CULTURAL RESOURCES REPORT COVER SHEET

DAHP Project Number: 2018-01-00737

Author: Garth L. Baldwin and Marsha R. Hanson

Title of Report: Cultural Resource Review for the Lower Kamm Creek Residential Development Project, Lynden, Whatcom County, Washington

Date of Report: March 20, 2020 (Replaces 2017 report on file with DAHP)

County(ies): Whatcom Section: 15 Township: 40N Range: 3E

Quad: Lynden, WA (1994) Acres: ~23

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.

DRAYTON ARCHAEOLOGY

Cultural Resource Review for the Lower Kamm Creek Residential Development Project, Lynden, Whatcom County, Washington

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Drayton Technical Report 0817B
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Author:	Garth L. Baldwin and Marsha R. Hanson
Date:	March 20, 2020
Location:	Whatcom County, Washington
USGS Quad:	Lynden, WA (1994), 7.5-minute quadrangle
Legal:	Township 40 North, Range 3 East, Section 15, Willamette Meridian

PROJECT SUMMARY

Drayton Archaeology (Drayton) was retained to conduct archaeological investigations for a series of related projects including, and supporting, the residential subdivision of approximately 22 acres on Northwood Road in Lynden Washington. A sewer line extension between Northwood Road and sewer main connection to the south west near Bradley Road, approximately 3,850 feet (1,173 meter) in length, for compliance with a US Army Corps of Engineers permit. In support of the development the City of Lynden (the City) required an additional sewer main upgrade to the existing line along the Northwood Road Right-of-Way (ROW) from the subject development (and extension) to a sewage tie-in located 260' south of the terminus of Brome Street at Spring Meadow Subdivision north of the project area. Drayton conducted individual reviews of each of the ancillary sewer upgrade projects in 2017, 2018, and the present work (2020) for the actual residential development.

The proposed work has been conducted in response to the need for a U.S. Army Corps of Engineers (the Corps) permit for work along Lower Kamm Creek as well as the mandates of the City. Owing to the need for a Corps permit, compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended was required. Pursuant to Section 106 the lead federal agency (the Corps in the present case) has direct jurisdiction over the proposed project and must consider the effects of the undertaking on historic properties that are or may be eligible for the National Register of Historic Places (NRHP).

Drayton's cultural resource assessments included background review of environmental and cultural contexts, field investigation to identify the presence / absence of archaeological deposits, and report production. Background review determined that the proposed corridor was located in an area of moderate probability for cultural resources. Field investigation included visual reconnaissance and subsurface testing.

During the course of the presented work, no cultural materials or historic properties identified. during the study. Based on the results of the work, no further archaeological oversight appears warranted.

REGULATORY CONTEXT

The proposed undertaking is expected to secure a permit from the U.S. Army Corps of Engineers (the Corps). As such, the expected threshold of compliance is federal, Section 106 of the National

Historic Preservation Act (NHPA) of 1966, as amended. The current archaeological investigation was conducted, in part, to satisfy regulatory requirements for Section 106 of the National Historic Preservation Act (NHPA), as amended, and the implementing regulations in 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effects of their undertakings on historic properties. An historic property is typically aged 50 years or older and is defined in 36 CFR part 800.16(l)(1), as follows:

> ...any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

The procedures under Section 106 generally require the federal agency involved in the undertaking to identify the area of potential effects (APE), inventory any historic properties that may be located within the APE, and determine if the identified historic properties located within the APE may be eligible to be listed in or eligible for listing in the National Register of Historic Places (NRHP). An APE is defined in 36 CFR 800.16(d), as follows:

> ... the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

If NRHP-eligible historic properties are identified within the APE, then potential adverse effects to the historic properties must be assessed and a resolution of adverse effects recommended. Under Section 106, the responsible Federal agency must, at minimum, consult with and seek comment from the DAHP and/or the Tribal Historic Preservation Office (THPO), as applicable, and consult with any affected or potentially affected Native American Tribe(s).

AREA OF POTENTIAL EFFECT AND PROJECT DESCRIPTION

The APE is in Section 15, Township 40 North, Range 3 East of the Willamette Meridian on the Lynden, WA 7.5' USGS quadrangle map (Figure 1). The proposed development would construct 34 SFRs with all associated utilities, ingress/egress, and storm water controls (Figures 2 and 3). Previous work conducted in the APE includes a review of 3,850 feet (1,173 meters) of proposed sewer line (Baldwin and Hunt 2017) extending across the property from near Brome Street to Northwood Road to tie into the City main (Figure 4). Additional work was required in 2018 by the City to review an upgrade to the sewer main along Northwood Road, extending north from the proposed development, within the existing ROW (Baldwin and Hanson 2018; Figure 5).

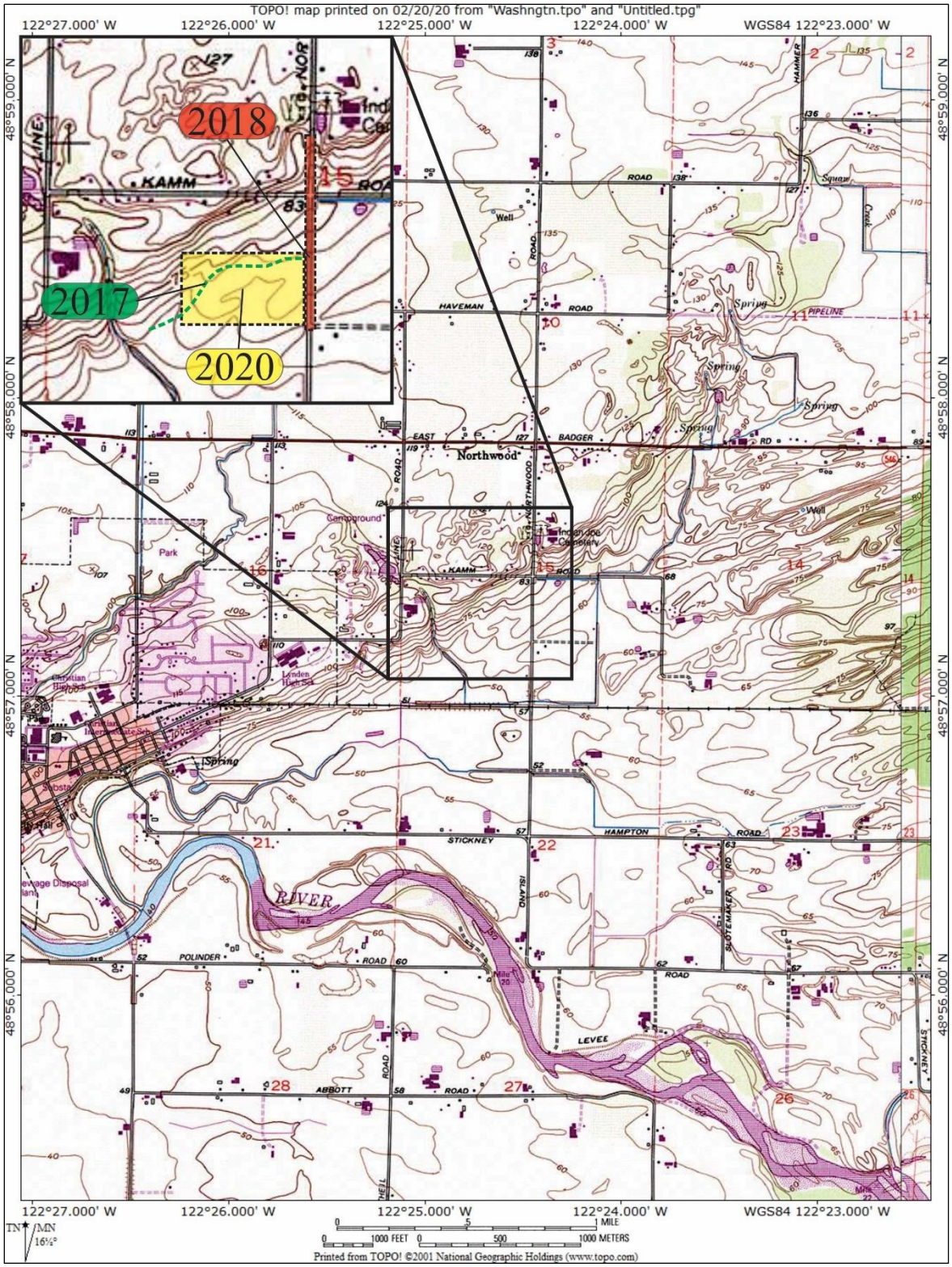

Figure 1. A portion of Lynden (1994) USGS 7.5-minute quad map illustrating all work areas.

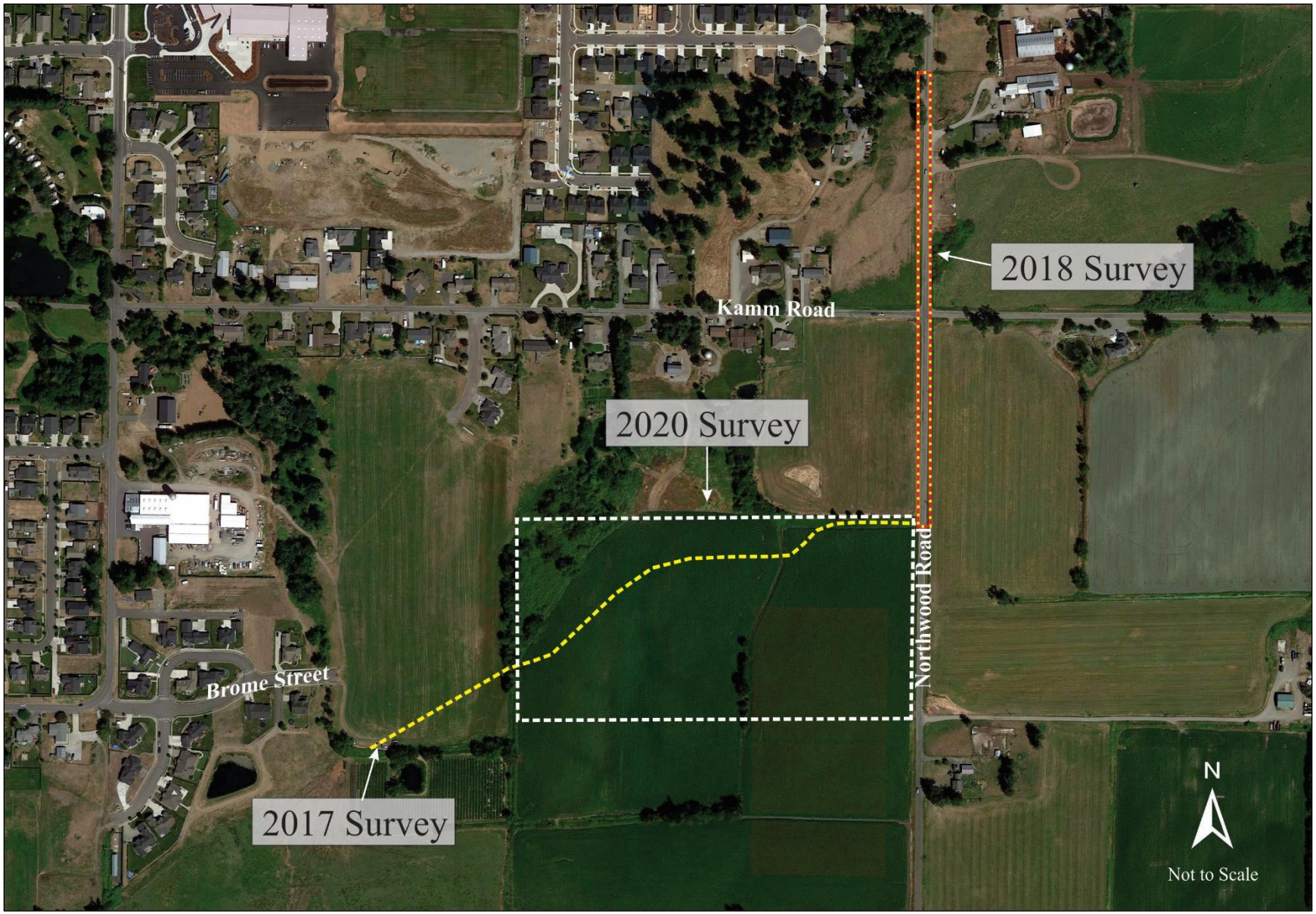

Figure 2. A Google Earth aerial image illustrating past Drayton surveys for the project.

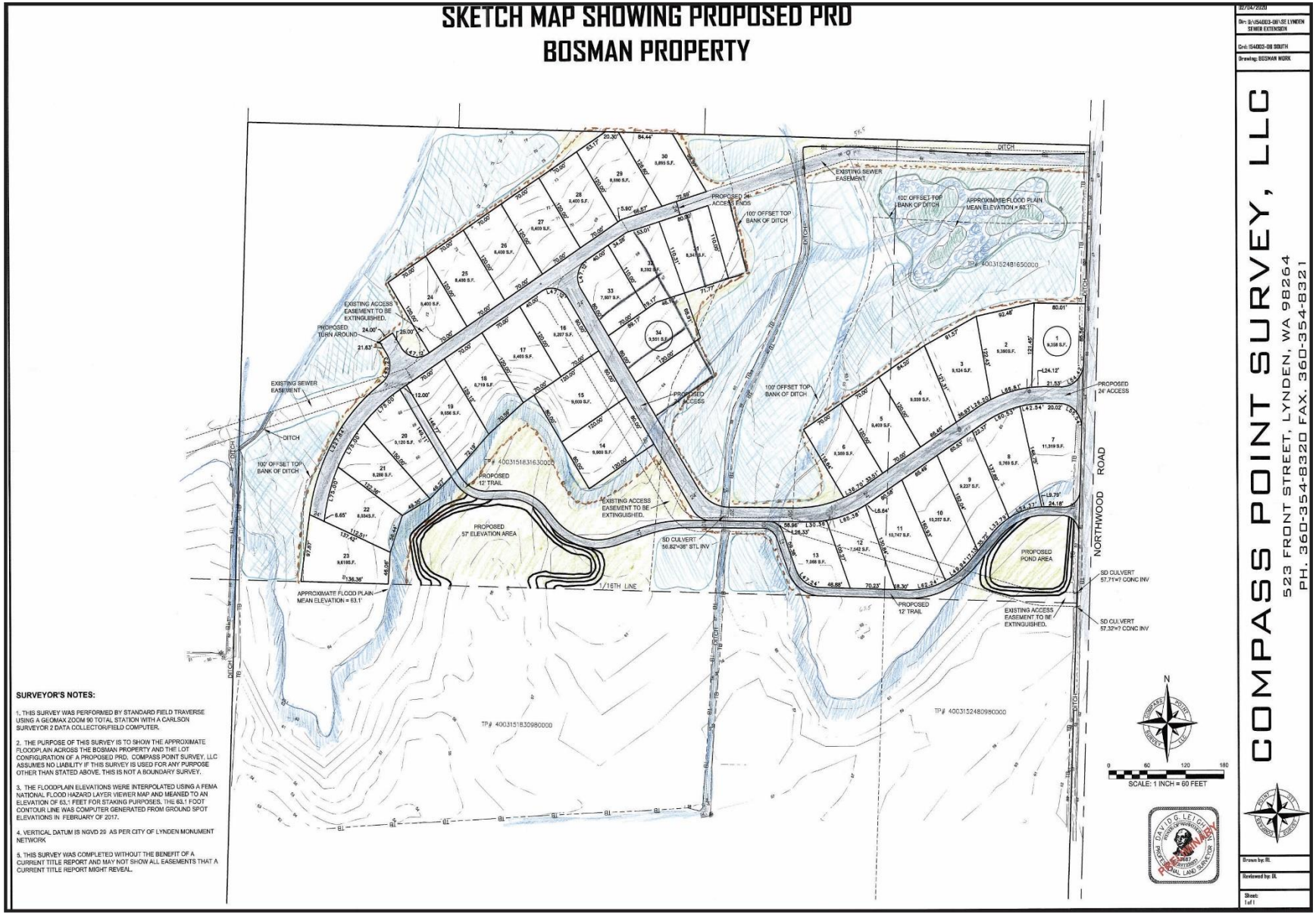

Figure 3. A plan view for the current proposed Bosman property development.

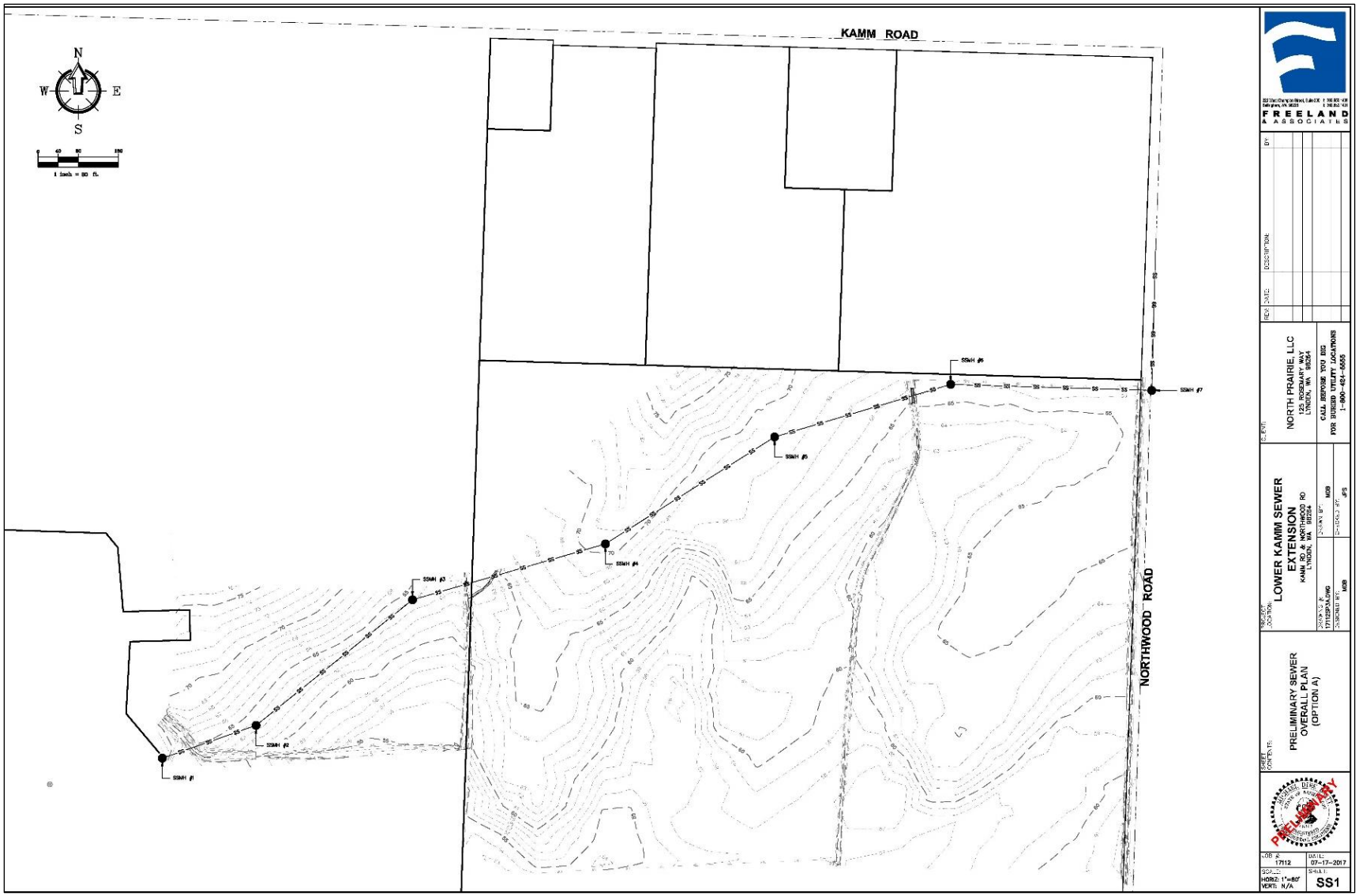

Figure 4. A plan sheet illustrating the 2017 APE from the Northwood Road tie-in to the tie-in near Bradley Road.

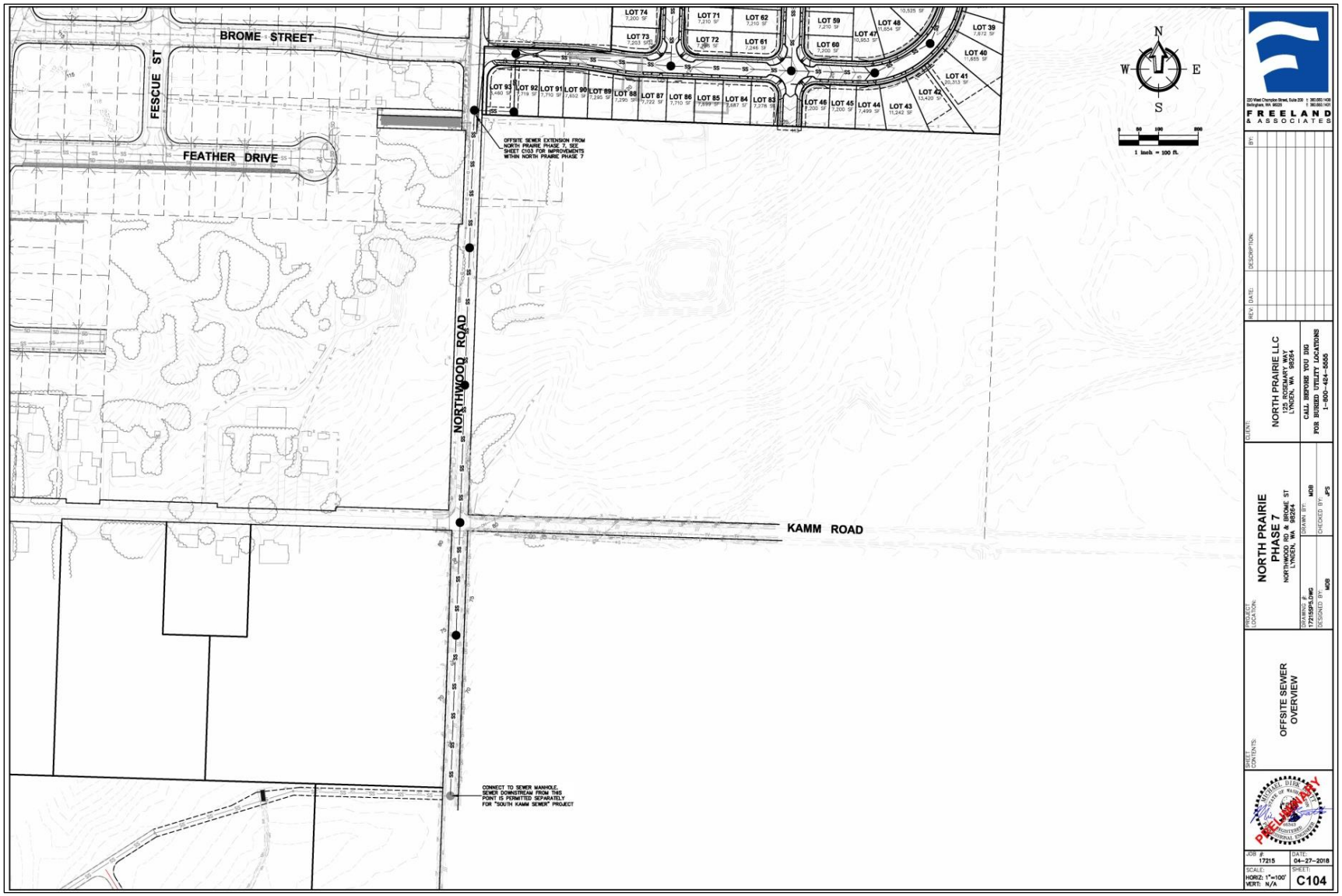

Figure 5. A plan sheet illustrating the 2018 survey.

BACKGROUND REVIEW

Determining the probability for historic properties to be present within the corridor of the proposed undertaking was based largely upon a review of past environmental and cultural contexts and previous cultural resources studies and sites recorded within about a one-mile radius of the proposed corridor. Consulted sources included reviewing local geologic data to better understand the depositional environment; archaeological, historic and ethnographic records on file on Washington State Department of Archaeology and Historic Preservation's (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD) database; and selected published local historic records.

Environmental Context

Topography and Geology

The proposed undertaking is located in Lynden, Whatcom County, Washington, at the northern end of the Puget Lowland. The Puget Lowland is a geological and physiographic province that 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 glaciers; and sediments were deposited and often reworked as the glaciers advanced and retreated. A thick mantle of glacial drift and outwash deposits were left across much of Whatcom 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 BP 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 BP (Clague and James 2002; Easterbrook 2003; Waitt and Thorson 1983).

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. The remaining ice was floated and wasted away rapidly. Glaciomarine drift deposits dating between 12,500–11,500 before present (BP) 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 from ca. 11,600–10,000 BP, leaving glacial till and outwash deposits in northwestern Washington (Kovanen and Easterbrook 2002).

Soils

According to the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), soils within the project area(s) span four types: Kickerville silt loam, 0 to 8 percent

slopes, Shalcar muck, drained, 0 to 2 percent, Pangborn muck, drained, 0 to 2 percent slopes, and Clipper silt loam, drained, 0 to 2 percent slopes.

The Kickerville series are composed of a very deep well drained outwash soil (UC Davis SoilWeb n.d.). A typical profile includes a dark brown silt loam topsoil from 0-22 cmbs (0-9 inches), and a subsoil including dark yellowish-brown silt loam 22-81 cmbs (9-32 inches), and dark yellowish brown very gravelly loam from 81-106 cmbs (32-42 inches). The substrate is very gravelly sand (UC Davis SoilWeb n.d.).

Found on drift plains, in river valleys and in depressions of stream terraces and outwash terraces, oxbows, and backswamps, the Shalcar series consists of very deep, very poorly drained organic deposits over alluvium, glacial outwash, or glaciomarine material with slopes of 0 to 3 percent. A typical profile consists of Oa1--0 to 15 cm (0 to 6 inches); muck, Oa2--15 to 66 cm (6 to 26 inches); muck, Oa3--66 to 94 cm (26 to 37 inches); muck, 2Bg--94 to 132 cm (37 to 52 inches); loam, 2Cg--132 to 152 cm (52 to 60 inches); gravelly sand (UC Davis SoilWeb n.d.).

The Pangborn series consists of very deep, very poorly drained soils formed in herbaceous and woody organic deposits. Pangborn soils are in depressional areas on outwash terraces, till plains, and stream terraces with slopes of 0 to 2 percent. A typical profile consists of OaP--0 to 38 cm (0 to 15 inches); dark reddish brown muck, Oa1--38 to 74 cm (15 to 29 inches); dark reddish brown muck, Oa2--29 to 114 cm (29 to 45 inches); dark reddish brown muck, Oa3--114 to 152 cm (45 to 60 inches); black muck (UC Davis SoilWeb n.d.).

Clipper series soils are deep and somewhat poorly drained, found on glacial outwash terraces and plains. A typical profile consists of: an Ap layer (0-9 inches/0-23 cm) of very dark grayish brown silt loam, followed by an E1 layer (9-18 inches/23-46 cm) of grayish brown and gray silt loam, followed by an 2E2 layer (18-22 in/46-56 cm) of grayish brown and gray gravelly sandy loam, followed by a 2Bs layer (22-30 in/56-76 cm) layer of yellowish brown gravelly sandy loam, followed by a 3C1 layer (30-37in/76-94 cm) of dark grayish brown and grayish brown very gravelly loamy sand, followed by a 3C2 layer (37-60 in/94-152 cm) of dark grayish brown very gravelly loamy sand (UC Davis SoilWeb n.d.).

Flora and Fauna

The project area is located within the *Tsuga heterophylla* vegetation zone. Native vegetation would have included, but not have been limited to Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), salal (*Gaultheria shallon*), and vine maple (*Acer circinatum*). Other locally important and available species would have included bracken fern (*Pteridium aquilinum*), black raspberry or blackcap *(Rubus occidentalis*), currants and gooseberries (*Ribes* spp.), deer fern (*Blechnum spicant*), devil's club (*Oplopanax horridus*), huckleberries (*Vaccinium* spp.), Indian plum or Oso berry (*Oemleria cerasiformis*), oceanspray

(*Holodiscus discolor*), red elderberry (*Sambucus racemosa*), snowberry *(Symphoricarpos albus*), sword fern (*Polystichum munitum*) and trailing blackberry (*Rubus ursinus*) (Franklin and Dyrness 1973:44-5; Pojar and MacKinnon 1994). Large areas would have differed from the broader regional pattern, however, with areas of prairie, oak woodland, and pine forest being distributed throughout the southern Puget Sound basin (Franklin and Dyrness 1973:88).

Terrestrial animals in the area would have included black tailed deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), black bear (*Ursus americanus*), beavers (*Castor canadensis*), as well as other small game and many species of waterfowl. Fish, especially salmon, were a staple food source (Suttles 1990). The APE is located approximately 15 miles from the marine shoreline, in which a variety of marine resources were available. Herring (*Clupea pallasii)*, smelt or eulachon (*Thaleichthys pacificus*), halibut (*Hippoglossus stenolepis*), flatfish and rockfish would have been abundant in the area. Shellfish including littleneck clams (*Protothaca staminea)*, butter clams (*Saxidomus giganteus)*, horse clams (*Tresus capax*), bay mussels (*Mytilus edulis)*, cockles (*Clinocardium nuttallii)*, and native oysters (*Ostrea lurida*) would have been harvested as well as Dungeness and red rock crabs (*Cancer magister* and *Cancer productus*, respectively).

Cultural Background

In any investigation of the history of an area, a discussion of the past inhabitants is necessary to appreciate the full spectrum of possible occupational remnants.

Ethnohistoric

The proposed undertaking is within the traditional use area of the Nooksack Tribe. The Nooksack Tribe of today is an amalgamation of a number of individual groups that occupied the interior of northern Whatcom County and southern British Columbia (Ruby and Brown 1986; Reid 1987; Spear 1977; Suttles 1990; Tremaine 1975). The name Nooksack probably originated from the indigenous word for the bracken fern root that was very important to the diet of the people (Ruby and Brown 1986:153). The name, as it is applied to the people, was probably a name applied by Euro-Americans to all those Native people living in the Nooksack River Valley (Ruby and Brown 1986:152). However, the origin of the name 'Nooksack', as presently spelled and applied, has been presented in many forms and as having a multitude of origins (Amos 1972:13; Hawley 1945:35; Jeffcott 1949:25, 54; Suttles 1990:474). Previous cultural resource studies may be consulted to provide a more detailed background applicable to proposed undertaking (Montgomery 1979; Reid 1987; Spear 1977; Suttles 1990; Tremaine 1975).

The Nooksack once lived as semi-sedentary people throughout the larger Fraser River Valley interior that the Nooksack River watershed is a part. The late precontact Nooksack people were associated with at least three and as many as nine reported village locations where they relied on riverine resources related to root gathering, hunting, and fishing (Jeffcott 1949:11-15; Suttles 1990:454-455; Tremaine 1975:43-71). In the early settlement period (1860s-1870s), as many as

50 different pit house locations were known along the Nooksack River, with 10-15 houses at each site (Tremaine 1975:54-55). This house form was dissimilar to the traditional large wooden structures of their coastal neighbors as well as the later house forms adopted after contact with Euro-Americans. Both house forms and the language of the Nooksack clearly demonstrate that they are a distinct cultural group from the Coast Salish.

Like all Native groups in the Pacific Northwest, salmon was important to the Nooksack, but they hunted terrestrial mammal like wapiti (C*ervus canadensis),* deer (*Odocoileus hemionus*), and black bear (*Ursus americanus*) as well. Another significant contributor to subsistence was gathering and cultivating vegetable foods. The Nooksack utilized root crops, such as camas (*Camassia quamash*), Sagittaria (*Sagittaria latifolia*), and later the white potato or *wapato* and various 'wild onions' (Amos 1972: 12-13; Hawley 1945:35; Suttles 1974:142; Tremaine 1975:51-52). They also made use of the great number of different berries found in the area. The variety of berries locally available includes blackberries (*Rubus vitifolia*), blackcaps (*Rubus leucodermis*), elderberry (*Sambucus racemosa* ssp. *pubens*), huckleberries (*Vaccinium* spp.), salal (*Gautheria shallon*), salmon berries (*Rubus spectabilis*), and Thimbleberry (*Rubus parviflorus*) (Amos 1972:12-13; Pojar and MacKinnon 1994; Suttles 1974:63).

Prior to immigrant settlement there were numerous Nooksack villages in the north interior of Whatcom County. A large smokehouse, or longhouse, was historically located at the confluence of Anderson Creek and the Nooksack River (Jeffcott 1949:12; Tremaine 1975:46-47). This location is a short distance north of present-day Goshen and southeast of the project area. According to Jeffcott, this village was the "chief center of [the] native population, from which the others seemed to radiate" (Jeffcott 1949:12). Jeffcott (1949:14) reports the name of Everson as "*Qu-an-ish*". He also claims that the longhouse at this location was still partially standing in the 1940s (Jeffcott 1949:12-13). David Johnson, Jeffcott's Nooksack contact, told him that the longhouse was at one time 500 feet long, located on the east bank of the river. The river changed course and the longhouse was then on the west bank (Jeffcott 1949:13). Jeffcott reproduces photos of this structure in his *Nooksack Tales and Trails* (1949:12-14). The former longhouse site is likely the same location recorded with the DAHP as 45WH03 from the 1950s (Emmons 1951a, 1952).

A long-term work in progress was completed by Richardson and Galloway (2011), in which all Nooksack place names were recorded and published. A number of place names are located within the prairies surrounding Lynden, as well as along the Nooksack River and its tributaries. Place names located nearest the APE include five village sites located along a trail that ran from near present-day Blaine, Washington to the last branch of Fishtrap Creek near Old Yale Road in British Columbia. These village names include *Chmo̲qwem,* the main village at Lynden 'have marsh/cranberry bog', *Sqehálich*, Lynden Jim's Place on Stickney Island or 'go through an opening-at back'**,** *Lhchálos,* at the east edge of the old part of Lynden, which is also the source of the language name *Lhéchalosem*, *Sp'etós*, a longhouse and pithouse location in the prairie

northeast of Lynden ‘suddenly broke through brush, anything requiring a struggle to get through’, and *Pá7atstel,* a prairie and village site near Northwood Road and north of the Jobe Cemetery (Figure 6).

The Nooksack are one of the few Native groups that staked homestead claims alongside Euro-Americans. Increased pressure from the incoming Euro-American settlers was met with uncertainty and discontent by the Nooksack who recognized they would have to make a place or make way (Amos 1972:38; Suttles 1990:474). In the Nooksack Valley a few Nooksack took homesteads around what today is Lynden, Everson, Nooksack, Lawrence, Deming, and Van Zandt (Royer 1982:14-15). Many prominent Nooksack people acquired land under the 1875 Homestead Act, however, Euro-Americans eventually purchased many of those properties. The 1884 Indian Homestead Act provided a way for some Nooksack to acquire land; much of that land has since remained in Native control (Amos 1972:38; Royer 1982:14-15; Suttles 1990:472). The Nooksack were reportedly unable to attend the winter signing of the Point Elliot Treaty of 1855 due to poor weather conditions on the river and thus the United States Government denied them status as a federally recognized Indian Nation (Amos 1972:38; Suttles 1990:474). In 1971, the Bureau of Indian Affairs officially recognized the sovereignty of the Nooksack Tribe (Amos 1972:38).

Figure 6. Map of Nooksack Place names, village and prairie sites, and features. Richardson and Galloway 2011: Map 7. Approximate location of the APE is overlaid in red.

Historic Period

Some of the earliest visitors to northwestern Whatcom County were individuals working on the International Boundary and Survey between the US and Canada in 1857 and 1858, which was also during the height of the Fraser River Gold Rush. James Bertrand, after whom Bertrand Creek was named, help cut timber during the survey and Indian Jim, Indian Joe, and Sally, who resided in the area of present-day Lynden near Fishtrap Creek, worked as packers and canoemen for the survey party (Jeffcott 1949:4-5). Other Nooksack and early settlers in the region made gains by selling provisions to the survey crew, as did many Whatcom businessmen.

Euro-American settlement in Whatcom County was linked to the fishing, logging and coal mining industries. The coast was developed first and the large stands of mature coniferous forests found in the interior were not immediately exploited. The deep forests of the interior were broken into small areas of open prairie. These inviting open spaces were not completely natural. According to Spear (1977:17) the Nooksack maintained these prairies by setting fires to cull the re-growth of trees and brush so the area would continue to produce root crop plants. As the Fraser gold fields panned out and the logging industry began moving east, cattle ranchers and subsistence farmers moved in to exploit the cleared prairies of northern Whatcom County where there was often plentiful water and easily accessible grazing for their animals (Koert 1976; Spear 1977:14; Tremaine 1975:77). After the prairies were settled people turned to clearing parcels in the heavy timber (Tremaine 1975:72).

The most abundant historical information of Euro-American settlement of the Nooksack Valley is associated with nearby Lynden and Everson. Local pioneers and historians including Phoebe Goodell Judson (1984), Robert E. Hawley (1945) and Percival R. Jeffcott (1949) wrote poetic retellings of stories about the earliest settlements along the Nooksack River. The first settlers in the area of Lynden were cattlemen. In the mid-1860s Colonel James Patterson and Mr. Reuben Bizer were in partnership raising beef and dairy cattle near the present-day city of Lynden (Jeffcott 1949:141; Tremaine 1975:77). These men were cattle ranchers exploiting the prairies and wetlands for the easy upkeep of their cattle. By 1870, however, Bizer and his wife, Matilda George of the Nooksack Tribe, had moved to Ferndale. Col. Patterson had also moved on by 1870, leaving his two daughters with Phoebe and Holden Judson with whom he made friends with in Olympia (Judson 1984). The Judson's took over Patterson's location which only held "squatter's rights" at the time (Koert 1976:8; Tremaine 1975:77). The area was surveyed six years later, which allowed the Judson's to file a pre-emption right to 160 acres in what is presently the center of Lynden (Judson 1984:194; Koert 1976:6). The couple was very active in the growth and government of Lynden. Mrs. Judson became a prominent figure in north Whatcom County and is referred to as "The Mother of Lynden" (Jeffcott 1949:125; Koert 1976:8; Roth 1926:838; Tremaine 1975:77). Mrs. Judson not only raised children of her own, but also reportedly raised many orphaned and abandoned children. The Judson's were instrumental in early Lynden life, Mrs. Judson was at the forefront of the log jam removal and the naming of the town while Mr. Judson served as the first

postmaster and was elected County Commissioner (Koert 1976:8). The first Protestant religious service in Lynden and the first school were also held in Judson home.

PREVIOUS CULTURAL RESOURCE STUDIES AND ARCHAEOLOGY

A search of the Washington Information System for Architectural and Archaeological Records Data (WISAARD) was conducted to develop the context for predicting the types, condition, context and potential for archaeological and/or historic material or structures in the project area. According to the database there are five (5) previously recorded archaeological sites, one (1) cemetery, and nine (9) cultural resource inventories located within approximately a one-mile radius of the APE.

Previously Recorded Archaeological Sites

Site 45WH2, is located approximately 130 feet west of Northwood Road, and 570 feet north of the Northwood and Kamm Road intersection. The site was recorded as a former longhouse, evidenced by cedar planks and ash at a depth of 24 inches below ground surface. The site was first recorded in 1951(b) by Richard V. Emmons, and no additional fieldwork or site visits have been conducted since then.

Site 45WH6 is located approximately 0.25 miles northwest of the tie-in location near Bradley Road. Emmons (1951c) reports that the site is the location of 6-8 pit houses that had been covered over by a bulldozer the year prior to the recording documentation (i.e. 1950). A collection of points and other lithic artifacts held by a "Bradley" was photographed. A total of twelve flaked points, two slate knives, and eight adze blades were reportedly in Mr. Bradley’s collection.

Site 45WH28, located just under 1-mile northeast of the APE, was recorded in 1969 by Allen, Larson, and Osler. The site consists of a serpentine adze blade and one cobble chopper. A "doubtful" core from an area near a gravel source was also collected (Allen et al. 1969). Two test pits excavated in November of the same year were negative for cultural materials.

The Haveman Site, 45WH534, is located just under one mile north-northwest of the APE and consists of a lithic scatter of primarily basalt debitage, with one chert core, two basalt bifaces, and one utilized flake. It was discovered and tested by Historical Research Associates (HRA) in 2000 while on survey for the Williams/BC Hydro Georgia Strait Crossing Project (GSX) (Hess et al. 2000). No subsurface cultural deposits were located during testing (Zachman 2000a).

Site 45WH535, the Kamm Creek Spring Site, is located just over one mile to the north-northeast of the APE. The site record documents a lithic scatter near a spring that feeds Kamm Creek, a minor tributary of the Nooksack River. The site was first recorded in 1952 and was updated by HRA in 2000, at which time the site was recommended eligible for inclusion to the NRHP. The HRA crew that updated the site discovered numerous loci or concentrations consisting of basalt

debitage, fire-cracked rock, cobble choppers, a large biface and biface preform, along with utilized cobbles and flakes. No temporally diagnostic items were identified (Zachman 2000b).

One cemetery, 45WH819, is located adjacent to the APE on both the west and east sides of Northwood Road. The cemetery is a Nooksack Cemetery in origin called the Jobe Cemetery. The cemetery has also been referred to as the "Indian Joe Cemetery; Lynden Jim Cemetery; and *Yelexeyham* Nooksack Indian Cemetery". The current name, and the one most accurate and is in reference to the Jobe family of the Nooksack Tribe. The original two-acres designated for the cemetery was donated by "Indian Joe" from a portion of his homestead in about 1877 (Hawley 1945: 69, 187). Headstones are in their appointed locations and, although some have fallen over due to age and deterioration, they all appear to be in or near their appointed locations.

Previously Conducted Cultural Resource Inventories

In 2001, HRA conducted a cultural resources study for the proposed Georgia Strait Crossing Project (GSX) for a proposed installation of a natural gas pipeline from Sumas, Washington to Vancouver Island, B.C (Hess et al. 2000). HRA was contracted to conduct a survey for the portion of pipeline falling on U.S. soil. A Canadian firm was hired to handle cultural resources on Canadian lands. The survey resulted in the discovery of nine previously unrecorded archaeological sites, two of which are located in close proximity to the undertaking, 45WH534 and 45WH535.

In 2011, Joseph Randolph of the NRCS conducted a pedestrian survey and shovel testing for the Leroy Lagerway 2011 EQIP Project. This project included two areas, one located east and one south-southeast of the APE. A total of eight shovel probes were excavated at the parcel nearest current project. No cultural resources were located during this survey.

Drayton Archaeology recently conducted six projects in the immediate vicinity of the current APE. The first study was conducted in 2009 in association with the E. Grover Street Reconstruction Project. No cultural resources were encountered during that review (Baldwin 2009). In 2014 Drayton conducted three cultural resource reviews related to the Northwood Park Water Association improvement project and conducted work within the Jobe Cemetery. No cultural resources were identified during work for the water improvement projects (Baldwin 2014a, 2014b). Newly annexed areas to the City of Lynden prompted testing within the ROW of Northwood Road and the Jobe Cemetery (Baldwin 2014c). Through the use of trench excavation, ground penetrating radar (GPR), and Time Domain Electromagnetic (TDEM) equipment was utilized to test the ROW of Northwood Road as well as a portion of the cemetery for heretofore unrecorded burials and other related features. No graves or other cultural deposits were observed in the ROW. Data was gathered around the presumed burial plots of *Yelexeyham* and his descendants where headstones and graves are present, but due to vandalism in the past it is unclear whether the headstones correspond to the correct graves. GPR determined that there are subsurface features, likely burials, in that location. In 2016 Drayton conducted a cultural resources survey of

the new Lynden Middle School and an additional survey for the Northwood Water Association. Aside from a piece of glass found in one probe at the middle school location, no cultural materials were identified (Baldwin 2016a, 2016b).

In 2017 Drayton inventoried the southern portion of the APE, from Northwood Road to the tie-in near Bradley Road. The results of this survey have been submitted to DAHP and the remainder of the APE was recently added. No historic properties were recorded in the southern portion of the APE (Baldwin and Hunt 2017). This project was updated in 2018 for an additional corridor of ROW along Northwood Road at the mandate of the City (Baldwin and Hanson 2018). The corridor had been previously reviewed, in part, by Drayton as reported previously as Baldwin 2014c.

CULTURAL RESOURCE AND HISTORIC PROPERTY EXPECTATIONS

Based on the scope of the proposed undertaking, environmental and cultural contexts, and previous archaeological studies and cultural resource inventories, the proposed corridor is considered to be in an area of moderate to high probability for cultural resources.

The specific types of cultural resources were considered during work, included, but were not limited to, precontact lithic processing items such as cobble tools, lithic reduction scatters, disposed tools; fire modified rock suggestive of processing/camping activities; and fishing, hunting, gathering features, artifacts and deposits related to historic and precontact use. The presence of pit houses and longhouses have been recorded nearby in both ethnographic and archaeological resources, therefore, surface and subsurface features relating to these features may also be present. Historic resources, if present, may represent early farming, logging, or domestic materials.

FIELD METHODOLOGY

Field investigations for the development were conducted in three installations. Initially in 2017 Drayton surveyed an approximately 3,850 foot (1,173 meter) long corridor for the installation of a sewer line for the Lower Kamm Creek Sewer Extension Project (previously submitted to DAHP August 17, 2017) to support the proposed residential development. Due to the increase of services, the City required additional work in 2018 for upgrading the existing sewer main along the Northwood Road ROW from the subject development (and extension) to a sewer tie-in located 260' south of the terminus of Brome Street at the Spring Meadow Subdivision north of the project area. Presently, the City required the proponent to conduct a review of the proposed residential subdivision proper, resulting in this synthesis of all work.

General methodology for a field review includes, but may not be limited to, visual reconnaissance, pedestrian survey, and subsurface testing. Visual reconnaissance examines exposed soil profiles, ground disturbances, and geologic features indicative of human alteration or use to identify

surficial cultural materials or interactions and reviews the area for structures with any historic or archaeological importance or cultural concern. For subsurface testing, manually excavated shovel probes or mechanical excavation are preferred methods for providing examining subsurface soil conditions for determining the potential for, or presence / absence of, buried archaeological deposits. The excavation of shovel probes or trenches is most often dependent upon considerations of the landform, topography, project proposal and subsurface geologic conditions.

An initial field investigation for a sewer line corridor was conducted on August 10, 2017 by former Drayton archaeologists Sebastian de Bont and B. Joby Hunt in warm, sunny, muggy conditions with poor air quality from regional wildfires. Courtney Paton conducted pedestrian survey and visual reconnaissance for the second phase along the northern portion of the APE on May 11, 2018 in sunny and warm conditions. The corridor had been previously reviewed by Drayton (Baldwin 2014c). Finally, the present review took place one March 6 and 9, 2020 in sunny but cool conditions, by Drayton archaeologists Alex Berry, Emma Dubois, and Madeleine Hall, with Jeffrey Hillstrom replacing Berry on the second day.

During the 2017 investigation for the sewer line extension, the corridor was staked along a southwest by northeast alignment measuring approximately 660 meters, or 2,165', between a sewage line tie-in south of Bradley Road and terminated at the intersection of Kamm Ditch, an agricultural field, and Northwood Road. The project area consisted of an agricultural field through which Kamm Creek and numerous diversionary / irrigation ditches runs. O the east was a field in cultivation of corn. The APE crossed Kamm Creek and terminated at the intersection of the cornfield with Northwood Road.

To the southwest, the staked sewer line APE (2017) began at the location of vertical PVC sewage line located approximately 260' south from the eastern limit of Bradley Road in the Spring Meadows Drive subdivision (Photos 1 – 2). From there the corridor extended across an unnamed diversion / irrigation ditch through the field to cross Kamm Creek (Photos 3 – 4). Kamm Creek bisects the field to the west from a planted cornfield to the east (Photos 5 – 6). The corridor continued northeast across the planted cornfield and terminated at the intersection of the northeast edge of the cornfield with Kamm Ditch and Northwood Road (Photos 7 – 10).

Photo 1. Overview of vertical Sewage Line tie-in, view to the north, located at the southwest extent of APE (2017) and south from a diversion ditch at the vegetation. Note staked centerline.

Photo 2. Detail view of the Sewage Line tie-in, view to the west-northwest. Note the Spring Meadows Drive subdivision in the background.

Photo 3. Overview of the Kamm Creek diversion / irrigation ditch, view to the southwest, towards the Sewer Line tie-in. Note the staked centerline.

Photo 4. Overview of project corridor (2017) through the field, view to the northeast. Note the stand of trees, located at the south trending drainage of Kamm Creek.

Photo 5. Overview of the APE (2017), view to the west, crossing Kamm Creek.

Photo 6. Overview of APE (2017), view to the east-southeast, at eastern edge of Kamm Creek and intersection of cornfield. Note staked centerline (orange) and staked northern corridor (plain).

Photo 7. Overview of APE (2017), view to the east, through the cornfield. Note staked centerline and archaeologist along corridor.

Photo 8. Overview of APE (2017), view to the west, along centerline. Note Kamm Ditch north of and at edge of cornfield.

Photo 9. Overview of APE (2017), view to the east, along the interface of the cornfield with Kamm Ditch.

Photo 10. Overview of sewer corridor west (2017), along edge of cornfield and Kamm Ditch. Photo taken from northeast edge of cornfield near intersection with Northwood Road.

The initial 2017 subsurface investigation followed a probabilistic sampling plan. Shovel probes were systematically placed no more than 30 meters apart along the centerline of the APE for the entire length of the corridor. The subsurface investigation consisted of the excavation of shovel probes (SP or SPs) which are generally sized 40-centimeters in diameter and manually excavated with a spade shovel. No predetermined target depth is set; however, SPs are typically terminated based on geologic conditions, culturally sterile soils, groundwater infiltration, or based on professional judgment. All excavated material was screened through ¼-inch wire mesh hardware cloth. Notes, photographs, and GPS points were taken for each SP. Shovel probes were backfilled upon completion. A complete description of the soil sequence and soil composition of each SP is tabulated in Appendix A

The investigators began the subsurface testing at the southwestern extent of the APE at the sewage line tie-in and worked northeast to Northwood Road. A total of nineteen (19) SPs were excavated across the APE (Figure 7). The first set of SPs were conducted west of Kamm Creek. Shovel probes 1 and 2, located on either side of an irrigation ditch, exhibited well-drained silty sands that terminated with glacial granitic sands with clay inclusions. For example, SP2 began with a rich-organics layered root-mat at approximately 0 – 3 centimeters below modern ground surface (cmbs) that transitioned to light-brown and brown-red silty sand between 3 – 32 cmbs, to light-brown silty-sand with white/gray/black variegated granitic sands at a depth of 32 – 54 cmbs and terminated at 103 cmbs at the interface of completely granitic sand layer with gray sandy clay containing oxidized inclusions (Photo 14). Shovel Probes 1 - 2 contained as much as 10 - 15 % gravels and as many as 3 -5 % rounded and angular cobbles measuring between 5 - 8cm^2 (Photo 15). These two SPs conform to the Kickerville silt loam soils defined by University of California Davis (UC Davis SoilWeb n.d.) and the NRCS soil survey (n.d.).

As the investigation moved across the field, the soil composition shifted into peat-moss stratum, defined as very poorly drained Shalcar and Pangborn muck (UC Davis SoilWeb n.d.; NRCS soil survey n.d.). The landowner shared with the archaeological crew that the field has not been plowed in seven years and that the owner employs a frequent practice of spreading cattle manure on the surface of the unplowed field.

Shovel probes 3 - 6 revealed a typical soil profile of a shallow, richly organic root-mat, less than 4 cm thick, with an underlaying dark-brown and brown-red silty loam or poorly drained peat with less than 1% gravels. With depth, the soil profile becomes wet as the sediment transitions to dark-brown and brown-red peat with mottled gray clays as deep as nearly 90 cmbs and terminates between 95 – 100 cmbs at the interface of granitic black/white/gray sands with gray clays (Photos 16 – 17). The excavation of SP #6, closest to the western bank of Kamm Creek, exposed better drained silty-sand soils, but the test terminated at 60 cmbs upon encountering the water table (Photo 18).

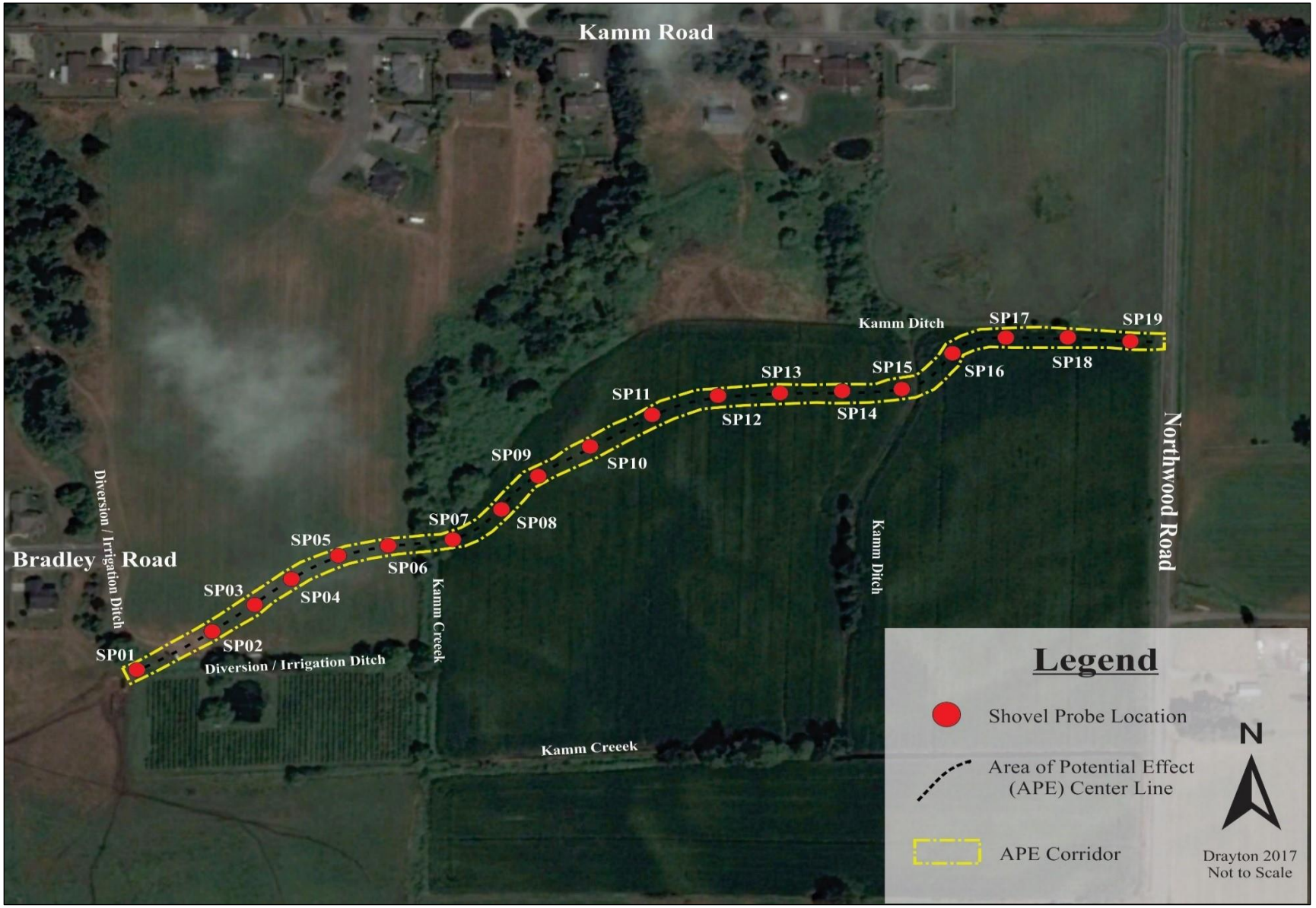

Figure 7. An adapted Google Earth aerial image illustrating the APE and shovel probe locations of the 2017 investigation.

Photo 11. Detail of Shovel Probe 1 (2017), showing root-mat, silty-sands, and granitic sands at base.

Photo 12. View of gravels exposed in Shovel Probe 2 (2017). Note some of the cobbles in the sifted soil.

Photo 13. Detail of Shovel Probe 4 (2017). Note dark peat, poorly drained, wet soils, and water at base.

Photo 14. Detail of the peat with gray granitic and glacial clays from base of SP4 (2017).

Photo 15. Detail of SP6 (2017), showing water table at base of probe. Note the better drained silty-sands closer to Kamm Creek.

On the eastern portion of the APE, east of Kamm Creek, the investigators encountered additional peat intermingled with silty-loam and silty-sand soil compositions throughout the testing of the ploughed and planted cornfield (Photo 19). Shovel probes 7 – 19 revealed no root-mat, although an approximately 20 – 30 cmbs deep layer of corn roots and other micro-rootlets were noted throughout (Photo 20). Generally, the soils were well drained with approximately 0 – 30 cmbs containing dark-brown and red-brown silty-loam with less than 1% gravels and no cobbles. The next layer consisted of a red-brown sandy-silt with as much as 5 – 10% gravels and less than 1% cobbles measuring between 3 – 8 cm^2. The SPs terminated between 75 – 90 cmbs at the interface of clays with granitic sands. The last stratum typically contained between 5 - 10 % gravels. Most of the SPs in the cornfield conform to the Kickerville silt loam soils, while a few were more similar to the Pangborn and Shalcar muck (peat) soils described above (UC Davis SoilWeb n.d.; NRCS soil survey n.d.).

Photo 16. Detail of soils excavated from SP16 (2017), showing peats with silty-sands.

Photo 17. Detail of SP10 (2017). Note silty-loam to silty-sand soil with a top stratum of corn and other rootlets.

An additional field investigation was requested and conducted in March 2020 for the proposed Bosman property development. The current project area consists of an approximately 22-acre field divided into two distinct sections by a north-south-oriented Kamm Ditch channel. A gravel access road connects both sections to Northwood Road at the APE's eastern boundary. The eastern portion of the APE consists of a flat, cleared corn field (Photo 21) while the western portion is comprised of a hilly grass field with Kamm Creek running south along the APE's western border (Photos 22 and 23). The western grassy portion of the APE had been a cornfield as well at the time of Drayton's 2017 investigation.

Photo 18. Overview, southeast, of the eastern cornfield. Kamm Ditch is visible in foreground.

Photo 19. Overview, southeast, of the western grass field, with standing water in distance.

Photo 20. Overview, south, of western grass field. Kamm Creek follows tree line at western boundary of APE.

Additional survey for the City sewer main upgrade was conducted in May 2018 by Courtney Paton along the proposed utility upgrade ROW corridor of Northwood Road. The proposed work was to tie-in to a location north of the subject site near Brome Street. The Northwood Road is a two-lane thoroughfare with gravel shoulders in a rural to light density residential setting (Photos 11 – 12). Overhead power lines and buried utilities are present in the ROW (Photo 13). No cultural materials, cultural resources, or historic properties were identified during the initial 2017 and 2018 investigations.

Photo 21. Overview, south, of the northern extent of the APE (2018; Northwood Road).

Photo 22. Overview south down Northwood Road.

Photo 23. A view south highlighting the corridor of buried utilities and overhead power lines.

Present field investigations occurred on March 6 and 9, 2020 in sunny but cool conditions, by Drayton archaeologists Alex Berry, Emma Dubois, and Madeleine Hall, with Jeffrey Hillstrom replacing Berry on the second day. A total of twenty-five (25) shovel probes were excavated in the APE (Figure 8). Soil profiles in the eastern cornfield generally conformed to the Clipper series described previously. A typical profile in the eastern portion consisted of an upper stratum of very dark brown silt loam with a low gravel content above a second stratum of highly compacted and very gravelly dark yellowish-brown or dark grayish-brown silt loam (Photo 24). Probes 10 and 11, along the northern border of the eastern field, appeared consistent with the Shalcar series described previously. Their profiles consisted of black organic muck with many fine roots overlying very dark grayish-brown loam.

In the western field, sediments observed were more variable with some profiles conforming to the Clipper series, generally located farther to the east, and others appearing more like the Kickerville series described previously, generally located closer to the western boundary. Profiles observed in the westernmost probes consisted of an upper stratum of dark brown silt loam overlying a second stratum of dark yellowish-brown gravelly silt loam, over a third stratum of slightly lighter dark yellowish-brown gravelly sand (Photo 25). A complete description of the soil sequence and soil composition of each SP excavated for the current phase of the project is presented in Appendix B. No cultural materials were observed during the present or previous investigations.

Figure 8. A Google Earth aerial image illustrating shovel probe locations (2020).

Photo 24. A representative soil profile in the eastern portion of the APE, shown here in SP06 (2020).

Photo 25. A representative soil profile in the western portion of the APE, shown here in SP09 (2020).

RESULTS AND RECOMMENDATIONS

Drayton conducted archaeological investigations for the proposed residential subdivision during 2017, 2018, and presently, 2020. All stages included background review of environmental and cultural contexts, field investigations to identify the presence/absence of archaeological deposits, and production reports. The present document combines all those previous investigations (Baldwin and Hunt 2017; Baldwin and Hanson 2018). Background review determined that the proposed work was located in an area of moderate to high probability for cultural resources.

The investigations did not identify cultural materials or historic properties during the study. Drayton therefore asserts that no impacts to cultural resources or historic properties are likely to occur during the execution of the undertaking as proposed. Drayton finds no warrant for recommending further archaeological oversight. Based on our investigation and previous work in the area the project should be permitted to proceed as designed. We further encourage the Corps, for their part, to assert a determination of No Historic Properties Affected for the proposed undertaking.

Washington State law provides for the protection of all archaeological resources under RCW Chapter 27.53, Archaeological Sites and Resources, which prohibits the unauthorized removal, theft, and/or destruction of archaeological resources and sites. This statute also provides for prosecution and financial penalties covering consultation and the recovery of archaeological resources. Additional legal oversight is provided for Indian burials and grave offerings under RCW Chapter 27.44, Indian Graves and Records. That law states that the willful removal, mutilation, defacing, and/or destruction of Indian burials constitute a Class C felony. A recent addition to Washington legal code, RCW 68.50.645, Notification, provides a strict process for the notification of law enforcement and other interested parties in the event of the discovery of any human remains regardless of perceived patrimony. The assessment of the property has been conducted by a professional archaeologist and meets or exceeds the criteria set forth in RCW: 27.53 for professional archaeological reporting and assessment.

In the event that archaeological materials are encountered during the work all operations should be halted in the vicinity of the find and an archaeologist should immediately be notified. Work would only proceed after the materials is inspected and assessed. At that time, the appropriate persons are to be notified of the exact nature and extent of the resource so that measures can be taken to secure them. In the event of inadvertently discovered human remains or indeterminate bones, work must stop immediately. Any remains should be covered and secured against further disturbance. Communication should then be established with the Lynden Police Department, the State Physical Anthropologist at DAHP, and Nooksack Tribe of Indians' Tribal Historic Preservation Officer and any other tribal agency that may have concerns.

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APPENDIX A: SHOVEL PROBE TABLE (2017)

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	RESULTS
SP01 (Irrigation Ditch Bank)		
0-20	Dark brown sandy silt, light gravel content, heavy compaction	Negative
20-90	Brown sand, light gravel content, moderate to light compactions	Negative
SP02 (Irrigation Ditch Bank)		
0-3	Root-mat matrix in dark-brown, light organics and roots	Negative
3-32	Brown + light brown mottled sandy silt	Negative
32-54	Light brown sandy silt with variegated sands with some clay.	Negative
54-103	Brown silty sand transitioning to granitic glacial sands with gray glacial clay w/ orange oxidized inclusions	Negative
Notes: SP contains ~ 20% gravels, is well drained, and has 3 -5 % rounded quartz cobbles		
SP03 (Field)		
0-50	Dark brown / black silty loam, low gravel content, light compactions	Negative
50-83	Gray clay sands, low gravel content, light comp.	Negative
SP04 (Field)		
0-4	Root-mat matrix of sandy silt with ~2% gravels, rich dark organics, and roots	Negative
4-27	Dark brown mottled gray brown silty loam peat, rich wet carbons	Negative
27-84	Dark brown and red-brown peat with mottled clays, no gravels	Negative
84-97	Peat transitioning into sandy clay (granitic sands color black/gray/white)	Negative
97+	Granitic sands and gray sandy clay	Negative
SP05 (Field)		
0-90	Black peat, no gravel contents, lightly compaction, very wet	Negative
90-96	Glacial sands and clays, water @ 94cm	Negative
SP06 (Kamm Creek Bank)		
0-3	Root-mat matrix of silty sand w/ some clays and 5% gravels	Negative
3-27	Dark brown and brown-red sandy silt loam, 15% gravels	Negative
27-58	Red-brown and light-brown sandy silt, no gravels	Negative
58-60	Sandy water table	Negative
SP07 (Kamm Creek Bank)		
0-55	Black peat, no gravel contents, lightly compaction, very wet	Negative
55-80	Brown loamy sand, moderate gravel, and compactions	Negative
SP08 (Entering Cornfield)		
0-30	No root-mat matrix, Red-brown and dark-brown silty loam with many micro-rootlets	Negative
30-92	Light brown and red-brown sandy-silt with less than 1% gravels	Negative
SP09 (Cornfield)		
0-35	Dark brown / black silty loam, low gravel content, light compactions	Negative
35-57	Brown silty loam, low gravel, low compact.	Negative
57-78	Brown silty loam, high gravels moderate compaction.	Negative

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	RESULTS
SP10 (Cornfield)		
0-50	Micro-rootlets in a matrix of red-brown silty loam	Negative
50-70	Brown and red-brown Sandy silty loam with ~10% gravels	Negative
70-85	Brown silty sand with ~15% gravels	Negative
SP11 (Cornfield)		
0-37	Dark brown / black silty loam, low gravel content, light compactions	Negative
37-73	Brown silty loam, high gravels moderate compaction.	Negative
SP12 (Cornfield)		
0-42	Micro-rootlets in a matrix of red-brown silty loam	Negative
42-87	Brown and red-brown Sandy silty loam with ~5% gravels	Negative
70-85	Brown silty sand with ~5% gravels	Negative
Notes: Root burns throughout		
SP13 (Cornfield)		
0-15	Dark brown / black silty loam, low gravel content, light compactions	Negative
15-49	Light brown / gray silty loam, no gravels	Negative
49-80	Brown silty loam, high gravels moderate compaction.	Negative
SP14 (Cornfield)		
0-15	Dark brown silty loam, heavy organics with rootlets	Negative
15-36	Brown and red-brown Sandy silty loam with ~5% gravels	Negative
36-78	Red brown silty loam ~5% gravels	Negative
78-87	Red-brown and yellow-brown sandy silty loam, with ~10% gravels	Negative
SP15 (Cornfield – West of Kamm Ditch)		
0-18	Dark brown / black silty loam, low gravel content, light compactions	Negative
18-83	Brown silty loam, high gravels moderate compaction.	Negative
SP16 (Cornfield – East of Kamm Ditch)		
0-28	Gray-brown and dark-brown organic peats at surface, no rootmat	Negative
28-70	Dark brown silty loamy Peats with gray glacial sandy clay inclusions	Negative
70-97	Gray clays with granitic sands	Negative
Note: less than 1% gravels		
SP17 (Cornfield – south of Kamm Ditch)		
0-54	Dark brown / black silty loam, low gravel content, light compactions	Negative
Note: root impasse next to large maple tree at 54 cmbs		
SP18 (Cornfield – south of Kamm Ditch)		
0-24	Gray-brown and dark-brown organic peats at surface, no rootmat	Negative
24-68	Dark brown silty loamy Peats with gray glacial sandy clay inclusions	Negative
68-79	Gray clays with granitic sands	Negative
Note: Contains ~5% gravels		
SP19 (Cornfield – south of Kamm Ditch near Northwood Road)		
0-24	Gray-brown and dark-brown organic peats at surface, no rootmat	Negative
24-68	Dark brown silty loamy Peats with gray glacial sandy clay inclusions	Negative
68-79	Gray clays with granitic sands~5% gravels	Negative

APPENDIX B: SHOVEL PROBE TABLE (2020)

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	RESULTS
SP01		
0 – 39	10YR 2/2 Very dark brown silt loam with a very low gravel content. (Plowed sediments).	Negative
39 – 70	2.5Y 5/2 Grayish brown coarse-grained gravelly silt loam with a high content of small subrounded cobbles and medium sized gravels.	Negative
Note: Water table at 70 cm		
SP02		
0 – 31	10YR 2/2 Very dark brown silt loam with a very low gravel content. (Plowed sediments).	Negative
31 – 80	10YR 3/4 highly compacted Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
SP03		
0 – 31	10YR 2/2 Very dark brown silt loam with a very low gravel content. (Plowed sediments).	Negative
31 – 67	10YR 3/4 highly compacted Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
67 – 80	2.5Y 4/2 Dark grayish-brown clayey silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
SP04		
0 – 36	10YR 3/3 Dark brown silt loam with a very low gravel content.	Negative
36 – 55	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
55 – 89	2.5Y 4/2 Dark grayish-brown clayey silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
SP05		
0 – 33	10YR 3/3 Dark brown silt loam with a very low gravel content.	Negative
33 – 68	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
68 – 100	10YR 5/1 Gray clay loam with oxidation mottling throughout.	Negative
SP06		
0 – 20	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
20 – 100	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	RESULTS
SP07		
0 – 38	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
38 – 60	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
60 – 100	10YR 4/4 Dark yellowish-brown gravelly loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP08		
0 – 28	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
28 – 62	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
62 – 80	10YR 4/4 Dark yellowish-brown sandy loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP09		
0 – 36	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
36 – 62	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
62 – 101	10YR 4/4 Dark yellowish-brown sandy loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP10		
0 – 36	10YR 2/1 Black muck with a moderate content of plant roots	Negative
36 – 76	10YR 2/1 Black muck with a high content of plant roots	Negative
76 – 100	10YR 3/2 Very dark grayish-brown loam	Negative
SP11		
0 – 42	10YR 2/1 Black muck with a moderate content of plant roots	Negative
42 – 80	10YR 2/1 Black muck with a high content of plant roots	Negative
80 – 100	10YR 3/2 Very dark grayish-brown loam	Negative
SP12		
0 – 35	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
35 – 70	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
70 – 100	10YR 4/4 Dark yellowish-brown gravelly loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP13		
0 – 24	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
24 - 80	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	RESULTS
SP14		
0 – 25	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
25 – 35	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
35 – 80	10YR 4/4 Dark yellowish-brown gravelly loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP15		
0 – 40	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
40 – 44	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
44 – 78	10YR 4/4 Dark yellowish-brown gravelly loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP16		
0 – 46	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
46 – 57	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
57 – 100	10YR 4/4 Dark yellowish-brown gravelly loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP17		
0 – 25	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
25 – 50	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
50 – 95	10YR 4/4 Dark yellowish-brown gravelly loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP18		
0 – 51	10YR 2/2 Very dark brown silt loam with a very low gravel content. (Plowed sediments).	Negative
51 – 79	2.5Y 5/2 Grayish brown coarse-grained gravelly silt loam with a low content of small subrounded cobbles and medium sized gravels.	Negative
79 – 80	2.5Y 5/2 Dark grayish-brown gravelly loam with a high concentration of pebbles and gravels.	Negative
SP19		
0 – 31	10YR 2/2 Very dark brown silt loam with a very low gravel content. (Plowed sediments).	Negative
31 – 51	2.5Y 5/2 grayish brown silt loam with a low concentration of pebbles.	Negative
51 – 82	2.5Y 5/2 Grayish brown coarse-grained gravelly silt loam with a high content of medium sized subrounded cobbles and medium sized gravels.	Negative
82 – 85	2.5Y 4/2 Dark grayish brown coarse-grained gravelly silt loam with a high content of medium sized subrounded cobbles and medium sized gravels.	Negative

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	RESULTS
SP20		
0 – 38	10YR 2/2 Very dark brown silt loam with a very low gravel content. (Plowed sediments).	Negative
38 – 46	2.5Y 5/2 grayish brown silt loam with a low concentration of pebbles.	Negative
46 – 80	2.5Y 5/2 Grayish brown coarse-grained gravelly silt loam with a high content of medium sized subrounded cobbles and medium sized gravels.	Negative
SP21		
0 – 32	10YR 2/2 Very dark brown silt loam with a very low gravel content.	Negative
32 – 52	2.5Y 5/2 grayish brown silt loam with a low concentration of pebbles.	Negative
52 – 81	2.5Y 5/2 Grayish brown coarse-grained gravelly silt loam with a high content of medium sized subrounded cobbles and medium sized gravels.	Negative
SP22		
0 – 41	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
41 – 81	10YR 4/4 Dark yellowish-brown sandy loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP23		
0 – 72	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
72 – 82	10YR 4/4 Dark yellowish-brown gravelly loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP24		
0 – 35	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
35 – 72	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
72 – 97	10YR 4/4 Dark yellowish-brown sandy loam with high gravel content with mostly subrounded pebbles and cobbles	Negative
SP25		
0 – 26	10YR 3/3 Dark brown silt loam with a low gravel content with mostly subrounded pebbles and a few cobbles.	Negative
26 – 40	10YR 3/4 Dark yellowish-brown silt loam with a high concentration of medium to small angular-subrounded cobbles and medium sized gravels.	Negative
40 – 90	10YR 4/4 Dark yellowish-brown sandy loam with high gravel content with mostly subrounded pebbles and cobbles	Negative