CULTURAL RESOURCES ASSESSMENT
FOR THE
NEW WHATCOM REDEVELOPMENT PROJECT,
WHATCOM COUNTY, WASHINGTON

REDACTED VERSION

December 12, 2007

NWAA Report Number WA 06-101

NORTHWEST ARCHAEOLOGICAL ASSOCIATES, INC.
SEATTLE, WASHINGTON

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Report Prepared for

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EXECUTIVE SUMMARY

Northwest Archaeological Associates, Inc. conducted an archaeological resources assessment to support preparation of a Master Plan EIS for redevelopment of approximately 216 acres of land fronting Bellingham Bay in the town of Bellingham, Washington. Three build alternatives (Alternatives 1, 2, and 3) vary in proposed density of construction and extent of ground disturbance within 10 redevelopment areas, a proposed marina, and other in-water and over-water improvements, and are being considered along with a no-action alternative.

A variety of shoreline landforms within the affected environment have provided natural resources and potential habitation surfaces for humans for millennia. Native American occupation in the vicinity of the New Whatcom redevelopment site before and after Euroamerican contact is evidenced by the rich archaeological record along the shore and on the uplands fronting Bellingham Bay and by the traditional ethnographic placenames for campsites near the mouths of Squalicum and Whatcom Creeks. Historic development within the project area has been primarily within the context of commercial, industrial, and transportation enterprises. Although data from geological, archaeological, ethnographic, and historical sources strongly suggest that portions of the project area have moderate to high potential for archaeological remains, physical access to the sediments that may contain such material is almost non-existent at the present.

Because Alternative 1 is the higher-density alternative and involves extensive roadway and utility redevelopment, numerous parking garages, and relocation of the BNSF railroad corridor, it presents the greatest potential of the three alternatives to directly affect buried Native American and historic-period archaeological resources. Alternative 2, Alternative 3, and finally the No-Action Alternative follow in ranking of potential adverse effects. Despite the greater density of construction and volume of earthwork required under Alternative 1 and to a lesser extent Alternatives 2 and 3, intact native sediments under the historic fill may be found at greater depths than proposed ground disturbances, and therefore no effects to pre-contact Native American archaeological resources are likely in those instances. Historic archaeological resources, however, may still exist within fill deposits so that even by shallow excavation some effects may occur to unknown significant archaeological resources under any of the alternatives.

Archaeological sites in urban waterfront settings are often difficult to identify and evaluate in advance of construction. In general, no preconstruction mitigation measures are recommended for any of the redevelopment sub-areas, but potential archaeological resource areas should be considered when development is undertaken. The prospects for avoiding archaeological sites, the preferred mitigation measure under SEPA, can be addressed prior to construction. No additional mitigation would be necessary if all identified cultural resource sites were avoided in the final design and construction of project facilities. If final placement of the project elements resulted in unavoidable adverse impacts to a significant resource, then mitigation should be required to retrieve the scientific and historical information that makes the site significant. In such cases, a mitigation plan would be prepared in consultation with state, tribal, and local agencies that would address actions to be taken. The mitigation plan would establish the procedures and appropriate response for addressing potential effects to archaeological resources. Because potential significant adverse impacts that have been identified herein could be avoided or otherwise mitigated, no significant unavoidable adverse impacts to cultural resources have been identified.

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Cover: Portion of Bellingham, Wash, c. 1909, panoramic photograph by J. Wilbur Sandison. Library of Congress, Panoramic photographs collection, number PAH US GEOG - Washington no. 48.

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1.1 INTRODUCTION

Northwest Archaeological Associates, Inc. (NWAA) has been contracted by Blumen Consulting Group, Inc. (Blumen) to conduct an archaeological resources assessment to support preparation of a Master Plan EIS for redevelopment of an approximately 216 acre area fronting Bellingham Bay in the town of Bellingham, Washington. The plan will govern development through an interim build-out horizon of 2016 and the estimated completed build-out of 2026. Redevelopment will include construction of a mixed-use neighborhood, recreational space, a new marina, and infrastructure improvements. This report describes the regulatory context and natural and cultural setting of the project, gives details of the methods and results of the assessment, discusses potential effects of the project on archaeological resources, and provides recommendations for management and mitigation of potentially significant resources.

Project Description

The proposed project is along the City of Bellingham waterfront in Whatcom County, Washington, in Sections 25 and 36 of Township 38 North, Range 2 East, and Sections 30 and 31 of Township 38 North, Range 3 East, Willamette Meridian (Figure 1). It includes approximately 216 acres of contiguous waterfront property within the City of Bellingham's Central Business District Neighborhood Planning Area. Approximately 162 acres of this property is owned by the Port of Bellingham, and the remainder is owned by the City of Bellingham, Burlington Northern Santa Fe (BNSF) railroad, and several private entities. For this archaeological resources assessment, the area of investigation is approximately 284 acres, and includes both shoreward and undersea lands within the project boundary defined in the EIS draft scoping document. Both are included because archaeological resources may be found in either terrestrial contexts or submerged in Bellingham Bay or Whatcom Waterway.

Four project alternatives have been proposed within the general project boundary, each allocating different amounts of development to 10 redevelopment areas within the project area shown in Figure 2. Each of the alternatives has been conceptualized in terms of an interim redevelopment stage in 2016 and completion of the full build-out of the project in 2026. The alternatives are as follows:

1) A *Higher-Density Alternative* proposes approximately 7.5 million square feet of mixed-use floor space, building heights as high as 17 to 20 stories, extensive roadway and utility redevelopment, numerous buildings and associated parking garages, relocation of the BNSF railroad corridor, a marina (Marina Concept A) and setting aside of about 33 acres for parks, trails, and open space.

2) A *Medium-Density Alternative* proposes approximately 6.0 million square feet of mixed-use floor space, building heights of about 12 stories, slightly less roadway and utility development than the Higher-Density Alternative, primarily parking garages, relocation of the BNSF railroad, a marina (Marina Concept A) and approximately 24 acres of green-space set aside.

3) The *Lower-Density Alternative* proposes approximately 4.0 million square feet of mixed-use floor space, building heights reaching 6 stories in some areas, fewer roadway and

Figure 1. Project location.

Figure 2. Project map showing sub-areas.

utility improvements than the other build alternatives, parking facilitated primarily on-street and in surface lots with few above-grade and below-grade parking structures, relocation of the BNSF railroad, a marina (Marina Concept A) and approximately 15 acres set aside for green-space.

4) A *No Action Alternative* in which the project area retains its Industrial Zoning classification assumes that some level of redevelopment (approximately 1.1 million square feet) would occur that is consistent with current industrial zoning over a 20-year build-out horizon, including a marina (Marina Concept B). It is also assumed that a limited level of infrastructure improvements would be made to support this redevelopment. The BNSF railroad would not be relocated under this alternative, and no new parks or other amenities would be built.

Project activities that have the greatest likelihood of impacting archaeological resources include excavation into the existing ground surface to construct below-grade parking structures, if any, and to install buried utility lines. Under the Action Alternatives, roadways on the project site would be raised above the existing grade via imported fill material. Building and parking facility construction and utility installation would primarily occur above the existing grade, minimizing the need for excavation into the existing ground surface within the redevelopment areas.

Marina Concept A, proposed under all three Action Alternatives, includes up to 460 boat slips, an adjacent parking lot, construction of a boat launch ramp, and associated marina facilities. Marina Concept B, assumed under the No Action Alternative, would incorporate up to 600 boat slips, parking, ramps, and facilities that involve a greater number of piles and float-area and ramp-area coverage than Marina Concept A.

Under the Action Alternatives, restoration of a natural shoreline along the southern side of Whatcom Waterway within the project site is a major element. Along the existing shoreline within several of the Redevelopment Areas, approximately 98,700 square feet of over-water wharf, approximately 1,030 linear feet of bulkhead and associated rip-rap, and approximately 460 linear feet shallow water-area bulkhead and associated rip-rap would be removed. Approximately 1,500 linear feet of new natural shoreline and beach would then be created.

Regulatory Context

The Master Plan EIS is being prepared to achieve compliance under the Washington State Environmental Policy Act (SEPA), with the Port of Bellingham (the Port) acting as the SEPA lead agency. Environmental review under the National Environmental Policy Act (NEPA) is assumed not to be required at this time. Environmental review associated with site clean-up under the Model Toxics Control Act (MTCA) will be separate from the New Whatcom EIS.

For archaeological resources, the SEPA review process requires project proponents to: a) identify and describe any places or objects listed on, or proposed for, national, state, or local preservation registers known to be within or adjacent to the project area; b) describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be within or adjacent to the project area; and c) offer proposed measures to reduce or control project impacts, if any (WAC 197-11-960). Since state regulations provide no measure of significance for archaeological sites, the criteria established in federal regulations provide a useful way of measuring this value.

Use of standards and guidelines associated with the National Historic Preservation Act of 1966, as amended (NHPA), assists compliance with state laws and positions the project to easily comply with federal requirements should the need arise in the future. Section 106 of the NHPA requires federal agencies to identify and assess the effects of federally-assisted or permitted undertakings on historic resources, archaeological sites, and traditional cultural properties, and to consult with others to find acceptable ways to avoid or mitigate adverse effects. Resources protected under Section 106 are those listed in or are eligible for listing in the National Register of Historic Places (NRHP). Such a listing also brings them to the forefront of SEPA-level analyses. Eligible properties must be at least 50 years old, possess integrity of physical characteristics, and meet at least one of four criteria of significance. Historic properties may include archaeological sites, buildings, structures, districts, or objects. Potentially eligible resources considered for this analysis are limited to archaeological sites and objects that may have significance for their information potential as archaeological resources, such as shipwrecks. Historic resources within the built environment, including standing buildings, structures, and districts, are treated separately in another discipline report.

Aside from SEPA, Washington State laws and regulations that address cultural resources include the Archaeological Sites and Resources Act (RCW 27.53), the Indian Graves and Records Act (RCW 27.44), and the Archaeological Site Public Disclosure Exemption (RCW 42.56.300). RCW 27.53 declares the state's interest in the conservation, preservation, and protection of Washington's archaeological resources and prohibits disturbance or excavation of historic or prehistoric archaeological resources on state or private land without a permit issued by the Department of Archaeology and Historic Preservation (DAHP). RCW 27.44 prohibits knowingly disturbing a Native American or historic grave. RCW 42.56.300 states that records, maps, or other information identifying the location of archaeological sites are exempt from disclosure in order to avoid the looting or depredation of such sites. Portions of this redacted version of the cultural resources assessment report have been removed accordingly. Potentially applicable local regulations include those in the Whatcom County Code (WCC 16.16) and City of Bellingham Municipal Code (BMC 16.55.010), which designates an array of “Critical Areas”, including areas of historical, archaeological, and aesthetic value.

Tribal Coordination

NWAA contacted the Lummi Nation and Nooksack Tribe at the beginning of this assessment with a letter on January 20, 2006 inquiring about concerns the Tribes may have about cultural resources in or near the project area. The letters were followed up with phone calls; voicemail messages were left for the Nooksack Tribe cultural resource specialist, and several phone conversations were held with the Lummi Nation Tribal Historic Preservation Officer (THPO). No specific concerns were raised at that time. Follow-up phone calls were made by NWAA to the Tribes on April 23, 2007. Voicemail messages were left for the Nooksack Tribe cultural resource specialist. The Lummi Nation THPO informed NWAA of a recent discovery of a possible shell midden deposit within a geotechnical core sample extracted for the nearby Laurel Street bridge project, and noted that they had yet to be contacted by the City of Bellingham. A second letter was sent to the Chairs of the Lummi and Nooksack Tribal Councils on May 9, 2007 asking again if either had concerns regarding archaeological resources, and inviting them to join NWAA in its site visit. Copies of letters sent by NWAA are in Appendix A.

1.2 ENVIRONMENTAL AND CULTURAL CONTEXTS

The environmental and cultural contexts of the New Whatcom Redevelopment Project contribute to the development of expectations for archaeological resources that may be found there. Changing environmental conditions since the end of the Pleistocene, the last great Ice Age, have affected the kinds and distributions of resources used by people as well as the suitability of particular landforms for human occupation. Environmental changes have also had consequences for the archaeological record in terms of site visibility and preservation.

The following sections review the potential for pre-contact archaeological sites, Native American archaeological sites associated with the 19th century, and archaeological deposits associated with the historic development of the city of Bellingham. The first is based on conventional archaeological parameters including landforms, availability of resources, and comparisons with similar settings. Topography and the abundance and location of resources have profound effects on site location and the cultural activities performed at the site. Assessing the potential for historic archaeological sites, both Native American and Euroamerican, is also based on evidence provided in ethnographic and historic accounts. Review of studies and results of previous cultural resource investigations in the vicinity of the project site also enhance our ability to predict archaeological site locations.

The Natural Setting

The Landscape

The New Whatcom Redevelopment project site is in Bellingham Bay in the Strait of Georgia watershed bordered by the Puget Sound on the south, the Nooksack watershed on the east, and on the west by the San Juan Islands. The Bay lies in the northern Puget Sound basin at the northern margins of a large north-south-oriented structural trough lying between the Cascade Range on the east and the Olympic Mountains on the west (Orr et al. 1992). The geomorphology and surficial geology of the region is dominated by landforms and deposits associated with the advance of multiple glacial ice sheets which expanded southward into the Puget Sound basin during the Pleistocene (1.8 million to 10,000 years ago) from the mountains of southwestern British Columbia (Booth and Goldstein 1994; Borden and Troost 2001; Clague et al. 1980).

As the Cordilleran ice sheet advanced during the last glaciation, known as the Vashon Stade of the Fraser Glaciation, the ice split into two lobes in the vicinity of the San Juan Islands. The Puget lobe advanced south into the Puget Lowland while the Juan de Fuca lobe extended west into the Strait of Juan de Fuca north of the Olympic Mountains. The Puget lobe reached its maximum southern extent just south of the town of Olympia about 14,500 years before present (BP) (Kovanen and Slaymaker 2004; Porter and Swanson 1998) and then, after remaining stationary for about 1,000 years, began to retreat rapidly northward, reaching the Seattle area by 13,600 BP and northern Whidbey Island by about 12,850 BP (Easterbrook 2003; Porter and Swanson 1998). At its maximum extent the ice is estimated to have reached 2100 m (about 6,890 feet) elevation and to have been about 1,200-1,500 m (3,937-4,921 feet) thick in the higher Cascades east of the town of Kendall. The ice sheet gradually thinned southward so that near the city of Everett it was about 1,200 m (4,000 feet) (Booth et al. 2003; Dethier et al. 1995; Kovanen and Easterbrook 2001).

The outwash deposited during the advance of the Vashon ice sheet filled the Puget Sound basin, rarely rising above 500 feet, bounded on the west by the Olympic Mountains and on the east by the Cascade Range (Booth and Goldstein 1994). Subglacial incision during ice advance and excavation by meltwater during ice retreat gouged out a number of large, deep troughs and meltwater channels. As a result, the geomorphology of the northern Puget Lowland is now dominated by well-defined north-trending troughs and ridges separated by extensive drift uplands. The surfaces of the uplands are characterized by numerous surface depressions occupied by small lakes and peat bogs created as the ice sheet retreated (Mullineaux et al. 1965). Much of the surface of the Vashon drift has not been extensively modified by postglacial erosion, though some streams have carved short, steep-sided canyons along the margins of the drift uplands. The uplands are separated by large Pleistocene glacial troughs some of which are now occupied by the marine waters of Puget Sound or by freshwater lakes such as Lakes Washington and Sammamish in the Seattle area (Galster and Laprade 1991; Liesch et al. 1963; Yount et al. 1993).

Melting and retreat of the Cordilleran ice sheet was complex and occurred over a relatively short time span. Local and global scale inter-related and temporally overlapping events and processes accompanied ice retreat, all of which left their mark in the Puget Sound basin. During ice retreat marine waters temporarily invaded the newly deglaciated land (Everson glaciomarine phase) which was still depressed in elevation due to the weight of the ice, shortly after the marine incursion land began to rise in elevation as the weight of the ice was removed, the latest stages of ice retreat was accompanied by ice stillstands and colder periods, and global sea levels began to rise in response to global warming. The effects of these processes operating at different scales and time spans have combined to make the northwest Washington landscape an extraordinarily geologically complex supporting a diverse mosaic of highly productive biotic environments.

Ice sheet retreat began about 14,500 BP and by 13,000 BP the ice had retreated far enough north and thinned sufficiently to allow the remaining ice to float, initiating the glaciomarine Everson phase. By the time the retreating Puget and Juan de Fuca ice lobes reached the San Juan Islands, the freshwater impounded in lakes in front of the retreating ice margin was draining to the sea into the Strait of Juan de Fuca through the Chimacum valley south of Port Townsend, and when further retreat across the San Juan Islands opened Admiralty Inlet, salt water inundated the proglacial basin uncovered by the retreating ice (Haugerud 2006). Most of the area south of the town of Everett was above sea level, but the estimated elevation of the marine incursion 65 miles (100 kilometers) north of Everett in the Bellingham area was about 90 m (295 feet) in altitude (Dethier et al. 1995) (Figure 3). In particular, the Nooksack Valley was inundated by marine water, and glaciomarine sediment was deposited from floating ice at least 10 km upvalley from the lowland to elevations possibly as much as 200 m above present sea level (Dethier 2007; Kovanen and Easterbrook 2001; Kovanen and Slaymaker 2004).

The latest stages in the retreat of the Cordilleran ice sheet from the northern Puget Sound basin and the Fraser Lowland to the northwest was interrupted several times by readvances or stillstands of ice between 10,000 and 11,600 years ago during the Sumas Stade (Kovanen and Easterbrook 2001). Stratigraphically, the beginning of the Sumas is marked by glacial moraines and outwash deposited on Everson glaciomarine deposits as land emerged above sea level due to isostatic rebound, and ends with the final disappearance of the Cordilleran ice sheet from the area (Kovanen 2002). The greatest advance of ice during the Sumas occurred about 11,400 BP., and shortly after that Sumas ice blocked the Nooksack valley southeast of the town of

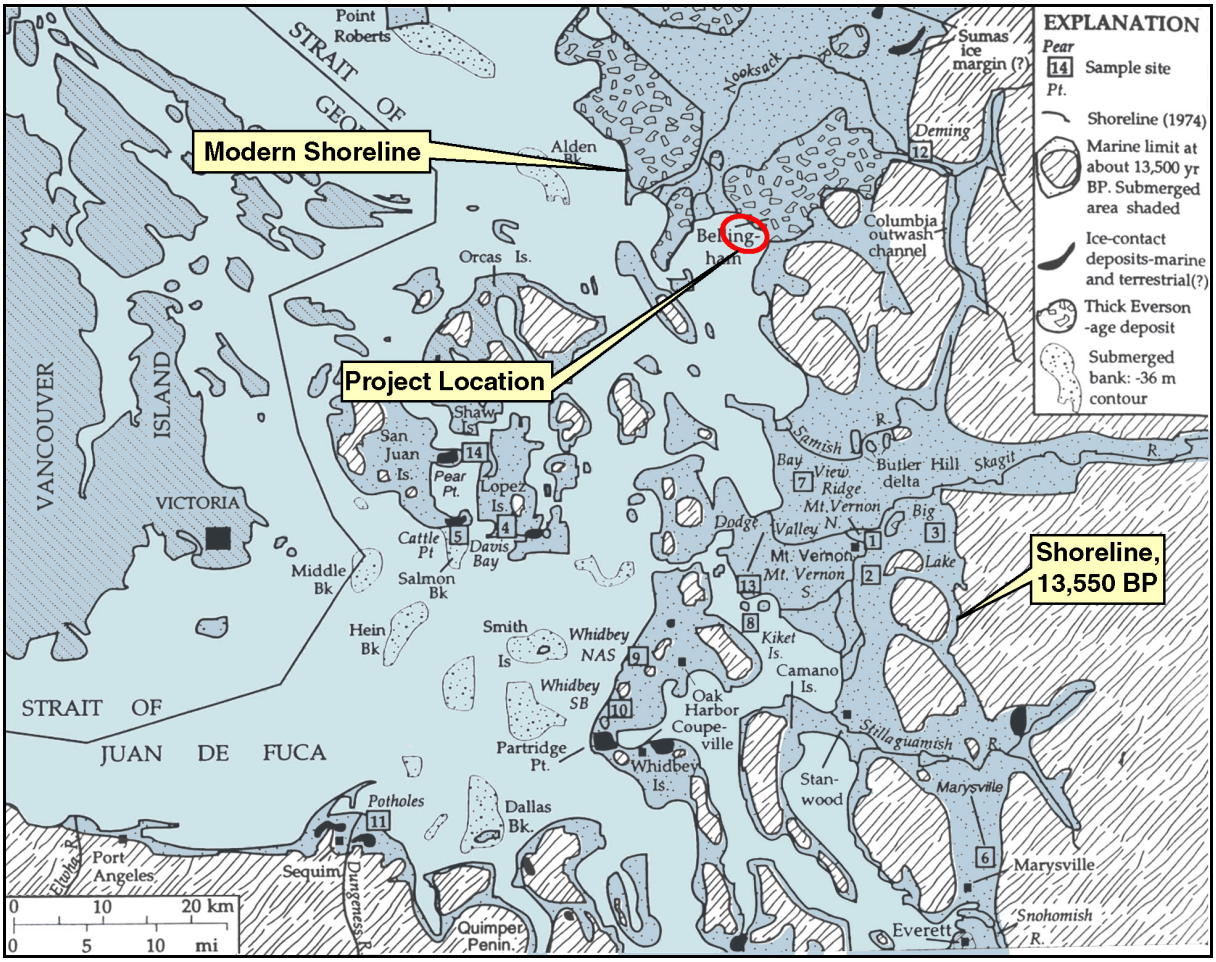

Figure 3. Map showing marine incursion levels in the project vicinity (modified from Deithier et al. 1995).

Everson and reached the sea at Bellingham Bay, Lummi Bay, Birch Bay, and Drayton Harbor (Haugerud 2007).

During the maximum extent of the last glaciation, global sea level was about 390 feet below the present sea level because of the large amount of water locked up in the ice. As the ice sheets melted away, global sea level rose rapidly, and reached about 30 feet below modern sea level between 13,000 years ago and 7,000 years ago. After 7,000 years ago, the rate of global sea level rise began to slow and by about 5,700 years ago sea level stood at about 16 feet below modern sea level.

At the same time global sea level was responding to the wasting away of the continental ice sheets, local relative sea level in the Puget Sound basin was affected by rapid uplift of land due to isostatic rebound caused by the decrease of weight as the ice melted (Thorson 1989). Depending on the thickness of the overlying ice, land areas depressed under the weight of the ice were uplifted to elevations ranging in amounts from negligible, at the southern ice sheet limit, to over 262 feet in northern Puget Lowland. Most of the uplift appears to have ceased by 9,000 years ago, and after rebound stopped, ongoing worldwide sea-level rise then began to

drown the early Holocene shorelines (Dragovich et al. 1994), resulting in renewed sedimentation and delta formation in Puget Sound and Strait of Georgia marine embayments such as Lummi and Bellingham Bays, and the Fraser River in British Columbia just north of the study area (Armstrong et al. 1965; Dragovich et al. 1994).

Climate fluctuations continued during the ensuing Holocene period, albeit on a smaller scale, and are recorded by episodic moraine building in the Cascades Mountains east of the study area. During the early Sumas, long-ranging alpine glaciers began to form about 12,300 BP in the Cascades Mountains as the Cordilleran ice sheet melted down below the level of ridges. Other alpine glaciers built moraines in the Nooksack Middle Fork basin as late as 10,600 BP, and glaciers on Mt. Baker and in nearby mountain cirques continued to construct moraines into the early Holocene. Later, alpine glaciers, particularly on Mt. Baker, experienced minor advances during the middle and late Holocene based on dates of 2400 to 2900 BP from logs buried by moraines below Deming glacier, and from logs in the left lateral moraine of the Coleman glacier that have been dated to between 690 and 740 years ago (Easterbrook 2007).

The Nooksack River, which now flows into Bellingham Bay north of the study area, formerly flowed north through the Sumas Valley into the Fraser River (Friele and Clague 2002). After switching from the Sumas Valley sometime in the Holocene, the Nooksack apparently has alternated between two main lower channels – the Lummi River, emptying into Lummi Bay, and the present channel which empties into Bellingham Bay. The Nooksack River delta, just north of the study area, is one of the fastest developing sedimentary features in the Puget Sound basin (Maudlin and Stark 2007). Since the channel was first mapped in AD 1887-88, the subaerial (surface) portion of the delta has prograded seaward about 1.5 km (0.9 mi) and deposited up to 20 feet of sediments on the bay floor in front of the advancing delta (Sternberg 1967). This relatively rapid sediment accumulation is surmised to have originated due to a major channel shift reportedly caused about AD 1860 by a log jam 7.2 km (4.5 mi) upstream from the present-day river mouth. As a result, the course of the river changed from its former outlet in Lummi Bay to Bellingham Bay (Bortleson et al. 1980). Historically, the Nooksack River delta supported an extensive system of riverine-tidal freshwater wetlands comparable to the system found on the Snohomish River delta at Everett, and upstream of the estuary, the Nooksack River channel meandered among expansive freshwater flood plain wetlands (Collins et al. 2002).

Bellingham Bay is backed by bluffs composed of Everson glaciomarine deposits (Fort Langley Formation) and the bay is currently classified as a rocky embayment formed in glacial terrain (Collins and Sheikh 2005). Except for the mouth of Whatcom Creek and other smaller streams, the early historic shoreline of Bellingham Bay was characterized by a narrow supratidal beach facing intertidal shoals and backed by bluffs.

Natural Resources

Bellingham Bay and the land and streams that surround it provide important and diverse resources that influenced the locations and times of occupation for Native Americans before and after Euroamerican contact. Growth and development of the historic Bellingham waterfront was based in part on some of these same resources used for commercial purposes. The availability of abundant lumber and salmon, coupled with the strategic location of the Bay in relation to transportation routes and other early historic-era settlements, ensured the prominence of Bellingham as the major city between Everett and Vancouver, British Columbia.

Both marine and anadromous fish have played an important role for the residents of Bellingham Bay for millennia. Economically important fish, as evidenced in archaeological deposits, the ethnographic and historic record, and observed today in the relatively low wave-energy habitat of Bellingham Bay, include spiny dogfish, skates and rays, ratfish, herring, anchovy, smelt, cod, surfperch, sablefish, greenling and lingcod, sculpin, flounder, and sole (Miller and Borton 1980). The Nooksack River, draining into Bellingham Bay, hosts populations of all five species of pacific salmon (spring and fall chinook, coho, chum, sockeye, and pink salmon), steelhead and cutthroat trout, and dolly varden (Smith 2002). These species congregate in the Bay, feeding on abundant forage fish such as Pacific sand lance before swimming upstream to spawn. Smaller streams emptying into the Bay host runs of salmon as well, including Squalicum and Padden Creeks with populations of fall chinook, chum, steelhead and cutthroat trout; and Whatcom Creek within the project area with populations of fall chinook, chum, pink, and sockeye salmon, and steelhead and cutthroat trout.

Shellfish are another faunal resource whose availability and distribution have had important economic implications for local Native American communities. The mixed gravel, sand, and muddy substrates of the Bellingham Bay intertidal provide habitat for a variety of clams, mussels, oysters, geoducks, and gastropods (Kozloff 1996). Areas that have been studied, however, are some distance from the City waterfront and project vicinity, in which substantial development has extirpated many shellfish beds and made others inaccessible. Despite long-term changes in habitat as Bellingham Bay in-filled and short-term changes in local distribution of particular molluscan species during historic times, the geomorphology of the bay and surrounding beaches is such that abundant shellfish would have been available nearby to prehistoric and historic occupants of the project vicinity.

Marine mammals and birds have been an important source of food and raw material for Native Americans living on the coast. A variety of loons, herons, ducks, swans, raptors, gulls, and small shorebirds have historically resided on the Bay and surrounding littoral, some year-round and some seasonally. Harbor seals, sea lions, porpoises and larger cetaceans would have also been available in the Bay (Angell and Balcomb 1982; Jeffries et al. 2000), and their remains found in nearby shell middens are reflective of past Native American subsistence activities. Although both Native American and Euroamerican communities living along Bellingham Bay have generally been marine-oriented, terrestrial fauna have also played an important role in subsistence and economy. Deer, elk, bear, and other smaller fur-bearing mammals have historically inhabited the Puget lowlands, as have birds and fish in freshwater ponds, streams, and wetlands (Ingles 1965; Wahl and Paulson 1991:62).

Aquatic plants such as kelp could easily be gathered from the Bellingham Bay shoreline, as well as plants from the coastal forests. Native vegetation of this area, part of the *Tsuga heterophylla* (western hemlock) zone, is characterized by stands of hemlock, western red cedar, and Douglas fir with a dense shrub and herbaceous understory (Franklin and Dyrness 1973). Although today the project area is mostly devoid of native vegetation, the plants that local Native American communities relied upon for food, fuel, medicine, and raw material would have been available in the immediate vicinity (Gunther 1945).

The Cultural Setting

Prehistory

The culture history of Native American occupation prior to Euroamerican contact suggests that the shore of Bellingham Bay, especially near the outlets of freshwater rivers and streams, would have provided an ideal landscape for settlement during much of the year, perhaps for the past several thousand years. Although several prehistoric archaeological sites have been identified in the vicinity of the project area, no culture-historical sequence has yet been specifically developed for Bellingham Bay. Sequences based on research at nearby areas such as Point Roberts, Semiahmoo Spit, Birch Bay, and Cherry Point (Blodgett 1976; Gaston and Grabert 1975; Grabert 1973, 1988; Grabert et al. 1978; Grabert and Spear 1976; Jermann 1977; Montgomery 1979), as well as Lummi Peninsula and Portage Island (Grabert and Griffin 1983; Griffin 1983), however, offer an interpretive framework for the prehistory of the Bay.

With the retreat of continental glaciation at the end of the last Ice Age, landforms in the Puget Trough became available for human settlement. This trend began perhaps as early as 12,000 years ago or even earlier, and continued well into the Holocene as relative sea level fluctuated and stabilized and shoreline features evolved. Archaeological evidence of the earliest human presence in the Pacific Northwest is based on finds of now-extinct large mammals and rare finds of artifacts from this period, generally known as the Paleoindian period. Distinctive fluted projectile points characterize this period. Archaeological deposits radiocarbon dated to this time, prior to about 10,000 BP, have been found in the interior of British Columbia and central Washington (e.g. Carlson 1990; Carlson and Dalla Bona 1996; Mehringer 1989). Isolated finds of Clovis points are more common, and have been found in upland settings as close as Whidbey Island, and Kitsap Peninsula, and in the North Cascades (Avey n.d.; Hollenbeck and Carter 1986; Meltzer and Dunnell 1987; Mierendorf et al. 1998; Stein et al. 2004). Given the rapid region-wide rise in relative sea level after the retreat of Pleistocene glaciers, coastal Paleoindian settlements have likely been inundated.

Archaeological evidence of more substantial settlement in the region dates as early as about 9000 BP at the Glenrose Cannery site on the Fraser River delta (Matson 1976; Ames and Maschner 1999:72). Regionally, coastal sites north of Bellingham Bay represent an adaption to near-shoreline terrestrial mammal hunting and littoral gathering, and include long-term occupations and campsites that span from 9000 BP to contact (Nelson 1990). This culture-historical period during the early Holocene, prior to about 5000 BP, has been variously called the "Old Cordilleran," "Lithic," or "Olcott" phase. Artifacts from sites dating to this time period include leaf-shaped projectile points and cobble tools, often chipped from basalt or dacite, and may reflect an economy based on terrestrial resources. Early Holocene components have been found in sites on the lower Fraser River as well as Whatcom County, including sites at Birch Bay (Gaston and Grabert 1975), Point Roberts (Jermann 1977), and Ferndale (Grabert n.d., 1983). On the Lummi Peninsula, a Lithic-period site (45WH98) rests upon redeposited glacial drift sediments and contains a large cobble tool assemblage and several activity areas (Grabert and Griffin 1983:148).

The St. Mungo, Mayne, and Locarno Beach phases, defined for the Gulf of Georgia region and dating between about 4500 BP and 2500 BP, represent an intensification of the maritime economy in the region. The most notable development is the appearance of large shell middens across much of the coastline, both on the mainland and on the Gulf and San Juan Islands. Increasing social complexity and economic intensification focused on marine resources during

these phases (Matson and Coupland 1995; Mitchell 1990). Sites with components dating to the Locarno Beach phase (3500-2500 BP) are characterized by a diverse artifact assemblage including ground bone composite harpoon points, labrets, microblades, ear spools, chipped and ground stone points, celts, grooved weights, bipolar, ground, and polished stone technologies, adzes, labrets, net sinkers, abraders, grinding slabs, and bone and antler tools. Locarno Beach components have been found in sites on Birch Bay, the western portion of the Lummi Peninsula, and Semiahmoo Spit and inland on the Nooksack River at Ferndale (Gillis 2007; Grabert n.d.; Grabert and Griffin 1983:150; Hutchings 2004; Nokes 2004).

The Marpole phase (2500 - 1500 BP) represents a continuation of earlier phases with distinctive ground stone and bone technology and small items crafted with stylistic similarities to Northwest Coast Native American art traditions (Ames and Maschner 1999:104-106; Burley 1980). Larger Marpole assemblages are often characterized by ground stone mauls, unilaterally barbed fixed points, large ground slate points, chipped slate knives, stemmed chipped points, toggling harpoons, small steatite carvings, celts, adzes, labrets, sculpted bowls, microblades, and personal adornments with shells, stone beads and copper. Marpole phase components are known from Point Roberts, Ferndale, Cherry Point, Semiahmoo and Birch Bay and six multi-component sites on the west side of Lummi Peninsula and at Fish Point on the east side of Lummi Peninsula (Grabert and Griffin 1983:150).

The Gulf of Georgia/San Juan phase (1500 BP to contact) continues the trend started during earlier phases of increased numbers of decorative objects and status markers and a large variety of tools. Sites on Semiahmoo Spit, Cherry Point, Birch Bay and the Lummi Peninsula, as well as numerous smaller sites in the immediate vicinity of Bellingham Bay, have Gulf of Georgia components (Grabert and Griffin 1983:151). The development of craft specialization and evidence for increasingly intensified use of predictable and storable food sources such as salmon are traits associated with the "classic" Coast Salish Northwest Coast pattern observed at the time of initial Euroamerican contanct (Ames and Maschner 1999; Borden 1970; Matson and Coupland 1995; Mitchell 1990). This contact in the late 18th century led to drastic changes in Native American populations and community structures, primarily due to disease epidemics (Boyd 1999).

Although the pre-contact culture-history of Bellingham Bay can be generalized from archaeological research developed elsewhere and outlined above, the prehistory of the immediate project vicinity relates directly to specific geological changes that determine the availability of landforms for human occupation. Uplift and subsidence of the shoreline related to eustatic, isostatic, and tectonic processes affect the location of depositional environments where archaeological sites are found. As sea levels rose, delta progradation began on many rivers, filling bays, burying low-lying shorelines, and creating marshes, prairies, and sloughs. Shoreline shifts caused by changing relative sea levels affected the emergence of beaches and intertidal areas. Expectations for the kinds and ages of prehistoric archaeological material within the project area therefore varies by landform, of which each kind has a specific geologic history since the last ice-age. These expectations are discussed in its section below.

Ethnography and Ethnohistory

The Native American communities that traditionally occupied the Bellingham waterfront include ancestors of the present-day Lummi Nation and Nooksack Indian Tribe, whose languages were affiliated with other Central Coast Salish groups living along the lower Fraser and Squamish Rivers, southeastern Vancouver Island, northern Olympic Peninsula, and the islands in the

Strait of Georgia (Suttles and Lane 1990). Today, the Lummi are typically associated with the coastal areas of the mainland and the islands in the Strait of Georgia, and the Nooksack are associated with the inland riverine areas of the northwestern-most Washington mainland. Prior to about AD 1830, however, the distribution of these Native American communities was quite different and boundaries between territories shifted considerably as increased contact with Euroamericans in the 19th century led to drastic demographic changes.

The settlement and subsistence of communities throughout this region were similar in many ways, primarily in their seasonal cycle of congregation at winter villages and dispersal during much of the year in pursuit of specific resources such as fish, game, and edible plants (Stern 1934; Suttles 1951). Winter villages of marine-oriented communities, such as those of the Lummi, were usually located along protected portions of the coast, where activities such as shellfish gathering could supplement the economic pursuits of other times of the year. Principal villages of riverine-oriented communities, such as the Nooksack, were most often situated at the confluences of major streams that provided fishing grounds for much of the year and transportation routes for hunting and interaction with other groups. Upon the annual return or maturation of certain resources such as spring salmon, berries, and other edible plants, occupants of the winter villages dispersed to specialized fishing, hunting, and gathering campsites comprised of smaller family groups. Subsistence resources were harvested, processed, and often preserved in such a way that they could be stored and transported to back to the winter village for consumption or trade. Winter villages recorded along Bellingham Bay were near Portage Bay and the present-day mouth of the main Nooksack River channel, both west of the project, and near the mouth of Squalicum Creek, in much closer proximity to the project (Suttles 1951:33-41).

Native American subsistence activities most pertinent to this project are shellfish gathering and fishing (Suttles 1951). For both pursuits, Bellingham Bay provided an ideal setting. Clams were gathered in the more sheltered side-bays such as Portage and Chuckanut Bays. Although salmon in great quantity was traditionally taken by local Native communities by reef net near Lummi Island (c.f. Easton 1990; Suttles 1951:154), spring chinook and chum salmon and steelhead trout were also caught in the lower reaches of Squalicum and Whatcom Creeks, and all species of Pacific salmon and trout were taken along the Nooksack River using smaller gear such as dip nets, often from weirs. Additionally, herring were taken in the spawning grounds in western Bellingham Bay, and harbor seals were hunted in the vicinity of Lummi Island (Suttles 1951:34). Figure 4 is a photograph from the late 19th century showing canoes and a Native American encampment below Whatcom Creek Falls, showing continued use of the Bellingham waterfront well after initial Euroamerican settlement along the Bay.

Several traditional village and camp sites in the project vicinity have been recorded by ethnographers from Lummi and Nooksack oral tradition. Figure 5 shows the approximate locations of these places on a composite 1860 General Land Office (GLO) map.

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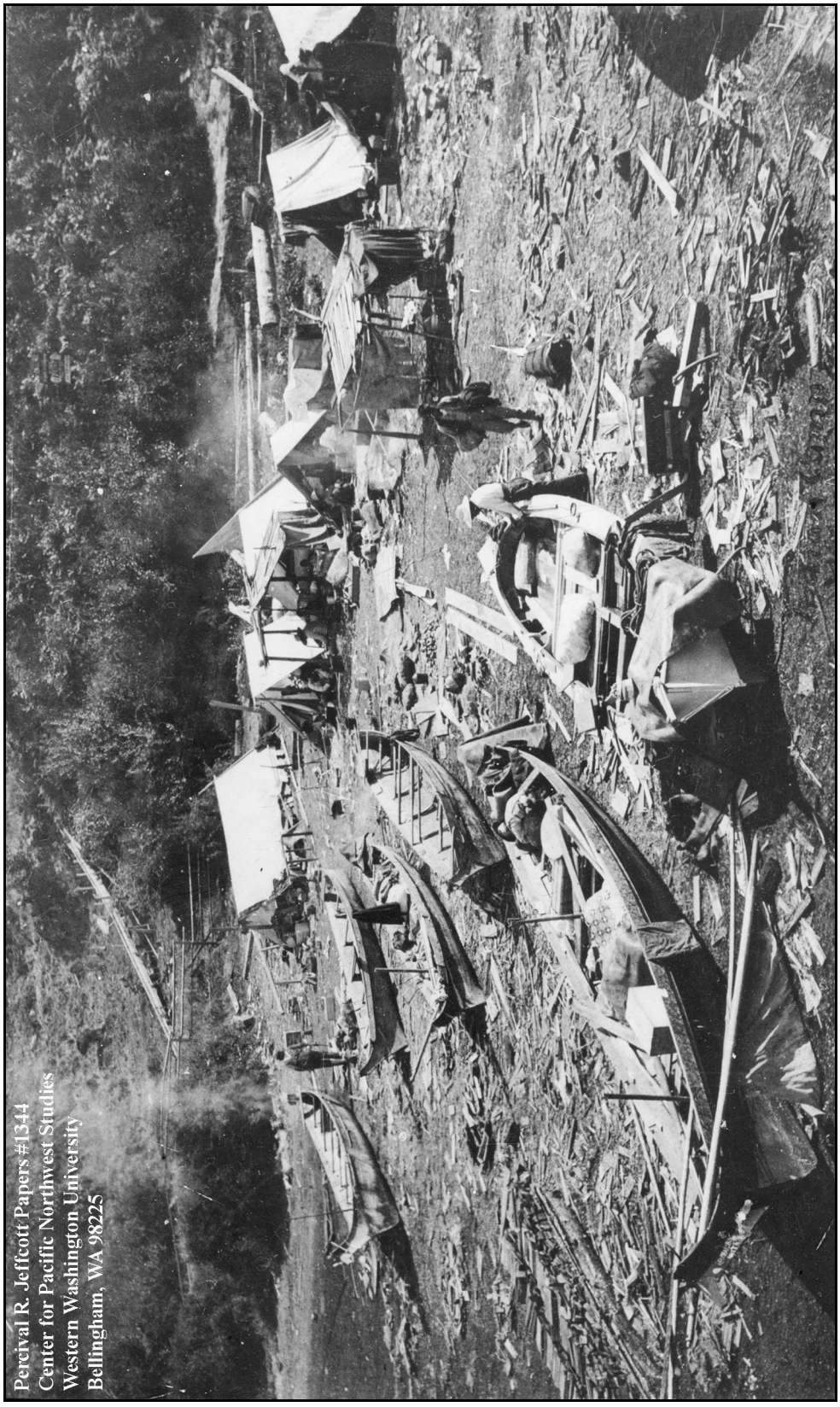

Figure 4. Native camp on Whatcom Creek, 1880 to 1900.

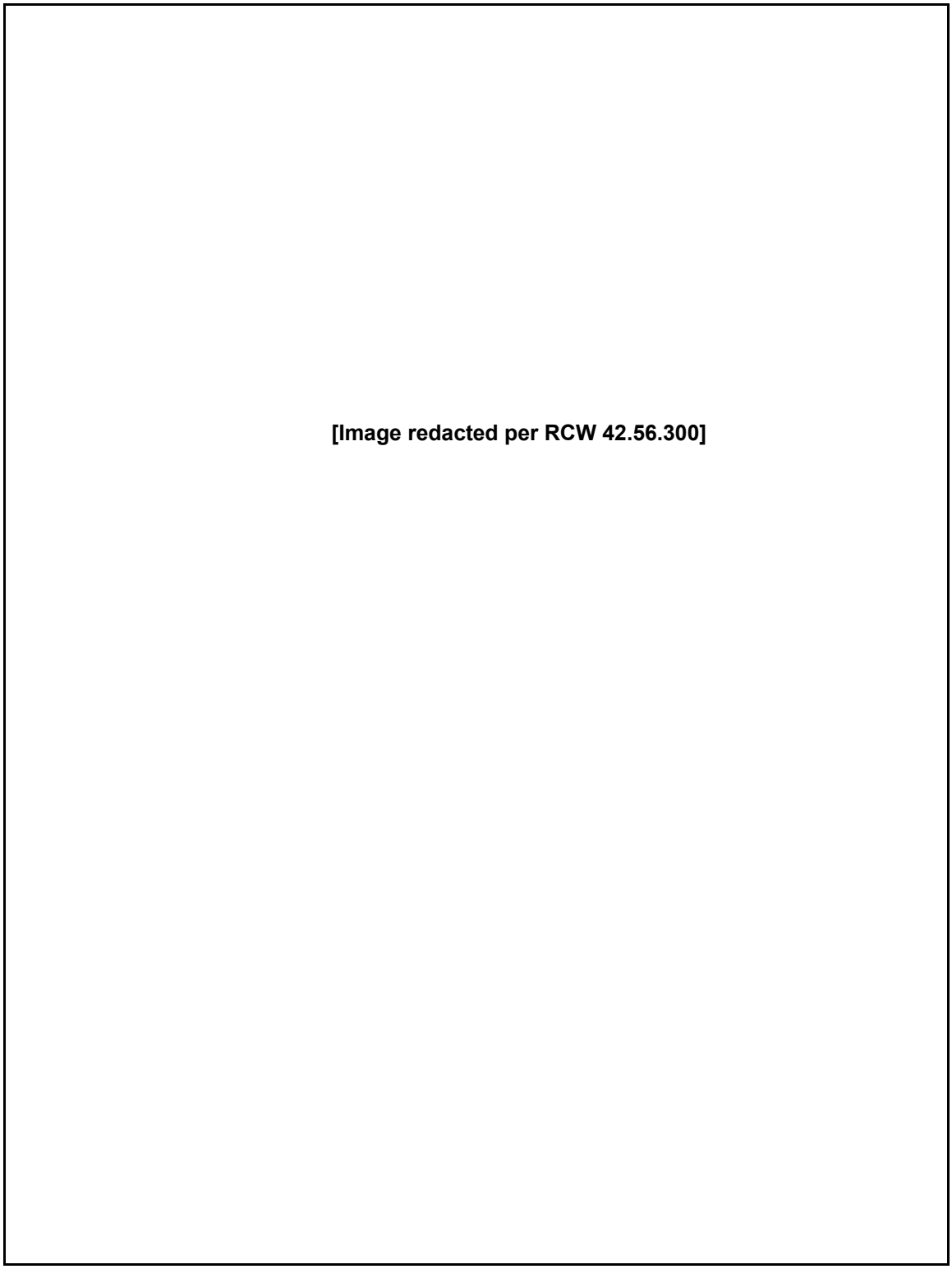

Figure 5. Composite GLO plat from 1860 showing the approximate locations of Native American camp and village sites.

Significant changes in the distribution and demographics of local Native communities occurred both before and after widespread Euroamerican settlement of the region. Shifts in territory occurred as the Nooksack established settlements on Bellingham Bay, including the mouth of Whatcom Creek, and then abandoned them as Lummi communities grew along the Bay. A maritime economy was vital to the Lummi, and at least some access to coastal resources was important to the Nooksack as well (e.g., Richardson 1979; Russo 1981; Smith 1950). Disease epidemics caused many Lummi communities based on the San Juan islands to relocate to the mainland and occupying many places left by the Nooksack. Geomorphological changes in the Nooksack River delta also forced additional settlement changes in the 19th century (Boyd 1999; Russo 1981). As signatories to the Point Elliott Treaty in 1855, the Lummi relinquished their traditional territory and most settled on the reservation established to accommodate them as well as other local Tribes, including the Nooksack and Samish. The Nooksack were not able to attend the treaty signing, and were eventually granted federal recognition in 1973 (Ruby and Brown 1992).

In summary, the ethnographic and ethnohistoric setting has substantial implications for expectations for potential Native American archaeological resources within the project area. Ancestors of the Lummi Nation and Nooksack Indian Tribe have occupied the shores of Bellingham Bay for millennia, and oral and written records indicate that they settled very close to the project boundaries. Their subsistence and other economic activities undoubtedly involved hunting, fishing, and gathering in the subtidal and intertidal and along the coastal beaches and bluffs that comprise the natural landscape within this area. Consequently, the archaeological remnants of Native American activity shortly before and after Euroamerican contact may be found here.

History

The historical period is considered AD 1791 to 1957 for this assessment, a time-span ranging from initial survey of the local coastline by Spanish explorers to a point marking the minimum age required for eligibility to the National Register of Historic Places. The history of the Bellingham waterfront can be partitioned into several periods of development, and examined in light of several themes. In turn, this context provides a means of assessing significance of particular historic archaeological resources that may be found in the project area. The historical geography, synthesized from written records and historic maps, photographs, and drawings, provides a means of predicting the potential kinds and distributions of historic archaeological material within the project area.

The Spanish were the first Europeans to explore the protected inlets and bays surrounding the Strait of Georgia, sailing through Haro and Rosario Straits in 1791 under the command of Francisco Eliza and mapping local geographic features including Bellingham, Chuckanut, and Samish Bays and Lummi Island. Captain George Vancouver's expedition followed one year later, mapping the coastline of Straits and Puget Sound region in much greater detail (Blumenthal 2004:46-72; Hayes 1999:72-74). Their interactions with local Native Americans were brief and any footprint on this landscape was slight relative to subsequent Euroamerican settlers (e.g., Hawley 1945). The Hudson's Bay Company (HBC) and competing American interests for the interior fur trade provided the impetus for settlement and more extensive interaction with local Native American communities in the early 1800s (Carhart 1926; Pickett 1924).

Henry Roeder and Russel Peabody were entrepreneurs in search of an ideal mill site following several large fires in San Francisco. They established the small community of Whatcom, the name of a Nooksack Indian chief (Carhart 1926), in 1853 at the mouth of the creek of the same name. A few years later Fort Bellingham was constructed along the shore of the Bay several miles west of the project. The 1856 T-sheet map shows the village as several buildings in the vicinity of present-day Holly and B Streets and a long pier extending almost 4,000 feet southwest to the deeper water of Bellingham Bay. Two much smaller piers extend from the shore in the vicinity of Vail's claim in what became the community of Sehome. With the exception of the long pier, none of the original settlement of Whatcom is within the project boundary (Figure 6). Sehome was centered on present-day Rose and Myrtle Streets, outside the project boundary as well, although the two small piers to the southwest correspond with the southwest portion of the project.

Whatcom Falls provided the power necessary to run the Roeder-Peabody sawmill, but disappointing profits from the mill prompted staking of Donation Land Claims. These first land claims along Bellingham Bay in the project vicinity are shown in Figure 7, a composite General Land Office (GLO) map from 1863 and 1864 that shows claims by Henry Roeder, Russel Peabody, Edward Fitzhugh, Charles Vail, and William Pattle. All five were eventually issued land patents between 1865 and 1871 under the Donation Land Claim Act (Bureau of Land Management 2007).

Further settlement of Bellingham Bay progressed very quickly when coal was discovered in the vicinity. A flurry of mineral claims were filed in 1853 and 1854, regular shipments of coal left the Bay for San Francisco, and improvements were made to the sawmill. Growth and the need for improvements in transportation, schools, and law enforcement prompted the formation of Whatcom County in 1854. A few years later, the Fraser River Gold Rush of 1858 created a much greater influx of settlers because this small community was the closest American shipping port to the gold claims north of the international border (Edson 1968). At the peak of this gold rush, the communities of Whatcom and Sehome were platted and the Old Nooksack Trail from the mouth of Whatcom Creek north into the Nooksack valley was widened and extended north to Fort Hope, British Columbia (Jeffcott 1945). The rush was brief, and within a few months the Euroamerican population of the Bay area, which had rose from about 150 to as much as 12,000, dropped back to 150 settlers. Speculation on the West Coast terminus for the Northern Pacific Railroad caused another short-lived population boom on the Bay in 1870, followed by a fire at the Roeder sawmill in 1873 and closure of most coal mine operations in the late 1870s (Edson 1968).

By 1883, recovery of the economy and population was underway as new rumors floated of a railroad terminus in the area. The Bellingham Bay Railroad and Navigation Company, established that same year, intended to connect the communities on Bellingham Bay with Fort Hope and Seattle, but poor financing and construction delays led once again to the end of a boom cycle. The Bellingham Bay and British Columbia Railroad, completed in 1891, was at that time the primary rail line, with a freight wharf and terminus in Sehome and tracks running along Railroad Avenue northeast towards Sumas and British Columbia. The northern branch line of the Fairhaven and Southern Railroad was completed a year earlier, part of the Great Northern system between Blaine and Sedro Wooley. This railroad ran adjacent to the Sehome waterfront and atop a trestle over the Bellingham Bay tideflats. By the end of the 19th century, the Great Northern Line ran the trestle route over the tideflats, and the Bellingham Bay and Eastern Railroad and the Bellingham Bay and British Columbia Railroad ran the Railroad Avenue route along the southeastern shore of the Bay (Edson 1968).

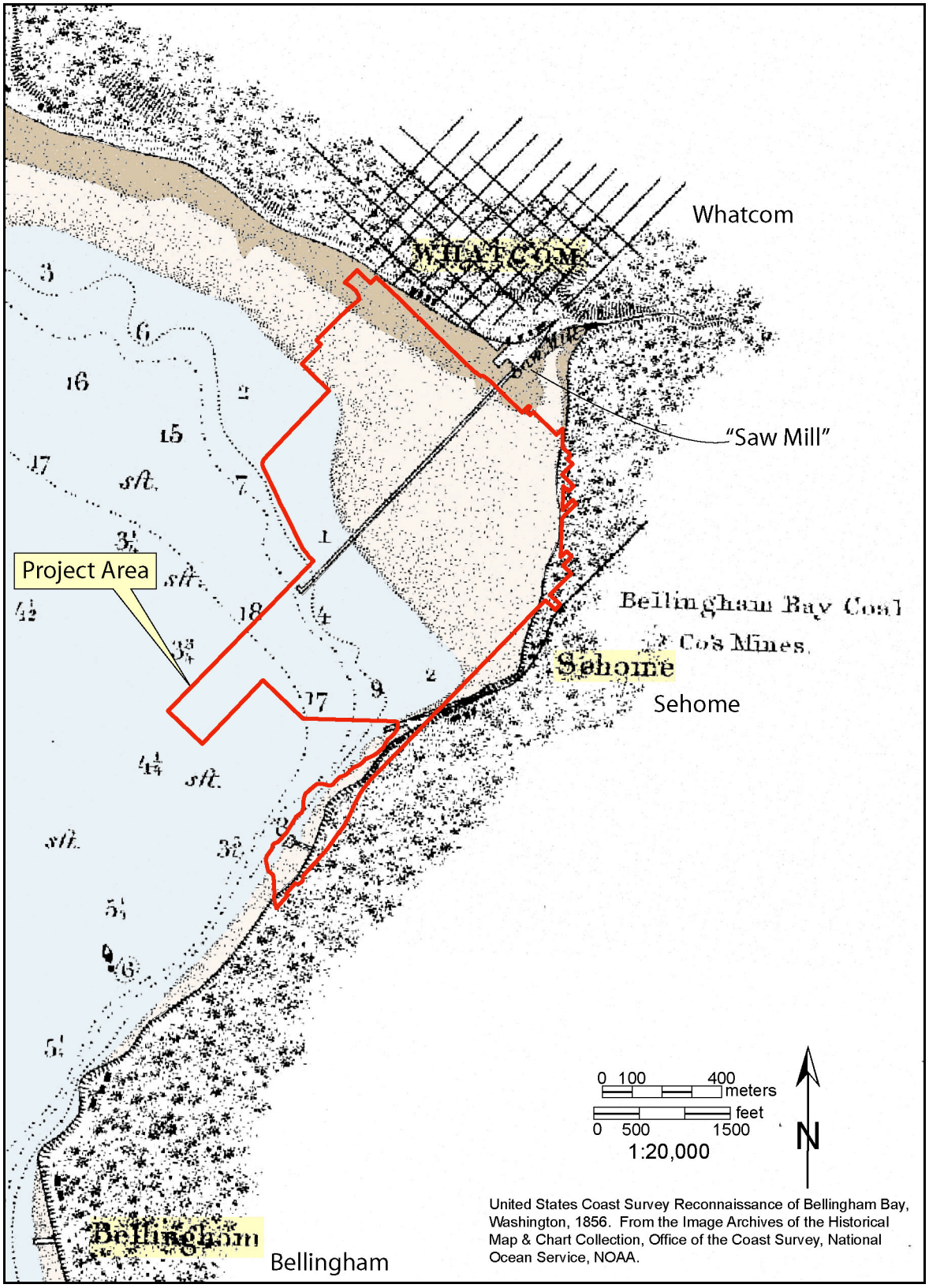

Figure 6. U.S. Coast Survey Map, 1856, showing early Whatcom and Sehome.

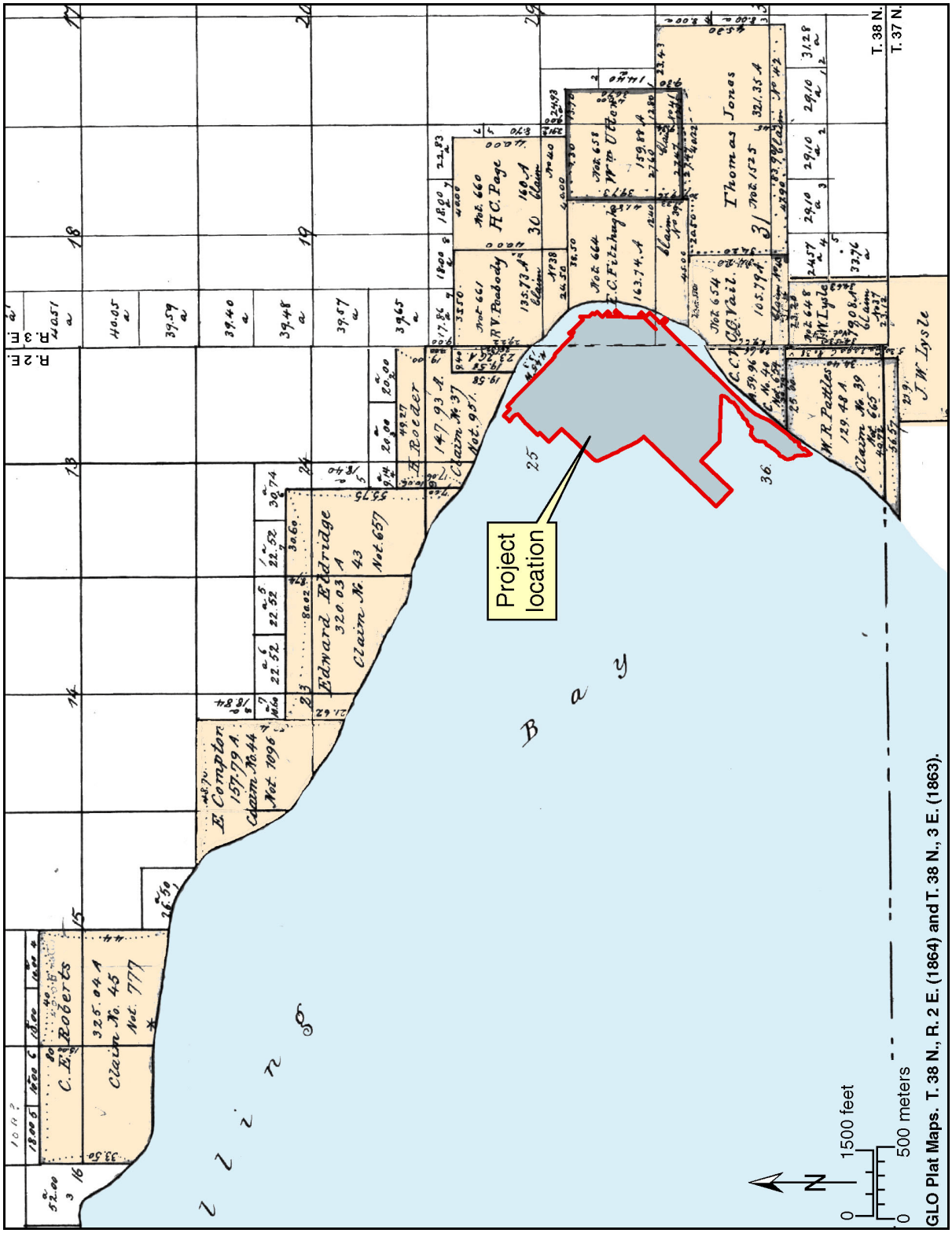

Figure 7. Composite GLO plat from 1863 and 1864 showing Donation Land Claims in the project vicinity.

The towns of New Whatcom and Sehome were still independent municipalities toward the end of the 19th century, yet development along the waterfront was almost continuous between them as shown on a bird's-eye drawing of Whatcom and Sehome from 1889 (Figure 8) and a map from 1893 (Figure 9). Between 1889 and 1890, squatters began constructing wood-frame shacks on pilings over the tideflats on the waterfront in anticipation of an impending survey of the land by the state. This created a "miniature Venice made of board shacks, with firewood, boxes of apples, etc., delivered...by canoe" (Edson 1968:237). By 1900, the mouth of Whatcom Creek had been heavily modified with several new city blocks constructed on fill. Substantial wharves were built into the Bay from the New Whatcom shore and the Sehome shore, on planks and pilings at first, followed by fill placed behind bulkheads. The railroad tracks built on pilings that traversed the mudflats fronting these communities were eventually abandoned as the shoreline was stabilized with wharves and bulkheads onto which the mainline rails were moved (Cheever 1948).

As late as 1897, small wharves still dominated the Whatcom and New Whatcom/Sehome waterfront, dwarfed only by the much longer G Street and B Street (formerly K Street) docks and the Great Northern railroad trestle. Figure 10 is a photograph from this period, showing a large portion of the project area as it was over 100 years ago. At that time, small mills such as J. C. Nostrom's sawmill, D. H. Decan's shingle mill, J. H. Stenger's planing mill, and Ryus Milling Co.'s feed and grist mill were located on the Whatcom waterfront, and larger mills such as the Globe Mill Company, Bellingham Bay Lumber and Manufacturing Company (BBLMC), and the Bellingham Bay Improvement Company (BBIC), were built on broader wharves closer to deeper water on the New Whatcom/Sehome waterfront.

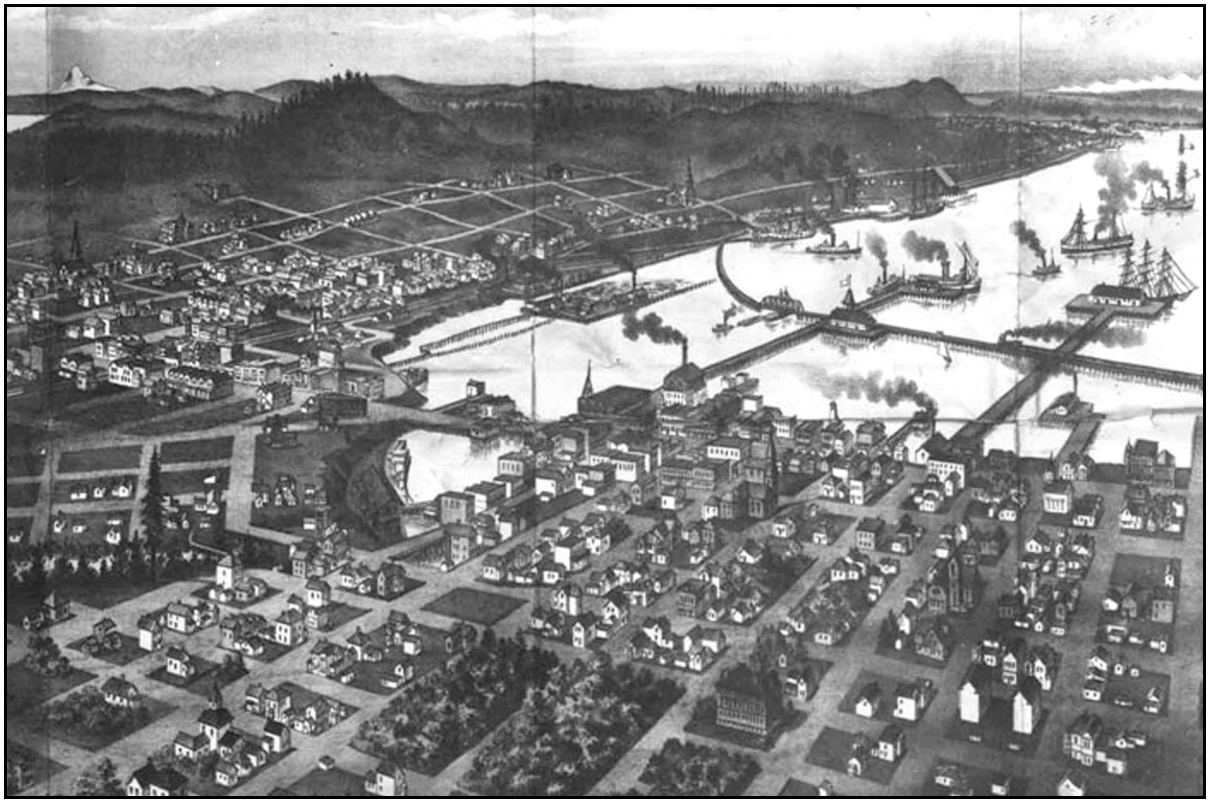

Figure 8. Bird's-eye view of Whatcom and Sehome by Jimmy Pickett, 1889 (Jeffcott collection #1322, Center for Pacific northwest Studies, Western Washington University).

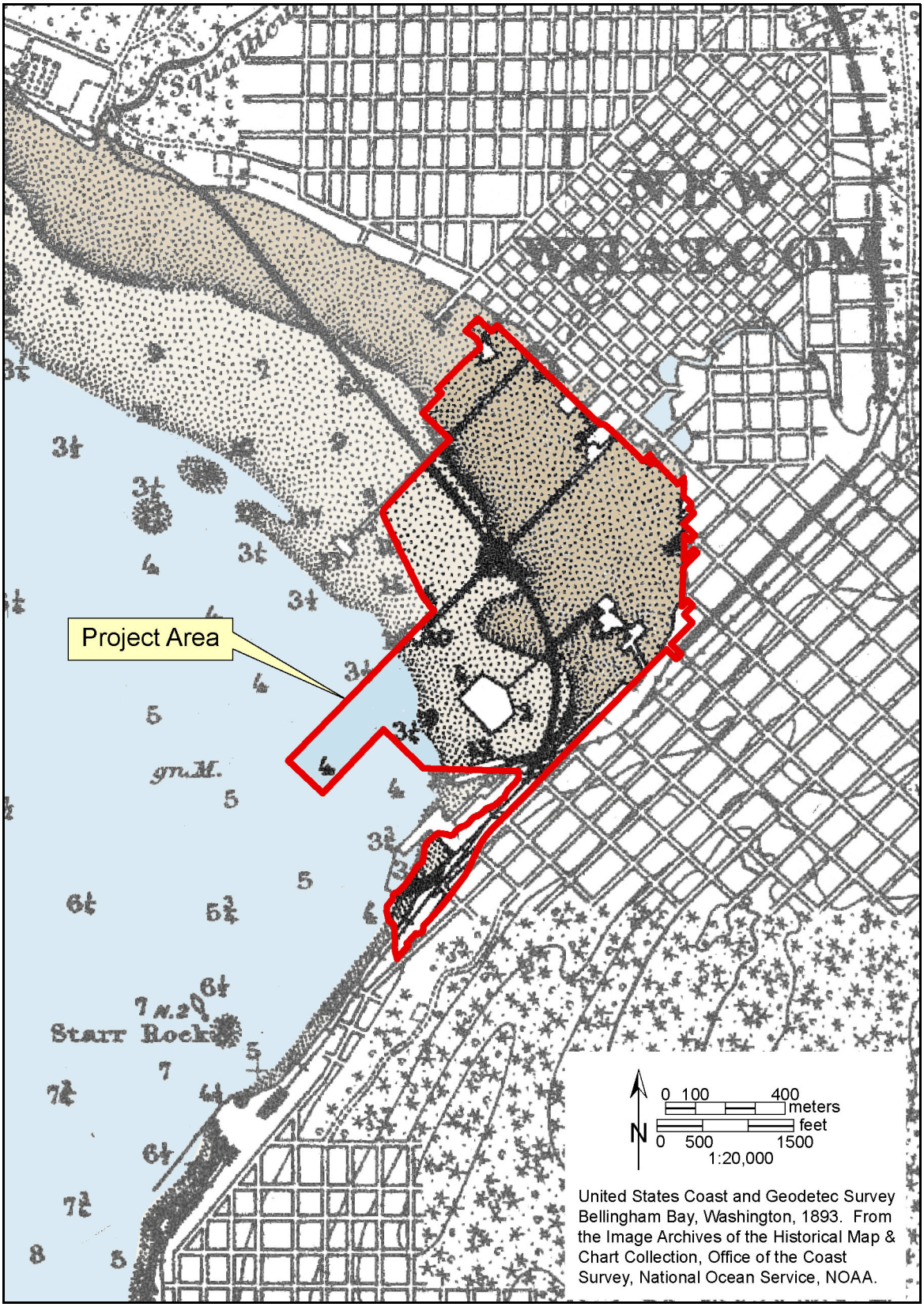

Figure 9. Map showing the New Whatcom and Sehome communities in 1893.

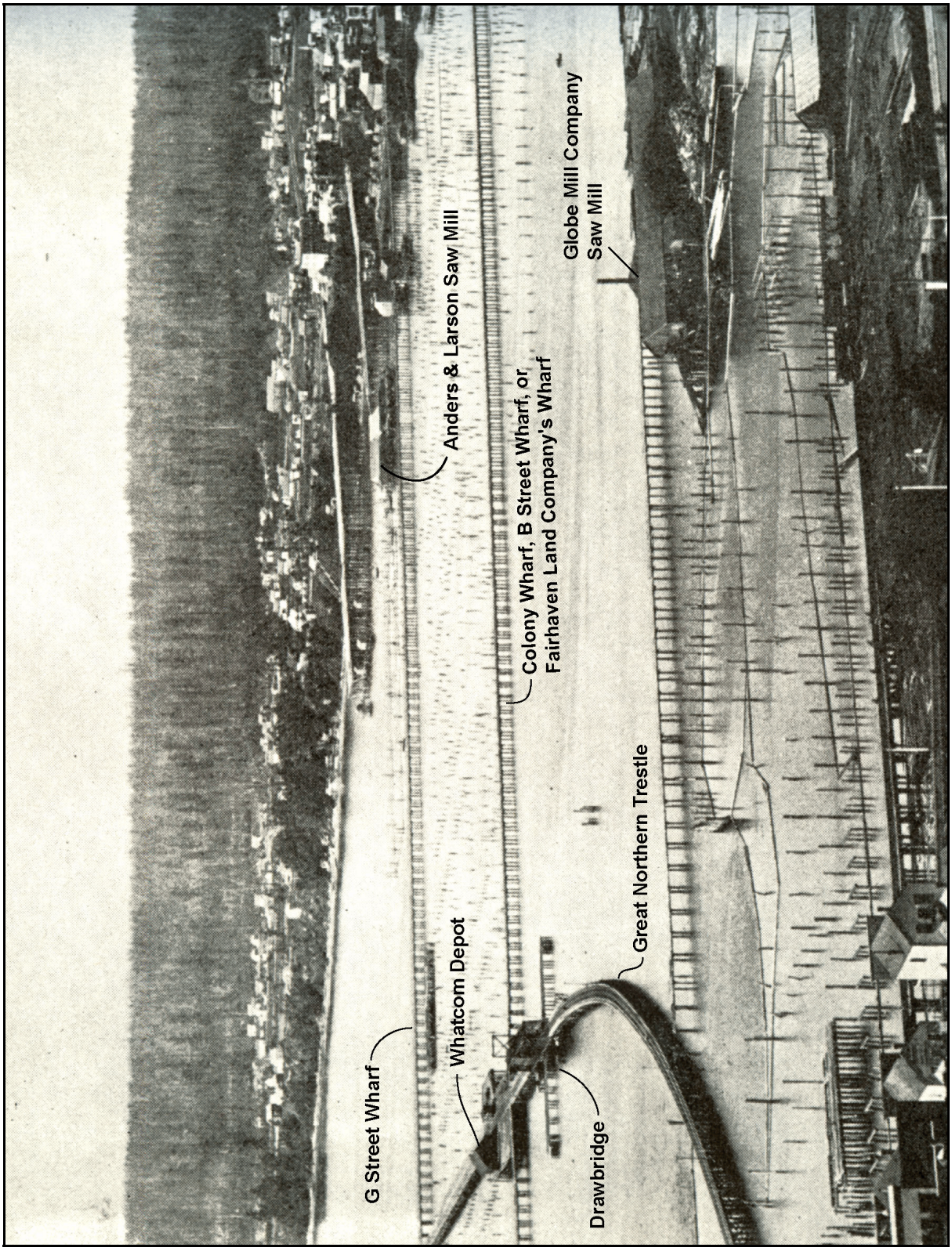

Figure 10. Photograph of the New Whatcom and Sehome tideflats, c. 1895 (modified from Edson 1968:246).

Whatcom and the Fairhaven community to the south were consolidated into the City of Bellingham in 1903. A map from 1906 with some later additions (Figure 11) indicates that substantial portions of the tideflats on both sides of Whatcom Creek were being in-filled. A channel from the mouth of Whatcom Creek was dredged to allow ships to dock closer to the city waterfront, and the newly-filled harbor wharves provided level ground on which were built additional railroad lines and spurs. The shift from narrow piers to broader wharves also encouraged the construction of mills, warehouses, canneries, foundries, boat factories, and other businesses over the former tideflats. There was also a shift from numerous smaller businesses built on the waterfront to fewer, larger operations that expanded their facilities to cover most or all of many of the wharves. By 1913, according to Sanborn Fire Insurance Co. maps, a large wharf between I Street and F Street hosted the Whatcom Falls Mill Company planing and shingle mill (Appendix B). Another large wharf between the Whatcom Creek waterway and D Street was occupied by the Standard Oil Company. Morrison Mill Company extended onto a large wharf occupying the curve of the downtown waterfront, centered on the intersection of Laurel and Army Streets and the former Globe and BBLMC mills. The Bloedel-Donovan Lumber Mill occupied the wharf at the south end of the project area at the former BBIC mill site, and in 1913 reorganized and consolidated several logging companies under its leadership (Clark 1949). The larger corporate structure of many of the waterfront industries in the project area allowed them to stay in business and provide jobs for the growing City of Bellingham through two World Wars and the Great Depression.

The Georgia-Pacific Corporation pulp mill and chemical plant has occupied the majority of wharf space on the waterfront for the better part of the 20th century. The mill began operation in 1925 as a tissue converting plant operated by the Puget Sound Pulp and Timber Company, and evolved over the years into a major pulp, paper and chemical complex (Table 1). Georgia-Pacific acquired the operation in 1963 and added a chlorine plant in 1965. The chemical plant closed in 1999, and the pulp mill ceased operations at the end of 2000. Georgia-Pacific sold the Port of Bellingham its waterfront property and aerated stabilization basin in 2005, including responsibility for environmental clean-up of the properties. Table 1 provides a timeline of historical events leading up to the start of operations at the Georgia-Pacific mill in 1925.

Table 1. Chronology of local and regional historical events in the development of the Bellingham waterfront.

1853	May 25, Village of Whatcom settled
1854	Whatcom County established, with two voter precincts
1855	January 22, Treaty of Point Elliott signed, creating Lummi Reservation
1856	Fort Bellingham constructed
1858	May 8, Plat of Town of Sehome filed
	July 24, Plat of Town of Whatcom filed
1883	August 31, Plat of Town of New Whatcom filed
1888	July 16, Town of Sehome incorporated
1888	November 23, Town of Whatcom incorporated
1889	November 11, Washington granted statehood
1890	April 18, Sehome re-incorporated as New Whatcom
	December 29, Whatcom and New Whatcom consolidate as New Whatcom
1901	June 14, New Whatcom named changed to Whatcom
1903	December 23, Formal consolidation of Whatcom and Fairhaven as City of Bellingham
1925	Georgia-Pacific Mill begins operations on the Bellingham waterfront

Previous Archaeological Investigations

The first reported archaeological research in the region was conducted as part of the Jesup North Pacific Expedition over a century ago. In 1899, Harlan Smith and his colleagues noted numerous shell middens and cairns along the coast of the Strait of Georgia and Puget Sound. Two "shell-heaps" were observed at Marietta at the mouth of the Nooksack River, and

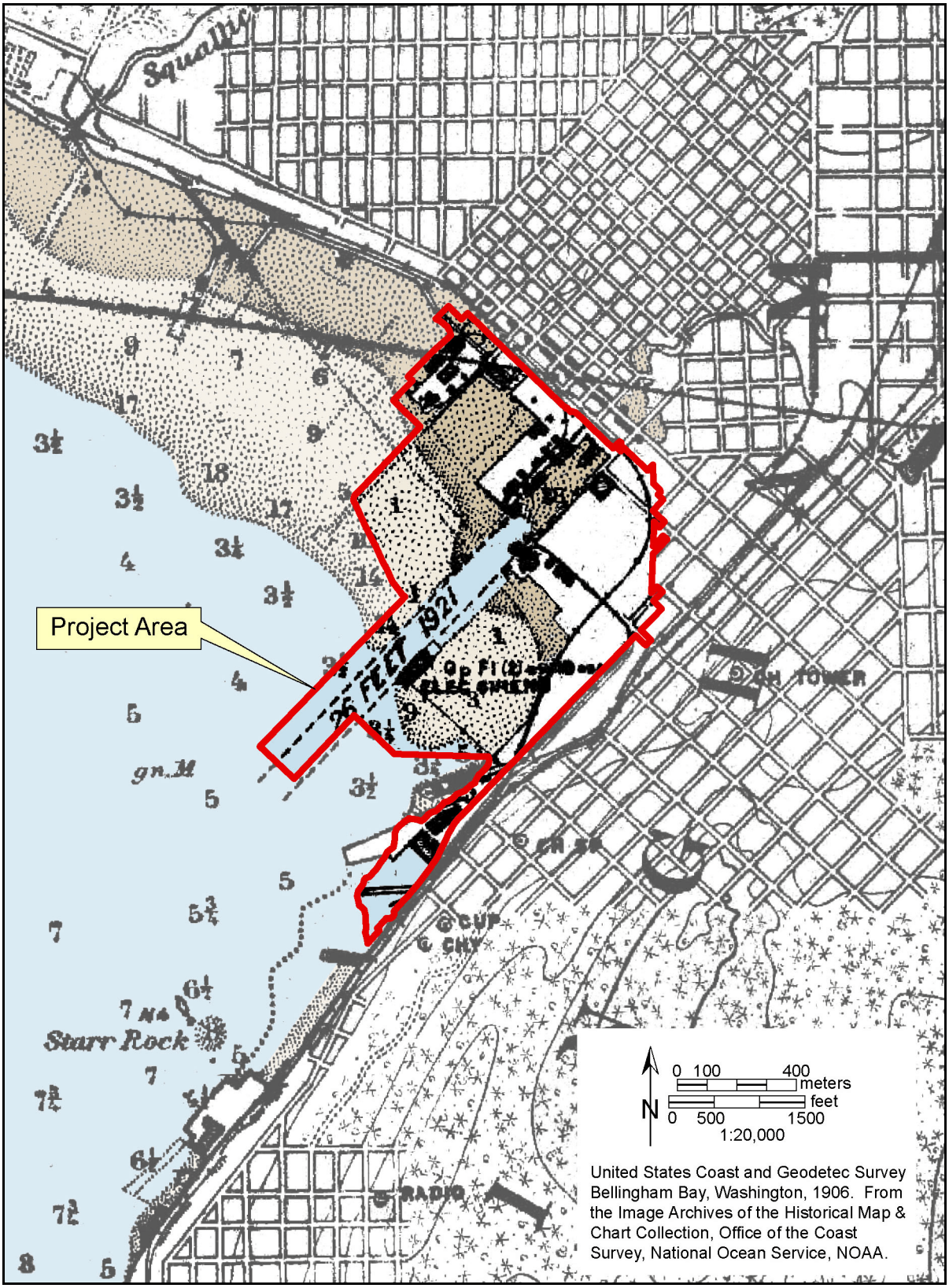

Figure 11. Map showing Bellingham and waterfront wharves and waterways in 1906.

reports of findings of Native American artifacts in the New Whatcom vicinity were also compiled (Smith and Fowke 1901:57; Smith 1907:367-372). Occasional research in the following decades was generally limited to observations across broad geographic areas. **[The remaining text of this paragraph has been redacted under RCW 42.56.300.]**

Archaeological research over the last 20 years in the immediate project vicinity has primarily been within the context of cultural resource management projects, reflecting the pace of development in the City of Bellingham and the need for compliance with state and federal cultural resource management laws. **[This portion of the text of this paragraph has been redacted under RCW 42.56.300.]** Table 2 lists previous cultural resource investigations within approximately one mile of the New Whatcom redevelopment project, and Table 3 lists archaeological sites that have been recorded on the Washington State Archaeological Site Inventory.

Table 2. Previous Cultural Resource Investigations Within One Mile of the APE.

AUTHOR	DATE	PROJECT	RELATION TO APE*	RESULTS*
Munsell, David, A.	1973	Proposed Expansion of the Squalicum Small Boats Basin in Bellingham Bay		
Grabert, G. F.	1973	Survey of Archaeological Resources in the Squalicum Harbor Area		
Castellano, Kyle K.	1983	History of Shoreline Alterations at Whatcom Creek		
King, J. Scott	1992	Proposed Cascade Natural Gas Corporation Pipeline		
Holstine, Craig and Barbara J. Gundy	1998	Cultural Resources Studies for the Washington State Department of Transportation 1998, Vol. 1		
Hartmann, Glenn	1999	Washington State Department of Transportation's Pacific Northwest Rail Corridor		
Dugas, Amy E. and Lynn L. Larson	1999	Bellingham Bay Demonstration Pilot Project		
Stilson, Lee	1999	Comments on Bellingham Bay Demonstration Pilot Project		
Piston, Victoria and Lorelea Hudson	2004	Sprint PCS WWU/Water Tower Wireless Tower SE54XC702B		
Gillis, Nichole A. and Lynn L. Larson	2004a	Holly Street Landfill Project		
Gillis, Nichole A. and Lynn L. Larson	2004b	Holly Street Landfill Project Monitoring Plan		
Juell, Kenneth	2004	Fairhaven Gardens Cultural Resources Monitoring		
Hale, James W. et al. ; Shong and Stevenson	2004; 2005	Little Sqaulicum Creek Park and the Coast Millennium Trail Squalicum Connector Segment A Development		
Hale, James W. et al.	2005	Whatcom Creek Trail Repair and Accessability Improvements		
Wessen, Gary C.	2005a	An Archaeological Survey and Evaluation of The Taylor Uplands Park		
Wessen, Gary C.	2005b	An Archaeological Survey and Evaluation of a Portion of the 45WH735 Site Area, Maritime Heritage Park, Bellingham, Washington		
Equinox Research and Consulting International Inc.	2005	Laurel Village Housing Project		
Bush et al.	2005	Holly Street Landfill Whatcom Creek Redevelopment Project		

*** Information in these two columns has been redacted under RCW 42.56.300.**

Table 3. Previously Recorded Archaeological Sites in the Vicinity of the APE.

SITE NO.	COMPILER/DATE	AGE	DESCRIPTION	APPROX RELATION TO APE*
45WH41	G.F. Grabert 1972	Pre Contact	Shell Midden	
45WH47	G.F. Grabert 1973; Kelly Bush, Jackie Ferry 2005	Pre Contact	Shell Midden	
45WH56	J. Gaston, C. Swanson 1974	Pre Contact	Shell Midden/ Camp site	
45WH60	G.F. Grabert, J. Grabert 1975	Pre Contact	Shell Midden	
45WH71	Edris and Walker 1970	Pre Contact	Camp site	
45WH726	Claborn 2004; Stevenson and Shong 2005	Pre Contact	Lithic Scatter	
45WH732	Mike Shong 2004	1890-1913	Historic Saloon	
45WH735	Reid and Hillegas 2005	Pre Contact/ Historical	Shell Midden; Roeder Mill	

*** Information in this column has been redacted under RCW 42.56.300.**

The results of previous archaeological investigations in the project vicinity suggests that certain landforms are more sensitive than others for containing pre-contact and historic archaeological resources. Dugas and Larson (1999) defined high, moderate and low probability areas for archaeological materials such as shell midden deposits, food processing features, lithic scatters, fish weir remnants, and campsites in a cultural resources overview for Bellingham Bay that included the project area. The pilot study noted that Native American archaeological sites were recorded on sand spits, along beach terraces and embayments, and on bluffs or ridges. The study noted that the present project area is primarily comprised of fill deposits from the last 100 years placed atop tidal flats. The study limited the "moderate to high probability area" for archaeological resources to the mouth of Whatcom Creek in a small area opposite Citizen's Dock southwest of the mainline railroad tracks (Dugas and Larson 1999:26-29).

Archaeological sites recorded near the project are primarily relatively visible shell midden deposits, clustering near the mouths of the Nooksack River, Whatcom Creek, and Padden Creek where anadromous runs of salmon and trout migrated to upstream spawning grounds. Sites found near the mouth of the Nooksack River are more recent, as are shell middens associated with the modern marine shoreline that represent late prehistoric and early historic settlements. Shell middens in upper delta locations tend to be older than those on the coast nearest to the project area based on sea level changes and delta progradation. One early-Holocene occupation site on Lummi Island, 45WH98, is on glacial drift and predates 2500 BP (Grabert and Griffin 1983). More recent sites are on the Bellingham Bay side of Lummi Island, suggesting a shift of people toward the mainland during the early nineteenth century and probably the late eighteenth century (Suttles 1951).

Although previously recorded archaeological sites have been identified on landforms above the intertidal zone that provide a relatively stable surface for occupation (and where archaeologists have been most able to investigate), the intertidal and subtidal portions of the project area also have potential for archaeological remains (cf. Stilson 1999). No direct underwater archaeological investigations have been conducted, however, so the presence of such features as submerged Native American fishing weirs remain speculation based on known weir sites in similar settings in Western Washington such as Grays Harbor and Commencement Bay. Historic resources either purposely placed, such as dock pilings, or lost by accident, such as sunken vessels, may also occur here. Despite heavy maritime traffic since the early historic period and the proximity of airports, naval air stations, and plane routes to the Bellingham waterfront, an inventory of sunken vessels and aircraft from 1990 lists only one sunken vessel in

Whatcom County, at Point Roberts some distance from Bellingham Bay (PTI Environmental Services 1990).

Expectations of Archaeological Site Potential

Given the environmental setting, history of human occupation, and extent of historic and modern disturbances that have locally occurred, sensitivity for encountering different kinds of archaeological resources varies spatially within the project area. Although the probability of encountering archaeological materials associated with Native Americans is especially difficult to estimate in a heavily modified urban setting such as the Bellingham waterfront, any pre-contact artifacts and features encountered on intact pre-fill tide flat and shoreline surfaces within the project area would carry high scientific value. Historic-period artifacts and features may similarly have potential significance for their scientific value. The following sections explore the potential distribution of sites and site types as conditioned by resource availability and natural landform.

Archaeological Potential of Landforms

The shoreline features of Bellingham Bay in the vicinity of the project area carry differing potential for harboring archaeological resources (Figure 12). Table 4 summarizes the natural landform types and their archaeological potential. In general, shoreline landforms can be separated into two main groups based on relative height above sea level. The first group is composed of landforms regularly affected by tidal fluctuations and include the tide flats fronting the Whatcom Creek estuary as well as any remnant deltaic and tidal wetland deposits formed at the mouth of Whatcom Creek, and the lower foreshore portions of beaches. The second group of landforms are those rarely or never affected by tidal fluctuations. This group consists of upper foreshore, berm, and backshore zones of beaches, and the bluffs ringing the Bay behind the shoreline. The following subsections introduce some of the archaeologically salient features

Table 4. Relative Archaeological Potential Associated with Landforms Along the Bellingham Bay Shoreline.

LANDFORM	DESCRIPTION	PRE-CONTACT ARCHAEOLOGICAL POTENTIAL	HISTORIC ARCHAEOLOGICAL POTENTIAL
Tideflats	The lowermost portion of the deltaic plain of the Nooksack and smaller stream deltas in northern Bellingham Bay. Tidal channels provided locations for weir and net fishing; gently sloping substrate provided platform for historic features on pilings or fill.	Moderate	Moderate
Delta	Upper intertidal zone and leading edge of the subaerial portion of the Whatcom Creek deltaic plain.	Moderate	Moderate
Tidal Wetlands	Small and possibly ephemeral wetlands that may have formed at the Whatcom Creek estuary	Low	Low
Beach	Beaches exhibit variable substrates which may be conducive to either habitation or resource harvesting, depending on local conditions.	High	Moderate
Bluffs	Bluffs define the back of the shoreline for much of the length of Bellingham Bay. Suitability for human use would vary according to topography and height of the bluff edge.	High	High

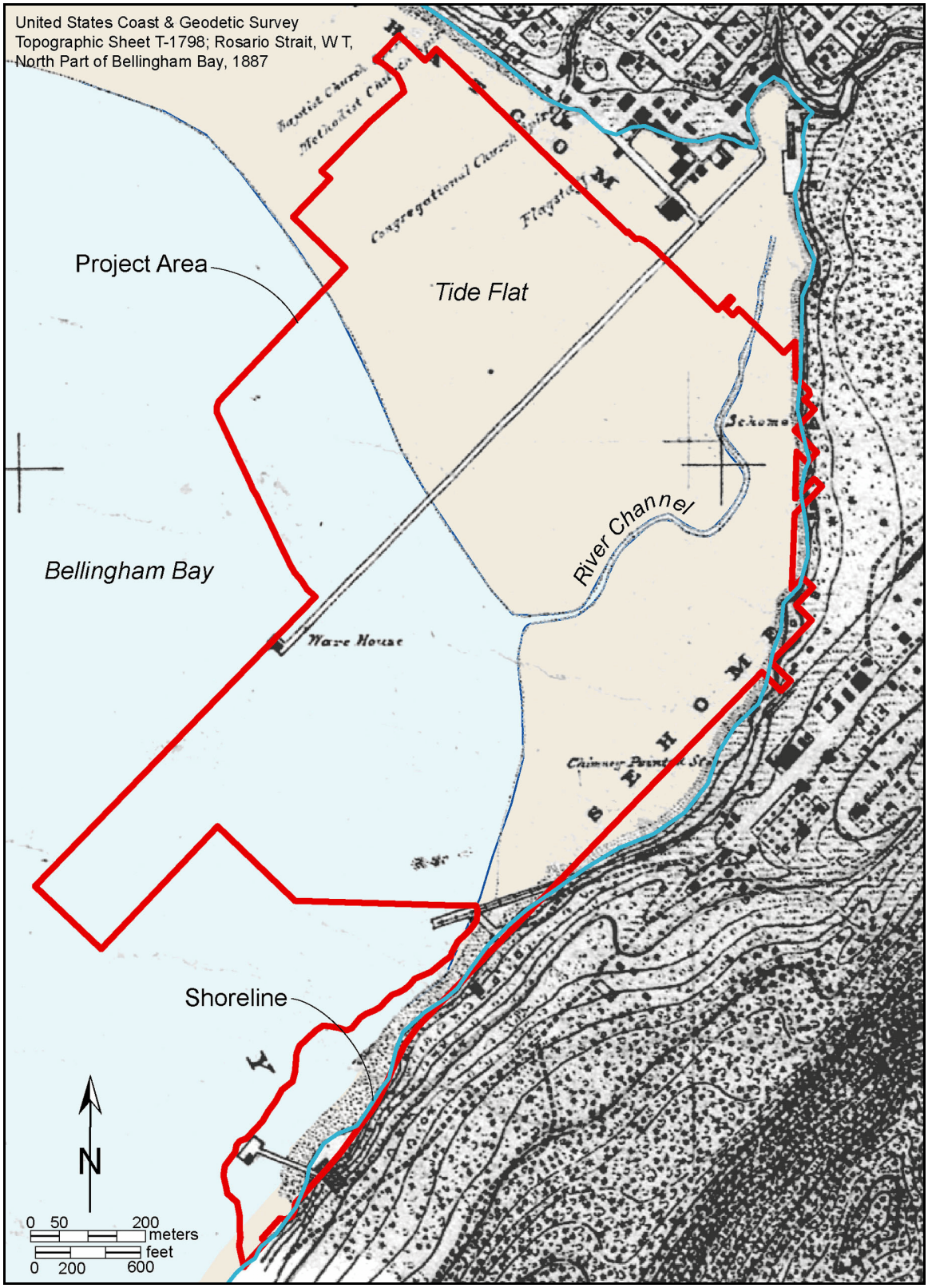

Figure 12. Map showing the pre-development (1887) shoreline features of Bellingham Bay within the project area.

of the landforms and discuss them in terms of archaeological potential. Archaeological potential here is a relative measure of the probability of encountering the physical artifacts or features of past human activity in a particular area, and is dependent upon the kinds of activities that occurred on a particular landforms.

The Deltaic System, Tide Flats, and Tidal Wetlands

Areas adjacent to the mouth of Whatcom Creek, the tideflats fronting the mouth of the creek, and any other smaller tidal wetlands on the Whatcom Creek flood plain could harbor significant pre-contact and ethnohistoric archaeological materials. Villages often were located near estuaries because of the ready availability of abundant and diverse resources. This ecological setting, for example, provided habitats for shellfish; migratory birds; and plants like tule and cattail for making mats, stinging nettle for fiber for cordage and nests; as well as estuarine roots, rhizomes, and bulbs (Deur and Turner 2005). Tidal channels and river distributary channels on the tidal flats also provided opportunities for harvesting anadromous fish in large quantities.

Site types associated with the intertidal portion of the landform include weirs and traps made with posts and flexible withes. Weir remains have been found in intertidal settings in Tacoma, Grays Harbor, and on the Skagit Delta (Bernick 2001, Munsell n.d.). Temporary camps established seasonally on high ground might include hearths, drying and smoking racks, processing ovens, other processing features, and midden deposits.

Bluff and Beach Systems

The oldest landforms, the bluffs and the glacial drift uplands behind them, were available for human occupation early in the Holocene between 9,000 and 11,000 years ago. These areas may preserve remnants of camps associated with early hunter-gatherers who first colonized the region and who moved together from location to location with little specialization in settlement type. These early camps would be characterized by Olcott period, or earlier, stone tools and fire-modified rock (FMR) from campfires.

Later inhabitants of the region, who were more focused on the marine shoreline where fish, shellfish, and sea mammals could be found, were more likely to use the uplands and bluffs for special purposes, some related to resources like the cedar, game animals, berries, and other plants found there, as well as other purposes unrelated to subsistence, such as burials. In a similar setting we might expect to find cedar trees with bark stripped away and others felled for use in making canoes, or split to produce house boards. Clusters of reduced cobbles used for woodworking may also be found in proximity to the shoreline villages. Campsites, if preserved, would be near the places where resources were harvested and processed, and the archaeological assemblages associated with these activities would tend to be smaller and characterized by a less diverse range of artifact types in association with smaller clusters of FMR.

Isolated stone artifacts lost in hunting, or used and discarded could be expected from any time period. These artifacts are difficult to attribute to particular culture periods with any degree of confidence unless they possess a distinctive shape or stylistic feature that informs on their time of manufacture.

Expectations for Pre-Contact and Ethnohistoric Native American Archaeological Resources

Based on the prehistoric culture-historical sequences that have been developed for nearby areas and the substantial amount of compliance-driven archaeological investigations in the immediate vicinity of the project, expectations can be developed for different portions of the project area. These expectations are based on the natural landforms within the project boundary, but are tempered by the extent to which historic and modern development within those portions of the project area may have damaged, destroyed, or removed prehistoric-period archaeological deposits.

Although landforms such as the tideflats have an inherently high potential for artifacts such as sunken canoes, weir stakes, and other lost or discarded Native American fishing gear, the probability of encountering such material in places where fill has been placed atop the tideflats is very slight. Former tideflats within the project area not covered by fill, including the settling pond and Whatcom Creek Waterway, have still undergone a substantial amount of disturbance such as dredging that would greatly lower expectations for finding prehistoric archaeological remains. Therefore, expectations for Native American archaeological sites are low in former tideflats in project redevelopment areas 1-10, the proposed marina, and Whatcom Creek Waterway, which corresponds with the majority of the project area.

The former beach zone below the bluffs has been completely covered by historic development of the waterfront, yet Native American settlement of this landform prior to the late 19th century was substantial and included temporary dwellings, canoe landings, drying racks, and other features as evidenced by historic photographs and inferred from ethnographic records. The density of archaeological deposits would be much greater along the beach than the tideflats, and if present may be intact beneath historic fill. Following ethnographic and ethnohistoric records, expectations may vary along the length of the beach with probability of encountering such material increasing with proximity to the mouth of Whatcom Creek and possible remnant delta and tidal wetland deposits. Expectations are therefore moderate to high in portions of redevelopment areas 2, 5, 7, 9, and 10 within the former beach zone.

Previous archaeological research in the Bellingham area and in similar settings throughout the region indicate that the bluff edges also were preferred areas for pre-contact and ethnohistoric occupations in addition to the beaches below the bluffs, and archaeological sites in bluff settings have yielded material dating from the past several millennia. In the project vicinity, the majority of the bluff edge overlooking the waterfront has been developed. Buildings, roads, sidewalks, and buried utility alignments have disturbed or removed sediment from this landform, where archaeological deposits likely would have been buried only at shallow depths. There may, however, be areas of intact surface sediments left undisturbed by grading or covered by historic fill that have a moderate to high probability to preserve Native American archaeological deposits. These areas occur in portions of redevelopment areas 2, 5, and 7 atop the existing bluffs where road and bridge construction are proposed to link the project area to the rest of downtown Bellingham.

Expectations for Historic Euroamerican Archaeological Sites

Historic records and maps indicate that much of the land in the study area has been constructed over the past 150 years to accommodate waterfront commercial development. The natural landform is not considered nearly as much of a predictive factor in the kind and distribution of

historic archaeological resources as is the case for Native American archaeological resources. The archaeological signatures associated with historic land use such as sawmill operations, dock and wharf construction and maintenance, and other port-related industry, are likely beyond anticipated depths for development activities proposed under the project alternatives. Objects such as bricks, pilings, hardware, glass, and other construction material may be found in concentrations reflecting specific past activities, or may be found redistributed in deposits along with fill, ballast, coal, and other sediments that were used to construct the waterfront. Expectations are therefore high for encountering historic archaeological material throughout the project area.

1.3 METHODS

The assessment of the potential for archaeological resources in the project area is derived from analysis of archival and historic records, photographs, and maps, and a summary review of geotechnical data available from other recent and ongoing development projects in the vicinity. A check of records filed at the Washington State Department of Archaeology and Historic Preservation (DAHP) in Olympia provided information on previously documented archaeological investigations and previously recorded sites in the vicinity of the project area. Historic maps and photographs were acquired from Artifacts Consulting, and accessed at the Center for Pacific Northwest Studies, the Whatcom Museum of History and Art, and the Whatcom County Historical Society in Bellingham, and the Pacific Northwest Digital Collections at the University of Washington library in Seattle. Digital copies of Sanborn Fire Insurance maps were accessed from the Seattle Public Library web page. Information on the natural and cultural setting of the project was accessed at the Western Washington University and University of Washington libraries and the NWAA office. Geotechnical information was derived from studies done in connection with the Whatcom Waterway remediation project.

Because of the change in landscape over the past 150 years and the complete inaccessibility of sediments below almost all of the project area, fieldwork was limited. A site visit was conducted on May 25, 2007, accompanied by a Port of Bellingham representative. Existing conditions were recorded, photographs taken, and standard field forms and photograph logs completed.

1.4 RESULTS AND DISCUSSION

Zones within the project area were differentiated for Native American archaeological resources based on the natural landforms identified within a particular redevelopment area, either from direct observation of their surface expression or inferred from historic maps in those areas covered by historic or modern fill. Without access to natural landforms buried beneath fill, however, specific adjustments to the probability that take post-depositional disturbances into account cannot be made at this time.

Probability areas within the project area were differentiated for historic archaeological resources based on the distribution of buildings and historic commercial and transportation features shown on historic maps, photographs, and written accounts. As with Native American archaeological resources, the extent of disturbance caused by later land use practices to early historic resources cannot be assessed at this time.

Landforms in the Project Area

Table 5 lists the landforms in each project sub-area based on nineteenth century maps of the Bellingham Bay shoreline, and Figure 12 shows the distribution of landforms in the study area as mapped in 1887. Most of the project area has been built on fill placed on the tideflats, and only redevelopment areas 2, 5, 7, and 10 contain remnants of the original bluffs fronting the bay and small portions of adjacent uplands behind the bluffs. Redevelopment areas 1, 2, 5, 7, 9, 10, and the Whatcom Waterway overlie 19th century beach and shoreline features of which remnants may still exist today below the existing ground surface.

Table 5. Landforms and Their Probability for Native American Archaeological Resources by Project Sub-Area.

PROJECT REDEVELOPMENT AREA	NATURAL LANDFORM(S) PRESENT (1856 map; see Figure 6)	PROBABILITY
1	Tideflat; Possible Delta, Tidal Wetlands, and Beach along NE edge	Moderate
2	Tideflat; Beach and Bluffs at E edge; Possible Delta at N edge	High
3	Tideflat	Moderate
4	Tideflat	Moderate
5	Tideflat; Beach and Bluffs at NE edge	High
6	Tideflat	Moderate
7	Tideflat; Beach and Bluffs at NE edge; Beach at SW edge	High
8	Tideflat	Moderate
9	Tideflat; Beach at SE edge	High
10	Tideflat; Beach and Bluffs along SE edge	High
Marina	Tideflat	Moderate
Waterway	Tideflat; Possible Delta and Tidal Wetlands near modern mouth of Whatcom Creek	Moderate

Archaeologically Sensitive Areas Within the Project Area

Portions of several redevelopment areas are likely to contain remnants of the pre-contact shoreline and bluffs, and therefore have a relatively high potential to preserve Native American archaeological resources. Although the former tideflats that comprise the majority of the project area have some potential to contain archaeological materials such as the remnants of fish weirs, these would likely be encountered as isolated finds beneath the fill. The undeveloped portions of the bluffs along the eastern edge of redevelopment areas 2, 5, and 7 are sensitive for Native American artifacts and features such as FMR concentrations, structural remains, occupation surfaces, and shell midden deposits. These materials would probably not be buried as deeply under historic fill given the original relative higher elevation of these landforms. Historic documents indicate bluffs were along the southeast edge of redevelopment area 10, and though grading may have reduced the height of portions of the bluffs, redevelopment area 10 may still retain some potential for pre-contact archaeological resources along the shoreline below the bluffs. Similar resources, including artifacts, shell midden deposits, occupation surfaces, structural remnants, and the remains of canoes may be encountered near the contact between natural beach deposits and the historic fill along the northeast edge of redevelopment

area 1 and the Whatcom Waterway; the east edge of redevelopment areas 2, 5, and 7; the southwest edge of redevelopment area 7; and the southern edge of redevelopment area 9. In these areas, Native American archaeological deposits may be found below the fill or within stratified pre-contact sediments.

Figure 13 shows estimates for areas of the proposed project to contain significant Native American archaeological materials, ranked as High, Medium, and Low probability. The rankings are derived from analysis of ethnographic accounts, historical maps, and the results of previous archaeological research. The high probability zone includes the bluffs, the shoreline extending to the upper intertidal zone, and the tideflat distributary channel of Whatcom Creek, while the moderate probability zone includes the areas of the project inundated by the daily tides. The low probability zone includes deeper waters in the subtidal zone below low mean water.

The intensity and focus of historic activity along the Bellingham Bay waterfront makes the probability high of encountering historic archaeological resources during project excavation below the existing grade throughout the entire project area, regardless of natural landform. The resources may be historic materials associated with specific businesses or transportation corridors in the project area, or may be the result of accumulation of historic debris near and under wharves built on decking and pilings. Tables 6 and 7 lists business and other features within each project redevelopment area, as depicted on Sanborn Fire Insurance Company maps spanning the years 1885-1950. The maps show if buildings and structures on the tideflats were built on decking and pilings or were constructed on fill behind bulkheads (Appendix B). For example, early wharves, railroad tracks, and other features were initially built on pilings. Some buildings and structures were removed after being demolished, some were incorporated into the fill on which the existing wharves were built, and a few may remain as standing structures today. Old structures that were not re-used or incorporated into new structures may have been demolished, or may have burned, collapsed, and incorporated into wharf fill. The fill deposits also are likely to contain layers of debris accumulated under the wharves that originated as refuse from vessels or from land.

Figure 13. Project sub-areas showing potential to find intact Native American archaeological materials.

Table 6. Historic Businesses and Features Shown on Sanborn Fire Insurance Co. and other Maps, 1885-1897, by Project Redevelopment Area.

REDEV. AREA	1885	1888	1890	1891	1897
1	Limited Plank/Pile Drives	Limited Plank/Pile Drives	J.C. Nostrom sawmill at end of I St. Pier on plank/pile; Small lodgings on plank/pile southwest side of 12th St.	Long G St. and B St. Plank/pile docks; Andreas and Larson sawmill at end of I St. Pier on plank/pile; Female lodging and French laundry on piles SW side of 12th St.; B'ham Bay Ice Co. along K St. Pier	Complex of buildings on piles SW of 12th St: D.H. Decan's Shingle Mill, female boarding; B'ham Bay Ice & Cold Storage Co. Plant along K St. Pier
2	None	None	Limited Plank/Pile Drives	Limited Plank/Pile Drives	A few vacant buildings bluff-top on Bay St.
3	None	None	None	None	None
4	None	None	None	Fairhaven & Southern RR mainline on trestle	Fairhaven & Southern RR mainline on trestle
5	Limited Plank/Pile Drives	Limited Plank/Pile Drives	Bellingham Bay Lumber & Mfg. Co. Mill	Bellingham Bay Lumber & Mfg. Co. Mill	Bellingham Bay Lumber & Mfg. Co. Mill listed as vacant
6	None	None	Limited Plank/Pile Drives	Limited Plank/Pile Drives	Limited Plank/Pile Drives
7	Possible structure on bluff (1887 T-sheet)	None	Plank/Pile Drives to Globe and B'ham Bay Mills	Plank/Pile Drives to Globe and B'ham Bay Mills; intersection of BB&BC and F&S RR tracks	In process of being filled; spur RR tracks; intersection of BB&BC and F&S RR tracks
8	None	None	Globe Mill Co. Sawmill	Globe Mill Co. Sawmill; Fairhaven & Southern RR mainline on trestle	Globe Mill Co. sawmill listed as vacant; Fairhaven & Southern RR mainline on trestle
9	Railroad spur and wharf in southern corner (1887 T-sheet)	Railroad spur and wharf	Railroad spur to B'ham Bay and B.C. Railroad wharf	Railroad spur and BB&BC RR freight wharf	Railroad spur and BB&BC RR freight wharf
10	Early wharf on piles (1887 T-sheet)	Early wharf on piles	B'ham Bay Improvement Co. Mill (under constr.)	B'ham Bay Improvement Co. Mill	B'ham Bay Improvement Co. Mill
Marina	Plank/pile long dock to warehouse (1887 T-sheet)	Plank/pile long dock to warehouse	Plank/pile long dock to warehouse	Fairhaven & Southern RR mainline on trestle; K St. Pier	Fairhaven & Southern RR mainline on trestle; K St. Pier
Water-way	Plank drive to long dock landing (1887 T-sheet)	Plank drive to long dock landing	Plank drive to long dock landing on "K" St.; J.H. Stenger's Planing Mill	Plank drive to long dock landing on "K" St.	K St. Pier; Fairhaven Land Company wharf at end of pier;

Table 7. Historic Businesses and Features Shown on Sanborn Fire Insurance Co. and other Maps, 1904-1950, by Project Redevelopment Area.

REDEV. AREA	1904	1913	1950
1	Roeder (formerly 12th St.) includes Great Northern RR mainline; buildings on SW side of street "vacant" on piles; Whatcom Falls Mill Co. and P.K. King's grist mill on fill wharf between I/J waterway and G St.	Area SW of Roeder consists of two main bulkheaded wharves on fill: Whatcom Falls Mill Co. on wharf between I/J Waterway and G St., Crescent Mill at Chesnut and G St.; Standard Oil Co. on bulk/fill wharf between D and B St.	NW wharf is primarily fill, with US Naval Reserve near Chestnut and North Pacific Frozen Products Co. cannery at end of wharf; D-B St. Wharf is also on fill, with Northwest Steel Casting Co. Near Chestnut and Standard Oil complex at end of wharf
2	GN RR trestle	Wharf built on piles, with Quakenbush General Warehouse; GN and B&N RR main tracks	Wharf on fill and piles, with Pacific Coast Paper Mills, Puget Sound Pulp & Timber Co., GN and B&N RR main tracks
3	Planked drive and tracks on piles to Morrison Mill	Vacant wharf on piles	Puget Sound Pulp and Timber Co. Mills
4	Morrison Mill Co. Sawmill on piles; portion of D. Ferguson mill lumber wharf	Morrison Mill Co. Sawmill on piles	Puget Sound Pulp and Timber Co. Mills
5	Washington Shingle Mill; Great Northern RR mainline trestle	Railroad spur along W. Laurel.	B&N RR main track; A few auto garages, spur RR lines and street car trestle
6	Small boat building; Limited Plank/Pile Drives and trestles	Limited Plank/Pile Drives and trestles	Columbia Valley Lumber Co. Sheds
7	At NE end: Whatcom Sash & Door Co.; At SW end: J.R. Christle's Wood Turning Shop	At NE end: Western Wood Working Co. ; GN and B&N RR tracks	Bloedel-Donovan Lumber Yard, B&N RR main tracks
8	D. Ferguson's Mill; GN RR passenger and freight depot in south corner	Small part of Morrison Mill Co.; Some vacant wharf space on pilings	Small part of Puget Sound Pulp and Timber yards; plank on pile drives
9	Railroad spur to BB&BC RR freight wharf; Templin Feed Co. Feed Mill	Railroad spur and BB&BC RR freight wharf; J.R. Magill's Fruit Cannery; Long dump RR spur on trestle into Bay	Railroad spur and BB&BC RR freight wharf; Columbia Valley Lumber Co. Box Factory; Port of Bellingham Shipping Dock on fill and piles
10	B'ham Bay Improvement Co. Mill; Log waste RR spurs, several small boat buildings, and waste fires along shore	Bloedel, Donovan Lumber Mills, on fill; Refuse flume, refuse fire, and log waste RR spurs along shore SW of mill	Apparently vacant wharf except International Cross Arm Mfg. Co. Shed; RR main lines and spurs, refuse flume
Marina	Great Northern RR Bay Line on trestle	None	None
Water-way	Great Northern RR Bay Line on trestle	Citizen's Dock	Citizen's Dock

2.1 CONSTRUCTION IMPACTS

The lack of access to pre-contact intact sediments and to early historic artifact-bearing deposits within the project area precludes a detailed identification of existing resources and assessment of specific impacts to potentially significant archaeological resources. Generalizations can be made, however, regarding the potential of the alternatives to impact archaeological resources (Figure 13).

Alternative 1 (Higher Density Alternative)

This alternative involves rebuilding road access into the project area from Laurel Street and Cornwall Avenue. Excavation below the existing grade, if any, under this alternative may therefore adversely affect pre-contact or ethnohistoric Native American archaeological resources along the bluff portions in redevelopment areas 2, 5, and 7.

Below-grade construction or utility installation of sufficient depth to disturb natural sediments along the former beach and shoreline below the bluffs in redevelopment areas 1, 2, 5, 7, 9, 10, and along the Whatcom Waterway, if any, may adversely affect pre-contact or ethnohistoric Native American archaeological resources that were created by shoreline-focused cultural activities. Likewise, removal of existing waterfront features for shoreline restoration along the south side of Whatcom Waterway and relocation of the BNSF railroad may expose or disturb buried Native American and historic archaeological resources.

Though specific development activities have yet to be designed, project construction activities are proposed through the end of the 2016 interim redevelopment stage, and are anticipated to continue until the end of the project in 2026.

Alternative 2 (Medium Density Alternative)

This alternative also proposes rebuilding road access from Laurel Street and Cornwall Avenue, and therefore, to the extent that excavation into the existing ground surface occurs, may adversely affect Native American archaeological resources along the bluff portions of redevelopment areas 2, 5, and 7. As the medium-density alternative, it proposes slightly less roadway and utility development than Alternative 1, and is characterized by construction primarily of below road-level parking garages and relocation of the BNSF railroad.

To the extent that it occurs, below-grade construction or utility installation that disturbs natural sediments along the former shoreline in redevelopment areas 1, 2, 5, 7, 9, 10, and the Whatcom Waterway may adversely affect pre-contact or ethnohistoric Native American archaeological resources associated with shoreline zones. Likewise, removal of existing waterfront features for shoreline restoration along the south side of Whatcom Waterway and relocation of the BNSF railroad may expose or disturb buried Native American and historic archaeological resources.

Though specific locations have yet to be determined, Alternative 2 construction activities are proposed through the end of the 2016 interim redevelopment stage, and are anticipated to continue until the end of the project in 2026 end of project.

Alternative 3 (Lower Density Alternative)

The alternative proposes rebuilding road access from Laurel Street and Cornwall Avenue, and therefore may impact Native American archaeological resources along the bluff portions of redevelopment areas 2, 5, and 7 to the extent that the existing ground surface is disturbed. As the lower-density alternative, it proposes fewer roadway and utility improvements than the other two build alternatives, with parking primarily located on streets and in surface lots with few parking structures; this alternative also includes relocation of the BNSF railroad.

Below-grade construction or utility installation that disturbs natural sediments along the former shoreline in redevelopment areas 1, 2, 5, 7, 9, 10, and the Whatcom Waterway, if any, may adversely affect pre-contact or ethnohistoric-period Native American archaeological resources associated with shoreline activities. Likewise, removal of existing waterfront features for shoreline restoration along the south side of Whatcom Waterway may expose or disturb buried Native American and historic archaeological resources.

Though specific activities and locations have yet to be determined, project construction activities are proposed through the end of the 2016 interim redevelopment stage, and are anticipated to continue until the end of the project in 2026.

No-Action Alternative

Under this alternative there would be no project-related activities but does assume that some level of redevelopment would occur consistent with current industrial zoning over the 20-year build-out horizon. It is also assumed that a limited level of infrastructure improvements would be undertaken to support this redevelopment. Although the BNSF railroad would not be relocated under this alternative, the limited development that would occur may adversely affect significant archaeological resources if ground-disturbing activities are extensive enough.

Summary of Construction Impacts

Because Alternative 1 is the higher-density alternative and involves extensive roadway and utility redevelopment, numerous above-grade and below-grade parking garages, and relocation of the BNSF railroad corridor, it presents the greatest likelihood of the three alternatives to directly affect buried Native American and historic-period archaeological resources, followed by Alternative 2, then Alternative 3, and finally the No-Action Alternative. Regardless of particular Alternative, intact native sediments under the historic fill may be at greater depths than specific proposed ground disturbances and therefore, no effects to pre-contact Native American archaeological resources are likely in those instances. Historic archaeological resources, however, may still be affected even by shallow excavation, and effects may occur to unknown significant archaeological resources under any of the alternatives. Additionally, all three Alternatives propose restoration of the natural shoreline along the southern side of Whatcom Waterway, and Alternatives 1 and 2 propose relocation of the BNSF railroad tracks. These components may adversely affect archaeological resources even if most or all new construction is designed within and atop fill imported for the redevelopment.

2.2 OPERATION IMPACTS

There are no identified operational impacts to archaeological resources for the No-Action Alternative or constructed alternatives.

2.3 INDIRECT AND CUMULATIVE IMPACTS

Indirect impacts to archaeological resources may result in adverse effects. Indirect adverse effects result in the loss or degradation of the aspects of integrity that make an archaeological site significant, but without involving physical damage. Because an archaeological site may be considered significant for the potential of its data to address important questions about prehistory or history, an example of an indirect effect is construction near a known and significant archaeological site that does not physically damage it but does make it permanently inaccessible to further study, hence degrading its information potential. No indirect impacts to archaeological resources are anticipated at this stage given what is known of the existing conditions of the redevelopment project. If archaeological resources are encountered during project activities, however, the potential for indirect adverse effects should be reassessed under the guidance of a management plan (see Section 3 below).

Cumulative impacts may be viewed in the broader context of increasing construction and development to which the project may contribute or cause. This trend may damage undocumented archaeological sites, which are a non-renewable part of the record of our past. Loss or destruction of data from any archaeological site decreases this body of knowledge. Although the New Whatcom redevelopment project has been designed to minimize excavation into the existing ground surface, thereby limiting the probability of damaging any archaeological sites that may be present, peripheral and future development that may occur as a result of the redevelopment may still impact significant archaeological deposits, resulting in a net loss of archaeological resources in the region. Specific cumulative effects, however, cannot be anticipated at this stage of planning the redevelopment, although several separate projects are known to be planned or proposed within and near the site area. These projects include improvements to the Bellingham Shipping Terminal, improvements along the south side of I & J Waterway and the north side of Whatcom Waterway, and three nearby mixed-use development projects (Bellwether on the Bay Phase II, 1010 Morse Square, and Bay View Tower).

Archaeological sites in urban waterfront settings are often difficult to identify and evaluate in advance of construction. In general, no preconstruction mitigation measures are recommended for any of the redevelopment areas, but potential archaeological resource areas should be considered when more specific redevelopment designs are being produced. Parameters such as depth and horizontal extent of any disturbance to the existing ground surface or underwater sea floor will allow potential archaeological resource areas to be considered during the planning process.

SEPA provides suggestions for ways of mitigating adverse effects to cultural resources. These can take several forms, including, but not limited to,

- Avoidance of the site,
- Maintaining or restoring the integrity of the site or landmark to the extent possible,
- Relocating the structure or artifact, and
- Meeting tribal needs for the sanctity of the location.

SEPA considers avoidance of identified cultural resource sites the primary mitigation measure available in any project development context. For the New Whatcom Redevelopment Project, the prospects for avoiding archaeological sites can only be feasibly addressed after SEPA review, as specific design documents of the various development components become available for comparison with the probability areas shown in Figure 13 and the historic map overlays in Appendix B. No additional mitigation would be necessary if all cultural resource sites, if identified during the life of the project, were avoided during construction of project components (e.g., avoidance of excavation into existing sediments in areas identified as high probability, but noting the difference in probability distribution between Native American and Historic Euroamerican archaeological resources). SEPA does not discuss the case of unavoidable impacts, however, but does enjoin proponents to develop appropriate treatments for significant archaeological sites. If final placement of the project elements resulted in unavoidable impacts to a significant resource, then data recovery may be required to retrieve the scientific and cultural information that makes the site significant. In such cases, if a site is discovered and impacts to it cannot be avoided, a site treatment plan that follows guidelines provided in the management plan should be prepared that describes the archaeological site, the proposed action that will impact the site, and the specific steps that will be taken to mitigate potential disturbance to the site by project activities. The treatment plan should be drafted in consultation with and agreed upon by state, tribal, and local agencies.

In lieu of identification of all archaeological properties at this time, a management plan could be developed for the life of the project that:

- Establishes procedures and appropriate responses for addressing potential effects to archaeological resources, including review by a qualified archaeologist of specific construction design components as they are produced by comparing them with the archaeological probability models for Native American and Historic Archaeological Resources developed in the discipline report (Figure 13, Tables 5-7, Appendix B). These procedures and responses could be scaled based on the presumed impact of

specific components to intact, natural sediments and their location within high, medium, or low probability zones;

- Considers levels of contractor awareness training and specific areas where on-site archaeological monitoring may be required;

- Lists on-site chains of authorities and contacts for decision-making regarding inadvertent archaeological discoveries during construction activities;

- Describes the process of developing archaeological site-specific treatment plans for inadvertent discoveries and prescriptive actions that would result in minimal additional disturbances to potentially significant archaeological resources, if any are discovered, including specific treatment plans for inadvertent discovery of human remains; and

- Identifies expectations of participating groups involved in addressing site significance, the severity of impact, and appropriate treatments.

Similar to specific site treatment plans for known resources, the management plan should be drafted in consultation with and agreed upon by state, tribal, and local agencies.

4. SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Construction impacts to significant cultural resources that cannot feasibly be avoided could be mitigated per specifications established in a mitigation plan as described in Section 3, developed in consultation with appropriate agencies, affected Native American Tribes, and the Washington State Department of Archaeology and Historic Preservation.

Significant operational impacts to cultural resources in the project vicinity are not anticipated.

Because the potential significant adverse impacts that have been identified could be avoided or otherwise mitigated, no significant unavoidable adverse impacts to cultural resources have been identified. Avoidance or application of mitigation actions proposed above would address impacts to archaeological resources; consequently, there are no unmitigatable significant adverse impacts anticipated.

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APPENDIX A: TRIBAL CORRESPONDENCE

Northwest Archaeological Associates, Inc.
Cultural Resources Management Services
5418 20th Avenue NW, Suite 200, Seattle, WA 98107

January 20, 2006

George Swanaset, Jr.
Nooksack Indian Tribe
PO Box 157
Deming, WA 98244-0157

RE: New Whatcom Redevelopment Project

Dear Mr. Swanaset,

Northwest Archaeological Associates, Inc. (NWAA) has been retained by Blumen Consulting Group, Inc. to conduct a cultural resource assessment to assist preparation of a SEPA Master Plan EIS for redevelopment of 180 acres fronting Bellingham Bay in the city of Bellingham, Washington.

Background research conducted at the Office of Archaeology and Historic Preservation in Olympia indicates numerous archaeological sites and historic structures previously recorded near the Bellingham waterfront. The goal of the present archaeological assessment is to provide an overview of the natural and cultural setting of the project, identify known or high-probability cultural resource areas nearby, and describe potential impacts of the various project alternatives on those resources along with mitigation measures.

We are interested to know the concerns the Nooksack Indian Tribe may have for historic properties, cultural resources, or traditional cultural properties in or near the project area. If so, please contact us at your earliest convenience so this can be taken into account during planning. We look forward working with you on this project. We respect any concerns the Nooksack may have about sharing sensitive information with us and we will be happy to work with you in a way that respects those concerns.

This letter is a technical inquiry and is not intended to replace government-to-government consultation. Thank you for your attention to this matter.

Sincerely,

Robert Kopperl, Ph.D.
Senior Archaeologist

Tel: (206) 781-1909
Fax: (206) 781-0154
Email: rkopperl@northwestarch.com

Northwest Archaeological Associates, Inc.
Cultural Resources Management Services
5418 20th Avenue NW, Suite 200, Seattle, WA 98107

May 9, 2007

The Honorable Narcisco Cunanan
Nooksack Indian Tribe, Chair
PO Box 157
Deming, WA 98244-0157

RE: New Whatcom Redevelopment Project

Dear Mr. Cunanan,

Northwest Archaeological Associates, Inc. has been retained by Blumen Consulting Group, Inc. to conduct an archaeological resources assessment to assist preparation of a SEPA Master Plan EIS for redevelopment of approximately 220 acres fronting Bellingham Bay in the city of Bellingham, Washington.

Background research, including examination of the natural setting of the project area, the history of Native American and Euroamerican settlement on the Bay, and a records check conducted at the State Department of Archaeology and Historic Preservation, suggests the potential for archaeological resources in certain parts of the Bellingham waterfront. The goal of the present archaeological assessment is to provide an overview of the natural and cultural setting of the project, identify known or high-probability archaeological resource areas nearby, and describe potential impacts of the various project alternatives on those resources along with mitigation measures.

We are interested to know concerns the Nooksack Indian Tribe may have for historic properties, cultural resources, or traditional cultural properties in or near the project area. If so, please contact us at your earliest convenience so this can be taken into account during planning. We look forward working with you on this project. We respect any concerns the Nooksack may have about sharing sensitive information with us and we will be happy to work with you in a way that respects those concerns. We will be conducting a field visit to investigate the existing conditions of the project area in the near future. If you or another representative of the Nooksack Indian Tribe would like to join us, please do not hesitate to let us know.

This letter is a technical inquiry and is not intended to replace any government-to-government consultation otherwise required by the project. Thank you for your attention to this matter.

Sincerely,

Robert Kopperl, Ph.D.
Senior Archaeologist

cc: Mike Stoner, Port of Bellingham
George Swanaset, Jr., Nooksack Indian Tribe, Cultural Resources

Tel: (206) 781-1909
Fax: (206) 781-0154
Email: rkopperl@northwestarch.com

Northwest Archaeological Associates, Inc.
Cultural Resources Management Services
5418 20th Avenue NW, Suite 200, Seattle, WA 98107

January 20, 2006

Lena Tso
Lummi Nation Tribal Historic Preservation Office
2616 Kwina Road
Bellingham, WA 98226-9298

RE: New Whatcom Redevelopment Project

Dear Ms. Tso,

Northwest Archaeological Associates, Inc. (NWAA) has been retained by Blumen Consulting Group, Inc. to conduct a cultural resource assessment to assist preparation of a SEPA Master Plan EIS for redevelopment of 180 acres fronting Bellingham Bay in the city of Bellingham, Washington.

Background research conducted at the Office of Archaeology and Historic Preservation in Olympia indicates numerous archaeological sites and historic structures previously recorded near the Bellingham waterfront. The goal of the present archaeological assessment is to provide an overview of the natural and cultural setting of the project, identify known or high-probability cultural resource areas nearby, and describe potential impacts of the various project alternatives on those resources along with mitigation measures.

We are interested to know the concerns the Lummi Nation may have for historic properties, cultural resources, or traditional cultural properties in or near the project area. If so, please contact us at your earliest convenience so this can be taken into account during planning. We look forward working with you on this project. We respect any concerns the Lummi may have about sharing sensitive information with us and we will be happy to work with you in a way that respects those concerns.

This letter is a technical inquiry and is not intended to replace government-to-government consultation. Thank you for your attention to this matter.

Sincerely,

Robert Kopperl, Ph.D.
Senior Archaeologist

Tel: (206) 781-1909
Fax: (206) 781-0154
Email: rkopperl@northwestarch.com

Northwest Archaeological Associates, Inc.
Cultural Resources Management Services
5418 20th Avenue NW, Suite 200, Seattle, WA 98107

May 9, 2007

Evelyn Jefferson
Chair, Lummi Business Council
2616 Kwina Road
Bellingham, WA 98226-9298

RE: New Whatcom Redevelopment Project

Dear Ms. Jefferson,

Northwest Archaeological Associates, Inc. has been retained by Blumen Consulting Group, Inc. to conduct an archaeological resources assessment to assist preparation of a SEPA Master Plan EIS for redevelopment of approximately 220 acres fronting Bellingham Bay in the city of Bellingham, Washington.

Background research, including examination of the natural setting of the project area, the history of Native American and Euroamerican settlement on the Bay, and a records check conducted at the State Department of Archaeology and Historic Preservation, suggests the potential for archaeological resources in certain parts of the Bellingham waterfront. The goal of the present archaeological assessment is to provide an overview of the natural and cultural setting of the project, identify known or high-probability archaeological resource areas nearby, and describe potential impacts of the various project alternatives on those resources along with mitigation measures.

We are interested to know concerns the Lummi Nation may have for historic properties, cultural resources, or traditional cultural properties in or near the project area. If so, please contact us at your earliest convenience so this can be taken into account during planning. We look forward working with you on this project. We respect any concerns the Lummi may have about sharing sensitive information with us and we will be happy to work with you in a way that respects those concerns. We will be conducting a field visit to investigate the existing conditions of the project area in the near future. If you or another representative of the Lummi Nation would like to join us, please do not hesitate to let us know.

This letter is a technical inquiry and is not intended to replace any government-to-government consultation otherwise required by the project. Thank you for your attention to this matter.

Sincerely,

Robert Kopperl, Ph.D.
Senior Archaeologist

cc: Mike Stoner, Port of Bellingham
Lena Tso, Lummi Nation THPO

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