW 27.44 Indian Graves and Records, and RCW 68.50.645 Skeletal Human Remains—Duty to Notify. The Archaeological Sites and Resources Act (RCW 27.53) prohibits knowingly disturbing archaeological sites without a permit from the DAHP. The Indian Graves and Records Act (RCW 27.44) prohibits knowingly disturbing Native American or historic graves. RCW 68.50.645 provides a strict process for notification of law enforcement and other interested parties in the event of discovering any human remains, regardless of inferred cultural affiliation.

This project will also comply with City of Olympia Ordinances (OMC 18.12.130 and

18.12.140).

PROJECT LOCATION AND DESCRIPTION

The project is located at 1210 West Bay Drive NW on Tax Parcel Number (TPN) 72600200100 and 91013100000 in Olympia, Thurston County, Washington within a portion of Section 10 of Township 18 North, Range 2 West (Figure 1 – Figure 2). The project area is about 17.8 acres. The nearest freshwater source to the API is Schneider Creek located approximately 0.09 miles (475.2 feet [ft]) north of the API.

The project intends to construct a mixed-use space that will include commercial and residential facilities with underground parking on the currently undeveloped property (Figure 3 - Figure 4). The mixed-used space will consists of five buildings that include approximately 470-478 residential units and 20,000 square ft of commercial space. The project will be constructed in three phases and will include new restaurant and retail opportunities, multiple public access amenities and significant environmental remediation. The development will also include two-story below-grade parking, an elevated public plaza, public access through and around the site, shoreline restoration, and a waterfront trail (City of Olympia 2022a). A seawall may also be added to the eastern boundary of the project area.

Construction will require grading of the entire site and approximately 56,000 cubic yards of fill will be added (City of Olympia 2022a). Excavation of the parking garage and foundations will impact approximately 3.96 – 4.26 m (13-14 ft) below the ground surface (Figure 6). Also, any and all existing structures will be removed throughout the site (City of Olympia 2022a).

For purposes of this project an Area of Potential Impact (API) has been defined to include the footprint of construction plus all staging areas. In this report, API and project area are used synonymously.

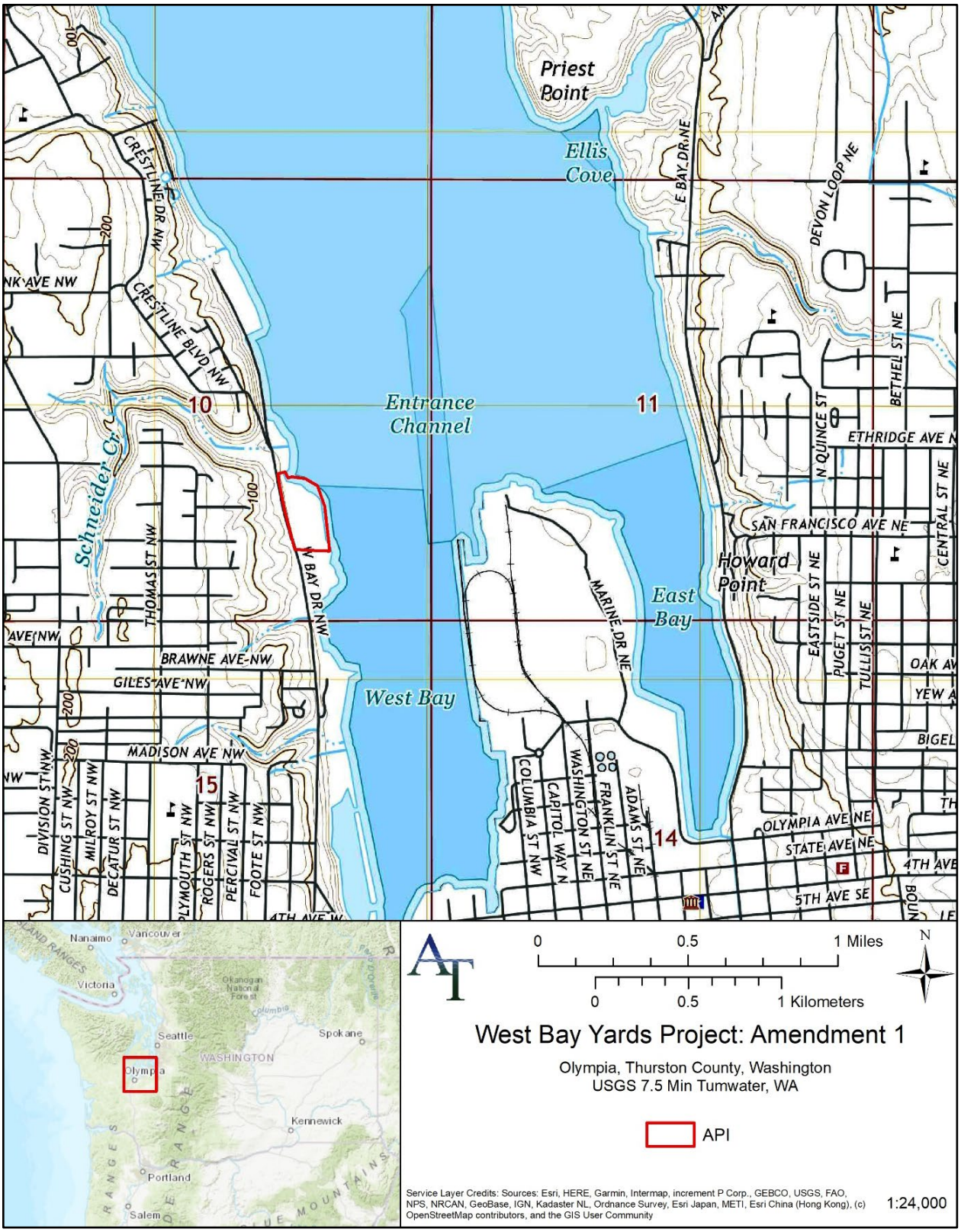

Figure 1. Location of the API on a portion of the United States Geological Survey ([USGS] 2020) Tumwater, Washington topographic map.

Figure 2. Satellite imagery detailing the location of the API.

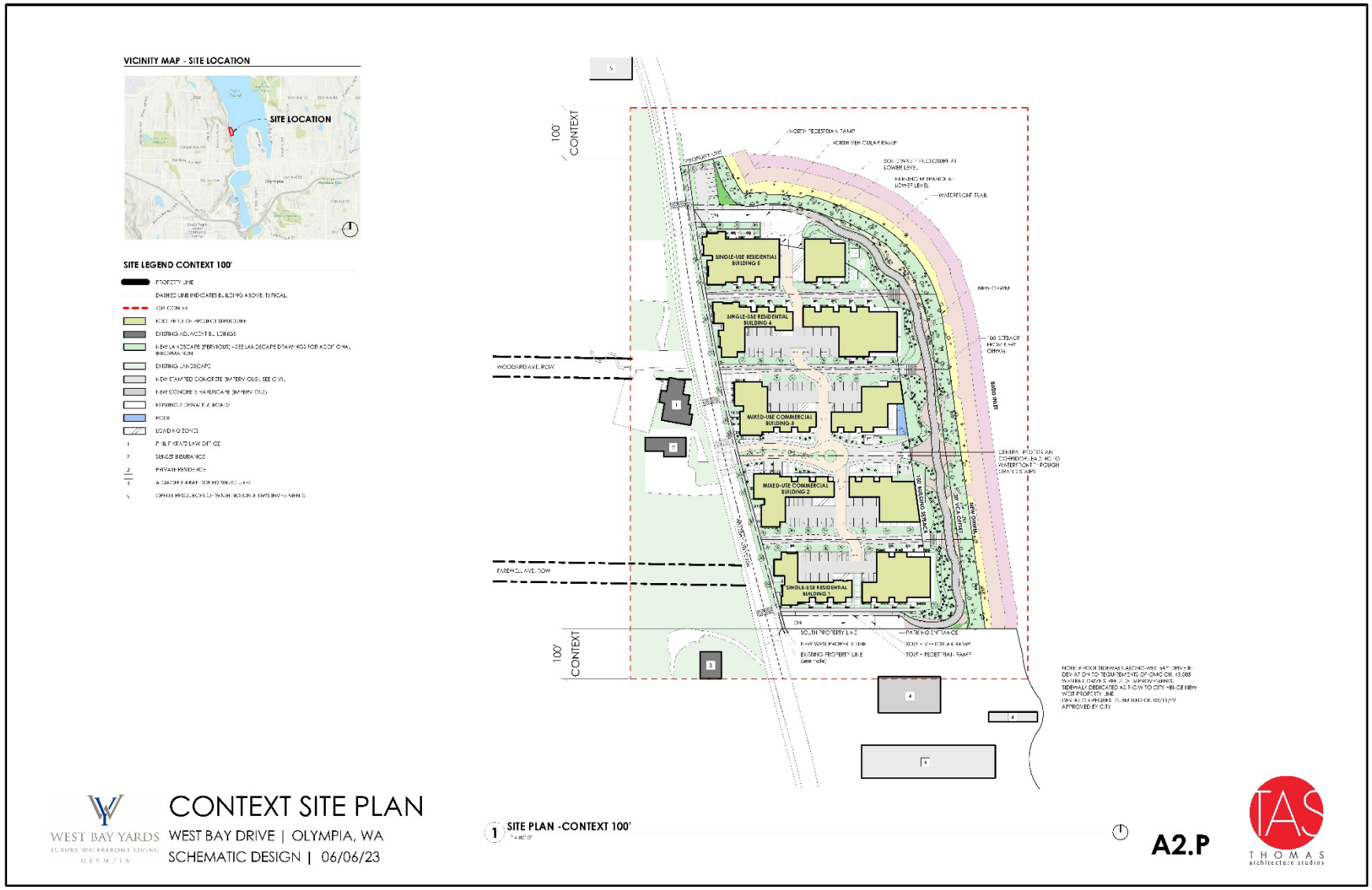

Figure 3. Proposed site plan.

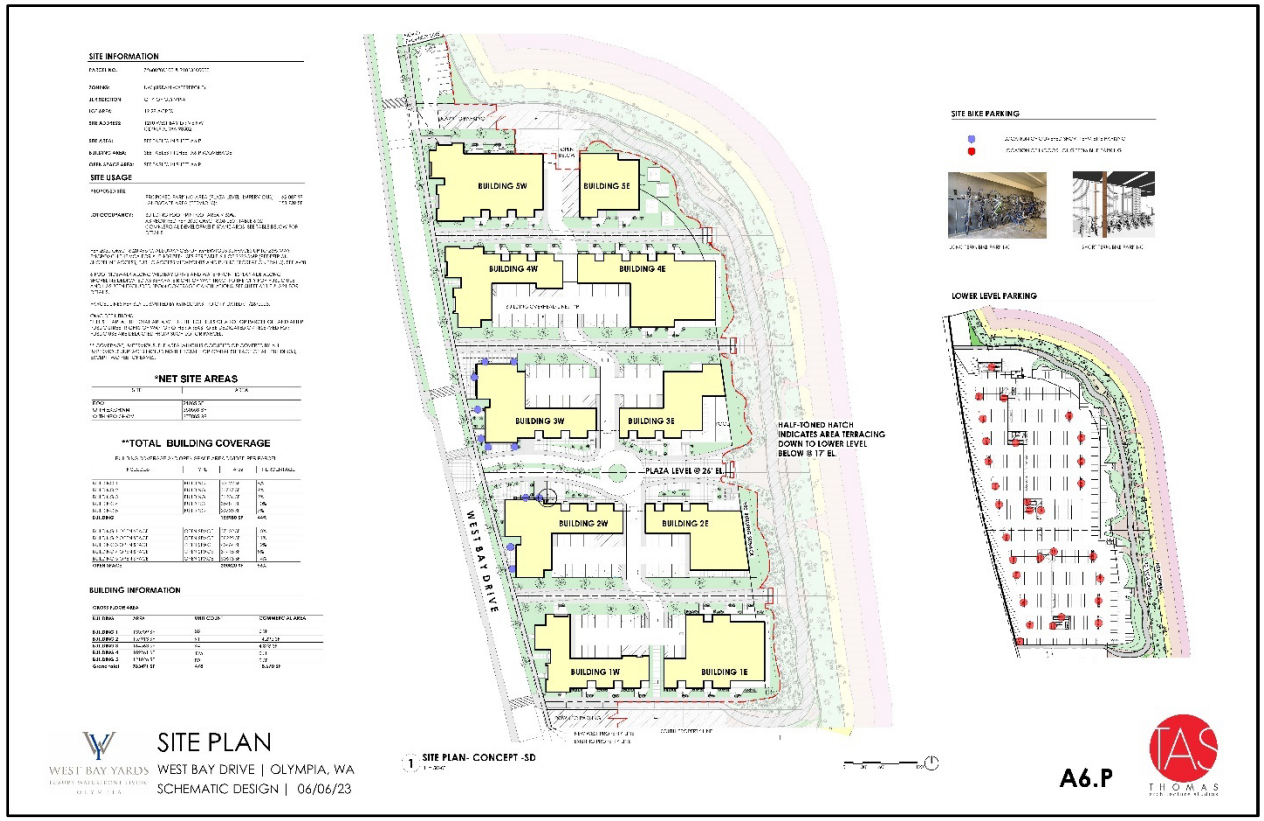

Figure 4. Proposed site plan

Figure 5. Rendering of the proposed development, view east.

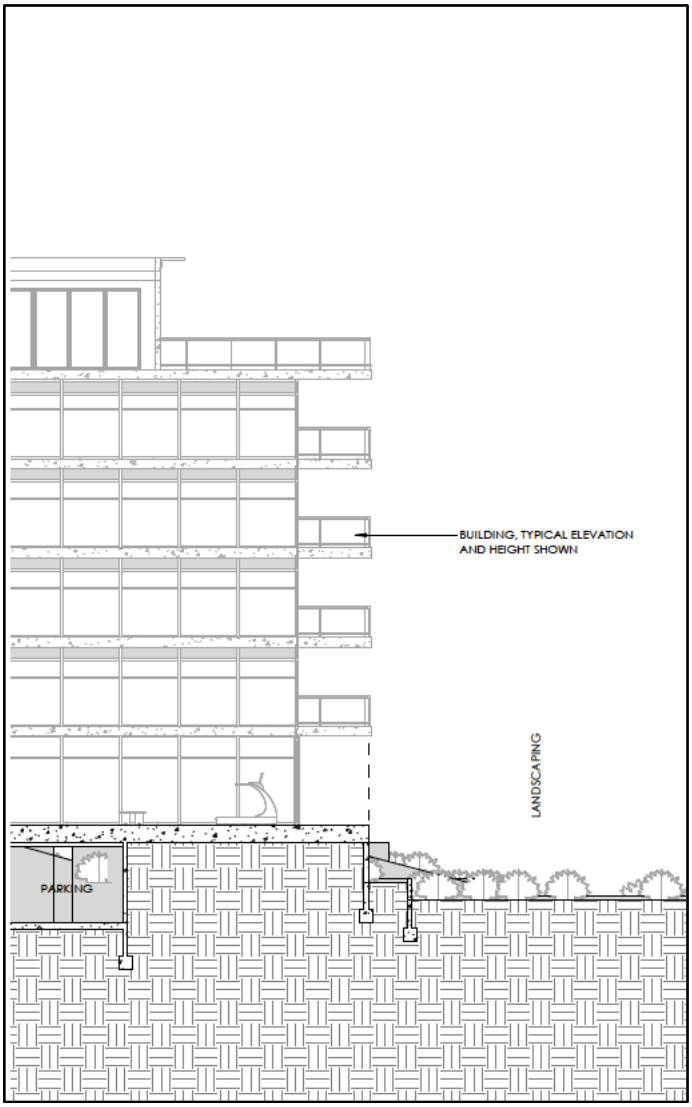

Figure 6. Profile of the proposed site plan detailing the extent of subsurface disturbance.

CORRESPONDENCE

The Cultural Resource Department of the Squaxin Island Tribe sent comments to the City of Olympia on August 16, 2021 about the West Bay Yards project. They recommended, "either deep testing using controlled excavation with a flat bucket backhoe (similar to Madrone) or a vibricore testing strategy to identify cultural resources or cultural resource bearing deposits (this might be the better option due to ground water issues). We further recommend that a research design document using either one of these methods is developed. Ideally this research design document needs to take into consideration the variable water table throughout the project area (Shaun Dinublio, personal communication 2021)." They sent an additional email to the City on June 2, 2022 to express that the comments were not addressed and to encourage this communication be included in the consultation record. A copy of this correspondence is provided in Appendix B. These comments prompted the planning of extensive boring at the site. The property owner agreed to the boring and the boring specs used were consistent with the Tribes recommendations.

On July 18th, 2022, ATCRC Principal Investigator Sarah Amell sent a summary email after a meeting and asked for confirmation on the approach and any comments. Shaun Dinubilo responded thanking Sarah for sharing the path forward and for the summary from the meeting on July 21st, 2022. A copy of this correspondence is provided in Appendix B

As part of this project, ATCRC sent technical notifications to the Chehalis Tribe, Cowlitz Indian Tribe, SIT, Nisqually Indian Tribe, and Puyallup Tribe of Indians on October 19, 2022, regarding the details of the project. No responses were received to this technical notification. A copy of this correspondence is provided in Appendix B.

After the initial fieldwork began on October 24, 2022, Sarah Amell sent a continuing technical consultation to the tribes from the initial technical notifications informing them of the shell matrix found during fieldwork and the plan to conduct additional Geotech bores in the cardinal directions in an attempt to define the site boundary. In addition, all shell matrix was collected at 10 cm levels, bagged, labeled, and transported back to ATCRC for water screening the following week. Shaun Dinubilo from the Squaxin Island Tribe responded that he agreed with the boring method and wet screening of the positive bore samples. Lance Wollwage (State Archaeologist with DAHP) also agreed with the plan for additional borings to define the site boundaries. A copy of this correspondence is provided in Appendix B

On October 27, 2022, Sarah Amell sent an additional continuing technical consultation email to the above named tribes and DAHP to inform them that not all of the bores were able to be completed within the time available from the drill crew, so work would resume sometime in December based on their availability. She informed them that an out of field summary would be sent early the following week. In addition, she invited the above mentioned parties to join ATCRC with the water screening activity the following week (Tuesday, November 1st -Thursday, November 3rd, 2022). A copy of this correspondence is provided in Appendix B

Shaun Dinubilo replied on Friday, October 28, 2022 asking for a brief summary of the trenching efforts that were conducted on October 26 and 27th and to inform ATCRC that he would not be able to attend the water screening due to preexisting obligations. A copy of this correspondence is provided in Appendix B

Sarah Amell sent an additional email containing the out of field summary and new schedule for boring (December 12-15) on Monday, October 31, 2022. She sent an additional email on November 3, 022 to inform the above mentioned parties that the drill crew was available sooner and work would continue at the site the following week (November 7, 2022). A copy of these correspondence is included in Appendix B.

BACKGROUND REVIEW

Determining the probability for cultural resources to be present within the API was based largely upon review and analysis of past environmental and cultural contexts and previous cultural resource studies and sites. Consulted sources included project files; local geologic data; archaeological, historic, and ethnographic records; selected published local historic records, and assessor's records. Archaeological, historic, and ethnographic records were reviewed from the Washington Information System for Architectural and Archaeological Records Data (WISAARD) database.

Environmental Setting

The project area is situated along the western shore of West Bay, the southernmost extent of Budd Inlet, in the Puget Lowland. The Puget Lowland physiographic province is a seismically active forearc basin formed between the Cascade Mountains and coastal ranges of Washington, extending from the San Juan Islands in the north to the convergence of the Washington Southern Cascade Range and the Willapa Hills in the south.

During the Pleistocene, repeated advances of continental ice sheets scoured and redeposited materials within the basin over more than a million years, leaving a layer of widespread but largely discontinuous glacial, fluvial, and marine deposits sometimes exceeding 100 meters (m) in depth and producing the distinctive north-south ridgelines of the area (Easterbrook 2003; Troost 2016). The most recent glacial advance in the Puget Lowland was during the Vashon Stade of the Fraser Glaciation, between approximately 30 and 11 thousand years before present (YBP), when the Cordilleran Ice Sheet (CIS) covered the northern and central regions of the basin in up to 1.8 kilometers (km) of ice and scoured the modern split paths of the Puget Sound (Easterbrook 2003; Troost 2016). The CIS reached its maximum Vashon extent, 25 km south of Olympia, by around 16.9 thousand YBP before retreating northwards, allowing marine waters to enter Puget Sound around 14.8 thousand YBP and rapidly disintegrating into a collection of floating bergs and stagnant, grounded ice (Easterbrook 1992, 2003; Thorson 1980; Troost 2016). During the retreat, several large proglacial lakes formed within the channels of the Puget Sound and in blocked river valleys before the melting ice allowed them to drain into the lowland and ocean. Unburdening of the basin as the ice melted permitted isostatic rebound throughout the remainder of the Fraser Glaciation, which interacted with eustatic sea level rise to produce a complex pattern of terrestrial and marine deposits throughout the province before relative sea level stabilized near the start of

the Holocene (Easterbrook 1969, 1992; Thorson 1980). Subsequent glacial stades of the Fraser Glaciation contributed several beds of glaciomarine sediment to the regional stratigraphic record but did not involve glacial intrusion into the lowlands (Easterbrook 1992, 2003; Thorson 1980). More recent landscape evolution within the Puget Lowland is dominated by mass wasting, fluvial and coastal processes, and sporadic deformation from seismic activity in the multiple associated fault zones (Troost 2016).

The API is located on a platform of fill along the western bank of Budd Inlet, at the foot of a 120 ft bluff of Vashon-age advance outwash. Slopes to the north, and along the eastern shore of Budd Inlet, expose layers of pre-Fraser drift, which form the core of the coastal bluffs surrounding Budd Inlet (Walsh et al. 2003). Soils in the API consist entirely of Xerorthents cut-and-fill, derived from excavated tidal flat material, which has no consistent profile (United States Department of Agriculture, Natural Resource Conservation Service [USDA NRCS] 2022; Table 1).

Table 1. Soils expected to be present within the API (USDA NRCS 2022).

NAME	SLOPE	LANDFORM	PARENT MATERIAL	TYPICAL PROFILE
Xerothents	0 to 5 percent	Tidal flats	Sandy and loamy cut and fill material	H1 - 0 to 60 inches: variable

The API is located in the Puget Sound Area of the Western Hemlock Zone of Washington (Franklin and Dyrness 1973). The Western Hemlock region is shielded from both maritime and continental air masses by the coastal and Cascade ranges to the west and east, being slightly drier than areas on the coast with more moderate temperature variations than in the continental interior. The Puget Sound section of the Western Hemlock Zone is within the rainshadow of the Olympic Mountains, producing drier and warmer summers than in other areas of the lowlands and generally limiting annual rainfall to 800-1300 millimeters (mm) instead of the 1500-3000 mm received elsewhere in the zone. More than 75% of this precipitation arrives as rain between October 1 and March 31, with long periods of little to no rainfall from June to August (Franklin and Dyrness 1973).

While the Western Hemlock climate regime is generally neither temperature- nor precipitation-limited and produces the highest biomass accumulations recorded in global temperate zones, moisture stress during the summer months limits the growth of the hardwoods that dominate most other temperate regions, and mild winters favor the year-long growth patterns of coniferous species (Franklin and Dyrness 1973). This pattern produces a very unusual variation on the temperate regime that likely sustains a silvicultural balance initially established during the harsher conditions of the Pleistocene. Like most of the Western Hemlock Zone, forest compositions are dominated by unusually large and long-lived conifers (particularly Douglas fir, western hemlock, and western red cedar), while younger forests and riparian areas are characterized by bigleaf maple, black cottonwood, red alder, and willow. Understories will generally transition from salmonberry (with a large variety of accompanying species) in young stands to a mixture of sword fern, red huckleberry, vine maple, Oregon grape, and salal. Unlike the more mesic regions to the south and west, the Puget Sound Area is also host to prairie ecosystems and several more arid-loving pine and hardwood species that are rarely found elsewhere in the Western Hemlock Zone (Franklin and Dyrness 1973).

Much of the Puget Sound area has been extensively cleared and logged since its initial settlement, often with extensive fires during the dry season, and is now covered by subclimax stands of

Douglas-fir more than Western Hemlock (Franklin and Dyrness 1973). Human activities have introduced many invasive species to the region, including knotweed, Himalayan blackberry, common groundsel, knapweeds, European starlings, and house sparrows.

Cultural Setting

Precontact

Human occupation in the Northwest Coast is believed to have begun following the retreat of glacial ice across the landscape in the Late Pleistocene. The earliest cultures in the region are thought to have resided in the area beginning approximately 14,000 YBP (Matson and Coupland 2009). Subsistence strategies included an adaptation to highly variable climates and a changing environment (Matson and Coupland 2009). Currently, archaeological evidence indicates patterns of high mobility and small groups reliant on large game and seasonably available resources (Ames and Machner 1999; Matson and Coupland 2009). The earliest recognized culture in the Pacific Northwest is the Clovis culture dated to 12,000 to 11,000 YBP. This culture, named for its distinctive fluted projectile points, was highly mobile and left little evidence of permanent base camps. These large fluted projectile points have been observed on the surface, distributed throughout Puget Sound (Croes et al. 2008).

Between 12,000 to 7,000 YBP, foraging strategies changed to include the smaller inland game, aquatic animals, and various plants. Sites from this period are typically encountered on high marine and river terraces (current and abandoned), subalpine meadows, and saltwater shores (Kirk and Daugherty 2007:84). These site types indicate a continued high mobility pattern, subsisted by terrestrial game. This period provides the first indication of plant processing and the use of aquatic environments (Ames and Machner 1999). Faunal and fish remains dating to this period are rare, but archaeological evidence has been reported (Chatters et al. 2011). Evidence from this period indicates a well-developed land-use strategy (Chatters et al. 2011). The artifact assemblage from this period is distinguishable by large leaf-shaped and stemmed points, scrapers, flake tools, and blade cores (Carlson 1990). In the Puget Sound region, as well as regions along the Columbia, the introduction of larger laurel-leaf projectile points indicates a tradition that is part of the Cascade Phase (Matson and Coupland 2009).

After 5000 YBP, populations appear to become larger and more complex as groups utilized a more extensive range of resources, including salmon and shellfish, land mammals, and plant resources such as berries, roots, and bulbs. Subsistence and settlement patterns are archaeologically evidenced to be distinct from those of earlier cultural adaptations (Kopperl et al. 2016). Settlements represent residential base camps with year-round re-occupation and access to multiple environments (Kopperl et al. 2016). Short-term base camps for smaller hunting or gathering groups, concentrating on specialized seasonally available resources, were introduced into the settlement pattern (Kopperl et al. 2016; Thompson 1978). Between 6,000 and 5,000 YBP, these predominantly sedentary lifestyles produced the first evidence of mass processing and storage of salmon and plants (Kopperl et al. 2016). By approximately 3,000 to 2,000 YBP, hunter-gatherer subsistence settlement patterns became focused on salmon fishing throughout the Puget Sound region and along the Columbia (Blukis Onat 1987; Burtchard 1998; Kopperl et al. 2016). Additionally, ground stone tools, microblades, and cores appear at this time as well as bone and

antler tools, ground shells, and harpoons. Canoe technology most likely developed around 2,000 to 3,000 YBP with the construction of large plank houses (Hebda and Matthews 1984, Donald 2003, Matson and Coupland 2009). Shell middens are also prevalent in this period and continued into the ethnohistoric period (Ames and Maschner 1999:89).

Ethnohistoric

Based on archaeological evidence, the ethnohistoric period closely resembles what European explorers encountered when they arrived in the eighteenth century (Chatters et al. 2011). Village sites are commonly present during this period and are placed at the mouth and the confluence of rivers. Seasonal camps were revisited yearly, producing an archaeological record of changing technologies and massive shell middens (Chatters et al. 2011). Faunal remains of large and small sea mammals, including whales, indicate an increased ability to hunt at sea (Ames and Maschner 1999; Matson and Coupland 2009). This is also evidenced by the introduction of compound harpoons made of three pieces bound together for more versatile individual pieces (Ames and Maschner 1999). During this time, a notable shift in the abundance of gathered plants and roots indicates selective management of the naturally available seasonal resources (Deur and Turner 2005). With this, an intensification in a storage-based economy where plant and animal resources contributed to community subsistence year-round, including the least productive months (Ames and Maschner 1999; Deur and Turner 2005).

The project area is located in the traditional territory of the contemporary SIT and the western reaches of the traditional territory of the contemporary Nisqually Indian Tribe (Haeberlin and Gunther 1930; Hilbert et al. 2001; Ruby and Brown 1986; Smith 1940; Spier 1936; Suttles and Lane 1990:485).

The SIT represents several autonomous groups who once occupied the seven-inlet region of southern Puget Sound and surrounding watersheds (Squaxin Island Museum and Tourism Department Staff 2015). These groups are descendants of maritime people who once occupied the land between Hood Canal and Case Inlet (Ruby and Brown 1986; Squaxin Island Tribe 2022a). According to the SIT website, the contemporary tribe consists of "the Noo-Seh-Chatl of Henderson Inlet, Steh Chass of Budd Inlet, Squi-Aitl of Eld Inlet, Sawamish/T'Peeksin of Totten Inlet, Sa-Heh-Wa-Mish of Hammersley Inlet, Squawksin of Case Inlet and S'Hotle-Ma-Mish of Carr Inlet" (Squaxin Island Tribe 2022b).

The traditional territory of the Nisqually is documented as extending along both sides of the Nisqually River from its delta at the southern end of the Puget Sound upstream for nearly 30 miles (Ruby and Brown 1986, Suttles and Lane 1990: 486). These boundaries included land near present-day Olympia, Tenino, and Dupont, and also extended to Mount Rainier (Nisqually Indian Tribe 2022). Major Nisqually village sites have been identified at the Nisqually River delta, Nisqually Lake, and confluences of Muck Creek, Clear Creek, and Mashel Creek, and at the towns of Roy, Rainier, and Tenino (Ragsdale et al. 2012:12; Smith 1940:9).

No specific ethnographic villages or placenames were identified as previously recorded in the project area. Within a one-mile radius of the API, numerous named ethnographic sites and geographic locations have been documented (Table 2). In addition, according to a Squaxin Island

informant Johnnie Scalopine a winter village called Whakupdup (White Beach) that consisted of two houses is located near this project site. This winter village site was reported as located on Percival Point between 45TN271 and Percival Cove (Scalopine [1927] as cited in Murphy [2002]). This site is located south of the API and is located along the west side of Capitol Lake.

Table 2. Ethnographic places previously recorded within approximately one mile of the API.

LOCATION	ETHNOGRAPHER'S ORTHOGRAPHY	ETHNOGRAPHER'S TRANSLATION/ DESCRIPTION	DISTANCE FROM API
Budd Inlet: a small promontory	QwEla'iutsid	Mouth of a creek where there is spray	0.3 mile
Budd Inlet: a creek on the western shore where the present western boat channel has been dredged	SqwExlo'x	None	0.4 mile

Historic

Spanish explorers first visited the Puget Sound area in the early 1600s and the area was later explored in part by Captain James Cook in the 1700s. European discovery of the far inland portions of the southern Puget Sound occurred in 1792 by Captain George Vancouver, who explored Admiralty Inlet, Hood Canal, and other areas throughout Puget Sound (Schilling 2005).

In the early 1800s, the Hudson Bay Company (HBC) established a fur trading company with posts in the Pacific Northwest. The HBC was a partnership between two rival fur trading operations, the Bay Company from Canada, and the Northwest Company in the United States. HBC's Fort Nisqually, in modern-day DuPont, Washington, was the first non-native settlement in the Pacific Northwest, established in the traditional homeland of the Nisqually in 1833 (Ruby and Brown 1986).

Non-native settlement of the area increased in the mid-1800s as a result of incentives via the United States government. In 1841, Congress passed the Distributive Preemption Act, which allowed squatters, to purchase up to 160 acres for $1.25 an acre after 14 months of residence. In 1850, the Donation Land Claims Act further encouraged local non-native settlement. The Donation Land Claims Act granted 320 acres to white male citizens aged at least 18 years old, if they resided on the property on or before December 1, 1850 (Riddle 2010). In addition, if a married couple took out a land claim, they were entitled to 640 acres (Riddle 2010).

The first non-native settlers to the greater project area were Levi Lathrop Smith and Edmund Sylvester. Smith and Sylvester created a townsite eventually known as Smithfield or Smithster (Thurston County Historic Commission [TCHC] 1992:4; Wilma 2003). Smith built a house near what was then the Olympia waterfront near Main and Third streets (TCHC 1992:3; Wilma 2003). In 1848, Smith drowned, and Sylvester inherited Smith's half of the claim.

In 1850, Smithfield was the end of the Cowlitz Trail that directed settlers from the Columbia River to Puget Sound (City of Olympia 2022b). Sylvester left Smithfield to join the California Gold Rush and returned with enough gold to purchase more land and goods to officially establish a town

(Wilma 2003). In 1850, Sylvester platted the town similar to his New England home in Maine with a town square, masonic hall, capitol grounds, tree-lined street, and land for schools (City of Olympia 2022b; TCHC 1992:3, Wilma 2003). Sylvester offered free lots for development, and the town quickly grew. During a celebration for the new town, in the spring of 1850, Sylvester's guest, Isaac Ebey, referred to the realm of the Olympic gods in the mountains in the distance and, subsequently, Sylvester officially named the town Olympia (Wilma 2003).

That same year, Sylvester, Ebey, and other investors purchased the Orbit, a small brig to run pilings sawed by the Michael Simmons mill to San Francisco and return with goods for the community. The brig and the discovery of coal nearby encouraged business and settlement and led to the opening of a United States Government Customs house in Olympia by 1851 (TCHC 1992; Wilma 2003). In 1851, Olympia was named the first Custom House on Puget Sound, following the establishment of the Puget Sound Collection District. The district required that all ships entering Puget Sound register in Olympia before proceeding to other ports. In 1853, Washington was officially established as a separate territory by Congress with Olympia as its capital (TCHC 1992; Wilma 2003). Sylvester donated 12 acres for the capitol building to be established. Construction for the Washington State Capitol Campus began in 1911-1912 (Deschutes Estuary Restoration Team [DERT] 2022).

Non-native settlement in the region drastically impacted local native groups and their traditions. Many Native American families were relocated and interned during this period. In 1854, following negotiations between the Squaxin, Nisqually and Puyallup and the United States government, the Medicine Creek Treaty led to the secession of most southern Puget Sound villages and compelled the Squaxin to relocate to the Squaxin Island Reservation and the Nisqually to the Nisqually Indian Reservation west of the Nisqually River (Ruby and Brown 1986; Squaxin Island Museum and Tourism Department Staff 2015). The treaty dissolved Indian title to their traditional lands, and by 1855-1856, the federal government used military force to contain any Native Americans dissatisfied with the inferior quality of reservation lands.

Due to the expansive forests surrounding Budd Bay, water transportation served as the most accessible means of travel in Olympia. Unfortunately, the mudflats of Budd Bay made it difficult to access the waterways. The first wharf was built by Samuel Hancock on the west side of Budd Inlet in 1848 and allowed access to deeper waters (TCHC 1992: 4). In 1854, Edward Giddings built a 300 foot long wharf that extended northward off of Main Street (now Olympia Way) (City of Olympia 2022b). In 1860, Sam Percival built Percival's Dock and eventually became a staple for steamboat trade. After 1860, Percival built a dock along Water Street between Third (State Avenue) and Second (Olympia Avenue) streets that could accommodate larger ships (Blankenship 1914:196).

The logging industry became a prominent portion of Thurston County's economy beginning in the 1880s. At this time, no large sawmills were in operation mainly due to a lack of railroads that went all the way to the water in this area (Hannum 2019: 160 - 161). The Olympia and Chehalis Valley Railroad was the only railroad in the area that went all the way to salt water (Hannum 2019: 161). Instead, the majority of logging companies used skid roads (greased logs laid transversely) to transport timbers (Hannum 2019). These skid roads were often later turned into tram roads which were wooden rails laid over railroad ties that eventually were traded out for standard steel rails.

Eventually, railroad spurs were constructed next to areas of logging so timber could be easily loaded onto the rail cars (Hannum 2019:163). These initial logs were not finished and were transported to mills elsewhere for processing (Hannum 2019).

By 1891, multiple sawmills were in operation and transportation of finished logs within Thurston County became feasible and more profitable. During the early part of the 20th century, the majority of the mills relied on railroad transportation for their logs, after which they processed the logs and shipped them. By the 1930s, with the expansion of roads, many logging companies shifted from transporting by railroad to transporting by truck. However, lumber and shingles milling peaked between 1900 and 1930 in Thurston County and, according to Hannum (2019:164), railroad logging was "essentially over" by the mid-1940s. While the logging industry and its associated mills were a large part of the Thurston County economy in the late 1800s and early 1900s, most mills have been razed leaving little evidence of their existence or their contributions to early Thurston County settlement (Hannum 2019:166).

As demand for commerce along the Olympia waterfront increased, the mudflats within Budd Bay became an issue for boats and ships. In 1885, the first dredging of Budd Bay was attempted but was unsuccessful (Stevenson and Fowler 1997:7). In response, the city expanded several wharfs (City of Olympia 2022b; Gallison and Virden 1984; Hudson et al 2008:9, 12). In 1892, United States Congress authorized excavation of a 12 foot deep by 250 foot wide channel across the Budd Bay tide flats. By 1895, the USACE dredged the harbor (Wilma 2003). Between 1909 and 1911, a voter-funded project to dredge the harbor and fill the downtown area added 29 blocks and filled the Deschutes waterway and mudflats north of downtown (City of Olympia 2022b; TCHC 1992; Wilma 2003). This fill event is often referred to as the Carlyon Fill (TCHC 1992). The dredged material was used as fill, and the fill was supported by a pile and brush bulkhead (Gallison and Virden 1984). Additional fill events occurred in 1924, 1930, 1933, 1943, 1963, 1981, and 1983, further promoting the waterfront (Stevenson 1982).

According to archives reviewed for this project the landform in which the API is located has been significantly modified. In 1893, the Washington Standard (1893) reported that "the dredger completed the fill of the Westside Mill Co's lumber yard lots yesterday and [… placed …] the mud on Third Street, east of the channel and under the buildings contiguous thereto. Small fir trees and hay [were] placed around the edges of the fill and the overflow of sand and mud soon form[ed] a barrier, when thus held, to the outward pressure of the mass, and in the course of time it [would become] as solid as the dry land." During this fill event, Westside Mill was reported to have secured 10,000 yards (Washington Standard 1893). In 1900, it was reported that Westside Mill dredged a basin to the depth of 20 ft at low tide, in which to float vessels while taking in cargoes of lumber (Washington Standard 1900a, 1900b). In 1913, it was noted that the waterway in front (east) of the API had been dredged.

Following the dredging and filling of the Olympia waterfront, an industrial district developed, and the Port of Olympia was established in 1922 (Riddle 2010). As Olympia grew, means of transportation expanded beyond the waterways. In 1869 a bridge was constructed across Budd Inlet connecting the east and west sides of Olympia. In 1878, the Olympia and Tenino Railroad was constructed. In the early 1890s, the Olympia Light & Power completed their electric trolly system between Olympia and Tumwater. In 1891, the Northern Pacific Railroad (NPRR) was

extended to Olympia. By the early 20th century, the advent of the automobile drastically changed the development of Olympia. Following the Highway Act and Interstate Freeway system, Olympia became the hub of two major roadways: the Pacific and Olympic State Highways. These main state north-south and east-west main corridors met in downtown Olympia at Fourth and Main (now Capitol Way).

In the 1940s, construction of the Capitol Campus was completed (DERT 2022). In 1949 a severe earthquake damaged many structures, including the dome of the Capitol Building. In the 1950s, the state demolished several historic structures to move the campus east of Capitol Way, and in 1951, the Deschutes River was dammed to form Capitol Lake (Wilma 2003). By the 1970s, Olympia underwent additional substantial growth and change. New modern buildings were constructed for commercial institutions. Improvements to infrastructure as dependency on the automobile grew. The 1990s ushered in an era of historic preservation, and Historic Downtown Olympia was rehabilitated and rejuvenated (City of Olympia 2022b; Wilma 2003).

Land Use History

To identify the land-use history of the API and its surroundings, ATCRC reviewed archival records including, but not limited to, local histories, historic maps and photographs, municipal assessor's records, and newspapers (Table 3).

Table 3. Archival records reviewed to establish land use history.

DATE	TITLE (SCALE)	SOURCE	INFORMATION
1854	Surveyor General's Office: Township 18 North, Range 02 West	Bureau of Land Management: General Land Office Records (BLM GLO)	The land the project area is in is depicted on this map. It is located to the west of Budd's Inlet. The name Hurd is listed in this section and may or may not be associated with the project area.
1856	United States Coastal Survey	Historical Map & Chart Collection	This map shows the original shoreline of the API.
1864	Private Claim: Township 18 North, Range 02 West	BLM GLO	Donation land claim no. 59 is listed on this map and is owned by M. Hurd
1873	United States Coast Survey	Historical Map & Chart Collection	This map details the coast of Washington.
1877	Oregon-Donation Act of 1850	BLM GLO	Mary Ann Hurd and Moses Hurd owned land API is in.
1890	Map of Olympia and Surroundings	Whitham and Page (1890)	This map depicts the shoreline of the API. In addition, it lists a railroad running north to south along the western edge of Budd's Inlet as the Port Townsend & Southern RR.
ca. 1890	Olympia Capital of the State of Washington photograph	Lange (ca. 1890)	This is a drawing of Olympia detailing Budd Inlet and shows a portion of the API's shoreline.
1892	USACE	USACE (1892)	This map depicts the shoreline of the API along Budd's Inlet. Port Townsend Southern RR is labeled near the western edge of the API.
1894	Plan of Olympia Harbor, Washington	Hudson (2008)	This map shows the shoreline of the API as well as a sawmill within the API and a portion of railroad tracks along the western edge of the API.

DATE	TITLE (SCALE)	SOURCE	INFORMATION
1924	Sanborn Fire Insurance Map from Olympia, Thurston County, Washington	Sanborn Map Company (1924)	This map shows the multiple structures of the Henry McCleary Timber Co within the API. In addition, it shows the refuse fire to the north of the API and railroad tracks along the western edge and from the south going through the center of the API towards Budd Inlet.
1937 (1937 ed.)	Topographic Map: Olympia, WA 15 min (1:62,500)	United States Geological Service (USGS)	Two potential train tracks running from the south to the NE of the API.
1937 (1943 ed.)	Topographic Map: Olympia, WA 15 min (1:62,500)	USGS	No changes to the API from the previous map
1941	Aerial Photograph (1:34,600)	USGS – Earth Explorer	Floating logs are visible tied off from the API. Mounds or structures are visible in the API and two long structures are visible just south of the API. A road or railroad tracks are visible traveling N/S east of the API and split into a Y at the southwest corner. The split traverses the southern end of the API northeast toward the Sound. The API is not as raised and the shoreline is less defined than today.
1924 (1945 modified)	Sanborn Fire Insurance Map from Olympia, Thurston County, Washington	Sanborn Map Company (1924 [1945 modified])	Some of the buildings in the southern portion of the site appear to be present along with the refuse fire to the north and the railroad tracks along the western edge and from the south to Budd Inlet. Many buildings in center appear to have been removed.
1949 (1958 ed.)	Topographic Map: Olympia, WA 15 min (1:62,500)	USGS	Pilings present to the east of the API. Single trail or track runs through the API from SW to E. Structures appear to be present in the API. East of the API says Dredged 27 ft in 1947. The shallow sands of the mudflats are illustrated extending east from the API and along the coast. The boundary is drawn at the edge of the newly dredged areas.
1949 (1964 ed.)	Topographic Map: Olympia, WA 15 min (1:62,500)	USGS	No changes from the previous map.
1949 (1970 ed.)	Topographic Map: Olympia, WA 15 min (1:62,500)	USGS	No change from the previous map.
1951	Phase I Environmental Site Assessment: Hardel Mutual Plywood Corporation 1210 West Bay Drive NW Olympia, Washington.	Pioneer Technologies Corporation (2020)	Property was occupied by Hardel Mutual Plywood Corporation
1956	Aerial Photograph (1:60,000)	USGS-Earth Explorer	The platform of the API does not appear as solid, raised, or well defined as it does today. A road, likely the railroad tracks illustrated in the topographic maps, is visible extending from the shoreline out to the edge of the dredged inlet. Floating logs are visible surrounding the API and along the shoreline.

DATE	TITLE (SCALE)	SOURCE	INFORMATION
1957	Aerial Photograph (1:32,000)	USGS-Earth Explorer	The API is less defined than today. Two structures are visible on the API and the Y railroad line to the Sound is visible in the aerial. Rows of floating logs are tethered to the API.
1959 (1969 ed.)	Topographic Map: Tumwater, WA (1:24,000)	USGS	New purple line present on the eastern portion of the API and one purple structure. It is a revision from the Geological Survey from aerial photographs taken in 1968 that has not been field checked. West Bay Drive is labeled.
1962	Metsker Map: Township 18 N Range 2 W, Northeast Quarter (page 17)	Historic Map Works	There are multiple pilings to the east of the API or slightly in the eastern portion of the API, API labeled McCleary. The Inner Harbor Line and the Outer Harbor Lines are illustrated on the map.
1959 (1966 ed.)	Topographic Map: Tumwater, WA (1:24,000)	USGS	Multiple structures present in the API. Sand labeled directly to the east of the API. Potential railroad track is south of the API running to the NE. Road labeled West Bay Drive is directly to the west of the API. Depth curves and soundings are illustrated and labeled in the dredged section of the Sound.
1968	Aerial Photography (1:30,000)	USGS-Earth Explorer	Several structures are visible within the API both north and south of the Y-railroad line through the API. The API appears to be better defined and more fill has been added for stabilization. Floating logs are tethered to the API.
1968	Sanborn Fire Insurance Maps	Tetra Tech (1999)	This map depicts the Hardel Mutual Plywood Corp within the API. There are multiple buildings depicted across the site including a factory, steel dry kilns as well as evidence of a railroad along the western border of the API.
1969	Aerial Photograph	NETROnline	There are multiple structures within the API, A road running north to south is directly to the west of the API. Multiple logs in the water
1973	Aerial Photograph	NETROnline	Multiple structures are present in the API. There are logs in the water to the east of the API.
1973	Metsker Map: Township 18 N Range 02 W	Historic Map Works	Two structures are present on the API.
1959 (1975 ed.)	Topographic Map: Tumwater, WA (1:24,000)	USGS	Purple line and structure still present and are revisions from the 1968 and 1973 Geological Survey that have not been field checked. West Bay Drive is labeled. The railroad track that extends N/E through the southern portion of the API no longer extends into the Sound and is cut off before the shoreline.
1975 (1977 ed.)	Topographic Map: Tacoma, WA (1:100,000)	USGS	Road to the west of the API is labeled as a light-duty road, hard or improved surface.
1977	Metsker Map: Township 18 N Range 2W	Historic Map Works	Portion of the API labeled McCleary and Woodard
1978	Aerial Photograph	Washington State Department of Ecology (WSDOE)	A massive industrial complex covers most of the available land area within the API.

DATE	TITLE (SCALE)	SOURCE	INFORMATION
1959 (1981 ed.)	Topographic Map: Tumwater, WA (1:24,000)	USGS	The two original structures on the west edge of the API have been replaced with a single purple structure in the center of the API. West Bay Drive is labeled.
1991	Aerial Photograph	USGS-Earth Explorer	One or multiple structures are present in the API.
1992	Aerial Photograph	WSDOE	A massive industrial complex with a similar roof style and color is present on most of the available land area within the API.
1959 (1995 ed.)	Topographic Map: Tumwater, WA (1:24,000)	USGS	There is now one large structure present in the API and no additional structures present. West Bay Drive is labeled. The railroad track through the API is no longer present. The track traveling N/S east of the API is still present.
1997 (2000 ed.)	Topographic Map: Tumwater, WA (1:24,000)	USGS	Large structure present in API. Area east of API is labeled as sand. West Bay Drive is to the west of the API.
2000	Aerial Photograph	WSDOE	All of the structures within the API have been removed to ground level. Extensive concrete foundations remain on site.
2005	Owner History	Thurston County Assessor	Hardel Mutual Plywood Corp. listed as buyer of Quit Claim Deed
2006	Aerial Photograph	WSDOE	No change from the previous aerial photograph.
2011	Topographic Map: Tumwater, WA (1:24,000)	USGS	There is a road that branches off of West Bay Drive and goes along the eastern border of the API until it connects back to West Bay Drive. The new road and West Bay Drive are labeled as local roads.
2014	Topographic Map: Tumwater, WA (1:24,000)	USGS	Road to the east of the API is labeled as W. Bay Dr. NW. It and the road around the API are labeled as local roads.
2016	Aerial Photograph	WSDOE	The concrete foundations have been removed.
2017	Topographic Map: Tumwater, WA (1:24,000)	USGS	No change from the previous map
2020	Topographic Map: Tumwater, WA (1:24,000)	USGS	Road around the eastern portion of the API is not visible in this map.

The earliest reviewed map of the API is the Bureau of Land Management General Land Office Records ([BLM GLO] 1854) map (Figure 7). At this time, the west side of the property is located on land and the eastern half is situated in the waters of Budd Bay; two small structures may be illustrated in the southwest corner of the API and a larger structure just outside the API. The BLM GLO (1854) map indicates the API was located in the easternmost extent a Donation Land Claim (DLC) which totaled 324.95 acres and was assigned to (William) Moses and Mary Ann Hurd. The Hurd's were one of Olympia's early settler families. The R.L. Polk and Company's (1893) city directory indicates that Moses Hurd was a teamster at Western Mill Company. An 1856 United States Coastal Survey shows the edge of the shoreline and the mudflat within the API (Figure 8). Later in 1873, another United States Coastal Survey map shows the mudflat edge as well as a shipping channel located in the eastern portion of the API (Figure 9).

Around 1890, the API was developed as the "West Side Mill" (Figure 10). At this time the mill included two smoke stacks and built on an extension into Budd Inlet (Lange ca. 1890). Materials for the mill were imported and exported via the Port Townsend Southern railroad which, nearest the API, was built mostly on pilings (Lange ca. 1890). That same year, a 1890 map shows the bathymetric lines within and adjacent to the API (Figure 11).

In 1892, the northwest portion of the API is illustrated as occupied by a large structure and wharf that extends east into Budd Bay; the area is labeled "wharf and saw mill" (Figure 12). At this time it is also illustrated that a 3.65 m (12 ft) and 76.2 m (250 ft) wide channel was proposed across the Budd Bay tide flats and Percival's Wharf had been extended to almost the same northern reaches of the bay.

In 1894, the API continues to be utilized as a saw mill (Figure 13). At this time, it appears the that the wharf detailed in the USACE (1892) map had either been removed and the area filled or the wharf had been expanded. Two buildings are illustrated as located on the wharf or filled landform. The map also indicates that a "westside waterway" running east to west approximately 132.7m (435.37ft) north of the API was planned.

The next depiction of the API is on the Sanborn Map Company (1924) map (Figure 14). At this time the API is labeled as Henry McCleary Timber Company. Generally, the buildings associated with the mill were concentrated to the northern half of the API and included offices, sawmills, auto garages, planers, lumber platforms, a blacksmith, an oil house, engine rooms, and a wood bin. Conveyor systems connected a small island to the east of the uplands area labeled "refuse fire" (Pioneer Technologies Corporation 2020: 3-7). The southern half of the API was generally used for log storage and planning at this time. Immediately west of the API was a railroad running north and south that was labeled "N[orthern] P[acific] R[ailwa]Y Spur Tracks;" at the southern portion of the API a spur extended from this spur and ran northeast before splitting again with one running north throughout the center of the API and another running northeast and expanding "50 feet beyond." West of the central spur the area is described as "platform 8'" and east of the central spur the area is labeled "hydraulic fill;" east of the fill the area is labeled "ruins of fire."

By 1945, the Sanborn Map Company (1924 [1945 modified]) map indicates that buildings in the northern half of the API have been removed and being dismantled; and only a few small buildings remained in the southern portion of the API (Figure 15). The southern portion of the API, at this time, is labeled "TLM Co" which is likely the Tumwater Lumber Mill.

By 1949, pilings are visible on the maps east of the API, and structures are present in the API; east of the API is labeled "Dredged 27 feet 1947" (Figure 17). By 1959, several buildings are illustrated as present in the API again (Figure 16). By 1968, the API is labeled as occupied by the Hardel Mutual Plywood Corporation (Sanborn Map Company 1968; Figure 15). Hardel Mutual Plywood Corporation operated as a plywood manufacturing facility in the project area until 1996 when a fire severely damaged buildings within the API. Following the 1996 fire the presence of hazardous chemicals was detected and the remaining structures were demolished, and in 2010, approximately 28 tons of stained concrete and 23,331 tons of petroleum- and PAH- impacted soil and debris was removed from three areas of the property and disposed of at the Weyerhaeuser Regional Landfill.

Excavations ranged in depth from 1.83 m (6 ft) to 4.88 m (16 ft) below ground surface, but no specific location depths were recorded (Pioneer Technologies Corporation 2020, WSDOE 2012).

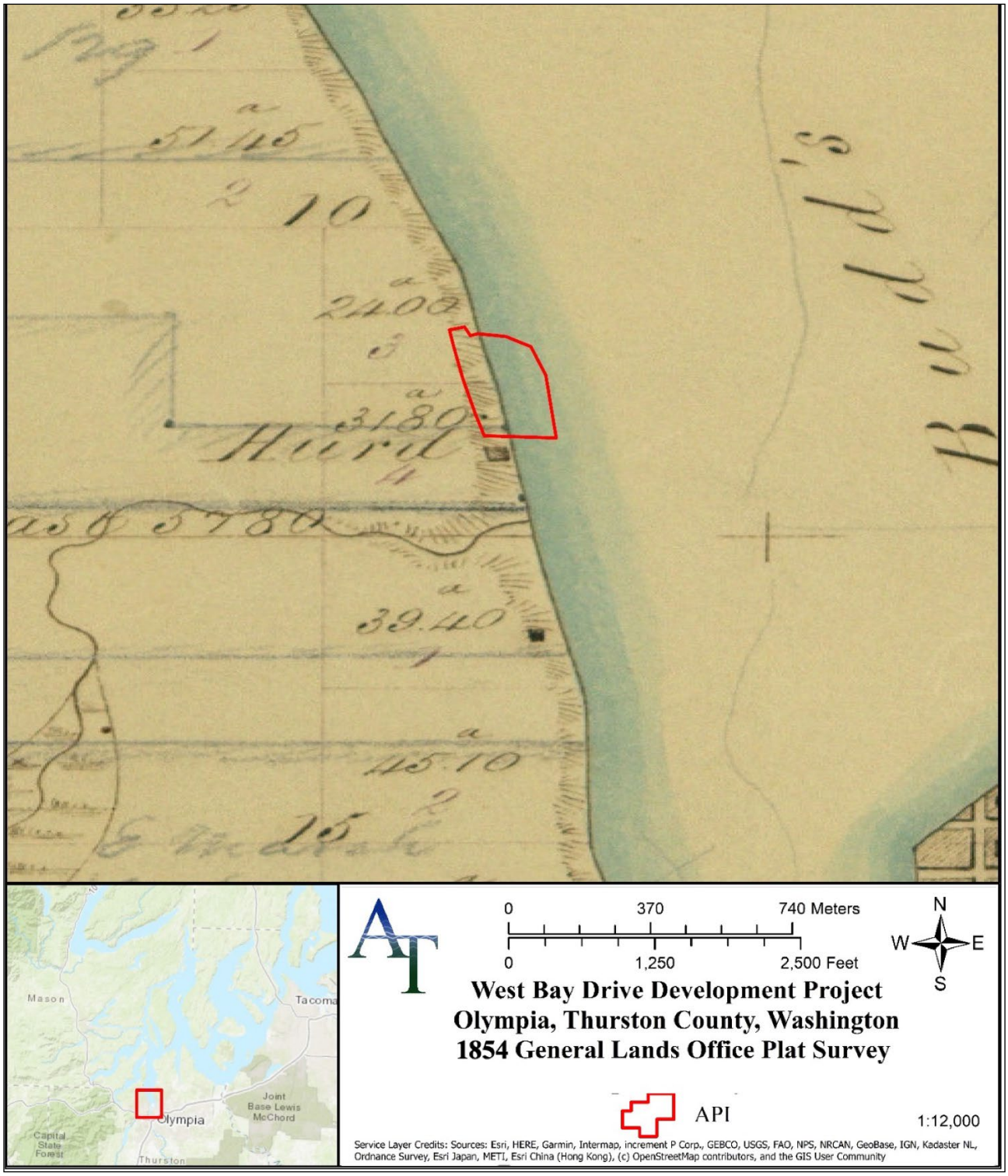

Figure 7. BLM GLO (1854) map detailing the location of the API.

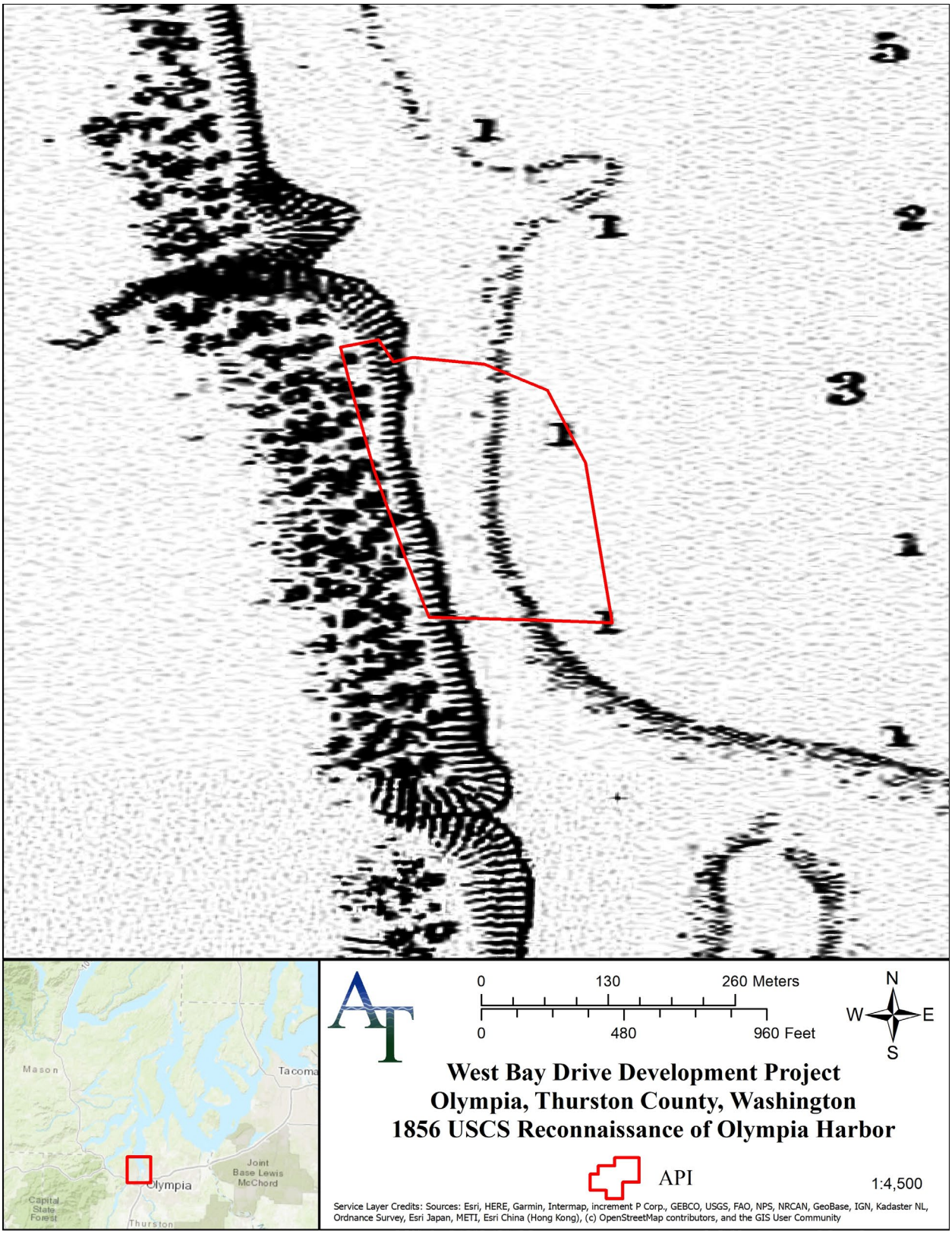

Figure 8. United States Coastal Survey ([USCS] 1856).

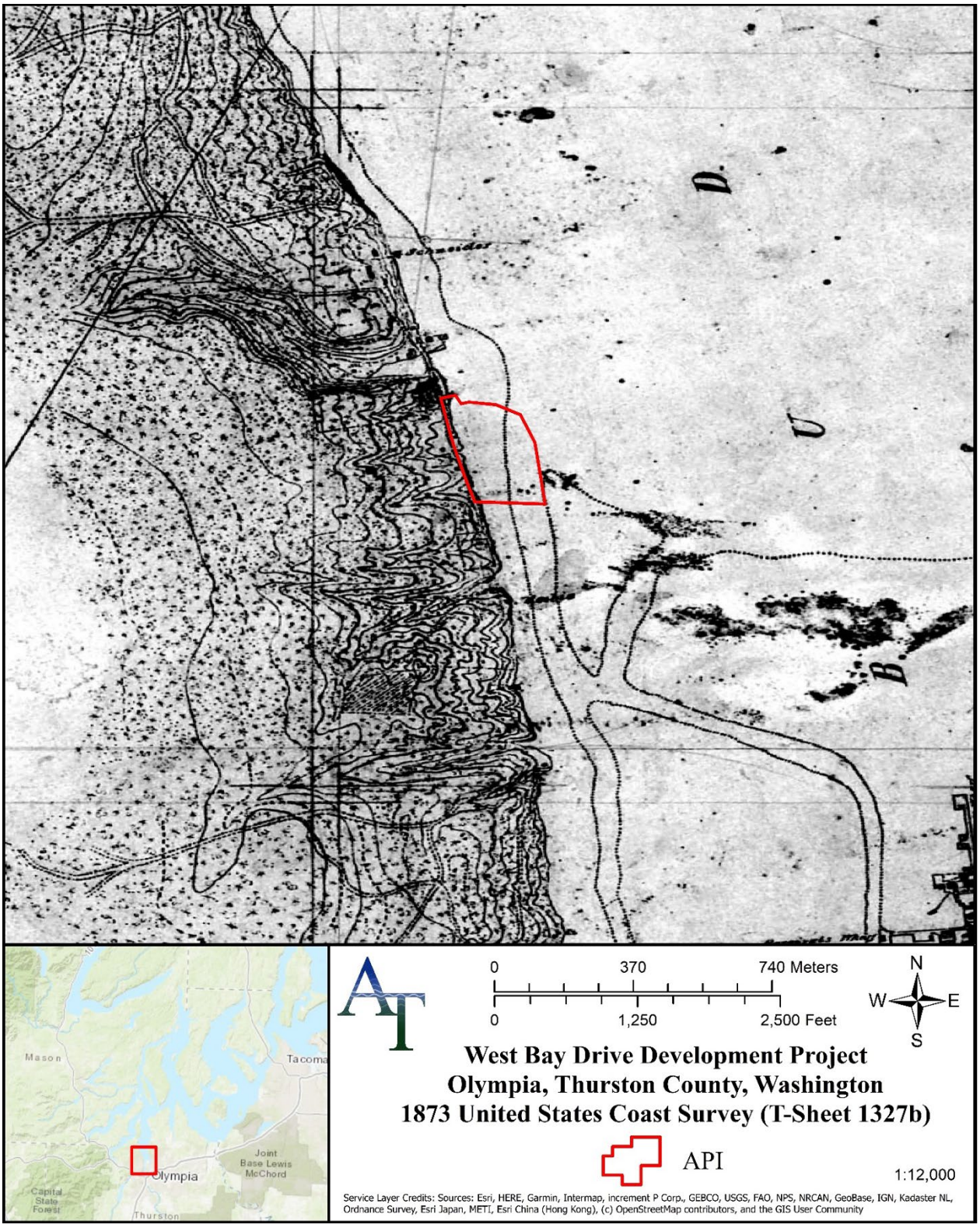

Figure 9. United States Coast & Geodetic Survey (1873) T-Sheet detailing the location of the API.

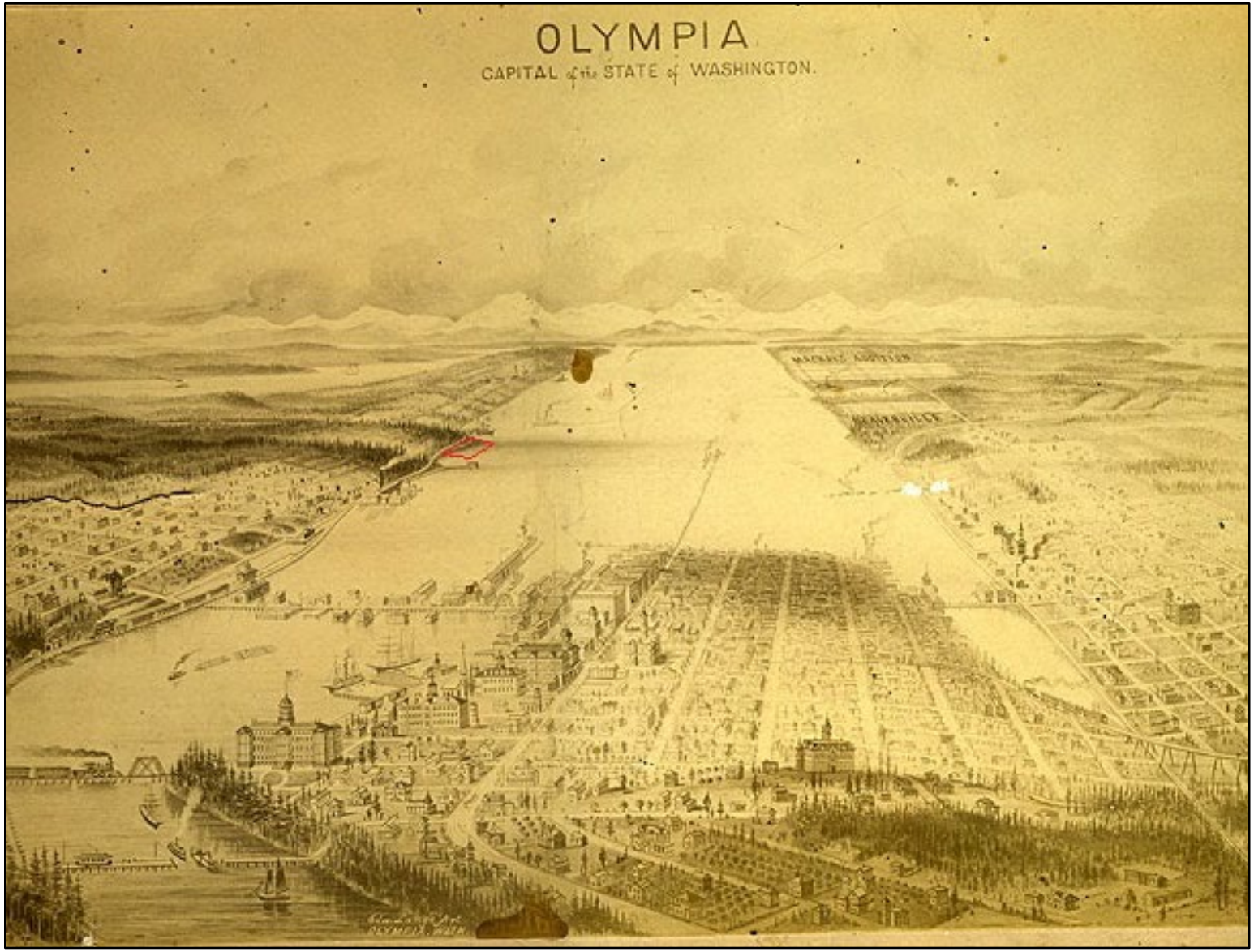

Figure 10. Ca. 1890 map detailing location of the API (Lange ca. 1890).

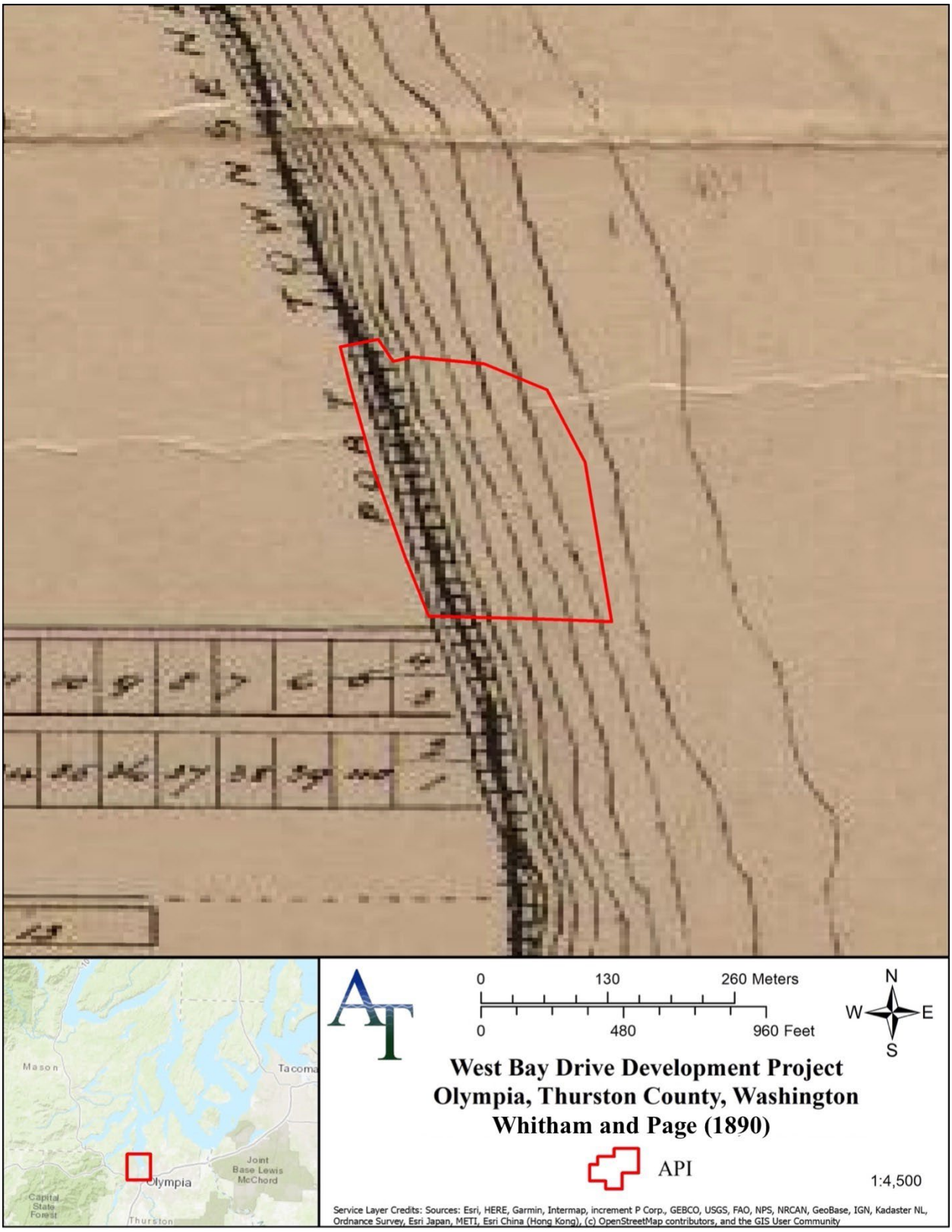

Figure 11. Whitham and Page (1890) map of Olympia and surroundings detailing the location of the API.

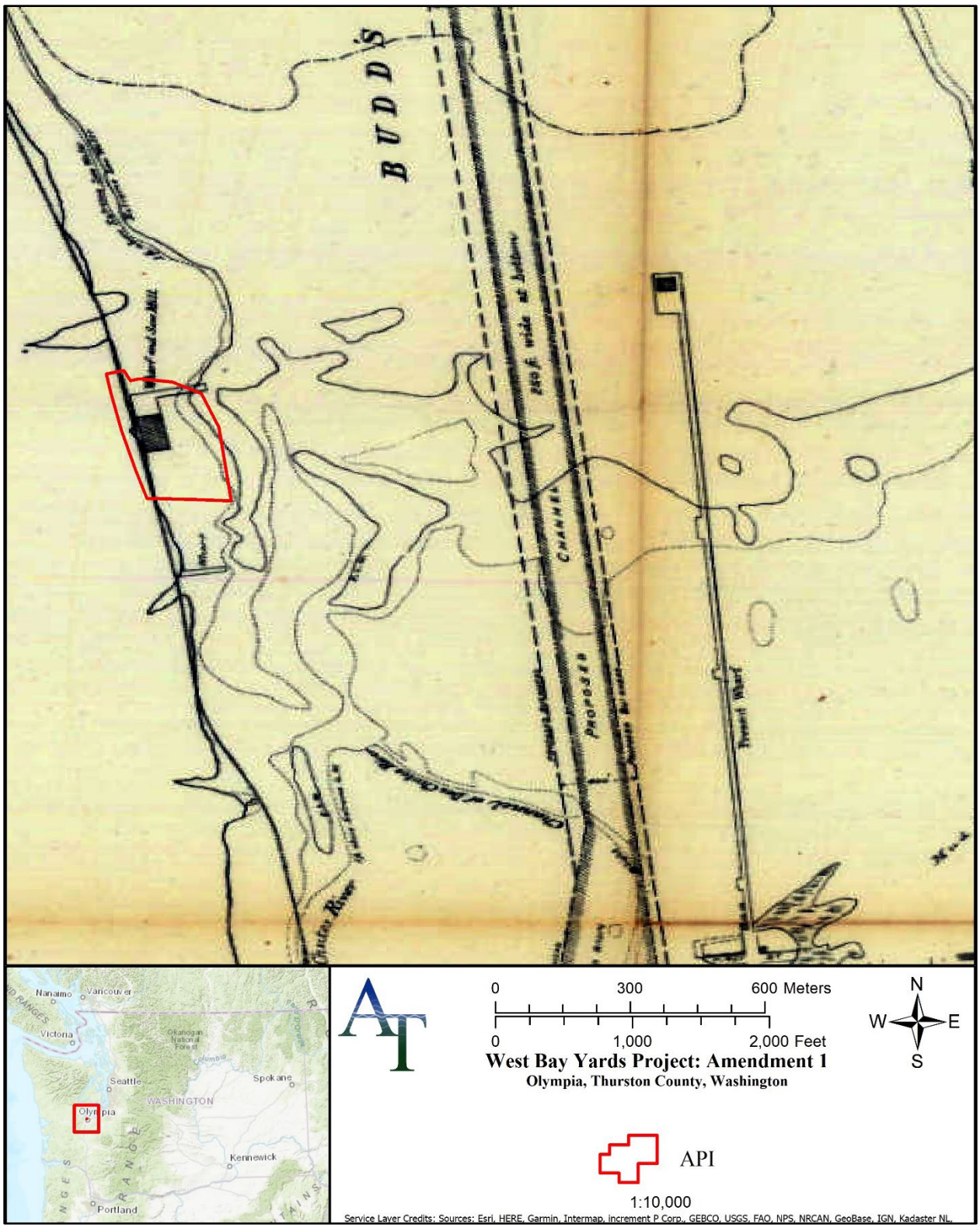

Figure 12. USACE (1892) detailing the location of the API. Note the API is the location of a "wharf and sawmill."

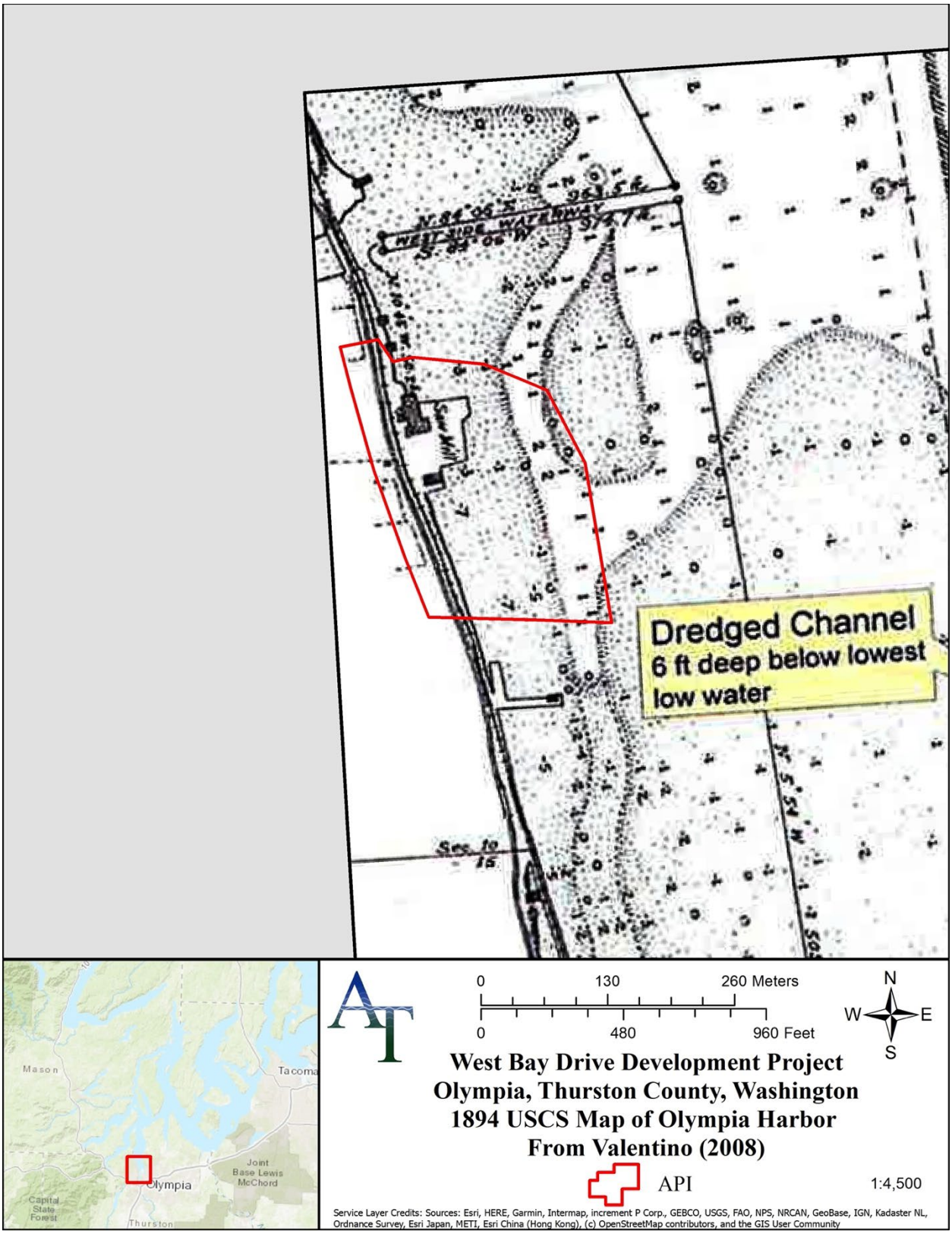

Figure 13. Plan of Olympia Harbor, Washington Map (1894) from Valentino (2008) and cropped by ATCRC.

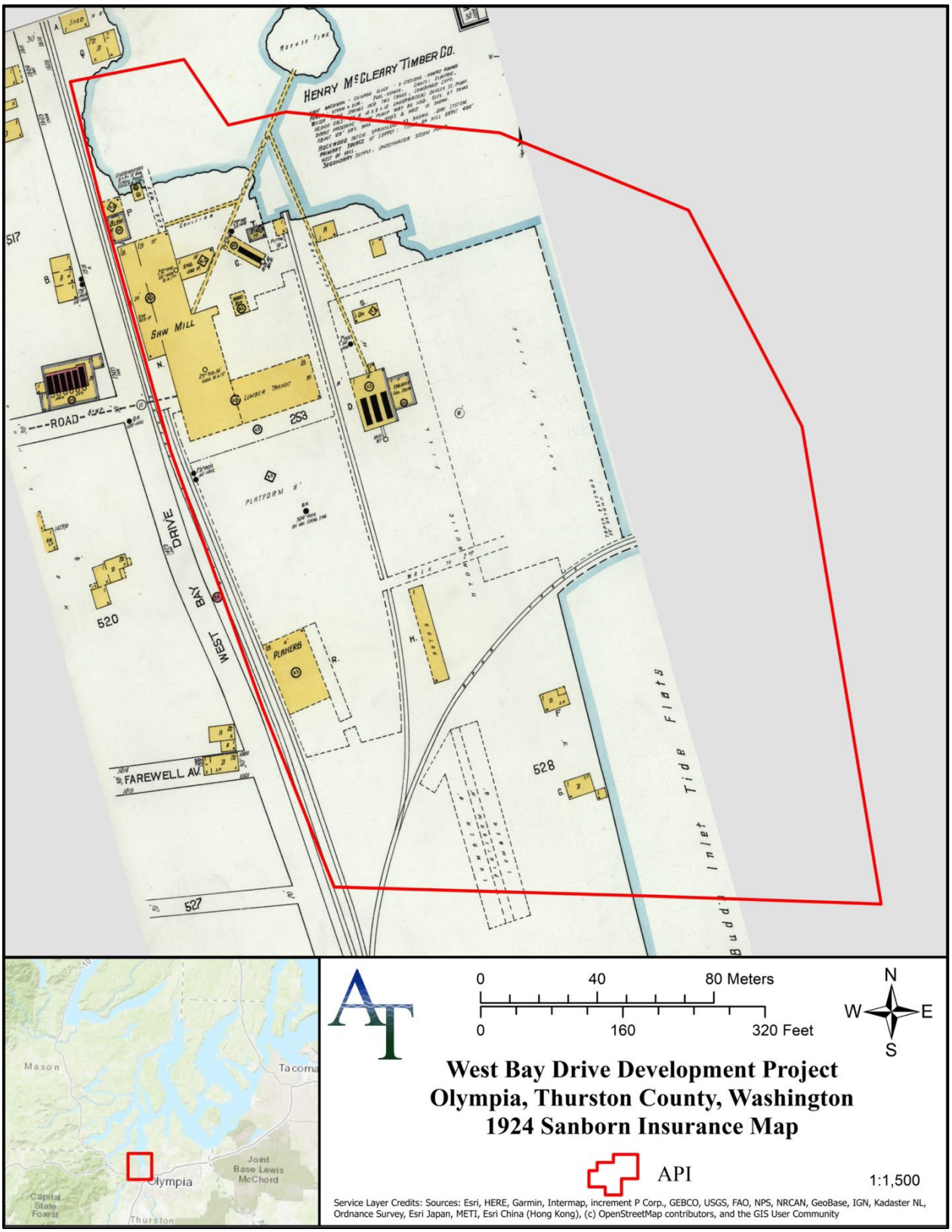

Figure 14. Sanborn Map Company (1924) map detailing the location of the API.

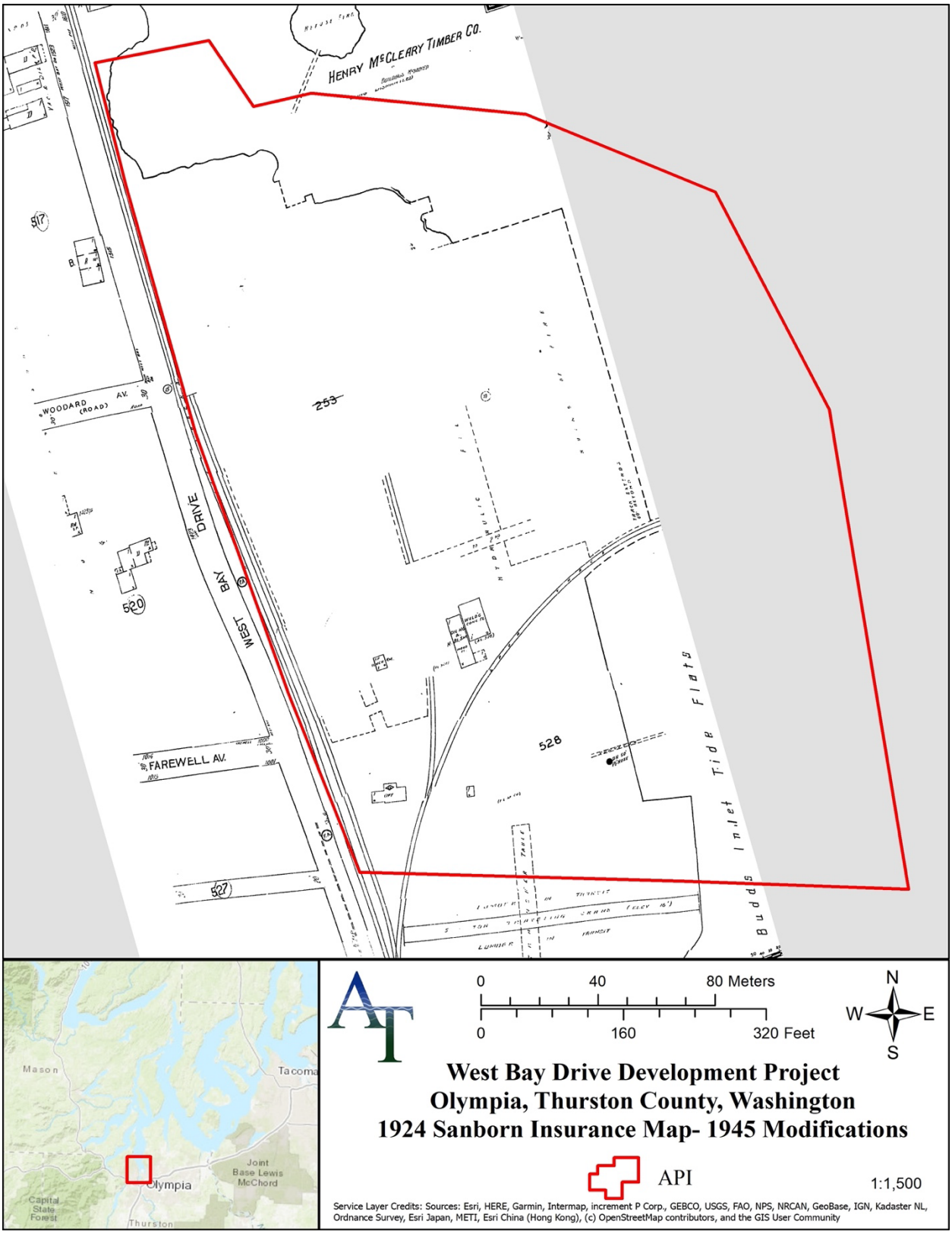

Figure 15. Sanborn Map Company (1924 [1945 modified]) detailing the location of the API.

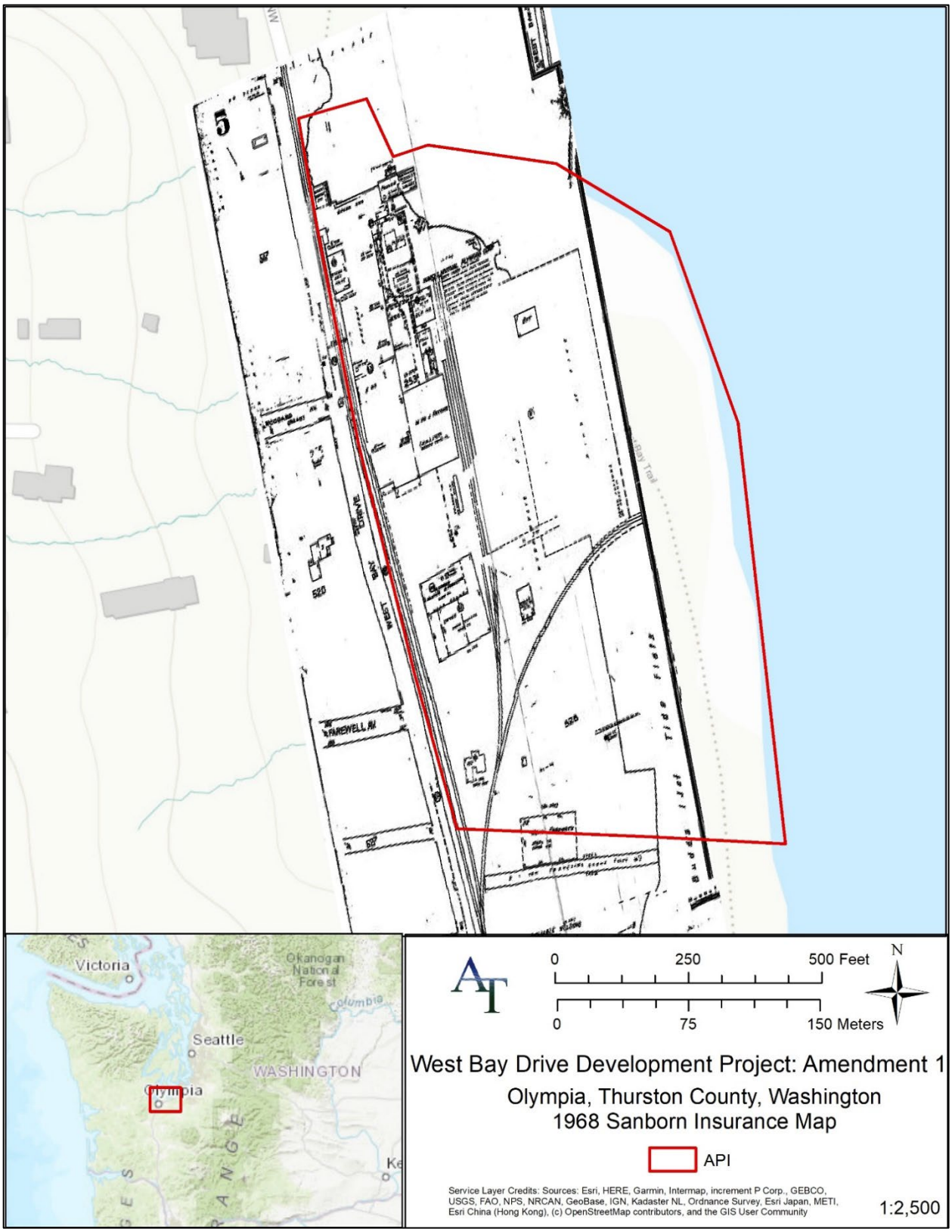

Figure 16. Sanborn Map Company (1968) detailing the location of the API (courtesy of Tetra Tech [1999]).

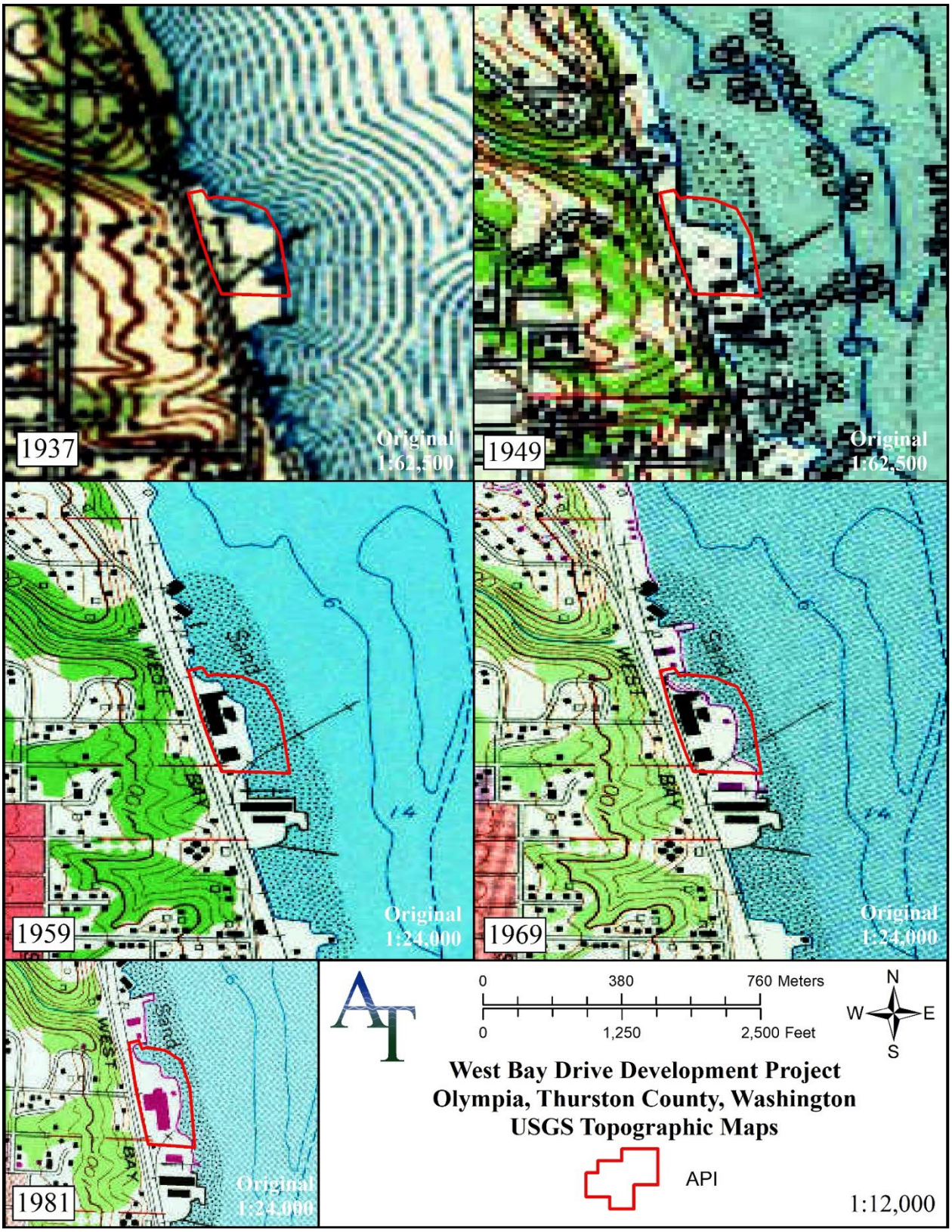

Figure 17. USGS (1937, 1949, 1959, 1969, and 1981) illustrating the location of the API.

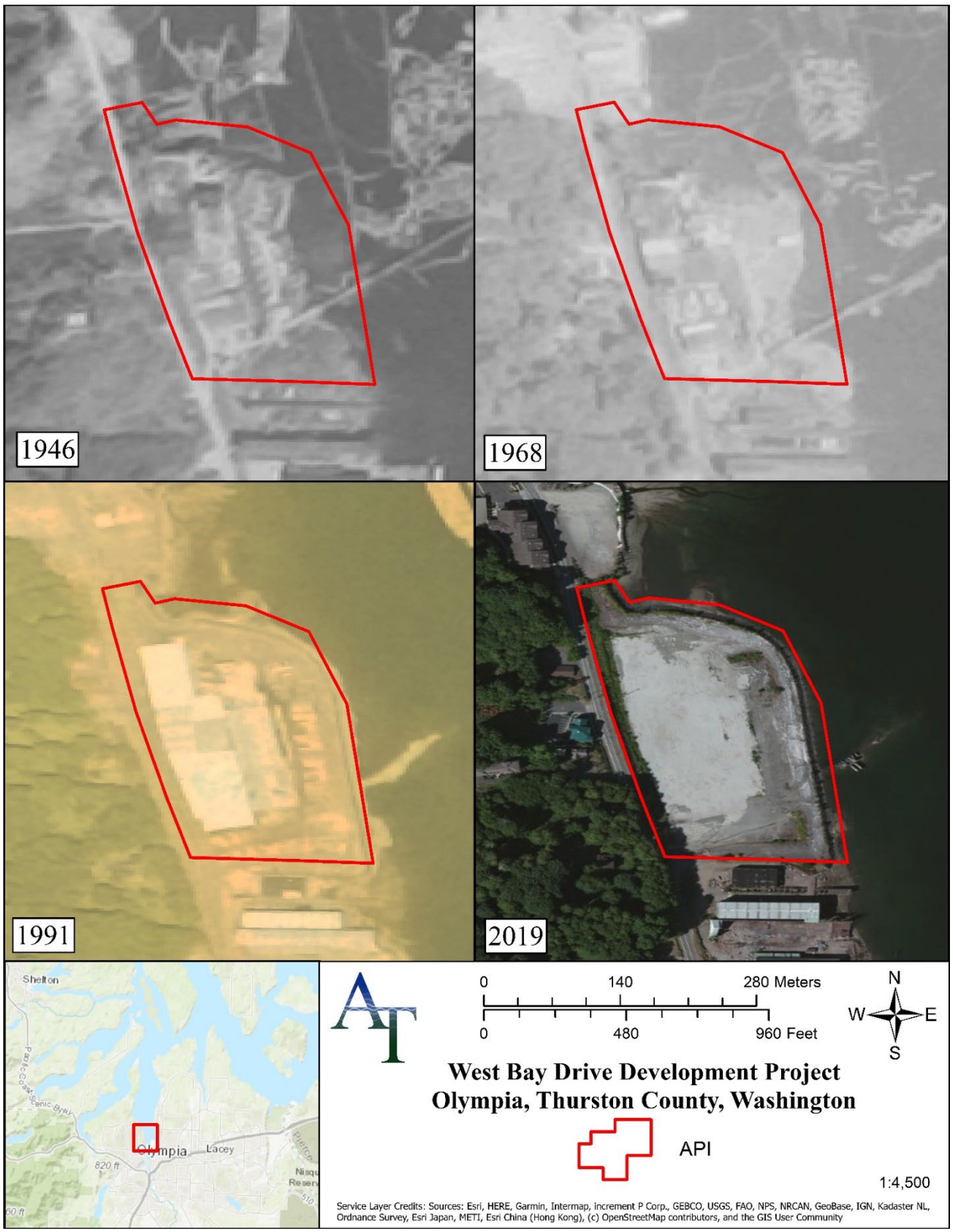

Figure 18. USGS (1946, 1968, 1991, and 2019) illustrating the location of the API.

WISAARD

DAHP's WISAARD database was reviewed to identify cultural resource studies, archaeological sites, registered properties, properties, cemeteries, and traditional cultural places (TCPs) that have been previously recorded within a one-mile radius of the API.

Cultural Resource Studies

According to WISAARD, 31 cultural resource surveys were completed within a one-mile radius of the API (Table 4). Of these, one was completed in the API: de Vry et al (2021). de Vry et al (2021) consisted of desktop review and pedestrian survey completed by ATCRC for an earlier phase of this project. At the time of this study, ground surface visibility was considered poor as it was covered entirely by either a concrete pad or crushed concrete. No standing structures or visible archaeological materials were observed within the API but remnants of pilings were observed east of the property (de Vry et al. 2021). It was recommended that no NRHP-eligible resources were present in the API and that a monitoring and inadvertent discovery plan be followed.

Table 4. Previous cultural resources surveys conducted in, and within a mile of the API.

NADB	AUTHOR (DATE)	TITLE	FINDINGS	DISTANCE FROM API
1695707	de Vry et al (2021)	Cultural Resource Desktop Review of the West Bay Yards Project, Olympia, Washington	Recommends that no NRHP-eligible resources will be affected in project and a monitoring and inadvertent discovery plan	Within the API
1349586	Smits (2007)	Archaeological Survey for the BNSF Olympia Abandonment Project, Olympia	Recommend that activities be restricted to the fill and recommends that the proposed project will have no effect on archaeological resources and no further work is recommended	0.06 mile
1352490	Valentino (2008)	Cultural Resources Assessment of West Bay Park, Phase I	Three cultural resources were identified. Archaeological monitoring is recommended and a monitoring and discovery plan.	0.30 mile
1353889	Trautman (2008)	Cultural Resources Survey Report Port of Olympia Intermodal Infrastructure Enhancement Project Washington State Department of Transportation Thurston County, Washington	Port of Olympia Office building adjacent to the APE is eligible for listing on NRHP. Railroad within APE is not eligible. No adverse effect to historic properties.	0.44 mile
1353889	Trautman (2008)	Cultural Resources Survey Report Port of Olympia Intermodal Infrastructure Enhancement Project Washington State Department of Transportation Thurston County, Washington	Port of Olympia Office Building located adjacent to project is eligible for NRHP. The railroad within the APE is not eligible for NRHP, and no adverse effect to historic properties.	0.49 mile

NADB	AUTHOR (DATE)	TITLE	FINDINGS	DISTANCE FROM API
1680153	Diveley (2010)	SR 520, 1-5 to Medina: Bridge Replacement and HOV Project; Archaeological Monitoring Report for Geotechnical and Environmental Testing at the Port of Olympia and Port of Tacoma, Washington	No further archaeological investigation is recommended unless project changes.	0.50 mile
1684210	Van Galder (2013)	Archaeological Monitoring for the Port of Olympia's Security and Surveillance Project, Olympia	Any ground-disturbing activities north of southern boundary should not require archaeological work, but any south of southern boundary should be monitored as well as any north of southern boundary that exceeds 12 ft.	0.53 mile
1689854	Munsell (2017)	NRCS Cultural Resources Survey for the Garden Raised Bounty Project, EQIP 2017 Project, Contract No. 7405461713H	No historic properties affected and that the project proceed as planned.	0.58 mile
1695666	Hibdon (2021)	Cultural Resources Survey for The Orchard–17 Lot Infill Subdivision Project at 2210 Walnut Road NW (Parcel No. 67400004401), Olympia, Washington	Inventory and evaluation of one historical-period single family residence and recommends it not eligible for NRHP. No impacts will occur to archaeological, historical or cultural resources.	0.61 mile
1686682	Hudson (2008)	Preliminary Cultural Resources Assessment for the Percival Landing Major Rehabilitation Project, Olympia	Recommends completion of NRHP assessment and archaeological monitoring and preparation of monitoring and discovery plan	0.65 mile
1691687	Amell (2018)	Cultural Resource Assessment of the Columbia Place Development Project, Thurston County, Washington	No cultural resources were encountered and determined unlikely that any cultural materials or features will be impacted and recommends an Inadvertent Discovery Plan	0.72 mile
1690208	Kramer (2018)	A Cultural Resources Assessment for the Woodruff Park Sprayground Project Olympia	No identified archaeological resources and they updated the existing Historic Property inventory form and recommended it not eligible	0.74 mile
1695749	Amell (2021)	Cultural Resource Monitoring Summary Memorandum for the Harrison Avenue Stormwater Retrofit Project, Olympia, Thurston County, Washington	No further work is recommended but if construction design changes or additional ground-disturbing work is required, consultation should be reinitiated.	0.76 mile
1353977	Valentino (2009)	Cultural Resources Assessment for the Percival Landing Major Rehabilitation Project, Section A	Neither historic property were affected and no archaeological sites were identified, monitoring recommended.	0.78 mile

NADB	AUTHOR (DATE)	TITLE	FINDINGS	DISTANCE FROM API
1695539	Matthews (2020)	Archaeological Monitoring and Survey for the Market Flats Development, Olympia, Thurston County, WA	An archaeological shell matrix deposit was impacted and a Stop Work order was issued. An archaeological survey of the property was requested before project construction work could resume and early historic archaeological materials were identified during survey in July 2020	0.84 mile
1695539	Matthews (2020)	Archaeological Monitoring and Survey for the Market Flats Development, Olympia, Thurston County, WA	An archaeological shell matrix deposit was impacted and a Stop Work order was issued by the City. Archaeological survey of property was request and early historic archaeological materials were identified during archaeological survey.	0.84 mile
1340573	Murphy (2001)	LOTT Southern Connection Project 1: Archaeological Resources Monitoring Thurston County, Washington	Identified isolated historic artifacts in historic period fill that had no reliable provenance. Recommends archaeological monitoring of construction excavations.	0.85 mile
1344801	Murphy (2002)	Letter to Tom deLaat Regarding LOTT Contract 4, Areas Recommended for Archaeological Monitoring	Recommends archaeological monitoring for the entire Southern Connection Project	0.85 mile
1345716	Murphy (2000)	Letter to Tom deLaat Regarding Archaeological Assessment of the Proposed LOTT Southern Connection Project Changes in Alignment	Recommends archaeological monitoring within 100 ft of former location of the Olympia Brewing Company Bottling works. Do not recommend monitoring for the remainder of the proposed change.	0.85 mile
1695056	Viloudaki (2020)	Cultural Resource Assessment of the Unwin Bulkhead Replacement Project, Olympia, Thurston County, Washington	A domestic refuse scatter was identified. Recommends No effect on Historic Properties and the adoption of an inadvertent discovery plan.	0.85 mile
1694664	Huber (2020)	Cultural Resource Assessment for the Madrone Development Project, Olympia, Thurston County, Washington	45TN522 is eligible under NRHP Criterion D. Recommends work proceed in location outside 45TN522. If the site cannot be avoided, recommends a Phase III data recovery be completed in advance of any construction activities.	0.89 mile
1684478	Diedrich (2014)	Archaeological Monitoring for LOTT Alliance Primary Sedimentation Basins Project, Earthwork Phase I, Olympia	The project has had no effect on historic properties.	0.90 mile

NADB	AUTHOR (DATE)	TITLE	FINDINGS	DISTANCE FROM API
1345630	Robbins (1997)	Field Reconnaissance for the Proposed LOTT Capitol Lake Pump Station Upgrade Project	Historic archaeological site was identified but no eligible for listing on NRHP and three archaeological sites were in relation to projects boundaries Recommend development of Treatment and Monitoring Plans to determine the site eligibility for listing on NRHP	0.92 mile
1344804	Murphy (2003)	FINAL: Deschutes Parkway Earthquake Repair Project Archaeological Resources Monitoring Report	Recorded one shell matrix site that may be eligible for listing on NRHP, recommends archaeological site be avoided.	0.92 mile
1687399	Dellert (2015)	Cultural Resources Inventory for the East Bay Drive NE Stormwater Retrofit Project, City of Olympia	Identified no cultural materials.	0.92 mile
1691630	Amell (2017)	Cultural Resource Assessment for the Views on 5th Development Project Olympia, Thurston County, Washington	Unlikely any cultural materials or features will be impacted, no further review is recommended, and recommends an inadvertent discovery plan.	0.92 mile
1684590	Chambers (2014)	Cultural Resources Assessment for Intercity Transit's Olympia Center Expansion Project, Olympia	Seven historic properties were accessed and determined not eligible for listing on NRHP. No adverse effect on structure near APE.	0.93 mile
1683926	Major (2013)	Archaeological Inventory Survey Report Mission Creek Restoration Project City of Olympia	Early historic era site, AD 1848-1860, not eligible for NRHP. Recommends minimize or mitigate anticipated effects of the project include changing to location of ground disturbance or doing data recovery excavation.	0.93 mile
1344803	Murphy (2003)	FINAL: Deschutes Parkway Earthquake Repair Archaeological Resources Monitoring	Does not extend further archaeological recommendation for the Deschutes Parkway Earthquake Repair Project and recommends that future construction plans avoid the Lower Deschutes Basin Shell Matrix Site (45TN271).	0.94 mile
1345689	Murphy (2000)	Letter to Tom deLaat Regarding Proposed LOTT Capitol Lake Pump Station Upgrade, Pipeline Auger Monitoring and Assessment of Four Additional City Blocks in Downtown Olympia	Recommends that professional archaeologist monitor subsurface excavations.	0.95 mile

NADB	AUTHOR (DATE)	TITLE	FINDINGS	DISTANCE FROM API
1692607	Van Galder (2018)	Archaeological Survey of Priest Point Park, Olympia, Washington	Located 10 archaeological sites and relocated four of the five previously documented archaeological sites and identified and documented six previously unknown sites.	1 mile

Archaeological Sites

No archaeological sites have been previously recorded in the API and 20 have been previously recorded within a one-mile radius (Table 5). Three sites, 45TN442, 45TN445, and 45TN441 are all close to the API. The closest site, 45TN442, is a row of piles associated with the Reliable Steel site; this site is located approximately 0.07 miles south of the API (Christopherson 2012a). Site 45TN445 is the remnants of the Delson Lumber mill including a pier structure and log pool; this site is located approximately 0.08 mile from the API (Christopherson 2012b). Site 45TN441 consists of creosote wood piles, wood cross beams, and dolphins (Christopherson 2012c); this site is located approximately 0.13 miles from the API. Due to proximity, none will be affected by this project.

Table 5. Previously documented archaeological sites within a one-mile radius of the API.

AUTHOR (DATE)	SMITHSONIAN	DESCRIPTION	NRHP ELIGIBILITY (DATE)	DISTANCE FROM API
Christopherson (2012)	45TN442	18 creosote wood piles	Potentially eligible	0.07 mile
Christopherson (2012)	45TN445	Concrete platforms, creosote timber framing and creosote pilings, pier structure, and log pool, brick debris and piles of cobble, ceiling fire suppression sprinkler, and large steel drive chain embedded in a piece of concrete	Not evaluated	0.08 mile
Christopherson (2012)	45TN441	Twenty-two sets of two creosote wood piles and wood cross beam, four dolphins with a single pile in the center	Potentially eligible	0.13 mile
Valentino and Matson (2008)	45TN381	Pilings, machinery foundation, cribbing and dock infrastructure, building foundation debris, historic debris and a burner platform	Potentially eligible	0.25 mile
Christophers on (2012)	45TN440	16 creosote wood dolphins and 9 single creosote wood piles, 4 piles	Potentially eligible	0.35 mile
Stevenson at al. (2008)	45TN380	Dense shell layers,	Not evaluated	0.40 mile
Liddle (1999)	45TN239	Historic debris concentration	Potentially eligible	0.81 mile
Cole (2002)	45TN250	Shell midden and historic debris concentration	Not evaluated	0.84 mile
Kavanaugh (1984)	45TN115	Shell matrix, cc flakes, seal bone, charcoal, fire cracked rock, brick, metal, leather, glass, moon snails, clams, chopper	Not evaluated	0.85 mile
Matthews (2020)	45TN519	Two shell middens, and a historic debris concentration	Determined eligible	0.85 mile

AUTHOR (DATE)	SMITHSONIAN	DESCRIPTION	NRHP ELIGIBILITY (DATE)	DISTANCE FROM API
Harvey and Stilson (1985)	45TN201	Historic debris concentration	Potentially eligible	0.86 mile
Liddle (1999)	45TN238	58 log pilings. 4 metal eye rods, rotted lumber, tile sewer pipe, concrete sewer pope, concrete slab, pile of dredged spoils, and three possible coffer dams.	Determined eligible	0.86 mile
Amell (2020)	45TN524	Historic debris concentration	Determined not eligible	0.88 mile
Kelly (2019)	45TN511	Small "dump" of bottles.	Not evaluated	0.88 mile
Morris (2021)	45TN522	Shell midden, charcoal, charred wood fragments, faunal remains, historic artifacts, and small amounts of fire-cracked rock in dark gray matrix	Determined eligible	0.89 mile
Dinubilo et al. (2020)	45TN500	Shell midden with shellfish, fire-affected rock	Potentially eligible	0.94 mile
Major (2012)	45TN450	Fire cracked rock, glass, and ceramics	Potentially eligible	0.95 mile
Jolivette (2018)	45TN498	Shell midden	Not evaluated	0.98 mile
Jolivette (2018)	45TN502	Historical-period Chalet and a burn pile with Historic debris concentration	Potentially eligible	0.99 mile
Wessen (1998)	45TN234	Shell midden, marine shell, fire-cracked rocks, and charcoal	Not evaluated	1 mile

Registered Properties

No registered properties (i.e. properties that have been listed on the NRHP, the Washington Heritage Register [WHR], or the Washington Heritage Barn Register [WHBR]) have been previously recorded in the API and 12 have been previously recorded within a one-mile radius (Table 6). The nearest is the Lane House located at 1205 West Bay Drive approximately 0.09 mile from the API. The Lane house was constructed in 1891 and is listed on the WHR. Due to proximity it will not be impacted by this project.

Table 6. Registered properties previously recorded within a one-mile radius of the API.

PROPERTY ID	NAME	LOCATION	BUILT DATE	REGISTER (YEAR)	DISTANCE FROM API
45TN93	Lane, George B., House	1205 West Bay Drive, Olympia, WA	1891	WHR (1979)	0.09 mile
45TN92	Giles, Charles, House	727 West Bay Drive, Olympia, WA	ca. 1883	WHR (1974)	0.33 mile
45TN343	Georgia-Pacific Plywood Company Office	600 Capitol Way North, Olympia, WA	1952	NRHP and WHR (2007)	0.70 mile
45TN297	Zeigler's Welding and Hitch Shop, Inc.	322 North Capitol Way, Olympia, WA	1910	WHR (1997)	0.82 mile
45TN299	Sand Man (Tug Boat)	Percival Landing, Olympia, WA	1908	NRHP and WHR (1998)	0.85 mile

PROPERTY ID	NAME	LOCATION	BUILT DATE	REGISTER (YEAR)	DISTANCE FROM API
45TN112	Old Olympia City Hall	West State Street and North Capitol Way, Olympia, WA	1912	WHR (1984)	0.89 mile
45TN307	The Daily Olympian	103 East State, 120-122 North Capitol Way, Olympia, WA	1930	WHR (1987)	0.92 mile
45TN304	Barnes Building-Knights of Pythias	211 West 4th Ave, Olympia, WA	ca. 1914	WHR (1986)	0.94 mile
45TN276	Meyer House	1136 East Bay Drive, Olympia, WA	1910	NRHP and WHR (1985)	0.94 mile
45TN108	Mottman Building	101-105 North Capitol Way, Olympia, WA	1888 and 1911	NRHP and WHR (1982)	0.95 mile
45TN305	Capital National Bank Building	402 South Capitol Way, Olympia, WA	1922	WHR (1995)	0.98 mile
45DT192	Olympia Downtown Historic District	State Avenue - 8th Avenue - Columbia Street - Franklin Street	1850-1952	NRHP and WHR (2004)	1 mile

Properties

No properties (i.e. historic buildings and/or structures aged at least 50 years old) have been recorded in the API and a total of eight have been previously recorded within a 0.25 mile radius of the API (Table 7). The nearest recorded property is one of two mid-century industrial buildings located on the property immediately south of the project area. Properties 489356 and 159307 were constructed in 1966 and 1942 respectively and are both partially enclosed steel beam industrial spaces with incomplete corrugated steel roofing and siding. Neither property will not be impacted by this project.

Table 7. Properties previously recorded within 0.25 mile of the API.

PROPERTY ID	COMMON NAME	ADDRESS	BUILT DATE	ELIGIBILITY (DATE)	DISTANCE FROM API
489356	Industrial Building	1218 West Bay Dr NW	1966	Not evaluated (2020)	0.01 mile
159307	Industrial Building	1218 West Bay Dr NW	1942	Not evaluated (2020)	0.02 mile
489843 (18884)	Dr. Alonzo Bixby, House	1429 West Bay Dr NW	1870	City of Olympia Register (1985)	0.02 mile
20156	Woodard, Harvey, House	1114 Woodard Ave NW	1860	Not Determined (2003)	0.05 mile
492678	Residence	1103 West Bay Dr NW	1919	Not evaluated (2020)	0.17 mile
484550	Residence	1013 West Bay Dr NW	1901	Not evaluated (2020)	0.19 mile
18885	Yantis House	1855 Northwest Yantis St	1929	City of Olympia Register (1985)	0.22 mile
484444	Residence	1516 NW Grove St	1928	Not evaluated (2020)	0.23 mile

Cemeteries

No cemeteries (or burials or funerary items) have been previously recorded in, or within a one-mile radius of, the API.

TCPs

No TCPs have been previously recorded in, or within a one-mile radius of, the API.

Predictive Model

According to WISAARD the API is located in a very high probability area for cultural resources to be present.

Objectives and Expectations

The objective of this cultural resource assessment was to identify any in-situ cultural resources that may exist within the API and, if so, to determine if the resources are significant and if the proposed project would affect such resources.

Based on ATCRC's background review of environmental and cultural contexts, previously recorded cultural resource studies and sites, and review of the WISAARD state-wide site probability model, the API is considered to be located in an area of very high potential for the presence of cultural resources.

Types of precontact and ethnographic artifacts that could be encountered within the API might include fire cracked rock, post holes, middens, fish and animal bones, seeds and nuts, and/or stone tools. Trails, rock art, culturally modified trees, may also be present.

Types of historic artifacts that could be in the API might include evidence of early Euro-American settlement activities, timber harvesting, sawmills, farmsteads, shellfishing and/or processing, railroads, and road systems.

FIELD INVESTIGATIONS

Field investigation for this project was conducted by Colin Higashi (ATCRC Cultural Resource Specialist), Carson Rouse (ATCRC Cultural Resource Specialist) and overseen by Sarah Amell (ATCRC Principal Investigator) between October 24 - 27, 2022 and November 7, 2022 during cool and rainy weather conditions.

Field investigations included direct-push boring and trench excavations. Direct-push bore sites were placed at regular intervals across the site, approximately 40 m (131.23 ft) for initial plotted locations and 5 m (16.4 ft) for radials. Direct-push boring consisted of mechanically auguring for samples. Samples were retrieved in 1.5 m (5 ft) sections to an average final depth of 4.58 m (15 ft) using a two-inch sheath. Bores were originally intended to extend to a final depth of 7.62 m (25 ft), however the drilling equipment encountered an impenetrable stratum just below 4.6 meters in several of the bores, breaking multiple pipette probes. The majority of subsequent bores were

terminated early to avoid further damage. If cultural materials were identified in the samples, additional bores were drilled in each of the four cardinal directions in an attempt to determine the extent of the find. If bores tested positive for shell matrix, samples were collected in 10 cm increments to be water screened. Shell matrix materials were bagged and taken to the lab to be processed through $^{1}/_{4}$-inch and $^{1}/_{8}$-inch screens.

Trenches were excavated at strategic locations on the northern and southern quadrants of the property, beyond the known extent of remediation excavations. Trenches were excavated with a backhoe and sized approximately 2.56 m x 1.2 m (8.4 ft x 4 ft). Trenches were planned to be excavated down to 4 - 5 meters (13 ft – 16.4 ft) below the ground surface, but many were terminated early due to groundwater exposure. The average depth of excavation in the trenches reached 1.5 - 1.75 m (5-5.75 ft) below the ground surface. Generally, soil was removed in 5 cm (2 in) lifts and deposited alongside the trench to be inspected for cultural resources. When cultural resources or changes in sediment character were observed at depths shallower than 1.2 m (4 ft), excavation was paused and the monitors entered the trench to inspect the floor and sidewalls for associated deposits. Excavation was stopped at 1.2 m (4 ft) in order for the monitor to enter and map the trench walls, and then continued to a maximum depth 5 m or until encountering groundwater. Trenches were backfilled upon completion and artifacts, if any, were shallowly buried within the backfill.

All field investigation efforts were documented with field notes, field forms, digital photographs and GPS points. Complete soil characteristics were defined and illustrated for each bore. Strat profiles were illustrated and photographed for at least one sidewall for each trench. Details for the direct-push bores are provided in Appendix C; and, Appendix D for the excavated trenches. Findings from the water screening is provided in Appendix E.

The API is a former shoreline area that has historically been filled on several occasions and used industrially since around 1891. Currently the API is undeveloped and stripped of most vegetation and has undergone remediation efforts to remove chemicals associated with its previous use in the lumber industry. The majority of the site is surfaced with concrete or compacted gravel fill (Figure 19 – Figure 20). Buried utilities are present within the eastern half and northern margin of the APE.

Figure 19. Overview of project area, view west.

Figure 20. Overview of the project area, view south.

A total of 29 direct-push bores and eight trenches were excavated across the API (Figure 21 - Figure 24). Of the direct-push bores, 25 were positive for shell matrix, three were negative for shell matrix, and one was terminated before a determination of positive or negative could be made. All of the trenches except for Trench 8 (T8) were positive for historic cultural materials.

Figure 21. Location of the direct-push bores and trenches excavated across the API.

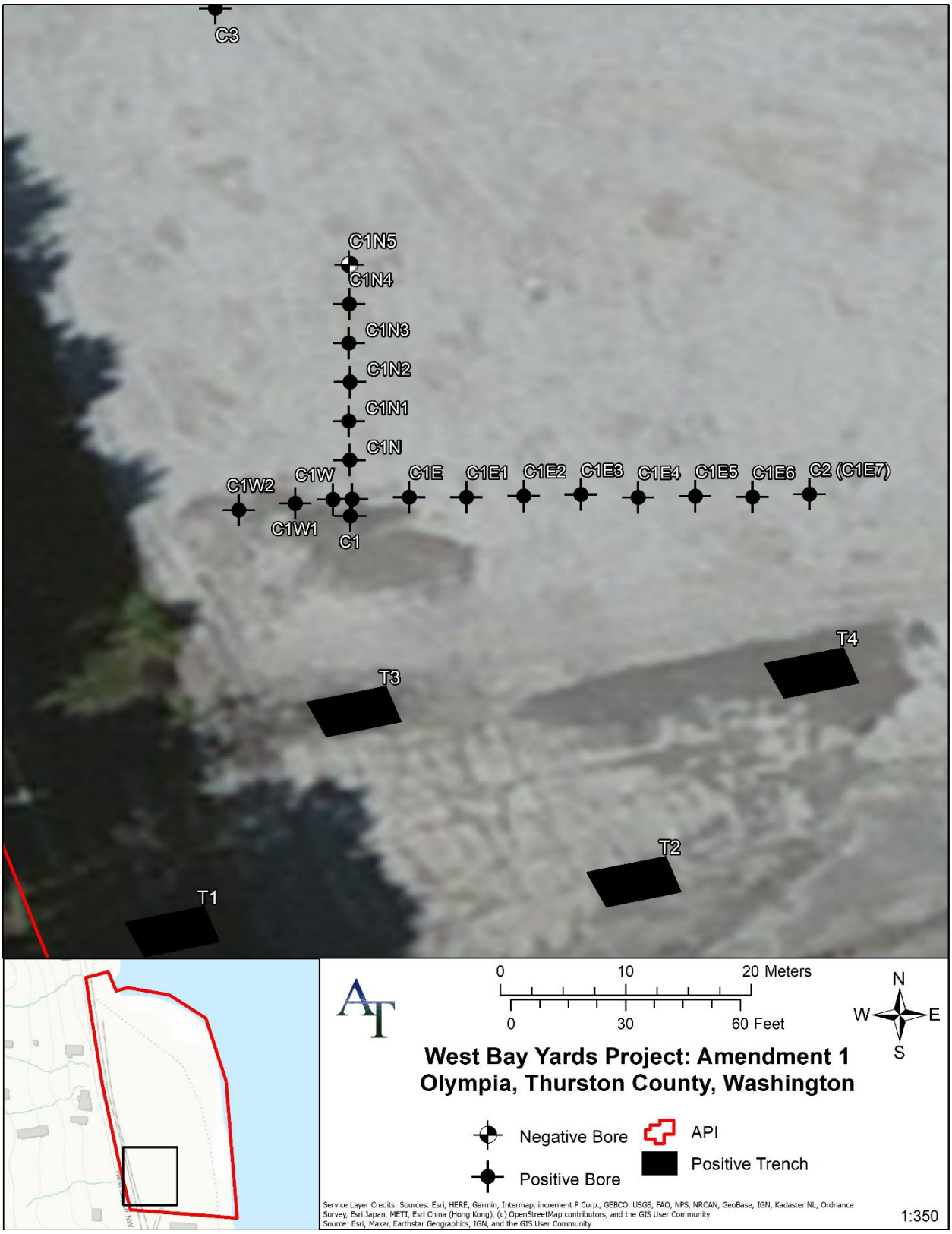

Figure 22. Detail of the direct-push bores excavated in the southern portion of the API.

Figure 23. Overview of API with direct-push bore equipment facing east.

Figure 24. Overview of trench excavation, view northeast.

Boring started at planned bore location C1, in the southwest near the entrance to the site. Observed sediments included a weathering series of sand and gravel fill extending to approximately 2.03 m - 2.39 m (6.66 -7.83 ft) below the surface (uncertainty due to vertical shortening of samples), overlying gray gravelly sands (possibly shoreline-modified fill materials) to a total depth of 2.39 m - 2.74 m (7.83 – 9 ft). This stratum transitioned directly into an N3 40% shell matrix layer with a fine to very fine sand matrix. An intermediate layer of light-colored 70% fine sand and 30% coarse sand to 0.07 in (2 cm) gravel was present between approximately 3.05 m (10 ft) and 3.3 - 3.45 m (10.83 - 11.32 ft) but transitioned back into shell-bearing matrix material and intermittent layers of organics-darkened fine sands which extended to a full depth of 4.32 - 4.4 m (14.17 - 14.42 ft). The matrix terminated on a dense layer of wood scraps, and the bore was terminated at 4.83 m (15.83 ft) when the rig encountered an inhibitive mass, possibly a piling or intact log/board.

Due to the early termination of bore C1, a supplementary bore was attempted approximately 0.61 m (2 ft) to the north, labeled C1A, to attempt t to reach the intended depth of 9.14 m (30 ft). Observed sediments were comparable to those observed in C1, with a deep upper layer of beige or tan fill overlying an older layer of coarser and more rounded gray sands and gravels, matrix material starting from 2.29 - 2.77 m (7.5 - 9.08 ft), an intermediate layer of light-colored sandy deposits between 6.09 m (20 ft) and 3.58 - 3.86 m (11.75 - 12.67 ft), and a dense layer of wood scraps immediately below the resumed matrix material. Retrieval between 4.57 m and 6.09 m (15 and 20 ft) was low and was likely reduced by resistance in the woody layer pushing underlying sediments out of the way, however retrieved sediments below the woody layer resembled estuarine or otherwise low-energy, relatively anoxic, distal-source deposits. They consisted of a yellowish gray (2.5Y 4/1) clayey layer containing sparse (~5%) scatterings of shell between 4.75 m - 5.49 m (15.58 - 18 ft) and 5.13 m - 5.86 m (16.83 - 19.25 ft), and a slightly coarser and darker clayey layer (20% very fine sand, 5% rounded 0.3-2.5 cm [0.12 - 0.98 ft] in gravel) with 15% shell extending to 5.36 m - 6.09 m (17.58 ft - 20 ft) 211 - 240 in. These progressed into light gray sandy gravelly silts from 6.09 m to 6.68 - 6.93 m (20 ft to 21.92 ft - 22.75 ft) and two layers of iron-stained shoreline-sorted sandy gravels to 7.37 m - 7.62 m (24.17 ft - 25 ft). Attempted boring below 7.62 m (25 ft) resulted in the loss of two pipette probes and thread stripping of both an old and new boring tube, and the bore was terminated. The loss of both available pipette probes hindered sampling efforts, as they were required to prevent sand heave from damaging or trapping the sampling tube below the water table (which was observed to be near 1.5 m [5 ft] depth). Another set of probes was requested from Holocene Drilling and arrived after 30 minutes.

Then the first radial, C1W, 1.52 m (5 ft) to the west of the initial bore position was excavated. No significant change in sediments or boundary depths was observed and the bore was again terminated after the 6.09 - 7.62 m (20 - 25 ft) sample due to refusal on rocky material. Radial C1W1, a further 3.05 m (10 ft) to the west for a cumulative offset of 4.57 m (15 ft) was excavated and encountered similar subsurface conditions to a depth of 4.57 m (15 ft), at which point the push rig encountered an inhibitive dense rocky surface. Within this bore, a mostly intact chunk of reddish wood, possibly cedar, was encountered in the matrix material at a depth of 3.3 m - 3.76 m (10.83 - 12.33 ft) to 3.4 - 3.86 m (11.1 ft - 12.67 ft). C1W1 was terminated at 6.09 m (20 ft) after the gravel or cobble surface damaged the cutting head of the rig. ATCRC staff requested and received permission to terminate future bores at 4.57 m (15 ft), below the observed base of the matrix deposits, to avoid further damages. Then, C1W2 was excavated, a further 4.57 m (15 ft) to the west for a cumulative offset of 9.14 m (30 ft). An orange plastic fragment was encountered in

the upper fill layers just below 1.52 m (5 ft), contact with the matrix and wood scrap layers occurred slightly shallower here, at 2.16 - 2.67 m (7.08 ft - 8.75 ft) and 3.35 - 4.11 m (11 - 13.5 ft), the intermediate layer of sand within the shell matrix was not present, and the shell matrix contained beds of peat and scattered wood fragments. C1W2 was terminated at 4.57 m (15 ft) in the clayey layer underlying the wood scrap layer and shell matrix.

There was no room for additional radials to the west, so radials extending northward from the original bore location at 15 ft intervals began. Three radials were completed at this time: C1N, C1N1, C1N2, and C1N3. Conditions within these radials were roughly similar to those observed in C1, C1A, and the westward radials, with shell matrix initially appearing at approximately 0.25 - 0.3 m (0.83 – 1 ft) above the base of the 1.5 - 3.05 m (5 - 10 ft) sample and ending on a layer of woody material near the bottom of the 3.05 - 4.57 m (10 - 15 ft) sample. The top of the matrix generally sank towards the north while the basal contact with the wood scrap layer remained relatively stable, and peat interbeds became much more common to the north. The majority of these radials were terminated at 4.57 m (15 ft), in or below the wood scrap layer at the expected base of the matrix, in order to avoid damaging more equipment on the deeper gravel and cobbles. C1N terminated at 3.68 m (12 ft) when the rig encountered an intact wooden mass, potentially a buried piling, and was not supplemented with an additional bore because matrix was known to be present in the 1.5 - 3.05 m (5 - 10 ft) sample. A chunk of reddish wood, possibly cedar, was identified within the matrix material in C1N1 at a depth of 3.3 - 3.75 m (10.83 - 12.33 ft) to 3.40 - 3.86 m (11.17 - 12.67 ft). C1N2 was consistent with the previous radials (Figure 21).

On Tuesday, October 25, direct-push bore excavations continued. Weather conditions were cold with steady rainfall. The line of radials north from C1N2 were continued and three additional northward radials at 15 ft intervals were excavated to a point approximately 4.57 - 6.09 m (15 - 20 ft) south of the intended location of C2. The trends noted on the previous day continued until C1N5, in which no matrix material was encountered. C1N3 terminated at 3.66 m (12 ft) upon encountering a solid wooden impasse below the matrix layer. C1N5 encountered a shallow layer of dark gray (N3) gravel and sand fill at approximately 0.77 m (2.54 ft) and contained peat lamina and a wood chunk in a layer of very fine gleyed sands at 2.08 - 2.57 m (6.83 - 8.42 ft) to 2.39 - 2.87 m, immediately above the wood scrap layer, but no identifiable matrix material was present so the northward line of radials were terminated.

Then, an eastward line of radials from the location of C1 were excavated, continuing with intervals of 4.57 m (15 ft) and collecting the matrix materials from all samples to be water screened in the office. A total of eight eastward radials were completed before the end of the day, labeled C1E, C1E1, C1E2, C1E3, C1E4, C1E5, C1E6, and C2 (aka C1E7). The previously established strata and associations continued throughout the holes, with peat beds and wood fragments interspersed with matrix material between approximately 2.74 - 4.27 m (9 - 14 ft), terminating on a layer of wood scrap around 4.42 - 4.57m (14.5 - 15 ft). C1E2 was excavated to 6.09 m (20 ft), below the wood layer, in order to confirm the absence of matrix at depth and observed the expected gleyed clayey sediments. C1E3 contained a layer of sludgy black organics between 0.48 - 0.89 m (1.58 - 2.92 ft) and a large wood layer between 2.17 - 2.67 m (7.13 - 8.75 ft) and 2.3 - 3.05 m (7.54 – 10 ft). The material between this wood layer and the lower wood layer forming the expected lower boundary of the shell matrix was slightly gleyed sand with low shell content, and could not be positively identified as matrix, however the overlying layer was very shell-dense shell matrix.

Matrix and wood scrap layers began occurring closer to the surface in C1E4 and C1E5, rising to as little as 1.65 - 2.12 m (5.42 - 6.96 ft) and 3.79 - 3.99 m (12.42 - 13.08 ft), respectively. Additional shallow layers containing sludgy organic material occurred in C1E5 and C1E6 between approximately 0.56 - 0.76 m (1.92 - 2.5 ft). The final eastward radial was placed on the intended location for C2, so was labeled C2 (aka C1E7). It was observed to contain a pocket of black sludgy organics at 0.74 m (2.42 ft) and matrix material from 2.09 - 2.4 m (6.88 - 7.88 ft) to the expected wood scrap layer at 3.79 - 4.19 m (12.42 - 13.75 ft).

A total of ten additional bore tests were completed throughout the property, labelled C3 through C10 with supplementary bores C7A and C8A (Figure 25 - Figure 26). Bore C7 encountered a large wooden mass at a depth of 3.35 m (11 ft) and was supplemented with C7A, offset 1.52 m (5 ft) to the north. Bore C8 encountered dangerous concentrations of methane gas within the wood layer and was supplemented by C8A, 1.52 m (5 ft) to the south, which was terminated at a depth of 4.57 m (15 ft) when methane concentrations in the bore reached 99% and failed to decrease over several minutes. Bore C10 had previously reached methane concentrations of 73% upon breaching the wood layer, but methane levels had diminished to safe levels within a couple of minutes and sampling was allowed to continue.

Additional extents of shell matrix were encountered throughout the majority of the sampled area, with the exception of bores C7A, C8, and C9 in the northwestern region of the property. Matrix material was generally found between 2.13 - 4.27 m (7 - 14 ft) underlain by the wood scrap layer observed in previous bores, which in turn rested on clayey estuarine material. C10 is a notable exception, where matrix material was encountered between 6.16 - 7.62 m (20.2 - 25 ft) below the thick wood layer (which extended from 3.05 - 6.16 m [10 ft to 20.2 ft]). ATCRC staff positively identified compact glacial material, either Vashon Stade or pre-Vashon, in bore C7A at a depth of approximately 5.18 m (17 ft). Other than the differences noted here, sediments and the distribution of culturally associated deposits were broadly consistent with those encountered during across the rest of the project area.

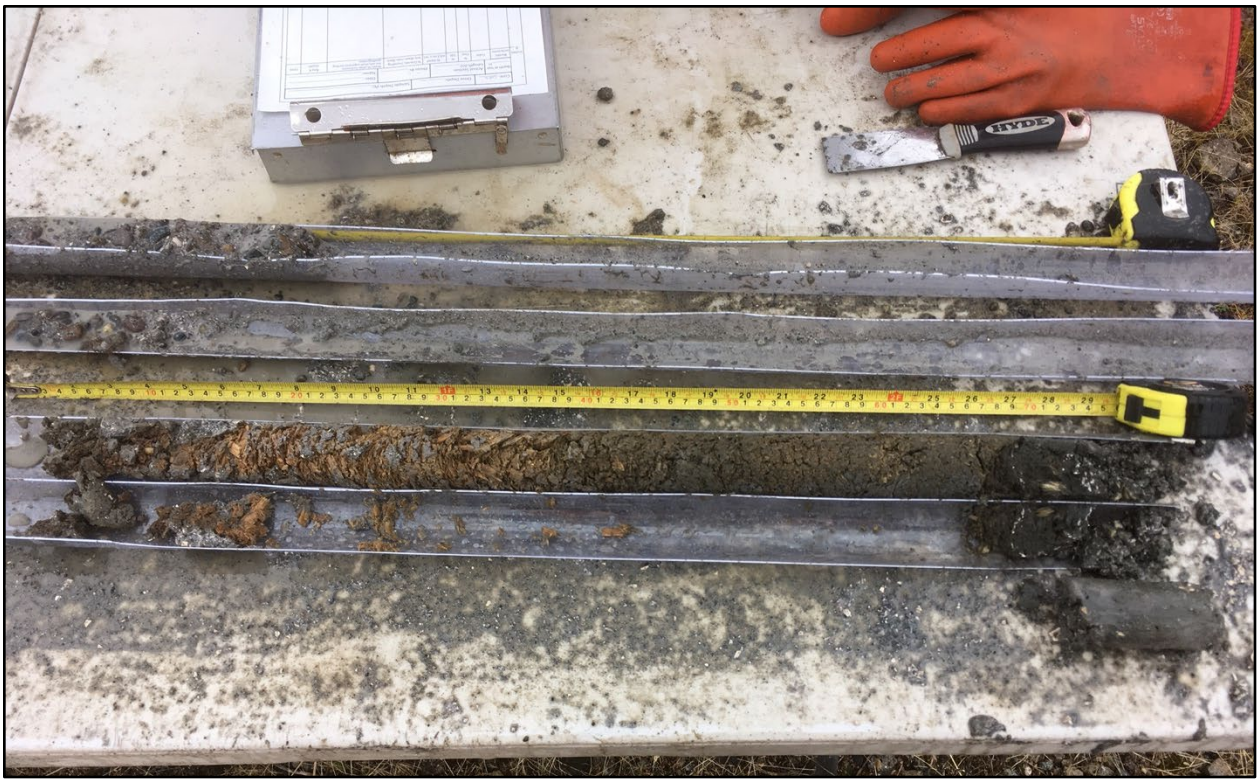

Figure 25. Wood layer observed in bore C1N2.

Figure 26. Wood layer observed in bore C3.

Figure 27. Shell matrix observed in bore C4.

Figure 28. Wood layer observed in bore C4.

Upon initial excavation of Trench 1 (T1) buried historic railroad tracks running north-south along the western edge of the property were exposed causing excavation to stop immediately. At this time, the railroad tracks were recorded and photographed. T1 was then relocated approximately 4.57 m (15 ft) south and 3.05 m (10 ft) east of its originally planned location. The relocated T1 was excavated to 1.4 m (4.59 ft) before filling with groundwater. T1 contained a layer of sawmill debris, including sawdust, offcuts, discarded lumber, an old Champion X spark plug, a shard of clear unleaded glass, and two 6.5 inch long round-head nails. The spark plug dates to approximately 1914/15 - 1921/22 and is a Ford Champion X spark plug (Peterson 2009). This layer began approximately 45 cm (17.72 in) below the ground surface and ended approximately 0.6 - 0.8 m (1.97 - 2.62 ft) (Figure 29).

T2 contained a layer of concrete and construction fill over an older layer of asphalt with construction fill. The second layer of fill ended at 0.5 m on a straight contact that truncated a warped stratum of compact organic-stained sands over looser gray shell-bearing sands leaving a small arc of darker material near the center of the trench. The looser gray sands had an intermittent layer of intact wood boards at 0.7 m (2.29 ft) extending approximately 0.51 m (1.67 ft) from the eastern slope of the trench. Excavation paused and the walls were mapped when the trench reached a depth of 0.92 cm (3 ft). They resumed after mapping was complete, and the trench was terminated at 1.15 m (3.77 ft) when groundwater began flowing into the trench (Figure 30 - Figure 31).

T3 was excavated until the trench breached an unknown concrete water pipe at a depth of 0.75 m (2.46 ft). The opening in the pipe was covered with a slab of concrete to prevent further clogging and the trench was backfilled. T3 contained rusted metal debris in the upper fill layer, one upright wooden piling at either end of the trench extending down from a depth of 0.60 m (1.97 ft), hardened gray clay and woody debris layers, and a tan fill unit intruding the woody debris presumably associated with the installation of the concrete water pipe (Figure 32).

T4 was excavated to 1.6 m (5.24 ft) before being terminated due to groundwater. T4 contained a rusted rail spike at 0.68 m (2.23 ft). A crushed concrete layer rested on a layer of sawdust, offcuts, and discarded boards which extended from 0.74 - 1.35 m (2.42 - 4.42 ft), transitioning into the gray shell-bearing sands (Figure 33). An intact wooden piling was encountered in the western wall of the trench, at a depth of approximately 0.6 m (1.97 ft).

T5 was excavated to approximately 2.70 m (8.86 ft) before being terminated due to groundwater. A disturbed portion of wood scrap material was encountered at the southwest corner of the trench starting at a depth of 1 m (3.28 ft), which expanded into a larger contiguous woody layer that covered the entire floor of the trench. The layer contained four 2x6 boards, two slabs of bark, and a solid matrix of sawdust and wood chips, and thickened towards the north, extending from 1.47 - 1.50 m (4.82 - 4.92 ft) on the southern wall and 1.47 - 1.75 m (4.82 - 5.74 ft) on the northern wall. The scrap layer terminated on the grayish shell-bearing sands encountered in the previous trenches, and a second deposit of sawmill debris was encountered at 2.20 m (7.22 ft) containing nine boards of various dimensions, several smaller offcuts, and burned pieces of wood and bark (Figure 34).

T6 was excavated to 1.70 m (5.58 ft) before being terminated due to groundwater. T6 primarily exposed a deep layer of very fine pale beige sand containing a variety of rusted metal debris, including rods, washers, and crumpled sheets. This layer extended to 1.45 m (4.76 ft) with only

minor color variations before giving way to gray shell-bearing sands. The shell-bearing sands contained a scattering of woody debris and discarded boards at 1.46 m (4.79 ft), a flared 1.57 inches tube of copper alloy, and the disconnected but mostly assembled remnants of a large copper plumbing system utilizing 2-inch piping (Figure 35).

Excavations at T7 were on a sloped surface; therefore, the depths of features are in reference to the west wall: the equivalent depth on the east wall is approximately 0.1 m (0.33 ft) shallower. T7 contained a pale beige layer of sand with concrete and rebar to a depth of 22 cm, after which the concrete chunks largely disappeared. Below 0.33 m (1.08 ft), a layer of historic debris, including plywood squares, brick, wood scraps, and a 19-inch chunk of concrete to a depth to approximately 1.5 m (3.45 ft) followed by shell-bearing gray sands. An organics-rich layer containing wood fragments, several bent fragments of a broken band-saw blade, and a 0.20 m (0.66 ft) chunk of concrete interrupted the shell-bearing sand layer between 1.54 - 1.91 m (5.05 – 6.27 ft). PVC piping from a more recent but apparently abandoned sewer system was recovered from the western wall just above 1.91 m (6.27 ft). The shell-bearing sands resumed at 1.91 cm (6.27) with dense sawmill debris, including many boards of various dimensions, board fragments, and whole logs up to roughly 2 ft (0.61 m) in diameter. Excavations were terminated at approximately 3.96 m (13 ft) (Figure 36).

Sediments in T8 included 0.88 m (2.89ft) of pale beige sand with abundant crushed concrete and rebar. The trench was terminated at 1.52 m (4.99ft) at groundwater (Figure 37).

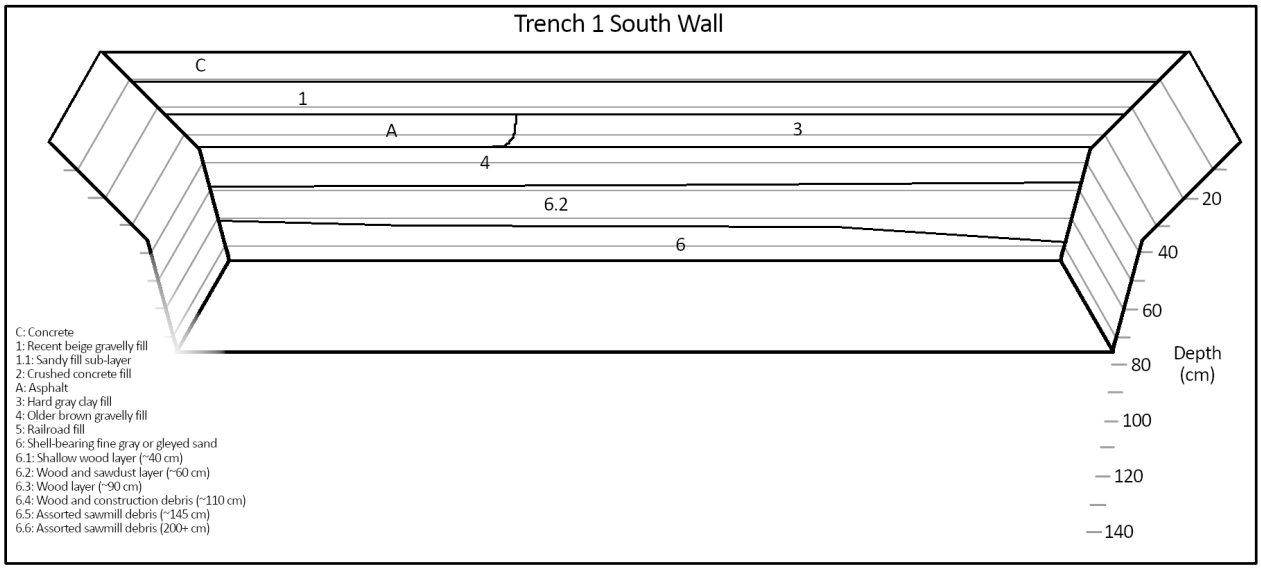

Figure 29. Profile of Trench 1, south wall.

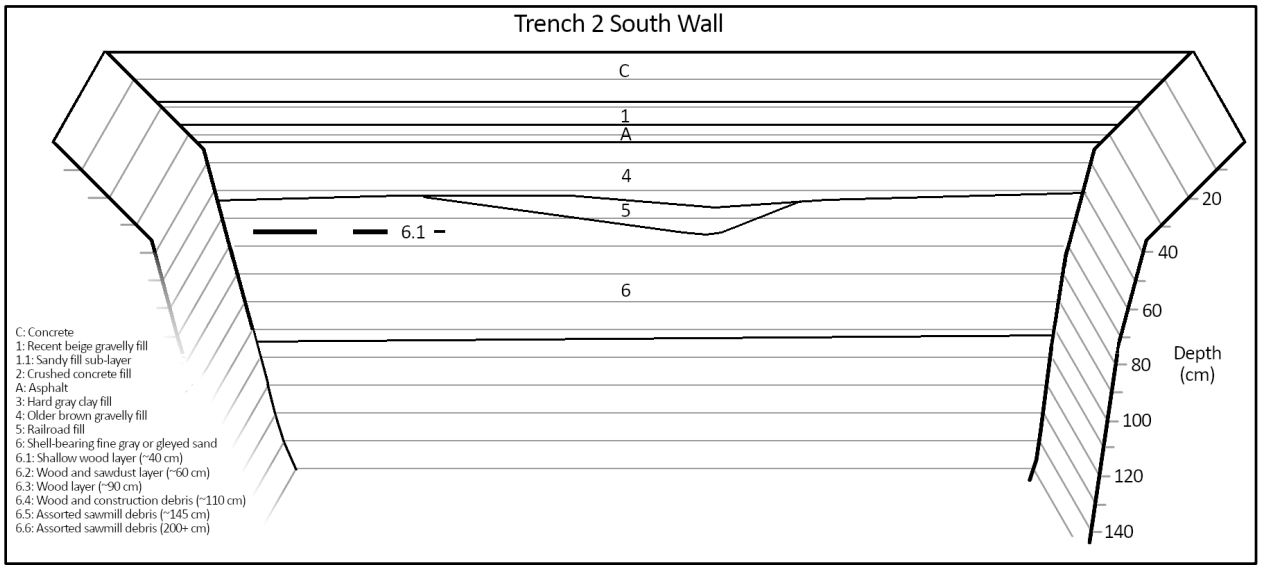

Figure 30. Profile of Trench 2, south wall.

Figure 31. Profile of Trench 2.

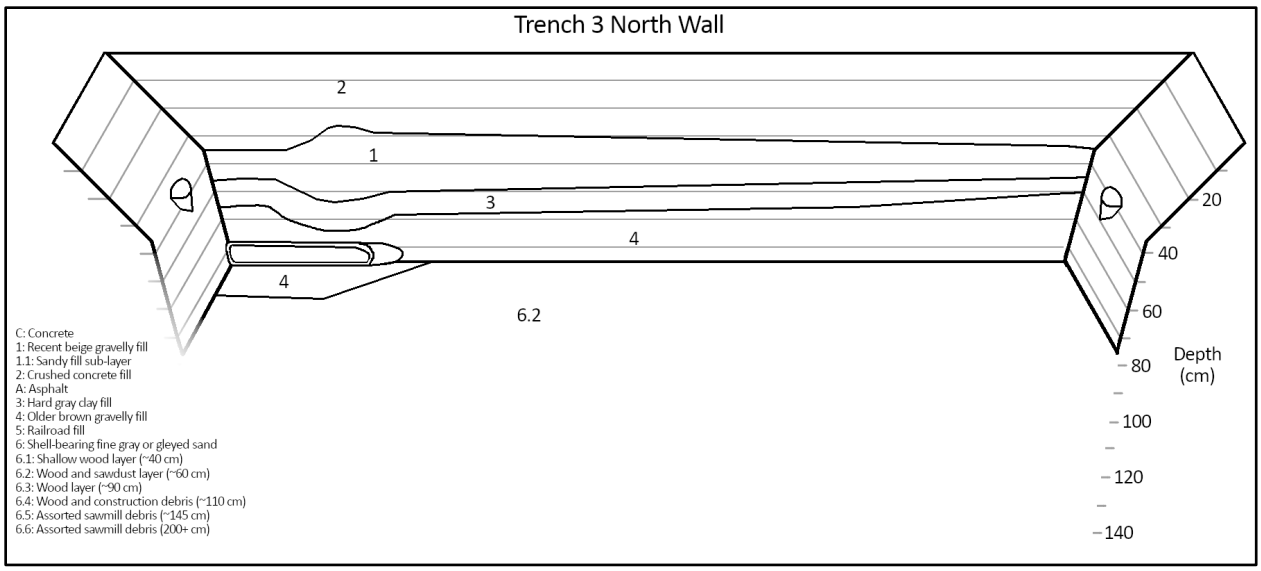

Figure 32. Profile of Trench 3, north wall.

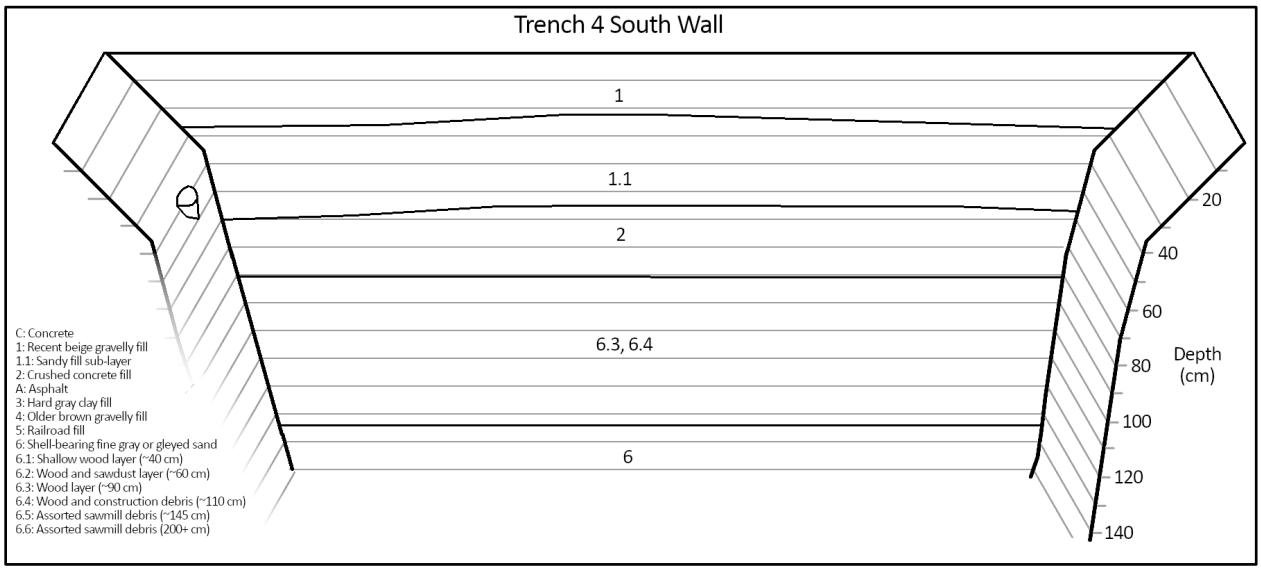

Figure 33. Profile of Trench 4, south wall.

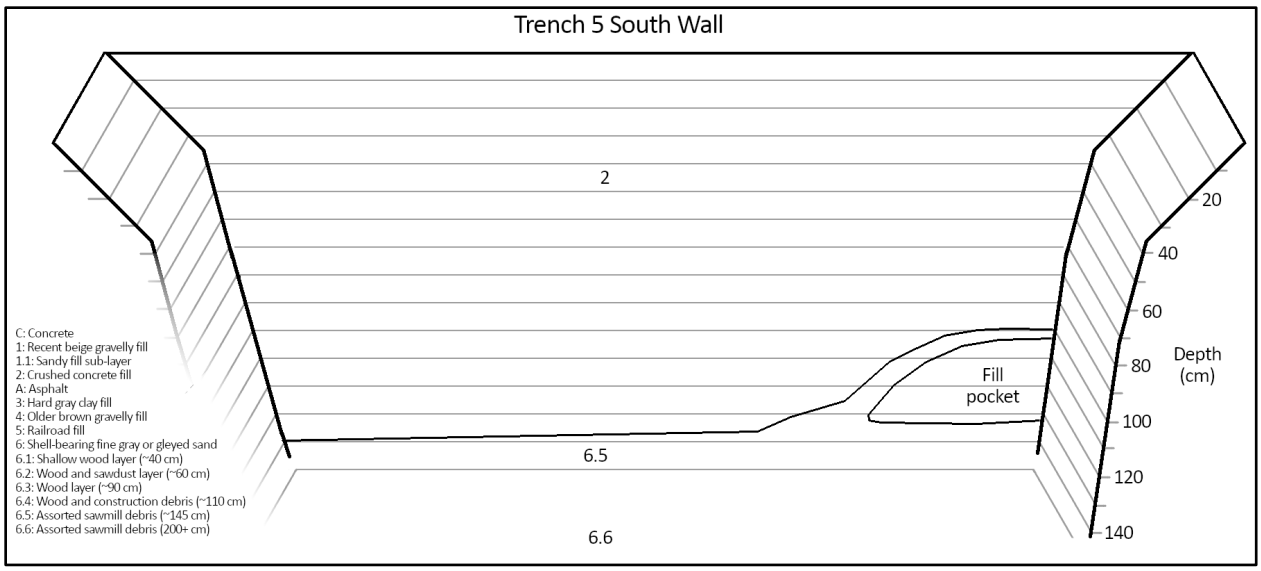

Figure 34. Profile of Trench 5, south wall.

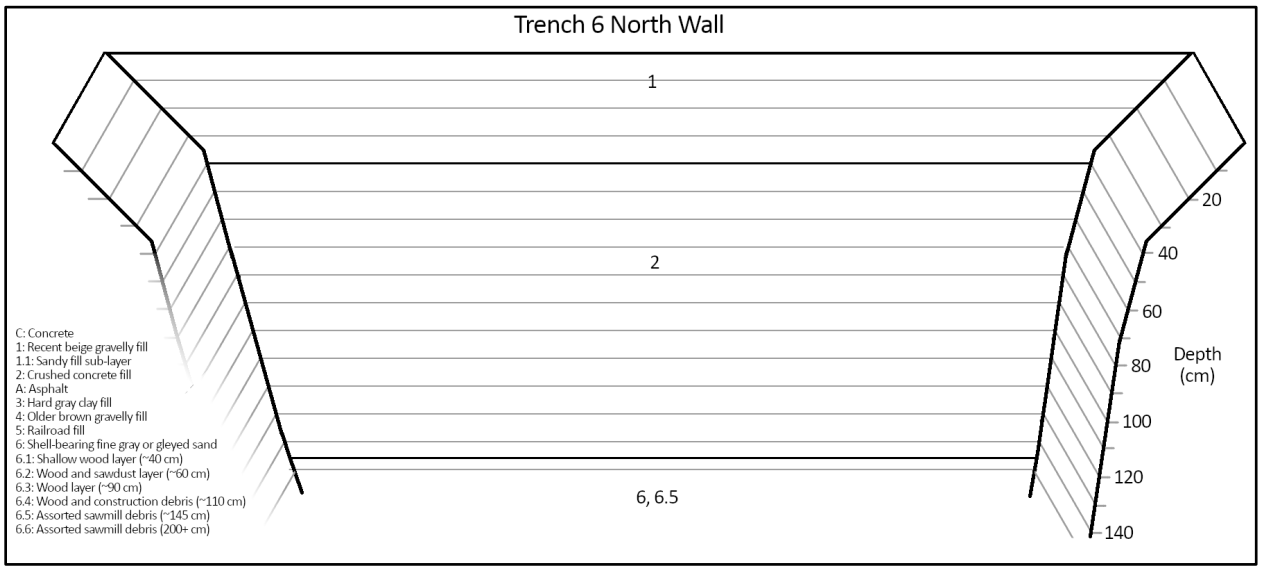

Figure 35. Profile of Trench 6, north wall.

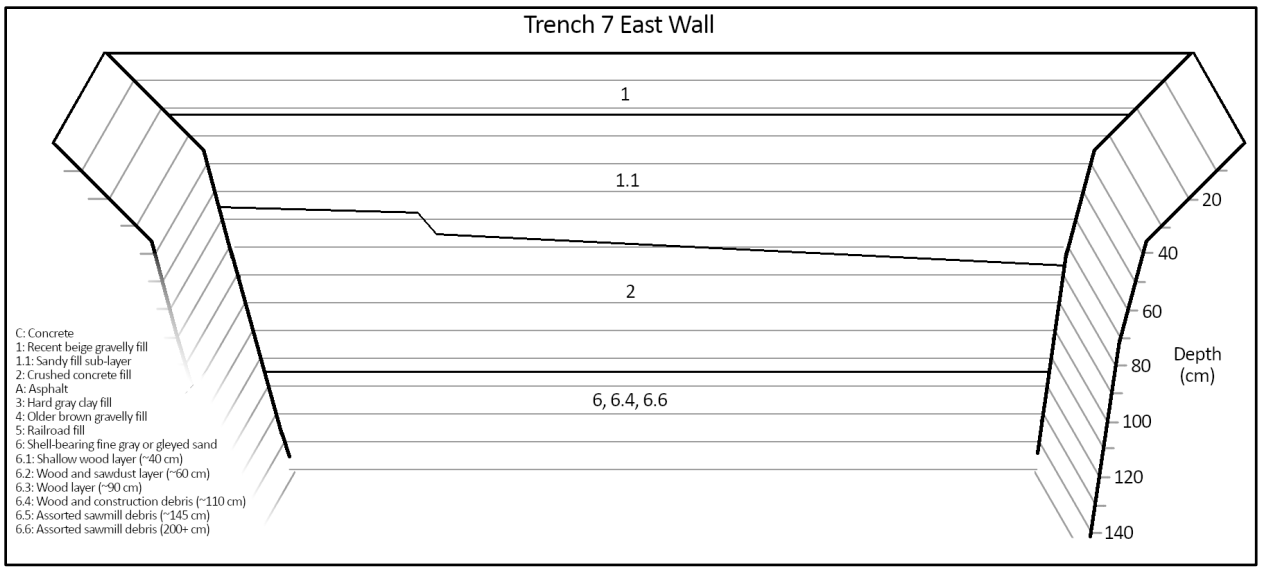

Figure 36. Profile of Trench 7, east wall.

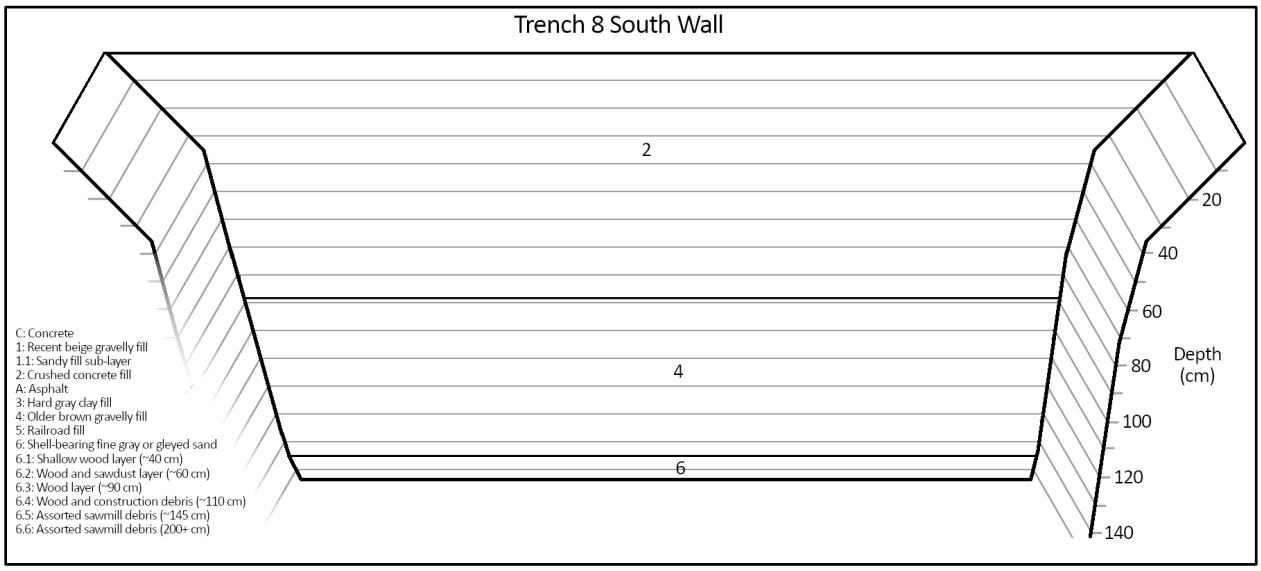

Figure 37. Profile of Trench 8, south wall.

Samples from direct-push bores positive for shell matrix were taken back to the ATCRC office for water screening. Samples were taken at 10 cm (3.94 in) intervals when the shell matrix was present. In addition, wood samples below the shell matrix were also taken. These samples were water screened using both ¼- and 1/8-inch mesh screens in nesting baskets (Figure 38).

Results of the water screening showed evidence of mainly shell with wood fragments and gravels (Appendix E). A few charcoal wood fragments were present (C1W1, C1N1, C1N2, and C1W) and brick fragments were present in C4. There were also occasional layers of peat found in the samples as well (C1, C1E6). Types of shells identified within the shell matrix include littleneck clams, butter clams, softshell clams, oysters (Olympia and potential Pacific), mussels, barnacles, and

spiral mollusk shells. Many shell fragments were too fragmented and small to identify and were listed as unidentifiable fragments.

No fish bones, fish scales, faunal bones, lithics, or other artifacts were identified in the samples processed by water screening.

Figure 38. Water screening station.

RESULTS

Three archaeological sites were identified in the API: a Historic Sawmill Site (TSN: TH2022-1101), a Shell Matrix Site (TSN: TH2022-1102), and a spur of the Northern Pacific Tumwater Branch (TSN: TH2022-1103) (Figure 39).

In accordance with DAHP, each were inventoried and, in accordance with SEPA, each were evaluated for potential inclusion in the NRHP. A copy of the site forms is provided in Appendix F.

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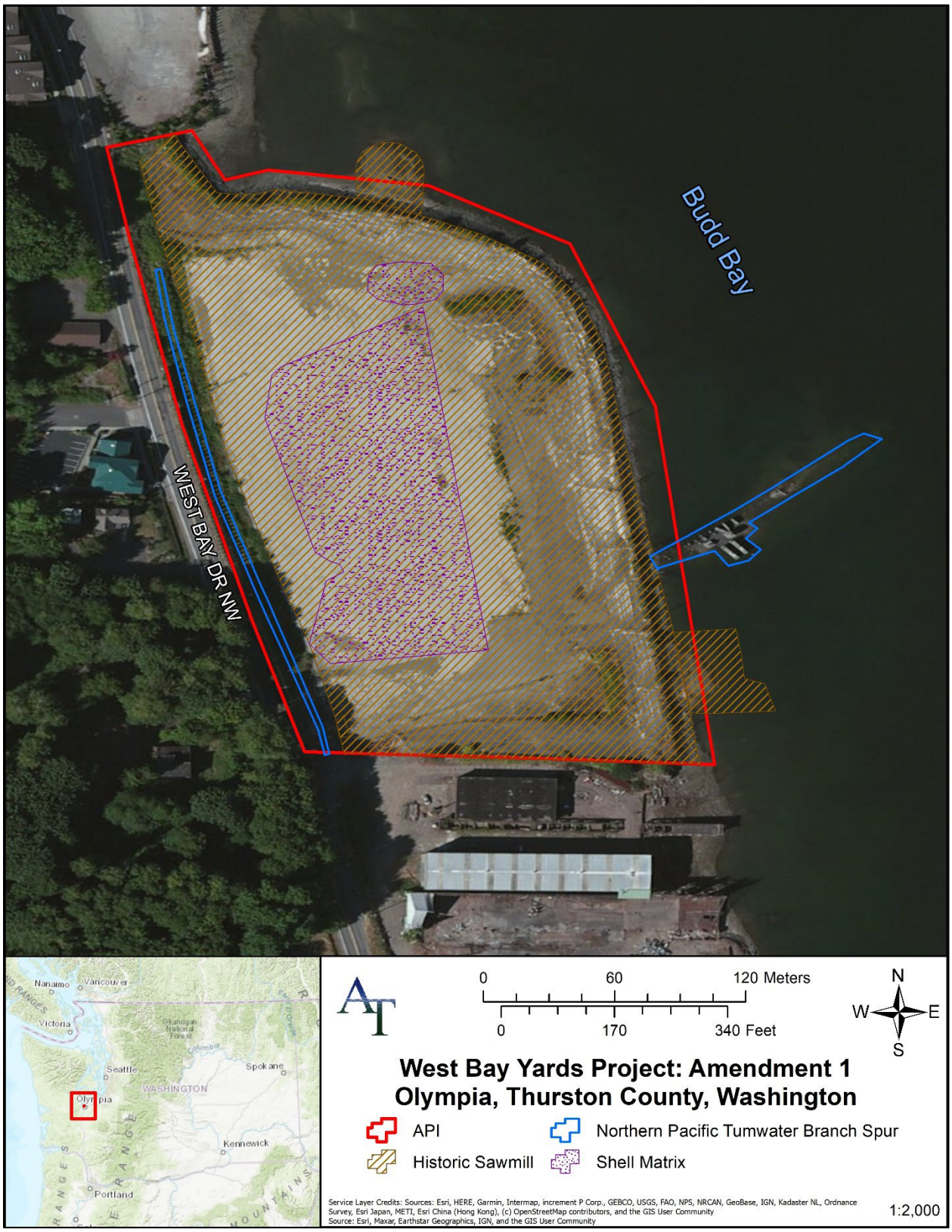

Figure 39. Location of the sites identified in the API.

Historic Sawmill Site (TSN: TH2022-1101)

The Historic Sawmill Site (TSN: TH2022-1101) was identified across the majority of the API and consists of dredged fill material, sawdust, off-cuts of wood, discarded lumber, slabs of bark, copper piping, plywood squares, brick fragments, two rounded-head nails, a Champion X spark plug, an undiagnostic historic saw blade, and a railroad spike (Figure 39 - Figure 45). These items were found at a variety of depths throughout the site. The site has undergone remediation efforts which have generally disturbed the center of the western half of the site.

The Historic Sawmill Site (TSN: TH2022-1101) also includes evidence of a refuse burner and two floating platforms. The refuse burner was identified to the north of the project site in the water (Figure 46 - Figure 47). The refuse burner is only visible during low tide and mainly consists of metal debris from the refuse burner. This area measures approximately 28 m by 33 m (91 ft by 108 ft). Refuse burners were used in historic sawmills to get rid of waste products produced from operations at the mill site. This refuse burner is depicted in the Sanborn Map Company (1924) map during the occupation of the McCleary Timber Company. The refuse burner is also depicted on the Sanborn Map Company (1946 and 1947) maps but is not seen on the Sanborn Map Company (1968) map. This may suggest that the refuse burner was constructed sometime around 1924 and abandoned by 1968.

Near the southeast boundary of the site, two sunken wooden platforms were observed (Figure 48 - Figure 49). The platforms consist of approximately 50 wooden piles seen from the shoreline. The area measures approximately 55 m by 37 m (180 ft by 121.4 ft). The platforms, however, are only visible at low tide so the measurements are approximate. Historically, these platforms can be seen at the site as early as 1973 and appear to have sunk around the 1980s (NETRonline 1973, 1980). This would associate the platforms with the Hardel Mutual Plywood Company operation. The platforms may have been used to help with the floating logs in the water.

According to review of historic documents, aerials, and photographs, the Historic Sawmill Site (TSN: TH2022-1101) has been the location of a sawmill since around 1891. At this time the site was the location of the West Side Mill (aka Westside Mill, or West Side Mill Company) (Figure 50 - Figure 52). In January 1900, it was reported that “the West Side Mill Company [was] the largest manufacture of lumber in Thurston County. The saw mill [had] a capacity of 75,000 feet every ten hours, and the planning mill [could] finish 30,000 feet of dressed lumber per day. It [had] two large dry kilns and other modern equipment, which [made] it one of the most complete plants in the state for both cargo and rail shipments” (Washington Standard 1900a, 1900b). According to the Olympian (1913), the West Side Mill operated on the site until 1907 following a depression in the lumber business.

From 1907 until 1912 or 1913, the mill site remained abandoned until it was sold to Henry McCleary (Olympian 1913). McCleary, one of the largest lumber barons in Washington, was originally from Cambridge, Ohio and moved west and began a career in the timber industry in 1890 in Tacoma, Washington. He ran mills through the 1910s and built a new plant in present day McCleary, Washington. At that site, the McCleary Timber Company, he had a plywood department to help produce doors and they expanded rapidly to producing 3000 doors a day. By

the 1920s, the door department “had gained the reputation of being one of the most modern and productive plants in the west” (Plywood Pioneers Association 1968:4). In 1913, it was reported that active work had begun to “repair and modernize the West Side Mill” (Olympian 1913). At that time, it was reported that the plant “will have to be entirely renovated and partially rebuilt, and new machinery will have to be installed.” The plant was to be used for the exporting business of the company and expected to “restored to former capacity of 125,000 feet a day and that from 125 to 150 men will be employed” (Olympian 1913). It was expected that new docks would need to be constructed in the “deep water channel recently dredged in front of the mill to accommodate seagoing vessels” (Olympian 1913). During this time, it was reported that the mill site included 100 acres (Olympian 1913).

In 1922, McCleary built a new and more efficient plywood plant in the API and moved, “the entire plywood operation, including personnel” (Pioneer Technologies Corporation 2020:3). It included offices, sawmills, auto garages, planers, lumber platforms, a blacksmith, an oil house, engine rooms, and a wood bin. Conveyor systems connected a small "refuse fire" to the plant (Pioneer Technologies Corporation 2020:3-7). Unfortunately, the new plant was destroyed in a fire in 1923, and instead of rebuilding, McCleary decided to rebuild at McCleary; pieces from the fire at the Olympia site were salvaged and moved to McCleary (Plywood Pioneers Association 1968:4). Documented evidence of the burned plant is illustrated in the Sanborn Map Company (1924) map as “Ruins of Fire” where the plant once stood.

In 1925, the “ready cut department” of Olympia Harbor Lumber Mill moved to West Bay Drive (Olympian 1931). By 1929, the property, which was also referred to in archives of the Olympian Newspaper as the Tumwater Lumber Mill, had been developed for $75,000 and included a “gang sawmill” (Olympian 1929). The gang sawmill was revolutionary at the time and “by means of two series, or gangs of saws, this electrically driven plant takes round logs and cuts them into boards of desired dimensions at one cutting” (Olympian 1929). The plant was noted for being “unusual as it housed special machinery for cutting small logs and, at the time, there were only two or three other mills like it in the entire United States” and was “patterned after the mills in Sweden” (Olympian 1929). Owned by Arthur Anderson and four other brothers the mill was expected to cut at a rate of 70,000 ft a day and would employ approximately 35 men (Olympian 1929). Review of archives from the Olympian newspaper during this time indicates that the Tumwater Lumber Mill also provided residential house plans locally.

In January 1945, it was reported that the “greatest single loss” was a fire that burned the Tumwater Lumber Company Mill (Olympian 1945). According to the Olympian (1945), the fire destroyed $49,000 worth of property with the “largest area was that which razed the old Springer mill site.” The Sanborn Map Company (1924 [1945 modified]) map indicates that, by that time, most buildings north of the railroad spur had been removed and dismantled. In the south portion of the site, several buildings remained just north of the RR spur including the Lunch Room, the Oil House “& H. Bl. Sm,” a welding flat, and an office building. Additionally, a “Transfer Table” and “5-Ton Traveling Crane (Elevation 16’) was present just south of the railroad spur. The area south of the railroad spur is also labeled (TLM Co), which is presumed to mean Tumwater Lumber Mill (Sanborn Map Company 1924 [1945 modified]).

By 1951, the site was owned by the Hardel Mutual Plywood Company (Figure 53 - Figure 59). Hardel was founded by brothers Delta V. Smyth and Harold Smyth (Delson Lumber 2023). The company was focused on low-grade plywood, including sheathing and the industrial type, whereas most other mills were focused on high-grade plywood (Olympian 1950). The site was designed to handle relatively smaller logs and the veneer lathe could peel logs up to 42 inches in diameter. The factory included a one-story wooden building (measuring 200 ft by 40 ft and costing $9000) located at 1506 West Bay Drive on land adjoining Delson Lumber Company (Olympian 1948).

By the 1960s, a new mill was built on the site based on review of aerials (Figure 55 - Figure 60). By the 1980s the upland area was expanded and armored with riprap. Hardel occupied the site until 1996 when a fire damaged several buildings and they then stopped work at the site (Tetra Tech 1999). In the 1990s, the buildings were demolished and removed from the site (Smith 2020). The site then underwent various remediation actions until 2010, when much of the site was backfilled with crushed concrete surfacing (Smith 2020). West Bay Developers bought the property in 2021 (WSDOE 2022). The only structures remaining after the fire were concrete building foundations, asphalt pavement, and an inactive rail line (Tetra Tech 1999). Functioning storm drainage and water lines also remained on the property.

The Historic Sawmill Site (TSN: TH2022-1102) is not recommended eligible for listing in the NRHP due to lack of integrity. The site is significant to the local, state, and national history (Criterion A). In Thurston County, lumber was the most important industry at the turn of the 20th century (Dougherty 2006). The formation of the Port of Olympia in 1922 allowed the lumber mills in the area to transport their products across the globe (Dougherty 2006). The site is also associated with an individual of significance in local context (Criterion B). In the 1920s, the site was developed by Henry McCleary. McCleary was one of the largest lumber barons in Washington. His company is credited with having the “most modern door plant on the west coast” (Plywood Pioneers Association 1968). The site has been the location of several phases of sawmills which were either expanded, burned, moved, or razed, and as such, little is left and that which does remain does not embody the distinctive characteristics of a type, period, method of construction, the work of a master, or possess high artistic values; therefore, the site is recommended not eligible for listing under Criterion C. Though a portion of the site’s boundary has been determined through preliminary testing, there is still potential for additional information regarding the history of the sawmills on the site, therefore, the site is also recommended eligible for listing on the NRHP under Criterion D. Nonetheless, the integrity of design, association, feeling, materials, or workmanship is absent and only the aspect of location and setting remains.

Figure 40. Close up of brick found in T7.

Figure 41. Detail of undiagnostic round-head nail identified in T1.

Figure 42. Champion X spark plug found in T1.

Figure 43. Undated advertisement for Champion Dependable Spark Plugs (Peterson 2009).

Figure 44. Close up of undiagnostic sawblade found in T7.

Figure 45. Close up of railroad spike found in T4.

Figure 46. Overview of the refuse burner at lower tide, direction north.

Figure 47. Overview of the refuse burner with tide in, direction north.

Figure 48. Overview of exposed piles from the floating platform east of the project site. View is southeast.

Figure 49. Overview of floating platform east of the site, direction east.

Figure 50. Undated photograph of Westside Olympia in the foreground looking toward downtown across the harbor (Washington State Historical Society as cited in Thurston County [2023]).

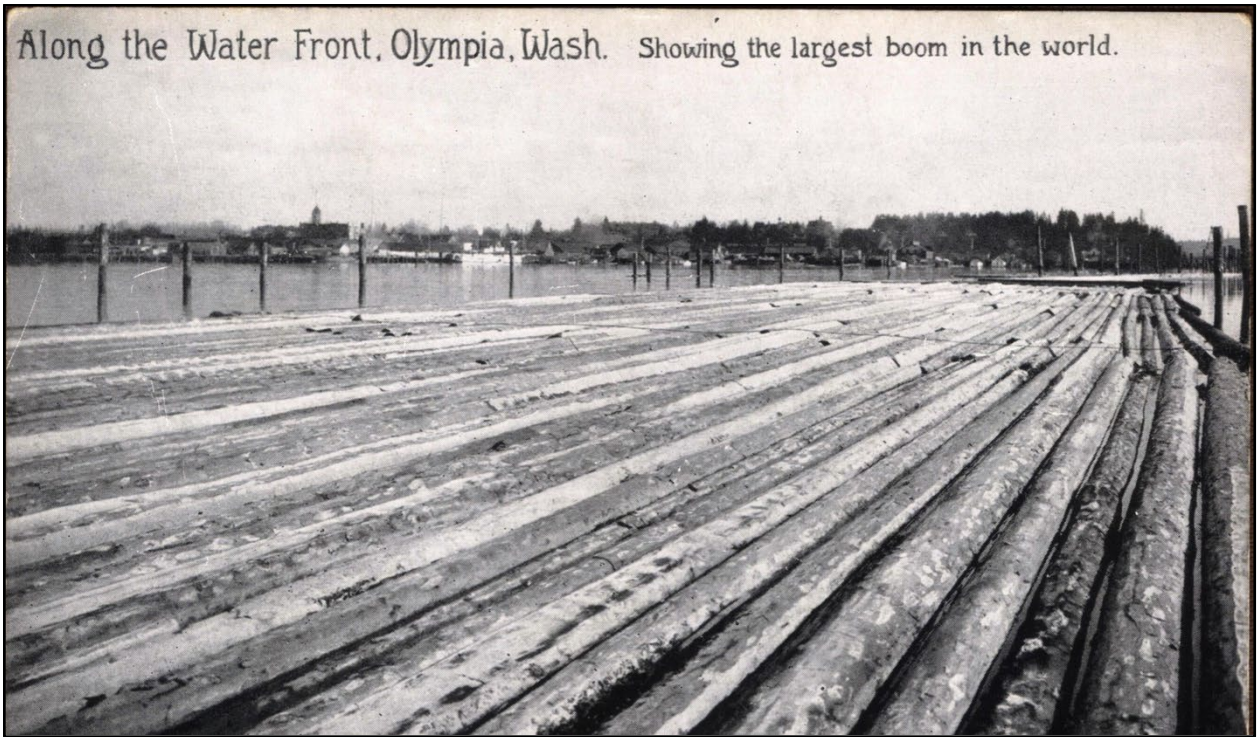

Figure 51. Undated photograph or postcard of the Westside Mill log boom (Image courtesy of the Olympia Historical Society and Bigelow House Museum 2022).

Figure 52. Undated photograph or postcard of Westside Mill log boom, from Schneider Hill with elevated railroad tracks, and small mill in the foreground, view east (Washington State Historical Society as cited in Thurston County 2023).

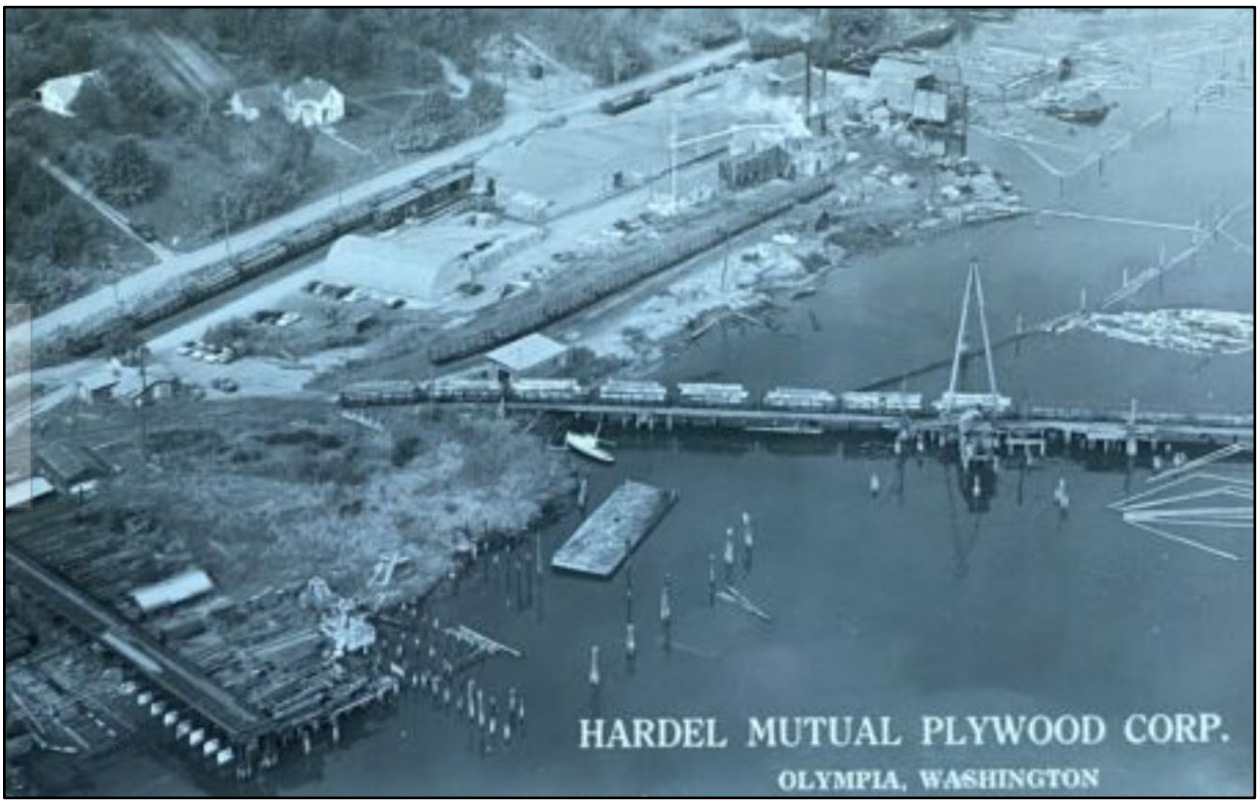

Figure 53. Ca. 1945 aerial of the Hardel Mutual Plywood Corporation, view northwest (Ebay 2023).

Figure 54. Ca. 1950 aerial of Hardel Plywood Company with railroad cars hauling lumber on the pier, view northwest. Note the three spur lines on the property. Only the east and west lines were identified (Delson Lumber 2023)

Figure 55. 1963 aerial of the API, view northwest (Image adapted from Millhorn 2022).

Figure 56. 1965 aerial of the API, view is southeast (Washington State Archives 2023a).

Figure 57. 1967 aerial of the Budd Inlet with the API in background left frame, view is north (Washington State Archives 2023b [cropped by ATCRC]).

Figure 58. 1967 aerial detailing the plywood factory in background right frame. Note the Lane House with triple arches (WHR listed) and the Woodward House left of API (WHR listed). View is west (Image adapted from the Washington State Archives 2023c).

Figure 59. Historic aerial 1969 showing the pier (NETROnline 2022).

Figure 60. Historic aerial 1973 showing the floating platform, historic pier, and refuse burner (NETROnline 2022).

Figure 61. 1976 aerial of the API. (WSDOE 2022).

Figure 62. Late 1970s aerial of the API (Moffat & Nichol 2022).

Shell Matrix Site (TSN: TH2022-1102)

The Shell Matrix Site (TSN: TH2022-1102) was identified within the center of the API in an area sized approximately 180m by 53m (590.55ft by 173.89ft) (Figure 39). The site consist of shell fragments composed of littleneck clams, butter clams, softshell clams, oysters, mussels, barnacles, and spiral mollusk shells. Due to the high level of fragmentation, most of the shells were too small to identify. In addition, some wood fragments, gravel, and charcoal were found within select samples. Brick fragments were found in one sample (C4). No fish bones, fish scales, faunal bones, or lithics were observed. Evidence of the shell matrix was found at depths on average between 2.13 - 4.27 m (7 - 14 ft) below the ground surface except for on small section in the northwestern corner and one small section in near the center of the project area (Figure 63). Underneath the shell matrix layer was a wood layer composed of small wood particles compressed together in a solid layer. In the southern portion of the API, the wood layer was usually at least 5.08 – 12.7 cm (2 - 5 in) thick; in the northern portion of the site the wood layer in some portions extended between 76.2 – 254 cm (30 to 100 in) thick.

The Shell Matrix Site (TSN: TH2022-1102) is recommended eligible for listing in the NRHP under Criterion D. At this time, no information has been revealed that would confirm the site is significant to local, state, and national history (Criterion A). Further, there is no evidence linking this site to a specific person or persons; therefore, so site is not recommended eligible for listing the NRHP under Criterion B. The site also does not appear to embody the distinctive characteristics of a type, period, method of construction, the work of a master, or possess high artistic values and is therefore not recommended not eligible under Criterion C. Shaun Dinubilo (Archaeologist for the Squaxin Island Tribe), has reported that there was a village site at this location; however, due to the sensitive nature of the area, no additional information was disclosed (personal communication 2022). As such, the site has the potential for additional information to be revealed and it is therefore recommended eligible for listing on the NRHP under Criterion D. The integrity of the site remains unknown at this time. The depth of the shell matrix combined with the high water table inhibits standard methods for data recovery efforts (hand excavation of units). The appropriate methodology for further evaluation to determine the integrity of the site will be determined by formal consultation between the DAHP and the Tribes to develop strategies for its evaluation of integrity.

Figure 63. Example of the shell matrix identified in bore C6.

Figure 64. Shell matrix layer in T2.

Figure 65. Shell matrix on top of wood layer in C4 (10-15 ft)

Figure 66. Shell matrix from C1W (10-15ft) from water screening through ¼ inch mesh.

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Figure 67. Shell matrix from C1W (10-15 ft) water screening 1/8 inch mesh.

Northern Pacific Tumwater Branch Spur (TSN: TH2022-1103)

Remnants of two Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103) were found in the API. The main spur was identified in the southwest corner of the site and a secondary spur, used for loading cargo onto ships, was identified east of the mid-line of the project area (Figure 39).

The main spur was identified in the southwest corner of the API and consists of a short section of rails that run north to south (Figure 69). A cement platform, located east adjacent to the main spur, runs along the western edge of the project area. Cement platforms like this were often used to make loading wares on and off railcars easier.

Figure 68. Cement platform adjacent to railroad line in southwestern corner of API.

Evidence of the secondary spur, which extends east from the main spur and branches toward the water, is visible directly east of the mid-line of the project area (Figure 70 - Figure 71). This section of the spur is best seen at low tide since portions of it are fully submerged by water at higher tides. Remains of this portion of the spur consist of partially submerged wood posts or pilings. Approximately 25 of these wooden pilings are visible from the shore during low tide. The posts are wood, round, and covered in barnacles. Adjacent to this portion of the spur are two rectangular and two square concrete foundations that are set just south of the spur. The rectangular foundations are sized approximately 12.19 by 1.83 m (40 ft by 6 ft); the square foundations are sized approximately 3.35 m by 3.66 m (11 ft by 12 ft). The concrete foundations are aligned northwest/southeast and approximately 3.35 m (11 ft) apart. Based on review of historic photos and maps, the concrete foundations supported a large crane and at the end of this spur was a small loading platform (Figure 72 - Figure 79). Between 1973 and 1976 the spur appears dismantled (Figure 77 - Figure 79).

Hannum (2002) identifies the spurs in the API as associated with the northern extension of the Olympia & Chehalis Valley Railroad (formerly the Olympia & Tenino Railroad [O&T). The O & T was a narrow-gauge line that totaled approximately 15 miles with lengthy spurs (Hannum 2002: 43). In 1889, the line was purchased by the Port Townsend Southern Railroad Company as part of

the Oregon Improvement Company and "only a few parts of the long-gone extension are visible today" (Hannum 2002:54). The line was initially narrow-gauge track and in 1891, the railroad was converted to a standard gauge and extended into deep waters on the east side of Budd Inlet (Hannum 2002:13, Miller 1925:250). In 1891, the Oregon Improvement Company was reorganized into the Pacific Coast Company and thus, gained new ownership under Northern Pacific (Miller 1925:250).

The main spur appears to be the same alignment previously inventoried by Allen (2007) and Smits (2007) (1349586). Smits (2007) noted that the line located north and south of what was recorded at that time had been removed. Allen (2007) noted that the line connected "several lumber and timber plants (including Olympia Fir Company, Panama Lumber and Shingle Co., Henry McCleary Timber Co., and Yankee Notion Mill Co.)." Allen (2007) also reported that it is "unclear if the present track follows or approximates the southern half of [the Port Townsend and Southern Railroad Company] track" and that the current track was laid in 1917 by the Northern Pacific Railway Company. Allen (2007) also notes that the spur was no longer in use after a fire destroyed the Hardel Plywood mill in 1996. Allen (2007) recommended the spur eligible for listing the NRHP under Criterion A for "its association with the development of railroads in the State of Washington and the Pacific Northwest, and [for] its association with the development of railroads as a means of conveying forest products from forests to mills and from mills to markets."

The Northern Pacific Tumwater Branch Spur (TSN: TH2022-1103) is recommended eligible for listing in the NRHP under Criterion A and D. The site is recommended under Criterion A due to the significance of the site to local, state, and national history. In Thurston County, lumber was the most important industry at the turn of the 20th century (Dougherty 2006). Railroads were used as a means to transport these lumber wares to markets across the globe (Dougherty 2006). Multiple business ventures used this site over the years and is not directly associated with any persons; therefore, the site is recommended eligible not for listing the NRHP under Criterion B due to the site's lack of association with an individual of significance in local, state, or national historic context. The site does not embody the distinctive characteristics of a type, period, method of construction, the work of a master, or possess high artistic values; therefore, the site is recommended not eligible for listing under Criterion C. Though a portion of the site's boundary has been determined through preliminary testing, there is still potential for additional information regarding the history of the railroad spurs on the site. Therefore, the site is recommended eligible for listing on the NRHP under Criterion D. Due to little of the site remaining intact, the integrity of design, association, feeling, materials, or workmanship are absent and only the aspects of location and setting remains.

Figure 69. Overview of exposed railroad associated with Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103) observed in the southwestern corner of the API, direction north.

Figure 70. Overview of the piers and concrete platforms for traveling crane associated with the Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103), direction east.

Figure 71. Overview of the piers and concrete platforms for traveling crane associated with the Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103), direction southeast.

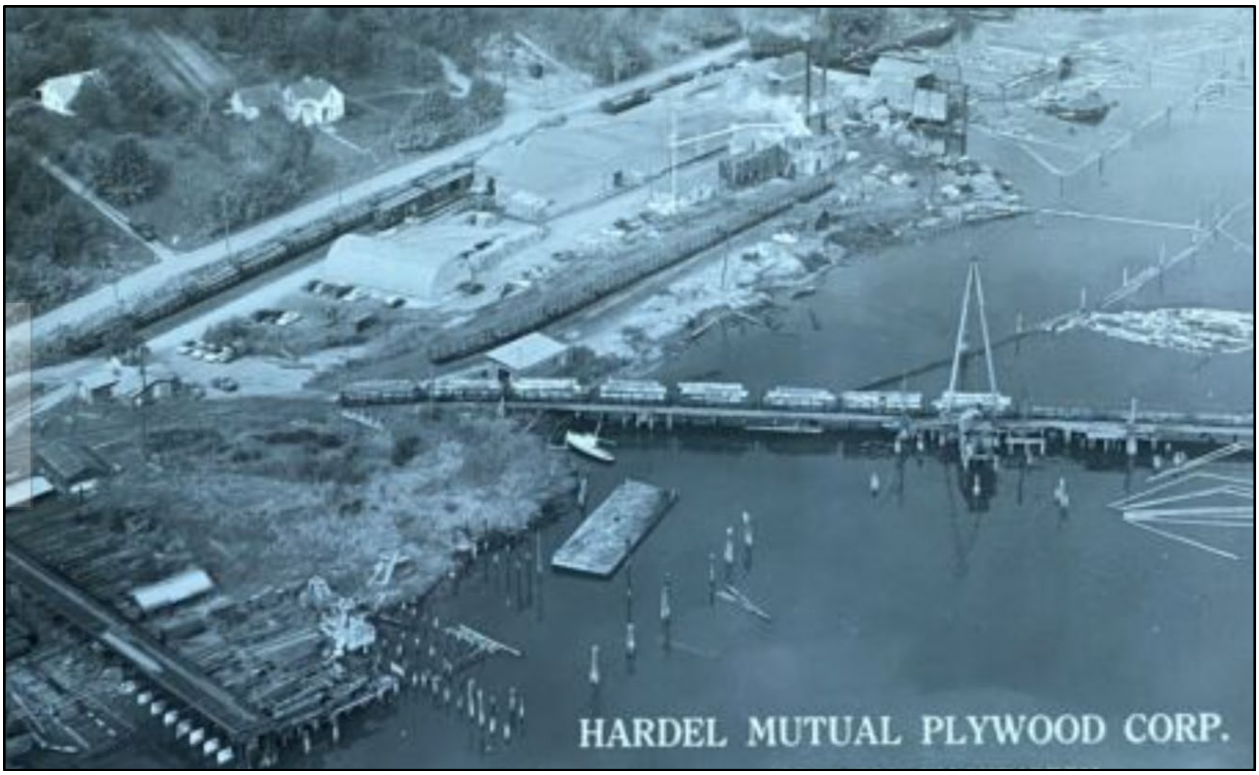

Figure 72. Ca. 1945 aerial of the Hardel Mutual Plywood Corporation detailing the Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103), view northwest (Ebay 2023).

Figure 73. Ca. 1950 aerial of Hardel Plywood Company with railroad cars hauling lumber on the pier, view northwest. Note the three spur lines on the property. Only the east and west lines were identified.

Figure 74. 1963 aerial of the API detailing the Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103), view northwest (Image adapted from Millhorn 2022).

Figure 75. 1967 aerial detailing the Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103), view is north (Washington State Archives 2023b [cropped by ATCRC]).

Figure 76. Historic aerial 1969 detailing the Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103), (NETROnline 2022).

Figure 77. 1973 aerial s detailing the Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103) (NETROnline 2022).

Figure 78. 1976 aerial detailing the Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103) (WSDOE 2022).

Figure 79. Ca. 1990 aerial detailing the Northern Pacific Tumwater Branch Spurs (TSN: TH2022-1103), view northwest (Moffat & Nichol 2022).

SUMMARY AND RECOMMENDATIONS

ATCRC conducted a cultural resources assessment for this project that consisted of a background review and field investigation. Background review determined that the project area was previously used as a sawmill for lumber production starting as early as 1891. Field investigation included drilling direct-push bores and excavating trenches across the project area to assess the presence or absence of buried cultural resources. Results of the assessment identified a Historic Mill Site (TSN: TH2022-1101), a Shell Matrix Site (TSN: TH2022-1102), and the Northern Pacific Tumwater Branch Spur (TSN: TH2022-1103). In accordance with DAHP, each site was inventoried and, in accordance with SEPA, each were evaluated for listing on the NRHP: the Historic Mill Site (TSN: TH2022-1101) was recommended not eligible for the NRHP due to lack of integrity; the Shell Matrix Site (TSN: TH2022-1102) was recommended eligible for the NRHP under Criterion D; and, the Northern Pacific Tumwater Branch Spur (TSN: TH2022-1103) was recommended eligible for the NRHP under Criteria A and D.

ATCRC understands that the project intends to disturb subsurface deposits as a result of prepping the landform and installing foundations and a seawall. Additionally, all piles and concrete foundations will be removed from the in-water portion of the project area. As such, ATCRC has determined that the project will impact cultural resources. If impacts to these sites cannot be avoided, mitigation efforts may be required. Some possible mitigation efforts could include a Arc GIS StoryMap related to the Squaxin Island Tribe cultural importance of the area, interpretive signage, and or a HistoryLink essay. ATCRC also recommends that cultural resource monitoring occurs during all ground-disturbing activities within the project area to ensure that no significant cultural resources are identified during construction. ATCRC also recommends that an MOA or Programmatic Agreement be prepared prior to the commencement of construction, to define how the impacts to cultural resources will be managed. Potential signatories for an MOA would include DAHP, the affiliated tribes within the consultation area, the property owner, and possibly the Army Corp of Engineers once their jurisdictional APE has been defined.

No cultural resources study can wholly eliminate uncertainty regarding the potential for prehistoric sites, historic properties, or TCPs associated with a project. The information presented in this report is based on professional opinions derived from our analysis and interpretation of available documents, records, literature, and information identified in this report and on our reconnaissance-level field investigation and observations as described herein. Conclusions and recommendations presented apply to project conditions existing at the time of our study and those reasonably foreseeable. The data, conclusions, and interpretations in this report should not be construed as a warranty of subsurface conditions described in this report. They cannot necessarily apply to project changes of which ATCRC is not aware of and has not had the opportunity to evaluate.

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APPENDIX A: INADVERTENT DISCOVERY PLAN (IDP)

The following Inadvertent Discovery Plan (IDP) outlines the procedures to be implemented, in accordance with state and federal laws, if NRHP potentially-eligible and ineligible cultural resource materials are inadvertently discovered during construction. The separate protocol for discovery of human skeletal remains is also described below.

1. RECOGNIZING CULTURAL RESOURCES

A cultural resource is an item of historical, traditional, or cultural importance. The item could be prehistoric or historic. Examples might include:

- A multi-species accumulation of shell (shell-midden) with associated bone, stone, antler or wood artifacts, burned rocks or charcoal.
- Bones that appear to be human or animal bones associated with a shell-midden (i.e. with associated artifacts or cooking features).
- An area of charcoal or very dark stained soil with associated artifacts.
- Artifacts made of chipped or ground stone (i.e. an arrowhead, adze or maul) or an accumulation (more than one) of cryptocrystalline stone flakes (lithic debitage).
- Basketry, cedar garments, fish weir stakes or items made of botanical materials.
- Clusters of tin cans or bottles, logging or agricultural equipment that appear to be older than 50 years.
- Buried railroad tracks, decking, or other industrial materials.

Not all cultural resource material encountered will be potentially-eligible for listing on the NRHP. To be eligible for the NRHP cultural resources identified during construction must be 50 years of age or older, meet one or more of the four criteria listed below, and retain sufficient physical integrity to convey historical significance (36 CFR 60.4). A building, site, object, or structure may be considered for inclusion in the NRHP if it meets at least one of the following criteria:

1. The property is associated with events that have made a significant contribution to the broad patterns of our history.
2. The property is associated with the lives of persons significant in our past.
3. The property embodies 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 might lack individual distinction.
4. The property has yielded, or might be likely to yield, information important in prehistory or history.

The following archaeological resources will indicate potentially NRHP-eligible deposits and will be assumed NRHP-eligible until determined otherwise by the State Historic Preservation Officer (SHPO):

- Precontact deposits (such as midden deposits) associated with Native American use or occupation.
- Historic era non-Native American artifacts from NRHP-eligible (or potentially NRHP eligible) deposits (native soil or surfaces that were stable and exposed either between fill episodes, or after the conclusion of historic filling).
- Historic features consisting of stratified deposits with artifact concentrations that appear to be spatially or temporally distinct. This includes refuse deposits, privies, or other discrete accumulations.
- Courses of brick or other architectural materials that are part of a building foundation or pavement in their original position.
- Historic era non-Native American artifacts from non-eligible contexts, only if they are diagnostic or have educational value.

Examples of deposits that will not be considered NRHP eligible include:

- Isolated or loose construction materials (brick, mortar, window glass), bottles, cans, located within fill sediments (not located in primary context).
- Mass deposits of lumber, concrete, granite, coal, etc.
- Pilings, decking, trestle, and railroad track, unless of clearly unusual construction.
- Historic-era artifacts not associated with a feature or stable surface.

Artifacts or deposits that are not potentially eligible, as described above, will be noted in daily field logs, photographed and documented on scaled site plans if possible. The protocol for Inadvertent Discovery, including the stop-work clause noted in the procedure below will not be implemented for artifacts or deposits that are not potentially eligible for listing in the NRHP.

2. ON-SITE RESPONSIBILITIES

STEP 1: STOP WORK

If any contractor or subcontractor believes that he or she has uncovered any cultural resource during construction of the project, all work adjacent to the discovery must stop. The discovery location should not be left unsecured at any time. Cultural resources encountered during an archaeological survey are intentional discoveries and are not covered under this plan.

STEP 2: NOTIFY DAHP

Rob Whitlam, Ph.D.
DAHP, State Archaeologist
Rob.Whitlam@dahp.wa.gov
(360) 586-3080
(360) 890-2615

The DAHP will review the eligibility criteria above, make a recommendation to the artifact or deposits potential eligibility, and will proceed with agency and tribal notification as necessary (so

long as the artifact or deposit is determined eligible). After consultation, DAHP will complete a written plan of action describing the disposition of cultural resources pursuant to 43 CFR Part 10 and will execute their prescribed duties within that plan of action.

3. PROTOCOL FOR DISCOVERY OF HUMAN SKELETAL REMAINS

In the event that human remains are discovered during the construction, the following procedures are to be followed to ensure compliance with RCW 68.60: Abandoned and Historic Cemeteries and Historic Graves, and RCW 27.44: Indian Graves and Records. Washington State law requires immediate notification of known or suspected human remains to county and/or municipal law enforcement agencies, county medical examiner or coroner's offices, DAHP, and federal and local agencies involved directly with the project or having jurisdiction over the subject properties.

If ground-disturbing activities encounter human skeletal remains during construction, then all activity that may cause further disturbance to those remains must immediately cease and the area of the find must be secured and protected from further disturbance. Any human remains that are discovered will be treated with dignity and respect. The remains should not be touched, moved, or further disturbed. If, however, handling of human remains is unavoidable, the archaeological monitor and/or professional archaeologist will use cloth gloves. All remains will remain covered with a tarpaulin that will not be removed until such time that the coroner assumes jurisdiction of the find.

The finding of human skeletal remains must be reported to the County Medical Examiner / Coroner in the most expeditious manner possible. The County Medical Examiner / Coroner will determine if the remains are human and whether the discovery constitutes a crime scene. If the remains are determined to not be a crime scene, the County Medical Examiner / Coroner will notify DAHP. The DAHP will be responsible for informing the affiliated tribes regarding the discovery. Contact information for the County Medical Examiner / Coroner and the DAHP is provided below.

CONTACT INFORMATION IF HUMAN SKELETAL REMAINS ARE DISCOVERED

Gary Warnock Thurston County Coroner 360-867-2140	Guy Tasa, State Physical Anthropologist Department of Archaeology and Historic Preservation 360-586-3534

4. PROCEEDING WITH CONSTRUCTION

Project construction outside the discovery location may continue while documentation and assessment of the cultural resources proceed. A Cultural Resources Specialist (either from DAHP, a consulting Tribe, or a professional consultant) must determine the boundaries of the discovery location. In consultation with DAHP and affected tribes, the project lead will determine the appropriate level of documentation and treatment of the resource. If federal agencies are involved, the agencies will make the final determinations about treatment and documentation.

Construction may continue at the discovery location only after the process outlined in this plan is followed, and DAHP (and the federal agencies, if any) determine that compliance with state and federal laws is complete.

APPENDIX B: CORRESPONDENCE

From: Shaun Dinubilo
To: Nicole Floyd
Cc: Maryanne Goddu; Sarah
Subject: West Bay Yards-CRD Recommendations

Hello Nicole,

Thank you for allowing me the extension to provide comments for the West Bay yards project. I hope you are having a good day. Due to the nature of this project, we recommend either deep testing using controlled excavation with a flat bucket backhoe (similar to Madrone) or a vibricore testing strategy to identify cultural resources or cultural resource bearing deposits (this might be the better option due to ground water issues). We further recommend that a research design document using either one of these methods is developed. Ideally this research design document needs to take into consideration the variable water table throughout the project area. Please feel free to reach out to me about this recommendation.

Lastly, we have additional comments regarding the cultural resource investigation that was conducted in the project area:

West Bay Yards-CR Appendix C

Comment Number	Page	Paragraph (Full)	Sentence	Comment
1	1	2	4	Projects such as Madrone, Market Flats, Legion Way, etc. show counter to this statement. There is no evidence or references that this project would be any different to the observed depositional regimes identified in similar environments in downtown Olympia (buried shoreline covered with fill). Based off the previous cultural resource work and the history of the project area, this would be a prime area for the possibility for deeply buried Cultural resources (early historic sites, wet sites, and pre-contact sites).
2	1	5	1	From reading the Department of Ecology (WDOE)/Grays Corporation 2012 final remedial report of the Hardel Site (current project area), it does not appear that the majority of the project site was cleaned up via sediment removal. While a lot of contaminated sediments were removed, it's far from the majority. In particular, if both the Pioneer reference and the WDOE 2012 report are accurate, it's unknown how deep the sediments were removed near the 1870s shoreline (somewhere between 6 to 16 feet). How is this in relation to the historic fill episodes? Just because 6 to 16 feet of sediment was remediated, doesn't necessarily mean buried cultural resource sites don't exist, especially if this remediation was limited to the historic fill layers.
3	3	1	4	How old is the pier? What its association? Was there a site form filled out for the pier (if older than 45 years?)?
4	3	1	5	The CRD of the Squaxin Island Tribe has not recommended monitoring for this project. We have no administrative records of making any formal recommendations as we literally just received the project on June 29th. We would be okay with monitoring, after some level of deep cultural resource investigation is conducted.
5	4	4	General	No mention of the City's IDP ordnance.
6	4	4	General	If this project is going to have federal permitting, might want to mention the National Historic Preservation Act
7	4	5	General	The API does not seem to account for indirect effects to cultural resources. The construction of a multi-use space with parking garage will cause increases to traffic and pedestrian use. The API might want to consider that and the possibly effect on known historic structures along West bay Drive.
8	9	2	2 to 3	How the sentences are written suggest that the Sa-He-Wa-Mish, Squi-Aitl, T'Peeksin, S'Hotl=Ma-Mish, and Noo-She-Chatl are not part of the Squaxin Island Tribe, when in fact they are.

From: Shaun Dinubilo
To: Nicole Floyd
Subject: West Bay Yards-Lack of Addressing the SIT"s Cultural Resource Departments comments
Date: Thursday, June 02, 2022 9:33:15 AM
Attachments: West Bay Yards-CRD Recommendations.msg

Hello Nicole,

Thank you for keeping us in the loop about this project. After reviewing the documents, it has become clear to the Cultural Resource Department of the Squaxin Island Tribe that the comments we provided your agency and the applicant's archaeologist were not addressed. I have reattached the comments that was sent to your agency on 8/16/2021. I have also noticed that this email was not part of your consultation/administrative record for the project. We do encourage your agency to add the attachment and this email to your consultation record.

Lastly, all cultural resource reports and cultural resource sites under RCW 42.56.300 are considered confidential and are not for public disclosure.

Shaun Dinubilo
Archaeologist
Cultural Resource Department
Squaxin Island Tribe
200 S.E. Billy Frank Jr. Way
Shelton, WA 98584
Office Phone: 360-432-3998
Cell Phone: 360-870-6324
Email: sdinubilo@squaxin.us
Email is my perferred method of communication.

As per 43 CFR 7.18[a][1]) of the Archaeological Resource Protection Act, Section 304 of the National Historic Preservation Act, and RCW 42.56.300 of the Washington State Public Records Act-Archaeological Sites, all information concerning the location, character, and ownership of any cultural resource must be withheld from public disclosure.

9	9	2	General	No mention of the Ste-Chass lived along Budd Inlet/Deschutes Estuary.
10	9	2	General	No mention of the Squaxin who lived along Case Inlet
11	9	General	General	See Madrone report comments about history and ethnography sections, they are applicable to here as well
12	9	2	General	List only 5 inlets and not all 7 of the Squaxin Island Tribe
13	11	General	General	No discussion about the 1890s fill and dredging work which drastically help create the modern alignment of the City of Olympia.
14	11	General	General	No mention of the Percivals, the establishment of Capitol Lake, etc.
15	20	General	General	Is the train platform old enough to be record as a site?
16	General	General	General	Further discussion about the 2012 remediation work is needed for this project.
17	General	General	General	No discussion about the Geotech results from 2012 or 2020, in particular, discussions about the reported dispositional environment.
18	General	General	General	Add maps showing the historic alignment of the shoreline ranging from the historic T-Sheets to the Sandborn maps

Thank you and have a good day,

Shaun Dinubilo
Archaeologist
CR Department
Squaxin Island Tribe
200 S.E. Billy Frank Jr. Way
Shelton, WA 98584
Office Phone: 360-432-3998
Cell Phone: 360-870-6324
Email: sdinubilo@squaxin.us

---------- Forwarded message ---------
From: **Sarah Amell** <sarah@aquaterracrc.com>
Date: Tue, Jul 19, 2022 at 2:13 AM
Subject: West Bay Landing, meeting summary
To: Brandon Smith <brandon@themilestonecompanies.com>, Shaun Dinubilo <sdinubilo@squaxin.us>
Cc: Neil, Stephanie L CIV USARMY CENWS (USA) <Stephanie.L.Neil@usace.army.mil>, Andrew Viloudaki <andrew@aquaterracrc.com>, Jessica Wadleigh-Stringer <jessica@bellscpa.com>

Hello Brandon and Shaun-
Thank you for the good meeting Friday morning. I wanted to follow up with a summary of the path forward we discussed during the meeting. Please reply with confirmation of the following approach or addd comments as needed.

1. ATCRC will prepare a research design, detailing that geotechnical bores (approx 8, or more) will be monitored during excavation, in the middle portions of the project area. Brandon will coordinate the geotech/get Sarah in touch with the geotech subs whom will be completing the work, so that we can partner up in the field on the endeavor.

2. ATCRC will monitor backhoe trenching in the NW and SW quadrant areas (close to the road), for additional information related to the identification of potentially deeply buried cultural resources. The approach for this, including maps and locations/number of trenches, will be detailed in the above-referenced research design. Brandon will contract the operator/backhoe for this endeavor.

3. The research design document will be ready for review within the next two weeks. We will send this to DAHP and the Squaxin CRD for review and approval prior to the initiation of the field survey activities.

4. The preliminary cultural resource assessment prepared previously will be updated to address/incorporate comments received from the Squaxin CRD, and preliminary comments from USACE, as well as with the results of the amended field survey activities discussed above.

If I missed anything, please let me know, and thank you both for our time in the field!

Regards,
Sarah J. Amell, MMA, RPA
Principal
Aqua Terra Cultural Resource Consultants
Sarah@AquaTerraCRC.com
8525 Stoney Creek Lane SW
Olympia, WA 98512
(d) 360.754.2208
(c) 360.359.6701
www.AquaTerraCRC.com

**Please note, I do not expect a reply from you on evenings and weekends.*
Office hours: Monday-Thursday 8:30-5:00.

Andrew Viloudaki <andrew@aquaterracrc.com> Thu, Aug 11, 2022 at 7:48 AM

Aqua Terra Cultural Resource Consultants
Andrew@AquaTerraCRC.com
8525 Stoney Creek Lane SW
Olympia, WA 98512
Via: Kaiserslautern, Germany
(O) 360.754.2208
(C) 360.489.6086
www.AquaTerraCRC.com

---------- Forwarded message ---------
From: **Shaun Dinubilo** <sdinubilo@squaxin.us>
Date: Thu, Jul 21, 2022 at 11:39 PM
Subject: RE: West Bay Landing, meeting summary
To: Sarah Amell <sarah@aquaterracrc.com>, Brandon Smith <brandon@themilestonecompanies.com>
Cc: Neil, Stephanie L CIV USARMY CENWS (USA) <Stephanie.L.Neil@usace.army.mil>, Andrew Viloudaki <andrew@aquaterracrc.com>, Jessica Wadleigh-Stringer <jessica@bellscpa.com>

Hello Sarah

Thank you for sharing the path forward and summary of the meeting last Friday.

Shaun Dinubilo

Archaeologist

Cultural Resource Department

Squaxin Island Tribe

200 S.E. Billy Frank Jr. Way

Shelton, WA 98584

Office Phone: 360-432-3998

Cell Phone: 360-870-6324

Email: sdinubilo@squaxin.us

Email is my perferred method of communication.

[Quoted text hidden]

Andrew Viloudaki <andrew@aquaterracrc.com> Thu, Aug 11, 2022 at 7:49 AM
To: Jessica Morris <morrisj@aquaterracrc.com>

Jessica Morris <morrisj@aquaterracrc.com>

West Bay Yards Project Cultural Resource Survey

1 message

Jessica Morris <morrisj@aquaterracrc.com> Wed, Oct 19, 2022 at 12:15 PM
To: dpenn@chehalistribe.org
Cc: Sarah Amell <sarah@aquaterracrc.com>, Andrew Viloudaki <andrew@aquaterracrc.com>

Hello Mr. Penn,

I am writing to provide a technical notification and request information regarding the West Bay Yards cultural resource survey occurring between Monday and Thursday, 10/24/2022 - 10/27/2022, in Olympia, Thurston County, WA. On Monday and Tuesday, starting at 8 am, ATCRC will be analyzing sediments from 4-inch diameter sonicore bores for cultural resources to a maximum depth of 30 feet. On Wednesday and Thursday, starting at 8:30 am, ATCRC will be guiding and monitoring up to 10 backhoe trenches as part of the cultural resource survey.

The project intends to construct an underground parking structure and mixed-use space that will include commercial and residential facilities. The project area has been previously disturbed by excavation and removal of contaminants.

I have included two maps and a Google Maps link for your reference.

https://goo.gl/maps/nKXTubABJ14wWewV9

Jessica Morris <morrisj@aquaterracrc.com>

West Bay Yards Project Cultural Resource Survey

1 message

Jessica Morris <morrisj@aquaterracrc.com> Wed, Oct 19, 2022 at 12:16 PM
To: Seth Russell <SRussell@cowlitz.org>
Cc: Sarah Amell <sarah@aquaterracrc.com>, Andrew Viloudaki <andrew@aquaterracrc.com>

Hello Mr. Russell,

I am writing to provide a technical notification and request information regarding the West Bay Yards cultural resource survey occurring between Monday and Thursday, 10/24/2022 - 10/27/2022, in Olympia, Thurston County, WA. On Monday and Tuesday, starting at 8 am, ATCRC will be analyzing sediments from 4-inch diameter sonicore bores for cultural resources to a maximum depth of 30 feet. On Wednesday and Thursday, starting at 8:30 am, ATCRC will be guiding and monitoring up to 10 backhoe trenches as part of the cultural resource survey.

The project intends to construct an underground parking structure and mixed-use space that will include commercial and residential facilities. The project area has been previously disturbed by excavation and removal of contaminants.

I have included two maps and a Google Maps link for your reference.

https://goo.gl/maps/nKXTubABJ14wWewV9

Jessica Morris <morrisj@aquaterracrc.com>

West Bay Yards Project Cultural Resource Survey

1 message

Jessica Morris <morrisj@aquaterracrc.com> Wed, Oct 19, 2022 at 12:13 PM
To: Brad Beach <Beach.Brad@nisqually-nsn.gov>
Cc: Sarah Amell <sarah@aquaterracrc.com>, Andrew Viloudaki <andrew@aquaterracrc.com>

Hello Mr. Beach,

I am writing to provide a technical notification and request information regarding the West Bay Yards cultural resource survey occurring between Monday and Thursday, 10/24/2022 - 10/27/2022, in Olympia, Thurston County, WA. On Monday and Tuesday, starting at 8 am, ATCRC will be analyzing sediments from 4-inch diameter sonicore bores for cultural resources to a maximum depth of 30 feet. On Wednesday and Thursday, starting at 8:30 am, ATCRC will be guiding and monitoring up to 10 backhoe trenches as part of the cultural resource survey.

The project intends to construct an underground parking structure and mixed-use space that will include commercial and residential facilities. The project area has been previously disturbed by excavation and removal of contaminants.

I have included two maps and a Google Maps link for your reference.

https://goo.gl/maps/nKXTubABJ14wWewV9

Jessica Morris <morrisj@aquaterracrc.com>

West Bay Yards Project Cultural Resource Survey

1 message

Jessica Morris <morrisj@aquaterracrc.com> Wed, Oct 19, 2022 at 12:14 PM
To: Brandon Reynon <brandon.reynon@puyalluptribe-nsn.gov>
Cc: Sarah Amell <sarah@aquaterracrc.com>, Andrew Viloudaki <andrew@aquaterracrc.com>

Hello Mr. Reynon,

I am writing to provide a technical notification and request information regarding the West Bay Yards cultural resource survey occurring between Monday and Thursday, 10/24/2022 - 10/27/2022, in Olympia, Thurston County, WA. On Monday and Tuesday, starting at 8 am, ATCRC will be analyzing sediments from 4-inch diameter sonicore bores for cultural resources to a maximum depth of 30 feet. On Wednesday and Thursday, starting at 8:30 am, ATCRC will be guiding and monitoring up to 10 backhoe trenches as part of the cultural resource survey.

The project intends to construct an underground parking structure and mixed-use space that will include commercial and residential facilities. The project area has been previously disturbed by excavation and removal of contaminants.

I have included two maps and a Google Maps link for your reference.

https://goo.gl/maps/nKXTubABJ14wWewV9

Jessica Morris <morrisj@aquaterracrc.com>

West Bay Yards Cultural Resource Survey

1 message

Jessica Morris <morrisj@aquaterracrc.com> Wed, Oct 19, 2022 at 12:02 PM
To: Shaun Dinubilo <sdinubilo@squaxin.us>
Cc: Sarah Amell <sarah@aquaterracrc.com>, Andrew Viloudaki <andrew@aquaterracrc.com>

Hi Shaun,

I am writing to provide a technical notification regarding the West Bay Yards cultural resource survey occurring between Monday and Thursday, 10/24/2022 - 10/27/2022, in Olympia, Thurston County, WA. On Monday and Tuesday, starting at 8 am, ATCRC will be analyzing sediments from 4-inch diameter sonicore bores for cultural resources to a maximum depth of 30 feet. On Wednesday and Thursday, starting at 8:30 am, ATCRC will be guiding and monitoring up to 10 backhoe trenches as part of the cultural resource survey.

I have included two maps and a Google Maps link for your reference in case you would like to join us in the field.

https://goo.gl/maps/nKXTubABJ14wWewV9

Please let me know if you have any questions or concerns.

Thank you,

Carson Rouse <carson.rouse@aquaterracrc.com>

Continuing technical consultation, West Bay Yards CR Survey (DAHP 2020-12-07564)

8 messages

Sarah Amell <sarah@aquaterracrc.com> Mon, Oct 24, 2022 at 11:44 AM
To: "Wollwage, Lance (DAHP)" <Lance.Wollwage@dahp.wa.gov>, Shaun Dinubilo <sdinubilo@squaxin.us>, Brad Beach <beach.brad@nisqually-nsn.gov>, "Brandon.Reynon@PuyallupTribe-nsn.gov" <Brandon.Reynon@puyalluptribe-nsn.gov>, "Jennifer M. Keating" <jennifer.m.keating@puyalluptribe-nsn.gov>
Cc: "Jolivette, Stephanie (DAHP)" <stephanie.jolivette@dahp.wa.gov>, Brandon Smith <brandon@themilestonecompanies.com>, Marygrace Goddu <mgoddu@ci.olympia.wa.us>, Colin Higashi <colin@aquaterracrc.com>, Carson Rouse <carson.rouse@aquaterracrc.com>, Jessica Morris <MorrisJ@aquaterracrc.com>

Hello Cultural Resource Stewards-
As some of you are aware, we began geotech boring at the project today, one part of our cultural resource survey efforts, which will also include backhoe trenching later this week. Lance, I am including you right now as I am aware that Stephanie is out of the office this week, and this identification may result in a need for a permit in the future.

This morning one of our bores (2.5-inch split spoon) identified shell-midden six feet below the modern ground surface. See the map attached. We have instructed the drillers/team to add additional bores in the cardinal directions of the positive bore, at five-meter intervals, until no additional cultural material is identified, to attempt to define a site boundary while we have the drillers on site and available, versus having them come back out at a future date and cost. Once a negative bore is identified, they will split the difference and step back in towards the positive bore at 2.5 meters, to further refine the boundary as we are able at this time.

The initial bores were being excavated to 30 feet bmgs, however, we will assess the additional bores, and if we can decrease the depth (because we are clearly in deep bay bottom sediments with no further potential of a stable landform evident, etc) we will proceed shallower so that we can focus the efforts on obtaining the valuable cultural data.

All the midden matrices from the samples are collected by 10 cm levels, bagged, and will be transported by bag and bucket back to our lab here in Olympia. We will proceed with water screening the material next week, through 1/8 and 1/4 inch mesh at our office. If any of you are interested in observing/participating in this, please feel welcome to join us. We will buy the pizza and welcome the opportunity to show you around our office and lab while we are at it.

I have attached a map of the positive bore location, photographs of the sample, and also our recently revised work plan. We received thoughtful comments from Shaun that were addressed and incorporated into this current version work plan, and this had been previously submitted to DAHP for review/is uploaded to Wisaard.

If you have any questions, please feel free to reach out to me via email or by cell, I am currently working from home today (and likely tomorrow) as I currently have a cold virus.

Sarah J. Amell, MMA, RPA
Principal
Aqua Terra Cultural Resource Consultants
Sarah@AquaTerraCRC.com
8525 Stoney Creek Lane SW
Olympia, WA 98512
(d) 360.754.2208
(c) 360.359.6701
www.AquaTerraCRC.com

**Please note, I do not expect a reply from you on evenings and weekends.*
Office hours: Monday-Thursday 8:30-5:00.

and permanently delete this transmission including attachments, if any.

4 attachments

West Bay_Survey.jpg
4530K

68832079610--99FBD0D2-AF30-4BF8-AA31-89D79175D8F9.jpg
3548K

IMG-5746.jpg
3227K

rev West Bay Yards Work Plan.pdf
1397K

Shaun Dinubilo <sdinubilo@squaxin.us> Mon, Oct 24, 2022 at 2:25 PM
To: Sarah Amell <sarah@aquaterracrc.com>, "Wollwage, Lance (DAHP)" <Lance.Wollwage@dahp.wa.gov>, Brad Beach <beach.brad@nisqually-nsn.gov>, "Brandon.Reynon@PuyallupTribe-nsn.gov" <Brandon.Reynon@puyalluptribe-nsn.gov>, "Jennifer M. Keating" <jennifer.m.keating@puyalluptribe-nsn.gov>
Cc: "Jolivette, Stephanie (DAHP)" <stephanie.jolivette@dahp.wa.gov>, Brandon Smith <brandon@themilestonecompanies.com>, Marygrace Goddu <mgoddu@ci.olympia.wa.us>, Colin Higashi <colin@aquaterracrc.com>, Carson Rouse <carson.rouse@aquaterracrc.com>, Jessica Morris <MorrisJ@aquaterracrc.com>

Sarah,

Thank you for the phone call and email heads up. From talking with you and visiting the project site, I agree with the boring method and the wet screening of the positive boring samples.

Shaun Dinubilo

Archaeologist

Cultural Resource Department

Squaxin Island Tribe

200 S.E. Billy Frank Jr. Way

Shelton, WA 98584

Office Phone: 360-432-3998

Cell Phone: 360-870-6324

Email: sdinubilo@squaxin.us

Email is my perferred method of communication.

[Quoted text hidden]

Wollwage, Lance (DAHP) <Lance.Wollwage@dahp.wa.gov> Mon, Oct 24, 2022 at 2:35 PM
To: Shaun Dinubilo <sdinubilo@squaxin.us>, Sarah Amell <sarah@aquaterracrc.com>, Brad Beach <beach.brad@nisqually-nsn.gov>, "Brandon.Reynon@PuyallupTribe-nsn.gov" <Brandon.Reynon@puyalluptribe-nsn.gov>, "Jennifer M. Keating" <jennifer.m.keating@puyalluptribe-nsn.gov>
Cc: "Jolivette, Stephanie (DAHP)" <stephanie.jolivette@dahp.wa.gov>, Brandon Smith <brandon@themilestonecompanies.com>, Marygrace Goddu <mgoddu@ci.olympia.wa.us>, Colin Higashi <colin@aquaterracrc.com>, Carson Rouse <carson.rouse@aquaterracrc.com>, Jessica Morris <MorrisJ@aquaterracrc.com>

Thank you Sarah, I agree with your plans for additional borings to define the site boundary. Please proceed.

Many Thanks,

Lance Wollwage Ph.D. | State Archaeologist

360-890-2616 (cell) | lance.wollwage@dahp.wa.gov

Department of Archaeology & Historic Preservation | www.dahp.wa.gov

1110 Capitol Way S, Suite 30 | Olympia WA 98501

PO Box 48343 | Olympia WA 98504-8343

Complete archaeological permit requirements can be found in Washington Administrative Code 25-48-060.

From: Shaun Dinubilo <sdinubilo@squaxin.us>
Sent: Monday, October 24, 2022 2:26 PM
To: Sarah Amell <sarah@aquaterracrc.com>; Wollwage, Lance (DAHP) <Lance.Wollwage@DAHP.wa.gov>; Brad Beach <beach.brad@nisqually-nsn.gov>; Brandon.Reynon@PuyallupTribe-nsn.gov; Jennifer M. Keating <jennifer.m.keating@puyalluptribe-nsn.gov>
Cc: Jolivette, Stephanie (DAHP) <stephanie.jolivette@dahp.wa.gov>; Brandon Smith <brandon@themilestonecompanies.com>; Marygrace Goddu <mgoddu@ci.olympia.wa.us>; Colin Higashi <colin@aquaterracrc.com>; Carson Rouse <carson.rouse@aquaterracrc.com>; Jessica Morris <MorrisJ@aquaterracrc.com>
Subject: RE: Continuing technical consultation, West Bay Yards CR Survey (DAHP 2020-12-07564)

External Email

[Quoted text hidden]

Sarah Amell <sarah@aquaterracrc.com> Thu, Oct 27, 2022 at 4:29 PM
To: "Wollwage, Lance (DAHP)" <Lance.Wollwage@dahp.wa.gov>, "Jennifer M. Keating" <jennifer.m.keating@puyalluptribe-nsn.gov>, Shaun Dinubilo <sdinubilo@squaxin.us>, "Brandon.Reynon@PuyallupTribe-nsn.gov" <brandon.reynon@puyalluptribe-nsn.gov>, "Jolivette, Stephanie (DAHP)" <stephanie.jolivette@dahp.wa.gov>, Brad Beach <beach.brad@nisqually-nsn.gov>, Marygrace Goddu <mgoddu@ci.olympia.wa.us>
Cc: Brandon Smith <brandon@themilestonecompanies.com>, Colin Higashi <colin@aquaterracrc.com>, Carson Rouse <carson.rouse@aquaterracrc.com>, Jessica Morris <MorrisJ@aquaterracrc.com>

Hello Cultural Resource Stewards- Continuing the technical consultation on this. We were not able to get all of the bores necessary within the time available from the drill crew, so they will need to be back. They are looking at being available sometime in December. Our team will share an out-of-field summary from this session early next week when the maps and documentation are compiled.

For next week, I would like to extend an invitation for anyone to join us at our office/lab to assist with the water screening activity if desired. We will have pop-up tents set up outside of the lab area, and a heater in the lab, and will plan to proceed with the screening activity for as long as it takes, we have a lot of material collected. I thought it would be a great opportunity to get together, so please feel welcome to attend. We also have drop-in workstations if you need a place to set up temporarily with other commitments.

Where: https://www.google.com/maps/place/Aqua+Terra+Cultural+Resource+Consultants/@46.965715,-123.031008,15z/data=!4m6!3m5!1s0x5491741b7b4c4fdb:0x4cb78149cfd3f362!8m2!3d46.965715!4d-123.031008!16s%2Fg%2F11cnbp__3r

When: Tuesday-Thursday, from 9 a.m. to 4 p.m.

Please reply if you will be attending so we can coordinate lunch, we will be having a staff birthday party on Wednesday as well.

Thank you and I look forward to seeing you if you can make it.

Sarah J. Amell, MMA, RPA
Principal
Aqua Terra Cultural Resource Consultants
Sarah@AquaTerraCRC.com
8525 Stoney Creek Lane SW
Olympia, WA 98512
(d) 360.754.2208
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Please note, I do not expect a reply from you on evenings and weekends.
Office hours: Monday-Thursday 8:30-5:00.

[Quoted text hidden]

Shaun Dinubilo <sdinubilo@squaxin.us> Fri, Oct 28, 2022 at 8:10 AM
To: Sarah Amell <sarah@aquaterracrc.com>, "Wollwage, Lance (DAHP)" <Lance.Wollwage@dahp.wa.gov>, "Jennifer M. Keating" <jennifer.m.keating@puyalluptribe-nsn.gov>, "Brandon.Reynon@PuyallupTribe-nsn.gov" <brandon.reynon@puyalluptribe-nsn.gov>, "Jolivette, Stephanie (DAHP)" <stephanie.jolivette@dahp.wa.gov>, Brad Beach <beach.brad@nisqually-nsn.gov>, Marygrace Goddu <mgoddu@ci.olympia.wa.us>
Cc: Brandon Smith <brandon@themilestonecompanies.com>, Colin Higashi <colin@aquaterracrc.com>, Carson Rouse <carson.rouse@aquaterracrc.com>, Jessica Morris <MorrisJ@aquaterracrc.com>

Hello Sarah,

Thanks for the heads up. Can you please give us a very brief summary of the trenching efforts your crew conducted on Wednesday (10/26) and Thursday (10/27)? I know this information is still being complied by your team. I was out there for the first trench and stayed until ground water was encountered at roughly five feet below the ground surface.

I will not be able to attend the wet screening next week due to preexisting obligations. I look forward to seeing the summary of boring results that were conducted earlier this week.

Thanks,

Shaun Dinubilo

Archaeologist

Cultural Resource Department

Squaxin Island Tribe

200 S.E. Billy Frank Jr. Way

Shelton, WA 98584

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Email: sdinubilo@squaxin.us

Email is my perferred method of communication.

[Quoted text hidden]

Sarah Amell <sarah@aquaterracrc.com> Fri, Oct 28, 2022 at 9:13 AM
To: Shaun Dinubilo <sdinubilo@squaxin.us>
Cc: "Wollwage, Lance (DAHP)" <Lance.Wollwage@dahp.wa.gov>, "Jennifer M. Keating" <jennifer.m.keating@puyalluptribe-nsn.gov>, "Brandon.Reynon@PuyallupTribe-nsn.gov" <brandon.reynon@puyalluptribe-nsn.gov>, "Jolivette, Stephanie (DAHP)" <stephanie.jolivette@dahp.wa.gov>, Brad Beach <beach.brad@nisqually-nsn.gov>, Marygrace Goddu <mgoddu@ci.olympia.wa.us>, Brandon Smith <brandon@themilestonecompanies.com>, Colin Higashi <colin@aquaterracrc.com>, Carson Rouse <carson.rouse@aquaterracrc.com>, Jessica Morris <MorrisJ@aquaterracrc.com>

Hi Shaun- Yes, our team will share an out-of-field summary from this session early next week when the maps and documentation are compiled.

Thank you,
Sarah J. Amell, MMA, RPA
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[Quoted text hidden]

Sarah Amell <sarah@aquaterracrc.com> Mon, Oct 31, 2022 at 2:57 PM
To: "Wollwage, Lance (DAHP)" <Lance.Wollwage@dahp.wa.gov>, "Jennifer M. Keating" <jennifer.m.keating@puyalluptribe-nsn.gov>, Shaun Dinubilo <sdinubilo@squaxin.us>, "Brandon.Reynon@PuyallupTribe-nsn.gov" <brandon.reynon@puyalluptribe-nsn.gov>, "Jolivette, Stephanie (DAHP)" <stephanie.jolivette@dahp.wa.gov>, Brad Beach <beach.brad@nisqually-nsn.gov>, Marygrace Goddu <mgoddu@ci.olympia.wa.us>
Cc: Brandon Smith <brandon@themilestonecompanies.com>, Colin Higashi <colin@aquaterracrc.com>, Carson Rouse <carson.rouse@aquaterracrc.com>, Jessica Morris <MorrisJ@aquaterracrc.com>

Hello Cultural Resource Stewards-
Following up to provide the out-of-field summary from our crew for the survey activity completed last week. We will be back out to finish up December 12-15, based on driller availability. Please see the following detail regarding the field survey activity, let me know if you have any questions and if we get to water screen with you in person this week at our office!

Kind Regards- SJA

From October 24 to October 27, Colin Higashi and Carson Rouse (C&C) conducted cultural resource investigations for the West Bay Yards Project. Weather was consistently cool, with morning showers on Monday turning into a steady drizzle on Tuesday before clearing to partly sunny on Wednesday and Thursday. Monday and Tuesday were spent monitoring direct-push bores in the southern half of the property with the assistance of Simone from Landau Associates, while Wednesday and Thursday were used for trench investigations on the northern and southern quadrants of the property. A total of 19 bores and 8 trenches were completed during the week. In between bores, Colin and Carson

collected data for the preparation of four Historic Property Inventories along the shoreline and western margin of the site, and added a fifth for a historic railroad line upon its discovery at the beginning of Wednesday.

On Monday, C&C met with Landau and the drilling crew at 8:00 AM for a safety meeting and then located the planned locations of C1, C2, C, C4, C5, C6, C7, C8, C9, and C10 for Mark to confirm the utility locates and re-mark the positions. Boring started at planned bore location C1, in the southwest near the entrance. Observed sediments included a weathering series of sand and gravel fill extending to approximately 80-94 inches below the surface (uncertainty due to vertical shortening of samples), overlying gray gravelly sands (possibly shoreline-modified fill materials) to a total depth of 94-108 inches. This strata transitioned directly into an N3 40% shell midden layer with a fine- to very fine sand matrix. An intermediate layer of light-colored 70% fine sand and 30% coarse sand to 2 cm gravel was present between approximately 120 inches and 130-136 inches, but transitioned back into shell-bearing midden material and intermittent layers of organics-darkened fine sands which extended to a full depth of 170-173 inches. The midden terminated on a dense layer of wood scraps, and the bore was terminated at 190 inches (5 feet 10 inches) when the rig encountered an inhibitive mass, possibly a piling or intact log/board. Upon discovery of midden material in bore C1, Colin instructed Carson to contact Jessica Morris at the ATCRC office to begin the notification process and set aside the midden samples for potential collection. Jessica responded after C&C had finished processing of the 10-15 foot sample and instructed C&C to proceed with bore C1, collecting the midden material in 10-cm intervals for water screening at the office, and then begin radials around the initial bore at intervals of 5 meters. Shaun Dinubilo, an archaeologist with the Squaxin Tribe, arrived on-site shortly after 10:00 AM to inspect the findings, and Jessica arrived with additional bags, buckets, and markers for sample collection and labeling several minutes later. The number of available sample collection bags was once again deemed to be drastically insufficient later in the day, and Carson of C&C temporarily left the site to buy more.

Due to the early termination of bore C1, a supplementary bore was attempted approximately 2 feet to the north, labeled C1A, to attempt to reach the intended depth of 30 feet. Observed sediments were comparable to those observed in C1, with a deep upper layer of beige or tan fill overlying an older layer of coarser and more rounded gray sands and gravels, midden material starting from 90-109 inches, an intermediate layer of light-colored sandy deposits between 120 inches and 141-152 inches, and a dense layer of wood scraps immediately below the resumed midden material. Retrieval between 15 and 20 feet was low, and was likely reduced by resistance in the woody layer pushing underlying sediments out of the way, however retrieved sediments below the woody layer resembled estuarine or otherwise low-energy, relatively anoxic, distal-source deposits. They consisted of a yellowish gray (2.5Y 4/1) clayey layer containing sparse (~5%) scatterings of shell between 187-216 and 202-231 inches, and a slightly coarser and darker clayey layer (20% very fine sand, 5% rounded 0.3-2.5 cm gravel) with 15% shell extending to 211-240 inches. These progressed into light gray sandy gravelly silts from 240 to 263-273 and two layers of iron-stained shoreline-sorted sandy gravels to 290-300 inches. Attempted boring below 25 feet (300 inches) resulted in the loss of two pipette probes and thread stripping of both an old and new boring tube, and the bore was terminated with permission from Jessica Morris and Andrew Viloudaki at ATCRC. The loss of both available pipette probes hindered sampling efforts, as they were required to prevent sand heave from damaging or trapping the sampling tube below the water table (which was observed to be near 5 feet depth). Another set of probes was requested from Holocene Drilling, and arrived after 30 minutes.

C&C began the first radial, C1W, 5 feet to the west of the initial bore position. No significant change in sediments or boundary depths was observed and the bore was again terminated after the 20-25 foot sample due to refusal on rocky material. Brandon, with West Bay Development Group, arrived during sampling to observe boring activities and inquire about progress and findings. C&C continued to radial C1W1, a further 10 feet to the west for a cumulative offset of 15 feet, and encountered similar subsurface conditions to a depth of 15 feet, at which point the push rig encountered an inhibitively dense rocky surface. C&C identified a mostly-intact chunk of reddish wood, possibly cedar, in the midden material at a depth of 130-148 to 134-152 inches. C1W1 was terminated at 20 feet after the gravel or cobble surface damaged the cutting head of the rig, and C&C requested and received permission to terminate future bores at 15 feet, below the observed base of the midden deposits, to avoid further damages.C&C proceeded to C1W2, a further 15 feet to the west for a cumulative offset of 30 feet. An orange plastic fragment was encountered in the upper fill layers just below 60 inches, contact with the midden and wood scrap layers occurred slightly shallower here, at 85-105 and 132-162 inches, the intermediate layer of sand within the shell midden was not present, and the shell midden contained beds of peat and scattered wood fragments. C1W2 was terminated at 15 feet in the clayey layer underlying the wood scrap layer and shell midden.

There was no room for additional radials to the west, so C&C began a line of radials extending northward from the original bore location at 15-foot intervals, completing three (C1N, C1N1, C1N2, and C1N3) before stopping work around 5:30 PM on Monday. Conditions within these radials were roughly similar to those observed in C1, C1A, and the westward radials, with shell midden initially appearing at approximately 10-12 inches above the base of the 5-10 foot sample and ending on a layer of woody material near the bottom of the 10-15 foot sample. The top of the midden generally sank towards the north while the basal contact with the wood scrap layer remained relatively stable, and peat interbeds became much more common to the north. The majority of these radials were terminated at 15 feet, in or below the wood scrap layer at the expected base of the midden, in order to avoid damaging more equipment on the deeper gravel and cobbles. C1N terminated at 12 feet 1 inch when the rig encountered an intact wooden mass, potentially a buried piling, and was not

supplemented with an additional bore because midden was known to be present in the 5-10 foot sample. C&C identified a chunk of reddish wood, possibly cedar, within the midden material in C1N1 at a depth of 130-148 to 134-152 inches. C1N2 was consistent with the previous radials. C&C ended work after collecting the midden from C1N2 and transferred the day's midden samples to the office for water screening.

On Tuesday, October 25, C&C were on site with Landau and Holocene Drilling at 8:00 AM to continue bore investigations. Steady rain interfered with recording and labeling, slowing the work. They extended the line of radials north from C1N2 (labeled appropriately), completing an additional three northward radials at 15-foot intervals to a point approximately 15-20 feet south of the intended location of C2. The trends noted on the previous day continued until C1N5, in which no midden material was encountered. C1N3 terminated at 12 feet upon encountering a solid wooden impasse below the midden layer. C1N5 encountered a shallow layer of dark gray (N3) gravel and sand fill at approximately 30.5 inches and contained peat lamina and a wood chunk in a layer of very fine gleyed sands at 82-101 to 94-113 inches, immediately above the wood scrap layer, but no identifiable midden material was present so the northward line of radials were terminated.

C&C began an eastward line of radials from the location of C1, continuing with intervals of 15 feet and collecting the midden materials from all samples to be water screened in the office. A total of eight eastward radials were completed before the end of the day, labeled C1E, C1E1, C1E2, [...], C1E6, and C2akaC1E7. The previously established strata and associations continued throughout the holes, with peat beds and wood fragments interspersed with midden material between approximately 9 and 14 feet, terminating on a layer of wood scrap around 14.5-15 feet. C&C continued C1E2 to 20 feet, below the wood layer, in order to confirm the absence of midden at depth, and observed the expected gleyed clayey sediments. C1E3 contained a layer of sludgy black organics between 19 and 35 inches and a large wood layer between 85.5-105 inches and 90.5-120 inches. The material between this wood layer and the lower wood layer forming the expected lower boundary of the shell midden was slightly gleyed sand with low shell content, and could not be positively identified as midden, however the overlying layer was very shell-dense shell midden. Midden and wood scrap layers began occurring closer to the surface in C1E4 and C1E5, rising to as little as 65-83.5 inches and 149-157 inches, respectively. Additional shallow layers containing sludgy organic material occurred in C1E5 and C1E6 between approximately 23 and 30 inches. The final eastward radial was placed on the intended location for C2, so was labeled C2akaC1E7. It was observed to contain a pocket of black sludgy organics at 29 inches and midden material from 82.5-94.5 inches to the expected wood scrap layer at 149-165 inches. C&C requested more bore logs from the office during the day and were delivered from catastrophe by Kaiah from ATCRC, who arrived with additional forms while they were processing C1E5. Work finished after the completion of C2akaC1E7, around 4:30 PM.

On Wednesday, C&C met on-site at 8:30 to begin trench investigations within the APE. Shaun (Squaxin Tribe archaeologist) was present in the early morning, observing through the excavation of trench T2. Excavations started at the intended location of T1 and were immediately stopped when the excavator encountered buried historic railroad tracks running north-south along the western edge of the property, which were added to the site record as a fifth HPI. The first excavation was moved to the intended location of T2, further to the east. T2 contained a layer of concrete and construction fill over an older layer of asphalt with its own construction fill. The second layer of fill ended on a straight contact at a depth of 50 cm. The contact truncated a warped stratum of compact organic-stained sands overlying looser gray shell-bearing sands, leaving only a small arc of the darker material near the center of the trench. The looser gray sands contained an intermittent layer of intact wooden boards at a total depth of 70 cm, extending approximately 20 inches from the eastern slope of the trench. Shaun hypothesized that this might constitute a slightly decayed historic surface, such as the floor of a sawmill, and excavations continued more slowly to maximize the potential to recover an intact surface. Results from later trenches suggest that this was likely a collection of individual boards rather than the partial remains of a surface. Excavation paused and the walls were mapped when the trench reached a depth of 92 cm. They resumed after mapping was complete, and the trench was terminated at 115 cm when groundwater began flowing into the trench.

After consultation with the office, T1 was relocated approximately 15 feet south and 10 feet east to avoid the historic rail line. The relocated T1 was excavated to 140 cm before filling with groundwater. T1 contained a layer of hardened gray gravelly clay directly underneath the asphalt, above the brown fill associated with the asphalt in T2, and a layer of sawmill and related debris (sawdust, offcuts, discarded lumber, an old Champion X spark plug, a shard of clear unleaded glass, and two 6.5" round-head nails) between the brown fill and the gray shell-bearing sands.

C&C continued to T3, which was excavated until the trench breached an unknown concrete water pipe at a depth of 75 cm. After consultation with Jessica and Mark, the opening in the pipe was covered with a slab of concrete to prevent further clogging and the trench was backfilled. T3 contained rusted metal debris in the upper fill layer, one upright wooden piling at either end of the trench extending down from a depth of 60 cm, the hardened gray clay and woody debris layers observed in T1(relocated), and a tan fill unit intruding the woody debris that is presumably associated with the installation of the concrete water pipe.

C&C continued to T4, which was excavated to 160 cm before being terminated on groundwater. T4 contained a tan fill similar to that encountered below the asphalt layer in T2 and T1(relocated) over a compact darker layer of crushed concrete containing a rusted rail spike. The crushed concrete layer rested on a layer of sawdust, offcuts, and discarded boards which extended from 74 to 135 cm, transitioning into the gray shell-bearing sands. An intact wooden piling similar to those encountered in T3 was encountered in the western wall of the trench, at a depth of approximately 60 cm.

C&C continued to T6, which was excavated to 170 cm before being terminated on groundwater. T6 primarily exposed a deep layer of very fine pale beige sand containing a variety of rusted metal debris (rods, washers, and crumpled sheets), as well as small pockets of dark sand and gravel reminiscent of the crushed concrete layer found in T4. This layer extended to 145 cm with only minor color variations before giving way to gray shell-bearing sands. The shell-bearing sands contained a scattering of woody debris and discarded boards at 146 cm, a flared 4 cm tube of copper alloy, and the disconnected but mostly assembled remnants of a large copper plumbing system utilizing 2-inch piping

C&C continued to T5, which was excavated to approximately 270 cm before being terminated on groundwater. Surface soils was a pale beige sand fill containing rebar, concrete chunks, and metal debris. A disturbed portion of wood scrap material was encountered at the southwest corner of the trench. starting at a depth of 100 cm, which expanded into a larger contiguous woody layer that covered the entire floor of the trench. The contiguous layer contained four 2x6 boards, two slabs of bark, and a solid matrix of sawdust and wood chips, and thickened towards the north, extending from 147-150 cm on the southern wall and 147-175 cm on the northern wall. The scrap layer terminated on the grayish shell-bearing sands encountered in the previous trenches, and a second deposit of sawmill debris was encountered at 220 cm containing 9 boards of various dimensions, several smaller offcuts, and burned pieces of wood and bark. Work terminated after completion of T5.

On Thursday, October 27, C&C arrived on-site at 8:00 AM and began work at trench T8. Weather was cool, cloudy, and windy. Sediments included 88 cm of pale beige sand with abundant crushed concrete and rebar, similar to that found in T6 and T5, 52 cm of beige fine to medium sand with 45% gravel, and gray fine sand. The trench was terminated at 152 cm when groundwater began spilling up from within the gray sand to cover the base of the trench. No signs of historic period activity were identified and C&C continued to T7.

Due to the slope of the surface, depths of features will be in reference to the west wall: the equivalent depth on the east wall is approximately 10 cm shallower. T7 contained the pale beige layer of sand with concrete and rebar to a depth of 22 cm, after which the concrete chunks largely disappeared. At 33 cm, sediments transitioned into an uneven layer of dense, dark brown slightly clayey sands with a deep brown weathering rind, sparse small wood fragments, and pockets of gleyed fine sand. This terminated on a layer of historic debris, including plywood squares, brick, wood scraps, and a 19-inch chunk of concrete, at the top of the shell-bearing gray sands encountered in previous trenches. An organics-rich layer of gleyed clayey very fine to medium sands interrupted the shell-bearing sand layer between 154 and 191 cm, This layer contained more wood fragments, several bent fragments of a broken band-saw blade, and a 20 cm chunk of concrete. PVC piping from a more recent but apparently abandoned sewer system was recovered from the western wall just above 191 cm. The shell-bearing sands resumed below the clayey layer with dense sawmill debris, including many boards of various dimensions, board fragments, and whole logs up to ~2 feet in diameter. These did not appear to contain significant quantities of sawdust or wood shavings, and seemed more reminiscent of a buried storage location than a processing area. Excavations were terminated at approximately 13 feet and work was finished slightly before 10:45 AM.

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[Quoted text hidden]

Sarah Amell <sarah@aquaterracrc.com> Thu, Nov 3, 2022 at 3:30 PM
To: "Wollwage, Lance (DAHP)" <Lance.Wollwage@dahp.wa.gov>, "Jennifer M. Keating" <jennifer.m.keating@puyalluptribe-nsn.gov>, Shaun Dinubilo <sdinubilo@squaxin.us>, "Brandon.Reynon@PuyallupTribe-nsn.gov" <brandon.reynon@puyalluptribe-nsn.gov>, "Jolivette, Stephanie (DAHP)" <stephanie.jolivette@dahp.wa.gov>, Brad Beach <beach.brad@nisqually-nsn.gov>, Marygrace Goddu <mgoddu@ci.olympia.wa.us>
Cc: Brandon Smith <brandon@themilestonecompanies.com>, Colin Higashi <colin@aquaterracrc.com>, Carson Rouse <carson.rouse@aquaterracrc.com>, Jessica Morris <MorrisJ@aquaterracrc.com>

Hello, continuing technical consultation on this endeavor. We were able to get the drill rig sooner, so work will resume Monday-Wed of next week, they will be completing the remainder of the ten bores with time for an additional if needed.

Please let us know if you have any questions.

Thank you,
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APPENDIX C: DIRECT-PUSH BORE LOG

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
C1	0 - 1.52 m (0 - 5 ft)	0-9cm (0-3.54 in)	Off white and beige	85% sand very coarse to fine, 15% gravel rounded to angular 0.5-3
	0 - 1.52 m (0 - 5 ft)	9-25cm (3.54-9.84in)	Tan	80% sand fine to very coarse, 20% gravel rounded to subrounded 0.7-2
	0 - 1.52 m (0 - 5 ft)	25-36 cm (9.84-14.2in)	Dark brown	60% fine to coarse sand with 40% gravel 0.7-3.5
	1.52 – 3.05 m (5 – 10 ft)	0-20 cm (0-7.87in)	Tan	80% sand fine, coarse to very coarse, 20% gravel rounded to subrounded 0.4-1
	1.52 – 3.05 m (5 – 10 ft)	20-26 cm (7.87-10.2in)	Grey beige	60-70% sand very fine to fine with coarse to very coarse, 40-20 rounded gravel 0.7-3, stick, well sorted pockets of different size sand
	1.52 – 3.05 m (5 – 10 ft)	26-34 cm (10.2-13.4 in)	Gray	60% sand medium to very coarse, 40% gravel rounded 0.5-3
	1.52 – 3.05 m (5 – 10 ft)	34-46 cm (13.4-18.1 in)		10% silt, 50% very fine to fine sand, 40% shell, clustered Olympia oysters, shell midden
	3.05 – 4.57 m (10 - 15 ft)	0-10 (0-3.94in)	Tan	70% fine to coarse sand, 30% gravel 0.7-2
	3.05 – 4.57 m (10 - 15 ft)	10-13cm (3.94-5.12in)	Grey	90% medium to very coarse sand, 10% shell has (Olympia oyster)
	3.05 – 4.57 m (10 - 15 ft)	13-17cm (5.12-6.69in)	Grey beige	90% fine to very coarse sand, 9% gravel 0.4-1, 1% shell Olympia oysters
	3.05 – 4.57 m (10 - 15 ft)	17-26.5cm (6.69-10.4in)	Milky grey	40% very fine to fine sand, 60% shell Olympia oyster
	3.05 – 4.57 m (10 - 15 ft)	26.5-33cm (10.4-12.9in)	Dark grey	60% very fine to fine sand, 40% shell Olympia oyster
	3.05 – 4.57 m (10 - 15 ft)	33-35cm (12.9-13.8in)	Very dark grey	20% silt, 80% very fine sand
	3.05 – 4.57 m (10 - 15 ft)	35-50cm (13.8- 19.7in)		5% silt, 70% very fine to fine sand, 25% shell with Olympia oyster
	3.05 – 4.57 m (10 - 15 ft)	50-57cm (19.7-22.4in)		100% wood
C1A	0 - 1.52 m (0 - 5 ft)	0-8cm (0-3.14in)	Grey	60% fine to very coarse sand, 40% gravel rounded to angular 0.5-3
	0 - 1.52 m (0 - 5 ft)	8-31cm (3.14-12.2in)	Tan	70% fine to coarse sand, 30% gravel rounded 0.3-2
	0 - 1.52 m (0 - 5 ft)	31-36cm (12.2-14.2in)	Dark tan	60% sand medium to very coarse, 40% gravel rounded 0.7-4
	1.52 – 3.05 m (5 – 10 ft)	0-13cm (0-5.12in)	Tan	75% very fine to coarse sand, 25% gravel subrounded, some asphalt present
	1.52 – 3.05 m (5 – 10 ft)	13-22cm (5.12-8.66in)	Grey beige	5% silt, 75% medium to very coarse sand, 20% gravel 0.7-2.5
	1.52 – 3.05 m (5 – 10 ft)	22-30cm (8.66-11.8in)	Olive grey	50% sand medium to very coarse, 50% gravel rounded 1-2

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	1.52 – 3.05 m (5 – 10 ft)	30-41cm (11.8-16.1in)	Dark grey	65% sand very fine to fine, 35% shell with Olympia oyster
	3.05 – 4.57 m (10 - 15 ft)	0-21cm (0-8.27in)	Beige	10% silt, 70% sand fine to medium with very coarse, 15% gravel rounded 0.7-1.5, 5% shell
	3.05 – 4.57 m (10 - 15 ft)	21-29cm (8.27-11.4in)	Milky grey	5% silt, 45% sand fine to medium, 50% shell fragments
	3.05 – 4.57 m (10 - 15 ft)	29-35cm (11.4-13.8in)	Dark grey	95% fine to very fine sand, 5% shell
	3.05 – 4.57 m (10 - 15 ft)	35-42cm (13.8-16.5in)	Dark grey	40% sand very fine to medium, 60% shell
	3.05 – 4.57 m (10 - 15 ft)	42-45cm (16.5-17.7in)	Dark grey	95% sand, 5% shell
	3.05 – 4.57 m (10 - 15 ft)	45-49cm (17.7-19.3in)	Off white	10% sand very fine to fine, 90% shell
	4.57 – 6.1 m (15 - 20 ft)	0-7cm (0-2.75in)		Wood
	4.57 – 6.1 m (15 - 20 ft)	7-22cm (2.75-8.66in)	2.5 Y 4/1	40% clay, 55% silt, layer of fine sand @ ½ in 5% shell
	4.57 – 6.1 m (15 - 20 ft)	22-31cm (8.66-12.2in)	2.5y 4/1	35% clay, 25% silt, 20% sand very fine, 5% rounded 0.7-2.5 gravel, 15% shell
	6.1 – 7.62 m (20 - 25 ft)	0-23cm (0-9.06in)	N6	60% silt, 25% sand very fine to fine, 15% gravel rounded 1.5-2, potentially subrounded
	6.1 – 7.62 m (20 - 25 ft)	23-42cm (9.06-16.5in)	5Yr 5/8	30% fine to very coarse sand, 70% gravel angular to subrounded
	6.1 – 7.62 m (20 - 25 ft)	42-50cm (16.5-19.7in)	7.5 YR 5/2	40% sand very coarse to medium, 60% gravel angular to rounded 1-2
C1E	0 - 1.52 m (0 - 5 ft)	0-5cm (0-1.97in)	Grey beige	60% sand fine with very coarse, 40% gravel subangular to subrounded 0.5-2
	0 - 1.52 m (0 - 5 ft)	5-35.5cm (1.97-13.9in)	Tan	55% sand fine with very coarse, 45% gravel subangular to subrounded 0.5-2
	0 - 1.52 m (0 - 5 ft)	35.5-37.5cm (13.9-14.8in)	2.5 Y 5/1	20% silt, 50% sand fine to very fine with coarse, 30% gravel rounded to subrounded 0.7-1
	1.52 – 3.05 m (5 – 10 ft)	0-10.5cm (0-4.13in)	Tan	75% sand fine to very fine, 25% gravel rounded 0.3-1
	1.52 – 3.05 m (5 – 10 ft)	10.5-20.5cm (4.13-8.07in)	5y 6/2	10% silt, 50% sand fine to medium with very coarse, 40% gravel rounded to subrounded 0.4/1
	1.52 – 3.05 m (5 – 10 ft)	20.5-29cm (8.07-11.4in)	5y 3/1	5% silt, 55% sand medium to fine with very coarse, 40% gravel rounded to subangular 0.3/1.5
	1.52 – 3.05 m (5 – 10 ft)	29-31cm (11.4-12.2in)	5 gy 4/1	Peat
	1.52 – 3.05 m (5 – 10 ft)	31-45cm (12.2-17.7in)	N3	3% silt, 47% sand fine to very fine, 50% shell Olympia oyster
	3.05 – 4.57 m (10 - 15 ft)	0-12cm (0-4.72in)	Tan	85% sand very fine to fine with coarse, 15% gravel subrounded 0.4-1.5, slough

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	3.05 – 4.57 m (10 - 15 ft)	12-44.5cm (4.72-17.5in)	N3	3% silt, 47% sand fine, 50% shell, concentrations up to 70%
	3.05 – 4.57 m (10 - 15 ft)	44.5-51cm (17.5-20.1in)		wood
C1E1	0 - 1.52 m (0 - 5 ft)	0-29cm (0-11.4in)	Tan	60% sand fine with very coarse, 50% gravel rounded to angular 0.7-1.5
	0 - 1.52 m (0 - 5 ft)	29-??cm (11.4- ? in)	10 YR 4/1	5% silt, 60% fine sand with very coarse sand,35% gravel subrounded to rounded 0.5-1.2
	1.52 – 3.05 m (5 – 10 ft)	0-5.5cm (0.197-2.17in)	Tan	10% silt, 70% sand fine, 20% gravel rounded to subrounded 0.4/1.1
	1.52 – 3.05 m (5 – 10 ft)	5.5-17.5cm (2.17-6.89in)	Beige	20% silt, 60% sand very fine, 20% subrounded to rounded gravels
	1.52 – 3.05 m (5 – 10 ft)	17.5-32.5cm (6.89-12.8in)	2.5 y 5/2	10% silt, 50% sand medium to fine, with very coarse, 40% gravel subrounded to rounded 0.5-1.1
	1.52 – 3.05 m (5 – 10 ft)	32.5-??cm (12.8- ? in)	N3	50% fine to very fine sand with 50% shell
	3.05 – 4.57 m (10 - 15 ft)	0-14.5cm (0-5.71in)	Tan	10% silt, 45% sand fine to medium, 45% gravel subrounded to subangular 0.7/2
	3.05 – 4.57 m (10 - 15 ft)	14.5-53cm (5.71-20.9in)	N3	65% sand very fine to fine, 35% shell
	3.05 – 4.57 m (10 - 15 ft)	53cm (20.9in)		wood
C1E2	0 - 1.52 m (0 - 5 ft)	0-29.5cm (0-11.6in)	Dark Beige	^0% sand fine, with very coarse, 40% gravel subrounded to rounded 1/1.5
	0 - 1.52 m (0 - 5 ft)	29.5-59cm (11.6-23.2in)	Grayish beige	65% sand fine to medium with very coarse, 35% gravel 0.7-1
	1.52 – 3.05 m (5 – 10 ft)	0-3cm (0-1.18in)	Tan	Slough
	1.52 – 3.05 m (5 – 10 ft)	3-25cm (1.18-9.84in)	Grayish beige	10% silt, 55% sand fine to medium with very ocarse, 35% gravel subrounded to subangular 0.5-1.2
	1.52 – 3.05 m (5 – 10 ft)	25-32cm (9.84-12.6in)	5 GY 4/1	peat
	1.52 – 3.05 m (5 – 10 ft)	32-50cm (12.6-19.7in)	N4	55% fine to very fine sand, 45% shell
	3.05 – 4.57 m (10 - 15 ft)	0-16cm (0-6.29in)	Tan	10% silt, 75% sand fine to very coarse, 10% gravel rounded 1-2.5
	3.05 – 4.57 m (10 - 15 ft)	16-25cm (6.29-9.84in)	2.5 YR 5/1	5% silt, 65% sand fine to very fine with very coarse, 30% gravel subrounded to rounded 0.7-1.2
	3.05 – 4.57 m (10 - 15 ft)	25-54cm (9.84-21.3in)	N3	70% sand fine to very fine, 30% shell
	4.57 – 6.1 m (15 - 20 ft)	0-25cm (0-9.84in)		100% wood
	4.57 – 6.1 m (15 - 20 ft)	25-30cm (9.84-11.8in)	5GY 4/1	50% clay, 20% silt, 20% sand very fine, 30% shell

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
C1E3	0 - 1.52 m (0 - 5 ft)	0-15.5cm (0-6.10in)	Gray beige	85% sand fine to medium with very coarse, 15% gravel subangular to rounded 0.5-3
	0 - 1.52 m (0 - 5 ft)	15.5-19cm (6.10-7.48in)	Brown	75% sand fine to medium with very coarse, 25% gravel subangular to subrounded 1/3
	0 - 1.52 m (0 - 5 ft)	19-35cm (7.48-13.8in)	True black	30% silt, 20% sand very fine, 50% organics
	0 - 1.52 m (0 - 5 ft)	35-38cm (13.8-14.9in)	5GY 4/1	85% sand very fine to fine, 15% shell
	1.52 – 3.05 m (5 – 10 ft)	0-14cm (0-5.51in)	N3	85% sand fine with very fine, 20% shell
	1.52 – 3.05 m (5 – 10 ft)	14-20cm (5.51-7.87in)	5GY 4/1	100% peat
	1.52 – 3.05 m (5 – 10 ft)	20-25.5cm (7.87-10.0in)	N4	35% sand fine to very fine, 65% shell
	1.52 – 3.05 m (5 – 10 ft)	25.5-??cm (10.0- ? in)		100% wood
	3.05 – 4.57 m (10 - 15 ft)	0-28.5 (0-11.2in)	5 GY 3/1	5% silt, 75% sand fine to very fine, 20% shell
	3.05 – 4.57 m (10 - 15 ft)	28.5-??cm (11.2-? in)		100% wood
C1E4	0 - 1.52 m (0 - 5 ft)	0-7cm (0-2.75in)	Dark tan	75% sand fine with very coarse, 25% gravel angular to subrounded 0.7-2.5
	0 - 1.52 m (0 - 5 ft)	7-22.5cm (2.75-8.86in)	Beige	5% silt, 90% sand very fine to fine, 5% subrounded gravel 1/3
	0 - 1.52 m (0 - 5 ft)	22.5-28cm (8.86-11.0in)	N4	95% very fine sand, streaks of black organics, 5% shell
	1.52 – 3.05 m (5 – 10 ft)	0-5cm (0-1.97in)		Slough
	1.52 – 3.05 m (5 – 10 ft)	5-20cm (1.97-7.87in)	N4	65% sand very fine, 35% shell
	1.52 – 3.05 m (5 – 10 ft)	20-23.5cm (7.87-9.25in)	5GY 4/1	Peat
	1.52 – 3.05 m (5 – 10 ft)	23.5-31.5cm (9.25-12.4in)	N4	45% sand very fine, 55% shell band of peat at bottom ½in
	1.52 – 3.05 m (5 – 10 ft)	31.5-41.5cm (12.4-16.3in)	N3	65% sand very fine, 35 % shell, wood chunk about 1 inch
	3.05 – 4.57 m (10 - 15 ft)	0-29cm (0-11.4cm)	N4	5% silt, 75% sand fine to very fine, 10% gravel rounded 0.7-2, 10% shell
	3.05 – 4.57 m (10 - 15 ft)	29-52cm (11.4-20.5in)		Wood
C1E5	0 - 1.52 m (0 - 5 ft)	0-7.5cm (0-2.96in)	Grey	Crushed concrete
	0 - 1.52 m (0 - 5 ft)	7.5-13.5cm (2.96-5.31in)	Tan	85% sand fine to very fine, 15% subrounded to rounded gravels 0.5-1.5
	0 - 1.52 m (0 - 5 ft)	13.5-16.5cm (5.31-6.49in)	Beige	85% fine to very fine sand, 15% gravels subrounded to rounded
	0 - 1.52 m (0 - 5 ft)	16.5-21.5cm (6.49-8.46in)	Tan	85% sand fine to very fine, 15% gravel subrounded to rounded

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	0 - 1.52 m (0 - 5 ft)	21.5-24.5cm (8.46-9.64in)	Beige	85% sand fine to very fine, 15% gravels subrounded to rounded
	0 - 1.52 m (0 - 5 ft)	24.5-27cm (9.64-10.6in)	Red-black	10% silt, 40% sand fine to very fine, 50% organics
	0 - 1.52 m (0 - 5 ft)	27-29cm (10.6-11.4)	10 YS 3/2	80% sand fine to very fine, 20% organics
	0 - 1.52 m (0 - 5 ft)	29-33cm (11.4-12.9in)	N3	85% sand fine to very fine, 15% shell
	0 - 1.52 m (0 - 5 ft)	33-36cm (12.9-14.2in)	Black	Wood (decayed)
	0 - 1.52 m (0 - 5 ft)	36-40cm (14.2-15.7in)	N3	??
	1.52 – 3.05 m (5 – 10 ft)	0-17cm (0-6.70in)	5GY 4/1	97% sand very fine to fine, 3% shell
	1.52 – 3.05 m (5 – 10 ft)	17-21cm (6.70-8.27in)	N3	98% sand fine to very fine, 2% shell
	1.52 – 3.05 m (5 – 10 ft)	21-24.5cm (8.27-9.65in)	N3	50% sand fine to very fine, 50% shell
	1.52 – 3.05 m (5 – 10 ft)	24.5-32.5cm (9.65-12.8in)	N3	97% fine to very fine sand, 3% shell
	1.52 – 3.05 m (5 – 10 ft)	32.5-37cm (12.8-14.6in)	5 GY 4/1	Peat
	1.52 – 3.05 m (5 – 10 ft)	37-42cm (14.6-16.5in)	N5	20-30% sand fine to very fine, 70-80% shell
	1.52 – 3.05 m (5 – 10 ft)	42-51cm (16.5-20.1in)	N3	85% sand fine to very fine, 15% shell
	1.52 – 3.05 m (5 – 10 ft)	51-53cm (20.1-20.9in)		wood
	3.05 – 4.57 m (10 - 15 ft)	0-44cm (0-17.3in)	N4	82% sand fine to very fine, 3% gravel 1-1.5, 15% shell
	3.05 – 4.57 m (10 - 15 ft)	44-49cm (17.3-19.3in)		Wood
	3.05 – 4.57 m (10 - 15 ft)	49-52cm (19.3-20.5in)		Peat
	3.05 – 4.57 m (10 - 15 ft)	52-56cm (20.5-22.0in)		Sand fine to very fine with coarse
	3.05 – 4.57 m (10 - 15 ft)	56-58cm (22.0-22.8in)		Wood
C1E6	0 - 1.52 m (0 - 5 ft)	0-6cm (0-2.36in)	Black	Crushed concrete and organic decayed
	0 - 1.52 m (0 - 5 ft)	6-14cm (2.36-5.51in)	Grey	97% sand very fine to fine, 3% subrounded gravel 0.4-0.7
	0 - 1.52 m (0 - 5 ft)	14-19.5cm (5.51-7.68in)	Brown	5% silt, 90% sand fine to very fine, 5% gravel subrounded 0.4-1
	0 - 1.52 m (0 - 5 ft)	19.5-25cm (7.68-9.84in)	N3	65% sand fine with very coarse, 35% gravel subrounded to subangular, organics present

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	0 - 1.52 m (0 - 5 ft)	25-27cm (9.84-10.6in)	Dark brown or black	50% sand coarse to very coarse with fine, 50% organics
	0 - 1.52 m (0 - 5 ft)	27-30cm (10.6-11.8in)	N3	97% sand fine to very fine, 3% shell
	1.52 – 3.05 m (5 – 10 ft)	0-22.5cm (0-8.86in)	N3	95% sand very fine, 5% shell
	1.52 – 3.05 m (5 – 10 ft)	22.5-29cm (8.86-11.4in)	N3-N4	90à30% sand fine to very fine, 10à70% shell
	1.52 – 3.05 m (5 – 10 ft)	29-35.5cm (11.4-13.9in)	5GY 4/1	Peat
	1.52 – 3.05 m (5 – 10 ft)	35.5-42cm (3.9-16.5in)	N5	30à80% sand fine to very fine, 70à20% shell
	1.52 – 3.05 m (5 – 10 ft)	42-48cm (16.5-18.8in)		Wood
C1E7 (aka C2)	0 - 1.52 m (0 - 5 ft)	0-6cm (0-2.36in)	Grey	65% sand fine with very coarse, 35% gravel 0.5-2
	0 - 1.52 m (0 - 5 ft)	6-9cm (2.36-3.54in)	Brown	5% silt, 90% sand fine, 5% gravel 0.5-0.7 rounded
	0 - 1.52 m (0 - 5 ft)	9-18.5cm (3.54-7.28in)	Grey	90% sand fine, 10% gravel subrounded to subangular, 0.3/1
	0 - 1.52 m (0 - 5 ft)	18.5-21cm (7.28-8.27in)	Dark grey	99% sand fine to very fine, coarse, 1% gravel rounded 0.4-1
	0 - 1.52 m (0 - 5 ft)	21-33cm (8.27-12.9in)	Mixed color	60% sand fine to very fine with coarse, 40% gravels angular 1-3.5, organics or tar in pocket at 29 in
	1.52 – 3.05 m (5 – 10 ft)	0-11cm (0-4.33in)	N3	5% silt, 92% sand very fine to fine, 3% shell, pocket of peat (5GY 2/1
	1.52 – 3.05 m (5 – 10 ft)	11-21cm (4.33-8.27in)	N4	5% silt, 45% sand very fine to fine, shell 50%
	1.52 – 3.05 m (5 – 10 ft)	21-22.5cm (8.27-8.86in)	5GY 4/1	Peat 5GY 4/1
	1.52 – 3.05 m (5 – 10 ft)	22.5-25.5cm (8.86-10.0in)	N4	10% silt, 30% sand very fine to fine sand, midden 60% shell, 1 inch of wood fragments at bottom
	1.52 – 3.05 m (5 – 10 ft)	25.5-31cm (10.0-12.2cm)	N3	97% sand very fine to fine, 3% shell
	1.52 – 3.05 m (5 – 10 ft)	31-33cm (12.2-12.9in)		wood
	3.05 – 4.57 m (10 - 15 ft)	0-29cm (0-11.4in)	N3	5% silt, 88% sand, 2% gravel rounded 0.4-0.7, 5% shell with sparse scatter of wood fragments
	3.05 – 4.57 m (10 - 15 ft)	29-36cm (11.4-14.2in)		Wood 100%
	3.05 – 4.57 m (10 - 15 ft)	36-41cm (14.2-16.1in)	5 GY 4/1	30% clay, 48% silt, 20% sand very fine, 2% shell
	3.05 – 4.57 m (10 - 15 ft)	41-42.5cm (16.1-16.7in)	Black	20% sand very fine, 80% decay fibrous organics

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	3.05 – 4.57 m (10 - 15 ft)	42.5-44cm (16.7-17.3in)	Black	20% sand very fine, 80% decay fibrous organics, with a wood chunk in it
C1N	0 - 1.52 m (0 - 5 ft)	0-5cm (0-1.97in)	Grey beige	60% sand fine to very fine, 40% gravel angular to subrounded 0.7-2
	0 - 1.52 m (0 - 5 ft)	5-30cm (1.97-11.8in)	Tan	60% fine to very fine sand, 40% angular to subrounded 0.7-2
	0 - 1.52 m (0 - 5 ft)	30-??cm (11.8-? in)	Dark beige	55% medium to very coarse sand, 45% gravel angular to rounded 1-2
	1.52 – 3.05 m (5 – 10 ft)	0-11cm (0-4.33in)	Tan	60% sand fine to very fine, 40% rounded gravel 0.5-1
	1.52 – 3.05 m (5 – 10 ft)	11-28cm (4.33-11.0in)	2.5 y 3/2	60% fine to very coarse sand, 40% gravels 1-3
	1.52 – 3.05 m (5 – 10 ft)	28-37cm (11.0-14.6in)	N4	60% fine to very fine sand, shell 40%
	3.05 – 4.57 m (10 - 15 ft)	0-5.5cm (0-2.16in)	2.5 Y 4-1	70% fine to very coarse sand, 30% gravel rounded to subrounded, 0.4-0.5
	3.05 – 4.57 m (10 - 15 ft)	5.5-11.5cm (2.16-4.52in)	2.5 Y 3/1	5% silt, 45% sand very coarse to fine sand, 50% gravel rounded to subrounded
	3.05 – 4.57 m (10 - 15 ft)	11.5-22cm (4.52-8.66in)	N4	5% silt, 60% sand, very fine to fine sand, with very coarse sand, 25% gravel rounded to subrounded 0.7-1.2, 10% shell
	3.05 – 4.57 m (10 - 15 ft)	22-30.5cm (8.66-12.0in)	N3	70% sand fine to very fine, 30% shell
	3.05 – 4.57 m (10 - 15 ft)	30.5-37cm (12.0-14.6in)		100% wood
C1N1	0 - 1.52 m (0 - 5 ft)	0-8cm (0-3.14in)	Grey beige	50% sand fine to very fine, 50% gravel angular to rounded, 1.5-4
	0 - 1.52 m (0 - 5 ft)	8-28cm (3.14-11.0in)	Tan	70% sand fine to very fine, with very coarse, 30% gravel rounded 1-3
	0 - 1.52 m (0 - 5 ft)	28-39cm (11.0-15.4in)	Dark beige	50% sand fine to coarse, 50% gravel rounded to subrounded 0.5-2
	1.52 – 3.05 m (5 – 10 ft)	0-13cm (0-5.12in)	Beige	80% sand fine to very fine, with very coarse, 20% rounded gravel 0.5-2
	1.52 – 3.05 m (5 – 10 ft)	13-20.5cm (5.12-8.07in)	2.5 Y 2.5/1	5% silt, 65% sand medium to very coarse, 30% gravel rounded 0.7-2
	1.52 – 3.05 m (5 – 10 ft)	20.5-35cm (8.07-13.8in)	2.5 y 4/1	10% silt, 50% sand fine to medium, 40% gravel rounded to subrounded,1 -3
	3.05 – 4.57 m (10 - 15 ft)	0-10cm (0-3.94in)	N4	60% sand very fine to fine, 40% shell
	3.05 – 4.57 m (10 - 15 ft)	10-14cm (3.94-5.51in)		Wood (reddish color and appears to be the remnants of one piece
	3.05 – 4.57 m (10 - 15 ft)	14-17.5cm (5.51-6.89in)	N3	10% silt, 90% sand fine to very fine
	3.05 – 4.57 m (10 - 15 ft)	17.5-23cm (6.89-9.06in)	N4	5% silt, 75% sand fine to very fine, 20% shell

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	3.05 – 4.57 m (10 - 15 ft)	23-28.5cm (9.06-11.2in)	N3	95% sand fine to very fine, 5% shell (1 small clump at 21-22 cm)
	3.05 – 4.57 m (10 - 15 ft)	28.5-29.5cm (11.2-11.6in)		5% silt, 95% sand fine to very fine
	3.05 – 4.57 m (10 - 15 ft)	29.5-42cm (11.6-16.5in)		100% wood (possibly significant)
C1N2	0 - 1.52 m (0 - 5 ft)	0-6cm (0-2.36in)	Grey beige	60% sand fine to very fine with very coarse, 40% gravel angular to rounded 0.7-3
	0 - 1.52 m (0 - 5 ft)	6-25cm (2.36-9.84in)	Tan	60% sand fine to very fine, with very coarse, 40% gravel angular to rounded 0.7-3
	0 - 1.52 m (0 - 5 ft)	25-39cm (9.84-15.4in)	Dark beige	55% sand medium to very coarse, 45% gravel rounded 0.7-2
	1.52 – 3.05 m (5 – 10 ft)	0-6.5cm (0-2.56in)	Beige	60% sand fine to very fine sand, with coarse sand, 40% gravel rounded to angular, 0.4-0.5
	1.52 – 3.05 m (5 – 10 ft)	6.5-12.5cm (2.56-4.92in)	2.5 y 5/1	10% silt, 50% sand medium to very fine with very coarse, 40% rounded -to subrounded
	1.52 – 3.05 m (5 – 10 ft)	12.5-18.5cm (4.92-7.28in)	2.5 y 5/1	5% silt, 60% sand medium to very coarse, 35% rounded gravel 0.7-2
	1.52 – 3.05 m (5 – 10 ft)	18.5-43cm (7.28-16.9in)	N3	65% sand fine to medium with very coarse, 35% gravel rounded 1.2-3
	3.05 – 4.57 m (10 - 15 ft)	0-15cm (0-5.91in)	2.5Y 6/1	10% silt, 70% sand very fine to fine with very coarse
	3.05 – 4.57 m (10 - 15 ft)	15-23cm (5.91-9.06in)	N4	55% sand fine to coarse, 45% gravel rounded 1.2-3
	3.05 – 4.57 m (10 - 15 ft)	23-32.5cm (9.06-12.8in)	N3	80% sand fine to very fine, 5% wood fragments, 10-15% shell in layers
	3.05 – 4.57 m (10 - 15 ft)	32.5-47cm (12.8-18.5in)	5GY 5/1	75% sand fine to very fine, 20% peat, 3% wood fragment, 2% very fine shell
	3.05 – 4.57 m (10 - 15 ft)	47-58cm (18.5-22.8in)		100% wood
C1N3	0 - 1.52 m (0 - 5 ft)	0-5cm (0-1.97in)	Grayish beige	60% sand fine with very coarse, 40% gravel subangular to subrounded 0.4-1.5
	0 - 1.52 m (0 - 5 ft)	5-27.5cm (1.97-10.8in)	Beige	55% sand very fine to fine, with coarse sand, 45% gravel subangular to subrounded 0.5-1.5
	0 - 1.52 m (0 - 5 ft)	27.5-39.5cm (10.8-15.6in)	N3	55 fine to medium sand with 45% gravel rounded to subangular 0.5-3
	1.52 – 3.05 m (5 – 10 ft)	0-8cm (0-3.14in)	Beige	75% sand very fine to fine with coarse sand, 25% gravels subangular to rounded 0.2-1
	1.52 – 3.05 m (5 – 10 ft)	8-34cm (3.14-13.4in)	5 GY 5/1	60% sand
	1.52 – 3.05 m (5 – 10 ft)	34-37.5cm (13.4-14.8in)	N3	5% silt, 90% sand fine to very fine, 5% gravel rounded
	1.52 – 3.05 m (5 – 10 ft)	37.5-49.5cm (14.8-19.5in)	N3	5% silt, 45% sand fine to very fine, 50% shell
	3.05 – 3.66 m (10 – 12 ft)	0-3.5cm (0-1.38in)	5GY 5/1	45% sand fine to very fine, 33% wood, 22% shell

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	3.05 – 3.66 m (10 – 12 ft)	3.5-6.5cm (1.38-2.56in)	N3	10% silt, 90% sand very fine to fine
	3.05 – 3.66 m (10 – 12 ft)	6.5-12cm (2.56-4.72in)		100% wood
C1N4	0 - 1.52 m (0 - 5 ft)	0-30.5cm (0-12.0in)	Tan	55% sand fine to very fine, 45% gravel rounded to subrounded 0.7-2
	0 - 1.52 m (0 - 5 ft)	30.5-50cm (12.0-19.7in)	N3	65% fine sand with very coarse sand, 35% rounded to subrounded gravel 0.5-1.5
	1.52 – 3.05 m (5 – 10 ft)	0-7cm (0-2.75in)	Tan	70% sand fine to very fine, 30% gravel subrounded to rounded 0.5-1.5
	1.52 – 3.05 m (5 – 10 ft)	7-27cm (2.75-10.6in)	N5	5% silt, 60% sand fine with very coarse, 35% gravel subrounded to subangular 1/3.5
	1.52 – 3.05 m (5 – 10 ft)	27-34.5cm (10.6-13.6in)	N3	5% silt, 70% sand fine with very coarse, 25% gravel
	1.52 – 3.05 m (5 – 10 ft)	34.5-42cm (13.6-16.5in)	N3	5% silt, 85% sand very fine to fine, 10% shell
	3.05 – 4.57 m (10 - 15 ft)	0-16cm (0-6.29in)	5GY 5/1	10% silt, 50% sand fine to very fine, with very coarse, 40% gravel subrounded to rounded 0.7-1.5
	3.05 – 4.57 m (10 - 15 ft)	16-23.5cm (6.29-9.25in)	N3	55% sand fine, 45% shell
	3.05 – 4.57 m (10 - 15 ft)	23.5-37.5cm (9.25-14.7in)	N3	90% fine sand, 10% shell with small bands of peat
	3.05 – 4.57 m (10 - 15 ft)	37.5-49.5cm (14.7-19.5in)	N3	90% sand fine, small beds peat, and woody debris around the top
	3.05 – 4.57 m (10 - 15 ft)	49.5-58cm (19.5-22.8in)		wood
C1N5	0 - 1.52 m (0 - 5 ft)	0-30.5cm (0-12.0in)	Tan	60% sand fine with very coarse, 40% gravel subrounded 0.5-1.3
	0 - 1.52 m (0 - 5 ft)	30.5-50cm (12.0-19.7in)	N5	60% sand fine to medium with very coarse, 40% subrounded 0.5/1.5
	1.52 – 3.05 m (5 – 10 ft)	0-11.5cm (0-4.52in)	2.5 YR 5/2	5% silt, 40% sand fine to very coarse, 55% gravel subangular-subrounded 0.7-2
	1.52 – 3.05 m (5 – 10 ft)	11.5-18.5cm (4.52-7.28in)	N3	5% silt, 45% sand very coarse, 50% gravel subangular to subrounded 1-2.5
	1.52 – 3.05 m (5 – 10 ft)	18.5-22cm (7.28-8.66in)	N4	5% silt, 75% sand fine to medium with very coarse, 20% subangular to subrounded 0.5/2
	1.52 – 3.05 m (5 – 10 ft)	22-34cm (8.66-13.4in)	5 Gy 4/1	97% very fine sand, peat bands, 3% shell lamina, wood chunk @25
	1.52 – 3.05 m (5 – 10 ft)	34-41cm (13.4-16.1in)		wood
	3.05 – 4.57 m (10 - 15 ft)	0-18cm (0-7.09in)	Dark red	100% wood
	3.05 – 4.57 m (10 - 15 ft)	18-36cm (7.09-14.2in)	Orange	Wood

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	3.05 – 4.57 m (10 - 15 ft)	36-??cm (14.2-?in)	Yellowing	wood
C1W	0 - 1.52 m (0 - 5 ft)	0-7cm (0-2.75in)	Beige	55% sand fine to medium with very coarse, 45% gravel angular to subrounded 0.7-1
	0 - 1.52 m (0 - 5 ft)	7-23cm (2.75-9.06in)	Tan	75% sand fine to medium with very coarse, 25% rounded to subrounded 0.4-1.5
	0 - 1.52 m (0 - 5 ft)	23-35cm (9.06-13.8in)	Dark beige	655 sand fine to medium, very coarse, 35% gravel rounded to subrounded 0.7-2.5
	1.52 – 3.05 m (5 – 10 ft)	0-13cm (0-5.12in)	10 YR 6/3	70% sand fine with coarse, 30% gravel rounded 0.4-1.5
	1.52 – 3.05 m (5 – 10 ft)	13-28cm (5.12-11.0in)	10YR 3-1	60% sand coarse to fine, 40% rounded gravel 1-2
	1.52 – 3.05 m (5 – 10 ft)	28-38cm (11.0-14.9in)	N5	60% fine to very fine, 40% shell frags with Olympia oyster
	3.05 – 4.57 m (10 - 15 ft)	0-21cm (0-8.27)	10 YR 5-1	87% sand very fine to fine, 10% gravel rounded, 35 shell
	3.05 – 4.57 m (10 - 15 ft)	21-27.5cm (8.7-10.8in)	N3	65% very fine to fine sand, 35% shell (@least 3 kinds including Olympia oyster)
	3.05 – 4.57 m (10 - 15 ft)	27.5-32cm (10.8-12.6in)	N3	98% sand very fine to fine, 2% shell hash
	3.05 – 4.57 m (10 - 15 ft)	32-46cm (12.6-18.1in)		70% sand fine to very fine, 30% shell chunk of wood 37-40 cm with extra piece of wood
	3.05 – 4.57 m (10 - 15 ft)	46-48cm (18.1-18.9in)	Off white	20% sand fine to very fine, 80% shell
	3.05 – 4.57 m (10 - 15 ft)	48-55cm (18.9-21.7in)		Wood chunks
	4.57 – 6.1 m (15 - 20 ft)	0-10cm (0-3.94in)	5Y 3-1	30% clay, 60% silt, 3% rounded gravel 1-1.5, 7% shell
	4.57 – 6.1 m (15 - 20 ft)	10-25cm (3.94-9.84in)		30% clay, 55% silt, 10% sand very fine, 2% gravel rounded 0.3-0.4, 3% shell, very small scattering of wood
	4.57 – 6.1 m (15 - 20 ft)	25-??cm (9.84- ? in)	5Y 3-1	30% clay, 66% silt, 1% gravel, 3% shell
	6.1 – 7.62 m (20-25 ft)	0-6cm (0-2.36in)	2.5 y 4/2	90% sand coarse to very coarse, 10% rounded gravel 0.4-0.7
	6.1 – 7.62 m (20-25 ft)	6-7cm (2.36-2.76in)	2.5 y 6/1	45% silt, 45% sand fine to very fine, 10% gravel rounded 1-2
	6.1 – 7.62 m (20-25 ft)	7-17cm (2.76-6.69in)	5yr 5/8	30% medium to very coarse sand, 70% rounded to subrounded 0.7-4
	6.1 – 7.62 m (20-25 ft)	17-38cm (6.69-14.9in)	7.5 YR 5/8	25% silt, 60% very fine to medium, 15% gravel rounded to subrounded 1.5/1.5
	6.1 – 7.62 m (20-25 ft)	38-52cm (14.9-20.5in)	10 YR 4/2	60% medium to very coarse, 40% rounded 1-3
C1W1	0 - 1.52 m (0 - 5 ft)	0-10cm (0-3.94in)	Grey beige	60% fine to very coarse sand, 40% angular to rounded 1-4
	0 - 1.52 m (0 - 5 ft)	10-16cm (3.94-6.29in)	Tan	60% sand fine to very coarse, 40% angular to rounded 1-4

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	0 - 1.52 m (0 - 5 ft)	16-29cm (6.29-11.4in)	Dark beige	65% medium to very coarse, 35% rounded 0.4-2
	0 - 1.52 m (0 - 5 ft)	29-37cm (11.4-14.6in)	Olive grey	60% very coarse to medium, 40% rounded 0.7-2
	1.52 – 3.05 m (5 – 10 ft)	0-10.5cm (0-4.13in)	Beige	70% fine to very coarse, 30% rounded gravel 0.4-2
	1.52 – 3.05 m (5 – 10 ft)	10.5-16.5cm (4.13-6.49in)	Dark beige	10% silt, 45% very fine to fine sand with very coarse, 45% gravel rounded
	1.52 – 3.05 m (5 – 10 ft)	16.5-30cm (6.49-11.8in)	2.5 y 3/1	60% fine to medium sand, very coarse, 40% gravel rounded 1-2
	1.52 – 3.05 m (5 – 10 ft)	30-38.5cm (11.8-15.2in)	N4	60% fine to very fine, 40% shell
	1.52 – 3.05 m (5 – 10 ft)	38.5-47cm (15.2-18.5in)	N3	65% sand fine to very fine, 35% shell
	3.05 – 4.57 m (10 - 15 ft)	0-4cm (0-1.57in)	N4	60% fine to very fine sand with 40% shell
	3.05 – 4.57 m (10 - 15 ft)	4-6cm (1.57-2.36in)	N4	90% sand fine to very fine, 10% shell
	3.05 – 4.57 m (10 - 15 ft)	6-12cm (2.36-4.72in)	N3	75% fine to very fine sand with 25% shell
	3.05 – 4.57 m (10 - 15 ft)	12-22.5cm (4.72-8.86in)	N3	98% fine to very fine sand, 2% shell
	3.05 – 4.57 m (10 - 15 ft)	22.5-30cm (8.86-11.8in)	5YR 3/3	100% wood
	3.05 – 4.57 m (10 - 15 ft)	30-36cm (11.8-14.2in)	2.5 y ¾	100% wood
	3.05 – 4.57 m (10 - 15 ft)	36-40cm (14.2-15.7in)		
	4.57 – 6.1 m (15 - 20 ft)	0-12.5cm (0-4.92in)	N3	10% clay, 50% silt, 25% sand very fine with very coarse, 10% rounded gravel 0.4-0.7 cm, 5% shell with scattered wood fragments
	4.57 – 6.1 m (15 - 20 ft)	12.5-17.5cm (4.92-6.88in)	N 2.5	5% clay, 48% silt, 30% sand very fine, 15% gravel rounded 1-2, 2% shell
C1W2	0 - 1.52 m (0 - 5 ft)	0-8cm (0-3.14in)	Grey beige	60% sand fine to very coarse, 40% rounded to subangular 0.5-2
	0 - 1.52 m (0 - 5 ft)	8-24cm (3.14-9.44in)	Tan	60% sand fine to very coarse, 40% gravel rounded
	1.52 – 3.05 m (5 – 10 ft)	0-8cm (0-3.14in)	Grey beige	70% very fine to medium, 30% gravel rounded 0.5-2, orange plastic piece approximately 7 inches
	1.52 – 3.05 m (5 – 10 ft)	8-16cm (3.14-6.29in)	Tan	70% sand very fine to medium, 30% gravel rounded 0.5-2
	1.52 – 3.05 m (5 – 10 ft)	16-25cm (6.29-9.84in)	2.5 Y 3/2	5% silt, 55% sand fine to very coarse, 40% gravel rounded to subangular, 0.4-1
	1.52 – 3.05 m (5 – 10 ft)	25-40cm (9.84-15.7in)	N4	65% fine to very fine sand, 35% shell

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	3.05 – 4.57 m (10 - 15 ft)	0-4cm (0-1.57in)	N4	60% sand fine to very fine, 40% shell
	3.05 – 4.57 m (10 - 15 ft)	4-6cm (1.57-2.36in)	10y 3-1	Pete with layers of sand
	3.05 – 4.57 m (10 - 15 ft)	6-12cm (2.36-4.72in)	N4	55% fine to very fine sand, 45% shell with wood fragments
	3.05 – 4.57 m (10 - 15 ft)	12-14cm (4.72-5.51in)	7.5 YR 2.5/2	100% wood
	3.05 – 4.57 m (10 - 15 ft)	14-23cm (5.51-9.06in)	10 YR 5/4	100% wood
	3.05 – 4.57 m (10 - 15 ft)	23-30cm (9.06-11.8in)	N3	30% clay, 30% silt, 20% sand very fine, 15% gravel rounded ½, 5% shell
C3	0 - 1.52 m (0 - 5 ft)	0-20 cm (0-7.87in)	Beige	5% silt, 50% sand fine to very fine, 45% gravel subrounded to rounded, 0.1-2cm
	0 - 1.52 m (0 - 5 ft)	20-50 cm (7.87-19.7in)	Dark Beige	75% sand fine, very coarse, 25% gravel (subrounded-rounded, 0.3-1.1 cm)
	0 - 1.52 m (0 - 5 ft)	50-100 cm (19.7-39.4in)	Beige	5% silt, 60% sand, fine to moderate, with very coarse, 35% gravel (0.5-2)
	0 - 1.52 m (0 - 5 ft)	100-160 cm (39.4-62.9in)	Dark Beige	3% silt, 57% sand, fine to moderate, with very coarse, 40% gravel subrounded to rounded, 1.5
	1.52 – 3.05 m (5 – 10 ft)	0-8 cm (0-3.14in)		90% fine to very fine, 5% gravel (subrounded to rounded, 0.4-0.5 cm)
	1.52 – 3.05 m (5 – 10 ft)	8-33 cm (3.14-12.9in)		5% silt, 55% sand fine to very fine, with coarse to very course, 40% gravel subrounded to rounded 0.4-1
	1.52 – 3.05 m (5 – 10 ft)	33-55 cm (12.9-21.6in)		5% silt, 50% sand, very fine with fine to very fine, 45% gravel subrounded to rounded 0.5-3
	1.52 – 3.05 m (5 – 10 ft)	55-75 cm (21.6-29.5in)		5% silt, 50% sand very fine, with fine to very fine, 45% gravel subrounded to rounded, 0.5-3
	1.52 – 3.05 m (5 – 10 ft)	75-80 cm (29.5-31.5in)		85% sand medium to very coarse, 15% gravel subrounded 1-3
	1.52 – 3.05 m (5 – 10 ft)	80-92 cm (31.5-36.2in)		15% silt, 85% sand very fine to fine
	1.52 – 3.05 m (5 – 10 ft)	92-102 cm (36.2-40.2in)	70% sand fine to very fine	30% shell
	1.52 – 3.05 m (5 – 10 ft)	102-141cm (40.2-55.5in)		56% sand very fine to fine, 4% shell, 40% peat
	1.52 – 3.05 m (5 – 10 ft)	141-158cm (55.5-62.2in)		80% sand very fine to fine, 20% shell
	3.05 – 4.57 m (10 - 15 ft)	0-54 cm (0-21.2in)	Dark brown	100% wood
	3.05 – 4.57 m (10 - 15 ft)	54-120 cm (21.2-47.2in)	Orange to yellow brown	100% wood

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	4.57 – 6.1 m (15 - 20 ft)	0-12 cm (0-4.72in)		100% wood
	4.57 – 6.1 m (15 - 20 ft)	12-40 cm (4.72-15.7in)	5 GY 4/1	20% clay, 30% silt, 30% sand, 5% gravel rounded to subrounded 0.7-1.3, 15% shell
C4	0 - 1.52 m (0 - 5 ft)	0-29 cm (0-11.4in)	Tan	55% sand very fine to medium with very coarse, 45% gravel angular to subangular, 1-2/5
	0 - 1.52 m (0 - 5 ft)	29-67 cm (11.4-26.4in)	Brown	10% silt, 70% sand, very fine, very coarse, 20% gravel rounded to subrounded 0.5-2.5, burned wood at 34 cm and 37 cm
	0 - 1.52 m (0 - 5 ft)	67-90 cm (26.4- 35.4in)	N-4	99% sand fine to very fine, 1% subrounded 0.4-0.5
	0 - 1.52 m (0 - 5 ft)	90-97 cm (35.4-38.2in)	N-5	93% sand fine to medium with very coarse, 7% gravel rounded to subrounded, 0.3-0.4, wood at 95% cm
	1.52 – 3.05 m (5 – 10 ft)	0-44cm (0-17.3in)	N3	80% sand fine to very fine with very coarse, 20% gravel rounded to subrounded 0.5-2
	1.52 – 3.05 m (5 – 10 ft)	44-56cm (17.3-22.0in)	2.5 yr 3/1	50% very fine to medium , 15% subangular to rounded 0.4-1, brick fragments, 5% shell, 30% decayed/ burned organics
	1.52 – 3.05 m (5 – 10 ft)	56-78cm (22.0-30.7in)	N4	75% sand fine to very fine, 25% shell
	1.52 – 3.05 m (5 – 10 ft)	78-100cm (30.7-39.4in)	N-5	60% sand fine to very fine, 40% shell
	3.05 – 4.57 m (10 - 15 ft)	0-47cm (0-18.5in)		10% silt, 75% sand fine to very fine, 25% gravel rounded to subrounded 0.4-2, more near base, 3% shell
	3.05 – 4.57 m (10 - 15 ft)	47-58cm (18.5-22.8in)	N-4	55% sand fine to very fine, 15% gravel rounded to subrounded, 0.5-3.5, 30% shell
	3.05 – 4.57 m (10 - 15 ft)	58-150cm (22.8-59.1in)		wood
	4.57 – 6.1 m (15 - 20 ft)	0-123cm (0-48.4in)		wood
	6.1 – 7.62 m (20 - 25 ft)	0-92cm (0-36.2in)		Wood
	6.1 – 7.62 m (20 - 25 ft)	92-150cm (26.2-59.1in)	10 YS 3A	32% clay, 15% silt, 20% sand very fine, 3% shell
C5	0 - 1.52 m (0 - 5 ft)	0-26cm (0-10.2in)		40% sand fine to moderate with very coarse, 60% gravel angular to subangular 1-3.
	0 - 1.52 m (0 - 5 ft)	26-56cm (10.2-22.0in)	Dark beige	95% sand fine to very fine, 5% gravel rounded 0.5-1.5
	0 - 1.52 m (0 - 5 ft)	56-73cm (22.0-28.7in)	Grey beige	98% fine to very fine sand with very coarse, 2% gravel rounded to subrounded, 0.4-0.5
	0 - 1.52 m (0 - 5 ft)	73-93cm (28.7-36.6in)	Gray	100% sand fine to very fine with coarse
	0 - 1.52 m (0 - 5 ft)	93-98cm (36.6-38.6in)		wood
	1.52 – 3.05 m (5 – 10 ft)	0-47cm (0-18.5in)	Grey	5% silt, 93% sand fine to very fine, 1% rounded 2

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	1.52 – 3.05 m (5 – 10 ft)	47-60cm (18.5-23.6in)		wood
	1.52 – 3.05 m (5 – 10 ft)	60-72cm (23.6-28.3in)	N-4	40% fine to very fine, 60% shell
	1.52 – 3.05 m (5 – 10 ft)	72-84cm (28.3-33.1in)	N3	95% sand fine to very fine, 5% organics at top
	1.52 – 3.05 m (5 – 10 ft)	84-110cm (33.1-43.3in)		wood
	3.05 – 4.57 m (10 - 15 ft)	0-20cm (0-7.87in)	Beige, brown	65% sand very fine to moderate, 20% gravels rounded 0.7-2, 15% peat/ organics
	3.05 – 4.57 m (10 - 15 ft)	20-28cm (7.87-11.0in)	Black	Wood
	3.05 – 4.57 m (10 - 15 ft)	28-32cm (11.0-12.6in)	Brown	30% fine sand, 70% wood
	3.05 – 4.57 m (10 - 15 ft)	32-50cm (12.6-19.7in)	Gray-beige	73% sand fine to very fine, 25% wood, 3% shell
	3.05 – 4.57 m (10 - 15 ft)	50-81cm (19.7-31.9in)		95% sand fine to very fine with very coarse, 5% shell
	3.05 – 4.57 m (10 - 15 ft)	81-150cm (31.9-59.1in)		wood
	4.57 – 6.1 m (15 - 20 ft)	0-5cm (0-1.96in)		Wood and peat
	4.57 – 6.1 m (15 - 20 ft)	5-78cm (1.96-30.7in)	??	25% clay, 35% silt, 20% sand very fine with very coarse, 15% gravel rounded 1-5, 2-5% shell
C6	0 - 1.52 m (0 - 5 ft)	0-36cm (0-14.2in)		55% sand fine to very fine, 45% gravel
	0 - 1.52 m (0 - 5 ft)	36-49cm (14.2-19.3in)	Grey beige	10% silt, 45% sand very fine to moderate, very coarse
	0 - 1.52 m (0 - 5 ft)	49-86cm (19.3-33.9in)	Dark brown	15% silt, 70% sand fine to very fine, very coarse, 15% gravel rounded to subrounded 0.5-1 3% shell
	1.52 – 3.05 m (5 – 10 ft)	0-48cm (0-18.9in)	N-3	85-90% sand fine to very fine, 10-15% shell
	1.52 – 3.05 m (5 – 10 ft)	48-55cm (18.9-21.6in)	Black	Organics
	1.52 – 3.05 m (5 – 10 ft)	55-65cm (21.6-25.6in)	N-4	10% silt, 90% very fine sand
	1.52 – 3.05 m (5 – 10 ft)	65-95cm (25.6-37.4in)	N-5	40% sand fine to very fine, 60% shell
	1.52 – 3.05 m (5 – 10 ft)	95-105cm (37.4-41.3in)	N-3	5% silt, 92% sand, fine to very fine, 3% shell
	1.52 – 3.05 m (5 – 10 ft)	105-120cm (41.3-47.2in)	N-6	25% sand fine to very fine, 75% shell
	3.05 – 4.57 m (10 - 15 ft)	0-13cm (0-5.12in)	Greyish beige	98% sand, very fine to moderate, 2% shell

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	3.05 – 4.57 m (10 - 15 ft)	13-21cm (5.12-8.26in)	Grey-beige	5% silt, 35% very coarse to fine sand, 60% angular to rounded 0.7-3
	3.05 – 4.57 m (10 - 15 ft)	21-30cm (8.26-11.8in)	Grey	60% sand fine to very fine with very coarse, 30% gravel rounded to subangular, 0.7-3, 5% shell
	3.05 – 4.57 m (10 - 15 ft)	30-42cm (11.8-16.5in)		wood
	4.57 – 6.1 m (15 - 20 ft)	23cm (9.06in)		Very, very decayed wood
	6.1 – 7.62 m (20 - 25 ft)	0-85cm (0-33.5in)		Wood
	6.1 – 7.62 m (20 - 25 ft)	85-111cm (33.5-43.7in)	N3	37% clay, 40% silt, 20% very fine sand, 3% wood fragments, 1% shell maybe
	6.1 – 7.62 m (20 - 25 ft)	111-138cm (43.7-54.3in)	N 2.5	24% clay, 40% silt, 30% sand very fine to fine with very coarse, 5% rounded to subrounded 0.4-0.5, 1-5% shell
C7	0 - 1.52 m (0 - 5 ft)	0-23cm (0-9.06in)	Light beige and off white	10% silt, 45% sand fine to very fine with very coarse, 45% gravel angular to subangular
	0 - 1.52 m (0 - 5 ft)	23-62cm (9.06-24.4in)	Brown	65% sand fine to very coarse, 35% gravel rounded to subrounded 0.5-2
	0 - 1.52 m (0 - 5 ft)	62-90cm (24.4-35.4in)	N-3	60% sand fine to very coarse, 40% rounded to subrounded
	1.52 – 3.05 m (5 – 10 ft)	0-60cm (0-23.6in)	Gray	55% sand coarse to fine, 45% gravel rounded 0.5-2.5
	1.52 – 3.05 m (5 – 10 ft)	60-73cm (23.6-28.7in)	Gray	60% sand very coarse to moderate, 40% gravels rounded 0.5-2
	1.52 – 3.05 m (5 – 10 ft)	73-93cm (28.7-36.6in)	Gray	55% sand coarse to fine, 45% gravel angular 0.5-2.5
	1.52 – 3.05 m (5 – 10 ft)	93-106cm (36.6-41.7in)	Gray beige	10% silt, 55% sand fine to very fine, 35% wood and peat
	1.52 – 3.05 m (5 – 10 ft)	106-119cm (41.7-46.9in)	N4	50% sand fine to very fine, 50% shell
	1.52 – 3.05 m (5 – 10 ft)	119-134cm (46.9-52.8in)	N3	100% very fine to fine
	1.52 – 3.05 m (5 – 10 ft)	134-160cm (52.8-62.9in)		20% clay, 30% silt, 50% wood-hit refusal at 11 ft
C7A	0 - 1.52 m (0 - 5 ft)	0-27cm (0-10.6in)		55% sand fine to very fine with very coarse, 45% gravel angular to subangular 0.7-2.5, moved 5 ft north of previous C7
	0 - 1.52 m (0 - 5 ft)	27-71cm (10.6-27.9in)	Tan	60% sand moderate to very fine, 40% gravel rounded 0.5-2
	0 - 1.52 m (0 - 5 ft)	71-106cm (27.9-41.7in)	gray	5% silt, 65% fine to very fine sand with very coarse, 30% gravel subrounded to subangular, 0.5-1.5
	1.52 – 3.05 m (5 – 10 ft)	0-28cm (0-11.0in)	Gray	5% silt, 55% sand fine to medium with very coarse, 40% gravel subrounded to rounded 0.5-3
	1.52 – 3.05 m (5 – 10 ft)	28-58 (11.0-22.8in)	Gray	60% sand fine to medium with very coarse, 40% gravel subrounded to rounded 0.5-4

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
	1.52 – 3.05 m (5 – 10 ft)	58-71cm (22.8-27.9in)	Gray	Wood
	1.52 – 3.05 m (5 – 10 ft)	71-160cm (27.9-62.9in)	Gray	70-80% sand very fine to fine, 5% gravel rounded 0.5-1, 0-10% shell, 5% wood
	3.05 – 4.57 m (10 - 15 ft)	0-85cm (0-33.5in)		wood
	4.57 – 6.1 m (15 - 20 ft)	0-58cm (0-22.8in)	gleyed	20% clay, 10% silt, 55% sand fine to very fine, 5% gravel rounded 0.7-2.5, 10% shell
	4.57 – 6.1 m (15 - 20 ft)	58-73cm (22.8-28.7in)	Olive, grey brown	20% clay, 65% sand very fine to very coarse, 15% gravel subangular to rounded, 0.5-0.7, very compacted
	4.57 – 6.1 m (15 - 20 ft)	73-84cm (28.7-33.1in)	Orange	10% silt, 90% sand fine to medium
	4.57 – 6.1 m (15 - 20 ft)	84-95cm (33.1-37.4in)	Orange	5% silt, 30% sand very coarse to very fine, 65% angular to rounded 0.4-1.5
C8	0 - 1.52 m (0 - 5 ft)	0-24cm (0-9.44in)	Tan	55% sand fine to moderate with very coarse, 45% gravel angular to subrounded 0.5-3
	0 - 1.52 m (0 - 5 ft)	24-??cm (9.44-?in)	Gray	40% silt, 40% sand very fine to fine, 20% gravel rounded to subrounded 1-4
C8A	1.52 – 3.05 m (5 – 10 ft)	0-10cm (0-3.94in)	Grey beige	55% sand very coarse to fine, 45% subrounded to subangular gravel 0.5-1
	1.52 – 3.05 m (5 – 10 ft)	10-25cm (3.94-9.84in)	Grey	20% clay, 30% silt, 30% sand fine to very fine, 20% gravel rounded 1-2
	1.52 – 3.05 m (5 – 10 ft)	25-64cm (9.84-25.2in)		Wood
	1.52 – 3.05 m (5 – 10 ft)	64-92cm (25.2-36.2in)	N3	65% fine to very fine sand, 35% shell
	1.52 – 3.05 m (5 – 10 ft)	92-??cm (36.2- ?in)		Wood
	3.05 – 4.57 m (10 - 15 ft)	0-30cm (0-11.8in)		60% sand fine to medium with very coarse, 40% gravel subangular 0.3-2.5
	3.05 – 4.57 m (10 - 15 ft)	30-60cm (11.8-23.6in)		5% silt, 85% sand fine to very fine with coarse, 10% gravel 0.6-3.3 subrounded
	3.05 – 4.57 m (10 - 15 ft)	60-90cm (23.6-35.4in)		5% silt, 85% sand fine to very fine with coarse, 10% gravel 0.6-3.5 subrounded
	3.05 – 4.57 m (10 - 15 ft)	90-104cm (35.4-40.9in)		Wood
C9	0 - 1.52 m (0 - 5 ft)	0-20cm (0-7.87in)		55% sand, 45% angular-subrounded 0.7-3, gravel and sand fill
	0 - 1.52 m (0 - 5 ft)	20-90cm (7.87-35.4in)	Tan	65% sand very fine to medium, 35% rounded to subrounded, 0.5-2.5
	1.52 – 3.05 m (5 – 10 ft)	0-65cm (0-25.6in)	Tan	65% sand fine to coarse, 35% gravel rounded to subrounded 0.5-2
	1.52 – 3.05 m (5 – 10 ft)	65-79cm (25.6-31.1in)	Gray	85% sand very fine to medium, with very coarse, 15% gravel rounded, 0.5-1
	1.52 – 3.05 m (5 – 10 ft)	79-107cm (31.1-42.1in)		20% sand fine to medium, very coarse, 80% gravel rounded 2-4

BORE NO.	SAMPLE DEPTH	STRATUM THICKNESS	COLOR	COMPOSITION
C10	0 - 1.52 m (0 - 5 ft)	0-20cm (0-7.87in)	Black	
	0 - 1.52 m (0 - 5 ft)	20-60cm (7.87-23.6in)	Brown	10% silt, 45% sand fine with very coarse, 30% gravel angular to subrounded 0.5-3, 15% wood
	0 - 1.52 m (0 - 5 ft)	60-70cm (23.6-27.6in)	Gray	5% silt, 60% fine to very fine sand, 35% rounded to subrounded gravel, 0.7-2
	0 - 1.52 m (0 - 5 ft)	70-80cm (27.6-31.5in)		Wood
	0 - 1.52 m (0 - 5 ft)	80-90cm (31.5-35.4in)	Brown	10% silt, 45% fine to very fine sand, 45% gravel rounded to subrounded 1-2.5
	1.52 – 3.05 m (5 – 10 ft)	0-6cm (0-2.36in)		30% silt, 70% very fine sand
	1.52 – 3.05 m (5 – 10 ft)	6-13cm (2.36-5.12in)		100% fine to very coarse sand, graded (trash)
	1.52 – 3.05 m (5 – 10 ft)	13-20cm (5.12-7.87in)		100% gravel rounded 0.5-2.5 (graded trash)
	1.52 – 3.05 m (5 – 10 ft)	20-27cm (7.87-10.6in)	N3	90% sand fine, very coarse, 10% wood frags (trash)
	3.05 – 4.57 m (10 - 15 ft)	0-10cm (0-3.94in)		Graded sand (trash)
	3.05 – 4.57 m (10 - 15 ft)	10-18cm (3.94-7.08in)	Black	Decayed wood
	3.05 – 4.57 m (10 - 15 ft)	18-22cm (7.08-8.66in)		Wood
	3.05 – 4.57 m (10 - 15 ft)	22-37cm (8.66-14.6in)	Black	Decayed wood
	3.05 – 4.57 m (10 - 15 ft)	37-47cm (14.6-18.5in)		Wood
	4.57 – 6.1 m (15 - 20 ft)	0-140cm (0-55.1in)		Wood
	6.1 – 7.62 m (20 - 25 ft)	0-11cm (0-4.33in)	Black	Wood
	6.1 – 7.62 m (20 - 25 ft)	11-24cm (4.33-9.44in)	N6	25% fine to very fine, 75% shell
	6.1 – 7.62 m (20 - 25 ft)	24-32cm (9.44-12.6in)	N3	90% sand fine to very fine, 10% shell
	6.1 – 7.62 m (20 - 25 ft)	32-57cm (12.6-22.4in)	Black	Wood
	6.1 – 7.62 m (20 - 25 ft)	57-111cm (22.4-43.7in)	N3	70% fine to very fine sand, 25% shell, 5% wood chunks
	6.1 – 7.62 m (20 - 25 ft)	111-120cm (43.7-47.2in)		Wood
	7.62 – 9.14 m (25 – 30 ft)	0-12cm (0-4.72in)	Dark brown	20% sand very fine, 80% decayed organics
	7.62 – 9.14 m (25 – 30 ft)	12-60cm (4.72-23.6in)	Gleyed	30% clay, 35% silt, 20% sand very fine, 15% shell

APPENDIX D: TRENCH LOG

DEPTH	SOIL DESCRIPTION	CULTURAL MATERIAL	INTERPRETATION
TRENCH 1 - S WALL			
0 - 11 cm (0 - 4.33 in)	Concrete		
11 - 22 cm (4.33 - 8.66 in)	Beige gravel construction fill		
22 - 31 cm (8.66 - 12.2 in)	Asphalt		
31 - 33 cm (12.2 - 12.9 in)	Hardened gray gravelly clay		
33 - 45 cm (12.9 - 13.8 in)	Brown gravel construction fill		
45 - 60/80+ cm (13.8 -23.6/ 31.4 in +)	Sawdust, offcuts, discarded lumber	10-count 4x4 boards 1-count 3x5 board 1-count 4x7 board 2-count irregular lumber 2 nails: 5.5" length, 1/4" round head 1 clear 1/16" unleaded glass shard 1 Champion X sparkplug	Sawmill debris
60 - 111 cm (23.6 - 43.7 in)	N4 fine sand with up to 15% shell fragments		Historic dredged fill
111 - 140 cm (43.7 - 55.1 in)	N3 fine sand with up to 15% shell fragments		Historic dredged fill
TRENCH 2 - S WALL			
0 - 18 cm (0 - 7.09 in)	Concrete		
18 - 25 cm (7.09 - 9.84 in)	Beige gravel construction fill		
25 - 33 cm (9.84 - 12.9 in)	Asphalt		
33 - 51.5/59 cm (12.9 - 20.3/23.2 in)	Brown gravel construction fill		
51.5 - 67 cm (20.3 - 26.4 in)	Hard dark brown fine to medium sand		Correlates with railroad debris
51.5 - 101 cm (20.3 - 39.8 in)	N4 fine sand with up to 15% shell fragments		Historic dredged fill
67.5 - 71 cm (26.6 - 27.9 in)	Scatter of boards and debris in sawdust	3-count 4x4 lumber Several offcuts, various sizes	Sawmill debris
74.5 - 78.5 cm (29.3 - 30.9 in)	Lens of very fine sand, no shell		
101 - 115 cm (39.8 - 45.2 in)	5GY 4/1 fine sand with 20-30% shell		Pre-utilization shoreline, possibly tidal flat, deposits
TRENCH 3 - S WALL			
0 - 25/34 cm (0 - 9.84/ 13.4 in)	Crushed concrete fill		
25 - 45/53 cm (9.84 - 17.7/ 20.9 in)	Beige gravel fill		

DEPTH	SOIL DESCRIPTION	CULTURAL MATERIAL	INTERPRETATION
45/53 - 64/58 cm (17.7/20.9 – 25.2/ 22.8 in)	Hard gray gravelly clay		
58 - 84/94 cm (22.8 - 33.1/ 37.0 in)	Brown gravel construction fill		Abandoned drainage pipe Rusted iron ring
84 - 94 cm (33.1 - 37.0 in)	Sawdust with burned bark and offcuts	2 slabs burned bark 1-count 4x4 lumber	Sawmill debris
TRENCH 4 - S WALL			
0 - 29 cm (0 - 11.4 in)	Beige gravel construction fill		
25 - 65 cm (9.84 - 25.5 in)	Beige sand fill		
65 - 85 cm (25.5 - 33.5 in)	Dark brown gravelly very fine sand	Rusted rail spike	Railroad debris
85 - 135 cm (33.5 - 53.1 in)	Sawdust with scattered boards	1-count 4x4 lumber 1-count 2x4 lumber	Sawmill debris
135 - 160 cm (53.1 - 62.9 in)	Gray fine sand with up to 15% shell		Historic dredged fill
TRENCH 5 - S WALL			
0 - 100/142 cm (0 - 39.4/ 55.9 in)	Beige crushed concrete fill		
100 - 150/175 cm (39.4 - 59.1/ 68.9 in)	Sawdust with scattered boards	4-count 2x6 2 slabs bark	Sawmill debris
150 - 220 cm (59.1 - 86.6 in)	Gray fine to medium sand with localized concentrations of shell		
220 - 270 cm (86.6 - 106 in)	Gray fine to medium sand with boards	9-count 2x4 lumber Numerous offcuts, some burned	Sawmill debris
TRENCH 6 - N WALL			
0 - 40 cm (0 - 15.7 in)	Beige topsoil: sandy loam, 15% rounded gravel		
40 - 145 cm (15.7 - 57.1 in)	Beige very fine sand with scattered rebar and concrete	Rusted iron washer, rod @ 41 cm	
145 - 170 cm (57.1 - 66.9 in)	Gray fine sand with minor shell	Scattered 4x6 boards and offcuts Disconnected copper plumbing system	
TRENCH 7 - W WALL			
0 - 33 cm (0 - 12.9 in)	Beige fine sand with concrete and rebar		
33 - 105 cm (12.9 - 41.3 in)	Gray very sandy medial loam with a clayey brown weathering rind	Scattered plywood squares and wood offcuts 1 brick 1-count 48-cm chunk of concrete	
105 - 154 cm (41.3 - 60.6 in)	Gray fine sand with 20% subrounded gravel, up to 20% shell		

DEPTH	SOIL DESCRIPTION	CULTURAL MATERIAL	INTERPRETATION
154 - 191 cm (60.6 - 75.2 in)	Blue-greenish organic-rich sand with 15% clay, 10% silt	Scattered wood scraps 1 concrete chunk (75.2-Broken bandsaw blade @ 180 cm Modern PVC sewer pipe @ ~177 cm	
191 - 390 cm (75.2 - 153 in)	Greenish fine sand with trace shell and 5% gravel	Dense offcuts, shavings, sawdust, and 1 log	
TRENCH 8 - S WALL			
0 - 88 cm (0 - 34.6 in)	Beige very fine to fine sand with crushed concrete and rebar		
88 - 140 cm (34.6 - 55 in)	Beige fine to medium sand with 45% gravel		
140 - 152 cm (55.1 - 59.8 in)	Gray fine sand	Historic dredged fill	

APPENDIX E: WATER SCREEN LOG

SAMPLE NUMBER	SAMPLE DEPTH	STRATUM THICKNESS	COMPOSITION 1/4	COMPOSITION 1/8
C1W1	3.05m (10ft)	0-10cm (0-3.94in)	99% clam shell mix, 1% rounded gravel	95% shell mix white, 5% rounded gravel
C1W1	3.05m (10ft)	10-20cm (3.94-7.87in)	99% clam shell mix, 1% rounded gravel	99% shell mix, 2 charcoal pieces, 1% charcoal
C1W1	3.05m (10ft)	20-30cm (7.87-11.8in)	100% clam shell mix	100% shell clam, shell mix with some mussel
C1W1	3.05m (10ft)	30-40cm (7.87-15.7in)	75% shell mix, 25% charcoal	70% shell mix, 30% charcoal
C1W1	3.05m (10ft)	40-50cm (15.7-19.7in)	99% clam shell mix, 1% wood	80% wood, 20% shell mix
C1W1	3.05m (10ft)	50-85cm (19.7-33.5in)	100% wood	100% wood
C1W1	4.57m (15ft)	0-10cm (0-3.94in) A	95% gravel subrounded, 5% shell, 1 conical shell, rest were unidentifiable, 1 charcoal piece present	80% gravel subrounded, 20% shell with mussel fragments, the rest were unidentifiable
C1W1		0-10cm (0-3.94in) B	95% gravel, 5% shell (unidentifiable)	90% gravel, 10% shell (mussels present, the rest were unidentifiable
C1W1	4.57m (15ft)	10-20cm (3.94-7.87in)	90% gravel, 10% shell with 1 conical snail shell, mussel fragments	60% gravels, 40% shell (50% mussel fragments, 2 conical brown shells (possibly northern striped dogwrinkle, rest were unidentifiable)
C1W1		255-265cm (100.4-104.3in)	95% shell mix, 5% rounded gravel	95% shell mix, 5% subrounded gravel
C1W1	4.57m (15ft)	275-285cm (108.3-112.2in)	100% shell (majority littleneck with Olympia, oyster	100% shell (littleneck and butter clam with mussels, majority are unidentifiable fragments)
C1W1	4.57m (15ft)	285-295cm (112.2-116.1in)	95% shell (the majority butter clam, with littleneck and mussels present), 5% gravel	100% shell (unidentifiable fragments with some mussel fragments present)
C1W1	4.57m (15ft)	265-275cm (104.3-108.3in)	100% shell mostly oyster	95% shell mix, 5% subrounded gravel
C1	1.52-3.05m (5-10ft)		40% peat, 40% gravel subrounded, 20% shell (little neck was the majority, mussels, rest were unidentifiable fragments)	30% gravel subrounded, 70% shell (little neck clams, butter clams, mussel, majority too small to identify
C1	3.05-4.57m (10-15ft)		65% gravel subrounded, shell 45% (30% little neck, 30% butter clam, rest unidentifiable fragments, 1 conical shell	40% gravel, 60% shell (majority unidentifiable, with mussel fragments scattered throughout)
C1W2	1.52-3.05m (5-10ft)	63-73cm (24.8-28.7in)	98% shell (littleneck clam,) 2% subrounded gravel	99% shell mix mainly butter clam with little neck, 1% subrounded gravel

SAMPLE NUMBER	SAMPLE DEPTH	STRATUM THICKNESS	COMPOSITION 1/4	COMPOSITION 1/8
C1W2	1.52-3.05m (5-10ft)	73-83cm (28.7-32.7in)	100% shell	90% shell mix with littler neck, butter clam, mussel, 10% subangular gravel
C1W2	1.52-3.05m (5-10ft)	83-93cm (32.7-36.6in)	100% shell oyster, littleneck, and butter clam	99% shell mix, 1% subrounded gravel
C1W2	3.05m (10ft)	10-20cm (3.94-7.87in)	98% shell (littleneck and butter clam with some mussel), 2% wood	98% shell (littleneck and butter clam with some mussel), 2% wood
C1W2	3.05m (10ft)	20-30cm (7.87-11.8in)	50% shell (mostly butter clam and little neck) 50% wood	50% shell (mostly butter clam and little neck) 50% wood
C1W2	3.05-4.57m (10-15ft)		100% shell mix	95% shell mix white, 5% subrounded gravels
C1N1	3.05-4.57m (10-15ft)	0-10cm (0-3.94in)	40% gravel rounded, 60% shell (majority butter clam with littleneck, 1 conical shell)	40% gravel rounded, 60% shell (unidentifiable fragments)
C1N1	3.05-4.57m (10-15ft)	10-20cm (3.94-7.87in)	100% shell (majority butter clam with mussel, rest unidentifiable fragments)	15% gravel subrounded, 85% shell (unidentifiable fragment with 1 red conical shell)
C1N1	3.05-4.57m (10-15ft)	20-30cm (7.87-11.8in)	85% wood fragments, 15% shell with butter clam, littleneck, majority unidentifiable)	85% wood fragments, 15% shell with butter clam, littleneck, mussel, majority unidentifiable fragments)
C1N1	3.05-4.57m (10-15ft)	30-40cm (7.87-15.7in)	95% shell (unidentifiable fragments) 5% charcoal fragments	95% shell (unidentifiable fragments), 5% wood fragments
C1N2	3.05-4.57m (10-15ft)	0-10cm (0-3.94in)	35% subrounded gravel, 45% wood fragments, 20% shell	75% shell (unidentifiable fragments, 23% wood fragments, 2% charcoal fragments)
C1N2	3.05-4.57m (10-15ft)	10-20cm (3.94-7.87in)	85%wood, 2% shell barnacle, 13% charcoal, only in 1/8 inch screen	
C1N	1.52-3.05m (5-10ft)	70-80cm (27.6-31.5in)	60% gravel subrounded, 25% shell (unidentifiable fragments), 15% wood fragments	50% subrounded gravels, 50% shell (mussel, butter clam, littleneck), 2 wood fragments
C1N		80-90cm (31.5-35.4in)	95% shell (butter clam with mussel), 5% subrounded gravel	10% gravels (rounded), 90% shell (butter clams and mussel)
C1N	3.05-4.57m (10-15ft)	0-10cm (0-3.94in)	85% subrounded gravel, 15% shell (some butter clam fragments, unidentifiable fragments), 1 wood fragment	60% subrounded gravel, 40% shell (butter clam and littleneck, most unidentifiable fragment), 1 wood fragment
C1N	3.05-4.57m (10-15ft)	10-20cm (3.94-7.87in)	100% shell (oyster, littleneck, mussel)	100% shell (majority unidentifiable fragments with oyster and mussel) 1 conical shell

SAMPLE NUMBER	SAMPLE DEPTH	STRATUM THICKNESS	COMPOSITION 1/4	COMPOSITION 1/8
C1N	3.05-4.57m (10-15ft)	20-30cm (7.87-11.8in)	5% gravels, 95% shell (mostly butter clam, with few oyster and unidentifiable fragments)	n/a
C1W	1.52-3.05m (5-10ft)		95% shell, 3% rounded gravel, 2% charcoal	
C1W	3.05-4.57m (10-15ft)	none listed	50% wood fragments/ wood plug, 30% gravel, 20% shells (Olympia oyster, littleneck, butter clam, majority unidentifiable)	10% wood fragments, 50% gravels, 40% shell (butter clam, littleneck, mussel, oyster, 1 conical shell)
C1W	4.5-6.09m (15-20ft)		30% subangular and subrounded gravels, 10% wood, 60% shell (barnacles, littleneck, butter clam, mussels, oyster	
C1E1	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	70% gravel subrounded, 30% shell (butter clam 5%, Olympia oyster 5%, softshell 5%, unidentifiable fragments 15%	15% gravel, 85% shell (unidentifiable fragments
C1E1	1.52-3.05m (5-10ft)	10-20cm (3.94-7.87in)	100% shell (10% littleneck, 10% softshell, 10% oyster, 5% butter clam, 65% unidentifiable fragments)	10% gravel (subrounded), 90% shell (unidentifiable fragments)
C1E1	3.05-4.57m (10-15ft)	0-10cm (0-3.94in)	75% gravel subrounded, 25% shell (majority softshell with littleneck and butter clam)	50% gravel subrounded, 50% shell (unidentifiable fragments)
C1E1	3.05-4.57m (10-15ft)	10-20cm (3.94-7.87in)	70% shell (majority butter clam, 30% gravel subrounded)	20% gravel subrounded, 80% shell (unidentifiable fragments)
C1E1	3.05-4.57m (10-15ft)	20-30cm (7.87-11.8in)	100% shell (softshell, butter clam with majority unidentifiable fragments)	15% gravel subrounded, 85% shell (unidentifiable fragments)
C1E1	3.05-4.57m (10-15ft)	30-40cm (7.87-15.7in)	100% shell (10% butter clam, 10% softshell, 10% little neck, 70% unidentifiable fragments	95% shell (unidentifiable fragments) 5% gravel subrounded with 1 conical shell
C1E1	3.05-4.57m (10-15ft)	40-50cm (15.7-19.7in)	100% shell with at least 30% butter clam and the rest unidentifiable fragments	100% shell with littleneck and oyster fragments present 10%, 90% unidentifiable fragments
C1E1	3.05-4.57m (10-15ft)	50-60cm (19.7-23.6in)	100% shell (25% butter clam, 25% Olympia oyster, 25% softshell, 25% unidentifiable fragments)	5% gravel, 95% shell (unidentifiable fragments)
C1E1	3.05-4.57m (10-15ft)	60-70 (23.6-27.6in)	100% shell with at least 40% butter clam, 60% unidentifiable fragments	30% gravel subrounded, 70% shell (butter clam present, most unidentifiable fragments)

SAMPLE NUMBER	SAMPLE DEPTH	STRATUM THICKNESS	COMPOSITION 1/4	COMPOSITION 1/8
C1E1	3.05-4.57m (10-15ft)	70-80cm (27.6-31.5in)	5% gravel subrounded, 95% shell (Majority unidentifiable fragments with littleneck, butter clam, and softshell were present	60% shell (unidentifiable fragments), 40% gravel subrounded
C1E1	3.05-4.57m (10-15ft)	80-90cm (31.5-35.4in)	100% shell (majority softshell)	40% gravel subrounded, 60% shell (unidentifiable fragments)
C1E1	3.05-4.57m (10-15ft)	90-100cm (35.4-39.4in)	795% wood fragments, 5% shell (1 oyster, 1 butter clam, 1 softshell)	75% wood fragments, 25% shell (unidentifiable fragments)
C1E7 akaC2	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	95% wood fragments, 5% shell (unidentifiable fragments with traces of oyster)	50% shell (unidentifiable fragments), 50% wood fragments
C1E7 akaC2	1.52-3.05m (5-10ft)	10-20cm (3.94-7.87in)	90% shell (50% Olympia oyster, 50% softshell), 10% wood fragments	15% wood fragments, 85% shell (unidentifiable fragments)
C1E6	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	100% shell (40% pacific oyster, 30% softshell, 30% unidentifiable fragments)	100% shell (unidentifiable fragments with mussels present)
C1E6	1.52-3.05m (5-10ft)	10-20cm (3.94-7.87in)	70% peat, 30% shell (15% softshell, 5% littleneck, 10% unidentifiable fragments)	100% shell (unidentifiable fragments)
C1E6	1.52-3.05m (5-10ft)	30-40cm (7.87-15.7in) A	100% shell (30% softshell, 30% oyster, 20% littleneck, 20% unidentifiable fragments)	100% shell (unidentifiable fragments)
C1E6	1.52-3.05m (5-10ft)	30-40cm (7.87-15.7in) B	80% wood fragments, 20% shell (70% butter clam, 30% unidentifiable fragments)	100% shell (unidentifiable fragments)
C1E3	0-1.52m (0-5ft)	0-10cm (0-3.94in)	80% shell (50% littleneck, 50% butter clam), 20% wood fragments	90% shell (unidentifiable fragments)
C1E3	0-1.52m (0-5ft)	10-20cm (3.94-7.87in)	90% wood fragments, 7% concrete fragments, 3% gravel subrounded	90% wood fragments, 5% shell (unidentifiable fragments) 5% concrete fragments
C1E3	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	95% shell (majority butter clam, with 1 cockle, rest unidentifiable fragments), 5% gravels subrounded	95% shell (unidentifiable fragments with mussel traces mixed in)
C1E3	1.52-3.05m (5-10ft)	10-20cm (3.94-7.87in)	100% shell (90% softshell, 5% butter clam, 5% littleneck)	95% shell (unidentifiable fragments, with mussels present), 5% gravel subrounded
C1E3	1.52-3.05m (5-10ft)	20-30cm (7.87-11.8in)	90% shell (40% softshell, 10% butter clam, 50% unidentifiable fragments)	100% shell (unidentifiable fragments)
C1E3	1.52-3.05m (5-10ft)	30-40cm (7.87-15.7in)	50% wood fragments, 50% shell (1 oyster fragment, rest unidentifiable)	95% shell (unidentifiable fragments), 5% wood fragments (1 piece)

SAMPLE NUMBER	SAMPLE DEPTH	STRATUM THICKNESS	COMPOSITION 1/4	COMPOSITION 1/8
C1E3	1.52-3.05m (5-10ft)	40-50cm (15.7-19.7in)	95% shell (50% oyster, 25% butter clam, 20% softshell, 5% littleneck, 5% wood fragments)	95% shell (littleneck, butter clam, softshell, mussel, oyster present, but majority unidentifiable fragments)
C1E3	1.52-3.05m (5-10ft)	50-60cm (19.7-23.6in)	100% shell (40% oyster, 40% softshell, 20% butter clam)	100% shell (unidentifiable fragments)
C1E2	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	75% subrounded gravel, 25% shell (unidentifiable fragments)	30% gravel subrounded, 70% shell (majority unidentifiable fragments, 2 conical shells)
C1E2	1.52-3.05m (5-10ft)	10-20cm (3.94-7.87in)	100% shell (littleneck 30%, butter clam 30%, Olympia oyster 40%)	95% shell (unidentifiable fragments), 5% gravel subrounded
C1E2	1.52-3.05m (5-10ft)	20-30cm (7.87-11.8in)	95% shell (little neck and butter clam 10%, 90% unidentifiable fragments)	95% shell (littleneck and mussels about 10%, 90% unidentifiable fragments), 5% gravel rounded
C1E2	1.52-3.05m (5-10ft)	30-40cm (7.87-15.7in)	100% shell (1 butter clam fragment, rest unidentifiable fragments)	95% shell (mussel and butter clam are 20%, 80% unidentifiable fragments), 5% gravel subrounded
C1E2	1.52-3.05m (5-10ft)	40-50cm (15.7-19.7in)	90% shell (40% oyster, 60% unidentifiable fragments), 10% gravel subrounded	90% shell (25% mussel fragments, 5% littleneck, 70% unidentifiable fragments), 10% gravel
C1E2	3.05-4.57m (10-15ft)	0-10cm (0-3.94in)	95% gravel subrounded, 5% oyster shell	50% gravel subrounded, 50% shell (unidentifiable fragments)
C1E2	3.05-4.57m (10-15ft)	10-20cm (3.94-7.87in)	90% shell (75% butter clam, 25% unidentifiable fragments)	95% shell (unidentifiable fragments), 5% gravel subrounded
C1E2	3.05-4.57m (10-15ft)	20-30cm (7.87-11.8in)	95% shell (25% butter clam, 75% unidentifiable fragment), 10% gravel subrounded	100% shell little neck present in less than 5% rest is unidentifiable fragments
C1E2	3.05-4.57m (10-15ft)	30-40cm (7.87-15.7in)	100% shell (unidentifiable fragments with 1 conical shell)	85% shell (5% mussel and oyster, 95% unidentifiable fragments), 15% gravel subrounded
C1E2	3.05-4.57m (10-15ft)	40-50cm (15.7-19.7in)	100% shell (30% butter clam, 70% unidentifiable fragments)	90% shell (mussel and oyster present but the majority is unidentifiable fragments)
C1E2	3.05-4.57m (10-15ft)	50-60cm (19.7-23.6in)	100% shell (75% butter clam, 10% oyster, 15% unidentifiable fragments	100% shell (littleneck and butter clam 5%, 95% unidentifiable fragments)
C1E2	3.05-4.57m (10-15ft)	60-70 (23.6-27.6in)	100% shell (littleneck and butter clam present 55%, cockle fragment, 45% unidentifiable fragments	90% shell (unidentifiable fragments with traces of littleneck, butter clam, mussel, and oyster fragments) 10% gravel
C1E	1.52-3.05m (5-10ft)	0-5cm (0.00-1.97in)	100% gravel rounded	30% shell mix, 65% gravel, 5% wood
C1E	1.52-3.05m (5-10ft)	5-15cm (1.97-5.90in)	90% shell mix (butter clam), 10% gravel	95% shell mix with oyster, clam and mussel, 5% gravel

SAMPLE NUMBER	SAMPLE DEPTH	STRATUM THICKNESS	COMPOSITION 1/4	COMPOSITION 1/8
C1E	1.52-3.05m (5-10ft)	15-25cm (5.90-9.84in)	100% shell (softshell, butter clam)	100% shell mix (unidentifiable fragments, 1 conical snail)
C1E	1.52-3.05m (5-10ft)	25-40cm (9.84-15.7in)	100% clam mix	90% clam mix, 10% subrounded gravels
C1E	3.05-4.57m (10-15ft)	0-10cm (0-3.94in)	100% shell (clam mix)	90% shell mix, 10% subrounded gravels
C1E	3.05-4.57m (10-15ft)	10-20cm (3.94-7.87in)	100% clam mix	90% clam shell mix, 10% subrounded gravels
C1E	3.05-4.57m (10-15ft)	20-30cm (7.87-11.8in)	100% clams and oyster mix with softshell and butter	90% clam shell mix, 10% subrounded gravel
C1E	3.05-4.57m (10-15ft)	30-40cm (7.87-15.7in)	95% shell mix, 5% rounded gravel	90% clam shell mix, 10% subangular gravel
C1E	3.05-4.57m (10-15ft)	40-50cm (15.7-19.7in)	95% shell mix big butter clams, 5% subangular gravel	50% clam mix, 50% subangular gravel
C1E	3.05-4.57m (10-15ft)	50-60cm (19.7-23.6in)	95% shell mix (butter, softshell, littleneck), 5% subangular gravel	50% clam mix, 50% subangular gravel
C1E	3.05-4.57m (10-15ft)	60-70 (23.6-27.6in)	95% shell mix with softshell present, 5% subangular gravel	70% clam mix with oyster and butter, softshell, 30% subangular gravels
C1E	3.05-4.57m (10-15ft)	70-80cm (27.6-31.5in)	70% wood, 30% clam mix	60% wood, 30% shell mix, 10% subangular gravel
C1E4 (A)	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	60% gravel subrounded, 40% shell (softshell)	50% gravel (subrounded), 50% shell (softshell)
C1E4 (A)	1.52-3.05m (5-10ft)	10-20cm (3.94-7.87in)	90% shell (softshell, oyster, majority unidentifiable fragments), 10% gravels subrounded	100% shell 60% softshell, 40% unidentifiable fragments)
C1E4 (A)	1.52-3.05m (5-10ft)	20-30cm (7.87-11.8in)	100% shell (60% softshell, 40% unidentifiable fragments)	100% shell (unidentifiable fragments)
C1E4 (A)	1.52-3.05m (5-10ft)	30-40cm (7.87-15.7in)	100% shell (60% softshell, 40% unidentifiable fragments)	10% wood fragments, 90% shell (unidentifiable fragments with mussels present)
C1E4 (A)	1.52-3.05m (5-10ft)	40-50cm (15.7-19.7in)	100% shell (60% softshell, 40% unidentifiable fragments, oyster present)	100% shell (unidentifiable fragments with mussels, butter clams, and 1 conical shell)
C1E4 (A)	1.52-3.05m (5-10ft)	50-60cm (19.7-23.6in)	70% shell (softshell and butter clam) 30% wood fragments)	20% wood fragments, 80% shell (unidentifiable fragments with traces of littleneck, butter clam, oyster, mussel)
C1E4 (A)	1.52-3.05m (5-10ft)	60-70 (23.6-27.6in)	100% shell (40% butter clam, 30% softshell, 30% unidentifiable fragments)	95% shell (unidentifiable fragments with butter clam, mussels present), 5% wood fragments

SAMPLE NUMBER	SAMPLE DEPTH	STRATUM THICKNESS	COMPOSITION 1/4	COMPOSITION 1/8
C1E4 (A)	1.52-3.05m (5-10ft)	70-80cm (27.6-31.5in)	75% wood fragments, 25% shell (20% oyster, 20% softshell, butter clam, and littleneck present)	20% wood fragments, 80% shell (unidentifiable fragments)
C1N4 (A)	3.05-4.57m (10-15ft)	0-10cm (0-3.94in)	70% shell (softshell and butter clam present), 20% wood fragments, 10% gravel subrounded	45% gravel subrounded, 45% shell (unidentifiable fragment), 10% wood fragments
C1N4 (A)	3.05-4.57m (10-15ft)	10-20cm (3.94-7.87in)	70% shell mix, 20% wood, 10% subrounded gravel	50% shell, 25% subrounded gravel, 25% wood
C1N4 (A)	3.05-4.57m (10-15ft)	20-30cm (7.87-11.8in)	100% shell (unidentifiable fragments)	100% shell (unidentifiable fragments)
C1N4 (A)	3.05-4.57m (10-15ft)	30-40cm (7.87-15.7in)	nothing present	50% shell, 50% wood
C1N4 (A)	3.05-4.57m (10-15ft)	40-50cm (15.7-19.7in)	100% shell mix	100% shell mix
C1N3	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	90% shell mix 10% gravel, 1 butter clam	100% shell mix with mussel, clam, and unidentifiable fragments
C1N3	1.52-3.05m (5-10ft)	10-20cm (3.94-7.87in)	95% shell (clam, butter, littleneck, mussel, 5% sand and rounded gravel	100% shell (unidentifiable fragments)
C1N3	3.05-4.57m (10-15ft)	0-10cm (0-3.94in)	30% wood chunks, 50% shell mix	100% shell mix (unidentifiable fragments)
C1N5	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	25% rounded gravel, 70% wood, 5% shell	100% shell (unidentifiable fragments)
C1E4	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	20% rounded gravel, 80% sand, 1 concrete chunk	100% shell (unidentifiable fragments, with traces of mussels)
C1E4	1.52-3.05m (5-10ft)	10-20cm (3.94-7.87in)	40% rounded gravel, sand and butter, and clam fragments	100% shell (unidentifiable fragments and 1 bird feather)
C1E4	1.52-3.05m (5-10ft)	20-30cm (7.87-11.8in)	40% rounded gravel, sand and butter, and clam fragments	90% shell fragment, 10% rounded gravel
C1E4	1.52-3.05m (5-10ft)	30-40cm (7.87-15.7in)	clay chunk, 10% rounded gravel, and shell fragments	90% clay, 2% shell, 8% rounded gravel
C1E4	1.52-3.05m (5-10ft)	40-50cm (15.7-19.7in)	30% clay, 70% shell (butter and mussels and unidentifiable fragments)	10% small shell mix, 90% dark grey clay
C1E4	1.52-3.05m (5-10ft)	50-60cm (19.7-23.6in)	20% shell mix with clams, 80% clay sand mix	15% small shell mix, 85% clay fragments
C1E4	1.52-3.05m (5-10ft)	60-70 (23.6-27.6in)	100% shell mix with clam and oyster	100% shell mix with clam and oyster
C1E4	1.52-3.05m (5-10ft)	70-80cm (27.6-31.5in)	60% shell mix with littleneck, butter clam, mussels, and a small amount of clay	30% shell mix with sand and clay
C10	6.09-7.62m (20-25ft)	0-10cm (0-3.94in)	95% wood (red-brown decaying), 5% shell mix, 1 unopened clam	85% wood fragments decaying, 15% shell mix
C10	6.09-7.62m (20-25ft)	10-20cm (3.94-7.87in)	95% shell mix with butter clams and littleneck, 5% wood debris	85% shell mix, clams, mussels, oysters, 15% wood fragments

SAMPLE NUMBER	SAMPLE DEPTH	STRATUM THICKNESS	COMPOSITION 1/4	COMPOSITION 1/8
C10	6.09-7.62m (20-25ft)	20-30cm (7.87-11.8in)	80% wood and rock pieces, decay, angular and subangular, medium to large pebbles, 20% shell with butter clams and oysters	50% wood fragments and rounded to subrounded pebbles, 50% shell mix
C10	6.09-7.62m (20-25ft)	30-40cm (7.87-15.7in)	100% wood and rocks subrounded to rounded	100% wood fragments (pebbles subrounded to round) 1 piece of shell butter clam
C10	6.09-7.62m (20-25ft)	40-50cm (15.7-19.7in)	95% wood fragments, rounded to subrounded rocks, 5% shell mix	80% wood fragments and subrounded to rounded pebbles, 20% shell mix
C10	6.09-7.62m (20-25ft)	50-60cm (19.7-23.6in)	75% wood fragments with rounded to subrounded pebbles, 25% shell mix with butter clams	60% shell mix with mussels, clams, and oysters, 40% wood fragments and rocks
C10	7.62-9.14m (25-30ft)	0-10cm (0-3.94in)	30% shell with butter clam pieces, 60% wood fragments with pebbles and clay	90% shell mix, with clay, 10% wood fragments with rounded pebbles
C6	1.52-3.05m (5-10ft)	35-45cm (13.8-17.7in)	95% red-brown wood fragments, 2 pieces of butter clam (5%)	95% wood pieces decaying, 5% small shell fragments
C6	1.52-3.05m (5-10ft)	45-55cm (17.7-21.7in)	100% shell (5 pieces of littleneck shell)	99% small shell fragments (mussels, clams, few small, rounded pebbles)
C6	1.52-3.05m (5-10ft)	55-65cm (21.7-25.6in)	100% shell fragments (oysters and clams present)	100% small shell fragments (mussels, oyster, butter, and littleneck clams)
C6	1.52-3.05m (5-10ft)	65-75cm (25.6-29.5in)	95% clam fragments with some small, rounded pebbles and 1 scallop-looking fragment	100% shell mix with a fragment of snail shell
C6	1.52-3.05m (5-10ft)	75-85cm (29.5-33.5in)	100% shell mix (littleneck, butter clam, oysters)	100% shell mix (mussel, clams, oyster)
C6	1.52-3.05m (5-10ft)	85-95cm (33.5-37.4in)	very few pieces after screen, 100% clam, oyster fragments	100% clam, oyster, mussel pieces, 1 subrounded pebble
C6	1.52-3.05m (5-10ft)	95-105 (37.4-41.3in)	100% butter and littleneck fragments	100% shell mix (oyster and clams), 2 small, rounded pebbles
C6	1.52-3.05m (5-10ft)	105-115cm (41.3-45.3in)	100% shell fragments (butter, littleneck, oyster)	multiple rounded pebbles, 1 piece of mussel
C8	1.52-3.05m (5-10ft) stopped at 9ft or 2.74m	65-75cm (25.6-29.5in)	100% shell fragments (littleneck present but majority too small to identify)	100% shell mix (clams), a few small, rounded pebbles
C8	1.52-3.05m (5-10ft)	75-85cm (29.5-33.5in)	100% shell mix (littleneck and butter clams, oysters)	100% shell (with clams, oysters, and mussels)

SAMPLE NUMBER	SAMPLE DEPTH	STRATUM THICKNESS	COMPOSITION 1/4	COMPOSITION 1/8
C8	1.52-3.05m (5-10ft)	85-95cm (33.5-37.4in)	80% medium wood fragments (decaying and black) 20% shell mix (butter and littleneck clams)	60% small wood fragments some blackened and decaying, few rocks, subrounded, 40% shell (clams and mussel fragments)
C3	1.52-3.05m (5-10ft)	70-80cm (27.6-31.5in)	1% shell (a piece of butter clam), 99% rounded to subrounded pebbles and gravels	50% shell (with butter clam), 50% rounded to subrounded gravel and pebble mix
C3	1.52-3.05m (5-10ft)	80-90cm (31.5-35.4in)	95% shell fragments (butter and littleneck, oyster) 5% rock	95% shell fragments (2 snail shells, mussels, clams) 5% decaying wood fragments, pebbles subrounded to rounded
C3	1.52-3.05m (5-10ft)	130-140cm (51.2-55.1in)	90% shell (clam present in mixture), 10% decaying wood with rounded pebbles	95% shell fragments (mussels, clams, oysters) 5% wood and pebble fragments
C4	1.52-3.05m (5-10ft)	90-100cm (35.4-39.4in)	90% brick and concrete with few pieces of wood fragments, 5% shell mix, 5% rounded to subrounded pebbles	90% brick and concrete fragments, 10% very small shell fragment mix
C4	1.52-3.05m (5-10ft)	100-110cm (39.4-43.3in)	50% few pieces of ashy pink rock, pebbles, 50% shell fragments (butter and littleneck clams)	100% shell fragment mix (mussels, clam, and oysters present
C4	1.52-3.05m (5-10ft)	110-120 (43.3-47.2in)	100% shell mix (butter and littleneck clams with shiny lacquered-looking flake)	100% shell mix (mussels, clams, oysters)
C4	1.52-3.05m (5-10ft)	120-130cm (47.2-51.2in)	100% shell fragments (oysters and clams)	100% shell fragments (mussels, butter, and littleneck clams, oysters) few rocks pebbles, subrounded to rounded
C4	1.52-3.05m (5-10ft)	130-140cm (51.2-55.1in)	100% shell mix (clam fragments with butter and littleneck)	99% shell mix (oysters, clam, and mussel fragments) 1% small, rounded pebbles
C5	1.52-3.05m (5-10ft)	60-70 (23.6-27.6in)	95% shell mix (oyster and butter and littleneck) 5% angular sand and rounded pebbles	99% shell mix, 1% small red-brown wood fragments
C7	1.52-3.05m (5-10ft)	107-118cm (42.1-46.5in)	99% shell mix (butter clam, mussel fragments, 1 large piece of shell, 1 subangular pebble)	100% shell (clam oyster and mussel)
C1N4	1.52-3.05m (5-10ft)	0-10cm (0-3.94in)	70% shell mix (littleneck and butter clams, oysters) 30% subrounded to rounded pebbles, with some wood fragments	50% shell mix (clam, and mussel fragments that are very small) 50% subrounded to rounded pebbles with some wood fragments

APPENDIX F: ARCHAEOLOGICAL SITE INVENTORY FORMS