

CULTURAL RESOURCES REPORT COVER SHEET

DAHP Project Number: _____ (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 Resources Assessment for the Arlington HP Pipeline Phase 2 Project, Snohomish County, Washington

Date of Report: April 15, 2021

County(ies): Snohomish Section: 11, 14 Township: 31 N Range: 5 E

Quad: Arlington West and Arlington East Acres: 1.6 km
linear

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 #:

- 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.



**Cultural Resources Assessment for the Arlington HP Pipeline Phase 2 Project,
Snohomish County, Washington**

Contains Confidential Information—Not for Public Distribution

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EXECUTIVE SUMMARY

Tierra Right of Way Services, Ltd. (Tierra), was contracted by Parametrix to conduct a cultural resources assessment for the proposed Arlington HP Pipeline Phase 2 Project (the project), located in Sections 11 and 14, Township 31 North, Range 5 East, Willamette Meridian, as depicted on the Arlington West and Arlington East, WA, 7.5-minute U.S. Geological Survey (USGS) quadrangles (Figure 1), in Arlington, Snohomish County, Washington. Cascade Natural Gas Corp (CNGC), in coordination with Parametrix, the City of Arlington (the City), and the Washington State Department of Transportation (WSDOT), proposes to replace approximately 1.6 km (1.0 mile) of existing 10-cm (4-inch) high-pressure gas pipeline, beginning approximately 213 m (700 feet) west of the intersection of 207th Street NE and Stillaguamish Avenue on the eastern terminus and ending at gate station 86 near the intersection of Kent Prairie Road and 71st Avenue NE on the western end.

The project is subject to compliance with the Washington State Environmental Policy Act (SEPA) and statutes regarding the protection of cultural resources (WAC 197-11, RCW 27.44, and RCW 27.53). Tierra, in cooperation with the City, recommends that the project's Area of Impacts (AI) be defined as the construction footprint along the existing pipe alignment and possible alternatives for new alignments, encompassing a total of approximately 27 acres (Figure 2). This recommended AI is intended to address the areas that will receive subsurface impacts from any proposed ground-disturbing activities. Indirect (visual, noise, etc.) impacts are not anticipated due to the minimal change in setting that will result from the project.

The Washington Department of Archaeology and Historic Preservation (DAHP) predictive model indicates that the AI lies within areas of High to Very High Risk for encountering archaeological artifacts or deposits. Based on archival and background research, Tierra anticipated that the AI still has a high probability for intact archaeological deposits beneath disturbed soils, especially in close proximity to (i.e., within 100 m [328 feet] of) Portage Creek.

The field investigations occurred in two phases. In the first phase, a Tierra archaeologist was on-site to monitor the geotechnical bores and conducted a pedestrian survey of the AI. In the second phase, Tierra excavated 18 shovel test probes across the AI. No historic or precontact cultural materials were encountered during either the monitoring or testing efforts.

No additional cultural resources work is recommended. Tierra recommends that all ground-disturbing activity take place under the guidance of an Inadvertent Discovery Plan (provided in this report). If the project design changes in a way that entails ground disturbance to areas outside those discussed in this report, additional cultural resources study would be needed.

INTRODUCTION

Tierra Right of Way Services, Ltd. (Tierra), was contracted by Parametrix to conduct a cultural resources assessment for the proposed Arlington HP Pipeline Phase 2 Project (the project), located in Sections 11 and 14, Township 31 North, Range 5 East, Willamette Meridian (WM), as depicted on the Arlington West and Arlington East, WA, 7.5-minute U.S. Geological Survey (USGS) quadrangles (Figure 1), in Arlington, Snohomish County, Washington. Cascade Natural Gas Corp (CNGC), in coordination with Parametrix, the City of Arlington (the City), and the Washington State Department of Transportation (WSDOT), proposes to replace approximately 1.6 km (1.0 mile) of existing 10-cm (4-inch) high-pressure gas pipeline, beginning approximately 213 m (700 feet) west of the intersection of 207th Street NE and Stillaguamish Avenue on the eastern terminus and ending at gate station 86 near the intersection of Kent Prairie Road and 71st Avenue NE on the western end. The 10-cm (4-inch) pipeline will be replaced with a 15-cm (6-inch) high pressure pipeline to be operated at 250 pounds-per-square-inch (PSI).

Regulatory Context and Recommended Area of Impacts

The project is subject to compliance with the Washington State Environmental Policy Act (SEPA) and statutes regarding the protection of cultural resources (WAC 197-11, RCW 27.44, and RCW 27.53). Tierra, in cooperation with the City, recommends that the project's Area of Impacts (AI) be defined as the construction footprint along the existing pipe alignment and possible alternatives for new alignments, encompassing a total of approximately 27 acres (Figure 2). This recommended AI is intended to address the areas that will receive subsurface impacts from any proposed ground-disturbing activities. Indirect (visual, noise, etc.) impacts are not anticipated due to the minimal change in setting that will result from the project.

ENVIRONMENTAL SETTING

This environmental section describes the depositional conditions that influence the likelihood of intact archaeological deposits being present in the AI and discusses features of the natural environment that would have encouraged or discouraged settlement of the AI by human populations in the past. Information regarding the physical environment of the project vicinity is provided, including a discussion of the changes in topography, geology, climate, vegetation, and the availability of floral and faunal resources that are relevant to assessing a location's sensitivity for containing cultural resources. Literature reviewed for this project included environmental data from the Washington State Department of Natural Resources, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) online soil survey, and resources in Tierra's library related to the geology and landform formation processes and the natural resources available in and around the AI.

Topography and Geology

The AI extends approximately 1.6 km (1.0 mile) over relatively flat terrain and spans Portage Creek, a tributary of the Stillaguamish River, near the southeast edge of the Stillaguamish River Valley. The AI lies approximately 2.1 km (1.3 miles) south of the North Fork/South Fork confluence of the Stillaguamish River, between 33.5 and 42.7 m (110.0 and 140.0 feet) above mean sea level (AMSL), at the eastern edge of the Puget Trough physiographic province (Franklin and Dyrness 1988:70–90). The Puget Trough, also referred to as the Puget Lowland, occupies a north-south depression between the Olympic Mountains and the western slopes of the Cascade Mountains extending from the Canadian border to the lower Columbia River along the Oregon border.

Path: Z:\Shared\GIS\2020\20W\RD0-494\01\arch\general_location.mxd Date: 2/26/2021 Drawn by: adelia Coordinate System: NAD 1983 UTM Zone 10N
Restricted Site Data. Do Not Distribute. For Project Specific Use Only

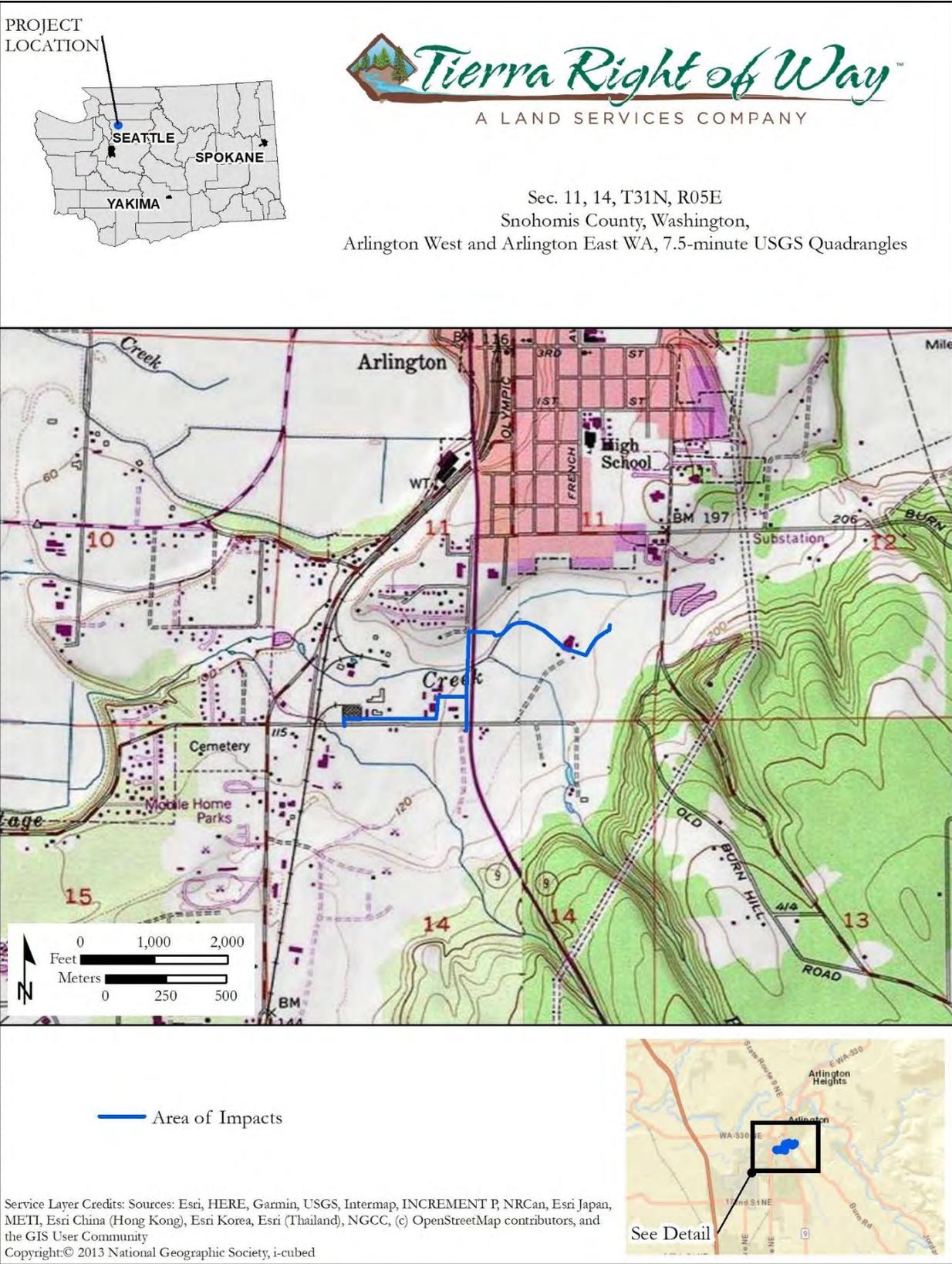


Figure 1. Project location.

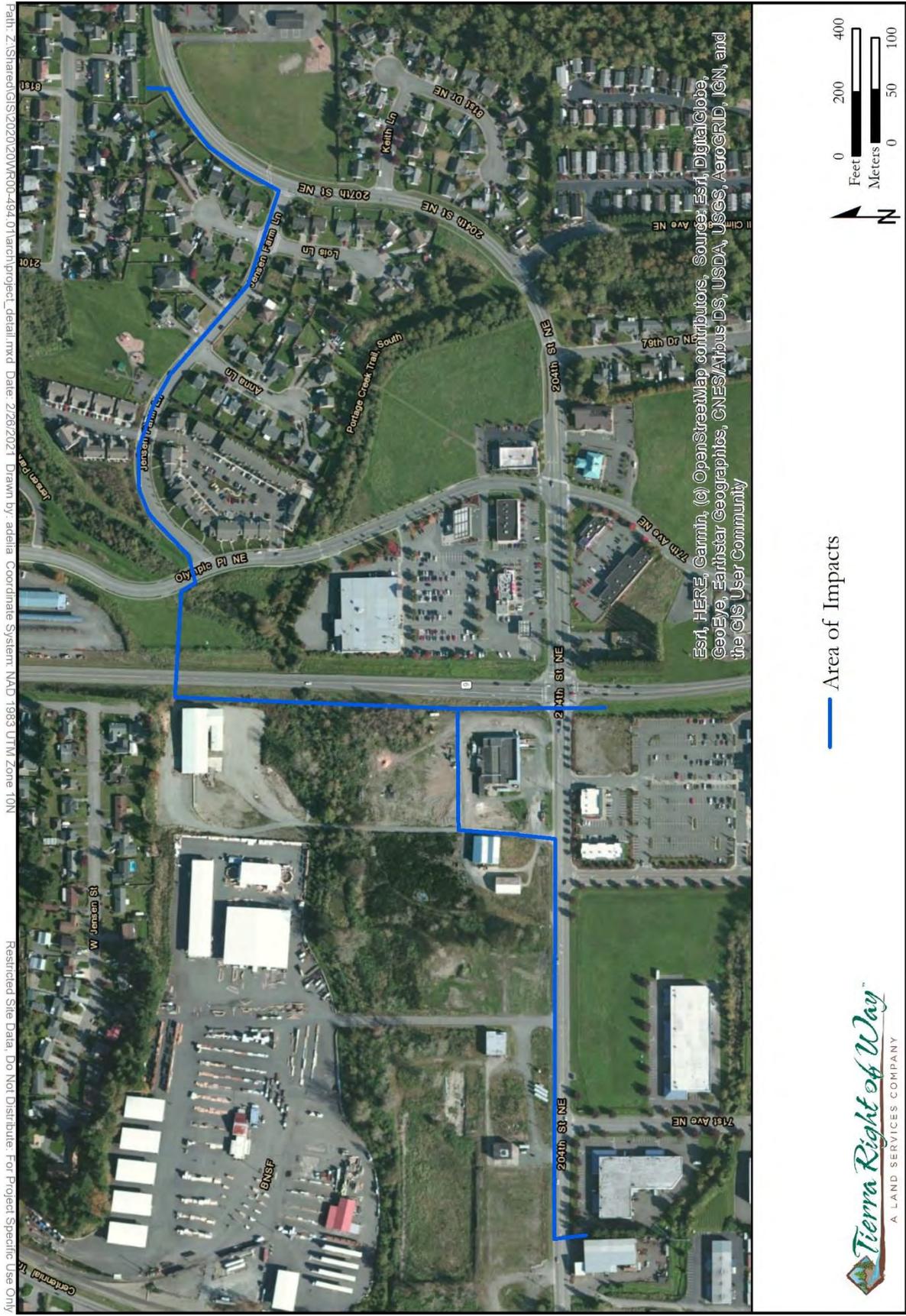


Figure 2. Aerial view of project.

The southern Cascade Mountains are composed primarily of tertiary andesite and basalt flows with associated breccias and tuffs and only minor amounts of igneous intrusive, sedimentary, or metamorphic rocks (McKee 1972:292). Dating to roughly 50 million years ago, limestone deposits in the vicinity of Snoqualmie Pass (approximately 100 km [62 miles] southeast of the AI) are remnants of the western coast of North America. From the Pass north along the Snoqualmie River, the Olney Pass terrane is a coarse mixture of enormous sandstone blocks set in a shaley matrix. The major Cascade range-building period, which included activities such as volcanism, folding, faulting, and uplift, slowed by the end of the mid-Pleistocene (Orr and Orr 1996:95).

The Puget Lowland was shaped by at least four periods of extensive glaciation during the Pleistocene (Easterbrook 2003; Lasmanis 1991). The bedrock was depressed and deeply scoured by glacial ice, and glacial outwash from retreating glaciers mantled areas above the valley floors, forming moraines that are today expressed as ridges. A thick mantle of glacial drift and outwash deposits were left across much of Snohomish County at the end of the last of these glacial periods, the Fraser Glaciation (Easterbrook 2003). The Vashon Stade of the Fraser Glaciation began around 18,000 B.P. with an advance of the Cordilleran Ice Sheet into the lowlands (Porter and Swanson 1998). The Puget Lobe of the ice sheet flowed down into the Puget Lowland and reached its terminus just south of Olympia between 14,500–14,000 B.P. (Clague and James 2002; Easterbrook 2003). The depth of the ice near the current AI is estimated to have been about 1,800–2,000 m (5,905–6,560 feet) (Easterbrook 2003).

The Puget Lobe began to retreat shortly after reaching its terminus. Marine waters entered the lowlands that had been carved out by the glacier and filled Puget Sound. Everson glaciomarine drift deposits dating between 12,500–11,500 B.P. were released from the melting glacial ice and deposited on the sea floor across the northern and central Puget Lowland (Easterbrook 2003). The enormous weight of the ice had depressed the land, but as the crust rebounded, relative sea levels fell and exposed some of the drift deposits (Clague and James 2002; Easterbrook 2003). The Cordilleran Ice Sheet advanced once again during the Sumas Stade of the Fraser Glaciation (ca. 11,600–10,000 B.P.), leaving glacial till and outwash deposits in northwestern Washington (Kovanen and Easterbrook 2002).

The sediments currently mapped in the AI are predominantly (approximately 86 percent) Norma loam. Usually found in depressional areas on glacial outwash plains and glacial till plains at elevations of 0–328 m (0–1,000 feet) AMSL, these very deep, poorly drained soils formed in alluvium. The typical soil profile consists of very dark gray loam to a depth of about 25 cmbs, overlying a subsoil layer of dark grayish brown sandy loam to 71 cmbs, overlying a substratum of dark gray sandy loam to a depth of at least 152 cmbs (Debose and Klungland 1983; NRCS 2021). There is a higher likelihood of identifying artifacts in alluvial soils, and poor drainage can assist in the preservation of cultural materials. The slight acidity of the soil can degrade artifacts over time, but locating distinguishable artifacts in this soil is still somewhat high.

Approximately 14 percent (in the westernmost portion of the AI) is Everett very gravelly sandy loam, 0–8 percent slopes. This very deep, somewhat excessively drained soil formed in glacial outwash and is found on terraces and outwash plains at similar elevations (9–274 m [30–900 feet]) AMSL. The typical soil profile consists of dark brown gravelly sandy loam to a depth of about 15 cm below ground surface (cmbs), overlying a dark brown very gravelly sandy loam subsoil to 46 cmbs, overlying an upper substratum layer of brown very gravelly sandy loam to a depth of 58 cmbs, overlying a lower substratum layer of dark brown extremely gravelly sand to a depth of at least 152 cmbs (Debose and Klungland 1983; NRCS 2021). Due to the slight to moderate acidity and excessive drainage, the

probability of identifying artifacts in soils derived from glacial outwash is relatively low. High-acid and low-moisture environments increase the likelihood of artifacts eroding over time.

Ecological Setting

The AI lies within the Western hemlock (*Tsuga heterophylla*) vegetation zone, the primary vegetative zone west of the Cascade Range (Franklin and Dyrness 1988:70–89). Prior to historic-era clearing, the forest overstory in lowland western Washington would have included, but not have been limited to, Douglas fir (*Pseudotsuga menziesii*), Western hemlock (*Tsuga heterophylla*), and Western red cedar (*Thuja plicata*). The understory would have consisted of shrubs and herbaceous species including bracken fern (*Pteridium aquilinum*), red huckleberry (*Vaccinium parvifolium*), salmonberry (*Rubus spectabilis*), trailing blackberry (*Rubus ursinus*), snowberry (*Symphoricarpos albus*), salal (*Gaultheria shallon*), Oregon grape (*Berberis nervosa*), rose (*Rosa gymnocarpa*), and stinging nettle (*Urtica dioica*). Along waterways and wetter areas, the understory included skunk cabbage (*Lysichiton americanum*), deer fern (*Blechnum spicant*), water parsley (*Oenathe sarmentosa*), coast willow (*Salix hookeriana*), and various sedges (*Carex* sp.). Inland prairies featured camas (*Camassia quamash*) and a host of edible tubers, berries, fruits, and nuts (Franklin and Dyrness 1988; Pojar and MacKinnon 1994).

The physical and floral diversity of the region in the precontact and historic periods provided foraging and breeding habitats for a wide range of terrestrial and aquatic mammals, including black-tailed deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), mountain goat (*Capra americana*), mountain sheep (*Ovis canadensis*), black bear (*Ursus americanus*), moose (*Alces alces*), cougar (*Felis concolor*), bobcat (*Felis rufus*), lynx (*Lynx lynx*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), fisher (*Mustela* sp.), marten (*Mustela* sp.), and muskrat (*Ondatra zibethica*). Wetland habitats along the rivers and marshes supported a specialized and diverse array of fauna that included raccoon (*Procyon lotor*), river otter (*Lutra canadensis*), beaver (*Castor canadensis*), and a variety of migratory waterfowl (Larrison and Sonnenberg 1968).

The Stillaguamish River watershed has historically supported large populations of resident and anadromous fish species, including chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), pink salmon (*Oncorhynchus gorbuscha*), chum salmon (*Oncorhynchus keta*), and steelhead trout (*Oncorhynchus mykiss*). The watershed also supports a number of other fish species, including bull trout (*Salvelinus confluentus*), sea-run cutthroat trout (*Salmo clarki clarki*), and pygmy whitefish (*Prosopium coulteri*) (Snohomish Conservation District 2017; Washington State Department of Ecology 1995).

CULTURAL SETTING

Precontact Period

Human occupation and utilization of the Stillaguamish River drainage has been continuous from approximately 16,000 years ago, based on archaeological evidence from the areas south of the Puget Lobe of the Cordilleran Ice Sheet in western Washington and from sites in eastern Washington. Archaeological, ethnographic, and historical investigations over the past several decades have provided regional contexts for evaluating potential archaeological finds within the AI (Blukis Onat 1987; Carlson 1990; Greengo 1983; Larson and Lewarch 1995; Matson and Coupland 1995; Meltzer and Dunnell 1987; Nelson 1990). A summary of hypothesized regional precontact-era settlement patterns can be found in Table 1.

Table 1. Summary of Regional Precontact-Era Settlement Patterns (adapted from Chatters et al. 2011, Kopperl et al. 2016, and Cooper et al. 2014)

Period	Tool Types	Location Preferences	Associated Data
<i>Paleoindian</i> 16,000–10,000 B.P.	large, concave-based, triangular spear points (Clovis points)	isolated sites in or near lakes and bogs; artifacts would be located on or in glacial soils	Pleistocene mammal bone with butchery marks
<i>Early Holocene Foragers</i> 10,000–7000 B.P.	the Olcott Phase (part of the Old Cordilleran Culture); tool types include leaf-shaped spear points and knives, scraping tools, and cobble tools known as “choppers”	upland environments near the base of the Cascade foothills and on raised terraces along major rivers; few isolated Olcott spear points have been found in bogs; isolates more common on steep slopes along major river valleys; artifacts are located on or in glacial soils	post-glacial period; small number of rock-like cooking pits have been found that were used to process starchy plant foods (camas roots, acorns); appears to represent a foraging society
<i>Middle Holocene Foragers</i> 7000–3500 B.P.	early tools similar to those seen in the early Holocene; later sites add microblades, side-notched projectile points, and large, stemmed projectile points; post 6000 B.P., ground-slate knives, adzes, and whetstones have been documented	after 5000 B.P., shell middens increase in marine sites; bone tools and ornaments found in middens; upland sites often located in valley bottoms of high terraces and consist of stone tools and fire-broken rocks	as forests became denser and less useful for human food procurement (7000 B.P.), marine environments stabilized and became more productive; people increasingly concentrated food-gathering activities on the riverbanks and marine shoreline
<i>Developmental Northwest Coast Culture</i> 3500–2500 B.P.	similar to tools used in the latter part of the Middle Holocene but seasonally specific; tools in seasonal prairie habitation areas consist of large, stemmed projectile points, flake tools, and concentrations of cooking rock	seasonal camps have been found in the prairies of south King and northern Pierce Counties; people moved to locations that allowed for mass-harvest of food (salmon, deer, clams, and/or roots); larger, year-round habitations also were used as well; small, rectangular dwellings are associated with these areas north of Puget Sound	from 3500 to 4000 B.P., the cultures of the Northwest Coast shifted subsistence strategies from immediate consumption of foodstuffs to amassing, processing, and storing food for later consumption

Period	Tool Types	Location Preferences	Associated Data
<p><i>Northwest Coast Culture</i> 2500–250 B.P.</p>	<p>arrow points replaced large atlatl dart points, toolkit is otherwise similar to previous period</p>	<p>large villages of long, split-plank houses created on rivers and along saltwater shores and maintained year-round; upland seasonal-use habitation areas used, leaving dense scatters of stone tools and fire-modified rock; similar habitation areas made along rivers for fishing; these are commonly found on the floodplains of river basins in the Puget Sound and Cascade foothills, often well preserved due to deposition of flood sediments</p>	<p>seasonal habitation areas established up to 3500 B.P. continued to be used and new ones were established; same sites were used seasonally for harvesting resources; large, thick shell middens formed at clamming and fishing locations and at many other localities along the shoreline where fresh water enters Puget Sound</p>
<p><i>Euroamerican Contact Period</i> 250–100 B.P.</p>	<p>at turn of nineteenth century, use of metal points and stone points, iron harpoon tips along with bone, and copper hooks bent from ships' copper; otherwise similar to previous period; as the century progressed, European/Euroamerican tools and technologies were adopted</p>	<p>by 1850, many longhouses replaced by smaller, less elaborate houses; in the 1850s, Native people forced to sign treaties; most were relocated to reservations</p>	<p>people traded with Europeans/Euroamericans for iron, copper, mirrors, and beads, incorporating the new materials into their existing technologies</p>

Archaeological evidence in this region suggests that soon after the land emerged from the last glacial retreat, Native populations moved into the tundra-like environment in pursuit of now-extinct megafauna, while also opportunistically hunting small game and gathering plant resources (Kopperl et al. 2016; Waters et al. 2011). Until recently, the evidence for human settlement of the Puget Lowlands prior to 10,000 years ago was primarily the presence of a small number of isolated fluted projectile points (Avey n.d.; Carlson 1990; Kopperl et al. 2016; Meltzer and Dunnell 1987).

Archaeological investigations conducted at the Bear Creek Site (45KI839) confirmed Native American settlement of the Puget Lowlands by at least 10,000 years ago. At this site, lithic artifacts were found on top of glacial deposits and below a peat deposit with radiocarbon and luminescence dates between approximately 12,500 and 10,000 cal. B.P. (Kopperl et al. 2016). Human hunting of extinct fauna has been corroborated by finds at the Manis mastodon site (Gustafson et al. 1979). The presence of a bone projectile point embedded in a mastodon rib has been substantiated, and combined DNA testing and accelerator mass spectrometry dates indicate the animal was hunted and killed ca. 13,860 to 13,763 B.P. (Lawler 2011; Waters et al. 2011). Archaeological evidence for these early sites (prior to about 8,000 years ago) typically include isolated artifacts and lithic scatters representing field camps and procurement/processing sites (Kopperl et al. 2016).

Early residential base camp sites dating to between 8000–5000 B.P. are commonly found on inland and upland glacial outwash surfaces in the Puget Lowland, northwest Washington, and inland western Washington foothill valleys (Kidd 1964; Mattson 1985). Regionally, these sites are referred to as “Olcott,” named after the type site (45SN14; Kidd 1964) located 4.8 km (3.0 miles) south-southeast of the AI, and as “Cascade” to the east of the Cascade Mountain range. These assemblages are typified by lanceolate-shaped projectile points and a generalist assemblage characteristic of the Archaic period (ca. 8000–4000 B.P.) in the Puget Sound. Olcott lithic assemblages typically include opportunistic tools derived from local cobbles; large, leaf-shaped and stemmed points; scrapers; flaked cobbles; and waste flakes. Sites during this time frame have been interpreted as evidence of an early, mobile hunting and gathering adaptation. Age estimates of Olcott sites have been inferred from the similarity of the assemblages to older (ca. 10,000–6000 B.P.) dated components from British Columbia and eastern Washington (Ames and Maschner 1999; Carlson and Dalla Bona 1996). Sites with Olcott-type assemblages are often located in elevated areas some distance inland from modern shorelines (e.g., Chatters et al. 2011). This pattern may have persisted for over 6,000 years, with the end of this time period marked by an increased reliance on marine and riverine resources. Marine resource use may extend back farther in time, but evidence that might exist on early shorelines has been inundated by rising sea levels, which reached near-modern elevations only by about 5000 B.P. (Kopperl et al. 2016).

As the climate and sea level stabilized after about 5000 B.P., local populations increased and utilized a diverse array of landforms and resources. Native populations became more reliant on marine resources and anadromous fish, gradually shifting to semisedentary subsistence patterns marked by the seasonal round (Carlson and Dalla Bona 1996; Kopperl et al. 2016; Matson and Coupland 1995). Development of marine-oriented cultures is apparent around 2500 B.P. Archaeological sites from this later period (post-2500 B.P.) include village sites, residential base camps, field camps, and special-use sites. Residential village sites represent the winter village described by early ethnographers. These sites are often recognized by large shell middens located near the modern shoreline or inland at river confluences. Base camps and field camps represent the exploitation of specific plant and animal resources by task groups travelling out from the winter village. Base camps may include hearth features, evidence of shelters, and features and artifacts indicative of processing, preservation, or preparation of plant and animal resources. Field camps reflect short duration use by small task groups

and may include hunting and plant-processing sites represented by lithic debris scatters, formed tools such as projectile points and scrapers, and fire-modified (FMR) rock features (Kopperl et al. 2016). Special-use sites include lithic and mineral quarries, peeled cedars, or spiritual sites.

Ethnographic/Protohistoric Period

The AI lies within the traditional territory of the Northern Lushootseed-speaking Stillaguamish, originally called the Stoluck-wa-mish River Tribe, who are part of the Southern Coast Salish regional group. The name Stillaguamish (under various spellings) has been used since about 1850 to describe those people who lived along the Stillaguamish River and its tributaries (Baenen 1981; Bruseth 1926; Lane 1973; Smith 1941; Stillaguamish Tribe of Indians 2020; Suttles and Lane 1990). Like other Southern Coast Salish Tribes, the Stillaguamish followed a seasonal round, occupying primary villages along the river during the winter and temporary campsites during the spring, summer, and fall while traveling to seasonal-use areas for procuring game (including marine and freshwater fish/shellfish) and plants for food, medicine, and utilitarian purposes (Baenen 1981; Suttles and Lane 1990). This movement across the landscape to resource areas located in varying environmental zones created high levels of interaction between groups of people, and many resource areas were shared between groups based on mutual friendship, marriage, or special permission. In his 1927 testimony before the Indian Claims Commission, Stillaguamish Tribal Member James Dorsey (Quil-Que-Kadam), who was born in 1850 and grew up along the Stillaguamish River, stated that both the Sauk-Suiattle and Skagit peoples were permitted into the Stillaguamish territory to visit or to join hunting parties (Lane 1973).

Smith (1941:209) documented two Stillaguamish villages in the current project vicinity: one near present-day Trafton (*Chuck-Kol-Che*), approximately 7.25 km (4.5 miles) northeast of the AI, and a larger village known as Skabalko (*sq^wú?alq^wú?*, meaning to gather, or unite fresh water) near the North Fork/South Fork confluence of the Stillaguamish River in present-day Arlington, approximately 2.1 km (1.3 miles) north of the AI. Skabalko was a massive village complex that was widely known as a gathering place and/or trading location for people traveling the Stillaguamish River (Tracy Boser, personal communication 2020). This location was also reportedly frequented by the Sauk and Snohomish (Bruseth 1926:11; Smith 1941:209–210). According to Bruseth (1926:11), the village “was known far and wide. Sauks travelling to the Sound and back, Snohobish coming down the South Fork, parties coming upriver to dig for roots, spaykoolist and leek at Ba-quab (Kent’s Prairie) nearly always stopped there and camped.”

Permanent villages such as Skabalko were made up of large wooden plank houses that housed multigenerational extended families. Information on the village location was originally documented in 1850 and 1851, when coal was discovered along the Stillaguamish River. At the time, the Euroamerican men who located the coal were likely some of the first non-Native people to travel to this location (Lane 1973). This village is also described in Mr. Dorsey’s 1927 testimony before the Indian Claims Commission; he notes its location in Section 2, Township 31 North, Range 5 East, WM, and that it was comprised of two large plank houses, a cemetery, and several hundred people near the river. Fish traps were also noted at this location by Mr. Dorsey (Lane 1973:26), and three families continued to live there until as late as 1890 (Tracey Boser, personal communication 2020).

Subsistence for the Stillaguamish and other Pacific Northwest indigenous groups depended heavily on salmon. Living upriver, however, the majority of Stillaguamish had smaller catches, and they supplemented their salmon stores with a greater amount of game meat than did their coastal neighbors (Baenen 1981:418). The prairies and wetlands surrounding Skabalko and the North Fork/South Fork

confluence were a readily accessible and plentiful source of game and wild plant crops. These included wild onion and edible roots, bulbs, and tubers as well as various grass, sedge, and reed species that were utilized in basket making (Larsen et al. 2016).

Deer and elk were commonly hunted throughout the Stillaguamish River drainage and particularly on the flats north of Arlington, in the Sultan Basin, in the Lake Cavanaugh area, along Jim Creek, and near Barlow Pass (Baenen 1981). Present-day Arlington lies in an area historically known as *stiqáyu?*, meaning wolf, due to a high population of wolves in the area, and neighboring prairies to the south were known as *báq^wab* (Tracey Boser, personal communication 2020), translating to “dry open land.” The AI crosses through *báq^wab*, also known as Kent’s Prairie, a particularly prolific traditional plant-gathering area that was maintained through regular burning and frequented by the Stillaguamish, Sauk, and Snohomish (Baenen 1981:418; Bruseth 1926:34). According to Bruseth (1926:34), some Stillaguamish occupied “Ba-quad” (Kent’s Prairie) permanently and “kept watch over the Prairie, dug roots and gave to travelers in exchange for fish and venison.” The area is depicted on the 1875 General Land Office (GLO) map along a small creek running northwest into a marshy area along the Stillaguamish River (Figure 3). As a result of subsequent development, this drainage (Portage Creek) has since been diverted to the west and empties into the river several miles downstream.

The history of the mid-nineteenth century in the Pacific Northwest is dominated by the U.S. government’s attempts to establish treaties with Tribal groups in order to solidify its claim on what is now Washington State over that of British-held Canada. The Stillaguamish, along with representatives from the Snohomish, Sauk-Suiattle, Skagit, Snoqualmie, Suquamish, Lummi, Skopamish (Muckleshoot), Kikiallus, and Duwamish Tribes, gathered in 1855 to sign the Treaty of Point Elliott, which proposed to give all the signing Tribes monetary payment, hunting and fishing rights, and other services in return for surrendering their ancestral lands (Lane 1973). After the signing of the Treaty, the Stillaguamish were directed to relocate to the Tulalip Reservation. Many did not relocate to the reservation and instead stayed near their ancestral lands. Individuals of Native American descent living off-reservation in the Puget Sound region often purchased land privately or occasionally received an off-reservation allotment within their ancestral lands. As with all Native Americans in the post-treaty era, they augmented their traditional subsistence practices with Euroamerican pursuits such as agriculture, logging, industrial labor, and other work (Huggins 1984; Ruby and Brown 1992:72–23, 140).

Euroamerican/Postcontact/Historic Period

Following the arrival of non-Native settlers in the Pacific Northwest (by the mid-1850s), many Native village/habitation sites were subsequently homesteaded or platted as towns; most areas that were previously inhabited by Native Americans were generally as desirable to non-Native settlers as they were to the areas’ original inhabitants. This was especially true for locations near water, at river confluences, or along traditionally utilized travel corridors/trails, many of which continued to be in use into the historic period if not the modern era.

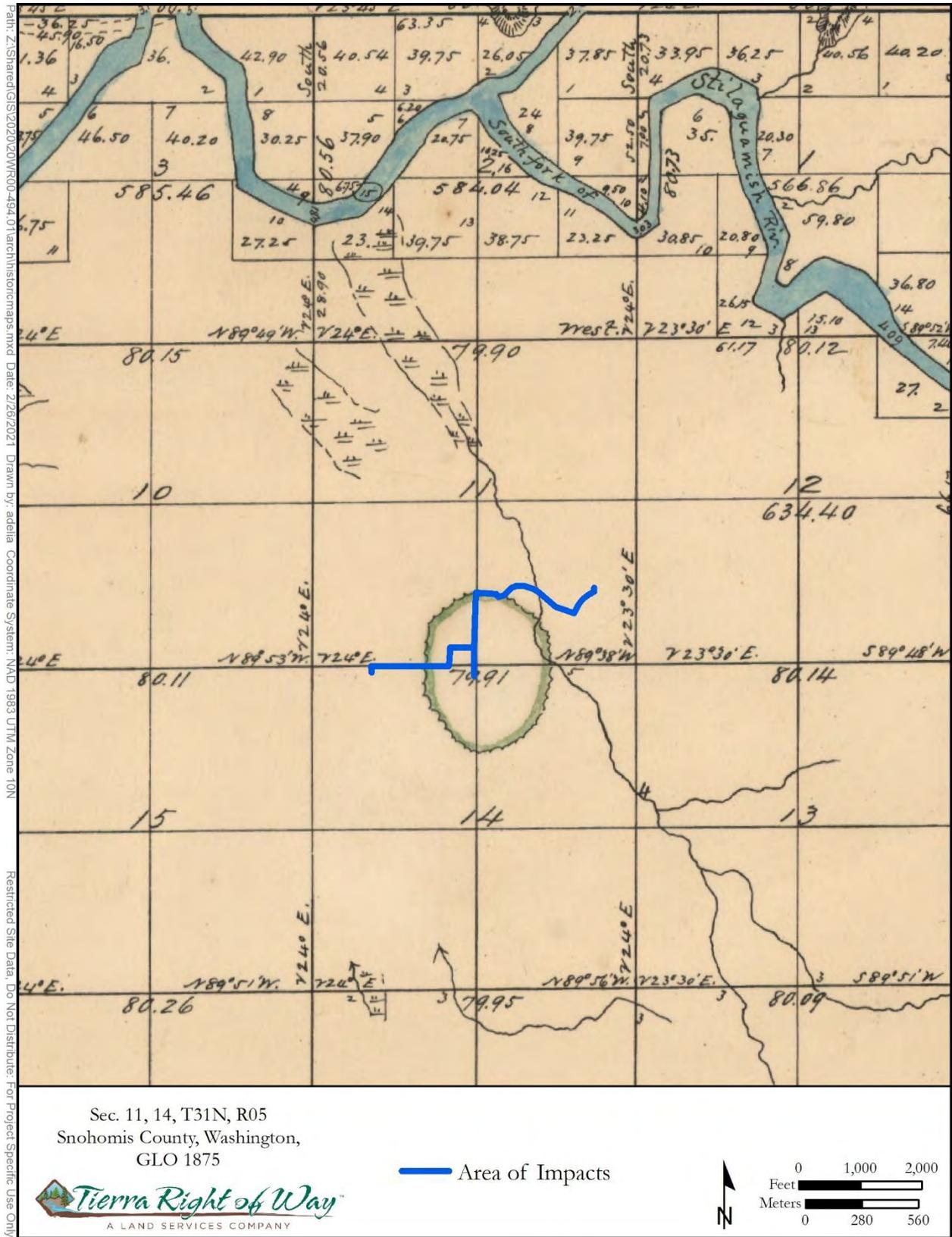


Figure 3. 1875 GLO plat showing vicinity of the AI through Kent's Prairie (USSG 1875).

Snohomish County was originally part of Island County, until 1861, when Snohomish County was formed by the territorial legislature. The first County seat was Mukilteo, but it was moved to Snohomish six months later. After the formation of the new County, settlements began at Lowell, Monroe, Stanwood, and Edmonds. Settlers were drawn to the fertile soil and easy access to water in these areas. Extensive logging and mining activity has taken place throughout the region from the mid-1800s to the present, and the construction and expansion of transportation corridors associated with railroads and roadways had a profound effect on the landscape in this area (Riddle 2006).

The AI has transformed drastically over the past 150 years. It has changed from old-growth forest and agricultural lands to an industrial area. Much of the AI seems to have escaped the western Washington metro-area cycle of rapid urbanization.

History of Arlington

The first non-Native settler in the Arlington area was J. L. “Frank” Kent, who arrived in 1877. Many other settlers began inhabiting the area in the 1880s. A road was cut by the U.S. Army in 1856 from Snohomish to just below the forks in the Stillaguamish River (City of Arlington 2020).

The City of Arlington began as two distinct towns separated by a 40-acre parcel, the ownership of which was contested. The claimants for the parcel were named McMann and Stephens, until McMann bought Stephens out in order to end the dispute during the depression of the 1890s. In 1897, the two Towns, known as Haller City and Arlington, joined together (Interstate Publishing Company 1906). In 1880, a road was cut roughly following the original U.S. Army trail between the forks of the Stillaguamish River (on which Haller City was located) and Stanwood in order to facilitate the movement of loggers and goods through the area without having to rely upon canoe freighting (City of Arlington 2020; Interstate Publishing Company 1906).

Haller City started with the construction of its first general store in 1888 by the confluence of the North Fork and South Fork of the Stillaguamish River. The store was run by N. K. Tvette and N. H. Johnson. In 1889, the White House Hotel was built by Lee Rogers and M. Dinsmore. Haller City was platted by Maurice Haller, the son of a well-known military figure named Granville O. Haller. The land was originally patented to Louis Smith, who later sold the property to John Irving, who sold it to Maurice Haller. Maurice drowned early in the formation of the town, and his interest in the town was passed on to three other men. Haller City grew rapidly at first, housing a sawmill, two saloons, a four-story hotel, a drug store, and a newspaper by 1890 (Interstate Publishing Company 1906).

In 1890, the construction train for the building of the Seattle, Lake Shore, & Eastern Railroad arrived at the site of the original Town of Arlington. The railroad distinguished Arlington from Haller City. Arlington was platted by Earl and McLeod, railroad contractors, who had bought land from Alfred Gifford. In 1890, Arlington started out with a newspaper and an “eating tent,” where people could purchase hot meals. It quickly grew to include a saloon, general store, hardware store, two restaurants, and a three-story hotel (Interstate Publishing Company 1906).

By 1893, the combined population of the two towns was 500. Arlington weathered the depression of the 1890s well, and the population continued to increase. In 1903, when the towns came together and incorporated, the population within the corporate limits was 800; by 1905, the population was up to 1,700 (Interstate Publishing 1906). Arlington has always been a logging town and has been home to

multiple logging companies, sawmills, and shingle mills. After areas were cleared, much of the land was used for agriculture and dairy farms (City of Arlington 2020).

LITERATURE REVIEW

Prior to fieldwork, Tierra staff reviewed the DAHP’s Washington Information System for Architectural and Archaeological Records Data (WISAARD) for archaeological site records and cultural resource survey reports located within a 1.6-km (1.0-mile) buffer surrounding the AI. Tierra also examined online resources such as the BLM’s GLO survey records database, HistoryLink, Historic Map Works, Washington State University’s Early Washington Maps Collection, and Spokane Public Library’s Northwest Digital Collections.

Previous Cultural Resource Studies

Background research revealed that there have been no previous cultural resources investigations directly within the AI. Within an approximately 1.6-km (1.0-mile) radius, Tierra’s records review documented 17 previous cultural resources studies (Table 2), 3 previously recorded archaeological sites, and 3 historic railroad properties (Table 3). The archaeological research completed in the vicinity of the AI has been associated with development-oriented projects (included in Table 2 are examples of road improvement, creek enhancement, residential development, pipeline, and transmission line projects). Four of the seventeen studies were conducted by Archaeological Investigations Northwest, Inc. (AINW), for Northwest Pipeline Corporation’s (Northwest’s) Capacity Replacement Project, which involved retirement of a 431-km-long (268-mile-long), 66-cm-diameter (26-inch-diameter) natural gas pipeline from Sumas to Washougal with a 91-cm-diameter (36-inch-diameter) pipeline. The initial survey of the pipeline route resulted in the identification of 44 archaeological and architectural resources, including 1 archaeological site associated with historic agriculture within 1.6 km (1.0 mile) of the current AI (Smith et al. 2004). Archaeologists recorded a drainage ditch (45SN391) that functioned as part of a network of agricultural ditches used to drain pastureland into the South Fork Stillaguamish River to the east (Ozbun 2004). Smith et al. (2004) noted that although the feature does not appear on historic maps, the history of land use in the area suggests it was constructed between 1890 and 1910. Due to the feature’s simple construction and lack of distinctive features, as well as “no integral associations with important events or persons in the history of the local area,” Smith et al. (2004:6–97) recommended the drainage ditch Not Eligible for listing in the NRHP.

Table 2. Previous Cultural Resource Studies within 1.6 km (1.0 Mile) of the AI

NADB	Reference	Title	Cultural Resources Identified ^a
1343688	Smith et al. 2004	<i>A Cultural Resource Overview and Survey of Northwest Pipeline Corporation’s Capacity Replacement Project, Western Washington Volume I</i>	historic archaeological site (45SN391)
1344814	Ozbun et al. 2004	<i>Cultural Resource Survey of Northwest Pipeline Corporation’s Capacity Replacement Project, Western Washington Addendum One: Supplemental Surveys of Workspace, Extra Workspace, Access Roads, and Pipeyards</i>	none
1346278	Smits et al. 2005	<i>Cultural Resource Survey of Northwest Pipeline Corporation’s Capacity Replacement Project, Western Washington Addendum Five: Supplemental Surveys of Extra Workspaces, Access Roads, Dewatering Areas, and Pipeyards</i>	historic railroad property (Property ID 46624)

NADB	Reference	Title	Cultural Resources Identified^a
1346406	Ozbun et al. 2005	<i>Cultural Resource Survey of Northwest Pipeline Corporation's Capacity Replacement Project, Western Washington Addendum Seven: Seattle, Lake Shore & Eastern Railway Spur at the Arlington 3 Pipeyard</i>	historic railroad property (Property ID 46624)
1353374	Piper and Smith 2009	<i>Phase 2 Cultural Resources Assessment for the Sedro Woolley-Horse Ranch Transmission Line Upgrade, Skagit County and Snohomish County, Washington</i>	45SN486
1353592	Schumacher 2009	<i>Cultural Resources Survey for Mid-Mountain Materials Cell Tower (SE07101A), Arlington, Washington</i>	none
1680049	Compas and Dellert 2010	<i>Archaeological Monitoring for the Sedro-Woolley Horse Ranch Transmission Line Rebuild Project, Skagit and Snohomish County, Washington</i>	none
1680166	Chambers 2010	<i>Archaeological Assessment for the 67th Avenue Phase III Improvement Project Arlington, Snohomish County, Washington</i>	6 historic buildings and 2 historic railroad properties (Property ID 46624, 114192)
1685105	Wilson et al. 2013	<i>Prairie Creek Drainage Improvements Project – Phase 2 Construction Cultural Resources Assessment, Arlington, Snohomish County, Washington</i>	none
1685034	Iversen 2014a	<i>Addendum to the Archaeological Assessment for the 67th Avenue Phase III Improvement Project, Arlington, Snohomish County, Washington</i>	historic railroad property (Property ID 671679)
1685732	Iversen 2014b	<i>Archaeological Monitoring for the Prairie Creek Drainage Improvements Project - Phase 2 Construction, City of Arlington, Snohomish County, Washington</i>	none
1688852	Steinkraus 2015	<i>Cultural Resources Assessment for the Eagle Creek Substation Project, Arlington, Snohomish County, Washington</i>	none
1691924	Larsen et al. 2016	<i>Archaeological Survey and Evaluation of the Proposed Park 77 Development, Arlington, Snohomish County, Washington</i>	none
1691492	Hushour 2017	<i>East Arlington Substation Project, an Addendum to the Cultural Resources Assessment for the Eagle Creek Substation Project, Arlington, Snohomish County, Washington</i>	none
1692412	Pierson et al. 2019	<i>Archaeological Resources Survey for the Temporary Extra Work Area at Williams Northwest Pipeline Arlington Meter Station at Milepost 1422.56, Snohomish County, Washington, Addendum Report</i>	none
1694059	Bush and Wilmoth 2020	<i>Archaeological Investigation Report: Pilbuck Village Project (Parcels 00769800000600 and 00793300002801), Arlington, Snohomish County Washington</i>	none
1694469	Iversen and Osiensky 2020a	<i>Cultural Resources Assessment for the Arlington Valley Road Land Sale Project, Arlington, Snohomish County, Washington</i>	none
1694591	Iversen and Osiensky 2020b	<i>Archaeological Assessment for the Lux Project, Arlington, Snohomish County, Washington</i>	45SN766

^a Within 1.6 km (1.0 mile) of the AI.

Table 3. Previously Recorded Archaeological Resources Located within 1.6 km (1.0 Mile) of the AI

Resource	Resource Type	Cultural Materials and Features	Distance and Direction from AI	NRHP Eligibility
45SN391	historic agriculture	historic drainage ditch dating from 1890 to 1910	1.55 km (0.96 miles) northeast	not evaluated
45SN486	precontact isolate	basalt scraper	0.68 km (0.42 miles) southeast	not evaluated
<i>Jensen Lithic Scatter</i> (45SN766)	precontact lithic material	sparse lithic scatter comprised of flakes, stone tools, debitage, and FMR	165 m (540 feet) south	not evaluated

Key: FMR = fire-modified rock; NRHP = National Register of Historic Places.

Three subsequent investigations for Northwest’s Capacity Replacement Project resulted in the documentation of two additional archaeological sites located outside of Snohomish County (Ozbun 2004) and one historic railroad property located 265 m (870 feet) north of the current AI (Smits et al. 2005; Ozbun 2004). Archaeologists surveyed the Arlington 3 Pipeyard, a laydown area immediately east of 67th Avenue NE, and identified an intact railroad spur extending east into the project area off the Burlington Northern Santa Fe railroad line currently running along the eastern shoulder of the roadway (Smits et al. 2005:6-32). The section of railroad running along 67th Avenue NE (west edge of the laydown area) was originally constructed in 1890 by the Seattle, Lake Shore, & Eastern Railway Company (SLS&E), and the spur extending into the pipeyard was built by 1910. Allen (2005) recorded the section of railroad and railroad spur within and adjacent to the pipeyard on a Historic Property Inventory form as the Seattle, Lake Shore, & Eastern Railway (Property ID 46624). AINW recommended the resource Eligible for listing in the NRHP under Criterion A for its role in the development of Arlington and as a major regional line serving the Puget Sound area. AINW also recommended that Northwest’s proposed use of the pipeyard would have no effect on the resource (Smits et al. 2005:6–32).

Due to a project design change involving reconstruction of a portion of the railroad spur within the pipeyard, AINW revised the previous recommendation to recommend that “no historic properties will be adversely affected” by use of the pipeyard during project-related construction activities (Ozbun 2004). Ozbun (2004) noted that the restoration would have an effect on the railroad spur, but the effect “will not diminish its integrity and will not be harmful to the overall qualities of the Seattle, Lake Shore, & Eastern Railway that make it Eligible for listing in the NRHP.” The DAHP concurred with the recommendation and the resource was determined Eligible in 2005.

Chambers (2010) revisited the Seattle, Lake Shore, & Eastern Railway segment during an archaeological assessment for the City of Arlington’s 67th Avenue Phase III Improvement Project and also documented a previously unrecorded segment at the intersection of 67th Avenue NE and Lebanon Street (Property ID 114192), approximately 0.6 km (0.4 miles) north of the current AI. Chambers (2010:18) recommended the segment Not Eligible for listing in the NRHP due to the absence of any distinctive architectural features, and therefore considered it non-contributing to the NRHP eligibility of the SLS&E Railway. Iversen (2014) conducted monitoring for the project and recorded a railroad spur off the main line of the SLS&E Railway (Property ID 671679) during trench excavation near the intersection of 67th Avenue NE and 211th Place NE, approximately 0.5 km (0.3 miles) northwest of the AI. In coordination with WSDOT Archaeologist Trent de Boer, Iversen

(2014) concluded that the spur did not represent a contributing element to the NRHP eligibility of the SLS&E Railway.

Most recently, Iversen and Osiensky (2020b) conducted an archaeological assessment for a residential development on a 3.2-acre parcel, approximately 165 m (540 feet) southeast of the current AI, and recorded a subsurface precontact lithic scatter. The Jensen Lithic Scatter (45SN766) was identified in 8 positive shovel test probes (STPs) out of a total of 39 STPs excavated across the parcel and consisted of FMR, lithic debitage, and flaked stone tools. The assemblage included one bifacially flaked artifact composed of fine-grained volcanic material observed during screening of sediments excavated between 40 and 60 cmbs. Osiensky (2020) noted the specimen's material, size, bifacial edge, cortex, and patina to be consistent with Olcott Phase artifacts (Carlson 1990; Chatters et al. 2011; Mattson 1985; Nelson 1990). The main component of the lithic scatter contained dispersed FMR (n=11), one broken flake exhibiting possible use-wear, and one base of a white translucent cryptocrystalline silicate (CCS) projectile point, potentially representing the remains of a displaced hearth feature associated with plant and/or animal processing in the former prairie environment. The artifacts were bagged and returned to the STPs in which they were documented, then later collected by the Stillaguamish Tribe (Osiensky 2020). Iversen and Osiensky (2020b) concluded that no intact site deposits were identified, and it appeared that all of the artifacts occurred within secondary subsurface contexts. Although the integrity of the identified deposits was compromised, Iversen and Osiensky (2020b:15) emphasized the possibility of encountering unidentified intact deposits within the project area and recommended archaeological monitoring during ground-disturbing activities.

Cemeteries

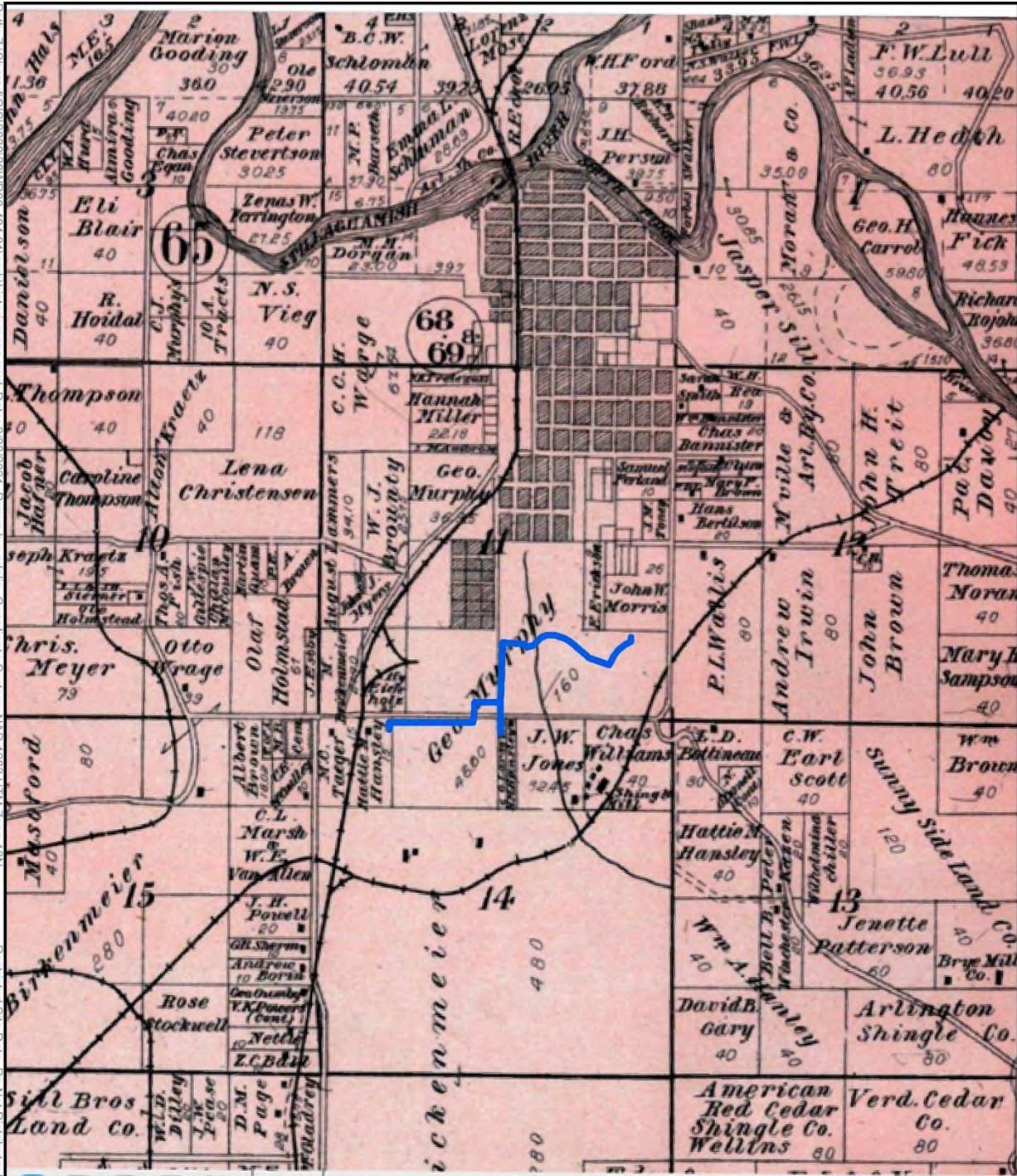
The nearest documented cemetery, Arlington Municipal Cemetery (45SN543) is located 0.41 km (0.25 miles) west of the AI and was formally plotted as "Harwood Cemetery" in 1903. The cemetery was operated by a non-profit association until the City of Arlington assumed ownership in 1999.

The Old Pioneer Cemetery (45SN523) was established in 1895 as Arlington's first cemetery, located 1.50 km (0.93 miles) north of the AI on a bluff above the South Fork of the Stillaguamish River, near a Stillaguamish burial ground. Many of the interred were moved to the larger Harwood Cemetery (now Arlington Municipal Cemetery) in 1903, and by 1912, the Old Pioneer Cemetery was no longer in use or maintained.

Historic Map Research

As described above, the 1875 GLO survey plat for Township 31 North, Range 5 East, WM, shows no cultural features located in the project vicinity, but depicts the open prairie known as *báq^wab* (or Kent's Prairie) in Sections 11 and 14, where the AI is located (see Figure 3). Historic maps from 1910 and 1934 indicate the majority of land where the current AI is located was owned by Geo. Murphy, whose property totaled approximately 242 acres in Sections 11 and 14 (Figure 4) (Anderson Map Company 1910; Kroll 1934). The USGS topographic map from 1911 shows at least three unnamed structures along two improved roads (present-day Kent Prairie Road and SR 9) in the western half of the AI (Figure 5) (USGS 1911).

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Sec. 11, 14, T31N, R05
Snohomis County, Washington,
Anderson, 1910



— Area of Impacts

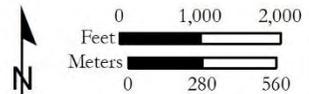


Figure 4. 1910 Anderson map showing land ownership in vicinity of the AI (Anderson Map Company 1910).

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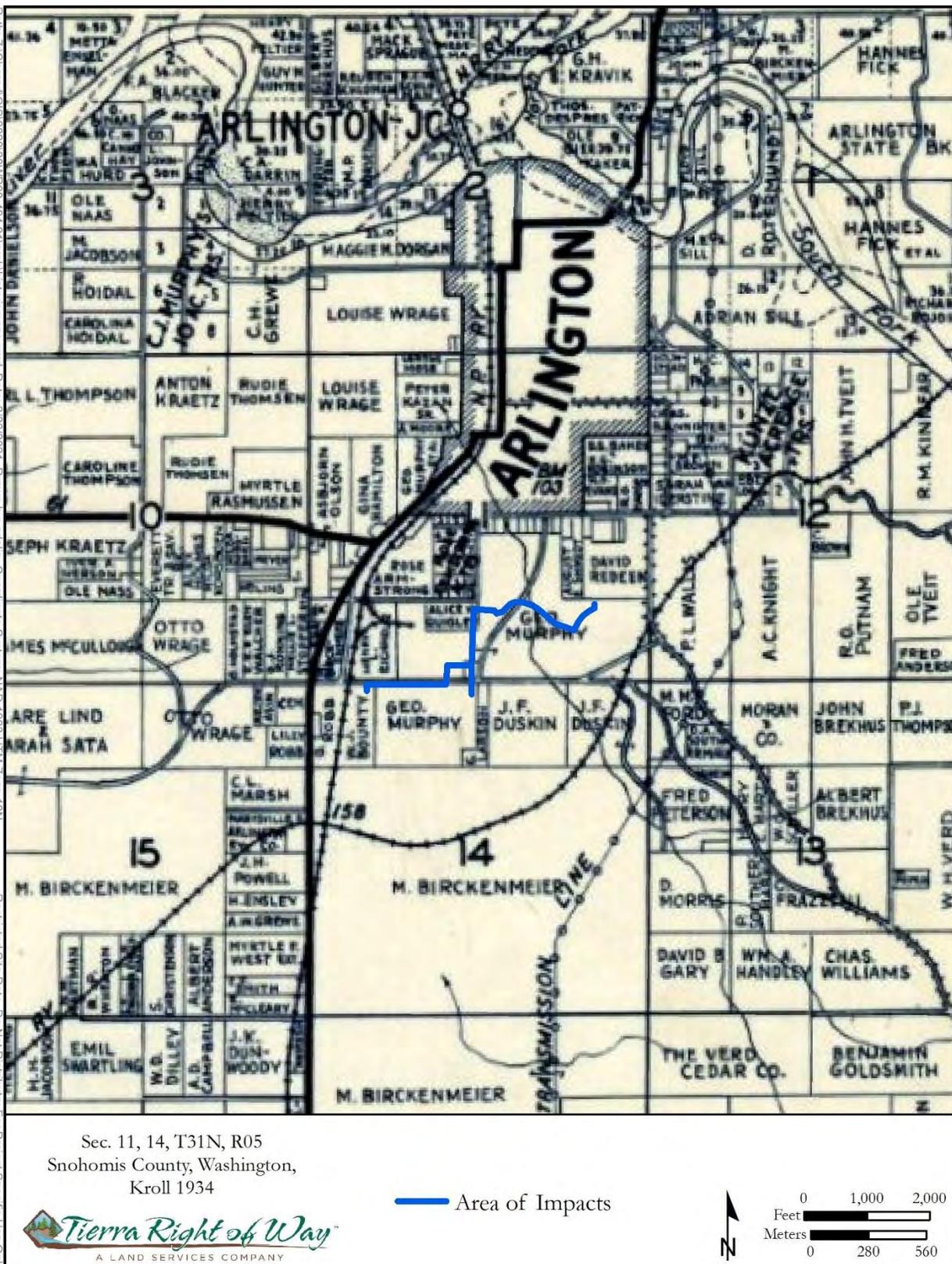


Figure 5. 1934 Kroll map showing land ownership in vicinity of the AI (Kroll Map Company 1934).

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Restricted Site Data. Do Not Distribute. For Project Specific Use Only



Sec. 11, 14, T31N, R05
Snohomis County, Washington,
Mt. Vernon 1911



— Area of Impacts

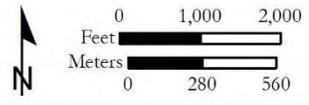


Figure 6. 1911 USGS map showing vicinity of the AI (USGS 1911).

ANTICIPATED FINDS

Tierra also reviewed DAHP's statewide predictive model layer for probability estimates of precontact cultural resources. Model probabilities are calculated using information from two general sources—data derived from archaeological surveys conducted prior to model development and a consideration of the relationship between these recorded sites and various environmental factors (Kauhi 2009). The DAHP model indicates that the AI lies within areas of High to Very High Risk for encountering archaeological artifacts or deposits.

The background information presented above indicates a high probability for archaeological resources that may be Eligible for listing in the NRHP. However, previous ground disturbances associated with agricultural land use, utility installation, and construction and maintenance of roads and buildings decrease the likelihood that intact archaeological deposits remain. Despite the history of historic land use, Tierra anticipates that the AI still has a high probability for intact archaeological deposits beneath disturbed soils, especially in close proximity to (i.e., within 100 m [328 feet] of) Portage Creek. Cultural materials and/or features associated with hunter-fisher-gatherer, ethnographic, or historic Native American hunting groups include stone or bone tools related to hunting or processing activities; lithic debris associated with the manufacture and maintenance of these tools; processing features, such as hearths, identified by the presence of FMR rocks, charcoal, charcoal-stained soils, and/or possibly faunal and floral remains; and larger symbolic features, such as rock/boulder cairns.

Ethnographic and historic Native American cultural materials could include similar kinds of archaeological materials. Historic Euroamerican cultural materials would likely be deposits and features associated with agriculture and homesteads, including household dumps containing ceramics, glass, and other domestic items. Cultural materials could also be related to irrigation and farming practices (including personal items and metal fragments or machinery pieces) or, perhaps, to early industry in the area (including, again, personal items and metal fragments). Personal items may include objects such as glass or ceramic beads or vessels, clothing (e.g., buttons), or iron tools.

FIELD METHODOLOGY

In compliance with Washington State law (RCW 19.122), Tierra requested utility locates for the AI several days prior to the field investigation. In order to identify any cultural resources that could be directly impacted by proposed activities, the field investigation included a pedestrian survey of the entire AI, monitoring of geotechnical probes, and excavation of STPs. The STPs measured 40 cm in diameter, and the contents of each were screened through quarter-inch mesh. Surface survey of the AI was conducted by walking 20-m (66-foot) transects of the entire AI. Prior to the start of the fieldwork, Tierra sent coordination and project information to the potentially interested Native American Tribes.

The field investigations for this assessment occurred in two phases. In the first phase of the cultural resources assessment, a Tierra archaeologist was on-site to monitor the geotechnical bores occurring along the planned pipeline and conduct a pedestrian survey of the project area. There were two goals for the archaeological monitor during this phase. First, the monitor was tasked with identifying, cataloguing, and recording any cultural resources uncovered during the ground-disturbing activities associated with the geotechnical investigation. Second, the results of the archaeological monitoring were to be used in conjunction with Tierra's archival review and the DAHP's predictive model to identify areas of high priority for subsurface archaeological testing.

The second phase of the cultural resources assessment included the excavation of 18 STPs across those sections of the AI that were identified as high priority areas during the first phase. The STPs measured between 35 and 40 cm in diameter and were excavated to a maximum depth of 100 cm. Observations regarding soil matrix characteristics were recorded on standard Tierra field forms. Digital photographs were taken of the project setting and STP, and photograph information, including direction of view and subject, was recorded. The STP locations were mapped with a handheld Trimble global positioning system (GPS) unit. Tierra's daily work records describing field conditions, procedures, and contacts were completed. Documents and photographs are on file at Tierra.

FIELD RESULTS

Field investigations were conducted between March 1 and March 12, 2021. Tierra archaeologist Jonathon Klem, M.A., conducted the pedestrian survey and archaeological monitoring of the geotechnical bores between March 1 and March 4, and Tierra archaeologists Jonathon Klem and Michele Parvey, M.A., conducted the subsurface testing on March 11 and March 12. Field conditions were overcast, and temperatures ranged between 40° and 60° F.

Pedestrian Survey and Archaeological Monitoring

The geotechnical investigations were carried out by GeoTest Services, Inc., between March 1 and March 4, 2021. Tierra archaeologist Jonathon Klem, M.A., met GeoTest Services Geotechnical Project Manager Cassidy Dimitroff on-site at 8:00 a.m. Monday morning and was briefed on the planned geological testing. The archaeologist monitored each of the 17 bores completed (Figure 7; Photo 1). These bores revealed intact Holocene subsoils along 204th Street NE and Washington State Route 9 (WA 9) (Appendix A). None of the bores revealed historic or precontact period cultural resources.

While the GeoTest crew was conducting the geotechnical boring, Tierra conducted a pedestrian survey across the entire AI. Much of the AI remains covered in hardscaped concrete or asphalt. In particular, the proposed pipeline route along Jensen Farm Lane was observed to be entirely within the existing roadway. Additionally, the road corridor was heavily landscaped and hardscaped, severely limiting the testable area along the eastern half of the project area (Photo 2). Along WA 9 and 204th Street NE, the Tierra archaeologist observed modern road trash and construction debris, but no historic or precontact period cultural resources were observed.

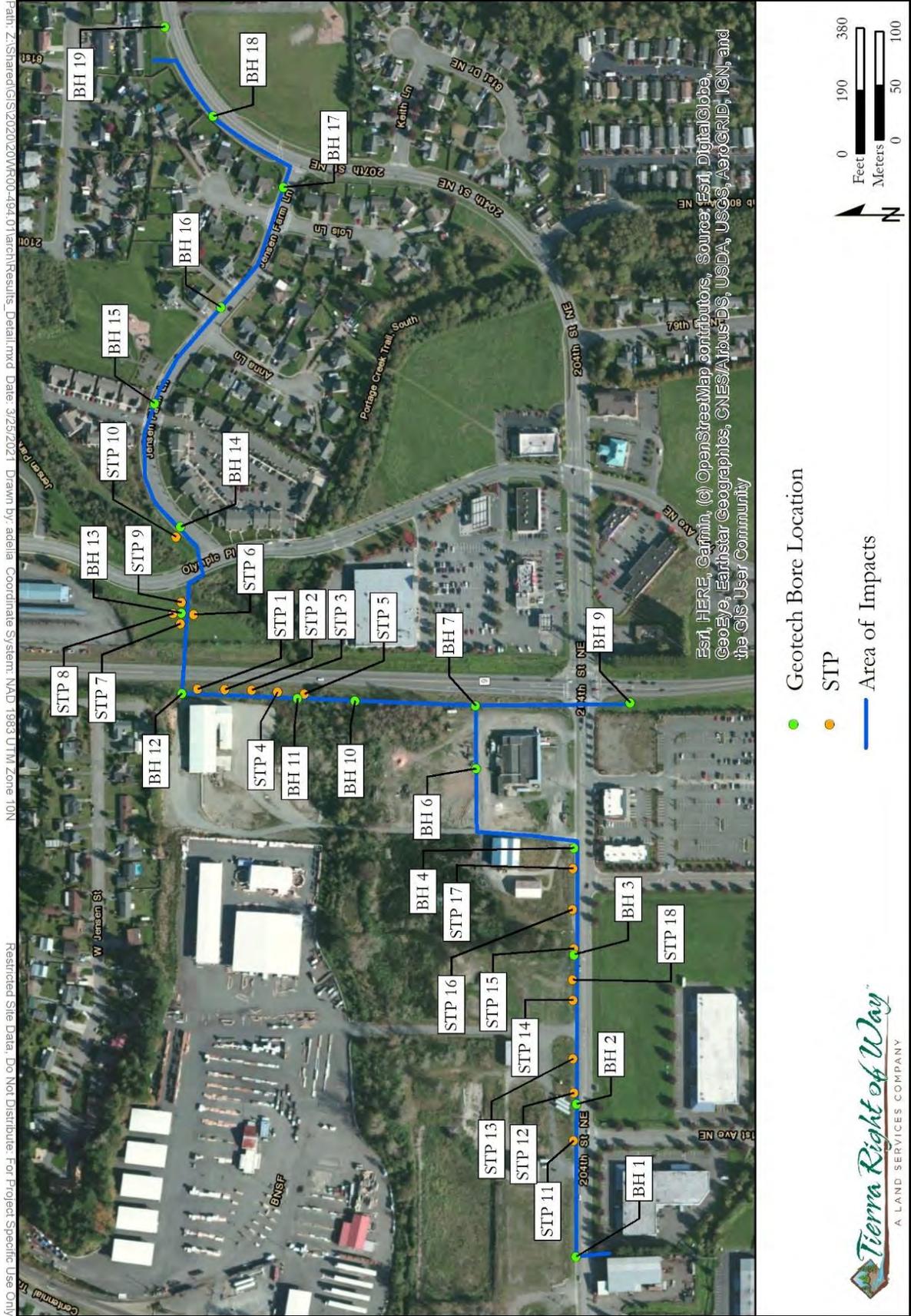


Figure 7. Results, showing placement of STPs and Geotechnical bores along the planned pipeline replacement.



Photo 1. Geotechnical Bore #11 in progress, view east.



Photo 2. Geotechnical Bore #16 in progress, view west; note position of bore within Jensen Farm Lane roadway.

Subsurface Survey

Based on the observations made during the monitoring effort, as well as the archival information and DAHP predictive model, Tierra selected three areas for intensive subsurface survey: the northern edge of 204th Street NE, the area north of Portage creek and west of WA 9, and the area east of WA 9 and west of Olympic Place. These areas corresponded to the areas tested by geotechnical bores 1–4 and 11–14 (Figure 7).

The Tierra crew conducted a subsurface survey on Thursday, March 11, and Thursday, March 18, 2021. The crew excavated 18 STPs to a maximum depth of 100 cmbs (Table 4). STP placement depended upon site conditions and varied based on the presence of utilities, hardscaped surfaces, and geotechnical bore placement (Figure 7; Photo 3, 4). Soils observed in these STPs reflected those observed during the geotechnical bore monitoring. Along WA 9 and Olympic Place, STPs 1–10 generally consisted of very dark brown, sandy silty topsoil overlying medium brown silty sands and light grey-brown outwash gravels. These soils are consistent with the Everett very gravelly sandy loam soil complex. In STPs 11–18, along 204th Avenue NE, the soils observed consisted of 20–80 cm of compacted modern gravel fills overlying light grey-brown glacial outwash gravels (Photo 5). No historic or precontact cultural material was observed within any of the STPs.



Photo 3. View west from STP 14, showing utilities and intersection between STPs 13 and 14.



Photo 4. View west from STP 16, showing modern sidewalk and hardscaping along 204th Avenue NE.



Photo 5. STP 16, showing modern gravel fills directly overlying glacial outwash material.

Table 4. STP Results

STP No	Depth and Reason for Termination (cmbs)	Soil Description (cmbs)	Cultural Material (cmbs)
1	75 glacial outwash	0–35: Very dark brown sandy silt with 15–30% subrounded to rounded, small to medium, poorly sorted gravels, small roots. 35–50: Medium reddish brown silty sand with 15–30% subrounded to rounded, small to large, poorly sorted gravels, abrupt boundary. 50–75: Light grey-brown coarse sand with 30–50% small to large, subrounded to rounded, sorted gravels (outwash).	none
2	40 compact gravel fills	0–40: Very dark brown silty sand with 30–50% subrounded to rounded, small to large gravels, abrupt boundary.	25: Modern nail
3	50 glacial outwash	0–30: Very dark brown sandy silts with 30–50% subrounded to rounded, tiny to very large, poorly sorted gravels, small roots, and abrupt boundary. 30–50: Medium reddish brown sand with 50%+ subrounded to rounded, poorly sorted, tiny gravels to small cobbles (outwash).	none
4	95 compact gravels	0–31: Very dark brown silt with <5% subrounded to rounded, tiny, poorly sorted gravels, small roots, and abrupt boundary. 31–51: Very light grey coarse sand with <5% subrounded to rounded, tiny, poorly sorted gravels, abrupt boundary. 51–60: Very dark brown sandy silt with 5–15% subrounded to rounded, poorly sorted, tiny gravels, abrupt boundary. 60–67: Very light grey coarse sands with <5% subrounded to rounded, poorly sorted, tiny gravels, abrupt boundary. 67–95: Very dark brown with reddish mottling, silt with 15–30% subangular to subrounded, tiny to medium gravels, compaction and gravels increase between 90–95.	none
5	70 glacial outwash	0–36: Dark brown silt with 15–30% subangular to rounded, poorly sorted, tiny gravels to small cobbles, small roots, abrupt boundary. 36–70: Dark reddish brown silty sand with 50%+ subrounded to rounded, poorly sorted, tiny gravels to small cobbles (outwash).	none
6	65 glacial outwash	0–44: Dark brown gravelly sandy silt with 15–30% subrounded to rounded, tiny to medium, poorly sorted gravels, small roots, clear boundary. 44–65: Dark to medium brown sand with >50% subrounded to rounded, poorly sorted, tiny to very large gravels (outwash).	none
7	59 glacial outwash	0–40: Very dark brown sandy silt with 15–30% subrounded to rounded, poorly sorted, tiny to small gravels, small roots, abrupt boundary. 40–59: Light reddish brown coarse sands with >50% subrounded to rounded, poorly sorted, tiny to large gravels (outwash).	none
8	60 glacial outwash	0–39: Dark brown silty sand with 30–50% rounded to subrounded, poorly sorted, tiny gravels to small cobbles, small roots, abrupt boundary. 39–60: Reddish brown coarse sand with >50% subrounded to rounded, poorly sorted, small gravels to large cobbles (outwash).	none

STP No	Depth and Reason for Termination (cmbs)	Soil Description (cmbs)	Cultural Material (cmbs)
9	61 glacial outwash	0–42: Very dark brown sandy silt with 15–30% subangular to rounded, small to large, poorly sorted gravels, small roots, abrupt boundary. 42–61: Medium reddish brown coarse gravelly sands with >50% subrounded to rounded, poorly sorted, tiny to large gravels.	none
10	72 compact gravels	0–72: Very dark brown with light grey and reddish mottles, sandy silt, 30–50% subangular to rounded, tiny to very large, poorly sorted gravels, small roots.	none
11	80 extremely compact	0–80: Mixed dark and light grey silty sands with >50% subangular to rounded, poorly sorted, tiny gravels to large cobbles.	Modern trash throughout
12	95 glacial outwash	0–24: Very dark grey brown silty sands with 30–50% subangular to rounded, poorly sorted, tiny gravels to medium cobbles, abrupt boundary. 24–95: Light grey-brown coarse sands with >50% subrounded to rounded, tiny to very large sorted gravels.	none
13	50 glacial outwash	0–28: Very dark grey-brown silty sand with 30–50% subangular to rounded, poorly sorted, tiny gravels to very large cobbles, abrupt boundary. 28–50: Light grey-brown coarse sand with >50% subrounded to rounded, small to large gravels.	0–15: Modern trash
14	48 glacial outwash	0–27: Mixed light to dark grey-brown silty sands with >50% subangular to rounded, poorly sorted, tiny to very large gravels, clear boundary. 27–48: Light grey-brown coarse sands with >50% subrounded to rounded, tiny to large gravels.	0–27: Modern trash
15	40 glacial outwash	0–12: Very dark grey-brown sandy silt with 30–50% subangular to rounded, poorly sorted, tiny to medium gravels, small roots, abrupt boundary. 12–40: Light grey-brown coarse sands with >50% subrounded to rounded, poorly sorted, tiny to large gravels.	none
16	30 glacial outwash	0–9: Very dark brown silty sands with 30–50% subangular to rounded, poorly sorted, tiny to large gravels, small roots, abrupt boundary. 9–30: Very light grey-brown coarse sands with >50% subrounded to rounded, poorly sorted, tiny gravels to small cobbles.	0–9: Modern trash
17	100	0–70: Very dark grey-brown silt with light grey sandy mottles, 30–50% Subangular to rounded, poorly sorted, tiny gravels to small cobbles, small roots, abrupt boundary. 70–100: Black to very dark grey silt with <5% subrounded to rounded, tiny to small gravels.	0–50: 4x Modern wire nails. 0–70: Fragmentary light brown bottle glass. 45: Screw-top bottle cap.

STP No	Depth and Reason for Termination (cmbs)	Soil Description (cmbs)	Cultural Material (cmbs)
18	45 glacial outwash	0–20: Dark grey-brown sandy silt with 30–50% subangular to rounded, poorly sorted, tiny gravels to very large cobbles, small roots, abrupt boundary. 20–45: Light grey brown coarse sands with >50% subrounded to rounded, poorly sorted, tiny gravels to very large cobbles.	0–20: Modern trash

CONCLUSIONS AND RECOMMENDATIONS

Tierra’s cultural resources assessment included background and archival research, pedestrian survey, archaeological monitoring of 17 geotechnical test bores, and the excavation of 18 STPs to investigate subsurface deposits. The DAHP predictive model shows the AI to be within areas of high to very high probability of encountering cultural resources. Tierra’s background research supported this, showing both historic and precontact period use of the surrounding region.

Pedestrian survey of the AI revealed that much of the AI would occur within modern roadways or road corridors. The western section of the AI, along 204th Avenue NE, was crossed by multiple utility lines, asphalt roadways and concrete pads, intersections, and sidewalks. The central section of the AI, along WA 9, also occurred within the road corridor. However, the northern end of this section, surrounding geotechnical bores 11, 12, and 13, rested within relatively open grassy areas surrounding Portage and Kruger Creeks. The eastern section of the AI, along Jensen Farm Lane, occurred entirely within the modern roadway, and the surrounding road corridor had been heavily landscaped and hardscaped due to residential development in the area. Much of the AI was covered in modern road debris, but no historic or precontact cultural material was observed.

Archaeological monitoring of the 17 geotechnical bores revealed natural sediments occurring below 0.76 m (2.5 feet) over most of the AI. Some bores revealed modern gravel fills extending to between 0.76 and 1.5 m (2.5 and 5.0 feet) below the surface, but no bores revealed modern fills below 1.5 m (5.0 feet). The sediments observed along WA 9, near the confluence of Portage and Kruger creeks, showed natural sediments within depths testable through manual excavation. Along 204th Avenue NE, the geotechnical bores periodically uncovered small lenses of natural outwash-derived sediments between the modern fill and outwash layers in depths testable though manual excavation. Geotechnical bores along Jensen Farm Lane occurred entirely within the modern roadway, where the modern hardscaping prevented manual excavation.

Excavation of 18 STPs along 204th Avenue NE, WA 9, and Olympic Place confirmed that large sections of the AI had been graded and filled. In STPs 1–10, the crew uncovered between 20 and 50 cm (8 and 20 inches) of gravelly, disturbed topsoils overlying Holocene subsoils and glacial outwash. STPs 11–18 revealed that the AI along 204th Avenue NE had been extensively graded, as most of these STPs revealed a direct transition from modern gravel fills to glacial outwash between 40 and 60 cmbs (16 and 24 inches bs). No historic or precontact cultural material was recovered from any of the geotechnical bores or STPs.

Modern development along the AI has contributed to extensive surface and subsurface disturbance across the AI. However, Tierra's investigations indicate the presence of undisturbed sediments below the modern gravel fills. Additionally, subsurface testing of the pipeline in the Jensen Farm Lane roadway was hindered by the existing asphalt and cement surfaces. As such, Tierra recommends that the project and associated ground-disturbing activities proceed under an Inadvertent Discovery Plan (IDP), provided below. If the project plans change in such a way that would cause disturbance to areas not covered in this report, additional cultural resources investigation is recommended.

Inadvertent Discovery Plan for Cultural Resources

Archaeological resources (RCW 27.53, 27.44 and WAC 25–48) are legally protected from disturbance. If artifacts or cultural deposits are inadvertently discovered during ground-disturbing activities in the AI, construction should be immediately stopped. The construction supervisor, the City of Arlington, and WSDOT should be notified. A professional archaeologist may be consulted to verify that the material is archaeological in nature. The on-site construction supervisor will establish a 20-m (66-foot) buffer area around the discovery to protect the find while it is investigated. Ground-disturbing work may proceed in other parts of the AI, provided it will not affect the cultural discovery.

If the discovery is archaeological, the City, as the lead agency, will be responsible for consultation with the DAHP and interested Tribes. Under consultation, the City will determine treatment measures for the discovery and carry out consultation as appropriate. Examples of cultural material that may be found include evidence for precontact activity, such as buried lenses of charcoal, fire-blackened rock, shell, and animal bones; tools made out of stone, bone, or antler; or flakes and debris from the manufacture of stone tools. Historic period activities might be indicated by the discovery of diagnostically older ceramics, iron metal, tools, bottles, machine parts, or structural features. If ground-disturbing activities reveal human remains, the protocol detailed below for the Inadvertent Discovery of Human Remains must be followed.

Inadvertent Discovery Plan for Human Remains

Human remains are legally protected from disturbance (RCW 68.50). If ground-disturbing activities reveal human skeletal remains, the protocol detailed below must be followed. Any human remains that are discovered during ground-disturbing activities will be treated with dignity and respect. If human remains are discovered during ground-disturbing activities in the AI, construction should be immediately stopped. All construction activity must be halted in a buffer area surrounding the remains that is sufficiently large to prevent any further disturbance. The construction supervisor, the City, WSDOT, and the DAHP should be notified. A professional archaeologist may also be consulted to confirm the identity of the find.

Alternatively, if there is a question as to whether the bones are human or animal, the DAHP physical anthropologist, Guy Tasa ([360] 790-1633), is available to make a determination. If the find is determined to be human skeletal material, it must be reported to the Snohomish County medical examiner ([425] 438-6200) and local law enforcement ([425] 388-3393). The medical examiner will assume custody over the human remains and determine if they are archaeological or forensic. If they are determined to be archaeological, the medical examiner will report that finding to the DAHP, which will then take custody of those remains. The DAHP physical anthropologist will further determine if the remains are Native American. As the lead agency, the City will carry out consultation with the DAHP and any affected Tribes for the final reburial and disposition of the remains.

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APPENDIX A. GEOTECHNICAL MONITORING LOGS



Geotechnical Bore Monitoring Form

Project Name: CNG Arlington

Date: 3-1-21

Tierra Project No.: 20WR494

Monitor: JK

On-site Contact: Cassidy Dmitriov

Time Start/End: 0700 – 1530

General field conditions: Overcast, temperate

Location: WA-09 and 204th Ave NE Bore Type/Diameter: 1" Sampling

Method: Hollow core

Bore #: 12

Planned Depth of Bore: 50ft

Actual Depth: 40

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Light grey to medium brown silty gravels, modern fill	N	Likely fill layers	02
5	2.5	Light grey to medium brown silty gravels	N	Likely fill	03
7.5	2.5	Light grey coarse sands	N	First natural layer	04
10	2.5	Medium brown coarse sands	N		05
15	5	Medium brown coarse sands	N	Damp	06
20	5	Medium brown coarse sands	N	Wet	07
25	5	Medium brown coarse sands	N	Wet	08
30	5	Medium brown coarse sands	N	Wet	09
35	5	Medium brown to light grey coarse sands	N	Wet	10



40	5	Medium brown to light grey coarse sands	N	Wet	11
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Bore #: 11

 Planned Depth of Bore: 50ft

 Actual Depth: 50

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Dark brown to light grey gravels	N	Very gravelly, small to medium subangular to subrounded gravels	13
5	2.5	Dark brown to light grey silty gravels	N	Very gravelly, small to medium subangular to subrounded gravels	14
7.5	2.5	Dark brown to light grey gravels, transitioning to medium brown coarse sands	N	Wet	15
10	2.5	Medium brown to light grey coarse sands	N	Wet	16
15	5	Medium brown to light grey coarse sands	N	Wet	17
20	5	Medium brown to light grey coarse sands	N	Wet	18
25	5	Medium brown coarse sands	N	Wet	19
30	5	Medium brown coarse sands	N	Wet	20
35	5	Medium brown coarse sands	N	Wet	21
40	5	Medium brown coarse sands	N	Wet	22

45	5	Medium brown coarse sands	N	Wet	23
50	5	Medium brown coarse sands	N	Wet	24

Bore #: 10

 Planned Depth of Bore: 50ft

 Actual Depth: 45

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Light to dark brown silty gravels	N	Fills	26
5	2.5	Light to dark brown silty gravels	N	Fills	27
7.5	2.5	Light grey very gravelly coarse sands	N	Wet, small to medium subangular to subrounded gravels	28
10	2.5	Medium brown coarse sands	N	Wet, no gravels	29
15	5	Medium brown coarse sands	N	Wet, no gravels	30
20	5	Medium brown coarse sands	N	Wet, no gravels	31
25	5	Medium brown coarse sands	N	Damp, pea gravel	32
30	5	Medium brown coarse sands	N	Damp, pea gravel	33
35	5	Medium brown coarse sands	N	Damp, pea gravel	34
40	5	Medium brown coarse sands	N	Damp, pea gravel	35
45	5	Medium grey coarse sands	N	Damp	36



Bore #: _____

 Planned Depth of Bore: 50ft

Actual Depth: _____

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Dark brown silty loam, transitioning to medium brown silty gravels	N	Fills from the garden bed, likely imported topsoil	38
5	2.5	Dark brown silty loam, transitioning to medium brown silty gravels	N	Fills from the garden bed, likely imported topsoils	39
7.5	2.5	Mixed light to dark grey silty gravels	N	Fills, appearing disturbed	40
10	2.5	Mixed light to dark grey silty gravels	N	Fills, appearing disturbed	41
15	5	Medium to light grey coarse sands	N	Wet	42
20	5	Medium brown coarse sands	N	Wet	43
25	5	Medium brown coarse sands	N	Damp	44
30	5	Medium brown coarse sands	N	Damp	45
35	5	Medium brown coarse sands	N	Damp	46
40	5	Medium brown coarse sands	N	Damp	47

 Archaeology observed: None



Additional Notes/observations:

0700 leave home

0755 Arrive on site. Meet Cassidy (Geotest foreman) and Borettech crew. Cassidy reports they will start on Bore 12 and 11 this morning, then move south to hit the other 3 along WA-9. Crew unloading drill rig

0830 Crew setting up to drill 12 (JK01). 6" drill, with 1" hollow core sample rod

0930 Bore 12 drilled, moving to 11

0940 Crew setting up to drill 11 (JK12)

1050 11 complete, moving to 10

1120 Setting up to drill 10 (JK25)

1230 10 Complete. Moving across 204th NE due to access issues

1315 unloading drill at Bore 09 (JK37)

1420 Crew finished drilling 09, Cassidy reports that they are done for today, back tomorrow at 0800.

He will email me where to meet

1530 Home



Geotechnical Bore Monitoring Form

Project Name: CNG Arlington

Date: 3-2-21

Tierra Project No.: 20WR494

Monitor: JK

On-site Contact: Cassidy Dmitriov

Time Start/End: 0700 – 1700

General field conditions: Overcast, cool, drizzle

Location: WA-09 and 204th Ave NE Bore Type/Diameter: 1" Sampling

Method: Hollow core

Bore #: 14

Planned Depth of Bore: 50ft

Actual Depth: 40

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Mixed light grey and brown silty sandy gravells	N	Fill	
5	2.5	Mixed brown gravelly silty sands	N	Damp	
7.5	2.5	Mixed brown gravelly silty sands	N	Wet, gravels small to medium subangular to subrounded	
10	2.5	Mixed brown gravelly silty sands	N	Wet, gravels small to medium subangular to subrounded	
15	5	Mixed brown gravelly silty sands	N	Wet, gravels small to medium subangular to subrounded	49
20	5	Medium brown to light grey silty coarse sands	N	Wet	
25	5	Medium brown to light grey silty coarse sands	N	Wet	
30	5	Medium brown to light grey coarse sands	N	wet	50



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35	5	Medium brown to light grey coarse sands	N	wet	
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Bore #: 15

Planned Depth of Bore: 10ft

Actual Depth: 10

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Light to dark grey silty gravels	N	Road fill	
5	2.5	Fill transitions to medium grey gravelly coarse sands	N	Damp, small to medium gravels, subrounded to subangular	
7.5	2.5	Medium grey gravelly coarse sands	N	Wet, small to tiny subangular to subrounded gravels	
10	2.5	Medium grey gravelly coarse sands	N	Wet, small to tiny subangular to subrounded gravels	
			N		

Bore #: 16

 Planned Depth of Bore: 10ft

 Actual Depth: 10

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Light to dark grey silty gravels	N	Road fill, mottles of white and orange present	
5	2.5	Light to dark grey silty gravels	N	Road fill, mottles of white and orange present	
7.5	2.5	Medium grey gravelly silty sands	N	Outwash, wet	52
10	2.5	Medium grey gravelly silty sands	N	Outwash, wet	

Bore #: 17

 Planned Depth of Bore: 10ft

 Actual Depth: 10

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Very light to dark grey silty gravells	N	Road fill	54
5	2.5	Fill transitions to medium brown coarse sands	N	Fill transitions to alluvial sands directly	
7.5	2.5	Fill transitions to medium brown coarse sands	N	Fill transitions to alluvial sands directly	
10	2.5	Medium grey coarse sand to orange brown silty clay	N	Wet, small pocket of clay between sands	55

Bore #: 18

Planned Depth of Bore: 10ft

Actual Depth: 10

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	light to dark grey silty gravels	N	Road fill	
5	2.5	Light to dark grey silty gravels	N	Fills, orange mottle	57
7.5	2.5	Light grey to medium brown coarse gravelly sands	N	Outwash, wet	
10	2.5	Light grey to medium brown coarse gravelly sands	N	Outwash, wet	



Bore #: 19

Planned Depth of Bore: 10ft

Actual Depth: 10

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Very light to light grey gravelly sands	N	Road fill, small to medium subangular to subrounded gravels	
5	2.5	Fill transitions to medium brown coarse silty sands	N	Fill transitions to damp natural soils	59
7.5	2.5	Medium to dark grey gravelly silty sands	N	Wet, small to medium, subangular to subrounded gravels	
10	2.5	Medium to dark grey gravelly silty sands	N	Wet, small to medium, subangular to subrounded gravels	

Bore #: 13

 Planned Depth of Bore: 50ft

 Actual Depth: 45

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Very light to light grey gravelly sands	N	Small to medium, subangular to subrounded gravels	
5	2.5	Transitions to medium brown coarse sands	N		
7.5	2.5	Medium brown to light grey coarse gravelly sands	N	Wet	
10	2.5	Medium brown to light grey coarse gravelly sands	N	Wet	61
15	5	Medium brown to light grey coarse gravelly sands	N	Wet	
20	5	Medium brown to light grey coarse gravelly sands	N	Wet	
25	5	Medium brown to light grey coarse gravelly sands	N	Wet	
30	5	Medium brown to light grey coarse gravelly sands	N	Wet	62
35	5	Medium grey coarse sands	N	Wet	
40	5	Medium grey coarse sands	N	Wet	
45	5	Medium grey coarse sands	N	Wet	



Archaeology observed: _____ None _____

Additional Notes/observations:

0700 leave home

0755 Arrive on site. Cassidy reports that they are on standby until they get approved for work

0945 still waiting for confirmation

1000 moving to bore 14 along W Jensen

1030 setting up to drill #14 (JK48)

1120 Term 14 @ 35'bs,

1140 setting up to drill 15 (JK51)

1215 15 finished, moving to 16 (JK52) Cass reports that all these will only go to 10'

Seems that most of these bores have around 3-4' of fill above outwash material

1250 16 done, moving to 17 (JK53)

1320 17 done, moving to 18 (JK56)

1350 18 done, moving to 19 (JK58)

1430 19 done, moving to 13 (JK60)

1545 13 done, Cass reports finished for today, back at 0800 if approval comes through. He will contact me to let me know

1700 Home



Geotechnical Bore Monitoring Form

Project Name: CNG Arlington

Date: 3-3-21

Tierra Project No.: 20WR494

Monitor: JK

On-site Contact: Cassidy Dmitriov

Time Start/End: 0700 – 1400

General field conditions: clear, temperate

Location: WA-09 and 204th Ave NE Bore Type/Diameter: 1" Sampling

Method: Hollow core

Bore #: 6

Planned Depth of Bore: 15ft

Actual Depth: 15

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Medium to light brown gravelly coarse sands	N	Small to medium, subangular to subrounded gravels	
5	2.5	Medium to light brown gravelly coarse sands	N	Small to medium, subangular to subrounded gravels. Very light grey mottling	JK65
7.5	2.5	Medium to dark grey gravelly coarse sands	N	Damp, orange mottling	
10	2.5	Medium grey silty sandy gravel	N	Wet, tiny to small subangular to subrounded gravels	
15	5	Medium to dark grey silty sands, patches of gravel	N	Wet, tiny to small subrounded gravels	JK66

Bore #: 7

 Planned Depth of Bore: 50ft

 Actual Depth: 50

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Medium brown to light grey silty sandy gravels	N	Small to medium, subangular to subrounded gravel, light grey mottling	68
5	2.5	Medium brown to light grey silty sandy gravels	N	Small to medium, subangular to subrounded gravel, light grey mottling	
7.5	2.5	Medium grey gravelly silty coarse sands	N	Tiny to small subrounded gravels, wet	
10	2.5	Medium brown coarse sands	N	Wet, few tiny gravels	
15	5	Medium brown coarse sands	N	Wet, few tiny gravels	
20	5	Medium brown coarse sands	N	Wet	
25	5	Medium brown coarse sands	N	Wet	
30	5	Medium brown coarse sands	N	Wet	69
35	5	Medium brown coarse sands	N	Wet	
40	5	Medium grey brown coarse sands	N	Wet	

45	5	Medium grey brown coarse sands	N	Wet	
50	5	Medium grey brown coarse sands	N	Wet	



Archaeology observed: _____ None _____

Additional Notes/observations:

0700 leave home

0755 arrive on site. Crew is waiting on word of access to final bore locations (1-8)

0900 Setting up in the lot to bore #'s 6+7. Cass hopes that access to 1-5 will be sorted by this afternoon

0915 unloaded and setting up to drill #6 (JK64)

0945 #6 terminated @ 15' bs, moving to drill #7 (JK67)

Both of these are placed in the open lot N of Bartell Drugs, which is covered in construction gravels and modern trash. Likely that the mottling found in the upper layers of each are due to modern disturbances

1130 Bore 7 complete to 50' bs. Cass is checking access to remaining bores

1300 No word on access, Cass is calling it for today and we will be back tomorrow @ 0800

1400 Home



Geotechnical Bore Monitoring Form

Project Name: CNG Arlington

Date: 3-4-21

Tierra Project No.: 20WR494

Monitor: JK

On-site Contact: Cassidy Dmitriov

Time Start/End: 0700 – 1115

General field conditions: clear, cool

Location: WA-09 and 204th Ave NE Bore Type/Diameter: 1" Sampling

Method: Hollow core

Bore #: 4

Planned Depth of Bore: 10ft

Actual Depth: 10

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Medium to dark brown silty sandy loam	N	Topsoil, likely imported sods	
5	2.5	Light to dark grey silty gravels	N	Small to medium, subangular to subrounded gravels. Very light grey mottling. Outwash	JK72
7.5	2.5	Medium grey brown silty coarse gravelly sand	N	Small to medium, subangular to subrounded gravels. Very light grey mottling. Outwash	
10	2.5	Medium grey brown coarse gravelly sand	N	Damp, tiny to small subrounded to subangular gravels	

Bore #: 3

 Planned Depth of Bore: 10ft

 Actual Depth: 10

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Dark brown loamy topsoil to light brown silty gravelly coarse sands	N	Small to medium subangular to subrounded gravels	
5	2.5	Dark to medium brown coarse silty sands and very light grey silty sandy gravels	N	Subsoils to outwash	74
7.5	2.5	Medium brown to light grey coarse gravelly sands	N	Small to medium subangular to subrounded gravels, outwash	
10	2.5	Medium brown to light grey coarse gravelly sands	N	Small to medium subangular to subrounded gravels, outwash	

Bore #: 2

 Planned Depth of Bore: 10ft

 Actual Depth: 10

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Medium grey brown silty gravelly sand	N	Damp, small to medium subangular to subrounded gravels	
5	2.5	Medium grey brown silty gravelly sand	N	Dry, outwash	
7.5	2.5	Dark grey silty gravelly coarse sands	N	Damp, small to medium subangular to subrounded gravels	
10	2.5	Medium grey brown coarse gravelly sands	N	Damp, small to medium subangular to subrounded gravels	76



Bore #: 1

Planned Depth of Bore: 10ft

Actual Depth: 10

Depth (feet)	Sample Interval (feet)	Sediment Description: <i>Describe soil changes, artifact frequencies/ densities, changes in excavation methods, and observations about materials (natural or cultural) in the matrix, or anything else of note encountered on a level-by-level basis. If necessary, use a continuation form to record additional information, including sketches of soil profiles if warranted.</i>	Cultural Material Observed	Notes	Photo #
2.5	2.5	Medium grey brown coarse silty sands	N	Topsoils overlying small band of gravel fill, overlying natural subsoil	78
5	2.5	Medium grey brown coarse silty sands	N		
7.5	2.5	Medium grey brown coarse sands	N	Damp	
10	2.5	Medium grey brown coarse sands	N	Damp	



Archaeology observed: _____ None _____

Additional Notes/observations:

0700 leave home

0755 arrive on site. Crew is setting up to bore #4 (JK70,71)

#'s 1-4 will be within the ROW along 204th, which is covered in road trash and appears to have been filled and leveled with construction of the sidewalk

0830 #4 complete to 10' bs. Moving to 3 (JK73)

Geotest reports that the CNG line will be directionally bored at the locations with the deeper test bores, while the shallower bores are where the crews will trench

0910 #3 complete to 10', moving to #2 (JK75)

0935 #2 complete, moving to #1 (JK77)

1010 #1 complete

1015 Cass reports that they are done with all bores

1115 home