WSDOT

U. S. Department of Transportation
Federal Highway Administration

April 2018

I-405, Downtown Bellevue Vicinity Express Toll Lanes Project (MP 11.9 to 14.6)

Attachment I: Cultural Resources Survey Discipline Report

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Cultural Resources Survey for the Washington State Department of Transportation's I-405: I-90 to Northeast 6th Street Improvements Project, King County, Washington

By: Jennifer Thomas and Jason Jones

Principal Investigator: Stan Gough

Submitted to Washington State Department of Transportation, Northwest Region
Agreement GCB-1426, Task Order Document AL

Short Report DOT2016-05
Archaeological and Historical Services
Eastern Washington University

March 2016

Archaeological and Historical Services, Eastern Washington University Cultural Resource Short Report Form

Authors: Jennifer Thomas and Jason Jones **Date:** March 2016
USGS Quadrangle: Mercer Island, WA, 7.5', 1950 (Photorevised 1968)
Location (Sec., T, R): Sections 32, 33 of T25N R5E and Section 4 of T24N R5E

PROJECT DATA

Agency/Sponsor: Washington State Department of Transportation (WSDOT)

Agreement No., Task Order Document: GCB1426, AL

PROJECT DESCRIPTION

The I-405 I-90 to Northeast 6th Street Improvements Project is located along the I-405 corridor within the city limits of Bellevue in King County. The project extends from Milepost (MP) 11.9 to MP 13.7 of I-405 (Figure 1). The project will add one new lane in each direction of I-405 from MP 11.9 to MP 13.7. Where feasible, the additional lanes will be achieved by restriping instead of roadway expansion. Additional related improvements include the widening and/or replacement of three overpasses, stormwater facility expansion, and minor components, such as illumination and signage. The three overpasses that will be modified by this project are as follows: 1) Eastside Rail Corridor / I-405 NB Overpass at MP 12.4 will be replaced with an adjacent structure; 2) Southeast 8th / I-405 Overpass at MP 12.78 will be widened; and, 3) Main Street / I-405 Overpass at MP 12.78 will be replaced. Minor project improvements will include pavement markings, drainage improvements, permanent signing, illumination, intelligent transportation systems, and barriers (WSDOT 2006:2-1). The cultural resources investigation area for the project, as defined by WSDOT, includes the direct impact area where all ground disturbances are planned, as well as a larger resource evaluation buffer. This combined area is referred to in this report as the project resource evaluation area (Figure 2).

Archaeological and Historical Services (AHS), Eastern Washington University, conducted the following tasks: search of site files available on the Washington Department of Archaeology and Historic Preservation (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD) database; field survey of the project resource evaluation area, including shovel test excavation; and, preparation of this report of findings and recommendations.

LOCATION

The project is located in southwestern King County, along the I-405 corridor, in the city of Bellevue, within and immediately adjacent to the WSDOT right-of-way.

ENVIRONMENTAL BACKGROUND

Setting

The project is located near the southeastern limit of Lake Washington in the Puget Sound Lowland physiographic province (Franklin and Dyrness 1988:16). This province incorporates all of Puget Sound and separates the Cascade Range from the coastal hills and Olympic Mountains (Alt and Hyndman 1995:296; Thorson 1980:1). Much of the topography was formed by glacial activity during the Pleistocene epoch (ca. 1.6 million to 10,000 years ago). The Puget Lobe of the Cordilleran Ice Sheet advanced from the vicinity of the San Juan Islands south to Centralia, reaching its southern terminus approximately 15,000 years ago (Booth 1994). Expansive areas south of Bellevue were blanketed by glacial outwash sands and gravels from meltwater streams. By 13,500 years ago, the most recent stage of the Fraser Glaciation called the Vashon Stade, retreated from the project area. Within several thousand years, the ice began to recede, marine waters returned to the Puget Sound Lowland and meltwater streams continued to carve many of the region's major river channels. Around 10,000 years ago, after a temporary southward re-advance of the Puget Lobe, the Cordilleran Ice Sheet melted, and the regional Ice Age ended (Booth 1994; WSDOT 2005a; 2006:E-2).

Vegetation re-established not long after the retreat of glacial ice. Species of pine took root on outwash plains which then gave way to scattered oak, grasses and Douglas fir. The general project area is located within the *Tsuga heterophylla*, or western hemlock, vegetation zone (Franklin and Dyrness 1988:70-93). There are a number of localized habitats within this zone, from forested uplands of Douglas fir, western hemlock and western red cedar to low, moist areas which contain cattails, vine maple and willow. Red alder and big leaf maple are the dominant secondary species and are common in the project corridor (WSDOT 2006:E-2). Invasive species such as Scots broom and Himalayan blackberry are also quite common and thrive in disturbed areas. Most of the non-paved surfaces along the I-405 margins were grubbed and cleared, mulched, seeded and fertilized from the early days of construction (Washington State Highway Commission [WSHC] 1962a); these margins have since been lined with ornamental and exotic landscaping (Boswell et al. 2011:4-4).

Most of the project is paved and mapped as Urban Land (Soil Survey Staff 2016). The remaining portion of the project resource evaluation area includes gravelly sand, sandy loam, silt loam and varieties of muck. Alderwood series soils are the most commonly mapped soil type. Alderwood series soils comprise moderately to well drained gravelly sandy loam. They are found

on ridges and hills with slopes in the range of 8 to 30 percent and formed in glacial drift and/or glacial outwash over dense glaciomarine deposits. Arents soils are roughly equivalent to Alderwood soils; Arents soils form on till plains comprised of basal till. Confined to the southern half of the project area is the Kitsap silt loam soil series; it is moderately well-drained and forms on terraces of 2 to 30 percent slope comprising lacustrine deposits with small amounts of tephra. Norma sandy loam, which is only present near the northern end of the project between Main and NE 6th Street, is poorly drained, contains some tephra, and forms on alluvial plains. The Kelsey Creek area is mapped as Bellingham silt loam, a very deep and poorly drained loam formed in loess, alluvium, and lacustrine sediments on slopes of 0 to 3 percent. Confined to the western half of the project is Seattle Muck and Tukwila Muck; both are represented in the vicinity of SE 6th Street and 114th Avenue SE and are poorly drained soils that form in heavily saturated environments (Washington Department of Natural Resources [WADNR] 2016; WSDOT 2005a; Soil Survey Staff 2016).

Re-landscaping has had a minimal effect on project lands when compared with the more significant sub-surface transformations and resulting changes to land surfaces. Examination of aerial photography indicates that most of the I-405 corridor was cut into a hillside above the east shore of Lake Washington. As a result of this sloped topography, original construction of I-405 required "cutting of many hillsides along the corridor and filling and grading in other locations . . . [and] several unnamed creeks have been buried in culverts and rerouted" (WSDOT 2006:iv). Drainage ditches were excavated at the toe of the cut-slope to control water and gravel was added to the spoils during backfill; the depth of disturbance to place the drain and cover with gravel/fill is commonly no less than 3-feet. Gunnite, a mixture of sand, crushed rock, cement and water, was then used to cover the slope for reinforcement (WSHC 1962b).

During preparation for I-405 construction, if peat was present in areas of construction it was removed in its entirety (more than 9-vertical-feet at times), and the cavity was backfilled with clean gravel (Humphres 1949a). The removal of all natural clay from work areas, coupled with the deep installation of large drainages and culverts to intercept and divert water necessitated large-scale excavations beyond the traffic lanes (Humphres 1949b). In areas where there was a natural deposit of clay or peat too deep for complete excavation, the applicable section was covered by 25 feet to 30 feet of fill (Humphres 1948). Geotechnical borehole data in the northern portion of the project resource evaluation area suggests that pockets of Holocene alluvium may be as shallow as 3 to 5 feet below the surface, but most of the area around downtown Bellevue may be buried in 2 to 10 feet of fill (Boswell et al. 2011:4-29). Few locations with natural, intact surface or sub-surface stratigraphy likely remain.

Furthermore, portions of the project resource evaluation area may have been submerged under Lake Washington until the opening of the Lake Washington Ship Canal in 1916-1917. At that time, the lake level was lowered approximately 10-feet (3-meters), and, in effect, terminated the lakes' natural drainage, the Black River. The newly exposed lakeshore terraces quickly became valuable acreage, now a roughly contiguous development of private residences that have destroyed the natural environment (Touchin and Turner 2014:1; WSDOT 2006:E-2, E-3).

Ground Surface Conditions

Ground surfaces within the resource evaluation area have been subject to extensive disturbances, primarily due to previous road construction, as well as construction of the now abandoned Burlington Northern Santa Fe Railroad bed, which crosses the corridor in the southern end of the resource evaluation area where it is now a graveled road (Figure 3). Both I-405 and the railroad bed are deeply cut into the steep slope of a large hill, and several water retention ponds have been constructed along the western edge of I-405 (Figures 4 and 5). Further disturbance has been caused by buried utility installation. Most of the resource evaluation area is paved or occupied by thick, often impenetrable, vegetation (Figure 6).

ETHNOGRAPHIC/HISTORIC BACKGROUND

The Duwamish are the traditional occupants of the region. Their traditional territory included the lands of the Black, Cedar, Green and White river drainages; they thought of these three rivers as one single waterway called *t-hw-duw* or "going inside." Villages were also on the shores of Elliott Bay, Lake Washington, Lake Sammamish and along the banks of the Sammamish River. Specifically, the lands north of the I-90 were inhabited by the "Lake Duwamish," designated by early ethnographers as a people localized between the Duwamish proper and the Snoqualmie. The Sammamish, a band of the Duwamish, held the land between Lake Sammamish and Lake Washington, the nucleus of the current project resource evaluation area, as their traditional territory (Boswell et al. 2011:4-6; Suttles and Lane 1990; WSDOT 2006: E-6).

Similar to other Native American peoples in the region, a seasonal settlement and subsistence pattern was employed to take advantage of prominent resource areas. Winter villages were comprised of cedar plank houses and hand-hewn cedar longhouses. Temporary settlements shifted systematically through particular, seasonal resource locations. The native people harvested the numerous anadromous fish, non-salmonid fish, shellfish, local terrestrial mammals, and edible plants for sustenance, utilitarian goods, and medicine (Castile 1985; Suttles and Lane 1990).

Duwamish people spoke a Southern Lushootseed dialect and occupied many important places in the vicinity of the I-405 which were designated in their native tongue. Villages derived their names most commonly from geographical landmarks (e.g., *Sbah-bah-DEED* or "little mountain," *Sa'tsakaL* or "water at head of a bay"), but also from spiritual beings (e.g., *Skai-TAW*) and localized activities (e.g., *Hwa 'utsegwiL* or "to carry a canoe over") (Bundy 2008:9; WSDOT 2006:E-7). A number of studies offer information related to Native American place names in the general project area (see Ballard 1929; Buerge 1989; Bundy 2008; Dailey 2003; Hilbert and Zahir 2001; Waterman 1920; WSDOT 2006) and the interested reader can find more elaborate information therein.

The signing of the Point Elliott Treaty in 1855, assigned the Duwamish to the Port Madison Reservation on the Kitsap Peninsula, within the traditional territory of a neighboring tribe, the Suquamish. The Sammamish people were not explicitly designated under the terms of the Point Elliott Treaty and some continued to live in traditional locations like Lake Sammamish while others joined the Snoqualmie Tribe. In short, many of the Duwamish people from various bands were relocated to reservations, while some filed claims under the Indian Homestead Act, and others sought assimilation into local communities. In 1857, the United States Government established the Muckleshoot Reservation near present day Auburn, Washington, and today the Muckleshoot Tribe is accepted as the tribal successor of a majority of the displaced bands of the Duwamish (Boswell et al. 2011:4-6, 4-7; Castile 1985:26; Muckleshoot Indian Tribe 2015).

Manipulation of project lands has been significant for over a century and has greatly masked the natural environment. Local and regional undertakings were needed to increase settlement capacity and expand lands for agricultural and industrial pursuits. For approximately 150 years, rivers and streams have been built over, marshes have been filled, large expansive forests have been cleared and hillsides have been cut, followed by the re-contouring of land for the railroad, local access roads and, of course, the expansive highway system.

In 1850, Colonel Isaac Ebey canoed up the Duwamish River and became the first Euro-American to explore Lake Washington. By the 1860s, coal was discovered on the east side of the lake, near Coal Creek, and William Meydenbauer and Aaron Mercer staked large claims in the area (Hetzel and Elder 2015:3-4). Meydenbauer cleared a tract of heavily timbered land at the edge of a small bay on the eastern Lake Washington shore and built a summer cabin. Mercer established a more permanent homestead south of “Meydenbauer Bay” and began farming the western bank of Kelsey Creek (WSDOT 2006:E-17).

According to early area maps, Girard Kellogg was one of the first residents of the project area: a review of the General Land Office (GLO) map for T24N, R5E indicates an unnamed trail from Lake Sammamish extending along the north side of the present day I-90 alignment. It enters the vicinity of the I-405/I-90 interchange in Section 9, and proceeds through Section 16 in a southwesterly direction to the house of Girard Kellogg, located on the eastern shore of Lake Washington in Section 17 (Bureau of Land Management 1865).

Isaac Bechtel, Sr., officially initiated the timber industry in what is now downtown Bellevue in the 1870s (Hetzel and Elder 2015:3-4). Felled trees, as big as 9 feet in diameter, were skidded by horse and ox to the eastern shore of Lake Washington and then floated across the lake to Phinney’s Mill (Hushour 2014:13). One of Bellevue’s first roads was NE 24th Street, which was built in 1879 and connected early occupants and their timber as well as other goods to Lake Washington for further transport (Hushour 2014:12). Within a decade, steamboats on Lake Washington began offering a regular schedule and direct route for travelers between Seattle and the eastern shores of Lake Washington, which helped but did not solve the problem of isolation for settlers east of Lake Washington (Boswell et al. 2011:4-8).

In the 1880s, coal became one of the leading forces in the growth of King County and attracted laborers of European descent, as well as Chinese and African American workers; this led to an increase in population and a need for further development. Settlers continued to clear large tracts of land to set up extensive farms for bulb cultivation and berry growing. The abundant timber continued to be cut down for housing as well as mining operations; the timber was still skidded to the lake but was now also moved by short rail spurs which were built into the bottomlands of local streams (Hetzel and Elder 2015:3-4, 3-5; WSDOT 2006:E-15—E-7).

Railroad connections to/from Bellevue did not see much early success. Coal discoveries near Renton and Issaquah were a catalyst to railroad development, but most early plans never came to fruition. However, in 1886 the Seattle, Lakeshore and Eastern (SLS&E) rail was under construction along the north side of Lake Washington and the eastern shores of Lake Sammamish en route to Snoqualmie Pass. The SLS&E employed railroad men, construction crews, and additional laborers from Europe and Asia and provided an economic boost to the area. The railroad was a key factor in the growth of Bellevue. The Northern Pacific railroad purchased the SLS&E in 1890 planning to create the 'Northern Pacific Railway Lake Washington Beltline Company' which would extend up the east side of Lake Washington, within ¾ of a mile of the contemporary I-405 corridor. It was to connect a newly constructed steel mill developed by Peter Kirk, near contemporary Kirkland, to coal and iron mines in the Cascade Mountains. However, due to impending financial crises in 1893, only two segments were built, a southern segment from Renton to Kelsey Creek (which crosses the project area just south of SE 8th Street) and a northern segment from Woodinville north toward Canada (Boswell et al. 2011:4-10, 4-11).

In 1897, in consequence to the economic incentive spurred by the Klondike Gold Rush, coupled with the congestion of railways along the Seattle waterfront (i.e., Railroad Avenue), the benefit of the new beltline was again realized and the segment between Kelsey Creek and Woodinville was under construction. In 1903, the Wilburton community became home to the Hewitt-Lea lumber mill, once located where the I-405 now crosses SE 8th Street. In 1904, the Hewitt-Lea mill had grown enough for the town of Wilburton to be platted. Also in 1904, the large Wilburton Trestle was erected over Kelsey Creek near SE 8th Street (less than 50-feet east of the current project resource evaluation area) and the Northern Pacific Railway Lake Washington Beltline officially connected Bellevue to Renton and surrounding areas. This connection expanded the economic market and Bellevue was officially mapped as a new city. The Wilburton area continued to thrive in the expansive timber market and logs from that area were floated down Kelsey Creek to be taken to Seattle and south to Tacoma (Boswell et al. 2011:4-11; Stein 2010; Touchin and Turner 2014:7; WSDOT 2006:E-17). By 1911 Bellevue was prosperous and had a firm hold on area produce and timber export, but still was only home to about 150 people (Boswell et al. 2011:4-8).

In 1916, Lake Washington was partially drained to lower the surface elevation nine vertical feet to facilitate construction of the Ship Canal, which was completed the following year. The opening of the Lake Washington Ship Canal created a direct route from Lake Washington to

Puget Sound which allowed more regular business ventures between Puget Sound and the previously isolated Bellevue area. Mercer Slough, once the western-most segment of Kelsey Creek, was a major route of transport and travel from Lake Washington to near Main Street in Bellevue. Lowering Lake Washington drained marshlands in the Kelsey Creek drainage, including Mercer Slough. The former slough quickly became one of the most productive agricultural areas around Lake Washington (Emerson 2011:3; Hushour 2014:14; WSDOT 2006:E-17, E-18).

Significant to twentieth century development of the general project area are the Boeing Airplane Company and the floating bridges. A record-setting manufacturing firm with a large production force, Boeing was originally located along the eastern shore of Lake Washington, but moved to its current location on the banks of the Duwamish River in 1917 (WSDOT 2006:E-21). In 1919, "King County constructed a network of paved roads connecting population centers" and Boeing may have been partially responsible for this development (Hushour 2014:13, from Boswell et al. 2011). In 1940, the Lake Washington Floating Bridge (I-90) was completed which greatly increased transport to and from Bellevue. In 1953, the city of Bellevue was incorporated and 10 years later a second floating bridge, the Evergreen Point (SR 520), opened which further assisted growth and transformation of the now large city (Stipe 2010:3).

Traditional Cultural Properties

Records on file at DAHP do not indicate there are traditional cultural properties (TCPs) reported within or near the project resource evaluation area. However, Native Americans are likely to have fished, hunted, and gathered plant resources in the general vicinity. On February 11, 2016, AHS sent letters to the Muckleshoot Tribe, the Snoqualmie Nation, and the Confederated Tribes and Bands of the Yakima Nation requesting tribal participation in the identification of cultural resources in and around the project resource evaluation area that may be of interest to them. To date, there has been no response.

Previous Investigations

No cultural resources have been recorded in the project resource evaluation area. Well over 200 historic properties have been recorded within one mile of the resource evaluation area. Three of these historic properties are listed on national and state historic registers. The Frederick W. Winters House, located half a mile to the west of I-405, and the Twin Valley Dairy, located about one mile to the east, are listed in the National Register of Historic Places (NRHP), and the Wilburton Trestle, located less than one-tenth of a mile east, is listed in the Washington State Historic Register. Additionally, two archaeological sites have been recorded within a mile—site 45KI1008, a historic debris scatter, and site 45KI1217, is a multicomponent artifact scatter. None are located within the resource evaluation area, and none of these resources will be affected by proposed project activities.

Results of the DAHP files search revealed that nine archaeological surveys have occurred within one mile of the current resource evaluation area (Table 1). None of these project areas intersect the resource evaluation area.

Table 1. Cultural Surveys within One Mile of the Resource Evaluation Area.

NADB Report No.	Date	Author	Title
1346848	2005b	WSDOT	I-405, NE 10th Overcrossing Project
1684713	2006	Schultz	SE3943B, Bellevue Malls/Sterling 600 106th Avenue NE, Bellevue
1354444	2010	Stipe	Verizon Wireless SEA Bellevue Alt. 1 Cellular Tower Cultural Resources Review
1681153	2011	Boswell et al.	NE 4th Street/120th Avenue NE Corridor Project, Cultural Resources Technical Report
1680513	2011	Emerson	SE02421J, Bellevue Christian Church, 10808 SE 28th Street, Archisto Enterprises Letter Report 2011-03
1684941	2014	Borth	Archaeological Resources Assessment for the Proposed AT&T Project SB1738 Enatai Park, SE 27th Place, Beaux Arts, Washington
1685041	2014	Kelly and Solmo	Cultural Resources Assessment for the Bellevue 124th Avenue NE Improvement Project, King County, Washington
1685669	2014	Touchin and Turner	Cultural Resources Survey for the Wilburton Sewer Capacity Upgrade Project in Bellevue, Washington
1687732	2015	Pinyerd	Bergman Jewelers #SE02321B

CULTURAL RESOURCE SURVEY RESEARCH DESIGN

Objectives and Background

The objective of this study is to assist WSDOT in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, by the location and preliminary characterization of both previously and as yet unidentified cultural resources within the resource evaluation area. Archaeological fieldwork described in this report was conducted in compliance with the 2008 I-405 Corridor Programmatic Agreement (PA) developed between the Federal Highway Administration (FHWA), WSDOT, the Washington State Historic Preservation Office (SHPO), the Muckleshoot Indian Tribe, and the Snoqualmie Indian Tribe (WSDOT 2008a). In 2015, AHS was contracted in support of Tasks IV.C.1 and IV.C.2 of the PA to create a map set illustrating archaeological potential within the WSDOT right-of-way along I-405 from SR 169 in Renton to NE 6th Street in Bellevue. A map set illustrating 89 archaeological potential zones along I-405 between Renton and Bellevue was produced (Jones 2015). The 89 zones are in three broad categories of archaeological potential defined in Task IV of the PA (WSDOT 2008a) and guided by a comparable study, the WSDOT I-405 Tukwila to Renton Improvement Project (Bundy 2008), also in support of the PA. The three broad zone categories are:

- *Unrestricted Zones* are locations where Holocene age native surfaces and post-glacial soils and sediments have been removed entirely. The design-builder may locate any ground-disturbing project element in an Unrestricted Zone without any further cultural resources review (per PA Task IV.C.3, see WSDOT 2008a).

- *Fill Zones* are locations identified as having deep fill, where native soils and possibly buried surfaces still may be present under the fill. Each fill zone was labeled on a map with a number indicating the estimated depth of fill. The design-builder may locate any ground disturbing project element in a Fill Zone when design indicates disturbance will not exceed three-quarters (3/4) of the total fill depth (to account for over-excavation). A sub-category of the *Fill Zones* is *Road Prism Fill Zones* which are locations identified as having deep fill, where native soils and possibly buried surfaces still may be present under the road prism. Ground disturbing work beyond the demonstrated depth of the road prism requires archaeological review (per PA Task IV.C.4, see WSDOT 2008a; Bundy 2008:17, 20).

- *Restricted Zones* are locations with little to no previous ground disturbance and native sediments and buried surfaces are likely to be present. The design-builder may NOT locate any ground-disturbing project element, regardless of the depth of the projected ground disturbance, in a Restricted Zone until it is reviewed and approved (in email or letter) by the WSDOT in consultation with interested and affected tribes and SHPO (per PA Task IV.C.5, see WSDOT 2008a).

This report presents cultural resources survey and shovel testing results for the I-405: I-90 to Northeast 6th Street Improvements Project by zone (cf. Jones 2015).

Methods

Prior to fieldwork, a site search of the DAHP online WISAARD database was undertaken to determine if cultural resources have been previously identified within or near the resource evaluation area. Background research was conducted at local repositories. The King County Assessor's Office on-line database was accessed to determine build dates for structures within the resource evaluation area.

All field work reported here followed procedures as set forth in the PA and the Guidelines (WSDOT 2008a, 2008b). The Guidelines established levels of archaeological probability based on environmental variables and historic land-use. Areas of high archaeological probability include gently sloped (0-10 percent) areas and locations within 200 feet of water sources. Areas of moderate archaeological probability include moderate slopes (10-30 percent) and areas >200 feet from water sources. Low probability areas are those characterized by steep slopes (>30 percent) or those areas located far from water sources (WSDOT 2008b).

A shovel testing strategy was formulated based on expectations concerning the potential for intact landforms and buried cultural resources. This strategy was based upon: (1) the framework for fieldwork provided in the Guidelines (WSDOT 2008b); (2) the archaeological potential zone maps (Jones 2015); (3) the WSDOT project excavation contour map-set (WSDOT 2015); (4) the results of previous sub-surface investigations within or in proximity to the I-405 right-of-way (see Bowden et al. 1997; Kanaby et al. 2009; Schneider et al. 2015; WSDOT 2006); and (5) geo-technical borehole data (see Boswell et al. 2011). A shovel test grid was created with ArcMap 10.3.1 GIS software with shovel tests plotted every 30 meters across the resource evaluation area.

From February 21 to February 26, 2016, AHS archaeologists Jennifer Thomas, Emily Nesbit, Patrick Fristoe, Cori Michel, and Deanna deBoer completed a cultural resources survey including shovel testing of the project resource evaluation area (with the exception of paved surfaces, inundated areas, areas where vegetation was impenetrable, and where slope exceeded 30 percent). Pedestrian survey transects were no wider than 10 meters. The entire project resource evaluation area covers approximately 399 acres. All unpaved areas were surveyed.

All shovel tests measured approximately 40 centimeters in diameter and were excavated to depths possible using a shovel (ca. 100 centimeters) or to impenetrable matrix. When feasible and appropriate, excavations were extended using a 10-centimeter-diameter (4-inch) bucket auger until excavation was terminated due to impenetrable surfaces or saturation. All excavated sediments were screened through ¼-inch-mesh hardware cloth and all excavations backfilled following data gathering. A hand held Global Positioning System (GPS) receiver with sub-meter accuracy was used to record each shovel test location. Shovel tests were designated using the last three digits of Universal Transverse Mercator (UTM) easting and northing coordinates.

Survey tasks were documented through completion of field notes and appropriate AHS field forms and digital photographs. Work area overview photographs and representative subsurface stratigraphy photographs were collected. All field data were entered on standard AHS forms/logs. Field notes, photographs, maps, correspondence, and other records generated during this study are on file at the AHS office in Cheney.

RESULTS

The cultural resources survey for the I-405 I-90 to NE 6th Street Improvements Project resulted in identification of one property more than 45 years old, a previously unrecorded segment of the Burlington Northern Santa Fe (BNSF) railroad that crosses Zone 69. The BNSF rail line was determined eligible for listing in the NRHP in 2007. No built environment structures 45 years or older were identified through survey or review of King County Assessor's records. No precontact or historic-era archaeological resources were identified.

Sixty-seven shovel tests were excavated throughout the project resource evaluation area. Unrestricted zones, paved areas, impenetrably vegetated areas, and slopes over 30 percent were not shovel tested. Excavation depths ranged from 23 to 300 centimeters below surface (cmbs) when factors such as cobbles, water, or compact sediments prevented further excavation. Sediments generally consisted of sand, loam, and clay with varying amounts of unsorted pebbles and cobbles. These sediments are consistent with mapped Pleistocene glacial drift in the region. No historic or precontact cultural materials were located during shovel testing. Shovel testing results are discussed below by zone. Appendix A presents shovel test data. Appendix B provides shovel test profile drawings and representative shovel test photographs are presented in Appendix C. Appendix D contains a site form for the abandoned segment of the NRHP eligible BNSF railroad bed that crossed Zone 69.

Zone 69

Road Prism Fill zone 69 comprises two areas located along I-405 south of SE 8th Street (Figures 7 and 8). Both considerably disturbed as a result of highway construction. A total of 28 shovel tests were excavated across Zone 69 (see Appendix A).

Area 1: Area 1 consists of the majority of the median between north- and south-bound I-405 lanes. Area 1 is on the steep, west-facing slope of a large glacial drift remnant of Puget Lowland fill (Booth 1994) (Figure 9). Both north and south I-405 corridors, as well as an abandoned segment of BNSF Railroad bed (Figure 10) are cut into the side of this hill. Kelsey Creek and Hixson/Trail Creek also traverse this zone. Steep cuts in the slope and impenetrable vegetation prevented shovel testing in many areas. Twenty-four shovel tests were excavated in Area 1 (see Figures 7 and 8). Five of these were excavated into road prism fill and terminated when dense gravels prevented further excavation. Excavations of the remaining 19 shovel tests exposed relatively undisturbed glacial drift sediments. Most shovel tests were terminated when dense cobbles prevented further excavation. Shovel test 613E 1870N reached a depth of 300 cmbs and revealed pebbly loamy sands with pockets of silty clay.

Area 2: This area is located immediately east of the north-bound exit ramp to SE 8th Street and overlooks the confluence of Hixson and Kelsey Creek to the northeast (see Figure 8). A layer of fill gravels was observed beneath the topsoil (Figure 11). Four shovel tests were excavated into road prism fill; all were terminated when dense gravels prevented further excavation.

Much of Zone 69 is heavily disturbed by road and railroad construction. Testing has confirmed that these disturbed areas are covered by varying thicknesses of fill and demonstrated the presence of deep, intact subsurface deposits in areas that are relatively undisturbed. Excavations exposed a composite of loams, sands, and clays mixed with unsorted pebbles and cobbles that generally increase with depth. Areas showing the least amount of disturbance consist almost exclusively of loams and sands with a few small pockets of silty clays appearing around 60 cmbs. This is consistent with the Kitsap silt loams formed in lacustrine sediments overlying Pleistocene glacial drift sediments mapped in this area (WADNR 2016; Soils Survey Staff 2016).

Shovel testing identified no evidence of significant cultural materials. Although there is evidence of intact glacial sediments, the steep slope suggests archaeological site potential is low.

Northern Pacific Railway Lake Washington Beltline

A short segment of the historic Northern Pacific (now BNSF) Railway railroad bed crosses Zone 69. The line was constructed in 1891 as a spur line connecting the Bellevue area to the major Northern Pacific line in Renton and initially served as a means of transporting coal and iron from mines east of Puget Sound to industrial plants, most importantly, to the steel mill at Kirkland (Allen and O'Brien 2007). The railroad and its associated features were determined eligible for listing in the NRHP by DAHP in 2007. The segment of the railroad within the I-405 corridor was subsequently abandoned and the rails and ties removed, leaving nothing but the ballast. The Wilburton Tunnel, part of the railroad line which once crossed the south-bound I-405 corridor, has also been removed (Figure 12). This abandoned segment was recorded on a Washington State Archaeological Inventory form (see Appendix D) and assigned the number 45KI1274.

Zone 72

Fill zone 72 consists of two areas located west of south-bound I-405 overlooking Mercer Slough to the west (see Figure 7). The zone is bounded by I-405 to the east and the remnants of the abandoned BNSF railroad bed to the west. Eleven shovel tests were excavated in Zone 72 (see Appendix A).

Area 1: This area contains a water retention pond with leveled spoils (Figure 13). Much of it is heavily disturbed. There is a layer of gravel on the surface and dense vegetation in the southern end. Four shovel tests were placed around the pond. Shovel test 512E 1517N, north of the pond, was excavated through fill and terminated on asphalt. The other three shovel tests exposed glacial drift sediments and were terminated when either dense cobbles or large tree roots prevented further excavation.

Area 2: This area contains dense vegetation in the northern half and short grasses in the southern half (Figure 14). This is also a Fill zone, although it was outside the zone potential mapping area (Jones 2015). Seven shovel tests were excavated here through glacial drift sediments until roots, dense cobbles, or compact sediments prevented further excavation.

Zone 72 consists primarily of sandy loam and occasional pockets of clay between 55 and 65 cmbs, with a mixture of unsorted pebbles and cobbles that generally increase with depth. This area is mapped as Kitsap silt loams formed in lacustrine sediments on slopes of 2 to 8 percent in Area 1 and Alderwood gravelly sandy loams formed in glacial drift over dense glaciomarine deposits on slopes of 15 to 30 percent in Area 2 (WADNR 2016; Soils Survey Staff 2016). Excavation across most of Zone 72 exposed glacial drift more similar to the Alderwood Series. Gravel concentrations exposed during testing generally did not exceed 40 percent, although shovel test 542E 1118N yielded approximately 70 percent gravels. Shovel testing identified no

evidence of significant cultural materials. Zone 72 is on a hillslope likely terraced during road construction. There is no evidence for intact Holocene-age sediments and archaeological potential is low.

Zone 74

Zone 74 is a Restricted zone situated in the median between north-bound and south-bound I-405 (see Figure 8). This zone comprises the narrow Hixson/Trail Creek floodplain and steep slopes to the east. A culvert runs east-west across the median. Dense vegetation and steep slopes prevented shovel testing throughout most of this area (Figures 15 and 16). Four shovel tests were placed along the western edge of this zone (see Appendix A). Excavations exposed relatively undisturbed glacial drift sediments, sandy loams towards the southern end and sandy clays to the north. Shovel tests were terminated in dense cobbles or compact sediments. This area is mapped as Kitsap silt loams formed in lacustrine sediments on slopes of 15 to 30 percent and Pleistocene glacial drift (WADNR 2016). Shovel testing found no evidence of significant cultural materials. Steep slopes suggest a low potential for intact subsurface archaeological materials.

Zone 76

Fill zone 76 comprises a water retention pond just north of a wetland and west of south-bound I-405 (see Figure 8). Dense vegetation in the southern portion and gravels across the rest of the zone prevented shovel testing in most areas (Figure 17). Three shovel tests were placed along the eastern edge of this zone (see Appendix A). Shovel testing confirmed the presence of modern fill, but compact sediments and dense gravels limited the depth of hand excavations. Geographically, this area is located on the edge of Mercer Slough, which was once a bay of Lake Washington. Prior to development, Zone 76 most likely contained mucky peat sediments similar to those found in the nearby mapped Seattle Muck (WADNR 2016; Soils Survey Staff 2016). Shovel testing found no evidence of significant cultural materials. Archaeological site potential is low.

Zone 78

Zone 78 was designated a Restricted zone due to the presence of Kelsey Creek and the possibility of intact Holocene sediments (WADNR 2016; Soils Survey Staff 2016). It is located east of the north-bound I-405 exit ramp onto SE 8th Street (see Figure 8). Kelsey Creek and Hixson Creek bound the northern and eastern edges of the zone. Extensive blackberry bushes and steep slopes prevented shovel testing in many areas, particularly along Kelsey Creek (Figure 18). Four shovel tests were excavated in this zone (see Appendix A). Shovel test 439E 2522N, just south of SE 8th Street, was excavated through road prism fill and terminated at concrete. The remaining three shovel tests were excavated through glacial drift sediments and terminated on dense cobbles. Shovel test 483E 2452N contained chunks of concrete and shovel test 491E 2469N contained pieces of non-diagnostic ferrous metal, indicating disturbed sediments.

Testing confirmed the presence of disturbed glacial sediments in most of the shovel tests and revealed modern fill overlying concrete on the terrace to the north which overlooks Kelsey Creek. Excavations exposed a composite of loam, sand, and clay mixed with a moderate amount of sorted and unsorted pebbles and cobbles throughout the strata. Zone 78 is mapped as Bellingham silt loam formed in loess, alluvium, and lacustrine sediments on slopes of 0 to 3 percent, Alderwood gravelly sandy loam formed in glacial drift on slopes of 15 to 30 percent, and urban fill area (WADNR 2016; Soils Survey Staff 2016). While the zone was designated Restricted, shovel testing identified no evidence of significant cultural materials. Shovel testing results support reassigning zone 78 as an Unrestricted zone. Given the steep slopes and heavy disturbance, archaeological site potential is low.

Zone 79

Heavily disturbed Fill zone 79 is located southeast of the intersection of SE 8th Street and 118th Avenue SE (see Figure 8). It is composed almost entirely of a water retention pond and surrounding gravels (Figure 19). One shovel test was excavated in this zone through fill before terminating on concrete (Appendix A). Geographically, this area is located on the edge of Mercer Slough. Mapped as urban land prior to development, Zone 79 most likely contained muck similar to the nearby mapped Seattle Muck (WADNR 2016; Soils Survey Staff 2016). Shovel testing found no evidence of significant cultural materials. Archaeological site potential is low.

Zone 80

Zone 80 is a Fill zone, a small turnout located southeast of the intersection of the I-405 exit ramp with SE 8th Street (see Figure 8). This zone overlooks Kelsey Creek to the south and is covered by compacted gravels. No shovel tests were excavated in Zone 80.

Zone 81

Road Fill Prism zone 81 comprises four separate areas from SE 8th Street (see Figure 8) north to just north of NE 6th Street (Figures 20 and 21). The majority of Zone 81 is paved. Previous investigations identified Holocene-age sediments capped by two to 10 feet of fill in bore holes just east of the project area along NE 4th Street (Boswell et al. 2011:4-28-4-29 and Figure 4-9) (see Figure 21). However, no Holocene surfaces were identified during these investigations. Sixteen shovel tests were excavated throughout Zone 81 (see Appendix A).

Area 1: This is a long narrow area parallel and adjacent to the east edge of north-bound I-405 (see Figure 20). Dense vegetation and steep slopes limited shovel test excavations to immediately along the edge of highway pavement (Figure 22). There is a small runoff channel about a meter east of the edge of the pavement. Eight shovel tests were excavated through fill

and terminated on dense cobbles, in water, or on asphalt. Modern refuse was observed in three shovel tests, indicating disturbance.

Area 2: This small area is located between I-405 and the onramp at SE 8th Street (see Figure 20). Slope, vegetation, and buried utility lines determined shovel test placement. Two shovel tests were excavated through fill and terminated on dense cobbles.

Area 3: This area is located along Main Street on either side of I-405 (see Figures 20 and 21). It comprises small landscaped areas adjacent to parking lots (Figure 23). This is a Fill zone that was not included in the zone potential mapping. Buried utility and sprinkler lines determined shovel test placement. Four shovel tests were excavated through fill along Main Street and terminated on dense cobbles. Modern trash was observed in three of the shovel tests, indicating disturbance.

Area 4: This area is located just west of 116th Street in the parking lot of the Impact HUB Bellevue building (see Figure 21). It comprises a small landscaped area (Figure 24). This is a Fill zone that was not included in the zone potential mapping. Steep slopes and buried utility lines determined shovel test placement. Two shovel tests were excavated through fill and terminated on dense cobbles.

Testing confirmed zone 81 is covered with fill of varying thicknesses. Dense gravels or water prevented excavations below the fill. Zone 81 is mapped as urban land overlying Pleistocene glacial drift (WADNR 2016; Soils Survey Staff 2016). Archaeological site potential is low.

Zone 82

Zone 82 is an Unrestricted zone located just east of I-405 on ramp at SE 8th Street (see Figure 20). This area was not tested.

Summary

Of the estimated 150 shovel tests proposed for all non-paved surfaces, a total of 67 shovel tests were excavated. No cultural resources were identified during shovel testing. Dense vegetation, steep slopes, standing water, and buried utility lines prevented excavation in many areas. Compact sediments, dense gravels, and concrete impeded hand excavations in most locations and often prevented hand augering beyond 100 cmbs and beyond the extent of modern fill. As a result, shovel testing in Fill zones often did not penetrate the full thickness of the fill, which could extend as deep as 30 feet (Humphres 1948). However, the potential for Holocene age deposits (i.e., Bellingham silt loam, Seattle and Tukwila mucks, and Norma sandy loam) where archaeological materials could occur is limited to the narrow Kelsey Creek floodplain just south of SE 8th Street (see Figure 8) and the area between Main Street and NE 6th Street (see Figure 21). Shovel tests in those areas identified no Holocene surfaces. Sediments in most areas along the I-405 corridor consist of soils formed in glacial parent materials, where the potential for

archaeological materials is generally limited to the upper one meter. Most of I-405 was constructed on steep hillslopes and the majority of the I-405 corridor is heavily disturbed by construction activities, also reducing the potential for intact subsurface cultural resource materials. Shovel testing identified no evidence for archaeological materials. No further shovel testing/hand augering is recommended.

A single cultural resource was identified in the project area, the Northern Pacific Railway (now BNSF). An abandoned segment of the resource crosses the project APE (site 45KI1274). The line has been determined eligible for listing in the NRHP under Criterion A and must be avoided. If the resource cannot be avoided, measures designed to mitigate adverse effect will be required.

MANAGEMENT SUMMARY

Cultural resources survey for the I-405: I-90 to NE 6th Street Improvements Project identified a single cultural resource, a segment of the Northern Pacific Railway (now BNSF) railroad bed (site 45KI1274) (see Figures 1, 7, and 8 and Appendix D). This site, a segment of a railroad line determined eligible for listing in the NRHP in 2007, must be avoided. If the railroad bed cannot be avoided, mitigation measures must be determined by WSDOT in consultation with DAHP and other appropriate parties. Shovel testing identified no cultural resources. Extensive disturbance related to I-405 construction (i.e., massive cuts and fills) and limited Holocene-era sediments in the predominantly side slope resource evaluation area result in very low probability for archaeological sites. No further cultural resources investigation is recommended.

In the event that potentially significant cultural materials are identified during project activities, work should be halted in the immediate vicinity of the find and a professional archaeologist notified to assess the resource. This document should be submitted by WSDOT to the appropriate review agencies, including DAHP, and other interested parties for review and comment prior to the initiation of any land altering activities.

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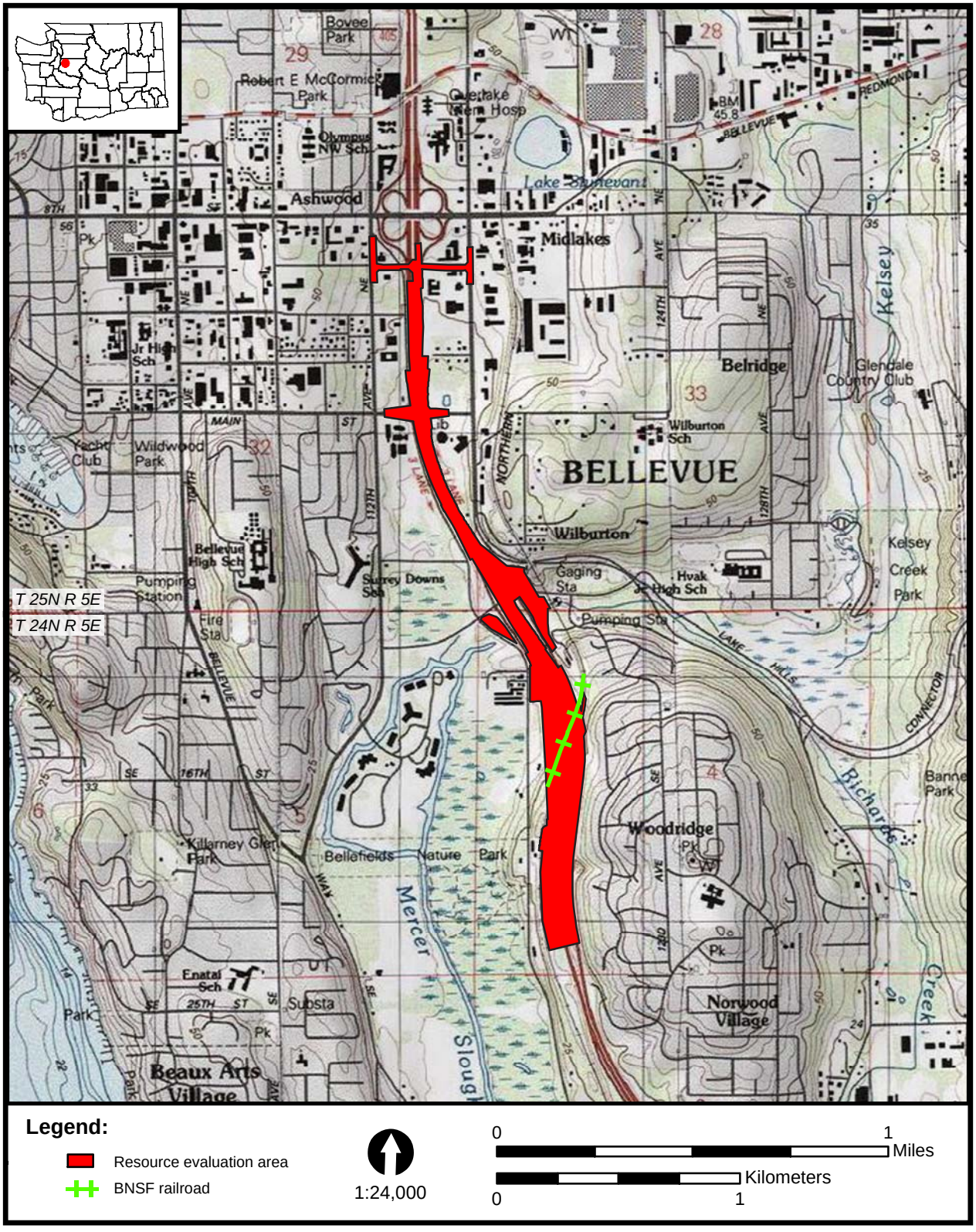

Figure 1. *Topographic map showing WSDOT's I-405 I-90 to Northeast 6th Street Improvements project and a segment of the Burlington Northern Santa Fe Railroad (site 45KI1274) (adapted from USGS topographic quadrangle Mercer Island, Wash., 1950 photorevised 1968).*

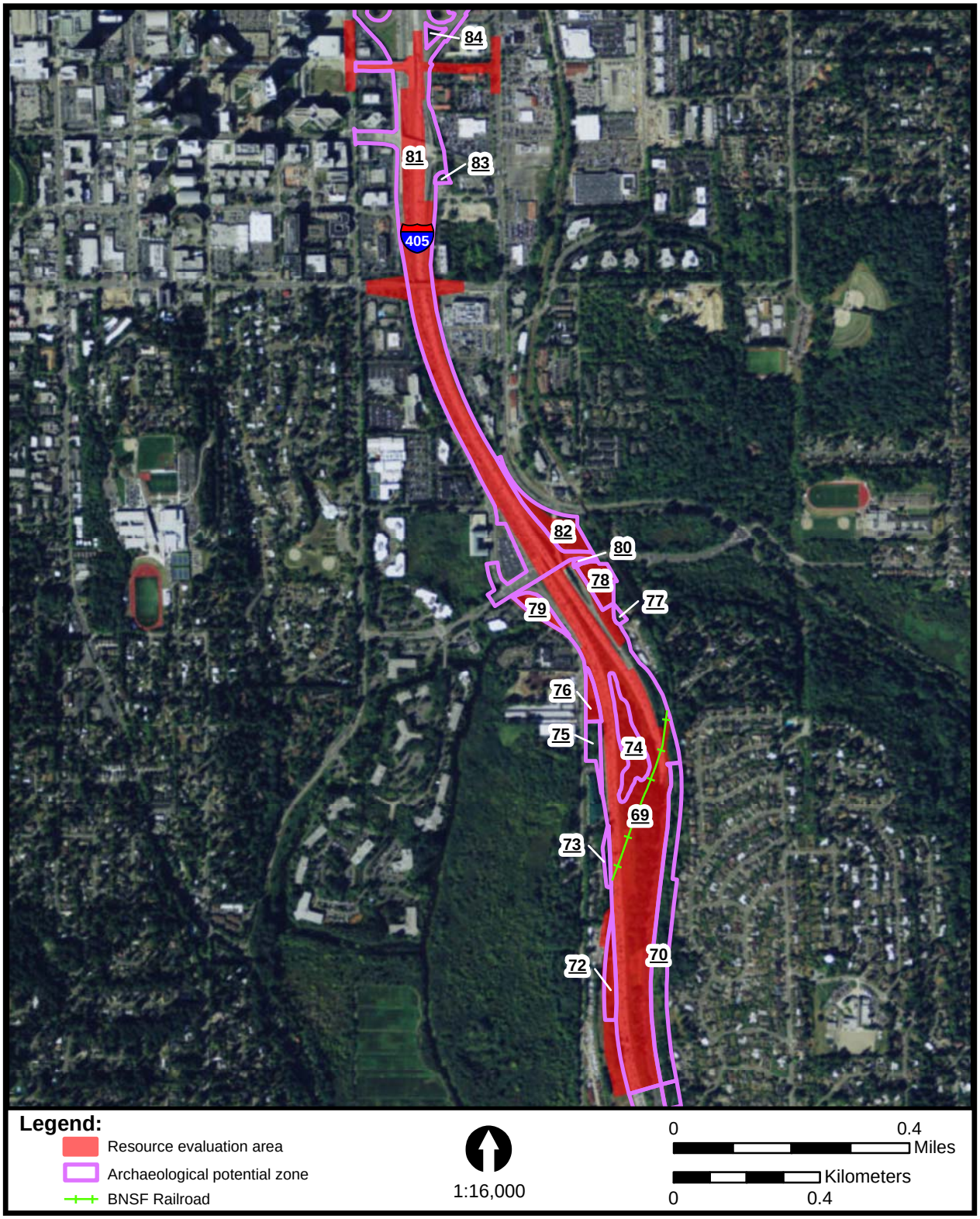

Figure 2. *Aerial photograph showing the archaeological potential zones (Jones 2015) and a segment of the Burlington Northern Santa Fe Railroad (site 45KI1274).*

Figure 3. *View of the now abandoned Burlington Northern Santa Fe Railroad bed (site 45KI1274), view to the south-southwest.*

Figure 4. *Photograph showing excavations at one of the water retention ponds, view to the northwest.*

Figure 5. *Photograph showing one of the water retention ponds. Note how I-405 is cut into the side of the hill, view to the south.*

Figure 6. *Photograph showing a cut slope covered by impenetrable blackberry bushes, view to the south-southeast.*

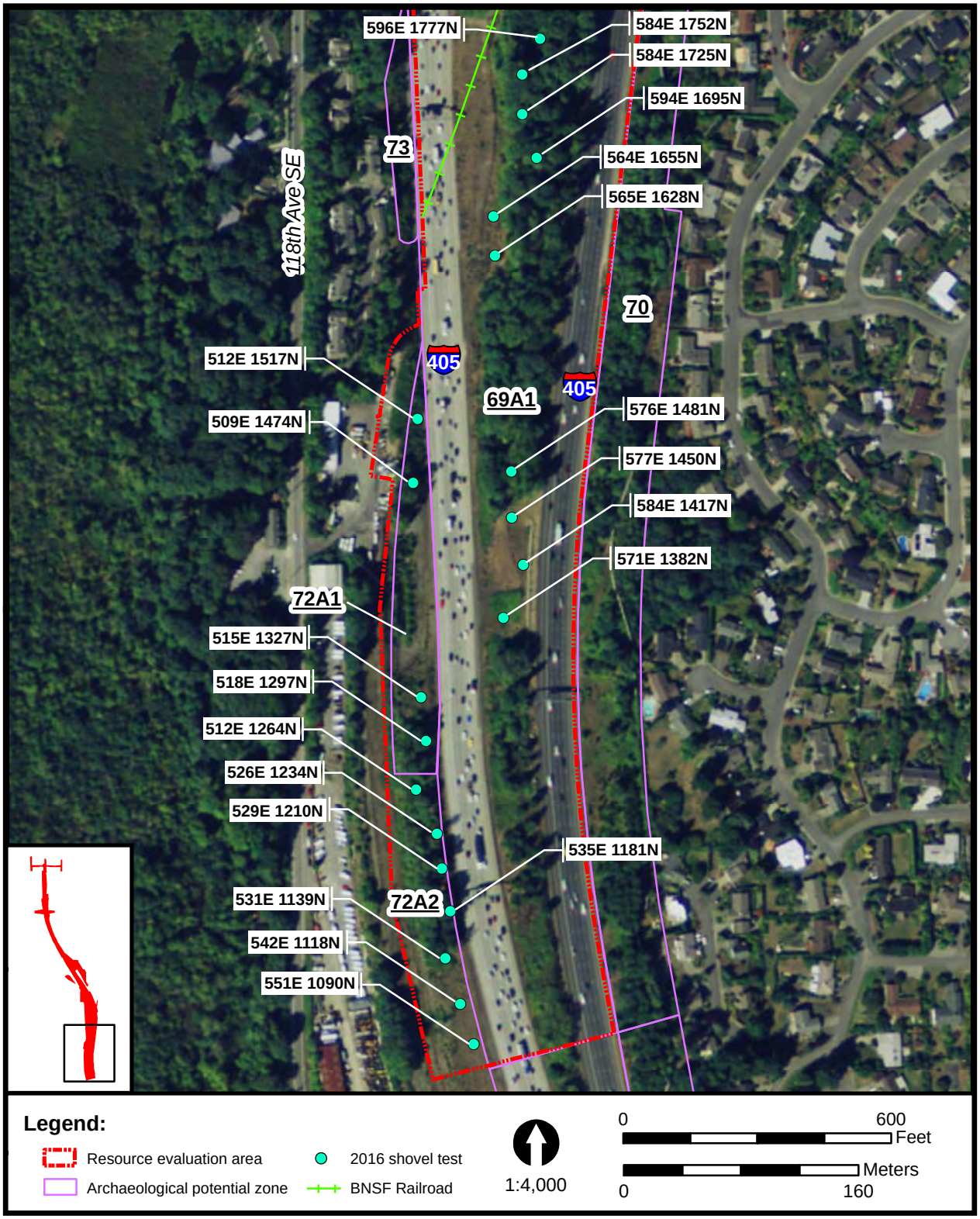

Figure 7. *Aerial photograph detail showing locations of excavated shovel tests in Zones 69-72 and a segment of the Burlington Northern Santa Fe Railroad.*

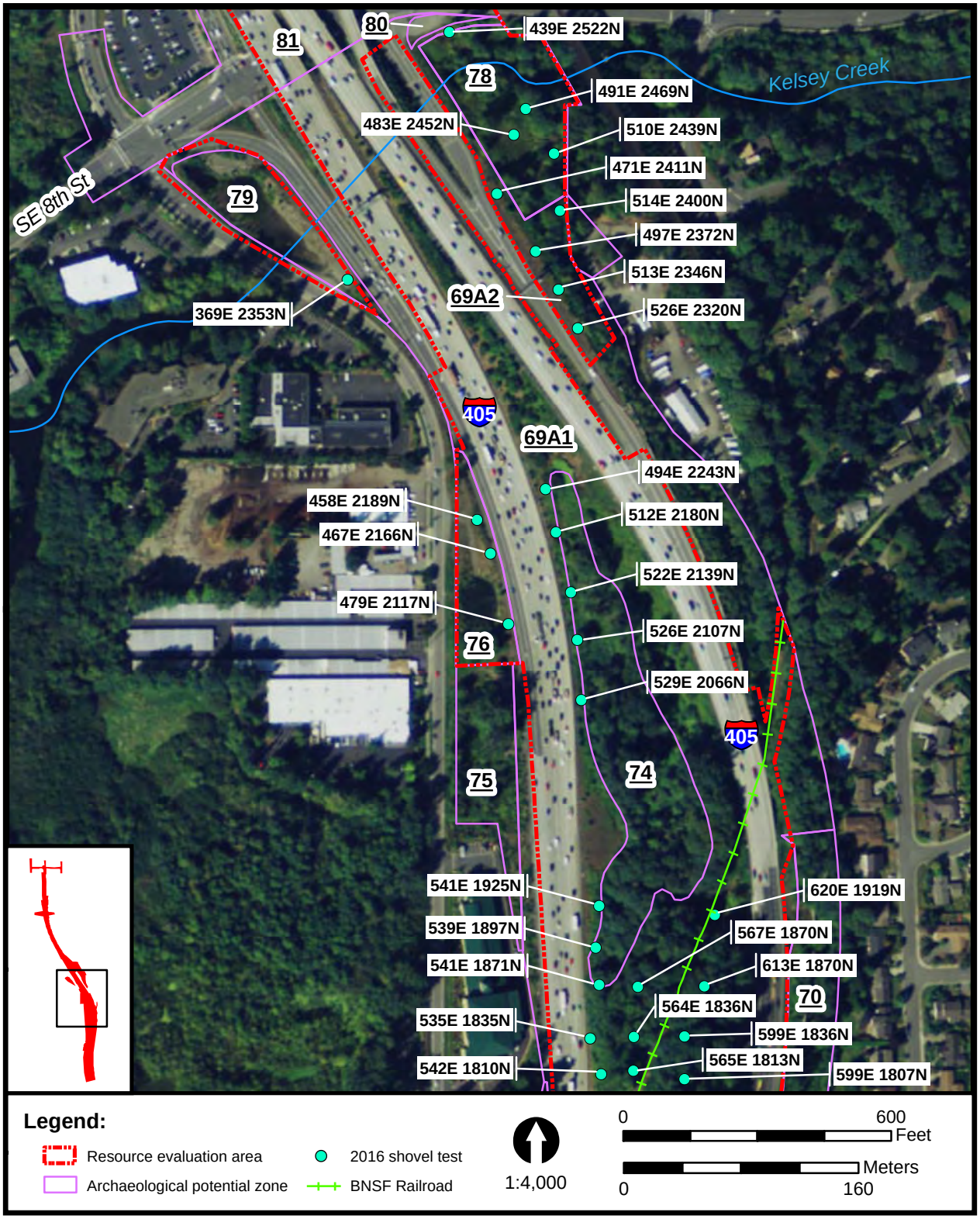

Figure 8. *Aerial photograph detail showing locations of excavated shovel tests in Zones 70-81 and a segment of the Burlington Northern Santa Fe Railroad.*

Figure 9. *Shovel test excavation in Zone 69 A1, view to the northeast. Note the steep slope.*

Figure 10. *Abandoned BNSF railroad bed (site 45KI1274) in Zone 69 A1, view to the northeast. Note the deep cuts in the hillside.*

Figure 11. *Zone 69 A2, view to the northwest. Note gravel layer on slope under grass mat.*

Figure 12. *Photograph showing a segment of the abandoned railroad bed overlooking the former location of the Wilburton Tunnel, view to the southwest.*

Figure 13. *Zone 72 A1 fenced water retention area, view to the north. Note gravel on surface.*

Figure 14. *Zone 72 A2 terraced landscape, view is to the north.*

Figure 15. *Zone 74, view to the south-southeast. Hixson-Trail Creek is located in the dense vegetation.*

Figure 16. *The north end of Zone 74, view to the north. Note the steep slope and impenetrable vegetation.*

Figure 17. *Overview showing the water retention pond in Zone 76, view to the south.*

Figure 18. *Zone 78 overview, view to the southeast. Note the steep slopes and impenetrable blackberry bushes.*

Figure 19. *Zone 79, note the water retention pond in the background, view to the northwest.*

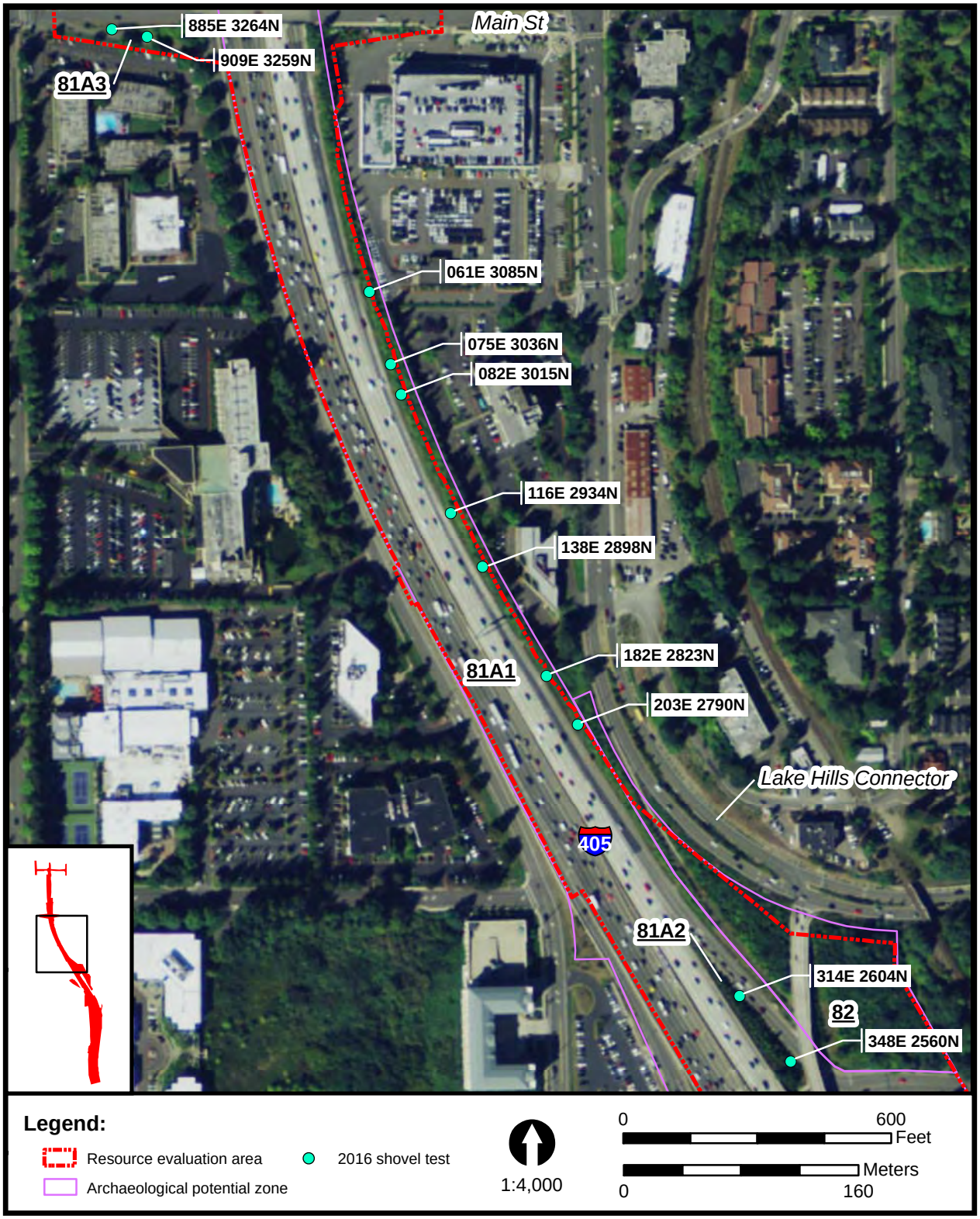

Figure 20. *Aerial photograph detail showing locations of excavated shovel tests in Zones 81 and 82.*

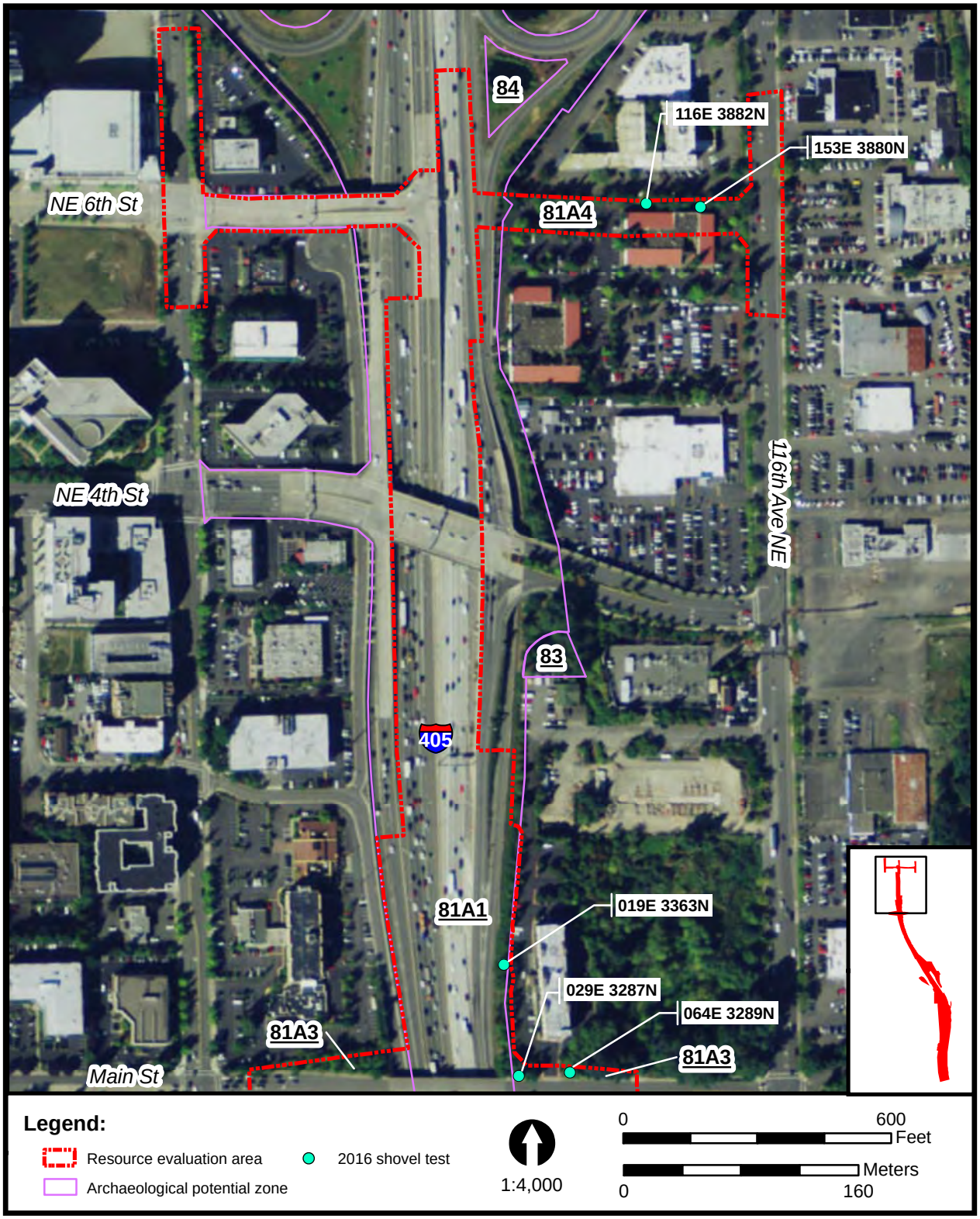

Figure 21. *Aerial photograph detail showing locations of excavated shovel tests in Zones 81-84.*

Figure 22. *Zone 81 A1, view to the northwest. Note runoff along edge of pavement and dense vegetation.*

Figure 23. *Shovel test excavations on NE Main Street in Zone 81 A3, view to the east. Note locations of buried utility lines denoted with orange spray paint.*

Figure 24. *Zone 81 A4 landscaping, view to the east.*

Appendix A

Shovel Test Data

Table A.1. I-405 Renton to Bellevue, Shovel Test Data, by Zone.

Zone	Test No.	Depth	Facies	Sediment Description	Interpretation	Termination
69 A1	494E 2243N	0-66	sandy clay	gray sandy clay, 30% rounded cobbles	glacial sediments	
		66-68	clay	mottled gray and brown clay, 30% rounded cobbles	glacial sediments	rock impasse
69 A1	512E 2180N	0-2	sandy loam	gray brown, sandy loam, organic matter, 20-25% unsorted sub-angular pebbles. many roots and some modern refuse	disturbed glacial sediments	
		2-45	loamy sand w/ silty clay	gray loamy sand with small lenses of gray silty clay, 40-50% unsorted sub-angular/sub-rounded pebbles and cobbles	glacial sediments	
		45-50	silty clay	light gray silty clay, 30-40% unsorted sub-rounded pebbles and cobbles	glacial sediments	rock impasse
69 A1	514E 2400N	0-37	sandy clay	very dark brown sandy clay, 30% sub-rounded cobbles	glacial sediments	rock impasse
69 A1	529E 2066N	0-10	sandy loam	grayish brown, sandy loam, organic matter, 20-25% unsorted sub-angular pebbles and cobbles	glacial sediments	
		10-50	loamy sand w/ silty clay	gray loamy sand with lenses of gray silty clay, 30-45% unsorted sub-angular/sub-rounded pebbles and cobbles increasing with depth	glacial sediments	
		50-59	silty clay	light gray silty clay, 30% unsorted sub-rounded pebbles and cobbles	glacial sediments	rock impasse
69 A1	535E 1835N	0-120	clay	dark grayish brown clay, few pebbles	glacial sediments	water
69 A1	541E 1925N	0-10	loamy sand	dark brown loamy sand, 60-70% unsorted angular/sub-rounded pebbles	glacial sediments	
		10-65	sandy loam	light brown sandy loam, 60% unsorted angular/rounded pebbles and cobbles	glacial sediments	
		65-77	silty clay	compacted gray silty clay, <5% pebbles	glacial sediments	
		77-93	loamy sand	light brown loamy sand, 50-80% moderately sorted rounded/sub-rounded pebbles and cobbles that increase with depth	glacial sediments	rock impasse
69 A1	542E 1810N	0-10	sandy loam	dark brown sandy loam, 40-50% unsorted sub-angular-sub-rounded pebbles, heavy roots	fill	
		10-100	sandy loam	light brown sandy loam with inclusions of gray silty clay, 50-80% unsorted sub-angular/sub-rounded pebbles that increase with depth	fill	compact sediments
69 A1	564E 1655N	0-5	sandy loam	dark brown sandy loam, 10-20% unsorted sub-angular/sub-rounded pebbles	fill	
		5-60	loamy sand	light brown loamy sand, 30-50% unsorted sub-rounded pebbles	fill	
		60-70	loamy sand w/ silty clay	light brown loamy sand with small lenses of gray silty clay that increase with depth, roughly 50% unsorted rounded pebbles and cobbles	fill	rock impasse and water

Table A.1. I-405 Renton to Bellevue, Shovel Test Data, by Zone.

Zone	Test No.	Depth	Facies	Sediment Description	Interpretation	Termination
69 A1	564E 1836N	0-27	loamy sand	dark brown loamy sand, 5% sub-rounded pebbles	glacial sediments	
		27-119	sand	brown sand, 20% pebbles	glacial sediments	rock impasse
69 A1	565E 1628N	0-10	sandy loam	dark sandy loam, 20-30% unsorted angular/ sub-rounded pebbles and one boulder	fill	
		10-60	loamy sand w/ silty clay	light brown loamy sand with pockets of gray silty clay and red sand, disturbed sediments, 30-60% unsorted sub-angular/rounded pebbles and cobbles	fill	
		60-75	loamy sand w/ silty clay	light brown loamy sand with pockets of gray silty clay that increase with depth, 80-90% pebbles and cobbles	fill	rock impasse and water
69 A1	565E 1813N	0-60	silt loam	mottled gray and brown silt loam	glacial sediments	
		60-135	silt	brown silt, pebbles increase with depth	glacial sediments	rock impasse
69 A1	567E 1870N	0-19	loamy sand	dark brown loamy sand, very few rocks, some minor root intrusion	glacial sediments	
		19-128	sand	light gray brown sand, 20% pebbles	glacial sediments	loose sand
69 A1	571E 1382N	0-16	sandy clay	gray brown sandy clay, 20% cobbles	glacial sediments	
		16-83	sand	light gray sand, 20% pebbles and cobbles	glacial sediments	
		83-91	sand	dark gray brown sand, 30% pebbles and cobbles	glacial sediments	rock impasse
69 A1	576E 1481N	0-61	loamy sand	light grayish brown loamy sand, compact pebbles	fill	rock impasse
69 A1	577E 1450N	0-55	sandy loam	dark gray brown sandy loam with high pebble content	fill	water
69 A1	584E 1417N	0-12	sandy clay	gray brown sandy clay, many roots and organics	disturbed glacial sediments	
		12-62	sandy clay	light gray brown sandy clay, high rock content	disturbed glacial sediments	rock impasse
69 A1	584E 1725N	0-10	sandy loam	dark brown, sandy loam, organic matter, 10-20% unsorted rounded/sub-rounded pebbles	glacial sediments	
		10-50	sandy loam	light brown sandy loam, 20-40% unsorted sub-rounded pebbles and cobbles	glacial sediments	
		50-70	silty loam	olive gray silty loam, 10-20% unsorted rounded/sub-rounded pebbles	glacial sediments	rock impasse

Table A.1. I-405 Renton to Bellevue, Shovel Test Data, by Zone.

Zone	Test No.	Depth	Facies	Sediment Description	Interpretation	Termination
69 A1	584E 1752N	0-10	sandy loam	dark brown sandy loam, charcoal present, <5% unsorted sub-rounded pebbles	glacial sediments	
		10-63	sand	brown sand, 40-60% pebbles and cobbles increasing with depth, heavy root masses	glacial sediments	
		63-68	silty clay	gray silty clay, 70-80% rounded/sub-rounded cobbles and boulders	glacial sediments	rock impasse
69 A1	594E 1695N	0-20	sandy loam	dark brown, sandy loam, organic matter, <10% unsorted sub-rounded pebbles, one granite boulder	glacial sediments	
		20-120	loamy sand	light brown loamy sand, 30-40% unsorted sub-rounded pebbles and cobbles	glacial sediments	
		120-150	silty loam w/ sand	olive gray silty loam with pockets of red-brown sand, 20-30% rounded pebbles and cobbles	glacial sediments	rock impasse
69 A1	596E 1777N	0-10	sandy loam	dark brown sandy loam, 10-15% unsorted sub-angular/sub-rounded pebbles	glacial sediments	
		10-50	loamy sand	light brown loamy sand, 10-15% unsorted sub-angular sub-rounded pebbles	glacial sediments	
		50-225	sand	light brown sand, 5-10% sorted rounded pebbles	glacial sediments	rock impasse
69 A1	599E 1807N	0-20	sandy loam	dark brown sandy loam, 10-15% unsorted sub-angular-sub-rounded pebbles	glacial sediments	
		20-60	sandy loam	light reddish brown sandy loam, 10-15% unsorted sub-angular-sub-rounded pebbles	glacial sediments	
		60-200	sand	light brown sand, 5-10% sorted rounded pebbles	glacial sediments	rock impasse
69 A1	599E 1836N	0-8	loam	extremely organic matter loam, dark brown, 50% charcoal burn, <10% unsorted sub-angular/sub-rounded pebbles	glacial sediments	
		8-100	loamy sand	light brown loam sand, 40-80% sub-rounded/rounded gravels increasing with depth, two boulders and charcoal noted	glacial sediments	rock impasse
69 A1	613E 1870N	0-10	sandy loam	dark brown sandy loam, organic matter, charcoal present, <10% sub-angular/sub-rounded pebbles	glacial sediments	
		10-280	loamy sand	light brown loamy sand, <10% sub-rounded/rounded pebbles	glacial sediments	
		280-300	loamy sand w/ silty clay	light brown loamy sand, 10-15% sub-rounded/rounded pebbles, clasts of gray silty clay increasing with depth	glacial sediments	mechanical limitations

Table A.1. I-405 Renton to Bellevue, Shovel Test Data, by Zone.

Zone	Test No.	Depth	Facies	Sediment Description	Interpretation	Termination
69 A1	620E 1919N	0-18	sandy loam	light brown sandy loam, 10% sub-angular pebbles and cobbles	disturbed glacial sediments	
		18-48	sandy loam	gray sandy loam, 15% sub-angular pebbles and cobbles	disturbed glacial sediments	
		48-62	sandy loam	dark brown sandy loam, 15% sub-angular pebbles and cobbles	disturbed glacial sediments	
		62-120	sand	black sand, 30% sub-angular pebbles and cobbles	disturbed glacial sediments	rock impasse
69 A2	471E 2411N	0-12	sandy clay	black sandy clay, 30% small rounded pebbles	fill	
		12-55	clayey sand	gray clayey sand, 40% rounded pebbles and cobbles	fill	rock impasse
69 A2	497E 2372N	0-13	sandy loam	dark brown sandy loam, 10% sub-rounded pebbles, top soil for replanted vegetation	fill	
		13-48	sandy loam	grayish brown sandy loam, 20% sub-rounded pebbles, compact	fill	rock impasse
69 A2	513E 2346N	0-10	sandy loam	dark brown, sandy loam, organic matter, 10% sorted sub-angular pebbles	fill	
		10-72	sandy loam	gray sandy loam, loam increases with depth, gradual change to gray silty clay, 30-40% unsorted pebbles and cobbles	fill	rock impasse
69 A2	526E 2320N	0-14	sandy clay	dark gray sandy clay, 10% rounded pebbles	fill	
		14-72	clayey sand	gray clayey sand, 40% rounded pebbles and cobbles	fill	rock impasse
72 A1	509E 1474N	0-80	sandy loam	dark brown sandy loam with roots, 5% sub-angular pebbles	fill	rock impasse
72 A1	512E 1517N	0-35	loamy sand	gray loamy sand, organic matter root mat, 35% unsorted sub-angular pebbles	fill	asphalt
72 A1	515E 1327N	0-8	silty sand	brown silty sand, 20% pebbles	glacial sediments	
		8-50	sandy loam	light brown sandy loam, 30% cobbles	glacial sediments	rock impasse
72 A1	518E 1297N	0-12	sandy loam	black sandy loam, few rocks, many small roots and organics	glacial sediments	
		12-59	sand	brown loose sand, a few small rounded pebbles	glacial sediments	roots
72 A2	512E 1264N	0-10	sandy loam	dark brown sandy loam, 15-20% unsorted sub-angular-rounded pebbles	glacial sediments	
		10-100	loamy sand	light orange-brown loamy sand (nearby Madrone tree) 25-30% unsorted sub-rounded pebbles, <5% cobbles	glacial sediments	rock impasse

Table A.1. I-405 Renton to Bellevue, Shovel Test Data, by Zone.

Zone	Test No.	Depth	Facies	Sediment Description	Interpretation	Termination
72 A2	526E 1234N	0-5	sandy loam	dark brown, sandy loam, organic matter, few pebbles	glacial sediments	
		5-55	sandy loam	light brown sandy loam, 20-40% unsorted round/sub-rounded pebbles and cobbles that increase with depth	glacial sediments	
		55-60	silty clay	gray silty clay, heavily compacted, <5% pebbles, decomposing granite present	glacial sediments	compact sediments
72 A2	529E 1210N	0-31	loamy sand	dark brown loamy sand with many roots and organics, 20% sub-rounded pebbles	glacial sediments	roots
72 A2	531E 1139N	0-15	sandy loam	dark grayish brown sandy loam, 20% sub-rounded pebbles and cobbles	disturbed glacial sediments	
		15-57	loamy sand	light gray loamy sand, 30% sub-angular/sub-rounded cobbles	disturbed glacial sediments	rock impasse
72 A2	535E 1181N	0-15	sandy loam	very dark brown sandy loam, 10-15% unsorted sub-angular-sub-rounded pebbles and cobbles, modern refuse	disturbed glacial sediments	
		15-65	loamy sand	orange loamy sand (possible from nearby Medrona trees), 30-40% unsorted sub-rounded pebbles and cobbles, modern refuse	disturbed glacial sediments	
		65-73	clay	gray silty clay, heavily compacted, <5% unsorted sub-rounded pebbles and cobbles	disturbed glacial sediments	compact sediments
72 A2	542E 1118N	0-8	sandy loam	dark brown organic sandy loam, 10-20% unsorted sub-angular pebbles and cobbles, modern refuse	disturbed glacial sediments	
		8-37	loamy sand	light grayish brown, compact loamy sand, >70% sub-angular to sub-rounded unsorted pebbles and cobbles	disturbed glacial sediments	rock impasse
72 A2	551E 1090N	0-9	sandy clay	organic, dark grayish brown sandy clay, 20% sub-angular pebbles and cobbles	disturbed glacial sediments	
		9-43	sandy loam	gray brown sandy loam, 30% sub-rounded pebbles and cobbles, compact	disturbed glacial sediments	rock impasse
74	522E 2139N	0-58	sandy clay	dark gray sandy clay, 30% rounded cobbles	glacial sediments	rock impasse
74	526E 2107N	0-34	sandy clay	dark gray sandy clay, 30% rounded cobbles	glacial sediments	compact sediments
74	539E 1897N	0-31	sandy loam	grayish brown sandy loam, 10% pebbles	glacial sediments	
		31-47	sandy loam	light brown sandy loam, 10% pebbles	glacial sediments	
		47-87	sandy loam	gray sandy loam, 60% pebbles and cobbles	glacial sediments	compact sediments

Table A.1. I-405 Renton to Bellevue, Shovel Test Data, by Zone.

Zone	Test No.	Depth	Facies	Sediment Description	Interpretation	Termination
74	541E 1871N	0-10	sandy loam	dark brown sandy loam, 30-40% unsorted pebbles, angular, roots and organic materials	glacial sediments	
		10-45	sandy loam	light brown sandy loam, 40% unsorted angular/sub-angular pebbles, heavy roots	glacial sediments	
		45-120	silty clay	compact gray silty clay, <1% pebbles and cobbles	glacial sediments	
		120-130	silty loam	light yellow-gray silty loam, 10-20% unsorted rounded pebbles	glacial sediments	rock impasse
76	458E 2189N	0-61	sandy clay	dark gray brown sandy clay, 30% sub-angular and sub-rounded cobbles	fill	compact sediments
76	467E 2166N	0-42	sandy clay	dark gray sandy clay, 30% sub-rounded/sub-angular cobbles	fill	compact sediments
76	479E 2117N	0-8	sandy loam	dark brown sandy loam, organic matter, 25% unsorted sub-angular/sub-rounded pebbles and cobbles, modern refuse	fill	
		8-70	loamy sand	gray brown loamy sand, 25-60% sorted sub-rounded/sub-angular pebbles and cobbles that increase with depth. Copper pipe fragment observed.	fill	rock impasse
78	439E 2522N	0-44	sandy clay	gray sandy clay, 30% rounded pebbles and cobbles	fill	concrete
78	483E 2452N	0-5	sandy loam	gray brown sandy loam	disturbed glacial sediments	
		5-45	loamy sand w/ silty clay	light grayish brown loamy sand, 50% sorted sub-rounded pebbles and cobbles, pockets of red and gray sand, large pockets of gray silty clay increasing with depth. Boulders and concrete chunks present	disturbed glacial sediments	
		45-50	silty clay	gray silty clay, 40-50% rounded pebbles and cobbles	glacial sediments	rock impasse and water
78	491E 2469N	0-14	sandy clay	very dark brown sandy clay, 30% sub-rounded cobbles	disturbed glacial sediments	
		14-78	sandy clay	brownish gray sandy clay, 30% pebbles and cobbles with historic trash (ferrous metal)	disturbed glacial sediments	rock impasse
78	510E 2439N	0-10	sandy loam	dark brown sandy loam, 15-20% unsorted sub-angular-rounded pebbles	glacial sediments	
		10-60	loamy sand	light brown loamy sand, 30-40% unsorted sub-rounded pebbles and cobbles, 3 boulders	glacial sediments	
		60-70	silty clay	compact gray silty clay, <5% gravels, sub-rounded pebbles and cobbles	glacial sediments	rock impasse
79	369E 2353N	0-15	sandy loam	grayish brown sandy loam, 60% cobbles, concrete chunks throughout unit	fill	concrete

Table A.1. I-405 Renton to Bellevue, Shovel Test Data, by Zone.

Zone	Test No.	Depth	Facies	Sediment Description	Interpretation	Termination
81 A1	019E 3363N	0-10	sandy loam	dark brown sandy loam, organic matter, <10% unsorted sub-angular pebbles	fill	
		10-70	loamy sand	dark brown loamy sand, 20% unsorted sub-rounded pebbles and cobbles, modern refuse	fill	
		70-80	loamy sand	light brown loamy sand, compact, 40% unsorted sub-rounded pebbles and cobbles, modern refuse	fill	rock impasse
81 A1	061E 3085N	0-10	sandy loam	dark brown, sandy loam, organic matter heavy root material @5 cmbs, 10-15% unsorted sub-angular/sub-rounded pebbles	fill	
		10-51	silty clay	gray silty clay, <5% gravels, a couple of well-rounded cobbles	fill	rock impasse
81 A1	075E 3036N	0-10	sandy loam	dark brown, sandy loam with roots, organic matter, <10% unsorted sub-angular pebbles, plastic erosion netting marks layer of separation, modern refuse	fill	
		10-50	silty clay	gray silty clay, <5% pebbles and cobbles	fill	rock impasse
81 A1	082E 3015N	0-42	sandy loam	grayish brown sandy loam, 30% sub-angular cobbles and pebbles	fill	water
81 A1	116E 2934N	0-44	sandy loam	gray sandy loam, 40% angular to rounded cobbles	fill	asphalt
81 A1	138E 2898N	0-14	sandy loam	dark brown sandy loam, 10% sub-rounded pebbles	fill	
		14-42	sandy loam	grayish brown sandy loam, 20% sub-rounded pebbless, road fill	fill	water
81 A1	182E 2823N	0-33	sandy clay	dark grayish brown sandy clay, 40% rounded pebbles and cobbles	fill	water
81 A1	203E 2790N	0-10	sandy loam	dark brown, sandy loam, organic matter, 10-15% unsorted sub-angular-sub-rounded pebbles, modern refuse	fill	
		10-82	sand	grayish brown coarse sand, 30-60% sorted sub-angular/sub-rounded pebbles and cobbles, clear fill	fill	rock impasse, water
81 A2	314E 2604N	0-18	sandy loam	dark brown, sandy loam, organic matter, 20-30% unsorted sub-angular pebbles and cobbles	fill	
		18-25	sandy loam	grayish brown sandy loam, 25% unsorted sub-angular pebbles and cobbles	fill	
		25-75	sand	grayish brown coarse sand, 30-50% sorted sub-angular/sub-rounded pebbles and cobbles, clear fill	fill	rock impasse

Table A.1. I-405 Renton to Bellevue, Shovel Test Data, by Zone.

Zone	Test No.	Depth	Facies	Sediment Description	Interpretation	Termination
81 A2	348E 2560N	0-45	sandy loam	grayish brown sandy loam, 25% unsorted angular/sub-angular pebbles and cobbles, boulders at 25cmbs	fill	
		45-70	sand	grayish brown coarse sand, 30-50% sorted sub-rounded pebbles and cobbles	fill	rock impasse
81 A3	029E 3287N	0-60	sandy clay	light grayish brown sandy clay, 30% unsorted pebbles and cobbles, fill	fill	rock impasse
81 A3	064E 3289N	0-10	loamy sand	dark brown, loamy sand, organic matter, 10-15% moderately sorted sub-angular pebbles, heavy roots. Modern refuse (glass, concrete).	fill	
		20363	loamy sand	light brown loamy sand with pockets of gray silty clay, 75% moderately sorted angular-rounded pebbles and cobbles, fill. Modern refuse (glass, concrete).	fill	rock impasse
81 A3	885E 3264N	0-10	sandy loam	dark brown, sandy loam, organic matter, 10-20% moderately sorted sub-angular-rounded pebbles. Modern refuse (paper, plastic wrapper)	fill	
		10-20	loamy sand	light brown loamy sand, 20% sub-angular unsorted pebbles and cobbles. Layer of asphalt, Modern refuse	fill	
		20-40	loamy sand w/ silty clay	mixed light brown loamy sand and pockets of gray silty clay, <10% unsorted sub-rounded pebbles and cobbles.	fill	
		40-65	loamy sand w/ silty clay	light brown loamy sand with pockets of gray silty clay, > 65% unsorted sub-angular, well-rounded pebbles and cobbles	fill	rock impasse
81 A3	909E 3259N	0-12	sandy loam	dark brown sandy loam, 10% sub-rounded cobbles, lots of organics and modern trash	fill	
		12-26	sandy clay	light gray brown sandy clay, 20% sub-rounded pebbles and cobbles	fill	
		26-28	clay	gray clay, 10% sub-rounded pebbles and cobbles	fill	
		28-53	silty sand	light brown silty sand mottled with gray and orange, 40% sub-rounded pebbles	fill	rock impasse
81 A4	116E 3882N	0-10	sandy loam	dark brown sandy loam with roots, 30% sub-angular pebbles and cobbles	fill	
		10-23	sandy loam	grayish brown sandy loam, 60% sub-angular pebbles and cobbles	fill	rock impasse
81 A4	153E 3880N	0-11	sandy clay	dark grayish brown sandy clay, 30% rounded pebbles and cobbles, many roots	fill	
		11-40	clayey sand	light gray clayey sand, 30% rounded pebbles and cobbles	fill	rock impasse

Appendix B

Shovel Test Profile Drawings

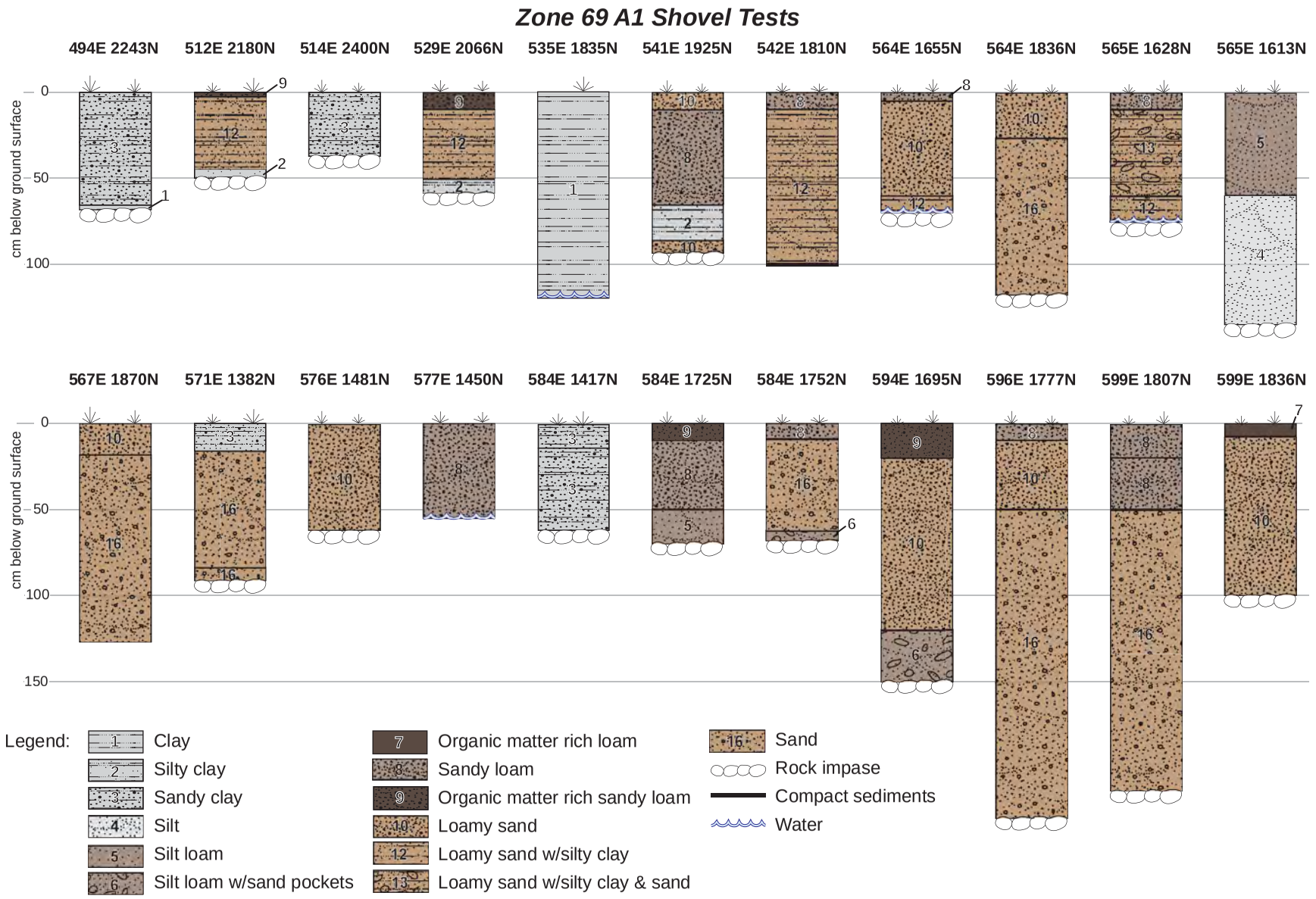

Figure B.1. *Profile drawings of shovel tests evcavated in Zone 69 A1.*

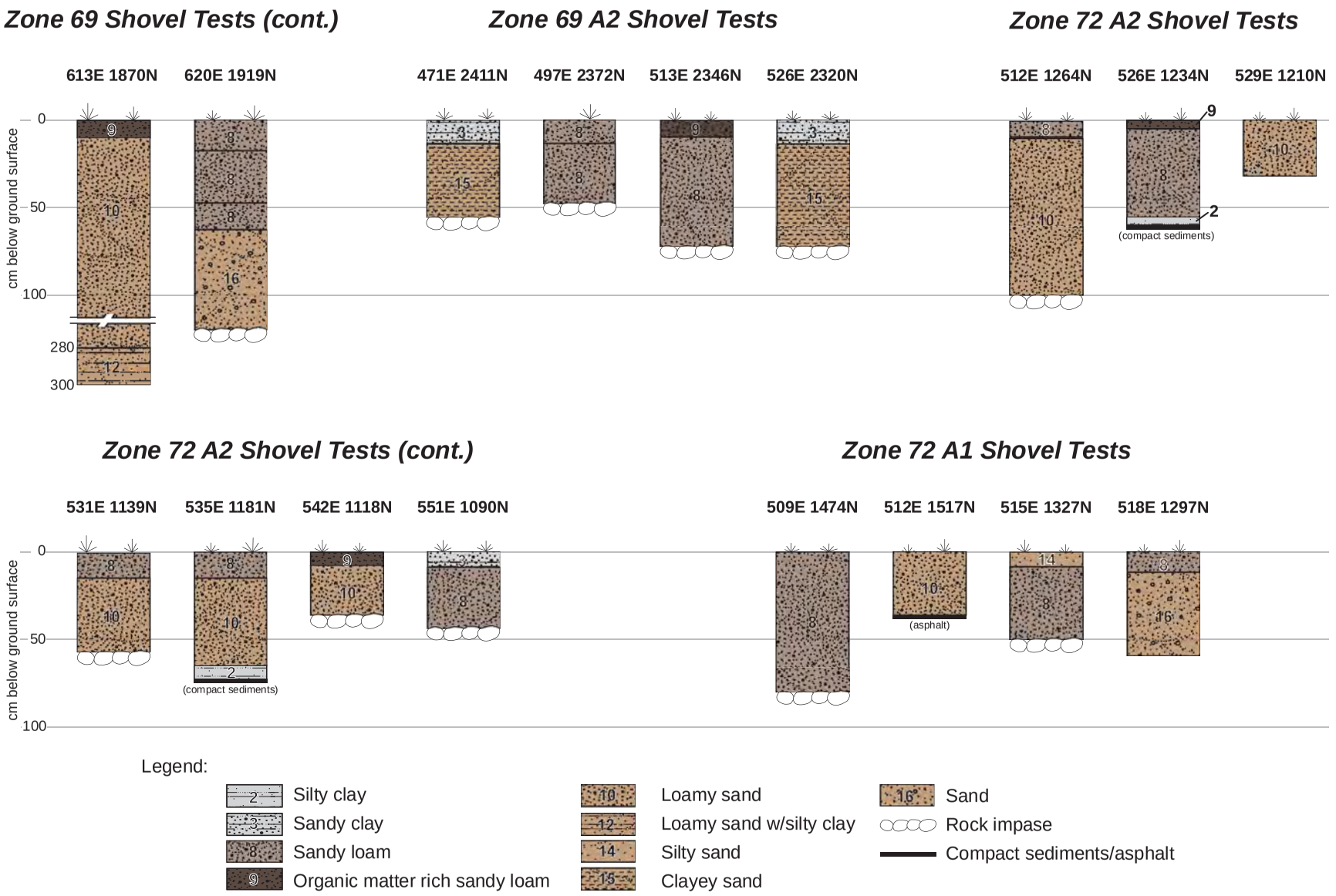

Figure B.2. *Profile drawings of shovel tests evcavated in Zones 69 A1, 69 A2, 72 A2, and 72 A1.*

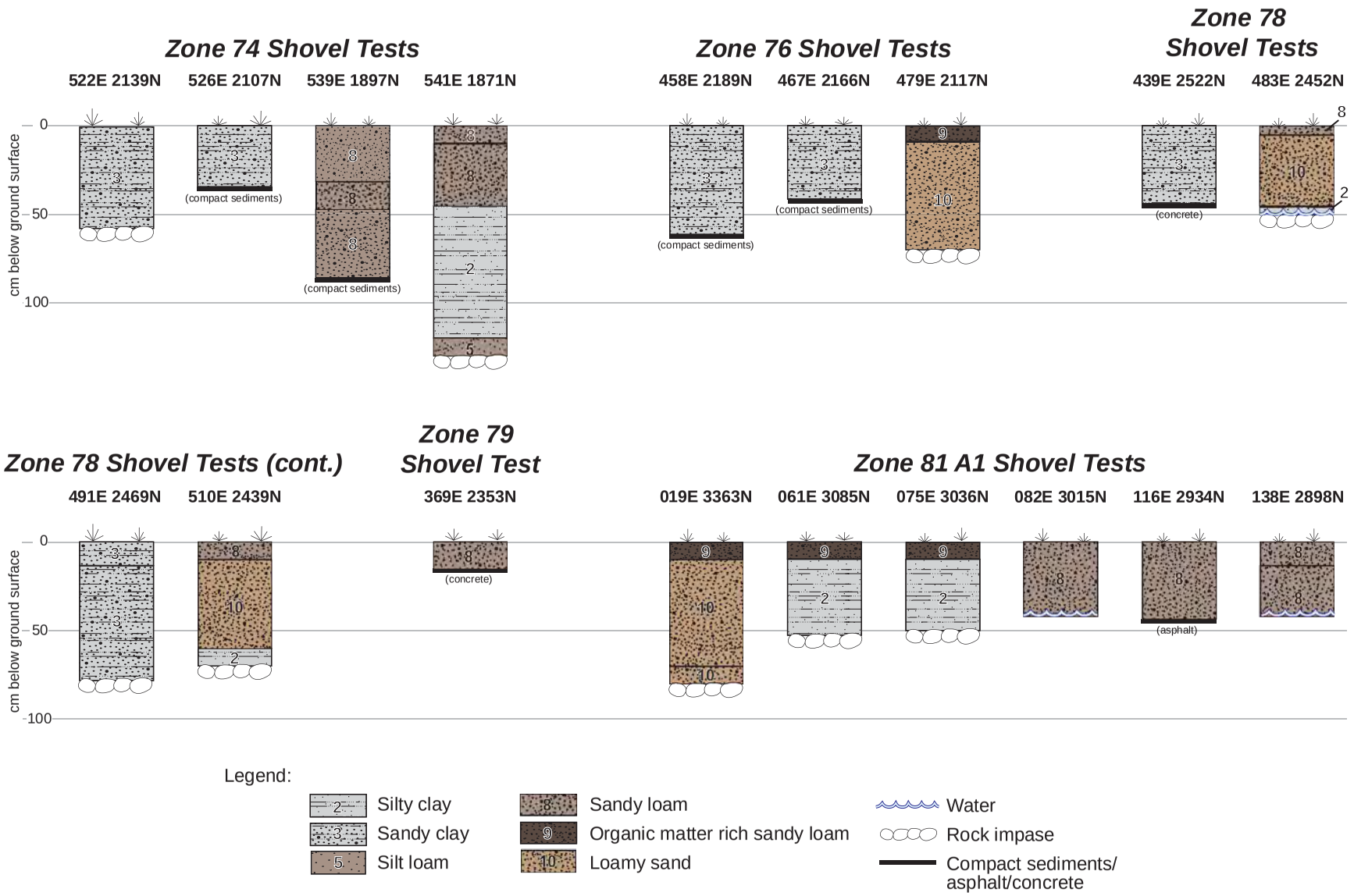

Figure B.3. *Profile drawings of shovel tests evcavated in Zones 74, 76, 78, 79, and 81 A1.*

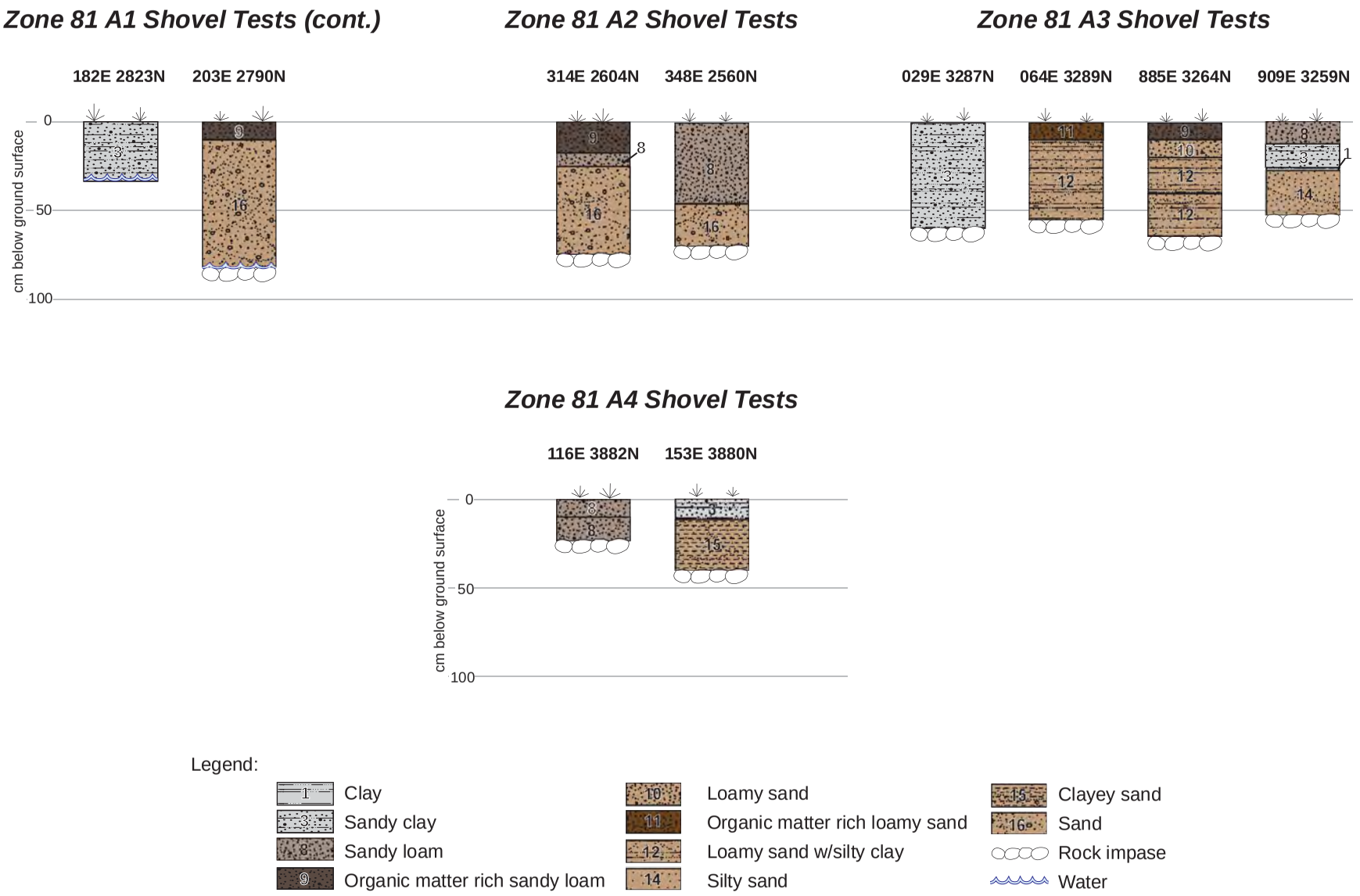

Figure B.4. *Profile drawings of shovel tests evcavated in Zones 81 A1, 81 A2, 81 A3, and 81 A4.*

Appendix C

Representative Shovel Test Photographs

Figure C.1. *Shovel test 599E 1836N in Zone 69 A1. The scale is divided into 10 cm intervals*

Figure C.2. *Shovel test 497E 2372N in Zone 69 A2. The scale is divided into 10 cm intervals*

Figure C.3. *Shovel test 515E 1327N in Zone 72 A1. The scale is divided into 10 cm intervals.*

Figure C.4. *Shovel test 531E 1139N in Zone 72 A2. The scale is divided into 10 cm intervals.*

Figure C.5. *Shovel test 539E 1897N in Zone 74. The scale is divided into 10 cm intervals*

Figure C.6. *Shovel test 479E 2117N in Zone 76. The scale is divided into 10 cm intervals*

Figure C.7. *Shovel test 510E 2439N in Zone 78. The scale is divided into 10 cm intervals.*

Figure C.8. *Shovel test 369E 2353N in Zone 79. The scale is divided into 10 cm intervals.*

Figure C.9. *Shovel test 075E 3036N in Zone 81 A1. The scale is divided into 10 cm intervals*

Figure C.10. *Shovel test 314E 2604N in Zone 81 A2. The scale is divided into 10 cm intervals*

Figure C.11. *Shovel test 885E 3264N in Zone 81 A3. The scale is divided into 10 cm intervals.*

Figure C.12. *Shovel test 116E 3882N in Zone 81 A4. The scale is divided into 10 cm intervals.*

Appendix D

Site Form 45KI1274
(Northern Pacific Railway [BNSF] Segment)

STATE OF WASHINGTON
ARCHAEOLOGICAL SITE INVENTORY FORM

Smithsonian No.: 45KI1274

***County:** King

***Date:** March 2016 ***Compiler:** Jennifer Thomas **Human Remains?** ☐ **DAHP Case No.:**

"Archaeological sites are exempt from public disclosure per RCW 42.56.300"

SITE DESIGNATION

Site Name: Northern Pacific Railway Lake Washington Beltline (abandoned segment)

Field/ Temporary ID:

***Site Type(s):** Historic Railroad Property

SITE LOCATION

***USGS Quad Map Name(s):** Mercer Island, WA 1950 (Photorevised 1968)

***Legal Description: T**24N **R** 5 **E/W:** W **Section(s):** 4

Quarter Section(s): SW corner of section 4: NE NW SW; SE SW NW; W2SENW

***UTM: Zone** 10 **Easting** 561587 **Northing** 5271845

Latitude: **Longitude:** **Elevation (ft/m):**

Other Maps: **Type:**

Scale: **Source:**

Drainage, Major: **Drainage, Minor:** **River Mile:**

Aspect: **Slope:**

Location Description** *(General to Specific):** This segment of the railroad crosses I-405 on the western slope of a hill overlooking Mercer Slough to the west in Bellevue, King County.

Directions** *(For Relocation Purposes):** From NE 4th Street in Bellevue, merge onto south-bound I-405. Travel south for a distance of 1.3 miles. This segment can be accessed on the far east side of the corridor.

SITE DESCRIPTION

Narrative Description** *(Overall Site Observations):** This short segment of the historic Northern Pacific Railway (now BNSF) railroad bed crosses both the north- and south-bound lanes of I-405 just south of Kelsey Creek. The rails and ties in this segment have been removed.

Site Dimensions** *(Overall Site Dimensions):**

*__Length:__ 1,450 ft *__Direction:__ SW/NE x *__Width:__ 12 ft *__Direction:__ NW/SE

*__Method of Horizontal Measurement:__ ArcMap

*__Depth:__ * __Method of Vertical Measurement:__

Vegetation** *(On Site):** None

__Local:__ Himalayan blackberry, cedar, various shrubs and grasses __Regional:__

Landforms *(On Site)***:**

__Local:__

Water Resources *(Type)***:** Kelsey Creek **Distance:** adjacent **Permanence:** permanent

CULTURAL MATERIALS AND FEATURES

***Narrative Description:** This is a short segment of the historic Northern Pacific Railway (now Burlington Northern Santa Fe) railroad line. Other portions of the railroad line outside of the I-405 right-of-way remain intact, including the nearby Wilburton Trestle which is on the Washington Historic Register. A historic property form for the entire line (the Northern Pacific Railway Lake Washington Beltline) is available through WISAARD under property #88798 (Allen and O'Brien 2007). The line was constructed in 1891 as a spur line connecting the Bellevue area to the major Northern Pacific line in Renton and initially served as a means of transporting coal and iron from mines east of Puget Sound to industrial plants, most importantly, to the steel mill at Kirkland (Allen and O'Brien 2007). The railroad and its associated features were determined eligible for listing in the NRHP by DAHP in 2007. The segment of the railroad within the I-405 corridor was subsequently abandoned and the rails and ties removed, leaving nothing but the ballast. The Wilburton Tunnel which once crossed the south-bound I-405 corridor has also been removed (Washington State Department of Transportation 2005).

***Method of Collection:** N/A

Location of Artifacts** *(Temporary/Permanent):** N/A

SITE AGE

Component:** Historic *__Dates__ *(Overall Site Age Approximation):** 1891-2007

***Dating Method:** Historic documents **Phase:** **Basis for Phase Designation:**

SITE RECORDERS

Observed by: **Address:**

***Date Recorded:** February 22, 2016

Recorded by** *(Professional Archaeologist):** Jennifer Thomas

***Organization:** AHS-EWU ***Organization Phone Number:** 509-359-2239

***Organization Address:** 201 Isle Hall, Cheney, WA ***Organization E-mail:** ahs@ewu.edu

Date Revisited: **Revisited By:**

SITE HISTORY

***Previous Archaeological Work:** This site is associated with DAHP Project #090208-55-STB. Although this particular railroad segment was not recorded, the entire railway line was determined eligible for listing in the NRHP in 2007 (WISAARD 2016).

LAND OWNERSHIP

***Owner:** Washington Department of Transportation

***Address:**

***Tax Lot/ Parcel No:**

RESEARCH REFERENCES

***Items/Documents Used In Research:**

Allen, Jason, and Elizabeth O'Brien

2007 Historic Property Inventory Form for Property #88798, Northern Pacific Railway Lake Washington Beltline. Project Number 090208-55-STB, BNSF Railway Abandonment Exemption AB-6 (Sub#464x). Available online through the Washington Information System for Architectural and Archaeological Records Data (WISAARD) database, Department of Archaeology and Historic Preservation, Olympia.

Washington State Department of Transportation

2005 *I-405 Bellevue Nickel Improvement Project. Geology, Soils, and Groundwater Discipline Report*. Washington State Department of Transportation, Olympia.

USGS MAP

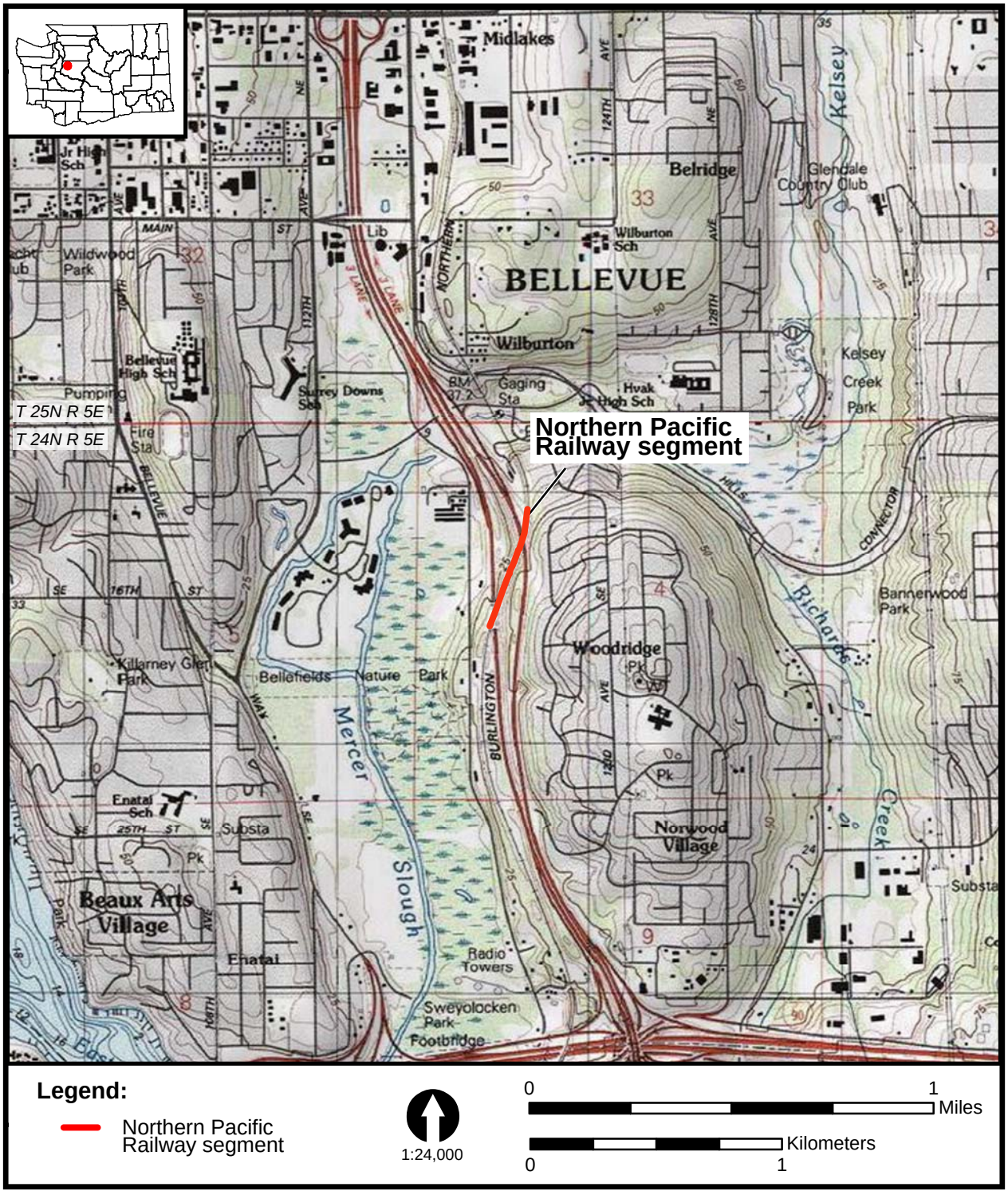

Figure 1. *Topographic map showing a segment of the Northern Pacific Railway line (adapted from USGS topographic quadrangle Mercer Island, Wash., 1950 photorevised 1968).*

PHOTOGRAPHS

Figure 2. *Railroad bed, view to the northeast.*

Figure 3. *Photograph showing the railroad bed and the location of the former Wilburton tunnel, view to the southwest.*