Feasibility Report

Boulevard Park Shoreline and Overwater Walkways

September 22, 2009

prepared by

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Prepared for City of Bellingham

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BOULEVARD PARK SHORELINE AND OVERWATER WALKWAYS FEASIBILITY STUDY

1. INTRODUCTION

1.1 Purpose of Report

Boulevard Park (the Park) is a major waterfront public park facility in the City of Bellingham (the City). The Park provides an extensive waterfront access point for the citizens of Bellingham and Whatcom County. It is located on the east side of Bellingham Bay between the Fairhaven District to the south and the Waterfront District and main downtown center of Bellingham to the north. The City of Bellingham Parks and Recreation Department manages and maintains Boulevard Park. A continuous waterfront walkway has been identified as an important feature to the citizens of Bellingham in a variety of past planning studies for the Bellingham parks system. Boulevard Park provides a key link in the network of waterfront trails in Bellingham.

The purpose of this report is to analyze the feasibility of improving the waterfront trail system at the Park through renovations to the existing overwater trail portion located on the Pattle Point Trestle, addressing shoreline erosion and beach enhancement opportunities on the waterside of the upland trail at the Park, and construction of a new overwater walkway section from the north end of the Park to the Cornwall Landfill site at the south end of the Waterfront District redevelopment area. The overall project is separated into four phases:

Phase I – Feasibility Study and Permit Document Preparation
Phase II – Permitting and Initial Design
Phase III – Final Engineering Design and Bid Ready Documents
Phase IV – Bidding and Construction

A feasibility study was conducted because of the complexity of the overall project work. The goal of the feasibility study was to study alternatives and arrive at a feasible conceptual site layout for the new overwater walkway and associated improvements to the existing Pattle Point overwater trail and park shoreline area. A variety of feasibility issues were reviewed as part of this phase of the project, including environmental, geotechnical, structural, cultural resources, urban design, funding, and preliminary estimated cost.

This report summarizes the work done in Phase 1 – Feasibility Study and Permit Document Preparation. The report includes field investigations, studies, conceptual alternatives, information from a public meeting, cost estimates, and preliminary designs as necessary to determine the overall feasibility of the proposed improvements to the waterfront trail system in the vicinity of the Park. The report also includes preliminary permitting feasibility discussions and draft and final permit documents for the project.

1.2 Definition of Terms

The following is a list of acronyms used in this report.

(AASHTO)	American Association of State Highway and Transportation Officials
(ADA)	Americans with Disabilities Act
(BE)	Biological Evaluation
(CSL)	Cleanup Screening Level
(CZM)	Coastal Zone Management
(dGPS)	differential Global Positioning System
(DNR)	Department of Natural Resources
(Ecology)	Washington State Department of Ecology
(FHWA)	Federal Highway Administration
(HPA)	Hydraulic Project Approval
(IBC)	International Building Code
(JARPA)	Joint Aquatic Resource Permit Application
(MGP)	Manufactured Gas Plant
(MLLW)	Mean Lower Low Water
(MTCA)	Model Toxics Control Act
(NMFS)	National Marine Fisheries Service
(PAHs)	Polycyclic aromatic Hydrocarbons
(PLP)	Potentially Liable Party
(R/V)	Research Vessel
(RCO)	Recreation and Conservation Office
(RI/FS)	Remedial Investigation/Feasibility Study
(SAP)	Sampling and Analysis Plan
(SDEIS)	Supplemental Draft Environmental Impact Statement
(SEPA)	State Environmental Policy Act
(SMS)	Sediment Management Standards
(USCG)	United States Coast Guard
(WAC)	Washington Administrative Code
(WDFW)	Washington Department of Fish and Wildlife
(WSDOT)	Washington State Department of Transportation

1.3 Project Team

The project contact list is included in Appendix 3. The team consists of the following firms and key contacts:

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2. PROJECT BACKGROUND

2.1 Location

The project is located in Bellingham, Washington, on the east side of Bellingham Bay at Boulevard Park. A vicinity map is shown in Figure 1 below.

Figure 1. Vicinity Map.

2.2 Project Elements

The three main project elements for the Boulevard Park project include renovation of the Pattle Point Trestle structure, addressing shoreline erosion and improved beach access at Boulevard Park, and a new overwater walkway section from the north end of the Park to the Waterfront District at Boulevard Park at the Cornwall Landfill site. The proposed improvements and the

existing Taylor Avenue Dock trail will provide a continuous walkway from the Fairhaven District to the south end of the new Waterfront District.

The City has funding for the feasibility phase of the project using Greenway III levy funds, and Real Estate Excise Tax funds. Grant money is also available from the Washington State Department of Transportation (WSDOT) for design and construction. Identification of additional funding sources and opportunities are included in the feasibility phase.

The study includes preparation of an Agreed Order with the Washington State Department of Ecology (Ecology) for cleanup of contamination at the Boulevard Park site. The City also has funding for design and construction, including $4 million for the Boulevard Park Overwater Walkway and $1.5 million for Boulevard Park Shoreline Improvements in the Greenway III Levy, and a $2.1 million Federal Enhancement Grant.

Permitting regulations and anticipated requirements were incorporated into the overall conceptual design of the project elements. Initial coordination with agencies, such as the Washington State Department of Fish and Wildlife (WDFW), the U.S. Army Corps of Engineers (Corps) and the Washington State Department of Natural Resources (DNR), occurred as part of the feasibility study.

Based on the analysis of various code requirements, including WSDOT guidelines for shared used paths, the Boulevard Park Overwater Walkway is designed to be 14 feet in width with larger nodes for benches and overlook areas. The overwater walkway structure will be pile supported, and will likely be constructed from steel and concrete similar to the recently completed Taylor Avenue Dock project, with similar railing and various options for decking. Various options for the walkway route, configuration, and materials of construction were developed as part of the feasibility study.

The Taylor Avenue Dock is located south of the project area in Bellingham Bay. This dock is a popular walking, jogging, and bicycling trail for the citizens of Bellingham. The City is pleased with the Taylor Avenue Dock and certain design features of the Taylor Avenue Dock have been incorporated into the preliminary designs of the Pattle Point Trestle Renovation and the Boulevard Park Overwater Walkway.

Other project tasks such as a condition inspection of the existing at Pattle Point Trestle and a Boulevard Park shoreline assessment were included as project elements. Preliminary environmental assessment planning for the overall cleanup of the park was also included in the feasibility stage of this project.

2.3 Additional Environmental Site Review and Agreed Order

The project feasibility analysis has been coordinated with existing environmental work done at the Park and environmental work currently underway by the Port of Bellingham (the Port) at the Cornwall Landfill site. The study also included preparation of an Agreed Order with Ecology and identification of additional environmental cleanup tasks for the Park. Results of the environmental work are included in Section 5 and Appendix 10 of the report.

3. PROJECT INITIATION

3.1 Information Review

Background information from a variety of resources was reviewed for the project. These included information on the recently constructed Taylor Avenue Dock project, site drawings of the Park, and various plans, City codes, and other information related to the work.

The permitting documents from Taylor Avenue Dock, including Joint Aquatic Resource Permit Application (JARPA) drawings and the Biological Evaluation (BE), were provided. The JARPA drawings and representative photos of Taylor Avenue Dock are attached as Appendix 2. The City would like the proposed Boulevard Park Overwater Walkway to be designed to complement the Taylor Avenue Dock. The project is in the unique position of having a successfully completed project to draw upon in the areas of permitting and general shape and design elements. Lessons learned from the Taylor Avenue Dock project were discussed and addressed in the preliminary design of the proposed walkways.

The City also provided information from its Public Works "City Information Query," which denoted nearby utilities. The figures indicate the presence of storm drain and water utilities in the Park area and sanitary sewer and natural gas in the Bayview Drive right of way. A survey of the shoreline area of the Park was conducted under separate contract to the City toward the end of the feasibility study.

A variety of standards, design guidelines, and regulatory plans were acquired, reviewed, and used to ensure design conformance for mixed use bicycle and pedestrian bridges. These include the City of Bellingham Shoreline Master Program, the 2004 Waterfront Vision and Framework Plan, New Whatcom Draft Framework Plan, City of Bellingham Shoreline Requirements and Critical Areas Ordinance, WSDOT/ Federal Highway Administration (FHWA) / Americans with Disabilities Act (ADA) design and construction standards, WSDOT Design Manual, City of Bellingham Public Works and Park Design Standards, American Association of State Highway and Transportation Officials (AASHTO) Guide for Development of Bicycle Facilities, Ecology Stormwater Manual, the International Building Code (IBC), and DNR requirements for preparing surveys for lease agreements.

The elements and features of the concept design were coordinated with potential characteristics and features of the Waterfront District master planning process as available. The New Whatcom Redevelopment Supplemental Draft Environmental Impact Statement (SDEIS) was reviewed for information relevant to the feasibility study for Boulevard Park.

3.2 Base Map Prep

A variety of sources of electronic base maps were combined for the feasibility stage of the project. The feasibility base map is based on a drawing that shows the shoreline in the vicinity, nearby streets, and proposed harbor line adjustments. The drawing was combined with another drawing of the topography at the Cornwall Landfill site, the bathymetry between the Cornwall Landfill site and Boulevard Park, and an aerial photo. Together this made an existing conditions

base map, which includes inner and outer harbor lines, bathymetry, upland survey information, and aerial photo information.

This information was added to the overall base map. The base map shows the entire project area including Pattle Point Trestle, Boulevard Park, and the area between Boulevard Park and the Cornwall Landfill site. This map should be used for the planning and feasibility stage only since it is a compilation of data. A site specific shoreline survey was conducted toward the end of the feasibility study. This survey included intertidal topographic data in order to accurately determine the extent and cost of shoreline improvements along the western edge of Boulevard Park and as baseline data for the Pattle Point Trestle Renovation project.

3.3 Bathymetric Survey

In addition to the existing base maps, a bathymetric map was created from the geophysical side scan sonar data of the area between the north end of the Park and the Cornwall Landfill site. The survey is attached as part of Appendix 8. It should be noted that the new bathymetry varied substantially from that shown on the previous Cornwall Landfill survey drawing. After review, the new bathymetry was added to the base map and the previous bathymetry was deleted. The acquired information was used in determining feasible walkway alignments and design.

4. SITE INVESTIGATIONS

4.1 Team and Park Staff Meeting and Site Visit

The design team kickoff meeting was held on March 6, 2008, (see Appendix 1). It brought the City staff and project team together and allowed all of the team disciplines to get an overview of the project and the responsibilities of the various parties. After the meeting, the project team toured the project site and discussed opportunities, potential problems, and solutions. Walking the site allowed team members to better visualize the project and take notes and pictures.

4.2 Pattle Point Trestle Inspection

Echelon Consulting Engineers of Lynnwood, Washington, inspected the Pattle Point Trestle on January 17 - 18, 2008 (see Appendix 4).

Pattle Point Trestle was built in approximately 1901 and served originally as a railroad trestle. It was refurbished in approximately 1980 on the creosote-treated timber railroad piles to serve as a pedestrian and bike trail. The creosote-treated piles (5 per bent) were removed and replaced with the existing chemonite-treated timber piles (2 per bent), in approximately 1991. The structure is approximately 510-feet long by 9-feet 9-inches wide (8-foot travelled width). It consists of timber, two-pile bents at approximately 15-feet on center, with timber pile caps, overlain by three longitudinal timber stringers nested together on both sides of the trestle, overlain by transverse timber railroad ties, overlain by longitudinal timber stringers, and finally overlain by transverse timber decking. There is a timber guardrail on both sides of the trestle. All timber is treated.

The condition of the structure is summarized as follows:

- Piling: Overall condition is fair to good; 12 piling out of 70 show minor damage or deterioration (90 to 99 percent section remaining).

- Cross Braces: Overall condition is fair to poor; 50 of 69 braces show significant mechanical and marine borer damage.

- Pile Caps: Overall condition is fair to good; of 70 pile caps, three show 75 to 90 percent fungal damage and two show significant checking.

- Rail Stringers: Overall condition is fair to poor; 67 of 126 stringers have heavy fungal or tilting damage, or are missing.

- Rail Ties: Overall condition is fair to good.

- Deck: Overall condition is fair to good. No significant damage encountered.

- Guardrail: Overall condition is fair to good. No significant damage encountered.

4.3 Visual Habitat Survey

Grette Associates conducted an above water visual shoreline survey on April 9, 2008, at the Boulevard Park/Cornwall Landfill embayment to investigate shoreline conditions as related to the Boulevard Park Overwater Walkway project (see Appendix 5). The site visit was conducted during the lowest practicable tide, which reached a low of approximately -2.2 feet mean lower low water (MLLW) datum to maximize intertidal exposure. Visibility was poor, limited to 2 to 3 feet of water depth.

Eelgrass was observed around the shoreward perimeter of the embayment and at both proposed walkway anchor points. At the location of the existing pier at the northwest corner of Boulevard Park, eelgrass is present beginning at approximately -2.5 feet MLLW and appears sparse immediately waterward of the dock. Substrate at the pier location consists of medium to large cobble/angular rock to approximately -3 feet MLLW and then transitions to sand. Eelgrass begins at approximately -2 feet MLLW east of the dock inside the embayment. Substrate consists of large rock from the top of the intertidal zone, transitioning to sand and silt by approximately -1.5 feet MLLW.

Eelgrass was also observed along the entire shoreline at the Cornwall Landfill (north) side of the embayment, beginning at approximately -2.0 feet MLLW. Eelgrass was not observed north of the embayment at Cornwall. Significant municipal garbage is present on the shoreline at Cornwall; however, garbage was not observed below approximately -2 feet MLLW. Substrate at Cornwall consists of large riprap with gravel, cobble and broken concrete from the top of the bank to approximately -2 feet to -2.5 feet MLLW. Substrate transitions to sand, and eelgrass begins at that point.

Based on the results of the visual survey, a scuba diver survey of the project area was suggested to provide more detailed eelgrass distribution and density information.

4.4 Eelgrass Dive Survey

Grette Associates conducted an underwater eelgrass survey in the areas potentially affected by the proposed Boulevard Park Overwater Walkway and Pattle Point Trestle Renovation (see Appendix 6a and 6b). Additionally, Grette Associates mapped the landward extent of existing eelgrass along the shoreline of Boulevard Park. Surveys occurred on June 3 through June 5, 2008.

4.4.1 Methods

The eelgrass surveys employ a modified version of the WDFW Intermediate Eelgrass/ Macroalgae survey methods, modified to meet the needs of the particular project and approved by WDFW (WDFW 2007). Eelgrass surveys entail both a delineation of the relevant edges of existing eelgrass (landward and/or waterward depending on project needs) using differential Global Positioning System (dGPS), and eelgrass density surveys where appropriate. The landward edge of eelgrass was delineated by walking the landward edge at low tide with dGPS and recording points at the eelgrass edge. The waterward edge was recorded by dive survey and boat-operated dGPS. Eelgrass density data were collected by establishing appropriate transects and then counting shoots (turions) at evenly spaced intervals along the transects. Densities were estimated by counting turions within a .25 m^2 quadrant at 2 o'clock, 6 o'clock, and 10 o'clock positions around the sampling location. Divers also recorded macroalgae presence and substrate characteristics.

Boulevard Park Overwater Walkway Location Survey

Eelgrass density data were collected at both of the potential shore landing locations of the Boulevard Park Overwater Walkway. Seven transects were sampled at the Boulevard Park landing, spaced 40 feet apart over approximately 230 linear feet of shoreline, and 16 transects were sampled at the Cornwall Landfill site landing, spaced 40 feet apart over approximately 600 linear feet of shoreline. These transects encompassed the entire shoreline area within which the future walkway's landings may be constructed. These transects also recorded the location of the waterward edge of eelgrass presence. The landward and waterward edges of the existing eelgrass beds in the embayment between the two landings were delineated using dGPS and surveyed either by walking the edge at low tide or by dive transects perpendicular from shore.

Pattle Point Trestle Location Survey

Eelgrass densities were calculated along five 300- to 430-foot transects set parallel to the existing Pattle Point Trestle (Figure 2). Three transects were established parallel to the trestle's waterward edge (10 feet, 20 feet, and 35 feet waterward of the waterward edge of the trestle). One transect was established under the trestle. The final transect was established 10 feet landward from the trestle.

4.4.2 Results

Boulevard Park Overwater Walkway Survey

Eelgrass is present along the entire shoreline length between Boulevard Park and the Cornwall Landfill site. Eelgrass ends abruptly at approximately Transect 14 at the Cornwall Landfill site, with the exception of three small, isolated patches northeast of Transect 14. In general, eelgrass begins at an upper elevation of approximately -1.7 feet to -2.0 feet MLLW and extends waterward to approximately -8 to -10 feet MLLW. Surveys indicate that the preferred design of the Overwater Walkway would be waterward of the eelgrass for the majority of its length; however, the walkway would pass over eelgrass at both shore landing points.

Eelgrass density was surveyed at those landing points. At the Boulevard Park landing, eelgrass density is lowest and the eelgrass band is narrowest at the existing pier. At the Cornwall Landfill landing, density is generally similar along the entire shoreline area.

Pattle Point Trestle Survey

At the Pattle Point Trestle, eelgrass presence is continuous along the entire study area shoreline, as high as approximately -1.5 feet MLLW. Eelgrass presence is limited in its landward extent by substrate and elevation, with eelgrass beginning at the transition from rock and cobble/gravel to sand and silt. Eelgrass density is lowest under the trestle, but this is likely due to shallow water and substrate rather than shading effects from the trestle.

Macroalgae was observed in all transects in the upper shoreline, limited to fucus and ulva. Coverage varied, as high as 80 percent. The dominant substrate within the eelgrass beds is silt and mud, with rock and cobble in the upper portions of transects.

4.5 Shoreline Assessment

A shoreline assessment was conducted as part of the feasibility study (see Appendix 7). The report details possible improvements to the shoreline to better protect it from eroding and provide better public access to the water. These improvements would involve cutting into the park shoreline in places and would necessitate moving the current path inshore. A topographic survey of the shoreline area was conducted to allow a more detailed conceptual design for the proposed shoreline improvements. The proposed shoreline improvements are also shown in Appendix 7.

4.6 Geotechnical

Landau Associates conducted an initial geotechnical engineering evaluation for the project based on available subsurface data and supplemented by an offshore geophysical survey of the Boulevard Park Overwater Walkway area (see Appendix 8). Landau Associates concluded that construction of a pile-supported overwater walkway between the Park and the Cornwall Landfill site is feasible from a geotechnical engineering perspective, as long as an offshore geotechnical drilling program and other subsurface evaluations are conducted as part of final design for the project.

The offshore geotechnical drilling and geophysical survey program needed for final design should be conducted as soon as practicable after receipt of the necessary permits to conduct the overwater explorations. The scheduling of the field work will be subject to seasonal restrictions related to the "fish window" and the work window (when in-water work can be conducted), which is currently understood to be July 16 to February 15 for the protection of Chinook salmon and bull trout. The overwater field work could occur after July 16, 2009.

The areas near both the Park and the Cornwall Landfill site represent historic beach and intertidal areas along the former Bellingham Bay shoreline where fill was placed in the past. Subsurface conditions in the marine area between the Park and Cornwall Landfill site along the proposed Boulevard Park Overwater Walkway consist of varying depths of fill materials (including wood waste and refuse), overlying varying depths of marine sediments, overlying bedrock.

The presence of compressible fill and soft marine sediments indicate that the overwater walkway and its abutments should be supported on steel pipe piling driven to bedrock (which consists of sandstone, siltstone, and shale of the Chuckanut Formation) that underlies the site. The depth to the top of the Chuckanut Formation along the proposed overwater walkway alignment is likely to range from approximately 10 to 46 feet below mud line (with the deepest bedrock contact identified by the geophysical survey in what appears to be a localized depression of the bedrock layer). The axial compression capacity of piling driven to refusal in bedrock will likely be limited by the structural strength of the pipe pile used for the project. Achieving adequate uplift capacity of the piling may require that the soil within certain piling be cleaned out and the piling filled with concrete or a rock anchor installed into the bedrock below the tip of the pile.

The project site lies within a seismically active area, and moderate to high levels of ground shaking should be anticipated during the design life of the overwater walkway. The Park and Cornwall Landfill site are located over deposits of relatively soft to loose soils that could potentially amplify earthquake ground motions at various frequencies.

It is yet to be determined whether any of the fill materials or marine sediments overlying bedrock along the overwater walkway alignment are potentially subject to liquefaction and associated loss of strength during a seismic event. While site explorations might identify some soil/sediment layers below the water table that could be subject to liquefaction and loss of strength during a major earthquake, it is not expected that potential soil liquefaction will be a critical design issue because such soil layers are expected to be limited in depth and the pile foundations would not be designed to rely on support from any such layers.

In addition to the design loads on the piling, pile drivability through the site soils/marine sediments and into the bedrock needs to be considered in selecting the pile type and dimensions and appropriate pile-driving equipment. Consideration should be given to the presence of obstacles (for example, submerged logs and piling) and the need to drive the piling an adequate distance into the bedrock without damaging the piling. Measures to limit the adverse impact of driving stresses include use of a thicker wall and higher grade steel for the pipe piling, proper selection of the pile-driving hammer and cushion, and use of appropriate pile driving refusal criteria. These considerations will be further evaluated during final design.

The installation of driven piling will create both noise and vibrations at the site. Vibrations due to pile driving, particularly for the piling near the shoreline, could potentially affect nearby structures, pavement, and utilities. The potential adverse affects of pile-driving should be addressed in the construction documents and a monitoring program should be implemented during pile-driving operations, if necessary.

It is recommended that an overwater geotechnical investigation, augmented with a site specific geophysical survey, be conducted to better estimate the depth and strength of the fill and marine sediments and the variations in the depth to bedrock along the selected overwater walkway alignment.

4.7 Cultural Resources

Wessen & Associates conducted an Assessment of the Probable Archaeological Potential of the Pattle Point Trestle project area (see Appendix 9 (a)). The report concluded that the site has potential to contain archaeological resources. However, the range of resources that may be present is relatively limited. The most likely archaeological resources to be present are structural remains representing the old Northern Pacific Railroad trestle (and its associated track) and the Bellingham Bay (later the E. K. Wood) Mill. Archaeological deposits representing either of the latter -- or other early historic activities -- are also possible, but they are considered to be relatively unlikely. Similarly, prehistoric archaeological deposits are also possible, but they are also considered to be relatively unlikely. If prehistoric deposits are present in the project area, they are most likely to be associated with hunting, fishing, or other economic activities conducted along the shoreline in this area during the last 3,000 to 5,000 years. The presence of deposits representing large and longstanding villages, cemeteries, or cultural activities occurring significantly earlier than about 5,000 years ago is unlikely.

The Pattle Point trestle project area and its immediate vicinity have been disturbed by a variety of both natural and historic cultural effects. The latter have probably impacted the archaeological resources here. If such deposits are present, they are apt to be disturbed. If intact archaeological deposits are present in the project area, they are likely to be either deeply buried or located in places that are at least slightly removed from the infrastructure of the railroad and the mill. Given these conditions, few of these archaeological resources are likely to be eligible for listing with the National Register of Historic Places.

The finding of limited archaeological potential should not be used to dismiss the possible presence of archaeological resources. It is recommended that a direct archaeological inspection be conducted. The minimum recommendation is for a single small test pit to be dug at, or close to, each of the proposed abutment locations and the southernmost timber frame bent. Test pits should be dug to the maximum depth of proposed impact at each location.

Originally constructed in 1901, Pattle Point Trestle project site has the potential to contain historic resources. However, the Pattle Point Trestle has been significantly modified since that time. A letter summarizing the project team's understanding of the chronology of the construction of the Pattle Point Trestle and subsequent modifications is provided as Appendix 9 (b).

5. ENVIRONMENTAL SITE ASSESSMENT

5.1 Background.

A focused environmental site assessment (ESA) was completed by Herrenkohl Consulting LLC and Landau Associates, Inc., in support of the Boulevard Park Shoreline and Overwater Walkways project elements. The Focused Environmental Site Assessment Report, dated April 17, 2009, is included in Appendix 10 (cover letter and report body). The complete report with Appendices is available under separate cover.

The purpose of the focused ESA was to define the nature and extent of any significant environmental impacts in soils and sediments at the proposed terminuses of the walkway at Boulevard Park and the Cornwall Landfill site, and along the walkway alignment between the two sites.

It was determined during the data gap analysis for this work (in support of the sampling and analysis plan [SAP], dated September 12, 2008) that there was adequate data to evaluate soil quality at the proposed terminuses at Boulevard Park and Cornwall Landfill site. No additional sampling was proposed for the focused ESA in these areas. However, there was a data gap for sediment quality data within the project site. The proposed sampling distribution described in the SAP focused on providing both surface and subsurface sediment data along the proposed alignment where sediment may need to be disturbed during construction of the walkway and shoreline improvements. Geotechnical data collection was proposed to evaluate excavation, filling and capping methods, and capacity of existing sediments to provide foundation support for construction of Boulevard Park overwater structures (e.g., pilings).

The focused ESA was conducted in accordance with regulatory requirements of the Model Toxics Control Act (MTCA) (Washington Administrative Code [WAC] 173-340) and the Sediment Management Standards (SMS) (WAC 173-204), which includes standards for marine sediments. The following sections provide a summary of the field sampling and testing results with relevant conclusions and recommendations as they pertain to construction of the proposed Boulevard Park Overwater Walkway and Shoreline Improvements.

5.2 Field Sampling and Testing

Field sampling in support of the focused ESA was conducted on September 19, 2008 (surface sediment sampling), and from September 22 through September 24, 2008 (sediment coring), aboard the Bio-Marine Enterprises research vessel (R/V) Kittiwake. Surface grab samples were also collected aboard the R/V Kittiwake from the Samish Bay reference area on September 30, 2008. Sampling operations consisted of sediment surface grab and subsurface core sampling for chemical, biological, and geotechnical testing. The historical and current sampling locations are provided in the final focused ESA report. The sampling consisted of nine stations located adjacent to the proposed terminuses and along the alignment of the overwater walkway connecting the Park with the Cornwall Landfill site. The actual sampling locations were within a few meters of the target locations proposed in the SAP (Herrenkohl & Landau

2008). Surface sediment samples were also collected from two reference locations in Samish Bay.

Sediment samples were delivered to Analytical Resources Inc., of Tukwila, WA for chemical and geotechnical testing and Northwestern Aquatic Sciences of Newport, OR for biological analysis. Analytical methods followed those described in the SAP.

5.3 Results

Sediment sample results from this study and relevant historical studies within the proposed project area were evaluated in the focused ESA report (Appendix 10). A summary of major findings is listed below.

- The upper layer of sediments is relatively heterogeneous and consists of saturated organic clayey silts with sand and highly organic debris, including wood dust/chips/bark. At several stations along the proposed Boulevard Park Overwater Walkway alignment, a distinct silty sand or sandy silt layer with clay and trace shell fragments was observed below this upper organic layer and identified as native marine sediment. This pre-industrial sediment layer appears to be located over bedrock identified as the Chuckanut sandstone or siltstone.

- Mercury was the only chemical of concern detected in the surface sediment composites at concentrations above the corresponding SMS cleanup screening level (CSL). This occurred at only one location (BLVD-SS-07), and this is an improvement from previous surface sediment results reported in the project area. Two other metals (copper and lead) and polycyclic aromatic hydrocarbons (PAHs) were reported above CSL criteria in these historical studies at the site.

- Bioassay testing was conducted on selected surface sediment composites based on field observations and/or chemical exceedances of criteria. Bioassays for each sample passed SMS criteria.

- Selected subsurface sediment samples exceeded CSL criteria for mercury and PAHs. The highest concentrations of mercury, exceeding sediment criteria, were observed 2 to 4 feet below mud line at stations BLVD-SC-06 and BLVD-SC-09. PAHs exceeding CSL criteria were detected in subsurface sediments at BLVD-SC-01, -02, and -04, located adjacent to the Park. The elevated PAH concentrations correspond with elevated TPH concentrations detected in these samples and a distinct petroleum odor and sheen observed in the field at these locations.

- The petroleum hydrocarbon and PAH contamination detected in subsurface sediments near the pier and pocket beach and subsurface soils in the lower portion of Boulevard Park (soil borings COB-01 and -02) is likely associated with historical operations of a coal gasification plant previously located in the upper portion of the Park and/or other historical operations in this area of Bellingham Bay. Surface and subsurface sediments to the west (BLVD-SC-03) and north (BLVD-SC-05, -06, -07, -08) of the pier did not show

obvious signs of petroleum hydrocarbon contamination based on field and laboratory results.

- PCBs were detected above sediment quality standards (SQS) criteria in subsurface samples from BLVD-SC-09, located adjacent to the former Cornwall Landfill site. The upper 8 feet of sediment contained elevated mercury and PCB concentrations with mercury exceeding the CSL at several depths. The mercury and PCBs are likely related to historical disposal of wood and municipal wastes at the site.

5.4 Conclusions and Recommendations

Subsurface soils and sediments within portions of the project area are impacted with petroleum hydrocarbons, mercury, and PCBs. Impacted soils at the Park are covered with a thick layer of fill materials (e.g., wood debris), making it unlikely that active cleanup (e.g., removal) would be required for construction of the project. Shoreline development, including removal of the existing pier at the Park and construction of the overwater walkway, may disturb these impacted subsurface sediments and potentially release certain contaminants (e.g., PAHs) to the environment. Water quality monitoring will likely be required as part of the Section 401 Water Quality Certification permitting requirements. If there are exceedances, contingency engineering controls (e.g., silt curtains) may be required to reduce impacts to water quality.

Sediment sampling may be required once construction is complete to determine if surrounding surface sediments have been impacted by disturbance of subsurface sediments in the project area. Additional long-term monitoring of sediments may also be necessary to confirm natural recovery of impacted surface sediments. The impacted sediments identified in this focused ESA will likely be investigated further as part of the remedial investigation/feasibility study (RI/FS) for the Manufactured Gas Plant (MGP) Site. The planned RI/FS will also include an evaluation of potential impacts to soil, groundwater, and surface water from the MGP Site.

The Port is updating the RI/FS report for the former Cornwall Landfill and coordinating with Ecology regarding evaluation and selection of an appropriate cleanup action for that site. It is currently anticipated that the cleanup action will include installation of a low permeability landfill cap over the uplands area, shoreline stabilization, and either capping or monitored natural recovery of subtidal sediments. The City should continue to coordinate with the Port and Ecology so that design and construction of the overwater walkway is properly integrated with design and construction of the future landfill cap and other environmental features that are determined to be necessary as part of the final cleanup action for the former Cornwall Landfill site. Conclusions and recommendations will be developed pending the final results analysis.

6. PUBLIC INVOLVEMENT BACKGROUND AND PUBLIC OPEN HOUSE

6.1 Past Public Processes

The proposed project elements, especially the Boulevard Park Overwater Walkway, have been components of several extensive public processes.

The Overwater Walkway has been mentioned in several local planning documents, including the following:

- In the 2002 City of Bellingham Parks, Recreation and Open Space Plan, the project is listed in a section outlining "proposed boardwalks/promenades." The 2008 update of the plan continues to recommend the project.

- The 2007 draft update of the City of Bellingham Shoreline Master Program states in the public access goals and objectives section that: "Areas identified for establishment or enhancement of shoreline public access may include but should not be limited to…" an, "overwater walkway from the south end of the Cornwall Avenue Landfill to the north end of Boulevard Park."

- The 2004 *Waterfront Vision and Framework Plan: Connecting Bellingham with the Bay*, by the Waterfront Futures Group, makes the following recommendation: "Construct an over-water trail to connect Boulevard Park to the Cornwall Landfill similar to the over water connection from Boulevard Park to Taylor Avenue Dock."

- The *New Whatcom Preliminary Draft Framework Plan* (2006) indicates that for its 2016 map an "over-water boardwalk connection is completed with linkage to Boulevard Park."

The Overwater Walkway has also been part of a City of Bellingham public vote, the third Greenways levy, which was approved by voters in 2006. Prior to the vote, in an adopted ordinance, the City Council recorded intent to pursue a list of potential greenway projects. The list was proposed by citizens who examined the City's current plans and needs. The Overwater Walkway was included in the "Waterfront Redevelopment Area" section of this list.

6.2 Open House

The Reid Middleton team, in conjunction with the City, held a public open house regarding the proposed project elements on June 26, 2008, at the Bellingham Public Library (see Appendix 11). The purpose of the open house was to inform the public about the proposed project elements and obtain public feedback. Approximately 40 people attended the meeting.

Project team members gave brief presentations to the open house attendees about various project details; the public was encouraged to ask questions of the presenters. The open house was organized into four main parts.

The first part covered the project background. Topics addressed in this portion of the meeting included the history of Boulevard Park, past public processes related to the proposed project elements, funding for the proposed project elements, and the provisional project schedule.

In the second part of the open house, presenters spoke about background studies that had been performed related to the project. The background studies covered subjects such as shoreline

conditions, the physical condition of the Pattle Point Trestle, cultural resources, environmental conditions (such as eelgrass), and geotechnical considerations.

In the third part of the open house initial design concepts were presented. Design concepts discussed included the Pattle Point Trestle Renovation, and the Boulevard Park Overwater Walkway alignment and design specifics (such as structure type).

The fourth part of the meeting detailed the permitting process and project "next steps."

Following the presentations, time was allotted for the public to ask any remaining questions or air any additional thoughts or concerns.

The questions and comments voiced by the public during the open house covered a wide range of topics (listed below). Some community members had specific questions about the project schedule (e.g., Could construction be delayed to coincide with other projects in order to reduce impact on public access?). Many community members had questions and comments on the proposed designs (e.g., How wide could we make the proposed walkway? Could the walkway run along the shoreline to avoid moorage impacts? The visual perspective from walkway would be better if it were farther from shore).

June 26, 2008 Public Meeting Comments

Comment #	*Comment*
1	Regarding the Pattle Point trestle: What would be the duration of construction? Could construction be delayed to coincide with other projects in order to reduce impact on public access?
2	How wide is the proposed walkway? How wide is Taylor dock? How wide is Pattle Point trestle? Concern about walkway width with respect to pedestrian/bike conflicts. How wide could we make proposed walkway? How much would this cost?
3	Concern about pedestrian/bike separation—a safety issue
4	Statement against the proposed overwater walkway: Cost of $6,000,000 and that's a previous estimate? Using Greenways' money?
5	Duplication: South Bay Trail Greenway is already there – a wonderful woodsy path with lovely views of the bay between the trees, very popular, connects Boulevard Park with the downtown and proposed waterfront park at the foot of Cornwall. The concrete walkway would obstruct these pretty views.
6	Some of the proposed 6 million dollars could be used, instead, to have an automatic gate at the railway crossing where a woman was recently killed. White Rock carries such gates.
7	The proposed walkway would displace a nice, partially sheltered anchorage, 25-30 feet deep, that now has a pleasant view both ways. There are now 7 boats anchored there as of Tuesday.
8	Taylor Dock over the water is different: It is nicely done, eliminates some nasty old pilings, and enables the trail south to Fairhaven to bypass a large obstructive building and uses an existing structure to get over the railroad.

9	Hopefully, this expensive, duplicating, view-obstructing, ugly walkway will never be built and public money can be used for better new trails elsewhere.
10	Could walkway run along shoreline to avoid moorage impacts?
11	Walkway along shoreline would raise safety issues
12	Timeline for coal gasification plant cleanup versus walkway construction—does cleanup affect walkway timeline?
13	Could Pattle Point trestle piles be wrapped to avoid possible creosote contamination?
14	Capping at Cornwall will possibly increase extent of eelgrass.
15	Beaches/climate change—more improvements to park necessary to deal with it?
16	Move walkway in closer to protect from storm damage
17	What do soft beaches accomplish? Erosion control? Access?
18	Protect corner of Cornwall Beach
19	Ensure shoreline improvements include environmental improvements
20	Include safety measures if people fall off walkway
21	How far offshore is farthest point of walkway?
22	Prefer design with less arc.
23	Connection to proposed Cornwall site—don't need to go all way up point.
24	Protect significant tree at Cornwall side.
25	Visual perspective from walkway would be better farther from shore.
26	Existing trail works fine.
27	Conduct site analysis—wind, sun, views.

7. AGENCY COORDINATION AND PRE-PERMITTING

7.0 Introduction

The project team engaged in early (before permit application submittal) coordination with various regulatory agencies and project stakeholders to inform them of the City's plans and obtain their feedback. Draft project descriptions and project drawings were used to introduce the agencies and stakeholders to the project. See Appendix 12, (a) and (b) for the latest project descriptions and Appendix 12, (c) and (d) for the latest project drawings.

7.1 Coordination with Washington Department of Fish and Wildlife

Grette Associates discussed eelgrass survey methods for the Boulevard Park Overwater Walkway and Pattle Point Trestle Renovation project elements with the WDFW prior to conducting fieldwork. After the completion of eelgrass fieldwork, Grette Associates transmitted the eelgrass delineation report to WDFW.

Grette Associates has also discussed with WDFW the potential impacts of the Overwater Walkway project element and possible mitigation strategies.

7.2 Coordination with City of Bellingham (Shoreline Master Program and State Environmental Policy Act)

Pre-application discussions were held with a City of Bellingham official familiar with both the City of Bellingham Shoreline Master Program (SMP) and the City's State Environmental Policy Act (SEPA) policies and procedures.

The proposed Pattle Point Trestle Renovation project element should qualify for an exemption from the shoreline permitting process. The full SEPA process would still be required.

The Boulevard Park Overwater Walkway project, under the existing SMP, is located in three different shoreline designations. The abutment at Boulevard Park is designated Conservancy II; the overwater portion is within a Conservancy III designation; and the Waterfront District abutment is designated Urban Maritime. Only the Urban Maritime shoreline designation allows for overwater construction. Conservancy II and III designations promote and often require public access to the shoreline, but do not allow for overwater public access feature to be built. However, section 173-27-160-3 of the Washington Administrative Code authorizes such projects upon approval of a Shoreline Conditional Use Permit. A Shoreline Conditional Use Permit requires a public hearing before the Hearing Examiner. Once the Hearing Examiner makes a decision on the permit, final approval is granted by the Department of Ecology's Shorelands Section at the Bellingham Field Office.

The existing SMP is being updated. In the current draft of the updated SMP, the proposed Overwater Walkway requires a Shoreline Conditional Use Permit.

The full SEPA process would be required for the Overwater Walkway.

Discussions regarding the Boulevard Park Shoreline Improvements project element were not held. The design for this project element is still under development.

7.3 Coordination with the United States Army Corps of Engineers

Pre-application discussions about the proposed Pattle Point Trestle Renovation, the proposed Boulevard Park Overwater Walkway, and the proposed Boulevard Park Shoreline Modifications have been held with the appropriate U.S. Army Corps of Engineers contact person.

The Corps contact's guidance for the Pattle Point Trestle Renovation and the Boulevard Park Overwater Walkway project elements was similar. After preliminary reviews of these two proposed projects, the Corps contact indicated that both projects would probably need to be authorized by an Individual Permit. Complete permit applications for each project would include a JARPA, project drawings, a "Certification of Consistency with the Washington State Coastal Zone Management Program for Federally Licensed or Permitted Activities" form, and a BE.

The BEs would need to consider potential and actual impacts to species listed under the Endangered Species Act (Chinook salmon, steelhead, bull trout, marbled murrelets, killer whales, steller sea lions, humpback whales, and leatherback sea turtles) and critical habitat located in the project area (Chinook salmon, bull trout, and killer whales). The BEs would also

need to include the results of a recent (within two years) eelgrass/macroalgae survey, forage fish spawning habitat survey (herring, surf smelt, and sand lance), and any conservation measures (mitigation actions) proposed. Additionally, the Corps contact indicated he would be contacting local tribes directly to determine whether there are any actions that may impair reserved tribal rights, and he recommended that the City undertake early discussions with tribal representatives to get their input on the proposed projects.

The Corps contact views the two projects as associated and strongly recommended combining the applications for the two projects. The contact indicated that the two projects could be applied for separately, but stated that if this is the case, the application materials for the first project (Pattle Point Trestle Renovation) should describe the second project (the Boulevard Park Overwater Walkway) in as much detail as possible. The BE for the Pattle Point Trestle project should consider the possible environmental impacts of the Overwater Walkway project element in its section on cumulative impacts.

The ’ contact recommended combining the shoreline modifications into the project applications for the other two project elements, if the shoreline modifications were associated with the Pattle Point Trestle Renovations or the Overwater Walkway, or if there were plans to use environmental benefits of the shoreline modifications as mitigation for either of the other two projects.

7.4 Coordination with Local Tribes

Coordination with local tribal entities will be completed by the City in the permitting phases of the projects.

7.5 Coordination with Port of Bellingham

The City of Bellingham is coordinating with the Port on a regular basis for the Waterfront District redevelopment and other associated common projects on an ongoing basis. The City will coordinate with the Port on potential opportunities and issues associated with this project.

7.6 Coordination with Washington Department of Natural Resources

The City of Bellingham has coordinated extensively with the DNR on various matters related to the proposed project elements.

The lease arrangement that would allow the City to use the DNR-owned aquatic lands located in between the south end of the Cornwall Landfill site and the north end of Boulevard Park for the Overwater Walkway project has been the subject of extensive coordination. Initially, it appeared that multiple lease agreements would be required to achieve this purpose. After further coordination, the City and DNR determined that one lease agreement for the entire Overwater Walkway project area would represent a more straightforward leasing solution. The City has made substantial progress toward obtaining a final lease agreement from DNR.

The City and DNR have also coordinated the handling of existing structures in the project area. DNR has secured grant funding for the removal of old piling in the proposed project area, and

will likely remove them prior to the City submitting applications to conduct work in the project area. The City, in conjunction with the Port, attempted to forge an agreement with the relevant regulatory agencies regarding mitigation. The agreement proposes that any structures removed from the project area prior to the City formally submitting applications to conduct work on the proposed project elements would be considered as mitigation at the time the applications are reviewed. Formal agreement on this provision was not attainable.

7.7 Coordination with Washington Department of Ecology

The City is negotiating with Ecology on an Agreed Order for completing an RI/FS at the South State Street MGP located at Boulevard Park. On August 12, 2005, Ecology notified the City of potential liability for the site and designated the City as a "Potentially Liable Party" (PLP) under the Washington Model Toxics Control Act (Chapter 70.105D RCW "MTCA"). Without admitting any liability, the City accepted its PLP status in its August 22, 2005, response letter. In a March 31, 2008, letter to Ecology, the City made a formal request to initiate negotiations for an Agreed Order at the site. On August 27, 2008, a project "kick-off" meeting was held at Ecology's Bellingham field office between representatives of the City, Ecology, and Puget Sound Energy (another PLP for the site). The meeting included a discussion of the potential scope of the RI/FS and schedule for completing the Agreed Order, including a Statement of Work.

The City prepared the first draft of an Agreed Order and Statement of Work in November 2008 for review by all parties. After several comment exchanges between the parties, a final draft Agreed Order and Statement of Work for the site were completed in June 2009. The documents will be available to the public for review and comment over a 30-day period beginning in August or September 2009.

7.8 Coordination with United States Coast Guard

The proposed Boulevard Park Overwater Walkway falls under the United States Coast Guard's (USCG) definition of a bridge ("any structure over, on, or in navigable waters of the United States used for transporting persons, vehicles, commodities or other physical matter and providing for the passage or flow of water through or under the structure") and requires coordination with the USCG. The USCG indicated that the proposed Overwater Walkway falls under bridge advanced approval provisions (33 Code of Federal Regulations 115.70). Bridge advanced approval applies when projects occur in reaches of waterways that can only be navigated by canoes, kayaks, small motor boats, and similar watercraft.

8. PRELIMINARY CONCEPTUAL DESIGN AND ALTERNATIVES ANALYSIS

8.1 Boulevard Park Overwater Walkway

8.1.1 Layouts, Guardrail, and Lighting

Walker Macy provided numerous conceptual layouts during the Boulevard Park Overwater Walkway Feasibility Study. They also provided recommendations for guardrail and lighting

systems. A summary of the various concepts is presented in the "Pre-Design Landscape Report" (see Appendix 14).

A Conceptual Design Meeting between Walker Macy and Reid Middleton took place on March 27, 2008. At this meeting, Walker Macy presented three schemes for consideration:

- Scheme 1 consists of a single 14-foot-wide walkway splitting into two separate 7-foot walkways arching across the bay. These walkways form larger gathering areas where they meet and offer multiple experiences on the walk from Boulevard Park to the Cornwall area.

- Scheme 2 consists of a smooth triple arch with a 14-foot-wide walkway. The walkway grows wider in places and splits into two 7-foot-wide walkways with a 3-foot gap between them. This concept hugs the minus 20-foot contour line offering an opportunity to experience the benefits of eelgrass as well as views of the bay.

- Scheme 3 consists of five straight segments generally following the same layout as Scheme 2. This option is designed to look like a log boom, which mimics the historical use of the site. Benches and gathering areas created the points where the straight "log" sections connect to each other. The walkway is 14-feet wide throughout its length.

Some proposed alignments contained a gathering area or gathering areas near the mid-length of the walkway. The three initial layouts (Schemes 1, 2, and 3) are attached in Appendix 15.

Three revised layouts and typical sections were created for presentation to the City based on the Conceptual Design Meeting (see Schemes A, B, and C and typical sections in Appendix 15):

- Scheme A – The walkway consists of a smooth triple arch with walkway widths varying from 7 to 14 feet and intermittent assembly areas up to 60-feet wide. Scheme A gently crosses to the outer edge of the eelgrass area, then approximately follows the minus 20-foot contour.

- Scheme B – The "Log boom" concept consists of straight segments formed into a triple arch with walkway widths varying from 14 to 30 feet. Scheme B sharply crosses to the outer edge of the eelgrass area, then continues beyond the minus 20-foot contour into deeper water.

- Scheme C – Braided "Eelgrass" consists of six braided segments formed into a complex arch with walkway widths varying from 7 to 14 feet and a larger assembly area. Scheme C gently crosses to the outer edge of the eelgrass area, then continues beyond the minus 20 foot contour into deeper water.

Two conceptual design layouts were prepared for presentation at the Public Open House based on response from the City (see Environmental Site Conditions, Layout 1, and Layout 2 drawings in Appendix 15):

- Conceptual Design Layout 1 consists of a single smooth arch with 14-foot uniform walkway width. Layout 1 gently crosses beyond the outer edge of the eelgrass area to approximately the minus 25-foot contour before curving back to the beach.

- Conceptual Design Layout 2 consists of a smooth triple arch with uniform 14-foot walkway width. Layout 2 gently crosses beyond the outer edge of the eelgrass area to approximately the minus 24-foot contour, then curves back along the minus 20-foot contour, and then curves back to the beach in a near mirror image.

The two layouts were further refined to have less curvature as a result of comments and questions at the Public Open House. The south end crosses the shoreline at the narrowest portion of the eelgrass beds, and the north end crosses the shoreline beyond the northernmost limit of the eelgrass beds. (See Option 1 and 2 Draft Alignment Concepts in Appendix 15.)

- Option 1 follows a single smooth curve, which arches smoothly away from the shoreline and the outer edge of the eelgrass beds into water as deep as 25 feet. It is approximately 2,340 linear feet long.

- Option 2 follows a somewhat complex S-curve that extends into water as deep as 24 feet and then curves toward shore to follow the shape of the shoreline and outer edge of the eelgrass beds. It is approximately 2,400-linear-feet long.

Guardrail Design Options. The options for creating a lighter, more transparent guardrail were explored (see example guardrail photos in Appendix 16). Options for using slender galvanized steel support members with either vertical or horizontal steel rails were presented for review. Two options for using stainless steel cable in lieu of the rails were also presented. The City decided to use timber posts and rails and vertical steel rungs, similar to the guardrail design used for the Taylor Avenue Dock.

Lighting Design Options. The goal for lighting the walkway was to minimize the visual impact of the light fixture housing while maximizing the durability and lamp life of the selected fixture. The fixture proposed for the walk is a high efficiency LED fixture. It has a long lamp life and a slim, vandal-resistant housing. The proposed walkway lighting is a high efficiency LED fixture placed 6 feet on center alternating on either side of the walkway, or 8 feet on center non-alternating. This lighting will be different than the lighting used at Taylor Avenue Dock and should require less maintenance and be less subject to vandalism. (See LED fixture product literature in Appendix 16.)

Seating Nooks. Seating nooks have been incorporated into the sides of the walk to provide a variety of viewing opportunities, both out to the bay and toward the shore. Each nook includes room for two benches, a trash receptacle, and an ADA accessible space. A Seating Nook Plan is attached in Appendix 16.

8.1.2 Structural Design Systems

Three structural concepts were prepared for initial review by the City (see hand sketches in Appendix 17):

1. The Steel Beam Option consists of cast-in-place or precast concrete deck, longitudinal steel girders, steel beam pile caps, steel pipe piling, and guardrail similar to Taylor Avenue Dock. The deck may be solid or partially grated to accommodate environmental requirements.

2. The Truss Option consists of a precast or cast-in-place concrete deck, steel or aluminum trusses on each side of the deck that also serve as the guardrail, steel beam pile caps, and steel pipe piling. The deck may be solid or partially grated to accommodate environmental requirements.

3. The Concrete Channel Option is similar to the existing Taylor Avenue Dock. It consists of a precast prestressed concrete channel beam deck, reinforced concrete pile caps, steel pipe piling, and guardrail similar to Taylor Avenue Dock. The deck may be solid or partially grated to accommodate environmental requirements.

The Concrete Channel Option and the Truss Option were further developed for presentation at the Public Open House as a result of the City's review (see enhanced drawings dated June 26, 2008, in Appendix 17). The following design concepts were better defined:

- Span lengths were preliminarily set at 48 feet for the Concrete Channel Option and 40 feet for the Truss Option.

- The deck is partially grated where it passes over eelgrass beds. A minimum 5-foot -wide solid deck is provided for individuals who do not feel comfortable walking on grating. The design vehicle, an ambulance (which is equivalent to an AASHTO H-5 (5-ton) Truck), governs the grated deck design.

- Pilings are battered rather than plumb to best accommodate anticipated shallow bedrock conditions.

- The height of the guardrail was considered. Guardrail height is required by AASHTO 2007 Bridge Design Specifications to be 3 feet 6 inch minimum for bicyclists. Previously, AASHTO required 4 feet 6 inches, but that often created an undesirable visual obstruction. An intermediate height of 4 feet 0 inches was recommended in a study by the National Cooperative Highway Research Program in 2004 and may be appropriate here. The guardrail at the existing Taylor Avenue Dock is 3 feet 6 inches high. If a guardrail height greater than 3 feet 6 inches were selected, a 3 feet 6 inch height at the seating nooks may be appropriate. The City selected a uniform 3 feet 6 inch guardrail height.

8.1.3 Concrete Deck Options

The three structural design options above involve either cast-in-place or precast concrete deck or a combination of the two. It is likely that the primary use of precast concrete, with cast-in-place closure pours, will prove most cost effective. Two options for the finished surface include pouring a concrete overlay on the precast panels or leaving the precast panels as the finished surface.

A concrete overlay on the precast panels would provide a uniform, architecturally pleasing surface similar to the Taylor Avenue Dock. It would also eliminate possible stumbling hazards due to the slight difference in height and camber of adjacent precast channels.

There are advantages to not providing the overlay. One advantage is cost savings. Other advantages include the elimination of a difficult concrete pour and a reduction in the potential for shrinkage cracking of the finished concrete surface.

It is understood that a similar overlay installed on the Taylor Avenue Dock was difficult to place and cure, and resulted in excessive cracking and subsequent repairs. It is also understood that the pour at Taylor Avenue Dock was complicated by having a difficult approach from land. Reid Middleton studied the two options and believes that the project could be successfully constructed with or without the overlay.

If the deck were to include an overlay, the following procedures could be used. Assuming that the deck overlay is 3-inches thick, and that deck is poured in two 1,200-foot-long pours, the concrete quantity would be 160 cubic yards per pour.

- Concrete could be pumped a maximum of 1,200 feet from each end of the overwater walkway. To do this conservatively, the concrete would be pumped in two stages using a pump on shore and a second pump located approximately 600 feet offshore. Sections of pipe/hose would be removed as pumping progressed. Careful attention to the design mix and handling will be required.

- Alternatively, the precast panels could be slightly over-designed to carry the weight of a concrete truck with approximately 5 cubic yards of concrete. In this way, the truck would back onto the trestle and place the concrete directly out of its chute. The deck reinforcing would be pre-installed on top of the precast panels and then raised onto chairs immediately behind the concrete truck, just prior to concrete placement. Temporary steel plating and special design consideration would be required at grated sections of the deck.

- Unsightly cracking in the deck could be minimized by a combination of the following methods. The deck could be made thick enough to allow sufficient crack control reinforcement. Crack control joints could be included in the deck to focus cracking. Curing could be accomplished with a combination of wet curing, curing compound, and curing blankets adequately weighted to keep them in place.

If the top of the precast panels were to be used as the finished surface, the following procedures could be used to ensure that adjacent panels were level.

- It would be necessary to bring the top surface of adjacent precast panels into alignment with each other to eliminate any possible tripping hazards or ADA obstructions (greater than 1/4-inch). This could be accomplished by installing a series of plastic sleeves along the joints between precast panels. Then bolts with plates at the top and bottom of the precast panels would be installed in the plastic pipes and tightened, to bring the adjacent precast panels into line. The bolts and plates would be removed after grouting of the joints between channels.

8.2 Pattle Point Trestle

8.2.1 Structural Design Concept

The design team prepared two initial structural design concepts for review by the City. The Initial Structural Concepts drawings are included in Appendix 18.

The first concept consists of: removing and replacing cross bracing, large bridge stringers, and up to four pile caps; reusing existing piling, good pile caps, and 8-foot-wide deck superstructure; and removing and replacing abutments.

The second concept consists of: removing and replacing cross bracing and up to four pile caps; reusing existing piling, and all but 0 to 4 pile caps; adding new 14-foot-wide superstructure, including guardrail similar to Taylor Avenue Dock; and removing and replacing abutments.

The City selected the second concept as a result of their review. The deck width was decreased from 14 feet to 12 feet to allow room for bench nooks, and the deck was partially grated due to the eelgrass beds under the trestle. The design vehicle, an ambulance (which is equivalent to an AASHTO H-5 [5-ton] truck), governs the grated deck design. The revised concept drawing was presented at the Public Open House (see Appendix 18).

8.3 Boulevard Park Shoreline Improvements

A preliminary concept for the Boulevard Park Shoreline Improvements is shown in Appendix 7. The concept includes four areas where rip rap will be removed and the shoreline will be graded back to form small pocket beaches protected on each side by the remaining rip rap. The shoreline will be sloped back from the existing location and supplemented with natural beach gravel in these areas. Three of the new beach areas would be bounded by concrete groins fashioned to look like sandstone. The development of shoreline improvement design concepts has required a topographic survey of the shoreline intertidal area by a local survey firm.

9. PREFERRED CONCEPTUAL DESIGN

9.1 Boulevard Park Overwater Walkway

9.1.1 Layout

The City selected the single curve option and requested that the north end connect into the Cornwall Landfill site at a greater angle to the shoreline. While the new angle at the Cornwall Landfill site does not completely avoid eelgrass, it is likely that the eelgrass will increase at the site due to the proposed site cleanup. The Preferred Layout is attached in Appendix 19.

9.1.2 Structural Design Concept

The City selected the Concrete Channel Option (see Appendix 19).

9.1.3 Preliminary Opinion of Probable Cost

Reid Middleton prepared an opinion of probable construction cost for the overall project. J Omega (Interface Engineers) prepared an opinion of probable construction cost for electrical and lighting. The total estimated cost is $6 million, including final design, construction engineering, construction, and construction contingency. Both opinions can be found in Appendix 19.

9.2 Pattle Point Trestle Renovation

9.2.1 Layout

The Pattle Point Trestle will be reconstructed on existing piling on the existing alignment.

9.2.2 Structural Design Concept

Following the public meeting, the Reid Middleton team performed an in-depth analysis of the existing trestle and found that the pile caps are not sufficient to support the dead load and uniform live load of the new 12-foot-wide trestle. As a result, the Pattle Point structural concept was modified to include a steel beam doubler on each existing pile cap, overlain by three steel stringers to carry the deck loads. Preliminary calculations indicate that the existing piles are adequate to support the new loads. The Preferred Structural Design Concept is attached in Appendix 20.

Reid Middleton prepared an opinion of probable construction cost for the overall project. The estimate of lighting and electrical was obtained by applying a proportionate amount of the J Omega (Interface Engineering) opinion of probable construction cost for Boulevard Park.

9.2.3 Preliminary Opinion of Probable Cost

The Opinion of Probable Cost for the Preferred Concept is attached in Appendix 20. The total estimated cost is approximately $1 million, including final design, construction engineering, construction, and construction contingency.

9.3 Boulevard Park Shoreline Improvements

The development of a preliminary and final Boulevard Park Shoreline Improvements design awaits approval of the conceptual shoreline design, which is included in Appendix 7.

10. PERMITTING DOCUMENTATION

The proposed project elements at Boulevard Park will each require a number of regulatory permits, approvals, and processes. This section lists the major documents that need to be submitted during the application process for each project element and provides related discussion. Preliminary draft, draft, and final draft (submittal) documents are included in Appendix 13.

Project drawings will be included in permit applications along with the permitting documentation discussed below. Project drawings are included as Appendix 12 (c) and (d).

10.1 Biological Documentation

If a project requires the Corps to engage in an "individual" Endangered Species Act consultation with the National Marine Fisheries Service (NMFS) and/or the United States Fish and Wildlife Service, the applicant needs to provide a BE as part of the project's permit application package.

The Corps has indicated that BEs will be required for the Pattle Point Trestle Renovation and Boulevard Park Overwater Walkway project elements. The Corps has not indicated whether a BE would be required for the Boulevard Park Shoreline Improvements project element.

A BE has been prepared by Grette Associates for the Pattle Point Trestle Renovation project element (see Appendix 13 (a)). Regarding effects on threatened and endangered species and critical habitat, the BE makes two types of effect determinations: "may effect, not likely to adversely affect," and, "no effect."

10.2 JARPA Documentation

The JARPA is the application form for several permits and approvals. These include:

Hydraulic Permit Approval
Any form of work that uses, diverts, obstructs, or changes the natural flow or bed of any fresh water or saltwater of the state, requires a Hydraulic Project Approval (HPA) from the WDFW.

Section 10 Permit
If a project involves any work in, over, or under navigable waters of the United States, a Section 10 permit from the Corps is required.

Section 404 Permit

If a project involves the discharge of dredged or fill material into the waters of the United States, including special aquatic sites such as wetlands, the project applicant must get a Section 404 permit from the Corps.

401 Water Quality Certification
Applicants receiving a Section 404 permit from the Corps, a Coast Guard permit, or license from the Federal Energy Regulatory Commission, are required to obtain a section 401 Water Quality Certification from Ecology. Issuance of a certification means that Ecology anticipates the project will comply with state water quality standards and other aquatic resource protection requirements under Ecology's authority.

Coastal Zone Management Certification
Activities and development affecting coastal resources that involve federal activities, federal licenses or permits, and federal assistance programs (funding) require a written Coastal Zone Management (CZM) decision by Ecology. Federally permitted/licensed or funded projects require a certification that they are consistent with the Washington CZM Program.

The proposed Pattle Point Trestle Renovation and Boulevard Park Overwater Walkway project elements will require all of the above permits and approvals. The Boulevard Park Shoreline Improvements project element may also require all of the above permits and approvals, but confirmation of the required permits and approvals requires additional project design information. JARPAs have been prepared for the Pattle Point Trestle Renovation and the Overwater Walkway (Appendix 13, (b) and (c)).

10.3 SEPA Documentation

The Washington SEPA is intended to ensure that environmental values are considered during decision-making by state and local agencies. Information provided during the SEPA review process helps agency decision-makers, applicants, and the public understand how a proposal will affect the environment. This information can be used to change a proposal to reduce likely impacts, or to condition or deny a proposal when adverse environmental impacts are identified.

In most cases, one state or local agency is designated as the SEPA “Lead Agency." This agency is responsible for evaluating the proposal and determining if the proposal is likely to impact the environment. For the Boulevard Park project elements, the SEPA Lead Agency is the City of Bellingham.

If a project is subject to SEPA, the applicant is required to submit an Environmental Checklist. The proposed Pattle Point Trestle and Boulevard Park Overwater Walkway project elements would be subject to SEPA. The Boulevard Park Shoreline Improvements project element may also be subject to SEPA, but confirmation of SEPA applicability requires additional project design information. Environmental Checklists have been prepared for the Pattle Point Trestle Renovation and the Overwater Walkway project elements (Appendix 13, (d) and (e)).

10.4 Shoreline Management Act Documentation

To comply with the Shoreline Management Act, development in shoreline jurisdiction must receive a permit or exemption from the applicable local government. If a permit is required, the permit would either be a Shoreline Substantial Development Permit, a Shoreline Conditional Use Permit, or a Shoreline Variance Permit. The City of Bellingham is the local government responsible for reviewing the proposed project elements for compliance with the Shoreline Management Act.

As discussed in Chapter 7.2 of this document, the Pattle Point Trestle Renovation project element should qualify for an exemption from shoreline permitting. A Shoreline Exemption Application has been prepared for the Pattle Point Trestle Renovation project and is included as Appendix 13 (f).

Also discussed in Chapter 7.2 of this document, the Boulevard Park Overwater Walkway project could be approved through a Shoreline Conditional Use Permit under the existing SMP, as outlined in section 173-27-160-3 of the Washington Administrative Code. The project would need to be approved through a Shoreline Conditional Use Permit under the most recent draft of the updated SMP. A Shoreline Permit Application has been prepared for the Overwater Walkway project and is included as Appendix 13 (g).

10.5 DNR Documentation

The City of Bellingham has been directly engaged with DNR regarding aquatic lands leases and has draft documentation related to the lease.

11. SCHEDULE AND NEXT STEPS

11.1 Next Steps

The following "Next Steps" were suggested through discussions with Park staff:

- Negotiate DNR lease.
- Obtain permitting agency approval from tribes, Corps, WDFW, DNR, Port of Bellingham, etc.
- Construct Pattle Point Trestle Renovation project.
- Seek grants from the Recreation and Conservation Office (RCO) and other sources.
- Construct the Boulevard Park Shoreline Improvements project.
- Construct Boulevard Park Overwater Walkway project.

Other near term "steps" include:

- Conduct a geotechnical site investigation along the chosen Boulevard Park Overwater Walkway alignment, with a supplemental geophysical survey to more fully determine the profile of the top of bedrock surface.
- Complete a preliminary and final design, and submit permit documents for Pattle Point Trestle Renovation.
- Complete an assessment, biological evaluation, preliminary design, and permit documents for Boulevard Park Shoreline Improvements.
- Consult the local tribes and conduct necessary subsurface testing for on-site archaeological materials.

11.2 Schedule

An interim project schedule developed in February 2009 is included as Appendix 21. The project schedule was extended to accommodate additional environmental assessment at the site, a shoreline survey, additional cultural resources evaluation, and assembly of Pattle Point Trestle Renovation permit documents.

11.3 Funding

The City of Bellingham Boulevard Park Shoreline and Overwater Walkway Project has many elements that meet grant funding source requirements. The project provides benefits in broadened leisure opportunities, creates an interconnecting trail, and addresses missing links in a regional system. The project creates opportunities for upland and habitat enhancements and stimulates the downtown with economic benefits. These important qualities make it an ideal project for securing grant funds.

The following funds have been secured at the time this report was prepared for the design and construction of this project: $2.1 million Federal Enhancement Grant; $4 million Greenway III Levy funds for Boulevard Park Overwater Walkway; and $1.5 million Greenway Levy funds for Boulevard Park.

The timing for securing and researching additional grant funding sources and matching grant opportunities has a direct correlation with timing and availability of funding sources, since they tend to change with legislative and congressional policies.

The full Potential Grant Sources Report provides a listing of the potential federal and state grant funding sources that parallel the goals and vision of the City of Bellingham's shoreline and overwater walkway project. On the federal level, Congress appropriates funds through transportation, environmental protection, and conservation funds. The Department of the Interior provides funds through the National Park Services and Housing and Urban Development programs. The state grants include opportunities through the RCO and Ecology.

In addition to government funding opportunities, private and foundation grants and gifts also provide sources of opportunities that will match or contribute personal dollars to see the project come to fruition.

As with all important and coordinated capital projects, marketing the project and comprehensive planning are vital to the success in the realization of the community vision.

The full report provides sources and contact points for submittal of matching grant proposals. The next step in securing the funds is meeting timeline and grant application deadlines and will be coordinated closely with the actual timeline and critical path of the identified project. The Potential Grant Sources Report is attached as Appendix 22.

12. SUMMARY

This feasibility study analyzed a variety of potential improvements to the waterfront trail system at Boulevard Park in Bellingham. The three main components of the improvements included renovation of the Pattle Point Trestle trail section at the south end of the park, shoreline enhancement and erosion protection in the main portion of the park, and a new overwater trail section at the north end of the park. The study included review of existing documentation such as planning documents, existing site conditions, code requirements for the proposed improvements, Park's staff and public input for the park, and regulatory agency requirements for the project. Preliminary alternatives, concept designs, and permitting documentation were prepared as part of this feasibility phase.

During the feasibility study, the design of the Boulevard Park Overwater Walkway evolved into a 2,340-foot-long, 14-foot-wide project extending away from shore in a single arc between the Park and the Cornwall Landfill site. The new structure will be similar to the existing Taylor Avenue Dock, except the deck will be partially grated where it crosses eelgrass beds at the north and south ends. The trail will include a specially designed pile foundation system to accommodate the weak overburden and shallow bedrock anticipated at the site. It will also include special compact, tamper-resistant, energy-saving LED lights.

The existing Pattle Point Trestle needs renovation. Its main timber stringer beams are deteriorated; the walking surface does not comply with ADA guidelines; and the deck is much narrower than WSDOT’s recommended 12-foot width for mixed use paths. The preferred upgrade includes removing the deteriorated stringers and existing deck and replacing the existing 8-foot-wide deck with a 12-foot-wide deck. The deck will consist of reinforced concrete, and fiberglass or metal grating supported by steel pile caps and stringers. The deck will be partially grated to minimize shading of the eelgrass beds under the structure.

A preliminary assessment of the Boulevard Park shoreline was performed. Following a full topographic survey of the beach and nearshore areas, a preliminary concept design for shoreline improvements was developed. The preliminary concept provides for four "pocket" beach areas for improved public access to the water spread throughout the park area. The three western accesses would involve construction of concrete rubble groins designed to look like sandstone.

The study also included various site investigations as needed for preliminary design and permitting:

- Echelon Engineering conducted an above and below water condition inspection of the Pattle Point Trestle. The timber frame bents at both ends of the trestle, the abutments at each end of the trail, the rail stringers, and the cross bracing were found to be in fair to poor condition and in need of replacement. The piles were found to be in fair to good condition and were not in need of replacement. The pile caps were found to be in fair to good condition with 4 caps probably in need of replacement. The rail ties were found to be in fair to good condition (approximately 23 in need of replacement). The deck stringers and planks were found to be in fair to good condition. The inspection findings have been used to determine which parts of the existing structure may be reused for the proposed Pattle Point Trestle Renovation.
- Grette Associates conducted an Eelgrass Habitat Survey for the Overwater Walkway. The survey was performed above water at a very low tide (-2.2 feet MLLW). The survey revealed that eelgrass exists continuously along the embayment between the Park and the Cornwall Landfill site. The inspection also defined the landward extent of the eelgrass beds. This information defines areas to be avoided by new structures and is used in the BE and the environmental permitting documents.
- Grette Associates also conducted an Eelgrass Dive Survey for the Boulevard Park Overwater Walkway. The dive survey delineated the landward and waterward extent of the eelgrass beds, measured eelgrass density, and recorded macroalgae presence and substrate characteristics.
- Grette Associates also conducted an Eelgrass Habitat Survey for the existing Pattle Point Trestle. The survey delineated the landward extent of the eelgrass beds and measured eelgrass density. The survey revealed that eelgrass exists continuously adjacent to the Trestle.
- The above Grette studies define areas that may need to be avoided by new structures. The studies have become part of the BE, which will be a part of environmental permitting documents.
- Grette Associates also prepared a draft BE for the Pattle Point Trestle Renovation. The BE determines whether the project may affect, is not likely to adversely affect, or has no effect on endangered species and their habitat. The BE will be delivered to the Corps as apart of the permit package, for subsequent review by U.S. Fish & Wildlife Service and NMFS.
- Reid Middleton prepared a draft Shoreline Assessment Report. The report suggests possible shoreline improvements, including three concrete rubble groins that would minimize erosion and improve shoreline access. The report, together with the shoreline survey and habitat studies discussed previously, will serve as a basis for detailed design of shoreline improvements.
- Landau Associates conducted an Initial Geotechnical Investigation for the Boulevard Park Overwater Walkway. A geophysical survey was conducted to determine bedrock depth, which varied from 10 to 46 feet below existing mud line. Nearby soils borings and the geophysical report revealed that the subsurface consists of bedrock overlain by soft soils and soft fill. Pipe piles driven to bedrock were recommended. The report noted that the region has high seismicity and the soft soils could be subject to liquefaction. A field

boring and testing program was recommended, augmented with supplemental geophysical surveying to more accurately map the bedrock surface. The Landau Report concluded that construction of the Boulevard Park Overwater Walkway is feasible from a geotechnical perspective.

- Wessen & Associates conducted a cultural resources evaluation. The study included a walk-through of the project site, literature search, and an Archaeological Potential Assessment Report. The report finds some potential for the site to contain archaeological resources. The most likely archaeological resources to be present include structural remains of the old Northern Pacific Railroad Trestle and the Bellingham Bay (later E.K. Wood) Mill. Prehistoric archaeological deposits are also possible, but they are considered relatively unlikely. Such prehistoric deposits would most likely be associated with hunting, fishing, and other economic activities during the last 3,000 to 5,000 years. Prehistoric deposits greater than 5,000 years are unlikely. The Pattle Point Trestle project area and its immediate vicinity have been disturbed by a variety of natural and historic cultural effects, which have probably impacted the archaeological resources there. If intact archaeological remains exist, they are likely deeply buried or located away from historic railroad and mill activities. Though archaeological potential at the site is limited, and potentially significant archaeological resources are relatively unlikely, a direct archaeological inspection is recommended. Specifically, it is important to dig at least a single small test pit at, or close to, each of the new abutment locations and the southernmost timber frame bent, where excavation is planned. The test pit should be dug to the maximum depth of proposed impact as each location.

The following statements can be made about the projects based on field studies, preliminary design and calculations, and initial contact with permitting agencies:

Boulevard Park Overwater Walkway.

It appears feasible to design and build a horizontally-arching walkway approximately 14-feet wide by 2,340-feet long, similar to the existing Taylor Avenue Dock, for approximately $6 million. The preliminary walkway route will begin and end crossing narrow portions of eelgrass beds, and will remain outside the eelgrass beds for the rest of the length. Geotechnical borings and associated geophysical surveying will be required to characterize the soils and define the top of bedrock surface to finalize the design of the structure. Additional discussions and coordination will be required with the regulatory agencies and tribes during the permitting phase of the project.

Pattle Point Trestle Renovation

It appears feasible to design and construct a renovation of the Pattle Point Trestle. The renovation would consist of removing and disposing of the existing timber cross bracing, 8-foot-wide deck, stringers, and guardrails, and installing a new 12-foot-wide deck (concrete and grating) and guardrails. The approximate cost for design, demolition, and construction would be approximately $1 million. The permit documentation and BE of the site have been completed, as have the final topographic and bathymetric survey of the shoreline. Though the archaeological potential at the site is limited, an archaeological field investigation is recommended to detect

possible historic and prehistoric artifacts at the site. Additional discussions and coordination will be required with the regulatory agencies and tribes during the permitting phase of the project. Final design may begin at any time.

Boulevard Park Shoreline Improvements

It appears advisable to make shoreline improvements to protect the shoreline from erosion and to improve access onto the beach. Four areas have been identified that could provide suitable locations for these improvements. The rip rap on the remaining shoreline should be maintained to prevent erosion in the other shoreline areas of the park. Conceptual design and of these shoreline improvements was completed following a topographical survey of the shoreline area and a biological evaluation. Following approval of the conceptual design, preliminary and final design could begin, and permit documents could be finalized and submitted.

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APPENDIX 1
Kickoff Meeting Agenda, March 6, 2008

AGENDA
Boulevard Park – Phase 1 Feasibility
March 6, 2008

Location and Time: RMC office at 1223 Railroad Ave, Bellingham, WA 98225
((360) 676-7733) from 10:00 am to 12:00 pm, lunch from 12:00 pm to 1:00 pm, and a site visit to Boulevard Park from 1:00 pm - ?

Purpose: The goals for this meeting are to discuss communication methods, coordinate the work, provide a brief synopsis of background data and tasks accomplished to date, discuss preliminary concepts for the project, review the schedule and deliverables for the project, and walk the site.

1. Team Introductions & Communication — Shannon
   - Verify Contact List

2. Project Goals — Gina

3. Project Description — Shannon
   - Phase 1 – Feasibility Study
   - Project Elements (review scope)

4. Background Information Review
   - Base map and data — Reid Middleton
   - Shoreline Assessment — Reid Middleton
   - Geotechnical — Landau
   - Cultural Resources — Landau
   - Environmental — Herrenkohl
   - Biological/Habitat — Grette
   - Paddle Point Trestle — RM for Echelon
   - Urban Design — Walker Macy
   - Coordination w/ agencies — Reid Middleton
   - Grants — AJO

5. Schedule — Shannon

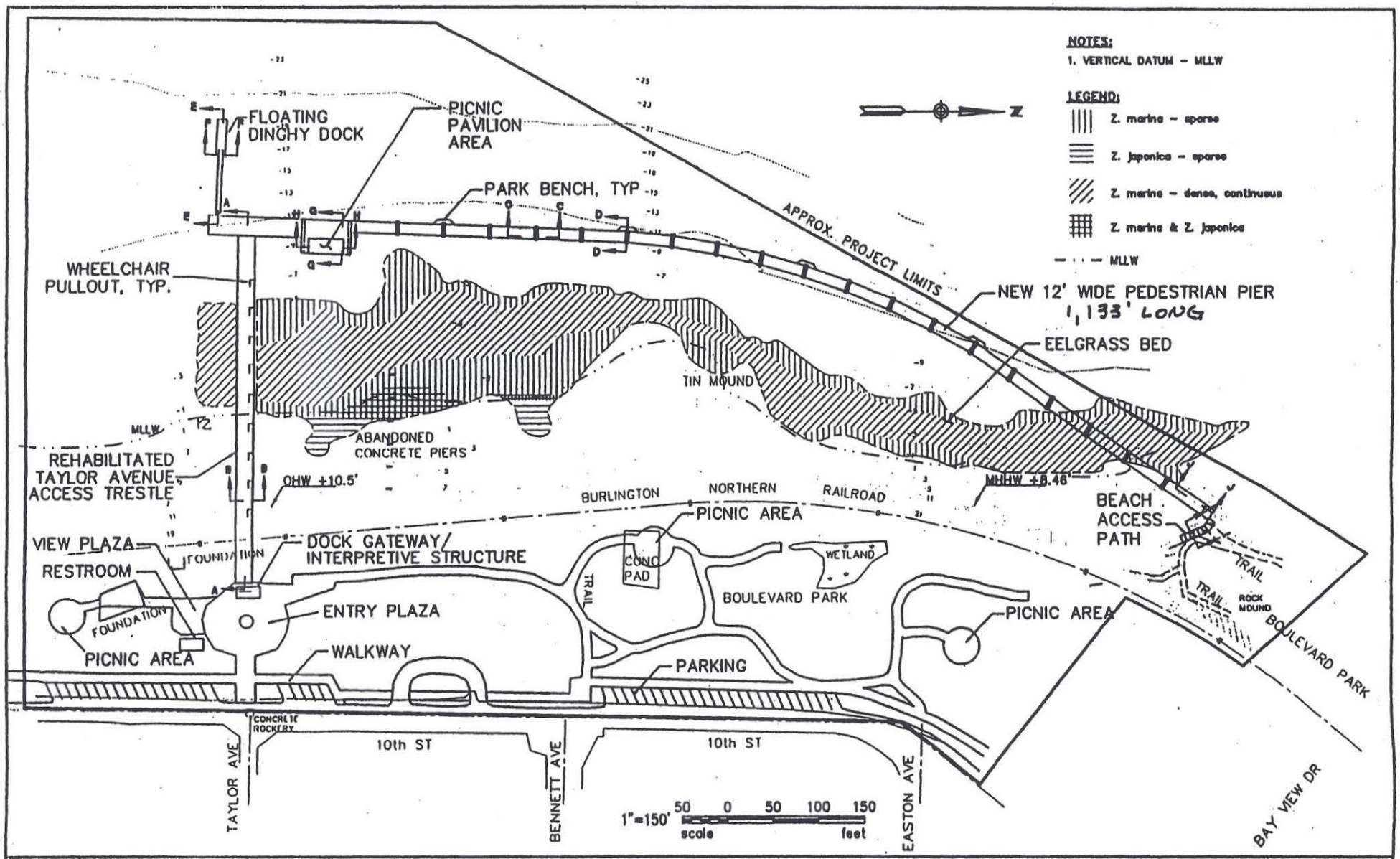
6. Public Involvement/Advisory Committees

7. Deliverables
   - Background information reports
   - Initial concepts, review documents
   - Agreed Order documentation
   - Data Gap Analysis
   - Draft Feasibility Report
   - Final Feasibility Report
   - Permit application materials
   - Biological Evaluation

8. QA/QC

9. Future Phases
   - Phase II Permitting and Initial Design
   - Phase III Final Engineering Design and Bid Ready Documents
   - Phase IV Bidding and Construction

APPENDIX 2
Taylor Avenue Dock JARPA Drawings and Photos

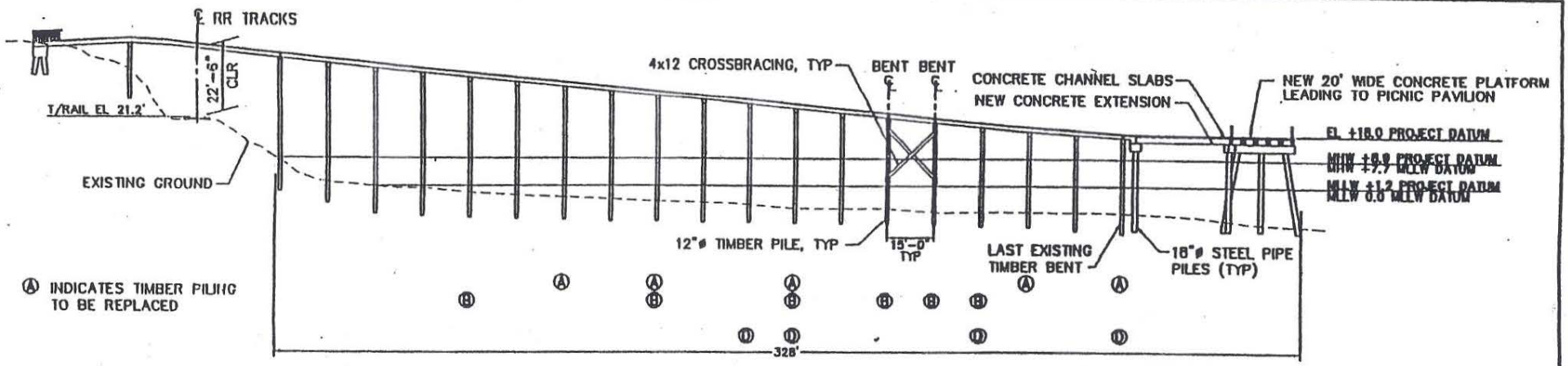


Purpose: Provide waterfront and beach access

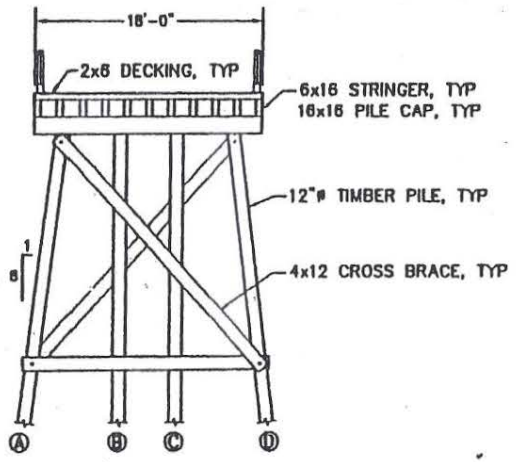
Datum : City of Bellingham

Proposed Development -- Taylor Avenue Dock

99-1-00030
Remove and renovate portions of the existing trestle including installing pilings, ramps, floats, and stairs
IN: Bellingham Bay
IN: Bellingham
COUNTY: Whatcom STATE: Washington
APPLICATION BY: Bellingham Parks Department
SHEET: 3 of 9 DATE: 3/20/99



SECTION A – RENOVATED TRESTLE
SCALE: 1" = 50'-0"



SECTION B – RENOVATED TRESTLE – TYPICAL BENT
SCALE: 1" = 10'-0"

NOTES: ELEVATION DATUM – CITY OF BELLINGHAM

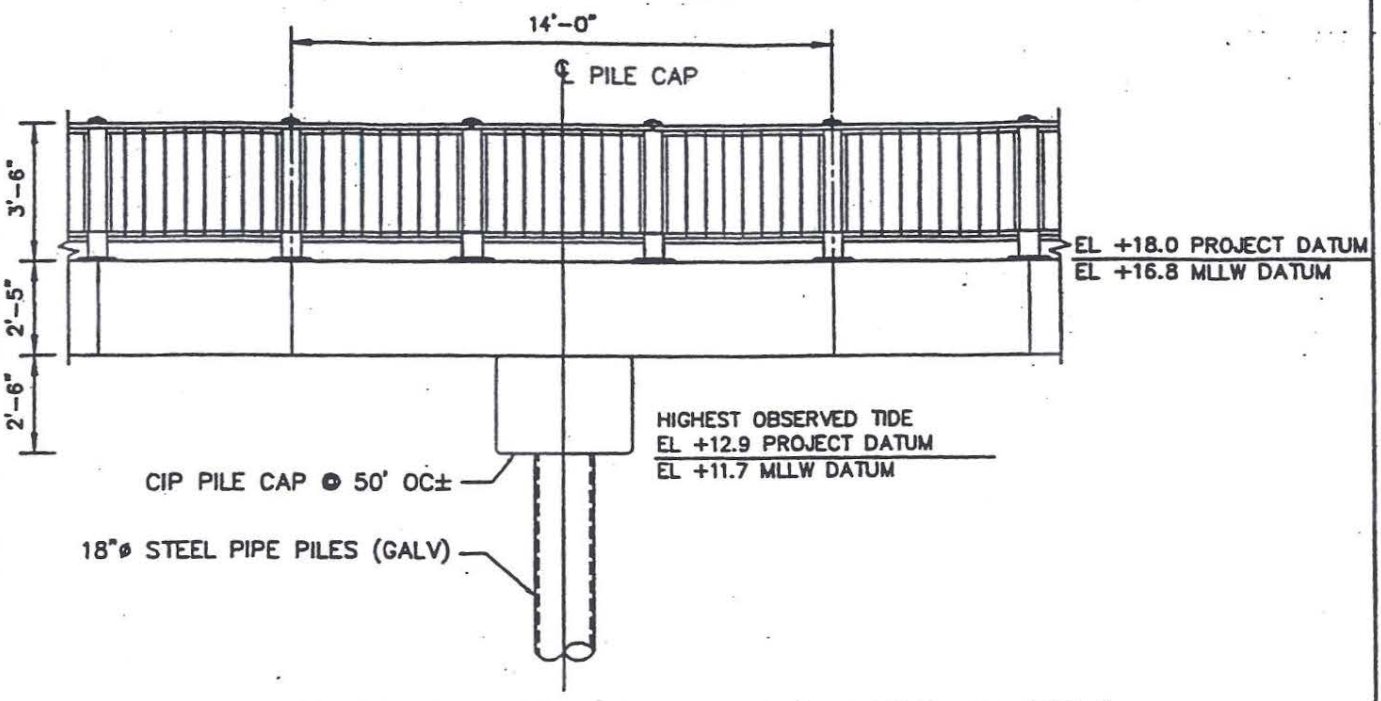
1) SUBTRACT 5.89 FEET FROM ELEVATIONS SHOWN TO CONVERT TO MEAN SEA LEVEL (1929) DATUM
2) SUBTRACT 1.18 FEET FROM PROJECT DATUM TO CONVERT TO MEAN LOWER LOW WATER (MLLW) DATUM

Purpose: Provide waterfront and beach access

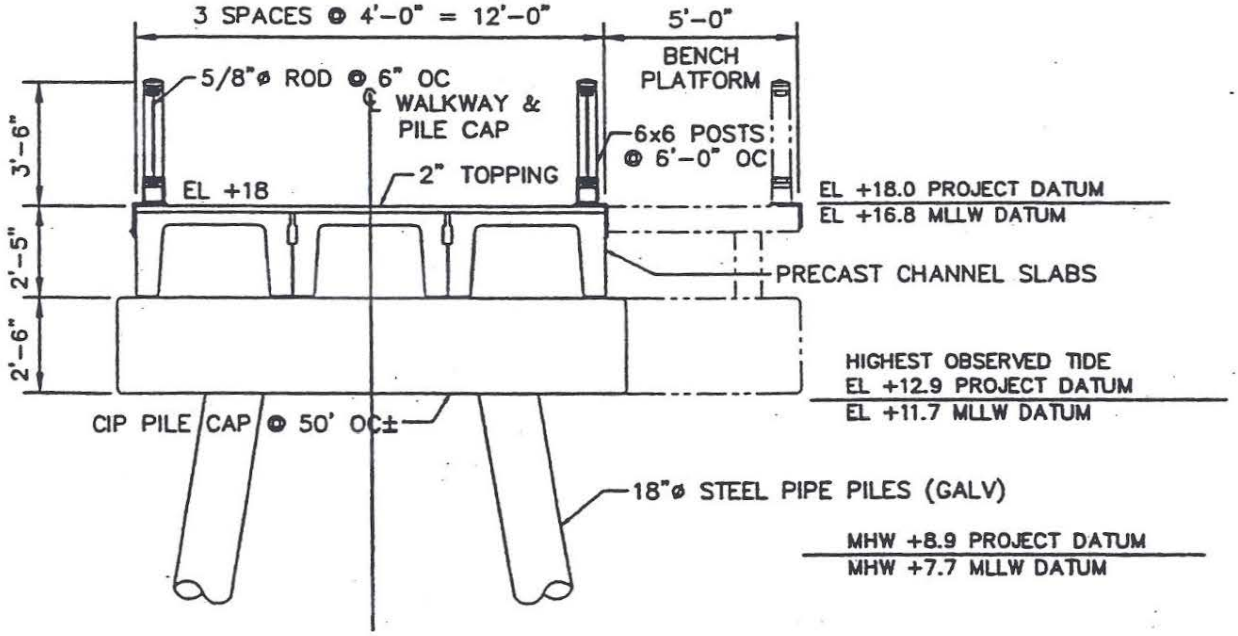
Datum : City of Bellingham

Renovated Trestle -- Taylor Avenue Dock

99-1-00030
Remove and renovate portions of the existing trestle including installing pilings, ramps, floats, and stairs
IN: Bellingham Bay
IN: Bellingham
COUNTY: Whatcom STATE: Washington
APPLICATION BY: Bellingham Parks Department
SHEET: 4 of 9 DATE: 3/20/99



SECTION C – PEDESTRIAN PIER (LONGITUDINAL VIEW)
SCALE: 1" = 5'-0"



SECTION D – PEDESTRIAN PIER (TRANSVERSE VIEW)
SCALE: 1" = 5'-0"

NOTES: ELEVATION DATUM – CITY OF BELLINGHAM

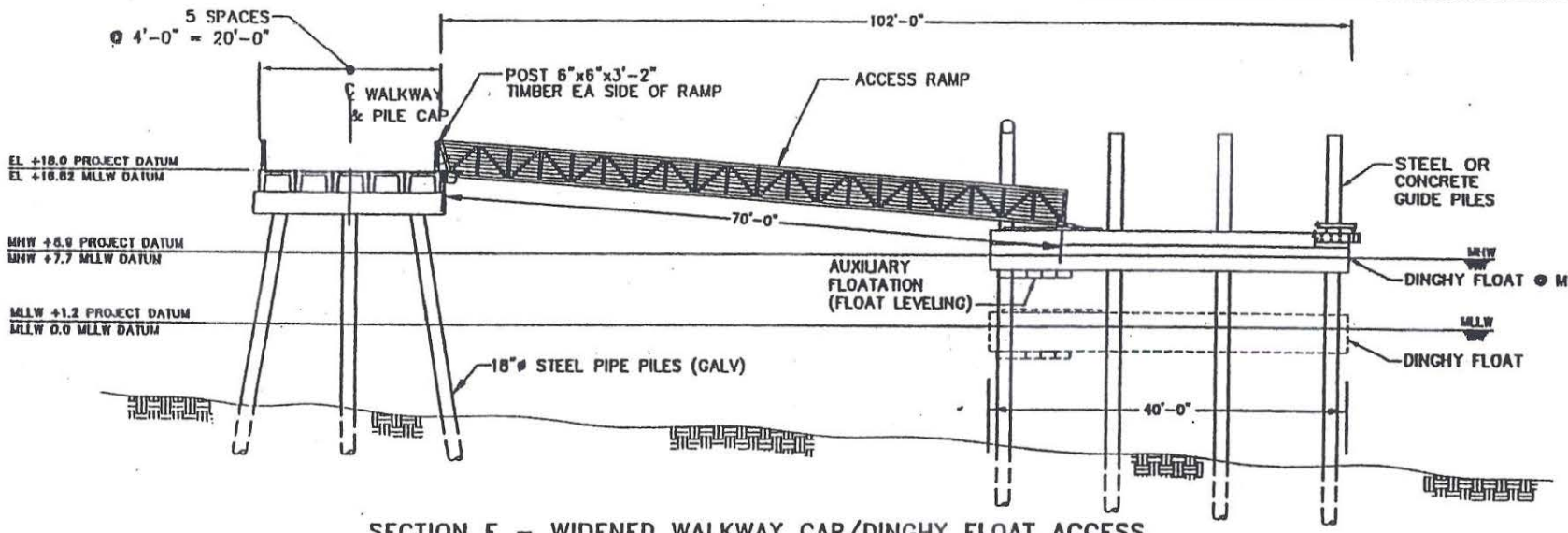
1) SUBTRACT 5.69 FEET FROM ELEVATIONS DATUM TO CONVERT TO MEAN SEA LEVEL (1929) DATUM
2) SUBTRACT 1.18 FEET FROM PROJECT SHOWN TO CONVERT TO MEAN LOWER LOW WATER (MLLW) DATUM

Purpose: Provide waterfront and beach access

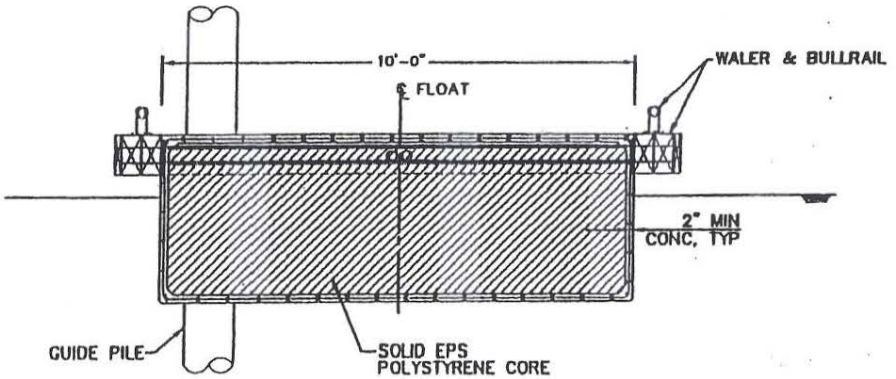
Datum : City of Bellingham

Pedestrian Pier -- Taylor Avenue Dock

99-1-00030
Remove and renovate portions of the existing trestle including installing pilings, ramps, floats, and stairs
IN: Bellingham Bay
IN: Bellingham
COUNTY: Whatcom STATE: Washington
APPLICATION BY: Bellingham Parks Department
SHEET: 5 of 9 DATE: 3/20/99



SECTION E – WIDENED WALKWAY CAP/DINGHY FLOAT ACCESS
SCALE: 1"=20'-0"



SECTION F – TYPICAL FLOAT MODULE
SCALE: 1"=4'-0"

NOTES: ELEVATION DATUM – CITY OF BELLINGHAM

1) SUBTRACT 5.69 FEET FROM ELEVATIONS SHOWN TO CONVERT TO MEAN SEA LEVEL (1929) DATUM
2) SUBTRACT 1.18 FEET FROM PROJECT DATUM TO CONVERT TO MEAN LOWER LOW WATER (MLLW) DATUM

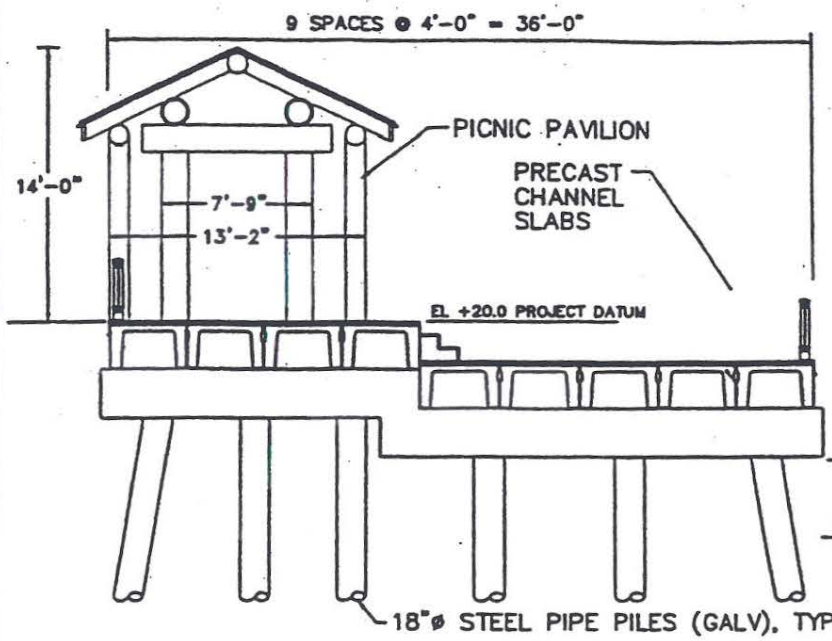
Purpose: Provide waterfront and beach access

Datum : City of Bellingham

Dinghy Float and Beach Access -- Taylor Avenue Dock

99-1-00030
Remove and renovate portions of the existing trestle including installing pilings, ramps, floats, and stairs
IN: Bellingham Bay
IN: Bellingham
COUNTY: Whatcom STATE: Washington

SHEET: 6 of 9 DATE: 3/20/99

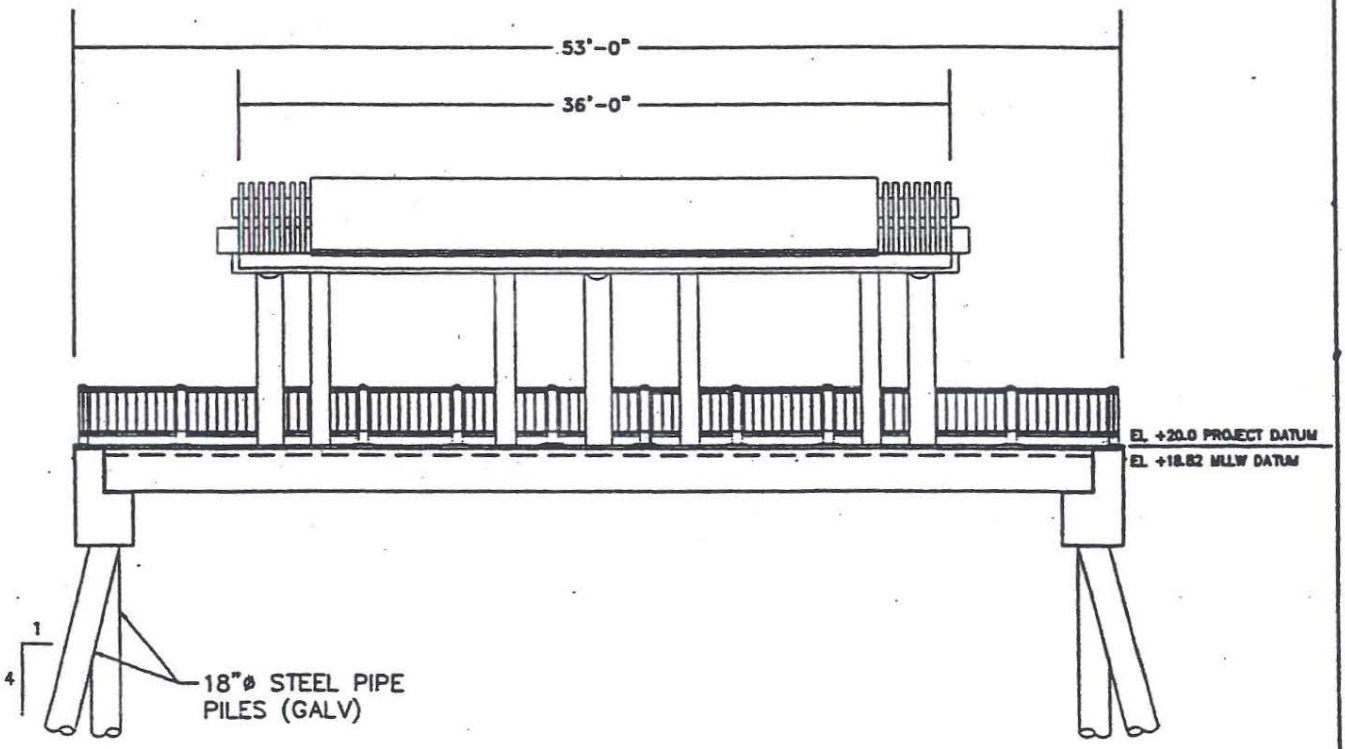


NOTES: ELEVATION DATUM – CITY OF BELLINGHAM

1) SUBTRACT 5.89 FEET FROM ELEVATIONS SHOWN TO CONVERT TO MEAN SEA LEVEL (1929) DATUM
2) SUBTRACT 1.18 FEET FROM PROJECT DATUM TO CONVERT TO MEAN LOWER LOW WATER (MLLW) DATUM

SECTION G – PICNIC PAVILION (TRANSVERSE VIEW)

SCALE: 1"=10'



SECTION H – PICNIC PAVILION (LONGITUDINAL VIEW)

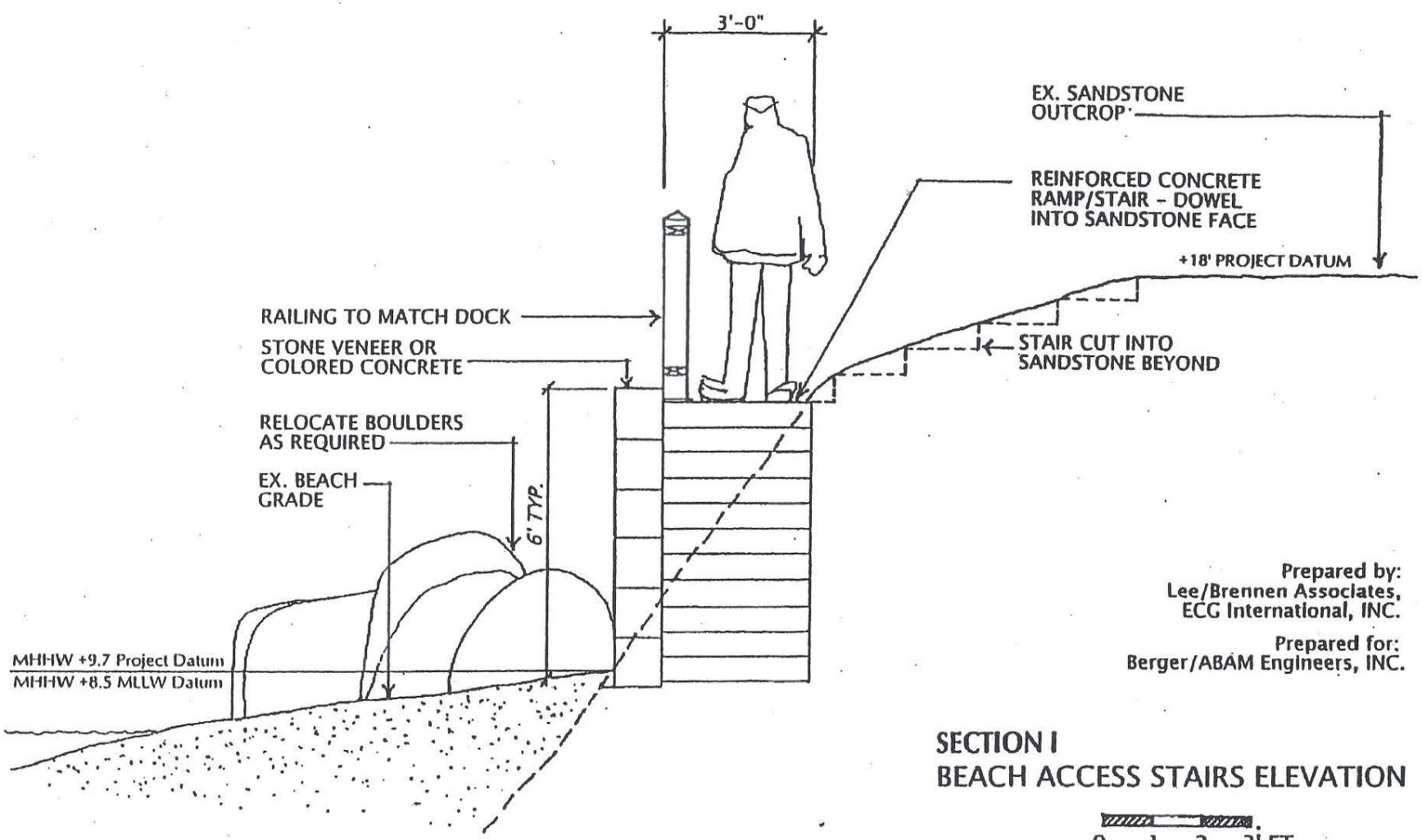
SCALE: 1"=10'

Purpose: Provide waterfront and beach access

Datum : City of Bellingham

Picnic Pavilion — Taylor Avenue Dock

99-1-00030
Remove and renovate portions of the existing trestle including installing pilings, ramps, floats, and stairs
IN: Bellingham Bay
IN: Bellingham
COUNTY: Whatcom STATE: Washington
APPLICATION BY: Bellingham Parks Department
SHEET: 7 of 9 DATE: 3/20/99



ELEVATION DATUM : CITY OF BELLINGHAM

Prepared by:
Lee/Brennen Associates,
ECG International, INC.

Prepared for:
Berger/ABAM Engineers, INC.

SECTION I
BEACH ACCESS STAIRS ELEVATION

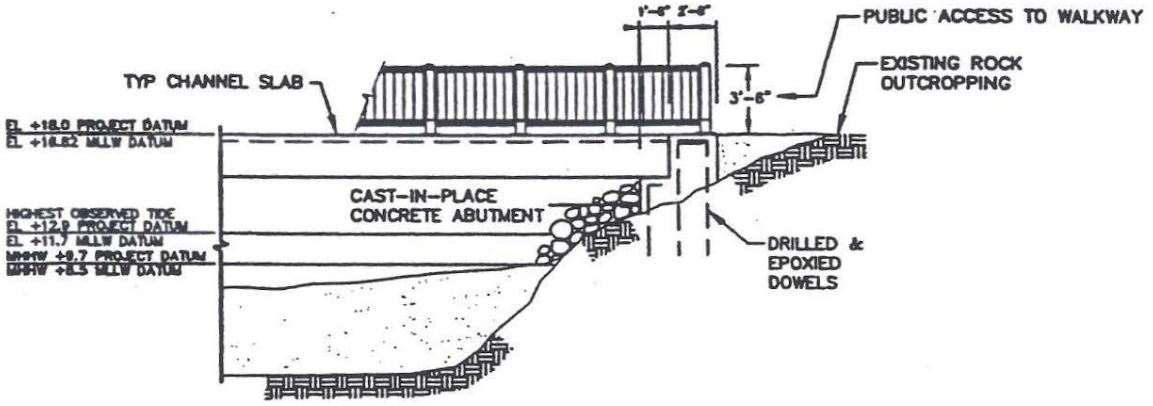
0 1 2 3' FT.

Purpose: Provide waterfront and beach access

Datum : City of Bellingham

Renovated Trestle -- Taylor Avenue Dock

99-1-00030
Remove and renovate portions of the existing trestle including installing pilings, ramps, floats, and stairs
IN: Bellingham Bay
IN: Bellingham
COUNTY: Whatcom STATE: Washington
APPLICATION BY: Bellingham Parks Department
SHEET: 8 of 9 DATE: 3/20/99



SECTION J – ABUTMENT AT NORTH END OF WALKWAY
SCALE: 1"=10'-0"

NOTES: ELEVATION DATUM – CITY OF BELLINGHAM

1) SUBTRACT 5.69 FEET FROM ELEVATIONS SHOWN TO CONVERT TO MEAN SEA LEVEL (1929) DATUM
2) SUBTRACT 1.18 FEET FROM PROJECT DATUM TO CONVERT TO MEAN LOWER LOW WATER (MLLW) DATUM

Purpose: Provide waterfront and beach access

Datum : City of Bellingham

Pedestrian Pier -- Taylor Avenue Dock

99-1-00030
Remove and renovate portions of the existing trestle including installing pilings, ramps, floats, and stairs
IN: Bellingham Bay
IN: Bellingham
COUNTY: Whatcom STATE: Washington
APPLICATION BY: Bellingham Parks Department
SHEET: 9 of 9 DATE: 3/20/99

APPENDIX 3
Team Member List

Boulevard Park
City of Bellingham
Contact List

Name	Organization	Phone	Fax	E-mail	Address
Gina G. Austin	City of Bellingham	360 778 7000	360 778 7001	GAustin@cob.org	3424 Meridian, Bellingham, Washington 98225
Shannon Kinsella	Reid Middleton	425 741 3800	425 741 3900	skinsella@reidmiddleton.com	728 134th Street SW, Suite 200 Everett, WA 98204
Sean Liner	Reid Middleton	425 741 3800	425 741 3900	sliner@reidmiddleton.com	728 134th Street SW, Suite 200 Everett, WA 98204
Nicole Faghin	Reid Middleton	425 741 3800	425 741 3900	nfaghin@reaidmiddleton.com	728 134th Street SW, Suite 200 Everett, WA 98204
Mark Daniel	Reid Middleton	425 741 3800	425 741 3900	mdaniel@reidmiddleton.com	728 134th Street SW, Suite 200 Everett, WA 98204
David Pischer	Landau Associates	425 778 0907	425 778 6409	dpischer@landauinc.com	130 2nd Ave S Edmonds, WA 98020
Rebekah Brooks	Landau Associates	425 778 0907	425 778 6409	rbrooks@landauinc.com	130 2nd Ave S Edmonds, WA 98020
John Fox	Landau Associates	425 778 0907	425 778 6409	jfox@landauinc.com	130 2nd Ave S Edmonds, WA 98020
Gary Wessen	Wessen & Associates	206-242-0525	206-433-9009	gwessen@aol.com	15028 24th Avenue SW Seattle, WA 98166
Mark Herrenkohl	Herrenkohl Consulting, LLC	360 319 0721	360 647 6980	mherrenkohl@msn.com	321 Summerland Road Bellingham, WA 98229
Jarvis Payne	Walker Macy	503 228 3122	503 273 8878	jpayne@walkermacy.com	111 S.W. Oak Street, Suite 200 Portland, OR 97204
Tammie Dubberly	Walker Macy	503 228 3122	503 273 8878	tdubberly@walkermacy.com	111 S.W. Oak Street, Suite 200 Portland, OR 97204
Arvilla Ohlde	AJO Consulting	360 731 0611	360 275 8692	arvilla@hctc.com	15191 E SR 106 Belfair, WA 98528
Brad Cornwell	RMC Architects	360 676 7733	360 738 0448	brad@rmcarchitects.com	1223 Railroad Ave Bellingham, WA 98225
Glenn Grette	Grette Associates, LLC	509 663 6300	509 664 1882	glenng@gretteassociates.com	151 S Worthen Street, Suite 101 Wenatchee, WA 98801
Jay Dirkse	Grette Assoiciates, LLC	509 663 6300	509 664 1882	jdirkse@gretteassociates.com	151 S Worthen Street, Suite 101 Wenatchee, WA 98801
Shelley Sommerfeld	Echelon Engineering	425 672 8924	425 672 8927	sdsommerfeld@echelon.com	21027 61st Avenue West, Lynnwood, WA 98036
Ed David	jOmega (Interface Engineering)	206 855 4600 or 916 288 6200	916 288 6250	eddavid@interfaceeng.com	8950 Cal Center Drive #250, Sacramento, WA 95826
Jim Johannessen	Coastal Geologic Services	360 647 1845		coastalgeo@attbi.com	401 Harris Street Bellingham, WA 98225

APPENDIX 4
Inspection & Assessment of Pattle Point Trestle

ECHELON ENGINEERING, INC.

Civil/Marine Consulting Engineers

Inspection & Assessment of Pattle Point Trestle Boulevard Park Bellingham, WA

Prepared For:

Reid Middleton, Inc.
728 134th Street SW, Suite 200
Everett, WA 98204

ATTN: Ms. Shannon Kinsella, PE
Waterfront Group Director
Tel: 425/ 741.3800

Prepared By:

Echelon Engineering, Inc.
21027 61st Avenue West
Lynnwood, WA 98036

ATTN: Ms. Shelley Sommerfeld, PE
President
Tel: 425 / 672.8924

January 2008
08-2317-Rev. 1

Echelon
Engineering

Civil / Marine
Consulting Engineers

February 6, 2008

Reid Middleton, Inc.
728 134th Street SW, Suite 200
Everett, Washington 98204

ATTN: Ms. Shannon Kinsella, P.E.
Waterfront Group Director

RE: Inspection and Assessment of Pattle Point Trestle, Boulevard Park, Bellingham, Washington

Dear Ms. Kinsella:

This report documents the findings of our recent inspection of the Pattle Point Trestle located in the City of Bellingham's Boulevard Park. The inspection was carried out as part of your feasibility study for the upgrading of the structure. The project was authorized by your Project No. 24-2008-001-Task 00302 and covered the inspection and assessment of the piles, intertidal zone braces and superstructure components that comprise the timber pedestrian trestle.

INTRODUCTION

The Pattle Point trestle is located on the eastern shore of Bellingham Bay near the Fairhaven district of Bellingham. The trestle serves as part of a pedestrian and cycle path along the shoreline of Boulevard Park. The structure is thought to be about 100 years old and was originally a rail road trestle. It was refurbished into its present configuration in 1991.

The trestle is built using typical timber construction with predominantly Chemonite treated piles and treated timber caps, rail stringers, rail ties and decking. The piles are configured in bents of two, numbered consecutively 1 – 35 from the north. The pile rows are designated A and B from the west. The structure is braced by a network of transverse diagonal timber braces.

The scope of this investigation included inspection of the piles, bracing and accessible superstructure components including the caps, rail stringers, rail ties and decking. The results of the investigation are discussed in the Observed Conditions section of this report. Photographs illustrating typical conditions encountered are presented in Appendix A. Appendix B provides a drawing that shows the layout of the structure and the identification system used. Appendix C provides a tabular listing of the inspection findings. Table 1

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provides details on the condition of the piles. Table 2 contains information on the intertidal zone braces. Table 3 lists information on the pile caps. Table 4 provides information on the rail stringers and Table 5 contains information on the damaged rail ties.

QUALIFICATIONS OF INSPECTORS

The investigation was conducted by a crew composed of professional and technical personnel capable and experienced in topside inspection and assessment of structural members. The personnel utilized on this project included the following Echelon Engineering staff:

S.D. Sommerfeld, P.E.	Project Manager/Engineer - Diver Licensed Professional Engineer, WA, Guam 25 Years Experience in Marine Structures Inspection and Design
E.B. Vegsund, B.Sc.	Marine Specialist/Biologist - Diver BS in Marine Biology - Emphasis on Marine Biological Studies 35 Years Experience in Marine Structures Inspection
K.A. Meyers	Inspection Technician - Diver 4 Years Experience in Marine Structures Inspection
C.J. Curtiss	Inspection Technician – Diver

INSPECTION METHODOLOGY & RATING SYSTEM

The investigation was carried out under the three tiered inspection protocol originally developed by the US Navy and endorsed by the American Society of Civil Engineers (ASCE). All timber members received Level I visual examination for their accessible length. Level II examination, including spot cleaning, hammer sounding and probing was conducted at suspect areas along the inspected length of the members. Level III probing and/or coring of suspect areas was carried out as required to assess the extent of any internal damage. Areas of damage were recorded, including the location and quantification of specific deterioration encountered.

Throughout the discussions the overall condition of the members is described as good, fair or poor in accordance with the following definitions:

- A member in **good condition** has no damage or only minor damage.
- A member in **fair condition** has sustained minor to moderate damage, but has no evidence of overstressing.
- A member in **poor condition** has sustained major to severe damage that affects the members load bearing capacity. This damage may be evident as advanced deterioration, overstressing or breakage.

Timber Piling

Individual ratings have been provided for each of the structural piling. These ratings are based on the overall damage noted along the length of the member using Level I visual inspection and augmented by the various Level II and Level III testing techniques. The condition of the piles has been expressed as a percentage of the remaining cross-sectional area of the member. All elevations are referenced to Chart Datum. A breakdown of the rating classifications is as follows:

100% Remaining Cross-sectional Area / Rating Classification
(No damage or deterioration)

90% Remaining Cross-sectional Area / Rating Classification
(Minor damage or deterioration; 90-99% remaining area)

75% Remaining Cross-sectional Area / Rating Classification
(Moderate damage or deterioration; 75-89% remaining area)

50% Remaining Cross-sectional Area / Rating Classification
(Moderate-Major damage or deterioration; 50-74% remaining area)

25% Remaining Cross-sectional Area / Rating Classification
(Major damage or deterioration; 25-49% remaining area)

0% Remaining Cross-sectional Area / Rating Classification
(Destroyed; 0-24% remaining area)

Timber Bracing

All brace members were subjected to Level I visual examination. Level II and III examination, including cleaning, hammer sounding, probing and drilling, was conducted at suspect areas along the length of the members. Areas of damage were identified and detailed information obtained, including the location and quantification of the specific deterioration encountered. A breakdown of the brace rating classifications is as follows:

Undamaged	No significant damage or deterioration (0-5% loss of section)
Functional	Minor damage that does not significantly impact serviceability (6-25% loss of section and no significant damage to connection)
Damaged	Moderate to major damage that significantly impacts serviceability (>25% loss of section and/or damage to connection)

Superstructure

All accessible superstructure members were subjected to Level I visual examination. Level II and III examination, including probing, hammer sounding and/or drilling was conducted at suspect areas along the length of the members. Areas of damage were identified and detailed information obtained, including the location and quantification of the specific deterioration encountered. All inspection holes were filled with treated dowels to restore the member's protection barrier. A breakdown of the superstructure rating classifications is as follows:

Undamaged	No significant damage or deterioration (0 – 4% loss of cross section)
Light Damage	Minor defects, No significant loss of capacity, No observed overstressing (5 – 24% loss of cross section)
Moderate Damage	Moderate defects, Moderate loss of capacity, No observed overstressing (25 - 49% loss of cross section)
Heavy Damage	Advanced deterioration, Significant loss of capacity, Possible areas of overstressing observed (50 – 100% loss of cross section)

OBSERVED INSPECTED CONDITIONS

The field investigation was carried out on January 17 and 18, 2008. Weather was seasonal with cold temperatures and clear skies. Tides during the inspection ranged from a low of +2.0 ft. (MLLW) to a high of +9.6 ft. (MLLW). No perceptible currents were experienced during the investigation. The results of the inspection are as follows:

Piles

Bent 1

1. Bent 1 is supported by creosote treated 12x12 inch posts. These timbers which are approximately 3-4 feet in length bear on a creosote treated timber sub-cap that is mostly buried. It appears that originally there were five posts identified at the Row A, A.2, A.5, A.7 and B positions. The post at the Row A position is missing. The remaining posts were found to be in good condition. Refer to Photo No. 17.

2. The exposed portion of the creosote treated sub-cap was found to be in good condition.

3. Two piles were found to be partially exposed beneath the sub-cap at the western end in the Row A and A.2 positions. Both of these piles were found to be partially bearing. The Row A pile is ~50% bearing and the Row A.2 pile is ~75% bearing under the sub-cap.

The remaining center and eastern portion of the sub-cap is buried. It is uncertain if there are any additional piles under this member.

Bents 2–34

1. The piles in Bents 2–34 are newer Chemonite treated piles. Several of the piles were noted to have a treatment stamp showing they were produced in 1991. The piles have been capped with a tar paper cover, which was found to be in generally good condition. The piles were found to have an average diameter of approximately 12 inches and to have a mudline to cap length ranging from approximately 5 to 20 feet. Refer to Photo No. 2.

2. A total of 66 Chemonite treated piles were inspected in Bents 2-35. The overall condition of the piles is fair to good.

3. Of the 66 piles inspected 53 (80.3%) are undamaged and have been rated in the 100% rating category. Refer to Photo No. 4.

4. Thirteen piles (19.7%) have sustained minor mechanical damage, such as abrasion or mechanical impact. These piles have been rated in the 90% rating category. No evidence of significant deterioration or loss of cross section has been noted in these piles at this time. These piles have been placed in the 90% category for comparative purposes with subsequent inspections, as the probability exists that these incipient problems, may with time, progress and result in loss of structural capacity of the members. Refer to Photo No. 3.

Bent 35

1. Bent 35 is supported by creosote treated 10x20 inch pile posts. These timbers which are approximately 3-4 feet in length bear on a creosote treated timber sub-cap that partially bears on a timber sill set on the mudline. There are seven posts identified at the Row A, A.2, A.3, A.5, A.7, A.8 and B positions. The post at the Row A position was found to have sustained a 90% marine borer cavity at an open bolt hole located in the intertidal zone.

2. The creosote treated sub-cap is 20x20 member that is comprised of two 10x20 inch creosote treated member that partially bear on sill timbers. The sill timbers are also 10x20 inch creosote treated members oriented longitudinally with the trestle and perpendicular to the sub-cap. These timbers lay directly on the gravel and rock ground. Investigation of these members found extensive marine borer damage and several missing members. The western half of the bent, from the west end to the Row A.5 position is not supported due to missing timbers. From the Row A.5 position to the east end of the bent, these bearing timbers are present, with extensive marine borer damage noted in the eastern most member. Refer to Photo No. 12.

Bracing

1. The structure was found to be braced by a network of transverse diagonal braces. These members which are Chemonite treated 3x10 inch timbers have been identified relative to the piles they span and their orientation. For example the brace identified as 2–A to 2-B, S Diagonal is a diagonal brace timber located on the south side of Bent 2 with its upper connection on Pile A and its lower connection on Pile B.

2. The overall condition of these braces is fair to poor. Of the 69 braces inspected, 19 (27.5%) members were found to be undamaged.

3. Ten (14.5%) braces were found to have sustained minor damage and are rated as functional. The damage on these members is typically minor marine borer or mechanical damage at the end of the member that has not yet extended to the bolted connection.

4. Forty (58.0%) braces are rated as damaged. These members have sustained heavy mechanical or marine borer damage to the timbers and/or to the bolted connection(s). Refer to Photos No. 5 and 6.

5. In addition to the diagonal braces, several horizontal braces were found at the elevation of the pile caps. These members appear to date back to the original rail trestle construction and are spiked to the side of the caps. Refer to Photo No. 7. These braces are not present throughout the structure. They were found in the following bent spans: 1–2, 2–3, 3–4, 4–5, 6–7, 8–9, 10–11, and 12–13. These members were found to be in generally good condition, however several exhibit minor section loss of up to 10% due to fire damage.

Caps

1. The majority of the caps are newer 12x16 inch Chemonite treated timbers. Three bents were found to be original 12x16 inch creosote treated members, and one bent was found to be a double 10x20 creosote treated member.

2. The overall condition of the superstructure caps is fair to good.

3. The majority of the newer Chemonite treated members are rated as undamaged. Several of these caps were noted to have large seasoning checks or splits. Inspection of these areas found no significant damage or fungal decay associated with these locations. One of the newer caps at Bent 30 was found to have sustained minor mechanical damage at its eastern end. This defect appears to date back to the time of construction. This member has been rated in the light damage category.

4. The three creosote treated caps all appear to date back to the original structure. These members, which are located at Bents 1, 2 and 6, have all sustained heavy fungal decay with a resultant loss of 75% to 90% of their original cross section.

5. The cap at Bent 35 is a 20x20 timber comprised of double 10x20 creosote treated members. The cap itself is undamaged. However, due to missing sill timbers under the western half of the bent, the cap has rotated downwards and consequently does not fully support the rail stringers and deck system that span from Bent 35 to the concrete sill/abutment at the south end of the trestle. Refer to Photos No. 12, 13, and 14.

6. The tops of several of the caps were found to be partially covered with metal sheathing or covers. This was apparently installed as a preventative maintenance measure to help prevent fungal decay. The majority of these metal covers are missing or have been significantly damaged by storm action. Refer to Photos No. 2 and 5.

Rail Stringers

1. The rail stringers are 10x18 inch timbers of indeterminate age and treatment. Many of these members appear to date back to the original rail road trestle. The members generally span three bents and are typically placed in two sets of three under the original steel rail locations. For purposes of identification, these members have been designated as Row A or Row B with the individual members within each set identified as west, center, and east, (i.e. Row A West Rail Stringer, Row A Center Rail Stringer, Row A East Rail Stringer, etc.).

2. It is evident that maintenance to some of the rail stringers has been carried out, likely during the 1991 rehabilitation of the trestle. It appears that in spans with heavily damaged members, the original three timbers were removed and replaced with a single 10x18 inch stringer. In some locations these single members spans only two bents. For the purposes of continuity the inspection assumed that there were three members in each span, at each of the Row A and Row B positions. In spans that currently have only one rail stringer per row the other two rail stringers have been listed as missing. Refer to Photo No. 8.

3. Access for the inspection of the center rail stringer was restricted due to the proximity of the adjacent west and east members. Given this restricted access, the possibility exists that there may be additional damage to these members that was not detectable by the inspection methods used.

4. The overall condition of the rail stringers is fair to poor. Evidence of significant fungal decay was identified in these members throughout the trestle. Refer to Photo No. 10.

5. The Row B rail stringers spanning Bents 13–15 were found to be rotated such that they are only partially bearing on the cap. Refer to Photo No. 9.

6. Several of the rail stringers spanning Bent 35 to the concrete sill/abutment were found to have sustained heavy fungal damage. Additionally, two of these Row A stringers were found to be unsupported at Bent 35 due to the downward displacement of the cap as a result of the missing sill timbers beneath the sub-cap. Refer to Photos No. 13 and 14.

Rail Ties

1. The rail ties are 8x8 inch creosote treated timbers that appear to date back to the original rail road trestle. These members are set at approximately 30-inch centers and bear on the rail stringers. The individual timbers are identified relative to the bents, (i.e. Rail Tie 27.6 is the member located approximately 60% along the span between Bents 27 and 28).

2. These members were accessible to inspection at both the west and east ends of the timbers, but restricted under the trestle due to the proximity of the rail stringers and the 4x4 and timber plank deck system installed during the 1991 rehabilitation of the structure.

3. The overall condition of the rail ties is fair to good. The majority of the members were found to be undamaged with no significant deterioration or fungal decay identified.

4. A total of 23 rail ties were identified to have sustained significant damage.

5. One member was found to have sustained a small split from the east end in approximately 3 feet. As no other damage was found this member was rated as undamaged.

6. Three ties were found to have sustained approximately 25% loss of section due to mechanical and/or fungal damage and have been rated in the moderate damage category.

7. Nineteen ties were found to have sustained heavy damage with the loss of 50% or more of their cross section. Refer to Photo No. 11.

Deck System

1. The deck is comprised of a series of six Chemonite treated 4x4 inch deck stringers set at approximately 20 inch centers. These members bear directly on the rail ties. The individual deck planks are 3x4 inch Chemonite timbers set with an approximate ¼ inch space between the planks.

2. The overall condition of the deck was found to be fair to good. Although weathering of the planks is evident, no areas of significant damage were encountered. Minor mechanical damage was noted in several locations, with the worst example found at Bent 9 where one plank near the middle of the trestle, was noted to have an approximate 25% splinter approximately 18 inches in length. Refer to Photo No. 16.

3. The decking in the vicinity of Bent 35 was noted to deflect when loaded with pedestrian traffic. This appears to be due to the unsupported sub-cap and other defective members previously noted at this location.

4. The deck has a rail system along both the west and east sides of the structure. The rail system was also found to be in generally fair to good condition with evidence of weathering and minor fungal decay noted in the tops of some of the vertical posts. Refer to Photo No. 15.

Abutments And Shore Protection

1. The north end of the trestle connects to a pathway that is constructed at the upland elevation of the park. The rip rap shore protection and backfill in this area is restrained by timber lagging installed along the north side of Bent 1. The overall condition of this lagging is poor with evidence of mechanical damage and fungal decay noted. Refer to Photo No. 17.

2. The south end of the trestle also connects to the pathway over a poured in place concrete abutment. This abutment was also found to be in poor condition. Scour under the northwest corner of the structure has led to the development of a large vertical crack and the entire structure is listing to the north. Refer to Photo No. 18.

SUMMARY

This inspection has shown that the overall condition of the Pattle Point Trestle at Boulevard Park is fair. When considered separately the condition of the major components is a follows:

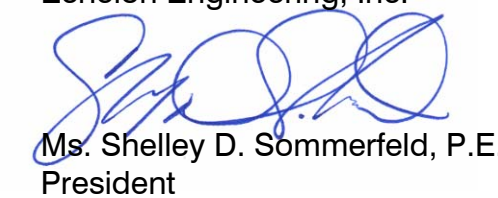
Member Type	Overall Condition
Piles	Fair to Good
Bracing	Fair to Poor
Caps	Fair to Good
Rail Stringers	Fair to Poor
Rail Ties	Fair to Good
Deck System	Fair to Good
Abutments / Shore Protection	Poor

We recommend that the defective members identified in this investigation be evaluated for possible maintenance. Additionally given the difficult access conditions inherent in the superstructure investigation, we recommend that a 15–20% contingency be included to cover maintenance costs for additional damaged rail tie and deck system members that might be discovered during any repair work.

We also recommend that periodic routine inspection of the trestle be carried out to monitor the condition of the structure. Per ASCE guidelines, facilities such as this are recommended for re-inspection of the piles and superstructure elements on a three to six year cycle. Such inspections would identify specific members that may require maintenance in order to ensure the continued safe operation of the structure.

Once again, it has been a pleasure to have worked with you on this project. Should you have any questions concerning this report, or if we can assist you further, please do not hesitate to contact our office.

Yours Truly,
Echelon Engineering, Inc.



Ms. Shelley D. Sommerfeld, P.E.
President

SDS:jds
Enclosures

PHOTO No. 1: Boulevard Park, Pattle Point Trestle, Looking Southeast - The structure is a former railway trestle that has been modified for pedestrian use. The trestle is constructed with timber piles and superstructure members.

PHOTO No. 2: Typical Construction, Looking Southwest - Note the Chemonite treated timber piles and intertidal zone braces. Also note the caps, rail stringers, and deck system are all constructed using treated timber.

PHOTO No. 3: Bent 9, Row A, Pile - Inspection of this pile in the intertidal zone identified this area of 1% shake on the pile's exterior, as indicated by the folding ruler. Due to this minor mechanical damage, the pile has been rated in the 90% remaining area category.

PHOTO No. 4: Bent 23, Row A, Pile - Note the good condition of this pile at the mudline. This was found to be typical of the majority of piles throughout the structure. Also note the sand and shell composition of the mudline and the eel grass that was found to be located to the west of the trestle.

PHOTO No. 5: Bents 22-26, Looking Southwest - Note the black arrows at Bent 23-24, indicating damaged braces that are broken and hanging from the Row A piles. Also note the damaged metal sheath on the Bent 23 cap indicated by the white arrow.

PHOTO No. 6: Bent 9, Row A Pile - Note the 90% marine borer cavity indicated by the ruler at the end of this Row B-A diagonal brace. The damage was found to extend from the brace end in beyond the attachment bolt.

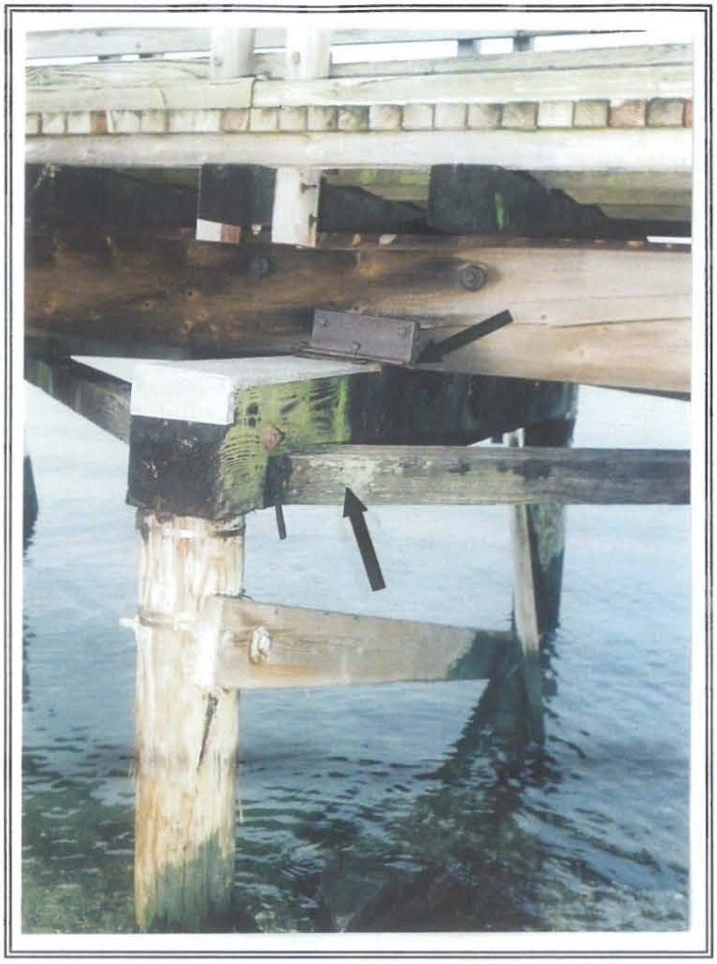


PHOTO No. 7: Bent 2, Row B Pile - Note the steel bands used to repair a split at the top of the pile. Also note the upper arrow indicating an area of the cap that was found to have sustained 90% fungal damage. The lower arrow indicates one of the horizontal brace timbers that are spiked to the side of the cap and found in several bent spans.

PHOTO No. 8: Bent 29 Looking South - Note the single Row A rail stringer (right) and Row B rail stringer (left). The single rail stringers span from Bent 24-29. The structure originally had three rail stringers over the Row A and over the Row B position.

PHOTO No. 9: Bent 14, Row B, Looking South - Note these rail stringers are rotated clockwise to the west and that they have been shimmed over the cap (indicated by the arrow).

PHOTO No. 10: Bent 23, Row A, Looking Southeast - Inspection of this Row A West Rail Stringer found it to have been destroyed due to heavy fungal damage throughout its length. Note that the transverse rail ties above the member are not bearing due to the damage in the rail stringer.

PHOTO No. 11: Bent 24, Rail Tie - Note the screwdriver inserted into the west end of this rail tie which was found to have sustained ~90% fungal damage from the end in ~2 feet. Also note the adjacent rail tie which is sistered along the north side of this member (indicated by arrow).

PHOTO No. 12: Bent 35, Looking West - Note the western edge of the sub-cap, indicated by the tape, is unsupported to ~Row A.5 due to missing bearing timbers. Also note the arrow indicating an ~90% marine borer cavity in the upper, Row A post.

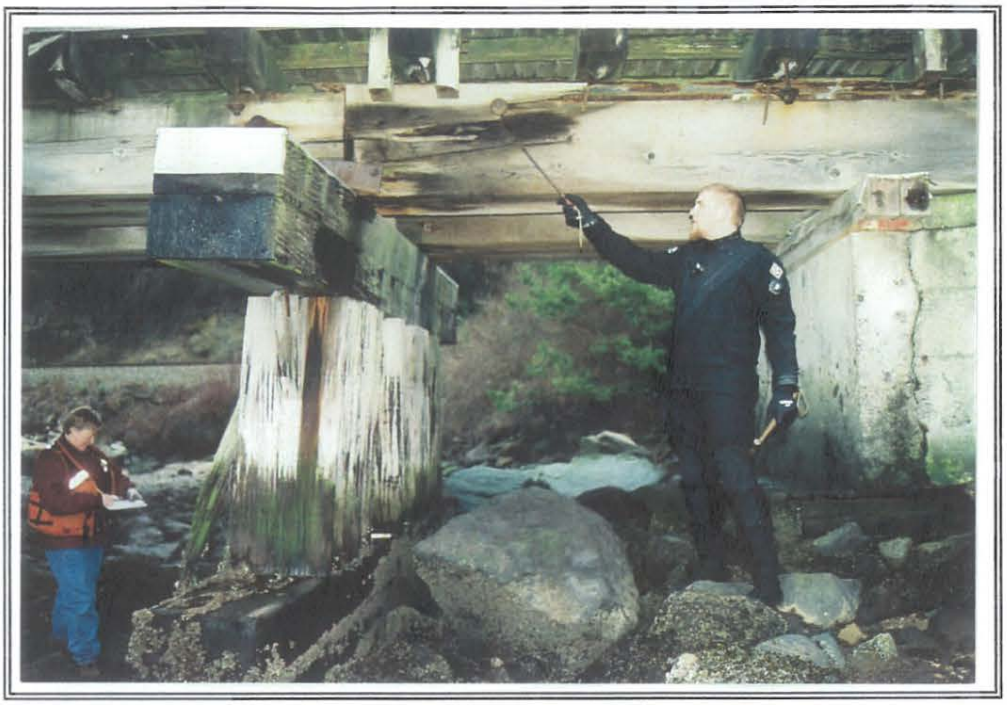


PHOTO No. 13: Bent 35-Sill, Row A, Looking East - Note the inspector indicating the West Rail Stringer which has been destroyed due to fungal damage. Also note the large vertical crack in the concrete sill at the south end of the trestle (far right).

PHOTO No. 14: Bent 35, Row A, Rail Stringers, Looking North - Note the screwdriver indicating these rail stringers are not bearing on the cap. The Row A , west rail stringer (indicated by arrow) that spans Bent 33-35 was found to have sustained heavy fungal damage at Bent 35. The Bent 35-sill, west rail stringer was also found to be destroyed at Bent 35.

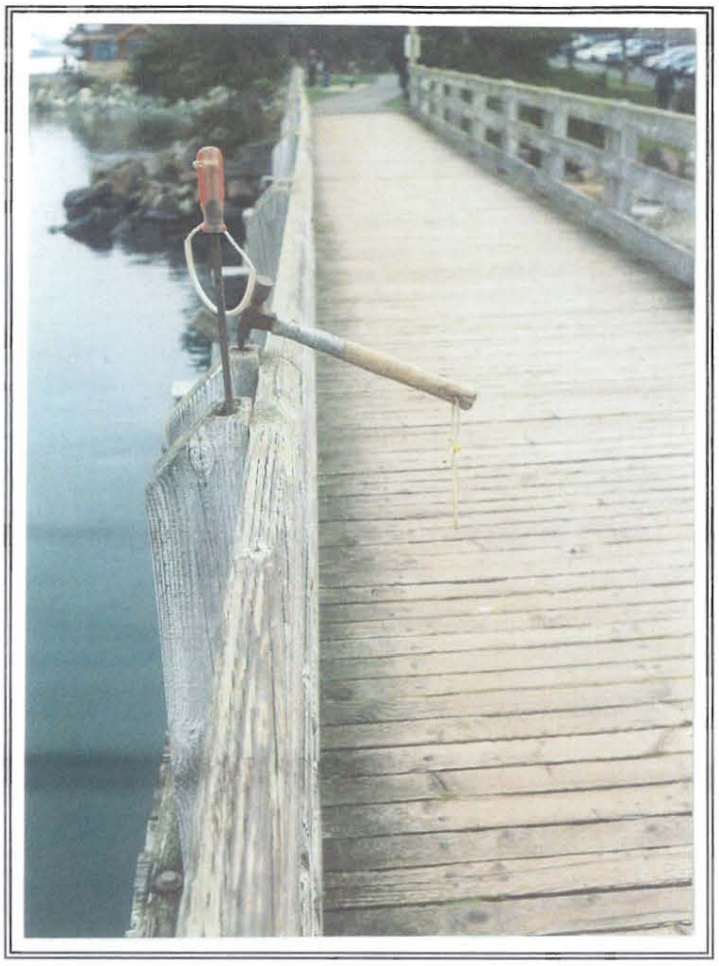
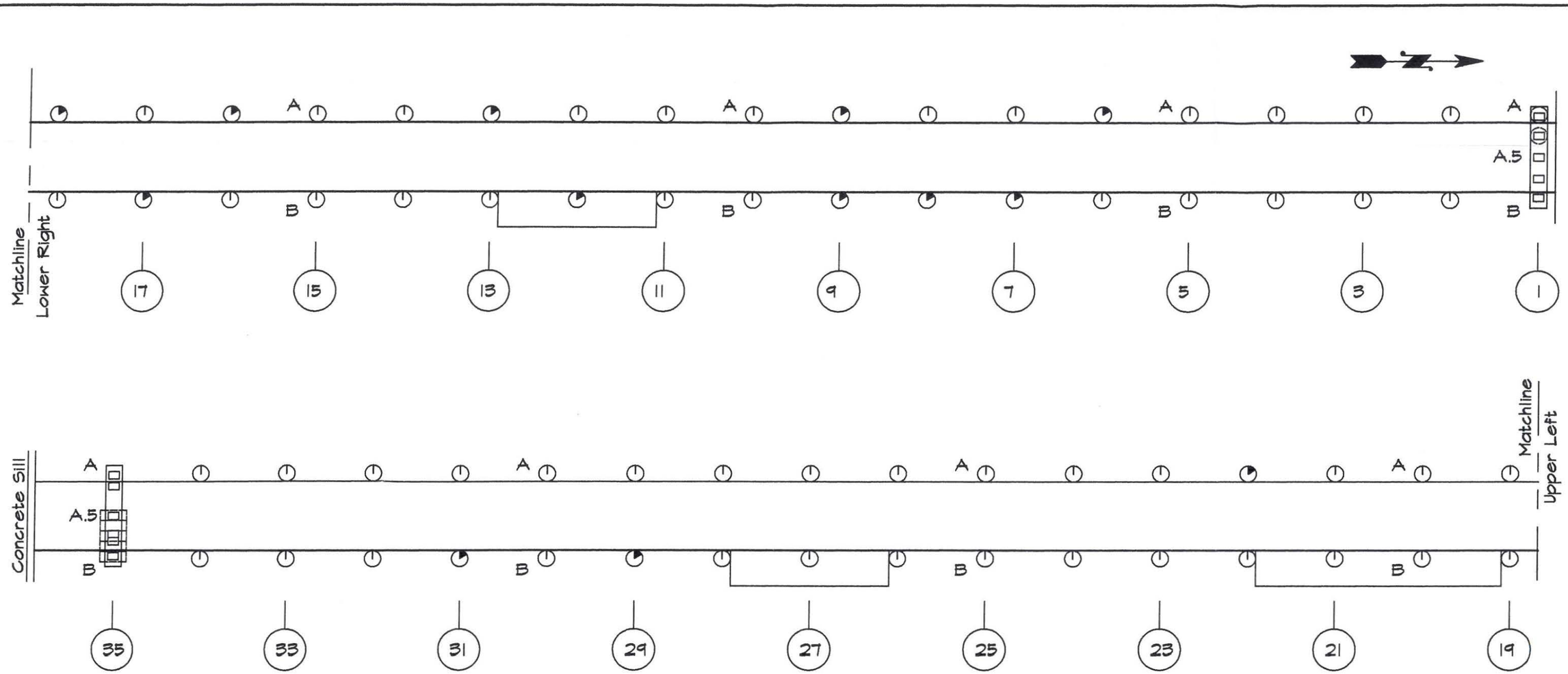


PHOTO No. 15: Deck and Handrail System, Looking North - Note the screwdriver and hammer inserted into localized fungal decay pockets at the top of the vertical rail posts at Bent 6. Also note the heavy weathering evident in the handrails and deck planks that was evident throughout the structure.

PHOTO No. 16: Bent 9, Deck, Looking South - Note the screwdriver inserted in a plank found to have sustained mechanical damage resulting in localized loss of ~25% of its cross section. Also note the minor weathering of the surrounding deck planks.

PHOTO No. 17: Bent 1, Looking Northeast - Note timber lagging in the abutment has been damaged probably due to rip rap placement at the west end of the sill (indicated by the arrow). Inspection found the lagging to have sustained varying degrees of fungal decay.

PHOTO No. 18: Bent 35, Looking Southeast - Note the void beneath the concrete sill and the downward rotation of the abutment to the north.



LEGEND

- (5) Bent
- 5 Row or Pile Number
- Timber Pile - 100% Rating Category
- Timber Pile - 90% Rating Category
- Timber Pile - 75% Rating Category
- Timber Pile - 50% Rating Category
- Timber Pile - 25% Rating Category
- Timber Pile - 0% Rating Category

PILE PLAN

SCALE: Not To Scale

Reid Middleton, Inc.
Everett, WA

City of Bellingham, Blvd. Park

Facility Inspection Results
Pattle Point Trestle

DATE:	Jan. 2008
PROJECT:	08-2517
SHEET:	1 of 1
DRAWN:	SDS / JDS

ECHELON ENGINEERING, INC.
CIVIL/Marine Consulting Engineers
Lynnwood, Washington
Tel: (425) 672-5424

SDS, Echelon Engineering, Inc. 1/25/2008 9:06 AM 2517-Sht 1 Rev 1.dwg

LEGEND TO TABLES

Ctr	Center
D	Damaged
Diag.	Diagonal
Dn	Down
E	East
F	Functional
ITZ	Intertidal Zone
N	North
S	South
UD	Undamaged
W	West

TABLE 1
TIMBER PILE INSPECTION DATA

PILE LOCATION		AREA RATING	CONDITION / DAMAGE	
Bent	Row	(%)	Elevation (Chart Datum)	Details / Remarks
2	A	100		
	B	100	Top Dn 1.5'	Split - Banded; UD
3	A	100		
	B	100	Top Dn 3'	Split - UD
4	A	100		
	B	100		
5	A	100		
	B	100	Top Dn 3'	Check - UD
6	A	90	Top Dn 3'	2% Mechanical
	B	100		
7	A	100		
	B	90	ITZ	2% Shake
8	A	100		
	B	90	Top Dn 3'	Check - UD
			ITZ	2% Mechanical
9	A	90	ITZ	1% Shake
	B	90	ITZ	2% Shake
10	A	100		
	B	100		
11	A	100		
	B	100		
12	A	100		
	B	90	ITZ	2% Shake
13	A	90	ITZ	2% Mechanical
	B	100		
14	A	100		
	B	100		
15	A	100		
	B	100	Top Dn 2'	Check - UD
16	A	90	ITZ	1% Shake
	B	100		
17	A	100		
	B	90	ITZ	1% Shake
18	A	90	ITZ	1% Shake
	B	100		
19	A	100		
	B	100		

TABLE 1
TIMBER PILE INSPECTION DATA

PILE LOCATION		AREA RATING	CONDITION / DAMAGE	
Bent	Row	(%)	Elevation (Chart Datum)	Details / Remarks
20	A	100		
	B	100		
21	A	100		
	B	100		
22	A	90	ITZ	1% Shake
	B	100		
23	A	100		
	B	100		
24	A	100		
	B	100		
25	A	100		
	B	100		
26	A	100	Top Dn 2'	Check - UD
	B	100		
27	A	100		
	B	100		
28	A	100		
	B	100		
29	A	100		
	B	90	ITZ	1% Shake
30	A	100		
	B	100		
31	A	100		
	B	90	ITZ	2% Shake
32	A	100		
	B	100	Top Dn 2'	Check - UD
33	A	100		
	B	100	Top Dn 2'	Check - UD
34	A	100		
	B	100		

TABLE 2
BRACE INSPECTION DATA

MEMBER LOCATION			MEMBER RATING	CONDITION / DAMAGE	
Upper End (Bent-Row)	Lower End (Bent-Row)	Type & Orientation		Location (Row)	Details / Remarks
1-B	1-A	S Diag.	D	A-A.5	Missing
				B	75% Mechanical
2-A	2-B	S Diag.	D	B	Broken
2-B	2-A	N Diag.	D	W End	25% Abrasion
				A	25% Abrasion; Loose
3-A	3-B	S Diag.	D		Missing
3-B	3-A	N Diag.	UD		
4-A	4-B	S Diag.	D	A.5	Broken
4-B	4-A	N Diag.	D	A	Not Attached
5-A	5-B	S Diag.	UD		
5-B	5-A	N Diag.	UD		
6-A	6-B	S Diag.	D	A.5	Broken
6-B	6-A	N Diag.	D	A	25% Abrasion; Loose
7-A	7-B	S Diag.	D	A	25% Abrasion; Loose
7-B	7-A	N Diag.	D	B	Loose; Partially Buried
8-A	8-B	S Diag.	D	B	Destroyed
8-B	8-A	N Diag.	D	A	Split End in Past Connection
9-A	9-B	S Diag.	UD		
9-B	9-A	N Diag.	D	A	90% Marine Borer Cavity End in Past Connection
10-A	10-B	S Diag.	F	A	Split End in to Connection
10-B	10-A	N Diag.	F	A.5	10% Marine Borer Damage
11-A	11-B	S Diag.	F	A	Split End in to Connection
11-B	11-A	N Diag.	D	A	90% Marine Borer Damage End in Past Connection
12-A	12-B	S Diag.	UD		
12-B	12-A	N Diag.	D	A	90% Marine Borer Cavity End in to Connection
				B	Split End in to Connection
13-A	13-B	S Diag.	D	B	25% Mechanical/Abrasion; Loose
13-B	13-A	N Diag.	D	A	Broken

TABLE 2
BRACE INSPECTION DATA

MEMBER LOCATION			MEMBER RATING	CONDITION / DAMAGE	
Upper End (Bent-Row)	Lower End (Bent-Row)	Type & Orientation		Location (Row)	Details / Remarks
14-A	14-B	S Diag.	UD		
14-B	14-A	N Diag.	D	A	Split End in to Connection
				B	Split End in to Connection
15-A	15-B	S Diag.	F	A.5	10% Marine Borer Damage
15-B	15-A	N Diag.	F	A	25% Marine Borer Cavity End in 3"
16-A	16-B	S Diag.	D	A	Split End in to Connection; 25% Marine Borer Cavity End in Past Connection
				B	25% Abrasion; Loose
16-B	16-A	N Diag.	D	A	Split End in Past Connection
				A.5	10% Marine Borer Damage/Mechanical
17-A	17-B	S Diag.	UD		
17-B	17-A	N Diag.	F	B	Split End in to Connection
18-A	18-B	S Diag.	F	B	10% Marine Borer Damage/Mechanical
18-B	18-A	N Diag.	D	A	Broken
19-A	19-B	S Diag.	UD		
19-B	19-A	N Diag.	D	A	90% Marine Borer Cavity End in Past Connection
20-A	20-B	S Diag.	D	A	Split End in Past Connection
				B	Loose
20-B	20-A	N Diag.	D	B	90% Marine Borer Cavity End in Past Connection
21-A	21-B	S Diag.	D	B	50% Abrasion; Loose
21-B	21-A	N Diag.	D	A	Broken
22-A	22-B	S Diag.	D	B	Loose
22-B	22-A	N Diag.	UD		
23-A	23-B	S Diag.	D	B	Broken
23-B	23-A	N Diag.	D	A	90% Marine Borer Cavity End in Past Connection
24-A	24-B	S Diag.	D	B	Broken
24-B	24-A	N Diag.	UD		
25-A	25-B	S Diag.	F	A	Split End in Past Connection
25-B	25-A	N Diag.	UD		

TABLE 2
BRACE INSPECTION DATA

MEMBER LOCATION			MEMBER RATING	CONDITION / DAMAGE	
Upper End (Bent-Row)	Lower End (Bent-Row)	Type & Orientation		Location (Row)	Details / Remarks
26-A	26-B	S Diag.	D	B	Broken
26-B	26-A	N Diag.	D	A	90% Marine Borer Cavity End in Past Connection
27-A	27-B	S Diag.	D	B	Loose
27-B	27-A	N Diag.	UD		
28-A	28-B	S Diag.	UD		
28-B	28-A	N Diag.	F	A.3	10% Marine Borer Damage/Mechanical
29-A	29-B	S Diag.	D	B	Split End in Past Connection; 50% Abrasion; Loose
29-B	29-A	N Diag.	UD		
30-A	30-B	S Diag.	D	B	90% Marine Borer Cavity End in to Connection
30-B	30-A	N Diag.	D	A	Destroyed
31-A	31-B	S Diag.	D	B	90% Marine Borer Cavity End in Past Connection
31-B	31-A	N Diag.	F	A	90% Marine Borer Cavity End in 3"
32-A	32-B	S Diag.	D	B	90% Marine Borer Cavity End in Past Connection
32-B	32-A	N Diag.	UD		
33-A	33-B	S Diag.	UD		
33-B	33-A	N Diag.	UD		
34-A	34-B	S Diag.	UD		
34-B	34-A	N Diag.	D	A	90% Marine Borer Cavity End in Past Connection
35-A.5	35-A	N Diag.	D	A-A.2	Destroyed
35-A.5	35-B	N Diag.	UD		

TABLE 3
CAP INSPECTION DATA

MEMBER LOCATION		DAMAGE RATING	CONDITION / DAMAGE	
Bent	Row		Location (Row)	Details / Remarks
1	A-B	Heavy	A.2-A.3	75% Fungal
2	A-B	Heavy	A.2	90% Fungal
			A.7	90% Fungal
3	A-B	UD	A-B	Large Checks - UD
4	A-B	UD		
5	A-B	UD		
6	A-B	Heavy	Throughout	90% Fungal
7	A-B	UD		
8	A-B	UD		
9	A-B	UD		
10	A-B	UD		
11	A-B	UD		
12	A-B	UD		
13	A-B	UD		
14	A-B	UD		
15	A-B	UD	A-B	Large Checks - UD
16	A-B	UD		
17	A-B	UD		
18	A-B	UD		
19	A-B	UD		
20	A-B	UD		
21	A-B	UD		
22	A-B	UD		
23	A-B	UD		
24	A-B	UD		
25	A-B	UD		
26	A-B	UD		
27	A-B	UD		
28	A-B	UD		
29	A-B	UD		

TABLE 3
CAP INSPECTION DATA

MEMBER LOCATION		DAMAGE RATING	CONDITION / DAMAGE	
Bent	Row		Location (Row)	Details / Remarks
30	A-B	Light	B	10% Mechanical
31	A-B	UD		
32	A-B	UD		
33	A-B	UD		
34	A-B	UD		
35	A-B	UD		

TABLE 4
RAIL STRINGER INSPECTION DATA

MEMBER LOCATION		DAMAGE RATING	CONDITION / DAMAGE	
Bent - Bent	Row		Location (Bent)	Details / Remarks
1-3	A-E	UD		
	A-Ctr	UD		
	A-W	Heavy	3	90% Fungal
	B-E	Heavy	Throughout	90% Fungal & Insect Infestation
	B-Ctr	UD		
	B-W	Heavy	1	50% Fungal
3-5	A-E	Heavy	5	50% Fungal
	A-Ctr	UD		
	A-W	Heavy	4.5	50% Fungal
	B-E	Heavy	3.3	75% Fungal
	B-Ctr	UD		
	B-W	Heavy	3.5-5	Missing
5-7	A-E	Heavy	5-6	Missing
	A-Ctr	Heavy	5-6	Missing
	A-W	Heavy	7	75% Fungal
	B-E	UD		
	B-Ctr	UD		
	B-W	Heavy	5-6	Missing
7-9	A-E	UD		
	A-Ctr	UD		
	A-W	Heavy	8.5 9	50% Fungal 90% Fungal
	B-E	Heavy	7-7.3 8	50% Fungal 90% Fungal
	B-Ctr	UD		
	B-W	UD		
9-11	A-E	UD		
	A-Ctr	UD		
	A-W	Heavy	9 10.5	90% Fungal 50% Fungal

TABLE 4
RAIL STRINGER INSPECTION DATA

MEMBER LOCATION		DAMAGE RATING	CONDITION / DAMAGE	
Bent - Bent	Row		Location (Bent)	Details / Remarks
9-11	B-E	UD		
	B-Ctr	UD		
	B-W	UD		
11-13	A-E	UD		
	A-Ctr	UD		
	A-W	Heavy	11 12.5 13	50% Fungal 75% Fungal 90% Fungal w/ Fruiting Bodies
	B-E	Heavy	11 12	75% Fungal 50% Fungal
	B-Ctr	UD		
	B-W	UD		
13-15	A-E	UD		
	A-Ctr	UD		
	A-W	H	Throughout	90% Fungal
	B-E	Heavy	13-15	Rotated; 25-75% Bearing
	B-Ctr	Heavy	13-15	Rotated; 25-75% Bearing
	B-W	Heavy	13-15 Throughout	Rotated; 25-75% Bearing Large Checks; Heavily Weathered
15-17	A-E	UD		
	A-Ctr	UD		
	A-W	Heavy	Throughout	90% Fungal
	B-E	UD		
	B-Ctr	UD		
	B-W	UD		
17-19	A-E	UD		
	A-Ctr	UD		
	A-W	Heavy	17-17.5	90% Fungal w/ Fruiting Bodies
	B-E	Heavy	Throughout	75% Fungal

TABLE 4
RAIL STRINGER INSPECTION DATA

MEMBER LOCATION		DAMAGE RATING	CONDITION / DAMAGE	
Bent - Bent	Row		Location (Bent)	Details / Remarks
17-19	B-Ctr	UD		
	B-W	Heavy	19	50% Fungal
19-21	A-E	UD		
	A-Ctr	UD		
	A-W	Heavy	Throughout	90% Fungal
	B-E	Heavy	Throughout	75% Fungal
	B-Ctr	UD		
	B-W	UD		
21-23	A-E	Heavy	23	90% Fungal; Destroyed
	A-Ctr	UD		
	A-W	Heavy	Throughout	90% Fungal; Destroyed
	B-E	Heavy	23	75% Fungal
	B-Ctr	UD		
	B-W	Heavy	23	75% Fungal
23-24	A-E	Heavy	23	90% Fungal
	A-Ctr	UD		
	A-W	Heavy	23	90% Fungal; Destroyed
	B-E	Heavy	23	75% Fungal
	B-Ctr	Heavy	24	90% Fungal
	B-W	UD		
24-25	A-E	Heavy	24-25	Missing
	A-Ctr	Heavy	24-25	Missing
	A-W	UD		
	B-E	UD		
	B-Ctr	Heavy	24-25	Missing
	B-W	Heavy	24-25	Missing
25-26	A-E	Heavy	25-26	Missing
	A-Ctr	Heavy	25-26	Missing
	A-W	UD		

TABLE 4
RAIL STRINGER INSPECTION DATA

MEMBER LOCATION		DAMAGE RATING	CONDITION / DAMAGE	
Bent - Bent	Row		Location (Bent)	Details / Remarks
25-26	B-E	UD		
	B-Ctr	Heavy	25-26	Missing
	B-W	Heavy	25-26	Missing
26-27	A-E	Heavy	26-27	Missing
	A-Ctr	Heavy	26-27	Missing
	A-W	UD		
	B-E	UD		
	B-Ctr	Heavy	26-27	Missing
	B-W	Heavy	26-27	Missing
27-28	A-E	Heavy	27-28	Missing
	A-Ctr	Heavy	27-28	Missing
	A-W	UD		
	B-E	UD		
	B-Ctr	Heavy	27-28	Missing
	B-W	Heavy	27-28	Missing
28-29	A-E	Heavy	28-29	Missing
	A-Ctr	Heavy	28-29	Missing
	A-W	UD		
	B-E	UD		
	B-Ctr	Heavy	28-29	Missing
	B-W	Heavy	28-29	Missing
29-31	A-E	Heavy	30	50% Fungal
	A-Ctr	Heavy	30	50% Fungal
	A-W	Heavy	Throughout	90% Fungal
	B-E	UD		
	B-Ctr	UD		
	B-W	Heavy	30	50% Fungal
31-33	A-E	UD		
	A-Ctr	UD		

TABLE 4
RAIL STRINGER INSPECTION DATA

MEMBER LOCATION		DAMAGE RATING	CONDITION / DAMAGE	
Bent - Bent	Row		Location (Bent)	Details / Remarks
31-33	A-W	Heavy	31-32	90% Fungal
			32-33	50% Fungal
	B-E	Moderate	Throughout	15% Fungal
	B-Ctr	UD		
	B-W	UD		
33-35	A-E	UD		
	A-Ctr	UD		
	A-W	Heavy	Throughout	90% Fungal
	B-E	Heavy	Throughout	90% Fungal
	B-Ctr	UD		
	B-W	Heavy	34	90% Fungal
			35	25% Fungal
35-Sill	A-E	Heavy	35	Non-Bearing; 50% Fungal
	A-Ctr	Heavy	35	Non-Bearing; 50% Fungal
	A-W	Heavy	Throughout	90% Fungal; Destroyed
	B-E	Heavy	35	75% Fungal
	B-Ctr	UD		
	B-W	UD		

TABLE 5
RAIL TIE INSPECTION DATA

MEMBER LOCATION		DAMAGE RATING	CONDITION / DAMAGE	
Bent	Row-Row		Location (Row)	Details / Remarks
6.2	A-B	Heavy	A.5	90% Fungal
6.8	A-B	Heavy	A.5	50% Fungal
10.5	A-B	Heavy	A.5	90% Fungal
11	A-B	Heavy	A.9	90% Fungal
11.2	A-B	Heavy	A.9-E End	90% Fungal
12	A-B	Heavy	A.8	90% Fungal
12.5	A-B	Heavy	A-B	90% Fungal
17.8	A-B	Moderate	A.5	25% Fungal
18	A-B	Moderate	A.5	25% Fungal/Mechanical
19.1	A-B	Heavy	W End	50% Mechanical
19.3	A-B	Moderate	W End	25% Fungal
21.6	A-B	Heavy	A.5	50% Fungal
			A.7	15% Fungal
23.2	A-B	UD	E End	Split End in 3'
23.9	A-B	Heavy	A.5	90% Fungal
24 N	A-B	Heavy	A.5	90% Fungal - Sistered Member
24 S	A-B	Heavy	W End	90% Fungal End in 2' - Sistered Member
26.2	A-B	Heavy	A-B	90% Fungal
26.7	A-B	Heavy	A.5-B	90% Fungal
26.9	A-B	Heavy	A.2-B	90% Fungal
27.4	A-B	Heavy	Throughout	90% Fungal
27.6	A-B	Heavy	Throughout	90% Fungal
28.2	A-B	Heavy	A.7	90% Fungal
31.7	A-B	Heavy	A.5	50% Fungal

APPENDIX 5
Eelgrass Habitat Survey

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

MEMORANDUM

To: Reid Middleton — May 7, 2008

From: Grette Associates LLC, Larry Lehman — *Rev.* February 15, 2009

Re: Boulevard Park Overwater Walkway Eelgrass Habitat — File No. 404.003

Grette Associates staff conducted a site visit to the Cornwall Landfill/Boulevard Park embayment (referred to hereafter as the "Project Area") on April 9, 2008, to investigate the presence of eelgrass (*Zostera marina*) as it relates to the Boulevard Park Overwater Walkway Project. In particular, the locations for the proposed overwater walkway shoreline anchor points were examined for eelgrass presence to the extent possible. The site visit was conducted to coincide with the lowest practicable tide, which reached a low of approximately -2.2 ft MLLW, to maximize eelgrass exposure.

General Observations

The embayment between Cornwall Landfill and Boulevard Park was examined at low tide for the presence of eelgrass (Figure 1). Visibility was not ideal, as turbidity limited visibility to no more than 2-3 ft of water depth. Eelgrass was observed around the entire perimeter of the embayment and at both proposed walkway anchor points. The landward-most extent of eelgrass was exposed at low tide, rooted as high as approximately -2.0 ft MLLW, though eelgrass density increases at approximately -2.5 ft MLLW and deeper.

The waterward extent of eelgrass presence could not be determined during the site visit. An eelgrass survey conducted south of the embayment in association with the construction of the Taylor Dock indicates that eelgrass extends waterward to a maximum depth of approximately -8 ft MLLW (Pacific International Engineering 2001). It is likely that eelgrass in the Project Area would end at approximately the same elevation. Thus it is assumed that eelgrass likely ends at approximately -8 ft MLLW in the Project Area. A dive survey will be necessary to confirm this.

Cornwall Landfill Side

Eelgrass was observed along the entire shoreline at the Cornwall Landfill (north) side of the embayment, beginning at approximately -2.0 ft MLLW (Photographs 1-4). Eelgrass was not observed north of the embayment at Cornwall Landfill. This may indicate that eelgrass is either absent or rooted deeper than was observable during low tide, though this could not be confirmed. Significant municipal garbage is present on the shoreline at Cornwall Landfill; however, garbage was not observed below approximately -2.0 ft MLLW. Substrate at Cornwall Landfill consists of large riprap with gravel, cobble and broken concrete from the top of the bank to approximately -2.0 ft to -2.5 ft MLLW. At that point substrate transitions to sand, and eelgrass begins.

Boulevard Park Side

Eelgrass was also observed along the entire shoreline at the Boulevard Park (south) side of the embayment (Photographs 5-9). At the existing dock location, eelgrass is present beginning at approximately -2.5 ft MLLW and is sparse immediately waterward of the dock. Substrate at the dock location consists of medium to large cobble/angular rock to approximately -3.0 ft MLLW, then transitions to sand. East of the dock inside the embayment, eelgrass begins at approximately -2.0 ft MLLW. Substrate consists of large rock from the top of the intertidal zone, transitioning to sand and silt by approximately -1.5 ft MLLW.

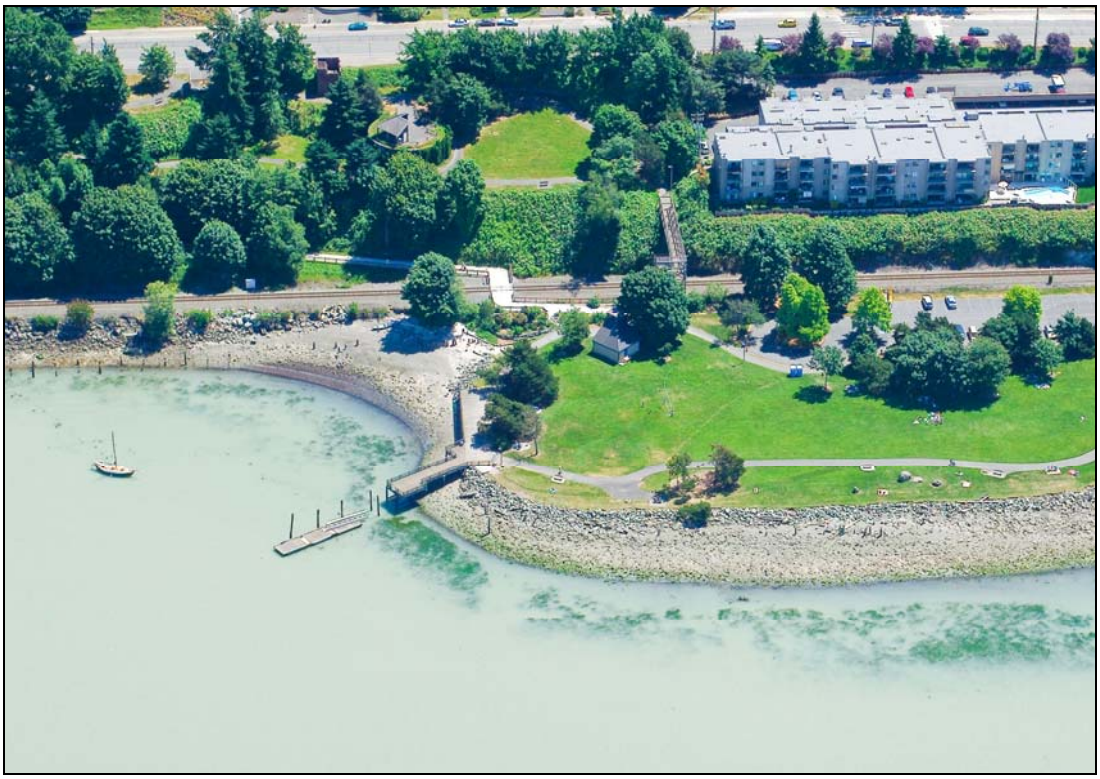
Figure 1. Aerial photo of the Cornwall Landfill /Boulevard park embayment that was surveyed for eelgrass (Google Earth 2008).

Photograph 1. Ecology oblique aerial photo of Cornwall Landfill site. Eelgrass fringe is visible at water's edge. Tidal elevation is approximately -1.7 ft MLLW.

Photograph 2. Cornwall Landfill shoreline facing south.

Photograph 3. Cornwall Landfill facing Boulevard Park across the embayment.

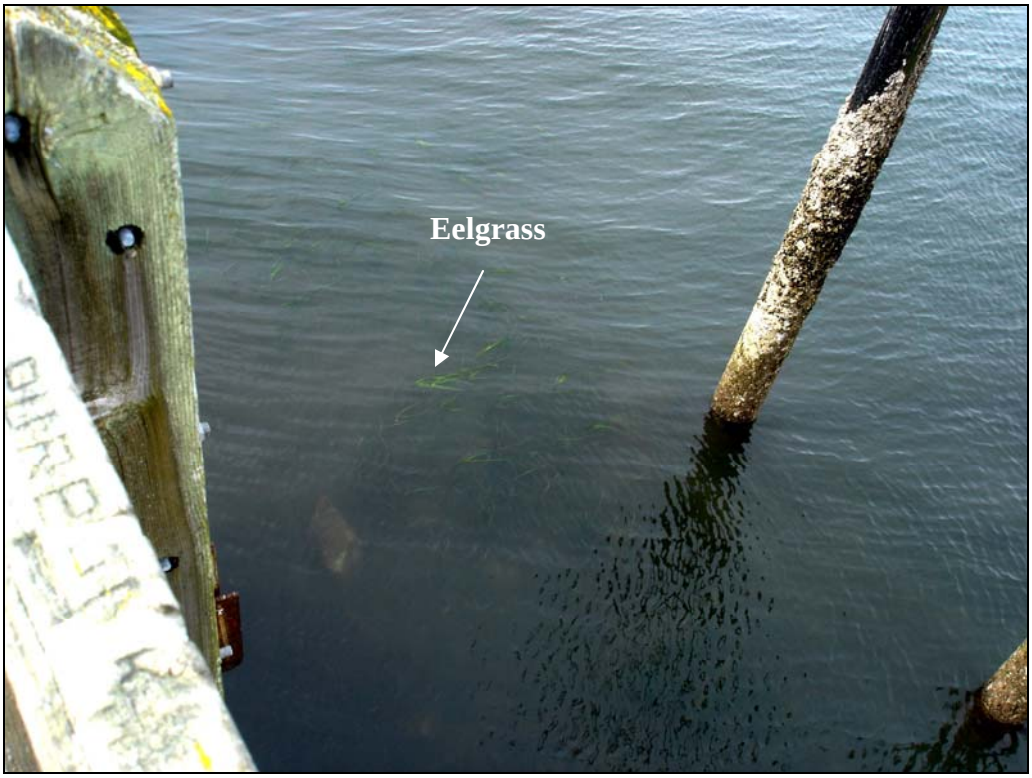
Photograph 4. Eelgrass present at approximately -2.0 ft MLLW at Cornwall Landfill shoreline.



Photograph 5. Ecology oblique aerial photo of the Boulevard Park site. Eelgrass fringe is visible. Tidal elevation is approximately -1.7 ft MLLW.

Photograph 6. Existing dock on the Boulevard Park side of the embayment, facing northeast.

Photograph 7. Eelgrass in the embayment at the Boulevard Park side, north of the existing dock



Photograph 8. Eelgrass visible beyond the end of the existing dock.

Photograph 9. Eelgrass exposed at approximately -2.0 ft MLLW north of the existing dock.

APPENDIX 6
Eelgrass Dive Surveys

APPENDIX 6a
Boulevard Park Overwater Walkway
Eelgrass Survey

TECHNICAL MEMORANDUM

Prepared for: Reid Middleton Date: July 14, 2008

Prepared by: Grette Associates[LLC] File No.: 404.003

Re: Boulevard Park Overwater Walkway Eelgrass Survey

INTRODUCTION

Grette Associates[LLC] was hired by Reid Middleton to conduct an eelgrass survey for the City of Bellingham from the Cornwall Landfill site to Boulevard Park in Bellingham, WA (Figure 1). The survey was conducted in accordance with the Washington Department of Fish and Wildlife (WDFW) Intermediate Eelgrass/macroalgae Habitat Survey guidelines, which are designed to determine the presence and density of eelgrass. This Technical Memorandum presents the results of the eelgrass survey conducted on June 3-5, 2008. The purpose of the survey was to assess the potential impacts to eelgrass as a result of the construction of an overwater walkway through the embayment, and to provide information for any future projects in the area. The walkway would extend northeast from Boulevard Park to the Cornwall Landfill site and would span the embayment between the two sites. The survey entailed a detailed delineation of the landward and waterward extents of the eelgrass beds, as well as a density survey. Density surveys were conducted along the northeastern shoreline of Boulevard Park (southwest end of the proposed walkway) and the Cornwall Landfill site (northeast end of the proposed walkway), where impacts to eelgrass may potentially occur (Figure 2).

METHODS

The eelgrass survey employed a modified version of the WDFW Intermediate Eelgrass/Macroalgae survey methods (WDFW 2007). WDFW staff reviewed and approved the survey methods prior to the implementation of the field effort. The survey entailed a detailed delineation of the landward and waterward extents of the eelgrass beds, as well as a density survey at the landing locations. Densities were not collected in the embayment as the walkway will be constructed waterward of the eelgrass bed.

EELGRASS DELINEATION

The landward and waterward edges of the existing eelgrass beds in the embayment between Boulevard Park landing and the Cornwall Landfill site were delineated using Differential Global Positioning Satellite (dGPS, horizontal accuracy ±1m). The landward edge of the eelgrass bed was surveyed by walking the edge at low tide and recording the boundary with dGPS. Divers delineated the waterward edge of the eelgrass beds by swimming along the eelgrass/non-eelgrass boundary, and holding a rope attached to a surface buoy at intervals determined by the complexity of the edge (typically between 20 to 30-foot intervals). In

areas where the edge was complex, the distance between buoys was reduced to capture the complexity. The dive tender then positioned the boat over the buoy, pulled the line tight (with the diver holding onto the anchor end of the line to keep it in place), and logged the position into the dGPS data recorder. This process was repeated until the eelgrass beds were delineated. In addition, nine perpendicular transects were conducted in the embayment, four of which were 500 feet long, and five of which were 300 ft long. These transects were to verify the edge of the eelgrass and assess macroalgae and substrates within the embayment. Upland monument positions were also logged in order to tie the survey to existing base maps.

The locations of sampling points recorded in the dGPS data logger were downloaded to GPS Pathfinder Office 2.90 software and converted to NAD-83 state plane coordinates. The state plane coordinate data were then converted to an AutoCAD file and plotted on an aerial photograph of the site.

EELGRASS DENSITY SURVEY

Eelgrass density data were collected at both shore landing locations. Seven (7) transects were sampled at the Boulevard Park landing and 16 transects were sampled at the Cornwall Landfill landing. Transects were spaced 40 ft apart over approximately 230 linear ft of shoreline at Boulevard Park and approximately 600 linear ft at Cornwall landfill, and encompassed the entire shoreline area within which a future walkway landing may be constructed. After the transects were established, turion counts were collected at 5 evenly spaced locations along the transects and within the eelgrass beds. Densities were sampled using a 0.25 m^2 quadrat. Divers also recorded macroalgae presence and substrate characteristics.

RESULTS

The eelgrass delineation revealed an eelgrass band as depicted in Figures 3-5. The eelgrass band is present along the entire Boulevard Park shoreline, extending northeast through the embayment to the Cornwall Landfill site. Eelgrass presence ends abruptly at approximately Transect 14 at the Cornwall Landfill site, with the exception of 3 very small, isolated patches northeast of Transect 14. Concrete slabs present in the water north of Transect 14 also impede eelgrass presence. The eelgrass band begins at an upper elevation of approximately -1.7 ft to -2.0 ft MLLW and extends waterward to approximately -8 to -10 ft MLLW. No eelgrass is present in deeper water beyond this waterward edge. The landward edge of eelgrass presence was strongly determined by the substrate. Eelgrass begins in the lower intertidal where gravel and cobble transition to mud and silt.

The eelgrass band varies in width. At Boulevard Park, the eelgrass band is a maximum of approximately 130 ft in the southern portion of the shoreline, and is narrowest at Transects 2 and 3 near the existing pier, at approximately 36 ft. At the Cornwall Landfill site, eelgrass is a maximum of approximately 150 ft wide in the southern portion of the Cornwall Landfill site, tapering to a minimum of approximately 30 ft in the northern portion. In the embayment area, the eelgrass band is a maximum width of approximately 110 ft.

Eelgrass densities surveyed at Boulevard Park and at the Cornwall Landfill site are listed in Table 1 below. No densities were collected on the 9 embayment transects. Transects 14-23 in the northern end of the Cornwall Landfill site showed no eelgrass.

Table 1. Turion densities and macroalgae coverage by transect

Transect	Average Turion Count (/m^2)	Macroalgae
Boulevard 1	73.6	None
Boulevard 2	59.2	None
Boulevard 3	24	None
Boulevard 4	86.4	Ulva/Fucus at landward end; ~30% coverage
Boulevard 5	82.4	Ulva/Fucus at landward end; ~35% coverage
Boulevard 6	60.0	Ulva/Fucus at landward end; ~11% coverage
Boulevard 7	60.8	Ulva/Fucus at landward end; ~8% coverage
Average	**63.8**	
Cornwall 8	44.0	Ulva/Fucus at landward end; ~8% coverage
Cornwall 9	78.4	Fucus at landward end; ~8% coverage
Cornwall 10	72.0	None
Cornwall 11	69.6	Fucus at landward end; ~8% coverage
Cornwall 12	53.6	Fucus at landward end; minimal coverage
Cornwall 13	61.6	Fucus at landward end
Cornwall 14-23	No Eelgrass Present	Fucus at landward end; some laminaria waterward (~10% typ. coverage)
Average[1]	**63.2**	

[1] Represents the average of transects on which eelgrass was encountered

The average density of the Boulevard Park transects was 63.8 turions per square meter; the average density at the Cornwall Landfill site (on transects containing eelgrass) was 63.2 turions per square meter. It should be noted that, at Boulevard Park, lowest eelgrass densities were recorded in Transects 2 and 3, which are nearest the existing pier. The eelgrass band is also narrowest at the existing pier (Figure 3). Thus, potential impacts to eelgrass of the proposed walkway landing would be minimized by locating the walkway landing at the existing pier location. At the Cornwall Landfill site, as mentioned above, eelgrass ends at Transect 14 (Figure 4). Thus, eelgrass impacts would be avoided completely by locating the walkway landing north of Transect 14, or at the point of the Cornwall Landfill site. Additionally, concrete slabs located at approximately -2 to -3 ft MLLW north of Transect 14 limit eelgrass presence. It is possible that, were these slabs removed, eelgrass would establish in these locations.

Sparse stands of macroalgae were present on several of the transects. Macroalgae was consistently found landward of eelgrass. Fucus and Ulva were present on most transects, and sparse Laminaria was observed further waterward on some transects.

The dominant substrate within the eelgrass beds was mud and silt. Substrate at the Boulevard Park landing consisted of moderately sloped riprap and cobble in the upper intertidal zone, transitioning to silt and sand further waterward. Substrate at the Cornwall Landfill consisted cobble and rip rap moderately sloped to the water, then transitioned to silt and sand. As mentioned above, some concrete slabs are also present. Substrate in the embayment consists of riprap transitioning to cobble and eventually silt approximately 50 ft waterward of the toe of the riprap slope.

References

Washington Department of Fish and Wildlife. 2007. Eelgrass/Macro Algae Habitat Survey Guidelines.

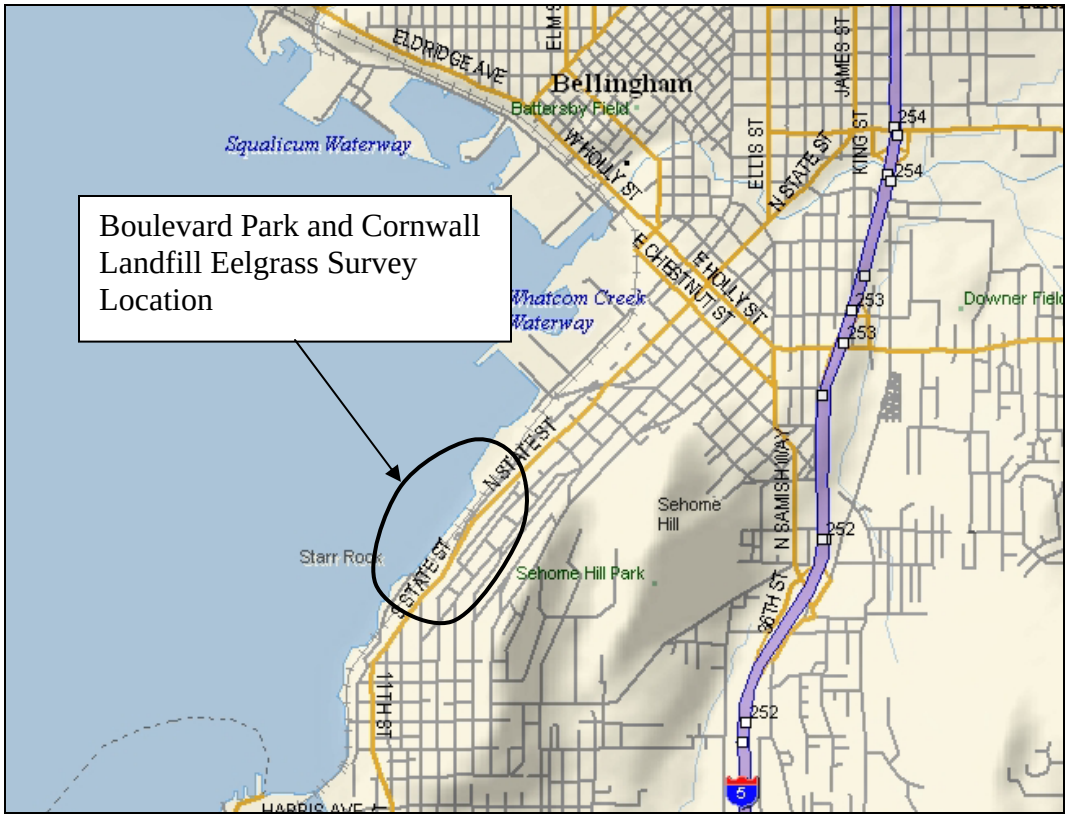


Figure 1: Vicinity Map

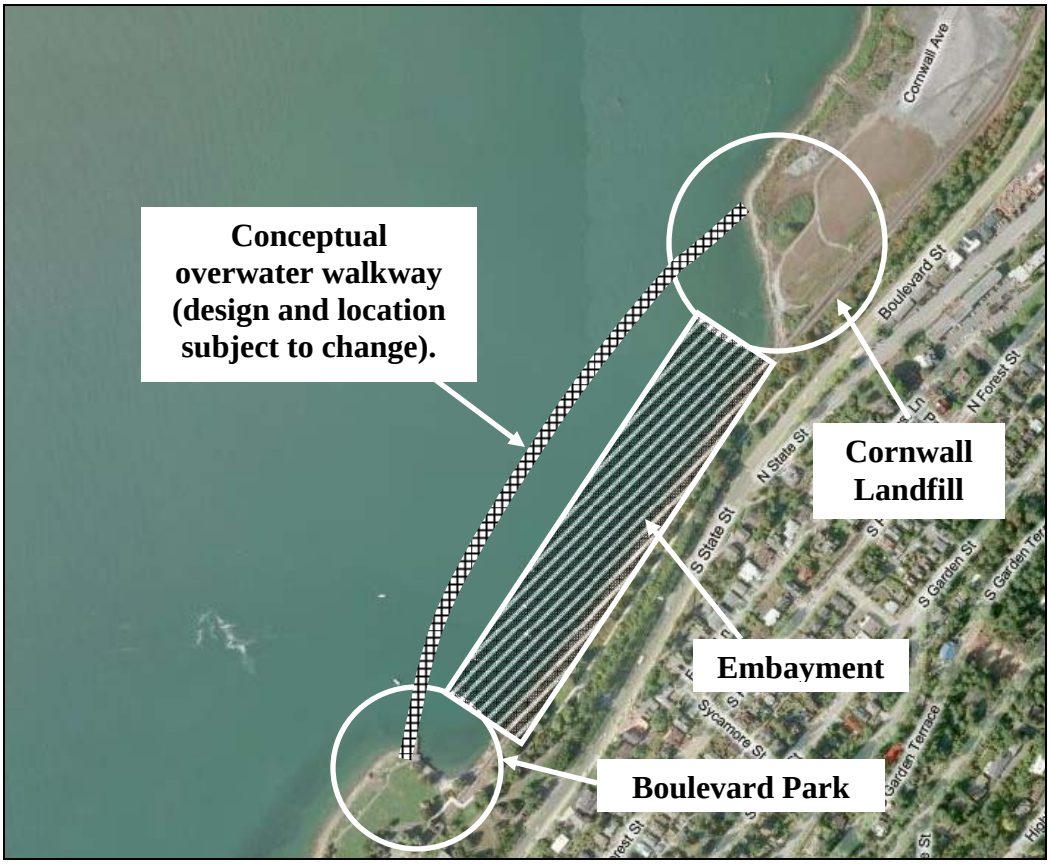


Figure 2. Eelgrass delineation site map

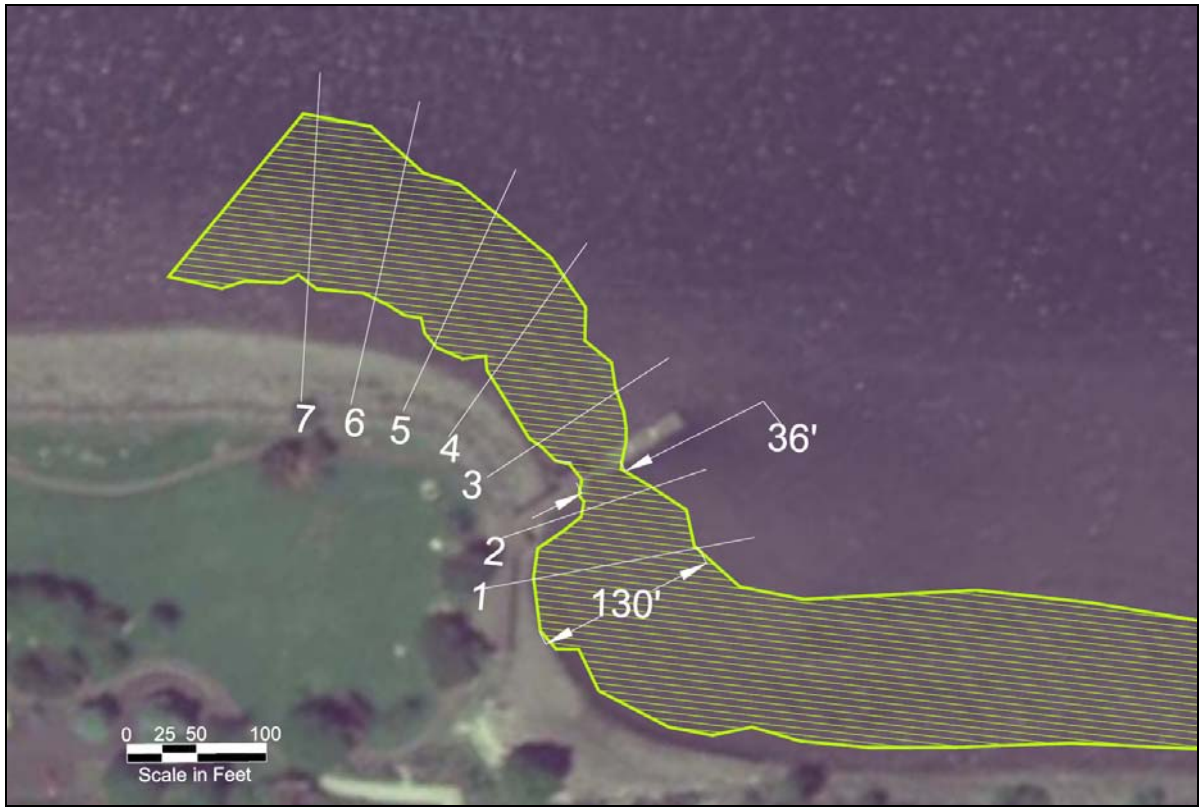


Figure 3. Boulevard Park transects, eelgrass bed

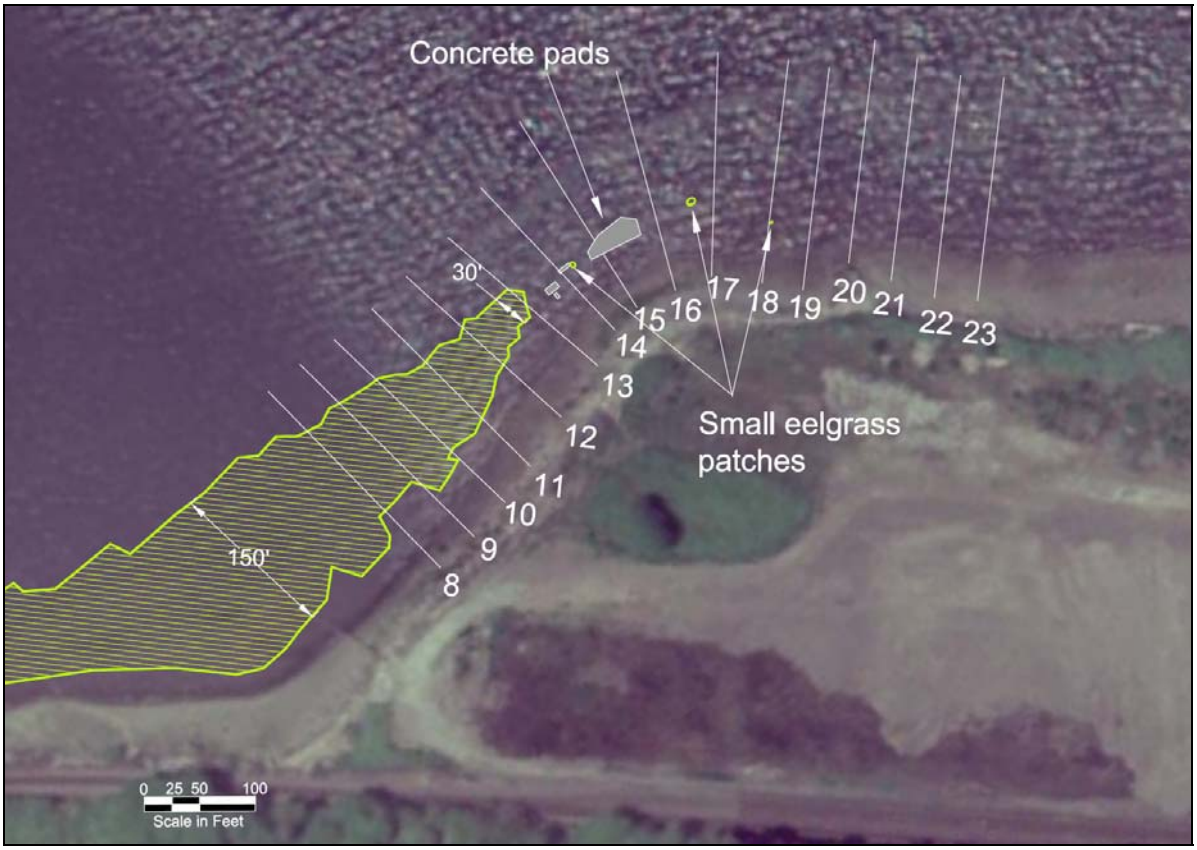


Figure 4. Cornwall Landfill transects, eelgrass bed

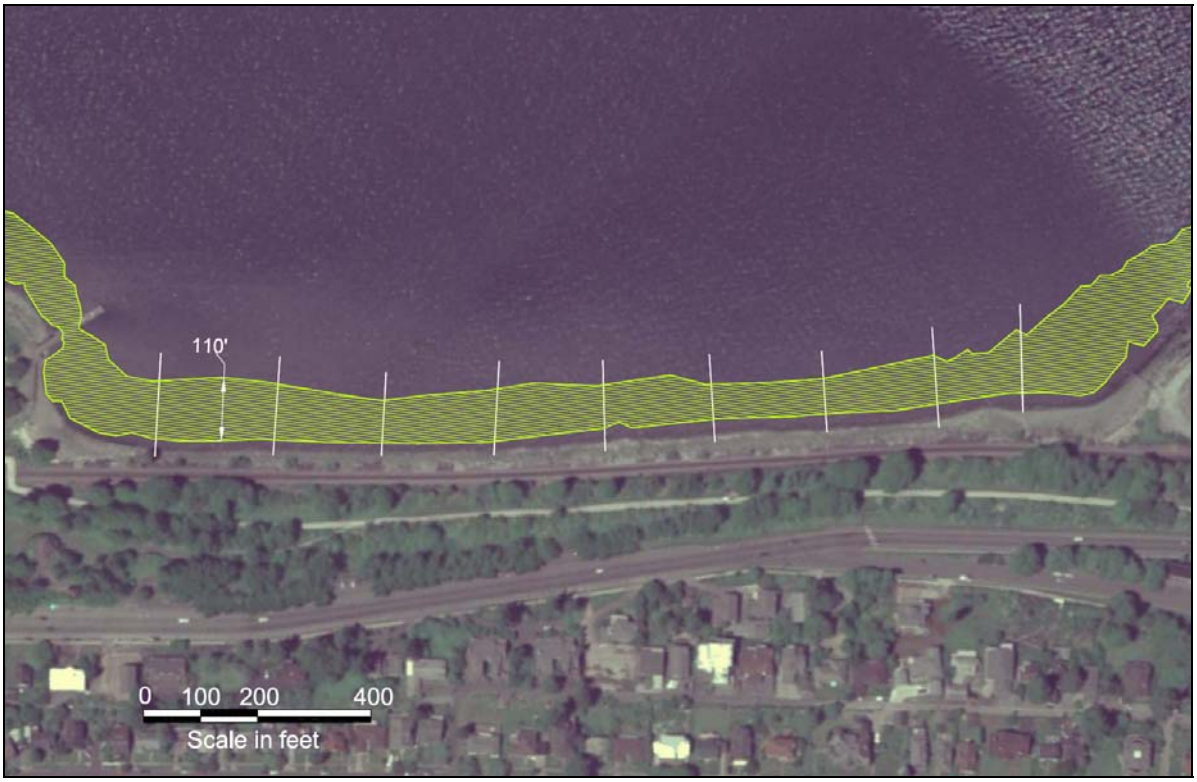


Figure 5: Embayment transects, eelgrass landward and waterward location

APPENDIX 6b
Pattle Point Overwater Walkway
Eelgrass Survey

TECHNICAL MEMORANDUM

Prepared for: Reid Middleton Date: July 14, 2008

Prepared by: Grette Associates[LLC] File No.: 404.003

Re: Pattle Point Overwater Walkway Eelgrass Survey

INTRODUCTION

Grette Associates[LLC] was hired by Reid Middleton to conduct an eelgrass survey for the City of Bellingham at the Pattle Point Trestle, immediately south of Boulevard Park, in Bellingham, Washington (Figure 1). The survey was conducted in accordance with the Washington Department of Fish and Wildlife (WDFW) Intermediate Eelgrass/Macroalgae Habitat Survey guidelines, which are designed to determine the presence and density of eelgrass. This Technical Memorandum presents the results of the eelgrass survey conducted on June 5, 2008. The purpose of the survey was to assess the potential impacts on eelgrass by resurfacing and widening the existing trestle, and to provide information for any future shoreline projects at Boulevard Park. The eelgrass survey entailed a delineation of the landward eelgrass edge from Boulevard Park south to beyond Pattle Point, and density calculations along five transects running parallel to the existing walkway at Pattle Point.

METHODS

The eelgrass survey in the habitat employed a modified version of the WDFW Intermediate Eelgrass/Macroalgae Survey Methods (WDFW 2007). The eelgrass survey entailed turion counts along five transects running parallel to the existing trestle at Pattle Point, and the delineation of the landward eelgrass edge from Boulevard Park to south of Pattle Point. WDFW staff reviewed and approved the survey methods prior to the implementation of the field effort.

EELGRASS DELINEATION

In order to map the landward edge of eelgrass, a biologist walked the landward edge of eelgrass beds at low tide from the northern end of Boulevard Park south to past the Pattle Point Trestle. The biologist marked the landward eelgrass boundary with a hand-held dGPS. These points were then mapped on AutoCAD and overlaid on an aerial photograph and base drawing, to show the location of eelgrass relative to existing shoreline features.

EELGRASS DENSITY SURVEY

Eelgrass densities were calculated along five (5) 300 to 430 foot transects set parallel to the existing trestle (Figure 2). Three transects were established parallel to the trestle's waterward edge, located 10 feet, 20 feet, and 35 feet waterward of the waterward edge of the trestle. The remaining two transects were established underneath the trestle and 10 feet landward from the trestle. Along each transect, eelgrass density was recorded every 20 feet. Turion

counts were collected within a .25 m^2 quadrat at 2 o'clock, 6 o'clock, and 10 o'clock (relative to north). In addition, single .25 m^2 quadrat samples were recorded at 10 foot intervals to increase sample size.

RESULTS

The landward edge of eelgrass is depicted in Figure 3. Eelgrass presence is continuous along the entire study area shoreline. Eelgrass is present in the intertidal zone as high as approximately -1.5 ft Mean Lower Low Water (MLLW). Eelgrass presence was limited in its landward extent by substrate and elevation, with eelgrass beginning at the transition from rock and cobble/gravel to sand and silt.

Eelgrass density was 68.9 turions per square meter where eelgrass was present, and 74.3 turions per square meter in the transects waterward of the walkway. It should be noted that, while eelgrass density was lowest in the transect underneath the trestle, this is likely due more to shallow water and substrate rather than shading effects from the trestle.

Macroalgae was observed in all transects in the upper shoreline, limited to fucus and ulva. Coverage varied, as high as 80%. The dominant substrate within the eelgrass beds was silt and mud, with rock and cobble in the upper portions of transects.

Table 1. Eelgrass density and macroalgae coverage

Transect	Average Eelgrass Density (Turions/m^2)	Macroalgae
1	73.1	Ulva, fucus; 80% coverage in upper portion
2	77.8	Ulva/fucus
3	71.9	Ulva/fucus; 2% coverage in upper portion
4	52.6	Ulva/fucus
5	No eelgrass present	Ulva/fucus

Figure 1. Pattle Point Vicinity Map

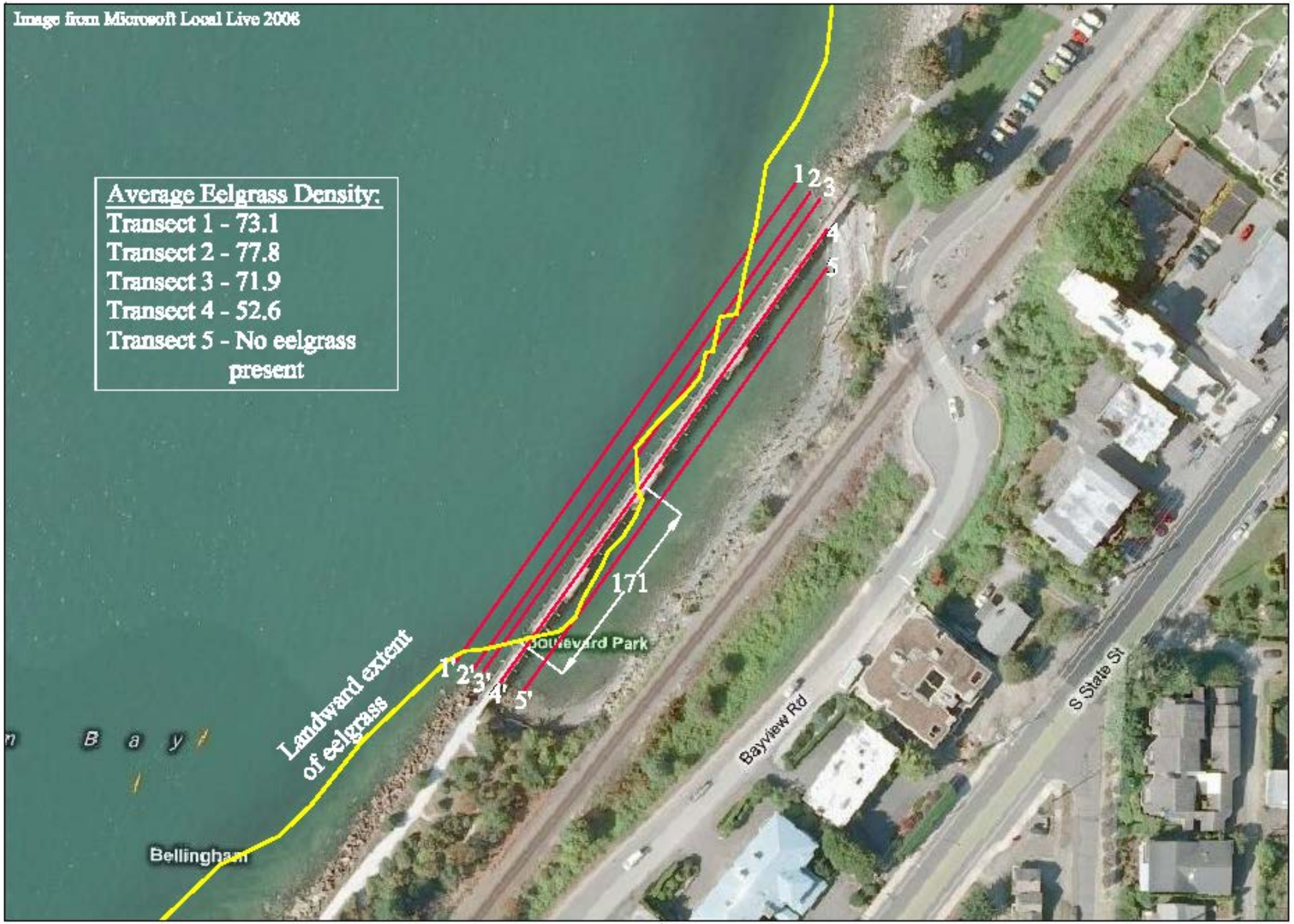


Figure 2. Eelgrass Presence Under Pattle Point Walkway Structure

Figure 3. Eelgrass Presence from Boulevard Park to South of Pattle Point

APPENDIX 7
Boulevard Park Shoreline Assessment

BOULEVARD PARK

Shoreline Assessment

August 2009

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Shoreline Assessment
City of Bellingham
Boulevard Park

August 2009

The engineering material and data contained in this report were prepared under the supervision and direction of the undersigned, whose seal as a registered professional engineer is affixed below.

Shannon M. Kinsella, P.E.
Project Principal

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File No. 242008.001

CITY OF BELLINGHAM, BOULEVARD PARK
SHORELINE ASSESSMENT
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CITY OF BELLINGHAM, BOULEVARD PARK
SHORELINE ASSESSMENT

INTRODUCTION

Boulevard Park is located on the east shore of Bellingham Bay between the Fairhaven District and the Waterfront District. The park is owned and maintained by the City of Bellingham. Boulevard Park is a shoreline park located adjacent to the existing railroad tracks that run along the east shore of the Bay. The main area of Boulevard Park is constructed on fill. Park features include parking, trails, grass area, landscaping, a small building housing a coffee shop in the central portion of the site, restroom facilities, and play areas. The amount of nearshore vegetation varies along the park with trees, low shrubs, and open grass spaces; the majority of the shoreline consists of open lawn area. A timber trestle walkway is located at the south end of the park. The trestle is called the Pattle Point Trestle, named after an early pioneer.

The majority of the shoreline at the park has a low to moderate height embankment and is generally covered with riprap. The park is exposed to storm conditions, that prevail from the south but can also occur from the northwest. The predominate direction of littoral (shoreline sediment) movement along the park shoreline is from the south to the north. This may vary by season and likely includes movement of material onshore and offshore.

The City of Bellingham requested a shoreline assessment as part of a feasibility study for an overwater walkway and improvements to Boulevard Park. Three major issues to address in the shoreline assessment include increasing opportunities for public access to the water, stabilization of minor erosion on the site, and improving natural environmental conditions along the waterfront edge. This shoreline assessment evaluates the existing shoreline conditions at the park and recommends improvements to meet the goals of increased access, improved shoreline stability, and enhancement of the natural environmental conditions.

The primary method recommended for improving public access to the lower beach areas is the removal of riprap and concrete rubble and creation of a higher backshore area for dissipation of wave energy during storm conditions. This often requires some loss of upland lawn area and may require some path relocations to provide the space for a flatter backshore slope. Low drift sills can be used to help stabilize the created beach areas. Drift sills are small rock structures extending from shore outward on one or both sides of a beach area. Unlike rock groins, drift sills are lower in profile and do not extend above high tide elevations, which allows for water movement and sediment movement across the sills. As an alternative to rock structures, it may also be feasible to construct the sills out of concrete and finish the concrete surface through coloring and finish techniques that mimic the natural sandstone bedrock features found in the area.

The primary recommendation for erosion protection at the site is continued use of riprap as a shore protection and placement of additional riprap in select locations. Where minor erosion is occurring on the top of the embankments, additional planting and stabilization with geotextiles would be an effective measure to reduce erosion due to runoff from shore.

Environmental enhancements discussed include removing timber piling, additional nearshore planting, and removing concrete rubble riprap. Nearshore planting of native vegetation is beneficial to the shoreline environment, since the plants provide natural shade and deleterious material that falls into the nearshore environment and helps the nearby plankton and small fish.

For the purposes of this assessment, the park shoreline is separated into seven sections starting at the south at the Pattle Point Trestle shoreline area and extending to the north of the park. Each of these areas has different characteristics (such as slope, exposure, and orientation). The assessment includes a general description of the shoreline for each area and recommended improvements for each area. The seven areas are shown in the attached figure.

SHORELINE AT PATTLE POINT TRESTLE (AREA 1)

Existing Conditions

The shoreline area at Pattle Point Trestle extends from the south end of the trestle to the north end of the trestle. The area is a shallow embayment bordered by a riprap shoreline on the south, the railroad tracks to the east, the park and park trail to the north, and the trestle to the west. The existing characteristics of this area include a shallow sloped intertidal and upper beach area with a steep backshore embankment adjacent to the railroad tracks on the east and the park path and entrance road on the north. The steeper backshore slope along the railroad tracks is covered with riprap. The riprap along the railroad track slope is uniformly placed and interlocked along the toe of the embankment along the railroad right-of-way with relatively vertical slope above the placed riprap. A group of existing timber piling, remnants of an older wharf structure, is present in the central portion of the embayment.

Some wave action and erosion does occur in the area, though because the area is a small, shallow embayment behind the existing timber trestle, there is less exposure to waves than other areas of the park. The upland slopes are fairly steep and almost vertical, particularly in the vicinity of the railroad tracks. The upland slopes are also narrow, particularly near the trail and railroad tracks. Some erosion is present in the area as evidenced by the upper embankment erosion. There appears to be a layer of harder till or bedrock material in the upper slope area, allowing for an almost vertical slope along the east side of the embayment along the railroad tracks.

The north side of the embayment adjacent to the main portion of the park provides access to one of the few larger gravel beach areas and is a popular area for people to congregate and access the beach and water. The upper section of the gravel beach on the north side of the embayment contains less riprap and includes logs and large woody debris. While this is a popular location for access down to the beach, steep upper slopes make access down to the beach area difficult. The existing park trail is located along the top of the embankment on the north side of the embayment.

Recommendations for Enhancement

Recommendations for enhancement for Area 1 are focused on improving the safety of the beach access on the north side of the embayment and enhancing the upper backshore area. The

recommended improvements include relocating the trail back from the edge of the top of embankment where feasible, grading the slope back to a flatter slope, and supplementing the upper beach area with additional gravel and strategically placed woody debris. This would occur to the west away from the area where the existing access road is immediately adjacent to the park path. Neither drift sills nor major beach renourishment is proposed because of the limited area,. The main goal of the work in this area is to reduce the grades in the upper shoreline to improve safe access to the lower beach. This proposal is similar to the work at Marine Park in Fairhaven, where riprap was removed and a gravel beach was constructed. Some grass area will be lost; however, there will be improved access to the beach and an enhanced backshore area. Additional enhancements in the area could include removal of the existing timber piling.

The shoreline directly along the railroad tracks should continue to be stabilized by riprap due to the steep slope and limited area between the toe of the slope and the railroad tracks. Since this is related to the stability of the tracks, the railroad is likely responsible for maintaining the slope in this area. Care should be taken to minimize disturbance of the existing riprap slope adjacent to the railroad if the existing piling are removed.

AREA BETWEEN NORTH ABUTMENT OF PATTLE POINT TRESTLE AND COFFEE SHOP (AREA 2)

Existing Conditions

This area has a greater exposure to both south and north storm conditions and is heavily covered with riprap. There is a small embayment located just south of the existing building. The embayment is fairly exposed to the south storm conditions. There is a variety of trees, lawn, and other vegetation along the top of the embankment in this area. The area has a relatively flat sloped nearshore beach area.

Recommendations for Enhancement

Because of the exposure in this area, it is recommend that the majority of shoreline remain covered with riprap to prevent further erosion. However, there is a small area where the trail could be moved back and an improved public access point to the beach could be provided. This is located in the small embayment just south of the building. This is another area where pulling back the trail and flattening the upper slope is recommended to improve access, reduce erosion, and enhance the environment.

CENTRAL AREA AT EXISTING BUILDING (AREA 3)

Existing Conditions

This area is exposed to both the northwestern and southern storm conditions in the bay. The existing upper shoreline is covered with riprap and various concrete rubble shore protection, both stacked slabs and randomly placed concrete slab debris that is intermixed with the riprap. Immediately in front of the building are two concrete walls that are perpendicular to shore and

forming a concrete ramp and concrete stair providing access to the beach. The concrete stairway is scoured and not easily accessible to the lower beach area due to the large dropoff at the bottom of the stairs. A small section of the south wall also turns and runs parallel to the shoreline.

The upland consists of trail between the building and shoreline, paved areas with bench seating, and the building.

Recommendations for Enhancement

Given the limited upland area between the shoreline and the building, it is recommended that a riprap shoreline be maintained in this area. Removing the concrete slabs and concrete riprap would enhance the environment at this section of the shoreline. Measures should be taken to increase the protection at the toe of the existing concrete wall and access stairs to prevent scour and undermining of these structures. This could be in the form of placing larger riprap at the base of the walls.

SHORELINE AREA NORTH OF EXISTING BUILDING TO EXISTING CONDEMNED PIER (AREA 4)

Existing Conditions

This area consists of a meandering shoreline with heavy riprap and the trail meandering along the top of the embankment. This area is also exposed to wave and currents from the north and south. There is a variety of open lawn area and some tree areas along the top of embankment where the trail is further upland. This area also includes a short section of a concrete bulkhead located between the water and a few trees, potentially installed to protect the trees and prevent erosion of the upper embankment. Numerous bench seating areas are in place on both sides of the upland trail in this area. There is a small embayment in the shoreline on the south side of this section where the path from the parking lot extends to the shoreline path.

Recommendations for Enhancement

It is recommended that this section of this area be maintained as a riprap shoreline with a larger pocket beach renourishment and access area in the small embayment by the existing path to the parking lot. A large pocket beach access with drift sills on each side would provide improved beach access for pedestrians, small hand-launched vessels (such as kayaks), and additional upper dry beach area for use by park patrons. This will require regrading and relocation of the trail in the central area and some loss of lawn area. Additional enhancements could include selective increased vegetation to enhance the natural environment while maintaining select view corridors. The northernmost section of this area should remain as a rip rap slope with enhancements such as removal of concrete rubble and reconstruction of the rip rap slope where the concrete rubble is removed.

NORTH SIDE OF PARK AREA – TIMBER WHARF STRUCTURE (AREA 5)

Existing Conditions

Located on the north side of the main Boulevard Park site, the area consists of an existing pile-supported timber wharf structure. Based on review of aerial photos and history of the site, this is likely from the old mill operations. The age of this structure and the condition of the small pier extending from the wharf structure indicate both are nearing the end of their design lives. The existing pier structure that extends from the wharf has settled and is currently condemned. The wharf serves as the main pathway in this area and is bordered on the upland side by a few trees and lawn area.

Recommendations for Enhancement

The recommendation for this area is to remove the timber wharf structure and place a new path on the upland land area. This may require some removal of trees. The existing shoreline could be graded back with only minor riprap or supplemental upper beach gravel fill, similar to Marine Park in Fairhaven, providing an upper backshore area for dissipation of wave energy in place of using riprap. Removing the structure may provide a mitigation area for related projects by improving nearshore habitat and reducing overwater coverage nearshore.

BEACH AREA NORTH OF THE STAIRWELL (AREA 6)

Existing Conditions

The area to the east of the existing wharf consists of a riprap shoreline with minor erosion along the top edge above the riprap. There is a bench and grass area between the riprap and the trail just east of the wharf. East of this section is a relatively shallow gravel beach protected from exposure to southern storm wind and waves by the main portion of the park. The backshore area is protected by a vertical rock bulkhead, approximately 3 to 4 feet in height on the upper portion of the beach. There is a path between the riprap bulkheads that provides a popular path for access to the shallow beach.

Recommendations for Enhancement

Enhancing public beach access through removal of riprap, provision for additional backshore gravel beach area, selective placement of woody debris, and planting to provide backshore stabilization is recommended because of the sheltering of this area from the south.

NORTH EMBANKMENT ALONG RAILROAD TRACKS (AREA 7)

Existing Conditions

This area consists of a relatively shallow gravel beach area with a steep riprap embankment protection of the railroad tracks. There is limited vegetation along the embankment, and the railroad tracks are in close proximity to the top of the embankment. The primary purpose of shoreline stabilization in this area is protecting the railroad tracks. A series of older timber piling also exists in this area. These are remnants of an old trestle.

Recommendations for Enhancement

It is recommended the railroad to maintain the riprap shoreline as required to protect the tracks. Removing the old timber piling may serve as mitigation for park projects.

SUMMARY

Three major goals for Boulevard Park include enhancing public access to the water, addressing minor erosion issues and preventing future erosion, and enhancing the natural environment. Several options are available to address all three goals at the park.

Four major locations are recommended for enhancement of public access to the water at the Park as shown on Figure 1. These four areas include the north side of the embayment adjacent to the north side of the Pattle Point Trestle, an area between the trestle and the existing coffee shop building, a small embayment north of the building, and the existing beach area on the north side of the park. The rest of the shoreline should remain protected by riprap and plantings to prevent future erosion. The goal for the southernmost access point is to improve an access path down to the lower beach area with minor grading. A preliminary concept plan for the other three major beach and public access improvement areas is shown in Figure 2. This figure shows new sandstone type drift sills and beach creation in the three areas.

Maintenance and enhancement recommendations include removing the concrete rubble and slab riprap, adding rock riprap to the toe of the existing concrete structures adjacent to the building to prevent further scour and undermining of the structures, and increased plantings and upper slope stabilization where minor erosion is occurring.

Recommendations for enhancing the natural environment include removing the concrete rubble and slab used for shore protection near the existing building and replacing it with natural rock riprap and increased plantings along the shoreline to increase nearshore vegetation and provide natural erosion protection. Removing treated timber piling is also recommended and could serve as mitigation for projects on the site.

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Figure 1. Four Locations Recommended for Enhancement of Public Access to Water.

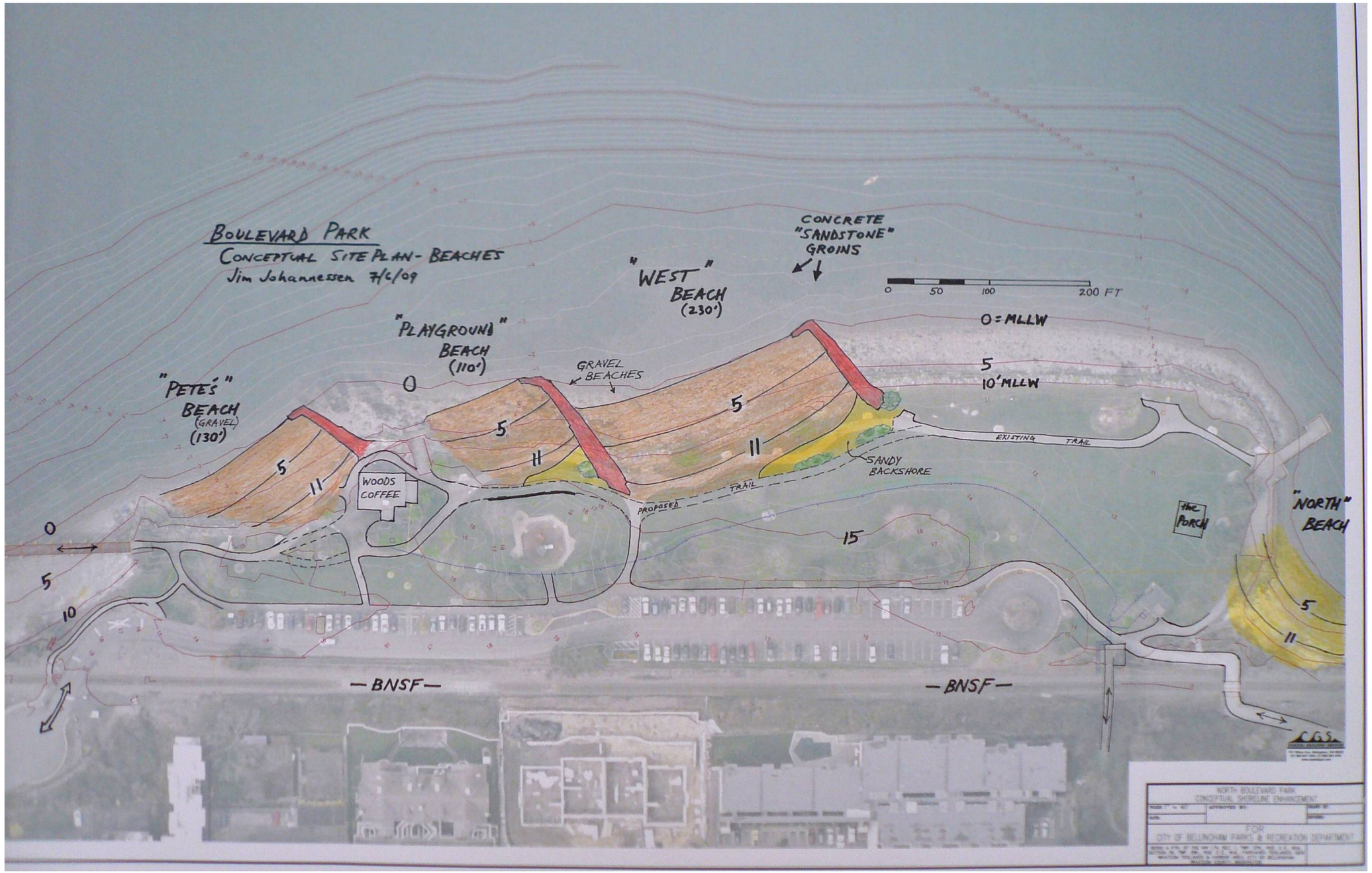

Figure 2 Preliminary Concept Plan for Three Major Beach and Public Access Improvement Areas.

APPENDIX 8
Initial Geotechnical Engineering Evaluation

Report
Initial Geotechnical Engineering Evaluation
Boulevard Park Shoreline & Overwater Walkway
City of Bellingham
Bellingham, Washington

April 8, 2009

Prepared for

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1.0 INTRODUCTION

This report summarizes the results of Landau Associates' initial geotechnical engineering evaluation conducted for the proposed Boulevard Park Shoreline and Overwater Walkway project in Bellingham, Washington. The overall project location along the Bellingham Waterfront between Boulevard Park and the Cornwall Avenue Landfill site is shown on the Vicinity Map (Figure 1).

This report has been prepared based on our discussions with representatives of the Reid Middleton project team, base map and walkway alignment information provided by Reid Middleton, data collected during our field reconnaissance and geophysical surveys conducted for this initial phase of the project, our familiarity with geologic conditions in the project vicinity, and our experience on similar projects.

1.1 PROJECT BACKGROUND

The City of Bellingham (City) and Port of Bellingham (Port) are in the process of redeveloping various portions of the Bellingham Waterfront. As part of redevelopment activities, the City is preparing a feasibility study as part of the Phase I - Boulevard Park Shoreline and Overwater Walkway project, which includes an overwater walkway between the northern portion of Boulevard Park and the southern portion of the Cornwall Avenue Landfill site.

The City retained the Reid Middleton team to conduct various studies and provide a preliminary design for the proposed overwater walkway and associated shoreline improvements. The current overwater walkway alignment alternatives are indicated on Figure 2. We understand that the proposed 14-foot (ft) wide walkway will be supported on steel pipe piles, and that the current plan is to support the walkway on pile bents that use two battered piles to form an A-frame foundation element at each bent location.

1.2 SCOPE OF SERVICES

Landau Associates was retained by Reid Middleton to conduct an initial geotechnical engineering evaluation for the project, based on use of available subsurface data supplemented by an offshore geophysical survey of the overwater walkway area. It has been assumed that this approach will be sufficient for the development feasibility study and preliminary design phase of the project. We understand that an offshore geotechnical drilling program and other subsurface evaluations will be conducted as part of final design for the proposed overwater walkway.

Our scope of services generally included the following tasks:

- Collecting and reviewing existing and readily available geotechnical information for the project area related to foundation support of the proposed overwater walkway.

- Participating in the project kickoff meeting and initial site reconnaissance on March 6, 2008 to discuss project objectives and approach, and to collect information on the general nature and physical features of the project area.

- Conducting an offshore geophysical survey in order to gain general information regarding subsurface soil layers and approximate depth to bedrock along the proposed alignments of the overwater walkway.

- Arranging to have a bathymetric survey of the offshore area between Boulevard Park and the Cornwall Avenue Landfill conducted as part of the offshore geophysical survey task, as part of a scope modification requested by Reid Middleton.

- Reviewing available subsurface information and conducting limited geotechnical engineering analyses to develop preliminary geotechnical design criteria and recommendations for the proposed overwater walkway.

- Summarizing the findings and results of our initial geotechnical engineering evaluation in this report, which contains the following preliminary design information:

    - A site plan showing pertinent site features and the proposed alignments of the overwater walkway.

    - The locations and logs of the available soil borings in the project vicinity and the results of the offshore geophysical survey.

    - A summary of anticipated sub-bottom conditions at the project site based on available data.

    - An evaluation of feasible pile types and the results of our initial pile capacity evaluations.

    - Estimated minimum pile embedment depths to accommodate the anticipated design lateral and vertical loads.

    - An initial evaluation of soil liquefaction potential.

    - A discussion of expected pile driving conditions and related constructability issues.

2.0 SITE CONDITIONS

This section summarizes our initial evaluation of site conditions along the proposed alignments of the overwater walkway between Boulevard Park and the Cornwall Avenue Landfill site (see Figure 2).

2.1 GEOLOGIC SETTING

The surficial geologic units in the site vicinity were interpreted from the Geologic Map of Western Whatcom County, Washington (Easterbrook 1976), the Geologic Map of the Bellingham Quadrangle, Washington (Lapen 2000), and certain other investigations that have been conducted by Landau Associates and others in or near the project area.

The near-surface geology in the Bellingham area has been shaped by various glacial deposits derived from the advance and retreat of the Cordilleran Ice Sheet between approximately 12,000 and 18,000 years ago, as well as by subsequent sedimentation and filling activities. The areas near both Boulevard Park and the Cornwall Avenue Landfill represent historical beach and intertidal areas along the former Bellingham Bay shoreline that were filled in the past. Typical descriptions of the geologic units present in the project vicinity are presented below, ordered from the deepest (oldest) units to the shallowest (youngest) deposits.

Chuckanut Formation

Bedrock that underlies the site consists of fractured sandstone, siltstone, and carbonaceous shale of the Chuckanut Formation. The Chuckanut Formation has an undulating surface that has been eroded by glaciers and water. The Chuckanut Formation is present near and often exposed at the ground surface and forms the bluff along the shoreline along portions of the project site. The top of the Chuckanut Formation slopes downward toward Bellingham Bay. The depth to the top of the Chuckanut Formation varies significantly, and appears to be present at depths ranging from a few feet to approximately 45 ft below ground surface (BGS) near the shoreline in the project vicinity.

Bellingham Drift (Glaciomarine Drift)

The Bellingham Drift is typically a soft to stiff, unsorted and unstratified pebbly, sandy silt and clay material (with occasional marine shells) that was derived from rock debris that melted out of glacial ice as rising sea levels floated and melted glacial ice and deposited the material on the sea floor. The Bellingham Drift material, also referred to as Glaciomarine Drift (GMD), varies in thickness and location; where present, the depth to the top of the GMD varies significantly and increases toward Bellingham Bay.

Nooksack Deposits

Nooksack deposits are fine-grained sediments deposited in Bellingham Bay by the Nooksack River, and typically consist of deposits of soft silt, sandy silt, and silty clay. The Nooksack deposits, where present, generally thicken toward Bellingham Bay and pinch out near the shoreline.

Beach Deposits

Beach deposits typically consist of very loose to loose, fine to medium sand with occasional shell and wood fragments deposited along the shoreline of Bellingham Bay.

Fill/Modified Land

The term "modified land" is used to describe surficial geologic conditions that have been modified by human activities such as, but not limited to: cutting, filling, grading, leveling, and shoreline protection. Fill materials are present over a significant portion of the site vicinity due to past shoreline filling and site development activities. Fill materials present at the site are highly variable and may consist of sand, silt, clay, gravel, sawdust and/or wood fragments, construction debris (bricks, concrete, etc.), and mixtures of these fill materials.

Landfill Refuse

While landfill refuse generally comes under the term "fill/modified land," it has been expressly called out here to reflect municipal solid waste and other waste materials present within the historical Cornwall Avenue Landfill site.

2.2 BATHYMETRIC SURVEY

As requested by Reid Middleton, Landau Associates arranged to have a bathymetric survey of the offshore area between Boulevard Park and the Cornwall Avenue Landfill conducted by Golder Associates as part of their offshore geophysical survey for the project.

The results of the bathymetric survey conducted by Golder Associates are presented in Appendix A, and have been provided to Reid Middleton for incorporation into the project base map. Note that the bathymetric feature located approximately half way between Boulevard Park and the Cornwall Avenue Landfill appears to be a localized bedrock outcrop area that may or may not be covered by marine

sediments. Old marine piles, logs and other large woody debris, and a sunken vessel were also observed along the mudline in the project vicinity.

2.3 OFFSHORE GEOPHYSICAL SURVEY

Landau Associates subcontracted to have an offshore geophysical survey conducted for the project in order to gain a better understanding of the depth to bedrock along the proposed overwater walkway alignments. The description and results of the offshore geophysical survey conducted for this initial phase of the project are included in Appendix B. In general, the geophysical survey indicates that the depth to bedrock along the proposed overwater walkway alignments is likely to range from approximately 10 to 46 ft below mudline (note that the deepest bedrock contact was located on Line 3 of the geophysical survey in what appears to be a localized depression in the bedrock layer).

2.4 SUBSURFACE SOIL CONDITIONS

Landau Associates reviewed available geotechnical information from previous studies (Dames & Moore 1960; Integral Consulting, Inc. 2007; Landau Associates 2009; W.D. Purnell 1985) that have been conducted at the Boulevard Park and Cornwall Avenue Landfill sites. Selected boring logs and geologic cross sections from these previous investigations are presented in Appendix C. These data, supplemented with the results of the offshore geophysical survey conducted as part of this study, formed the basis of our evaluation of subsurface conditions along the alignments of the proposed overwater walkway.

Our interpretation of subsurface conditions near Boulevard Park are based on the two borings advanced for the proposed Pavilion Donation Project (Integral Consulting, Inc. 2007), which are located about 100 ft from the start of the proposed overwater walkway along the north side of Boulevard Park. In general, these borings reportedly encountered about 5 ft of earthen fill, 19 ft of wood waste fill, and 1 ft of sandy beach deposits over bedrock encountered at about 25 ft BGS.

Subsurface conditions near the Cornwall Avenue Landfill were interpreted based on the numerous borings advanced for previous site development studies (Dames & Moore 1960; W.D. Purnell 1985) and the ongoing remedial investigation/feasibility study (RI/FS) being conducted at the closed landfill (Landau Associates 2009). Boring B-14 from the W.D. Purnell investigation (see Appendix C) appears to be located near the end of the proposed overwater walkway along the south side of the Cornwall Avenue Landfill. This boring reportedly encountered about 2 ft of granular fill, 23 ft of landfill refuse, 10 ft of wood waste fill, and 8 ft of Nooksack Deposits/Glaciomarine Drift over bedrock encountered at about 43 ft BGS.

Subsurface conditions in the marine area between the Boulevard Park and the Cornwall Avenue Landfill sides of the proposed overwater walkway likely consist of varying depths of fill materials (estimated to increase in thickness near the existing shorelines), overlying varying depths of marine sediments, overlying bedrock of the Chuckanut Formation. As previously noted, the geophysical survey (see Appendix B) indicates that the depth to bedrock along the proposed overwater walkway alignments is likely to range from approximately 10 to 46 ft below mudline [or as deep as approximately Elev. -60 ft mean lower low water (MLLW) as indicated on Line 3 of the geophysical survey, in an area that appears to be a localized depression in the bedrock layer].

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our initial geotechnical evaluation, it is our opinion that construction of the proposed overwater walkway between Boulevard Park and the Cornwall Avenue Landfill site is feasible from a geotechnical engineering perspective, provided that the recommendations presented in this and subsequent design-level geotechnical reports are incorporated into the project design.

3.1 FOUNDATION SUPPORT

The presence of compressible fill and soft marine sediments indicate that the abutments for the proposed overwater walkway should be pile supported, similar to pile support of the overwater walkway structure.

We understand that the preliminary design for the proposed 14-ft wide overwater walkway calls for use of open-ended steel pipe piles for foundation support, and that the current plan is to support the walkway on pile bents that use two battered piles to form an A-frame foundation element at each bent location. We understand that battered piles were selected rather than vertical piles in order to better accommodate anticipated shallow bedrock conditions. Vertical piles would be subject to axial compression and lateral loads, and it is expected that the loose/soft subsurface materials overlying bedrock would not likely provide adequate resistance to the lateral loads. Battered piles would primarily be subject to axial compression and uplift (pullout) loads that could be more readily resisted with adequate embedment into the bedrock layer.

We recommend that the piles supporting the abutments and the overwater walkway structure be driven to refusal in the underlying bedrock. Except within limited areas of the project area, bedrock is anticipated to be encountered at a relatively shallow depth, and should be readily reached with driven piles. Based on our interpretation of currently available information, we anticipate that the depth to bedrock along the proposed overwater walkway alignments will typically range from approximately 10 to 30 ft below mudline, with limited areas expected to have a depth to bedrock in the range of approximately 30 to 50 ft below mudline. Additionally, we anticipate that the depth to bedrock near the south abutment at Boulevard Park to range from approximately 20 to 30 ft BGS, and the depth to bedrock near the north abutment at the Cornwall Avenue Landfill to range from approximately 40 to 50 ft BGS.

3.1.1 AXIAL PILE CAPACITY

The axial design loads for the piles were not provided at the time of preparation of this report; however, the axial compression capacity of properly sized steel pipe piles driven to refusal in bedrock

will be sufficient to meet design requirements, and will likely be limited by the structural strength of the pipe piles used for the project. Settlement of piles driven to refusal in bedrock is anticipated to be less than approximately ¼ inch and should occur as the loads are applied to the piles.

3.1.2 UPLIFT CAPACITY

The design uplift loads for the piles were not provided at the time of preparation of this report. However, we recommend that the uplift capacity of the piles be based primarily on the depth of embedment into the bedrock, neglecting the limited resistance that may be provided by the loose fill and soft sediments present above the bedrock.

We currently anticipate that adequate uplift resistance of the battered piles at each bent can be achieved if the steel pipe piles are installed to achieve several feet of embedment into bedrock. If determined necessary to achieve the design uplift resistance, the soil within the piles could be cleaned out and the piles could be filled with concrete, a rock anchor could be installed into the bedrock below the tip of the piles, or the piles could be driven deeper into a pre-drilled hole in the bedrock.

3.2 SEISMIC DESIGN CONSIDERATIONS

The entire Puget Sound region lies within a seismically active area, and moderate to high levels of ground shaking should be anticipated during the design life of the proposed overwater walkway. The Boulevard Park and Cornwall Avenue Landfill sites are located over deposits of relatively soft to loose soils that could potentially amplify earthquake ground motions at various frequencies. Consequently, the near-surface soils at the site could affect the level of earthquake ground shaking felt in the area.

Significant zones of loose, saturated, granular material that are typically prone to liquefaction during a significant earthquake event have not been identified in the vicinity of the proposed overwater walkway. It is yet to be determined if any of the marine sediments overlying bedrock along the walkway alignments are potentially subject to liquefaction and associated loss of strength during a strong motion seismic event. While site-specific explorations might identify some soil/sediment layers below the water table that could potentially be subject to liquefaction, it is not expected that liquefaction will be a critical foundation design issue because any potentially liquefiable soil layers are expected to be limited in depth, and the pile foundations would not be designed to rely on support from any such soil layers.

We understand that the overwater walkway structure will need to be designed to resist seismic loading conditions; however, we have not yet confirmed the actual seismic design criteria to be used for

the project. Seismic design using most recent design codes and generally accepted engineering standards and practices should be conducted during the design phase of the project.

If the seismic design complies with the 2006 International Building Code (IBC), this would account for an earthquake ground motion with a 2 percent probability of exceedance in 50 years (a 2,475-year return period), but with a reduced acceleration (about two-thirds of the acceleration that corresponds to a 2,475-year event). Assuming use of the 2006 IBC, the following parameters are recommended for preliminary seismic design of the overwater walkway:

- Site Class B (per Table 1613.5.2 of the 2006 IBC)
- S_s = 0.988 g
- S_1 = 0.331 g
- Peak horizontal ground acceleration = 0.435 g.

3.3 PILE DRIVABILITY

In addition to the design loads on the piles, pile drivability through the site soils/marine sediments and into the bedrock needs to be considered in selecting the pile type and dimensions and appropriate pile-driving equipment. Unless adequately designed to resist anticipated driving stresses, the piles could potentially be damaged during driving of the piles to refusal in bedrock.

Consideration should be given to the presence of obstacles (e.g., submerged logs and piling) and the need to drive the piles an adequate distance into the bedrock without damaging the piles. The piles could potentially need to have hardened tips to permit sufficient penetration through the weathered bedrock zone and into dense, relatively unweathered bedrock. Pile driving stresses can be estimated using the wave equation analysis for piles (WEAP) software, which is typically performed prior to construction based in part on the contractor's pile-driving equipment. However, pile driving stresses should be estimated during the final design stage of the project. Measures to limit the adverse impact of driving stresses include use of a thicker wall and a higher grade steel for the pipe piles, proper selection of the pile-driving hammer and cushion, and use of appropriate pile driving refusal criteria. These considerations should be further evaluated during final design for the project.

3.4 VIBRATION AND NOISE EFFECTS DURING PILE-DRIVING

The installation of driven piles will create both noise and vibrations at the site. Vibrations due to pile-driving, particularly for the piles near the shoreline, could potentially impact adjacent structures,

pavement, and utilities located in the upland portions of the project. For existing structures adequately supported on piles, the impacts of pile-driving should be negligible. Vibrations may cause settlement to existing pavement and utilities (which are expected to be underlain by fill) and existing small structures supported on shallow foundations.

At this time, we are not aware of concerns regarding potential settlement of upland structures or utilities due to pile-driving. Additionally, the adverse impacts of pile-driving should be addressed in the construction documents and, if necessary, a monitoring program should be implemented during pile-driving operations.

3.5 CORROSION CONSIDERATIONS

The steel pipe piles should have a wall thickness that adequately accounts for corrosion in a marine environment, or alternately have a suitable coating that provides for corrosion protection. The piles at and near the Cornwall Avenue Landfill end of the walkway should also be evaluated for corrosive conditions associated with contact with landfill refuse materials.

3.6 RECOMMENDATIONS FOR FINAL DESIGN PHASE SERVICES

We recommend that an overwater geotechnical investigation, supplemented with a supplemental geophysical survey, be conducted to better estimate the depth and strength of the fill and marine sediments and the variations in the depth to bedrock along the selected overwater walkway alignment.

We also recommend that additional engineering analyses be conducted during the design phase to confirm the pile capacity recommendations included in this report, and to conduct lateral pile capacity evaluations in the event that vertical piles are used instead of battered piles. Additionally, seismic design considerations should be further evaluated and incorporated into the final design of the overwater walkway.

4.0 USE OF THIS REPORT

Landau Associates prepared this report for the exclusive use of Reid Middleton and the City of Bellingham for specific application to the Phase I - Boulevard Park Shoreline and Overwater Walkway project in Bellingham, Washington. This report is not intended to be sufficient for final design; however, the information in this report should be supplemented with additional subsurface investigations and engineering analyses which could form the basis of design-phase geotechnical recommendations. Any use of this report by others, or for purposes other than intended, is at the user's sole risk. Within the limitations of scope, schedule, and budget, our services have been conducted in accordance with generally accepted practices of the geotechnical engineering profession; no other warranty, express or implied, is made as to the professional advice included in this report.

The preliminary conclusions and recommendations contained in this report are based in part on the subsurface data reviewed by Landau Associates in the general vicinity of the project site. There will be some variation in subsurface conditions at the site, and the nature and extent of the variations may not become evident until additional explorations are conducted, or even until construction. Accordingly, an appropriate contingency should be included in the project budget to accommodate potential variability of ground conditions. As the project enters the design stage and foundation loads are defined, we should be advised so that we can finalize our geotechnical study and review our recommendations to confirm if they are consistent with specific project plans.

* * * * * * * * * *

We appreciate the opportunity to provide our geotechnical services on this project and look forward to assisting you during the upcoming final design construction phase. If you have any questions or comments regarding the information contained in this report, or if we may be of further service, please call us at 425-778-0907.

LANDAU ASSOCIATES, INC.

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Senior Staff Geotechnical Engineer

Steven R. Wright, P.E.
Senior Associate

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DAP/JJB/SZW/kes
053101.010

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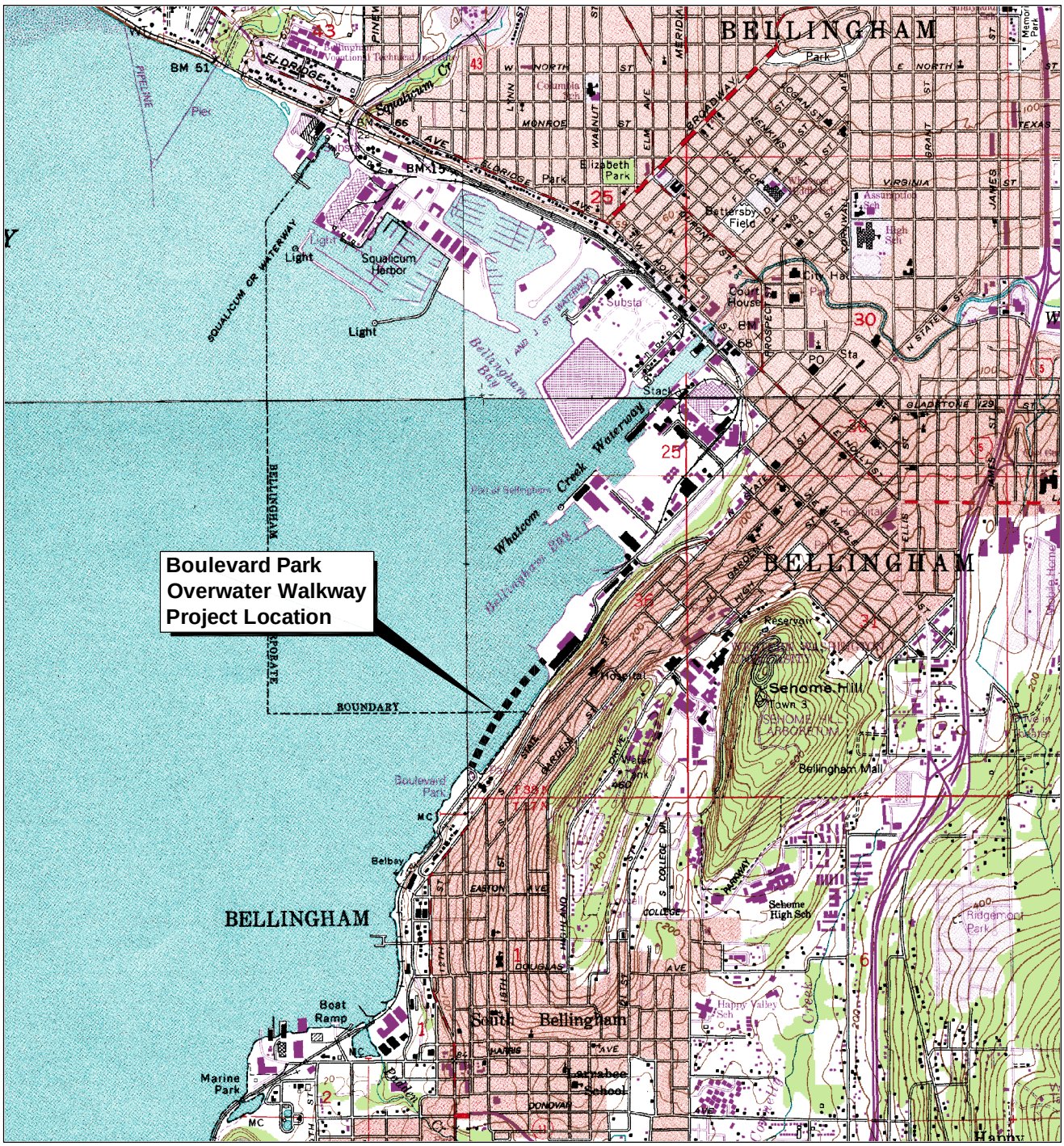
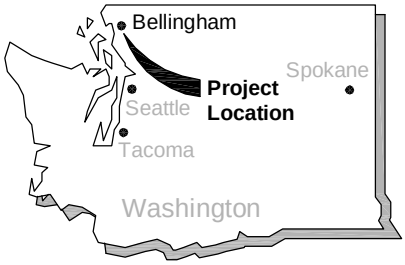




0 2000 4000

Approximate Scale in Feet

Boulevard Park Overwater Walkway | V:\053\101\011\D\Initial Geotechnical Evaluation Report\Fig1.dwg (A) "Figure 1" 7/22/2008

LANDAU ASSOCIATES

Boulevard Park Shoreline and Overwater Walkway Bellingham, Washington

Vicinity Map

Figure 1

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Google Earth 2008, Reid Middleton July 10, 2008 Alignments

0 250 500

Scale in Feet

LANDAU ASSOCIATES

Boulevard Park Shoreline and Overwater Walkway
Bellingham, Washington

Proposed Overwater Walkway Alignment Alternatives

Figure 2

Boulevard Park Overwater Walkway | V:\053\101\011D\Initial Geotechnical Evaluation Report\Fig2.dwg (A) "Figure 2" 4/8/2009

APPENDIX A

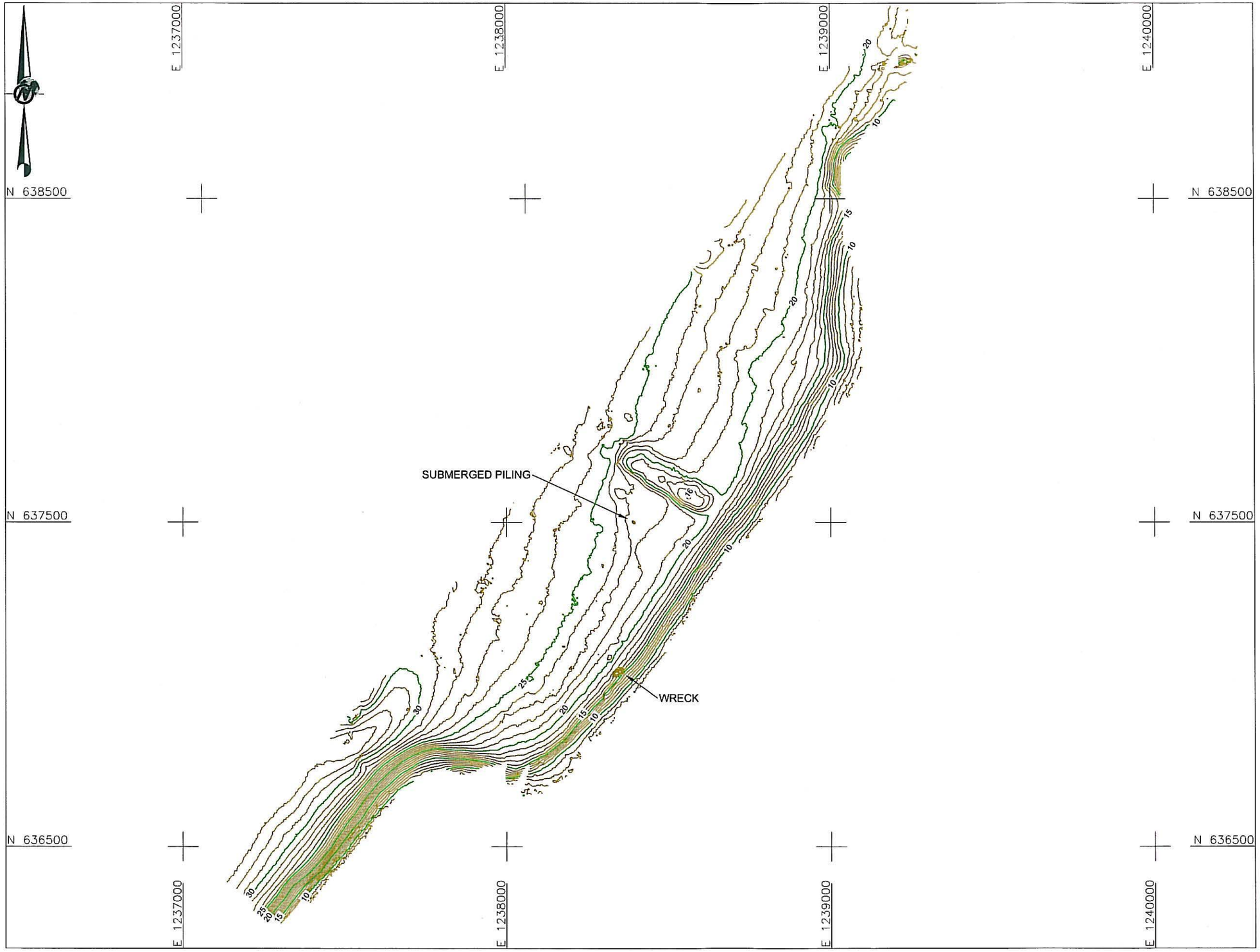
Bathymetric Survey Data

APPENDIX A
BATHYMETRIC SURVEY DATA

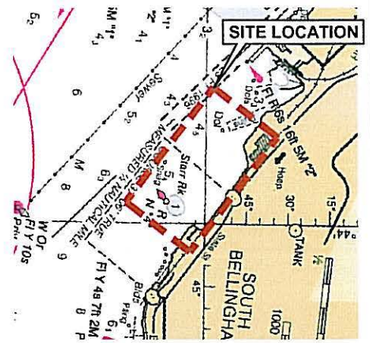
As requested by Reid Middleton, Landau Associates arranged to have a bathymetric survey of the offshore area between Boulevard Park and the Cornwall Avenue Landfill conducted by Golder Associates as part of their offshore geophysical survey for the project.

The bathymetric data are presented on Figure 6 of Golder Associates' May 8, 2008 report. This bathymetric contour information, shown in feet below mean lower low water (MLLW), is presented on attached Figure 6 from that report. Note that the bathymetric feature located approximately halfway between Boulevard Park and the Cornwall Avenue Landfill appears to be a localized bedrock outcrop area that may or may not be covered by marine sediments.

Due to the differences between Golder's bathymetric data and previously available bathymetric data in the project vicinity (which was reportedly based on soundings collected by Georgia Pacific and the U.S. Army Corp of Engineers in 1996), Landau Associates subcontracted Global Geophysics to collect spot check bathymetric soundings during the supplemental geophysical survey conducted on May 22, 2008, the results of which are shown on attached Figure A. These spot check bathymetric data appear to be relatively consistent with the bathymetric contour data presented on Figure 6 from Golder Associates' report.



KEY MAP



LEGEND

30 BATHYMETRIC CONTOURS
CONTOUR INTERVAL = 1 FOOT

0 300 600
SCALE IN FEET

INSTRUMENTATION

Reson 7125 Multibeam Echosounder
CODA F185 Inertial Navigation
Trimble 5700 RTK Navigation System
QINSy QPS Navigation Software
Datasonic Bubble Pulser Seismic Source
IRIS SYSCAL RESISTIVITY SYSTEM

GEODETIC PARAMETERS

VERT. DATUM: MEAN LOWER LOW WATER
PROJECTION: NAD83, WA STATE PLANE N ZONE, US FEET

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SUBMITTED TO:
LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

PROJECT:
BOULEVARD PARK MARINE
GEO INVEST/WA

TITLE:
BATHYMETRIC CONTOUR MAP

PROJECT	083-93164	DESIGN	DS	5-08-08
FILE No.	08393164100F03-F6a	CADD	ACF	5-08-08
REV.	0	CHECK	DS	5-08-08
SCALE	AS SHOWN	REVIEW	–	–

FIGURE 6

C:\Temp\053101083_93164_100_F03-F6a.dwg | FIG 6. | Mod: 05/09/2008, 11:17 | Plotted: 05/14/2008, 10:09 | KWrigg

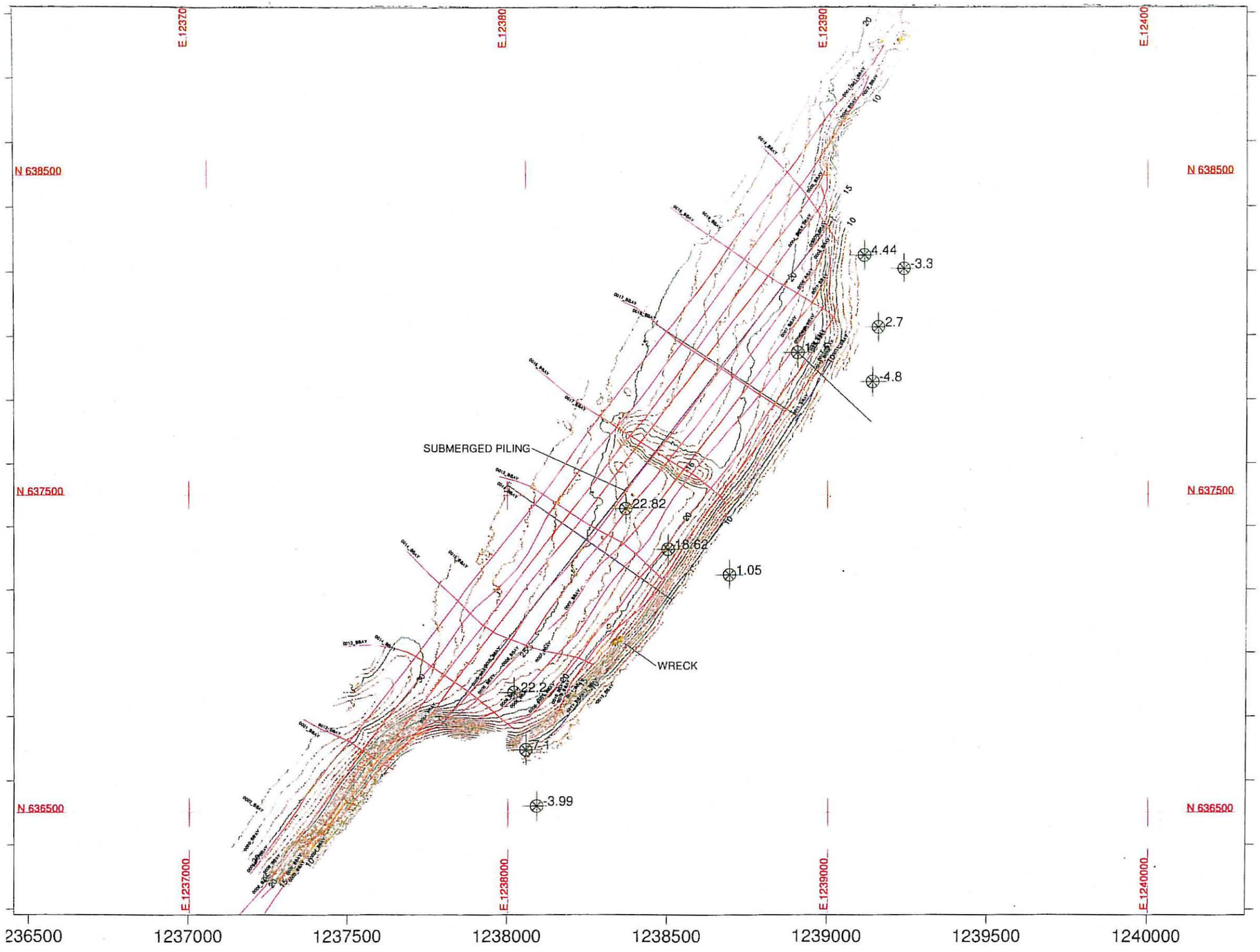


FIGURE A

Legend:

⊕ Water Depth Sounding Location (Taken by Global Geophysics) (MAY 22, 2008)

APPENDIX B

Geophysical Survey Data

APPENDIX B
GEOPHYSICAL SURVEY DATA

Landau Associates initially subcontracted Golder Associates to conduct an offshore geophysical survey for the project in order to gain a better understanding of the depth to bedrock (Chuckanut Formation) in the project vicinity. However, the marine sediment and bedrock contour data provided in Golder Associates' May 8, 2008 report was determined to be inaccurate and not credible. Accordingly, Landau Associates subcontracted Global Geophysics to redo the geophysical survey in order to obtain more realistic data regarding the depth to bedrock in the project vicinity.

The results of Global Geophysics' geophysical survey are included in their attached report dated May 27, 2008. The text of Golder Associates' May 8, 2008 report is also attached for general information purposes; however, other than the bathymetric data shown on Figure 6 of their report (included in Appendix A), the figures from Golder Associates' report have not been included in this Appendix.

Global Geophysics
16651 White Mountain Road SE
Monroe, WA 98272
Tel: 425-890-4321
Fax: 360-805-0259

May 27, 2008

Our ref: 083-0516.000

Landau Associates, Inc.
130 2nd Ave. S.
Edmonds, WA 98020

Attention: Mr. David Pischer

RE: REPORT FOR A MARINE SEISMIC REFRACTION SURVEY NORTH OF BOULEVARD PARK, BELLINGHAM, WA

This letter report presents the results of the geophysical survey performed by Global Geophysics. The survey was carried out on May 22, 2008 north of Boulevard Park, Bellingham, Washington. The objective of the survey was to determine the depth to bedrock for the walkway design.

GEOPHYSICAL METHOD

Seismic refraction is the traditional method for mapping the thickness of alluvium and depth to bedrock using a controlled energy source (hammer, blank shotgun shells, or chemical explosives) to generate a seismic signal. The seismic signals are received by a series of hydrophones (24, for example) that are connected to a seismic cable laid on the seafloor in a linear manner. The hydrophones, evenly spaced along the geophone cable, are placed on the seafloor. The seismic energy source is discharged at several places along the array and off both ends.

The seismic wavelets travel through the earth to the geophones that convert the acoustic energy in the ground to an electric signal in the geophone cable. The seismograph detects the arriving electric signals with respect to time and stores the records for future data processing. The seismic data is processed to determine the seismic velocity of the earth material through which the energy has traveled and to model the subsurface geology. This geophysical model depicts the earth in cross-section showing the velocity and thickness of the subsurface layers below the seismic line.

INSTRUMENTATION AND FIELD PROCEDURES

The seismic survey was carried out using a Geometrics Geode, 24-channel seismograph and 12 Oyo Geospace hydrophones. The field procedure consisted of laying the seismic cable with hydrophones (12 takeouts and 10 m apart) on the seafloor in a linear manner. Both ends of the cable were anchored and marked with floats on the surface. 400-grain blank shot shells were used for the seismic source, which were lowered to the sea floor and detonated with an inverter. Since no refracted wave were observed on the seismic records from the shots in the bay due to the presence of organic materials, the seismic lines were oriented to have one end near the shore. The refracted seismic waves were obtained from the shots near shore. The data were collected and on four lines and recorded for further processing. The locations of these lines are shown in Figure 1.

ANALYSIS AND RESULTS

For generalized reciprocal method and tomography interpretation methods, three to five shots along a seismic line and two off end shots are required to determine the velocities of the underneath materials and depths to their interfaces. However, due to the presence of organic materials in the bay, refracted seismic signals were only presented in the records from shots near shore. Seismic refraction static correction approach is used here to interpret the data with a few assumptions (such as bedrock velocity estimation). Large errors in the interpreted overburden thickness in the bay are expected, and the interpreted seismic refraction profiles will be revised once borehole log information from the bay becomes available. The interpreted seismic refraction profiles are show in Figure 2.

The interpreted bedrock surface undulates and the thickness of the overburden varies from 6 ft to 46 ft.

CLOSURE

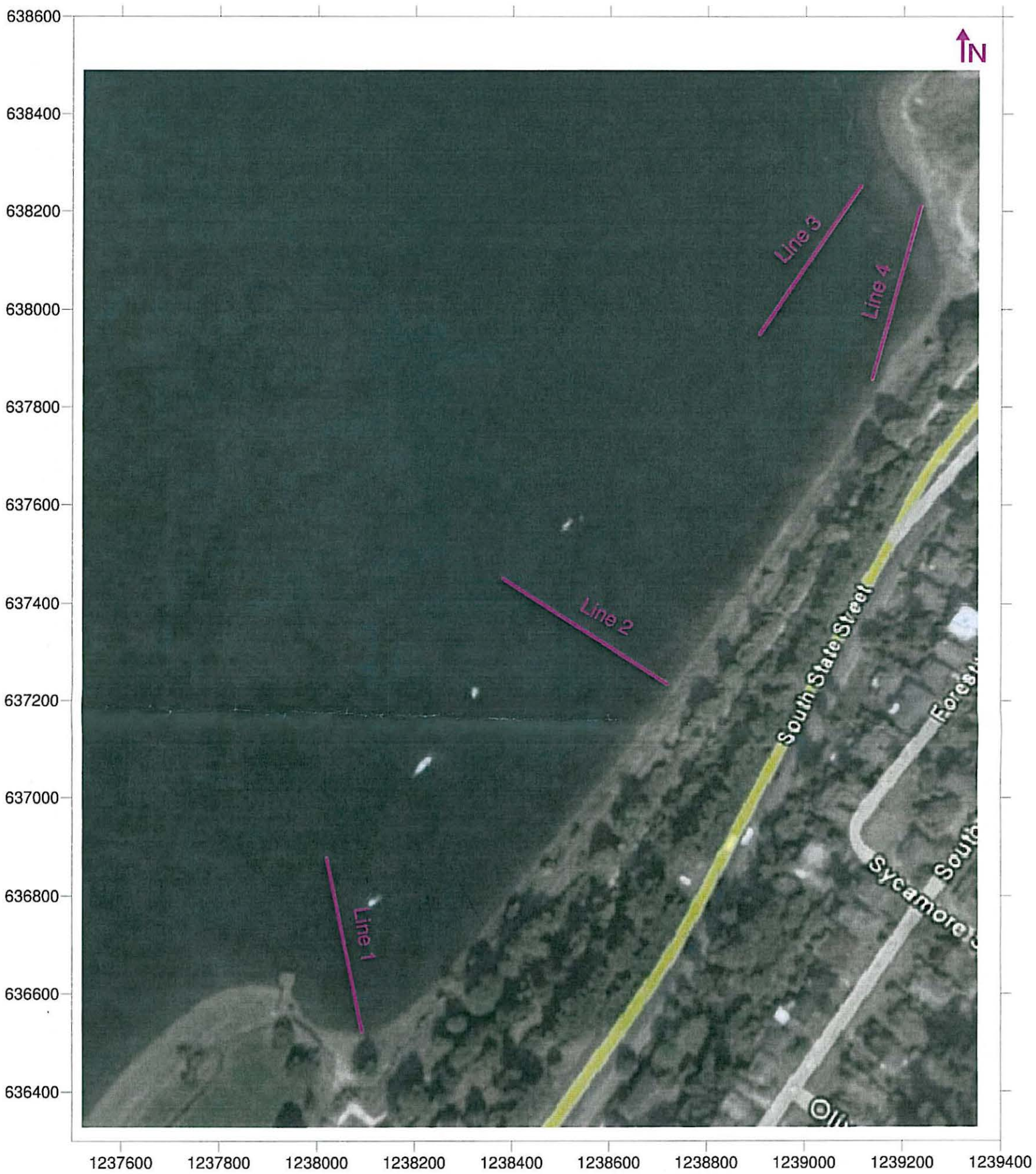
Global Geophysics's services are conducted in a manner consistent with the level of care and skill ordinarily exercised by other members of the geophysical community currently practicing under similar conditions subject to the time limits and financial and physical constraints applicable to the services. Seismic refraction is a remote sensing geophysical method that may not detect all features or boundaries within the subsurface. Furthermore, it is possible that geophysical boundaries identified on the seismic profiles that are interpreted to be soil units, boundaries, bedrock, etc. may upon intrusive sampling prove to be misinterpreted. Since there were valid data only from one shot near shore on each line, large errors in the interpreted overburden thickness in the bay are expected.

We appreciate the opportunity to work with you on this project, and we hope that you find the results of the geophysical survey useful to your investigation. If you have any questions regarding this report, please call the undersigned at 425-890-4321. We look forward to providing you with additional geophysical services in the future.

Sincerely,

Global Geophysics.

John Liu, Ph.D., R.G.
Principal Geophysicist



0 ft 100 ft 200 ft

Legend:

Seismic refraction line

Geodetic parameters:
Vertical datum: Mean lower low water
Projecttion: NAD83, WA State Plane North Zone, US feet

PROJECT

LANDAU ASSOCIATES, INC.
MARINE SEISMIC REFRACTION SURVEY
BOULEVARD PARK, BELLINGHAM, WA

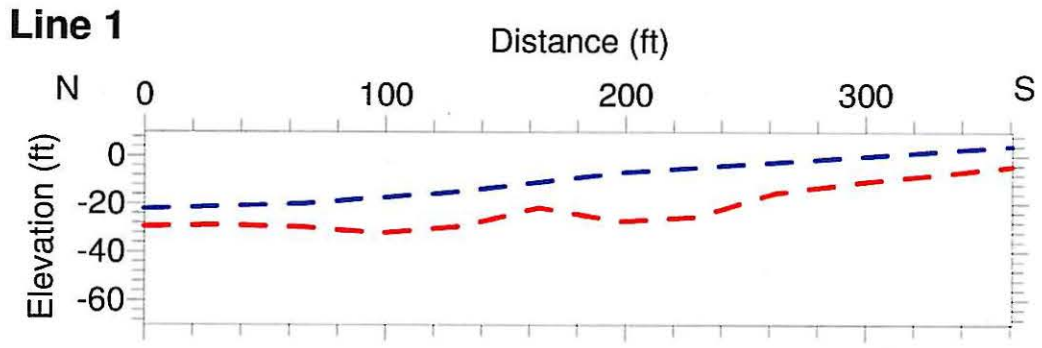
TITLE

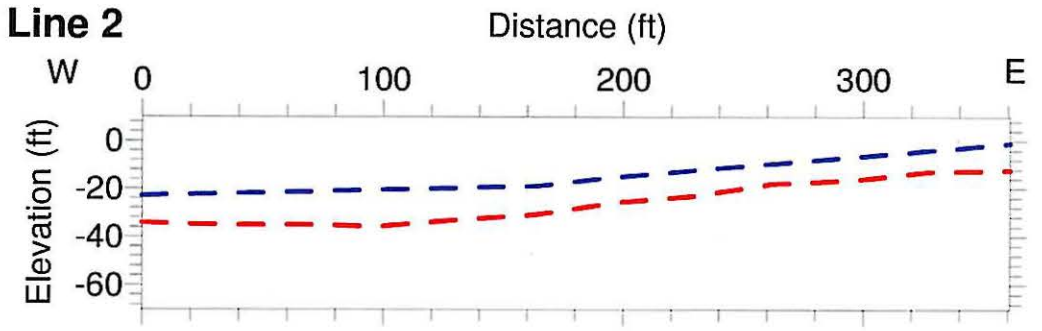
SITE PLAN

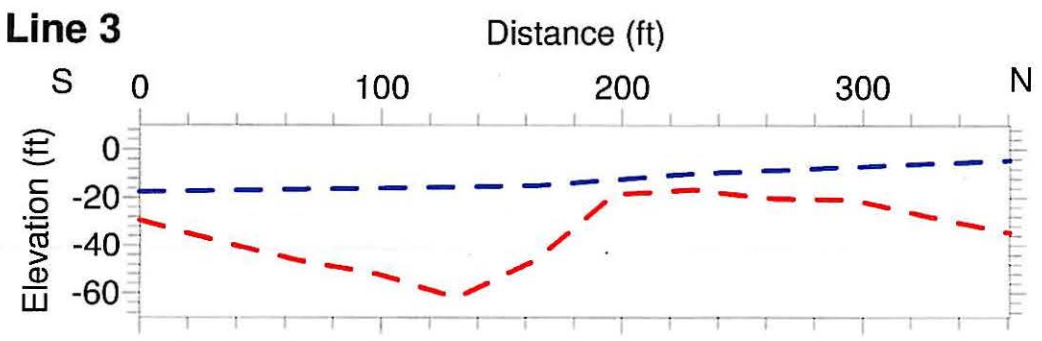
Global Geophysics
16651 White Mountain Road SE
Monroe, WA, 98272
Tel: 425-890-4321

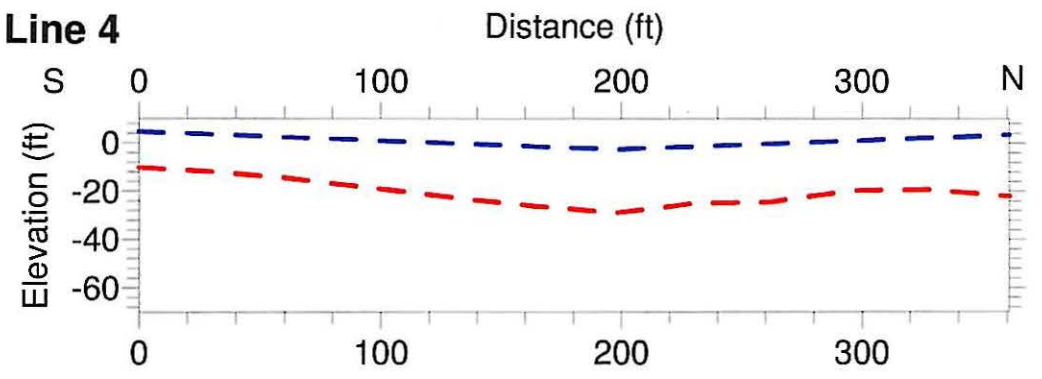
PROJECT No.	083-0516.000	FILE No.	Figure 1 Site Plan.srf
DESIGN	--	SCALE	AS SHOWN
CADD	JL	REV.	
CHECK	--		
REVIEW	--		

FIGURE 1









Legend:

- Sea floor surface
- Interpreted bedrock surface

Geodetic parameters:
Vertical datum: Mean lower low water
Projecttion: NAD83, WA State Plane North Zone, US feet

PROJECT
LANDAU ASSOCIATES, INC.
MARINE SEISMIC REFRACTION SURVEY
BOULEVARD PARK, BELLINGHAM, WA

TITLE
INTERPRETED SEISMIC REFRACTION PROFILES

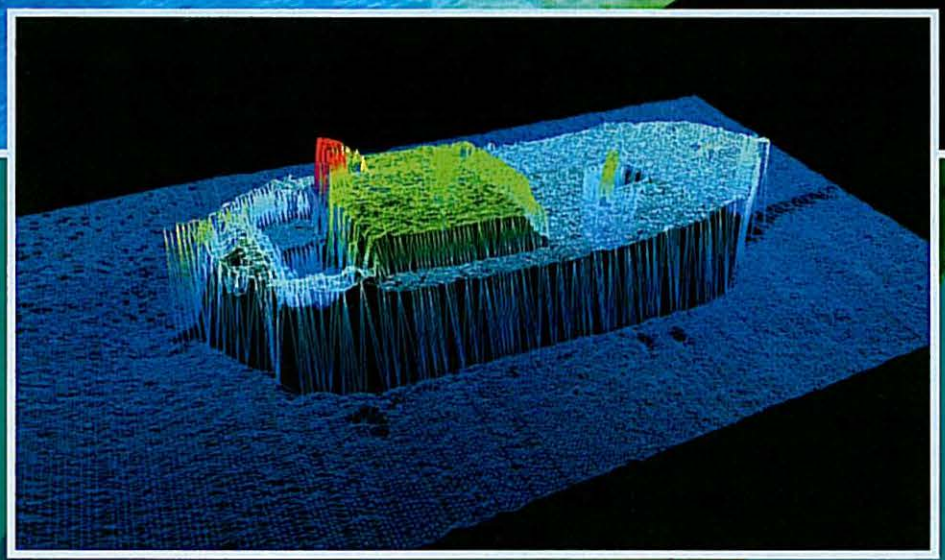
Global Geophysics
16651 White Mountain Road SE
Monroe, WA, 98272
Tel: 425-890-4321

PROJECT No.	083-0516.000		FILE No.	Interpreted Seismic Profiles.srf
DESIGN	--		SCALE	AS SHOWN
CADD	JL		REV.	
CHECK	--			
REVIEW	--			

FIGURE 2

Report on the

Marine Geophysical Investigation at Boulevard Park, Bellingham, WA



May 8, 2008

Prepared for:
Landau Associates, Inc.
Edmonds, WA

Prepared by:
Golder Associates Inc.
Redmond, WA

Golder Associates

083931641000v01.indd DATE 05/09/08

Golder Associates Inc.
18300 NE Union Hill Road, Suite 200
Redmond, Washington 98052
Telephone: (425) 883 0777
Fax: (425) 882 5498

Golder Associates

May 9, 2008 083-93164

Landau Associates, Inc
130 2nd Avenue S.
Edmonds, Washington 98020

Attention: David Pischer

RE: REPORT ON THE RESULTS OF THE BOULEVARD PARK MARINE GEOPHYSICAL SURVEY, BELLINGHAM, WASHINGTON

Dear Mr. Pischer:

This report presents the results of the offshore geophysical survey conducted by Golder Associates Inc. (Golder) on April 7th and 8th, 2008.

SURVEY OBJECTIVE

The objective of the investigation was to map the bathymetry and lateral and vertical distribution of marine sediment in the area immediately offshore of Boulevard Park in Bellingham, Washington (Figure 1). In addition, information on the extent and thickness of wood chips located within the study area was also desired. The geophysical methods used to attempt to achieve these objectives included multibeam or swath bathymetry, seismic reflection profiling and electrical resistivity imaging (Figure 2).

INSTRUMENTATION AND FIELD METHODS

Navigation

The position of the survey vessel was determined using a real-time kinematic (RTK) global positioning system (GPS). The RTK system provided horizontal control and information for tide corrections, in real-time, based on the coordinates for V 454 1974 control point. The navigation computer was interfaced with the other geophysical instruments including the graphic recorders, and digital acquisition systems.

The position of the survey vessel, and the completed tracklines, were displayed in real-time on a color monitor that also provided additional navigation parameters to the helmsman. This made it possible to navigate the survey vessel along the planned survey transects.

Multibeam or Swath Bathymetry

Bathymetric data were acquired with a Reson 7125, operating at 400 kHz with 256 beams, and 0.5 degree beam width. Inertial navigation was used to correct for heave, pitch, roll and heading of the vessel. The sound velocity of the water column was measured at the beginning, and end of the survey.

TABLE 1

Control and Hydrographic Instruments

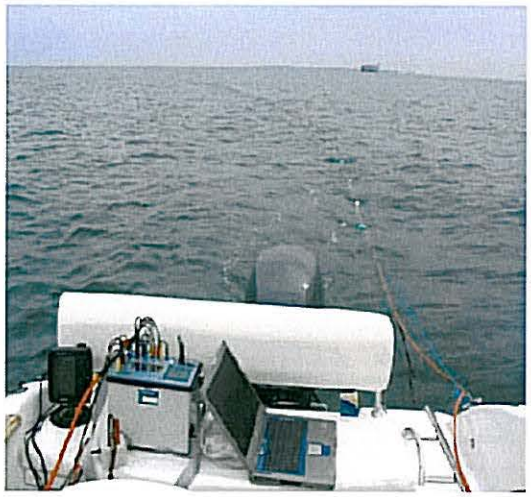
System	Manufacturer
Projection	NAD83 WA State Plane N
Vertical Datum	NAVD 88, MLLW for rpt.
Basis of Coordinates	NGS Brass Cap "V 454 1973 N 638142.926, E 1239416.406 Elevation 16.000
Multibeam Echosounder	Reson 7125, 400 kHz, 256 beams, 0.5 degrees
Inertial Navigation	CODA f185, HPR,heading
RTK Positioning	Trimble 5700 base and rover
Navigation Software	QINSy QPS, V. 8.0
Processing Software	Caris HIPS, v. 6.1

Subbottom Reflection Profiling

A low frequency seismic reflection profiling was used to map the subsurface stratigraphy. This system operated with a source frequency range of 400 to 2000 Hz and provided subsurface data to a depth of approximately 200 feet below the seafloor (Figure 3). The data were stored digitally on a computer and a digital tape recorder.

Electrical Resistivity Imaging

The marine ERI method maps differences in the electrical resistivity of geologic materials. Most soils and rock minerals are electrical insulators or highly resistive. The flow of current in these materials is primarily conducted through moisture filled pore spaces. Therefore, the resistivity of soils and rock is primarily controlled by the porosity and permeability of the medium, the amount of pore water (degree of saturation) and the concentration of dissolved solids (ionic solutions) in the pore water.



The method involves transmitting an electric current into the ground between two current electrodes and measuring the voltage between ten pairs of potential electrodes. The measured point is called a sounding, which represents the apparent resistance of the area beneath the electrodes.

A combination of different electrode arrangements is used to collect enough soundings to produce a resistivity cross section below the ERI transect. The interpreted data is presented as a color contoured cross section that highlights stratigraphic contacts or other features (e.g., contact between alluvium and wood debris.) where there is a variation in subsurface resistivity.

The following table is a list of the instrumentation used for this investigation.

TABLE 2

Geophysical Instrumentation

System	Manufacturer	Parameters
Differential GPS	Trimble Model AG132	L1 C/A code, 12 Channel
Multibeam Echosounder	Reson 8124	250 kHz, , 1.5 degree
Seismic Reflection System	Datasonic Bubble Pulser	350/1000 Hz
Seismic Processor	GeoAcoustic 5210A	100 db gain, TVG, BP filter
Seismic Digital Acquisition	Sony Model 208 DAT Chesapeake SonarWIZ	8 Channel digital tape 12 bit DAS
Graphic Display Recorders	EPC Model 1086-500	2-Channel, 12 bit display
Electrical Resistivity System	Iris Syscal Pro 10	10 Channel, 10 ft. interval

Field Procedures

On the first day data were acquired with the multibeam bathymetric and seismic reflection systems. These two instruments were run simultaneously along the survey transects (Map). On the second day, data were acquired with the electrical resistivity system. Resistivity data were collected in a continuous mode and measurements were recorded every two seconds. The automated data acquisition system was programmed to record approximately 770 measurements per line.

Survey Coverage

The study area was approximately 3000 feet in length (NE-SW orientation) and 600 feet in width with a maximum water depth of approximately 30 feet. Approximately 12 survey transects were run parallel to the long axis of the site and 6 transects were run perpendicular to these primary transects for all geophysical systems (Figures 3 and 4)

DATA PROCESSING AND ANALYSIS

Preliminary analysis of the data was conducted during the survey. This included reviewing the tracklines to assure that adequate coverage was obtained and QA/QC of the subsurface reflection data. Archiving the field records and downloading the digital data was done immediately following the survey.

Navigation

The event marks from the navigation data were plotted on a trackline map to verify that the sequence of event number ran continuously along a given trackline. A table of event numbers was also generated where tracklines crossed each other to assist in interpretation and validation of the data.

Bathymetric Data

Raw values recorded from the instruments and sensors during data collection were processed into final soundings using Caris HIPS. The processing workflow is as follows.

- **Sound Velocity Correction** This step converted the travel time recorded from the multibeam into a depth based on the speed of sound of the water. In addition, refraction of each beam through the water column was compensated for based on the beam launch angle and sound velocity variations in the water column.
- **Application of Sensor Data** Soundings were corrected for heave, pitch, and roll.
- **Merging the Data** All other correctors were applied to create a geo-registered sounding with latitude, longitude and depth. These corrections included vessel offsets, vessel heading, tide corrections and draft.
- **Data Cleaning** Of the millions of soundings collected during even the smallest surveys, some amount of data will either be erroneous or out of specification and will need to be removed from the data set. HIPS provides several tools that allows the hydrographer to efficiently view, query and flag any individual sounding or filters that allow multiple soundings to be flagged at once.
- **Data Binning** This process took all the accepted data from the corrected data set and binned the data at a regular grid. Bin sizes are user selectable and were selected in a manner that preserved as much of the resolution as possible while keeping file sizes manageable. An average depth was reported for the cell center of each bin. The depth, along with the coordinates of each cell center, made up the final sounding.

Subbottom Reflection Data

The field data and the processed data were analyzed to provide a qualitative classification of sediment type and to determine the thickness of unconsolidated sediment and depth to an interpreted acoustically hard-material or reflector. An attempt was also made to identify the distribution of surficial wood chips and their thickness.

Sediment classification, based on seismic reflection data, uses the principal of seismic facies analysis. This method identifies various reflection patterns (reflection free, uniform horizontal reflectors, discontinuous, chaotic reflectors, multiple reflections etc.) on the graphic records and then assumes a particular pattern is characteristic of a particular type of sediment, geology or depositional environment. For example, a reflector pattern (geophysical facies) on the record comprised of continuous, thin layers suggests fine-grained sediment deposited in a low energy environment. Sediments deposited in a high-energy environment, or that may be more consolidated than overlying material, usually produce very strong reflections (dark layers on the records) and the reflectors are often discontinuous. Areas of no subsurface penetration, with a dark reflection pattern, or numerous multiple reflections, represent acoustically hard (very dense material such as cobble or boulders or low density such as gas charged sediment). An example of the seismic reflection data from this project is shown on Figure 4.

Estimating the depth below the seafloor to the first acoustic horizon, consisted of identifying the contact between the unconsolidated surface material and the subsurface reflector interpreted to represents the top of a more dense material. The depth calculations were made using the two-way

travel time for an acoustic pulse to travel from seafloor to the top of the reflector identified as the top of the acoustically hard reflector. The two-wave travel time was multiplied by a compressional wave velocity for sound of 5,200 feet/second to determine the depth in feet.

Electrical Resistivity Imaging Data

Data were collected using a dipole-dipole array and recorded using IRIS Sysmar marine acquisition software. ERI data were processed using commercially available RES2DINV inversion software. Data were displayed as a color-contoured cross section where cool colors (blue and green) represent low resistivity values and hot colors (red and violet) represent relatively high resistivity values.

RESULTS

Bathymetry

The swath bathymetric system mapped the seafloor depth from approximately 8 feet to 29 feet. The contours generally parallel the shoreline with the exception of the small mound located near the middle of the site (Figures 6 and 6a). This feature is oriented perpendicular to the general trend of the contour lines.

Numerous logs could be seen on the isometric image of the bathymetry and a sunken vessel was mapped near shore at the southern end of the site (see image on report cover). The vessel is approximately 35 feet in length, 10 feet in width and extends 6 feet above the seafloor and is located at 637038.95N, 1238354.71E (Figure 6).

Interpreted Seismic Reflection Results

There was no clear evidence of wood chips on the seismic reflection data. However, the presence of multiple reflections in some areas suggests that organic material and gas charged sediment may be present. It was not possible to determine the thickness of the material producing the multiple reflections and these zones were too discontinuous to produce a surficial features map showing their lateral extent.

The reflection data indicated the presence of an unconsolidated, possibly fine to medium grained, deposit overlying a more dense material. This sequence is interpreted to be loose, unconsolidated marine sediment overlying dense, compacted glacial or glacial marine deposits. The contact between the two appears as a nearly continuous reflector on all of the seismic reflection transects at a subsurface depth of 100 to 120 feet below the seafloor (Figure 5). There are additional reflection horizons at a depth of approximately 170 to 200 feet below the seafloor. These reflectors are horizontal, continuous and have greater reflection amplitude than the shallower horizon. Because of the nearly constant depth or elevation of the contact between the interpreted marine sediment and glacial sediment it is not possible to produce a meaningful contour map showing the elevation of the contact. The interpreted profiles shown on Figure 3 are characteristic of the subsurface data obtained on the other seismic reflection transects.

In several areas the acoustic signal does not image the deeper reflectors and appears to be blocked or attenuated by surface and near-surface material. This could be caused by the presence of very coarse-grained sediment deposits.

Electrical Resistivity Imaging Data

The electrical resistivity system was only able to obtain seafloor and subsurface data along two or three near shore transects located in shallow water (Figure 7). In deeper water the array was unable to provide enough current to image the sea floor or subsurface strata.

Figures 7 presents the interpreted ERI results from Line 11, which is the transect located closest to shore (Figure 4). The depth of investigation is approximately 28 feet (9 meters), but the upper 8 feet (2.5) meters is the water column. The extremely low resistivity values are, of course, due to seawater. There is a slight increase in resistivity with depth but the low resistivity of the seawater predominates.

There are several zones of relatively high resistivity values deeper in the profile indicated by the darker colors. These anomalies (37 to 88m and 251 to 301 m, depth 4m) are interpreted as representing zones of an increase in grain size of the sediment.

LIMITATIONS OF GEOPHYSICAL METHOD

Golder services are conducted in a manner consistent with the level of care and skill ordinarily exercised by other members of the geophysical community currently practicing under similar conditions subject to the time limits and financial and physical constraints applicable to the services. Swath bathymetry, subbottom reflection profiling and electrical resistivity imaging are remote sensing geophysical method that may not detect all surficial or subsurface features or identify boundaries between different materials if there is poor contrast in acoustic properties. In addition near-surface geologic conditions may limit the ability of the method to detect deeper geologic horizons or reflectors. A complete and accurate interpretation of the geophysical data requires the acquisition of samples in the survey area.

Sincerely,

GOLDER ASSOCIATES INC.

Dick Sylwester, L.G., LE.G.
Associate/Senior Geophysicist

Matthew Benson
Geophysics Group Leader

Attachments: Figures 1-7
Seismic Reflection Data (provided in original only)

RES/MB/tp

APPENDIX C

Previous Subsurface Investigation Data

APPENDIX C
PREVIOUS SUBSURFACE INVESTIGATION DATA

To supplement our preliminary geotechnical evaluation for the Boulevard Park Shoreline and Overwater Walkway project, Landau Associates reviewed available geotechnical information from previous studies conducted at both the Boulevard Park and Cornwall Avenue Landfill sites. Selected boring logs and geologic cross sections from these previous investigations are attached herein. These exploration logs and geologic cross sections are provided for background information only, as conditions may have changed since the time of these past investigations.

REFERENCES

Dames & Moore. 1960. *Report of Foundation Investigation, Proposed Site Development, Bloedel-Donovan Mill Site, Bellingham, Washington*. Prepared for the Port of Bellingham. December 19.

Integral Consulting, Inc. 2007. *Letter Report for Focused Site Characterization, Pavilion Donation Project, Boulevard Park, Bellingham, Washington*. Prepared for City of Bellingham. March 5.

Landau Associates, Inc. 2009. *Draft, Cornwall Avenue Landfill Remedial Investigation/Feasibility Study, Bellingham, Washington*. Prepared for the Port of Bellingham. In preparation.

W.D. Purnell & Associates. 1985. *Report, Engineering Geology and Geotechnical Investigation, Tissue Warehouse Additions, Bellingham Division*. Prepared for Georgia-Pacific Corporation. March 20.

Dames & Moore 1960

DAMES & MOORE
CONSULTANTS IN APPLIED EARTH SCIENCES
SOIL MECHANICS · ENGINEERING GEOLOGY · GEOPHYSICS

LOS ANGELES
SAN FRANCISCO
PORTLAND
SEATTLE
SALT LAKE CITY
CHICAGO
NEW YORK
ATLANTA

421 THIRD AVENUE WEST · SEATTLE 99, WASHINGTON · ATWATER 4-8160
ASSOCIATE: JOSEPH LAMONT, JR.

December 19, 1960

Port of Bellingham
P.O. Drawer 643
Bellingham, Washington

Attention: Mr. Thomas J. Glenn, Chief Engineer

Gentlemen:

We submit herewith five copies of our "Report of Foundation Investigation, Proposed Site Development, Bloedel-Donovan Mill Site, Bellingham, Washington, for the Port of Bellingham".

The scope of this investigation was planned in discussions between Mr. T. J. Glenn of the Port of Bellingham and the writer. Our findings have been discussed with Mr. Glenn during progress of the investigation.

It is our opinion that the site can be developed within certain significant limitations which are described in our report. As your plans develop, we would be pleased to discuss the results of our studies with you or your design engineers at any convenient time.

Yours very truly,

DAMES & MOORE

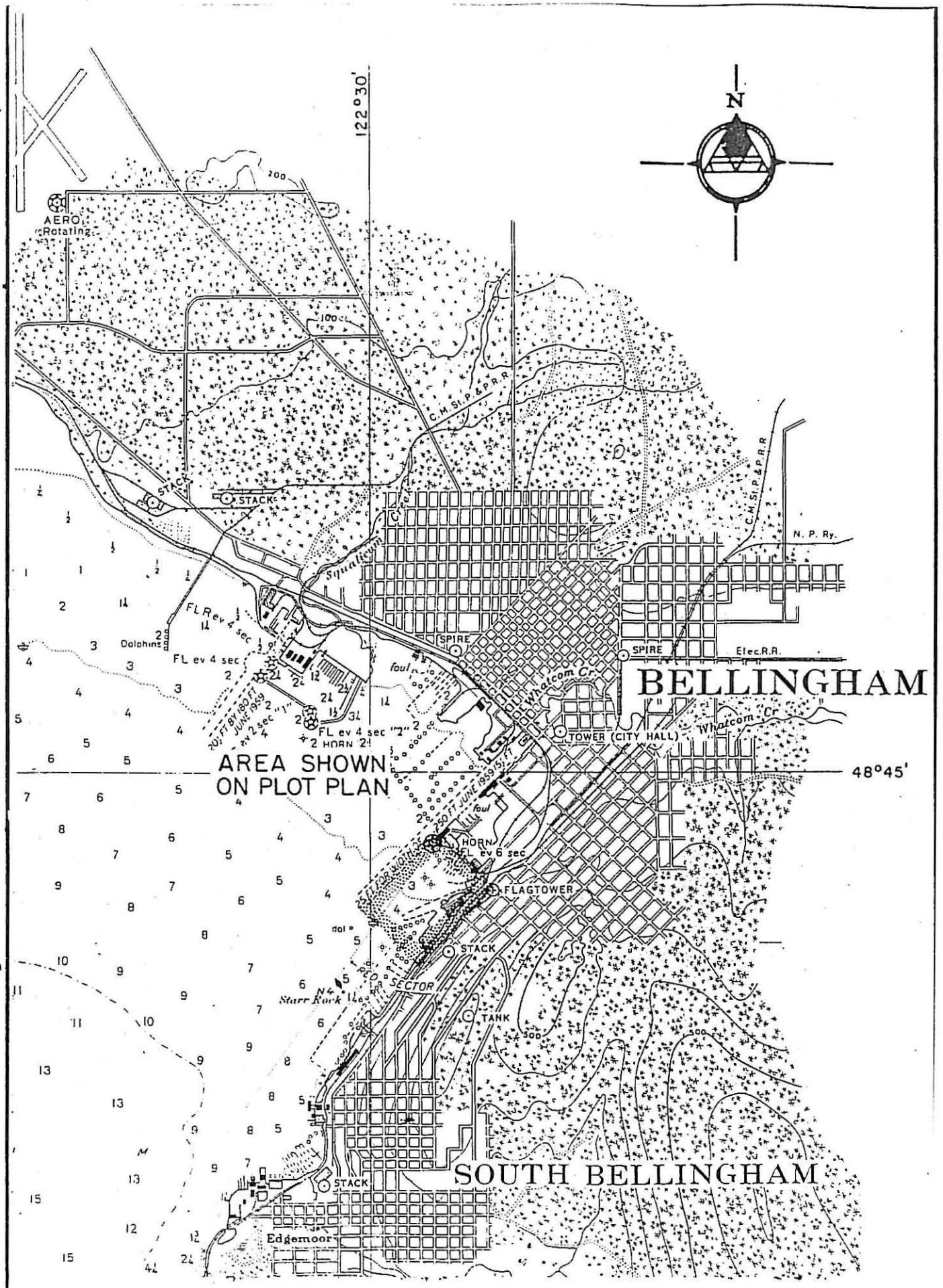
By

Joseph Lamont, Jr.

JL-JKT:fm

REVISIONS
BY _____ DATE _____ TO GO ___
BY _____ DATE _____ TO GO ___

BY RAD DATE 11-18
CHECKED BY ___ ___
COPY TO GO _____ FILE 3395-A



MAP OF AREA

FEET
500 0 500 1000 1500 2000

DAMES & MOORE
SOIL MECHANICS ENGINEERS

REVISIONS
BY_____ DATE_____
BY_____ DATE_____
PLATE_____ OF_____

FILE 3995-B
BY RAO DATE 12-5-60
CHECKED BY_____ DATE_____

BELLINGHAM BAY

N

OUTER HARBOR LINE

LOCATION OF OLD DOCK
(DOCK HAS BEEN REMOVED BUT PORTIONS OF PILING STILL EXIST)

BORING NO.

APPROXIMATE SHORELINE

GARBAGE DUMP
(SANITARY FILL)

INNER HARBOR LINE

EXISTING BUILDINGS

WAREHOUSE NO 7

TOE OF SLOPE

REFERENCE:
PORT OF BELLINGHAM DRAWING ENTITLED "BLOEDEL-DONOVAN MILL SITE-1960," DATED 7-21-60

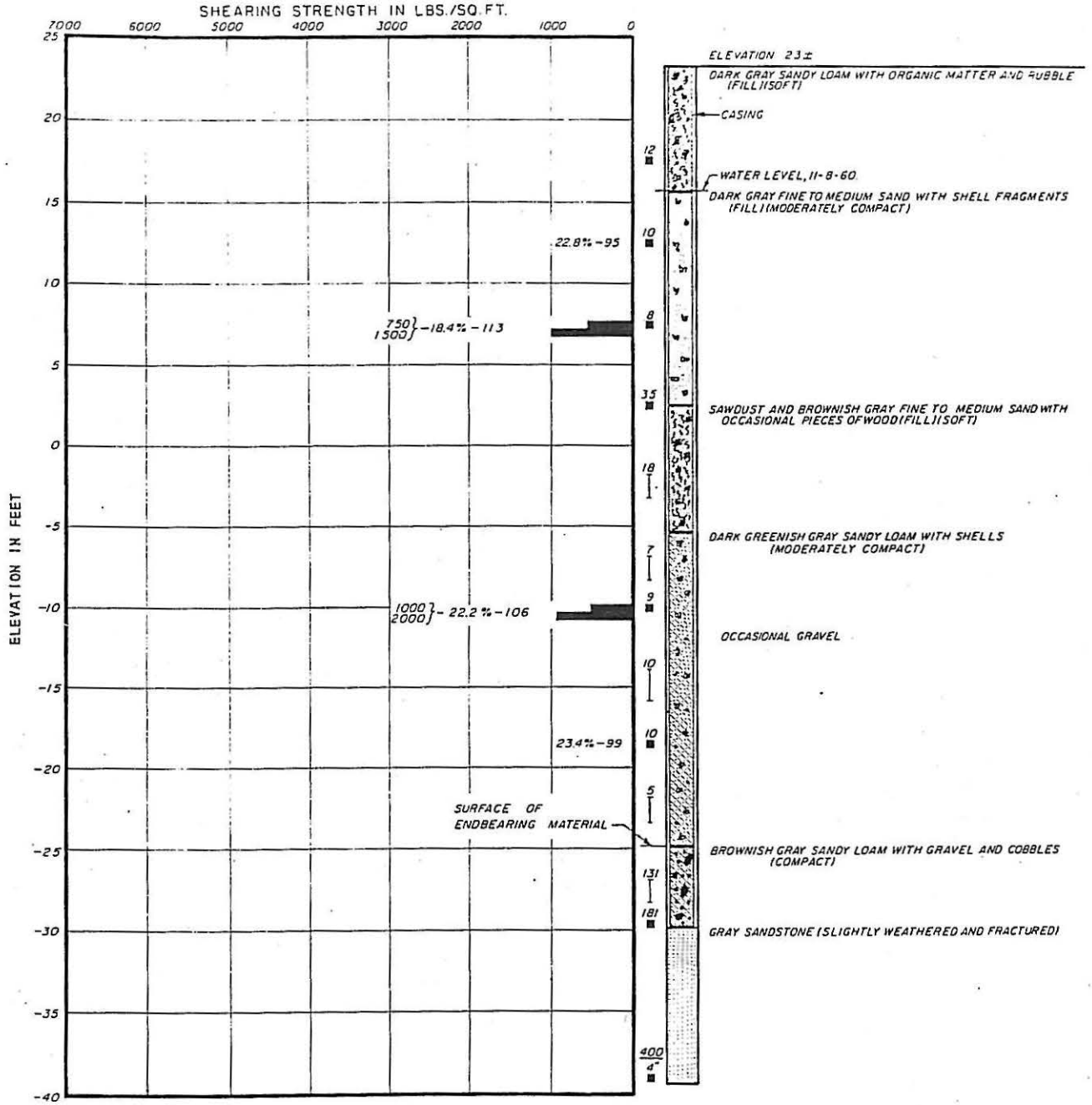
PLOT PLAN

FEET
100 0 100 200

DAMES & MOORE
SOIL MECHANICS ENGINEERS

PLATE 2

BORING 1

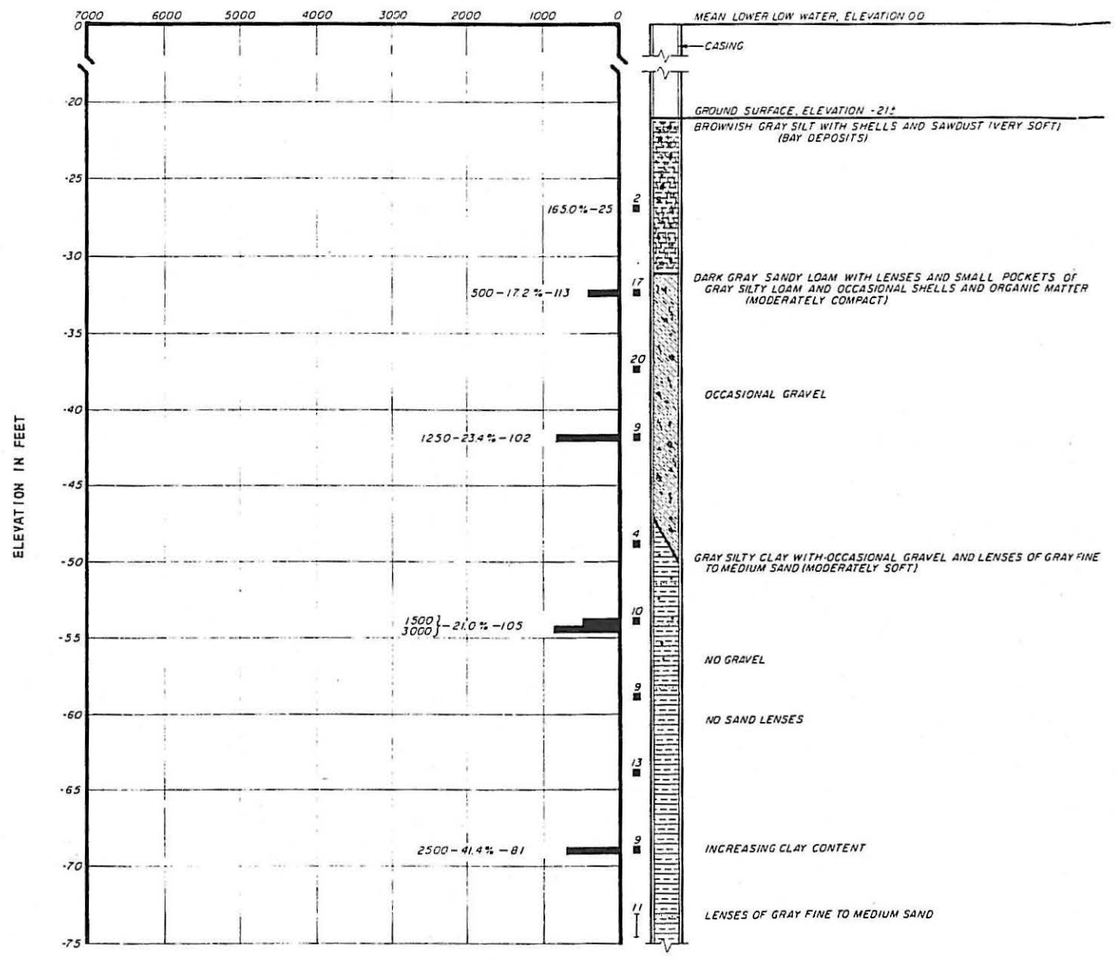


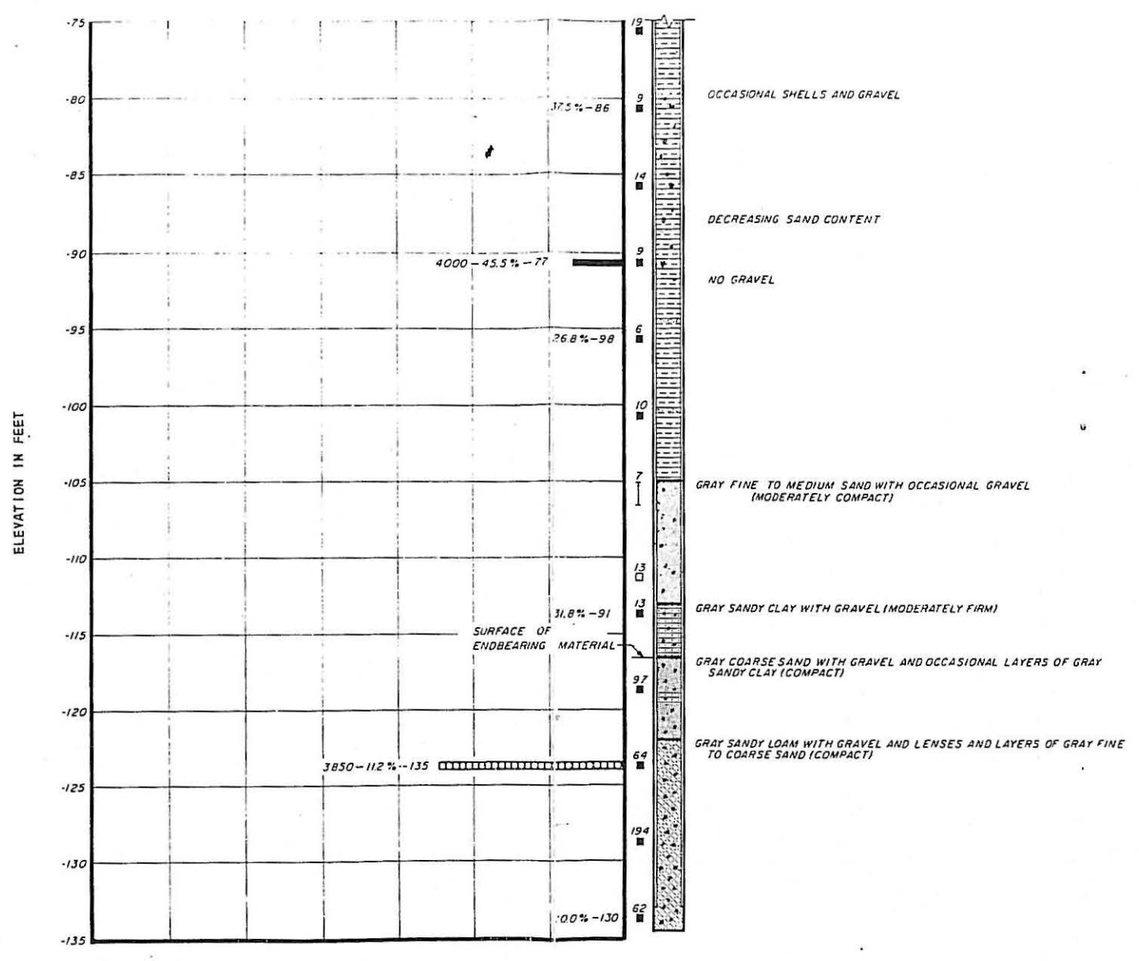
NOTE:
ELEVATIONS REFER TO U.S.C.&G.S. DATUM, (M.L.L.W. = ELEVATION 0.0).

LOG OF BORINGS

DAMES & MOORE
SOIL MECHANICS ENGINEERS

BORING 2





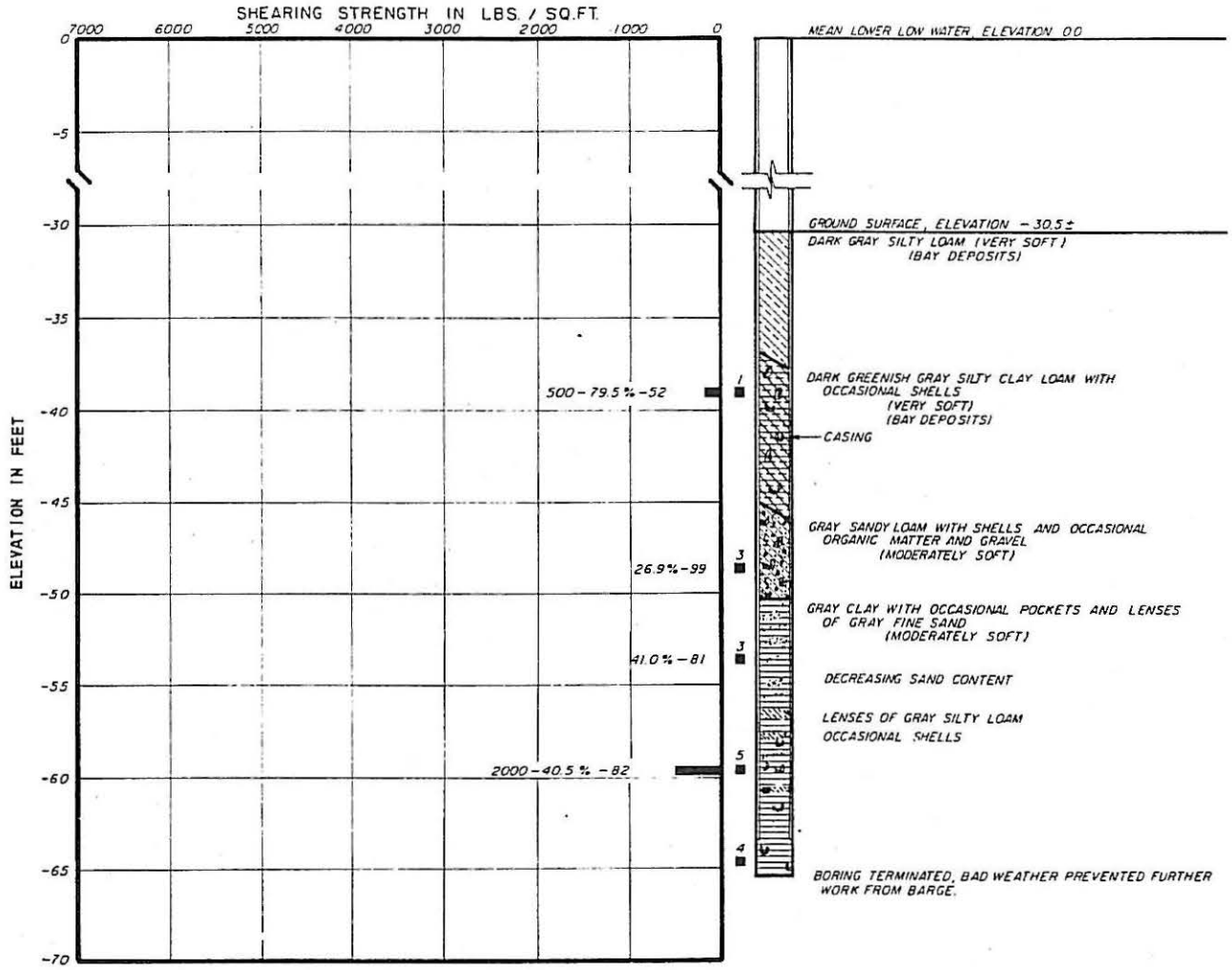
LOG OF BORINGS

DAMES & MOORE
SOIL MECHANICS ENGINEERS

REVISIONS
BY _____ DATE _____
BY _____ DATE _____
PLATE _____ OF _____

FILE 3.5.735-3 - Log of Borings
BY _____ DATE _____
CHECKED BY _____ DATE _____

BORING 3



LOG OF BORINGS

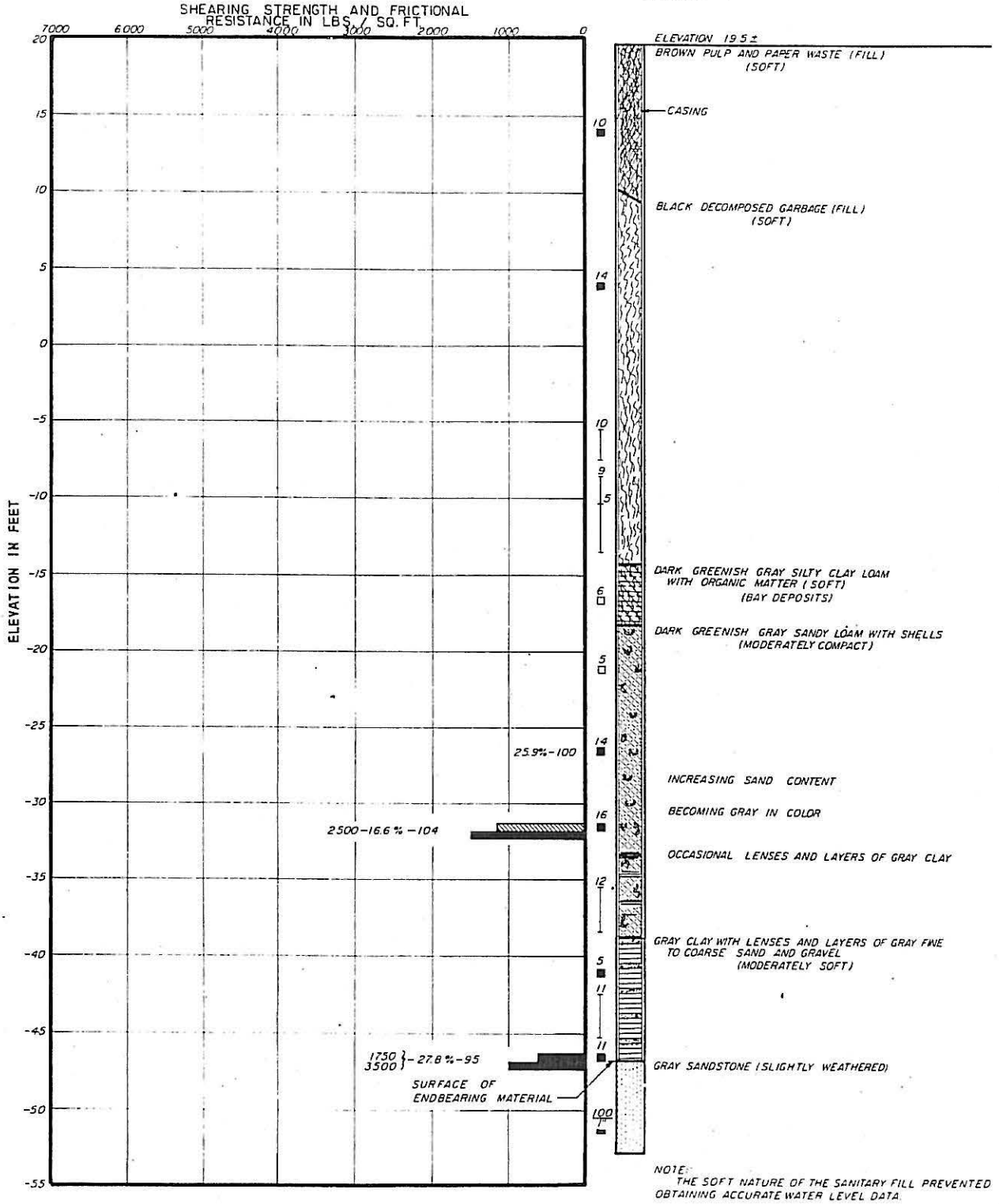
REVISIONS
BY _____ DATE _____
BY _____ DATE _____
PLATE _____ OF _____

FILE 3395-6
Port of Bellingham
BY JSC DATE 11-1-60
CHECKED BY _____ DATE _____

466.10 III

DAMES & MOORE
SOIL MECHANICS ENGINEERS

BORING 4



NOTE:
THE SOFT NATURE OF THE SANITARY FILL PREVENTED OBTAINING ACCURATE WATER LEVEL DATA.

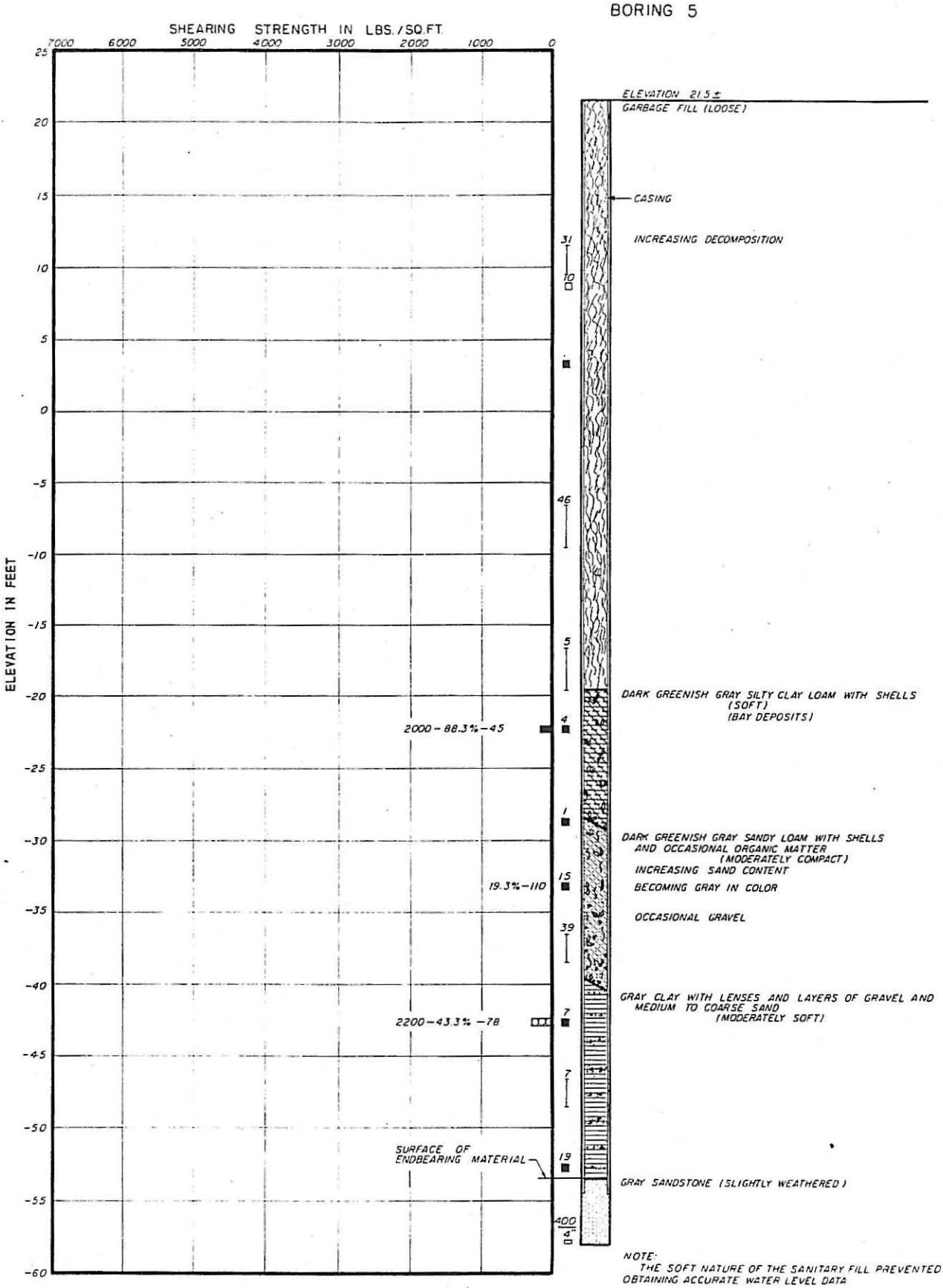
LOG OF BORINGS

REVISIONS
BY _____ DATE _____
BY _____ DATE _____
PLATE _____ OF _____

FILE 3325-B
BY _____ DATE 12-1-60
CHECKED BY _____ DATE _____

DAMES & MOORE
SOIL MECHANICS ENGINEERS

BORING 5



NOTE:
THE SOFT NATURE OF THE SANITARY FILL PREVENTED OBTAINING ACCURATE WATER LEVEL DATA

LOG OF BORINGS

DAMES & MOORI
SOIL MECHANICS ENGINEERS

REVISIONS
BY DATE
BY DATE
PLATE OF

FILE 3325-B
Port of Oakland
BY [illegible] DATE 12-2-60
CHECKED BY [illegible] DATE [illegible]

466.19 (REV.)

W.D. Purnell & Associates 1985

60/020,

REPORT

ENGINEERING GEOLOGY AND GEOTECHNICAL INVESTIGATION

TISSUE WAREHOUSE ADDITIONS

BELLINGHAM DIVISION

GEORGIA-PACIFIC CORPORATION

BELLINGHAM, WA

PRESENTED

BY

W.D. PURNELL & ASSOCIATES

20 MARCH 1985

8418E

Bellingham Bay

D B M 3, Terminated at -65 Elev. Ground at -30'
M.L.L. Water Elev = 0.0

D B M 2, 13.5 EL

D B M 1, -30' EL

D B M 5, -54' EL

D B M 4, -47' EL

B-14, -33' EL.

B-10, -42' EL.

B-9, -27' EL

B-11, -8.5' EL

B-1, -6.5' EL.

B-3, -2.5' EL.

B-2, 0.0' EL.

TP-3, 3.3' EL.

B-12, -18'

B-13, -18' EL.

B-7, -2.5' EL

B-5, 0.0' EL

TP-2, 4.5' EL

B-4, 3.0' EL

TP-1, 8.5' EL

B-6, 1.0' EL.

TP-5, 3.7' EL

Site "B"

Site "A"

TP-6

TP-4

Existing Building

Existing Building

FORMER BURNER FOUNDATION

TYPICAL ROCK CONTOUR

TYPICAL CONTOUR

LIMIT OF GARBAGE FILL

NOTES:

Survey By Construction Surveyors N.W. Inc., 206-733-3383

Key to Data:

- B-5, -50' EL. — Elev. of Bedrock; Boring Number
- TP-5, -10' EL. — Elev. of Bedrock; Test Pit Number
- D B M 5, -50' EL. — Elev. of Bedrock; Boring Number; Ref: Report of Soils Investigation Port of Bellingham February 1962

Rock Contours estimated between borings

P - Piezometer Location

1" = 10'

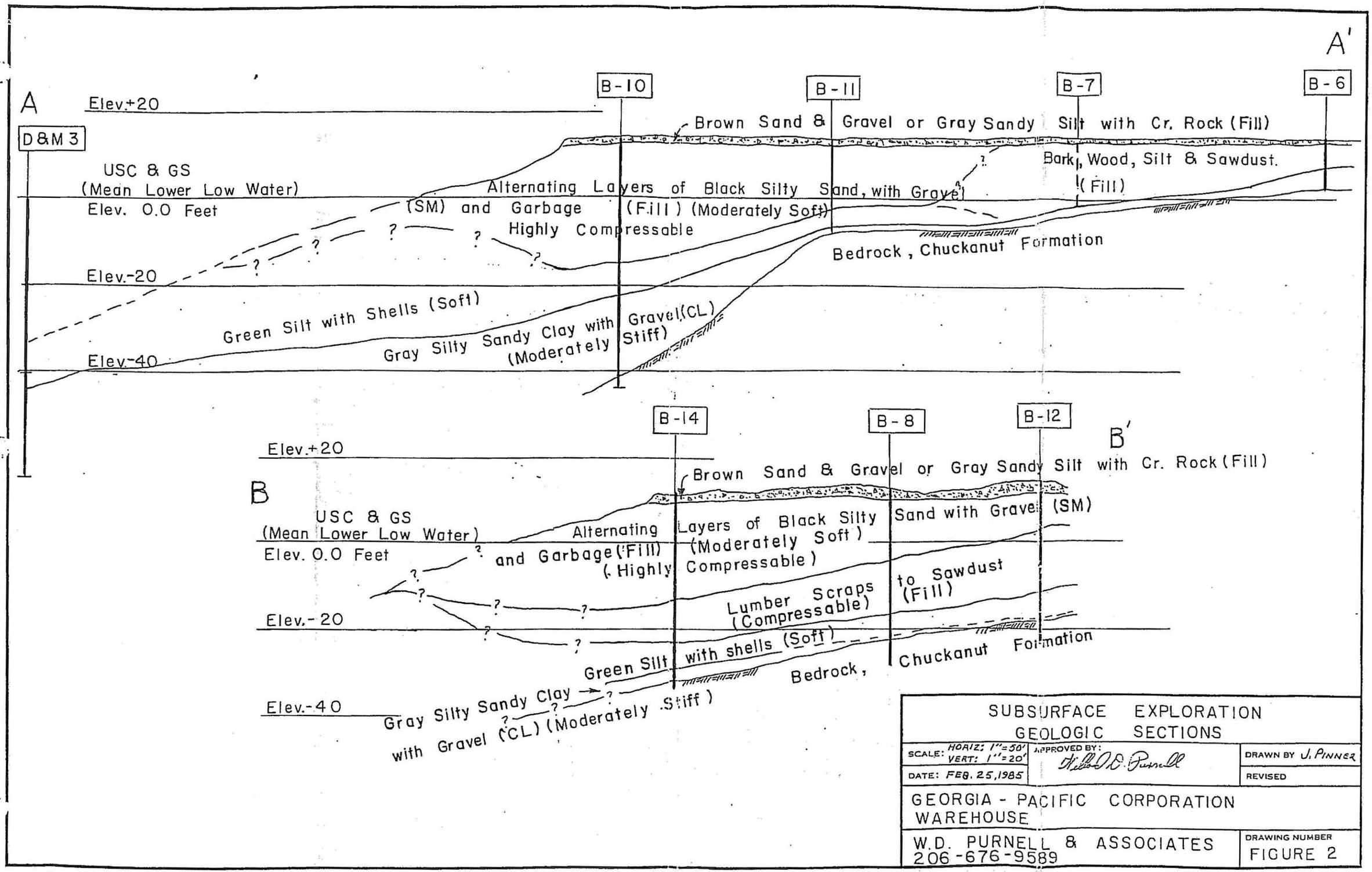
ROCK CONTOURS
PLAN OF TEST PITS & BORING LOCATIONS AND GEOLOGIC SECTIONS

Date: 3-7-85

GEORGIA - PACIFIC CORP. WAREHOUSE

W. D. PURNELL & ASSOCIATES
206-676-9589

FIGURE 1



SUBSURFACE EXPLORATION
GEOLOGIC SECTIONS

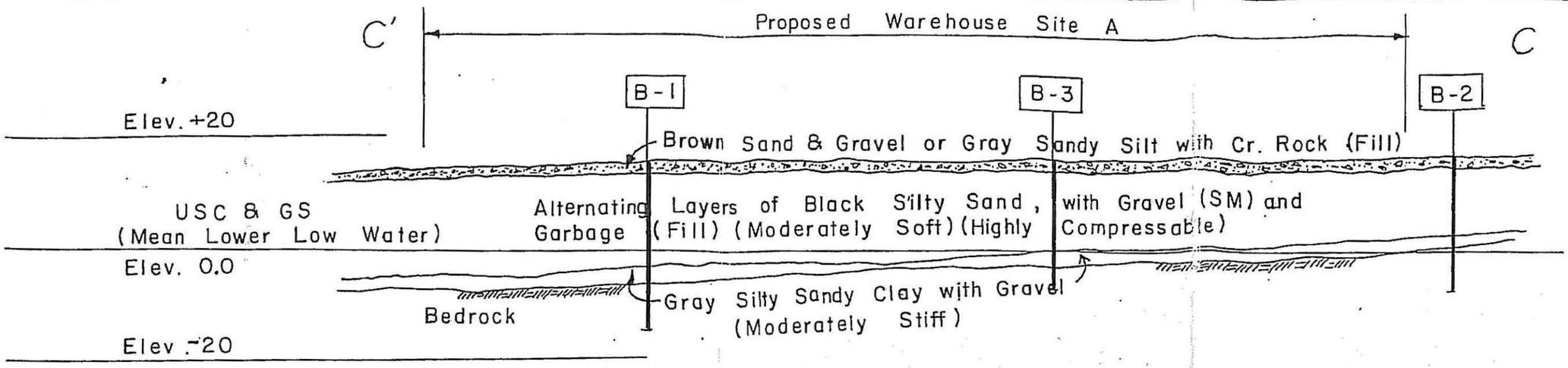
SCALE: HORIZ: 1"=50' VERT: 1"=20'	APPROVED BY: W.D. Purnell	DRAWN BY J. PINNER
DATE: FEB. 25, 1985		REVISED

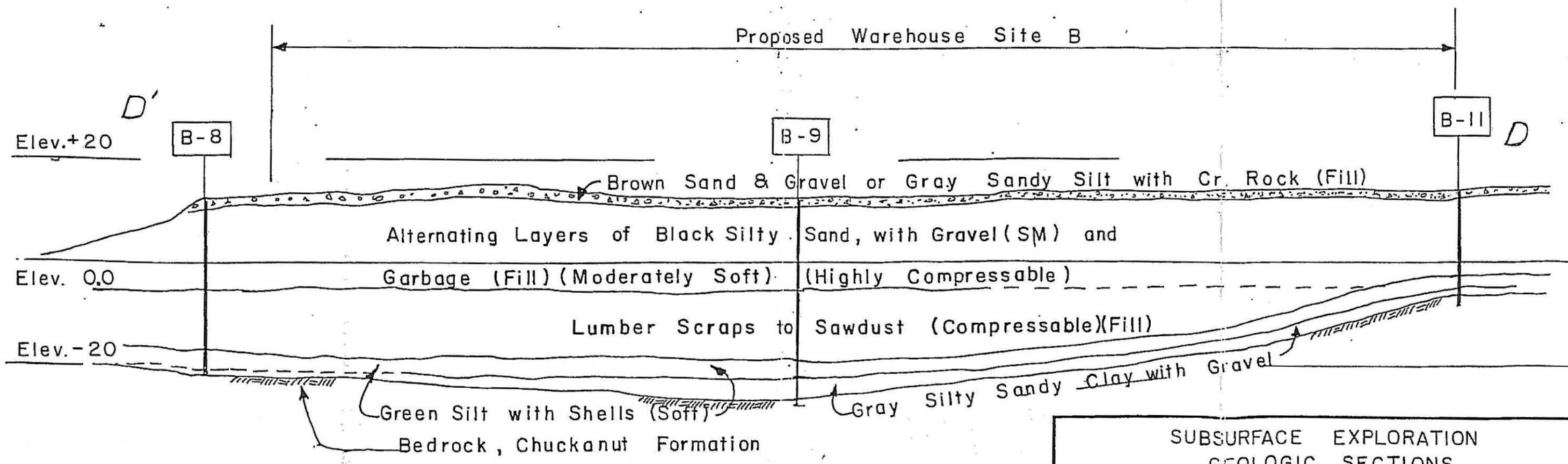
GEORGIA - PACIFIC CORPORATION
WAREHOUSE

W.D. PURNELL & ASSOCIATES
206-676-9589

DRAWING NUMBER
FIGURE 2

11 X 17 PRINTED ON NO. 1000H CLEARPRINT





SUBSURFACE EXPLORATION
GEOLOGIC SECTIONS

SCALE: HORIZ: 1" = 50' VERT: 1" = 20'	APPROVED BY: W. D. Purnell	DRAWN BY V. Pinner
DATE: Feb 25, 1985		REVISED

GEORGIA - PACIFIC CORPORATION
WAREHOUSE

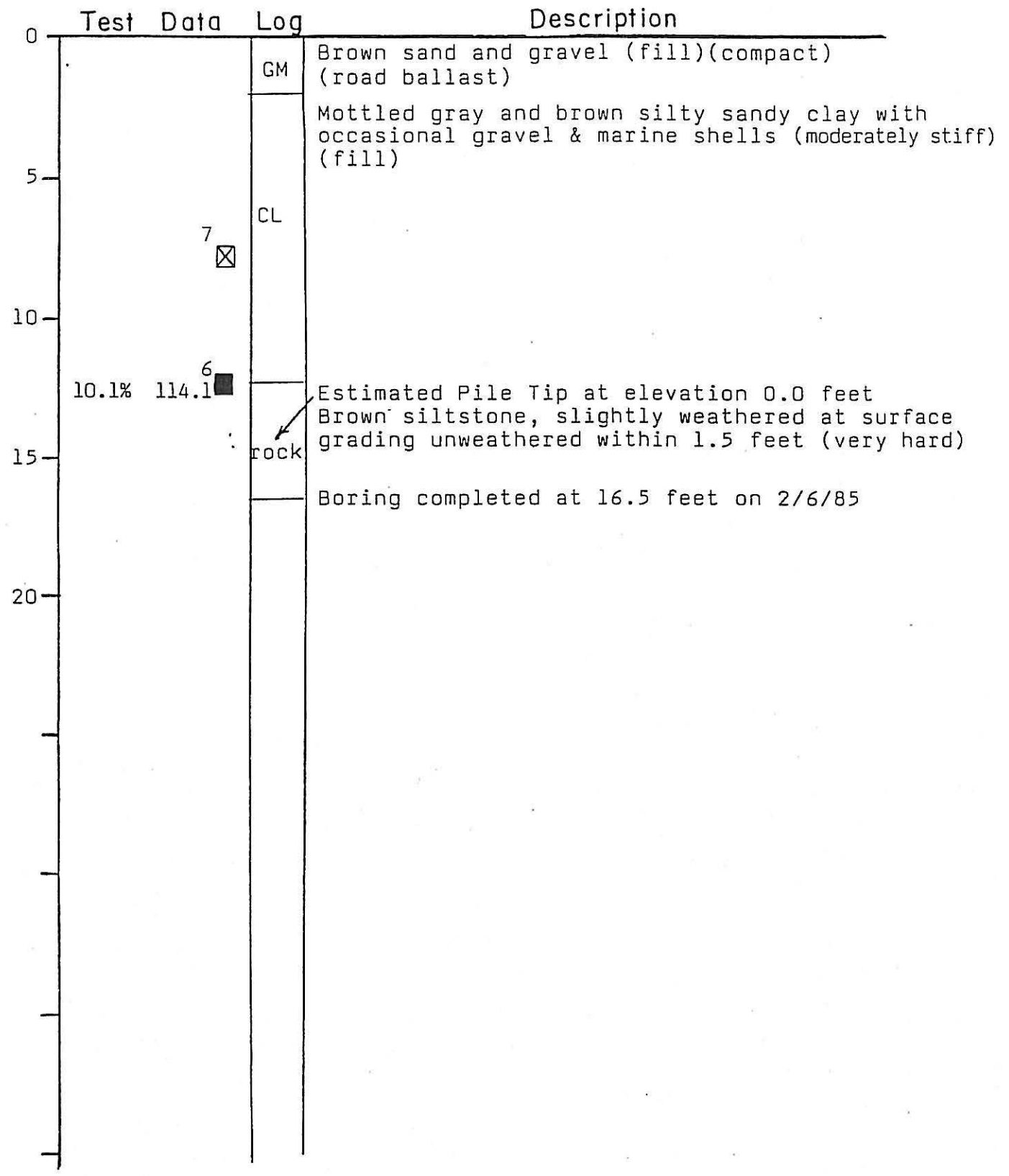
W. D. PURNELL & ASSOCIATES
206-676-9539

DRAWING NUMBER
FIGURE 3

11 X 17 PRINTED ON NO. 1000H CLEARPRINT ®

ELEVATION: 14.3 feet

BORING NO. 6

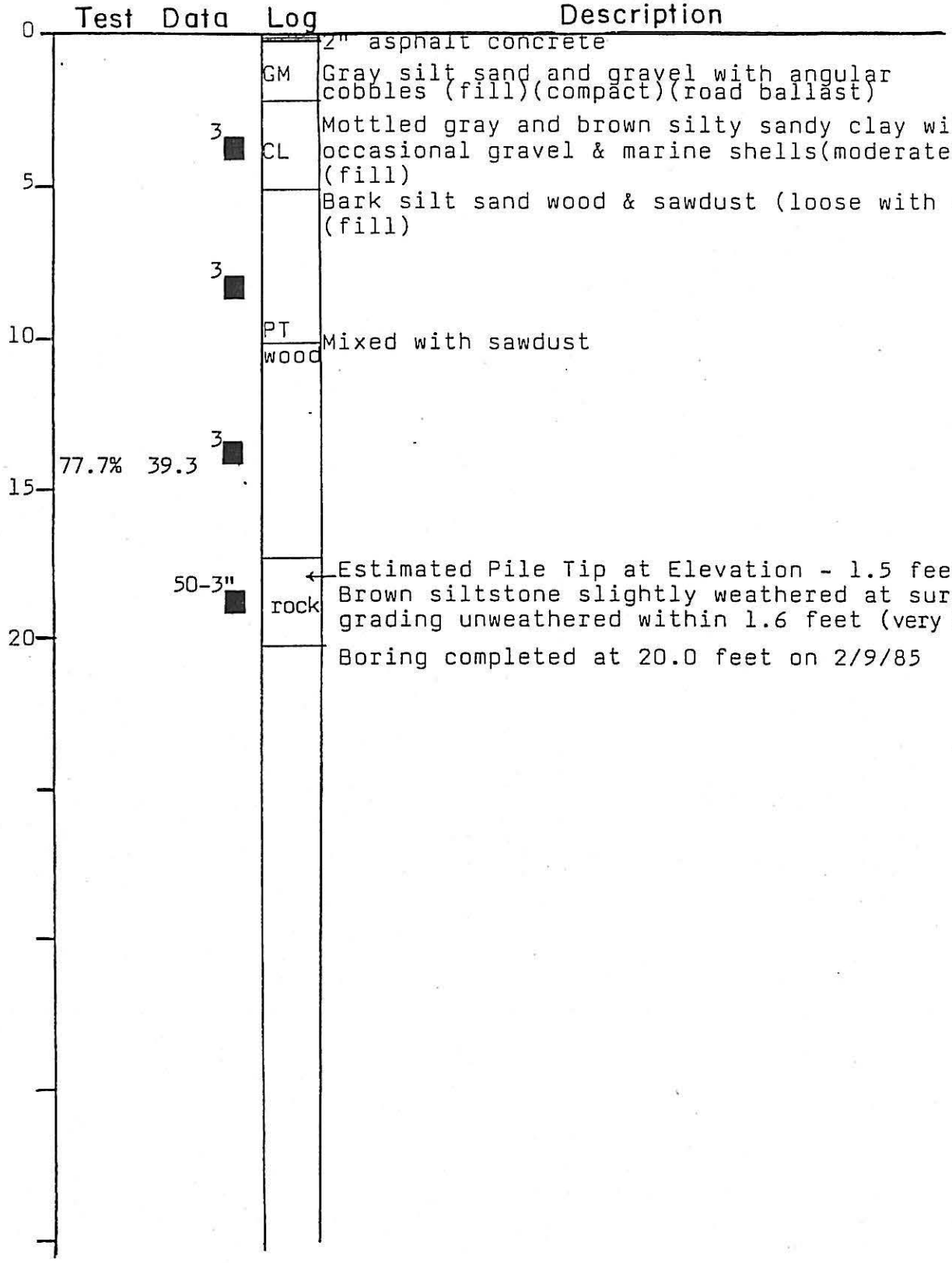


W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT •

ELEVATION: 16.5 feet

BORING NO. 7

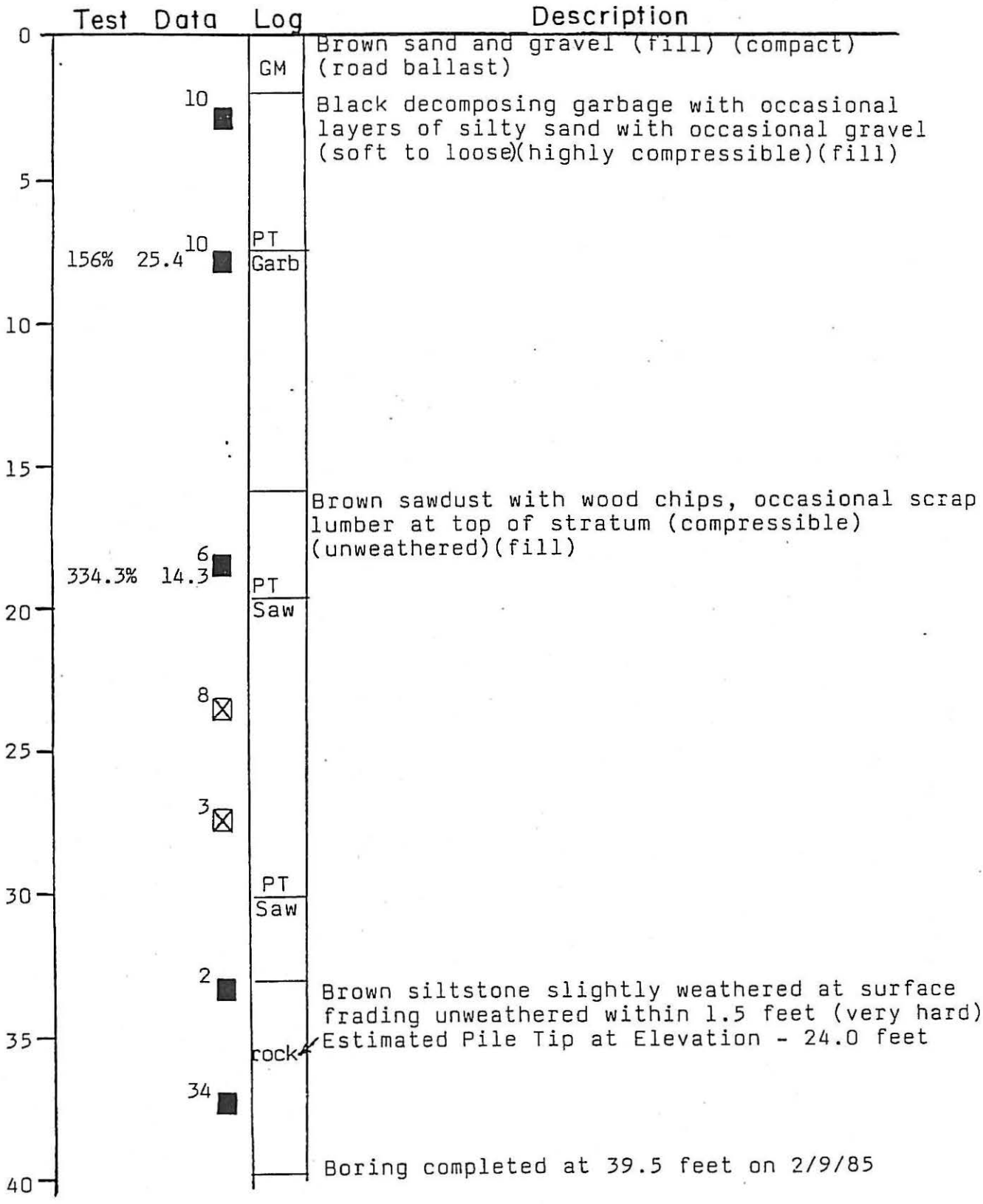


W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT •

ELEVATION: 11.5 feet

BORING NO. 8

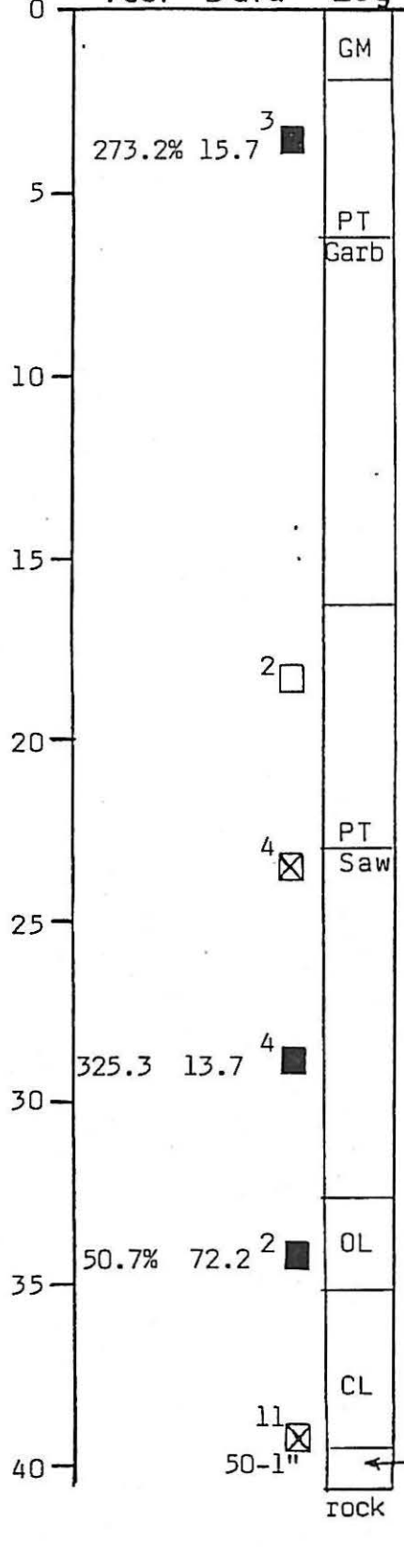


W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 x 17 PRINTED ON NO. 1000H CLEARPRINT •

ELEVATION: 12.4 feet

BORING NO. 9



Gray silt sand and gravel with angular cobbles (fill)(compact(road ballast)

Black decomposing gargabe with occasional gravel (soft to loose)(highly compressible)(fill)

Brown sawdust with wood chips, occasional scrap lumber at top of stratum (compressible) (unweathered)(fill)

Green silt with occasional marine shells (soft)

Gray silty sandy clay with occasional gravel (moderately stiff)

Estimated piling Tip at Elevation-27.5 feet

Brown siltstone, slightly weathered at surface grading unweathered within 1.5 feet (very hard)

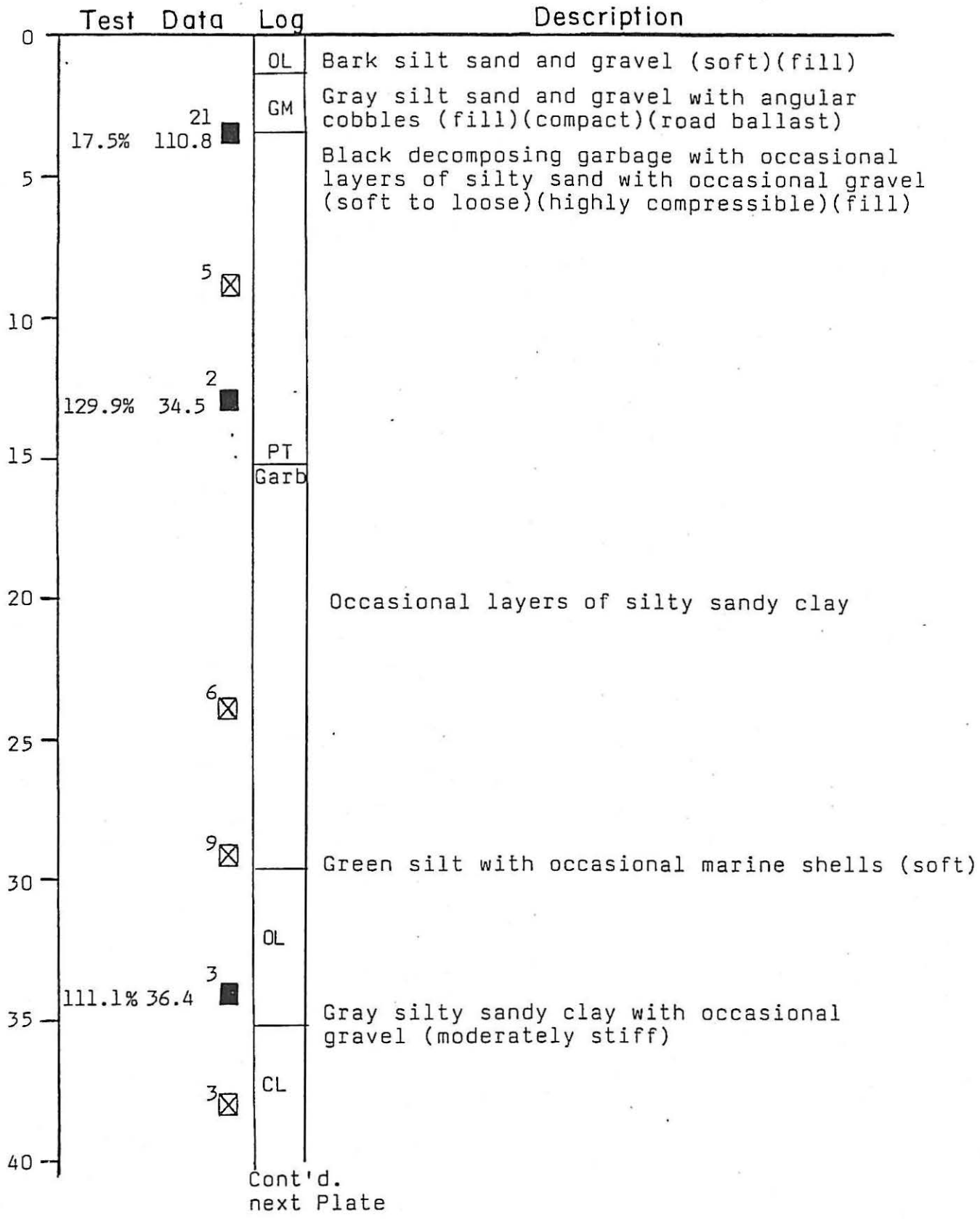
Boring completed at 40.5 feet on 2/9/85

W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT

ELEVATION: 13.6 feet

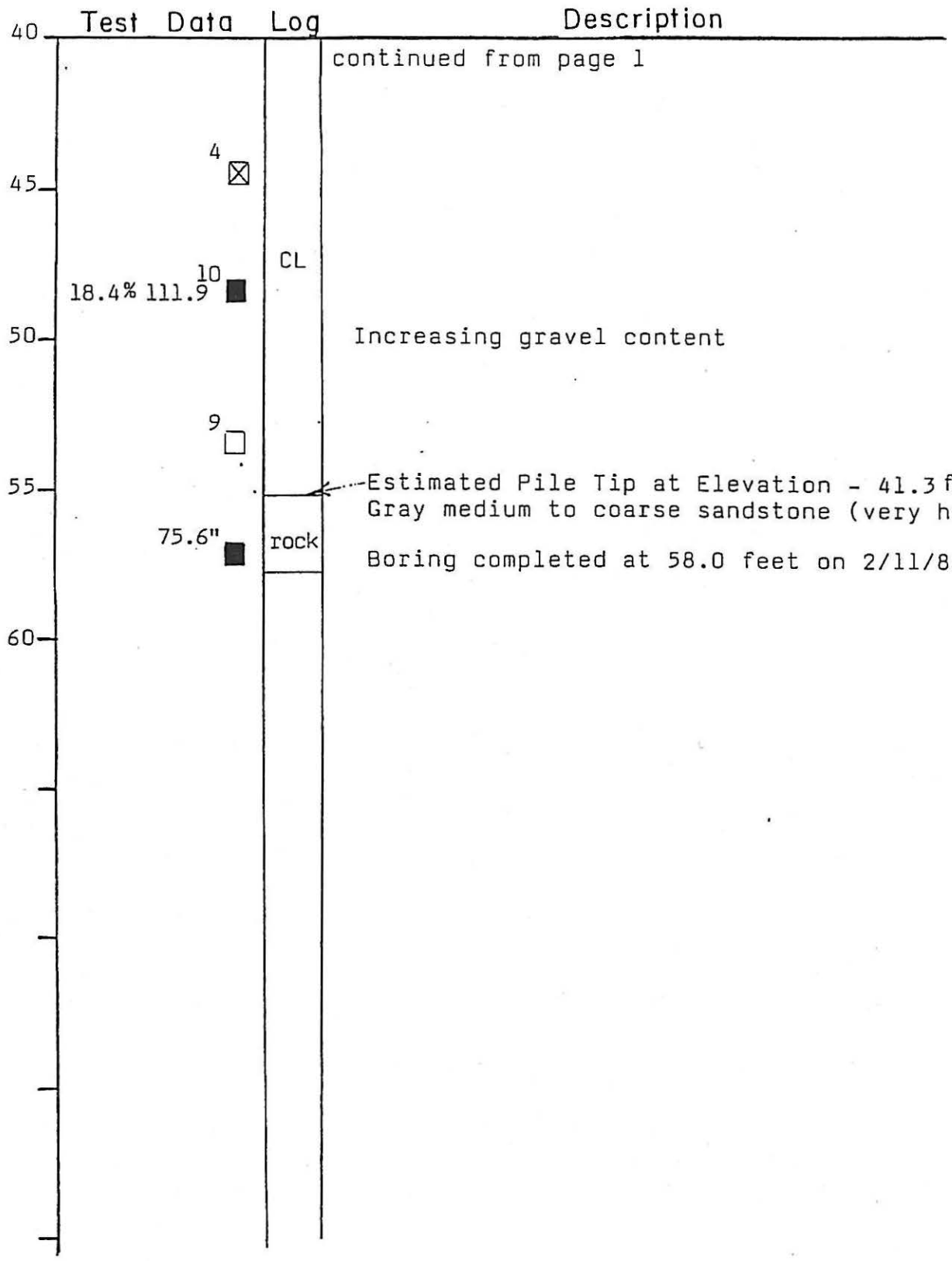
BORING NO. 10
PLATE 1 of 2



W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT.

BORING NO. 10
PLATE 2 of 2

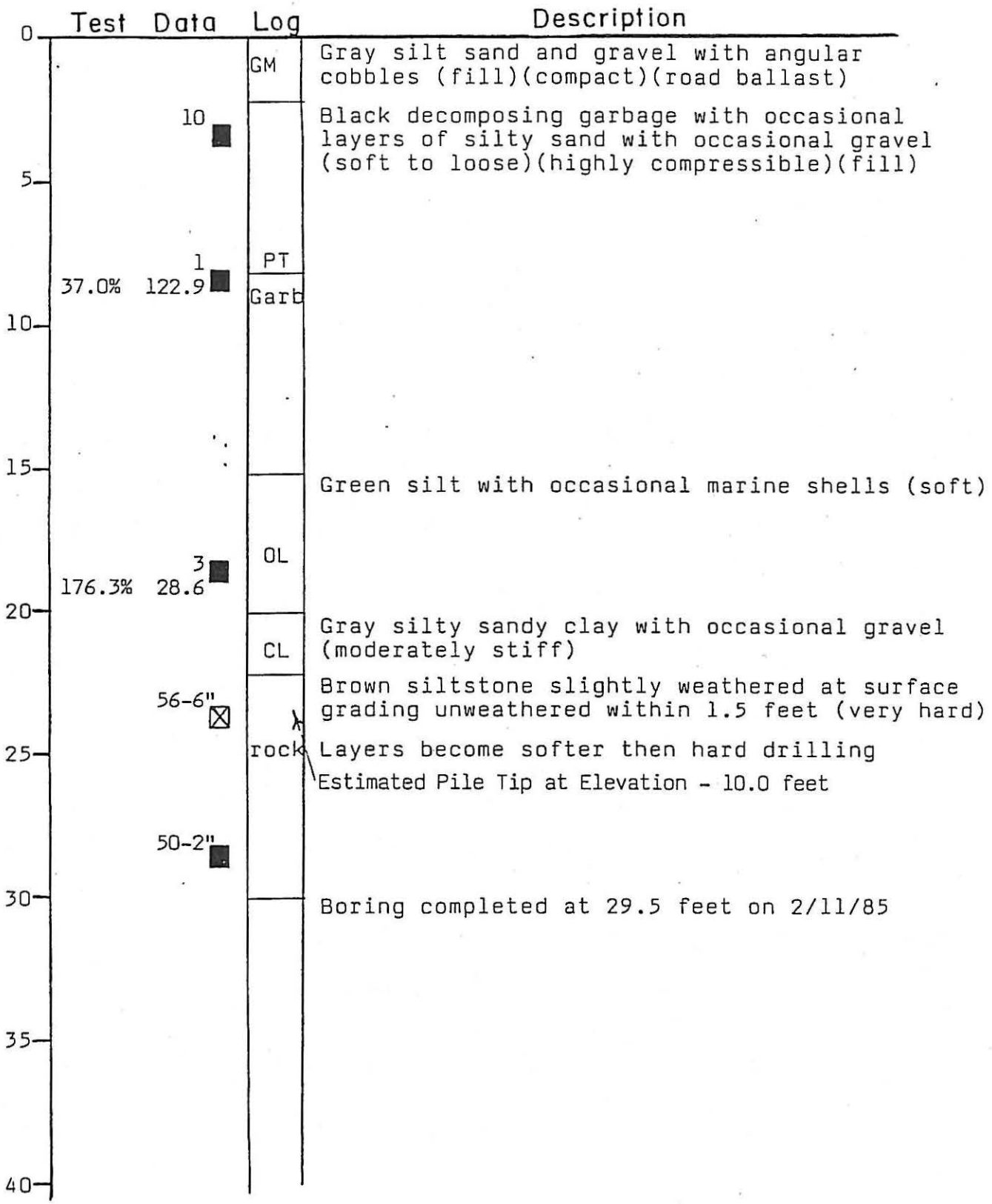


W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT •

ELEVATION: 13.5 feet

BORING NO. 11

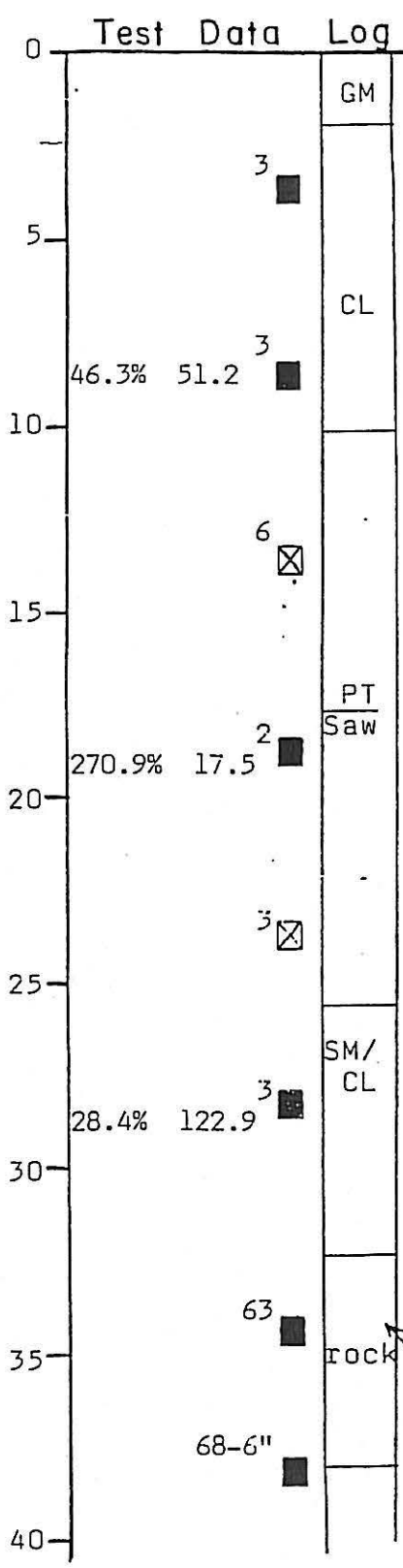


W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT •

ELEVATION 14.0 feet

BORING NO. 12



Description

Brown sand and gravel (fill)(compact) (road ballast)

Mottled gray and brown silty sandy clay with occasional gravel & marine shells (moderately stiff) (fill)

Brown sawdust with wood chips, occasional scrap lumber at top of stratum (compressible)(unweathered) (fill)

Green silty sand grading to gray silty sandy clay with occasional gravel and marine shells

Brown siltstone slightly weathered at surface grading unweathered within 1.5 feet (very hard)

Estimated Pile Tip at Elevation - 20.0 feet

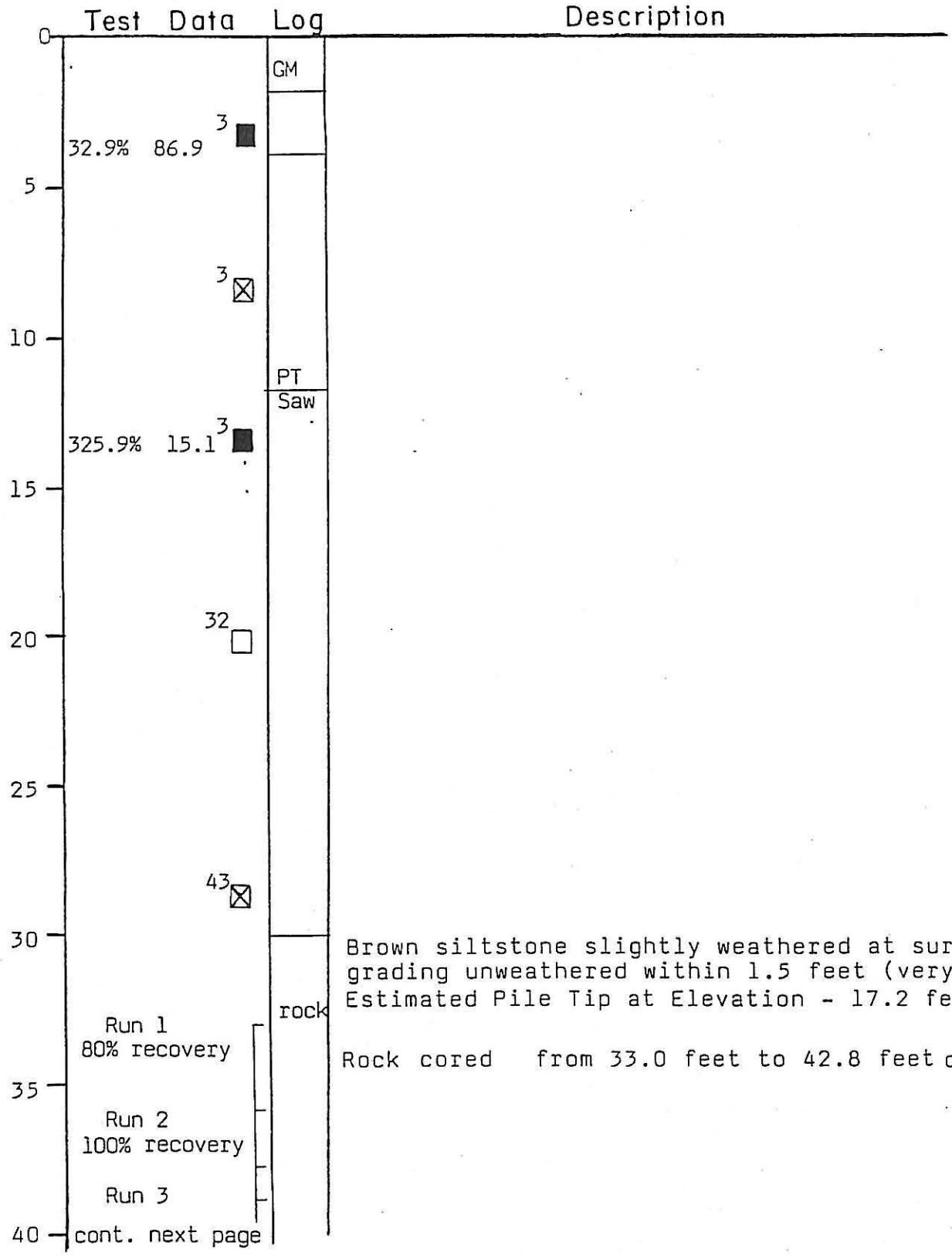
Boring completed at 38.5 feet on 2/11/85

W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT •

ELEVATION: 13.8

BORING NO. 13
PLATE 1 of 2



W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT ●

BORING NO. 13
PLATE 2 of 2

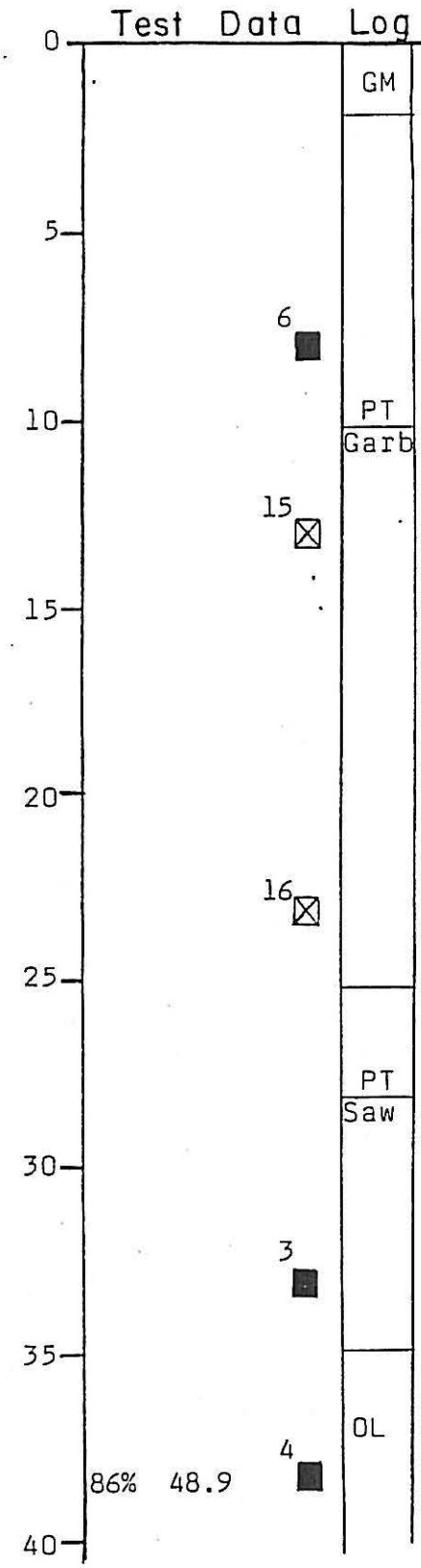
	Test Data	Log	Description
40	Run 3 100% recovery	rock	continued from page 1
45			Auger refused to advance further Boring completed at 44.5 feet on 2/13/85

W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT

ELEVATION: 11.5 feet

BORING NO. 14
PLATE 1 of 2



Description

Brown sand and gravel (fill)(compact) (road ballast)

Black decomposing garbage with occasional layers of silty sand with occasional gravel (soft to loose)(highly compressible)(fill)

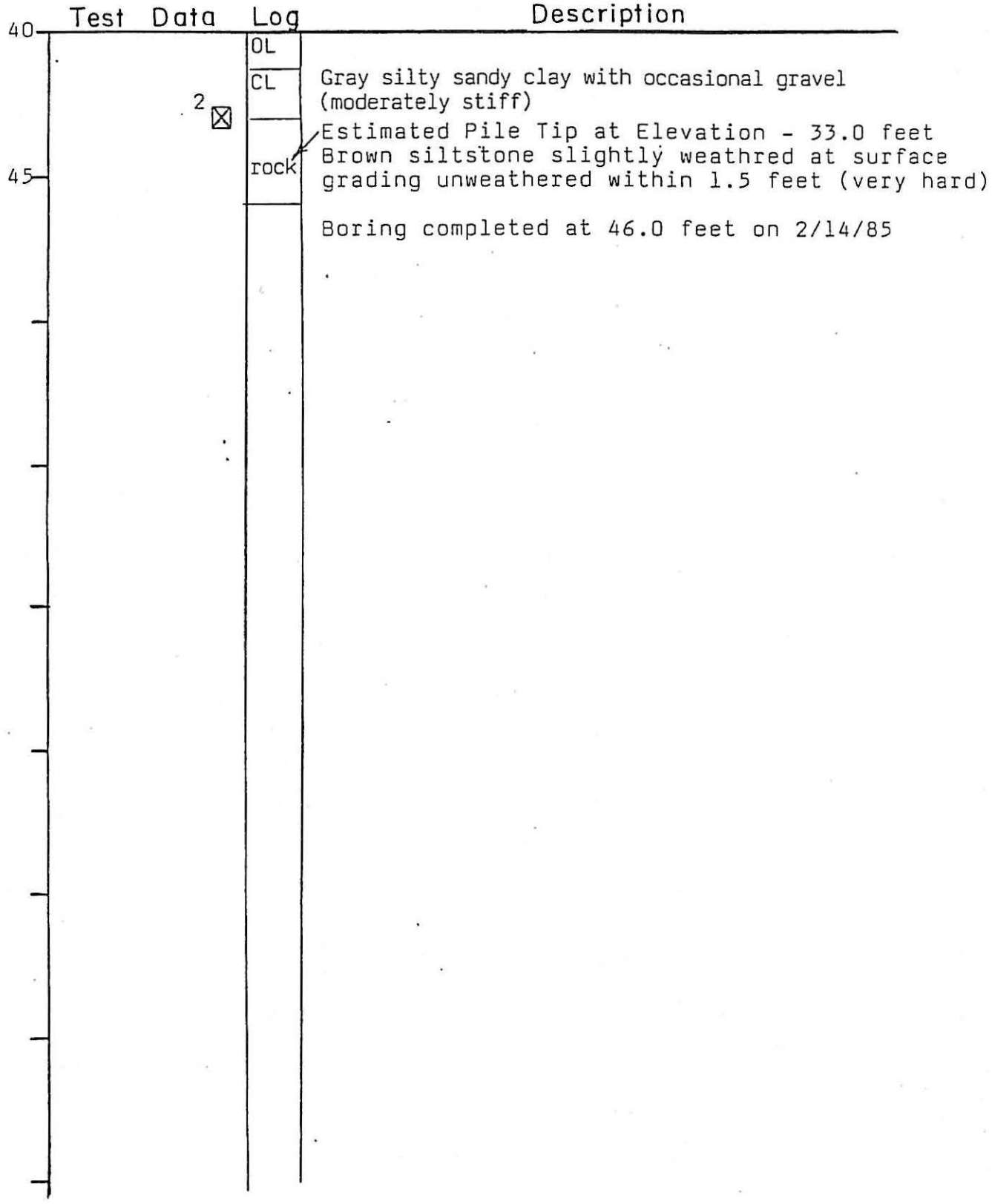
Brown sawdust with wood chips, occasional scrap lumber at top of stratum (compressible) (unweathered)(fill)

Green silt with occasional marine shells (soft)

W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT •

BORING NO. 14
PLATE 2 of 2



W. D. PURNELL & ASSOCIATES | EXPLORATION LOG

11 X 17 PRINTED ON NO. 1000H CLEARPRINT •

Integral Consulting, Inc. 2007

Integral Consulting Inc.
1201 Cornwall Avenue
Suite 208
Bellingham, WA 98225

telephone: 360.756.9296
facsimile: 206.756.7914
www.integral-corp.com

March 5, 2007 C330-0104

Ms. Gina Gobo, P.E.
Project Engineer
Parks & Recreation Department
City of Bellingham
3424 Meridian Street
Bellingham, WA 98225

Subject: **Letter Report for Focused Site Characterization**
Pavilion Donation Project, Boulevard Park, Bellingham WA

Dear Gina:

This letter report presents a focused site characterization and geotechnical engineering evaluation in support of the proposed Pavilion Donation Project located in Boulevard Park, Bellingham, Washington (Figure 1). The purpose of this work is to assist the City of Bellingham Parks & Recreation Department (City) with the evaluation of soil quality and physical characteristics in the design and construction of a 30 ft by 30 ft, one-story timber-framed pavilion with foundation on the park site (Cascade Joinery 2006). Soil borings were advanced at two locations within the proposed footprint of the pavilion on January 26, 2007. Soil samples collected from the borings were delivered to Analytical Resources, Incorporated (ARI) for chemical and physical testing on January 27, 2007.

The sections below present a summary of the field and analytical methods used during the focused site characterization followed by a description of the site geology and hydrogeology and comparison of analytical results to the Washington State Model Toxics Control Act (MTCA) Method A soil cleanup levels for unrestricted use. The comparison to MTCA cleanup levels is followed by the geotechnical engineering evaluation including design level earthwork and foundation recommendations for the design and construction of the proposed pavilion in Boulevard Park.

Integral Consulting Inc. (Integral) has prepared this report for the City and their designated agents, as described in our scope of work dated October 26, 2006 (Integral 2006). This report has been prepared in accordance with generally accepted professional environmental and engineering practices related to this type of work completed in the same or similar localities, at the time the work was performed. No other warranty, express or implied, is made.

integral

1201 Cornwall Avenue, Suite 208
Bellingham, WA 98225
(360) 756-9296 FAX (360) 756-7914

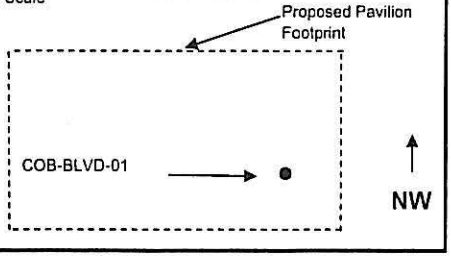
BOREHOLE NUMBER	COB-BLVD-01
PROJECT	Boulevard Park Pavilion
LOCATION	Bellingham, Washington
PROJECT NUMBER	C330-0102
LOGGED BY	Mark Herrenkohl, PEG & Jeff Ninnemann
DATE	1/26/2007

SAMPLE INFORMATION							Depth (ft)	STRATA	DESCRIPTION
Sample ID	Time	Blow Counts	% Recovery	PID/FID	Sheen	Sample Depth (ft)			Secondary soil type(s), Primary soil type(s) (CAPS), modifers, approximate grain size distribution, color (Munsell), density, moisture content, odor, plasticity, etc. (parentheses)
-	-	-	-	-	-	-			Grass removed before sampling
		3						SM	(1.3 ft recovery) Silty fine SAND with clay and root fragements, worm observed,
BLVD0001	0815	3	87%	0.0	No	0.5-2			no odor, (10YR 3/4), loose, moist grading to
		6					2--	ML/CL	Silty CLAY/Clayey SILT with fine sand, (10YR 4/3), soft, moist, no odor, (Fill)
		5							(1.5 ft recovery)
BLVD0002	0825	4	100%	0.0	No	2.5-4		SM/ML	Interbedded silts and SANDs with clay and gravel, mottled color gray to brown,
		4					4--		(10YR 4/1), Sands (fine to medium), gravel fine plus 1-inch coarse gravel,
									no odor, moist, (loose/soft) (Fill)
		2							(1.5 ft recovery)
BLVD0003	0835	2	100%	0.0	No	5-6.5		OL/PT	Organic SILT or CLAY with fine Sand, (5YR 5/1), mostly bark material, soft, wet,
		2					6--	▼	grading to Peat of mostly bark and fine organic debris, (5YR 4/3), moderate
									sulfide odor, moist to wet, soft, (Fill)
		1							(0.9 ft recovery)
BLVD0004	0845	1	60%	0.0	No	7.5-9	8--	PT	Highly organic wood debris (fine bark and chips) in SILTCLAY with fine Sand matrix,
		1							black (10YR 2/1), slight sulfide odor, wet, very soft (Fill)
		3					10--		(0.7ft recovery)
BLVD0005	0850	3	47%	0.0	No	10-11.5		PT	Highly organic wood debris (fine bark and chips) in Silty fine SAND with
		2							clay matrix, black (10YR 2/1), slight organic/sulfide odor, wet, soft (Fill)
							12--		
							14--		

DRILLING CONTRACTOR	Boretec, Inc.
DRILLING METHOD	Hollow-Stem Auger
SAMPLING EQUIPMENT	California Modified Split-Spoon
COORDINATES	N48° 43.9724' W122° 30.0608'
DRILLING STARTED	0815 Ended 0940
SURFACE ELEVATION	
DATUMS	

Location Sketch

Not to Scale



integral consulting inc.
1201 Cornwall Avenue, Suite 208
Bellingham, WA 98225
(360) 756-9296 FAX (360) 756-7914

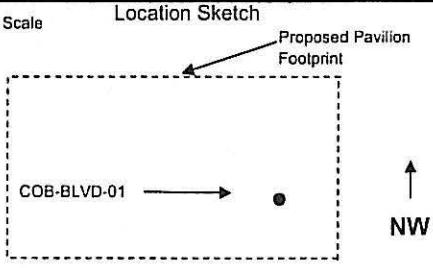
BOREHOLE NUMBER	COB-BLVD-01
PROJECT	Boulevard Park Pavilion
LOCATION	Bellingham, Washington
PROJECT NUMBER	C330-0102
LOGGED BY	Mark Herrenkohl, PEG & Jeff Ninnemann
DATE	1/26/2007

SAMPLE INFORMATION							Depth (ft)	STRATA	DESCRIPTION
Sample ID	Time	Blow Counts	% Recovery	PID/FID	Sheen	Sample Depth (ft)			Secondary soil type(s), Primary soil type(s) (CAPS), modifers, approximate grain size distribution, color (Munsell), density, moisture content, odor, plasticity, etc. (parentheses)
		3							(0.5ft recovery)
BLVD0006	0915	2	33%	0.0	No	15-16.5	16--	PT	Highly organic wood debris (fine bark and chips) in Silty fine SAND with
		1							clay matrix, black (10YR 2/1), slight organic/sulfide odor, wet to saturated, soft
									(Fill)
							18--		
							20--		
		4							(0.6 ft recovery)
BLVD0007	0921	3	40%	0.0	Yes	20-21.5		PT	Highly organic wood debris with Silty SAND matrix, Black (10YR 2/1), soft,
		3							wet to saturated, moderate petroleum odor and sheen (Fill)
							22--		
									Soils become stiffer @23.5ft according to the drillers
							24--		Clayey SILT with fine Sand, (65% silt, 20% clay, <15% sand), (5Y 6/1), stiff,
								ML	damp to moist, slight to moderate petroleum odor (small sample in shoe)
BLVD0008	0940		No	0.0	Yes	24-25			
	Refusal								Refusal at ~25ft, drilling smooth, likely Chuckanut Sandstone or smooth bedrock.
							26--		

DRILLING CONTRACTOR	Boretec, Inc.
DRILLING METHOD	Hollow-Stem Auger
SAMPLING EQUIPMENT	California Modified Split-Spoon
COORDINATES	N48° 43.9724' W122° 30.0608'
DRILLING STARTED	0815 Ended 0940
SURFACE ELEVATION	
DATUMS	

Location Sketch

Not to Scale



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Bellingham, WA 98225
(360) 756-9296 FAX (360) 756-7914

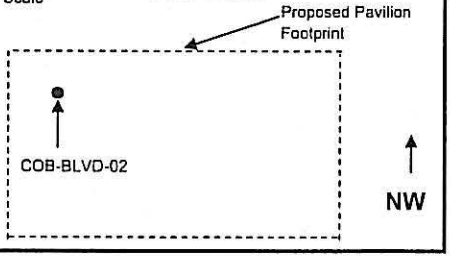
BOREHOLE NUMBER	COB-BLVD-02
PROJECT	Boulevard Park Pavilion
LOCATION	Bellingham, Washington
PROJECT NUMBER	C330-0102
LOGGED BY	Mark Herrenkohl, PEG & Jeff Ninnemann
DATE	1/26/2007

SAMPLE INFORMATION							Depth (ft)	STRATA	DESCRIPTION
Sample ID	Time	Blow Counts	% Recovery	PID/FID	Sheen	Sample Depth (ft)			Secondary soil type(s), Primary soil type(s) (CAPS), modifers, approximate grain size distribution, color (Munsell), density, moisture content, odor, plasticity, etc. (parentheses)
-	-	-	-	-	-	-			Grass removed before sampling
		5						SM/ GM	(1.1 ft recovery)
BLVD0009	1010	8	73%	0.0	No	0.5-2			Silty fine SAND with clay grading to Gravelly (fine-medium) SAND with fines and up to
		15					2--		2" Gravel observed, (10YR3/3), loose, damp to moist, no odor (Fill)
		6						ML/CL	(1.3 ft recovery) Sandy Clayey SILT (old soil),
BLVD0010	1020	8	87%	0.0	No	2.5-4			roots and wood chucks at boundary (10YR4/2)
		8					4--	SM	Silty fine to medium SAND with Clay (2.5YR 4/1), loose, moist, no odor, (Fill)
		2							(1.1 ft recovery)
BLVD0011	1025	2	73%	0.0	No	5-6.5		PT	Highly organic wood debris in Clayey SILT with Sand matrix, (10YR2/1),
		2					6--	▼	very soft, moist to wet, slight organic odor, (Fill)
		1							(0.8 ft recovery)
BLVD0012	1035	1	53%	0.0	No	7.5-9	8--	PT	Highly organic wood debris in fine Sand matrix, Black, very soft,
		1							wet to saturated, no (obvious) odor, (Fill)
									(0.4 ft recovery)
		2					10--	PT	Highly organic wood debris in fine Sand matrix, Black, very soft,
BLVD0013	1040	2	27%	0.0	No	10-11.5			wet to saturated, no (obvious) odor, (Fill)
		2							
							12--		
							14--		

DRILLING CONTRACTOR	Boretec, Inc.
DRILLING METHOD	Hollow-Stem Auger
SAMPLING EQUIPMENT	California Modified Split-Spoon
COORDINATES	N48° 43.9722' W122° 30.0621'
DRILLING STARTED	1010 Ended 1125
SURFACE ELEVATION	
DATUMS	

Location Sketch

Not to Scale



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Bellingham, WA 98225
(360) 756-9296 FAX (360) 756-7914

BOREHOLE NUMBER COB-BLVD-02
PROJECT Boulevard Park Pavilion
LOCATION Bellingham, Washington
PROJECT NUMBER C330-0102
LOGGED BY Mark Herrenkohl, PEG & Jeff Ninnemann
DATE 1/26/2007

SAMPLE INFORMATION							Depth (ft)	STRATA	DESCRIPTION
Sample ID	Time	Blow Counts	% Recovery	PID/FID	Sheen	Sample Depth (ft)			Secondary soil type(s), Primary soil type(s) (CAPS), modifers, approximate grain size distribution, color (Munsell), density, moisture content, odor, plasticity, etc. (parentheses)
		1							(0.4 ft recovery) low recovery
BLVD0014	1043	2	27%	0.0	No	15-16.5	16--	PT	Highly organic wood debris in very fine Sand matrix, Black, very soft,
		1							wet to saturated, slight to moderate sulfide odor, (Fill)
		2							(0.8 ft recovery)
BLVD0015	1055	1	53%	0.0	No	17.5-19	18--	PT	Highly organic wood debris in fine Sand matrix, Black, very soft,
		1							wet to saturated, slight sulfide odor, (Fill)
		1					20--		(0.4 ft recovery)
BLVD0016	1100	1	27%	0.0	No	20-21.5		PT	Highly organic wood debris in fine Sand matrix, Black, very soft,
		2							wet to saturated, slight sulfide odor, (Fill)
		2					22--		(0.8 ft recovery)
BLVD0017	1110	2	67%	0.0	Yes	22.5-24		PT	Highly organic wood debris in fine Sand matrix, Black, very soft, wet to saturated, moderate to strong petroleum odor,
		3					24--	SM	Silty Clayey fine to medium SAND with shell fragments, gray (10YR 4/1), loose wet to saturated, strong petroleum odor, spotty sheen throughout, (Native)
		10							(no recovery)
--	1125	50	0%	0.0	Yes	25-25.5	26--		
		for 5"							Refusal at ~25.5ft bedrock

Note: Upper 0-2.5 ft of soils collected for compaction test (BLVD0018)

DRILLING CONTRACTOR	Boretec, Inc.
DRILLING METHOD	Hollow-Stem Auger
SAMPLING EQUIPMENT	California Modified Split-Spoon
COORDINATES	N48° 43.9722' W122° 30.0621'
DRILLING STARTED	1010 Ended 1125
SURFACE ELEVATION	
DATUMS	

Location Sketch

Not to Scale

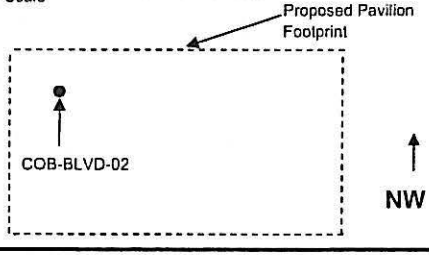


Table B-1. Conversion from Non-Standard Blow Counts to SPT Values
Boulevard Park Pavilion Project

By: Mark Otten PE
Created: Feb. 20, 2007
Checked By: Mark Herrenkohl PEG

$N = N' [WH/4200]x[(2.0^2-1.375^2)/(D_o^2-D_i^2)$

N' is non-standard blow count
N is STP blow count
W is hammer weight in pounds
H is hammer drop height in inches
D_o is outside diameter of sampler in inches
D_i is inside diameter of sampler in inches

W	H	D_o	D_i	$[4200/WH][(2.0^2-1.375^2)/(D_o^2-D_i^2)]$
140	30	3.0	2.375	0.628
140	30	2.0	1.375	1.000

Boring	Depth	N'	N	Soil unit
Blvd 01	0.5-2.5	9	6	Silty sand / silty clay (Fill)
	2.5-4.0	8	5	Interbedded sand and silt with clay (Fill)
	5.0-6.5	4	3	Organic silt
	7.5-9.0	2	1	Wood fibers with silt
	10-11.5	5	3	Wood fibers with silt
	15-16.5	3	2	Wood fibers with silt
	20-21.5	6	4	Wood fibers with silt
	23.5-25			Clayey silt with fine sand
	25	Refusal		Bedrock (Chuckanut Formation?)
Blvd 02	0.5-2.5	23	14	Silty sand to gravelly sand (Fill)
	2.5-4.0	16	10	Sandy clay to silty sand (Fill)
	5.0-6.5	4	3	Wood fibers with silt
	7.5-9.0	2	1	Wood fibers with silt
	10-11.5	4	3	Wood fibers with silt
	15-16.5	3	2	Wood fibers with silt
	17.5-19	2	1	Wood fibers with silt
	20-21.5	3	2	Wood fibers with silt
	22.5-24	5	3	Silty sand at 24 ft.
	25-25.5	50/5 in		Bedrock (Chuckanut Formation?)

Landau Associates 2009

Draft
Cornwall Avenue Landfill Remedial Investigation/Feasibility Study
Bellingham, Washington

In preparation

Prepared for

Port of Bellingham
Bellingham, Washington

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

Legend

- Approximate Location Supplemental RI Seep Sample (2002) (RIS-1 through RIS-3)
- Approximate Location Supplemental RI Test Pit (2002)
- Approximate Location Supplemental RI Boring (2002)
- Approximate Location Supplemental RI Sediment Sample (2002)
- Approximate Location Monitoring Well (MW-1 through MW-5, Focused RI 1998; MW-6 through MW-10, Supplemental RI 2002; CL-MW-15 and CL-MW-ID, RE Haley; RI 200)
- Approximate Location Expanded Site Investigation Test Pit (1996)
- Approximate Location Whatcom Waterway RI Sediment Samples (1996)
- Approximate Location of Aspect Consulting Monitoring Well (2004)
- Approximate Location of Aspect Consulting Boring (2004)
- Approximate Location of GeoEngineers Monitoring Well (2004)
- Approximate Location of Purnell & Associates Boring (1985)
- Approximate Location of Purnell & Associates Test Pit (1985)
- Approximate Location of Dames and Moore Boring (1960)
- Approximate Shoreward Boundary of Landfill
- Inner Harbor Line - Washington State
- Fence
- Existing Building
- Approximate Location of Expanded Site Investigation Seep/Sediment Sampling (1996) and Focused RI Seep Sampling (1998)
- Approximate Location of Initial Site Investigation Seep/Sediment Sampling (1992)

Bellingham Bay

(608 ft. from HC-SS-20) HC-SS-19

(583 ft. from HC-SS-28) HC-SS-21

HC-SS-20 HC-SS-28

SRI-SED-1 SRI-SED-2 SRI-SED-3 SRI-SED-4 SRI-SED-5 SRI-SED-6

RIS-1 RIS-2 RIS-3 S-1 S-2 S-3 E-1 E-2 E-3 E-4

TPI-1 (1) TPI-2 TPI-3 TPI-4

Cornwall Avenue Landfill

MW-1 MW-2 MW-3 MW-4 MW-5 MW-6 MW-7 MW-8 MW-9 MW-10

B-1 B-2 B-3 B-4 B-5 B-6 B-7 B-8 B-9 B-10 B-11 B-12 B-13 B-14

AF-MW01 AF-MW02 AF-SB01 AF-SB02 AF-SB03 AF-SB04

CL-MW-1S CL-MW-1D CL-MW1S/D

RISB-1 RISB-2 RISB-3 RISB-4

TP-1 TP-2 TP-3 TP-4 TP-5 TP-8

RITP-1 RITP-2 RITP-3 RITP-4 RITP-5 RITP-6 RITP-7 RITP-8 RITP-9 RITP-10 RITP-11 RITP-12 RITP-13 RITP-14

Existing Stormwater Detention Basin

BNSF Railway Mainline

Note

TPI-1 is within 2 ft. of S-2.

Basemap source: Port of Bellingham 1996

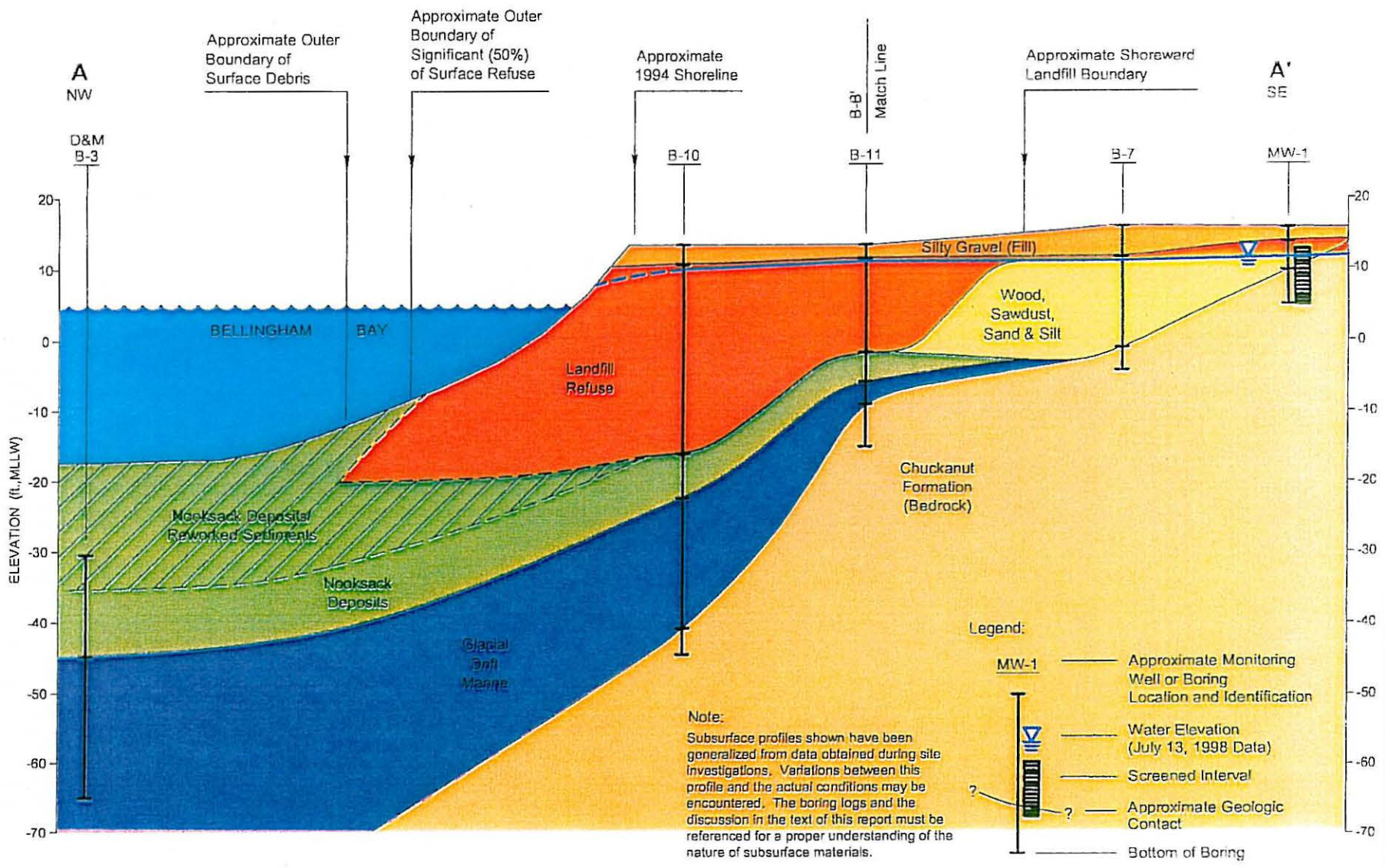
0 100 200

Scale in Feet

LANDAU ASSOCIATES

Cornwall Avenue Landfill Bellingham, Washington	**Geologic Cross Section Locations**	Figure 3-5

Port of Bellingham \ Cornwall Avenue Landfill \ RI/FS \ V:\0010\0204\00\RI_FS Report\Fig3-05.dwg (A) *Figure 3-5* 11/20/2007



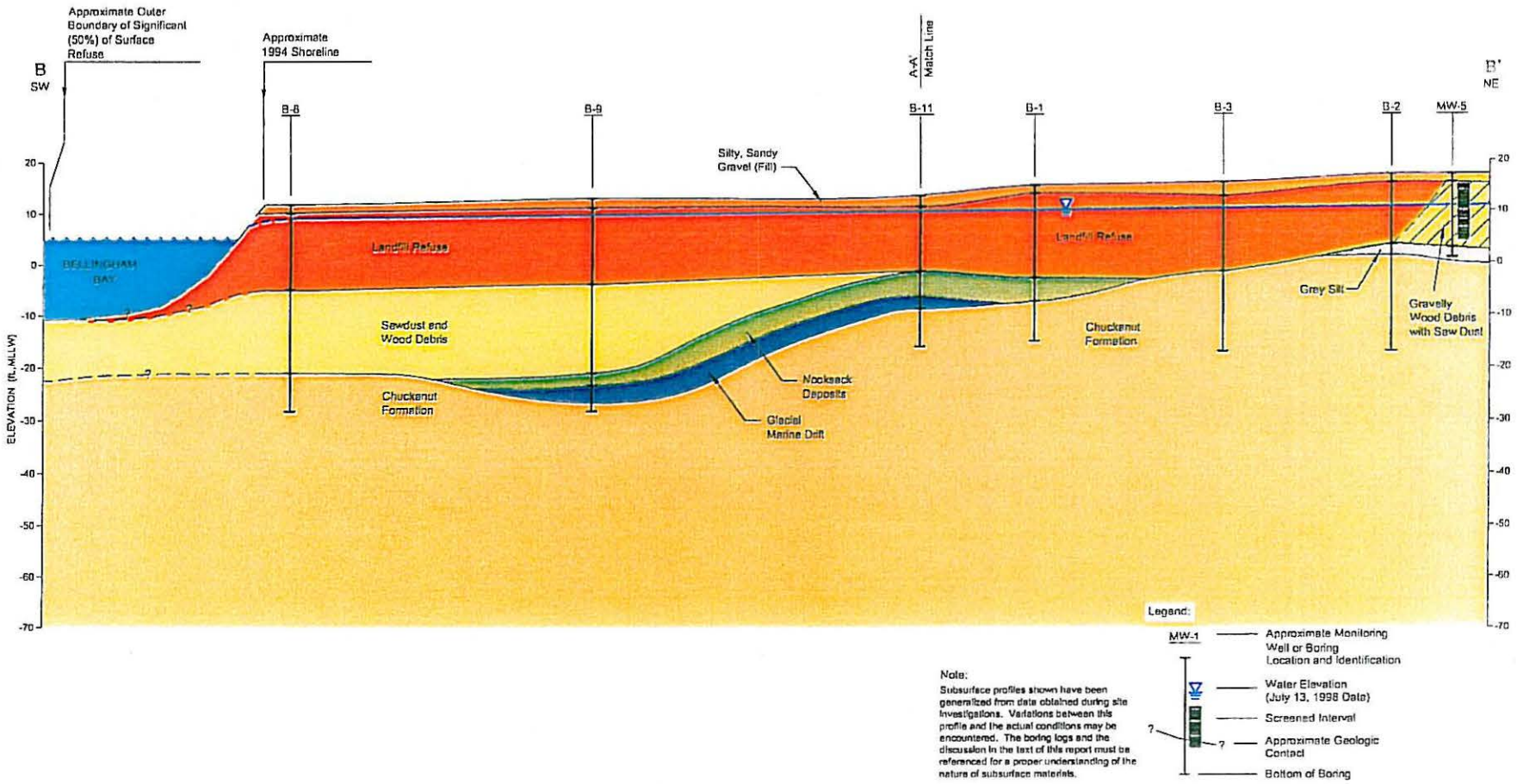
LANDAU ASSOCIATES

0 100 200
Scale in Feet
Vertical Exaggeration = 5x

Cornwall Avenue Landfill
Bellingham, Washington

Geologic Cross Section A-A'

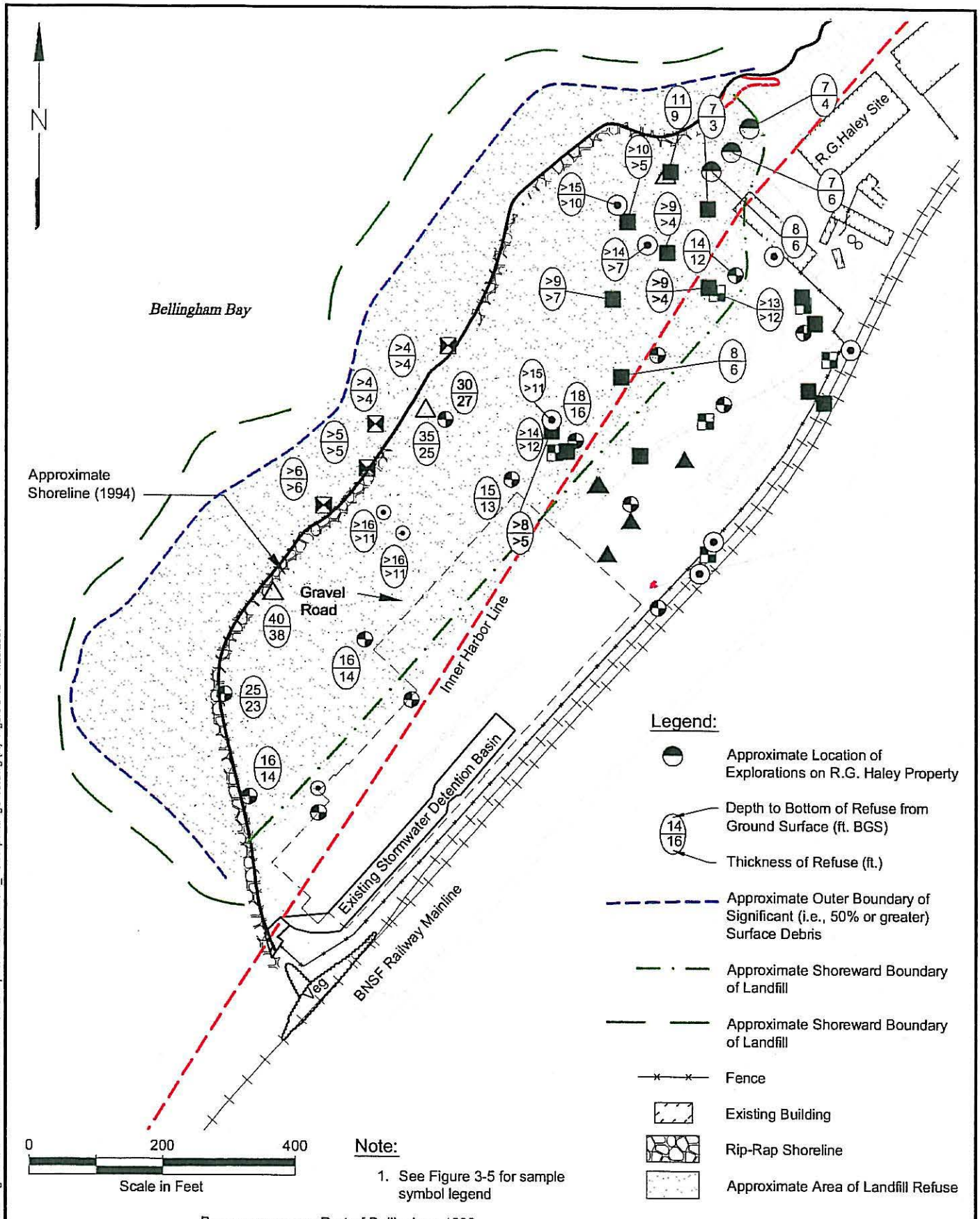
Figure
3-7



Port of Bellingham \ Cornwall Avenue Landfill \ RI/FS \ V:\001\02\04\00\RI_FS Report\Fig3-08.dwg [A] "Figure 3-7" 11/20/2007

LANDAU ASSOCIATES

Cornwall Avenue Landfill Bellingham, Washington	Geologic Cross Section B-B'	Figure 3-8



Basemap source: Port of Bellingham 1996

Port of Bellingham \ Cornwall Avenue Landfill \ RI/FS \ V:\0010\020\400\RI_FS Report\Fig3-13.dwg (A) "Figure 3-13" 11/20/2007

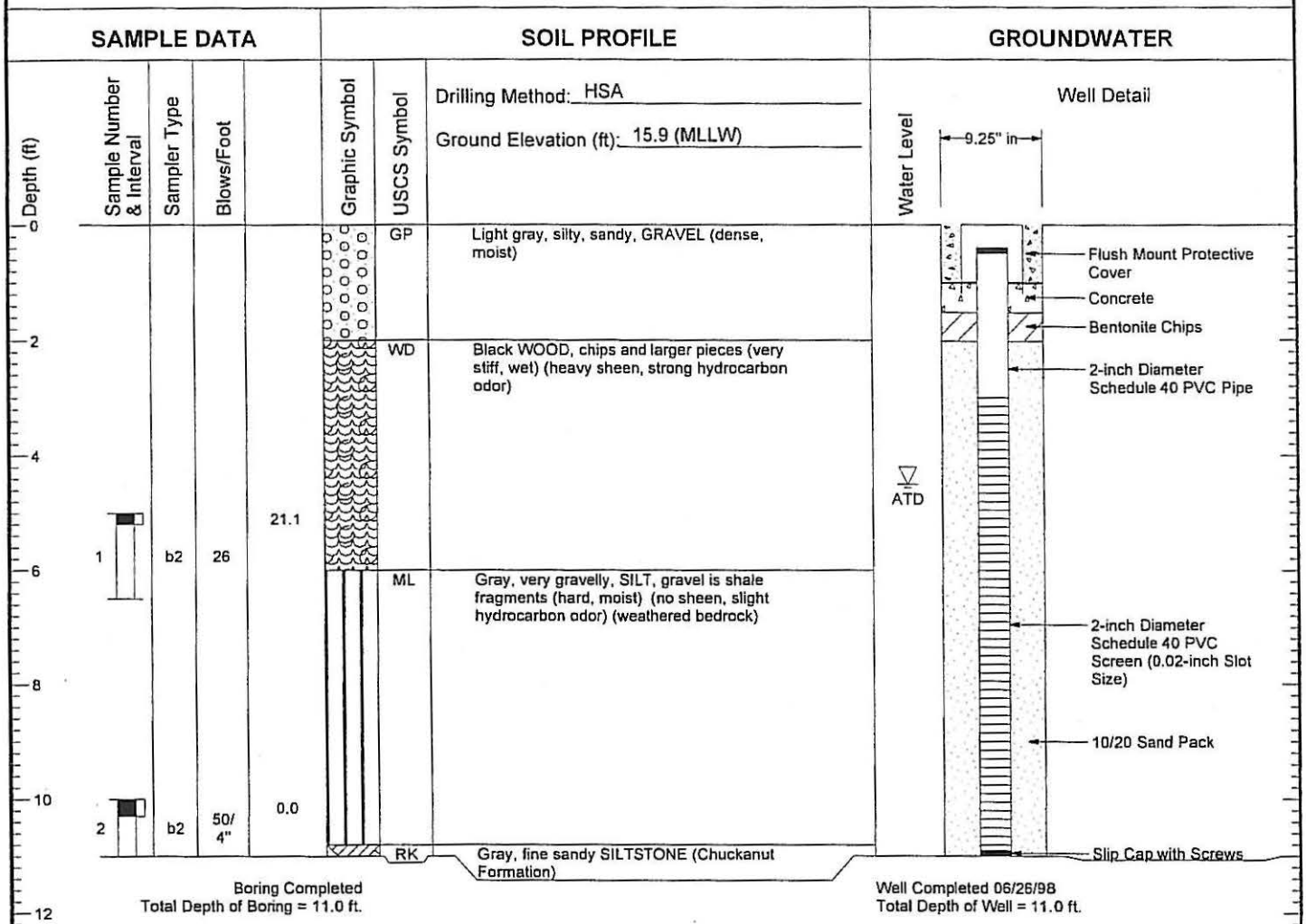
LANDAU ASSOCIATES

Cornwall Avenue Landfill
Bellingham, Washington

Approximate Extent of In Situ Landfill Refuse

Figure 3-13

MW-1

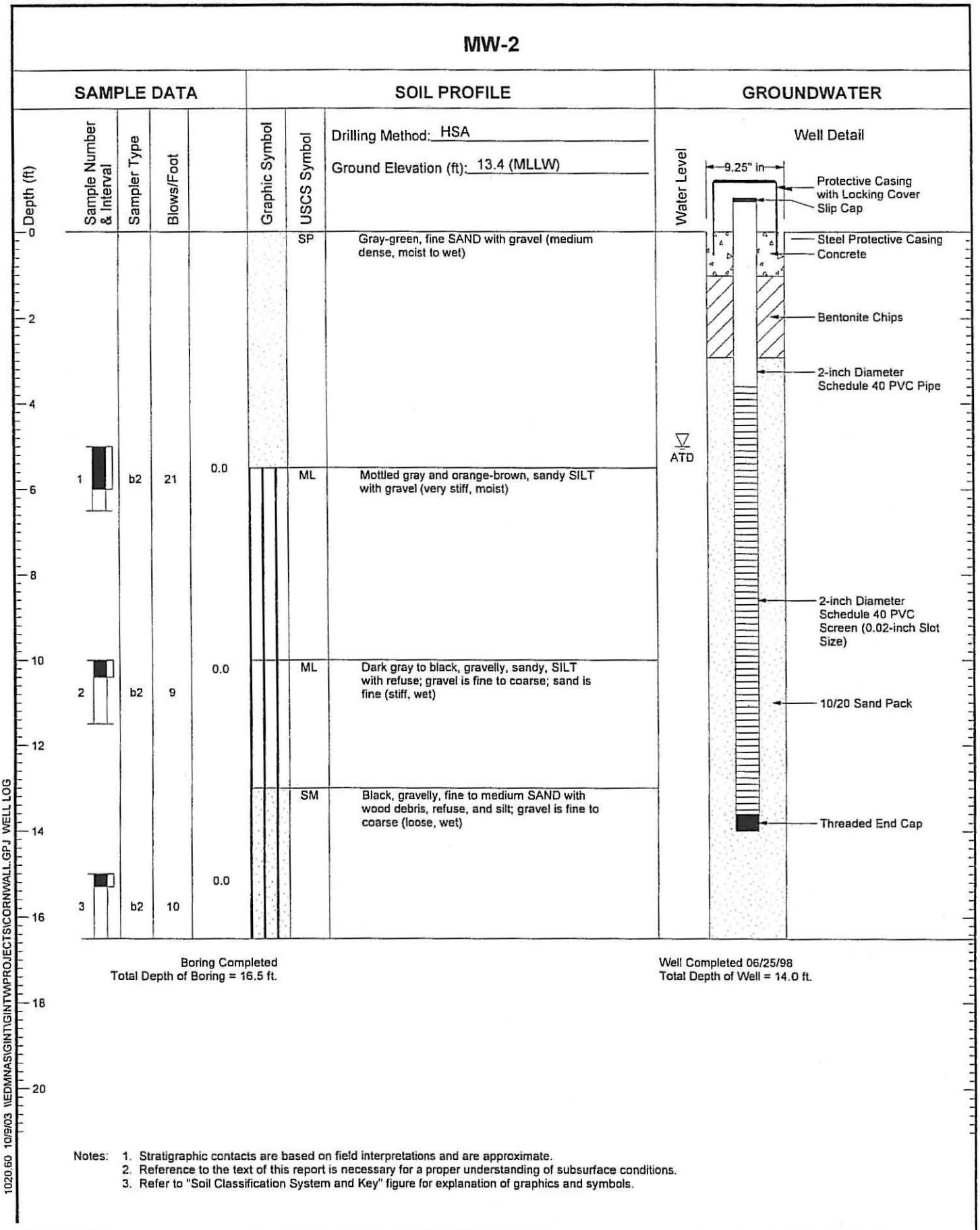


Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1020.60 10/9/03 \\EDMNAS\GINT\GINTWPROJECTS\CORNWALL.GPJ WELL.LOG

Log of Well MW-1	Figure C-2

MW-2



Boring Completed
Total Depth of Boring = 16.5 ft.

Well Completed 06/25/98
Total Depth of Well = 14.0 ft.

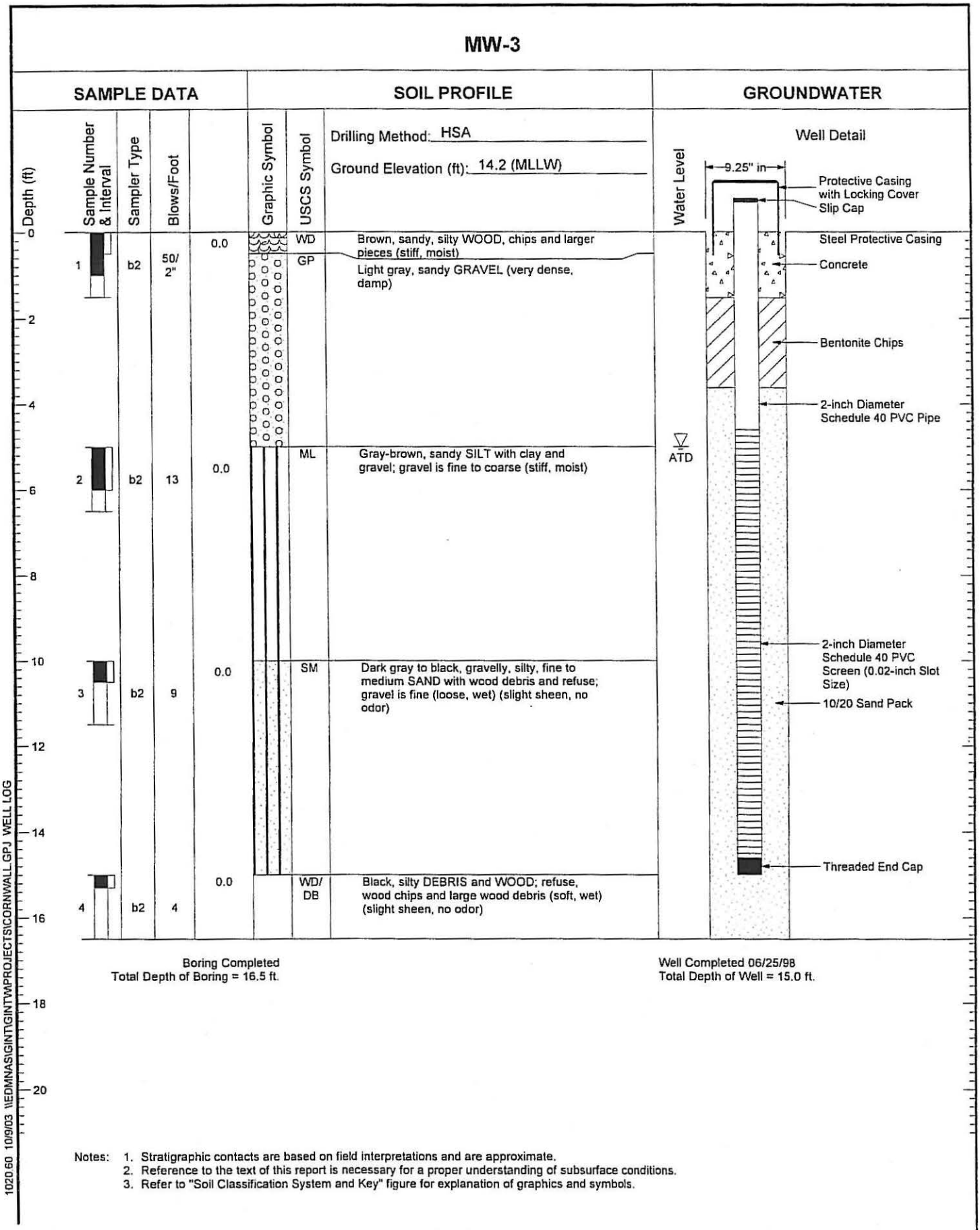
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1020.60 10/9/03 \\EDMNAS\GINT\GINTW\PROJECTS\CORNWALL.GPJ WELL LOG

Log of Well MW-2

Figure C-3

MW-3



Boring Completed
Total Depth of Boring = 16.5 ft.

Well Completed 06/25/98
Total Depth of Well = 15.0 ft.

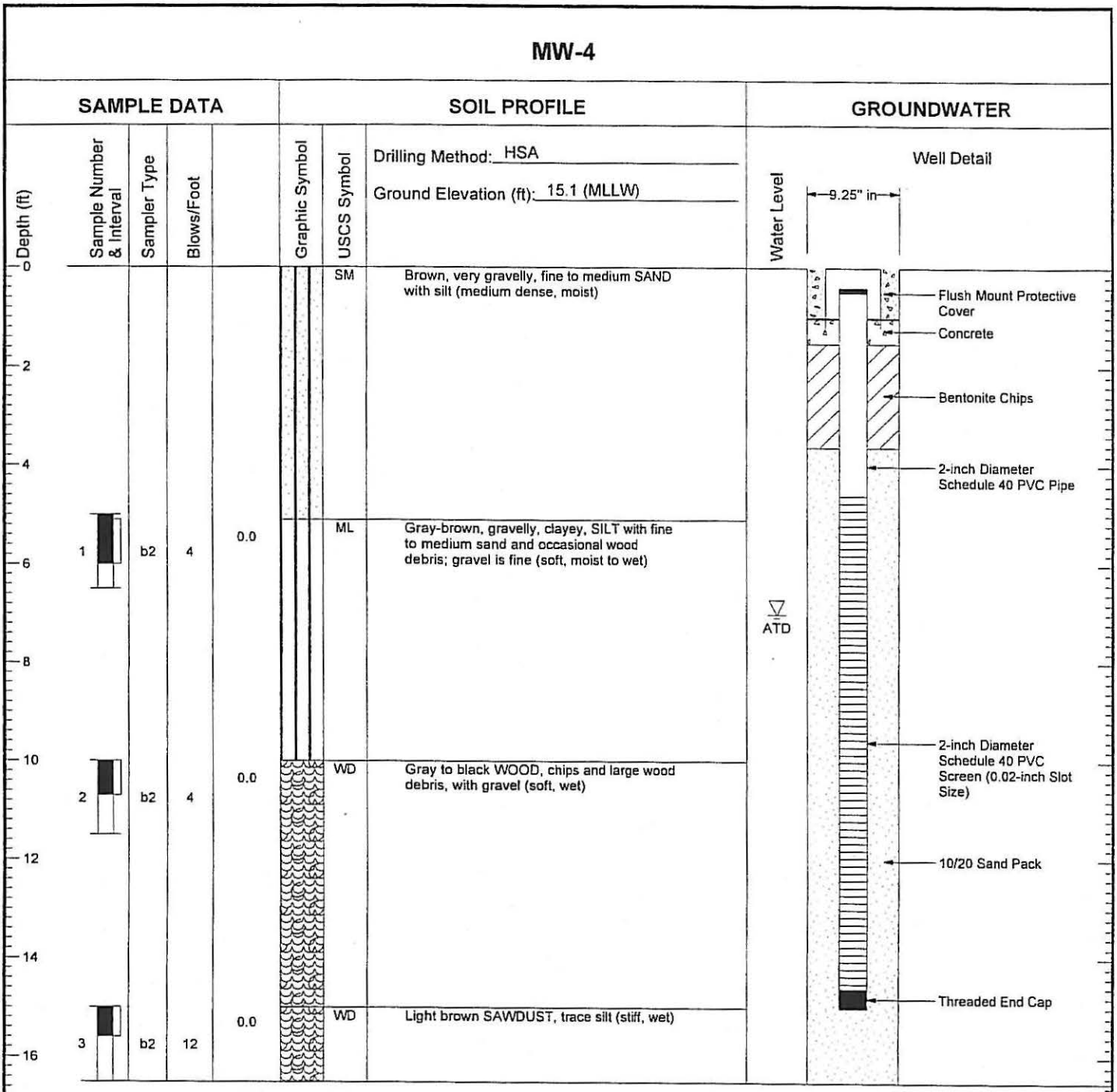
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1020 60 10/9/03 \\EDMNAS\GINT\GINTWPROJECTS\CORNWALL.GPJ WELL LOG

Log of Well MW-3

Figure C-4

MW-4



Boring Completed
Total Depth of Boring = 16.5 ft.

Well Completed 06/25/98
Total Depth of Well = 15.0 ft.

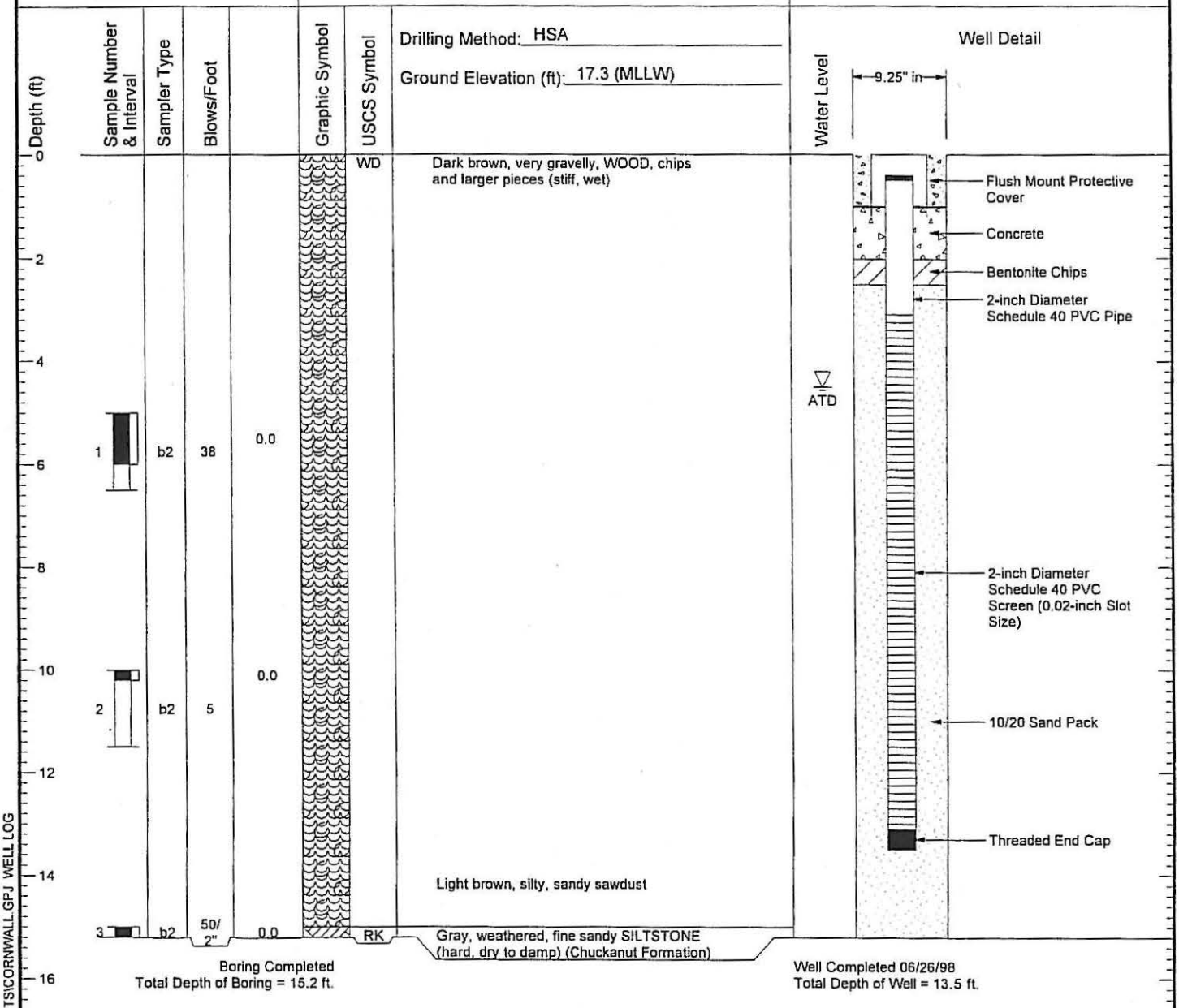
Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1020.60 10/9/03 \\EDMNAS\GINT\GINTWP\PROJECTS\CORNWALL.GPJ WELL LOG

Log of Well MW-4

Figure C-5

MW-5



1020.60 10/9/03 \\EDMNAS\GINT\GINTW\PROJECTS\CORNWALL.GPJ WELL LOG

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

Log of Well MW-5

Figure C-6

APPENDIX 9
Cultural Resources

APPENDIX 9a
An Assessment of the Probable Archaeological Potential of the Pattle Point Trestle Walkway

AN ASSESSMENT OF THE PROBABLE ARCHAEOLOGICAL POTENTIAL OF THE PATTLE POINT TRESTLE WALKWAY PROJECT AREA, BOULEVARD PARK, BELLINGHAM, WASHINGTON

By

GARY C. WESSEN, Ph.D. and TIM WAHL

Prepared for

Reid Middleton, Inc.
728 134th Street SW, Suite 200
Everett, Washington 98204

By

Wessen & Associates, Inc.
15028 24th Avenue SW
Burien, Washington 98166

July 2009

MANAGEMENT SUMMARY[1]

The Pattle Point Trestle Project Area has some potential to contain archaeological resources. Having recognized this, however, it is likely that the range of such resources which may be present is relatively limited. The most likely archaeological resources to be present are structural remains representing the old Northern Pacific Railroad trestle (and its associated track) and the Bellingham Bay (later the E. K. Wood) Mill. Archaeological deposits representing either of the latter - - or other early historic activities - - are also possible, but they are considered to be relatively unlikely. Similarly, prehistoric archaeological deposits are also possible, but they are also considered to be relatively unlikely. If prehistoric deposits are present in the project area, they are most likely to be associated with hunting, fishing, and/or other economic activities which were conducted along the shoreline in this area during the last ca. 3,000 to 5,000 years. The presence of deposits representing large and longstanding villages, cemeteries, or cultural activities which occurred significantly earlier than ca. 5,000 years ago is unlikely.

The Pattle Point Trestle Project Area, and its immediate vicinity, have been disturbed by a variety of both natural and historic cultural affects and the latter have probably impacted the archaeological resources here. The structural remains thought most likely to be present are likely to be relatively durable objects. Nevertheless, features such as old pilings and concrete supports may be broken and/or damaged in other ways. It is also possible that some such objects could have been incorporated into more recent structures in the project area. Having expressed the view that the potential for archaeological deposits being present appears to be limited, we should add that, if such deposits are present, they are likely to be disturbed. If intact archaeological deposits are present in the project area, they are likely to be either deeply buried or located in places that are at least slightly removed from the infrastructure of the railroad and the mill. Given these conditions, we suspect that most of the archaeological resources which may be found in the project area are unlikely to be eligible for listing with the National Register of Historic Places.

Overall, this review of the Pattle Point Trestle Project Area suggests that its archaeological potential is probably limited and that potentially significant archaeological resources are relatively unlikely to be present here. Nevertheless, it is important to emphasize that these are not the conclusions of a direct archaeological inspection of the project area. They are judgments based upon a literature review and prior experience in the northern Puget Sound basin. While we believe that the archaeological potential of the project area is probably limited, this finding of limited potential should not be used as a basis to dismiss the possibility that archaeological resources might be present.

---

1 Conclusions and recommendations in this report represent Wessen's opinions. In order to avoid potential conflicts of interest, Wahl, an employee of the City of Bellingham Parks and Recreation Department, makes no recommendation at present concerning any particular actions regarding the assessment or monitoring of possible archaeological resources located in the Pattle Point Trestle Project Area. Wahl is not employed as a cultural resource professional or historian by City Parks, but he has conducted several previous Bellingham waterfront historical studies for other parties as a researcher and historian.

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INTRODUCTION

The City of Bellingham's Parks/Design & Development Division has contracted with Reid Middleton, Inc. to assist in the planning and implementation of proposed improvements to the Pattle Point Trestle at the southern end of Boulevard Park. One aspect of the planning for this effort is an assessment of the Pattle Point Trestle Project Area's archaeological potential. To this end, Reid Middleton has requested that Wessen & Associates, Inc. make the required archaeological assessment.

This document describes the background, goals, methods, and findings of our assessment of archaeological potential of the Pattle Point Trestle Project Area.

2 BACKGROUND

Appropriate areas of background consideration for this presentation include the basic character of the Pattle Point Trestle Project Area and its environmental, cultural, and archaeological settings.

2.1 Project Area

The Pattle Point Trestle Project Area is a long narrow corridor that spans a small embayment at the southern end of Boulevard Park, in the southwestern portion of Bellingham, Washington (see Figure 1). Specifically, it is located in the northwestern quarter of Section 1, Township 37 North, Range 2 East. The trestle itself is a 525 by 16 foot wooden structure oriented approximately northeast-southwest (see Figure 2). The project area includes the structure and the immediate vicinity of small abutments at each end. Thus, the project area occupies an area of approximately 555 by 20 feet.

The Pattle Point Trestle was originally built as a railroad trestle and was later converted to an overwater segment of the Coast Millennium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham. First use of the route as a trail occurred in the 1980s and a significant renovation of the trestle structure was undertaken in 1991. The Parks/Design & Development Division now wishes to make a number of additional improvements to it. Many of the proposed actions will only effect the upper portion of the trestle structure, but some ground-disturbing activities are also planned. The latter include: removal and replacement of the trestle's southernmost timber frame bent, removal of the trestle's northernmost timber frame bent, and removal and replacement of the trestle's two existing abutments. The most extensive ground disturbances are associated with the removal and replacement of the abutments. Each new abutment will be 30 feet long and 16 feet wide. Ground disturbances up to a depth of approximately 5 feet are anticipated in these areas. The total volume of the excavation at the north abutment will be approximately 67 cubic yards; the south abutment excavation will be approximately 80 cubic yards. These actions will be largely confined to terrestrial sediments at the northern and southern ends of the trestle, although some disturbance to the immediately adjacent beach deposits will also occur. A much smaller ground disturbance is planned at the trestle's southernmost timber frame bent. A layer of rock which will support the new bent at this location will require the excavation of a 16 by 6 foot trench to a depth of approximately 1 foot. This action will occur on the beach.

Figure 1 The location of the Pattle Point Trestle Project Area, Boulevard Park, Bellingham, Washington.

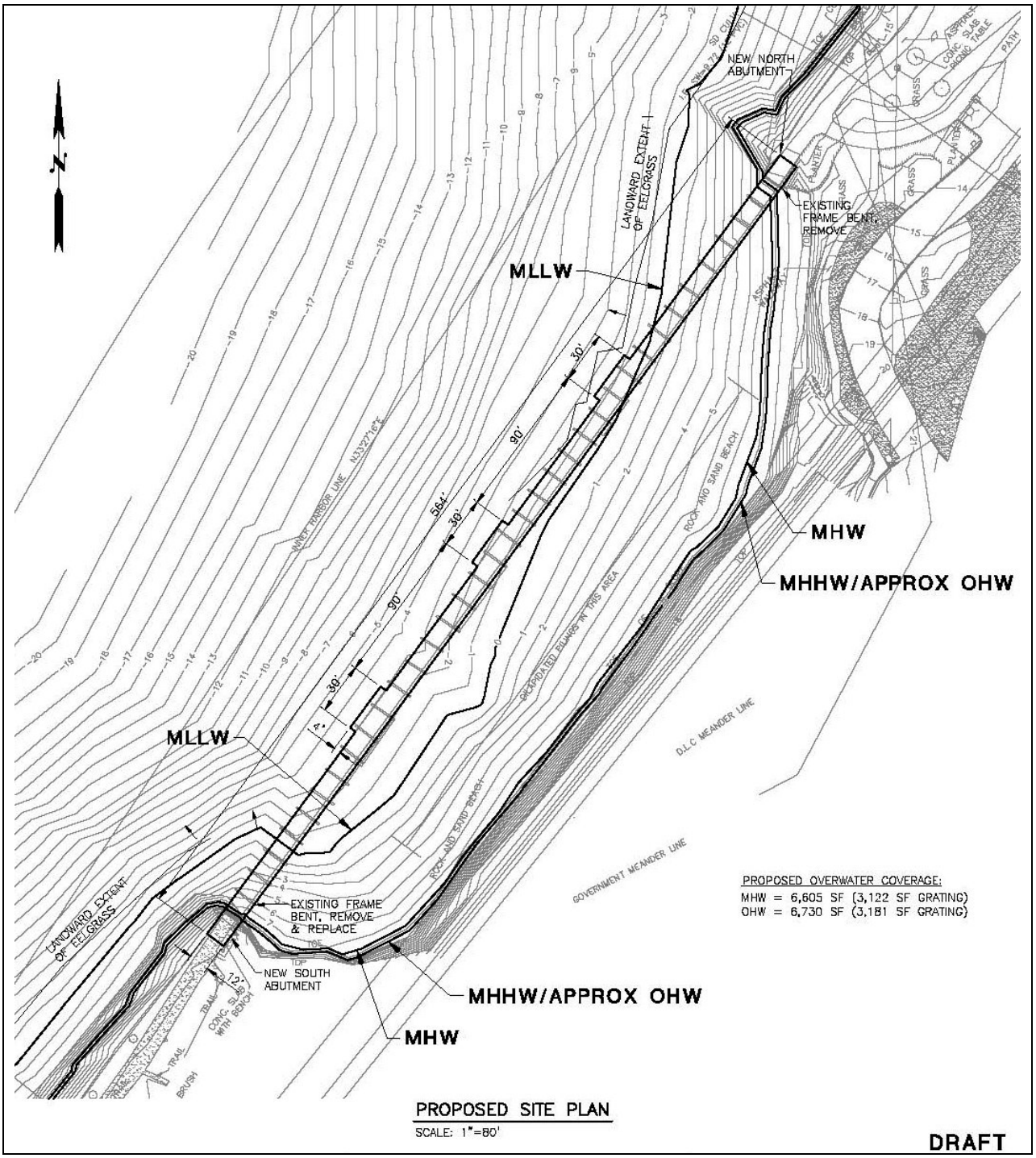

Figure 2 The Pattle Point Trestle Project Area, Boulevard Park, Bellingham, Washington.

2.2 Environmental Setting

The Pattle Point Trestle Project Area includes a portion of the intertidal zone in a small embayment on the south side of Pattle Point and limited areas on the headlands at the northern and southern ends of this embayment. The general vicinity has had a considerable history of industrial and other disturbance (see Section 2.3.2), and thus, at least some of the present landforms are probably not natural. The headland surfaces at the ends of the project area have probably received the most extensive modifications and are now approximately 15 feet above sea level (MLLW). Trestle pilings begin on the beach surface at an elevation of approximately 7 feet above sea level and, at its lowest point, extend into an area which is approximately 3 feet below sea level. Prior to development, we suspect that this area had a relatively steep rocky high bank shoreline marked by occasional bedrock exposures. There do not appear to be any surface fresh water resources in or near the project area today. While there may be closer seeps or very small streams, the nearest significant source we are aware of is Padden Creek, approximately 3,000 feet to the south.

The entire project area is underlain by Chuckanut Formation sandstone and bedrock exposures of this material are exposed at Pattle Point and elsewhere in the immediate vicinity (Easterbrook and Rahm 1971). Early historic records indicate that bedrock outcrops were much more conspicuous in this area, and that much of this material has been removed during various industrial developments (Wahl 2009). The headland surfaces at each end of the embayment are mantled with what Goldin (1992: Map 44) describes as an Squalicum – Urban Land Complex soil. This is a soil mapping unit that includes an intricate mosaic of Everett, Chuckanut, Labounty, Squalicum, Sehome, and Whatcom series soils. Typically, areas mapped with this classification are approximately 50% Squalicum gravelly sandy loams and complex mixtures of some or all of the remaining soil types. All are relatively deep, moderately well to well drained soils that have developed in a combination of alluvium and/or colluvium, volcanic ash, glacial till, glacial outwash, and sandstone. All tend to have a high gravel fraction. Squalicum – Urban Land Complex soils are common in this part of Whatcom County. A considerable amount of historic fill material is known to be present in Boulevard Park and there is reason to believe that such material may be present on one, or both, of the headlands in the project area (Wahl 2003 and 2009). The beach below the headlands is unlikely to contain fill deposits. The beach is a gravel-cobble surface. This suggests that it is probably subject to relatively high wave energy at some times and that significant erosion of the shoreline has occurred here.

Vegetation in the immediate vicinity of the project area has been extensively altered by historic activities. The area at the northern end of the trestle is now a landscaped portion of Boulevard Park. It contains maintained lawns, ornamental plantings, and relatively young second growth trees. The area at the southern end of the trestle is less maintained and stands of invasive brushy plants such as Himalayan blackberry (*Rubus discolor*) are present. Prior to historic development, upland areas probably supported a dense nearshore coastal forest dominated by trees such as Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*). The understory was probably thick and plants such as sword fern (*Polystichum munitum*) would have been well represented. We have not determined when the original forest vegetation was removed from the area, but we are confident that this occurred sometime prior to 1900. Thus, the native vegetation of the project area and its immediate vicinity has been absent for more than a century.

It should be noted that a small remnant of a native plant community which may be indicative of the late prehistoric Pattle Point shoreline vegetation is present in the rocky meadow openings on the sea bluff just to the north of Boulevard Park. This meadow remnant includes chocolate lily (*Fritillaria lanceolata*), Columbia lily (*Lilium columbianum*), and a species of grassland saxifrage. Other scattered native species including beaked hazel (*Corylus cornuta*) and blue elder (*Sambucus cerulea)* persist along the nearby shoreline and suggest a landscape with openings encouraged by prehistoric land management practices and featuring breaks in the original forest canopy.

Finally, while this discussion of the project area's environmental setting has focused on its current conditions, it is also worthwhile to briefly consider the character of past environments here. All of Whatcom County was covered by the Puget Lobe of the Cordilleran Ice Sheet in the Late Pleistocene, but this area was probably ice free by ca. 12,000 to 14,000 years ago (Porter and Swanson 1998). A recent reconstruction of Late Pleistocene and Holocene sea level history for southwestern British Columbia suggests that the project area may have been significantly below sea level until sometime between ca. 13,500 and 11,500 years ago and then relative sea levels lower than the modern stand probably characterized much of the Early and Middle Holocene period (Gowan 2007). The modern sea level has probably been in place for approximately the last ca. 3,000 to 5,000 years. Thus, the project area may have been a shoreline area briefly ca. 12,000 years ago, but it was probably at least somewhat interior to the shore for much of the following 7,000 to 9,000 years. While there have been significant changes in the vegetation of this region during the Holocene, pollen data suggests that forest communities much like those of the early historic period have probably been present in western Whatcom County for the last ca. 3,500 to 5,000 years (Whitlock 1992). In sum, environmental conditions in and near the Pattle Point Trestle Project Area have probably approximated those of the early historic period for much of the second half of the Holocene. A more open (i.e., less forested) landscape was probably present prior to that time.

2.3 Cultural Setting

The cultural setting of the Pattle Point Trestle Project Area includes both the Native American and Euro-American use of the vicinity. The following sections briefly consider each.

2.3.1 The Native American Presence

The late prehistoric and early historic Native American occupants of western Whatcom County were members of a broad grouping of peoples referred to as the Coast Salish. Coast Salish peoples are widespread in Western Washington and southwestern British Columbia and are divisible into a number of smaller regional groups. The people of the Whatcom, northwestern Skagit, and San Juan County areas are considered to be members of the Central Coast Salish (Suttles 1990). They are distinguished from their neighbors by the language they speak: Lkungen, as opposed to the Lushootseed spoken by other local Salish groups further to the south. They also differ in their pursuit of a distinctive subsistence and settlement system which traditionally placed a heavy emphasis upon exploiting the marine resources, particularly the reef-netting of sockeye salmon, within their traditional territory.

The Central Coast Salish people have often been divided into a number of tribal groups, but it is worthwhile to note that such tribal groups may be historic phenomena and the term "tribe" may not be directly applicable to the pre-contact inhabitants of the area. Most types of economic, political and social affiliation appear to have focused on local lineal groups (i.e., families). Family control of resource collection localities and ownership of the rights to ceremonial properties such as dances, songs, titles, and masks was the rule. The historic tribal groups most frequently mentioned in southwestern Whatcom County include the Lummi, Samish and Noo-wha-ah Indians.

There appears to be very little ethno-historical information about the Pattle Point Trestle Project Area and its general vicinity. We know that the Lummi People occupied much of the land to the north during historic times and that the Samish and Noo-wha-ah lands were mostly to the south. There is no clear agreement regarding the boundary between these territories. Indeed, there is even reason to believe that such boundaries have probably changed over time (Allen 1976). Stern (1934) places the southern boundary of Lummi Territory a few miles to the south of Chuckanut Creek (approximately 4 to 5 miles to the south of the project area). Suttles (1951) places the southern boundary of Lummi Territory just to the north of Chuckanut Creek (approximately 2.5 mile to the south of the project area). Sampson (1972) places the northern boundary of Noo-wha-ah Territory well to the north of Chuckanut Creek. Thus, at least two of these three sources place the project area within Lummi Territory.

There are also a few very limited references to yet another Native American group in the vicinity of the project area. Wahl (2003) notes that at least one account from an Indian Agent and oral traditions from some of the first Euro-American settlers in the Bellingham Bay area make reference to a group referred to as the Mamosee who occupied the southern part of the Bellingham Bay shoreline in the vicinity of what is now Fairhaven and Boulevard Park. The Mamosee people were largely gone by the 1850s and little is known about them. As such, the specific details of their territory and relationships with neighboring groups is largely unknown.

None of the above sources, nor any other source we are aware of, specifically describes Native American settlements - - or other activities by Indian people - - either within, or close to, the Pattle Point Trestle Project Area. Most of the closest Lummi settlements which we are aware of were located farther to the north and west on Hale Passage and the tributaries of today's Nooksack River. Suttles (1951:34) identifies a number of early historic Lummi villages and smaller seasonal camps on the west side of Bellingham Bay, on Portage Island, and on Lummi Island, all 5 to 7 miles to the west. He also noted a Lummi settlement at the mouth of Squalicum Creek, approximately 2.5 miles to the northwest, but was uncertain whether this community predated the early historic period. The closest reported settlement to the south was a seasonal camp on the north side of Chuckanut Bay, approximately 2 miles away. Suttles (1951:42) attributes this settlement to the Samish Indians, people who may have had an association with the Noo-wha-ah.

While this discussion may appear to suggest there were no Native American settlements at, or close to the Pattle Point Trestle Project Area, it is likely that this appearance is - - at least in part - - a reflection of incomplete ethnographic data. Sixteen prehistoric archaeological sites have been identified within 2 miles of the project area (see Section 2.4), many of which are concentrated near the mouth of Padden Creek and in the vicinity of Chuckanut Bay. This density of sites is not suggested by the ethnographic data and argues that at least one or more unreported late prehistoric or early historic settlements were probably present in the vicinity.

2.3.2 The Euro-American Presence

The earliest known Euro-American activities in the general vicinity of the Pattle Point Trestle Project Area are associated with Bellingham Bay (Carhart 1926, Edson 1968). The first European to enter the area was probably Jose Narvaez, sailing for Francisco Eliza, who briefly visited Bellingham Bay in 1791. The following year Galiano and Valdez inspected and mapped Bellingham Bay in greater detail, and were shortly followed by a boat crew under Joseph Whidbey, dispatched from Birch Bay by George Vancouver. The Spaniards first named the adjoining body of water "Gaston Bay", although the Vancouver expedition gave it the persisting name "Bellingham Bay" on its charts. The name honored Sir William Bellingham, an associate of Vancouver's in the British Navy. The first US land claimant on Bellingham Bay was William Pattle, who arrived in 1852. Additional became established in the next few years and several communities, including Whatcom, Sehome, Bellingham, and Fairhaven, were present along the eastern shore of the bay by the 1880s (Scott and Turbeville III 1983). The smaller communities gradually merged to become the modern City of Bellingham in 1904.

William Pattle and two associates, James Morrison and John Thomas, all filed Donation Land Claims in the vicinity of Boulevard Park and pursued an early interest in coal mining in this area (Griffin 2007 and Wahl 2009). The Pattle Point Trestle Project Area is located on the northern part of the Morrison DLC and Pattle's DLC began approximately 300 feet further to the north. Pattle's home was located approximately 450 feet northeast of the project area. Pattle, Morrison, and Thomas briefly operated a coal mine at Easton Cove, approximately 500 feet to the southwest of the project area and they had a small wharf at Pattle Point, not far from Pattle's home. The venture was not successful, however, and it was largely abandoned by the early 1860s.

The next phase of developments in this area began with the construction of the Bellingham Bay Mill at Pattle Point in the early 1880s (Griffin 2007 and Wahl 2009). The mill changed hands twice in the following years. It saw its largest operations during the first two decades of the 20th Century, at which time it was known as the E. K. Wood Lumber Company Mill. It was destroyed by a fire in 1925. While some of the mill complex was built on land here, much of it was constructed atop pilings which extended out over the water. At least some of the mill infrastructure was located in the small embayment spanned by the Pattle Point Trestle. It is likely that the first significant filling of tidelands in the Boulevard Park area began while the mill operated.

The construction of railroads along the Bellingham Bay shoreline also began to impact the vicinity of the project area during the late 19th and early 20th Centuries (Griffin 2007 and Wahl 2009). The first railroad grade in the area was built in 1889 or 1890. Originally built as the Fairhaven and Southern Railroad, it was soon acquired by the Great Northern Railroad. This alignment, just to the east of the project area, still exists and is now the Burlington Northern & Santa Fe Railroad mainline through the Bellingham area. Of more immediate relevance to the project area, the Bellingham Bay and Eastern Railroad built a track across the Pattle Point area in 1901. The latter included a trestle across the small embayment south of the point, here referred to as the Pattle Point Trestle. The Bellingham Bay and Eastern Railroad was purchased by the Northern Pacific Railroad in 1904 and the Northern Pacific used this route until at least the 1940s. It is likely that the Pattle Point Trestle structure was modified at least once during this period. The abandoned railroad grade - - including the trestle - - began to be used as public trail in the 1980s and a significant renovation of the trestle itself occurred in 1991. We have not

documented the specific details of the renovation at that time, but it is likely that extensive alterations to the structure were made.

In sum, the current Pattle Point Trestle represents an altered version of a structure first built to accommodate a railroad track in 1901. Whether, and to what extent, original structural elements are still present is not clear at this time.

A final aspect of the history of the project area worthy of comment is the extensive historic disturbance which has occurred here. Our review of early historic maps, drawings, and photographs indicates that higher portions of the Pattle Point area have been graded and substantially lowered and that tidelands in the vicinity of the point have been filled. Indeed, much of the northern half of Boulevard Park appears to have been built upon fill materials which were deposited here between the 1920s and the 1960s. Our knowledge of the history of filling within the headland portions of the Pattle Point Trestle Project Area is less complete, but it appears likely that at least some fill materials are present in these areas as well.

2.4 Archaeological Setting

The history of archaeological research in the northern Puget Sound Basin begins shortly before the beginning of the 20th Century, but the vast majority of such activities have occurred during the last 50 years. The earliest efforts were associated with the American Museum of Natural History's Jessup North Pacific Expedition, and these resulted in what are essentially reconnaissance reports of prehistoric cultural resources by Harlan Smith and Gerald Fowke (1901), and Smith (1907). Smith and Fowkes noted the presence of shell middens sites on the northern part of Bellingham Bay, but they provided very little information about them. Writing shortly later, Albert Reagan (1917) also identified several midden sites on the northern part of Bellingham Bay, but he also offered few details about any of these places. After Smith, Fowke, and Reagan, there were virtually no further archaeological studies in western Whatcom County until the early 1970s. At that time, Garland Grabert and his students at Western Washington University initiated a wide-ranging survey and excavation studies in this area. Grabert was active for more than 20 years and, directly or indirectly, had a role in the recording of more than 100 sites in Whatcom County. Grabert's replacement at Western Washington University, Sarah Campbell, remains active in the archaeology of this region today. Most of the recorded archaeological sites in western Whatcom County are shell middens associated with the modern marine shoreline. These sites probably represent late prehistoric to early historic settlements. Present in lesser numbers are grave sites, petroglyph (rock art) sites, and lithic sites. Only a small percentage of Whatcom County's sites have been dated with radiometric techniques and most of the latter are from a few hundred to a few thousand years old. Nevertheless, assessments of site age based upon stylistic comparisons, suggest that some Whatcom County sites are probably much older.

There are no recorded archaeological sites either within, or in the immediate vicinity of, the Pattle Point Trestle Project Area. The closest known sites are located to the south and west. The closest prehistoric sites include both shell midden deposits and lithic sites thought to be associated with either the lowermost portion of the Padden Creek Channel, or the marine shoreline of Bellingham Bay, approximately 0.6 to 0.7 mile to the southwest. Most of these sites were recorded by Garland Grabert and/or his students in the 1970s. Unfortunately, none of these sites have been subjects of study - - beyond their initial recording - - and thus, very little is known about them. None of the sites appear to represent the ethno-historically reported Native

American villages. A small number of historic archaeological sites representing Euro-American activities have also been recorded on or near the Bellingham Bay shoreline. The closest of these is an array of old log pilings, approximately 1 mile to the northeast, which are thought to represent the mid to late 19th Century Bellingham Bay Coal Company wharf.

The absence of recorded archaeological sites in or near the project area must be seen in light of the fact that there have been no previous surveys here[2]. Despite this, however, there have been at least two efforts which addressed the archaeological potential of the Boulevard Park area (Dugas and Larson 1999 and Kanaby et al. 2009). Both studies relied upon a combination of cultural and environmental data to make projections regarding where archaeological resources are likely to be present. Curiously, the two studies came to very different conclusions. Amy Dugas and Lynn Larson prepared an overview of approximately 16 miles of Bellingham Bay shoreline in 1999. A major goal of their effort was to identify high, moderate, and low probability areas for archaeological and historic resources. A number of high and moderate potential areas were identified, but none of the latter are in, or close to, Boulevard Park. The closest moderate and high potential areas they identified are in the lower Padden Creek area, approximately 0.7 mile to the southwest. In contrast, the study recently prepared by Kara Kanaby and her associates was an initial evaluation of the potential of Boulevard Park, undertaken as part of the planning effort for several proposed park improvements (including the Pattle Point Trestle work being considered here). Their study does not reference the earlier Dugas and Larson (1999) work and concludes that the Boulevard Park area has a high probability of containing both prehistoric and historic archaeological resources.

3 RESEARCH DESIGN

The activities described in this report represent a limited program of study designed to offer an assessment of the probable archaeological potential of the Pattle Point Trestle Project Area. The research design for the effort included both a clear statement of goals and an identified set of appropriate methods.

3.1 Goals

The goals of this study were to investigate the probable archaeological potential of the Pattle Point Trestle Project Area and offer recommendations regarding how the proposed trestle improvement actions can be undertaken without adversely impacting potentially significant archaeological resources. To these ends, we specifically planned to examine what kinds of archaeological resources might be present, where within the project area they were likely to be found, and what their likely condition might be. It should be emphasized, however, that this study is not an archaeological survey of the project area. Rather, it is essentially an archival exercise intended to document the context of the project area, and to offer guidance for the design of an archaeological survey.

2 There are no reported archaeological surveys of this area, but it seems likely that Grabert - - and/or some of his students - - undertook at least an informal inspection of the Boulevard Park area. If this is correct, we can conclude that they found nothing of interest, since no sites were recorded.

3.2 Methods

The work plan for this study was basically to collect and review relevant background information for the project area, compare it to regional patterns in the distribution of archaeological resources, and then offer informed opinions about what conditions are likely to be the case in the Pattle Point Trestle Project Area. Relevant background information for the study includes the modern and earlier environmental conditions, local ethnographic and historic land use history, prior archaeological research, and the details of proposed ground-disturbing actions in the project area. While much of the effort was conducted as a literature review, important additional information was obtained by direct communication with the City of Bellingham's Parks/Design & Development Division, Reid Middleton, and other knowledgeable local individuals. Insights into regional patterns in the distribution of archaeological resources were obtained from literature addressing the northern Puget Sound basin and nearby areas in southwestern British Columbia.

4 ARCHAEOLOGICAL POTENTIAL OF THE PROJECT AREA

The methods identified in Section 3.2 provided a basis for suggesting the probable archaeological potential of the Pattle Point Trestle Project Area. The review considered both prehistoric and historic archaeological resources and, since there are important differences between them, each will be considered separately below.

4.1 Prehistoric Archaeological Resources

We believe that the potential for prehistoric archaeological resources in the Pattle Point Trestle Project Area is relatively low. The area was most likely to have attracted prehistoric cultural activity when it was a shoreline setting close to Bellingham Bay. Environmental data indicates that there were two intervals when this occurred: a relatively brief period ca. 12,000 years ago and during the last ca. 3,000 to 5,000 years. The project area was under either water or glacial ice prior to ca. 12,000 years ago and was an at least somewhat more interior location during the period between the two intervals. While we think it likely that at least some degree of cultural activity did occur here during these two intervals, we also think that both its relatively exposed character and the apparent absence of a surface fresh water source made it relatively unattractive for occupation. Certainly, much more attractive locations are located in the general vicinity (e.g., the mouth of Padden Creek). We therefore think that evidence of large or long-standing prehistoric residential occupations is particularly unlikely. The presence of cemeteries also seems unlikely. If prehistoric archaeological materials are present in the project area, they are most likely to reflect hunting, fishing, and/or other economic activities which were conducted along the shoreline here. Evidence of occupation is most likely to represent brief seasonal camping episodes associated with the latter. Such sites are unlikely to be either large or deep. If such sites are present, they are far more likely to represent the more recent of the two shoreline intervals (i.e., the last ca. 3,000 to 5,000 years). The latter is a much longer interval, it occurred at a time when the prehistoric population of the area was probably much greater, and its relatively recent time frame increases the likelihood that cultural materials deposited here have survived.

It should also be noted that different portions of the project area probably have significantly different potentials. Prehistoric archaeological materials, if present, are most likely to be found on the headlands above the beach, at the ends of the trestle. Prehistoric archaeological materials within the beach deposits immediately below the trestle are not impossible, but we believe that they are much less likely here. While prehistoric archaeological deposits in intertidal and subtidal settings are known to occur on the southern Northwest Coast, they are generally encountered at some depth below the beach surface (Easton 1993). Given the relatively shallow character of the ground disturbances which have been proposed for the intertidal portion of the project area, such deposits seem unlikely to be exposed, even if they are present.

Finally, we add that, if prehistoric archaeological deposits are present in the project area, they are likely to be disturbed. We have already indicated our view that the headlands above the beach are the portions of the project area most likely to contain such materials. Recall, however, that these areas are both small and have been extensively disturbed. Both are within the alignment of the old Northern Pacific Railroad grade. They were clearly disturbed when the railroad was built and may have been impacted further when the tracks were removed and the present Coast Millennium Trail was developed. Thus, any prehistoric archaeological deposits in the headland portions of the project area are likely to be disturbed, unless they occur at some depth below the surface here.

4.2 Historic Archaeological Resources

The potential for historic archaeological resources in the Pattle Point Trestle Project Area is high, although the range of such resources may not be great. This area is known to be in the immediate vicinity of a number of 19th and early 20th Century built features and we believe that evidence of at least some of them are likely to be present within, or close to, the project area. The most obvious of these is the trestle itself. While it has been modified on at least one occasion, we think that there is a relatively high probability that elements of the original structure are still present in the area. These could include old pilings, concrete supports, and/or other objects associated with the trestle. We also know that buildings, and possibly other structures, associated with the Bellingham Bay (later E. K. Wood) Mill were located quite close to the trestle prior to 1925. At least some of the latter were built on pilings over the water in this area. It is likely that old pilings and/or other features associated with the mill are still present and some of these may be found within the project area. In both cases, we suspect that archaeological materials will be present largely - - or exclusively - - as structural features. The presence of archaeological deposits seems less likely. William Pattle's original (ca. 1853) home site and a small wharf were present in the Pattle Point area, but our land use history reconstruction indicates that both were relatively small features which were probably located a short distance to the north. It is unlikely that evidence of either will be encountered in the project area.

Similar to the case with prehistoric archaeological materials, we suspect that historic archaeological resources are also unevenly distributed in the project area. The distribution of historic archaeological resources, however, is likely to be different from that of the prehistoric materials. Most of the structural features representing the trestle and the mill are likely to be encountered on the beach - - rather than the headlands - - portion of the project area. While historic archaeological materials may also be present on the headlands, the limited extent of the project area on these landforms significantly reduces the potential for exposing things there. The

most likely historic archaeological materials to be encountered on the headlands are structural features associated with the trestle and/or the railroad grade which formerly crossed it. It should also be noted that, if historic fill sediments are present on the headlands, it is possible that cultural materials could be present within this matrix. While we believe that large numbers of cultural materials are very unlikely, but the presence of at least some specimens within the fill deposits would not be unusual. Historic cultural materials are most likely to be encountered in the fill sediments, but prehistoric cultural materials could also be present. Cultural materials encountered in fill deposits in the project area do not represent an archaeological site in the project area. Rather, they are re-deposited materials which originated elsewhere and were brought to the project area at some time in the past. It is very unlikely that the original source of such materials can be reconstructed.

The earlier observation about the likely condition of prehistoric archaeological deposits in the project area also has some relevance here. Indeed, the widespread historic disturbance to this area is likely to have impacted any archaeological deposits which might be present. This condition may be less important in the case of the historic archaeological resources, however, as we believe that the most likely historic resources to be present will be structural features rather than archaeological deposits.

5 DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

The Pattle Point Trestle Project Area has some potential to contain archaeological resources. Having recognized this, however, it is likely that the range of such resources which may be present is relatively limited. The most likely archaeological resources to be present are structural remains representing the old Northern Pacific Railroad trestle (and its associated track) and the Bellingham Bay (later the E. K. Wood) Mill. Archaeological deposits representing either of the latter - - or other early historic activities - - are also possible, but they are considered to be relatively unlikely. Similarly, prehistoric archaeological deposits are also possible, but they are also considered to be relatively unlikely. If prehistoric deposits are present in the project area, they are most likely to be associated with hunting, fishing, and/or other economic activities which were conducted along the shoreline in this area during the last ca. 3,000 to 5,000 years. The presence of deposits representing large and longstanding villages, cemeteries, or cultural activities which occurred significantly earlier than ca. 5,000 years ago is unlikely.

The Pattle Point Trestle Project Area, and its immediate vicinity, have been disturbed by a variety of both natural and historic cultural affects and the latter have probably impacted the archaeological resources here. The structural remains thought most likely to be present are likely to be relatively durable objects. Nevertheless, features such as old pilings and concrete supports may be broken and/or damaged in other ways. It is also possible that some such objects could have been incorporated into more recent structures in the project area. Having expressed the view that the potential for archaeological deposits being present appears to be limited, we should add that, if such deposits are present, they are likely to be disturbed. If intact archaeological deposits are present in the project area, they are likely to be either deeply buried or located in places that are at least slightly removed from the infrastructure of the railroad and the mill. Given these conditions, we suspect that most of the archaeological resources which may be found in the project area are unlikely to be eligible for listing with the National Register of Historic Places.

Overall, this review of the Pattle Point Trestle Project Area suggests that its archaeological potential is probably limited and that potentially significant archaeological resources are relatively unlikely to be present here. Nevertheless, it is important to emphasize that these are not the conclusions of a direct archaeological inspection of the project area. They are judgments based upon a literature review and prior experience in the northern Puget Sound basin. While we believe that the archaeological potential of the project area is probably limited, this finding of limit potential should not be used as a basis to dismiss the possibility that archaeological resources might be present. We believe that a direct archaeological inspection - - with at least limited subsurface testing of those areas where ground disturbance is planned - - is appropriate. Specifically, it is important to dig at least a single small test pit at, or close to, each of the proposed new abutment locations and the southernmost timber frame bent. Test pits should be dug to the maximum depth of the proposed impact at each location. In this regard, background information indicates that historic fill deposits may be present at one or both of the abutment locations. Fills elsewhere in the Boulevard Park area are known to contain a significant quantity of construction debris and such materials could be present at either abutment location. If so, construction debris could make sampling of these areas difficult and it may prove necessary to work from the depositional profiles exposed along the margins of each abutment. The results of this testing should then be used to determine whether construction monitoring, or other archaeological resource protection measures are warranted.

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APPENDIX 9b
Cultural Resources Letter to the U.S. Army Corps of Engineers

ReidMiddleton

September 9, 2009
File No. 242008.001

Mr. Randel Perry
Seattle District, Corps of Engineers, Regulatory Branch
CENWS-OD-RG
P.O. Box 3755
Seattle, WA 98124-3755

Engineers
Planners
Surveyors

Subject: NWS-2008-880, Pattle Point Trestle Renovation

Dear Mr. Perry:

The City of Bellingham (applicant) and Reid Middleton, Inc. (agent) have received the letter regarding cultural resources that you mailed on August 26, 2009. Sent in response to your letter, the purpose of this letter is twofold:

1. To inform you of our approach to the additional cultural resources work requested in your letter.

2. To summarize the project team's current understanding of the chronology of the construction of the Pattle Point trestle and subsequent modifications.

Regarding our approach to the additional cultural resources you requested, the project team will perform the sampling recommended in the report titled "*An Assessment of the Probable Archeological Potential of the Pattle Point Trestle Walkway Project Area, Boulevard Park, Bellingham, Washington*" (Wessen & Wahl, dated July 2009). After the sampling has been performed, the project team will submit to you additional archaeological documentation that discusses the sampling results.

Additionally, the project team will contract with a historic perseveration professional to prepare documentation for the project in accordance with the Washington Historical Properties Inventory Guide. The chosen historic preservation professional will be listed on the State of Washington Department of Archaeology and Historic Preservation list of qualified professionals.

Regarding the chronology of the construction of the Pattle Point trestle and subsequent modifications, the bulleted list below summarizes the project team's current understanding. Please note that this information supersedes any conflicting information contained in any application documents submitted previously.

- The, "Bellingham Bay and Eastern Railroad built a track across the Pattle Point area in 1901," which, "included a trestle across the small embayment south of the point…the Pattle Point trestle," notes the report "*An Assessment*

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Everett, WA 98204

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Fax: 425 741-3900

of the Probable Archaeological Potential of the Pattle Point Trestle Walkway Project Area, Boulevard Park, Bellingham, Washington" (page 7, Wessen & Wahl, dated July 2009). This report then states that the, "Bellingham Bay and Eastern Railroad was purchased by the northern Pacific Railroad in 1904 and the Northern Pacific used this route until at least the 1940s. It is likely that the Pattle Point Trestle structure was modified at least once during this period."

- The entire trestle superstructure above the timber rail stringers was replaced at or about that time, according to construction drawings by the firm Jongejan, Gerrard, and McNeal, dated 1980.

- All creosote piles in bents two through 34 were replaced with a smaller number of Chemonite piles at or about that time, according to construction drawings by the firm Associated Project Consultants, Inc., dated 1991 and the report "*Inspection & Assessment of Pattle Point Trestle, Boulevard Park, Bellingham, WA*" (Echelon Engineering, Inc., dated January 2008).

Please contact me at (425) 741-3800 if you have any questions about this information. You may also contact Gina G. Austin, of the City of Bellingham Parks and Recreation Department, at (360) 778-7000.

Sincerely,

Reid Middleton, Inc.

Mark J. Daniel
Planner

Enclosures as noted

cc: Gina G. Austin, P.E., City of Bellingham Parks and Recreation Department
Rebekah Padgett, Washington Department of Ecology
Steven Sundin, City of Bellingham Planning and Community Development Department
Brian W. Williams, Washington Department of Fish and Wildlife

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APPENDIX 10
Focused Environmental Site Assessment Report
(Report appendices are available under separate cover.)

Herrenkohl Consulting LLC
321 Summerland Road
Bellingham, WA 98229

telephone: 360.319-0721
mherrenkohl@msn.com

April 17, 2009

Gina Austin, PE
City of Bellingham Parks & Recreation
3424 Meridian Street
Bellingham, Washington 98225

Subject: Final Focused Environmental Site Assessment Report
In Support of the Construction Feasibility Study for the Boulevard Park Shoreline and Overwater Walkway Project (Dated April 17, 2009)

Dear Gina:

Enclosed please find one (1) paper copy of the final focused environmental site assessment (ESA) report (including compact disk [CD]) in support of the construction feasibility study for the Boulevard Park shoreline and overwater walkway project dated April 17, 2009 for your use.

Concurrently, I am sending paper copies of the final ESA report to John Rork of Puget Sound Energy and Mary O'Herron of Ecology. Electronic copies (CD) in PDF format will be distributed to Shannon Kinsella of Reid Middleton, Dave Pischer of Landau, John Houlihan of Houlihan Law, and Lucy McInerney of Ecology.

If you have any questions, please contact me at 360-319-0721 or mherrenkohl@msn.com. It has been a pleasure working for you and the City of Bellingham on this project.

Sincerely,
HERRENKOHL CONSULTING LLC

Mark J. Herrenkohl, LG, LEG
Principal Manager

Enclosure: (1 paper copy with CD)

Cc Mary O'Herron, Ecology (1 paper copy of report with CD); John Rork, PSE (1 paper copy of report with CD); John Houlihan (CD); Shannon Kinsella, Reid Middleton (CD); Dave Pischer, Landau (CD); Lucy McInerney, Ecology (CD)

FINAL REPORT
FOCUSED ENVIRONMENTAL SITE ASSESSMENT

Boulevard Park Shoreline & Overwater Walkway
Bellingham, WA

Prepared for
City of Bellingham
Parks & Recreation Department
3424 Meridian Street
Bellingham, WA 98225

Prepared by

Herrenkohl Consulting LLC
321 Summerland Road
Bellingham, WA 98229

Landau Associates Inc.
130 2nd Avenue South
Edmonds, WA 98020

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Reid Middleton, Inc.
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April 17, 2009

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ACRONYMS AND ABBREVIATIONS

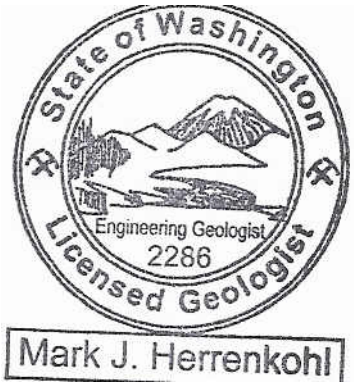
AET	Apparent Effects Threshold
ARI	Analytical Resources, Inc.
ASTM	American Society for Testing and Materials
BAP	benzo(a)pyrene
bgs	below ground surface
BNA	Base Neutral Acid
BNSF	Burlington Northern Santa Fe
BSL	bioaccumulation screening level
CMA	combined mortality and abnormality
CSL	cleanup screening level
CVAA	cold vapor atomic absorption spectrometry
DGPS	Differential Global Positioning System
DQOs	Data quality objectives
Dx	Diesel-range and Motor oil-range organic hydrocarbons
ECD	electron capture detector
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management
EPA	US Environmental Protection Agency
ESA	Environmental Site Assessment
FCR	Field Change Request
FID	flame ionization detector
GC	gas chromatograph
GPC	Gel permeation chromatography
GPS	Global Positioning System
Herrenkohl	Herrenkohl Consulting LLC
HPAH	high molecular weight polycyclic aromatic hydrocarbon
HRGC/HRMS	high-resolution gas chromatography with high-resolution mass spectrometry
ICP/MS	inductively coupled plasma/mass spectrometry
ICP-OES	inductively coupled plasma-optical emission spectrometry

LAET	lowest apparent effect threshold
2LAET	second lowest apparent effect threshold
Landau	Landau Associates, Inc.
LL	liquid limit
LPAH	low molecular weight polycyclic aromatic hydrocarbon
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
mg/kg OC	milligrams per kilogram normalized to organic carbon
mg/L	milligrams per liter
MGP	manufactured gas plant
MIG	mean individual growth
MLLW	mean lower low water
MTCA	Model Toxics Control Act
NAD	North American Datum
NAPL	nonaqueous phase liquid
NAVD	North American Vertical Datum
NWTPH	Northwest Total Petroleum Hydrocarbons
PAHs	Polycyclic aromatic hydrocarbons
Pcf	pounds per cubic foot
PI	plasticity index
PL	plastic limit
PSE	Puget Sound Energy
PSEP	Puget Sound Estuary Program
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RI/FS	remedial investigation/feasibility study
RPD	relative percent difference
R/V	research vessel
SAP	Sampling and Analysis Plan
SIM	Selective Ion Monitoring
SMS	Washington State Sediment Management Standards

SQS	sediment quality standard
SVOCs	semivolatile organic compounds
TEQ	toxicity equivalency
TOC	total organic carbon
TPH	total petroleum hydrocarbons
USCS	Unified Soil Classification System
VOCs	volatile organic compounds
WAC	Washington Administrative Code
WARM	Washington Ranking Method

CERTIFICATION

I, Mark J. Herrenkohl, a licensed engineering geologist in the State of Washington, certify that I have reviewed the geosciences portions of this document.



Signature of Geologist:

Name: Mark J. Herrenkohl Date: April 17, 2009

EXECUTIVE SUMMARY

INTRODUCTION

In September 2008, Herrenkohl Consulting LLC and Hart Crowser Inc., under contract with the City of Bellingham (City) and the Washington State Department of Ecology (Ecology) respectively, conducted a focused environmental site assessment (ESA) for the proposed shoreline development and overwater walkway from Boulevard Park to the former Cornwall Avenue landfill. The project site is being evaluated for possible impacted soils and sediments with regulatory consideration under the Washington State Model Toxics Control Act (MTCA, Chapter 70.105D RCW) and the Sediment Management Standards (SMS, Washington Administrative Code [WAC] 173-204). Sediment collection and analysis procedures described in the project Sampling and Analysis Plan (SAP, Herrenkohl & Landau 2008) were in general accordance with WAC 173-340-820, WAC 173-204-600, and the Sediment Sampling and Analysis Appendix, as updated (Ecology 2008a).

The results of this focused ESA will be used, along with other project evaluations, to assist the City in determining the feasibility of constructing the proposed overwater walkway and associated shoreline improvements. It will also provide critical data on the nature and magnitude of environmental impacts in sediments to supplement data collected as part of the future remedial investigation/feasibility study (RI/FS) at the South State Street Manufactured Gas Plant (MGP Site) once located in Boulevard Park[1].

SCIENTIFIC TEAM

The sampling team consisted of staff from Hart Crowser Inc.'s Seattle, Washington office and Herrenkohl Consulting LLC of Bellingham, Washington. Field sampling at the site was conducted from September 19 through 30, 2008, aboard the research vessel (R/V) Kittiwake owned and operated by Mr. Charles Eaton of Bio-Marine Enterprises. Mr. Mark Herrenkohl of Herrenkohl Consulting LLC was the field manager during the survey, and along with Landau Associates Inc. is under contract with Reid Middleton for completion of this focused ESA report. Dr. Roger McGinnis was the Hart Crowser project manager for the field program under contract with Ecology. Ms. Gina Austin, City of Bellingham Parks & Recreation Department, has the overall responsibility for management of the Boulevard Park Shoreline and Overwater Walkway project. Ms. Lucy McInerney is the designated project manager for Ecology, providing oversight and review for the project.

DATA COLLECTION AND ANALYSIS

Surface sediment grab samples and sediment vibracores were collected from 9 locations along the proposed alignment of the overwater walkway between Boulevard Park and the former Cornwall Avenue landfill. Nine surface (0 to 12 cm) and 32 subsurface sediment composite

[1] The City and Puget Sound Energy are negotiating an Agreed Order with Ecology to conduct an RI/FS for the MGP Site.

samples (plus field quality control samples) were collected and analyzed for SMS conventional parameters and chemicals of concern. Three surface samples and two reference samples were tested for sediment toxicity based on field and laboratory results. Selected subsurface samples were also tested for various geotechnical parameters.

Selected sediment samples were delivered to Analytical Resources, Inc. of Tukwila, Washington and analyzed for total solids, total organic carbon, total sulfides, ammonia, heavy metals, petroleum hydrocarbons, semivolatile organic compounds, and polychlorinated biphenyls (PCBs). Geotechnical tests included grain size analysis, Atterberg limits, moisture content, specific gravity, and wet and dry bulk density. Analytical methodology, quality control, and detection limit requirements followed specifications in the project-specific SAP.

Sediment toxicity testing was also performed on selected surface sediment samples by Northwestern Aquatic Services of Newport, Oregon. The toxicity tests performed included the acute 10-day amphipod mortality test, the acute 48- to 60-hour larval mortality/abnormality test, and the chronic 20-day test for growth in juvenile polychaetes.

SUMMARY OF MAJOR FINDINGS

Sediment sample results from this study and relevant historical studies within the proposed project area were characterized. A summary of major findings is listed below.

- The upper layer of sediments is relatively heterogeneous and consists of saturated organic clayey silts with sand and highly organic debris including wood dust/chips/bark. At several stations along the proposed walkway alignment, a distinct silty sand or sandy silt layer with clay and trace shell fragments was observed below this upper organic layer and identified as native marine sediment. This pre-industrial sediment layer appears to be located over bedrock identified as the Chuckanut sandstone or siltstone.

- For the surface sediment composites, mercury was the only chemical of concern detected at concentrations above the corresponding SMS cleanup screening level (CSL), but at only one location (BLVD-SS-07). This is an improvement from previous surface sediment results reported in the project area in that, in addition to mercury, two other metals (copper and lead) and polycyclic aromatic hydrocarbons (PAHs) were reported above CSL criteria in these historical studies at the site.

- Bioassay testing was conducted on selected surface sediment composites based on field observations and/or chemical exceedances of criteria. Bioassays for each sample passed SMS criteria.

- Selected subsurface sediment samples exceeded CSL criteria for mercury and PAHs. The highest concentrations of mercury, exceeding sediment criteria, were observed 2 to 4 ft below mudline at stations BLVD-SC-06 and BLVD-SC-09. PAHs exceeding CSL criteria were detected in subsurface sediments at BLVD-SC-01, -02, and -04, located adjacent to Boulevard Park. The elevated PAH concentrations correspond with elevated

TPH concentrations detected in these samples and a distinct petroleum odor and sheen observed in the field at these locations.

- The petroleum hydrocarbon and PAH contamination detected in subsurface sediments near the pier and pocket beach and subsurface soils in the lower park (soil borings COB-01 and -02) may be associated with historical operations of a coal gasification plant previously located in the upper portion of Boulevard Park and/or other historical operations in this area of Bellingham Bay. Surface and subsurface sediments to the west (BLVD-SC-03) and north (BLVD-SC-05, -06, -07, -08) of the pier did not show obvious signs of petroleum hydrocarbon contamination based on field and laboratory results.

- In addition to mercury exceedances, PCBs were detected above sediment quality standards SQS criteria in subsurface samples from BLVD-SC-09, located adjacent to the former Cornwall Avenue landfill site. The upper 8 ft of sediment contained elevated mercury and PCB concentrations with mercury exceeding the CSL at several depths. The mercury and PCBs are likely related to historical disposal of wood and municipal wastes at the site.

CONSIDERATIONS FOR CONSTRUCTION FEASIBILITY STUDY

Subsurface soils and sediments within portions of the project area are impacted with petroleum hydrocarbons, mercury, and PCBs. Impacted soils at Boulevard Park are covered with a thick layer of fill materials (e.g., wood debris). Because impacted subsurface sediments have been covered with cleaner surface sediment, active cleanup (e.g., removal) would likely not be required for construction of the project. However, shoreline development including removal of the existing pier at Boulevard Park, shoreline stabilization, and construction of the overwater walkway may disturb these impacted subsurface sediments and potentially release certain contaminants (e.g., PAHs) to the environment. Water quality monitoring will likely be required as part of the Section 401 Water Quality Certification permitting requirements. If there are exceedances, contingency engineering controls (e.g., silt curtains) may be required to reduce impacts to water quality.

Sediment sampling may be required once construction is complete to determine if surrounding surface sediments have been impacted by disturbance of subsurface sediments in the project area. Additional long-term monitoring of sediments may also be necessary to confirm natural recovery of impacted surface sediments. The impacted sediments identified in this focused ESA will likely be investigated further as part of the RI/FS for the MGP Site. The planned RI/FS will also include an evaluation of potential impacts to soil, groundwater, and surface water from the MGP Site.

The Port of Bellingham is currently updating the RI/FS report for the former Cornwall Avenue landfill and coordinating with Ecology regarding evaluation and selection of an appropriate cleanup action for that site. It is currently anticipated that the cleanup action will include installation of a low permeability landfill cap over the uplands area, shoreline stabilization, and either capping or monitored natural recovery of subtidal sediments. As a potential liable party

for the Cornwall Avenue landfill, the City will continue to coordinate with the Port and Ecology so that design and construction of the overwater walkway is properly integrated with design and construction of the future landfill cap and other environmental features that are determined to be necessary as part of the final cleanup action for the former Cornwall Avenue Landfill site.

1 INTRODUCTION

This report describes the results of a focused environmental site assessment (ESA) in support of the construction feasibility study for the Boulevard Park shoreline and overwater walkway project located in Bellingham, Washington (Figure 1-1). This report has been prepared by Herrenkohl Consulting LLC and Landau Associates Inc. for Reid Middleton Inc. (project team) under contract (Contract No. 2008-011) to the City of Bellingham (City) with project cost-sharing and review by the Washington State Department of Ecology (Ecology).

The sampling operations in support of the ESA were conducted between September 19 and 30, 2008 by Hart Crowser Inc. and Herrenkohl Consulting LLC[2], and followed procedures described in the project sampling and analysis plan (SAP) (Herrenkohl and Landau 2008). In total, 10 surface sediment grab samples and 9 sediment cores, ranging in depth between 4 ft and 15 ft below mud surface, were collected within the proposed alignment of the overwater walkway. Surface sediment grab samples were also collected from two reference locations in Samish Bay as part of this study. The work described in this report has been coordinated with other work in support of the construction feasibility study, including geotechnical and structural engineering evaluations for shoreline and overwater walkway development (Reid Middleton 2009).

1.1 PURPOSE AND SCOPE

The purpose of this focused ESA was to define the nature and extent of any significant environmental impacts in soils and sediments at the proposed terminuses of the walkway at Boulevard Park and the former Cornwall Avenue landfill, and along the walkway alignment between the park and landfill. It was determined during the data gap analysis in support of the SAP that there were adequate data to evaluate soil quality at the proposed terminuses at Boulevard Park and the Cornwall Avenue landfill, so no additional sampling was proposed for the focused ESA in these areas. The sampling distribution focused on providing both surface and subsurface sediment data along this proposed alignment where sediment may be disturbed during construction of the walkway and shoreline improvements. Geotechnical data were also collected to facilitate future evaluations of potential excavation, filling, and capping activities, and capacity of existing sediments to provide foundation support for construction of overwater structures (e.g., pilings).

In addition to providing data for the construction feasibility study, the results of the focused ESA will also provide critical data on the nature and magnitude of environmental impacts in sediments to supplement data collected as part of the future RI/FS at the South State Street Manufactured Gas Plant Site (MGP Site). The City and Puget Sound Energy (PSE) are negotiating an Agreed Order with Ecology to conduct an RI/FS for the MGP Site. Figure 1-1 shows the existing structures of the MGP Site located in the upper portions of Boulevard Park.

[2] Hart Crowser Inc. was Ecology's sampling and testing contractor under a cost-sharing agreement with the City. Herrenkohl Consulting LLC provided field sampling support on behalf of Reid Middleton and the City.

This focused ESA was conducted in accordance with regulatory requirements of the Model Toxics Control Act (MTCA) [WAC 173-340] and the Sediment Management Standards (SMS) [WAC 173-204], which includes standards for marine sediments.

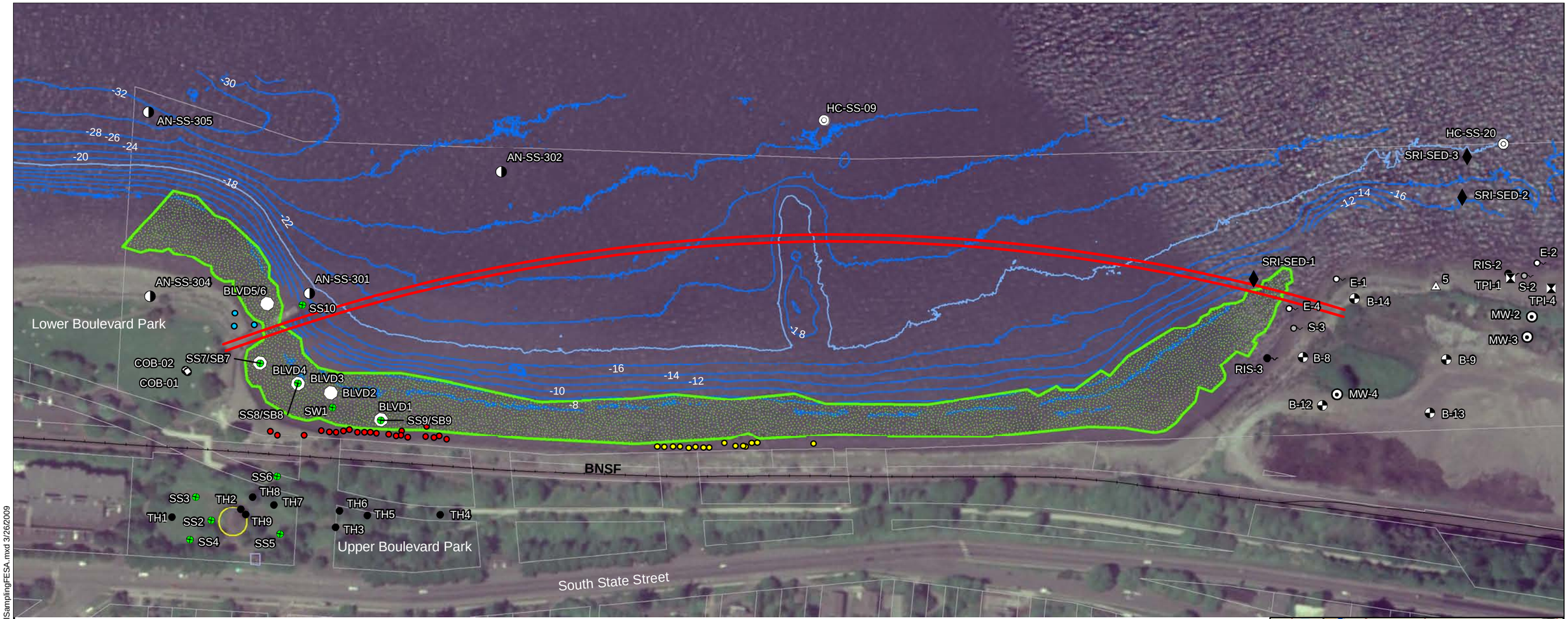
1.2 ORGANIZATION OF REPORT

Following this introduction, the report has been organized into six sections including the following:

- Section 2 describes existing data including a summary of previous investigations;
- Section 3 provides a summary of the field and laboratory activities conducted by Herrenkohl, Hart Crowser Inc., Analytical Resources Inc., and Northwestern Aquatic Sciences;
- Section 4 presents the field and laboratory testing results from this work with comparisons to SMS criteria;
- Section 5 provides a discussion of the combined historical and focused ESA results including comparisons to MTCA and SMS criteria;
- Section 6 provides summary and conclusions for the construction feasibility study; and
- Section 7 provides references.

Figures and tables are numbered to correspond to and are presented in each respective section. This report is supplemented by six appendices:

- Appendix A: Historical data summary;
- Appendix B: Field sampling forms, station location data, photograph log, and detailed sediment description logs based on field and laboratory descriptions and grain size distribution data;
- Appendix C: Chain-of-custody information;
- Appendix D: Data validation reports for chemistry and bioassay testing;
- Appendix E: Chemistry and geotechnical testing reports from Analytical Resources, Inc. (ARI) of Tukwila, Washington; and
- Appendix F: Bioassay testing report from Northwestern Aquatic Sciences of Newport, Oregon.



Legend

Historic Boulevard Park Sample Locations

- *SS1* — 1991 E&E Site Hazard Assesment
- *TH1* — 1998 Groundwater Assesment
- *BLVD1* — 1998 SMS Assessment
- *COB-01* — 2007 Integral Boring
- AN-SS-301 — Starr Rock Surface Sediment Sample Location (1998)

Historic Cornwall Avenue Landfill Sample Locations

- Approximate Location of Dames and Moore Boring (1960)
- Approximate Location of Expanded Site Investigation Seep/Sediment Sampling (1996) and Focused RI Seep Sampling (1998)
- Approximate Location of Expanded Site Investigation Test Pit (1996)
- Approximate Location of Initial Site Investigation Seep/Sediment Sampling (1992)
- Approximate Location of Monitoring Well Focused RI (1998) and of Monitoring Well Supplemental RI (2002)
- Approximate Location of Purnell & Associates Boring (1985)
- Approximate Location of Supplemental RI Sediment Sample (2002)
- Approximate Location of Supplemental RI Seep Sample (2002)
- Approximate Location of Whatcom Waterway RI Sediment Samples (1996)

Other Map Features

- Boulevard Park Dock Pilings (Lisa Kaufman, DNR 2008)
- Boulevard Park North Pilings (Lisa Kaufman, DNR 2008)
- Boulevard Park Beach Pilings (Lisa Kaufman, DNR 2008)
- Proposed Walkway Alignment (Walker Macy)
- Bathymetry (Golder 2008)
- Eelgrass Survey (Grette Associates)
- Railroad (City of Bellingham)
- Parcels (City of Bellingham)
- Former Gas Facility Features
- Existing Gas Holder Tank
- Existing Transformer Building

N

0 200 400

Scale in Feet, NAD 83

Data Source: City of Bellingham; WA Department of Natural Resources; Reid Middleton; Walker Macy, Grette Associates, Golder

Y:\Projects\053101\Mapdocs\Focused Environmental Site Assessment\Figure1-1_HistoricalSamplingFESA.mxd 3/26/2009

LANDAU ASSOCIATES

Boulevard Park Bellingham, Washington	**Historical Sampling Locations, Focused Environmental Site Assessment**	Figure **1-1**

2 HISTORICAL DATA/PREVIOUS STUDIES

The Boulevard Park site and vicinity has been studied previously (EPA 1984, E&E 1991, Anchor & Hart Crowser 2000, Erickson and Cubbage 1998, Norton and Summers 1998, Integral 2007, Landau 2007). These historical studies include information on sediment, surface water, groundwater, and soil quality, the results of which were used in the evaluation of data gaps for this study (refer to SAP). A brief summary of the historical data from previous studies is provided below. A vicinity map with historical site sample locations is shown on Figure 1-1. Relevant historical data for the project site are summarized in tables presented in Appendix A.

2.1.1 EPA 1984 Site Assessment

In May 1984, the US Environmental Protection Agency (EPA) completed a preliminary environmental site assessment on soils in the vicinity of the historical coal gasification plant located in Boulevard Park. The evaluation was conducted in response to observations made by City personnel during the development of the park in the late 1970's (*personal communication with Byron Elmendorf and John Ivory*). Twenty-two surface soil (0-6 in) and 19 subsurface soil (3 ft depth) samples were collected in the lower and upper upland portions of Boulevard Park (EPA 1984). Each soil sample was analyzed for polycyclic aromatic hydrocarbons (PAHs) using unspecified screening methods. The results were not included in the project database because the data are approximately 25 years old and original laboratory data certificates are not available for review.

2.1.2 Ecology 1991 Site Hazard Assessment

Ecology and Environmental Inc. (E&E), on behalf of Ecology, conducted a hazard assessment of the historical coal gasification plant site to evaluate the potential environmental and public health hazards and to determine the ranking of the site using the Washington Ranking Method (WARM). Four surface (0 to 10 cm) sediment samples, three subsurface (1 to 2 ft) sediment samples, and one surface water sample were collected in the vicinity of the public dock and pocket beach on the northern end of Boulevard Park as part of a site hazard assessment (E&E 1991) (Figure 1-1). Five surface soil samples (unknown depth) were also collected in the upper section of the park. Additional soil and surface water samples were collected within and adjacent to a ditch between the upper park and the Burlington Northern Santa Fe (BNSF) railroad tracks located along the shoreline. Volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) were analyzed for each media. Because the data are approximately 18 years old, they were not evaluated further in the focused ESA but data are included in the project database.

2.1.3 Whatcom Waterway RI/FS (1996/1998)

Georgia Pacific Corporation conducted a remedial investigation/feasibility study (RI/FS) on the Whatcom Waterway site in 1996 and 1998 (Anchor and Hart Crowser 2000). Five surface sediment grab samples (0 to 9 cm) were collected in the vicinity of the public dock at Boulevard

Park and between Boulevard Park and the former Cornwall Avenue landfill in support of this study (Figure 1-1). Four of the sediment samples (AN-SS-301, 302, 304, 305) were analyzed for total organic carbon (TOC), metals, grain size, and SVOCs. The other surface sediment sample (HC-SS-09) was tested only for TOC, grain size, and mercury. These data were carried forward for use in the focused ESA and included in the project database.

2.1.4 Ecology 1998 Intertidal Sediment Investigation

Ecology conducted a sediment investigation at Boulevard Park to determine whether or not a sediment station cluster of potential concern was present, as described in Ecology's SMS (173-204-510). Six surface sediment samples (locations BLVD1 through BLVD6) were collected from a depth of 0 to 10 cm for chemical analysis (Norton and Summers 1998) (Figure 1-1). All samples were analyzed for conventionals (e.g., TOC), metals, and SVOCs using Puget Sound Estuary Program (PSEP)-recommended methods. These data were carried forward for use in the focused ESA and included in the project database.

2.1.5 Ecology 1998 Preliminary Groundwater Assessment

A qualitative groundwater assessment was also conducted by Ecology in upland portions of the park to determine if contaminants could migrate via groundwater to Bellingham Bay (Erickson and Cubbage 1998). Nine test holes were drilled to depths ranging from 1 to 15 ft to determine depth to groundwater and bedrock and physical soil characteristics (Figure 1-1). No analytical data were collected but information was considered in the focused ESA.

2.1.6 City of Bellingham 2007 Soil Investigation

Two soil borings (COB-BLVD-01 and -02) were advanced within the footprint of a proposed pavilion planned for construction in the lower section of the park (Figure 1-1) (Integral 2007). Selected soil samples were collected from the borings and analyzed for metals, total petroleum hydrocarbons (TPH), and SVOCs. These data were carried forward for use in the focused ESA and included in the project database.

2.1.7 Cornwall Avenue Landfill RI/FS

A number of environmental and geotechnical investigations have been conducted at or near the former Cornwall Avenue landfill, and provide the basis for characterizing the nature and extent of site contamination (Landau 2007). Surface water, groundwater, soil, and sediment samples have been collected in support of the project RI/FS. Relevant sample locations near the proposed terminus of the overwater walkway are shown on Figure 1-1. Depending on data quality and time of collection, these physical and chemical data were carried forward for use in the focused ESA and included in the project database.

3 METHODS

This section describes the methods used in the collection and analysis of chemical, biological, and geotechnical sediment samples during the focused ESA for Boulevard Park. Except where noted, field and analytical methods followed those described in the SAP (Herrenkohl and Landau 2008).

3.1 FIELD METHODS

Field sampling at Boulevard Park and vicinity was conducted on September 19, 2008 (surface sediment sampling) and from September 22 through September 24, 2008 (sediment coring), aboard the Bio-Marine Enterprises research vessel (R/V) Kittiwake. Surface grab samples were also collected aboard the R/V Kittiwake from the Samish Bay reference area on September 30, 2008. Sampling operations consisted of sediment surface grab and subsurface core sampling for chemical, biological, and geotechnical testing. The sample locations are presented on Figure 3-1. The sampling consisted of 9 stations located adjacent to the proposed terminuses and along the alignment of the proposed overwater walkway between Boulevard Park and the former Cornwall Avenue landfill. The actual sampling locations were within a few meters of the target locations proposed in the SAP (refer to Appendix B, Table B-1). Surface sediment samples were also collected from two reference locations in Samish Bay (Samish Bay Ref 2, Samish Bay Ref 3) with location information presented in Appendix B, Table B-2.

A summary of the field methods used during the sampling are provided below. Additional information is provided in the SAP (Herrenkohl and Landau 2008).

3.1.1 Navigation

The R/V Kittiwake was positioned at each sampling station using the boat's Trimble NT300D differential global positioning system (DGPS). Positions were reported in both latitude/longitude and State Plane Coordinate System, North American Datum 1983 (NAD83) with an accuracy of 1 to 2 meters. Water depths and sediment elevations were measured using the boat's meter wheel attached to the sampling wire and depth sounders (Lowrance X-85 and Furuno FCV-665 Sounders) and referenced to Mean Lower Low Water (MLLW). A summary of station locations for all samples collected is provided in Appendix B (Tables B-1 and B-2).

3.1.2 Surface Grab Sampling

Surface sediment samples were collected using either a stainless steel double 0.1 m^2 van Veen grab sampler or a stainless steel 0.1 m^2 Young van Veen grab sampler (BLVD-SS-01 only). The upper 12 cm of sediment was collected from each grab sample for possible testing. The 12 cm depth is considered the biological active zone in sediments of Bellingham Bay (RETEC 2006). The sample depth for stations BLVD-SS-06 through BLVD-SS-09 was overpenetrated (>16 cm) with each attempt because the sediment at these locations was very soft. Although the surface

was disturbed, the upper 12 cm of sediment was collected from the overpenetrated samples for testing. Sample field logs are presented in Appendix B.

All surface grab samples were processed for both chemistry and bioassay testing and followed methods provided in the SAP (Herrenkohl and Landau 2008). Materials encountered in the grab samples were classified in the field in general accordance with American Society for Testing and Materials (ASTM) Standard Practice D 2488, the Standard Practice for the Classification of Soils (Visual-Manual Procedure). A photograph was taken of each grab sample (refer to Appendix B for representative photographs).

Reference sediments were collected aboard the R/V Kittiwake on September 30, 2008 from Samish Bay, located approximately 30 miles south of the project site (Figure 3-2). Sediment was collected from two stations, one station primarily composed of fine-grained material (Samish Bay Ref 2) and the other primarily composed of sand (Samish Bay Ref 3). The collected reference sediment was processed for conventional chemistry and bioassay testing.

3.1.3 Sediment Coring

Sediment cores were collected using a 4-inch diameter vibracorer with Lexan core tube and core catcher. The boat's winch and boom were used to lower the vibracorer to the bottom to begin sampling. The penetration and recovery depths were measured for each core, the ends were capped and taped, and the cores were labeled and transported to shore for further processing.

Sediment cores were transported by vessel to the Port of Bellingham's (Port) Whatcom Marine Terminal warehouse for processing. At the onshore processing facility, the cores were cut into smaller sections based on the recovery-to-penetration data. In general, sample sections were approximately 2 ft in length[3]. A description of sample appearance including station location, depth, gross characterizations of the vertical profile, penetration depth, evidence of sheen, and sample quality was recorded on detailed sediment description logs presented in Appendix B. Materials encountered in the core samples were classified in the field in general accordance with ASTM D 2488. A photograph was taken of a representative portion of the vibracore samples (refer to Appendix B).

3.1.4 Deviations from SAP

Five deviations from the SAP were implemented during the field program for the focused ESA. Table 3-1 briefly describes each of the deviations. The field change request (FCR) forms are provided in Appendix B.

[3] For each core, the length of sample sections was adjusted based on the recovery of sediment in the core compared to the measured penetration depth. For example, if the penetration depth was 10 ft but only 9 ft of sediment was recovered in the core, the recovery-to-penetration was 90%. Therefore, sample sections planned for 2 ft were adjusted to 1.8 ft lengths assuming compaction occurred throughout the core tube during sampling.

Table 3-1. Deviations from the Sampling and Analysis Plan

Field Change Request No.	Date	Description of Change	Reason for Change
FCR-1	9-23-08	Change coring depth at stations BLVD-08, -09 from 18-ft to 15-ft below mudline.	There was a concern for the safety of vessel and occupants in collecting cores greater than 15-ft.
FCR-2	9-23-08	Sample recovery for BLVD-SC-06 was below acceptance criteria of 75%. Accept core recovery at 50%.	High wood debris content in sediments resulted in low recovery at this location.
FCR-3	9-23-08	Sample recovery for BLVD-SC-03 was below acceptance criteria of 75%. Accept core recovery at 58%.	High wood debris content in sediments resulted in low recovery at this location.
FCR-4	9-23-08	Sample recovery for BLVD-SC-02 was below acceptance criteria of 75%. Accept core recovery at 59%.	High wood debris content in sediments resulted in low recovery at this location.
FCR-5	9-24-08	For BLVD-SC-07, composite multiple depths (0-2, 2-4 ft) into one sample for analysis.	The upper 0-2 ft sample was composed mostly of water.

3.2 LABORATORY METHODS AND DATA ANALYSIS

Sediment samples collected from the project site and reference locations were analyzed for various chemical, biological, and geotechnical tests as described in the following sections. Chain-of-custody information is provided in Appendix C. A more detailed description of laboratory methods and quality control requirements is provided in the SAP.

3.2.1 Sediment Chemistry

Sediment samples were analyzed for one or more of the following chemical and conventional analyses (refer to Table 3-2 located at end of this section):

- Total SMS Metals by EPA Method SW 6010B/7471
- Diesel- and Motor Oil-range Petroleum Hydrocarbons by Ecology Method NWTPH-Dx (with GC/FID Silica and Acid Cleanups)
- SVOCs by EPA Method SW 8270D low level
- PCBs by EPA Method SW 8082 low level
- TOC by Plumb 1981
- Total Sulfides by EPA Method 376.2
- Ammonia by EPA Method 350.1M
- Grain size analysis by ASTM D 422 with hydrometer.

The selection of samples for chemical analysis followed the tiered approach presented in the SAP. Selected samples were initially analyzed for SMS metals and NWTPH-Dx. At the request from Ecology, selected samples collected from station BLVD-09 were also analyzed for PCBs. If either the diesel- or motor oil-range fractions from the NWTPH-Dx method were above the 200 mg/kg screening level, samples were also analyzed for TOC and SVOCs. Additional samples were analyzed for TOC and SVOCs based on field observations and results of corresponding samples collected at depths above or below a particular sample (e.g., BLVD-SS-01).

3.2.2 Bioassay Testing

Three surface grab samples (BLVD-SS-01, -07, -09) and two reference sediment samples (Samish Bay Ref 2 and 3) were selected for bioassay testing based on the chemistry results and observations made in the field. The following tests were conducted as described in the SAP:

- Amphipod (*Eohaustorius estuarius*) 10-day mortality test (Ecology 2008a)
- Larval (*Mytilus [edulis] galloprovincialis*) development test (Ecology 2008a)
- Juvenile Polychaete (*Neanthes arenaceodentata*) 20-day mortality and growth test (Ecology 2008a).

Biological tests were conducted by Northwestern Aquatic Sciences (NAS) located in Newport, Oregon.

3.2.3 Geotechnical Testing

The physical testing of selected samples was performed for this study to evaluate specific index and geotechnical engineering properties of sediments at the site. Knowledge of the physical characteristics of sediments will be used to evaluate potential excavation, filling and capping methods, and capacity of existing sediments to provide foundation support for construction of overwater structures (e.g., pilings). In addition to grain size described in Section 3.2.1, the following tests were performed on representative sections of sediment cores collected at the site (refer to Table 3-2):

- Atterberg limits by ASTM D 4318
- Specific gravity by ASTM D 854
- Moisture content by ASTM D 2216
- Wet and dry bulk density by ASTM D 2937.

All testing was conducted by ARI's physical testing laboratory.

Table 3-2. Sample Analysis Summary.

Station Location	Sample Depth	Conventionals	Metals	NWTPH-Dx	SVOCs	PCBs	Physical Parameters	Bioassays
Surface Sediment Samples								
BLVD-SS-01	0-12 cm	TOC, TS, AM, GS	X	X	X			X
BLVD-SS-02	0-12 cm	TOC, TS, AM	X	X				
BLVD-SS-03	0-12 cm	TOC, TS, AM	X	X				
BLVD-SS-04	0-12 cm	TOC, TS, AM	X	X				
BLVD-SS-05	0-12 cm	TOC, TS, AM	X	X				
BLVD-SS-06*	0-12 cm	TOC, TS, AM, GS	X	X				
BLVD-SS-07	0-12 cm	TOC, TS, AM, GS	X	X				X
BLVD-SS-08	0-12 cm	TOC, TS, AM, GS	X	X				
BLVD-SS-09	0-12 cm	TOC, TS, AM, GS	X	X		X		X
BLVD-SS-10*	0-12 cm	TOC, TS, AM, GS	X	X				
BLVD-FB-01	NA		X	X				
Sediment Core Samples								
BLVD-SC-01	0-2 ft	TOC	X	X	X			
	2-4 ft	TOC	X	X	X			
	4-6 ft	TOC	X	X	X			
BLVD-SC-02	2-4 ft	TOC	X	X	X			
	6-8 ft	TOC	X	X	X			
BLVD-SC-03	4-6 ft		X	X				

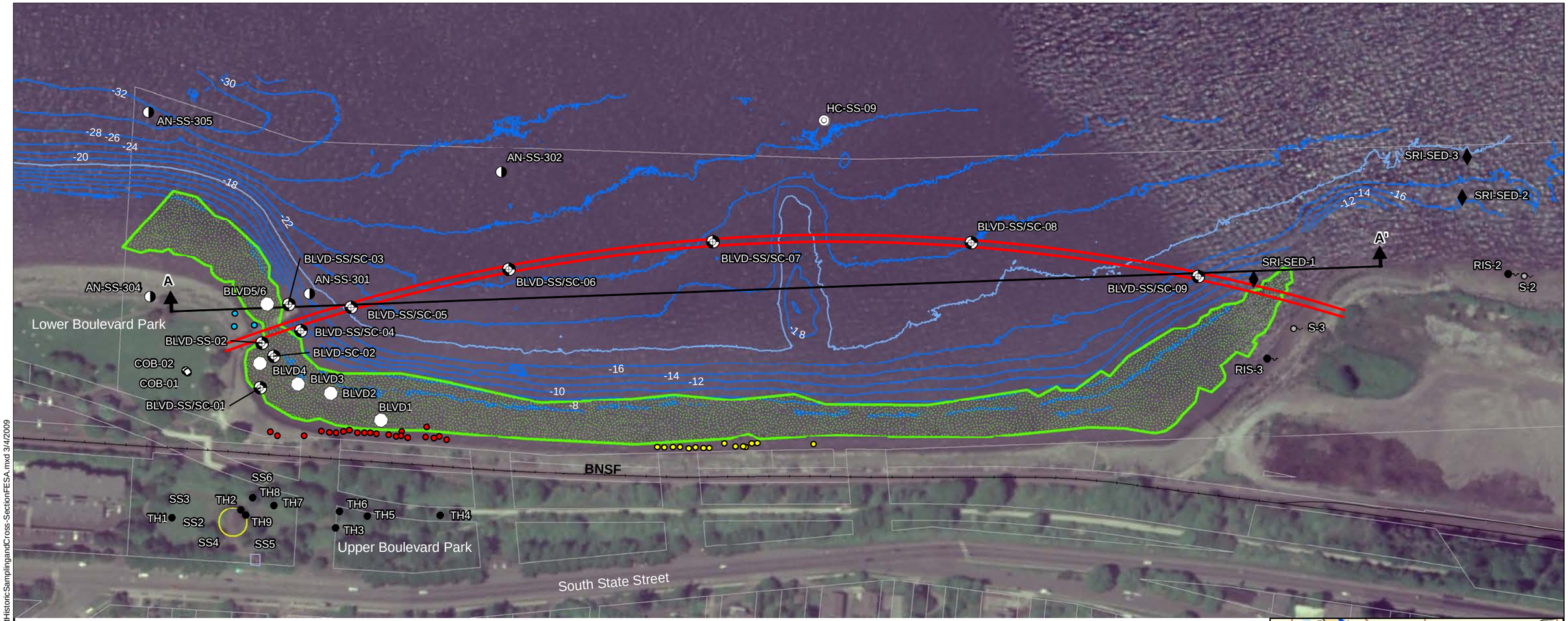
Table 3-2. Sample Analysis Summary.

Station Location	Sample Depth	Conventionals	Metals	NWTPH-Dx	SVOCs	PCBs	Physical Parameters	Bioassays
	6-8 ft		X	X				
BLVD-SC-04	0-2 ft	TOC	X	X	X			
	2-4 ft	TOC			X			
	4-6 ft	TOC			X			
	8-10 ft	GS	X	X			MC, AL, SG	
	10-10.5 ft						MC, BD	
BLVD-SC-05	6-8 ft		X	X				
	8-9.5 ft		X	X				
	9.5-10 ft	GS					MC, AL, SG	
	10-10.5 ft						MC, BD	
	10.5-12 ft	GS	X	X			MC, AL, SG	
	13.5-14 ft	GS						
BLVD-SC-06	0-2 ft		X	X				
	2-4 ft		X	X				
	4-6 ft		X	X				
	6-8 ft	GS					MC, AL, SG	
	8-9 ft						MC, BD	
	12-14 ft	GS					MC, AL, SG	
	14-14.5 ft						MC, BD	

Table 3-2. Sample Analysis Summary.

Station Location	Sample Depth	Conventionals	Metals	NWTPH-Dx	SVOCs	PCBs	Physical Parameters	Bioassays
BLVD-SC-07	0-4 ft		X	X				
BLVD-SC-08	0-2 ft		X	X				
	2-2.5 ft						MC, AL, SG, BD	
	2.5-4 ft	GS	X	X			MC, AL, SG	
	4-6 ft		X	X				
	8-8.5 ft						MC, BD	
	8.5-10 ft	GS					MC, AL, SG	
	14-14.5 ft						MC, BD	
BLVD-SC-09	0-2 ft		X	X		X		
	2-3 ft*	TOC	X	X	X	X		
	3-4 ft	TOC	X	X	X	X		
	4-6 ft	TOC	X	X	X	X		
	6-8 ft	TOC	X	X	X	X		
	8-8.5 ft						MC, BD	
	8.5-9.7 ft	GS	Hg Only				MC, AL, SG	
BLVD-SC-11	2-3 ft*	TOC	X	X	X			
BLVD-FB-02	NA		X	X				

Notes: * indicates field duplicate sample; TOC = total organic carbon; TS = total sulfides; AM = ammonia; GS = grain size; HG = mercury; AL = Atterberg limits; SG = specific gravity; MC = moisture content; BD = bulk density; SS = surface sediment; SC = sediment core; FB = field blank. Remaining samples were archived (frozen) for possible future analysis.



Legend

2008 Sample Locations

BLVD-01 — Surface Sediment (SS) and Sediment Coring (SC) Location

Historic Boulevard Park Sample Locations

TH1 — 1998 Groundwater Assesment

BLVD1 — 1998 SMS Assessment

COB-01 — 2007 Integral Boring

AN-SS-301 — Starr Rock Surface Sediment Sample Location (1998)

Historic Cornwall Avenue Landfill Sample Locations

Approximate Location of Expanded Site Investigation Seep/Sediment Sampling (1996) and Focused RI Seep Sampling (1998)

Approximate Location of Supplemental RI Sediment Sample (2002)

Approximate Location of Supplemental RI Seep Sample (2002)

Approximate Location of Whatcom Waterway RI Sediment Samples (1996)

Other Map Features

Boulevard Park Dock Pilings (Lisa Kaufman, DNR 2008)

Boulevard Park North Pilings (Lisa Kaufman, DNR 2008)

Boulevard Park Beach Pilings (Lisa Kaufman, DNR 2008)

Cross-Section Location

Proposed Walkway Alignment (Walker Macy)

Bathymetry (Golder 2008)

Eelgrass Survey (Grette Associates)

Railroad (City of Bellingham)

Parcels (City of Bellingham)

Former Gas Facility Features

Existing Gas Holder Tank

Existing Transformer Building

Note

1. Only relevant historical data locations based on age and quality are shown

N

0 200 400

Scale in Feet, NAD 83

Data Source: City of Bellingham; WA Department of Natural Resources; Reid Middleton; Walker Macy, Grette Associates, Golder

LANDAU ASSOCIATES

Boulevard Park Bellingham, Washington	**Current and Historical Sampling Locations, Focused Environmental Site Assessment**	Figure 3-1

Y:\Projects\053101\Mapdocs\Focused Environmental Site Assessment\Figure3-1_RelevantHistoricSamplingandCross-SectionFESA.mxd 3/4/2009

Legend

⊕ Reference Station

N

0 7,100 14,200

Scale in Feet

Data Source: ESRI

Y:\Projects\053101\Mapdocs\Focused Environmental Site Assesment\Figure3-2_SamishBay Reference Stations.mxd 3/4/2009

LANDAU ASSOCIATES

Boulevard Park Bellingham, Washington	**Samish Bay Reference Sample Locations, Focused Environmental Site Assessment, Boulevard Park**	Figure 3-2

4 RESULTS

This section presents the sampling and testing results for the focused ESA with comparisons to regulatory criteria, as appropriate. Field and coring logs are presented in Appendix B. Chain-of-custody documentation is provided in Appendix C. Supporting data validation for chemistry and bioassay testing is presented in Appendix D. Sediment chemistry laboratory reports and associated quality control documentation are provided in Appendix E. Bioassay laboratory reports and associated quality control documentation are provided in Appendix F.

4.1 SEDIMENT DESCRIPTIONS

The predominant sediment type encountered in surface sediments of the project site was a gray to black, sandy silt with clay and moderate to abundant organic debris (e.g., fine wood chips, bark, etc.) (Unified Soil Classification System [USCS] symbol OH). One station, BLVD-SS-01, located near the pocket beach of Boulevard Park, was primarily composed of silty sand with moderate to abundant organic debris (SM). Organic debris appeared to increase with depth in each grab sample collected within the project site. Reference sediments from Samish Bay were collected to match the two general sediment types observed at the project site. Reference sample Samish Bay Ref 2 was primarily composed of fine-grained material (97%) and sample Samish Bay Ref 3 was primarily composed of sand (88%) based on grain size data (Table 4-1).

The predominant lithology of core sediments was an olive to dark brown, organic, clayey silt with fine sand (OH) to highly organic wood debris (PT). The organic sediments were underlain by an olive, fine sandy, clayey silt with trace shell fragments (MH/ML) and olive, silty, fine to medium sand with clay and trace shell fragments (SM). The lower layers observed in some cores (BLVD-SC-05, -06, -08) likely represent “native” material or pre-industrial sediment deposits in Bellingham Bay. The layers of wood debris observed in the cores were predominately composed of wood chips, dust, and bark fragments, with origins likely from milling operations along the shores of Bellingham Bay and the Nooksack River from the late 1800’s through the early 1970’s (Anchor and CGS 2007). Core logs are presented in Appendix B.

One of the five cores collected near the pocket beach of Boulevard Park (core BLVD-SC-01) contained a distinct silty sand layer (SM) above the organic layer described above. The sand layer was observed from the surface to approximately 1.0 ft below mudline. Bedrock or a second coarse sand or gravel layer was encountered at a depth of 6 ft below mudline causing refusal of the vibracorer. Several attempts were made to collect deeper core samples from this location, but core refusal was encountered at approximately 6 ft below the sediment surface for all sampling attempts.

A thick bark layer at approximately 4 ft below mudline was encountered in multiple coring attempts at station BLVD-SC-07 preventing the corer from collecting sediment below this depth. Bark was lodged in the core catcher after each attempt, identifying the cause of refusal at this station.

A cross section (A-A') was prepared along the proposed alignment of the overwater walkway from the terminus at Boulevard Park to the terminus at the former Cornwall Avenue landfill (Figure 3-1 and 4-1). The cross section utilizes the lithologic information obtained during the focused ESA coring activities as well as the information from relevant historical data (Integral 2007, Landau 2007). The predominant lithology encountered in these cores was organic clayey silt (OH) and highly organic debris (PT). The organic sediments are underlain by clayey silt and silty sand layers with trace shell fragments. This lower layer is most likely pre-industrial sediment deposits as stated above. The estimated depth to bedrock varies along the length of the site as generally indicated on Figure 4-1. The surface of bedrock appears to be located at a higher elevation (rise) between stations BLVD-SC-07 and -08 based on bathymetry data.

4.2 DATA QUALITY

Evaluation of data quality was based on a number of project goals and objectives presented in the SAP (Herrenkohl & Landau 2008). The following summarizes overall findings concerning data quality obtained during the field sampling and laboratory analyses. Additional documentation of quality control related issues and listing of the validated data can be found in Appendix D.

4.2.1 Field Quality Control Evaluation

Analytical data for this focused ESA have been reviewed for overall validity based on field quality control (QC) checks. The data validity evaluation steps include field QC sampling (i.e., collection of equipment blanks and field duplicates), analysis of field QC samples, and comparison of field QC sample results to environmental sample results. Comparison of field QC results to environmental sample results reduces the possibility of erroneously attributing chemical detections to environmental contamination by identifying other potential sources of contamination inherent to environmental sampling. Field duplicates were collected to assess the accuracy of the field sampling efforts.

4.2.1.1 Equipment Blank Evaluation

Equipment blanks were analyzed to evaluate the effectiveness of decontamination procedures. Equipment blanks were prepared by pouring distilled water supplied by the laboratory over (or through) a recently used and decontaminated piece of sampling equipment and directly into clean sample containers. The equipment blank sample was then shipped to the laboratory and analyzed using the same methods required for the associated environmental samples.

Two equipment blank samples (BLVD-FB-01 and -02) were collected and analyzed during the field sampling; one for each sampling method. Samples were analyzed for SMS metals and NWTPH-Dx. Low levels of copper and zinc were detected in the equipment blank sample collected from the van Veen grab sample but at levels far below those detected in the surface sediments. No qualification of results was deemed necessary.

4.2.1.2 Field Duplicate Evaluation

Two field duplicate samples were collected and tested during the field sampling. One field duplicate sample was collected for the surface sediment sampling (BLVD-SS-10 the duplicate of BLVD-SS-06) and one for the subsurface sediment sampling (BLVD-SC-11-2-3' the duplicate of BLVD-SC-09-2-3').

The relative percent difference (RPD) of each parameter and detected compound was reviewed to assess sample collection reproducibility and matrix variability associated with field collection and laboratory analytical methods. Field duplicates analyzed for conventional and inorganic parameters showed good reproducibility of results, with RPD values generally less than 20%. A few higher RPDs were calculated for total sulfides (28% for BLVD-SS-06) and TOC (54% for BLVD-SC-09-2-3') and chemicals detected at lower levels. The RPDs of field duplicate organic results were usually higher than inorganics with values ranging from 3.7% to 121%. No action was deemed necessary based on this sample variability.

4.2.2 Laboratory Quality Assurance Evaluation

The quality of the chemical and biological data sets is summarized below, based on the review that was conducted as described in the SAP. The chemistry data were subject to an EPA standard data review following the format outlined in the National Functional Guidelines for Organic Data Review (EPA 1999) and the National Functional Guidelines for Inorganic Data Review (EPA 2002) modified to include specific criteria of the individual analytical methods. Bioassay testing data were also reviewed for completeness and usability following quality control requirements presented in the SMS. A detailed review of data quality for chemistry and bioassay data is presented in Appendix D.

Overall, the data are acceptable for decision-making purposes. No data was determined to be unusable and rejected. Consequently, completeness of the focused ESA dataset was 100%.

4.3 SURFACE SEDIMENT RESULTS

Surface composite samples BLVD-SS-01 through BLVD-SS-10, representing the upper 12 cm of sediment, were analyzed for SMS conventional parameters and chemicals of concern (Table 3-1). Mercury was the only chemical of concern detected at levels above the corresponding SMS criteria but below the Bellingham Bay bioaccumulation screening level (BSL) of 1.2 mg/kg[4]. This was the case in one composite sample collected from BLVD-SS-07. The chemical testing results are described below.

[4] The BSL is an area-weighted average sediment mercury concentration calculated for the Whatcom Waterway site below which ensures protectiveness of ecological receptors (RETEC 2006).

4.3.1 Sediment Conventionals

Surface composite samples were analyzed for total solids, TOC, total sulfides, ammonia, and grain size to further characterize the sediment at these locations and to provide information to aid in interpreting chemical and biological tests. For example, elevated levels of ammonia and sulfides in the sediments can adversely affect the organisms used in the biological tests.

Surface sediments tended to be coarser (containing more sand) nearshore (BLVD-SS-01), while stations further from shore (north and east) contained substantially more fines (silt and clay) and organics. This was also documented in field logs by field personnel (refer to Section 4.1). Surface sediments represented by composite BLVD-SS-01 had a higher sand fraction than the other stations, with 77% sand, 22.5% fines (silt and clay), and minor amounts of gravel (Table 4-1). The total solids content was also higher in this station at 54.1%. Total solids content at other stations ranged from 23.6% to 40.2%, indicating a liquid limit of >50% as described by the USCS. TOC, total sulfides, and ammonia tended to be higher at stations which had both lower sand content and total solids fractions, but more organics. In these organic-rich sediments, represented by stations BLVD-SS-02 through BLVD-SS-09, TOC ranged from 2.09% to 12.2%, total sulfides ranged from 543 mg/kg to 2,900 J mg/kg, and ammonia ranged from 13.5 mg/kg to 27.5 mg/kg.

Grain size results for reference sediment stations (Samish Bay Ref 2 and Ref 3) are also presented in Table 4-1. Because the reference sediment stations were to have comparable fine fractions to those identified for biological testing, fine fractions of approximately 30-50% (BLVD-SS-01 only) and 80-85% were targeted. The wet sieve screening for reference sediments collected indicated 81% fines at station Ref 2 (near Samish Bay Reference Station SM-30) and 29% fines at station Ref 3 (near SM-34). The grain size results were approximately 16% higher for Ref 2 (96.8% fines) and 17% lower for Ref 3 (11.8% fines).

4.3.2 Petroleum Hydrocarbons

Diesel- and motor oil-range TPH concentrations were either below detection or slightly above the detection limit (20 mg/kg) in surface sediment samples (Table 4-1). The highest TPH concentrations were detected at BLVD-SS-01 and BLVD-SS-02 (both samples at 101 mg/kg for diesel- and motor oil-range hydrocarbons combined).

No sediment criteria have been established for TPH; however, TPH concentrations are below the project screening level of 200 mg/kg[5] and well below the Model Toxics Control Act (MTCA) Method A screening criteria of 2,000 mg/kg for upland soil.

[5] Ecological indicator soil concentration for protection of terrestrial plants and animals (MTCA 173-340-900, Table 749-3). This is the lowest available screening level for TPH (diesel-range) in MTCA; there are no criteria for TPH in the SMS.

4.3.3 SMS Chemicals of Concern

Sediment results for non-ionizable SVOCs and PCBs were organic carbon-normalized when TOC concentrations were between 0.5% to 3.5% per current Ecology guidance (*personal communication with Dr. Peter Adolphson of Ecology*). Results of the sediment chemical analysis of organic carbon-normalized data were compared to SMS marine criteria, including sediment quality standards (SQS) and cleanup screening levels (CSL) as described in WAC 173-204-320. Samples with TOC concentrations outside the 0.5% to 3.5% range were compared to Apparent Effects Threshold (AET) values including Lowest Apparent Effects Threshold (LAET) and Second Lowest Apparent Effects Threshold (2LAET) in accordance with SMS protocols.

The marine SQS and LAET numerical chemical concentration criteria define the degree of sediment quality that is expected to cause no adverse effects to biological resources in Puget Sound marine sediments. The CSL and 2LAET represent concentrations above which adverse biological effects are considered to be significant.

The results of the analytical chemistry results are summarized in Table 4-1. Concentrations that exceed the SQS or LAET criteria are highlighted with a box. An exceedance of the CSL or 2LAET is also highlighted in bold. Mercury concentrations exceeding the corresponding BSL are indicated with double-lined box. With the exception of mercury, all detected chemicals were below the corresponding SQS. Figure 4-2 shows the distribution of SMS exceedance for mercury in surface sediments.

With the exception of silver, all metals were detected in the surface samples. In general, metals concentrations increase in surface sediments toward the northeast. This would be expected because this area is closer to the former Cornwall Avenue landfill and industrial activities at the Bellingham waterfront.

SVOCs were only analyzed in sediments for BLVD-SS-01 based on field observations made while collecting a sediment core from this location (BLVD-SC-01). PAHs, bis(2-ethylhexyl)pthalate, phenol, and 4-methylphenol were detected at relatively low levels in the sediment composite, and below SQS criteria (Figure 4-2). Total low molecular weight PAH (LPAH) and high molecular weight PAH (HPAH) concentrations were 43.44 mg/kg organic carbon (OC) and 227.93 mg/kg OC, respectively.

PCBs were analyzed but not detected in surface composite BLVD-SS-09.

There were no other obvious trends in the organic compounds detected in surface sediments.

4.3.4 Bioassay Testing Results

Based on the chemistry results and field observations, three site surface composites (BLVD-SS-01, -07, -09) and two reference samples (Samish Bay Ref 2 and Ref 3) were selected for bioassay testing. The bioassay testing report and results are presented in Appendix F. A summary of the results are presented in the following subsections.

4.3.4.1 Amphipod Testing

Under the SMS program, a sediment treatment fails SQS if mean amphipod mortality is statistically significantly higher than that of the reference treatment, and mean mortality in the test sediment is greater than 25%. Treatments fail the CSL if the test treatment mortality is both statistically significantly different and 30% greater than the reference sediment. Percent mortality for all samples was not significantly greater than the associated reference samples and mean mortality for test sediment samples was less than the 25% and 30% criteria. Therefore, all test sediments passed both SQS and the one-test criterion for CSL.

4.3.4.2 Larval Testing

For the larval test, a sediment test fails SQS criteria if the number of normal larvae in the test treatment is significantly different than that of the reference and the combined mortality and abnormality (CMA) in the test treatment is greater than 15% of the CMA in the reference. Treatments fail CSL criteria if the CMA is greater than 30% of the response observed in the reference.

There were no significant decreases in normal development for any of the samples compared to their corresponding reference samples. Statistically significant decreases in normal development were observed in test and reference sediment samples relative to seawater controls. Relative to their respective reference treatments, normal development in each of the test treatments met the numeric threshold for both SQS and CSL criteria; thus passing the overall criteria.

4.3.4.3 Neanthes Growth Test

Suitability determinations for the juvenile polychaete test were based on mean individual growth rates (MIG). A test treatment will fail SQS criteria if MIG is statistically lower in the test treatment, relative to the reference, and MIG in the test treatment is 70% less than the reference treatment. The treatments will fail CSL criteria if MIG is significantly lower than the reference treatment and is 50% less than the reference treatment.

The MIG in BLVD-SS-07 and BLVD-SS-09 were not significantly lower (and not less than 70% or 50% lower) than the corresponding reference sediment. The MIG in BLVD-SS-01 was significantly lower than its corresponding reference sediment “Samish Bay Ref 3”, although it did not fail the mean growth thresholds of less than 70% or 50% reference mean growth. It was noted that the MIG in BLVD-SS-01 was also significantly lower than the control. All test sediments passed both SQS and the one-test criterion for CSL.

4.4 SUBSURFACE SEDIMENTS

Selected sediment samples from cores BLVD-SC-01 through BLVD-SC-09 were analyzed for SMS conventional parameters and chemicals of concern (Table 3-1). Mercury, PAHs, and PCBs

were the only chemicals of concern detected in the core samples at levels above the corresponding SMS and BSL (mercury). The chemical testing results are described below.

4.4.1 Sediment Conventionals

Subsurface composite samples were analyzed for TOC for carbon-normalization of non-ionized SVOCs and PCBs and comparison to SMS criteria. TOC ranged from 3.13% (BLVD-09-4-6') to 23.9% (BLVD-SC-02-2-4'). Twelve of 13 samples had TOC concentrations above 3.5%, the upper limit for carbon-normalization of results (refer to Table 4-2).

4.4.2 Petroleum Hydrocarbons

Diesel- and motor oil-range TPH concentrations were detected above the screening level of 200 mg/kg in 6 of 25 samples (Table 4-2). The highest TPH concentrations were detected at BLVD-SC-01 (2-4 ft) and BLVD-SC-09 (2-3 ft, 4-6 ft). TPH concentrations are below the MTCA Method A screening criteria of 2,000 mg/kg for upland soil.

4.4.3 SMS Chemicals of Concern

The results of the analytical chemistry results are summarized in Table 4-2. Concentrations that exceed the SQS or LAET criteria are highlighted with a box. Exceedances of CSL or 2LAET criteria are highlighted as bold with a box. Mercury concentrations exceeding the corresponding BSL are indicated with double-lined box. Mercury, PAHs, and PCBs concentrations were detected in some samples above corresponding SMS/AET criteria. Figure 4-3 shows the distribution of SMS and BSL exceedance for mercury in subsurface sediments. Figure 4-3 also shows the distribution of SMS/AET exceedances for organic compounds in subsurface sediments.

With the exception of silver, all SMS metals were detected in one or more of the core samples. In general, metals concentrations were observed to be the highest in the 2 to 4 ft sample depth intervals and in stations to the northeast. For example, the highest mercury concentrations, exceeding the BSL for Bellingham Bay, were detected at station BLVD-SC-06-2-4' (3.52 mg/kg) and BLVD-SC-09-3-4' (3.8 mg/kg).

SVOCs were analyzed in sediment samples from BLVD-SC-01, -02, -04, and -09 based on field observations and exceedances of the project screening level for TPH of 200 mg/kg. PAHs were detected in samples above SMS and AET criteria in samples from stations BLVD-SC-01, -02, and -04, located near the pocket beach and pier at Boulevard Park. In general, PAH concentrations increased with increasing sample depth at these station locations (refer to Figure 4-3).

PCBs were analyzed and detected in core samples from BLVD-SC-09 with the highest concentration observed in the 3 to 4 ft sample (total PCBs concentration of 700 µg/kg which is above the corresponding LAET value of 130 µg/kg but below the 2LAET value of 1000 µg/kg). However, PCBs are below SMS criteria in the 0 to 2 ft and 6 to 8 ft samples.

4.4.4 Geotechnical Testing Results

Geotechnical testing results for grain size, Atterberg limits, specific gravity, moisture content, and bulk density (dry/wet) are presented in the following subsections. A summary of the geotechnical testing results is presented in Table 4-2 (grain size data) and Table 4-3. The sample results are presented in Appendix E.

4.4.4.1 Grain Size Distribution

Grain size distribution was determined for 9 core sediment samples at varied depths along the proposed terminuses and alignment of the overwater walkway. After analysis, samples were classified in accordance with the USCS. Grain size distribution and sediment classification for each sample is presented on the detailed description logs in Appendix B, with a summary of test results provided in Table 4-2.

Subsurface sediments along the proposed alignment are classified as either organic clayey silt with fine sand (OH/MH) or a highly organic material (PT) overlying either a sandy, clayey silt (MH) or silty, gravelly sand (SM). Grain size results are consistent with the field descriptions provided on the logs (Appendix B).

4.4.4.2 Atterberg Limits

The purpose of the Atterberg limits is to determine the plasticity of the sediments and in particular, of the silt and clay portion of the sediments. Atterberg limits were determined for 8 sediment samples that represent different areas and sediment depths along the proposed overwater walkway site. The results of the Atterberg limits are presented in Table 4-3, with additional laboratory information, including graphical representations of the liquid and plastic limits, in Appendix E.

Six of eight samples had liquid limits (LL) above 50% with a plastic limit (PL) near 50%. The plasticity index (PI) ranged from 21.5 to 69.3. One sample, BLVD-SC-05-10.5-12', was considered non-plastic and composed of mostly sand (77%).

4.4.4.3 Specific Gravity

Specific gravity was determined for 9 sediment samples that represent the range of material types encountered at the site. Specific gravity values range from 2.40 (BLVD-04-8-10') to 2.68 (BLVD-SC-05-10.5-12').

4.4.4.4 Moisture Content/Bulk Density

Moisture contents are used in conjunction with the Atterberg limits to assess the strength, compressibility, and plasticity characteristics of sediments in the proposed overwater walkway area. Moisture contents are presented in Table 4-3.

The moisture content is high in the sediments with an average of 113 percent (sample number [n] of 16). Sediment at three sample depths in BLVD-SC-05 (from 9.5 to 12 ft below mudline) had moisture contents below 100%, ranging from 35.5% to 60.3%.

Wet unit weights (density) of sediment samples ranged from 76.5 pounds per cubic foot (pcf), BLVD-SC-04-10-10.5') to 110.1 pcf (BLVD-SC-05-10-10.5'). Dry unit weights ranged from 29.0 pcf to 76.6 pcf for the same samples. Sediments composed of mostly sand (e.g., BLVD-SC-05-10.5-12') had higher wet and dry bulk densities.

Table 4-1. Summary of Surface Sediment Conventional and Chemistry Results

Sample Station					BLVD-SS-01	BLVD-SS-02	BLVD-SS-03	BLVD-SS-04	BLVD-SS-05	BLVD-SS-06	BLVD-SS-10	BLVD-SS-07	BLVD-SS-08	BLVD-SS-09
Sampling Depth (cm)					0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12
Sampling Date	AETs		SMS		9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008
	LAET	2LAET	SQS	CSL							Dup of BLVD-SS-06			
Conventionals in %														
Total Solids					54.1	40.2	23.6	26.8	28.2	35.7	35.2	37.8	36.9	37.2
Total Organic Carbon					2.94	3.25	9 *	12.2 *	4.87 *	2.33	2.45	2.09	3.27	3.26
Gravel					0.4					0	0	2.3	0	2.2
Sand					76.9					2.5	1.9	3.3	0.9	14.5
Fines					22.5					97.5	98.1	94.5	99.1	83.1
Conventionals in mg/kg														
N-Ammonia					11.4	17.1	27.5	17	22.7	23	21.9	22.5	16.3	13.5
Sulfide					441	1740	1270	749	2710	1510	2000	2180 J	1750	543
TPH in mg/kg														
Diesel-Range Hydrocarbons					29	31	31	26	31	14 U	15 U	13 U	13 U	14 U
Motor Oil-Range Hydrocarbons					72	66	70	43	54	28 U	29 U	26 U	26 U	28 U
Metals in mg/kg														
Arsenic	57	93	57	93	9 U	10 U	20 U	20 U	20 U	10 U	10 U	10	10 U	20
Cadmium	5.1	6.7	5.1	6.7	0.6	0.8	1.2	1.2	1.1	0.9	0.9	0.9	0.7	1.1
Chromium	260	270	260	270	31.6	35	43	43	68	76	76	81	71	70
Copper	390	390	390	390	32.5	46.4	45.9	40.6	53.4	54.6	56.5	55.6	53.8	66.3
Lead	450	530	450	530	32	34	24	21	15	13	13	16	13	27
Mercury	0.41	0.59	0.41	0.59	0.1	0.1	0.3	0.4	0.2	0.2	0.2	**0.6**	0.3	0.4
Nickel	140	140			30	37	60	57	98	111	111	115	107	97
Silver	6.1	6.1	6.1	6.1	0.5 U	0.7 U	1 U	1 U	1 U	0.8 U	0.8 U	0.8 U	0.8 U	0.7 U
Zinc	410	960	410	960	85	93	142	85	112	112	113	119	106	124
PCBs	**ug/kg**		**mg/kg OC**											
Aroclor 1016														0.61 U
Aroclor 1221														0.61 U
Aroclor 1232														0.61 U
Aroclor 1242														0.61 U
Aroclor 1248														0.61 U
Aroclor 1254														0.61 U
Aroclor 1260														0.61 U
Aroclor 1262														0.61 U
Aroclor 1268														0.61 U
Total PCBs	130	1000	12	65										0.61 U
PAHs	**ug/kg**		**mg/kg OC**											
Naphthalene	2100	2400	99	170	1.53 T									
Acenaphthylene	1300	1300	66	66	3.40									
Acenaphthene	500	730	16	57	2.01 U									
Fluorene	540	1000	23	79	2.11									
Phenanthrene	1500	5400	100	480	30.61									
Anthracene	960	4400	220	1200	5.78									
2-Methylnaphthalene	670	1400	38	64	2.01 U									
1-Methylnaphthalene					2.01 U									
Total LPAHs	5200	13000	370	780	43.44									
Fluoranthene	1700	2500	160	1200	57.82									
Pyrene	2600	3300	1000	1400	44.22									

Table 4-1. Summary of Surface Sediment Conventional and Chemistry Results

	Sample Station					BLVD-SS-01	BLVD-SS-02	BLVD-SS-03	BLVD-SS-04	BLVD-SS-05	BLVD-SS-06	BLVD-SS-10	BLVD-SS-07	BLVD-SS-08	BLVD-SS-09
	Sampling Depth (cm)					0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12
	Sampling Date	AETs		SMS		9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008	9/19/2008
		LAET	2LAET	SQS	CSL							Dup of BLVD-SS-06			
	Benzo(a)anthracene	1300	1600	110	270	20.41									
	Chrysene	1400	2800	110	460	23.81									
	Benzo(b)fluoranthene					19.73									
	Benzo(k)fluoranthene					19.39									
	Total Benzofluoranthenes	3200	3600	230	450	39.12									
	Benzo(a)pyrene	1600	3000	99	210	23.81									
	Indeno(1,2,3-cd)pyrene	600	690	34	88	8.50									
	Dibenz(a,h)anthracene	230	540	12	33	2.41									
	Benzo(g,h,i)perylene	670	720	31	78	7.82									
	Total HPAHs	12000	17000	960	5300	227.93									
Chlorinated Benzenes		**ug/kg**		**mg/kg OC**											
	1,2-Dichlorobenzene	35	50	2.3	2.3	*2.01 U*									
	1,3-Dichlorobenzene	170	170			2.01 U									
	1,4-Dichlorobenzene	110	120	3.1	9	2.01 U									
	1,2,4-Trichlorobenzene	31	51	0.81	1.8	*2.01 U*									
	Hexachlorobenzene	22	70	0.38	2.3	*2.01 U*									
Phthalate Esters		**ug/kg**		**mg/kg OC**											
	Dimethylphthalate	71	160	53	53	2.01 U									
	Diethylphthalate	200	200	61	110	2.01 U									
	Di-n-Butylphthalate	1400	1400	220	1700	2.01 U									
	Butylbenzylphthalate	63	900	4.9	64	2.01 U									
	bis(2-Ethylhexyl)phthalate	1300	1900	47	78	1.67 T									
	Di-n-Octyl phthalate	6200	6200	58	4500	2.01 U									
Miscellaneous Compounds		**ug/kg**		**mg/kg OC**											
	Dibenzofuran	540	700	15	58	1.05 T									
	Hexachlorobutadiene	11	120	3.9	6.2	*2.01 U*									
	N-Nitrosodiphenylamine	28	40	11	11	*2.01 U*									
	Hexachloroethane					2.01 U									
Ionizable Organic Compounds in ug/kg															
	Phenol	420	1200	420	1200	94									
	2-Methylphenol	63	63	63	63	59 U									
	4-Methylphenol	670	670	670	670	60									
	2,4-Dimethylphenol	29	29	29	29	*59 U*									
	Pentachlorophenol	360	690	360	690	300 U									
	Benzyl Alcohol	57	73	57	73	*59 U*									
	Benzoic Acid	650	650	650	650	590 U									

NOTES:
***** TOC concentration outside of range (0.5 to 3.5 percent) for OC normalization. AETs are used for comparison.
U = Not detected at the reporting limit indicated.
J = Estimated value.
T = Value is between the MRL and MDL.
Blank indicates no AET/SMS criteria established or sample not analyzed for specific analyte.
Italics indicate reporting limit is above AET/SMS criteria.
Boxed value exceeds LAET/SQS criteria. Bold value exceeds 2LAET/CSL criteria.
Double-lined boxed value exceeds BSL for mercury.

Table 4-1. Summary of Surface Sediment Conventional and Chemistry Result

	Sample Station					Samish Bay Ref 2	Samish Bay Ref 3
	Sampling Depth (cm)					0-12	0-12
	Sampling Date	AETs		SMS		9/30/2008	9/30/2008
		LAET	2LAET	SQS	CSL		
Conventionals in %							
	Total Solids					35	71.2
	Total Organic Carbon					2.14	1.02
	Gravel					0	0
	Sand					3.2	88.2
	Fines					96.8	11.8
Conventionals in mg/kg							
	N-Ammonia					17.4	15.8
	Sulfide					202	54.4
TPH in mg/kg							
	Diesel-Range Hydrocarbons						
	Motor Oil-Range Hydrocarbons						
Metals in mg/kg							
	Arsenic	57	93	57	93		
	Cadmium	5.1	6.7	5.1	6.7		
	Chromium	260	270	260	270		
	Copper	390	390	390	390		
	Lead	450	530	450	530		
	Mercury	0.41	0.59	0.41	0.59		
	Nickel	140	140				
	Silver	6.1	6.1	6.1	6.1		
	Zinc	410	960	410	960		
PCBs		**ug/kg**		**mg/kg OC**			
	Aroclor 1016						
	Aroclor 1221						
	Aroclor 1232						
	Aroclor 1242						
	Aroclor 1248						
	Aroclor 1254						
	Aroclor 1260						
	Aroclor 1262						
	Aroclor 1268						
	Total PCBs	130	1000	12	65		
PAHs		**ug/kg**		**mg/kg OC**			
	Naphthalene	2100	2400	99	170		
	Acenaphthylene	1300	1300	66	66		
	Acenaphthene	500	730	16	57		
	Fluorene	540	1000	23	79		
	Phenanthrene	1500	5400	100	480		
	Anthracene	960	4400	220	1200		
	2-Methylnaphthalene	670	1400	38	64		
	1-Methylnaphthalene						
	Total LPAHs	5200	13000	370	780		
	Fluoranthene	1700	2500	160	1200		
	Pyrene	2600	3300	1000	1400		

Table 4-1. Summary of Surface Sediment Conventional and Chemistry Result

	Sample Station					**Samish Bay Ref 2**	**Samish Bay Ref 3**
	Sampling Depth (cm)					0-12	0-12
	Sampling Date	**AETs**		**SMS**		9/30/2008	9/30/2008
		LAET	2LAET	SQS	CSL		
	Benzo(a)anthracene	1300	1600	110	270		
	Chrysene	1400	2800	110	460		
	Benzo(b)fluoranthene						
	Benzo(k)fluoranthene						
	Total Benzofluoranthenes	3200	3600	230	450		
	Benzo(a)pyrene	1600	3000	99	210		
	Indeno(1,2,3-cd)pyrene	600	690	34	88		
	Dibenz(a,h)anthracene	230	540	12	33		
	Benzo(g,h,i)perylene	670	720	31	78		
	Total HPAHs	12000	17000	960	5300		
Chlorinated Benzenes		**ug/kg**		**mg/kg OC**			
	1,2-Dichlorobenzene	35	50	2.3	2.3		
	1,3-Dichlorobenzene	170	170				
	1,4-Dichlorobenzene	110	120	3.1	9		
	1,2,4-Trichlorobenzene	31	51	0.81	1.8		
	Hexachlorobenzene	22	70	0.38	2.3		
Phthalate Esters		**ug/kg**		**mg/kg OC**			
	Dimethylphthalate	71	160	53	53		
	Diethylphthalate	200	200	61	110		
	Di-n-Butylphthalate	1400	1400	220	1700		
	Butylbenzylphthalate	63	900	4.9	64		
	bis(2-Ethylhexyl)phthalate	1300	1900	47	78		
	Di-n-Octyl phthalate	6200	6200	58	4500		
Miscellaneous Compounds		**ug/kg**		**mg/kg OC**			
	Dibenzofuran	540	700	15	58		
	Hexachlorobutadiene	11	120	3.9	6.2		
	N-Nitrosodiphenylamine	28	40	11	11		
	Hexachloroethane						
Ionizable Organic Compounds in ug/kg							
	Phenol	420	1200	420	1200		
	2-Methylphenol	63	63	63	63		
	4-Methylphenol	670	670	670	670		
	2,4-Dimethylphenol	29	29	29	29		
	Pentachlorophenol	360	690	360	690		
	Benzyl Alcohol	57	73	57	73		
	Benzoic Acid	650	650	650	650		

NOTES:
***** TOC concentration outside of range (0.5 to 3.5 percent) for OC normalization. AETs are used for comparison.
U = Not detected at the reporting limit indicated.
J = Estimated value.
T = Value is between the MRL and MDL.
Blank indicates no AET/SMS criteria established or sample not analyzed for specific analyte.
Italics indicate reporting limit is above AET/SMS criteria.
Boxed value exceeds LAET/SQS criteria. Bold value exceeds 2LAET/CSL criteria.
Double-lined boxed value exceeds BSL for mercury.

Table 4-2 - Summary of Subsurface Sediment Conventional and Chemistry Results

Sample Station					BLVD-SC-01	BLVD-SC-01	BLVD-SC-01	BLVD-SC-02	BLVD-SC-02	BLVD-SC-03	BLVD-SC-03	BLVD-SC-04	BLVD-SC-04
Sample Depth (ft)					0-2	2-4	4-6	2-4	6-8	4-6	6-8	0-2	2-4
Sampling Date	**AETs**		**SMS**		9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08
	LAET	2LAET	SQS	CSL									
Conventionals in %													
Total Solids					40.7	38.5	52.3	20.9	44.8			21.5	32.3
Total Organic Carbon					11.8 *	10.2 *	7.63 *	23.9 *	5.98 *			17.7 *	6.88 *
Gravel													
Sand													
Fines													
TPH in mg/kg													
Diesel-Range Hydrocarbons					130	290	87	72	80	74	52	130	
Motor Oil-Range Hydrocarbons					190	330	140	140	130	92	65	210	
Metals in mg/kg													
Arsenic	57	93	57	93	10 U	10 U	10 U	20 U	10 U	10 U	10 U	20 U	
Cadmium	5.1	6.7	5.1	6.7	0.9	0.8	0.6	1.2	1.2	1.1	1.3	1.1	
Chromium	260	270	260	270	41	40	32	34	73	57	69	44	
Copper	390	390	390	390	50.3	39.5	36.5	36.3	57.8	54.4	57.1	66.3	
Lead	450	530	450	530	48	52	36	44	65	43	78	25	
Mercury	0.41	0.59	0.41	0.59	0.3 J	0.4	0.2	0.3	**2.0**	**0.7**	0.4	0.2	
Silver	6.1	6.1	6.1	6.1	0.8 U	0.8 U	0.6 U	1 U	0.7 U	0.8 U	0.8 U	1 U	
Zinc	410	960	410	960	110	102	96	86	135	95	340	88	
PCBs	**ug/kg**		**mg/kg OC**										
Aroclor 1016													
Aroclor 1221													
Aroclor 1232													
Aroclor 1242													
Aroclor 1248													
Aroclor 1254													
Aroclor 1260													
Aroclor 1262													
Aroclor 1268													
Total PCBs	130	1000	12	65									
PAHs	**ug/kg**		**mg/kg OC**										
Naphthalene	2100	2400	99	170	380	540	240	160	110			150	250
Acenaphthylene	1300	1300	66	66	1200	**2100**	820	550	560			420	840
Acenaphthene	500	730	16	57	140	240	93	69	60			66	210
Fluorene	540	1000	23	79	310	440	170	99	54			100	320
Phenanthrene	1500	5400	100	480	2400	2200	1000	670	370			330	380
Anthracene	960	4400	220	1200	1300	1500	660	480	260			580	1400
2-Methylnaphthalene	670	1400	38	64	220	330	150	50	37 T			76	98
1-Methylnaphthalene					130	170	83	44 T	32 T			68	110
Total LPAHs	5200	13000	370	780	5730	7020	2983	2028	1414			1646	3400
Fluoranthene	1700	2500	160	1200	**14000**	**18000**	**7800**	**2700**	2000			**4100**	**8700**
Pyrene	2600	3300	1000	1400	**14000**	**19000**	**7100**	2500	2000			2300	**6000**
Benzo(a)anthracene	1300	1600	110	270	**10000**	**15000**	**4600**	**2000**	**1700**			**1600**	**3400**
Chrysene	1400	2800	110	460	**11000**	**16000**	**4600**	2400	1800			2300	**3900**
Benzo(b)fluoranthene					8500	13000	5500	2400	2000			1800	2600
Benzo(k)fluoranthene					7500	12000	4000	2000	1800			1800	4300
Total Benzofluoranthenes	3200	3600	230	450	**16000**	**25000**	**9500**	**4400**	**3800**			**3600**	**6900**
Benzo(a)pyrene	1600	3000	99	210	**12000**	**19000**	**8000**	2500	2300			2700	**4500**
Indeno(1,2,3-cd)pyrene	600	690	34	88	**3100**	**12000**	**3400**	**1200**	**1200**			**730**	**1100**
Dibenz(a,h)anthracene	230	540	12	33	**1000**	**1600**	**1000**	400	400			260	460
Benzo(g,h,i)perylene	670	720	31	78	**2600**	**4100**	**3000**	**1200**	**1100**			660	**1400**
Total HPAHs	12000	17000	960	5300	**83700**	**129700**	**49000**	**19300**	16300			**18250**	**36360**

Table 4-2 - Summary of Subsurface Sediment Conventional and Chemistry Results

Sample Station					BLVD-SC-01	BLVD-SC-01	BLVD-SC-01	BLVD-SC-02	BLVD-SC-02	BLVD-SC-03	BLVD-SC-03	BLVD-SC-04	BLVD-SC-04
Sample Depth (ft)					0-2	2-4	4-6	2-4	6-8	4-6	6-8	0-2	2-4
Sampling Date	AETs		SMS		9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08
	LAET	2LAET	SQS	CSL									
Chlorinated Benzenes	**ug/kg**		**mg/kg OC**										
1,2-Dichlorobenzene	35	50	2.3	2.3	*60 U*	*59 U*	*59 U*	*46 U*	*39 U*			*60 U*	*40 U*
1,3-Dichlorobenzene	170	170			60 U	59 U	59 U	46 U	39 U			60 U	40 U
1,4-Dichlorobenzene	110	120	3.1	9	60 U	59 U	59 U	46 U	39 U			60 U	40 U
1,2,4-Trichlorobenzene	31	51	0.81	1.8	*60 U*	*59 U*	*59 U*	*46 U*	*39 U*			*60 U*	*40 U*
Hexachlorobenzene	22	70	0.38	2.3	*60 U*	*59 U*	*59 U*	*46 U*	*39 U*			*60 U*	*40 U*
Phthalate Esters	**ug/kg**		**mg/kg OC**										
Dimethylphthalate	71	160	53	53	60 U	59 U	59 U	46 U	39 U			60 U	40 U
Diethylphthalate	200	200	61	110	60 U	59 U	59 U	46 U	39 U			60 U	40 U
Di-n-Butylphthalate	1400	1400	220	1700	60 U	59 U	59 U	46 U	39 U			60 U	40 U
Butylbenzylphthalate	63	900	4.9	64	60 U	59 U	59 U	46 U	39 U			60 U	40 U
bis(2-Ethylhexyl)phthalate	1300	1900	47	78	100	590 U	84	48	55			99 U	130
Di-n-Octyl phthalate	6200	6200	58	4500	60 U	59 U	59 U	46 U	39 U			60 U	40 U
Miscellaneous Compounds	**ug/kg**		**mg/kg OC**										
Dibenzofuran	540	700	15	58	100	120	46 T	68	53			39 T	120
Hexachlorobutadiene	11	120	3.9	6.2	*60 U*	*59 U*	*59 U*	*46 U*	*39 U*			*60 U*	*40 U*
N-Nitrosodiphenylamine	28	40	11	11	*60 U*	*59 U*	*59 U*	*46 U*	*39 U*			*60 U*	*40 U*
Hexachloroethane					60 U	59 U	59 U	46 U	39 U			60 U	40 U
Ionizable Organic Compounds in ug/kg													
Phenol	420	1200	420	1200	120	87	100	52	30 T			240	47
2-Methylphenol	63	63	63	63	60 U	59 U	59 U	46 U	39 U			60 U	40 U
4-Methylphenol	670	670	670	670	60 U	59 U	59 U	34 T	47			60 U	67
2,4-Dimethylphenol	29	29	29	29	*60 U*	*59 U*	*59 U*	*46 U*	*39 U*			*60 U*	**37** T
Pentachlorophenol	360	690	360	690	300 U	300 U	300 U	230 U	200 U			300 U	200 U
Benzyl Alcohol	57	73	57	73	*60 U*	*59 U*	*59 U*	46 U	39 U			*60 U*	40 U
Benzoic Acid	650	650	650	650	600 U	590 U	590 UJ	460 U	390 UJ			600 U	400 U

NOTES:

***** TOC concentration outside of range (0.5 to 3.5 percent) for OC normalization. AETs are used for comparison.

U = Not detected at the reporting limit indicated.

J = Estimated value.

T = Value is between the MRL and MDL.

Blank indicates no AET/SMS criteria established or sample not analyzed for specific analyte.

Italics indicate reporting limit is above AET/SMS criteria.

Boxed value exceeds LAET/SQS criteria. Bold value exceeds 2LAET/CSL criteria.

Double-lined boxed value exceeds BSL for mercury.

Table 4-2 - Summary of Subsurface Sediment Conventional and Chemistry Results

Sample Station					BLVD-SC-04	BLVD-SC-04	BLVD-SC-05	BLVD-SC-05	BLVD-SC-05	BLVD-SC-05	BLVD-SC-05	BLVD-SC-06	BLVD-SC-06
Sample Depth (ft)					4-6	8-10	6-8	8-9.5	9.5-10	10.5-12	13.5-14	0-2	2-4
Sampling Date	AETs		SMS		9/23/08	9/23/08	9/22/08	9/22/08	9/22/08	9/22/08	9/22/08	9/22/08	9/22/08
	LAET	2LAET	SQS	CSL									
Conventionals in %													
Total Solids					31.2								
Total Organic Carbon					8.83 *								
Gravel						2.0			0.2	0.1	15.6		
Sand						19.3			52.3	76.9	67.1		
Fines						78.8			47.3	22.9	17.4		
TPH in mg/kg													
Diesel-Range Hydrocarbons						60	79	12		6.8 U		16	29
Motor Oil-Range Hydrocarbons						84	99	20		14 U		26	41
Metals in mg/kg													
Arsenic	57	93	57	93		10 U	10 U	10		7		10	10 U
Cadmium	5.1	6.7	5.1	6.7		1.7	1.6	1.1		0.8		0.9	1.2
Chromium	260	270	260	270		53	59	45.1		16.3		89	83
Copper	390	390	390	390		61.1	56.3	32.2		9.4		59	54.8
Lead	450	530	450	530		49	30	8		3 U		19	29
Mercury	0.41	0.59	0.41	0.59		0.36	0.35	0.1		0.05 U		**0.6**	**3.52**
Silver	6.1	6.1	6.1	6.1		0.8 U	0.7 U	0.5 U		0.4 U		0.8 U	0.7 U
Zinc	410	960	410	960		109	109	67		27		121	123
PCBs	**ug/kg**		**mg/kg OC**										
Aroclor 1016													
Aroclor 1221													
Aroclor 1232													
Aroclor 1242													
Aroclor 1248													
Aroclor 1254													
Aroclor 1260													
Aroclor 1262													
Aroclor 1268													
Total PCBs	130	1000	12	65									
PAHs	**ug/kg**		**mg/kg OC**										
Naphthalene	2100	2400	99	170	440								
Acenaphthylene	1300	1300	66	66	**1500**								
Acenaphthene	500	730	16	57	300								
Fluorene	540	1000	23	79	220								
Phenanthrene	1500	5400	100	480	1500								
Anthracene	960	4400	220	1200	2300								
2-Methylnaphthalene	670	1400	38	64	160								
1-Methylnaphthalene					150								
Total LPAHs	5200	13000	370	780	6260								
Fluoranthene	1700	2500	160	1200	**14000**								
Pyrene	2600	3300	1000	1400	**12000**								
Benzo(a)anthracene	1300	1600	110	270	**6200**								
Chrysene	1400	2800	110	460	**5800**								
Benzo(b)fluoranthene					4900								
Benzo(k)fluoranthene					5600								
Total Benzofluoranthenes	3200	3600	230	450	**10500**								
Benzo(a)pyrene	1600	3000	99	210	**6800**								
Indeno(1,2,3-cd)pyrene	600	690	34	88	**2000**								
Dibenz(a,h)anthracene	230	540	12	33	**590**								
Benzo(g,h,i)perylene	670	720	31	78	**1800**								
Total HPAHs	12000	17000	960	5300	**59690**								

Table 4-2 - Summary of Subsurface Sediment Conventional and Chemistry Results

Sample Station					BLVD-SC-04	BLVD-SC-04	BLVD-SC-05	BLVD-SC-05	BLVD-SC-05	BLVD-SC-05	BLVD-SC-05	BLVD-SC-06	BLVD-SC-06
Sample Depth (ft)					4-6	8-10	6-8	8-9.5	9.5-10	10.5-12	13.5-14	0-2	2-4
Sampling Date	AETs		SMS		9/23/08	9/23/08	9/22/08	9/22/08	9/22/08	9/22/08	9/22/08	9/22/08	9/22/08
	LAET	2LAET	SQS	CSL									
Chlorinated Benzenes	**ug/kg**		**mg/kg OC**										
1,2-Dichlorobenzene	35	50	2.3	2.3	*120 U*								
1,3-Dichlorobenzene	170	170			120 U								
1,4-Dichlorobenzene	110	120	3.1	9	*120 U*								
1,2,4-Trichlorobenzene	31	51	0.81	1.8	*120 U*								
Hexachlorobenzene	22	70	0.38	2.3	*120 U*								
Phthalate Esters	**ug/kg**		**mg/kg OC**										
Dimethylphthalate	71	160	53	53	*120 U*								
Diethylphthalate	200	200	61	110	120 U								
Di-n-Butylphthalate	1400	1400	220	1700	120 U								
Butylbenzylphthalate	63	900	4.9	64	*120 U*								
bis(2-Ethylhexyl)phthalate	1300	1900	47	78	120 U								
Di-n-Octyl phthalate	6200	6200	58	4500	120 U								
Miscellaneous Compounds	**ug/kg**		**mg/kg OC**										
Dibenzofuran	540	700	15	58	180								
Hexachlorobutadiene	11	120	3.9	6.2	*120 U*								
N-Nitrosodiphenylamine	28	40	11	11	*120 U*								
Hexachloroethane					120 U								
Ionizable Organic Compounds in ug/kg													
Phenol	420	1200	420	1200	120 U								
2-Methylphenol	63	63	63	63	*120 U*								
4-Methylphenol	670	670	670	670	120 U								
2,4-Dimethylphenol	29	29	29	29	*120 U*								
Pentachlorophenol	360	690	360	690	*600 U*								
Benzyl Alcohol	57	73	57	73	*120 U*								
Benzoic Acid	650	650	650	650	*1200 U*								

NOTES:
***** TOC concentration outside of range (0.5 to 3.5 percent) for OC normalization. AETs are used for comparison.
U = Not detected at the reporting limit indicated.
J = Estimated value.
T = Value is between the MRL and MDL.
Blank indicates no AET/SMS criteria established or sample not analyzed for specific analyte.
Italics indicate reporting limit is above AET/SMS criteria.
Boxed value exceeds LAET/SQS criteria. Bold value exceeds 2LAET/CSL criteria.
Double-lined boxed value exceeds BSL for mercury.

Table 4-2 - Summary of Subsurface Sediment Conventional and Chemistry Results

Sample Station					BLVD-SC-06	BLVD-SC-06	BLVD-SC-06	BLVD-SC-07	BLVD-SC-08	BLVD-SC-08	BLVD-SC-08	BLVD-SC-08	BLVD-SC-09
Sample Depth (ft)					4-6	6-8	12-14	0-4	0-2	2.5-4	4-6	8.5-10	0-2
Sampling Date	**AETs**		**SMS**		9/22/08	9/22/08	9/22/08	9/24/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08
	LAET	2LAET	SQS	CSL									
Conventionals in %													
Total Solids													
Total Organic Carbon													
Gravel						3.8	0			1.1		3.4	
Sand						15.0	3.1			10.1		2.3	
Fines						81.1	96.8			88.7		94.1	
TPH in mg/kg													
Diesel-Range Hydrocarbons					28			37	14	41	43		45
Motor Oil-Range Hydrocarbons					31			67	23 U	73	61		110
Metals in mg/kg													
Arsenic	57	93	57	93	10 U			10 U	10	10 U	10 U		10
Cadmium	5.1	6.7	5.1	6.7	1.3			1.1	0.9	1.3	1.3		1.2
Chromium	260	270	260	270	70			76	83	53	56		74
Copper	390	390	390	390	58			61.7	62	55.4	50.1		74.4
Lead	450	530	450	530	22			24	22	19	17		52
Mercury	0.41	0.59	0.41	0.59	0.2			**0.8**	**0.87**	0.5	0.35		**0.8**
Silver	6.1	6.1	6.1	6.1	0.7 U			0.8 U	0.7 U	0.7 U	0.7 U		0.8 U
Zinc	410	960	410	960	111			127	126	98	99		148
PCBs	**ug/kg**		**mg/kg OC**										
Aroclor 1016													20 U
Aroclor 1221													20 U
Aroclor 1232													20 U
Aroclor 1242													20 U
Aroclor 1248													55
Aroclor 1254													49
Aroclor 1260													20 U
Aroclor 1262													20 U
Aroclor 1268													20 U
Total PCBs	130	1000	12	65									104
PAHs	**ug/kg**		**mg/kg OC**										
Naphthalene	2100	2400	99	170									
Acenaphthylene	1300	1300	66	66									
Acenaphthene	500	730	16	57									
Fluorene	540	1000	23	79									
Phenanthrene	1500	5400	100	480									
Anthracene	960	4400	220	1200									
2-Methylnaphthalene	670	1400	38	64									
1-Methylnaphthalene													
Total LPAHs	5200	13000	370	780									
Fluoranthene	1700	2500	160	1200									
Pyrene	2600	3300	1000	1400									
Benzo(a)anthracene	1300	1600	110	270									
Chrysene	1400	2800	110	460									
Benzo(b)fluoranthene													
Benzo(k)fluoranthene													
Total Benzofluoranthenes	3200	3600	230	450									
Benzo(a)pyrene	1600	3000	99	210									
Indeno(1,2,3-cd)pyrene	600	690	34	88									
Dibenz(a,h)anthracene	230	540	12	33									
Benzo(g,h,i)perylene	670	720	31	78									
Total HPAHs	12000	17000	960	5300									

Table 4-2 - Summary of Subsurface Sediment Conventional and Chemistry Results

Sample Station					BLVD-SC-06	BLVD-SC-06	BLVD-SC-06	BLVD-SC-07	BLVD-SC-08	BLVD-SC-08	BLVD-SC-08	BLVD-SC-08	BLVD-SC-09
Sample Depth (ft)					4-6	6-8	12-14	0-4	0-2	2.5-4	4-6	8.5-10	0-2
Sampling Date	**AETs**		**SMS**		9/22/08	9/22/08	9/22/08	9/24/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08
	LAET	2LAET	SQS	CSL									
Chlorinated Benzenes	**ug/kg**		**mg/kg OC**										
1,2-Dichlorobenzene	35	50	2.3	2.3									
1,3-Dichlorobenzene	170	170											
1,4-Dichlorobenzene	110	120	3.1	9									
1,2,4-Trichlorobenzene	31	51	0.81	1.8									
Hexachlorobenzene	22	70	0.38	2.3									
Phthalate Esters	**ug/kg**		**mg/kg OC**										
Dimethylphthalate	71	160	53	53									
Diethylphthalate	200	200	61	110									
Di-n-Butylphthalate	1400	1400	220	1700									
Butylbenzylphthalate	63	900	4.9	64									
bis(2-Ethylhexyl)phthalate	1300	1900	47	78									
Di-n-Octyl phthalate	6200	6200	58	4500									
Miscellaneous Compounds	**ug/kg**		**mg/kg OC**										
Dibenzofuran	540	700	15	58									
Hexachlorobutadiene	11	120	3.9	6.2									
N-Nitrosodiphenylamine	28	40	11	11									
Hexachloroethane													
Ionizable Organic Compounds in ug/kg													
Phenol	420	1200	420	1200									
2-Methylphenol	63	63	63	63									
4-Methylphenol	670	670	670	670									
2,4-Dimethylphenol	29	29	29	29									
Pentachlorophenol	360	690	360	690									
Benzyl Alcohol	57	73	57	73									
Benzoic Acid	650	650	650	650									

NOTES:
***** TOC concentration outside of range (0.5 to 3.5 percent) for OC normalization. AETs are used for comparison.
U = Not detected at the reporting limit indicated.
J = Estimated value.
T = Value is between the MRL and MDL.
Blank indicates no AET/SMS criteria established or sample not analyzed for specific analyte.
Italics indicate reporting limit is above AET/SMS criteria.
Boxed value exceeds LAET/SQS criteria. Bold value exceeds 2LAET/CSL criteria.
Double-lined boxed value exceeds BSL for mercury.

Table 4-2 - Summary of Subsurface Sediment Conventional and Chemistry Results

	Sample Station					BLVD-SC-09	BLVD-SC-11	BLVD-SC-09	BLVD-SC-09	BLVD-SC-09	BLVD-SC-09
	Sample Depth (ft)					2-3	2-3	3-4	4-6	6-8	8.5-9.7
	Sampling Date	**AETs**		**SMS**		9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08
		LAET	2LAET	SQS	CSL		Dup of BLVD-SC-09-2-3'				
Conventionals in %											
	Total Solids					31.1	34	25.5	34.5	44.2	
	Total Organic Carbon					13.2 *	7.59 *	8.99 *	3.13	5.28 *	
	Gravel										
	Sand										
	Fines										
TPH in mg/kg											
	Diesel-Range Hydrocarbons					80	130	110	210	60	
	Motor Oil-Range Hydrocarbons					270	480	210	640	170	
Metals in mg/kg											
	Arsenic	57	93	57	93	20 U	20 U	10	10 U	10 U	
	Cadmium	5.1	6.7	5.1	6.7	1.8	2.0	2.6	2.5	1.7	
	Chromium	260	270	260	270	86	86	110	89	65	
	Copper	390	390	390	390	121	119	126	94.8	71.3	
	Lead	450	530	450	530	143	124	142	120	42	
	Mercury	0.41	0.59	0.41	0.59	**1.7**	**1.8**	**3.8**	**1.5**	**0.77**	0.4 J
	Silver	6.1	6.1	6.1	6.1	1 U	1 U	0.9	1.5	0.6 U	
	Zinc	410	960	410	960	280	270	328	353	151	
PCBs		**ug/kg**		**mg/kg OC**							
	Aroclor 1016					59 U		98 U	3.13 U	20 U	
	Aroclor 1221					59 U		98 U	3.13 U	20 U	
	Aroclor 1232					59 U		98 U	9.58 U	58 U	
	Aroclor 1242					59 U		98 U	8.63	44	
	Aroclor 1248					250		290	3.13 U	20 U	
	Aroclor 1254					270		410	4.47	40 P	
	Aroclor 1260					59 U		98 U	3.13 U	20 U	
	Aroclor 1262					59 U		98 U	3.13 U	20 U	
	Aroclor 1268					59 U		98 U	3.13 U	20 U	
	Total PCBs	130	1000	12	65	520		700	13.1	84	
PAHs		**ug/kg**		**mg/kg OC**							
	Naphthalene	2100	2400	99	170	24	17 T	20 U	0.80	11 T	
	Acenaphthylene	1300	1300	66	66	22	17 T	20 U	0.64 U	20 U	
	Acenaphthene	500	730	16	57	20 U	20 U	20 U	0.45 T	20 U	
	Fluorene	540	1000	23	79	14 T	16 T	20 U	0.58 T	20 U	
	Phenanthrene	1500	5400	100	480	83	80	42	2.94	30	
	Anthracene	960	4400	220	1200	55	49	17 T	1.09	11 T	
	2-Methylnaphthalene	670	1400	38	64	15 T	9.9 T	20 U	0.58 T	20 U	
	1-Methylnaphthalene					20 U	20 U	20 U	0.42 T	20 U	
	Total LPAHs	5200	13000	370	780	198	179	59	5.85	52	
	Fluoranthene	1700	2500	160	1200	280	210	110	6.71	72	
	Pyrene	2600	3300	1000	1400	210	160	84	2.49	54 U	
	Benzo(a)anthracene	1300	1600	110	270	77	99	44 U	0.89 U	31 U	
	Chrysene	1400	2800	110	460	260	280	84	3.51	46 U	
	Benzo(b)fluoranthene					140	110	43	2.17	28	
	Benzo(k)fluoranthene					160	120	60	2.17	28	
	Total Benzofluoranthenes	3200	3600	230	450	300	230	103	4.34	56	
	Benzo(a)pyrene	1600	3000	99	210	160	120	66	2.68	41 U	
	Indeno(1,2,3-cd)pyrene	600	690	34	88	56	44	22	1.88 U	14 T	
	Dibenz(a,h)anthracene	230	540	12	33	16 T	13 T	20 U	1.88 U	20 U	
	Benzo(g,h,i)perylene	670	720	31	78	50	40	20	1.82 T	14 T	
	Total HPAHs	12000	17000	960	5300	1409	1196	489	21.55	156	

Table 4-2 - Summary of Subsurface Sediment Conventional and Chemistry Results

Sample Station					BLVD-SC-09	BLVD-SC-11	BLVD-SC-09	BLVD-SC-09	BLVD-SC-09	BLVD-SC-09
Sample Depth (ft)					2-3	2-3	3-4	4-6	6-8	8.5-9.7
Sampling Date	AETs		SMS		9/23/08	9/23/08	9/23/08	9/23/08	9/23/08	9/23/08
	LAET	2LAET	SQS	CSL		Dup of BLVD-SC-09-2-3'				
Chlorinated Benzenes	**ug/kg**		**mg/kg OC**							
1,2-Dichlorobenzene	35	50	2.3	2.3	20 U	20 U	20 U	0.64 U	20 U	
1,3-Dichlorobenzene	170	170			20 U	20 U	20 U	0.64 U	20 U	
1,4-Dichlorobenzene	110	120	3.1	9	12 T	20 U	20 U	0.64 U	20 U	
1,2,4-Trichlorobenzene	31	51	0.81	1.8	20 U	20 U	20 U	0.64 U	20 U	
Hexachlorobenzene	22	70	0.38	2.3	20 U	20 U	20 U	0.64 U	20 U	
Phthalate Esters	**ug/kg**		**mg/kg OC**							
Dimethylphthalate	71	160	53	53	28	16 T	12 T	1.41	20 U	
Diethylphthalate	200	200	61	110	20 U	20 U	20 U	0.64 U	20 U	
Di-n-Butylphthalate	1400	1400	220	1700	73	24	23	0.64 U	260	
Butylbenzylphthalate	63	900	4.9	64	20 U	20 U	20 U	0.64 U	20 U	
bis(2-Ethylhexyl)phthalate	1300	1900	47	78	260	300	100	16.93	13 T	
Di-n-Octyl phthalate	6200	6200	58	4500	20 U	20 U	20 U	1.88 U	20 U	
Miscellaneous Compounds	**ug/kg**		**mg/kg OC**							
Dibenzofuran	540	700	15	58	20 U	20 U	20 U	0.35 T	20 U	
Hexachlorobutadiene	11	120	3.9	6.2	*20 U*	*20 U*	*20 U*	0.64 U	*20 U*	
N-Nitrosodiphenylamine	28	40	11	11	20 U	20 U	20 U	0.64 U	20 U	
Hexachloroethane					20 U	20 U	20 U	0.64 U	20 U	
Ionizable Organic Compounds in ug/kg										
Phenol	420	1200	420	1200	280	69	20 U	74	22	
2-Methylphenol	63	63	63	63	20 U	20 U	20 U	20 U	20 U	
4-Methylphenol	670	670	670	670	29	23	20 U	58	20 U	
2,4-Dimethylphenol	29	29	29	29	20 U	20 U	20 U	20 U	20 U	
Pentachlorophenol	360	690	360	690	99 U	99 U	99 U	98 U	99 U	
Benzyl Alcohol	57	73	57	73	20 U	20 U	20 U	20 U	20 U	
Benzoic Acid	650	650	650	650	200 U	200 U	200 U	200 U	200 U	

NOTES:
***** TOC concentration outside of range (0.5 to 3.5 percent) for OC normalization. AETs are used for comparison.
U = Not detected at the reporting limit indicated.
J = Estimated value.
T = Value is between the MRL and MDL.
Blank indicates no AET/SMS criteria established or sample not analyzed for specific analyte.
Italics indicate reporting limit is above AET/SMS criteria.
Boxed value exceeds LAET/SQS criteria. Bold value exceeds 2LAET/CSL criteria.
Double-lined boxed value exceeds BSL for mercury.

Table 4-3. Summary of Geotechnical Testing Data

Sample ID	Sampling Date	Moisture Content (%)	Atterburg Limits				Specific Gravity (Std. units)	Wet Density (pcf)	Dry Density (pcf)
			PI	LL	PL	USCS			
BLVD-SC-04-8-10'	9/23/08	160.8	22.0	89.4	67.4	MH	2.40		
BLVD-SC-04-10-10.5'	9/23/08	164.1						76.5	29.0
BLVD-SC-05-9.5-10'	9/22/08	60.32	21.5	45.3	23.8	CL	2.67		
BLVD-SC-05-10-10.5'	9/22/08	43.78						110.1	76.6
BLVD-SC-05-10.5-12'	9/22/08	35.52	NA	NA	NA	Non-Plastic	2.68		
BLVD-SC-06-6-8'	9/22/08	146.3	35.0	84.5	49.5	MH	2.44		
BLVD-SC-06-8-9'	9/22/08	119.4						84.4	38.5
BLVD-SC-06-12-14'	9/22/08	111.5	69.3	116.5	47.2	MH	2.63		
BLVD-SC-06-14-14.5'	9/22/08	107.5						92.7	44.7
BLVD-SC-08-2-2.5'	9/23/08	121.6					2.60	91.9	41.5
BLVD-SC-08-2.5-4'	9/23/08	121.7	41.7	86.4	44.7	MH	2.44		
BLVD-SC-08-8-8.5'	9/23/08	110.0						88.1	42.0
BLVD-SC-08-8.5-10'	9/23/08	120.4	42.3	84.7	42.4	MH	2.63		
BLVD-SC-08-14-14.5'	9/23/08	99.72						89.6	44.9
BLVD-SC-09-8-8.5'	9/23/08	130.4						80.9	35.1
BLVD-SC-09-8.5-9.7'	9/23/08	151.5	43.5	97.7	54.1	MH	2.46		

NOTES:
NA = Non-plastic.
PI = Plasticity Index, LL = Liquid Limit, PL = Plastic Limit

A South

A North

COB-BLVD-02 Offset 119' W
COB-BLVD-01 Offset 123' W
BLVD-SC-01 Offset 161' W
BLVD-SC-02 Offset 98' W
BLVD-SC-03 Offset 3' E
BLVD-SC-04 Offset 48' W
BLVD-SC-05 Offset 1' E
BLVD-SC-06 Offset 63' E
BLVD-SC-07 Offset 102' E
BLVD-SC-08 Offset 77' E
BLVD-SC-09 Offset 6' W
B-8 Offset 179' W
B-14 Offset 64' W

Elevation in Feet (MLLW)

SM/GM (Fill)
PT
SM
MH/SM (Native)
PT/OH
SM/MH (Native)
MH (Native)
Chuckanut Formation (Sandstone / Siltstone)
Possible Outcropping of Chuckanut Formation
GM (Fill)
MH/OH
OL/CL

Vertical Datum: Mean Lower Low Water (MLLW)

Note:

The shoreline ground surface near landward explorations has been projected onto this cross-section for clarity.

Soil Descriptions:

OL / OH	= Organic Clayey Silt w/ Sand
PT	= Wood Debris (dust/ chips/ bark)
SM	= Silty Sand
GM	= Silty Sandy Gravel
MH	= Clayey Silt w/ Sand
CL	= Silty Sandy Clay

0 200 400

Horizontal Scale: 1" = 200'
Vertical Exaggeration = 20x

Adapted from: City of Bellingham 2005, Golder Associates 2008

LANDAU ASSOCIATES

Focused Environmental Site Assessment
Boulevard Park
Bellingham, Washington

Cross Section A-A'

Figure **4-1**

Report | V:\0531\101\0311\DIFig 4-1.dwg (A) "Figure 4-1" 4/14/2009

AN-SS-305	
Mercury	1.5 mg/kg

HC-SS-09	
Mercury	0.5 mg/kg

BLVD5	
Total LPAHs	8800 µg/kg
Total HPAHs	15030 µg/kg
BLVD6 (Dup of BLVD5)	
Total LPAHs	10120 µg/kg
Total HPAHs	28590 µg/kg
4-Methylphenol	680 µg/kg

AN-SS-302	
Mercury	0.45 mg/kg

AN-SS-304	
Total LPAHs	3630 µg/kg
Total HPAHs	16180 µg/kg

AN-SS-301	
Mercury	1.0 mg/kg
Total LPAHs	6560 µg/kg
Total HPAHs	42100 µg/kg

BLVD-SS-07	
Mercury	0.6 mg/kg

CL-MS-2 (S-2)	
Copper	398 J mg/kg
Lead	649 J mg/kg

BLVD3	
Total LPAHs	37300 µg/kg
Total HPAHs	109300 µg/kg
Dibenzofuran	1700 µg/kg
2-Methylphenol	130 J µg/kg
4-Methylphenol	1400 µg/kg
2,4-Dimethylphenol	100 J µg/kg

BLVD4	
Total LPAHs	12820 µg/kg
Total HPAHs	30770 µg/kg
Dibenzofuran	620 µg/kg
4-Methylphenol	800 µg/kg
Benzoic Acid	1700 µg/kg

BLVD1	
Total LPAHs	5790 µg/kg
Total HPAHs	30210 µg/kg

BLVD2	
Total LPAHs	154.78 mg/kg OC
Total HPAHs	601.30 mg/kg OC

BLVD-SS-01 BLVD-SS-02 BLVD-SS-03 BLVD-SS-04 BLVD-SS-05 BLVD-SS-06 BLVD-SS-07 BLVD-SS-08 BLVD-SS-09

SRI-SED-1 SRI-SED-2 SRI-SED-3 CL-MS-3 (S-3)

BNSF

Legend

- Sampling Locations Exceeding 2LAET/CSL Screening Levels
- Sampling Locations Exceeding LAET/SQS Screening Levels
- Sampling Locations with No Screening Level Exceedances
- Sampling Location where Total LPAH or HPAH do not Exceed Screening Levels, but Individual PAH Compounds Exceed the Screening Levels
- Sampling Location Not Tested for SMS Organic Chemicals
- Proposed Walkway Alignment (Walker Macy)
- Bathymetry (Golder 2008)
- Eelgrass Survey (Grette Associates)
- Railroad (City of Bellingham)
- Historic Manufactured Gas Plant Features
- Parcels (City of Bellingham)

N

0 200 400

Scale in Feet, NAD 83

Note
1. For complete analytical results please refer to Tables A-1 and 4-1.

Data Source: City of Bellingham; Reid Middleton; Walker Macy; Grette Associates; Golder

LANDAU ASSOCIATES

Boulevard Park Bellingham, Washington	**Distribution of SMS Chemical Exceedances in Surface Sediments, Focused Environmental Site Assessment, Boulevard Park**	Figure 4-2

Y:\Projects\053101\Mapdocs\Focused Environmental Site Assesment\Figure4-2_DistributionOfSMSExceedancesSurface.mxd 3/4/2009

BLVD-SC-09		
Depth (ft)	Analyte	Concentration
0-2	Mercury	0.8 mg/kg
2-3	Mercury	1.7/1.8 (Dup) mg/kg
	Total PCBs	520 mg/kg OC
3-4	Mercury	3.8 mg/kg
	Total PCBs	700 mg/kg OC
4-6	Mercury	1.5 mg/kg
	Total PCBs	13.1 mg/kg OC
6-8	Mercury	0.77 mg/kg

BLVD-SC-08		
Depth (ft)	Analyte	Concentration
0-2	Mercury	0.87 mg/kg
2.5-4		0.5 mg/kg

BLVD-SC-06		
Depth (ft)	Analyte	Concentration
0-2	Mercury	0.6 mg/kg
2-4		3.52 mg/kg

BLVD-SC-07		
Depth (ft)	Analyte	Concentration
0-4	Mercury	0.8 mg/kg

BLVD-SC-03		
Depth (ft)	Analyte	Concentration
4-6	Mercury	0.7 mg/kg

BLVD-SC-05

BLVD-SC-02		
Depth (ft)	Analyte	Concentration
2-4	Total HPAHs	19300 µg/kg
6-8	Total HPAHs	16300 µg/kg
	Mercury	2.0 mg/kg

BLVD-SC-04		
Depth (ft)	Analyte	Concentration
0-2	Total HPAHs	18250 µg/kg
2-4	Total LPAHs	3400 µg/kg
	Total HPAHs	36360 µg/kg
	2,4-Dimethylphenol	37 J µg/kg
4-6	Total LPAHs	6260 µg/kg
	Total HPAHs	59690 µg/kg

BLVD-SC-01		
Depth (ft)	Analyte	Concentration
0-2	Total LPAHs	5730 µg/kg
	Total HPAHs	83700 µg/kg
2-4	Total LPAHs	7020 µg/kg
	Total HPAHs	129700 µg/kg
4-6	Total HPAHs	49000 µg/kg

BNSF

Legend

- Sampling Locations Exceeding 2LAET/CSL Screening Levels
- Sampling Locations Exceeding LAET/SQS Screening Levels
- Sampling Locations where Total LPAH or HPAH do not Exceed Screening Levels, but Individual PAH Compounds Exceed the Screening Levels
- Sampling Locations with No Screening Level Exceedances
- Proposed Walkway Alignment (Walker Macy)
- Bathymetry (Golder 2008)
- Eelgrass Survey (Grette Associates)
- Railroad (City of Bellingham)
- Historic Manufactured Gas Plant Features
- Parcels (City of Bellingham)

N

0 200 400

Scale in Feet, NAD 83

Data Source: City of Bellingham; Reid Middleton; Walker Macy; Grette Associates; Golder

Note
1. For complete analytical results please refer to Table 4-2.

LANDAU ASSOCIATES

Boulevard Park Bellingham, Washington	**Distribution of SMS Chemical Exceedances in Subsurface Sediments, Focused Environmental Site Assessment, Boulevard Park**	Figure 4-3

Y:\Projects\053101\Mapdocs\Focused Environmental Site Assessment\Figure4-3_DistributionOfSubsurfaceSMSExceedances.mxd 3/4/2009

5 DISCUSSION

The following sections provide a discussion on the historical and recently collected data for soil and sediments within the proposed project area, including an evaluation of the nature and extent of significant environmental impacts based on currently available data. This information will be used by the City, along with other project elements, in its evaluation of the feasibility of developing the shoreline and constructing an overwater walkway from Boulevard Park to the former Cornwall Avenue Landfill.

5.1 BOULEVARD PARK SOIL

A soil investigation was recently completed by the City in the lower park area adjacent to the proposed southern terminus of the overwater walkway in support of the design and construction of an entertainment pavilion (Integral 2007). Two soil borings were advanced in support of this investigation. Soil samples representing the upper 4 ft of fill material at boring location COB-01 were tested for TOC, metals, and petroleum hydrocarbons (Figure 3-1). One sample collected from 2.5 to 4 ft below ground surface (bgs) was also tested for SVOCs. TOC, metals, and petroleum hydrocarbons were also analyzed for two deeper samples located above bedrock (20-21.5 ft and 22.5-24 ft bgs) from boring location COB-02. The deeper of the two samples was analyzed for SVOCs and PCBs based on observations made in the field during sampling (a distinct petroleum odor and sheen).

Metals (cadmium, chromium, copper, mercury, lead, nickel, and zinc) were detected in one or more of the soil samples with the highest concentrations detected in the upper 4 ft of fill material in boring COB-01, but at levels below the MTCA Method A soil cleanup levels. Petroleum hydrocarbons were reported in all soil samples tested with the highest concentration detected in the 22.5 to 24 ft bgs sample collected from COB-02 (total TPH of 2,250 mg/kg). PAHs were also detected at elevated concentrations in this sample (total LPAHs of 629 mg/kg and total HPAHs of 484.6 mg/kg). PCBs were not detected in the sample analyzed. The TPH concentration of 2,250 mg/kg exceeds the Method A cleanup level of 2,000 mg/kg for soils. Moreover, naphthalenes, benzo(a)pyrene (BAP), and total PAH toxicity equivalency (TEQ) exceeded the corresponding MTCA cleanup level by one or more orders of magnitude. The elevated level of petroleum hydrocarbons and PAHs appears to be confined to a 3 to 5 ft thick layer of native, gravelly sand (SW) located above bedrock.

Although not tested, a distinct petroleum odor and sheen was also observed in subsurface soils (20 to 25 ft bgs) from boring COB-01 located approximately 30 ft from COB-02 (Figure 3-1). The extent of the petroleum contamination in the lower park is unknown but it may be associated with historical operations of the coal gasification plant previously located upgradient from this location (Integral 2007, refer to Figure 3-1). The upper portion of Boulevard Park was developed on the location of this plant which was in operation from the early 1890's until at least 1950 (based on review of Sanborn Insurance maps dated 1904, 1913, 1950). Products and/or byproducts (i.e., coal tar) from the MGP Site may have been accidently spilled during plant

operations and traveled downgradient and down slope via surface water and groundwater movement. Based on the results from these borings, the lower park area near the proposed southern terminus of the overwater walkway is likely impacted with residual petroleum product in the subsurface soils 20 to 25 ft below the existing ground surface (Integral 2007).

5.2 CORNWALL AVENUE LANDFILL SOIL

Soil chemistry data near the proposed northern terminus of the walkway at the former Cornwall Avenue landfill are relatively old, with most subsurface data collected in the late 1980's and early 1990's (Landau 2007). However, data and information provided in the Cornwall Avenue landfill RI/FS indicates this upland portion of the site is composed primarily of municipal and wood wastes. Most of the site was originally tideflats and sub-tidal areas. From 1888 to 1946, the site was used for sawmill operations, including log storage and wood disposal. The site was used for municipal waste disposal from approximately 1953 until 1965. Soil borings advanced near the proposed northern terminus (locations B-8 and B-14) indicate up to 30 ft of waste material interspersed with other fill material (e.g., silty sand and gravel) at this location (refer to Figure 3-1). Wood waste appears to be the principal fill component along the south shore of the landfill, near the proposed location of the walkway terminus, based on the field logs for these borings. However, other waste materials may contain mercury and PCBs at levels above MTCA criteria based on the chemistry results from BLVD-SC-09, located approximately 100 ft south of the former landfill.

5.3 SEDIMENTS

Similar to previous sediment studies conducted in the project site area, certain sediments sampled in this focused ESA contain levels of mercury and PAHs above SMS criteria. In historical studies, mercury and PAHs were observed at relatively high levels in surface sediments near the Boulevard Park pier and shoreline area (Norton and Summers 1998, Anchor and Hart Crowser 2000). Surface sediment data were generally lower in concentration for these chemicals during the focused ESA (refer to Table 4-1). There was only one exceedance of SMS criteria for mercury at station BLVD-SS-07 located near the center of the proposed alignment; all other chemistry and bioassay data (including bioassay results for BLVD-SS-07) were below SMS criteria. However, subsurface sediment samples collected at stations BLVD-SC-01, -02, and -04 near Boulevard Park and station BLVD-SC-09 near the former Cornwall Avenue landfill had one or more of these chemicals exceeding criteria (refer to Table 4-2). PCBs also exceeded SQS/LAET criteria in samples collected and tested from BLVD-SC-09.

Lower levels of SMS chemicals in surface sediments observed during the focused ESA can be explained by recent sediment deposition in this portion of Bellingham Bay. Over time, cleaner sediments from the Nooksack River and local creeks have mixed with and covered the impacted sediments, thereby reducing the impact on benthic biological organisms based on bioassay testing results. This has also been observed in surface sediments of other areas of Bellingham Bay (e.g., Whatcom Waterway Supplemental RI/FS – Anchor and Hart Crowser 2000).

Subsurface sediments near Boulevard Park are impacted (above CSL criteria) to at least 6 ft below mudline based on sample results for BLVD-SC-01, -02, and -04. PAHs were the principal chemicals above criteria in this area of the site as that observed in soil samples tested from COB-02 located in the lower park area (refer to Section 5.1). Based on the current dataset, the extent of the petroleum contamination in sediments near Boulevard Park appears to be contiguous to the pocket beach and east side of the pier. Subsurface sediments collected to the west (BLVD-SC-03) and north (BLVD-SC-05, -06, -07, and -08) of the pier did not show obvious signs of petroleum contamination based on field and laboratory results.

Mercury levels above CSL and BSL criteria were also observed in subsurface sediments at representative locations (BLVD-SC-02, -06, -07, 08, and -09) along the proposed overwater walkway alignment. The highest levels of mercury were observed in sediments at station BLVD-SC-06 (center of alignment) and BLVD-SC-09 near the former Cornwall Avenue landfill. Mercury contamination in Bellingham Bay sediments is associated with the former Georgia Pacific pulp mill, and this portion of the Bay is considered part of the Whatcom Waterway cleanup site (Ecology 2008b). Monitored natural recovery is the selected remedial alternative for this portion of the waterway (Site 9) because mercury levels above cleanup criteria are generally observed in subsurface sediments covered with cleaner surface sediments. Also, bioassay testing results for surface sediments in this area have generally passed SMS criteria.

PCB concentrations above SMS criteria were observed in station BLVD-SC-09 to a depth of 6 ft below mudline with the highest total PCB concentration (700 µg/kg) in the 3-4 ft sample. PCBs were detected in the 6 to 8 ft sample but at a level below the corresponding LAET.

6 SUMMARY AND CONCLUSIONS

The purpose of this focused ESA was to fill data gaps identified in the SAP and complete a site environmental characterization in support of the construction feasibility study for shoreline development and design and construction of an overwater walkway.

The upper layer of sediments collected in the project area was relatively heterogeneous consisting of saturated organic clayey silts with sand (OH/MH) and highly organic debris including wood dust/chips/bark (PT). At several stations along the proposed walkway alignment, a distinct silty sand or sandy silt layer with clay and trace shell fragments (SM/MH) was observed below this upper organic layer and identified as native marine sediment. This pre-industrial sediment layer appears to be located over bedrock identified as the Chuckanut sandstone or siltstone formation. The upper organic layer was encountered at depths ranging from the mudline surface to 1 ft below mudline and varied in thickness from 4.5 to 11 ft depending on location. The native silt/sand layer was encountered at depths of 9.5 to 12 ft below mudline with greater depths nearshore and upland (e.g., Cornwall landfill area).

For the surface sediment composites, mercury was the only chemical of concern detected at concentrations above the corresponding CSL but at only one location (BLVD-SS-07). This is an improvement from previous surface sediment results reported in the project area in that, in addition to mercury, two other metals (copper and lead) and PAHs were reported above CSL criteria in these historical studies at the site.

Bioassay testing was conducted on selected surface sediment composites based on field observations and/or chemical exceedances of criteria. Bioassays for each sample passed SMS criteria.

Subsurface sediment composites from 9 cores were tested for SMS conventionals and chemicals of concern. Several of the subsurface sediment samples exceeded CSL criteria for mercury and PAHs. The highest concentrations of mercury, exceeding both CSL and BSL levels, were observed 2 to 4 ft below mudline at stations BLVD-SC-06 and BLVD-SC-09. PAHs exceeding CSL criteria were observed in subsurface sediments at BLVD-SC-01, -02, and -04, located adjacent to Boulevard Park. The elevated PAH concentrations correspond with elevated TPH concentrations detected in these samples and a distinct petroleum odor and sheen observed in the field at these locations. The petroleum contamination observed in subsurface sediments near the pier and pocket beach and subsurface soils in the lower park (soil borings COB-BLVD-01 and COB-BLVD-02) may be associated with historical operations of a coal gasification plant previously located in the upper portion of Boulevard Park and/or other historical operations in this area of Bellingham Bay. Surface and subsurface sediments to the west (BLVD-SC-03) and north (BLVD-SC-05, -06, -07, and -08) of the pier did not show obvious signs of petroleum contamination based on field and laboratory results.

In addition to mercury exceedances, PCBs were tested and detected above SQS criteria in subsurface samples from BLVD-SC-09, located adjacent to the former Cornwall Avenue landfill

site. The upper 8 ft of sediment contained elevated mercury and PCB concentrations with mercury exceeding the CSL at several depths. The mercury and PCBs are likely related to historical disposal of wood and municipal wastes at the landfill.

Subsurface soils and sediments within portions of the project area are impacted with petroleum hydrocarbons, mercury, and PCBs. No residual petroleum product was observed in the sediments but an oily sheen was observed in subsurface soils in lower portion of Boulevard Park. Subsurface soils at Boulevard Park are covered with nearly 20 ft of fill materials including wood debris (chips/dust). Impacted soils at the former Cornwall Avenue landfill are associated with past disposal of municipal and wood wastes. Because impacted subsurface sediments have been covered with cleaner surface sediment, active cleanup (e.g., removal) would likely not be required for construction of the project. However, shoreline development (e.g., stabilization) and construction of the overwater walkway may disturb these impacted subsurface sediments and potentially release certain contaminants (e.g., PAHs) to the environment. For example, removal of the pier at Boulevard Park and driving piles for the walkway could potentially release petroleum contaminants from subsurface sediments to the water column. Water quality monitoring will likely be required as part of the Section 401 Water Quality Certification permitting requirements. If there are exceedances during construction, contingency engineering controls (e.g., silt curtains) may be required to reduce impacts to water quality.

Sediment sampling may be necessary once construction is complete to determine if surrounding surface sediments have been impacted by disturbance of subsurface sediments in the project area. Additional long-term monitoring of sediments may also be necessary to confirm natural recovery of impacted surface sediments. This action would be consistent with the monitored natural recovery alternative selected for some sediment areas within the Whatcom Waterway site (Ecology 2008b).

The impacted sediments located adjacent to the proposed Boulevard Park terminus, including the pocket beach and pier, will likely be investigated further as part of an RI/FS for the MGP Site. As previously mentioned, the City and PSE are currently negotiating an Agreed Order with Ecology to conduct an RI/FS for the site. In addition to sediments adjacent to Boulevard Park, the RI/FS will likely include an evaluation of potential impacts to soil, groundwater, and surface water.

The Port is currently updating the RI/FS report for the Cornwall Avenue Landfill and coordinating with Ecology regarding evaluation and selection of an appropriate cleanup action for that site. It is currently anticipated that the cleanup action will include installation of a low permeability landfill cap over the uplands area, shoreline stabilization, and either capping or monitored natural recovery of subtidal sediments. As a potential liable party for the Cornwall Avenue landfill, the City will continue to coordinate with the Port and Ecology so that design and construction of the overwater walkway is properly integrated with design and construction of the future landfill cap and other environmental features that are determined to be necessary as part of the final cleanup action for the former Cornwall Avenue Landfill site.

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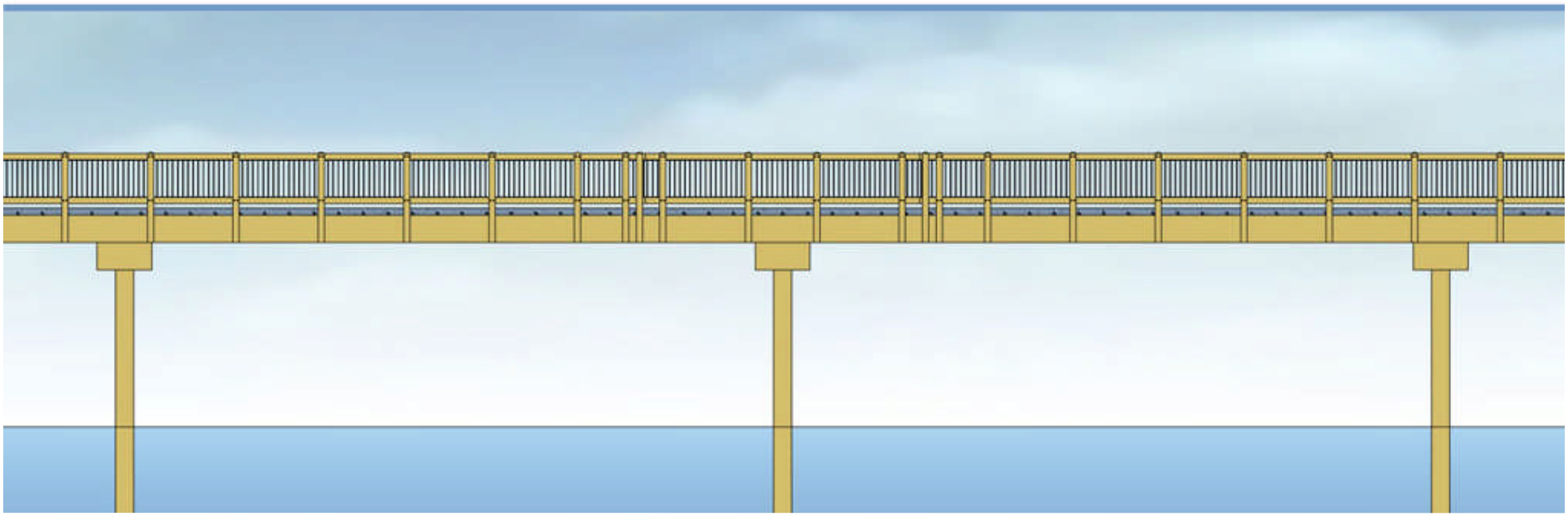
Sanborn Maps from 1904, 1913, 1950.

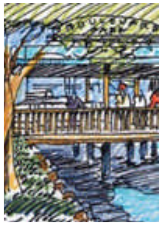
APPENDIX 11
Public Meeting Presentation
June 26, 2008

Boulevard Park



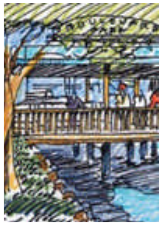
Public Meeting
June 26, 2008

AGENDA

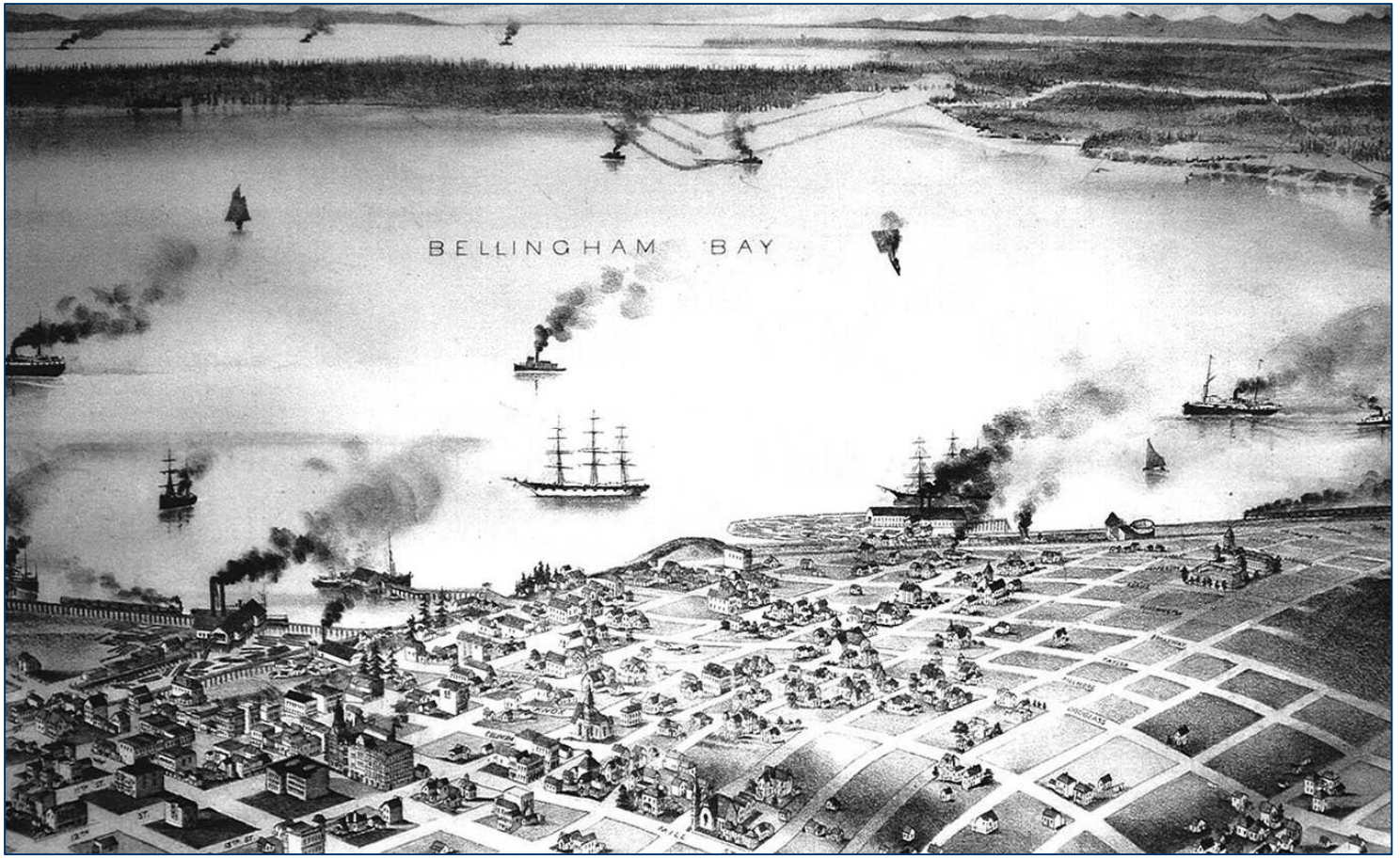


- Introductions
- Project Background
  - Park History
  - Public Process
  - Funding
  - Schedule
- Background Studies
  - Shoreline Assessment
  - Pattle Point Condition Assessment
  - Cultural Resources Assessment
  - Focused Environmental Site Assessment and Geotechnical Study
  - Eelgrass Survey
- Initial Concepts
- Permit Process and Next Steps
- Q&A

PROJECT BACKGROUND



- Park History



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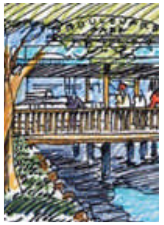
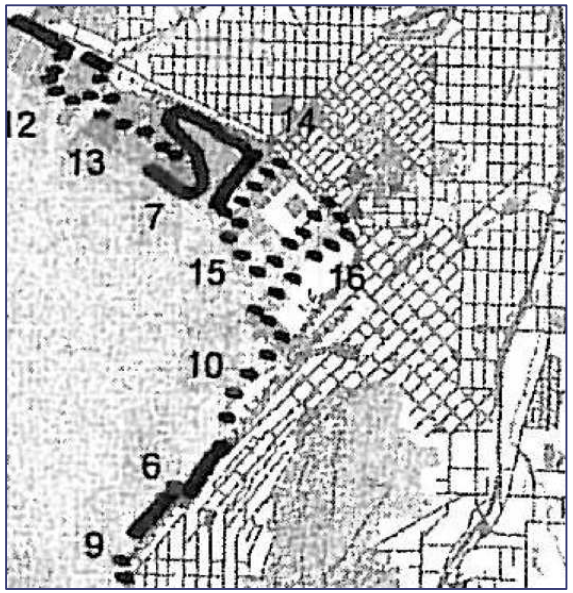


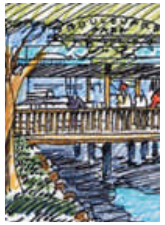
- Public Process
  - Parks, Recreation and Open Space Plan 2002



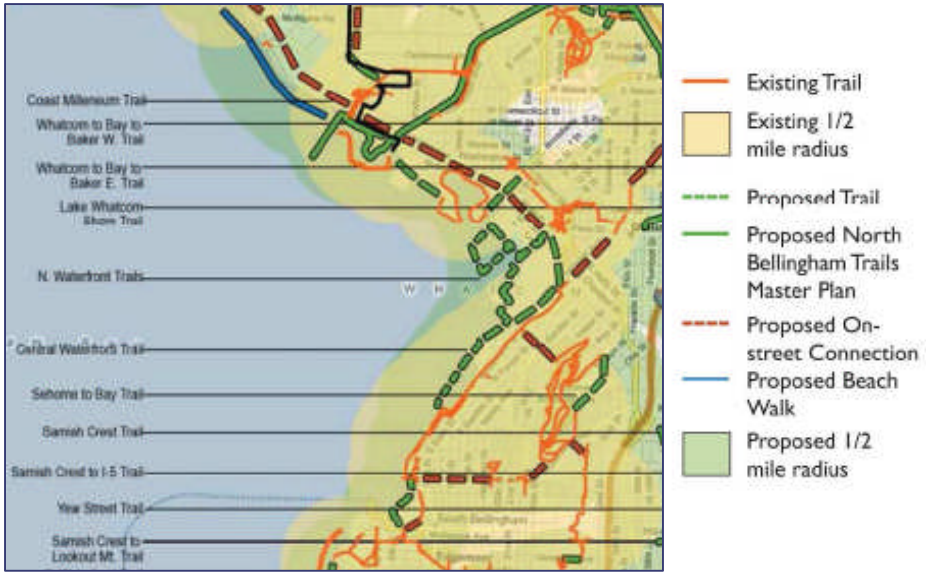
Recommended Trails Plan

shoreline trails – existing
shoreline trails – proposed
boardwalk/promenades – existing
boardwalk/promenades – proposed

PROJECT BACKGROUND

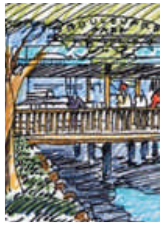


- Public Process
  - Parks, Recreation and Open Space Plan (Updated 2008)



Recommended Trails Plan

PROJECT BACKGROUND



- Public Process
  - Waterfront Futures Group
  - Vision & Framework
  - Plan 2004

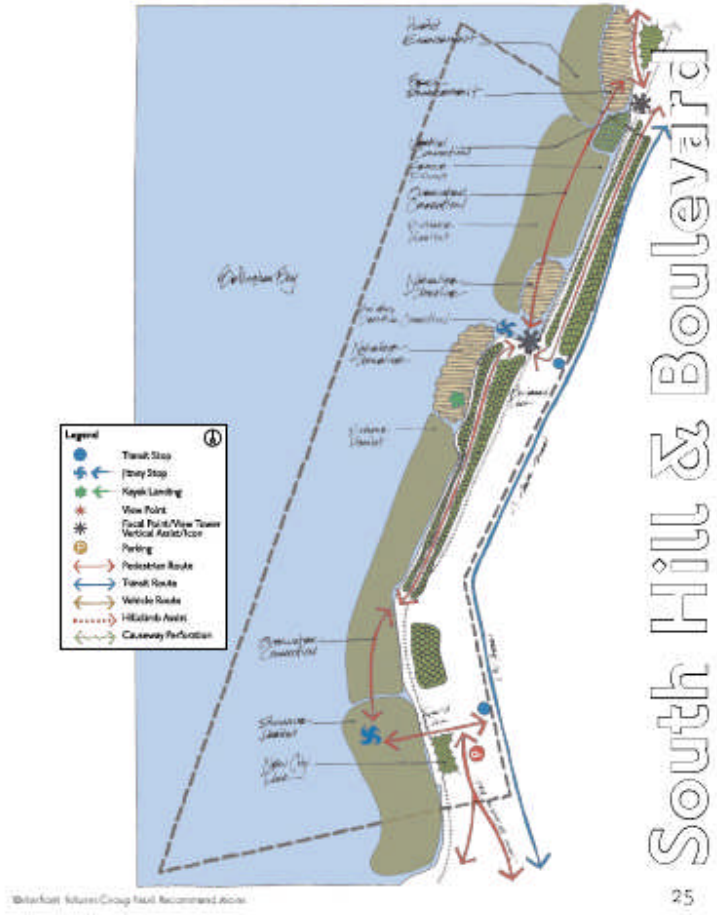
RECOMMENDATIONS

Culture & History

- Collaborate with Native American neighbors.
- Conduct an inventory to identify all the historic and native sites.

Connections

- Construct an over-water trail to connect Boulevard Park to the Cornwall Landfill similar to the over water connection from Boulevard Park to Taylor Avenue Dock.



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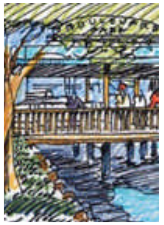
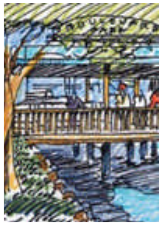


- Public Process
  - Waterfront District Development Plan
    - Identifies connection between waterfront district plan and waterfront

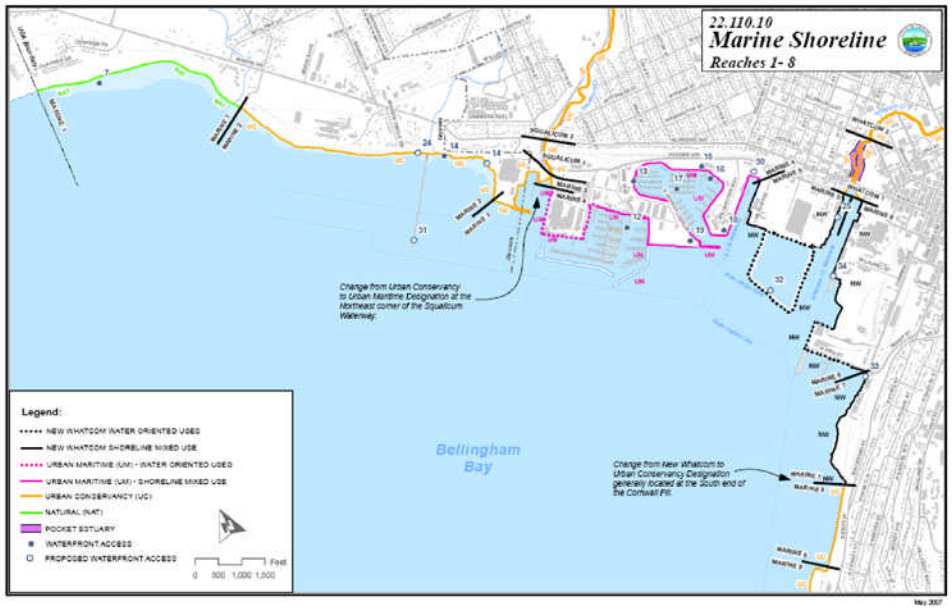
PROJECT BACKGROUND



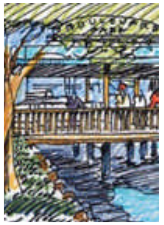
- Public Process:
  - Shoreline Master Program Update 2007

    Public Access "Goals and Objectives" includes:

Overwater walkway from the south end of the Cornwall Avenue Landfill to the north end of Boulevard Park

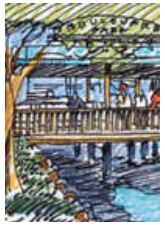


PROJECT BACKGROUND



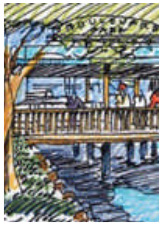
- Public Process
  - Greenway Levy III
  - City wide vote
  - Listed as Waterfront Redevelopment Trail

PROJECT BACKGROUND



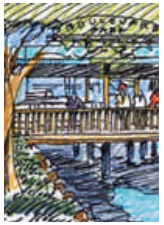
- Funding Sources
  - Greenway Levy III
    - Heritage Parks Improvements Boulevard Park Trestle & Beach Improvements $1.5M
  - Greenway Levy III
    - Waterfront Redevelopment Trail $4M
  - 2005 Federal Enhancement Grant
    - $1.6M
  - Ecology Remediation Grant (Focused Environmental Site Assessment)
    - Matching funding available upon completion of Agreed Order between City and Ecology

PROJECT BACKGROUND



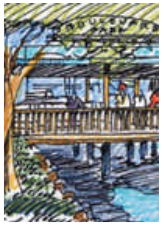
- Schedule
  - Feasibility Study 2008
  - Pattle Point Trestle Improvements 2009
  - Shoreline Improvements 2010
  - Over water walkway permitting through 2011
  - Boulevard Park Cleanup 2012

SITE BACKGROUND STUDIES

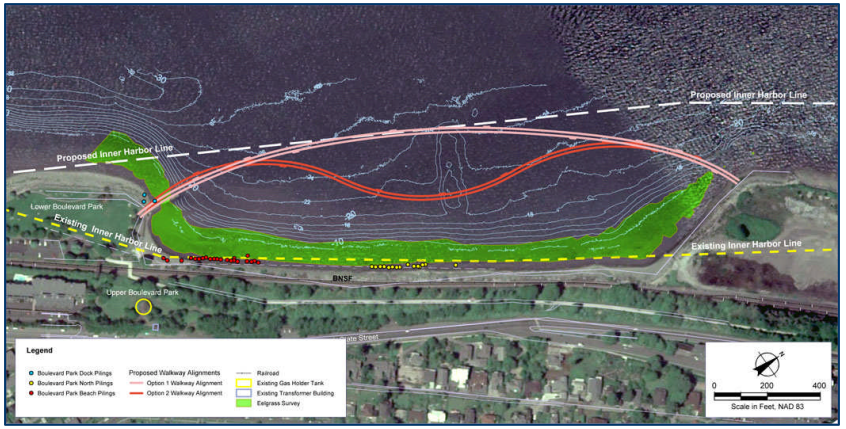


- Shoreline Assessment
- Pattle Point Condition Assessment
- Cultural Resources Assessment

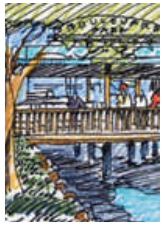
SITE BACKGROUND STUDIES



- Focused Environmental Site Assessment and Geotechnical Study
  - Data Gap Analysis
  - Sampling and Analysis Plan
  - Sediment Sampling
    - Surface Sediments
    - Sediment Cores/Borings
  - Geophysical and Bathymetry Surveys

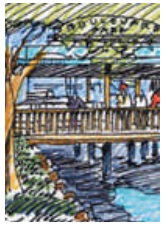


SITE BACKGROUND STUDIES

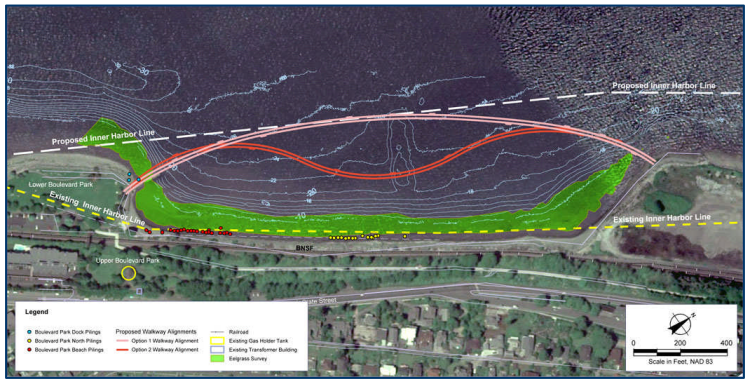


- Remedial Investigation/Feasibility Study
  - Agreed Order Negotiations with Ecology
  - Historical Coal Gasification Plant
  - Work Plans for Additional Sampling & Testing
  - Separate Public Participation Process

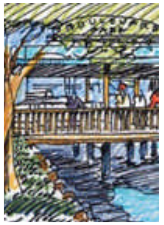
SITE BACKGROUND STUDIES



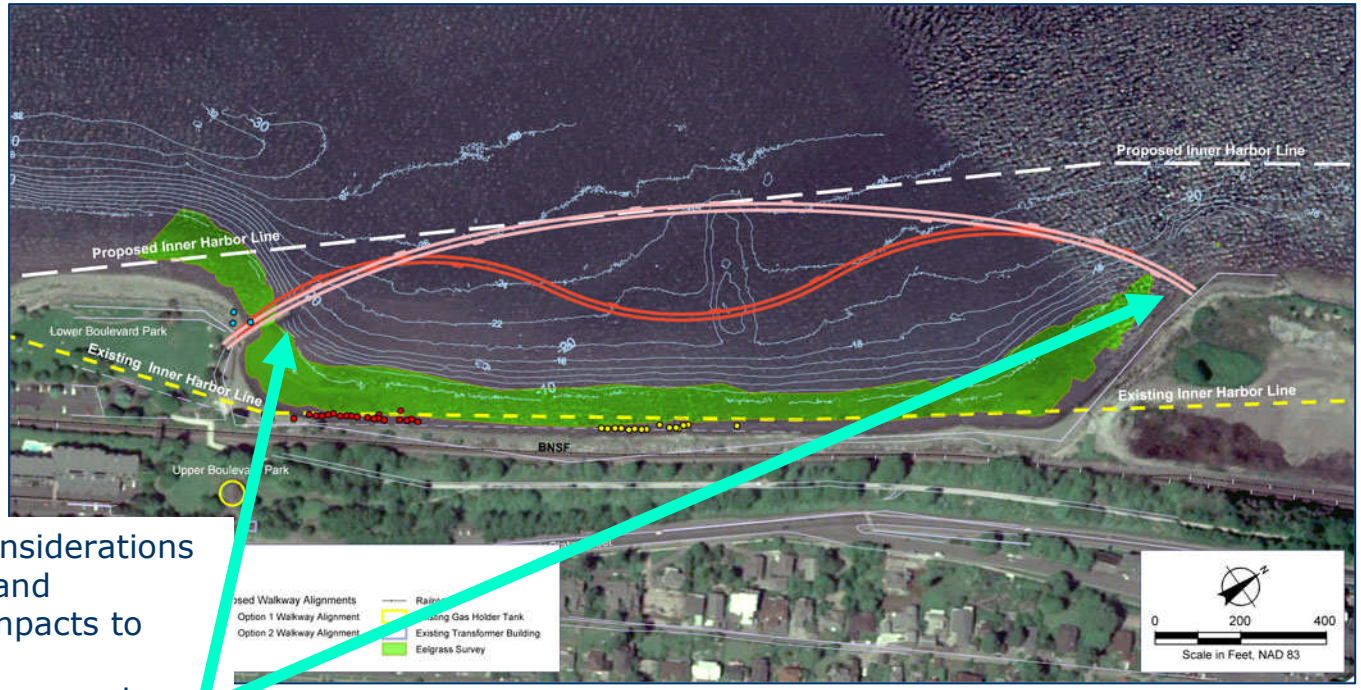
- Eelgrass
  - Present in the Boulevard Park area and Pattle Point
  - Very important aquatic habitat for a range of aquatic species including salmon
  - Eelgrass and macroalgae survey conducted in June using latest survey protocols.
  - Survey provides basis for avoiding and minimizing eelgrass and macroalgae
  - Results show clear limits of eelgrass and no macroalgae.



SITE BACKGROUND STUDIES

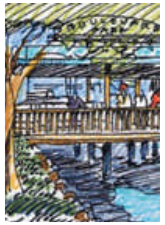


- Eelgrass and Concept Design
  - Approach: avoid and minimize impacts

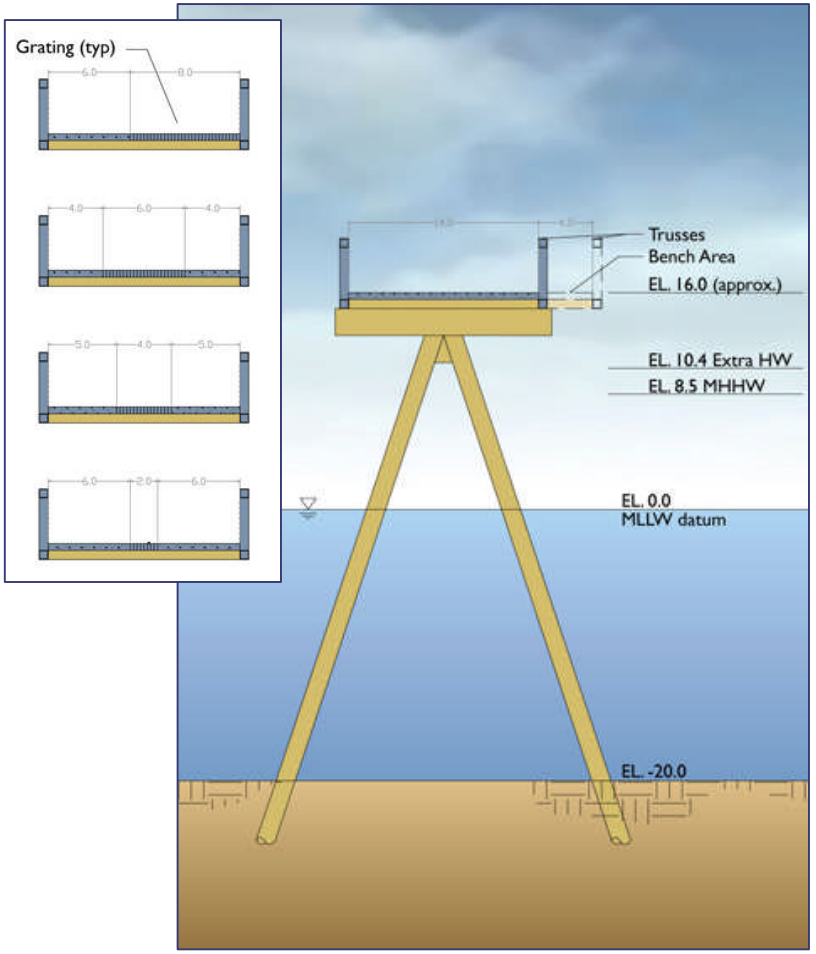


Important considerations for avoiding and minimizing impacts to eelgrass:
- Location of approaches
- Water depth under trail
- Walkway surface

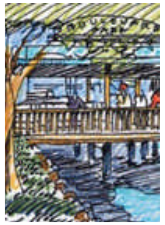
INITIAL CONCEPTS



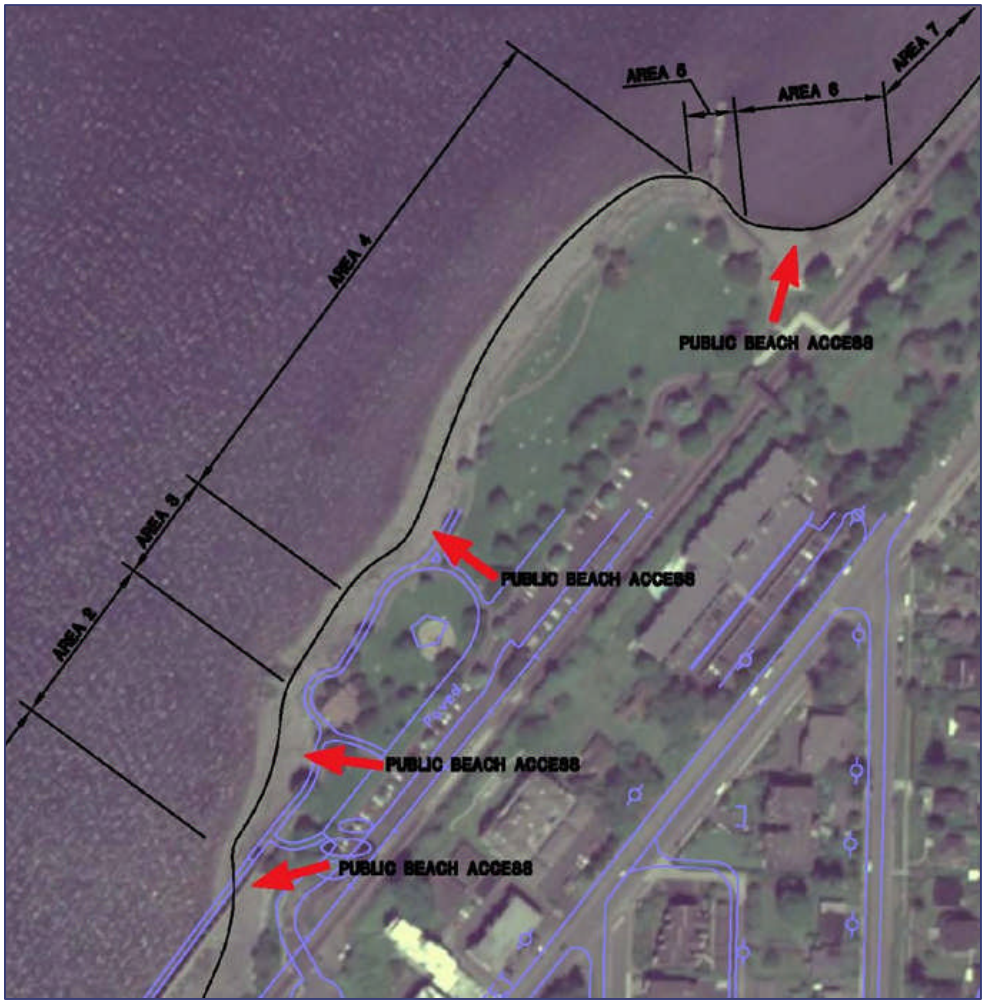
- Pattle Point Trestle Renovation
  - Existing stringers are at the end of design life
  - Improve walking surface and ADA access
  - Reuse piling and pile caps
  - Replace superstructure
  - Increase width to 12’ plus bench areas
  - Utilize combination of grating and solid concrete decking



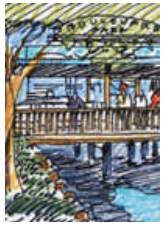
INITIAL DESIGN CONCEPTS



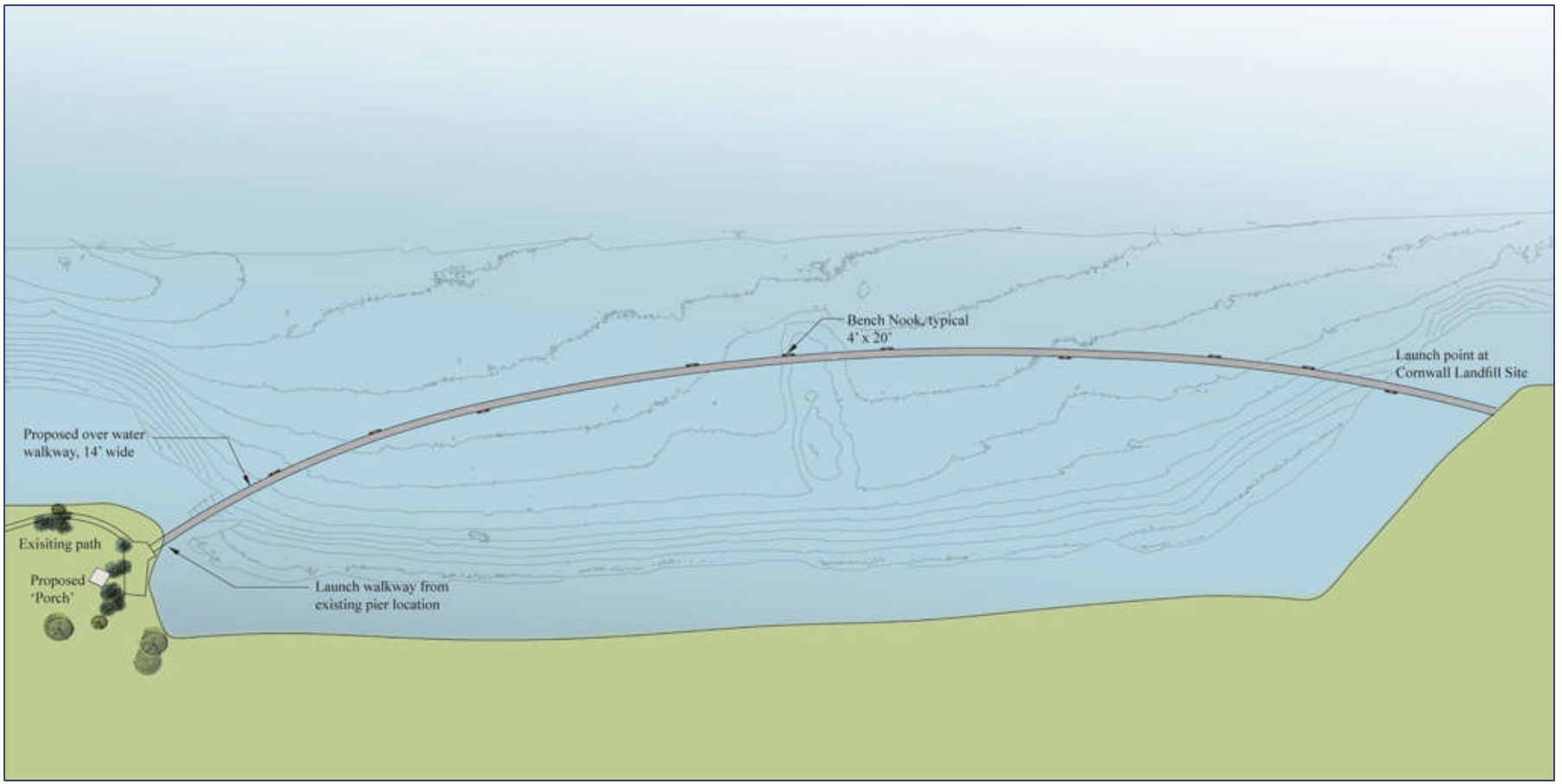
- Shoreline Improvements
  - Enhance public access and environment
  - Four proposed areas of enhancement
  - Removal of concrete & rock rubble
  - Create gradual sloped pocket beach areas
  - Minor trail relocation



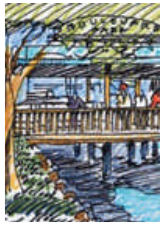
INITIAL CONCEPTS



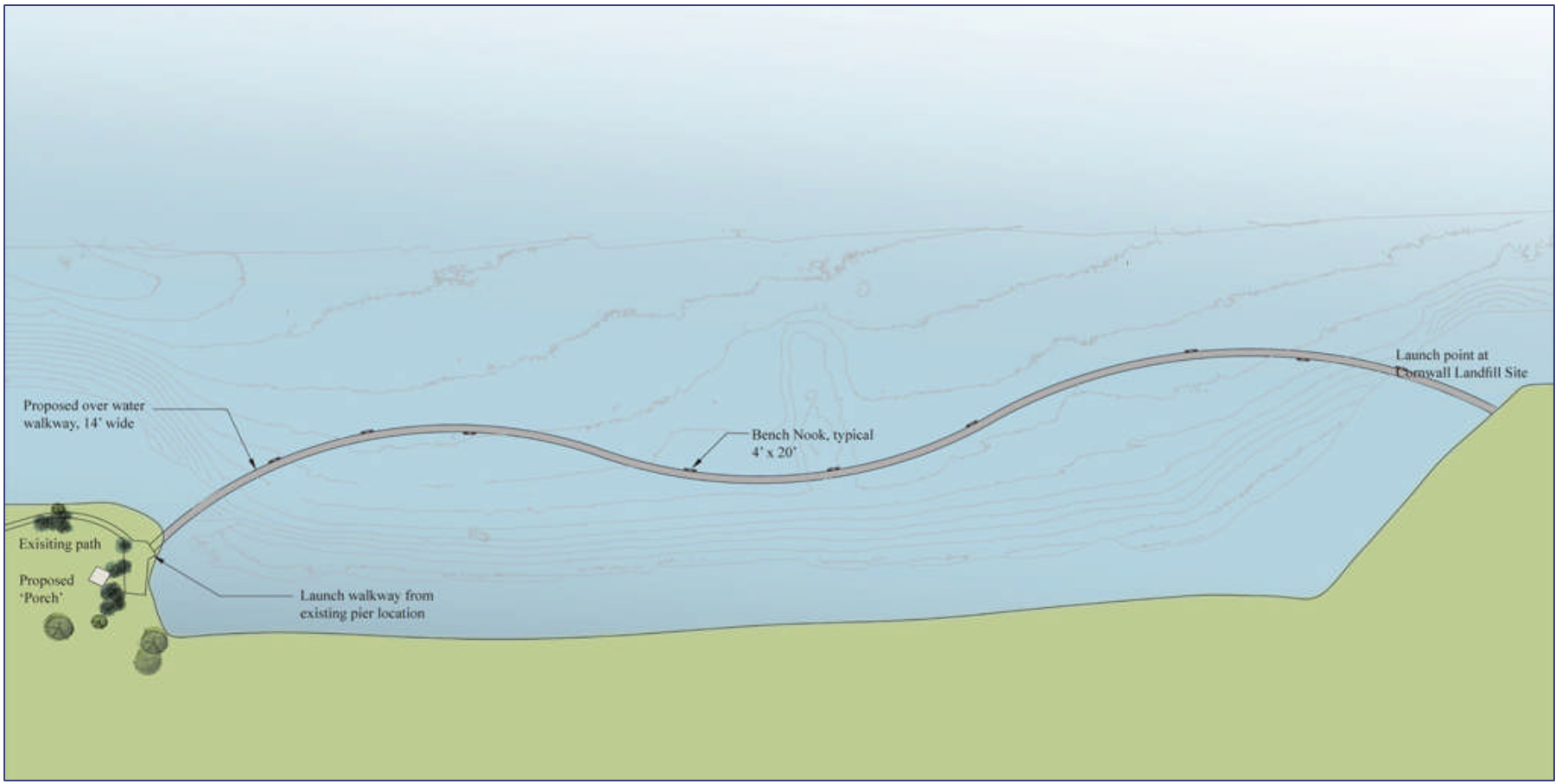
- Overwater Trail Layout Option 1 – Arc Style



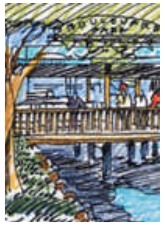
INITIAL DESIGN CONCEPTS



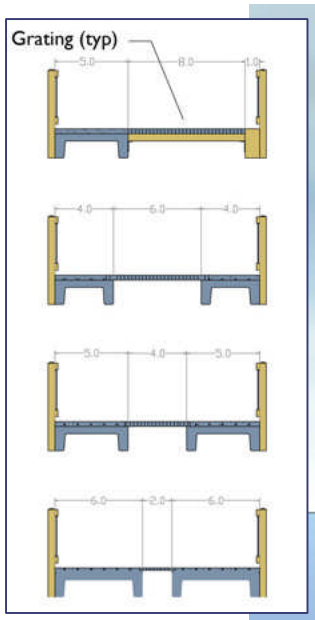
- Overwater Trail Layout Option 2 – S Curve Style

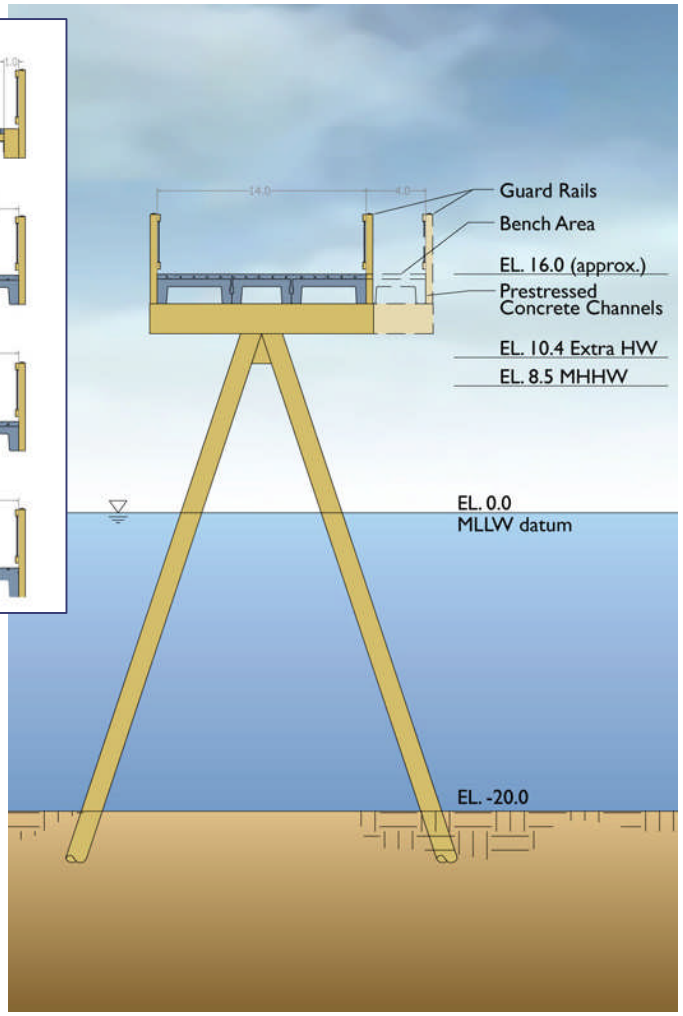


INITIAL DESIGN CONCEPTS

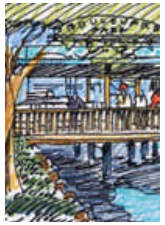


- 14’ clear walkway
- Bench areas
- Decking – combination of grating and solid concrete surfacing
- Handrail
- Low level security lighting

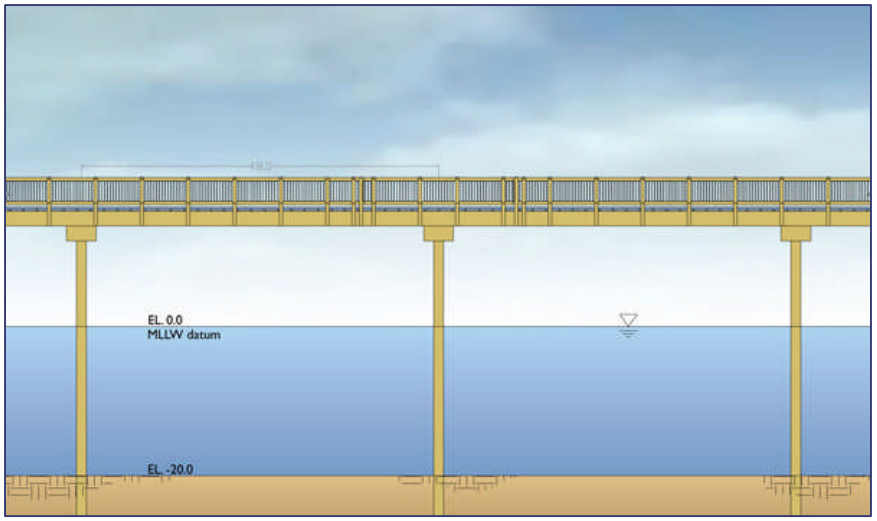


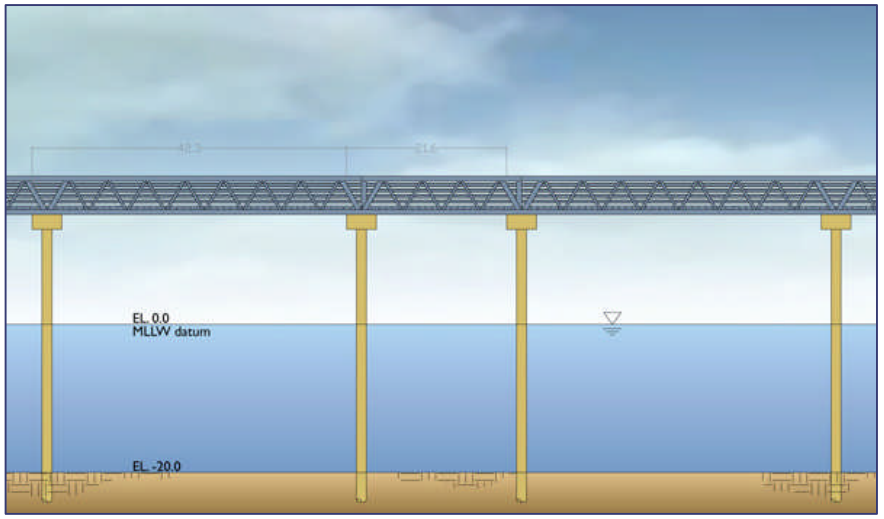


INITIAL DESIGN CONCEPTS



- Structure Options
  - Channel Design (similar to Taylor St Dock)
  - Truss Design





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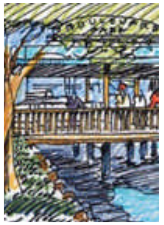
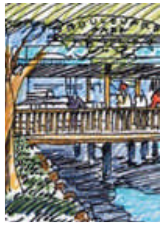
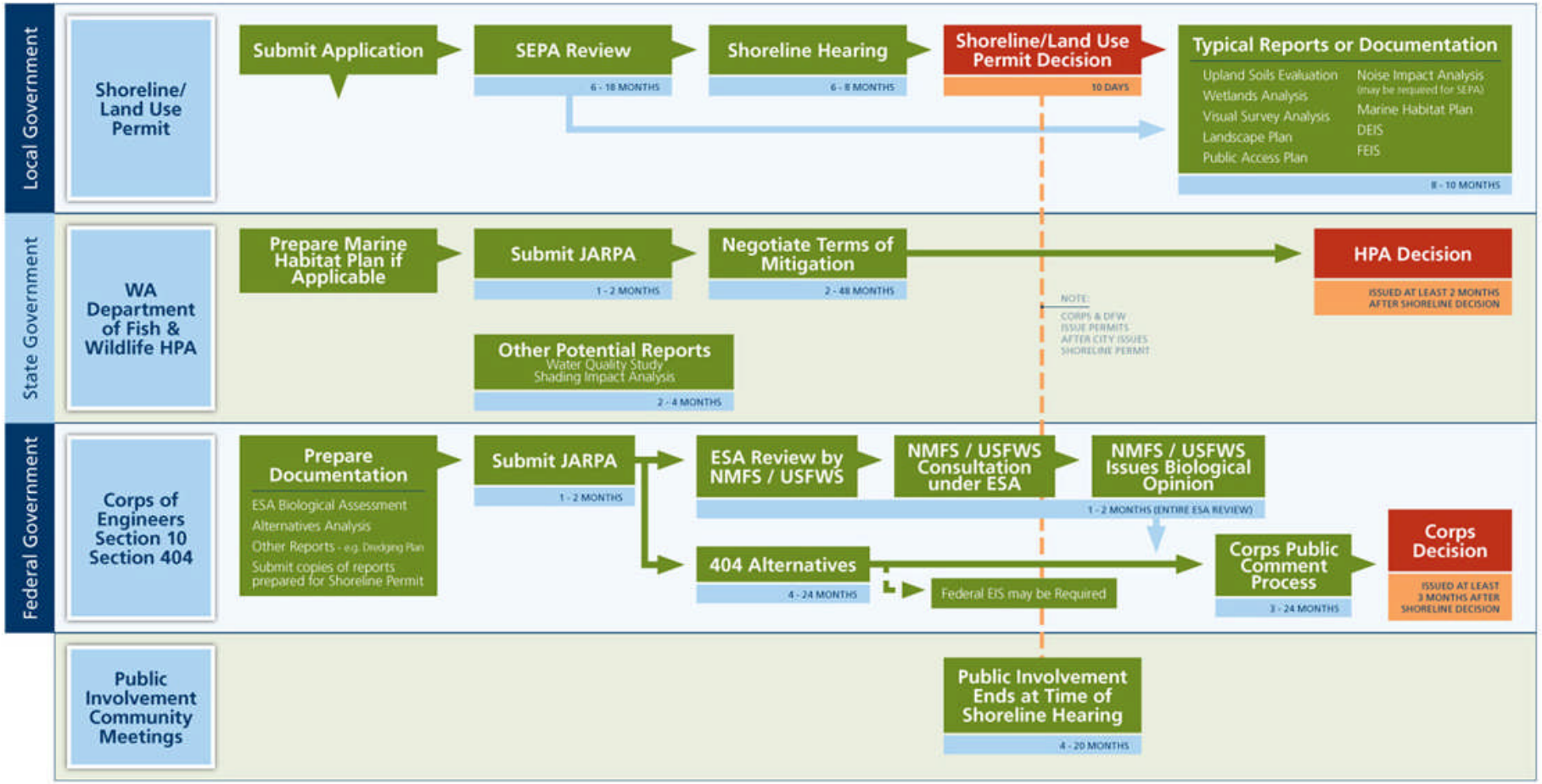


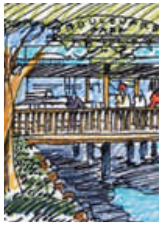
- Conceptual Options

TYPICAL LAND USE & SHORELINE PERMITTING PROCESS





PERMIT AGENCY RELATIONSHIPS



City of Bellingham

- Shoreline Substantial Permit
  - SEPA

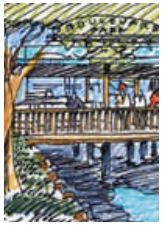
State Government

- Department of Fish & Wildlife
  - Hydraulic Project Approval (HPA)
- Department of Ecology-
  - Water Quality Permit

Federal Government

- Corps of Engineers §10 or 404
- ESA Compliance - NOAA (NMFS), USFWS

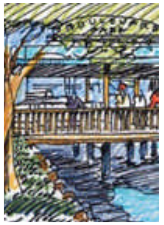
SHORELINE PERMITTING



Key Issues In water

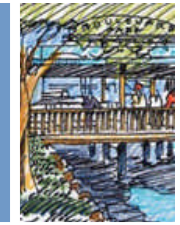
- Water depths
- Nearshore Habitat
- Vegetation – eelgrass & surf smelt
- Overwater Coverage
- Fish Windows & Closures
- Cultural Resources

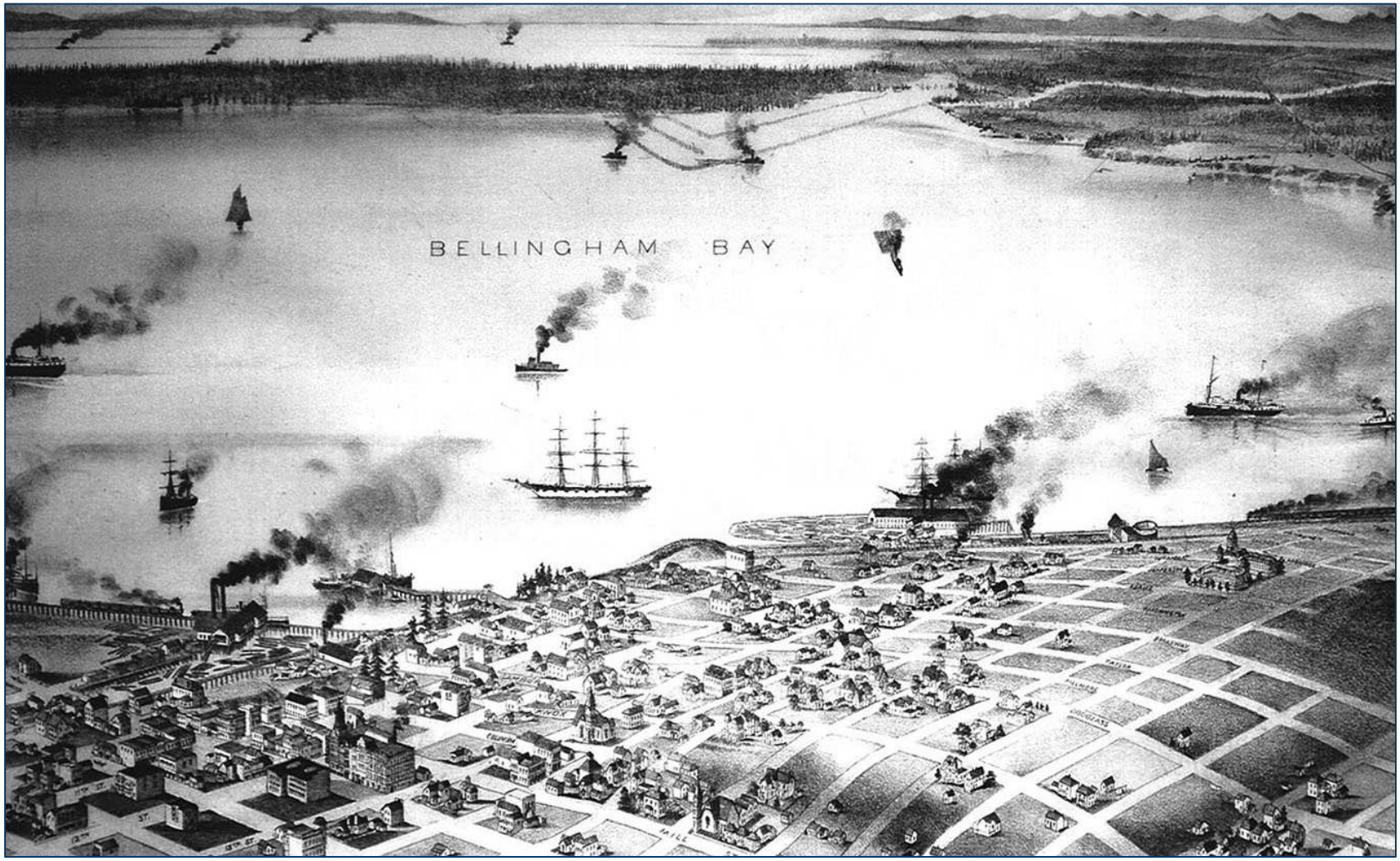
NEXT STEPS



- Negotiate DNR lease
- Permitting agency approval (tribes, Army Corps, WDFW, DNR, Port, etc)
- Improvements to existing Pattle Point construction
- RI/FS, Work Plan, Construction Cleanup of Cornwall Landfill, Coal Gasification Site Clean Up (Boulevard Park)
- Seek grants from RCO and other sources
- Construct Shoreline improvements at Boulevard Park
- Construct over water walkway

Q & A





APPENDIX 12
Project Descriptions and Project Drawings

12a
Pattle Point Trestle Renovation
Project Description

Pattle Point Trestle Renovation
Project Description

Project Overview

The City of Bellingham Parks and Recreation Department proposes to renovate an approximately 525-foot-long trestle that supports an overwater segment of the Coast Millennium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham. Boulevard Park is located on the eastern shores of Bellingham Bay, in Bellingham, Washington. Proposed work includes:

- Removal and replacement of the trestle's superstructure
- Removal and replacement of the trestle's southernmost timber frame bent
- Removal of the trestle's northernmost timber frame bent
- Removal and replacement of the trestle's two existing abutments
- Removal and replacement of the trestle's treated-timber cross bracing
- Removal and replacement of four of the trestle's timber pile caps

Project Purpose

The purpose of the project is to protect public health and safety by renovating defective components of the existing trestle; additionally, the project would protect public health and safety and enhance public shoreline access by increasing the width and improving the surface (improvements would comply with the Americans with Disabilities Act) of this heavily trafficked segment of the Coast Millennium Trail.

Existing Conditions

The Pattle Point trestle was originally built in 1901 to accommodate trains. The trestle has served as a multi-use trail since the establishment of Boulevard Park in 1980. The trestle was refurbished to its present configuration in 1991.

The current physical condition of the Pattle Point trestle was documented in a report by Echelon Engineering, Inc., dated January 2008. The report identified several of the trestle components as being in "poor condition." "Poor condition" was defined in the report as meaning that a member "has sustained major to severe damage that affects the members load bearing capacity."

Design, Construction, and Demolition Details

For this proposed project, construction activities that may occur in water or over water (in this document, the terms "in water" (or "in-water") and "over water" (or "overwater") signify areas waterward of the ordinary high water (OHW) line) include:

- Removal and replacement of the trestle's superstructure. Removal of the trestle's existing superstructure involves the removal of an approximately 10-foot-wide (14-foot-wide at seating nooks) by 525-foot-long non-grated, timber deck and 1,074 feet of timber guardrail. 521 feet of the trestle's existing superstructure length is over water; total overwater coverage is 5,697 square feet. Replacement of the trestle's superstructure involves the installation of a 12-foot-wide (16-foot-wide at seating nooks) by 564-foot-long deck and 1,152 linear feet of timber/steel guardrail. 521 feet of the replacement superstructure length would be over water; total overwater coverage would be 6,730

square feet, of which 3,181 square feet would consist of steel-beam-supported grated deck and 3,549 square feet would consist of steel-beam-supported concrete deck.

- Removal and replacement of the trestle's southernmost timber frame bent. The existing bent is comprised of two horizontal and five vertical 10-inch-by-20-inch creosote-treated timbers, two 4-inch-by-10-inch creosote-treated timber cross braces, and a creosote-treated timber sill. The replacement bent would consist of 12-inch-by-12 inch ACZA-treated timber, with the exception of the cross braces, which would consist of 4-inch-by-10-inch ACZA-treated timbers, and an ACZA-treated timber or concrete sill.

- Removal of the trestle's northernmost timber frame bent, comprised of two horizontal and four vertical 12-inch-by-12-inch creosote-treated timbers, and associated timber lagging.

- Removal and replacement of the trestle's two existing abutments. The existing north abutment is timber surrounded by riprap; the existing south abutment is concrete surrounded by riprap. The north abutment total excavation volume would be approximately 67 cubic yards (approximately 23 cubic yards of excavation in water). The south abutment total excavation volume would be approximately 80 cubic yards (approximately 33 cubic yards of excavation in water). The two replacement abutments would both consist of a concrete pile cap (sitting atop two steel-pipe piles, if necessary) surrounded by riprap. The north abutment would require a total of approximately 38 cubic yards of replacement fill, including concrete, clean backfill, and riprap (approximately 22 cubic yards of replacement fill in water, including clean backfill and riprap). The south abutment would require a total of approximately 54 cubic yards of replacement fill including concrete, clean backfill, and riprap (approximately 32 cubic yards of replacement fill in water, including clean backfill and riprap).

- Removal and replacement of the trestle's treated-timber cross bracing, comprised of 66 boards (each 20 feet long).

- Removal and replacement of four of the trestle's timber pile caps (each 12 inches wide,16 inches deep, 16 feet long).

For the protection of aquatic life, all in-water activities would take place during the approved work window (July 16 to February 15). Construction activities that can be performed landward of the OHW line may take place at any time. Construction activities that can be performed landward of the OHW line include installation of deck, electrical systems, pavement, and site drainage and treatment.

Removal of Existing Structures

The existing superstructure, bents, abutments, cross bracing, and pile caps proposed for removal would be removed by derrick barge or conventional crane. The removed structures would be placed onto land or a barge before being loaded onto trucks and hauled to a disposal facility.

The site contains approximately four creosote-treated timber piling beneath the northernmost frame bent. These piling (each approximately 12-inches in diameter) would be cut two feet below the mud line, then covered with coarse sand or pea gravel. For each pile cut, approximately .25 cubic yards of fill material would be required. Best Management Practices as identified by the United States Army Corps of Engineers Dredge Management Office would be employed.

Any creosote-treated wood removed would be disposed of in accordance with Washington State's Dangerous Waste Regulations (WAC 173-303). All waste and debris generated by the project would be collected and removed to a legally permitted waste disposal or recycling site.

Installation of Replacement Structures

The replacement superstructure, bent, abutments, cross bracing, and pile caps would be placed by derrick barge or conventional crane. All replacement wood would be treated with ACZA.

Total Project Excavation and Fill

As shown in Table 1, the total project would require excavation and fill of approximately 726 square feet. Table 1 also shows that the project would require a total of approximately 148 cubic yards of excavation and a total of approximately 93 cubic yards of fill. The 55 cubic yard reduction in fill volume is primarily due to differences in the design of the existing and proposed abutments.

Table 1. Total Project Excavation and Fill

Construction Activity	Proposed Excavation Area / Volume	Proposed Fill Area / Volume	Net Change Area / Volume
Removal and replacement of north abutment	386 SF / 66.9 CY	386 SF / 38.0 CY	0 SF / -28.9 CY
Removal and replacement of south abutment	336 SF/ 79.9 CY	336 SF / 53.8 CY	0 SF / -26.1 CY
Cutting below mud line of approximately four creosote-treated timber piling beneath the northernmost frame bent	4 SF / 1.0 CY	4 SF / 1.0 CY	0 SF / 1.0 CY
Totals	726 SF / 147.8 CY	726 SF / 92.8 CY	0 SF / -55 CY

Gains and Losses of Waters of the United States

A summary of the gains and losses of Waters of the United States that would result from the various project actions described above is provided below in Tables 2 (relative to OHW) and 3 (relative to MHHW). Relative to OHW and MHHW, the project actions would increase in the Waters of the United States by 3.5 cubic yards and .6 cubic yards, respectively.

Table 2. Gains and Losses of Waters of the United States (relative to OHW, approximately +9.51 feet MLLW)

Construction Activity	Proposed Excavation Volume Below OHW	Proposed Fill Volume Below OHW	Net Change Below OHW
Removal and replacement of north abutment	23.4 CY	21.6 CY	-1.8 CY
Removal and replacement of south abutment	33.3 CY	31.6 CY	-1.7 CY
Cutting below mud line of approximately four creosote-treated timber piling beneath the northernmost frame bent	1.0 CY	1.0 CY	0 CY
Totals	57.7 CY	54.2 CY	-3.5 CY

Table 3. Gains and Losses of Waters of the United States (relative to MHHW, +8.51 feet MLLW)

Construction Activity	Proposed Excavation Volume Below MHHW	Proposed Fill Volume Below MHHW	Net Change Below MHHW
Removal and replacement of north abutment	18.1 CY	17.8 CY	-0.3 CY
Removal and replacement of south abutment	26.0 CY	25.7 CY	-0.3 CY
Cutting below mud line of approximately four creosote-treated timber piling beneath the northernmost frame bent	1.0 CY	1.0 CY	0.0 CY
Totals	45.1 CY	44.5 CY	-.6 CY

Gains and Losses in Shading of the Waters of the United States

A summary of the changes in overwater coverage that would result from the project actions described above is provided below in Tables 4 (relative to OHW) and 5 (relative to MHW). Relative to OHW and MHW, net overwater coverage would increase by 1,033 square feet and 1,004 square feet, respectively. However, 3,181 square feet (relative to OHW)/3,122 square feet (relative to MHW) of the proposed deck would feature grating, in contrast to the existing trestle deck, which does not feature any grating. The proposed trestle renovations, in comparison to the existing trestle, would reduce the typical width of solid decking from approximately 10 feet to 6 feet.

Table 4. Gains and Losses in Shading of Waters of the United States (relative to OHW, approximately +9.51 feet MLLW)

Construction Activity	Baseline Shaded Water Column		Proposed Shaded Water Column		Net Shaded Water Column Change	
Removal of existing superstructure and installation of replacement superstructure	Solid	5,697 SF	Solid	3,549 SF	Solid	-2,148 SF
	Grated	0 SF	Grated	3,181 SF	Grated	+3,181 SF
	Total	5,697 SF	Total	6,730 SF	Total	+1,033 SF

Table 5. Gains and Losses in Shading of Waters of the United States (relative to MHW, +7.70 feet MLLW)

Construction Activity	Baseline Shaded Water Column		Proposed Shaded Water Column		Net Shaded Water Column Change	
Removal of existing superstructure and installation of replacement superstructure	Solid	5,601 SF	Solid	3,483 SF	Solid	-2,118 SF
	Grated	0 SF	Grated	3,122 SF	Grated	+3,122 SF
	Total	5,601 SF	Total	6,605 SF	Total	+1,004 SF

Construction Timing

Construction on the trestle is expected to occur between July 16, 2009 and February 15, 2010. The entire project, including demolition and construction, is expected to take approximately 8 weeks to complete. In-water work is expected to take approximately 6 weeks to complete. However, the duration and total period of in-water work would be affected by several factors, including the type of construction equipment and procedures selected by the contractor, and the sequencing of work elements. Approximate durations for various construction activities are listed below in Table 6. All in-water work would occur during the approved work window (July 16 to February 15). If it were necessary to perform certain work at night during a low tide, appropriate City of Bellingham, Whatcom County, and/or any other required approvals would be obtained.

Table 6. Approximate Duration of In-Water Activities

Project Element	Approximate Duration
Removal and replacement of cross bracing	3 days
Removal of superstructure	5 days
Removal and installation of abutments	2 weeks
Removal and replacement of pile caps	1 day
Installation of superstructure	6 weeks

The City of Bellingham Parks and Recreation Department anticipates the proposal of an overwater walkway from Boulevard Park to the Cornwall Landfill area, approximately .2 mile north of the Pattle Point trestle. This project is still in the design phase, but it is anticipated for construction in 2012-2013, pending receipt of permits. Funding for this proposed future overwater walkway has not been wholly secured at this time.

12b
Boulevard Park Overwater Walkway
Project Description

Boulevard Park Overwater Walkway
Project Description

Project Overview

The City of Bellingham Parks and Recreation Department proposes to construct an approximately 2,360-foot-long overwater segment of a multi-use (e.g., walking, bicycling) trail from Boulevard Park to the Cornwall Avenue landfill. Boulevard Park and the Cornwall Avenue landfill are located on the eastern shores of Bellingham Bay, in Bellingham, Washington. Proposed work includes:

- Removal of an existing timber pier
- Removal of 5 existing, isolated, treated-timber piles
- Installation of 2 concrete abutments
- Installation of 98 steel or concrete piles
- Installation of the walkway superstructure

Project Purpose

The purpose of the project is to increase public access to the shoreline and provide trail access to waterfront development. The proposed overwater walkway has been called for in several planning documents, including: the 2002 *City of Bellingham Parks, Recreation and Open Space Plan*, and its 2008 update; the 2004 *Waterfront Vision and Framework Plan: Connecting Bellingham with the Bay*; the 2006 *Whatcom Preliminary Draft Framework Plan*; the 2007 draft update of the City of Bellingham Shoreline Master Program; and the mayor's 2008 *Waterfront Connections Plan*. The project has also been part of a City of Bellingham public vote, the third greenways levy, which was approved by voters in 2006. Prior to the vote, in an adopted ordinance, the city council recorded intent to pursue a list of potential greenway projects—the proposed project was included in that list. The list was put together by citizens who examined the city's current plans and needs.

Existing Conditions

The proposed project site is an embayment located on the eastern shores of Bellingham Bay. The embayment is currently mostly devoid of marine structures, with the exception of: a dilapidated, timber pier; a sunken vessel; scattered individual and clustered timber piles; and concrete slabs (at the Cornwall Avenue landfill end). The southern end of the proposed walkway would be located at Boulevard Park, in the area where the existing timber pier is currently situated. The northern end of the walkway would be located at the Cornwall Avenue landfill, which is currently underutilized Port of Bellingham property (however, the City of Bellingham and Port of Bellingham have set forth future plans for this area).

DRAFT

Design, Construction, and Demolition Details

For this proposed project, construction activities that may occur in-water (defined as waterward of the ordinary high water (OHW) line) include:

- Removal of an existing timber pier, comprised of approximately 1,240 square feet of timber deck supported by 8 steel H-piles (each 8 inches square).

- Removal of 5 existing, isolated, treated-timber piles (each 12 inches in diameter).

- Installation of 2 concrete abutments, each comprised of 74 square feet of reinforced concrete. At each end of the proposed overwater walkway, approximately 480 square feet of the shoreline would be graded in order to prepare for placement of the abutment and riprap. Riprap would be placed over approximately 300 square feet at each end of the proposed overwater walkway.

- Installation of 98 steel or concrete piles (each 16 inches in diameter).

- Installation of the walkway superstructure, comprised of a 14-foot-wide (18 feet at seating nooks) by 2,360-foot-long deck (4,000 square feet of grated deck, 30,000 square feet of concrete deck, 34,000 square feet of total overwater coverage), and 4,720 linear feet of timber/steel guardrail.

For protection of aquatic life, all in-water activities would take place during the approved work window (July 15 to February 15). Construction activities that would be performed landward of the OHW line may take place at any time. Out-of-water construction activities may include installation of pier deck, electrical systems, asphalt concrete pavement, and site drainage and treatment.

Removal of Existing Structures

The existing isolated timber piles and pier (including the 8 steel H-piles) at the north end of Boulevard Park would be removed by derrick barge or land-based conventional crane. The removed structures would be placed onto land or onto a barge before being loaded onto trucks and hauled to a disposal facility.

The site contains 5 isolated, creosote-treated timber bearing piling. Best Management Practices as identified by the United States Army Corps of Engineers Dredge Management Office (DMMO) would be employed during removal of the piling. Timber piles would be removed in whole, wherever possible, by use of a vibratory mechanism. Removal of whole pilings is the preferred method, as it would remove from the environment the creosote preservative adhering to the piling. During removal, if a pile were to break above the mud line, an attempt would be made to pull the remainder of the piling. If the pile were to break below the mud line, the remainder would be left in place and covered with clean backfill, to minimize disturbance of sediment.

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All creosote treated wood that is removed would be disposed of in accordance with Washington State's Dangerous Waste Regulations (WAC 173-303) and Excluded Categories of Waste (WAC 173-303-071). All waste and debris generated by the project would be collected and removed to a legally permitted waste disposal or recycling site.

Installation of New Structures

Structures to be installed within the site include riprap, two concrete abutments, and approximately 2,360 linear feet of pier supported by 98 concrete or steel piles. These structures would be placed by derrick barge or land-based conventional crane. All wood would be treated with ACZA or ACQ.

Steel piling would be driven with a vibratory hammer, except that the final portion of driving would be completed with an impact hammer to prove the bearing capacity. During the pile installation process, it may be necessary to drill holes into the bedrock if piles would encounter sloping or very shallow bedrock.

Gains and Losses of Waters of the United States

A summary of the changes in waters of the state that would result from the various project actions described above is provided in Table 1. The waters of the United States below OHW would decrease by 879 square feet.

Table 1. Gains and Losses of Waters of the United States (area in square feet (SF) below ordinary high water, +13.00 feet MLLW)

Construction Activity	Baseline Fill Area (SF)	Proposed Fill Area (SF)	Net Fill Area Change (SF)
Removal of 5 isolated, treated-timber piles	4*	0	-4
Removal of 8 steel H-piles	4**	0	-4
Installation of 2 abutments	0	148	+148
Placement of riprap	0	600	+600
Installation of 98 piles	0	139	+139
Totals	**8**	**887**	**+879**

* Pile square footage is approximate

** Pile square footage based on outside dimensions

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Gains and Losses in Overwater Coverage

A summary of the changes in shading of waters of the United States that would result from the various project actions described above is provided in Table 2. For the entire project, the net increase in overwater coverage would be 32,760 square feet. However, approximately 12 percent of the walkway would be grated. For the portion of the project between OHW and -10 MLLW, the net increase in overwater coverage would be 3,520 square feet. However, 57 percent of the walkway in this area would be grated.

Table 2. Gains and Losses in Overwater Coverage (area in SF below OHW)

Construction Activity	Baseline Shaded Water Column (SF)		Proposed Shaded Water Column (SF)		Net Shaded Water Column Change (SF)		Net Over Water Coverage Change Between OHW and -10 MLLW (SF)	
Removal of timber pier	Solid	1,240	Solid	0	Solid	-1,240	Solid	-1,240
	Grated	0	Grated	0	Grated	0	Grated	0
	Total	1,240	Total	0	Total	0	Total	0
Installation of walkway superstructure	Solid	0	Solid	30,000	Solid	+30,000	Solid	+2,040
	Grated	0	Grated	4,000	Grated	+4,000	Grated	+2,720
	Total	0	Total	34,000	Total	+34,000	Total	+4,760
Totals	**Solid**	**1,240**	**Solid**	**30,000**	**Solid**	**+28,760**	**Solid**	**+800**
	Grated	**0**	**Grated**	**4,000**	**Grated**	**+4,000**	**Grated**	**+2,720**
	Total	**1,240**	**Total**	**34,000**	**Total**	**+32,760**	**Total**	**+3,520**

Construction Timing

The entire project, including demolition and construction, is expected to take approximately 17 weeks to complete. In-water work is expected to take approximately 17 weeks to complete. However, the duration and total period of in-water work would be affected by several factors, including the type of construction equipment and procedures selected by the contractor, and the sequencing of work elements. Approximate durations for various construction activities are listed below. All in-water work would occur during the approved work window (generally July 15 to February 15). If it is necessary to perform certain work at night during a low tide, appropriate City of Bellingham, Whatcom County, and any other necessary approvals would be obtained.

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Table 3. Approximate Duration of In-Water Activities

Project Element	Approximate Duration
Remove isolated timber piles	1 day
Remove timber pier	2 days
Install abutments	2 weeks
Install walkway	17 weeks

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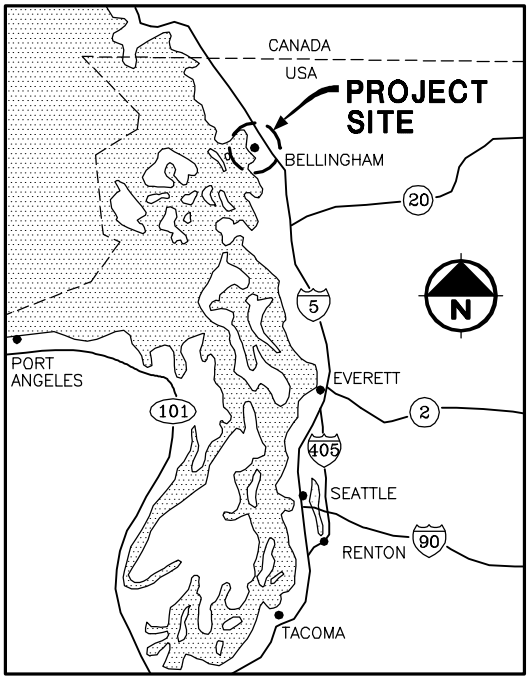
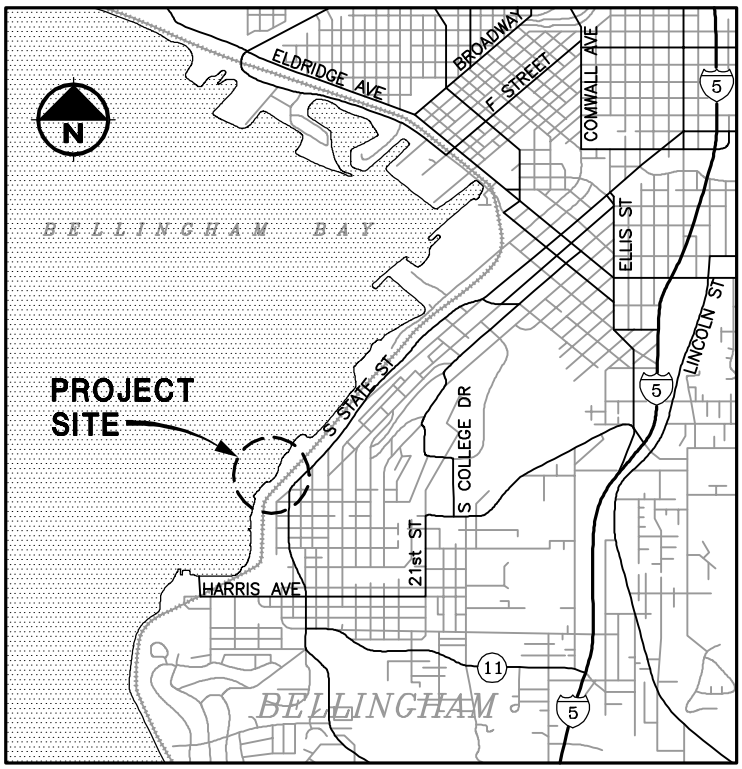
12c
Pattle Point Trestle Renovation
Project Drawings

CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT

BOULEVARD PARK
PATTLE POINT TRESTLE RENOVATION



LOCATION MAP



VICINITY MAP

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:
1. CITY OF BELLINGHAM
2. WHATCOM CO
3. WA DNR
4. BNSF RAILWAY

CITY OF BELLINGHAM
PATTLE POINT
TRESTLE RENOVATION

NAME: CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT
3424 MERIDIAN
BELLINGHAM, WA 98225

ADDRESS: BOULEVARD PARK
470 BAYVIEW RD BOULEVARD PARK
BELLINGHAM, WA 98225

Reid Middleton
728 134th Street SW · Suite 200
Everett, Washington 98204
Ph: 425 741-3800

IN: BELLINGHAM BAY
AT: BOULEVARD PARK
COUNTY OF: WHATCOM
APPLICATION BY: CITY OF BELLINGHAM

SHEET 1 OF 8 DATE: JULY 2009

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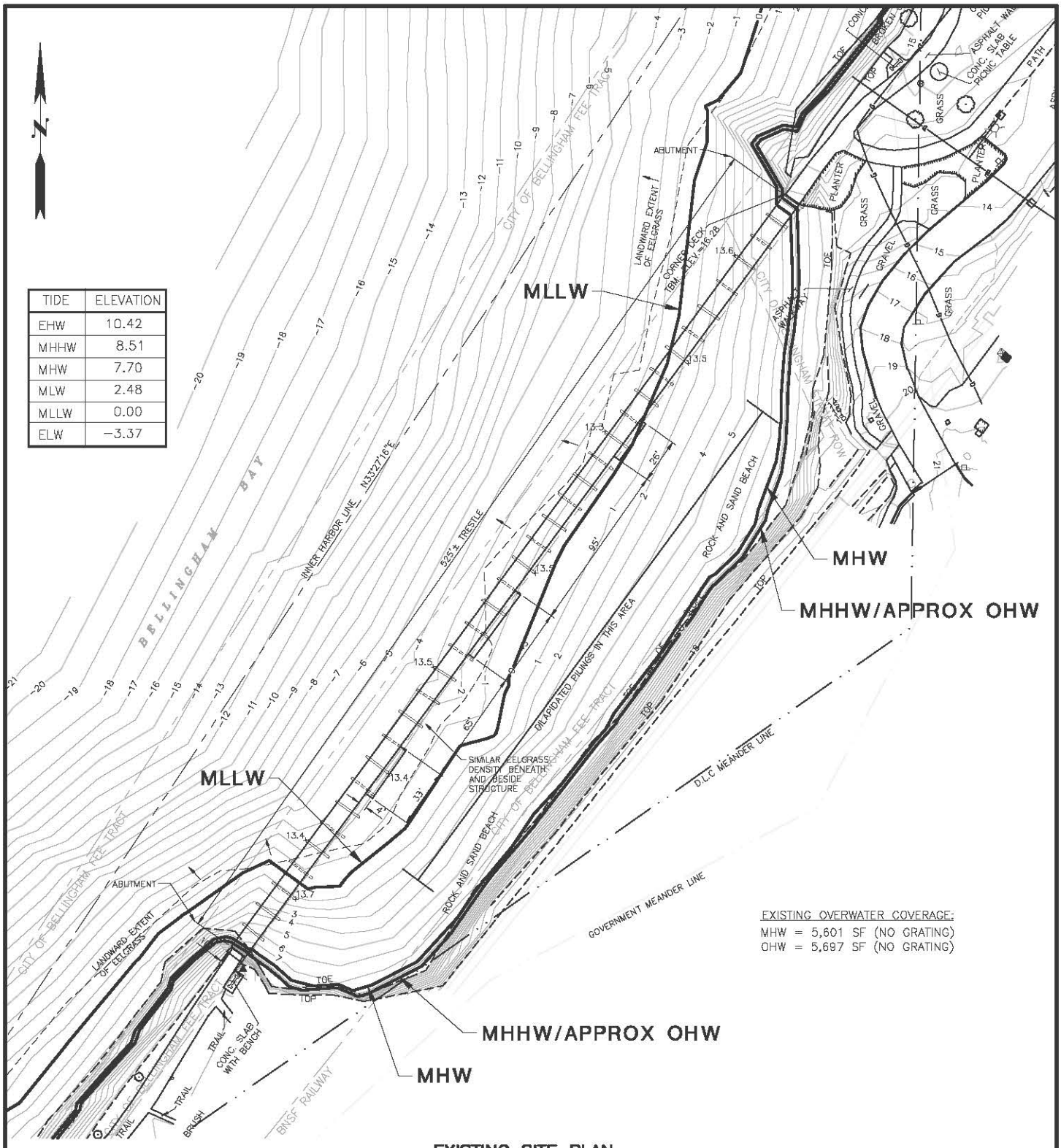

EXISTING SITE PLAN

SCALE: 1"=80'

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:
1. CITY OF BELLINGHAM
2. WHATCOM CO
3. WA DNR
4. BNSF RAILWAY

CITY OF BELLINGHAM PATTLE POINT TRESTLE RENOVATION

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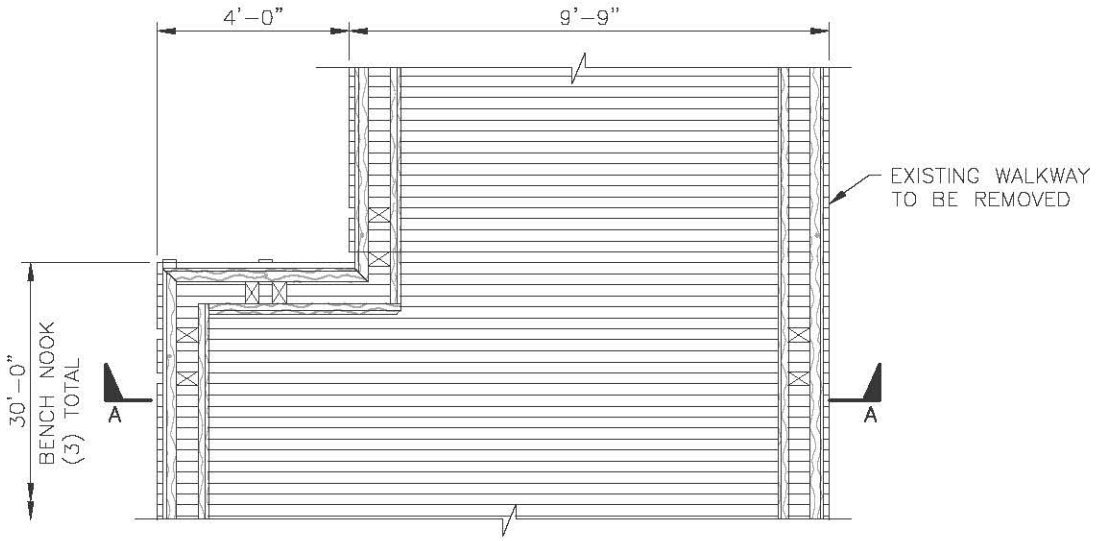
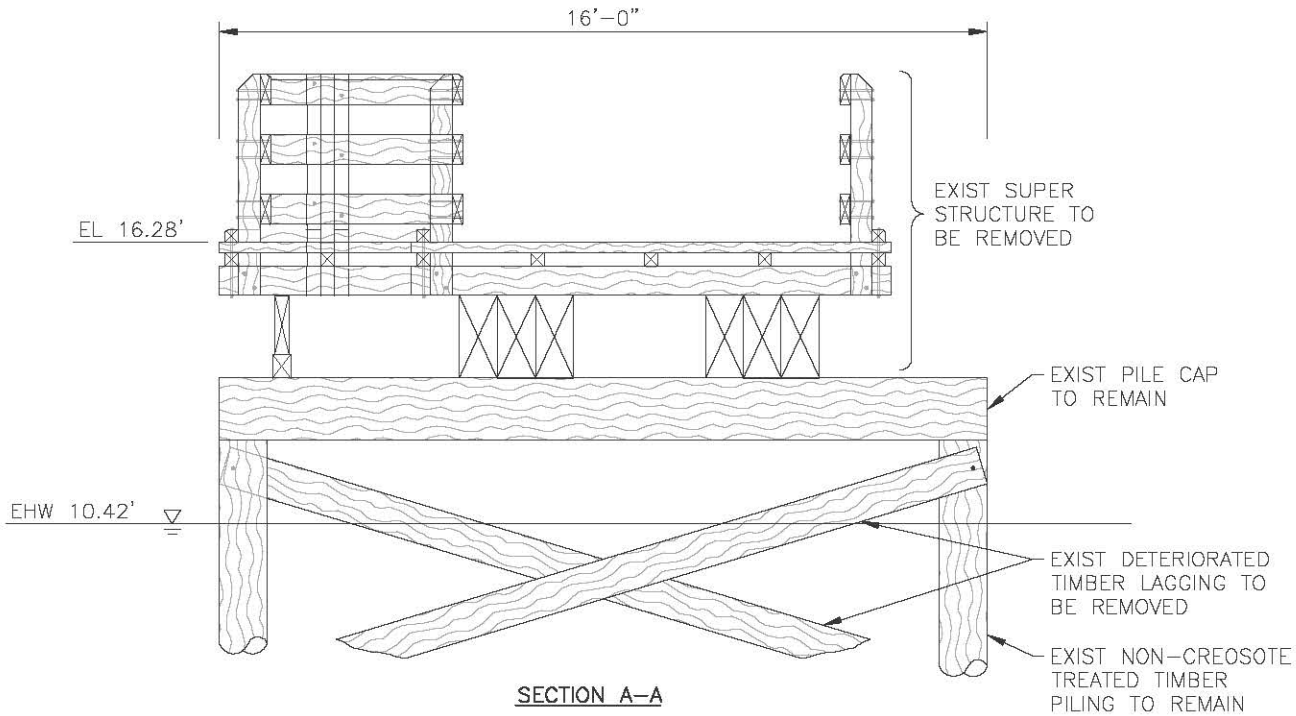


PLAN



SECTION A-A

EXISTING TIMBER PIER

SCALE: 1/4"=1'-0"

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: -122° 30.20'

ADJACENT PROPERTY OWNERS:
1. CITY OF BELLINGHAM
2. WHATCOM CO
3. WA DNR
4. BNSF RAILWAY

CITY OF BELLINGHAM
PATTLE POINT
TRESTLE RENOVATION

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COUNTY OF: WHATCOM
APPLICATION BY: CITY OF BELLINGHAM

SHEET 3 OF 8 DATE: JULY 2009

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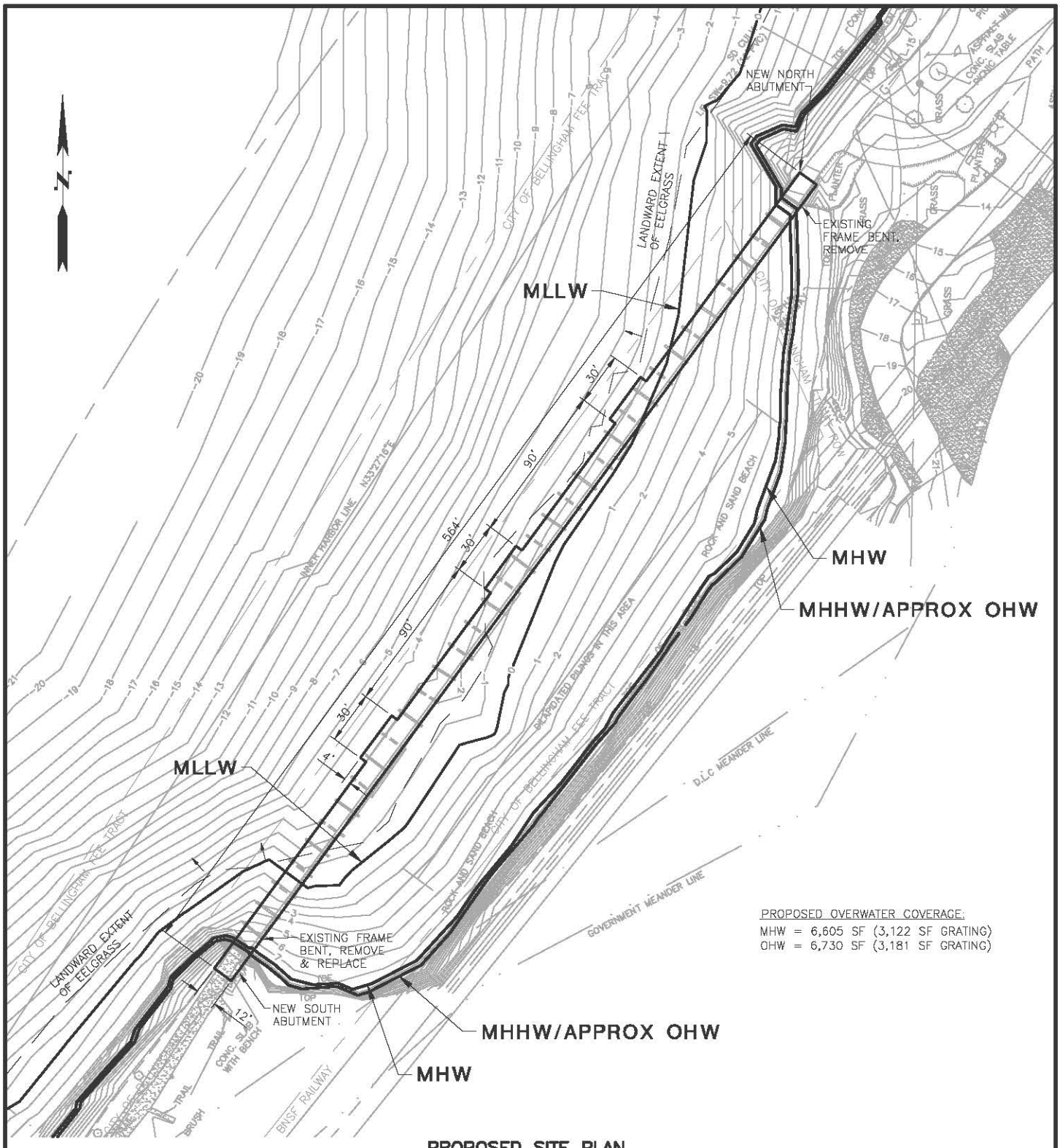

PROPOSED SITE PLAN

SCALE: 1"=80'

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:
1. CITY OF BELLINGHAM
2. WHATCOM CO
3. WA DNR
4. BNSF RAILWAY

CITY OF BELLINGHAM PATTLE POINT TRESTLE RENOVATION

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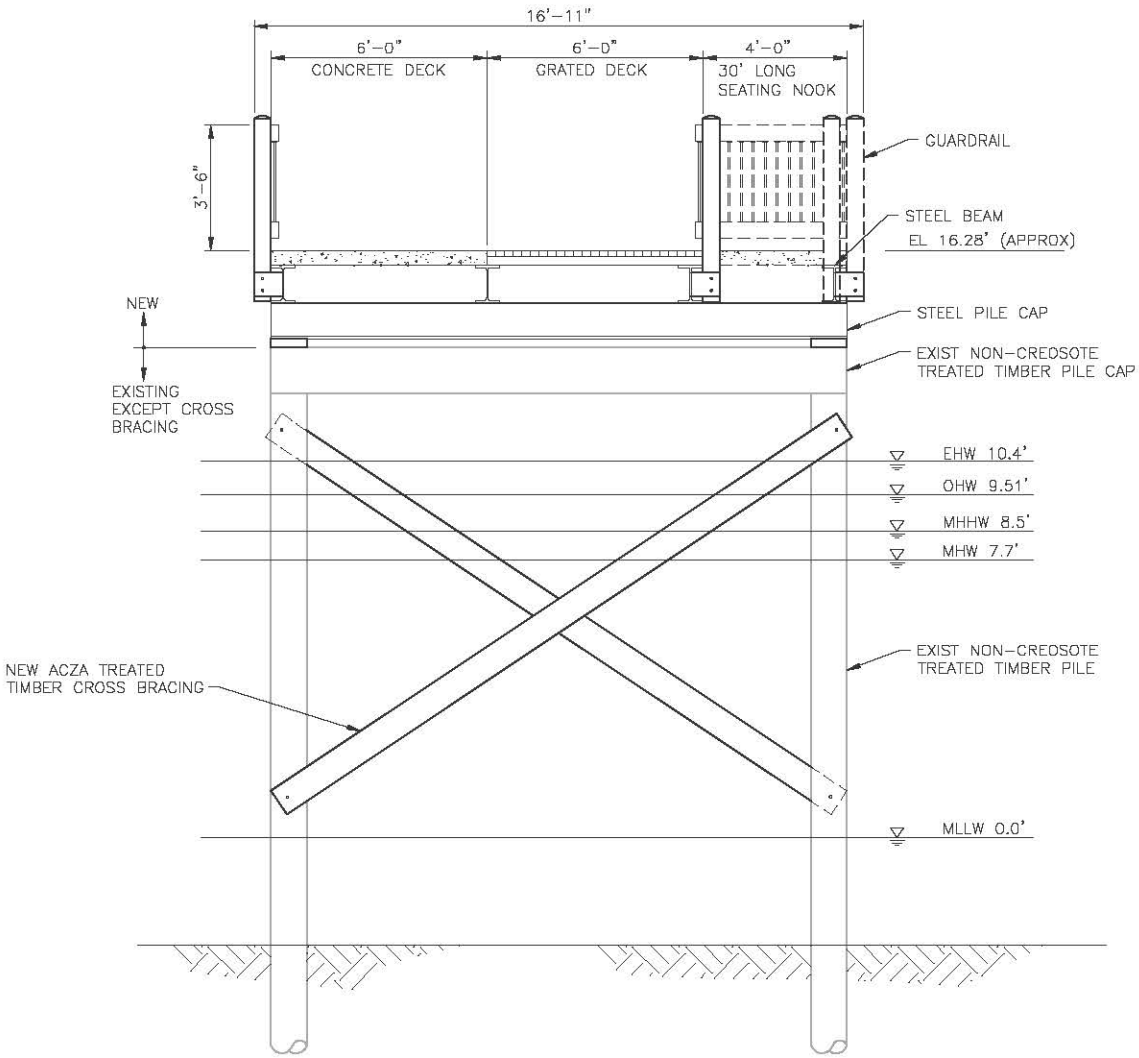

PROPOSED TRESTLE SECTION

SCALE: 3/16"=1'-0"

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:
1. CITY OF BELLINGHAM
2. WHATCOM CO
3. WA DNR
4. BNSF RAILWAY

CITY OF BELLINGHAM
PATTLE POINT
TRESTLE RENOVATION

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BELLINGHAM, WA 98225

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SHEET 5 OF 8 DATE: JULY 2009

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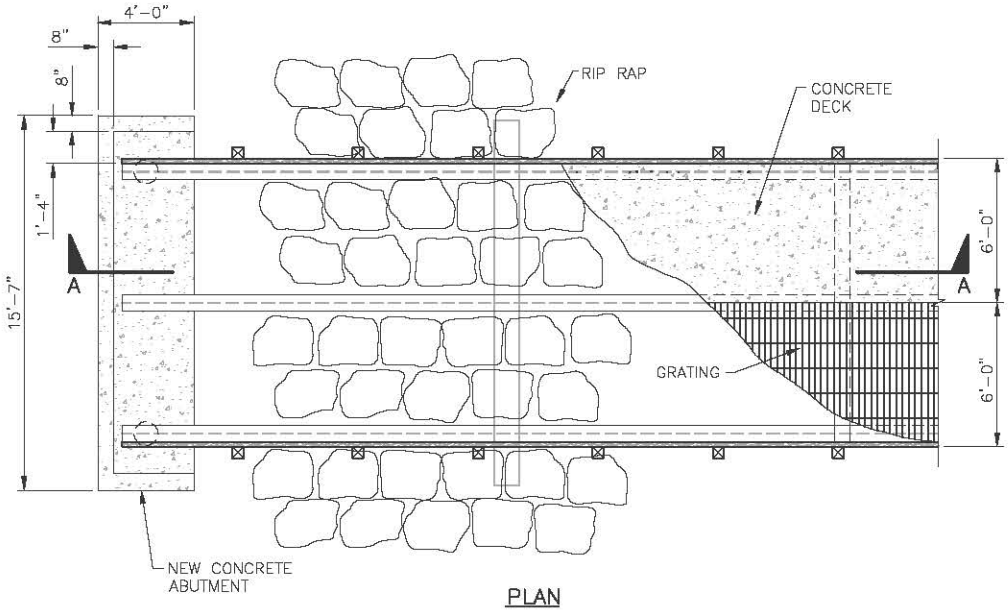
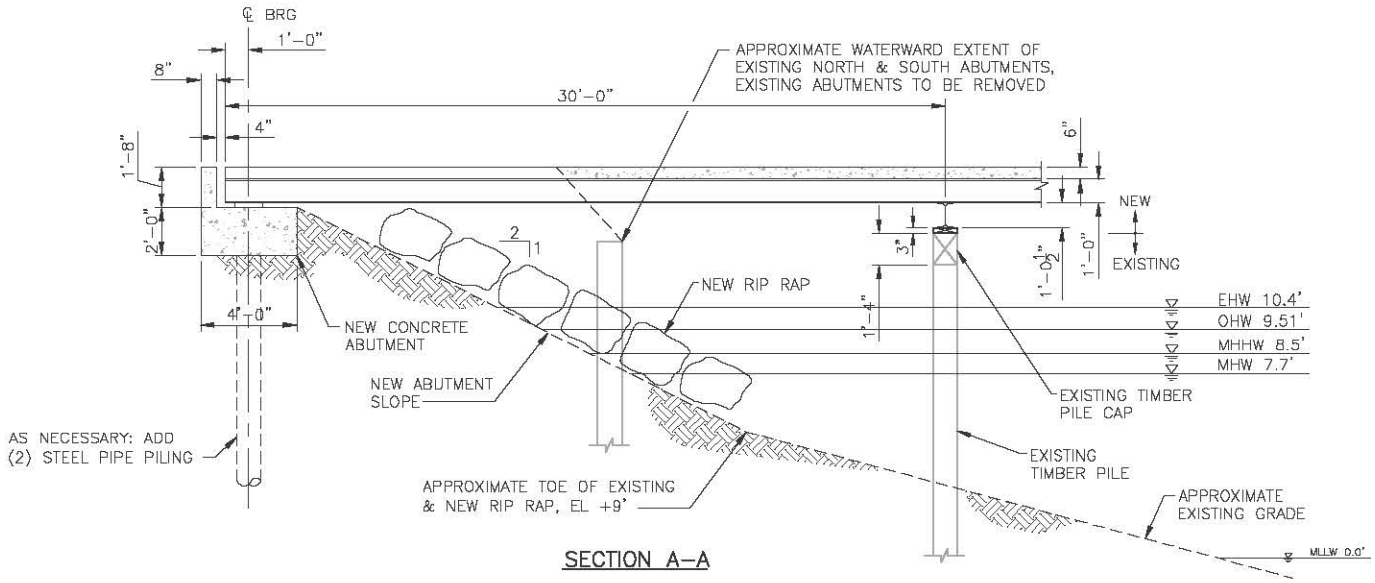


PLAN



SECTION A–A

NORTH ABUTMENT:

EXCAVATION: 18.1 CY (MHHW)
23.4 CY (OHW)
66.9 CY (TOTAL)
386 SF (TOTAL)

FILL: 17.8 CY (MHHW)
21.6 CY (OHW)
38.0 CY (TOTAL)
386 SF (TOTAL)

SOUTH ABUTMENT:

EXCAVATION: 26.0 CY (MHHW)
33.3 CY (OHW)
79.9 CY (TOTAL)
336 SF (TOTAL)

FILL: 25.7 CY (MHHW)
31.6 CY (OHW)
53.8 CY (TOTAL)
336 SF (TOTAL)

PROPOSED NORTH & SOUTH CONCRETE ABUTMENTS

SCALE: 1/8"=1'-0"

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:
1. CITY OF BELLINGHAM
2. WHATCOM CO
3. WA DNR
4. BNSF RAILWAY

CITY OF BELLINGHAM PATTLE POINT TRESTLE RENOVATION

NAME: CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT
3424 MERIDIAN
BELLINGHAM, WA 98225

ADDRESS: BOULEVARD PARK
470 BAYVIEW RD BOULEVARD PARK
BELLINGHAM, WA 98225

Reid Middleton
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Everett, Washington 98204
Ph: 425 741-3800

IN: BELLINGHAM BAY
AT: BOULEVARD PARK
COUNTY OF: WHATCOM
APPLICATION BY: CITY OF BELLINGHAM

SHEET 6 OF 8 DATE: JULY 2009

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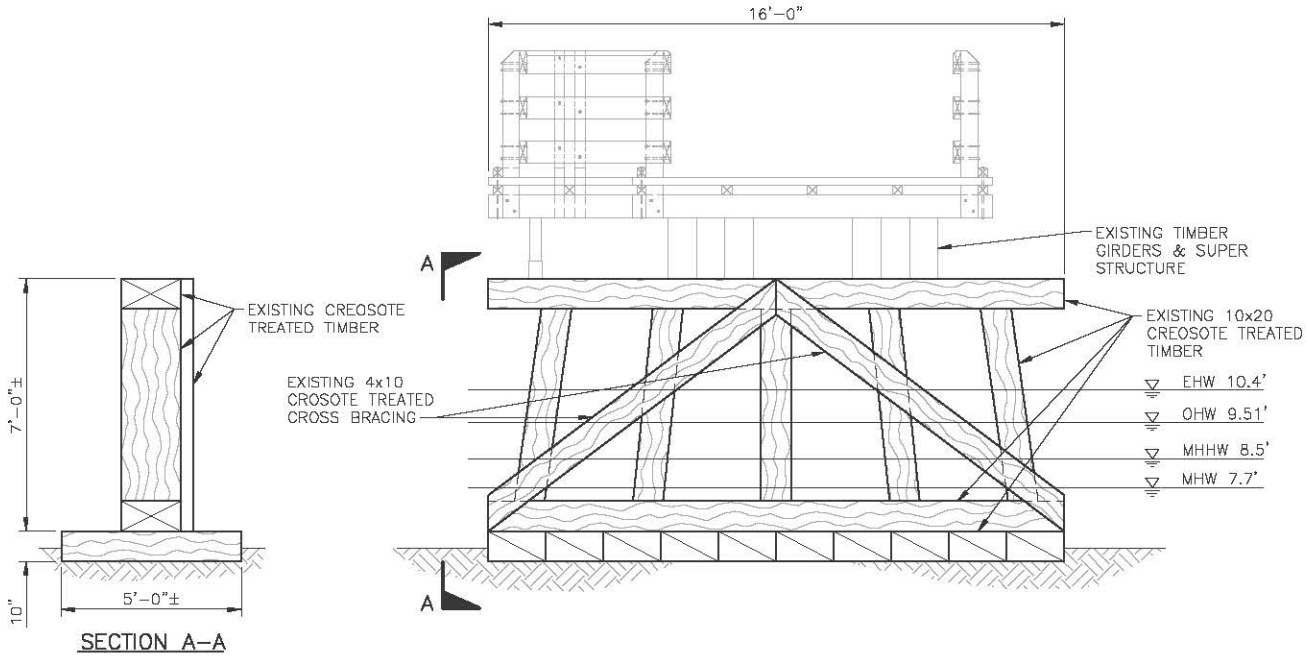
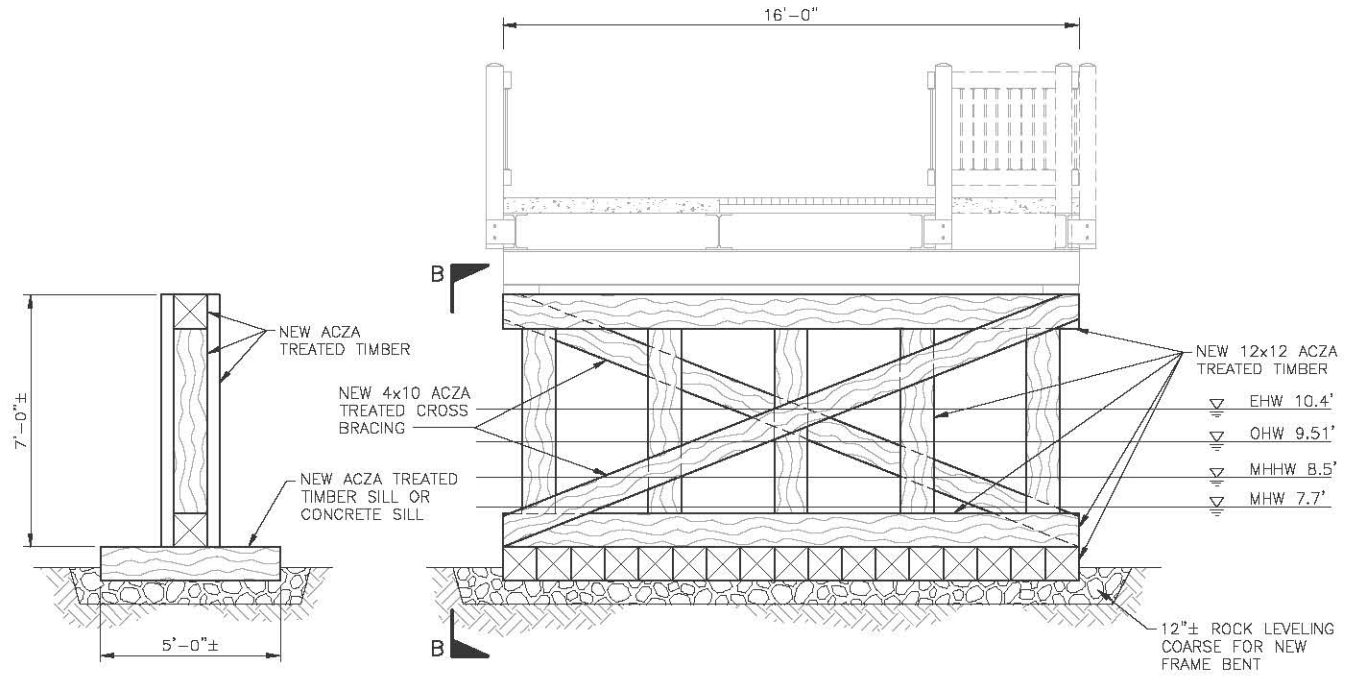


EXISTING SOUTH END FRAME BENT TO BE REMOVED

SCALE: 3/16"=1'-0"



PROPOSED SOUTH END FRAME BENT

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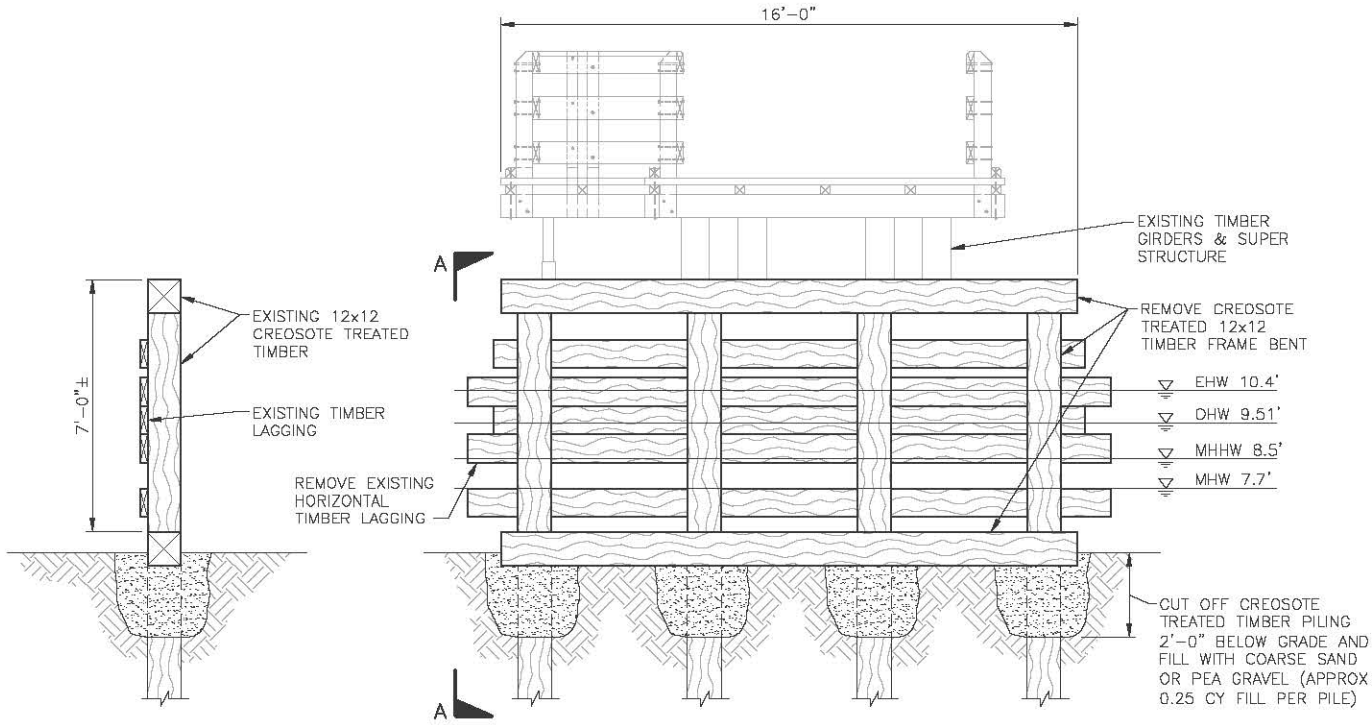

SECTION A–A

EXISTING NORTH END FRAME BENT TO BE REMOVED

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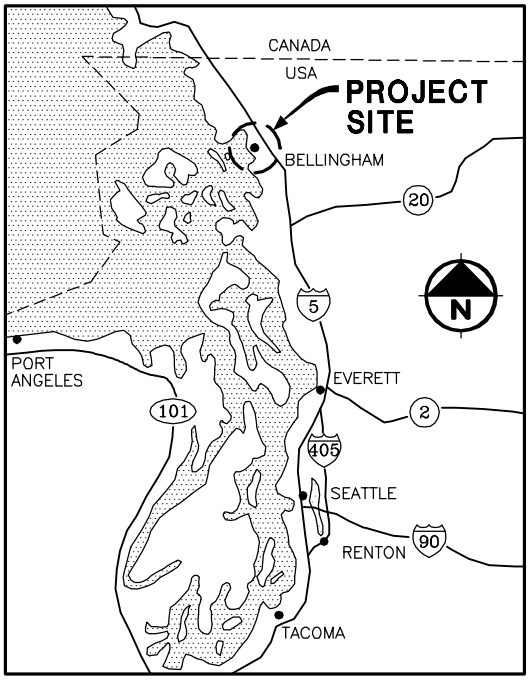
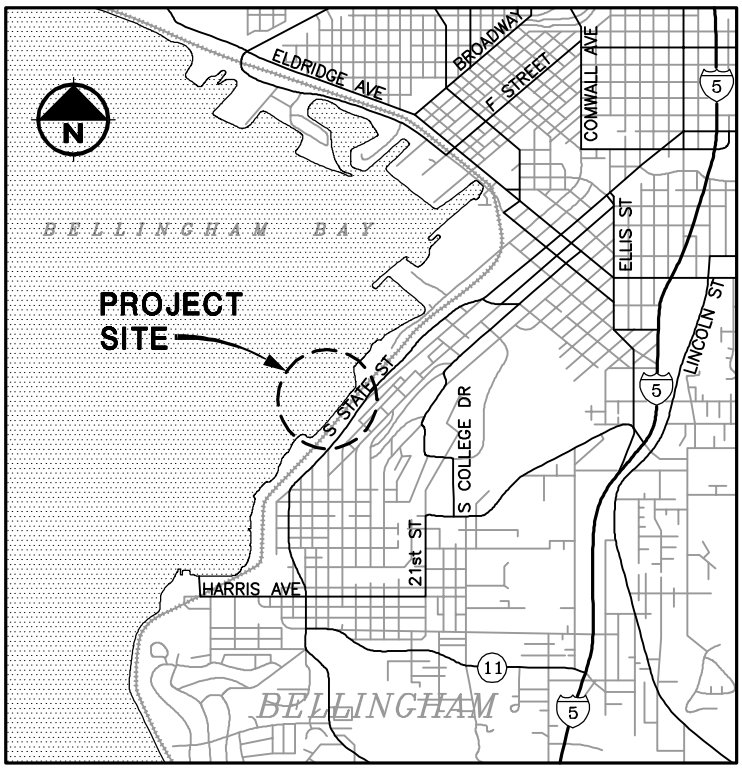
12d
Boulevard Park Overwater Walkway
Project Drawings

CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT

BOULEVARD PARK
OVERWATER WALKWAY



LOCATION MAP



VICINITY MAP

DRAFT

PURPOSE: CONSTRUCT AN OVERWATER WALKWAY FROM BOULEVARD PARK TO CORNWALL AVE PARK

DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:

1. SEE ATTACHED LIST
2.
3.

CITY OF BELLINGHAM
BOULEVARD PARK

NAME: CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT
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IN: BELLINGHAM BAY
AT: BOULEVARD PARK
COUNTY OF: WHATCOM
APPLICATION BY: CITY OF BELLINGHAM

SHEET 1 OF 6 DATE: OCT 2008

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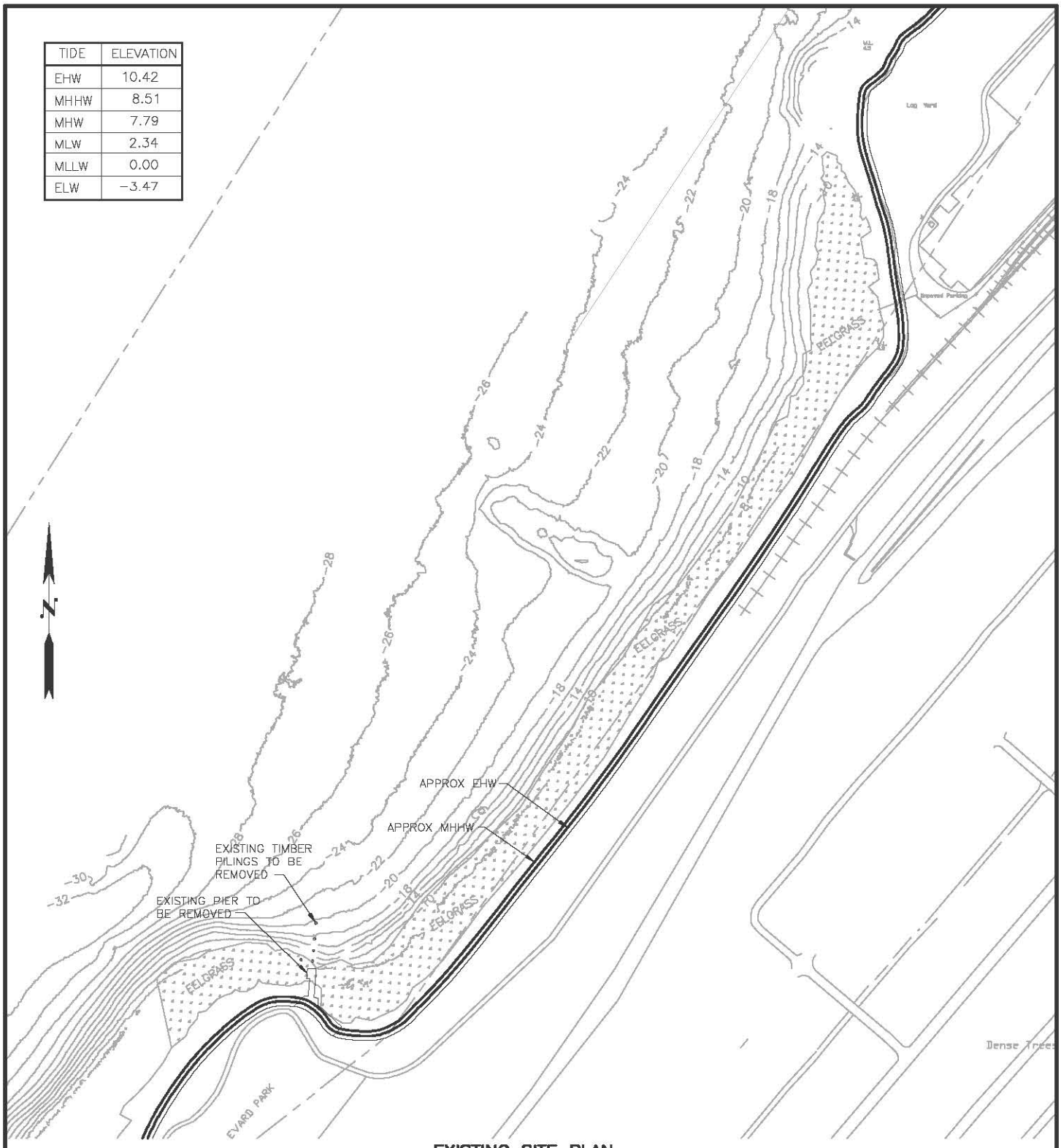
TIDE	ELEVATION
EHW	10.42
MHHW	8.51
MHW	7.79
MLW	2.34
MLLW	0.00
ELW	−3.47



EXISTING SITE PLAN

SCALE: 1"=300'

DRAFT

PURPOSE: CONSTRUCT AN OVERWATER WALKWAY FROM BOULEVARD PARK TO CORNWALL AVE PARK

DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

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COUNTY OF: WHATCOM
APPLICATION BY: CITY OF BELLINGHAM

SHEET 2 OF 6 DATE: OCT 2008

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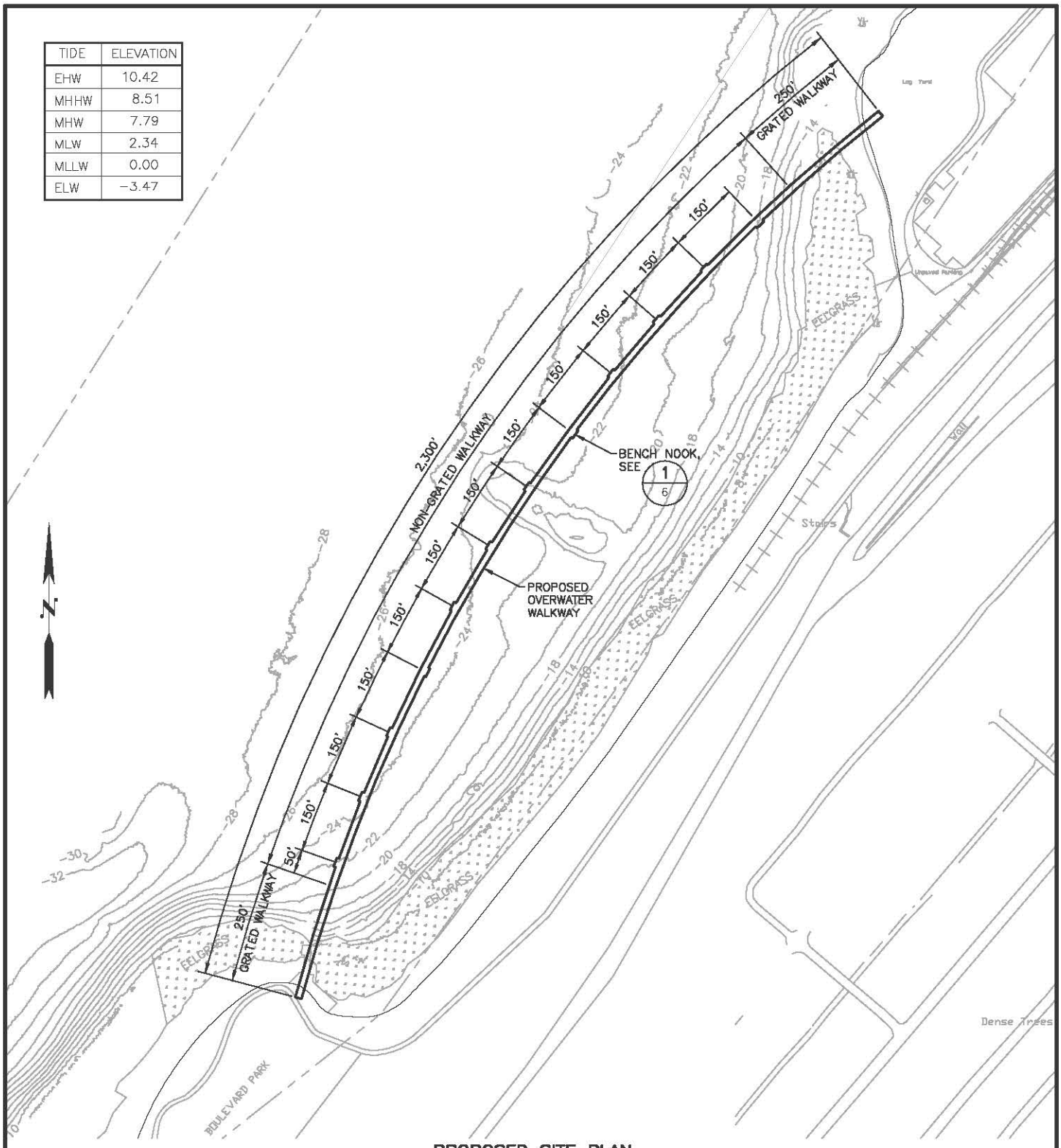
TIDE	ELEVATION
EHW	10.42
MHHW	8.51
MHW	7.79
MLW	2.34
MLLW	0.00
ELW	−3.47



PROPOSED SITE PLAN

SCALE: 1"=300'

DRAFT

PURPOSE: CONSTRUCT AN OVERWATER WALKWAY FROM BOULEVARD PARK TO CORNWALL AVE PARK

DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
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ADJACENT PROPERTY OWNERS:

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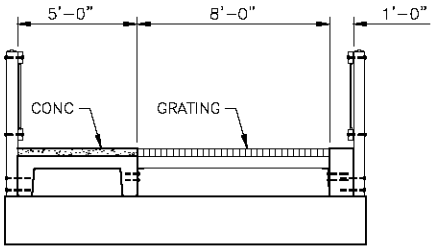
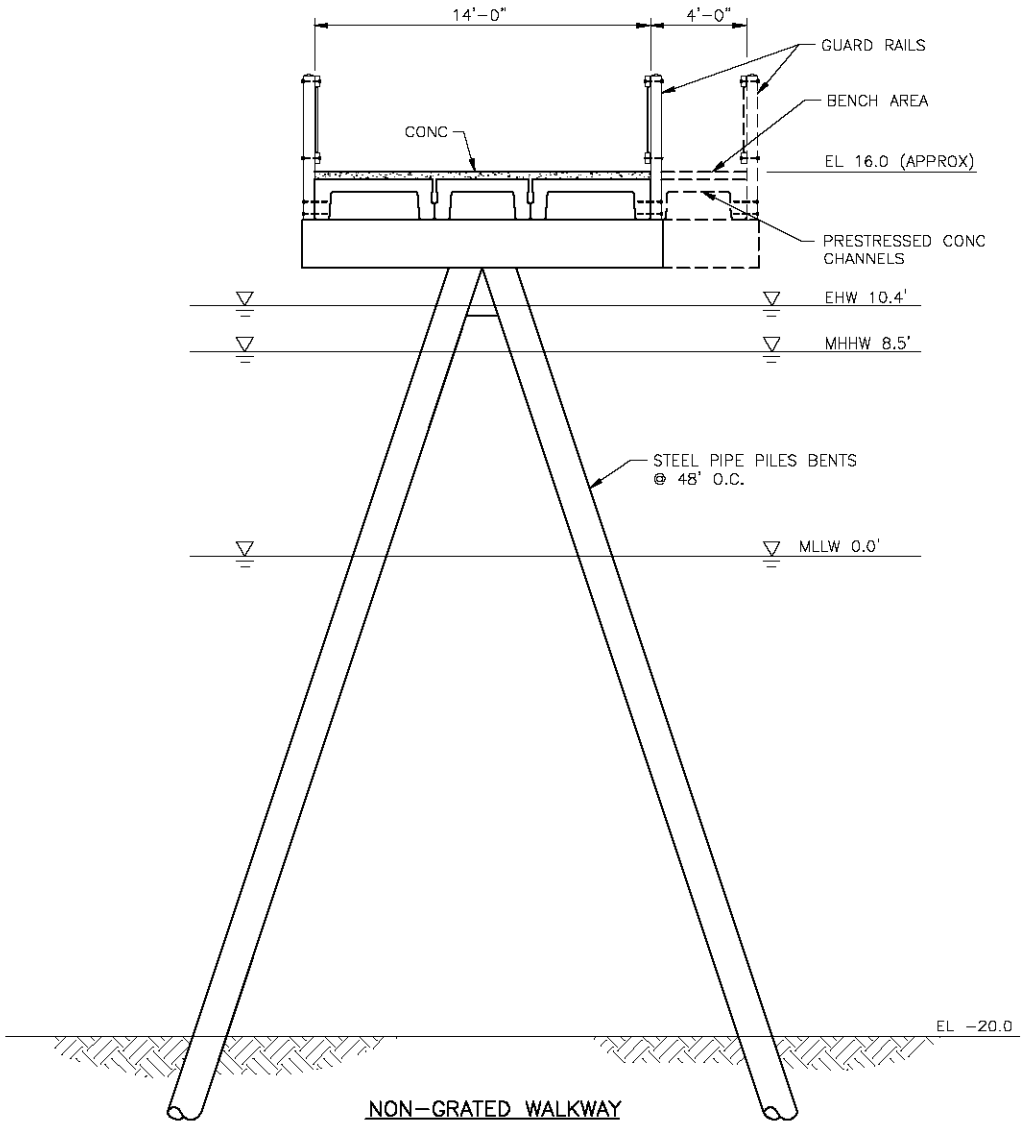


GRATED WALKWAY



NON-GRATED WALKWAY

A/3 **OVER WATER WALKWAY**
SCALE: 1/8"=1'-0"

DRAFT

PURPOSE: CONSTRUCT AN OVERWATER WALKWAY FROM BOULEVARD PARK TO CORNWALL AVE PARK

DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: -122° 30.20'

ADJACENT PROPERTY OWNERS:

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SHEET 4 OF 6 DATE: OCT 2008

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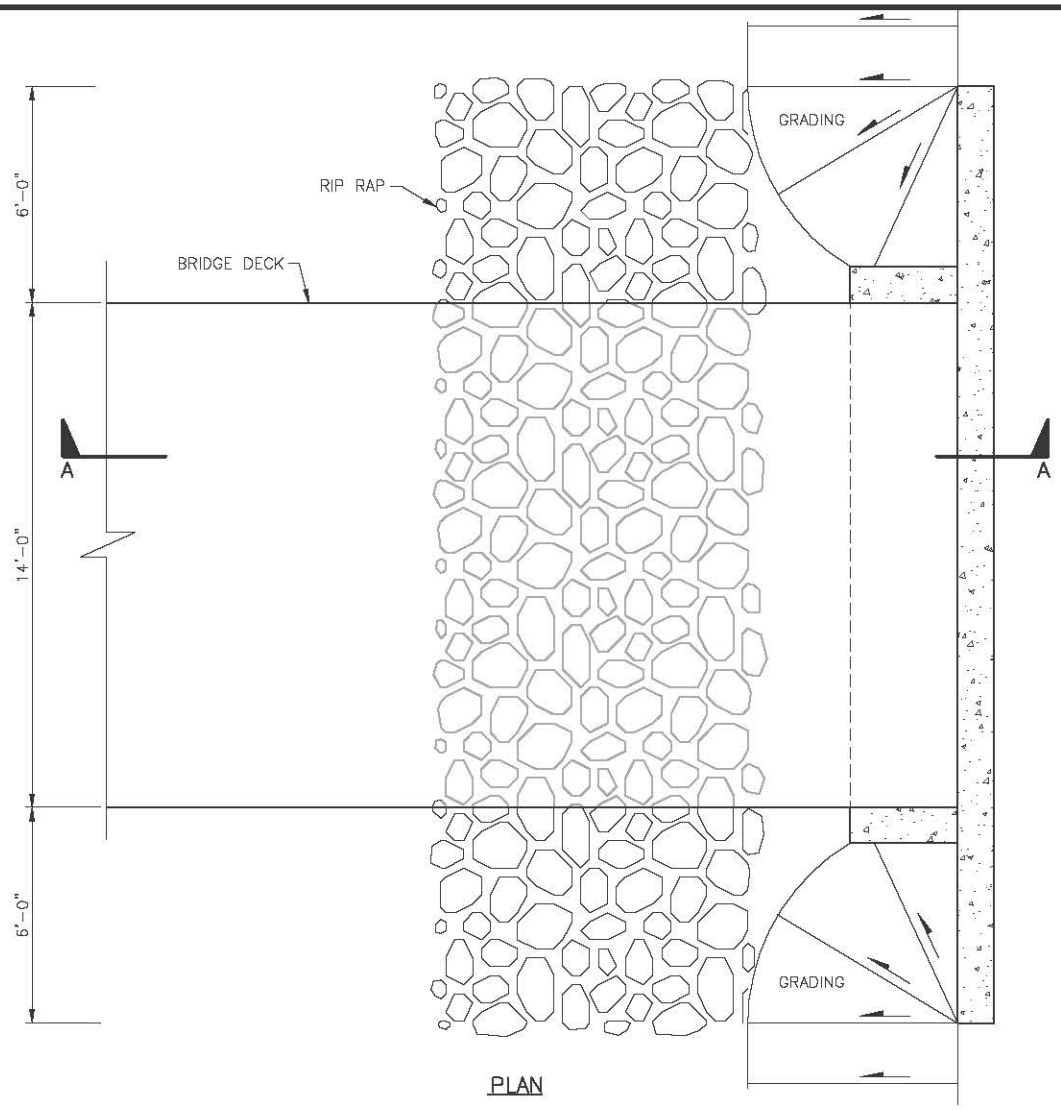
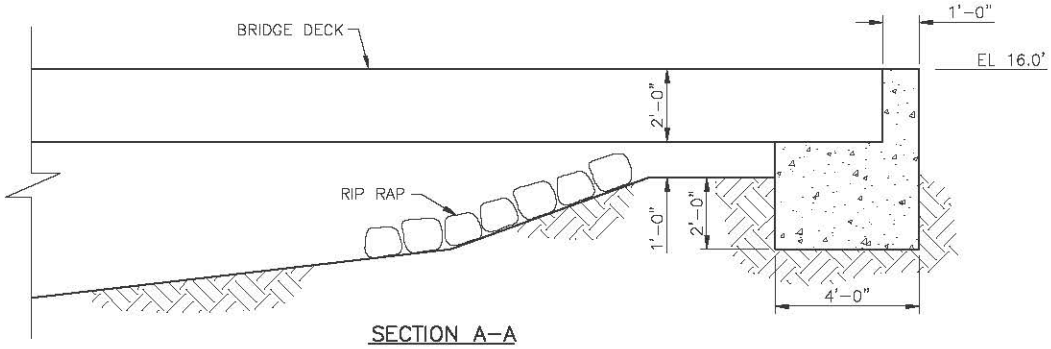


PLAN



SECTION A-A

PROPOSED CONCRETE ABUTMENTS

SCALE: 3/16"=1'-0"

DRAFT

PURPOSE: CONSTRUCT AN OVERWATER WALKWAY FROM BOULEVARD PARK TO CORNWALL AVE PARK

DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
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BOULEVARD PARK

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COUNTY OF: WHATCOM
APPLICATION BY: CITY OF BELLINGHAM

SHEET 5 OF 6 DATE: OCT 2008

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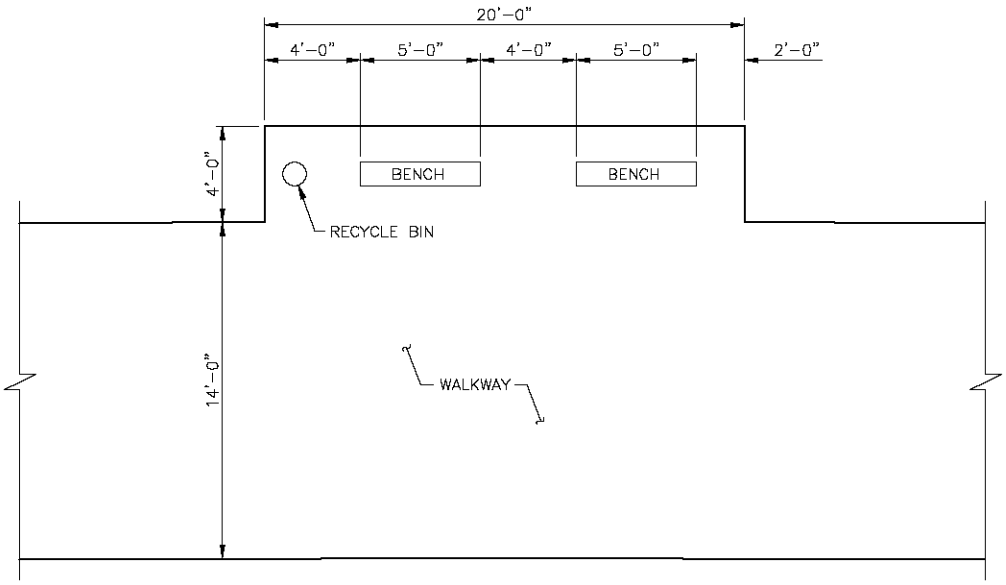

1/3 **TYPICAL BENCH NOOK PLAN**
SCALE: 1/8"=1'-0"

DRAFT

PURPOSE: CONSTRUCT AN OVERWATER WALKWAY FROM BOULEVARD PARK TO CORNWALL AVE PARK

DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
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ADJACENT PROPERTY OWNERS:

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COUNTY OF: WHATCOM
APPLICATION BY: CITY OF BELLINGHAM

SHEET 6 OF 6 DATE: OCT 2008

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APPENDIX 13
Preliminary Permitting Documentation

13a
Pattle Point Overwater Walkway Upgrades Biological Evaluation

PATTLE POINT TRESTLE RENOVATION

BIOLOGICAL EVALUATION

PREPARED FOR:

REID MIDDLETON
728 134TH STREET SW, SUITE 200
EVERETT, WASHINGTON 98204

PREPARED BY:

GRETTE ASSOCIATES LLC

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WENATCHEE, WASHINGTON 98801
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TACOMA, WASHINGTON 98403
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JULY 10, 2009

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

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APPENDICES

Appendix A. Essential Fish Habitat Assessment
Appendix B. Eelgrass Survey

1 INTRODUCTION AND SPECIES OF CONCERN

The City of Bellingham Parks and Recreation Department (City) proposes to renovate the approximately 525-foot-long Pattle Point Trestle (Trestle), which supports an overwater segment of the Coast Millennium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham, Washington. The Trestle is located on the eastern shore of Bellingham Bay, in Boulevard Park, Bellingham. The purpose of the Pattle Point Trestle Renovations Project (Project) is to protect public health and safety by renovating defective components of the existing Trestle; additionally, the Project would protect public health and safety and enhance public shoreline access by increasing the width and improving the surface (improvements would comply with the Americans with Disabilities Act) of this heavily trafficked segment of the Coast Millennium Trail.

In connection with the proposed Project, the City is submitting an application for a U.S. Army Corps of Engineers (Corps) permit for work in and over Bellingham Bay. The Endangered Species Act (ESA) requires Federal agencies (in this case, the Corps) to ensure that they do not authorize, fund, or carry out actions that are likely to jeopardize the continued existence of endangered or threatened species, or to result in the destruction or adverse modification of critical habitat for such species. This Biological Evaluation (BE) has been prepared to assist the Corps in its review of the permit application and in conducting required consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS; under National Oceanic and Atmospheric Administration [NOAA] Fisheries).

Species listed under the ESA that may be present in the vicinity of the Project and designated critical habitats potentially affected by the Project are listed in Table 1.

Table 1. Listing status for species and critical habitat occurring in Puget Sound.

Species	**Listing status**
Puget Sound chinook salmon (*Oncorhynchus tshawytscha*)	Threatened
Coastal-Puget Sound bull trout (*Salvelinus confluentus*)	Threatened
Puget Sound steelhead trout (*Oncorhynchus mykiss*)	Threatened
Southern Resident killer whale (*Orcinus orca*)	Endangered
Steller sea lion (*Eumetopias jubatus*)	Threatened
Humpback whale (*Megaptera novaeangliae*)	Endangered
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Marbled murrelet (*Brachyramphus marmoratus*)	Threatened
Critical Habitat	**Listing status**
Puget Sound chinook salmon designated critical habitat	Designated
Coastal-Puget Sound bull trout designated critical habitat	Designated
Southern Resident killer whale designated critical habitat	Designated

This BE addresses the potential effects of the Project on the species and habitat listed above, and is being submitted to fulfill consultation requirements pursuant to Section 7 of the ESA. The

conclusions of this BE are summarized in Table 2.

Table 2. Effect determinations for listed species and designated critical habitat based on anticipated Project impacts.

Species	**Effect determination**
Puget Sound chinook salmon	May affect, not likely to adversely affect
Coastal-Puget Sound bull trout	May affect, not likely to adversely affect
Puget Sound steelhead trout	May affect, not likely to adversely affect
Southern Resident killer whale	No effect
Steller sea lion	No effect
Humpback whale	No effect
Leatherback sea turtle	No effect
Marbled murrelet	May affect, not likely to adversely affect
Critical Habitat	**Effect determination**
Puget Sound chinook salmon designated critical habitat	May affect, not likely to adversely affect
Coastal-Puget Sound bull trout designated critical habitat	May affect, not likely to adversely affect
Southern Resident killer whale designated critical habitat	No effect

In addition to the analysis described above, an evaluation of the effects of the proposed Project on Essential Fish Habitat (EFH) has also been prepared, pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) as amended by the 1996 Sustainable Fisheries Act (SFA). The effects of the proposed Project on EFH are addressed in Appendix A.

The City is the applicant for aquatic resource permits under the Federal Clean Water Act, the Federal Rivers and Harbors Act, the Washington Shoreline Management Act, and other local, state, and federal aquatic resources regulatory programs. The contact at the City is Gina G. Austin, PE. For regulatory permitting purposes, the Agent for the Project is Shannon Kinsella, (425) 741-3800.

2 PROJECT DESCRIPTION

2.1 BACKGROUND

The Trestle is a segment of the Coast Millennium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham. The Trestle has served as a multi-use trail since the establishment of Boulevard Park in 1980. The Trestle was originally built in the 1890s to accommodate trains, and was refurbished to its present configuration in 1991.

The current physical condition of the Trestle was documented in a report by Echelon Engineering, Inc., dated January 2008. The report identified several of the Trestle components as being in "poor condition," defined in the report as a member that "has sustained major to severe damage that affects the members load bearing capacity."

2.2 PROJECT DESCRIPTION AND CONSTRUCTION METHODS

2.2.1 Design, Construction, and Demolition Details

The City proposes to renovate the Trestle by upgrading the severely damaged members, in order to ensure continuing safe public use (Sheets 1-8). For this proposed Project, construction activities that may occur in water or over water include:

- **Removal and replacement of the Trestle's superstructure.** Removal of the Trestle's existing superstructure involves the removal of an approximately 10-foot-wide (14-foot-wide at seating nooks) by 525-foot-long non-grated, timber deck and 1,074 feet of timber guardrail (Sheets 2 and 3). 521 feet of the Trestle's existing superstructure length is over water; the total overwater shading is 5,697 square feet. Replacement of the Trestle's superstructure involves the installation of a 12-foot-wide (16-foot-wide at seating nooks) by 564-foot-long deck and 1,152 linear feet of timber/steel guardrail (Sheets 4 and 5). 521 feet of the replacement superstructure length would be over water; total overwater coverage would be 6,730 square feet, of which 3,181 square feet would consist of steel-beam-supported grated deck and 3,549 square feet would consist of steel-beam-supported concrete deck.

- **Removal and replacement of the Trestle's southernmost timber frame bent.** The existing bent is comprised of two horizontal and five vertical 10-inch-by-20-inch creosote-treated timbers, two 4-inch-by-10-inch creosote-treated timber cross braces, and a creosote-treated timber sill (Sheet 7). The replacement bent would consist of 12-inch-by-12 inch ACZA-treated timber, with the exception of the cross braces, which would consist of 4-inch-by-10-inch ACZA-treated timbers, and an ACZA-treated timber or concrete sill.

- **Removal of the Trestle's northernmost timber frame bent.** The northernmost timber frame bent is comprised of two horizontal and four vertical 12-inch-by-12-inch creosote-treated timbers that extend below the ground surface, and associated timber lagging (Sheet 8). The existing piles would be cut at least 2 ft below the ground surface and covered by coarse sand and gravel fill.

- **Removal and replacement of the Trestle's two existing abutments.** The existing north abutment consists of timber surrounded by riprap; the existing south abutment consists of concrete surrounded by riprap (Sheet 6). The total excavation volume at the north abutment would be approximately 67 cubic yards (CY; approximately 23 CY of excavation in water), and approximately 80 CY (approximately 33 CY of excavation in water) at the south abutment. The two replacement abutments would both consist of a concrete pile cap (sitting atop two steel-pipe piles, if necessary; the piles would be driven above Mean Higher High Water [MHHW]) surrounded by riprap. The north abutment would require a total of approximately 38 cubic yards of replacement fill, including concrete, clean backfill, and riprap (approximately 22 CY of replacement fill in water, including clean backfill and riprap). The south abutment would require a total of approximately 54 CY of replacement fill including concrete, clean backfill, and riprap (approximately 32 CY of replacement fill in water, including clean backfill and riprap).

- **Removal and replacement of the Trestle's treated-timber cross bracing.** All existing pile cross-bracing boards, which are creosote-treated timber, would be replaced with ACZA-treated timber (Sheet 5). Cross-bracing is comprised of 66 boards (each 20 feet long; Sheet 5).

- **Removal and replacement of four of the Trestle's timber pile caps.** Each of the pile caps is 12 inches wide, 16 inches deep, 16 feet long. Each pile cap is completely above the horizontal plane of MHHW (Sheet 5).

2.2.1.1 Total Project Excavation and Fill

The total Project would require excavation and fill over an area of approximately 726 square feet. The Project would require a total volume of approximately 148 CY of excavation and approximately 93 CY of fill (including excavation and fill both above and below water; excavation and fill below MHHW is discussed in Section 2.2.1.2 below). The 55 CY reduction in fill volume is primarily due to differences in the design of the existing and proposed abutments.

2.2.1.2 Gains and Losses of Waters of the United States

A summary of the gains and losses of Waters of the United States that would result from the Project is provided below in Table 3 (relative to Ordinary High Water [OHW] and MHHW). Relative to OHW and MHHW, the Project actions would increase in the Waters of the United States by 3.5 CY and 0.6 CY, respectively.

Table 3. Gains and Losses of Waters of the United States (relative to OHW [~+9.51 ft MLLW] and MHHW [~+8.51 ft MLLW])

Construction Activity	Proposed Excavation Volume Below OHW / MHHW	Proposed Fill Volume Below OHW / MHHW	Net Change Below OHW / MHHW
Removal and replacement of north abutment	23.4 CY / 18.1 CY	21.6 CY / 17.8 CY	-1.8 CY / -0.3 CY
Removal and replacement of south abutment	33.3 CY / 26.0 CY	31.6 CY / 25.7 CY	-1.7 CY / -0.3 CY
Cutting below mud line of approximately four creosote-treated timber piling beneath the northernmost frame bent	1.0 CY / 1.0 CY	1.0 CY / 1.0 CY	0 CY / 0 CY
Totals	57.7 CY / 45.1 CY	54.2 CY / 44.5 CY	-3.5 CY / -0.6 CY

2.2.1.3 Gains and Losses in Shading of the Waters of the United States

As a result of the renovations, the Trestle footprint would increase by 1,033 square feet and 1,004 square feet relative to OHW and MHW, respectively. However, 3,181 square feet (relative to OHW)/3,122 square feet (relative to MHW) of the proposed deck would feature grating, in contrast to the existing Trestle deck, which does not feature any grating. Grating would be placed in a 6-ft wide section along the entire length of the Trestle, on the Trestle's bayward side (Sheet 5). As a result, the proposed Trestle renovations, in comparison to the existing Trestle, would reduce the typical width of solid decking from approximately 10 feet to 6 feet. Thus, while the footprint of the Trestle would increase, total shading on the surface of the water would be very similar to the existing conditions, and the shaded width would decrease (from 10 ft to 6 ft).

2.2.2 Design, Construction, and Demolition Details

The existing superstructure, bents, abutments, cross bracing, and pile caps proposed for removal or replacement would be removed by derrick barge or conventional crane. The removed structures would be placed onto either the upland or a barge before being loaded onto trucks and hauled to a disposal facility.

The site contains approximately four creosote-treated timber piling beneath the northernmost frame bent. These piling (each approximately 12-inches in diameter) would be cut two feet below the mud line, then covered with coarse sand or pea gravel. For each pile cut, approximately 0.25 CY of fill material would be required. Best Management Practices as identified by the Corps Dredge Management Office would be employed.

Any creosote-treated wood removed would be disposed of in accordance with Washington State's Dangerous Waste Regulations (WAC 173-303). All waste and debris generated by the Project would be collected and removed to a legally permitted waste disposal or recycling site.

2.3 CONSTRUCTION SCHEDULE

For the protection of aquatic life, all in-water or above-water activities would take place during

the allowable in-water work window (anticipated to be July 16 to February 15), though a more restrictive work window may be imposed by WDFW. Construction on the Trestle is expected to occur during the 2010 work window. The entire Project, including demolition and construction, is expected to take approximately 8 weeks to complete. In-water work is expected to take approximately 6 weeks to complete. However, the duration and total period of in-water work would be affected by several factors, including the type of construction equipment and procedures selected by the contractor, and the sequencing of work elements. Approximate durations for various construction activities are listed below in Table 4. Construction activities that can be performed in the upland may take place at any time. These activities include installation of electrical systems, pavement, and site drainage and treatment. If it were necessary to perform certain work at night during a low tide, appropriate City of Bellingham, Whatcom County, and/or any other required approvals would be obtained.

Table 4. Approximate duration of in-water activities.

Project Element	Approximate Duration
Removal and replacement of cross bracing	3 days
Removal of superstructure	5 days
Removal and installation of abutments	2 weeks
Removal and replacement of pile caps	1 day
Installation of superstructure	6 weeks

3 DESCRIPTION OF THE PROJECT AREA AND ACTION AREA

3.1 HABITAT ZONES

For the purposes of this BE, intertidal area is defined as the zone between MHHW (+8.5 feet Mean Lower Low Water [MLLW]) and -4 feet MLLW. Shallow subtidal area is defined as the zone between -4 feet and -10 feet MLLW. Subtidal area is defined as the zone below -10 feet MLLW. The intertidal and shallow subtidal habitats are considered the most important in the early life history of listed salmonids, particularly chinook. The subtidal bottom surface is not considered habitat for listed salmonids, but the water column overlying the subtidal surface is used by juvenile, sub-adult, and adult fish.

3.2 DEFINITION OF THE PROJECT AREA

The "Project Area" encompasses the entire area where work will occur. This consists of the entire area of the Trestle, as well as its supporting superstructure down to the aquatic substrate. All in-water work will occur over intertidal/shallow subtidal areas, above approximately -6 ft MLLW. The Project Area is approximately 525 feet long by 14 feet wide and includes all locations where construction would occur. Approximately 521 linear ft of the Project Area is located over aquatic habitat.

3.2.1 Existing Conditions in the Project Area

The aquatic habitat in the Project Area includes intertidal/shallow subtidal habitat beneath the walkway. Substrate in the Project Area consists primarily of small boulders and cobbles in the upper intertidal zone, transitioning to cobble/gravel and sand in the lower intertidal and shallow subtidal zone. Sand and gravel is present in the upper intertidal zone under the northern end of the Trestle.

3.2.1.1 Eelgrass

An eelgrass survey was conducted in June 2008 to document the presence, extent and density of eelgrass in the vicinity of the Trestle (Appendix B). The survey revealed eelgrass present underneath the Trestle for approximately 171 linear ft between approximately -1.5 ft MLLW and -8 ft MLLW. Eelgrass is also present along the waterward edge of the Trestle for most of its length. Survey transects were conducted parallel to the walkway, located waterward, beneath, and landward of the structure. Eelgrass density was lowest directly underneath the structure. However, it was determined that this was not due to shading from the walkway but rather from shallow water and subsequent wave energy, since the walkway passes over eelgrass at its extreme landward limit. Additionally, macroalgae is present in much of the Project Area, including *Fucus* and *Ulva*.

3.2.1.2 Forage Fish

According WDFW SalmonScape map, WDFW forage fish spawning surveys have identified surf smelt (*Hypomesus pretiosus*) spawn in the Action Area, under the northern end of the walkway (WDFW 2008; Figure 1). Based on preliminary site investigations, surf smelt spawning substrate (coarse sand and gravel) appears to be present in this location between approximately +5 and +6

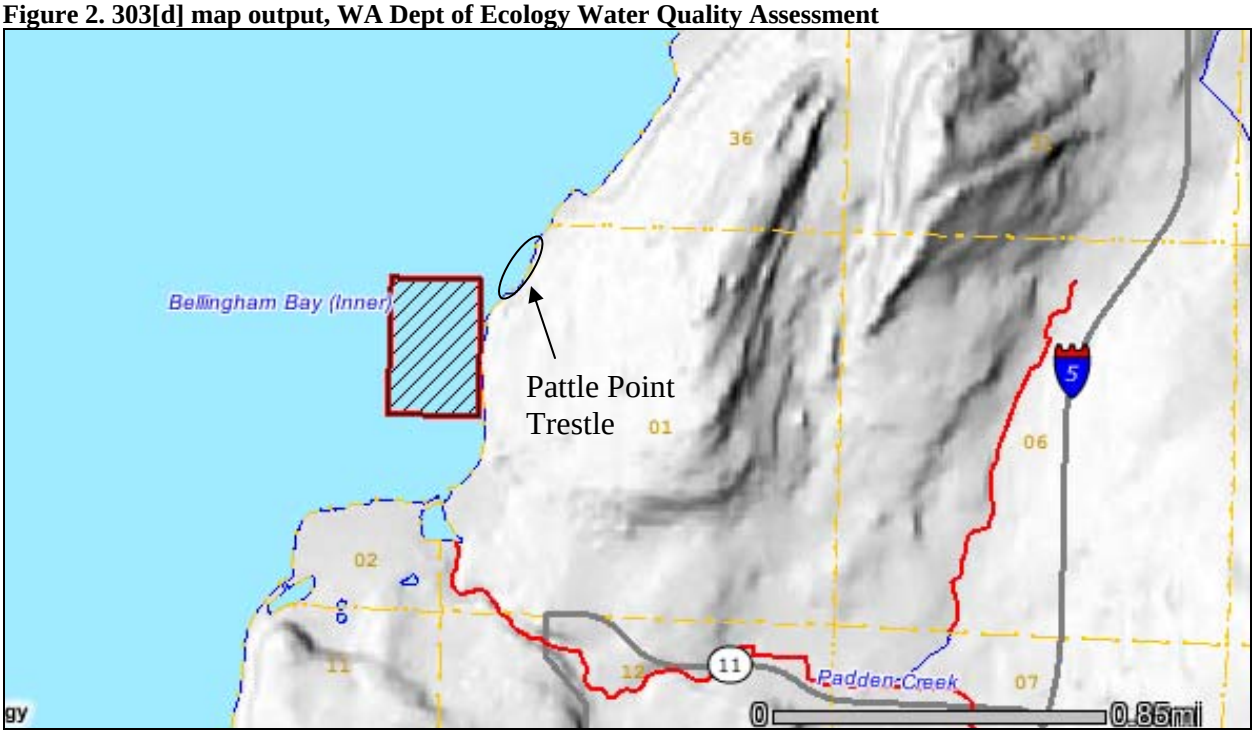
ft MLLW.

Figure 1. Documented surf smelt spawning in the Project Area (WDFW 2009).

3.2.1.3 Water and Substrate Quality

Per the 2008 Washington State Water Quality Assessment (DOE 2008) and the interactive mapping tool (available on-line at http://apps.ecy.wa.gov/wqawa/viewer.htm), no Category 5 (State 303[d] list) waters or sediments are present in the Project Area. Category 5 sediments are mapped approximately 370 ft west of the Project Area, with the impairment being LPAH and HPAH (Figure 2). The closest Category 5 waterbody is Padden Creek, located approximately one-half mile from the Project site; parameters for impairment in Padden Creek include fecal coliform and dissolved oxygen (DOE 2008).

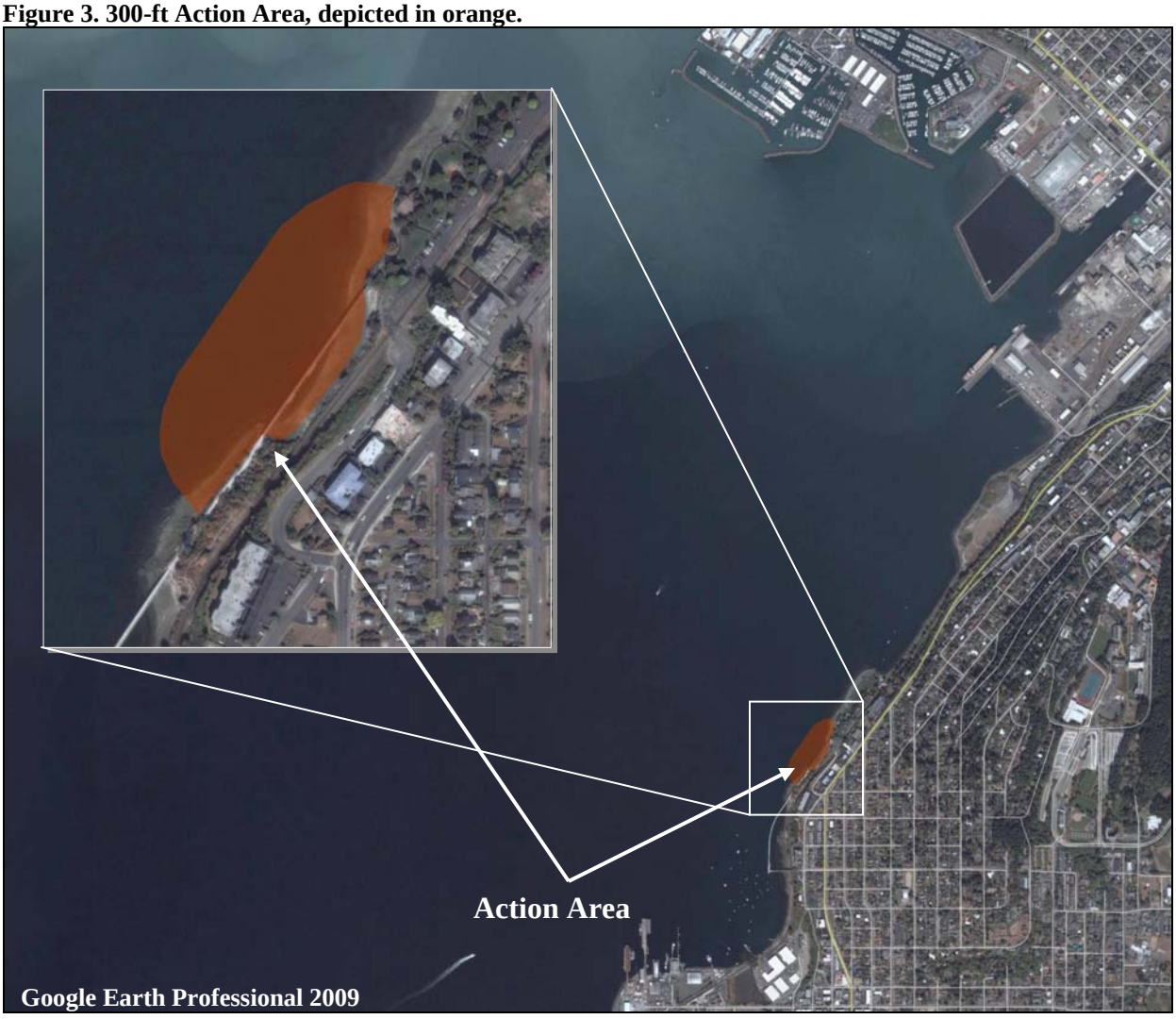
Figure 2. 303[d] map output, WA Dept of Ecology Water Quality Assessment



3.3 DEFINITION OF THE ACTION AREA

The "Action Area" encompasses the location where construction will occur (the Project Area), as well as all areas that may be directly or indirectly affected by the proposed Project (Figure 3). The geographic limits of the Action Area were defined by considering the potential geographic reach of mechanisms that may lead to impacts on the species of concern. In aquatic areas, the primary potential mechanisms for impact associated with this Project would be noise and disturbance from construction machinery. The Project does not involve in-water pile driving, so the potential reach of noise would be the extent of the barge and above-ground machinery noise. Turbidity, if generated, would be expected to be very minor. Therefore, the Action Area is defined by this area. It is expected that the noise from barge traffic would extend no greater than a radius of 300 ft from the Project Area.

Figure 3. 300-ft Action Area, depicted in orange.



4 DESCRIPTION OF SPECIES AND HABITAT USE

The species of concern associated with the Action Area are Puget Sound chinook salmon, Coastal-Puget Sound bull trout, Puget Sound steelhead trout, Southern Resident killer whale, Steller sea lion, humpback whale, leatherback sea turtle, and marbled murrelet. Per recent conversations with the Corps, NMFS, and USFWS, this section is reduced to a list of references that describe the life history of the species, and a description of how the species may utilize the Action Area. Additionally, this section describes the designated critical habitat for Puget Sound chinook salmon, Coastal-Puget Sound bull trout, and Southern Resident killer whale, which are present in the Action Area.

4.1 SPECIES OF CONCERN

4.1.1 Puget Sound Chinook Salmon

General life history information for Puget Sound chinook salmon, including use of nearshore habitats by juvenile fish, may be found in Healey 1982, Healey 1991, and Simenstad et al. 1982. Stock information may be found in Washington State Salmon and Steelhead Stock Inventory (WDF et al. 1993); updated stock information is located on-line at the WDFW Salmonid Stock Inventory (SaSI) website (available on-line at http://wdfw.wa.gov/fish/sasi/). Distribution information was obtained through the WDFW *SalmonScape* GIS map tool (available on-line at http://wdfw.wa.gov/mapping/salmonscape/index.html) and WDFW PHS data and maps (WDFW 2007).

The nearest chinook salmon-bearing stream is Padden Creek. The mouth of Padden Creek is approximately one-half mile from the Action Area. Additionally, chinook salmon utilize Whatcom Creek and the Nooksack River, which are further from the Action Area. Peak abundances of juvenile chinook in the Action Area are expected to occur in May and June as they migrate seaward (Tyler 1964; Sjolseth et al. 1968; Pacific International Engineering and Anchor Environmental 1999). Sub-adult and adult chinook may be present in the Action Area during any month of the year.

4.1.2 Coastal-Puget Sound Bull Trout

General life history and stock information on Coastal-Puget Sound bull trout can be found in the following references: Ratliff 1992; Rieman and McIntyre 1993, 1995; Kraemer 1994; Bonneau and Scarnechia 1996; Buchanan and Gregory 1997; Lee et al. 1997; USFWS 1999; Corps 2000a. Stock information may be found in Washington State Salmonid Stock Inventory Bull Trout/Dolly Varden (WDFW 2004a); distribution data is located at the WDFW SalmonScape GIS map tool.

Anadromous bull trout are known to be present in the Nooksack River, approximately 5 miles north of the Project Area. Because bull trout may range in salt water as much as 30 or 40 kilometers from the mouth of their natal stream (Kraemer 1994), it is assumed that they may be present in Bellingham Bay and may be present in the Action Area. Sub-adult and adult bull trout may be in the area during any month of the year. Juvenile bull trout would most likely be present at the same time as other juvenile salmonids.

4.1.3 Puget Sound Steelhead Trout

Puget Sound steelhead trout was listed as a threatened species by NMFS on May 11, 2007; the rule became effective June 11, 2007 (NOAA 2007). General life history information for Puget Sound steelhead trout has been reviewed in the Federal Listing Proposal (NOAA 2006a) and the Status Review Update for Puget Sound Steelhead (NMFS 2005a). Information relating to habitat usage by steelhead trout has been solicited by NMFS, but the critical habitat listing for this species was not proposed as of July 2009. WDFW stock information for steelhead may be found in the WDFW SaSI (available on-line at http://wdfw.wa.gov/fish/sasi/). Distribution information was obtained through the WDFW SalmonScape GIS map tool and WDFW PHS data and maps obtained for this Project (WDFW 2007).

The closest watersheds with data for steelhead stocks within the vicinity of the Action Areas are Padden Creek and Whatcom Creek, both of which are winter stocks. The creeks are located approximately 0.5 and 1.2 miles from the Action Area, respectively (WDFW 2007). According to PHS maps for the area, the stock in Padden Creek is documented at "present".

4.1.4 Southern Resident Killer Whale

Life history information on Southern Resident killer whales potentially found in the Action Area can be found in the following references: WDFW 2004b; Barrett-Lennard and Ellis 2001; Braham and Dahlheim 1982; Dahlheim and Heyning 1999; Felleman et al. 1991; Ford et al. 2000.

Within Washington, the Southern Resident population of killer whales typically resides in the inland waters around the San Juan Islands from late spring to fall (Heimlich-Boran 1988; Felleman et al. 1991; Olson 1998; Ford et al. 2000). They are present, but generally spend less time in other parts of the Strait of Juan de Fuca, Puget Sound, and the outer coast. Little is known about the movements of killer whales during the winter and early spring, however the resident and transient populations typically migrate to South Puget Sound, the outer coast, or depart the state (WDFW 2004). Based on the available Southern Resident killer whale sightings database information, the nearest sightings have occurred west of the Action Area, through Hale Passage along the coast of Lummi Island, approximately 6 miles southwest of the Action Area, at the southern end of Bellingham Bay (Whale Museum 2008). Thus, based on guidance from NOAA regarding assessment of Project's impacts on marine mammals, the species can be considered "not present". Southern Resident killer whale DPS very rarely enter Bellingham Bay. They are especially unlikely to be present in the Action Area due to its shallow water and nearshore location.

4.1.5 Steller Sea Lion

Life history information on Steller sea lions potentially found in the Action Area can be found in the following references: Spalding 1964; Fiscus and Baines 1966; Jones 1981; Treacy 1985; Osborne 1988; Olesiuk et al. 1990; NMFS 1992; Jones & Stokes Associates, Inc. and Natural Resources Consultants, Inc. 2000; Corps 2000b.

There are no documented areas of regular use by Steller sea lions in Bellingham Bay or in any of

the Eastern Bays (Region 9) described in the WDFW atlas of sea lion haulouts (Jeffries 2000). The nearest documented Steller sea lion haulout is over 29 miles away, off the coast of Saturna Island. Thus, based on guidance from NOAA regarding assessment of Project's impacts on marine mammals, the species can be considered "not present". Additionally, given the relatively high level of human activity in the vicinity of the Project, Steller sea lion presence in the Action Area is considered unlikely. However, Steller sea lions do occasionally occur in areas where there is a high level of human activity. Therefore, it is possible, but highly unlikely that they could be present in the Action Area.

4.1.6 Humpback Whale

Life history information on humpback whales potentially found in the Action Area can be found in the following references: Scheffer and Slipp 1948; Tomilin 1957; Simenstad et al. 1979; Evans 1987; Osborne 1988; Braham 1991; Calambokidis et al. 1994, 1997a, 1997b, 1998; Calambokidis and Steiger 1995; Calambokidis and Quan 1997.

Humpback whales use coastal areas because of the productivity of these habitats. They are not commonly present in Puget Sound because of the lack of appropriate habitat and food availability for these large mammals. Humpback whales are only rarely sighted near Bellingham Bay (Falcone et al. 2005), and no sightings have been reported within Bellingham Bay on the Orca Network sightings database (Orca Network 2008). Given their habitat requirements for feeding and breeding, as well as shallow water, humpback whales are not expected to occur in the Action Area at any time.

4.1.7 Leatherback Sea Turtle

Life history information on leatherback sea turtles potentially found in the Action Area can be found in the following references: Groombridge 1982; CEE 1983; Mager 1985; Bowlby et al. 1994; NMFS and USFWS 1998.

Because leatherback sea turtles typically occur in offshore locations, and there are no documented sightings within Puget Sound (Salzer, pers. comm. 2006), it is unlikely that this species uses Bellingham Bay. It is, therefore, reasonable to assume that leatherback sea turtles do not occur in the Action Area.

4.1.8 Marbled Murrelet

Life history and population information on marbled murrelets may be found in the following references: Carter 1984; Ralph et al. 1995; USFWS 1997.

Marbled murrelets feed on marine waters but nest in old-growth coniferous forests. There are no identified nesting areas in the vicinity of the Action Area (WDFW 2007). Marbled murrelets are known to occasionally feed offshore in Bellingham Bay (Pacific International Engineering and Anchor Environmental 1999). However, murrelets are not likely to be found close to shore. Therefore, marbled murrelet would not likely be present in the Action Area unless flying overhead to waters offshore of the Action Area. Designated critical habitat for the marbled murrelet applies only to nesting habitat, and does not occur in the Action Area (WDFW 2007).

4.2 DESIGNATED CRITICAL HABITAT

4.2.1 Puget Sound Chinook Salmon Designated Critical Habitat

On September 2, 2005, NMFS designated critical habitat for 12 Evolutionarily Significant Units (ESUs) of Pacific salmon and steelhead, including the Puget Sound chinook salmon ESU (NOAA 2005a). For this ESU, critical habitat includes 15 associated sub-basins within Puget Sound and the Nearshore Marine Areas (Unit 16). The Project Area is located within Unit 16, or "Nearshore Marine Areas". Nearshore Marine Areas include the entire nearshore zones of Puget Sound (including areas adjacent to islands), Hood Canal, and the Strait of Juan de Fuca (to the mouth of the Elwha River) (NOAA 2005a). Nearshore Marine Areas are further divided into subunits based on the boundaries separating the 19 Water Resource Inventory Areas (WRIA) that discharge into Puget Sound; the Project Area is located within Nearshore Marine Area 1 (corresponding to WRIA 1) (NOAA 2005b).

Nearshore Marine Areas include habitat from extreme high water (EHW) offshore to a depth of -30 m (~ -98 feet) MLLW (NOAA 2005a, 2005b). The focus within the Nearshore Marine Areas has been identified as photic zone habitat based on the presence of macrophytes (eelgrass and macroalgae) that are vital to rearing, migrating, and maturing chinook salmon and their prey (NOAA 2005b). Based on this critical habitat designation, much or all of the aquatic habitat in the Action Area is within designated chinook salmon critical habitat area.

4.2.2 Coastal-Puget Sound Bull Trout Designated Critical Habitat

On September 26, 2005, USFWS designated 22 Critical Habitat Units (CHU) for the protection of critical habitat for five populations of bull trout, including Coastal-Puget Sound bull trout (USFWS 2005). The Project Area is located within CHU 28: Puget Sound (Marine), and is within the range of the Coastal-Puget Sound population. The Puget Sound (Marine) CHU encompasses 566 miles of stream/shoreline along Puget Sound (USFWS 2005).

Designated critical habitat includes bankfull width of the rivers, and estuarine areas from MHHW to -10 m (-33 feet) MLLW (USFWS 2005). Based on the critical habitat designation for nearshore habitat in the Puget Sound region, much of the aquatic area in the Action Area is within the bull trout critical habitat area.

4.2.3 Southern Resident Killer Whale Designated Critical Habitat

On November 29, 2006, NMFS designated critical habitat for Southern Resident killer whale (NOAA 2006b). The rule became effective December 29, 2006. Three areas have been designated as critical habitat: Area 1: the Core Summer Area in Haro Strait and waters around the San Juan Islands; Area 2: all of Puget Sound; and Area 3: the Strait of Juan De Fuca. The extent of these areas totals approximately 2,560 square miles of marine habitat. The Project's Action Area is located within Area 1, which is specified to include waters surrounding the San Juan Islands, the U.S. portion of the Southern Strait of Georgia, and areas directly offshore of Skagit and Whatcom counties (NOAA 2006b).

According to the final rule, designated critical habitat includes all waters within Puget Sound deeper than -20 feet EHW (NOAA 2006b), which corresponds to approximately –9.6 ft MLLW

within the Action Area. Therefore, the Project Area is outside of Southern Resident killer whale critical habitat, but much of the Action Area is within Southern Resident killer whale critical habitat.

5 EFFECTS OF THE PROJECT

5.1 SUMMARY OF EFFECTS

This section presents the direct effects and indirect effects of the proposed Project on ESA-listed species that may be present within the Action Area, and describes interrelated and interdependent actions that may lead to effects on the species of concern. This section also addresses potential effects on listed critical habitat.

Although all proposed work would occur in or over intertidal/shallow subtidal habitat, the Project involves very little potential for direct impacts to ESA species. Project elements that could potentially affect species of concern include changes in overwater coverage, replacement of the abutments, operation of a barge and barge-mounted equipment, construction noise, shoreline substrate changes, and potential for spills of hazardous materials. Proposed construction would be relatively minor. No in-water pile driving would occur, as the existing piles would remain and continue to be used, and any piles necessary for the abutments would be driven above MHHW. Construction activities may generate minor turbidity. Noise would be minimal, limited to machinery used to remove and replace the abutments, Trestle components, and pile caps.

Since there have been no confirmed sightings of leatherback sea turtle in Puget Sound, it is extremely unlikely that leatherback sea turtles would be present in Bellingham Bay or the Action Area as to be considered discountable. Thus, leatherback sea turtles are not discussed further.

5.2 DIRECT EFFECTS ON SALMONIDS

Chinook salmon, bull trout, and steelhead trout use the Action Area in similar ways, though the trout species are larger at outmigration and less dependent on shallow, nearshore waters than chinook salmon. Due to their similarities in habitat use, effects of all three salmonid species of concern are evaluated together.

5.2.1 Construction Noise

Construction noise and activity would occur associated with construction equipment. This would consist mainly of operation of barge-mounted construction equipment, which would include minor noise and general in-water activity. Noise generated by the construction equipment would be minimal and would not rise to the level at which impacts are expected. There is little risk of direct mortality of sub-adult or adult fish that may be present in the waters of Bellingham Bay, as they would be expected to actively avoid areas of construction. Further, the Project would be conducted during the established in-water work window approved by WDFW, NMFS, and USFWS. This would ensure that in-water work does not occur during the period when juvenile salmonids are abundant in the Action Area. Limitations on in-water work in marine waters are not typically extended to sub-adult and adult salmonids because fish in these life stages are highly mobile and expected to avoid areas of active construction. Therefore, it is possible that adult and sub-adult chinook salmon, bull trout, and steelhead could be present in the Action Area during Project construction. If present, the risk of direct mortality due to Project construction is negligible.

5.2.2 Effects on Water Quality

Abutment replacement and bent removal/replacement would disturb the underlying and surrounding sediment, which could cause minor elevated turbidity. Abutment and riprap replacement would be accomplished either by barge-based equipment or by equipment staged in the upland. Work would be conducted in the dry when possible, thus minimizing potential turbidity. It is anticipated that any turbidity generated would be very minimal.

Accidental spills of chemicals could occur in conjunction with machinery operation. As part of the Project Best Management Practices (BMPs), the construction contractor will be responsible for the preparation of a Spill Prevention, Control, and Countermeasures (SPCC) plan to be used for the duration of the construction period. The plan will outline measures to be taken to prevent the release or spread of hazardous materials, including (but not limited to) gasoline, oils, and chemicals.

Additionally, it is possible that debris could enter the water during Trestle resurfacing. Any debris associated with resurfacing the Trestle will be collected and disposed of at an appropriate upland disposal site. BMPs will be implemented to minimize debris entering the water, and to collect debris that does enter the water (Section 6.2).

5.3 INDIRECT EFFECTS ON SALMONIDS

5.3.1 Changes in Overwater Shading

As discussed in Section 2.2.1, the existing Trestle encompasses approximately 5,697 sq ft of overwater shading, and the proposed Trestle would encompass approximately 6,730 sq ft of overwater coverage. The increased footprint would occur due to a 2-ft increase in Trestle width. However, the proposed Trestle would include 3,181 sq ft of grated surface, in a 6-ft wide strip along the waterward side of the Trestle (Sheet 5). Considering the use of grating, the functional shading resulting from the proposed Trestle would be similar to or less than existing conditions.

There have been concerns over the potential for overwater shading to adversely affect juvenile salmonid migration. Further, increases in shading can decrease productivity of the aquatic environment through decreased photosynthetic activity. However, since the as-built conditions would generate similar levels of shading as the existing conditions, and the actual width of solid shading would decrease (from 10 ft to 6 ft), widening the pier would not be expected to adversely affect juvenile salmonid migration or productivity,

5.3.2 Potential Impacts to Eelgrass

Eelgrass (Zostera marina) provides critical refuge and rearing habitat for juvenile salmonids, as well as habitat for salmonid prey species. As mentioned in Section 3.2.1.1, eelgrass is present under approximately 171 ft of the Trestle, and is present waterward of the Trestle along its entire length.

There is some potential for impacts to eelgrass during construction activities. In order to replace the decking of the walkway, the contractor would likely use barge-mounted machinery. The barge would operate from the waterward side of the walkway, directly above the eelgrass bed.

The greatest potential for impacts to eelgrass would be from the barge grounding out and uprooting eelgrass rhizomes. There is also potential for the barge's propulsion system to affect eelgrass if running at high levels within the bed. It is expected that the barge would be able to operate in a manner that would not impact eelgrass. Extreme care would be taken to avoid impacts to eelgrass. The barge would typically operate during high tides to avoid grounding out. See Section 6.2 for BMPs that would be implemented of minimize risk of impacts on eelgrass.

Over the long-term, no adverse impacts on eelgrass are anticipated. Increased shading has the potential to affect eelgrass through reduced photosynthetic activity. However, as discussed in Section 5.3.1, although the walkway would be widened slightly, the Project would not result in an increase in functional shading. The completed Trestle would include a 6-ft wide section of grated decking. This would essentially offset the slight increase in width. In addition, the use of grating reduces the typical width of solid shading from approximately 10 ft to 6 ft. With these changes to the walkway surface, the pre- and post-Project conditions are expected to be very similar in terms of ambient light reaching eelgrass, and it is possible that more ambient light will reach eelgrass due to the decreased width of solid shading. Thus, the Project is not expected to adversely affect eelgrass, and may benefit eelgrass through increases in ambient light.

5.3.3 Fill Volume Changes

The Project would include replacement of the existing abutments and shoreline stabilization riprap at both shore landing sites. The abutments and riprap would be essentially replaced in-kind, with little changes in area or volume below MHHW. Approximately 45.1 CY of fill (including abutments) would be removed below MHHW (57.7 CY below OHW). Replacement abutments would encompass approximately 44.5 CY below MHHW (54.2 below OHW). Thus, there would be a slight decrease in fill below MHHW/OHW as a result of the Project. Abutment and riprap replacement would occur during tidal exposure to the extent possible. For these reasons, potential impacts to salmonids from this work would be negligible.

5.3.4 Potential Impacts on Forage Fish Spawning Areas

As discussed in Section 3.2.1.2, surf smelt spawning has been observed in the Action Area, along the shoreline under the northern end of the walkway (WDFW 2008; Figure 1). Based on field observations, surf smelt spawning substrate is present under the Trestle, immediately waterward of the bent and piles proposed to be removed at the northern end of the Trestle. Shaded surf smelt spawning sites have been shown to result in significantly greater egg survival rates than unshaded sites (Penttila 2001). Removal of the bent and cutting/capping of the four piles would not adversely affect surf smelt spawning or substrate, as this action would be done either outside the documented spawning season at this location or the site would be investigated for surf smelt eggs prior to construction. Thus, no impact to spawning substrate would occur when surf smelt spawning is occurring.

Further, material proposed to cover the four cut pile would be coarse sand and gravel, which is ideal surf smelt spawning substrate. Thus, this action would increase shaded surf smelt spawning substrate in an area where spawning has been documented. Overall, the Project would benefit surf smelt.

5.4 DIRECT AND INDIRECT EFFECTS ON SOUTHERN RESIDENT KILLER WHALE, STELLER SEA LION AND HUMPBACK WHALE

Southern Resident killer whales, Steller sea lions and humpback whales are not commonly sighted in Bellingham Bay. Bellingham Bay is accessible to these species, thus it is possible for these species to be present in the Action Area. However, as discussed in Sections 4.1.4, 4.1.5 and 4.1.6, based on the available whale sightings database (Whale Museum 2008; Orca Network 2008) no sightings of Southern Resident killer whale or humpback whale have ever been reported within approximately 6 miles of the Project's Action Area. Additionally, the nearest Steller sea lion haul-out is located over 10 miles away (Jefferies et al. 2000). Based on these sightings data and guidance from NOAA (NOAA 2008) regarding ESA determinations for marine mammals, these species can thus be considered "not present" in the Project's Action Area.

Based on guidance from NOAA regarding ESA consultations for marina mammals, four effects pathways must be considered when determining effects of a project on marine mammals: sound, physical disturbance, prey quantity, and contaminants/prey quality.

5.4.1 Sound

As discussed above, all three marine mammal species can be considered "not present". Based on guidance from NOAA, if a species is considered "not present", sound generated by the Project has no effect on the species. Thus, even if sound were generated by the Project that could affect marine mammals, it would have no effect since the species are not present. If present, the Project's construction noise would have negligible effect. The only potential in-water sound disturbance from the Project would be from construction machinery (either in the upland or operating from a barge). Barge noise would be very minor and would not be expected to affect marine mammals were they present.

Overall, the Project would have no effect on marine mammals through sound disturbance.

5.4.2 Physical Disturbance

Physical disturbance includes increases in physical obstructions such as boat moorage and buoys. As mentioned above, these marine mammal species are considered not present (NOAA 2008). The Project Area is too shallow to be habitat for whale species and is not Steller sea lion habitat. Thus, even if physical disturbances were to increase, they would have no effect on these species.

Further, even if these species were present, the Project would have no effect on them through increased physical disturbances. The in-water structure would not change in such a way as to increase physical disturbances to marine mammals. The number of piles would not change, all existing piles would remain, and no moorage is proposed. Thus, the Project would not affect marine mammals through physical disturbances.

5.4.3 Prey Quantity

Salmon are a primary prey resource for Southern Resident killer whale. Steller sea lion feed on a variety of fish, including salmon, as well as cephalopods. Humpback whale typically feed on

small schooling fish such as forage fish, and large zooplankton such as krill (NMFS 1991). Any impacts on these species would also be an indirect effect on marine mammals. As determined in Section 5.2 and 5.3, the Project's impacts on salmonids and forage fish are expected to be negligible. Surf smelt would likely benefit due to the expansion of shaded spawning gravel. Based on NOAA's guidance (2008), a *not likely to adversely affect* call for salmonids indicates that the Project will have no effect on marine mammals relative to prey resources. The Project's effects on all prey species would be similar. Overall, there would be no decrease in prey resources for marine mammals.

5.4.4 Contaminants/Prey Quality

The Project has no elements that would increase contaminants in prey. The removal of creosote-treated timber elements (cross-bracing, timber bents and bent piles) would decrease contaminants in the Project Area. Thus, the Project would modestly improve contaminants/prey quality conditions for marine mammals.

5.4.5 Summary

Overall, the Project would have no effects on humpback whale, as there are no mechanisms for impacts. These species are considered not present in the Action Area based on the criteria set forth in NOAA 2008 (no sightings in the vicinity for whales, no haul-outs within 10 miles for Steller sea lions). Further, the Project would not adversely affect salmonids or other prey items, and would decrease contaminants in the Action Area. Thus, the Project will have no effects on marine mammals.

5.5 DIRECT AND INDIRECT EFFECTS ON MARBLED MURRELET

There is no documented marbled murrelet nesting in vicinity of the Project, but murrelets may fly through the Action Area in transit between off-site nesting areas and the waters of Bellingham Bay. The main potential for in-water projects to affect marbled murrelets is through impact pile driving in the vicinity of a foraging individual. Since the Project includes no in-water pile driving, this is not a concern for the Project.

It is possible that these birds would avoid flying directly over the Action Area during upland pile driving or construction. The machinery that would be used for construction would generate levels of noise similar to the existing uses of Bellingham Bay. Should they be present, construction activities would not affect their ability to forage within Bellingham Bay or vicinity. Thus, the Project is expected to have negligible effects on marbled murrelet.

5.6 EFFECTS ON PUGET SOUND CHINOOK SALMON DESIGNATED CRITICAL HABITAT

Based on the designations provided for nearshore marine zones, all of the Action Area below EHW is considered Puget Sound chinook salmon critical habitat. NMFS has identified six primary constituent elements (PCEs) (i.e., physical and biological features) essential to the conservation of chinook salmon (NOAA 2005a). Since the Action Area is located within a nearshore marine area, only PCE 5 (listed below) applies to the Project. Effects of the Project on the different components of PCE 5 of chinook critical habitat are presented in detail below.

5. *Nearshore marine areas free of obstruction and excessive predation with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.*

5.6.1 Obstruction and Excessive Predation

The Project would not change the number of in-water structures associated with the Trestle, as all of the existing piles would continue to be used and no new piles would be driven below MHHW. Any components of the Trestle in need of replacement would essentially be replaced in-kind. The new abutments would be slightly smaller than the existing abutments. Functional shading resulting from the Trestle would essentially remain the same, as the increase in the Trestle's footprint would be offset by the use of grated decking. The area of grated decking (3,122 sq ft) proposed would be approximately three times the size of the increased footprint area (1,033 sq ft). Thus, no changes related to obstruction or predation are expected to occur.

5.6.2 Water Quality and Quantity

The effects of the Project on water quality are addressed in Section 5.2.2 of this document. Removal of creosote-treated timber members would improve water quality in the Action Area. As discussed, no elevated turbidity is expected. There would be a small risk of spills of hazardous materials associated with construction equipment (barge and barge-mounted machinery). This would be minimized through the use of BMPs. There will be no effect from the Project on stormwater within the Action Area. Thus, the Project is not expected to affect water quality. Water quantity would not be affected by construction activities.

5.6.3 Forage

During Project construction, construction noise and disturbance could cause any chinook salmon present to move out of the area to forage. However, any displacement would be temporary. Further, there is ample foraging area in the immediate vicinity, and any temporary displacement would not be expected to affect chinook salmon foraging success. Adherence to applicable in-water work windows would ensure that the Project occurs when juvenile chinook would be absent or present in very low numbers.

5.6.4 Natural Cover

The only natural cover in the vicinity would be eelgrass and macroalgae under and waterward of the existing walkway. No impacts to eelgrass or macroalgae are anticipated. As discussed in Section 5.3.2, potential impacts to eelgrass would be during construction through operations of the barge, which would stage above or near the eelgrass bed. The barge would be required to operate under BMPs intended to minimize potential impacts to eelgrass from grounding out or prop wash, and is not expected to adversely affect eelgrass.

Overall, the Project's short-term and long-term effects on chinook salmon critical habitat are expected to be negligible.

5.7 EFFECTS ON COASTAL-PUGET SOUND BULL TROUT DESIGNATED CRITICAL HABITAT

USFWS (2005) identified eight PCEs (i.e., physical and biological features) essential to the conservation of bull trout using the best scientific and commercial data available. Most of these elements are focused on freshwater systems and the impacts that may occur there. Because the Project will take place in the nearshore marine environment, only four of the eight PCEs (numbers 1, 6, 7 and 8) apply to this Project.

1. *Water temperatures ranging from 36 to 59 ºF (2 to 15 ºC), with adequate thermal refugia available for temperatures at the upper end of this range*

6. *Migratory corridors with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and foraging habitats*

7. *An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish*

8. *Permanent water of sufficient quantity and quality such that normal reproduction, growth, and survival are not inhibited*

Based on the designations provided for nearshore marine areas, most or all of the Action Area below MHHW is considered critical habitat. Effects of the Project on the applicable PCEs of bull trout critical habitat are presented in the text below.

5.7.1 Primary Constituent Element #1: Water Temperature

The Project is located within the tidally influenced Bellingham Bay and therefore, water temperature at the site is influenced both by the saline Puget Sound and freshwater input from surrounding rivers and creeks. Neither construction activities nor the as-built condition of the Project will change the input of water at the site or in other ways alter water temperature in the short or long term. Therefore, the Project will have no effect on this PCE.

5.7.2 Primary Constituent Element #6: Migratory Corridors

Anadromous bull trout are presumed to be present in the Nooksack River, approximately 5 miles north of the Project Area. Bull trout using the greater Puget Sound critical habitat may migrate through the Project Area.

Construction activities will cause a minor, temporary disturbance in the Action Area through construction activity and noise; however, they would be limited to work windows established for the protection of bull trout. In the unlikely event that bull trout are present within the Action Area during construction, any avoidance due to sound impacts is not expected to impede migration. No long-term changes in migratory corridors are anticipated. Thus, the Project could have a temporary, minimal effect on this PCE, though this effect would be negligible.

5.7.3 Primary Constituent Element #7: An Abundant Food Base

Sub-adult and adult migratory bull trout are opportunistic feeders and generally consume large

quantities of small fish in marine and freshwater environments (USFWS 2005). Small forage fish may avoid the Project Area during construction activities, but their avoidance will be temporary and is not expected to significantly affect foraging abilities of bull trout. In the long term, the Project is not expected to affect the availability of bull trout prey items along the shore of Bellingham Bay or in the greater Puget Sound. The Project would likely benefit surf smelt spawning. Therefore, the Project is not expected to adversely affect, and may benefit, this PCE.

5.7.4 Primary Constituent Element #8: Permanent Water of Sufficient Quantity and Quality

As described in Section 5.2.2, any turbidity generated by the Project is expected to be very minor. However, there is a minor risk of spills of hazardous materials into the water with the use of construction machinery over the water. This risk would be minimized through adherence to BMPs. Long-term adverse impacts on water quality are not expected to result from the Project. Water quantity will not be affected by construction activities.

Overall, the Project's effects on bull trout critical habitat are expected to be negligible.

5.8 EFFECTS ON SOUTHERN RESIDENT KILLER WHALE DESIGNATED CRITICAL HABITAT

On November 29, 2006, NMFS designated critical habitat for southern resident killer whale (NOAA 2006b). NMFS identified three PCEs (i.e., physical and biological features) essential to the conservation of southern resident killer whale (NOAA 2006b).

1. *Water quality to support growth and development;*

2. *Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth;*

3. *Passage conditions to allow for migration, resting and foraging;*

Southern Resident killer whale critical habitat has been defined to begin at -20 ft relative to Extreme High Water (EHW) (NOAA 2006b). In Bellingham Bay, this would be approximately -9.6 ft MLLW. Thus, the actual Trestle is outside Southern Resident killer whale critical habitat, since the waterward side of the Trestle is approximately -5 ft MLLW, which would correspond to approximately -16 ft relative to EHW. However, a portion of the Action Area waterward of the walkway would be within Southern Resident killer whale critical habitat. Effects of the Project on the three PCEs are presented in detail below. Only the impacts that could potentially extend into Southern Resident killer whale critical habitat are assessed.

5.8.1 Primary Constituent Element #1: Water Quality

The effects of the Project on water quality are addressed in Section 5.2.2 of this document. In the short-term, there is a small risk of spills of hazardous material associated with construction equipment, which could then extend into Southern Resident killer whale critical habitat or affect Southern Resident killer whale prey resources. This risk is negligible and would be minimized through the use of BMPs. In the long term, there would be no change in water quality in the Action Area.

5.8.2 Primary Constituent Element #2: Prey Quantity, Quality, and Availability

Southern Resident killer whale prey mainly on salmon (NOAA 2006b). Impacts of the Project on salmonids were discussed in 5.2.1 and 5.3.1 of this BE. It was concluded that potential short-term and long-term impacts of the Project would be negligible. The risk of direct and indirect effects on juvenile salmonids would be minimal because of the nature of the work and because all in-water work would only occur during the approved in-water work window. Salmonid prey resources in the Action Area (eelgrass beds, forge fish spawning beds) are also not likely to be adversely affected by the Project with the use of BMPs (see Section 6.2). No long-term impacts to eelgrass beds or forage fish spawning beds are expected. Eelgrass may benefit over the long-term through the use of grated decking and the resulting narrower shadow.

Section 5.6 evaluates the effects of the Project on Puget Sound chinook salmon critical habitat and concludes that the Project would not result in any long-term impacts. Therefore, Southern Resident killer whale prey quantity, quality and availability are not anticipated to be compromised. As a result, killer whale growth, reproduction, and development, as well as growth of the populations (PCE 2) are not likely to be affected by short- or long-term Project impacts. Based on these conclusions, impacts of this Project on PCE 2 are considered negligible.

5.8.3 Primary Constituent Element #3: Passage Conditions

This Project has no mechanism for long-term impacts to Southern Resident killer whale passage conditions. The walkway itself is located landward of Southern Resident killer whale critical habitat, and the Project would not significantly change any in-water aspect of the structure. Based on these conclusions, the Project would not impact PCE 3.

Overall, the Project is not expected to affect Southern Resident killer whale critical habitat.

5.9 INTERDEPENDENT AND INTERRELATED ACTIONS

This is a localized, outcome-focused Project designed to improve the aging and narrow walkway. Site use in this public park area of Bellingham Bay would remain the same as before the Project. Therefore, there are no substantial interrelated or interdependent actions, or associated effects, to consider for the listed species or designated critical habitat.

5.10 CUMULATIVE IMPACTS

Cumulative impacts assess the potential effects of other future state or private actions that are reasonably certain to occur. The City anticipates the proposal of an overwater walkway from Boulevard Park to Cornwall Landfill area, approximately 0.2 mile north of the Pattle Point Project Area. This project is still in the design phase, but it is anticipated that the project would involve constructing an approximately 2,000-ft long by 14-ft wide pile-supported walkway. This project is anticipated for construction in 2012-2013, pending receipt of permits. The project would undergo state and federal permitting processes and ESA consultation, and would be subject to all applicable regulations including avoiding and minimizing impacts.

6 CONSERVATION MEASURES

6.1 REGULATORY CONDITIONS

Federal, state, and local permits contain conditions that are intended to reduce the potential for short-term effects from in-water construction activities and long-term effects from habitat change. These provisions comprise an extensive list of conservation measures that are applied to projects in or near marine and estuarine waters. The following are permit conditions typical of projects in nearshore marine areas such as Bellingham Bay, and are conservation measures for the Project:

- Timing restrictions specifying that in-water work must occur when juvenile salmonids are absent or present in very low numbers would be strictly observed. Additional timing restrictions are established for the protection of forage fish. All timing restrictions that may be established by WDFW, the Corps, NMFS, or USFWS would be strictly observed.
- Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters. Proper security shall also be maintained to prevent vandalism.
- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including:
    - In the event of a spill, containment and cleanup efforts will begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup will include proper disposal of any spilled material and used cleanup material.
    - The cause of the spill shall be assessed and appropriate action will be taken to prevent further incidents or environmental damage.
- Spills and/or conditions resulting in distressed or dying fish shall be reported immediately to DOE's Northwest Regional Spill Response Office at (425) 649-7000 (a 24-hour phone number).

6.2 IMPACT AVOIDANCE AND MINIMIZATION

BMPs are employed to reduce the potential for construction-related impacts on species and habitats. In addition to the regulatory considerations above, the following BMPs and conservation measures have been incorporated into the Project design and/or would be used during construction to minimize Project impacts:

- All creosote-treated timber cross-bracing (66 20-ft long boards) would be replaced with ACZA-treated timber boards.
- Four creosote-treated timber piles would be cut 2-ft below the mudline and covered with coarse sand and gravel. This would result in an expansion of shaded surf smelt spawning substrate in an area where spawning has been documented.
- Replacement of abutments and placement of fill would be conducted from the upland during tidal exposure if possible.

- During trestle superstructure resurfacing, a fabric will be placed below the superstructure to catch any debris.
- The barge would not be anchored in eelgrass beds.
- Care would be taken by the barge operator to avoid grounding out and minimize propeller wash.
- The contractor will have a spill containment kit, including oil-absorbent materials, on site to be used in the event of a spill or if any oil product is observed in the water.
- The contractor is responsible for the preparation of a SPCC plan to be used for the duration of the Project. The SPCC plan will: 1) identify construction planning elements and recognize potential spill sources in the Action Area, 2) outline the response actions in the event of a spill or release and identify notification and reporting procedures, 3) outline contractor management elements such as personal responsibilities, site security and inspections, and training, and 4) outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on-site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. Hazardous materials include but are not limited to gasoline, oils, and chemicals, and are further defined in RCW 70.105.010.

7 DETERMINATION OF EFFECTS

7.1 THREATENED AND ENDANGERED SPECIES

7.1.1 Puget Sound Chinook Salmon, Coastal-Puget Sound Bull Trout and Puget Sound Steelhead Trout

Effects of the Project on chinook, bull trout, and steelhead trout were assessed in Sections 5.2 and 5.3. It was determined that potential impacts that could arise from the Project would have negligible short- or long-term effects on salmonids. Based on this analysis, it is determined that the Project ***may affect, but is not likely to adversely affect*** Puget Sound chinook salmon, Coastal-Puget Sound bull trout and Puget Sound steelhead.

7.1.2 Southern Resident Killer Whale

Potential impacts on Southern Resident killer whale were discussed in Section 5.4. Based on NOAA's guidance for assessing impacts on marine mammal species, it was concluded that the Project has no mechanism for impacts on Southern Resident killer whale. Further, it was concluded that, due to the lack of reported sightings of Southern Resident killer whales in the vicinity of the Action Area, the species could be described as "not present" in the Action Area. Based on these analyses, it is concluded that this Project will have ***no effect*** on Southern Resident killer whale.

7.1.3 Steller Sea Lion

Potential impacts on Steller sea lion were discussed in Section 5.4. Based on the distance from the Action Area and the nearest Steller sea lion haulout, Steller sea lions can be described as "not present" in the Action Area. Further, it was determined that, if present, the Project's potential impacts would not affect Steller sea lions. Based on the analysis in this BE, the Project will have ***no effect*** on Steller sea lion.

7.1.4 Humpback Whale

Potential impacts on humpback whale were discussed in Section 5.4. It was concluded that the Project has no mechanism for impacts. Further, it was concluded that, due to the lack of reported sightings of humpback whales in the vicinity of the Action Area, the species could be described as "not present" in the Action Area. Based on these analyses, it is concluded that this Project will have ***no effect*** on humpback whale.

7.1.5 Leatherback Sea Turtle

As mentioned in Section 4.1.7, there are no recorded sightings of leatherback sea turtle in Puget Sound. Since the species is not expected to be present, the Project would have ***no effect*** on leatherback sea turtle.

7.1.6 Marbled Murrelet

Potential direct effects on marbled murrelet are addressed in Section 5.5. The Project involves no

in-water pile driving or other mechanisms by which marbled murrelet could be injured. Marbled murrelets may occur in the Action Area during Project construction, but the Project would have negligible effects on them. If they are present, they may avoid flying directly overhead of the Action Area during construction or upland pile driving, but this would not adversely affect foraging in Bellingham Bay. Marbled murrelet nest sites do not occur in or near the Action Area. Based on the analysis in this BE, the Project ***may affect but is not likely to adversely affect*** marbled murrelet.

7.2 DESIGNATED CRITICAL HABITAT

7.2.1 Puget Sound Chinook Salmon Designated Critical Habitat

Effects of the Project were considered for the one applicable PCE of Puget Sound chinook salmon critical habitat: PCE 5 nearshore marine areas. See Section 5.6 for an analysis of the effects of the Project on this PCE. Based on that analysis, it is concluded that this Project ***may affect, but is not likely to adversely affect*** Puget Sound chinook salmon designated critical habitat.

7.2.2 Coastal-Puget Sound Bull Trout Designated Critical Habitat

Effects of the Project were considered for four PCEs of Coastal-Puget Sound bull trout critical habitat: water temperature, migratory corridors, an abundant food base, and permanent water of sufficient quality. See Section 5.7 for an analysis of the effects of the Project on these PCEs. Based on that analysis, it is concluded that the Project ***may affect, but is not likely to adversely affect*** Coastal-Puget Sound bull trout designated critical habitat.

7.2.3 Southern Resident Killer Whale Designated Critical Habitat

Effects of the Project on designated southern resident killer whale critical habitat were analyzed in Section 5.8. The analysis focused on the potential impacts on these PCEs by Project elements. It was determined that no adverse effects on these PCEs are anticipated. For these reasons, it is concluded that the Project will have ***no effect*** on Southern Resident killer whale critical habitat.

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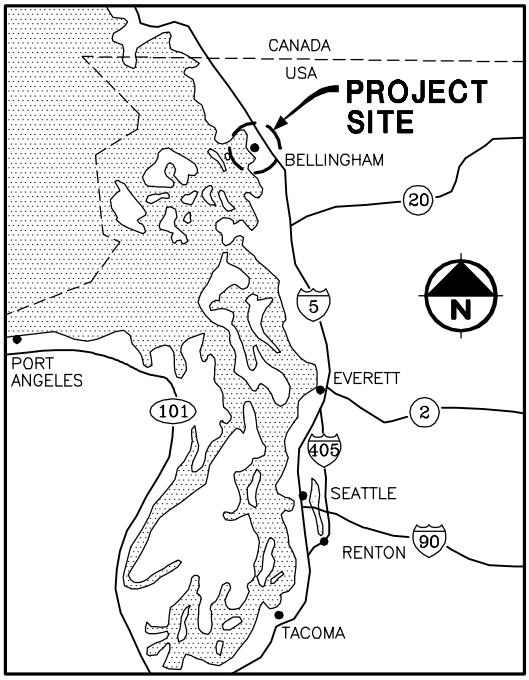
PATTLE POINT TRESTLE RENOVATION

SHEETS

CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT

BOULEVARD PARK
PATTLE POINT TRESTLE RENOVATION



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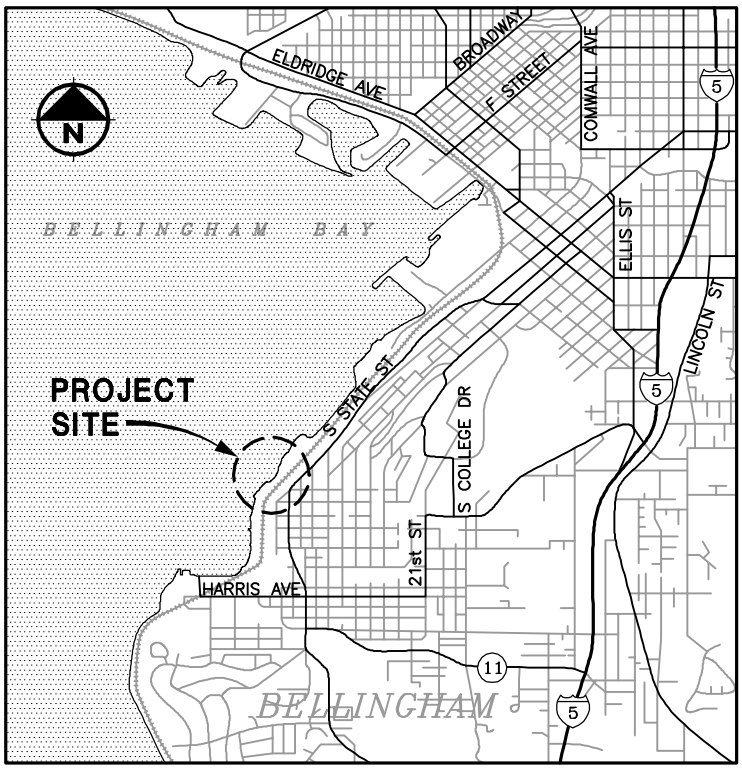

VICINITY MAP

DRAFT

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY

DATUM: MLLW = 0.0'
LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:
1. SEE ATTACHED LIST
2.
3.

CITY OF BELLINGHAM
PATTLE POINT

NAME: CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT
3424 MERIDIAN
BELLINGHAM, WA 98225

ADDRESS: BOULEVARD PARK
470 BAYVIEW RD BOULEVARD PARK
BELLINGHAM, WA 98225

Reid Middleton
728 134th Street SW · Suite 200
Everett, Washington 98204
Ph: 425 741-3800

IN: BELLINGHAM BAY
AT: BOULEVARD PARK
COUNTY OF: WHATCOM
APPLICATION BY: CITY OF BELLINGHAM

SHEET 1 OF 8 DATE: JUNE 2009

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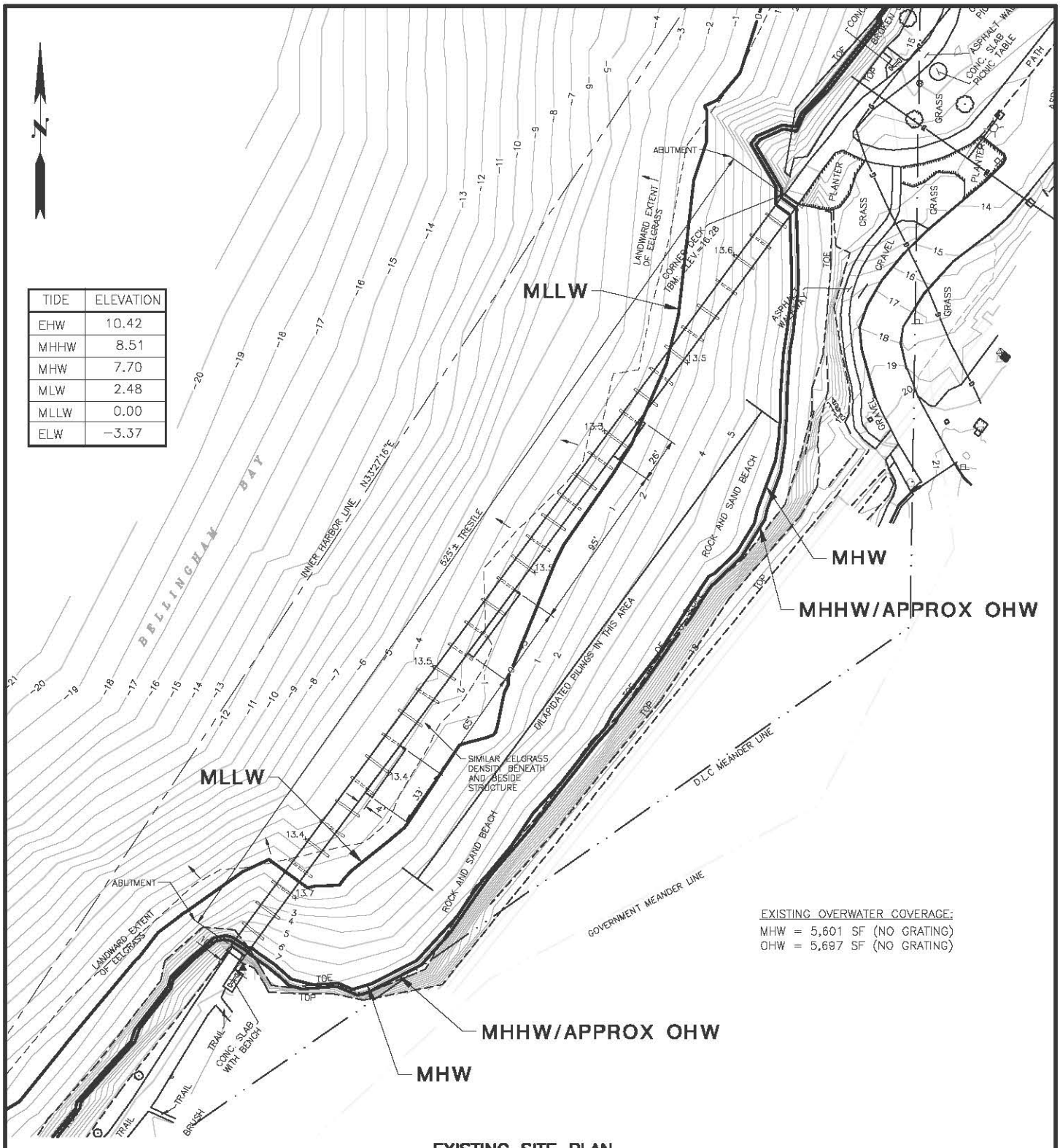

EXISTING SITE PLAN

SCALE: 1"=80'

DRAFT

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:
1. CITY OF BELLINGHAM
2. WHATCOM CO
3. WA DNR
4. BNSF RAILWAY

CITY OF BELLINGHAM PATTLE POINT TRESTLE RENOVATION

NAME: CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT
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SHEET 2 OF 8 DATE: JUNE 2009

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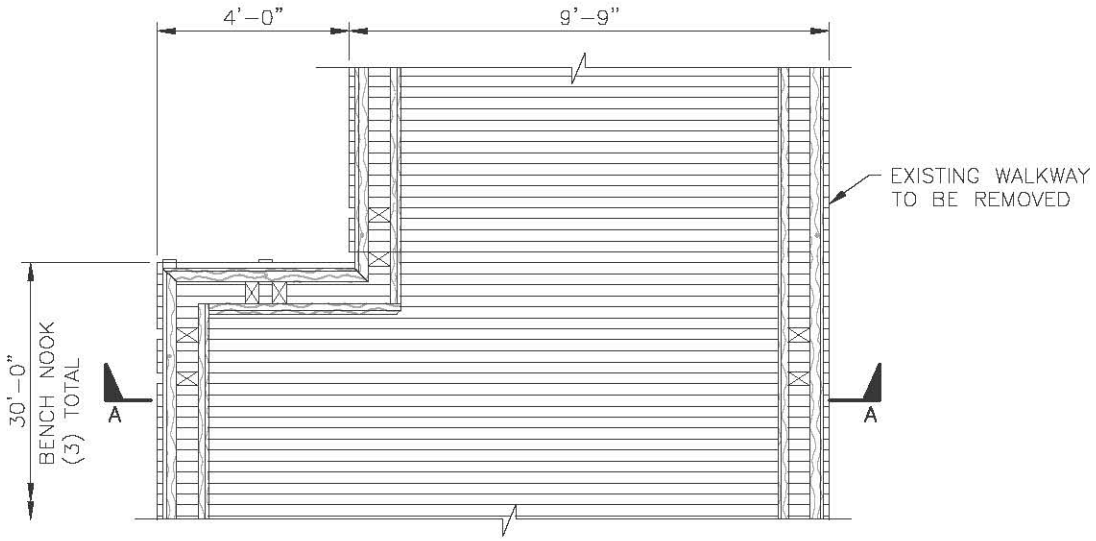

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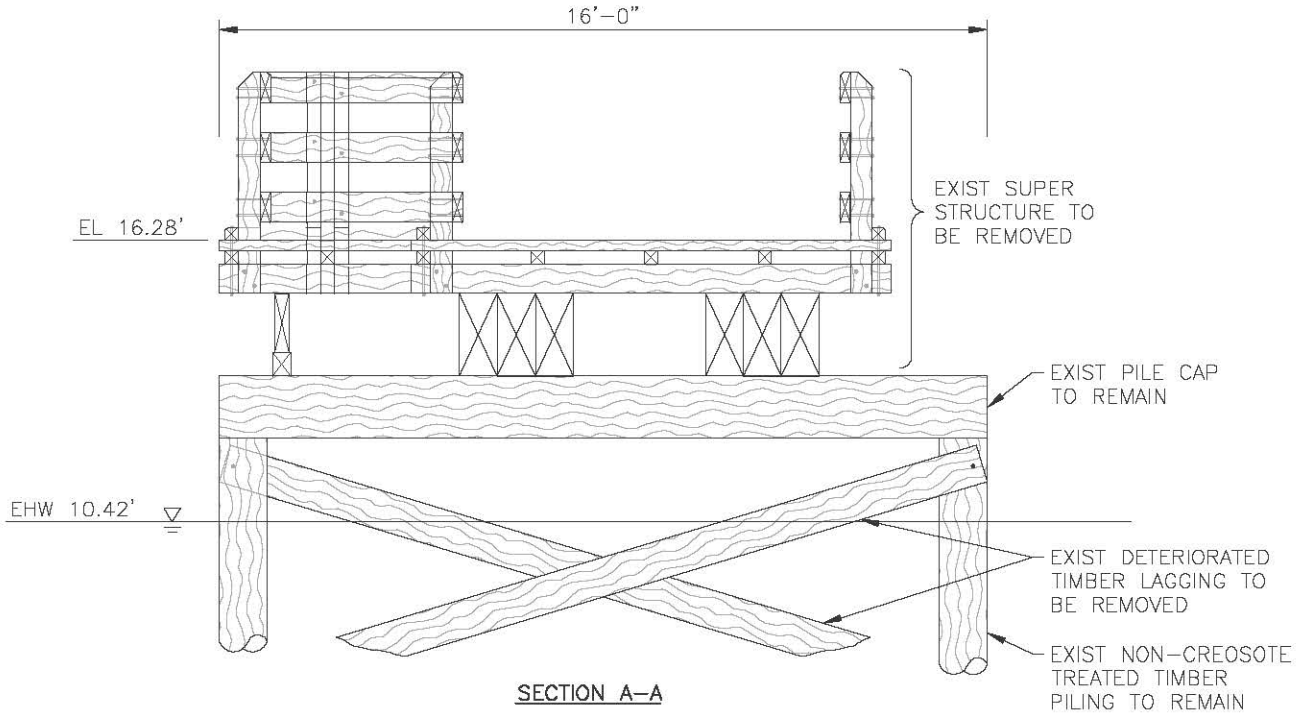

SECTION A-A

EXISTING TIMBER PIER

SCALE: 1/4"=1'-0"

DRAFT

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY

DATUM: MLLW = 0.0'
LATITUDE: 48° 43.80'
LONGITUDE: -122° 30.20'

ADJACENT PROPERTY OWNERS:
1. SEE ATTACHED LIST
2.
3.

CITY OF BELLINGHAM
PATTLE POINT

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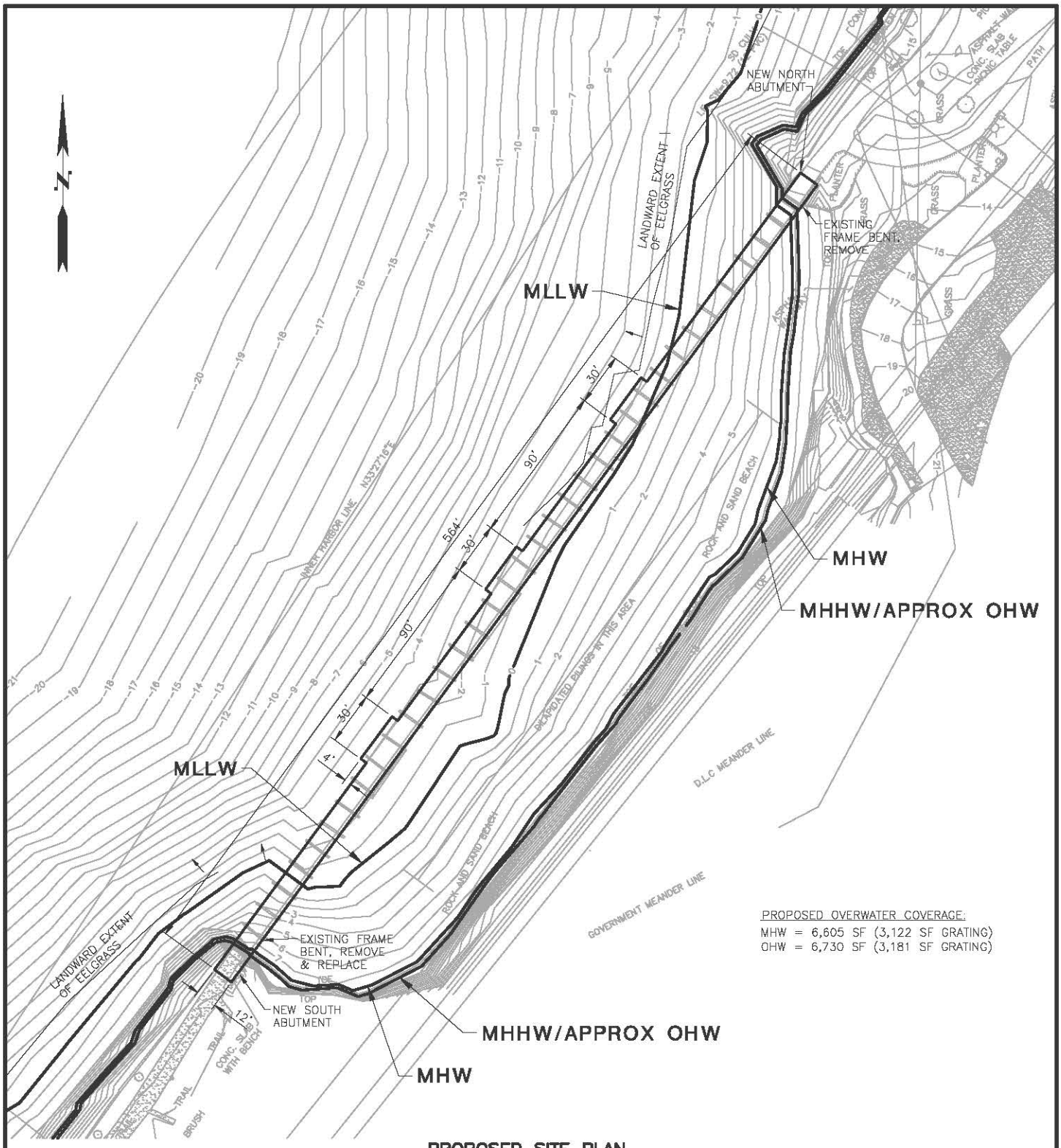

PROPOSED SITE PLAN

SCALE: 1"=80'

DRAFT

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:
1. CITY OF BELLINGHAM
2. WHATCOM CO
3. WA DNR
4. BNSF RAILWAY

CITY OF BELLINGHAM PATTLE POINT TRESTLE RENOVATION

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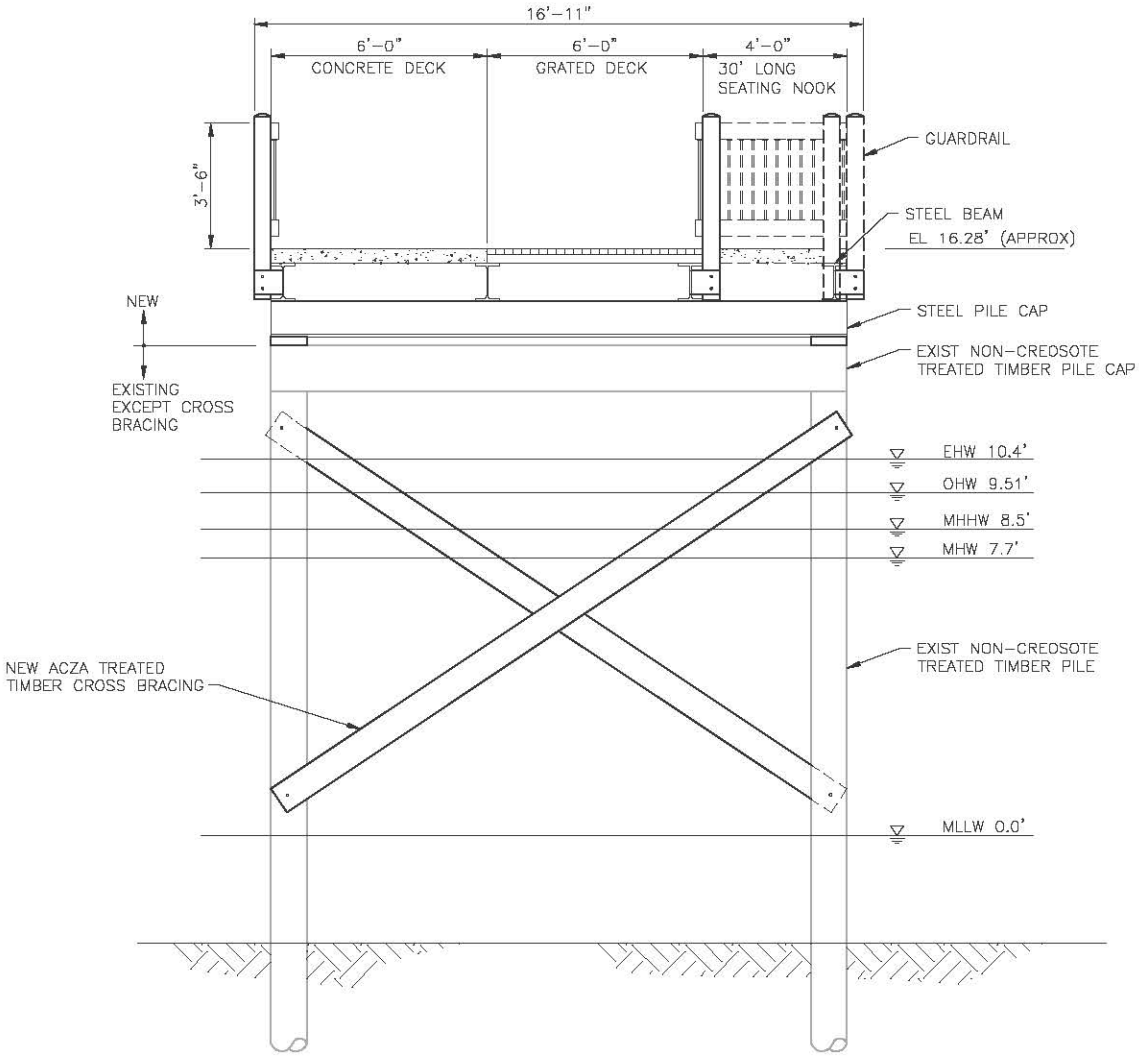

PROPOSED TRESTLE SECTION

SCALE: 3/16"=1'-0"

DRAFT

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

ADJACENT PROPERTY OWNERS:
1. CITY OF BELLINGHAM
2. WHATCOM CO
3. WA DNR
4. BNSF RAILWAY

CITY OF BELLINGHAM
PATTLE POINT
TRESTLE RENOVATION

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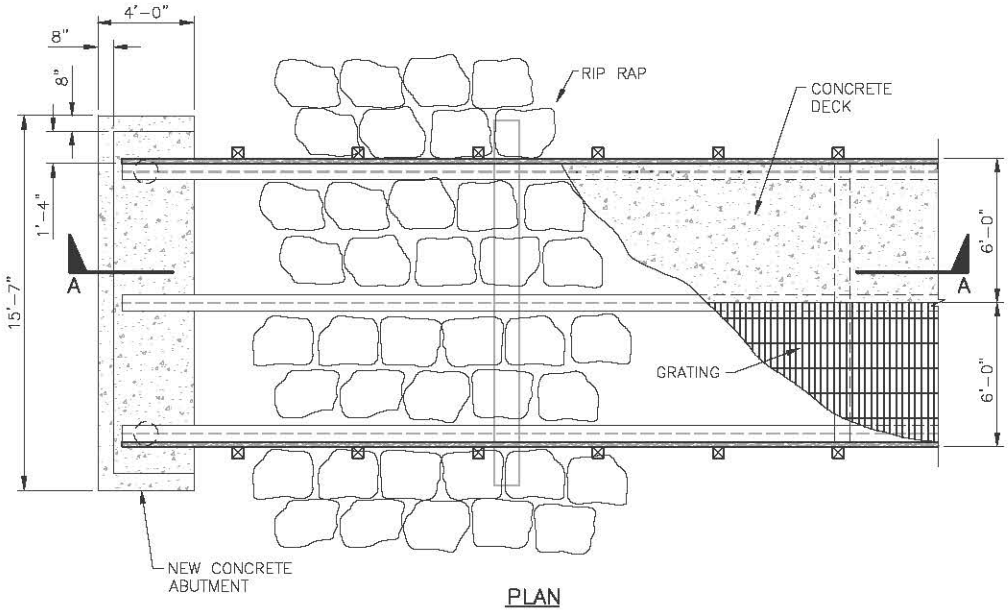

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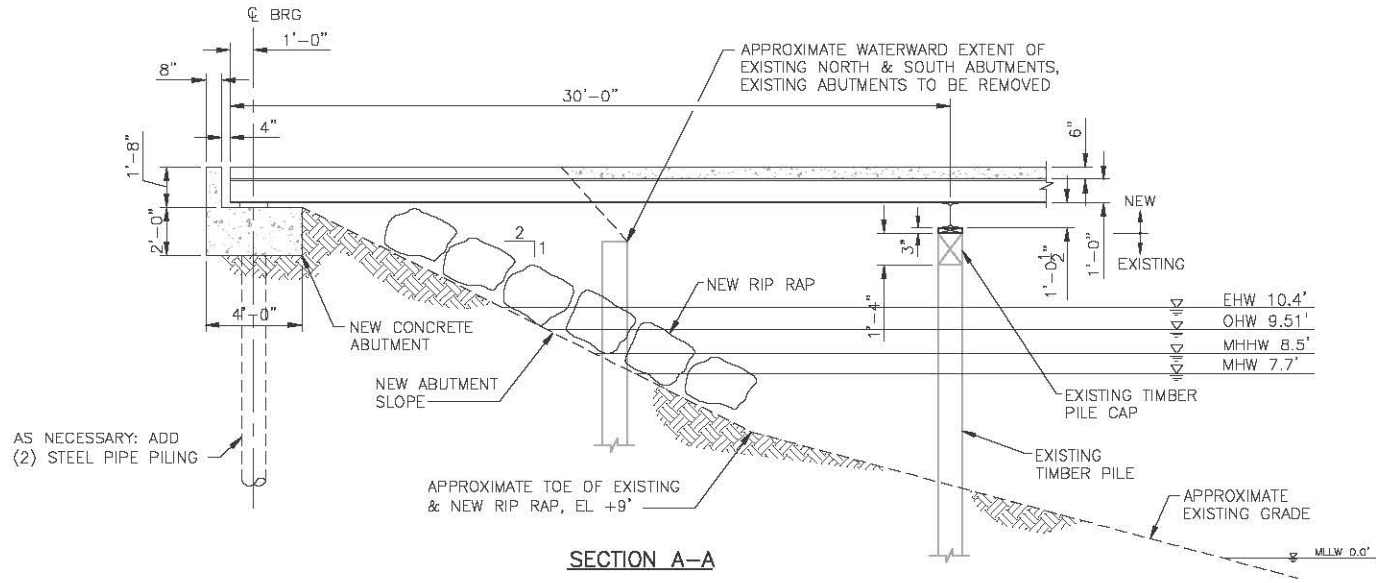

SECTION A–A

NORTH ABUTMENT:

EXCAVATION: 18.1 CY (MHHW)
23.4 CY (OHW)
66.9 CY (TOTAL)
386 SF (TOTAL)

FILL: 17.8 CY (MHHW)
21.6 CY (OHW)
38.0 CY (TOTAL)
386 SF (TOTAL)

SOUTH ABUTMENT:

EXCAVATION: 26.0 CY (MHHW)
33.3 CY (OHW)
79.9 CY (TOTAL)
336 SF (TOTAL)

FILL: 25.7 CY (MHHW)
31.6 CY (OHW)
53.8 CY (TOTAL)
336 SF (TOTAL)

PROPOSED NORTH & SOUTH CONCRETE ABUTMENTS

SCALE: 1/8"=1'-0"

DRAFT

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
LONGITUDE: −122° 30.20'

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3. WA DNR
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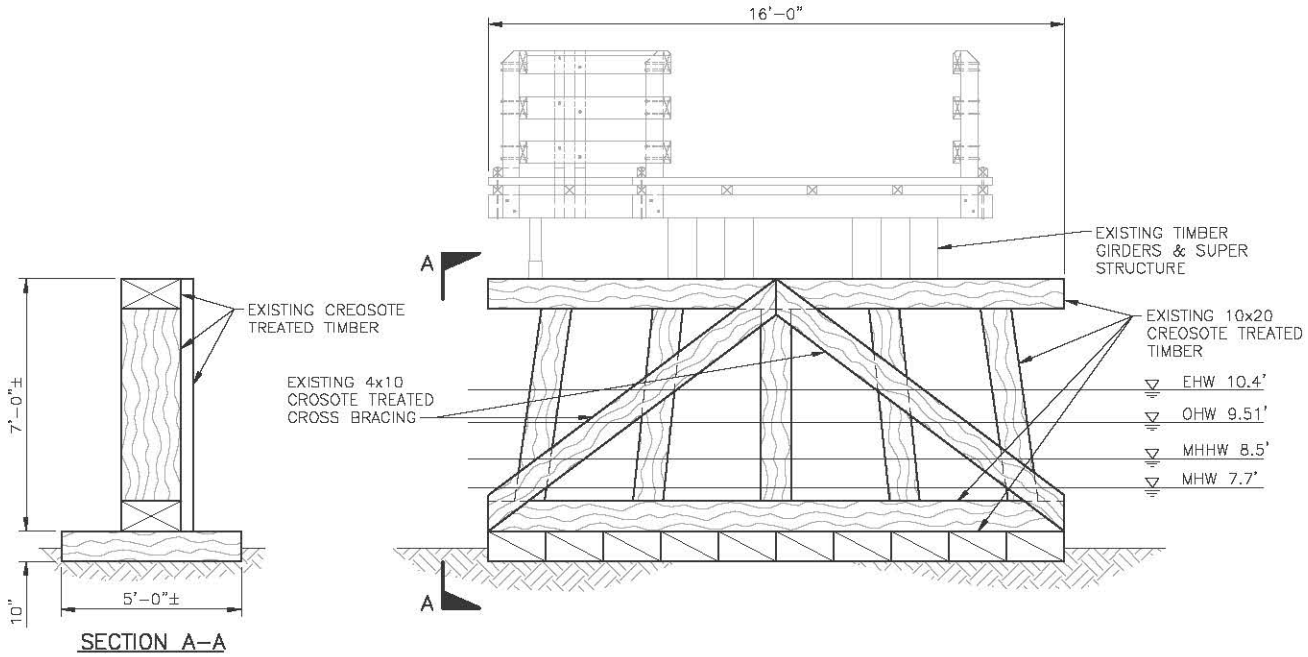
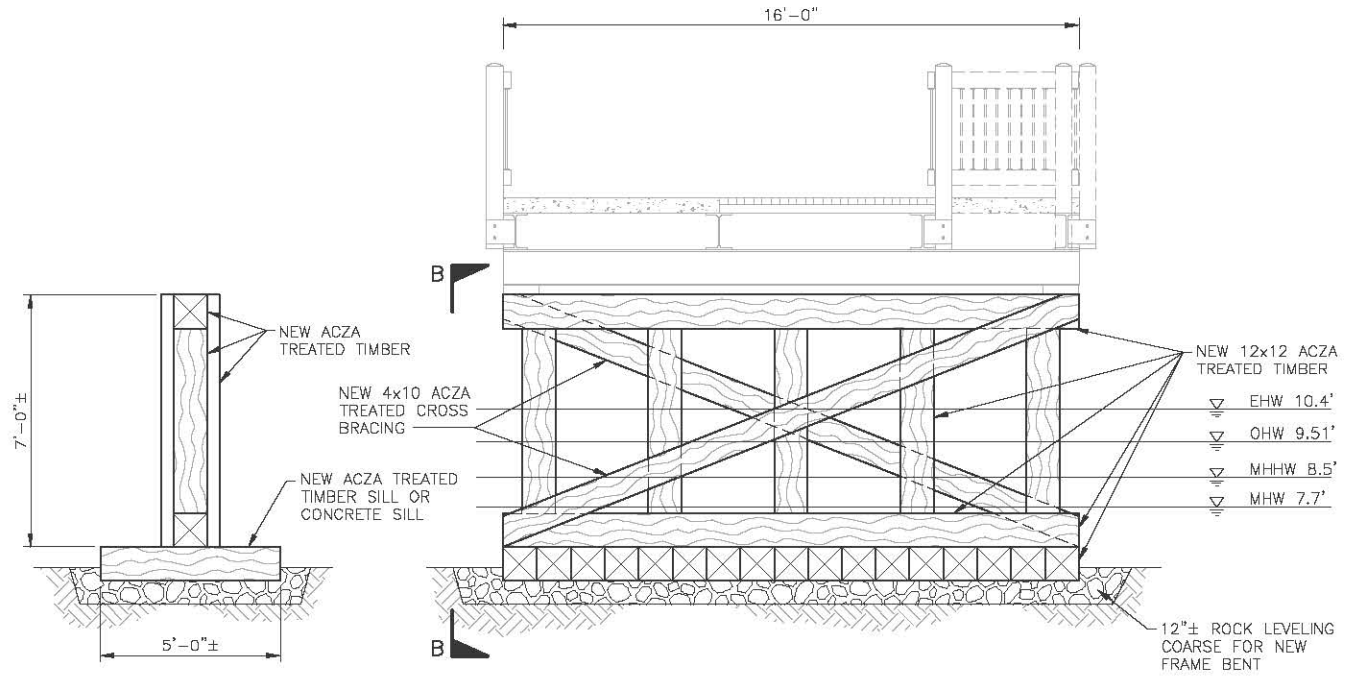


EXISTING SOUTH END FRAME BENT TO BE REMOVED

SCALE: 3/16"=1'-0"



PROPOSED SOUTH END FRAME BENT

SCALE: 3/16"=1'-0"

DRAFT

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
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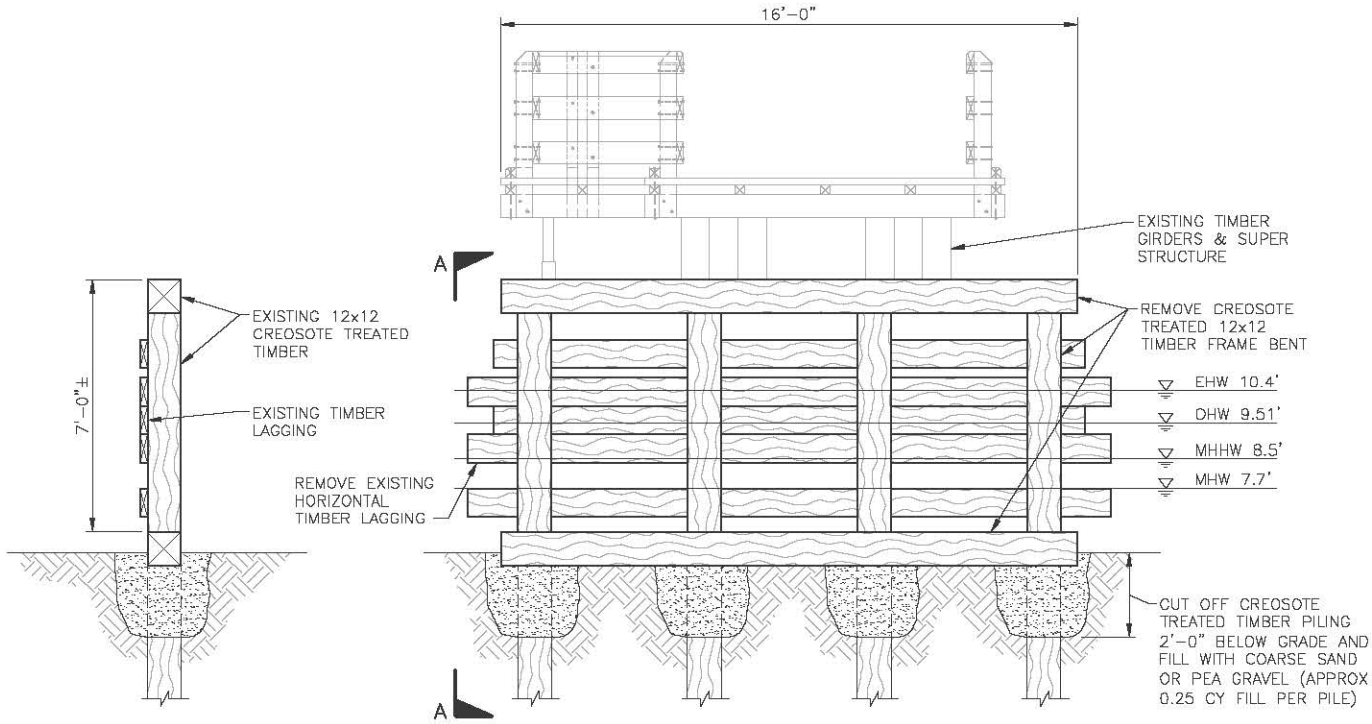

SECTION A–A

EXISTING NORTH END FRAME BENT TO BE REMOVED

SCALE: 3/16"=1'-0"

DRAFT

PURPOSE: RENOVATE THE EXISTING PATTLE POINT TRESTLE WALKWAY
DATUM: MLLW = 0.0'

LATITUDE: 48° 43.80'
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APPLICATION BY: CITY OF BELLINGHAM

SHEET 8 OF 8 DATE: JUNE 2009

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PATTLE POINT TRESTLE RENOVATION

APPENDIX A: ESSENTIAL FISH HABITAT ASSESSMENT

PATTLE POINT OVERWATER WALKWAY UPGRADES

ESSENTIAL FISH HABITAT ASSESSMENT

PREPARED FOR:

REID MIDDLETON
728 134TH STREET SW, SUITE 200
EVERETT, WASHINGTON 98204

PREPARED BY:

GRETTE ASSOCIATES LLC
151 SOUTH WORTHEN STREET, SUITE 101
WENATCHEE, WASHINGTON 98801
(509) 663-6300

2102 NORTH 30TH STREET, SUITE A
TACOMA, WASHINGTON 98403
(253) 573-9300

JULY 9, 2009

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

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1 INTRODUCTION

Pursuant to the Magnuson-Stevens Fishery Conservation Act (MSFCA) and the 1996 Sustainable Fisheries Act (SFA), an Essential Fish Habitat (EFH) evaluation of impacts is necessary for the actions that are associated with the Pattle Point Trestle Renovation Project (the "Project"). A complete description of this Project, including tables and figures, can be found in the main document to which this appendix is attached.

EFH is defined by the MSFCMA in 50 CFR 600.905-930 as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The waters of Puget Sound are designated as EFH for various groundfish, coastal pelagic and salmonid species (NMFS 1998; PFMC 1998a, 1998b, 1999). EFH and life history stages of these guilds potentially found within the Project's Action Area are listed in Table 1 (NMFS 1998; Stadler pers. comm. 2007).

Table 1. Species of fishes and life history stages with designated EFH in the waters of Puget Sound (further specified for the Project's Action Area)[1].

Guild / Common Name	Scientific Name	Adults	Juveniles	Larvae	Eggs
Groundfish[1]					
Big skate	*Raja binoculata*	x	x		x
Black rockfish	*Sebastes melanops*	x	x		
Blue rockfish	*Sebastes mystinus*	x	x	x	
Bocaccio	*Sebastes paucispinis*	x	x	x	
Brown rockfish	*Sebastes auriculatus*	x	x		
Butter sole	*Isopsetta isolepis*	x	x	x	x
Cabezon	*Scorpaenichthys marmoratus*	x	x	x	x
China rockfish	*Sebastes nebulosus*	x	x		
Copper rockfish	*Sebastes caurinus*	x	x		
Dover sole	*Microstomus pacificus*	x	x	x	x
English sole	*Parophrys vetulus*	x	x		x
Flathead sole	*Hippoglossoides elassodon*	x	x		
Green striped rockfish	*Sebastes elongatus*	x	x	x	
Kelp greenling	*Hexagrammos decagrammus*	x	x	x	x
Lingcod	*Ophiodon elongatus*		x	x	
Longnose skate	*Raja rhina*	x	x		x
Pacific cod	*Gadus macrocephalus*	x			
Pacific hake	*Merluccius productus*	x	x		
Pacific sanddab	*Citharichthys sordidus*	x	x	x	x
Petrale sole	*Eopsetta jordani*	x	x		
Quillback rockfish	*Sebastes maliger*	x	x	x	
Redstripe rockfish	*Sebastes proriger*	x	x	x	
Rex sole	*Glyptocephalus zachirus*	x	x		
Rock sole	*Lepidopsetta bilineata*	x	x	x	x
Sablefish	*Anoplopoma fimbria*	x	x	x	x
Sand sole	*Psettichthys melanostictus*	x	x	x	x

Guild / Common Name	Scientific Name	Adults	Juveniles	Larvae	Eggs
Spiny dogfish	*Squalus acanthias*	x	x		
Splitnose rockfish	*Sebastes diploproa*	x	x	x	
Spotted ratfish	*Hydrolagus colliei*	x	x		x
Starry flounder	*Platichthys stellatus*	x	x	x	x
Tiger rockfish	*Sebastes nigrocinctus*	x	x	x	
Widow rockfish	*Sebastes entomelas*	x	x	x	
Yelloweye rockfish	*Sebastes ruberrimus*	x	x	x	
Yellowtail rockfish	*Sebastes flavidus*	x	x		
Pacific Salmon[2]					
Chinook	*Oncorhynchus tshawytscha*	x	x		
Coho	*Oncorhynchus kisutch*	x	x		
Puget Sound pink	*Oncorhynchus gorbuscha*	x	x		
Coastal Pelagic[2]					
Northern anchovy	*Engraulis mordax*	x	x	x	x
Pacific sardine	*Sardinops sagax caerulea*	x			
Pacific mackeral	*Scomber japonicus*	x			
Market squid	*Loligo opalescens*	x			

[1] Based on information from EFH database provided by J. Stadler (NMFS), January 16, 2007. Those habitat features not used for generation of this groundfish species-specific list include hard bottom (with the exception of cobble and/or gravel), vegetated bottom, and tide pools.
[2] Based on previously published Puget Sound EFH lists from NMFS used in EFH assessments through 2006.

2 ANALYSIS OF EFFECTS ON EFH

The assessment of potential impacts from the proposed Project to the species' EFH is based on information in the above-referenced documents (NMFS 1998; PFMC 1999). The specific elements of the Project that could potentially impact groundfish, coastal pelagic and salmonid species EFH, impact mechanisms, and conservation measures that avoid and minimize impacts are identified in Table 2.

Table 2. Affected EFH by Project elements and proposed conservation measures.

Project Element	Affected EFH	Impact Mechanism	Applicable Conservation Measures (see list below)
Operation of barge-mounted equipment	Groundfish, pelagic and salmonid EFH (Waters)	Trestle renovation would involve the operation of barge-mounted equipment, which would generate minor noise. It is not anticipated that this noise would reach levels that would adversely affect these fish species. See Section 5.2.1 of the BE for a more thorough description of this action.	1, 2, 3, 4, 5 and 6
	Groundfish, pelagic and salmonid EFH (Waters)	Barges would operate above or near existing eelgrass patches. There is potential for eelgrass to be affected if the barge grounds out or runs the propeller at very high levels.	7
Replacement of trestle abutments	Groundfish, pelagic and salmonid EFH (Substrate)	Replacement of both trestle shore abutments would involve some minor substrate disturbance, which could generate minor turbidity. Replacement would occur in-kind, with a slight reduction in overall fill volume. See Sections 5.2.2 and 5.3.3 of the BE for a more thorough description of this action.	1, 2, 3, 4, 5 and 6
Removal or replacement of damaged timber members	Groundfish, pelagic and salmonid EFH (Waters)	Several creosote-treated timber members will be removed (northern-most timber bent) or replaced with AZCA-treated timber members (southern-most timber bent and sill timbers, all cross-bracing, select pile caps). Four timber piles associated with the northern abutment would be cut two feet below the mudline and covered with clean fill.	1, 2, 3, 4, 5, 6 and 8
Replacing the trestle decking surface	Groundfish, pelagic and salmonid EFH (Waters)	The trestle's decking, currently encompassing 5,697 sq ft of shading, would be replaced with a new surface, encompassing 6,730 sq ft. This increased area represents a widening of the decking by 2 ft. (No new piles are required since the existing pile caps are 16 ft wide.)	1, 2 and 9
	Groundfish, pelagic and salmonid EFH (Waters)	Eelgrass is present under the trestle. An increase in the footprint of the shading have the potential to shade out eelgrass.	1, 2 and 9

List of Applicable Conservation Measures

1. Timing restrictions specifying that in-water work must occur when juvenile salmonids are absent or present in very low numbers.
2. Compliance with WDFW HPA conditions.
3. Compliance with the State's standards will ensure that fish and aquatic life will be protected to the extent feasible and practicable.
4. Care will be taken to prevent any petroleum products, chemicals, or other toxic or deleterious materials from entering the water. If a spill were to occur, work would be stopped immediately, steps would be taken to contain the material, and appropriate agency notifications would be made.
5. Implementation of BMPs during construction to ensure that water quality standards and requirements are met, including a Spill Prevention, Control, and Countermeasures (SPCC) plan prepared by the contractor to be used for the duration of the Project.
6. Work would occur in the dry to the extent possible.
7. The barge operator would be required to operate under BMPs designed to avoid grounding out and minimize the use of the propeller in a manner that could affect eelgrass.
8. Compliance with applicable State water quality standards (WAC 173-201A).
9. Approximately 3,181 sq ft of the new trestle surface would be grated decking, which is over three times the area of increased trestle footprint. Overall, with the use of grated decking, shading would remain essentially the same and may decrease due to the reduction of shaded width from 10 ft to 6 ft.

2.1 EFH ASSESSMENT

Pursuant to the MSFCMA and the SFA, an EFH assessment has been completed and concludes that the proposed action ***will not adversely affect*** groundfish, coastal pelagic and salmonid EFH. Based on the scale of the Project and its effects, and the impact avoidance and minimization measures that will be in place, any effects to EFH will be minor, localized and temporary.

2.1.1 Groundfish EFH

The impacts of the Project on groundfish EFH and minimization measures to address them are shown in Table 2. No substantial change in overwater shading would occur. Removal of creosote-treated timber members would improve water quality. Abutment replacement would include minor construction activity/noise and would generate very minor turbidity. If done during tidal inundation, no turbidity would be anticipated. Any turbidity generated would be very minor and short-term. The Project may increase the risk of chemical contamination in the water column caused by unintentional spills of fuel, lubricants or hydraulic fluid. However, spills are not expected to occur. Conservation measures would be implemented to offset this risk (Table 2 above). Overall, the Project ***will not adversely affect*** groundfish EFH.

2.1.2 Coastal Pelagic EFH

The impacts of the Project on coastal pelagic EFH and minimization measures to address them are shown in Table 2. Impacts are expected to be negligible. No substantial change in overwater shading would occur. Replacement of creosote-treated timber members would improve water quality. Abutment replacement would include minor construction activity/noise and would generate very minor turbidity. If done during tidal inundation, no turbidity would be anticipated. Any turbidity generated would be very minor and short-term. The Project may increase the risk of chemical contamination in the water column caused by unintentional spills of fuel, lubricants or hydraulic fluid. However, spills are not expected to occur. Conservation measures would be implemented to offset this risk (Table 2 above). Overall, the Project ***will not adversely affect*** coastal pelagic EFH.

2.1.3 Salmonid EFH

The impacts of the Project on salmonid EFH and minimization measures to address them are shown in Table 2. Impacts are expected to be negligible. Upper intertidal substrate in the northern end of the Project Area would improve through the increase of coarse sand and gravel fill material. No substantial change in overwater shading would occur. Replacement of creosote-treated timber members would improve water quality. Abutment replacement would include minor construction activity/noise and would generate very minor turbidity. If done during tidal inundation, no turbidity would be anticipated. Any turbidity generated would be very minor and short-term. The Project may increase the risk of chemical contamination in the water column caused by unintentional spills of fuel, lubricants or hydraulic fluid. However, spills are not expected to occur. Conservation measures would be implemented to offset this risk (Table 2 above). Overall, the Project ***will not adversely affect*** salmonid EFH.

2.2 CONCLUSIONS AND DETERMINATIONS OF EFH EFFECTS

Based on the analyses in this document, it is expected that implementation of the proposed Project ***will not adversely affect*** EFH for groundfish, coastal pelagic, and salmonid species.

3 REFERENCES CITED

National Marine Fisheries Service (NMFS). 1998. Essential Fish Habitat West Coast Groundfish Appendix. NMFS, Seattle, Washington.

Pacific Fishery Management Council (PFMC). 1998a. The Pacific Coast Groundfish Fishery Management Plan. Pacific Fisheries Management Council, Portland, Oregon.

Pacific Fishery Management Council (PFMC). 1998b. Coastal Pelagics Fishery Management Plan. Pacific Fisheries Management Council, Portland, Oregon.

Pacific Fishery Management Council (PFMC). 1999. Appendix A. Identification and Description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon. PFMC, Portland, Oregon. 146 pgs.

Stadler, J. 2007. Personal communication between Melora Shelton, Grette Associates Biologist and John Stadler, NMFS EFH Coordinator regarding EFH data updates for the Puget Sound region. January 16, 2007.

PATTLE POINT TRESTLE RENOVATION

APPENDIX B: EELGRASS SURVEY

TECHNICAL MEMORANDUM

Prepared for: Reid Middleton Date: July 14, 2008

Prepared by: Grette Associates[LLC] File No.: 404.003

Re: Pattle Point Overwater Walkway Eelgrass Survey

INTRODUCTION

Grette Associates[LLC] was hired by Reid Middleton to conduct an eelgrass survey for the City of Bellingham at the Pattle Point Trestle, immediately south of Boulevard Park, in Bellingham, Washington (Figure 1). The survey was conducted in accordance with the Washington Department of Fish and Wildlife (WDFW) Intermediate Eelgrass/Macroalgae Habitat Survey guidelines, which are designed to determine the presence and density of eelgrass. This Technical Memorandum presents the results of the eelgrass survey conducted on June 5, 2008. The purpose of the survey was to assess the potential impacts on eelgrass by resurfacing and widening the existing trestle, and to provide information for any future shoreline projects at Boulevard Park. The eelgrass survey entailed a delineation of the landward eelgrass edge from Boulevard Park south to beyond Pattle Point, and density calculations along five transects running parallel to the existing walkway at Pattle Point.

METHODS

The eelgrass survey in the habitat employed a modified version of the WDFW Intermediate Eelgrass/Macroalgae Survey Methods (WDFW 2007). The eelgrass survey entailed turion counts along five transects running parallel to the existing trestle at Pattle Point, and the delineation of the landward eelgrass edge from Boulevard Park to south of Pattle Point. WDFW staff reviewed and approved the survey methods prior to the implementation of the field effort.

EELGRASS DELINEATION

In order to map the landward edge of eelgrass, a biologist walked the landward edge of eelgrass beds at low tide from the northern end of Boulevard Park south to past the Pattle Point Trestle. The biologist marked the landward eelgrass boundary with a hand-held dGPS. These points were then mapped on AutoCAD and overlaid on an aerial photograph and base drawing, to show the location of eelgrass relative to existing shoreline features.

EELGRASS DENSITY SURVEY

Eelgrass densities were calculated along five (5) 300 to 430 foot transects set parallel to the existing trestle (Figure 2). Three transects were established parallel to the trestle's waterward edge, located 10 feet, 20 feet, and 35 feet waterward of the waterward edge of the trestle. The remaining two transects were established underneath the trestle and 10 feet landward from the trestle. Along each transect, eelgrass density was recorded every 20 feet. Turion

counts were collected within a .25 m^2 quadrat at 2 o'clock, 6 o'clock, and 10 o'clock (relative to north). In addition, single .25 m^2 quadrat samples were recorded at 10 foot intervals to increase sample size.

RESULTS

The landward edge of eelgrass is depicted in Figure 3. Eelgrass presence is continuous along the entire study area shoreline. Eelgrass is present in the intertidal zone as high as approximately -1.5 ft Mean Lower Low Water (MLLW). Eelgrass presence was limited in its landward extent by substrate and elevation, with eelgrass beginning at the transition from rock and cobble/gravel to sand and silt.

Eelgrass density was 68.9 turions per square meter where eelgrass was present, and 74.3 turions per square meter in the transects waterward of the walkway. It should be noted that, while eelgrass density was lowest in the transect underneath the trestle, this is likely due more to shallow water and substrate rather than shading effects from the trestle.

Macroalgae was observed in all transects in the upper shoreline, limited to fucus and ulva. Coverage varied, as high as 80%. The dominant substrate within the eelgrass beds was silt and mud, with rock and cobble in the upper portions of transects.

Table 1. Eelgrass density and macroalgae coverage

Transect	Average Eelgrass Density (Turions/m^2)	Macroalgae
1	73.1	Ulva, fucus; 80% coverage in upper portion
2	77.8	Ulva/fucus
3	71.9	Ulva/fucus; 2% coverage in upper portion
4	52.6	Ulva/fucus
5	No eelgrass present	Ulva/fucus

Figure 1. Pattle Point Vicinity Map

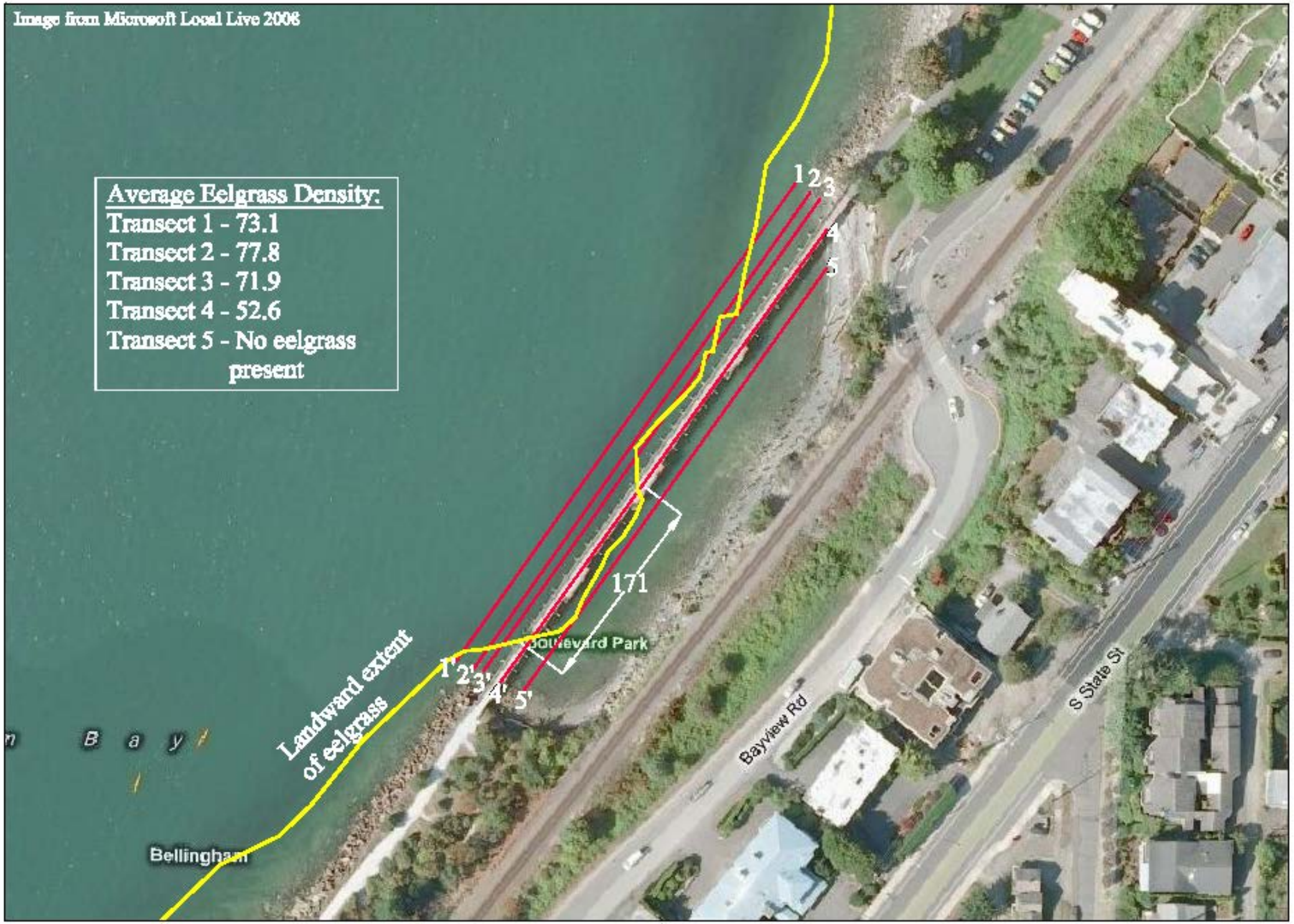

Figure 2. Eelgrass Presence Under Pattle Point Walkway Structure

Figure 3. Eelgrass Presence from Boulevard Park to South of Pattle Point

13b
Pattle Point Trestle Renovation
JARPA

2009
WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) Form [help]

US Army Corps of Engineers ®
Seattle District

AGENCY USE ONLY

Date received:

Agency reference #: _____

Tax Parcel #(s): _____

_____

_____

USE BLACK OR BLUE INK TO ENTER ANSWERS IN WHITE SPACES BELOW.

Part 1–Project Identification

Unique project information that makes it easy to identify. [help]

1a. Unique Project Identifier Number (UPI #) [help] • Don't have one yet? Get one at http://www.epermitting.wa.gov or call the Washington Governor's Office of Regulatory Assistance at (800) 917-0043.
426628-09-01
1b. Project Name (Examples: Smith's Dock or Seabrook Lane Development) [help]
Pattle Point Trestle Renovation

Part 2–Applicant

The person or organization responsible for the project. [help]

2a. Name (Last, First, Middle) and Organization (if applicable)			
Gina G. Austin, PE, City of Bellingham Parks and Recreation Department			
2b. Mailing Address (Street or PO Box)			
3424 Meridian			
2c. City, State, Zip			
Bellingham, WA 98225			
2d. Phone (1)	**2e.** Phone (2)	**2f.** Fax	**2g.** E-mail
(360) 778-7000	( )	(360) 778-7001	GAustin@cob.org

Part 3–Authorized Agent or Contact

Person authorized to represent the applicant about the project. (Note: Authorized agent(s) must sign 11b. of this application.) [help]

3a. Name (Last, First, Middle) and Organization (if applicable)			
Shannon Kinsella, PE, Reid Middleton, Inc			
3b. Mailing Address (Street or PO Box)			
728 134th Street SW, Suite 200			
3c. City, State, Zip			
Everett, WA 98204			
3d. Phone (1)	**3e.** Phone (2)	**3f.** Fax	**3g.** E-mail
(425) 741-3800	( )	(425) 741-3900	skinsella@reidmiddleton.com

Part 4–Property Owner(s) [help]

Contact information for people or organizations owning the property(ies) where the project will occur. [help]

☒ Same as applicant. (Skip to Part 5.)

☐ Repair or maintenance activities on existing rights-of-way or easements. (Skip to Part 5.)

☐ There are multiple property owners. Complete the section below and use JARPA Attachment A for each additional property owner.

4a. Name (Last, First, Middle) and Organization (if applicable)			
4b. Mailing Address (Street or PO Box)			
4c. City, State, Zip			
4d. Phone (1)	**4e.** Phone (2)	**4f.** Fax	**4g.** E-mail
( )	( )	( )	

Part 5–Project Location(s)

Identifying information about the property or properties where the project will occur. [help]

☐ There are multiple properties or project locations (e.g., linear projects). Complete the section below and use JARPA Attachment B for each additional property.

5a. Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5n.) [help]			
5b. City, State, Zip (If the project is not in a city or town, provide the name of the nearest city or town.) [help]			
Bellingham, WA 98225			
5c. County [help]			
Whatcom County			
5d. Provide the section, township, and range for the project location. [help]			
¼ Section	**Section**	**Township**	**Range**
NW	01	37 N	02 E
5e. Provide the latitude and longitude of the project location. [help] • Example: 47.03922 N lat. / -122.89142 W long			
48°43’47” N latitude/-122°30’15” W longitude			
5f. List the tax parcel number(s) for the project location. [help] • The local county assessor’s office can provide this information.			
City of Bellingham property			
5g. Indicate the type of ownership of the property. (Check all that apply.) [help]			
☐ State Owned Aquatic Land ☐ Tribal ☐ Private ☒ Other publicly owned (federal, state, county, city, special districts like schools, ports, etc.)			

5h. Contact information for all adjoining property owners, lessees, etc. (If you need more space, use JARPA Attachment C.) [help]

Name	Mailing Address	Tax Parcel # (if known)
Whatcom County Parks and Recreation	3373 Mount Baker Highway Bellingham, WA 98226	370201065455
City of Bellingham	210 Lottie Street Bellingham, WA 98227-1581	370201058384 370201090495
Washington State Department of Natural Resources	PO Box 47027 Olympia, WA 98504-7027	
Burlington Northern Santa Fe Railway	2650 Lou Menk Drive Fort Worth, TX 76131-2830	

5i. Is any part of the project area within a 100-year flood plain? [help]

☐ Yes ☒ No ☐ Don't know

5j. Briefly describe the vegetation and habitat conditions on the property. [help]

The aquatic habitat in the project area includes intertidal/shallow subtidal habitat. An eelgrass survey conducted in June 2008 revealed eelgrass present underneath the trestle for approximately 171 linear feet between approximately -1.5 feet and -8 feet MLLW. Eelgrass is also present along the waterward edge of the trestle for most of its length. Macroalgae is present in much of the project area. WDFW forage fish spawning surveys have indentified sure smelt spawn in the project area, under the northern end of the walkway. Based on preliminary site investigations, surf smelt spawning substrate appears to be present in this location between approximately +5 and +6 feet MLLW.

Upland vegetation at the northern end of the trestle consists of maintained lawn, ornamental plantings, and relatively young second growth trees. At the southern end of the trestle, upland vegetation is less maintained and consists of stands of invasive brushy plants such as Himalayan blackberry.

Please see the project Biological Evaluation (prepared by Grette Associates, dated July 10, 2009) for detailed information on existing environmental conditions.

5k. Describe how the property is currently used. [help]

The site is currently used as a public park. The Pattle Point trestle supports an overwater segment of the Coast Millennium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham.

5l. Describe how the adjacent properties are currently used. [help]

Adjacent properties are also used as public park. Additionally, the Pattle Point trestle runs parallel to the Burlington Northern Santa Fe main line, separated by a distance of approximately 120 feet.

5m. Describe the structures (above and below ground) on the property, including their purpose(s). [help]

The Pattle Point trestle was originally built in 1901 to accommodate trains. The trestle has served as a multi-use trail since the establishment of Boulevard Park in 1980. The trestle was refurbished to its present configuration in 1991.

The current physical condition of the Pattle Point trestle was documented in a report by Echelon Engineering, Inc., dated January 2008. The report identified several of the trestle components as being in "poor condition." "Poor condition" was defined in the report as meaning that a member "has sustained major to severe damage that affects the members load bearing capacity."

5n. Provide driving directions from the closest highway to the project location, and attach a map. [help]

I-5
Exit 250
Head west on Old Fairhaven Parkway (WA 11)
Right at 12th Street
12th Street turns into Finnegan Way, then 11th Street
Left at S Bay View Drive

Part 6–Project Description

6a. Summarize the overall project. You can provide more detail in 6d. [help]

The City of Bellingham Parks and Recreation Department proposes to renovate an approximately 525-foot-long trestle that supports an overwater segment of the Coast Millennium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham. Boulevard Park is located on the eastern shores of Bellingham Bay, in Bellingham, Washington. Proposed work includes:

- Removal and replacement of the trestle's superstructure
- Removal and replacement of the trestle's southernmost timber frame bent
- Removal of the trestle's northernmost timber frame bent
- Removal and replacement of the trestle's two existing abutments
- Removal and replacement of the trestle's treated-timber cross bracing
- Removal and replacement of four of the trestle's timber pile caps

6b. Indicate the project category. (Check all that apply.) [help]

☐ Commercial ☐ Residential ☐ Institutional ☐ Transportation ☐ Recreational
☒ Maintenance ☐ Environmental Enhancement

6c. Indicate the major elements of your project. (Check all that apply.) [help]

☐ Aquaculture	☐ Culvert	☐ Float	☐ Road
☐ Bank Stabilization	☐ Dam / Weir	☐ Geotechnical Survey	☐ Scientific Measurement Device
☐ Boat House	☐ Dike / Levee / Jetty	☐ Land Clearing	☐ Stairs
☐ Boat Launch	☐ Ditch	☐ Marina / Moorage	☐ Stormwater facility
☐ Boat Lift	☐ Dock / Pier	☐ Mining	☐ Swimming Pool
☐ Bridge	☐ Dredging	☐ Outfall Structure	☐ Utility Line
☐ Bulkhead	☐ Fence	☐ Piling	
☐ Buoy	☐ Ferry Terminal	☐ Retaining Wall (upland)	
☐ Channel Modification	☐ Fishway		

☒ Other: Trestle renovations

6d. Describe how you plan to construct each project element checked in 6c. Include specific construction methods and equipment to be used. [help]

- Identify where each element will occur in relation to the nearest waterbody.
- Indicate which activities are within the 100-year flood plain.

For this proposed project, construction activities that may occur in water or over water (in this document, the terms “in water” (or “in-water”) and “over water” (or “overwater”) signify areas waterward of the ordinary high water (OHW) line) include:

- Removal and replacement of the trestle’s superstructure. Removal of the trestle’s existing superstructure involves the removal of an approximately 10-foot-wide (14-foot-wide at seating nooks) by 525-foot-long non-grated, timber deck and 1,074 feet of timber guardrail. 521 feet of the trestle’s existing superstructure length is over water; total overwater coverage is 5,697 square feet. Replacement of the trestle’s superstructure involves the installation of a 12-foot-wide (16-foot-wide at seating nooks) by 564-foot-long deck and 1,152 linear feet of timber/steel guardrail. 521 feet of the replacement superstructure length would be over water; total overwater coverage would be 6,730 square feet, of which 3,181 square feet would consist of steel-beam-supported grated deck and 3,549 square feet would consist of steel-beam-supported concrete deck.

- Removal and replacement of the trestle’s southernmost timber frame bent. The existing bent is comprised of two horizontal and five vertical 10-inch-by-20-inch creosote-treated timbers, two 4-inch-by-10-inch creosote-treated timber cross braces, and a creosote-treated timber sill. The replacement bent would consist of 12-inch-by-12 inch ACZA-treated timber, with the exception of the cross braces, which would consist of 4-inch-by-10-inch ACZA-treated timbers, and an ACZA-treated timber or concrete sill.

- Removal of the trestle’s northernmost timber frame bent, comprised of two horizontal and four vertical 12-inch-by-12-inch creosote-treated timbers, and associated timber lagging.

- Removal and replacement of the trestle’s two existing abutments. The existing north abutment is timber surrounded by riprap; the existing south abutment is concrete surrounded by riprap. The north abutment total excavation volume would be approximately 67 cubic yards (approximately 23 cubic yards of excavation in water). The south abutment total excavation volume would be approximately 80 cubic yards (approximately 33 cubic yards of excavation in water). The two replacement abutments would both consist of a concrete pile cap (sitting atop two steel-pipe piles, if necessary) surrounded by riprap. The north abutment would require a total of approximately 38 cubic yards of replacement fill, including concrete, clean backfill, and riprap (approximately 22 cubic yards of replacement fill in water, including clean backfill and riprap). The south abutment would require a total of approximately 54 cubic yards of replacement fill including concrete, clean

backfill, and riprap (approximately 32 cubic yards of replacement fill in water, including clean backfill and riprap).

- Removal and replacement of the trestle's treated-timber cross bracing, comprised of 66 boards (each 20 feet long).

- Removal and replacement of four of the trestle's timber pile caps (each 12 inches wide,16 inches deep, 16 feet long).

For the protection of aquatic life, all in-water activities would take place during the approved work window (July 16 to February 15). Construction activities that can be performed landward of the OHW line may take place at any time. Construction activities that can be performed landward of the OHW line include installation of deck, electrical systems, pavement, and site drainage and treatment.

Removal of Existing Structures
The existing superstructure, bents, abutments, cross bracing, and pile caps proposed for removal would be removed by derrick barge or conventional crane. The removed structures would be placed onto land or a barge before being loaded onto trucks and hauled to a disposal facility.

The site contains approximately four creosote-treated timber piling beneath the northernmost frame bent. These piling (each approximately 12-inches in diameter) would be cut two feet below the mud line, then covered with coarse sand or pea gravel. For each pile cut, approximately .25 cubic yards of fill material would be required. Best Management Practices as identified by the United States Army Corps of Engineers Dredge Management Office would be employed.

Any creosote-treated wood removed would be disposed of in accordance with Washington State's Dangerous Waste Regulations (WAC 173-303). All waste and debris generated by the project would be collected and removed to a legally permitted waste disposal or recycling site.

Installation of Replacement Structures
The replacement superstructure, bent, abutments, cross bracing, and pile caps would be placed by derrick barge or conventional crane. All replacement wood would be treated with ACZA.

Total Project Excavation and Fill
As shown in Table 1, the total project would require excavation and fill of approximately 726 square feet. Table 1 also shows that the project would require a total of approximately 148 cubic yards of excavation and a total of approximately 93 cubic yards of fill. The 55 cubic yard reduction in fill volume is primarily due to differences in the design of the existing and proposed abutments.

Table 1. Total Project Excavation and Fill

Construction Activity	Proposed Excavation Area / Volume	Proposed Fill Area / Volume	Net Change Area / Volume
Removal and replacement of north abutment	386 SF / 66.9 CY	386 SF / 38.0 CY	0 SF / -28.9 CY
Removal and replacement of south abutment	336 SF/ 79.9 CY	336 SF / 53.8 CY	0 SF / -26.1 CY
Cutting below mud line of approximately four creosote-treated timber piling beneath the northernmost frame bent	4 SF / 1.0 CY	4 SF / 1.0 CY	0 SF / 1.0 CY
Totals	726 SF / 147.8 CY	726 SF / 92.8 CY	0 SF / -55 CY

Gains and Losses of Waters of the United States

A summary of the gains and losses of Waters of the United States that would result from the various project actions described above is provided below in Tables 2 (relative to OHW) and 3 (relative to MHHW). Relative to OHW and MHHW, the project actions would increase in the Waters of the United States by 3.5 cubic yards and .6 cubic yards, respectively.

Table 2. Gains and Losses of Waters of the United States (relative to OHW, approximately +9.51 feet MLLW)

Construction Activity	Proposed Excavation Volume Below OHW	Proposed Fill Volume Below OHW	Net Change Below OHW
Removal and replacement of north abutment	23.4 CY	21.6 CY	-1.8 CY
Removal and replacement of south abutment	33.3 CY	31.6 CY	-1.7 CY
Cutting below mud line of approximately four creosote-treated timber piling beneath the northernmost frame bent	1.0 CY	1.0 CY	0 CY
Totals	57.7 CY	54.2 CY	-3.5 CY

Table 3. Gains and Losses of Waters of the United States (relative to MHHW, +8.51 feet MLLW)

Construction Activity	Proposed Excavation Volume Below MHHW	Proposed Fill Volume Below MHHW	Net Change Below MHHW
Removal and replacement of north abutment	18.1 CY	17.8 CY	-0.3 CY
Removal and replacement of south abutment	26.0 CY	25.7 CY	-0.3 CY
Cutting below mud line of approximately four creosote-treated timber piling beneath the northernmost frame bent	1.0 CY	1.0 CY	0.0 CY
Totals	45.1 CY	44.5 CY	-.6 CY

Gains and Losses in Shading of the Waters of the United States

A summary of the changes in overwater coverage that would result from the project actions described above is provided below in Tables 4 (relative to OHW) and 5 (relative to MHW). Relative to OHW and MHW, net overwater coverage would increase by 1,033 square feet and 1,004 square feet, respectively. However, 3,181 square feet (relative to OHW)/3,122 square feet (relative to MHW) of the proposed deck would feature grating, in contrast to the existing trestle deck, which does not feature any grating. The proposed trestle renovations, in comparison to the existing trestle, would reduce the typical width of solid decking from approximately 10 feet to 6 feet.

Table 4. Gains and Losses in Shading of Waters of the United States (relative to OHW, approximately +9.51 feet MLLW)

Construction Activity	Baseline Shaded Water Column		Proposed Shaded Water Column		Net Shaded Water Column Change	
Removal of existing superstructure and installation of replacement superstructure	Solid	5,697 SF	Solid	3,549 SF	Solid	-2,148 SF
	Grated	0 SF	Grated	3,181 SF	Grated	+3,181 SF
	Total	5,697 SF	Total	6,730 SF	Total	+1,033 SF

Table 5. Gains and Losses in Shading of Waters of the United States (relative to MHW, +7.70 feet MLLW)

Construction Activity	Baseline Shaded Water Column		Proposed Shaded Water Column		Net Shaded Water Column Change	
Removal of existing superstructure and installation of replacement superstructure	Solid	5,601 SF	Solid	3,483 SF	Solid	-2,118 SF
	Grated	0 SF	Grated	3,122 SF	Grated	+3,122 SF
	Total	5,601 SF	Total	6,605 SF	Total	+1,004 SF

6e. What are the start and end dates for project construction? (month/year) [help]

- If the project will be constructed in phases or stages, use JARPA Attachment D to list the start and end dates of each phase or stage.

Start and end dates: Between July 16, 2009 and February 15, 2010 ☐ See JARPA Attachment D

The entire project, including demolition and construction, is expected to take approximately 8 weeks to complete. In-water work is expected to take approximately 6 weeks to complete. However, the duration and total period of in-water work would be affected by several factors, including the type of construction equipment and procedures selected by the contractor, and the sequencing of work elements. Approximate durations for various construction activities are listed in the table below in. All in-water work would occur during the approved work window (July 16 to February 15). If it were necessary to perform certain work at night during a low tide, appropriate City of Bellingham, Whatcom County, and/or any other required approvals would be obtained.

Approximate Duration of In-Water Activities

Project Element	Approximate Duration
Removal and replacement of cross bracing	3 days
Removal of superstructure	5 days
Removal and installation of abutments	2 weeks
Removal and replacement of pile caps	1 day
Installation of superstructure	6 weeks

The City of Bellingham Parks and Recreation Department anticipates the proposal of an overwater walkway from Boulevard Park to the Cornwall Landfill area, approximately .2 mile north of the Pattle Point trestle. This project is still in the design phase, but it is anticipated for construction in 2012-2013, pending receipt of permits. Funding for this proposed future overwater walkway has not been wholly secured at this time.

6f. Describe the purpose of the work and why you want or need to perform it. [help]

The purpose of the project is to protect public health and safety by renovating defective components of the existing trestle; additionally, the project would protect public health and safety and enhance public shoreline access by increasing the width and improving the surface (improvements would comply with the Americans with Disabilities Act) of this heavily trafficked segment of the Coast Millennium Trail.

6g. Fair market value of the project, including materials, labor, machine rentals, etc. [help]

$988,000

6h. Will any portion of the project receive federal funding? [help]

- **If yes**, list each agency providing funds.

☐ Yes ☒ No ☐ Don't know

Part 7–Wetlands: Impacts and Mitigation

☐ Check here if there are wetlands or wetland buffers on or adjacent to the project area.
(If there are none, skip to Part 8.)

7a. Describe how the project has been designed to avoid and minimize adverse impacts to wetlands. [help]

☐ Not applicable

7b. Will the project impact wetlands? [help]

☐ Yes ☐ No ☐ Don't know

7c. Will the project impact wetland buffers? [help]

☐ Yes ☐ No ☐ Don't know

7d. Has a wetland delineation report been prepared? [help]

- **If yes**, submit the report, including data sheets, with the JARPA package.

☐ Yes ☐ No

7e. Have the wetlands been rated using the Western Washington or Eastern Washington Wetland Rating System? [help]

- **If yes**, submit the wetland rating forms and figures with the JARPA package.

☐ Yes ☐ No ☐ Don't know

7f. Have you prepared a mitigation plan to compensate for any adverse impacts to wetlands? [help]

- **If yes**, submit the plan with the JARPA package.

☐ Yes ☐ No ☐ Not applicable

7g. Use the table below to list the type and rating of each wetland that will be impacted; the extent and duration

of the impact; and the type and amount of compensatory mitigation proposed. If you are submitting a compensatory mitigation plan with a similar table, you may simply state (below) where we can find this information in the mitigation plan. [help]

Activity causing impact (fill, drain, excavate, flood, etc.)	Wetland type and rating category[1]	Impact area (sq. ft. or acres)	Duration of impact[2]	Proposed mitigation type[3]	Wetland mitigation area (sq. ft. or acres)

[1] Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package.

[2] Indicate the time (in months or years, as appropriate) the wetland will be measurably impacted by the activity. Enter "permanent" if applicable.

[3] Creation (C), Re-establishment/Rehabilitation (R), Enhancement (E), Preservation (P), Mitigation Bank/In-lieu fee (B)

Page number(s) for similar information in the mitigation plan, if available: _____

7h. For all filling activities identified in 7g., describe the source and nature of the fill material, the amount in cubic yards that will be used, and how and where it will be placed into the wetland. [help]

7i. For all excavating activities identified in 7g., describe the excavation method, type and amount of material in cubic yards you will remove, and where the material will be disposed. [help]

7j. Summarize what the compensatory mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan. [help]

Part 8–Waterbodies (other than wetlands): Impacts and Mitigation

In Part 8, "waterbodies" refers to non-wetland waterbodies. (See Part 7 for information related to wetlands.) [help]

☒ Check here if there are waterbodies on or adjacent to the project area. (If there are none, skip to Part 9.)

8a. Describe how the project is designed to avoid and minimize adverse impacts to the aquatic environment. [help]

☐ Not applicable

Federal, state, and local permits contain conditions that are intended to reduce the potential for short-term effects from in-water construction activities and long-term effects from habitat change. These provisions comprise an extensive list of conservation measures that are applied to projects in or near marine and estuarine waters. The following are permit conditions typical of projects in nearshore marine areas such as Bellingham Bay, and are conservation measures for the Project:

- Timing restrictions specifying that in-water work must occur when juvenile salmonids are absent or present in very low numbers would be strictly observed. Additional timing restrictions are established for the protection of forage fish. All timing restrictions that may be established by WDFW, the Corps, NMFS, or USFWS would be strictly observed.

- Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters. Proper security shall also be maintained to prevent vandalism.

- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including:

  o In the event of a spill, containment and cleanup efforts will begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup will include proper disposal of any spilled material and used cleanup material.

  o The cause of the spill shall be assessed and appropriate action will be taken to prevent further incidents or environmental damage.

- Spills and/or conditions resulting in distressed or dying fish shall be reported immediately to DOE's Northwest Regional Spill Response Office at (206) 649-7000 (a 24-hour phone number).

BMPs are employed to reduce the potential for construction-related impacts on species and habitats. In addition to the regulatory considerations above, the following BMPs and conservation measures have been incorporated into the Project design and/or would be used during construction to minimize Project impacts:

- All creosote-treated timber cross-bracing (66 20-ft long boards) would be replaced with ACZA-treated timber boards.

- Four creosote-treated timber piles would be cut 2-ft below the mudline and covered with coarse sand and gravel. This would result in an expansion of shaded surf smelt spawning substrate in an area where spawning has been documented.

- Replacement of abutments and placement of fill would be conducted from the upland during tidal exposure if possible.

- During trestle superstructure resurfacing, a fabric will be placed below the superstructure to catch any debris.

- The barge would not be anchored in eelgrass beds.

- Care would be taken by the barge operator to avoid grounding out and minimize propeller wash.

- The contractor will have a spill containment kit, including oil-absorbent materials, on site to be used in the

event of a spill or if any oil product is observed in the water.

- The contractor is responsible for the preparation of a SPCC plan to be used for the duration of the Project. The SPCC plan will: 1) identify construction planning elements and recognize potential spill sources in the Action Area, 2) outline the response actions in the event of a spill or release and identify notification and reporting procedures, 3) outline contractor management elements such as personal responsibilities, site security and inspections, and training, and 4) outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on-site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. Hazardous materials include but are not limited to gasoline, oils, and chemicals, and are further defined in RCW 70.105.010.

8b. Will your project impact a waterbody or the area around a waterbody? [help]

☒ Yes ☐ No

8c. Summarize impact(s) to each waterbody in the table below. [help]

Activity causing impact (clear, dredge, fill, pile drive, etc.)	Waterbody name	Impact location [1]	Duration of impact [2]	Amount of material to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
Excavation	Bellingham Bay	In	Less than 2 weeks	57.7 cubic yards	Approximately 260 square feet
Fill	Bellingham Bay	In	Life of structure	54.2 cubic yards	Approximately 260 square feet
Overwater coverage	Bellingham Bay	In	Life of structure	N/A	Additional 1,033 square feet of overwater coverage (3,181 square feet to be grated)

[1] Indicate whether the impact will occur in or adjacent to the waterbody. If adjacent, provide the distance between the impact and the waterbody and indicate whether the impact will occur within the 100-year flood plain.

[2] Indicate the time (in months or years, as appropriate) the waterbody will be measurably impacted by the work. Enter "permanent" if applicable.

8d. Have you prepared a mitigation plan to compensate for the project's adverse impacts to non-wetland waterbodies? [help]

- **If yes**, submit the plan with the JARPA package.

☐ Yes ☐ No ☒ Not applicable

8e. Summarize what the compensatory mitigation plan is meant to accomplish. Describe how a watershed approach was used to design the plan.

- If you already completed 7j., you do not need to restate your answer here. [help]

8f. For all activities identified in 8c., describe the source and nature of the fill material, amount (in cubic yards) you will use, and how and where it will be placed into the waterbody. [help]

- The north abutment would require a total of approximately 22 cubic yards of replacement fill in water, including clean backfill and riprap.
- The south abutment would require a total of approximately 32 cubic yards of replacement fill in water, including clean backfill and riprap.
- The approximately four creosote-treated timber piling to be cut two feet below the mudline the material would be backfilled with a total of approximately 1 cubic yard of coarse sand or washed gravel purchased from a vendor.
- All fill material would be placed by a backhoe or hydraulic excavator.

8g. For all excavating or dredging activities identified in 8c., describe the method for excavating or dredging, type and amount of material you will remove, and where the material will be disposed. [help]

- The north abutment total excavation volume would consist of approximately 23 cubic yards of excavation in water.
- The south abutment total excavation volume would consist of approximately 33 cubic yards of excavation in water.
- Excavated material would be removed by a backhoe or hydraulic excavator.
- Materials will be disposed of at a legally permitted waste disposal or recycling site.

Part 9–Additional Information

Any additional information you can provide helps the reviewer(s) understand your project.

9a. If you have already worked with any government agencies on this project, list them below. [help]

Agency Name	Contact Name	Phone	Most Recent Date of Contact
US Army Corps of Engineers	Randel Perry	(206) 764-6985	6/11/09
City of Bellingham Planning and Community Development Department	Steven Sundin	(360) 778-8359	7/10/09

9b. Are any of the wetlands or waterbodies identified in Part 7 or Part 8 on the Washington Department of Ecology's 303(d) List? [help]

- **If yes,** list the parameter(s) below.
- If you don't know, use Washington Department of Ecology's Water Quality Assessment tools at: http://www.ecy.wa.gov/programs/wq/303d/.

☐ Yes ☒ No

9c. What U.S. Geological Survey Hydrological Unit Code (HUC) is the project in? [help]

- Go to http://cfpub.epa.gov/surf/locate/index.cfm to help identify the HUC.

17110002

9d. What Water Resource Inventory Area Number (WRIA #) is the project in? [help]

- Go to http://www.ecy.wa.gov/services/gis/maps/wria/wria.htm to find the WRIA #.

WRIA 1

9e. Will the in-water construction work comply with the State of Washington water quality standards for turbidity? [help]

- Go to http://www.ecy.wa.gov/programs/wq/swqs/criteria.html for the standards.

☒ Yes ☐ No ☐ Not applicable

9f. If the project is within the jurisdiction of the Shoreline Management Act, what is the local shoreline environment designation? [help]

- If you don't know, contact the local planning department.
- For more information, go to: http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/211_designations.html.

☐ Rural ☐ Urban ☐ Natural ☐ Aquatic ☐ Conservancy ☒ Other Conservancy II

9g. What is the Washington Department of Natural Resources Water Type? [help]

- Go to http://www.dnr.wa.gov/BusinessPermits/Topics/ForestPracticesApplications/Pages/fp_watertyping.aspx for the Forest Practices Water Typing System.

☒ S ☐ F ☐ Np ☐ Ns

9h. Will this project be designed to meet the Washington Department of Ecology's most current stormwater manual? [help]

- **If no**, provide the name of the manual your project is designed to meet.

☒ Yes ☐ No

Name of manual:

9i. If you know what the property was used for in the past, describe below. [help]

The Bellingham Bay Mill (later E.K. Wood Lumber Company) operated in the project area from the early 1880s to 1925, when it was destroyed by fire. The Pattle Point trestle was originally built in 1901 to accommodate trains, and continued in this role until at least the 1940s. The trestle has served as a multi-use trail since the establishment of Boulevard Park in 1980.

9j. Has a cultural resource (archaeological) survey been performed on the project area? [help]

- **If yes**, attach it to your JARPA package.

☒ Yes ☐ No

9k. Name each species listed under the federal Endangered Species Act that occurs in the vicinity of the project area or might be affected by the proposed work. [help]

Species	Listing Status	Effect determination
Puget Sound chinook salmon	Threatened	May affect, not likely to adversely affect
Coastal-Puget Sound bull trout	Threatened	May affect, not likely to adversely affect
Puget Sound steelhead trout	Threatened	May affect, not likely to adversely affect
Southern Resident killer whale	Endangered	No effect
Steller sea lion	Threatened	No effect
Humpback whale	Endangered	No effect
Leatherback sea turtle	Endangered	No effect
Marbled murrelet	Threatened	May affect, not likely to adversely affect
Critical Habitat		**Effect determination**
Puget Sound chinook salmon designated critical habitat	Designated	May affect, not likely to adversely affect
Coastal-Puget Sound bull trout designated critical habitat	Designated	May affect, not likely to adversely affect
Southern Resident killer whale designated critical habitat	Designated	No effect

9l. Name each species or habitat on the Washington Department of Fish and Wildlife's Priority Habitats and Species List that might be affected by the proposed work. [help]

Bald eagle, Brandt's cormorant, brant, bufflehead, bull trout, coastal cutthroat trout, common loon, common murre, Dungeness crab, great blue heron, Barrow's goldeneye, common goldeneye, harlequin duck, marbled murrelet, pacific harbor porpoise, Puget Sound nearshore habitat, salmon (chinook, chum, coho, pink, sockeye), steelhead trout, Steller sea lion, surf smelt, western grebe.

No adverse effects to any of these species are anticipated.

Part 10–Identify the Permits You Are Applying For

Use the resources and checklist below to identify the permits you are applying for.

- Online Project Questionnaire at http://apps.ecy.wa.gov/opas/.
- Governor's Office of Regulatory Assistance at (800) 917-0043 or help@ora.wa.gov.

10a. Compliance with the State Environmental Policy Act (SEPA). (Check all that apply.) [help]

- For more information about SEPA, go to www.ecy.wa.gov/programs/sea/sepa/e-review.html.

☐ A copy of the SEPA determination or letter of exemption is included with this application.

☒ A SEPA determination is pending with City of Bellingham (lead agency). The expected decision date is August 2009.

☐ I am applying for a Fish Habitat Enhancement Exemption. (Check the box below in 10b.)

- Submit the Fish Habitat Enhancement Project form with this application. The form can be found at http://www.epermitting.wa.gov/Portals/_JarpaResourceCenter/images/default/fishenhancement.doc

☐ This project is exempt (choose type of exemption below).

☐ Categorical Exemption. Under what section of the SEPA administrative code (WAC) is it exempt? _____

☐ Other: _____

☐ SEPA is pre-empted by federal law. [help]

10b. Indicate the permits you are applying for. (Check all that apply.) [help]

LOCAL GOVERNMENT

Local Government Shoreline permits:

☐ Substantial Development ☐ Conditional Use ☐ Variance

☒ Shoreline Exemption Type (explain): _____

Other city/county permits:

☐ Floodplain Development Permit ☐ Critical Areas Ordinance

STATE GOVERNMENT

Washington Department of Fish and Wildlife:

☒ Hydraulic Project Approval (HPA) ☐ Fish Habitat Enhancement Exemption

Washington Department of Ecology:

☒ Section 401 Water Quality Certification

Washington Department of Natural Resources:

☐ Aquatic Resources Use Authorization

FEDERAL GOVERNMENT

United States Department of the Army permits (U.S. Army Corps of Engineers):

☒ Section 404 (discharges into waters of the U.S.) ☒ Section 10 (work in navigable waters)

United States Coast Guard permits:

☐ General Bridge Act Permit ☐ Private Aids to Navigation (for non-bridge projects)

Part 11–Authorizing Signatures

Signatures required before submitting the JARPA package.

11a. Applicant Signature (required) [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities, and I agree to start work only after I have received all necessary permits.

I hereby authorize the agent named in Part 3 of this application to act on my behalf in matters related to this application. SA (initial)

By initialing here, I state that I have the authority to grant access to the property. I also give my consent to the permitting agencies entering the property where the project is located to inspect the project site or any work related to the project. SA (initial)

SM Austin
Applicant

7/17/09
Date

11b. Authorized Agent Signature [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities and I agree to start work only after all necessary permits have been issued.

Shawn Kuula
Authorized Agent

7/22/09
Date

11c. Property Owner Signature (if not applicant) [help]

I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.

Property Owner

Date

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.

If you require this document in another format, contact The Governor's Office of Regulatory Assistance (ORA). People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341.
ORA publication number: ENV-019-09

13c
Boulevard Park Overwater Walkway
JARPA

	AGENCY USE ONLY	**JARPA FORM LAST UPDATED: March 19, 2007**
Agency Reference #:	Date Received:	
Circulated by:	(local govt. or agency)	
Project Tracking Number:		

Washington State **JOINT AQUATIC RESOURCES PERMIT APPLICATION (JARPA)** Form

Step 1: Get Ready	Step 2: Complete Form	Step 3: Check Work	Step 4: Copy and Send In
Go to www.epermitting.org for **correct form** and **instructions**.	Use **black ink**. Check correct permit boxes. Use internet **"Help" buttons** to answer questions completely.	Use final review checklist at www.epermitting.org.	See **JARPA Contacts** at www.epermitting.org for correct mailing addresses.

☐ Fish Habitat Enhancement Projects per RCW 77.55.181. You must submit copy of completed JARPA form and Fish Habitat Enhancement JARPA Addition to your Local Government Planning Dep't and WA Dep't of Fish and Wildlife (WDFW) Area Habitat Biologist on same day. Note for Local Governments: You must submit comments to WDFW within 15 working days.

Based on instructions at www.epermitting.org, I am sending copies of this application to the following: *(check all that apply)*

☒ Local Government for Shoreline: ☐ Substantial Development ☒ Conditional Use ☐ Variance ☐ Exemption ☐ Revision
☐ Floodplain Management ☐ Critical Areas Ordinance

☒ Washington Department of Fish and Wildlife for Hydraulic Project Approval (Submit 2 copies to WDFW Region)

☒ Washington Department of Ecology for 401 Water Quality Certification (to Regional Office-Federal Permit Unit)

☒ Washington Department of Natural Resources for Aquatic Resources Use Authorization Notification

☒ Corps of Engineers for: ☒ Section 404 permit ☒ Section 10 permit

☐ Coast Guard for: ☐ General Bridge Act Permit ☐ Private Aids to Navigation (for non-bridge projects)

☐ For Department of Transportation projects only: This project will be designed to meet conditions of the most current Ecology/Department of Transportation Water Quality Implementing Agreement

PROJECT TITLE:
Boulevard Park Overwater Walkway

PROJECT DESCRIPTION:
The City of Bellingham Parks and Recreation Department proposes to construct an approximately 2,360-foot-long overwater segment of a multi-use (e.g., walking, bicycling) trail from Boulevard Park to the Cornwall Avenue landfill. Boulevard Park and the Cornwall Avenue landfill are located on the eastern shores of Bellingham Bay, in Bellingham, Washington. Proposed work includes:

- Removal of an existing timber pier
- Removal of 5 existing, isolated, treated-timber piles
- Installation of 2 concrete abutments
- Installation of 98 steel or concrete piles
- Installation of the walkway superstructure

SECTION A - Use for all permits covered by this application. Be sure to ALSO complete Section C (Signature Block) for all permit applications.

help 1. APPLICANT
City of Bellingham Parks and Recreation Department, Contact: Gina Gobo Austin, PE

MAILING ADDRESS
3424 Meridian, Bellingham, WA 98225

WORK PHONE	E-MAIL ADDRESS	HOME PHONE	FAX #
(360) 778-7000	GAustin@cob.org		(360) 778-7001

If an agent is acting for the applicant during the permit process, complete #2. Be sure agent signs Section C (Signature Block) for all permit applications

help 2. AUTHORIZED AGENT
Reid Middleton, Inc., Contact: Nicole Faghin

MAILING ADDRESS
728 134th Street SW, Suite 200, Everett, WA 98024

WORK PHONE	E-MAIL ADDRESS	HOME PHONE	FAX #
(425) 741-3800	nfaghin@reidmiddleton.com		(425) 741-3900

help 3. Relationship of applicant to property: ☒ OWNER ☐ PURCHASER ☒ LESSEE ☐ _____

help 4. Name, address and phone number of property owner(s) if other than applicant:
Washington State Department of Natural Resources
PO Box 47027, Olympia, WA 98504-7027
(360) 902-1100

help 5. Location (street address, including city, county and zip code, where proposed activity exists or will occur)
The overwater walkway would extend from Boulevard Park to the Cornwall Avenue landfill. Boulevard Park and the Cornwall

DRAFT

Avenue landfill are located on the eastern shores of Bellingham Bay, in Bellingham, Washington.

help Local government with jurisdiction (city or county)
City of Bellingham

help Waterbody you are working in Bellingham Bay help Is this waterbody on the 303(d) List ☐ YES ☒ NO If **YES**, what parameter(s)?					help Tributary of help Shoreline designation To be completed upon completion of City of Bellingham Shoreline Master Program Update help Zoning designation Industrial/Waterfront Mixed-Use (north end) Public (south end)
¼ Section	Section	Township	Range	Government Lot	help WRIA #1 help DNR stream type if known
SW & SE	36	38 N	2 E		
help Latitude and Longitude: 48°44'09", -122°29'56"					Tax Parcel Number Washington State Department of Natural Resources aquatic lands

help 6. Describe (a) the current use of the property, (b) structures existing on the property, and (c) existing environmental conditions.
Have you completed any portion of the proposed activity on this property? ☐ YES ☒ NO
For any portion of the proposed activity already completed on this property, indicate month and year of completion.

(a)
The south end of the proposed project site is currently used as park land. The north end of the proposed project site is currently underutilized Port of Bellingham property. Immediately to the east of the project site, the adjacent property is used as a railroad corridor. Farther east, the area beyond the railroad corridor is primarily publicly-owned open space.

(b)
The embayment is currently mostly devoid of marine structures, with the exception of: a dilapidated, timber pier; a sunken vessel; scattered individual and clustered timber piles; and concrete slabs (at the Cornwall Avenue landfill end).

(c)
The embayment is situated along a marine shoreline (Bellingham Bay). Please see the project Biological Evaluation (to be prepared by Grette Associates) for detailed information on existing environmental conditions.

help Is the property agricultural land? ☐ YES ☒ NO help Are you a USDA program participant? ☐ YES ☒ NO

help 7a. Describe the proposed work that needs aquatic permits: Complete plans and specifications should be provided for all work waterward of the ordinary high water mark or line, including types of equipment to be used. If applying for a shoreline permit, describe all work within and beyond 200 feet of the ordinary high water mark. If you have provided attached materials to describe your project, you still must summarize the proposed work here. Attach a separate sheet if additional space is needed.

For this proposed project, construction activities that may occur in-water (defined as waterward of the ordinary high water (OHW) line) include:

- Removal of an existing timber pier, comprised of approximately 1,240 square feet of timber deck supported by 8 steel H-piles (each 8 inches square).
- Removal of 5 existing, isolated, treated-timber piles (each 12 inches in diameter).
- Installation of 2 concrete abutments, each comprised of 74 square feet of reinforced concrete. At each end of the proposed overwater walkway, approximately 480 square feet of the shoreline would be graded in order to prepare for placement of the abutment and riprap. Riprap would be placed over approximately 300 square feet at each end of the proposed overwater walkway.
- Installation of 98 steel or concrete piles (each 16 inches in diameter).
- Installation of the walkway superstructure, comprised of a 14-foot-wide (18 feet at seating nooks) by 2,360-foot-long deck (4,000 square feet of grated deck, 30,000 square feet of concrete deck, 34,000 square feet of total overwater coverage), and 4,720 linear feet of timber/steel guardrail.

For protection of aquatic life, all in-water activities would take place during the approved work window (July 15 to February 15). Construction activities that would be performed landward of the OHW line may take place at any time. Out-of-water construction activities may include installation of pier deck, electrical systems, asphalt concrete pavement, and site drainage and treatment.

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Removal of Existing Structures
The existing isolated timber piles and pier (including the 8 steel H-piles) at the north end of Boulevard Park would be removed by derrick barge or land-based conventional crane. The removed structures would be placed onto land or onto a barge before being loaded onto trucks and hauled to a disposal facility.

The site contains 5 isolated, creosote-treated timber bearing piling. Best Management Practices as identified by the United States Army Corps of Engineers Dredge Management Office (DMMO) would be employed during removal of the piling. Timber piles would be removed in whole, wherever possible, by use of a vibratory mechanism. Removal of whole pilings is the preferred method, as it would remove from the environment the creosote preservative adhering to the piling. During removal, if a pile were to break above the mud line, an attempt would be made to pull the remainder of the piling. If the pile were to break below the mud line, the remainder would be left in place and covered with clean backfill, to minimize disturbance of sediment.

All creosote treated wood that is removed would be disposed of in accordance with Washington State's Dangerous Waste Regulations (WAC 173-303) and Excluded Categories of Waste (WAC 173-303-071). All waste and debris generated by the project would be collected and removed to a legally permitted waste disposal or recycling site.

Installation of New Structures
Structures to be installed within the site include riprap, two concrete abutments, and approximately 2,360 linear feet of pier supported by 98 concrete or steel piles. These structures would be placed by derrick barge or land-based conventional crane. All wood would be treated with ACZA or ACQ.

Steel piling would be driven with a vibratory hammer, except that the final portion of driving would be completed with an impact hammer to prove the bearing capacity. During the pile installation process, it may be necessary to drill holes into the bedrock if piles would encounter sloping or very shallow bedrock.

Gains and Losses of Waters of the United States
A summary of the changes in waters of the state that would result from the various project actions described above is provided in Table 1. The waters of the United States below OHW would decrease by 879 square feet.

Gains and Losses of Waters of the United States
(area in square feet (SF) below ordinary high water, +13.00 feet MLLW)

Construction Activity	Baseline Fill Area (SF)	Proposed Fill Area (SF)	Net Fill Area Change (SF)
Removal of 5 isolated, treated-timber piles	4*	0	-4
Removal of 8 steel H-piles	4**	0	-4
Installation of 2 abutments	0	148	+148
Placement of riprap	0	600	+600
Installation of 98 piles	0	139	+139
Totals	**8**	**887**	**+879**

* Pile square footage is approximate
** Pile square footage based on outside dimensions

Gains and Losses in Overwater Coverage
A summary of the changes in shading of waters of the United States that would result from the various project actions described above is provided in Table 2. For the entire project, the net increase in overwater coverage would be 32,760 square feet. However, approximately 12 percent of the walkway would be grated. For the portion of the project between OHW and -10 MLLW, the net increase in overwater coverage would be 3,520 square feet. However, 57 percent of the walkway in this area would be grated.

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Gains and Losses in Overwater Coverage
(area in SF below OHW)

Construction Activity	Baseline Shaded Water Column (SF)		Proposed Shaded Water Column (SF)		Net Shaded Water Column Change (SF)		Net Over Water Coverage Change Between OHW and -10 MLLW (SF)	
Removal of timber pier	Solid	1,240	Solid	0	Solid	-1,240	Solid	-1,240
	Grated	0	Grated	0	Grated	0	Grated	0
	Total	1,240	Total	0	Total	0	Total	0
Installation of walkway superstructure	Solid	0	Solid	30,000	Solid	+30,000	Solid	+2,040
	Grated	0	Grated	4,000	Grated	+4,000	Grated	+2,720
	Total	0	Total	34,000	Total	+34,000	Total	+4,760
Totals	**Solid**	**1,240**	**Solid**	**30,000**	**Solid**	**+28,760**	**Solid**	**+800**
	Grated	**0**	**Grated**	**4,000**	**Grated**	**+4,000**	**Grated**	**+2,720**
	Total	**1,240**	**Total**	**34,000**	**Total**	**+32,760**	**Total**	**+3,520**

PREPARATION OF DRAWINGS: See sample drawings and guidance for completing the drawings. ***ONE SET OF ORIGINAL OR GOOD QUALITY REPRODUCIBLE DRAWINGS MUST BE ATTACHED.*** NOTE: Applicants are encouraged to submit photographs of the project site, but these DO NOT substitute for drawings. ***THE CORPS OF ENGINEERS AND COAST GUARD REQUIRE DRAWINGS ON 8-1/2 X 11 INCH SHEETS. LARGER DRAWINGS MAY BE REQUIRED BY OTHER AGENCIES.***

help 7b. Describe the purpose of the proposed work and why you want or need to perform it at the site. Please explain any specific needs that have influenced the design.

The purpose of the project is to increase public access to the shoreline and provide trail access to waterfront development. The proposed overwater walkway has been called for in several planning documents, including: the 2002 *City of Bellingham Parks, Recreation and Open Space Plan*, and its 2008 update; the 2004 *Waterfront Vision and Framework Plan: Connecting Bellingham with the Bay*; the 2006 *Whatcom Preliminary Draft Framework Plan*; the 2007 draft update of the City of Bellingham Shoreline Master Program; and the mayor's 2008 *Waterfront Connections Plan*. The project has also been part of a City of Bellingham public vote, the third greenways levy, which was approved by voters in 2006. Prior to the vote, in an adopted ordinance, the city council recorded intent to pursue a list of potential greenway projects—the proposed project was included in that list. The list was put together by citizens who examined the city's current plans and needs.

help 7c. Describe the potential impacts to characteristic uses of the water body. These uses may include fish and aquatic life, water quality, water supply, recreation and aesthetics. Identify proposed actions to avoid, minimize, and mitigate detrimental impacts and provide proper protection of fish and aquatic life. Identify which guidance documents you have used. Attach a separate sheet if additional space is needed.

To be completed upon completion of Biological Evaluation by Grette Associates.

help 7d. For in-water construction work, will your project be in compliance with the State of Washington water quality standards for turbidity (WAC 173-201A-410)? [X] YES [ ] NO

help 8. Will the project be constructed in stages? [ ] YES [X] NO

Construction Timing

The entire project, including demolition and construction, is expected to take approximately 17 weeks to complete. In-water work is expected to take approximately 17 weeks to complete. However, the duration and total period of in-water work would be affected by several factors, including the type of construction equipment and procedures selected by the contractor, and the sequencing of work elements. Approximate durations for various construction activities are listed below. All in-water work would occur during the approved work window (generally July 15 to February 15). If it is necessary to perform certain work at night during a low tide, appropriate City of Bellingham, Whatcom County, and any other necessary approvals would be obtained.

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Approximate Duration of In-Water Activities

Project Element	Approximate Duration
Remove isolated timber piles	1 day
Remove timber pier	2 days
Install abutments	2 weeks
Install walkway	17 weeks

Proposed starting date: To be determined

Estimated duration of activity: Approximately 17 weeks

help 9. Check if any temporary or permanent structures will be placed:

[x] Waterward of the ordinary high water mark or line for fresh or tidal waters AND/OR

[x] Waterward of the mean higher high water for tidal waters?

help 10. Will fill material (rock, fill, bulkhead, or other material) be placed:

[ ] Waterward of the ordinary high water mark or line for fresh waters?
If **YES**, VOLUME (cubic yards) / AREA (acres)

[x] Waterward of the mean higher high water for tidal waters?
If **YES**, VOLUME (cubic yards) To be determined / AREA Approx. 887 square feet

help 11. Will material be placed in wetlands? [ ] YES [x] NO

If **YES**:

help A. Impacted area in acres:

help B. Has a delineation been completed? **If YES**, please submit with application. [ ] YES [ ] NO

help C. Has a wetland report been prepared? **If YES**, please submit with application [ ] YES [ ] NO

help D. Type and composition of fill material (e.g., sand, etc.)

help E. Material source:

help F. List all soil series (type of soil) located at the project site, and indicate if they are on the county's list of hydric soils. Soils information can be obtained from the natural Resources Conservation Service (NRCS).

help G. WILL PROPOSED ACTIVITY CAUSE FLOODING OR DRAINING OF WETLANDS? [ ] YES [ ] NO
If **YES**, IMPACTED AREA IS ACRES OF DRAINED WETLANDS.

NOTE: If your project will impact greater than 1/10 of an acre of wetland, submit a mitigation plan to the Corps and Ecology for approval along with the JARPA form.
NOTE: A 401 water quality certification may be required from Ecology in addition to an approved mitigation plan if your project wetland impacts are greater than 1/10 acre in size. Please submit the JARPA form and mitigation plan to Ecology for 401 certification review.

help 12. Stormwater Compliance: This project is (or will be) designed to meet ecology's most current stormwater manual, or an Ecology approved local stormwater manual. [x] YES [ ] NO

If **YES** – Which manual will your project be designed to meet? 2005

help If **NO** – For Clean Water Act Section 401 and 404 permits only – Please submit to Ecology for approval, along with this JARPA application, documentation that demonstrates the stormwater runoff from your project or activity will comply with the water quality standards, WAC 173-201(A)

help 13. Will excavation or dredging be required in water or wetlands? [ ] YES [x] NO

If **YES**:

A. Volume: (cubic yards) /area (acre)

B. Composition of material to be removed:

C. Disposal site for excavated material:

D. Method of dredging:

help 14. Has the State Environmental Policy Act (SEPA) been completed [ ] YES [x] NO

SEPA Lead Agency: City of Bellingham

SEPA Decision: DNS, MDNS, EIS, Adoption, Exemption Decision Date (end of comment period)

SUBMIT A **COPY OF YOUR SEPA DECISION LETTER** TO WDFW AS REQUIRED FOR A COMPLETE APPLICATION

help 15. List other Applications, approvals or certifications from other federal, state or local agencies for any structures, construction discharges or other activities described in the application (i.e. preliminary plat approval, health district approval, building permit, SEPA review, federal energy regulatory commission license (FERC), Forest practices application, etc.). Also, indicate whether work has been completed and indicate all existing work on drawings. NOTE: For use with Corps Nationwide Permits, identify whether your project has or will need an NPDES permit for discharging wastewater and/or stormwater.

TYPE OF APPROVAL	ISSUING AGENCY	IDENTIFICATION NO.	DATE OF APPLICATION	DATE APPROVED	COMPLETED?

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State Environmental Policy Act Review	City of Bellingham		Pending		No
Shoreline Conditional Use Permit	City of Bellingham		Pending		No
Building Permit	City of Bellingham		Pending		No
Section 10 Permit	United States Army Corps of Engineers		Pending		No
Section 404 Permit	United States Army Corps of Engineers		Pending		No
401 Water Quality Certification	Washington Department of Ecology		Pending		No
Coastal Zone Management Certification	Washington Department of Ecology		Pending		No
Aquatic Resources Use Authorization Notification	Washington Department of Natural Resources		Pending		No

help 16. Has any agency denied approval for the activity you're applying for or for any activity directly related to the activity described herein?

☐ YES ☒ NO

If **YES**, explain:

SECTION B - Use for Shoreline and Corps of Engineers permits only:

help 17a. Total cost of project. This means the fair market value of the project, including materials, labor, machine rentals, etc.

$6,058,000

help 17b. If a project or any portion of a project receives funding from a federal agency, that agency is responsible for ESA consultation. Please indicate if you will receive federal funds and what federal agency is providing those funds.

FEDERAL FUNDING ☒ YES ☐ NO If **YES**, please list the federal agency.

Surface Transportation Enhancement Grant (administered by Washington State Department of Transportation)

help 18. Local government with jurisdiction: City of Bellingham

help 19. Provide names, addresses and telephone numbers of adjoining property owners, lessees, etc. ***Please note:*** *Shoreline Management Compliance may require additional notice – consult your local government.*

NAME	ADDRESS	PHONE NUMBER
Burlington Northern Sante Fe Railway	2650 Lou Menk Drive, Fort Worth, TX 76131-2830	(800) 795-2673
Port of Bellingham	P.O. Box 1677, Bellingham, WA 98227-1677	(360) 676-2500
City of Bellingham	210 Lottie Street, Bellingham, WA 98227-1581	(360) 778-8000
Whatcom County Parks and Recreation	3373 Mount Baker Highway, Bellingham, WA 98226	(360) 733-2900
Washington State Department of Natural Resources	PO Box 47027, Olympia, WA 98504-7027	(360) 902-1100

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SECTION C - This section MUST be completed for any permit covered by this application

help 20. Application is hereby made for a permit or permits to authorize the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. I hereby grant to the agencies to which this application is made, the right to enter the above-described location to inspect the proposed, in-progress or completed work. I agree to start work **ONLY** after all necessary permits have been received.

SIGNATURE OF APPLICANT	DATE
SIGNATURE OF AUTHORIZED AGENT	DATE

I HEREBY DESIGNATE_____TO ACT AS MY AGENT IN MATTERS RELATED TO THIS APPLICATION FOR PERMIT(S). I UNDERSTAND THAT IF A FEDERAL PERMIT IS ISSUED, I MUST SIGN THE PERMIT.

SIGNATURE OF APPLICANT DATE

SIGNATURE OF LANDOWNER (EXCEPT PUBLIC ENTITY LANDOWNERS, E.G. DNR)

THIS APPLICATION MUST BE SIGNED BY THE APPLICANT AND THE AGENT, IF AN AUTHORIZED AGENT IS DESIGNATED.

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.

COMPLETED BY LOCAL OFFICIAL

A. Nature of the existing shoreline. (Describe type of shoreline, such as marine, stream, lake, lagoon, marsh, bog, swamp, flood plain, floodway, delta; type of beach, such as accretion, erosion, high bank, low bank, or dike; material such as sand, gravel, mud, clay, rock, riprap; and extent and type of bulkheading, if any)

B. In the event that any of the proposed buildings or structures will exceed a height of thirty-five feet above the average grade level, indicate the approximate location of and number of residential units, existing and potential, that will have an obstructed view:

C. If the application involves a conditional use or variance, set forth in full that portion of the master program which provides that the proposed use may be a conditional use, or, in the case of a variance, from which the variance is being sought:

These Agencies are Equal Opportunity and Affirmative Action employers.
For special accommodation needs, please contact the appropriate agency in the instructions

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13d
Pattle Point Trestle Renovation
SEPA Checklist

PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
Planning Division
210 Lottie Street, Bellingham, WA 98225
Telephone: (360) 676-6982 Fax: (360) 738-7306 TTY: (360) 676-6883

ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of proposed project, if applicable:

   Pattle Point Trestle Renovation

2. Name, address, and phone number of owner/decision maker:

   City of Bellingham, Parks and Recreation Department
   Contact: Gina G. Austin, PE
   3424 Meridian Street
   Bellingham, WA 98225
   (360) 778-7000

3. Name, address and phone number of contact person:

   Reid Middleton, Inc.
   Contact: Shannon Kinsella, PE
   728 134th Street SW, Suite 200
   Everett, WA 98204
   (425) 741-3800

4. Tax Assessor's Parcel Number and Legal Description of Subject Property (the parcel number is mandatory to begin processing of the application). Give sufficient information for a person to understand the precise location of your proposed project. If a proposal would occur over a large area, provide the boundaries of the site. Provide a complete legal description, site plan, vicinity map, and topographical map, if reasonably available. You are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

   The location of the project is the existing Pattle Point trestle, which runs along the shoreline of Boulevard Park. Boulevard Park is located on the eastern shores of Bellingham Bay, in Bellingham, Washington.

   The project would occur on property owned by the City of Bellingham.

5. Street Address of Subject Property

   Not applicable

6. Neighborhood and Area Designation (as per Comprehensive Plan)

   Neighborhood: South Hill

Area Designation: Public

7. Zoning/Land Use Designation of Subject Property (see Neighborhood Plan – required for processing)

   Public (Parks, OS, School).

8. Date checklist prepared:

   July 20, 2009

9. Department requesting checklist:

   City of Bellingham Planning Department

10. Proposed timing or schedule (including phasing, if applicable):

    Construction on the trestle is expected to occur between July 16, 2009 and February 15, 2010. The entire project, including demolition and construction, is expected to take approximately 8 weeks to complete. In-water work is expected to take approximately 6 weeks to complete. However, the duration and total period of in-water work would be affected by several factors, including the type of construction equipment and procedures selected by the contractor, and the sequencing of work elements. Approximate durations for various construction activities are listed in the table below. All in-water work would occur during the approved work window (July 16 to February 15). If it were necessary to perform certain work at night during a low tide, appropriate City of Bellingham, Whatcom County, and/or any other required approvals would be obtained.

Approximate Duration of In-Water Activities

Project Element	Approximate Duration
Removal and replacement of cross bracing	3 days
Removal of superstructure	5 days
Removal and installation of abutments	2 weeks
Removal and replacement of pile caps	1 day
Installation of superstructure	6 weeks

11. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain:

    The City of Bellingham Parks and Recreation Department anticipates the proposal of an overwater walkway from Boulevard Park to the Cornwall Landfill area, approximately .2 mile north of the Pattle Point trestle. This project is still in the design phase, but it is anticipated for construction in 2012-2013, pending receipt of permits. Funding for this proposed future overwater walkway has not been wholly secured at this time.

12. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal:

    - Technical Memorandum Re: Pattle Point Overwater Walkway Eelgrass Survey (prepared by Grette Associates, July 14, 2008)
    - Biological Evaluation (prepared by Grette Associates, July 10, 2009)
    - Boulevard Park Shoreline Assessment (draft prepared by Reid Middleton, Inc, April 2008)

- Technical Memorandum Re: Initial Cultural Resources Evaluation (revised draft prepared by Landau Associates, August 2008)
- An Assessment of the Probable Archaeological Potential of the Pattle Point Trestle Walkway Project Area, Boulevard Park, Bellingham, Washington (prepared by Gary C. Wessen and Tim Wahl, July 2009)

13. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain:

No such application are known.

14. List any government approvals or permits that will be needed for your proposal, if known:

- State Environmental Policy Act Review (City of Bellingham)
- Shoreline Exemption (City of Bellingham)
- Building Permit (City of Bellingham)
- Hydraulic Project Approval (Washington Department of Fish and Wildlife)
- Section 10 Permit (United States Army Corps of Engineers)
- Section 404 Permit (United States Army Corps of Engineers)
- 401 Water Quality Certification (Washington Department of Ecology)
- Coastal Zone Management Certification (Washington Department of Ecology)

15. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page:

The City of Bellingham Parks and Recreation Department proposes to renovate an approximately 525-foot-long trestle that supports an overwater segment of the Coast Millennium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham. The trestle currently has several defective components. Use of the trestle would not change. Many dimensions of the existing trestle would only be minimally altered, or would not be altered. The trestle deck would increase from an average width of approximately 10 feet to an average width of 12 feet. However, 3,181 square feet (relative to the ordinary high water mark) of the proposed deck would feature grating, in contrast to the existing trestle deck, which does not feature any grating.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (underline one): Flat, rolling, hilly, steep slopes, mountainous, other: aquatic

b. What is the steepest slope on the site (approximate percent slope)?

The steepest slope on the site is vertical (bulkhead).

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland:

Substrate in the project area consists primarily of small boulders and cobbles in the upper intertidal zone, transitioning to cobble/gravel and sand in the lower intertidal and shallow subtidal zone. Sand and gravel is present in the upper intertidal zone under the northern end of

the trestle.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe:

Boulevard Park is located over deposits of relatively soft to loose soils that could potentially amplify earthquake ground motions at various frequencies.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill:

Project work includes the removal and replacement of the trestle's two existing abutments. The existing north abutment is timber surrounded by riprap; the existing south abutment is concrete surrounded by riprap. The north abutment total excavation volume would be approximately 67 cubic yards (approximately 23 cubic yards of excavation in water). The south abutment total excavation volume would be approximately 80 cubic yards (approximately 33 cubic yards of excavation in water). The two replacement abutments would both consist of a concrete pile cap (sitting atop two steel-pipe piles, if necessary) surrounded by riprap. The north abutment would require a total of approximately 38 cubic yards of replacement fill, including concrete, clean backfill, and riprap (approximately 22 cubic yards of replacement fill in water, including clean backfill and riprap). The south abutment would require a total of approximately 54 cubic yards of replacement fill including concrete, clean backfill, and riprap (approximately 32 cubic yards of replacement fill in water, including clean backfill and riprap).

Approximately four creosote-treated timber piling located beneath the northernmost frame bent would be cut two feet below the mudline and backfilled with a total of approximately 1 cubic yard (.25 cubic yards each) of coarse sand or washed gravel purchased from a vendor.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe:

Erosion could occur in the shoreline area during construction activity. Erosion could occur as existing structures and vegetative cover are removed, if surface water or strong winds were to pass over the areas of exposed soil.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The percentage of the uplands covered by impervious surfaces would not be significantly changed. Approximately 53 percent of the trestle would be covered with impervious surfaces. The remaining 47 percent would consist of porous grating.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The use of erosion control best management practices during construction would mitigate the potential for erosion to occur at the site.

2. Air

a. What types of emission to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known:

During construction, temporary emissions to the air would result from the use of construction

equipment. The quantity of these emissions is unknown; however, the quantity is not expected to be significant.

b. Are there any off-site sources of emissions or odor that may effect your proposal? If so, generally describe:

No off-site sources of emissions or odor that may affect this proposal are known. The Pattle Point trestle runs parallel to the Burlington Northern Santa Fe main line, separated by a distance of approximately 120 feet.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

All construction equipment would be maintained in proper working order.

3. Water

a. Surface:

1). Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into:

The project would occur in the waters and shoreline area of Bellingham Bay (saltwater).

2). Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans:

- Removal and replacement of the trestle's superstructure. Removal of the trestle's existing superstructure involves the removal of an approximately 10-foot-wide (14-foot-wide at seating nooks) by 525-foot-long non-grated, timber deck and 1,074 feet of timber guardrail. 521 feet of the trestle's existing superstructure length is over water; total overwater coverage is 5,697 square feet. Replacement of the trestle's superstructure involves the installation of a 12-foot-wide (16-foot-wide at seating nooks) by 564-foot-long deck and 1,152 linear feet of timber/steel guardrail. 521 feet of the replacement superstructure length would be over water; total overwater coverage would be 6,730 square feet, of which 3,181 square feet would consist of steel-beam-supported grated deck and 3,549 square feet would consist of steel-beam-supported concrete deck.

- Removal and replacement of the trestle's southernmost timber frame bent. The existing bent is comprised of two horizontal and five vertical 10-inch-by-20-inch creosote-treated timbers, two 4-inch-by-10-inch creosote-treated timber cross braces, and a creosote-treated timber sill. The replacement bent would consist of 12-inch-by-12 inch ACZA-treated timber, with the exception of the cross braces, which would consist of 4-inch-by-10-inch ACZA-treated timbers, and an ACZA-treated timber or concrete sill.

- Removal of the trestle's northernmost timber frame bent, comprised of two horizontal and four vertical 12-inch-by-12-inch creosote-treated timbers, and associated timber lagging.

- Removal and replacement of the trestle's two existing abutments. The existing north abutment is timber surrounded by riprap; the existing south abutment is concrete surrounded by riprap. The north abutment total excavation volume would be approximately 67 cubic yards (approximately 23 cubic yards of excavation in water). The south abutment total excavation volume would be approximately 80 cubic yards (approximately 33 cubic

yards of excavation in water). The two replacement abutments would both consist of a concrete pile cap (sitting atop two steel-pipe piles, if necessary) surrounded by riprap. The north abutment would require a total of approximately 38 cubic yards of replacement fill, including concrete, clean backfill, and riprap (approximately 22 cubic yards of replacement fill in water, including clean backfill and riprap). The south abutment would require a total of approximately 54 cubic yards of replacement fill including concrete, clean backfill, and riprap (approximately 32 cubic yards of replacement fill in water, including clean backfill and riprap).

- Removal and replacement of the trestle's treated-timber cross bracing, comprised of 66 boards (each 20 feet long).

- Removal and replacement of four of the trestle's timber pile caps (each 12 inches wide,16 inches deep, 16 feet long).

For the protection of aquatic life, all in-water activities would take place during the approved work window (July 16 to February 15). Construction activities that can be performed landward of the OHW line may take place at any time. Construction activities that can be performed landward of the OHW line include installation of deck, electrical systems, pavement, and site drainage and treatment.

3). Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material:

Project work includes the removal and replacement of the trestle's two existing abutments. The existing north abutment is timber surrounded by riprap; the existing south abutment is concrete surrounded by riprap. The north abutment total excavation volume would be approximately 67 cubic yards (approximately 23 cubic yards of excavation in water). The south abutment total excavation volume would be approximately 80 cubic yards (approximately 33 cubic yards of excavation in water). The two replacement abutments would both consist of a concrete pile cap (sitting atop two steel-pipe piles, if necessary) surrounded by riprap. The north abutment would require a total of approximately 38 cubic yards of replacement fill, including concrete, clean backfill, and riprap (approximately 22 cubic yards of replacement fill in water, including clean backfill and riprap). The south abutment would require a total of approximately 54 cubic yards of replacement fill including concrete, clean backfill, and riprap (approximately 32 cubic yards of replacement fill in water, including clean backfill and riprap).

Approximately four creosote-treated timber piling located beneath the northernmost frame bent would be cut two feet below the mudline and backfilled with a total of approximately 1 cubic yard (.25 cubic yards each) of coarse sand or washed gravel purchased from a vendor.

The in-water area impacted is approximately 260 square feet; the total area impacted is approximately 726 square feet.

4). Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known:

The proposal would not require surface water withdrawals or diversions.

5). Does the proposal lie within a 100-year floodplain? If so, note the location on the site plan:

The project is not located in a mapped Federal Emergency Management Agency floodplain.

6). Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge:

During construction activities, there is potential for waste materials to enter surface waters.

However, several measures will be taken to ensure to prevent discharges and mitigate any effects should such a discharge occur. These measures include:

- Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc, shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters.

- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including:

    - In the event of a spill, containment and cleanup efforts will begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup will include proper disposal of any spilled material and used cleanup material.

    - The cause of the spill shall be assessed and appropriate action will be taken to prevent further incidents or environmental damage.

- Spills and/or conditions resulting in distressed or dying fish shall be reported immediately to DOE's Northwest Regional Spill Response Office at (206) 649-7000 (a 24-hour phone number).

- During trestle superstructure resurfacing, a fabric will be placed below the superstructure to catch any debris.

- The contractor will have a spill containment kit, including oil-absorbent materials, on site to be used in the event of a spill or if any oil product is observed in the water.

- The contractor is responsible for the preparation of a SPCC plan to be used for the duration of the Project. The SPCC plan will: 1) identify construction planning elements and recognize potential spill sources in the Action Area, 2) outline the response actions in the event of a spill or release and identify notification and reporting procedures, 3) outline contractor management elements such as personal responsibilities, site security and inspections, and training, and 4) outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on-site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. Hazardous materials include but are not limited to gasoline, oils, and chemicals, and are further defined in RCW 70.105.010.

b. Ground

1). Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known:

No ground water would be withdrawn as part of this proposal. No water would be discharged to ground water as part of this proposal.

2). Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial, containing chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve:

No waste material would be discharged into the ground from septic tanks or other sources as part of this proposal.

c. Water Runoff (including storm water):

1). Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe:

Storm water runoff from the trestle would flow into Bellingham Bay.

2). Could waste materials enter ground or surface waters? If so, generally describe:

During construction activities, there is the potential for debris to enter surface waters. After the project is complete, waste materials associated with users of the trestle (such as litter) could enter surface waters.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

The project would incorporate best management practices and an erosion control plan. The project would also comply with any permit requirements. Trash receptacles would be provided at the project site.

4. Plants

a. Check or circle types of vegetation found on the site:

deciduous tree: alder, maple, aspen, other
evergreen tree: fir, cedar, pine, other
shrubs
grass
pasture
crop or grain
wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
water plants: water lily, eelgrass, milfoil, other: macroalgae
other types of vegetation:

b. What kind and amount of vegetation will be removed or altered?

A limited amount of the existing vegetation (such as grass and shrubs) at both ends of the trestle would be removed or altered during construction work as part of the replacement of the trestle abutments and superstructure.

c. List threatened or endangered species known to be on or near the site:

No threatened or endangered plant species are known to be on or near the site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance

vegetation on the site, if any:

Any vegetation removed during construction work would be replaced with an environmentally appropriate species.

5. Animals

a. Circle any birds and animals, which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, other: marbled murrelet
mammals: deer, bear, elk, beaver, other: sea lion, whale, sea turtle
fish: bass, salmon, trout, herring, shellfish, other: surf smelt

b. List any threatened or endangered species known to be on or near the site:

Threatened species:
- Puget Sound chinook salmon (*Oncorhynchus tshawytscha*)
- Coastal-Puget Sound bull trout (*Salvelinus confluentus*)
- Puget Sound steelhead trout (*Oncorhynchus mykiss*)
- Steller sea lion (*Eumetopias jubatus*)
- Marbled murrelet (*Brachyramphus marmoratus*)

Endangered species:
- Southern resident killer whale (*Orcinus orca*)
- Humpback whale (*Megaptera novaeangliae*)
- Leatherback sea turtle (*Dermochelys coriacea*)

c. Is the site part of a migration route? If so, explain:

The nearest chinook salmon-bearing stream is Padden Creek. The mouth of Padden Creek is approximately one-half mile from the Action Area. Additionally, Chinook salmon utilize Whatcom Creek and the Nooksack River, which are further from the Action Area. Peak abundances of juvenile Chinook in the Action Area are expected to occur in May and June as they migrate seaward.

The site is also located in the Pacific Flyway.

d. Proposed measures to preserve or enhance wildlife, if any:

Federal, state, and local permits contain conditions that are intended to reduce the potential for short-term effects from in-water construction activities and long-term effects from habitat change. These provisions comprise an extensive list of conservation measures that are applied to projects in or near marine and estuarine waters. The following are permit conditions typical of projects in nearshore marine areas such as Bellingham Bay, and are conservation measures for the Project:

- Timing restrictions specifying that in-water work must occur when juvenile salmonids are absent or present in very low numbers would be strictly observed. Additional timing restrictions are established for the protection of forage fish. All timing restrictions that may be established by WDFW, the Corps, NMFS, or USFWS would be strictly observed.

- Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly

for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters. Proper security shall also be maintained to prevent vandalism.

- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including:

    - In the event of a spill, containment and cleanup efforts will begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup will include proper disposal of any spilled material and used cleanup material.

    - The cause of the spill shall be assessed and appropriate action will be taken to prevent further incidents or environmental damage.

- Spills and/or conditions resulting in distressed or dying fish shall be reported immediately to DOE's Northwest Regional Spill Response Office at (206) 649-7000 (a 24-hour phone number).

BMPs are employed to reduce the potential for construction-related impacts on species and habitats. In addition to the regulatory considerations above, the following BMPs and conservation measures have been incorporated into the Project design and/or would be used during construction to minimize Project impacts:

- All creosote-treated timber cross-bracing (66 20-ft long boards) would be replaced with ACZA-treated timber boards.

- Four creosote-treated timber piles would be cut 2-ft below the mudline and covered with coarse sand and gravel. This would result in an expansion of shaded surf smelt spawning substrate in an area where spawning has been documented.

- Replacement of abutments and placement of fill would be conducted from the upland during tidal exposure if possible.

- During trestle superstructure resurfacing, a fabric will be placed below the superstructure to catch any debris.

- The barge would not be anchored in eelgrass beds.

- Care would be taken by the barge operator to avoid grounding out and minimize propeller wash.

- The contractor will have a spill containment kit, including oil-absorbent materials, on site to be used in the event of a spill or if any oil product is observed in the water.

- The contractor is responsible for the preparation of a SPCC plan to be used for the duration of the Project. The SPCC plan will: 1) identify construction planning elements and recognize potential spill sources in the Action Area, 2) outline the response actions in the event of a spill or release and identify notification and reporting procedures, 3) outline contractor management elements such as personal responsibilities, site security and inspections, and training, and 4) outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on-site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. Hazardous materials include but are not limited to gasoline, oils, and chemicals, and are

further defined in RCW 70.105.010.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Not applicable

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe:

The project would not affect the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Not applicable

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, which could occur as a result of this proposal? If so, describe:

Construction-related environmental health hazards that are typically associated with shoreline construction work could occur as a result of this proposal.

The contractor is responsible for the preparation of a Spill Prevention Control and Countermeasures plan to be used for the duration of the Project. The SPCC plan will: 1) identify construction planning elements and recognize potential spill sources in the Action Area, 2) outline the response actions in the event of a spill or release and identify notification and reporting procedures, 3) outline contractor management elements such as personal responsibilities, site security and inspections, and training, and 4) outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on-site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. Hazardous materials include but are not limited to gasoline, oils, and chemicals, and are further defined in RCW 70.105.010.

1). Describe special emergency services that might be required:

No special emergency services are anticipated to be required.

2). Proposed measures to reduce or control environmental health hazards, if any:

Contractor would be required to submit a safety plan to the City of Bellingham Department of Parks and Recreation and conduct weekly site meetings. Contractors would follow applicable safety regulations.

b. Noise

1). What types of noise exist in the area which may affect your project (for example: traffic,

equipment, operation, other)?

No types of noise that may affect this proposal are known. The Pattle Point trestle runs parallel to the Burlington Northern Santa Fe main line, separated by a distance of approximately 120 feet.

2). What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site:

Some construction activities would be expected to result in a short-term, moderate increase in noise levels.

Long-term noise levels after project completion are not expected to differ from the noise levels currently resulting from use of the existing trestle.

3). Proposed measures to reduce or control noise impacts, if any:

The proposed facility would be subject to Bellingham Municipal Code provision 8.04.040, which states that parks may only be used between the hours of 6:00 am and 10:00 pm.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

The site and adjacent properties are currently used as public park land.

b. Has the site been used for agriculture? If so, describe:

No.

c. Describe any structures on the site:

The Pattle Point trestle is an approximately 525-foot-long overwater segment of the Coast Millennium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham. The Pattle Point trestle was originally built in 1901 to accommodate trains. The trestle has served as a multi-use trail since the establishment of Boulevard Park in 1980. The trestle was refurbished to its present configuration as a multi-use trail in 1991.

The current physical condition of the Pattle Point trestle was documented in a report by Echelon Engineering, Inc., dated January 2008. The report identified several of the trestle components as being in “poor condition.” “Poor condition” was defined in the report as meaning that a member “has sustained major to severe damage that affects the members load bearing capacity.”

d. Will any structures be demolished? If so, what?

Defective components of the existing trestle would be demolished and replaced.

e. What is the current comprehensive plan designation of the site?

Public

f. If applicable, what is the current shoreline master program designation of the site?

Conservancy II

g. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify:

The site contains designated critical habitat for:

- Puget Sound chinook salmon
- Coastal-Puget Sound bull trout
- Southern Resident killer whale

h. Approximately how many people would reside or work in the completed project?

No people would reside or work in the completed project.

i. Approximately how many people would the completed project displace?

The completed project would not displace any people.

j. Proposed measures to avoid or reduce displacement impacts, if any:

Not applicable

k. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposed facility would be subject to Bellingham Municipal Code provision 8.04.040, which states that parks may only be used between the hours of 6:00 am and 10:00 pm.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle or low-income housing:

The project would not provide any housing units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing:

The project would not eliminate any housing units.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The tallest height of the trestle would be 19.5 feet above mean lower low water (approximately the same height as the existing trestle). The principal exterior building materials would be wood

and steel.

b. What views in the immediate vicinity would be altered or obstructed?

Views in the immediate vicinity would essentially be the same before and after the proposed trestle renovations.

c. Proposed measures to reduce or control aesthetic impacts, if any:

No such measures are proposed.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

No light or glare would be produced by this proposal, as no lighting is proposed.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Not applicable

c. What existing off-site sources of light or glare may affect your proposal?

No existing off-site sources of light or glare that may affect the proposal are known.

d. Proposed measures to reduce or control light and glare impacts, if any:

Not applicable

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Designated recreational opportunities are in the immediate vicinity include pathways for walking, running, and bicycling. Boulevard Park provides space for informal recreational opportunities (e.g., Frisbee throwing, kite flying). The waters in the vicinity provide opportunities for boating.

b. Would the proposed project displace any existing recreational uses? If so, describe:

During construction, usage of the trail that passes over the trestle would be disrupted. However, in the long-term, the proposed project would not displace any existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

The proposed project would enhance recreation by being designed to better accommodate the significant number of pedestrians and bicyclists that utilize this segment of trail. More specifically, the average width of the trestle would increase by approximately two feet. Also, the project would make Americans with Disabilities Act improvements to the trestle surface.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe:

No such places or objects are known to be on or next to the site.

b. Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site:

The Pattle Point trestle project area has some potential to contain archaeological resources. However, it is likely that the range of such resources which might be present is relatively limited. Additionally, if archaeological deposits are present, they are likely to be disturbed. Thus, any archaeological resources found would be unlikely to be eligible for listing with the National Register of Historic Places.

The most likely archaeological resources to be present are structural remains representing the old Northern Pacific Railroad trestle (and its associated track) and the Bellingham Bay (later the E.K. Wood Mill) Mill. Archaeological deposits representing either of the latter—or other early historic activities—are also possible, but they are considered to be relatively unlikely. Similarly, prehistoric archaeological deposits are also possible, but they are also considered be relatively unlikely.

The above information is based on the report "An Assessment of the Probable Archaeological Potential of the Pattle Point Trestle Walkway Project Area" (Wessen & Wahl).

c. Proposed measures to reduce or control impacts, if any:

The project would comply with permit requirements.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any:

Vehicular access to Boulevard Park is via Bay View Drive. Bay View Drive is accessible from the north via South State Street and from the south via 11th Street.

b. Is the site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

Boulevard Park is served by Whatcom Transit Authority route number 401. Buses run regularly along South State Street, which runs parallel to the Pattle Point trestle, approximately 400 feet to the southeast.

c. How many parking spaces would the completed project have? How many would the project eliminate?

The proposed project would not alter existing parking arrangements.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private):

The proposal would not require any new roads or streets, nor any improvements to existing roads or streets.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe:

The Pattle Point trestle runs parallel to the Burlington Northern Santa Fe main line, separated by a distance of approximately 120 feet.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur:

The vehicular trips per day generated by the completed project are not expected to differ from the trips per day generated by the existing facility.

g. Proposed measures to reduce or control transportation impacts, if any:

Not applicable

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe:

The project would not result in an increased need for public services, as the project would renovate an already existing facility.

b. Proposed measures to reduce or control direct impacts on public services, if any:

Not applicable

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, garbage service, telephone, sanitary sewer, septic system, other:

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed:

No utilities are proposed as part of this project.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Mark J. Daniel

Date Submitted: 7/24/2009

D. FEE

An application fee shall be submitted in the amount set by the City Council. See separate Fee Schedule handout.

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13e
Boulevard Park Overwater Walkway
SEPA Checklist

PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
Planning Division
210 Lottie Street, Bellingham, WA 98225
Telephone: (360) 676-6982 Fax: (360) 738-7306 TTY: (360) 676-6883

ENVIRONMENTAL CHECKLIST INSTRUCTIONS

PURPOSE:

The State Environmental Policy Act (SEPA), Chapter 43.21C RCW, requires all agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

INSTRUCTIONS FOR APPLICANTS:

Mailing list and labels: If you are submitting an environmental checklist concurrently with a building permit application or a Public Facility Construction Agreement application, you must attach a mailing list and mailing labels per the Mailing List Instructions form and mailing list form. The mailing list radius is property ownership within 500 feet of the project site boundary.

Providing information: This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or does not apply". Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, etc. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

USE OF CHECKLIST FOR NON-PROJECT PROPOSALS:

Complete this checklist for non-project proposals, even though questions may be answered “does not apply”. In addition, complete this supplemental sheet for non-project actions (Part D).

For non-project actions, the references in the checklist to the words "project", "applicant", and "property or site" should be read as "proposal", "proposer", and "affected geographic area," respectively.

DRAFT

PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
Planning Division
210 Lottie Street, Bellingham, WA 98225
Telephone: (360) 676-6982 Fax: (360) 738-7306 TTY: (360) 676-6883

ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of proposed project, if applicable:

   Boulevard Park Overwater Walkway

2. Name, address, and phone number of owner/decision maker:

   City of Bellingham, Parks and Recreation Department
   Contact: Gina Gobo Austin, PE
   3424 Meridian Street
   Bellingham, WA 98225
   (360) 778-7000

3. Name, address and phone number of contact person:

   Reid Middleton, Inc.
   Contact: Nicole Faghin
   728 134th Street SW, Suite 200
   Everett, WA 98204
   (425) 741-3800

4. Tax Assessor's Parcel Number and Legal Description of Subject Property (the parcel number is mandatory to begin processing of the application). Give sufficient information for a person to understand the precise location of your proposed project. If a proposal would occur over a large area, provide the boundaries of the site. Provide a complete legal description, site plan, vicinity map, and topographical map, if reasonably available. You are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

   The overwater walkway would extend from Boulevard Park to the Cornwall Avenue landfill. Boulevard Park and the Cornwall Avenue landfill are located on the eastern shores of Bellingham Bay, in Bellingham, Washington.

   The project would be constructed over Washington State Department of Natural Resources aquatic lands.

5. Street Address of Subject Property

   Not applicable

6. Neighborhood and Area Designation (as per Comprehensive Plan)

   Neighborhood: CBD (Cornwall landfill end) & South Hill (Boulevard Park end)

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Area Designation: Industrial/Mixed-Use (Cornwall landfill end) & Public (Boulevard Park end)

7. Zoning/Land Use Designation of Subject Property (see Neighborhood Plan – required for processing)

   Industrial/Waterfront Mixed-Use (Cornwall landfill end) & Public (Parks, OS, School) (Boulevard Park end)

8. Date checklist prepared:

   February 2009

9. Department requesting checklist:

   City of Bellingham Planning Department

10. Proposed timing or schedule (including phasing, if applicable):

    The entire project, including demolition and construction, is expected to take approximately 17 weeks to complete. In-water work is expected to take approximately 17 weeks to complete. However, the duration and total period of in-water work would be affected by several factors, including the type of construction equipment and procedures selected by the contractor, and the sequencing of work elements. Approximate durations for various construction activities are listed below. All in-water work would occur during the approved work window (generally July 15 to February 15). If it is necessary to perform certain work at night during a low tide, appropriate City of Bellingham, Whatcom County, and any other necessary approvals would be obtained.

Approximate Duration of In-Water Activities

Project Element	Approximate Duration
Remove isolated timber piles	1 day
Remove timber pier	2 days
Install abutments	2 weeks
Install walkway	17 weeks

11. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain:

    No

12. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal:

    - Memorandum Re: Boulevard Park Overwater Walkway Eelgrass Habitat (May 2008)
    - Technical Memorandum Re: Boulevard Park Overwater Walkway Eelgrass Survey (prepared by Grette Associates, July 2008)
    - Biological Evaluation (BE) (to be prepared by Grette Associates)
    - Boulevard Park Shoreline Assessment (draft prepared by Reid Middleton, Inc., April 2008)
    - Initial Geotechnical Engineering Evaluation (draft prepared by Landau Associates, July 2008)
    - Technical Memorandum Re: Initial Cultural Resources Evaluation (revised draft prepared by Landau Associates, August 2008)

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13. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain:

To be completed after further discussions with the City of Bellingham.

14. List any government approvals or permits that will be needed for your proposal, if known:

- State Environmental Policy Act Review (City of Bellingham)
- Shoreline Substantial Development Permit (City of Bellingham)
- Building Permit (City of Bellingham)
- Hydraulic Project Approval (Washington Department of Fish and Wildlife)
- Section 10 Permit (United States Army Corps of Engineers)
- Section 404 Permit (United States Army Corps of Engineers)
- 401 Water Quality Certification (Washington Department of Ecology)
- Coastal Zone Management Certification (Washington Department of Ecology)
- Aquatic Resources Use Authorization Notification (Washington Department of Natural Resources)

15. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page:

The City of Bellingham Parks and Recreation Department proposes to construct an approximately 2,360-foot-long overwater segment of a multi-use (e.g., walking, bicycling) trail from Boulevard Park to the Cornwall Avenue landfill. The overwater walkway deck would have an average width of 14 feet.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (underline one): Flat, rolling, hilly, steep slopes, mountainous, other: aquatic

b. What is the steepest slope on the site (approximate percent slope)?

The steepest slope on the site is vertical (bulkhead).

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland:

In the area at the south end of the proposed overwater walkway, at the north side of Boulevard Park, subsurface conditions consist of about 5 feet of earthen fill, 19 feet of wood waste fill, and 1 foot of sandy beach deposits over bedrock encountered about 25 feet below ground surface.

In the area at the north end of the proposed overwater walkway, at the south side of the Cornwall Avenue landfill, the subsurface conditions consist of about 2 feet of granular fill, 23 feet of landfill refuse, 10 feet of wood waste fill, and 8 feet of Nooksack Deposits/Glaciomarine Drift over bedrock encountered about 43 feet below ground surface.

In the marine area between the Boulevard Park and Cornwall Avenue landfill sides of the overwater walkway, subsurface conditions likely consist of varying depths of fill materials

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(estimated to increase in thickness near the existing shorelines), overlying varying depths of marine sediments, overlying bedrock.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe:

The Boulevard Park and Cornwall Avenue landfill sites are located over deposits of relatively soft to loose soils that could potentially amplify earthquake ground motions at various frequencies.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill:

For this proposed project, construction activity includes:

- Installation of 2 concrete abutments, each comprised of 74 square feet of reinforced concrete. At each end of the proposed overwater walkway, approximately 480 square feet of the shoreline would be graded in order to prepare for placement of the abutment and riprap. Riprap would be placed over approximately 300 square feet at each end of the proposed overwater walkway.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe:

Erosion could occur in the shoreline area during clearing and construction activity. This erosion could occur as existing structures and vegetative cover are removed, if surface water or strong winds were to pass over the areas of exposed soil.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The percentage of the uplands covered by impervious surfaces would not be significantly changed. Approximately 12 percent of the overwater walkway would be covered with pervious grating. The remaining 88 percent would consist of impervious concrete.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The use of erosion control best management practices (BMPs) during construction would mitigate the potential for erosion to occur at the site.

2. <u>Air</u>

a. What types of emission to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known:

During construction, temporary emissions to the air would result from the use of construction equipment. The quantity of these emissions is unknown; however, the quantity is not expected to be significant.

b. Are there any off-site sources of emissions or odor that may effect your proposal? If so, generally describe:

No off-site sources of emissions or odor that may affect this proposal are known. The proposed

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overwater walkway would run parallel to the Burlington Northern Santa Fe main line, separated by a distance of approximately 500 feet.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

All construction equipment would be maintained in proper working order.

3. Water

a. Surface:

1). Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into:

The project would occur in and around a small embayment of Bellingham Bay (saltwater).

2). Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans:

For this proposed project, construction activities that may occur in-water (defined as waterward of the ordinary high water (OHW) line) include:

- Removal of an existing timber pier, comprised of approximately 1,240 square feet of timber deck supported by 8 steel H-piles (each 8 inches square).
- Removal of 5 existing, isolated, treated-timber piles (each 12 inches in diameter).
- Installation of 2 concrete abutments, each comprised of 74 square feet of reinforced concrete. At each end of the proposed overwater walkway, approximately 480 square feet of the shoreline would be graded in order to prepare for placement of the abutment and riprap. Riprap would be placed over approximately 300 square feet at each end of the proposed overwater walkway.
- Installation of 98 steel or concrete piles (each 16 inches in diameter).
- Installation of the walkway superstructure, comprised of a 14-foot-wide (18 feet at seating nooks) by 2,360-foot-long deck (4,000 square feet of grated deck, 30,000 square feet of concrete deck, 34,000 square feet of total overwater coverage), and 4,720 linear feet of timber/steel guardrail.

For protection of aquatic life, all in-water activities would take place during the approved work window (July 15 to February 15). Construction activities that would be performed landward of the OHW line may take place at any time. Out-of-water construction activities may include installation of pier deck, electrical systems, asphalt concrete pavement, and site drainage and treatment.

3). Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material:

For this proposed project, construction activity includes:

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Installation of 2 concrete abutments, each comprised of 74 square feet of reinforced concrete. At each end of the proposed overwater walkway, approximately 480 square feet of the shoreline would be graded in order to prepare for placement of the abutment and riprap. Riprap would be placed over approximately 300 square feet at each end of the proposed overwater walkway.

4). Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known:

The proposal would not require surface water withdrawals or diversions.

5). Does the proposal lie within a 100-year floodplain? If so, note the location on the site plan:

The project is located in a mapped Federal Emergency Management Agency floodplain.

6). Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge:

During construction activities, there is potential for debris to enter surface waters.

However, several measures will be taken to ensure to prevent discharges and mitigate any effects should such a discharge occur. These measures include:

- Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters. Proper security shall also be maintained to prevent vandalism.

- Corrective actions will be taken in the event of any discharge of oil, fuel, or chemicals into the water, including:

    - In the event of a spill, containment and cleanup efforts will begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup will include proper disposal of any spilled material and used cleanup material.

    - The cause of the spill shall be assessed and appropriate action will be taken to prevent further incidents or environmental damage.

- Spills and/or conditions resulting in distressed or dying fish shall be reported immediately to DOE's Northwest Regional Spill Response Office at (206) 649-7000 (a 24-hour phone number).

- Appropriate containment measures will be implemented during pier re-surfacing to prevent release of debris into the water.

- The contractor will have a spill containment kit, including oil-absorbent materials, on site to be used in the event of a spill or if any oil product is observed in the water.

- The contractor is responsible for the preparation of a SPCC plan to be used for the duration of the Project. The SPCC plan will: 1) identify construction planning elements and recognize potential spill sources in the Action Area, 2) outline the response actions in the event of a spill or release and identify notification and reporting procedures, 3) outline contractor management elements such as personal responsibilities, site security and inspections, and training, and 4) outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on-site and encountered during construction but not identified in contract documents, or any hazardous

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materials that the contractor stores, uses, or generates on the construction site during construction activities. Hazardous materials include but are not limited to gasoline, oils, and chemicals, and are further defined in RCW 70.105.010.

b. Ground

1). Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known:

No ground water would be withdrawn as part of this proposal. No water would be discharged to ground water as part of this proposal.

2). Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial, containing chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve:

No waste material would be discharged into the ground from septic tanks or other sources as part of this proposal.

c. Water Runoff (including storm water):

1). Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe:

Storm water runoff from the overwater walkway structures would flow into Bellingham Bay.

2). Could waste materials enter ground or surface waters? If so, generally describe:

During construction activities, there is the potential for debris to enter surface waters. Also, there is the potential for water contamination associated with removal of the existing timber creosote piles. After the project is complete, waste materials associated with users of the overwater walkway, such as litter, could enter surface waters.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

The project would comply with permit requirements. Several trash receptacles would be provided on the proposed overwater walkway.

4. <u>Plants</u>

a. Check or circle types of vegetation found on the site:

deciduous tree: alder, maple, aspen, other
evergreen tree: fir, cedar, pine, other
shrubs
grass
pasture
crop or grain
wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
water plants: water lily, eelgrass, milfoil, other
other types of vegetation:

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To be completed upon completion of Biological Evaluation by Grette Associates.

b. What kind and amount of vegetation will be removed or altered?

To be completed upon completion of Biological Evaluation by Grette Associates.

c. List threatened or endangered species known to be on or near the site:

To be completed upon completion of Biological Evaluation by Grette Associates.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

To be completed upon completion of Biological Evaluation by Grette Associates.

5. Animals

a. Circle any birds and animals, which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other:

To be completed upon completion of Biological Evaluation by Grette Associates.

b. List any threatened or endangered species known to be on or near the site:

To be completed upon completion of Biological Evaluation by Grette Associates.

c. Is the site part of a migration route? If so, explain:

To be completed upon completion of Biological Evaluation by Grette Associates.

d. Proposed measures to preserve or enhance wildlife, if any:

To be completed upon completion of Biological Evaluation by Grette Associates.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity would be used for lighting.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe:

The project would not affect the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

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The proposed project would incorporate high-efficiency light emitting diode (LED) lights.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, which could occur as a result of this proposal? If so, describe:

Construction-related environmental health hazards that are typically associated with shoreline construction work would occur as a result of this proposal.

The contractor is responsible for the preparation of a Spill Prevention Control and Countermeasures plan to be used for the duration of the Project. The SPCC plan will: 1) identify construction planning elements and recognize potential spill sources in the Action Area, 2) outline the response actions in the event of a spill or release and identify notification and reporting procedures, 3) outline contractor management elements such as personal responsibilities, site security and inspections, and training, and 4) outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on-site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. Hazardous materials include but are not limited to gasoline, oils, and chemicals, and are further defined in RCW 70.105.010.

1). Describe special emergency services that might be required:

No special emergency services are anticipated to be required.

2). Proposed measures to reduce or control environmental health hazards, if any:

Contractor would be required to submit a safety plan to the City of Bellingham Department of Parks and Recreation conduct weekly site meetings. Contractors would follow applicable safety regulations.

b. Noise

1). What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

No types of noise that may affect this proposal are known. The proposed overwater walkway would run parallel to the Burlington Northern Santa Fe main line, separated by a distance of approximately 500 feet.

2). What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site:

Some construction activities (e.g., pile driving) would be expected to result in a short-term increase in noise levels.

Long-term noises associated with the project would consist of the types of noises typically generated by the usage of this type of facility (e.g., people talking, dogs barking). Long-term noise levels after project completion are not expected to differ markedly from the noise levels currently resulting from use of the existing Pattle Point trestle and Taylor Dock overwater

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walkway.

3). Proposed measures to reduce or control noise impacts, if any:

The proposed facility would be subject to Bellingham Municipal Code provision 8.04.040, which states that parks may only be used between the hours of 6:00 am and 10:00 pm.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

The south end of the proposed project site is currently used as park land. The north end of the proposed project site is currently underutilized Port of Bellingham property. Immediately to the east of the project site, the adjacent property is used as a railroad corridor. Farther east, the area beyond the railroad corridor is primarily publicly-owned open space.

b. Has the site been used for agriculture? If so, describe:

No

c. Describe any structures on the site:

The embayment is currently mostly devoid of marine structures, with the exception of a dilapidated, out-of-use timber fuel pier, a sunken vessel, and scattered individual and clustered timber piles.

d. Will any structures be demolished? If so, what?

Structure to be demolished include:

- Removal of an out-of-use timber pier, comprised of approximately 1,240 square feet of timber deck supported by 8 steel H-piles (each 8 inches square)
- Removal of 5 isolated, treated-timber piles (each 12 inches in diameter)

e. What is the current comprehensive plan designation of the site?

Industrial/Waterfront Mixed-Use (Cornwall landfill end) & Public (Boulevard Park end)

f. If applicable, what is the current shoreline master program designation of the site?

To be completed upon completion of City of Bellingham Shoreline Master Program Update

g. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify:

To be completed upon completion of Biological Evaluation by Grette Associates.

h. Approximately how many people would reside or work in the completed project?

No people would reside or work in the completed project.

i. Approximately how many people would the completed project displace?

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The completed project would not displace any people.

j. Proposed measures to avoid or reduce displacement impacts, if any:

Not applicable

k. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposed facility would be subject to Bellingham Municipal Code provision 8.04.040, which states that parks may only be used between the hours of 6:00 am and 10:00 pm.

The proposed overwater walkway has been called for in several planning documents, including: the 2002 *City of Bellingham Parks, Recreation and Open Space Plan*, and its 2008 update; the 2004 *Waterfront Vision and Framework Plan: Connecting Bellingham with the Bay*; the 2006 *Whatcom Preliminary Draft Framework Plan*; the 2007 draft update of the City of Bellingham Shoreline Master Program; and the mayor's 2008 *Waterfront Connections Plan*. The project has also been part of a City of Bellingham public vote, the third greenways levy, which was approved by voters in 2006. Prior to the vote, in an adopted ordinance, the city council recorded intent to pursue a list of potential greenway projects—the proposed project was included in that list. The list was put together by citizens who examined the city's current plans and needs.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle or low-income housing:

The project would not provide any housing units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing:

The project would not eliminate any housing units.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The tallest height of the proposed overwater walkway would be 20 feet above mean lower low water (the overwater walkway would be approximately the same height as the existing Pattle Point trestle, which is located to the south of the proposed project site). The principal exterior building materials would be wood and steel.

b. What views in the immediate vicinity would be altered or obstructed?

No views in the immediate vicinity would be materially altered or obstructed.

c. Proposed measures to reduce or control aesthetic impacts, if any:

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No such measures are proposed.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

The proposal would incorporate pathway lighting. The proposed lighting is a high-efficiency light emitting diode (LED) fixture that would be placed eight feet on center, on alternating sides of the overwater walkway. The lighting would be operational during non-daylight hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

c. What existing off-site sources of light or glare may affect your proposal?

No existing off-site sources of light or glare that may affect the proposal are known.

d. Proposed measures to reduce or control light and glare impacts, if any:

The proposed pathway lighting does not exceed the requirements for safe usage of the overwater walkway. Additionally, the lighting would be mounted low to the ground, on the guardrail.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Designated recreational opportunities are in the immediate vicinity include pathways for walking, running, and bicycling. Boulevard Park provides space for informal recreational opportunities (e.g., Frisbee throwing, kite flying). The waters in the vicinity provide opportunities for boating.

b. Would the proposed project displace any existing recreational uses? If so, describe:

The proposed overwater walkway may displace some temporary mooring buoys.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

The purpose of the project is to increase recreational opportunities and public access to the shoreline. The proposed overwater walkway has been called for in several planning documents.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe:

No such places or objects are known to be on or next to the site.

Nineteen archaeological sites have been previously recorded with the Washington State Department of Archaeology and Historic Preservation within a 2-mile radius of the project area. One of these 19 archaeological sites is located within an approximately .25-mile radius of the

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project area.

A total of ten historic structures and two historic districts listed on the Washington Heritage Register and the National Register of Historic Places, are located within a 1-mile radius of the project area. None of these properties are directly adjacent to the project area.

b. Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site:

Currently, no fieldwork has been conducted within the project area to test for the presence of archaeological resources.

The Washington State Department of Archaeology and Historic Preservation database indicates the presence of 19 archaeological sites located within an approximately 2-mile radius of the project area, the majority of which are prehistoric shell middens. These sites are located to the north and south of the project area in proximity to Bellingham Bay. The closest site is less than .25 miles from the project area. In addition, the historical use of the Boulevard Park area for early settlement and industrial purposes, as well as the Cornwall Avenue Landfill site for sawmilling and refuse deposition, could potentially include the deposition of historic archaeological materials. Because the proposed project is located in an area considered to have a high probability for both prehistoric and historic cultural resources, there is a possibility that intact archaeological materials could be encountered during ground-disturbing activities.

c. Proposed measures to reduce or control impacts, if any:

The project would comply with permit requirements.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any:

Vehicular access to Boulevard Park is via Bayview Drive. Bayview Drive is accessible from the north via South State Street and from the south via 10th Street.

b. Is the site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

Boulevard Park is served by Whatcom Transit Authority route number 401. Buses run regularly along South State Street, which runs parallel to the proposed overwater walkway, approximately 550 feet to the southeast.

c. How many parking spaces would the completed project have? How many would the project eliminate?

The proposed project would not alter current parking arrangements.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private):

The proposal would not require any new roads or streets, nor any improvements to existing roads or streets.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so,

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generally describe:

The proposed overwater walkway would run parallel to the Burlington Northern Santa Fe main line, separated by a distance of approximately 500 feet.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur:

The proposed overwater walkway is a pedestrian facility that would be part of a citywide trail system.

g. Proposed measures to reduce or control transportation impacts, if any:

No such measures are proposed.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe:

The project is not expected to result in an increased need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any:

Not applicable

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, garbage service, telephone, sanitary sewer, septic system, other:

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed:

Electrical service would be extended from the nearest connection point. Construction activities associated with this electrical service extension would include excavation and backfill for underground primary power from the connection point to the service location.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:

Date Submitted:

D. FEE

An application fee shall be submitted in the amount set by the City Council. See separate Fee Schedule handout.

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13f
Pattle Point Trestle Renovation
Shoreline Permit Application

Planning

Permit Center
210 Lottie Street
Bellingham, WA 98225
phone: 360-778-8300
fax: 360-778-8301
www.cob.org

Land Use Application

Check all permits you are applying for in the boxes provided. Submit this application form, the applicable materials listed in the corresponding permit application packet(s) and application fee payment.

☐ Accessory Dwelling Unit ☐ Binding Site Plan ☐ Clearing Permit ☐ Conditional Use Permit ☐ Critical Area Permit ☐ Critical Area Exemption ☐ Design Review ☐ Grading Permit ☐ Home Occupation ☐ Institutional ☐ Interpretation ☐ Landmark – Historic Certificate of Alteration ☐ Legal Lot Determination ☐ Nonconforming Use Certificate	☐ Parking Adjustment Application ☐ Planned Development ☐ Rezone ☒ SEPA ☐ Shoreline Permit ☒ Shoreline Exemption ☐ Subdivision-Short Plat/Lot Line Adjustment ☐ Subdivision-Preliminary Plat ☐ Subdivision-Final Plat ☐ Variance ☐ Wireless Communication ☐ Zoning Compliance Letter ☐ Other:_____	**Office Use Only** Date Rcvd:_____ Case #:_____ Process Type: _____ Neighborhood: _____ Area Number: _____ Zone: _____ Pre-Ap. Meeting:_____ Concurrency: _____

Project Address: Boulevard Park, Bellingham, WA

Tax Assessor Parcel Number(s): City of Bellingham property

Project Description: Renovate an approximately 525-foot-long trestle that supports an overwater segment of the Coast Millennium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham.

Applicant/Agent ☒ Primary Contact for Application

Name Reid Middleton, Inc, Shannon Kinsella, PE
Address 728 134th Street SW, Suite 200
City/State/Zip Everett, WA 98204
Phone (425) 741-3800
FAX (425) 741-3900
Email skinsella@reidmiddleton.com

Owner(s) ☒ Applicant ☐ Primary Contact for Application

Name City of Bellingham, Gina G. Austin, PE
Address 3424 Meridian
City/State/Zip Bellingham, WA 98225
Phone (360) 778-7000
FAX (360) 778-7001
Email GAustin@cob.org

Property Owner(s)

I am the owner of the property described above or am authorized by the owner to sign and submit this application. I grant permission for the City staff and agents to enter onto the subject property at any reasonable time to consider the merits of the application and post public notice. I certify under penalty of perjury of the laws of the State of Washington that the information on this application and all information submitted herewith is true, complete and correct.

I also acknowledge that by signing this application I am the responsible party to receive all correspondence from the City regarding this project including, but not limited to, expiration notifications. If I, at any point during the review or inspection process, am no longer the Applicant for this project, it is my responsibility to update this information with the City in writing in a timely manner.

Signature by Owner/Applicant/Agent _____, Date _____

City and State where this application is signed:_____ (City), _____ (State)

Planning

Permit Center
210 Lottie Street
Bellingham, WA 98225
phone: 360-778-8300
fax: 360-778-8301
www.cob.org

SHORELINE EXEMPTION APPLICATION

A determination of exemption is written approval from the Planning and Community Development Department Planning Director that confirms the proposed activity is exempt from a Shoreline Permit. The exemption can specify conditions that assure the activity complies with the provisions of the Shoreline Master Program (SMP). In all cases, the activity is required to implement best management practices to avoid degradation of the shoreline.

Approval from the Planning Director is required prior to any work within the Shoreline Jurisdiction. NOTE: Other federal, state, and local regulations may apply.

REVIEW PROCESS:

The City will use a Type I or Type II process to review the application. A Type II process is required for projects that include a SEPA threshold decision. Type I is used for all other projects.

BEFORE YOU APPLY:

A Pre-Application Conference is required for Type II project applications, unless a written waiver is granted by the Planning Director. Pre-Application Conference form and Waiver Application are available at the Permit Center.

APPLICATION REQUIREMENTS:

Additional information may be required by staff in order to evaluate a project for consistency with the SMP.

- ☐ A completed Land Use Application form
- ☐ Pre-Application Conference or waiver (Type II)
- ☐ SEPA Environmental checklist (Type II)
- ☐ Mailing list and labels (Type II)
- ☐ Application fee payment
- ☐ All of the materials and information required by this form

SITE PLAN REQUIREMENTS:

On an 11”x17” scaled site plan identify the site boundary and all items below that apply to your exemption request.

- ☐ 4 scaled plans (min. 1”=20’) with north arrow.
- ☐ 2 reduced 8 ½ x 11” site plans.
- ☐ Property lines including dimensions of the project site.
- ☐ Ordinary high water mark.
- ☐ Typical cross section or section showing:
  a. Existing ground elevations.
  b. Proposed ground elevation.
  c. Height of existing structures.
  d. Height of proposed structures.
- ☐ Where appropriate, proposed land contours using 5 foot intervals in water area and 10 foot intervals on areas landward of ordinary high water mark, if development involves grading, cutting, filling, or other alteration of land contours.
- ☐ Show dimensions and locations of all existing structures, which will be maintained.
- ☐ Show dimensions and locations of proposed structures.
- ☐ Identify source, composition, and volume of fill material.
- ☐ Identify composition and volume of any extracted materials and identify proposed disposal area.
- ☐ Location of proposed utilities, such as sewer, septic tanks and drainfields, water, gas, electricity.
- ☐ If the development proposes septic tanks, does proposed development comply with local health and state regulations.
- ☐ Shoreline designation according to the Master Program.
- ☐ Show which areas are shorelines and which are shorelines of statewide significance. Lake Whatcom and Bellingham Bay seaward of extreme low tide are shorelines of statewide significance.

B. VICINITY MAP:

- ☐ Indicate site location using natural points of reference (roads, state highways, prominent landmarks, etc.).
- ☐ If the development involves the removal of any soils by dredging or otherwise, identify the proposed disposal site on the map. If the disposal site is beyond the confines of

the vicinity map, provide another vicinity map showing the precise location of the site and its distance to the nearest city or town.

☐ Give a brief narrative description of the general nature of the improvements and land use within one thousand feet in all directions from development site (i.e., residential to the north, commercial to the south, etc.).

PROJECT DATA:

1. Name of adjacent water body:

   Bellingham Bay.

2. Describe the current use of the property, including existing structures:

   The property is currently used as a public park. The Pattle Point trestle is located on the property. The Pattle Point trestle was originally built in 1901 to accomodate trains. The trestle has served as a multi-use trail since the establishment of Boulevard Park in 1980. The trestle was refurbished to its present configuration in 1991. The current physical condition of the trestle was documented in a report by Echelon Engineering, Inc, dated January 2008. The report identified several members as being in "poor condition." "Poor condition" was defined in the report as meaning that a member "has sustained major to severe damage that affects the members load bearing capacity."

3. Describe the proposed project. Include the size of the property, the project dimensions and materials, and the total area of paving:

   The City of Bellingham Parks and Recreation Department proposes to renovate an approximately 525-foot-long trestle that supports an overwater segment of the Coast Millenium Trail, a multi-use trail that runs along the shoreline of Boulevard Park connecting the Fairhaven District to Downtown Bellingham. Boulevard Park is located on the eastern shores of Bellingham Bay, in Bellingham, Washington. Please see project drawings for additional information.

4. Nature of the existing shoreline. (Describe the type of shoreline, such as marine, stream, lake, lagoon, marsh, bog, swamp, flood plain, floodway, delta; type of beach, such as accretion, erosion, high bank, low bank, or dike; material such as sand, gravel, mud, clay, rock, riprap; and extent and type of bulkheading, if any:

Type of shoreline: marine. Type of beach: low bank. Material: small boulders and cobbles in the upper intertidal zone, transitioning to cobble/gravel and sand in the lower intertidal and shallow subtidal zone; sand and gravel is present in the upper intertidal zone under the northern end of the trestle. Extent and type of bulkheading: the shoreline in this area features riprap armoring.

5. In the event that any of the proposed buildings or structures will exceed a height of thirty-five feet above the existing grade level, indicate the approximate location of and number of residential units, existing and potential, that will have an obstructed view. AVERAGE GRADE LEVEL DETERMINATION: The natural or existing topography of the portion of the lot, parcel, or tract of real property, which will be directly under the proposed structure shall be used in calculating average grade level. "Natural or existing topography" shall mean the topography of the building site prior to any excavation, grading or filling. Calculation of average grade level shall be made by averaging the elevations at the center of all exterior walls of a building or structure:

Not applicable (no proposed structures will exceed a height of thirty-five feet above the existing grade level).

6. Does SEPA apply? Yes. If so, provide a completed SEPA checklist concurrent with this application.

MAILING LIST INSTRUCTIONS

Applicants are responsible for providing an accurate mailing list and typed mailing label forms using information from the Whatcom County Assessor's Office. Errors in mailing labels may result in process delays and re-notice fees.

How to Obtain Property Ownership Information from the Whatcom County Assessor's Office

Go to the Whatcom County Assessor's Office on the first floor of the Whatcom County Courthouse, 311 Grand Avenue, Bellingham, 360-676-6790. Business hours are 8:30 AM to 4:30 PM Monday through Friday. Bring enough information to identify all of the property in the project site, such as tax parcel numbers, legal descriptions, address(es) or boundary on a plat map.

Assessor's Office staff can help you find the Assessor's map(s) containing the project parcel(s). Measure the required ownership notice distance on the map from the boundary of the project parcel(s). The required distance (commonly 500 feet) is specified on the application form.

Copy the parcel number for each parcel within or partially within the notice distance onto the mailing list form. If the owner of the project property owns other property within the notice distance but not included in the project site, contact the Planning Division to determine whether the notice radius must be increased.

Look up the name and mailing address of the owner of each parcel number and record it on the mailing list form. This can be done from the computer data base using the terminals at the Assessor's Office or you can access the same data base through the Internet. The data base is located at www.whatcomcounty.us/assessor/index.jsp under "Real Property Search." Click on the parcel number in the first data screen to bring up a screen with the owner's full address and zip code. The maps are also available at this site if you wish to check a parcel number.

If the site is a condominium, include the owner of each unit.

Mailing List Label Format

Type addresses on Avery 5160 labels or in Avery 5160 label format, or type on label grid format provided by the Permit Center. Include owner, applicant and contact for the proposal. Include the Mayor's Neighborhood Advisory Commission member(s) and neighborhood association(s) as described below.

The names must be typed in the format shown below, with one address per grid.

Format: Owner's Name
Owner's mailing address
City, State Zip Code

Do not repeat names on the mailing list. If someone is listed as owning more than one property, only list the owner's name and address once on the mailing list.

Do not list the tax parcel number on the labels.

Adding Neighborhood Representatives and Associations

The following addresses must be added to the mailing list:

For the neighborhood in which the project is located and any neighborhood within the required notice distance (usually 500 feet) from the boundary of the project site:

1. The Mayor's Neighborhood Advisory Commission member for the neighborhood; and
2. Any neighborhood association registered with the Planning and Community Development Department.

Contact Planning Division staff at the Permit Center, Bellingham City Hall, 210 Lottie Street (360-778-8300) to determine which neighborhood representatives and associations must be added to your mailing list and obtain addresses. Add the addresses to the label format for your permit application.

The following neighborhoods are within the required notice radius (check all that apply):

- ☐ Alabama Hill
- ☐ Birchwood
- ☐ CBD
- ☐ Columbia
- ☐ Cornwall Park
- ☐ Edgemoor
- ☐ Fairhaven
- ☐ Guide Meridian
- ☐ Happy Valley
- ☐ King Mountain
- ☐ Lettered Streets
- ☐ Meridian
- ☐ Mt. Baker
- ☐ Puget
- ☐ Roosevelt
- ☐ Samish
- ☐ Sehome
- ☐ Silver Beach
- ☐ South
- ☐ South Hill
- ☐ Sunnyland
- ☐ Whatcom Falls
- ☐ WWU
- ☐ York

Application file number/address: _____

Checked by staff: _____

NAMES AND MAILING ADDRESSES OF SURROUNDING PROPERTY OWNERS.

Following are the names and mailing addresses of all property owners having property within 500 feet of the exterior boundary of the subject property. Said names are as recorded in the Whatcom County Assessor's Office and as appear in the authentic tax records of this County. (Attach extra pages if needed.) Also provide mailing labels for each address listed, per the attached mailing list label instructions.

PRINT CLEARLY OR TYPE (IN BLUE OR BLACK INK)

NAME OF CONTACT PERSON	MAILING ADDRESS	CITY/STATE	ZIP CODE

NAME OF NEIGHBORHOOD REP/ASSNS	MAILING ADDRESS	CITY/STATE	ZIP CODE

NAMES OF PROPERTY OWNERS	MAILING ADDRESSES	CITY/STATE	ZIP CODE	PARCEL NUMBER	LOT/BLOCK/PLAT

I _____being duly sworn on oath, hereby certify that I have familiarized myself with the rules and regulations with respect to preparing and filing this application, that the foregoing statements and the statements contained in any papers or plans submitted herewith are true to the best of my knowledge and belief, and that the list of names and addresses of property owners within 500 feet of the subject is complete and correct according to the records of the Whatcom Assessor's Office as of _____, 20 ___. I understand that if this list does not contain accurate information as listed in the Assessor's Office, this application may be successfully challenged and result in the necessity to reapply.

Signature _____

Subscribed and sworn to before me this
_____ day of _____, 20___.

_____
Notary Public in and for the State of Washington
Printed name_____
Residing at _____

DRAFT

Page _____ of _____

NAMES OF PROPERTY OWNERS	MAILING ADDRESSES	CITY/STATE	ZIP CODE	PARCEL NUMBER	LOT/BLOCK/PLAT

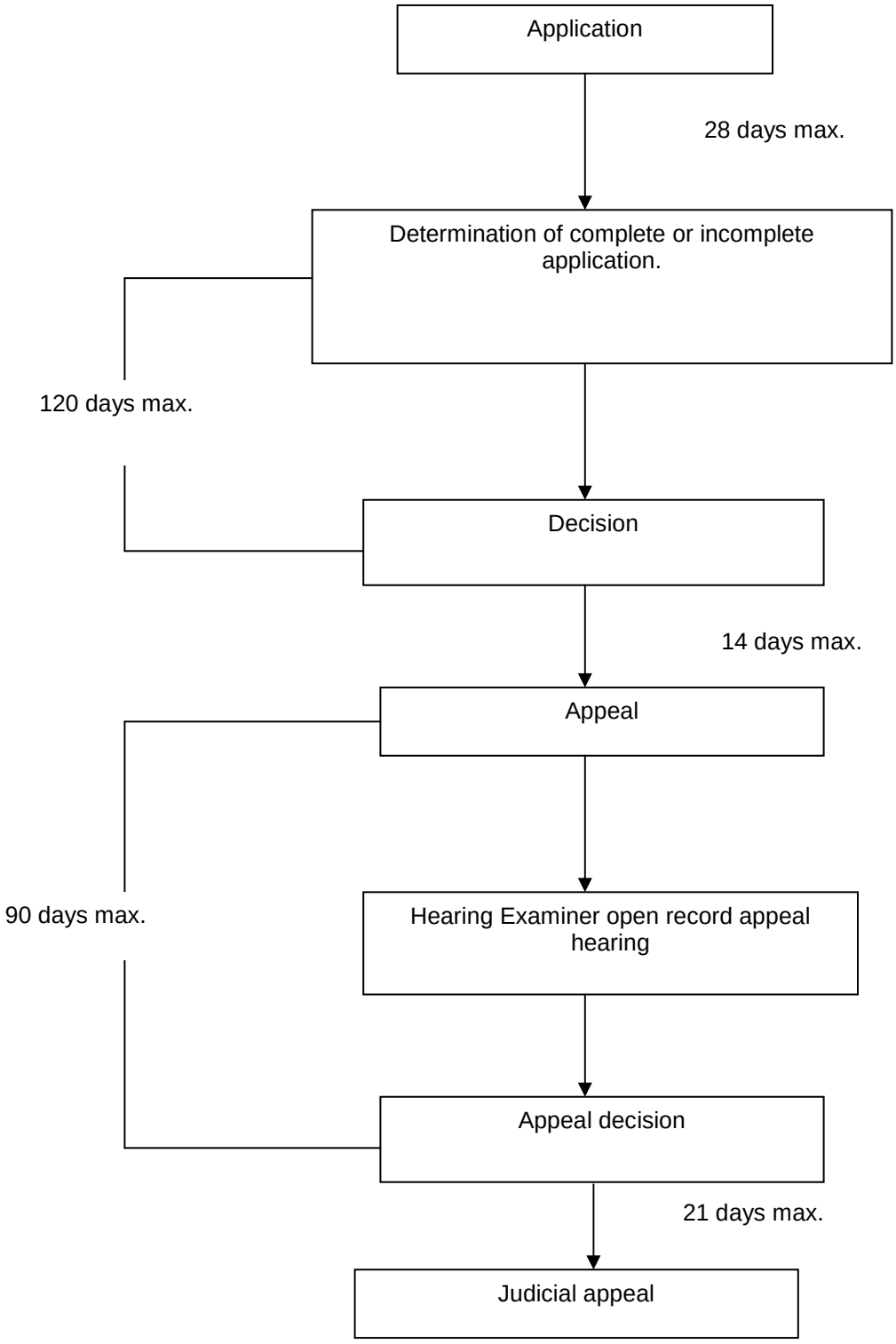
Project: Include applicant and contact addresses on labels		Avery 5160 labels or in Avery 5160 label format First name Last name Address City, State, Zip		

DRAFT

DRAFT

TYPE I PROCESS

(Minor Administrative Decisions)



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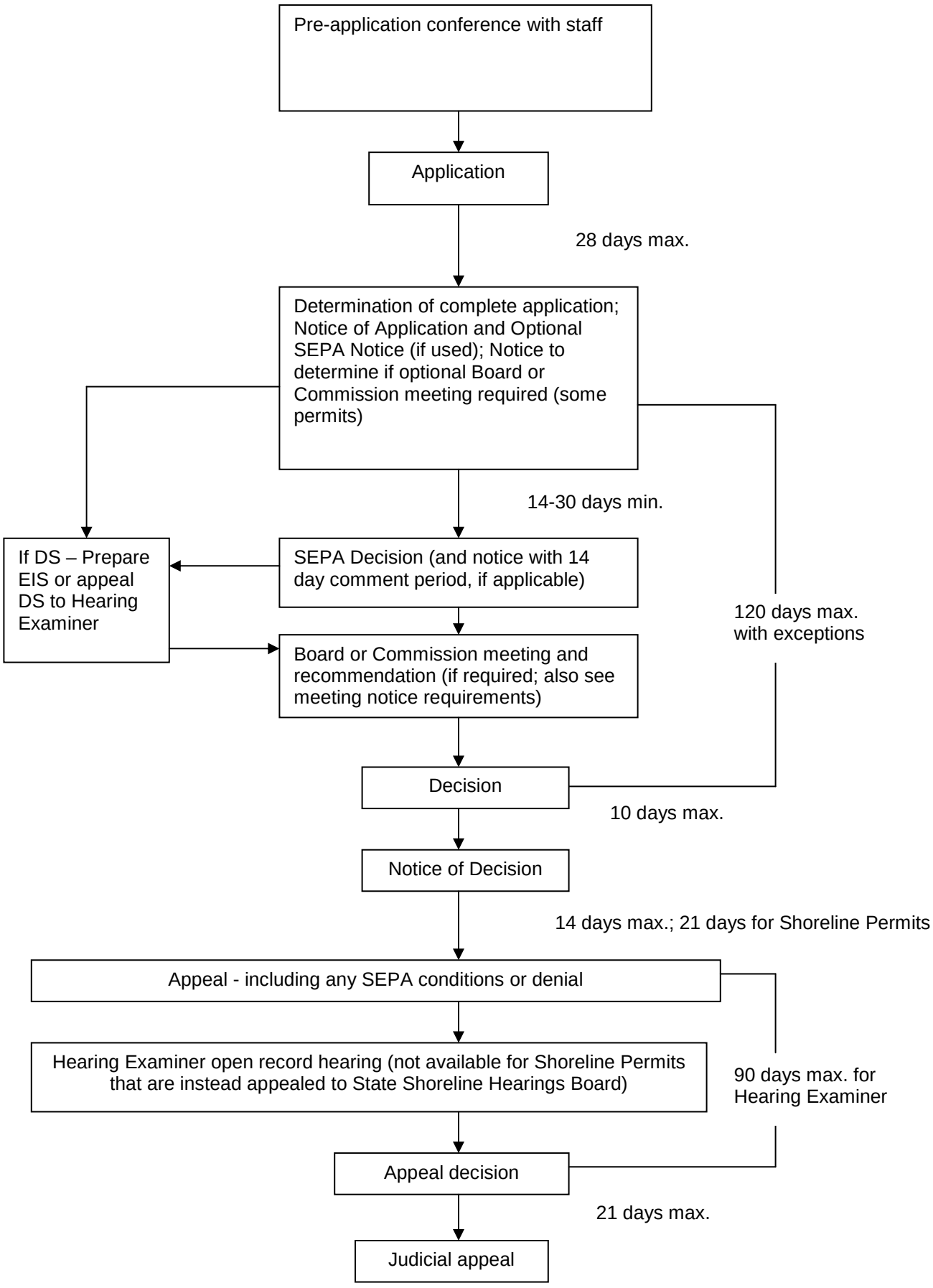
TYPE II PROCESS

(Administrative Decisions)



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13g
Boulevard Park Overwater Walkway
Shoreline Permit Application

Planning

Permit Center
210 Lottie Street
Bellingham, WA 98225
phone: 360-778-8300
fax: 360-778-8301
www.cob.org

SHORELINE PERMIT APPLICATION

(PLEASE PRINT CLEARLY OR TYPE IN BLUE OR BLACK INK)

Pre-Application Steps:

- ☐ Pre-Application conference or waiver
- ☐ Transportation concurrency certificate, if applicable

Application Requirements:

- ☐ A completed Land Use Application form
- ☐ All of the materials and information required by this form
- ☐ SEPA Checklist, if applicable
- ☐ Application fee payment

Project Data:

1. Name of adjacent water body: Bellingham Bay.

2. Describe the current use of the property, including existing structures: The south end of the proposed project site is currently used as park land. The north end of the proposed project site is currently underutilized Port of Bellingham property. Immediately to the east of the project site, the adjacent property is used as a railroad corridor. Farther east, the area beyond the railroad corridor is primarily publicly-owned open space. The embayment is currently mostly devoid of marine structures, with the exception of: a dilapidated, timber pier; a sunken vessel; scattered individual and clustered timber piles; and concrete slabs (at the Cornwall Avenue landfill end).

3. Describe the proposed project. Include the size of the property, the project dimensions and materials, and the total area of paving: The City of Bellingham Parks and Recreation Department proposes to construct an approximately 2,360-foot-long overwater segment of a multi-use (e.g., walking, bicycling) trail from Boulevard Park to the Cornwall Avenue landfill. The overwater walkway deck would have an average width of 14 feet. Please see the project drawings for project specifications.

4. Nature of the existing shoreline. (Describe the type of shoreline, such as marine, stream, lake, lagoon, marsh, bog, swamp, flood plain, floodway, delta; type of beach, such as accretion, erosion, high bank, low bank, or dike; material such as sand, gravel, mud, clay, rock, riprap; and extent and type of bulkheading, if any): Type of shoreline: marine. Type of beach: low-no bank. Material: gravel, riprap. Extent and type of bulkheading: the shoreline in the project area is extensively armored with riprap.

5. In the event that any of the proposed buildings or structures will exceed a height of thirty-five feet above the existing grade level, indicate the approximate location of and number of residential units, existing and potential, that will have an obstructed view. AVERAGE GRADE LEVEL DETERMINATION: The natural or existing topography of the portion of the lot, parcel, or tract of real property, which will be directly under the proposed structure shall be used in calculating average grade level. "Natural or existing topography" shall mean the topography of the building site prior to any excavation, grading or filling. Calculation of average grade level shall be made by averaging the elevations at the center of all exterior walls of a building or structure: Not applicable (no proposed buildings or structures will exceed a height of thirty-five feet above the existing grade level).

6. Project diagrams: **Draw all maps to scale**, clearly indicating scale on the lower right hand corner of the map. Attach all maps to the application. Maps shall be 8 ½" X 11" to 11" X 17" in size. Four copies are required. One map set should be 18" X 24" for use at the Shoreline Committee Meeting.

   A. SITE PLAN MAP Include on map:

      1. Site boundary.
      2. Property dimensions in vicinity of project.
      3. Ordinary high water mark.
      4. Typical cross section or section showing:
         a. Existing ground elevations.
         b. Proposed ground elevation.
         c. Height of existing structures.
         d. Height of proposed structures
      5. Where appropriate, proposed land contours using five-foot intervals in water area and ten-foot intervals on areas landward of ordinary high water mark, if development involves grading, cutting, filling, or other alteration of land contours.
      6. Show dimensions and locations of existing structures, which will be maintained.
      7. Show dimensions and locations of proposed structures.
      8. Identify source, composition, and volume of fill material.
      9. Identify composition and volume of any extracted materials and identify proposed disposal area.
      10. Location of proposed utilities, such as sewer, septic tanks and drainfields, water, gas, electricity.
      11. If the development proposes septic tanks, does proposed development comply with local health and state regulations.

12. Shoreline designation according to the Master Program.
13. Show which areas are shorelines and which are shorelines of statewide significance. Lake Whatcom and Bellingham Bay seaward of extreme low tide are shorelines of statewide significance.

B. VICINITY MAP

1. Indicate site location using natural points of reference (roads, state highways, prominent landmarks, etc.)
2. If the development involves the removal of any soils by dredging or otherwise, please identify the proposed disposal site on the map. If the disposal site is beyond the confines of the vicinity map, provide another vicinity map showing the precise location of the site and its distance to the nearest city or town.
3. Give a brief narrative description of the general nature of the improvements and land use within one thousand feet in all directions from development site (i.e., residential to the north, commercial to the south, etc.).

7. A filing fee shall be required at the time of application as determined by Council (see separate fee sheet). Please indicate project valuation:

☐ Less than $100,000
☐ $100,000 or more but less than $500,000
☒ $500,000 or more: List valuation: $6,058,000

I, _____, am the above-named applicant for a permit to construct a substantial development pursuant to the Shoreline Management Act of 1971 and the Bellingham Shoreline Master program, and hereby state that the foregoing statements, answers, and information are, in all respects, true and correct to the best of my knowledge and belief.

_____
Signature

_____
Date

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- ☐ Edgemoor
- ☐ Fairhaven
- ☐ Guide Meridian
- ☐ Happy Valley
- ☐ Lettered Streets
- ☐ Meridian
- ☐ Mt. Baker
- ☐ Puget
- ☐ Roosevelt
- ☐ Samish
- ☐ Sehome
- ☐ Silver Beach
- ☐ South
- ☐ South Hill
- ☐ Sunnyland
- ☐ Whatcom Falls
- ☐ WWU
- ☐ York

Application file number/address: _____

Checked by staff: _____

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PRINT CLEARLY OR TYPE (IN BLUE OR BLACK INK)

NAME OF CONTACT PERSON	MAILING ADDRESS	CITY/STATE	ZIP CODE

NAME OF NEIGHBORHOOD REP/ASSNS	MAILING ADDRESS	CITY/STATE	ZIP CODE

NAMES OF PROPERTY OWNERS	MAILING ADDRESSES	CITY/STATE	ZIP CODE	PARCEL NUMBER	LOT/BLOCK/PLAT

I _____being duly sworn on oath, hereby certify that I have familiarized myself with the rules and regulations with respect to preparing and filing this application, that the foregoing statements and the statements contained in any papers or plans submitted herewith are true to the best of my knowledge and belief, and that the list of names and addresses of property owners within 500 feet of the subject is complete and correct according to the records of the Whatcom Assessor's Office as of _____, 20 ___. I understand that if this list does not contain accurate information as listed in the Assessor's Office, this application may be successfully challenged and result in the necessity to reapply.

Signature _____

Subscribed and sworn to before me this
_____ day of _____, 20___.

_____
Notary Public in and for the State of Washington
Printed name_____
Residing at _____

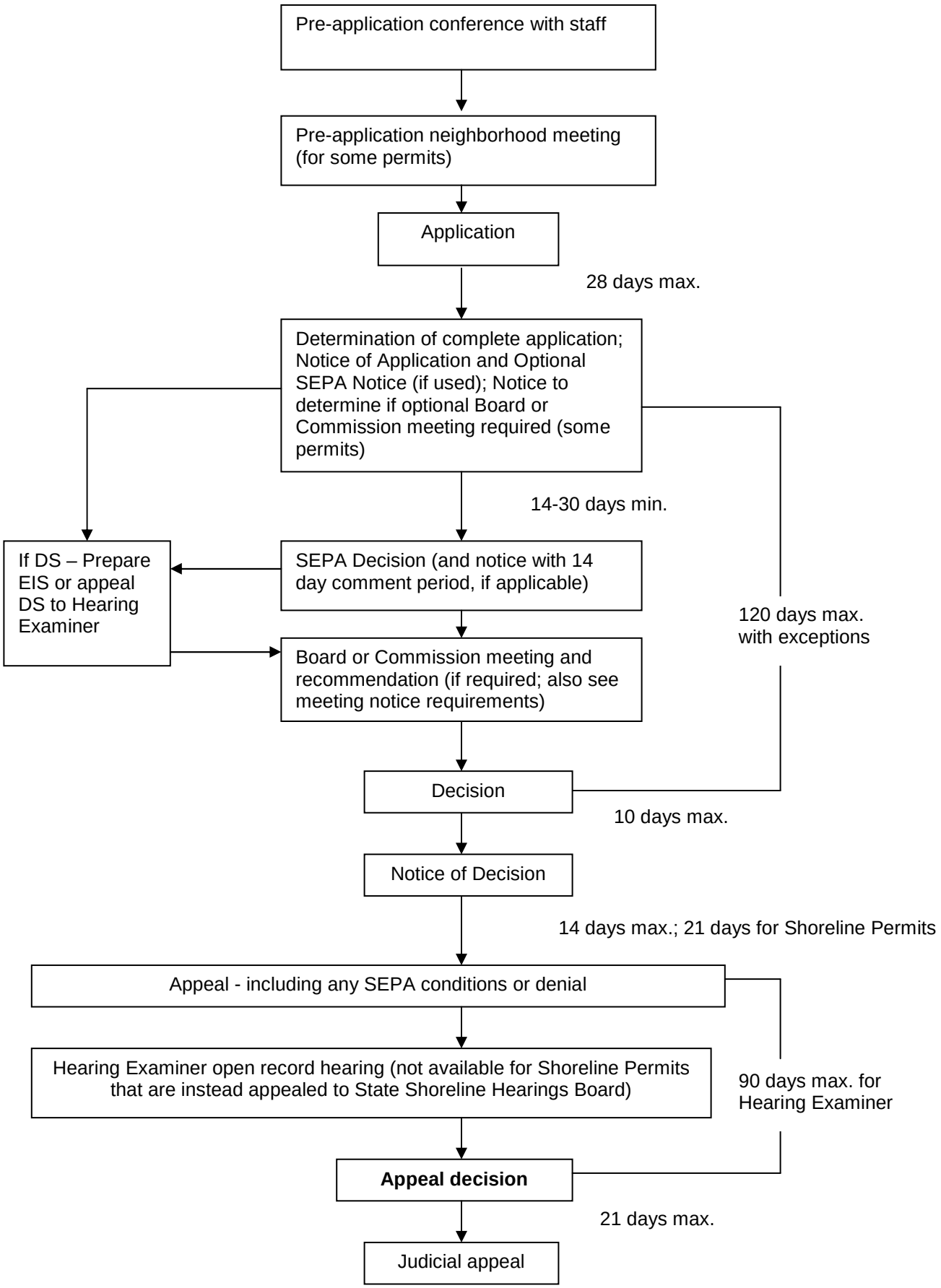
Page _____ of _____

NAMES OF PROPERTY OWNERS	MAILING ADDRESSES	CITY/STATE	ZIP CODE	PARCEL NUMBER	LOT/BLOCK/PLAT

Project: Include applicant and contact addresses on labels		Avery 5160 labels or in Avery 5160 label format First name Last name Address City, State, Zip		

TYPE II PROCESS

(Administrative Decisions)



APPENDIX 14
Pre-Design Landscape Report

WALKER·MACY
Landscape Architecture Urban Design Planning

Bellingham Boulevard Park
Pre-Design Landscape Report
August 26, 2008

Pre Design for the over water walkway at Bellingham Boulevard Park
The pre design for the over water walkway began with a review and assessment of the project site and existing facilities. The project team, led by input from the Parks Department, developed a program for the project and from that program, prepared three initial design concepts for review by the Parks Department. From the comments received from the public and the Parks Department, a preferred design concept for the walkway was prepared for inclusion into the Feasibility Report.

Existing Facilities and Site Conditions
The project team met on March 6th, 2008, and walked the project site at Bellingham Boulevard Park to review Taylor Avenue Docks and the proposed launch site for the over-water walkway.

- Taylor Avenue Dock

  The existing Taylor Avenue Dock has proven to be a very successful project for the City of Bellingham and has brought increased numbers of users to the waterfront and to Boulevard Park. The Parks Department had determined that to be responsive to the increase in users, the new over-water walkway connecting Boulevard Park to the Cornwall site to the north, should have an increased width of 14 feet.

  Due to the volume of users on the walk, some conflicts were noted between people moving at a faster pace (bikers and joggers) and people who were stopped to enjoy the view and have a conversation or to stroll the walkway at a significantly slower pace (senior citizens, children, dogs).

  It was also noted that there was some vandal damage to the existing light fixtures and that the fixtures were visually prominent due to their size and their incorporation into the guardrail support structure.

- Boulevard Park

  The current pier at the northwest corner of Boulevard Park is in disrepair and has been closed to the public. It was decided that the launch point for the new over water walk would be at this existing pier location, once the pier has been removed. This would launch the walkway at a north-northwest orientation from the shore.

  The Parks Department currently has plans to build a covered "porch" just to the south of the pier launch point. The funding for this project was provided by pprivate donations. This deck would serve as a stage for music and general park use. The deck is oriented

J. Douglas Macy • Michael W. Zilis

111 SW Oak, Suite 200 Portland, OR 97204
Phone 503-228-3122 Fax 503-273-8878

towards the south-southeast of the park with the back of the deck tucked into an existing pine tree grove. The location of this future structure was considered in the layout of the launch point and in anticipating access to the over water walkway from the existing park path system. A new asphalt path would connect the overwater walkway towards the east to the sandy beach area.

At the north end of the park is a small ADA accessible sandy beach cove. It is intended that the beach area will be expanded to the west once the existing pier structure is demolished and the new walkway is constructed. The shoreline bank would be shifted landward to accommodate a larger beach area at the cove.

- Overwater Walkway site within Bellingham Bay

  During the early phase of the design process, the location of the eel grass within the project site had yet to be mapped. Given that eelgrass generally occurs at water depths less than 20 ft., the 20 ft. bathymetric contour was used as a guide for the early alignment of the walkway across the water. The goal was to have minimal impact of the shallow depths of the project site that could potentially contain eel grass. Once the walkway alignment was beyond the 20 ft. water depth, the walkway would take a more direct northerly alignment toward the Cornwall Site.

  With the alignment of the walk occurring between two peninsulas and being 300 feet off shore, there will be unique and stunning views to the Bay and back to the shoreline from the over water walkway.

Program

After discussions with the Parks Department and the project team, the following program for the over water walkway was developed:

- Multi-modal walk
  The ADA accessible walk should serve both pedestrians and bicycles with a minimal width of 14 ft. The design of the walk should create opportunities for users to stop and enjoy the view while not impeding the movement of other users.

- Incorporate an event space.
  Early in the design process, Parks expressed an interest in having an event space incorporated into the walkway that would large enough to rent for events, such as weddings. The space would be oriented off of the primary walkway so that the space could be isolated from the primary circulation path and not impede the flow of traffic. The goal was to generate some revenue from the rental of this space.

- Seating and viewing opportunities.
  The unique opportunity to view Bellingham Bay and the shoreline from the walkway should be maximized. The numerous seating and viewing opportunities towards the west and the east from both sides of the walk should be explored. The creation of seating nooks off of the walk would allow users to sit and relax at a more leisurely pace.

- Minimize impact to eel grass zones.
  The layout of the walk and the material selection for the decking should be explored to minimize impacts and shading of the eel grass. Explore having the alignment of the walk run parallel to the bathymetric contours to lessen the length of walk that traverses the eel grass zone. Also, explore paving options for the walk, such an ADA accessible steel grating that would allow more light to penetrate the surface of the walk, minimize with width of shaded water surface and provide better habitat for the growth of eel grass.

- Create an enlarged accessible sand beach to the east of the walkway launch point.
  The existing sand beach cove to the east of the walkway launch point should be enlarged to accommodate increased user need. The shoreline bordering the existing beach could be shifted landward to create a larger useable beach area.

Initial Design Concepts

The impetus for all the initial design concepts was to create a layout for the walkway that was an outgrowth of the unique specific features of the site. The team looked at the topography, the natural ecosystems, and the history of the project site for inspiration.

- Bathymetric Walkway Layout
  This design concept was a direct reflection of the bathymetry of the site, and to have the alignment of the walk follow the contours of the bay floor. The result was a layout that created a soft 'S' shaped walk way that moved away from and then back towards the shore.

- Braided Eel Grass Walkway Layout
  This design concept was an attempt to create a very fluid, organic, interwoven form on the water surface to reflect the fluid form and motion of the native eel grass. The 14 foot walkway was split at times to create two 7 foot walks. Seating nodes were created when the walkway paths crossed.

- Log boom walkway layout.
  This design concept took the stiff linear nature of the historic log booms that once covered the site, and interpreted their form to create segmented walkways with seating nooks and a large event space. The seating nooks occurred at the apex of the log boom segments, further emphasizing views either toward the bay or back to the shore.

Final Design Concept

The preferred design was the product of public review comments and direction from the Parks department. Two layout options for the walkway were advanced, with the inclusion of four feet wide by 20 feet long seating nodes that included space for two benches, a trash receptacle, and an ADA accessible space for a wheelchair.

- Single arc layout
  A single arc layout for the walkway was developed. The subtle form of the arc connected Boulevard Park with the Cornwall site with the middle of the arc advancing into the bay at the minus 21 foot contour.

- Multi arc layout
  A double arc layout for the walkway was also explored creating two convex arcs and one concave arc. Neither of the convex arcs advanced beyond the minus 19 feet contour in the bay.

- Guardrail design options.
  The guardrail design was studied, and options for creating a 'lighter' more transparent guardrail were explored. Options of using slender galvanized steel support members with either vertical or horizontal steel rails were presented for review. Two options of using stainless steel cable in lieu of the rails were also presented.

- Lighting design options.
  The goal while reviewing options for lighting the walkway was to minimize the visual impact of the light fixture housing while maximizing the durability and lamp life of the selected fixture. The fixture that is proposed for the walk is a high efficiency LED fixture. It has a very long lamp life and a slim, vandal resistant housing. The lights would be placed on eight foot centers alternating on either side of the walk.

- Preferred final design concept.
  The single arc layout was chosen as the preferred design concept for the walkway. The walkway arc was softened to keep the walk in line with the waterside limits of the adjacent peninsulas.

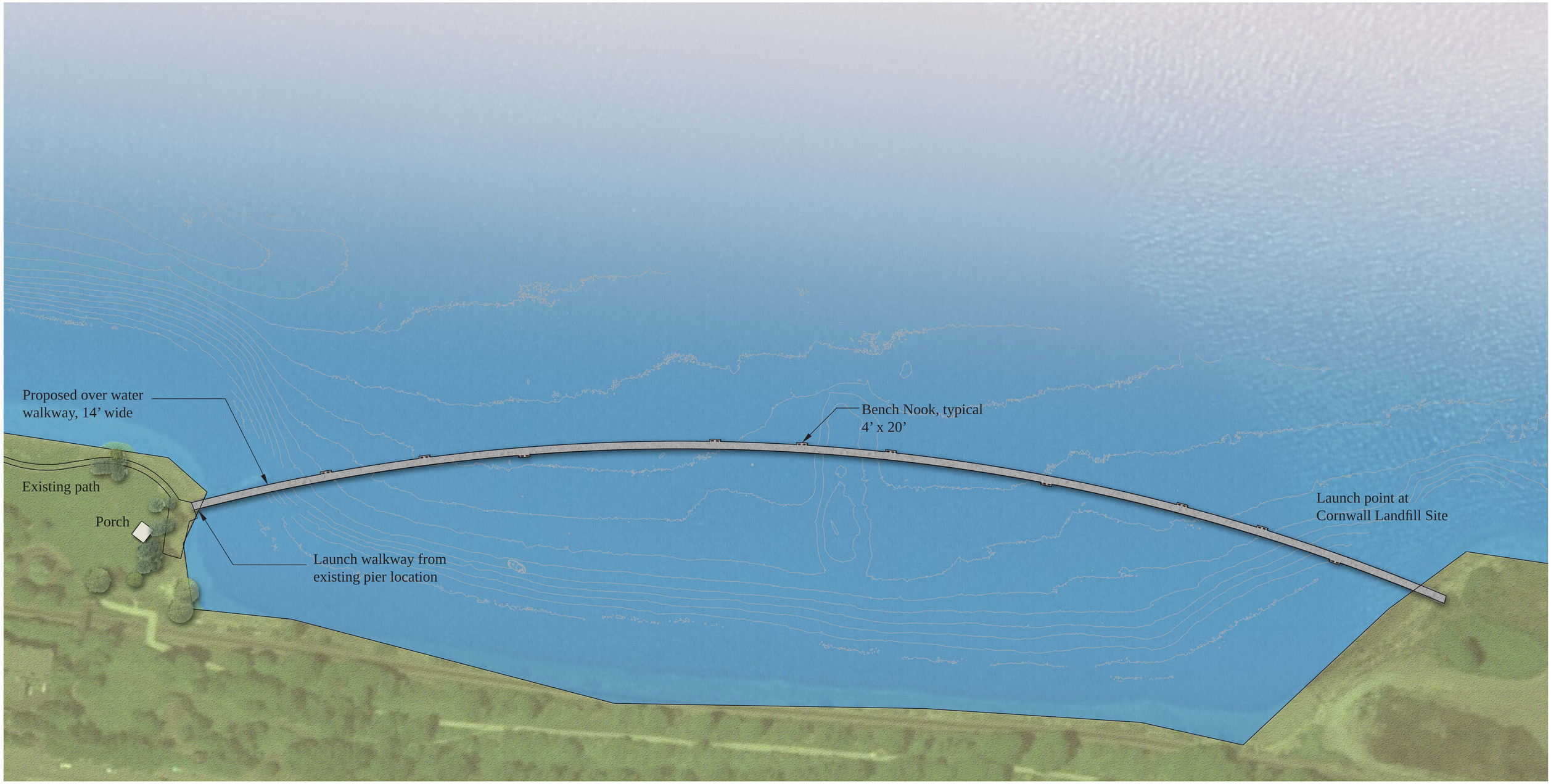
  A total of ten seating nooks were incorporated into both sides of the walk to provide a variety of viewing opportunities, both out to the bay and back towards the shore. Each nook includes two benches, one trash receptacle, and an ADA accessible space.

  It was decided to use a similar guardrail design to what was used for the Taylor Avenue Docks. The proposed lighting for the walk is a high efficiency LED fixture place eight feet on center, on alternating sides of the walk.

Walker♦Macy

Jarvis Payne

Jarvis Payne
Associate



Preferred Conceptual Design Overwater Walkway Trail

Plan View

Walker Macy

Reid Middleton | Grette Associates
Landau Inc. | | RMC Architects
AjO Consulting | Herrenkohl Consulting

0 40 80ft 160ft

Bellingham Boulevard Park Over Water Walkway

The City of Bellingham | August 2008

Preferred Conceptual Design Overwater Walkway Trail

Noon Perspective

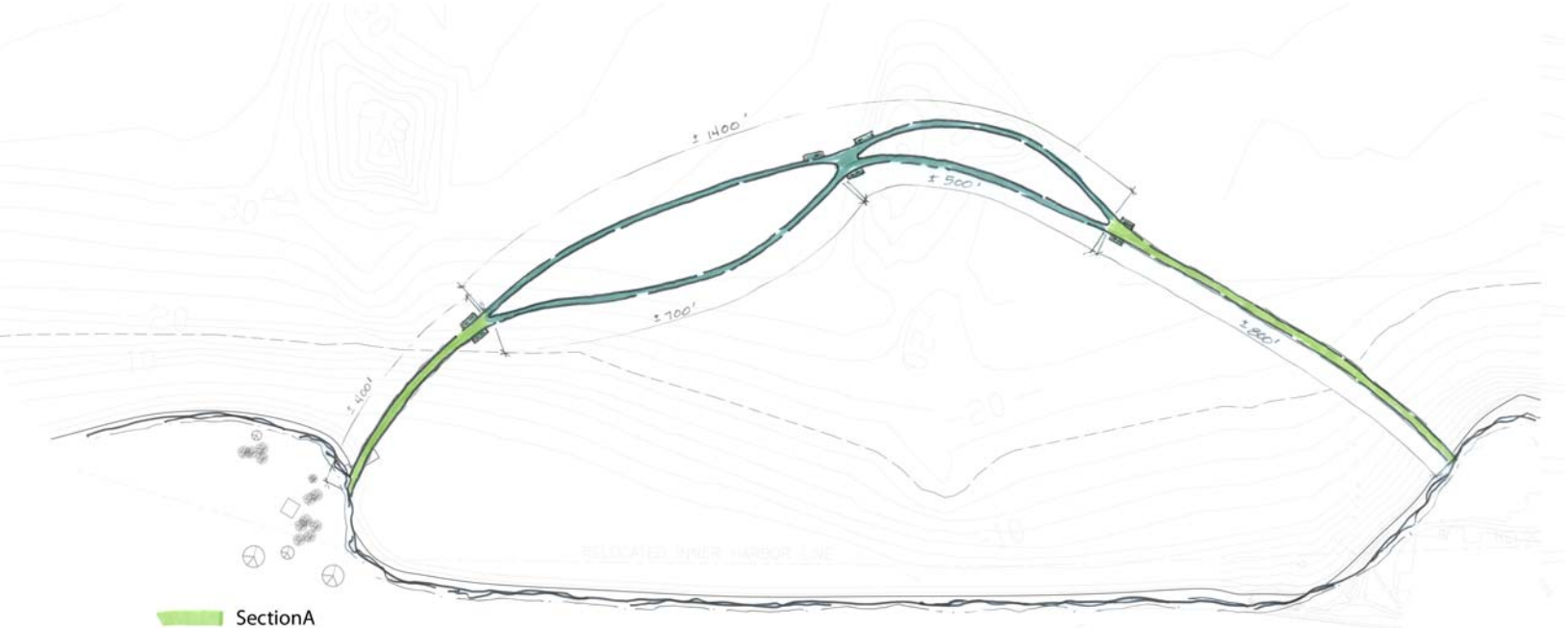
Walker Macy

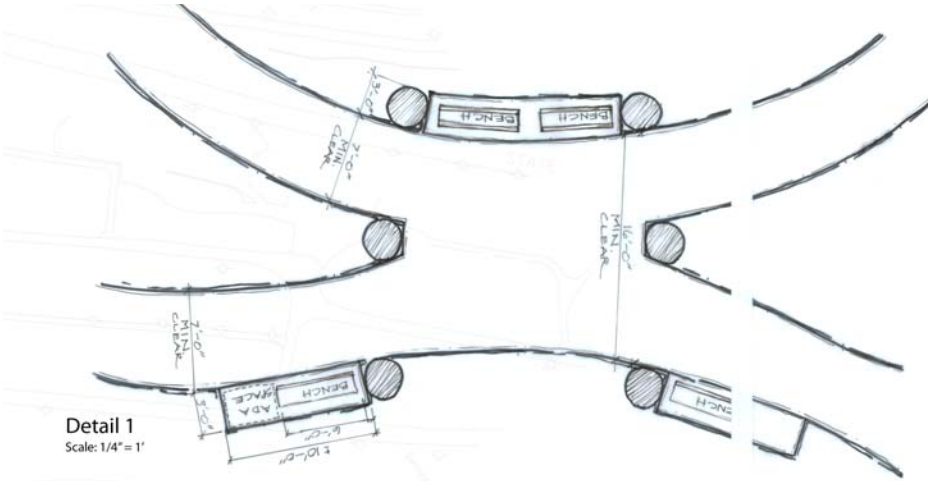
Reid Middleton | Grette Associates
Landau Inc. | RMC Architects
AJO Consulting | Herrenkohl Consulting

Bellingham Boulevard Park Over -Water Walkway

The City of Bellingham | August 2008

APPENDIX 15
Layout Options





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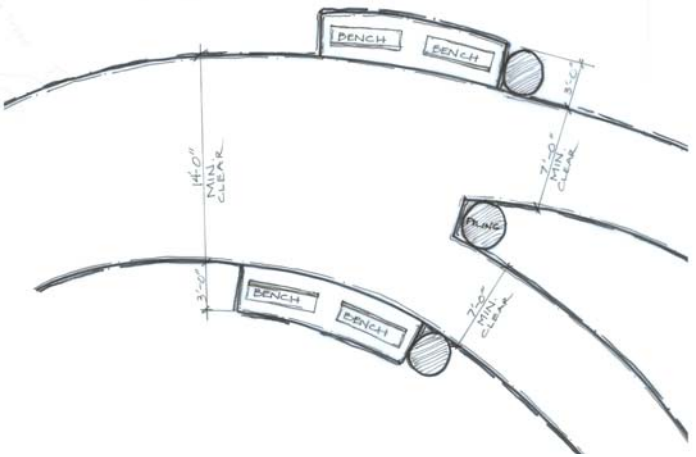
Scale: 1/4" = 1'



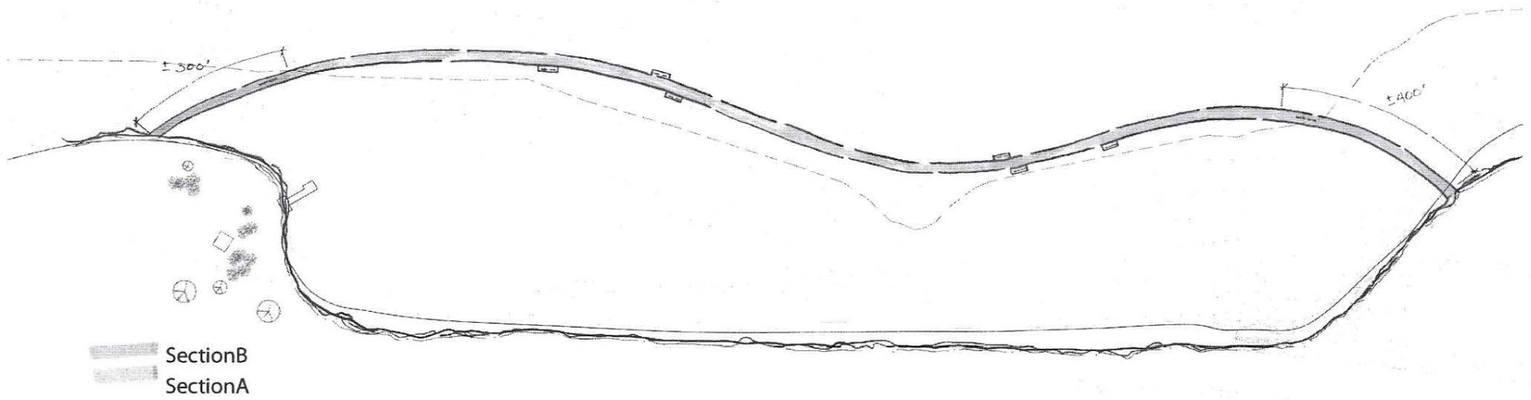
Detail 2
Scale: 1/4" = 1'

0 50 100ft 200ft

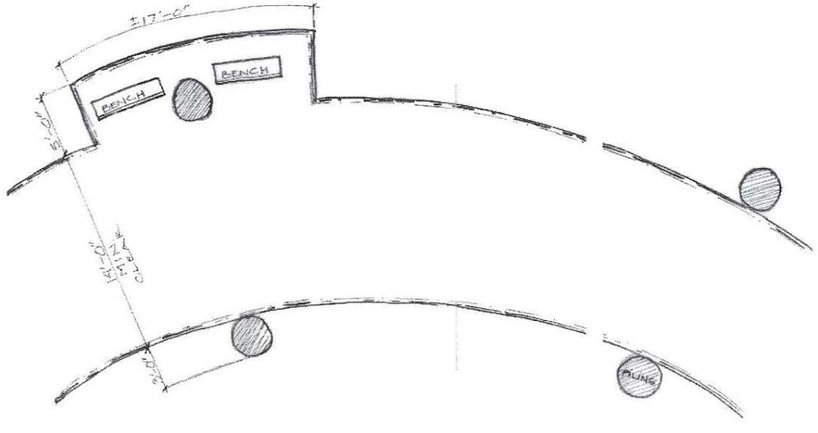
Scheme 1

Walker Macy
Reid Middleton | RCM Architects
Landau Inc. | Grette Associates
AjO Consulting | Herrenkohl Consulting

3/27/08



Scheme 2



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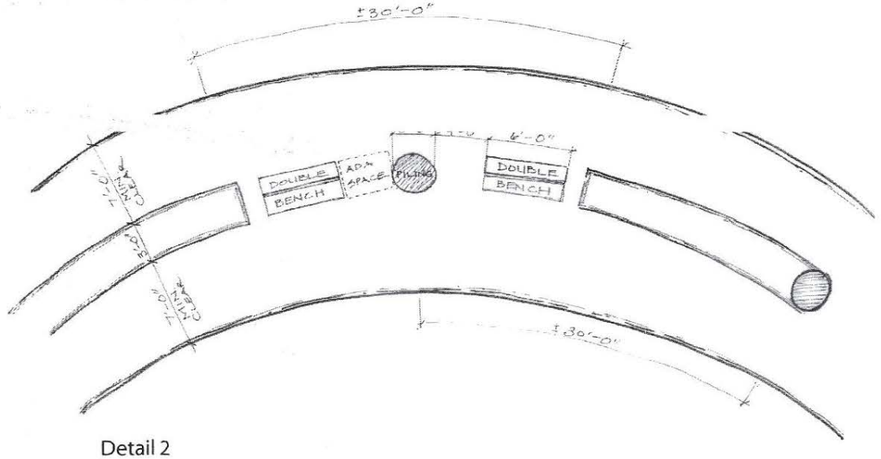
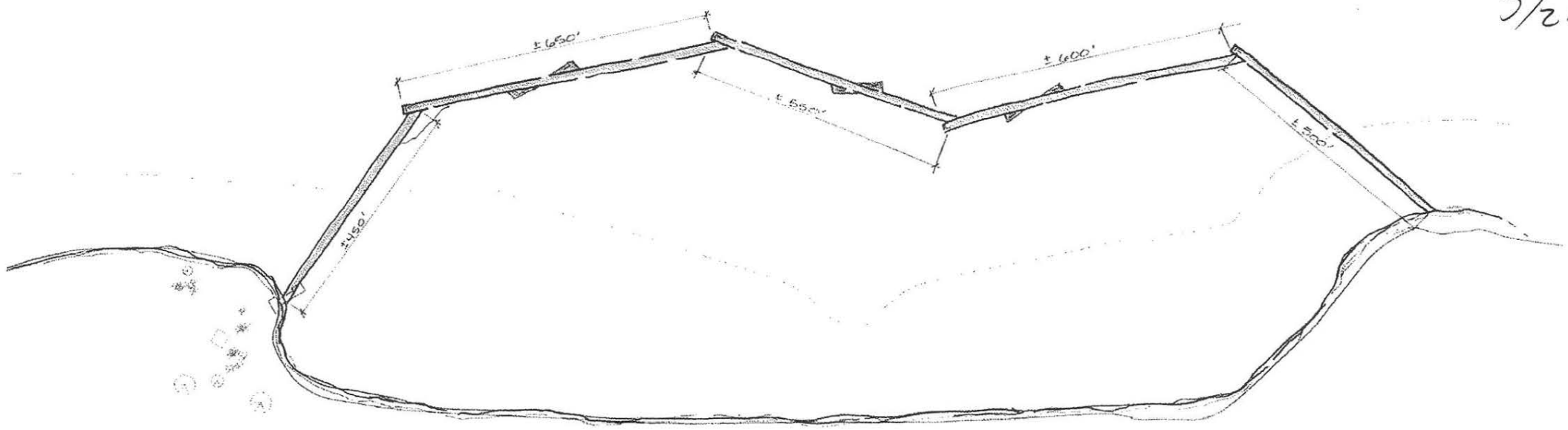


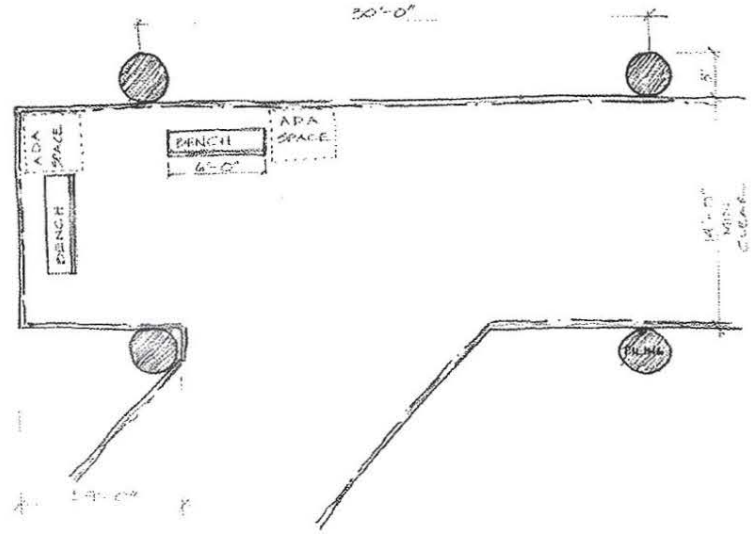
Detail 2

0 50 100ft 200ft

Scheme 2

3/27/08





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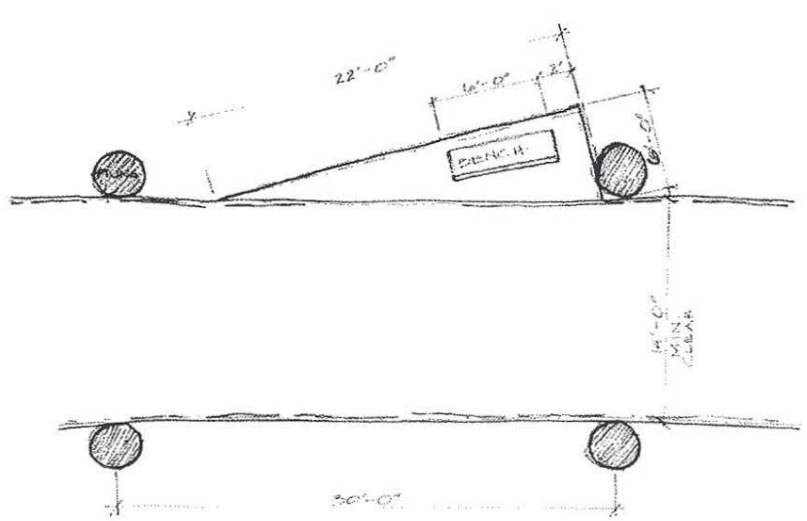
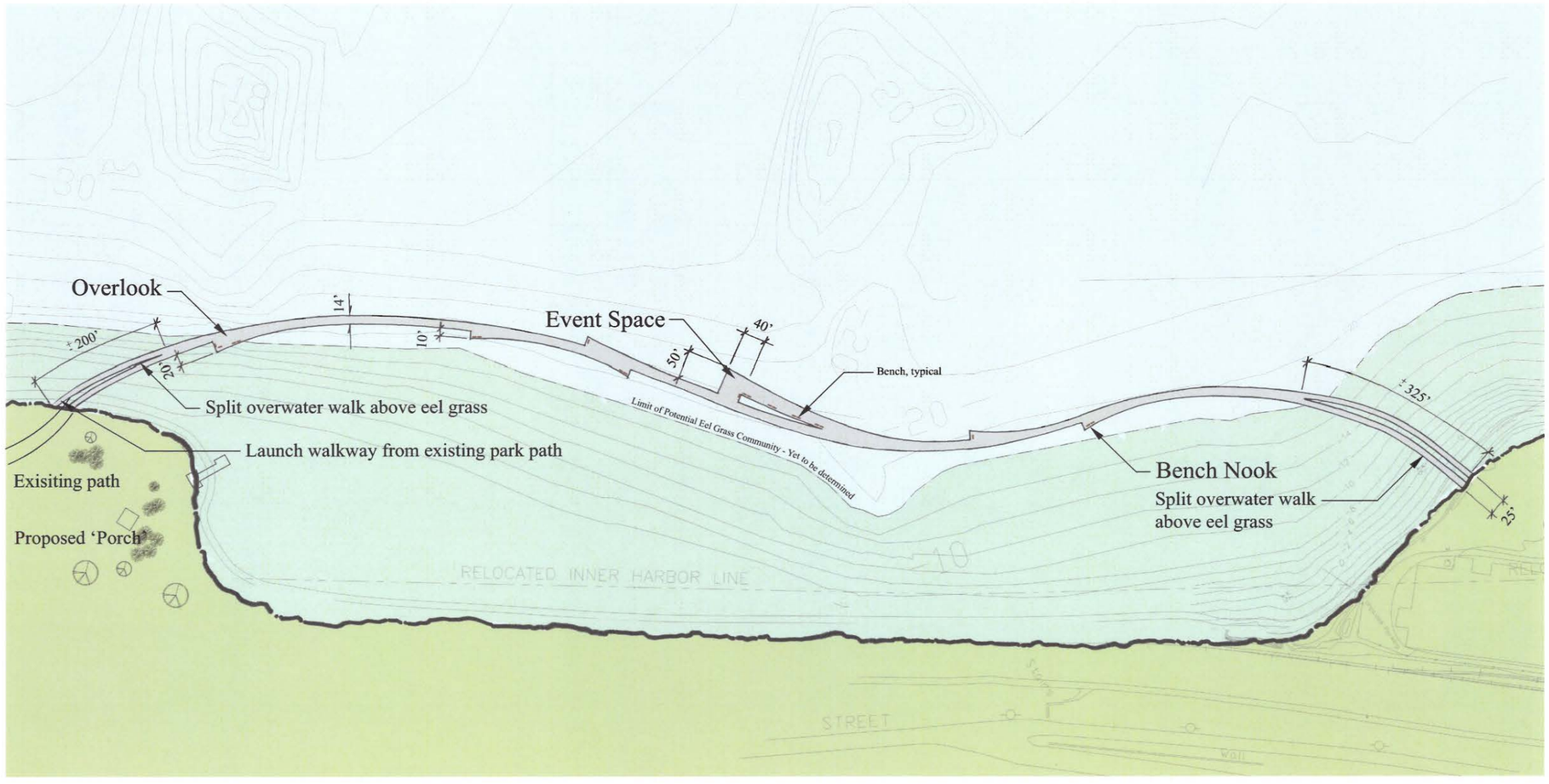


Detail 2

Scheme 3

Bellingham Boulevard Park Over-Water Walkway
The City of Bellingham | April 2008

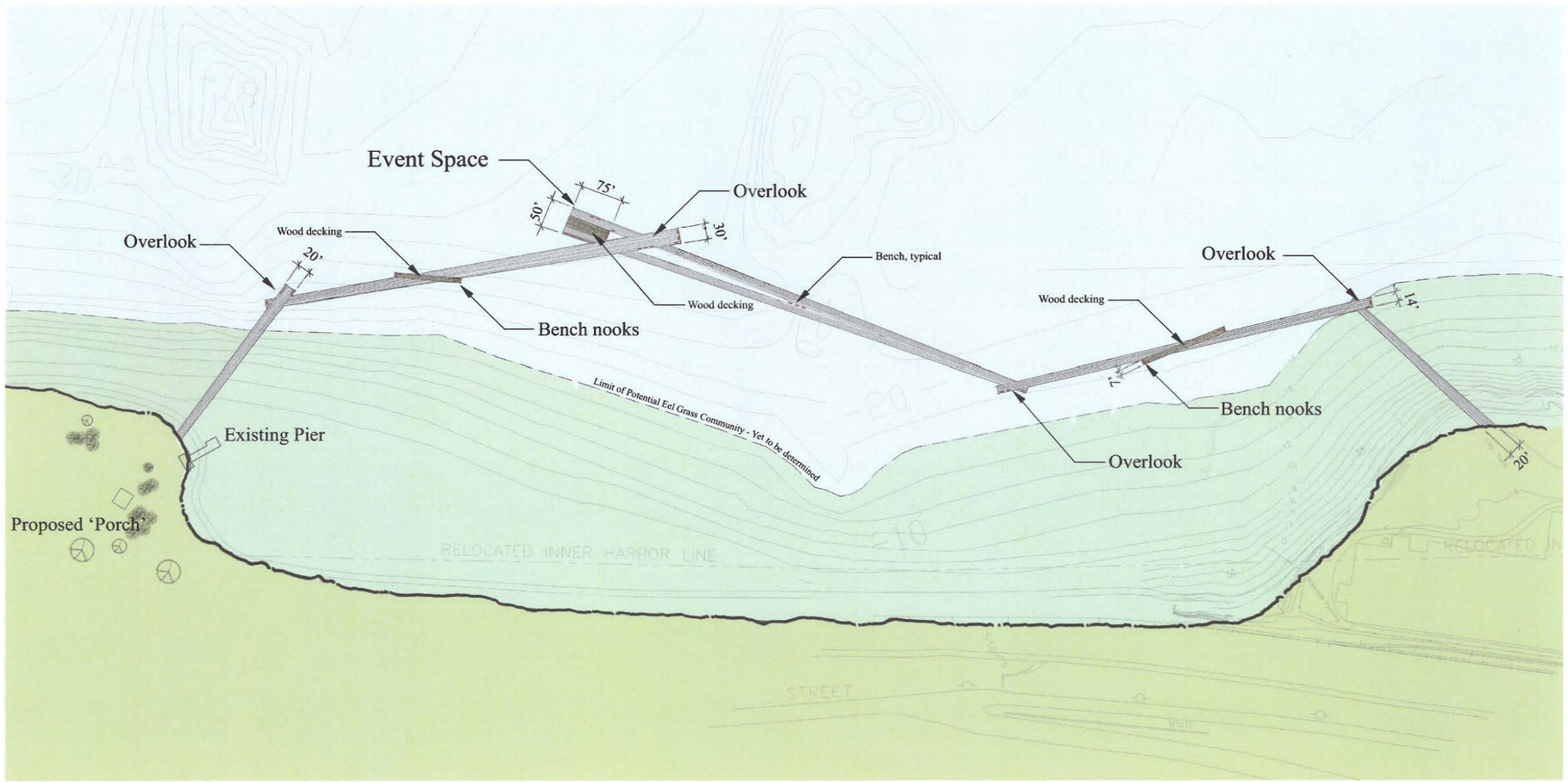
Walker Macy
Todd Middleton | BDE Architects
Landau Inc. | Gerber Associates
A/E Consulting | Stevenson Consulting



Plan

Scheme A - Bathymetrics

Walker Macy
Reid Middleton | Grette Associates
Landau Inc. | | RMC Architects
AJO Consulting | Herrenkohl Consulting



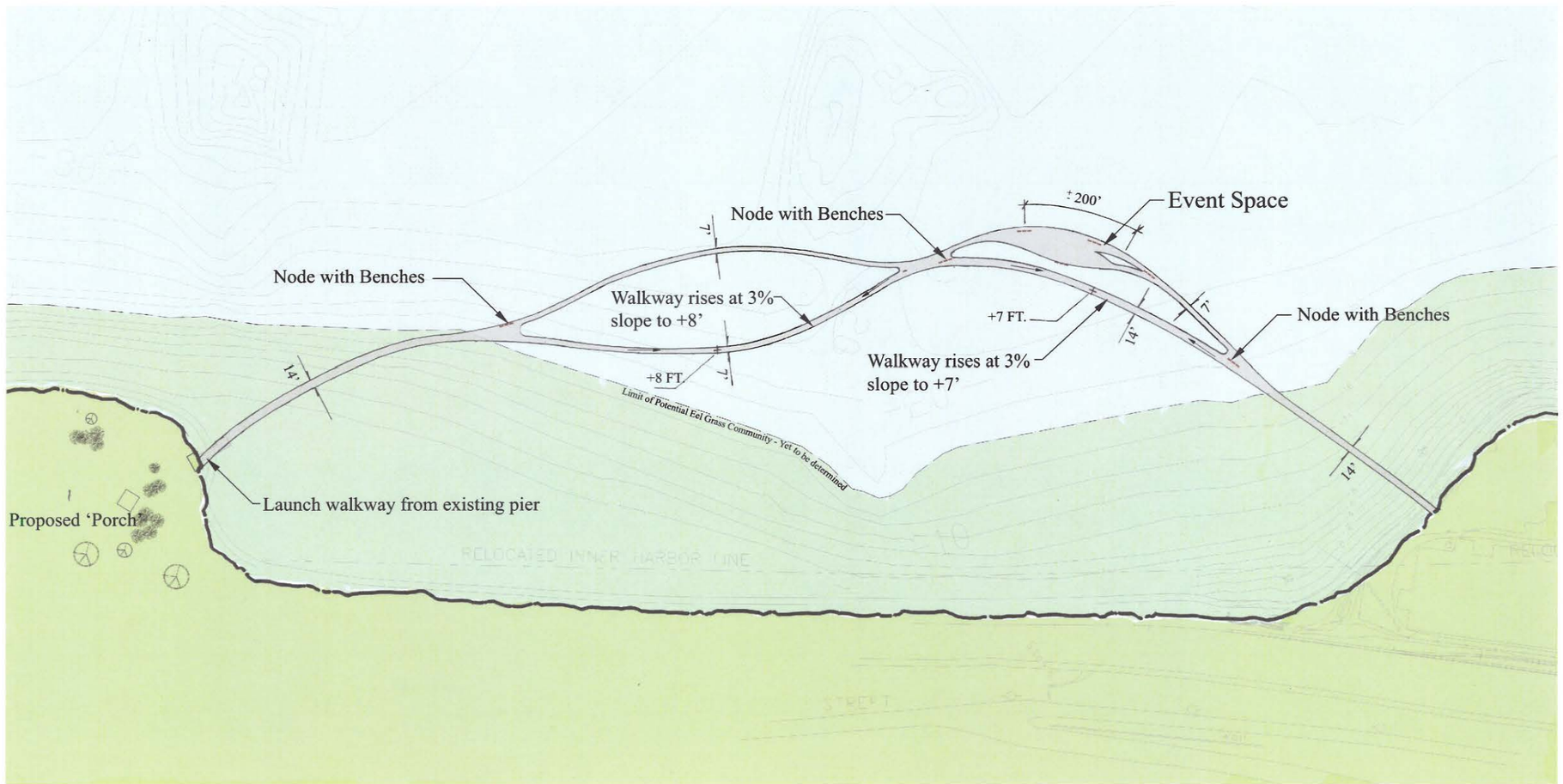
Plan

Scheme B - Logbooms

Walker Macy
Reid Middleton | Grette Associates
Landau Inc. | JRMC Architects
AJO Consulting | Herrenkohl Consulting

0 50 100ft 200ft

Bellingham Boulevard Park Over -Water Walkway
The City of Bellingham | April 2008



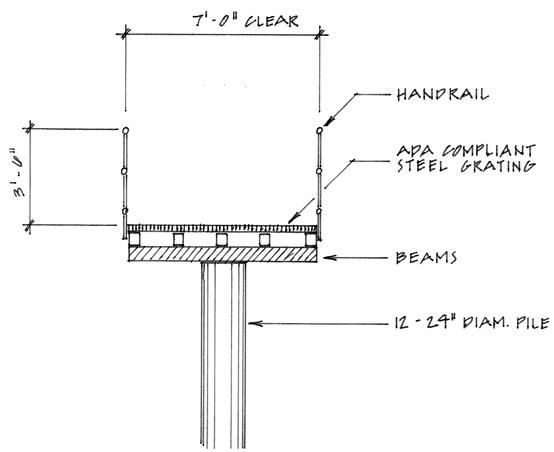
Plan

Scheme C - Braided Eel Grass

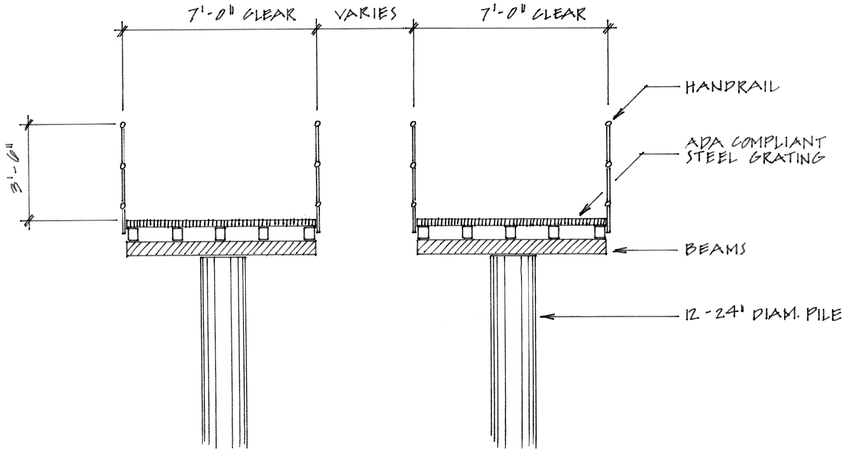
Walker Macy
Reid Middleton | Grette Associates
Landau Inc. | | RMC Architects
AJO Consulting | Herrenkohl Consulting

0 50 100ft 200ft

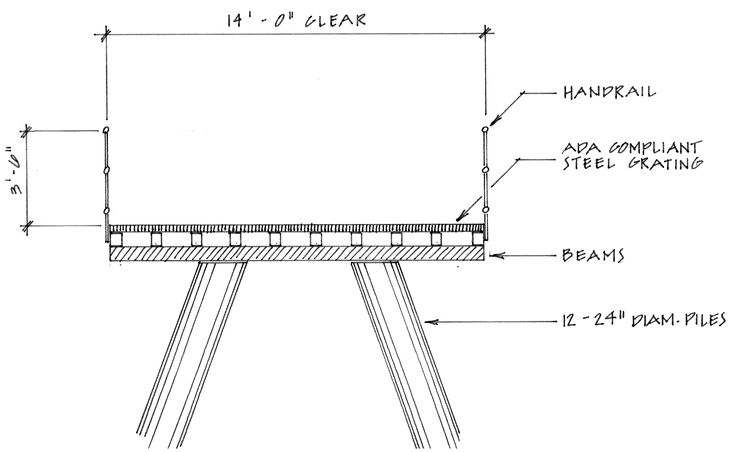
Bellingham Boulevard Park Over -Water Walkway
The City of Bellingham | April 2008



7’-0” Walkway - Single Piling



14’-0” Minimum Split Walkway



14’-0” Double Piling

Sections of Over - Water Walkway

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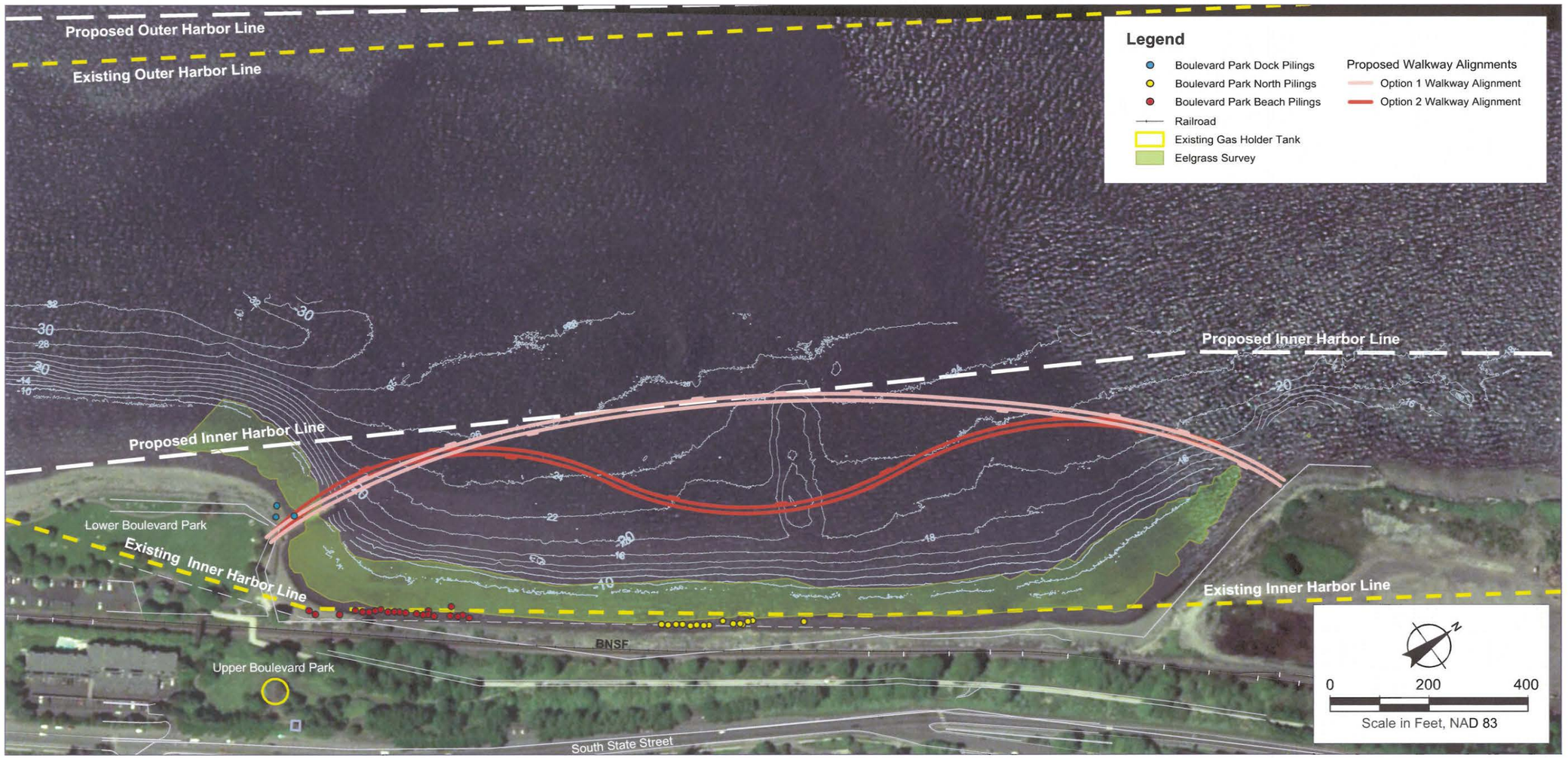
Landau Inc. | | RMC Architects
AjO Consulting | Herrenkohl Consulting

Bellingham Boulevard Park Over -Water Walkway

The City of Bellingham | April 2008

BOULEVARD PARK



Environmental Site Conditions

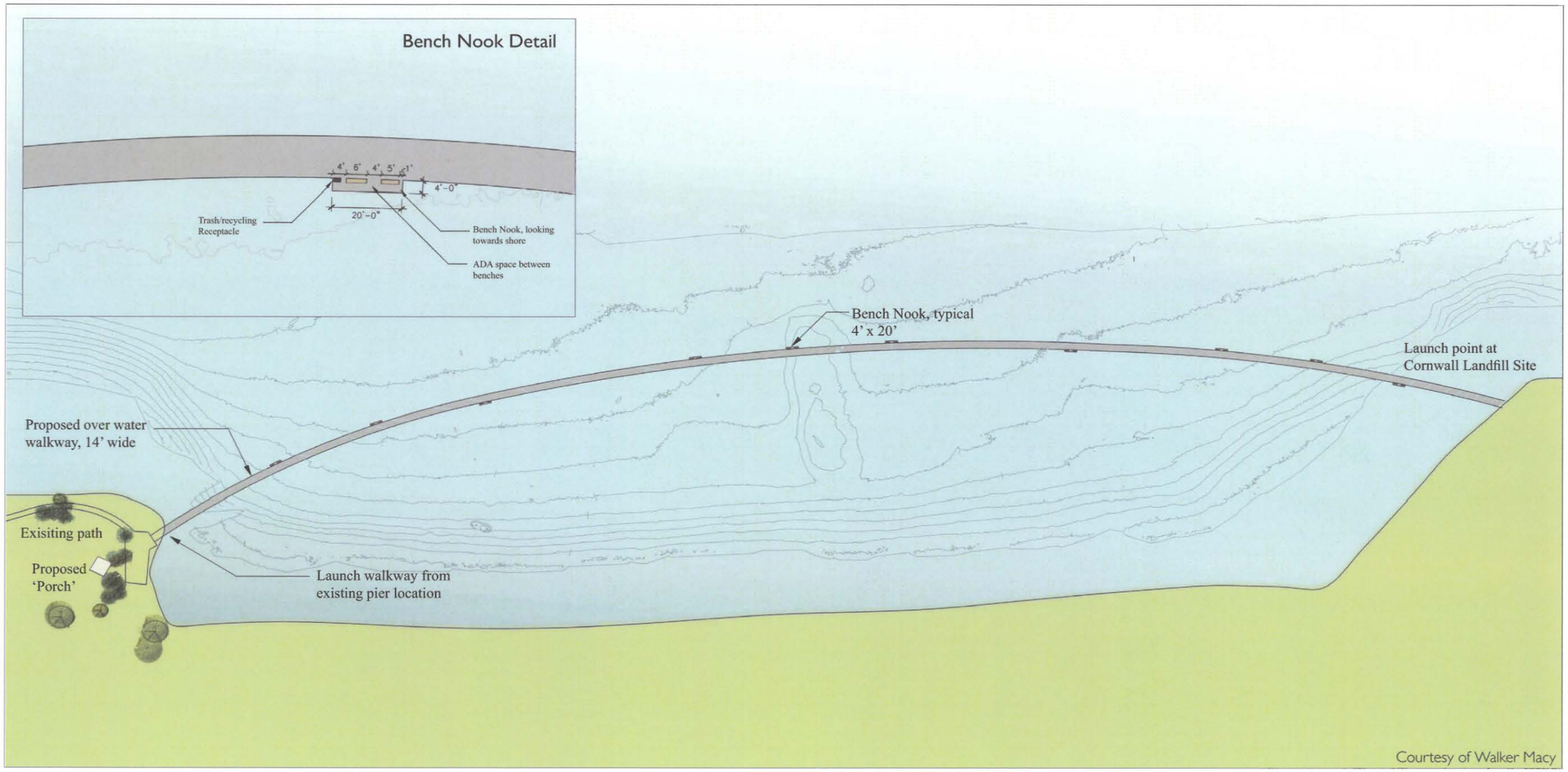
Bellingham Parks & Recreation

Public Open House
June 26, 2008

ReidMiddleton

Walker Macy | Grette Associates
Landau Inc. | RMC Architects
AjO Consulting | Herrenkohl Consulting

BOULEVARD PARK



Conceptual Design Overwater Trail – Layout 1

Bellingham Parks & Recreation

Public Open House
June 26, 2008

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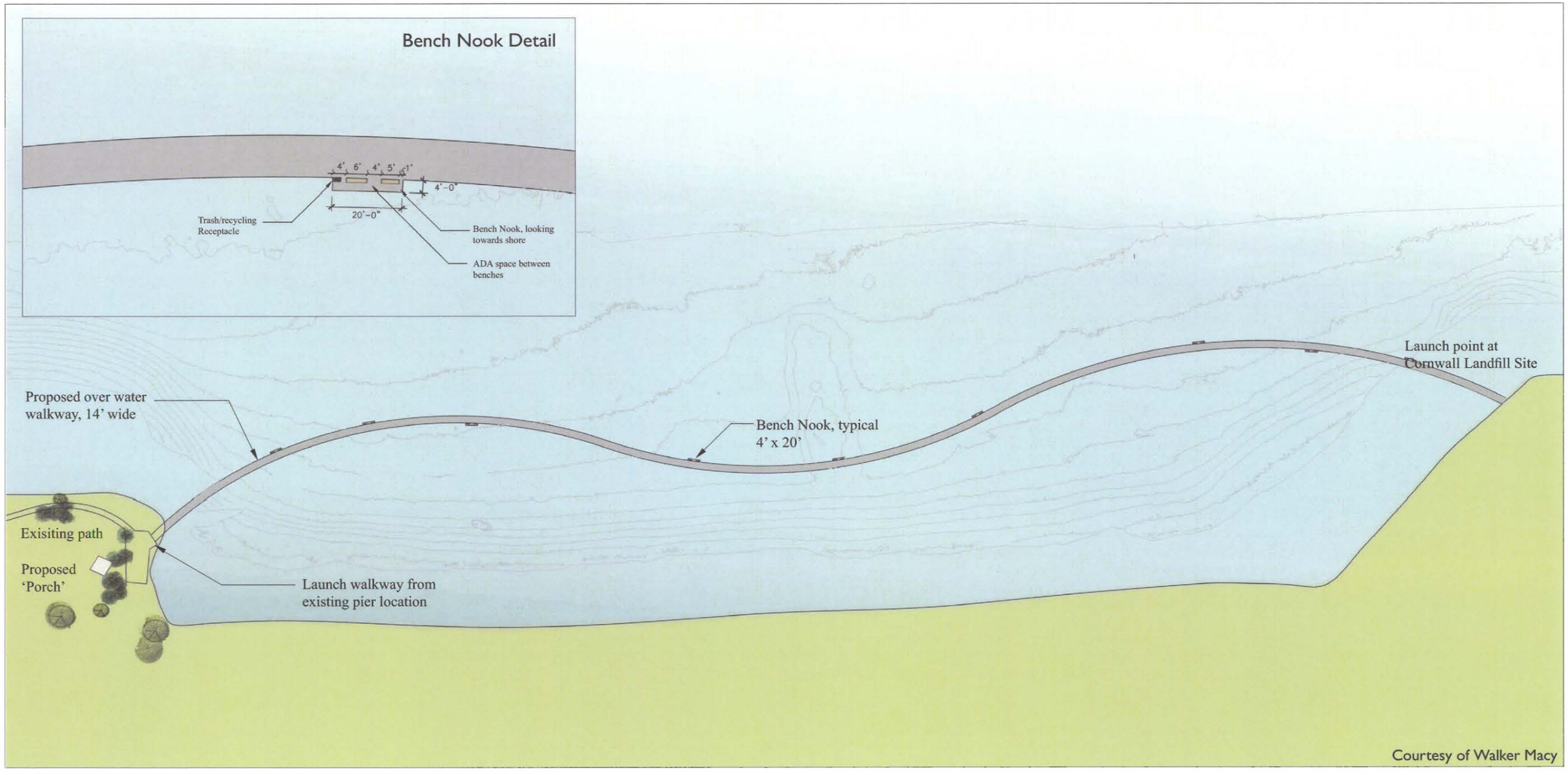
Landau Inc. | RMC Architects
AjO Consulting | Herrenkohl Consulting

BOULEVARD PARK



Conceptual Design Overwater Trail – Layout 2

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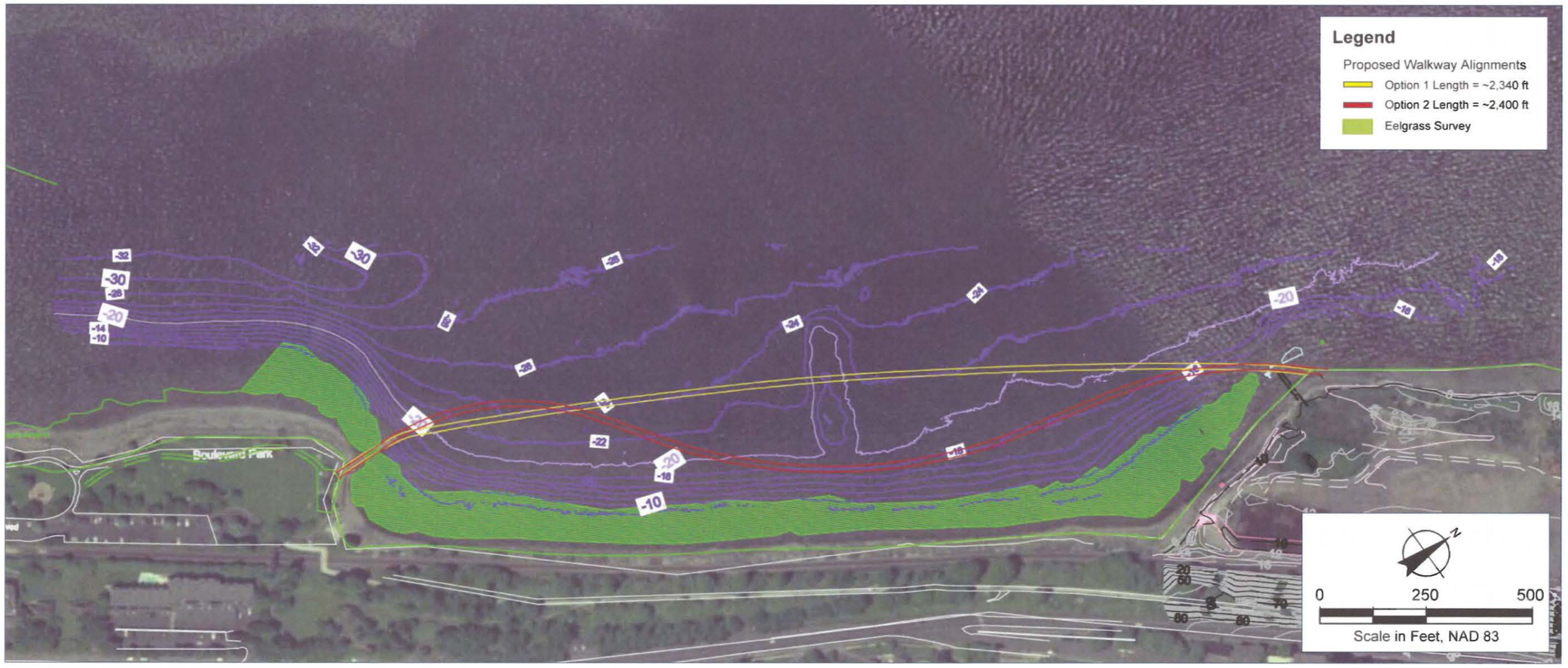
Landau Inc. | RMC Architects
AjO Consulting | Herrenkohl Consulting

Bellingham Parks & Recreation

Public Open House
June 26, 2008

BOULEVARD PARK



Draft Alignment Concepts

Bellingham Parks & Recreation

Revised per Open House Comments
July 9, 2008

ReidMiddleton

Walker Macy | Grette Associates
Landau Inc. | RMC Architects
AjO Consulting | Herrenkohl Consulting

APPENDIX 16
Guardrail, Lighting, and Seating Nook Options

plane
STEP LIGHT

Application
The **plane** step light is an LED-based luminaire that offers a variety of different color combinations for edge glow accents and functional pathway lighting. For use in exterior and interior architectural applications. **plane** mounts directly to a recessed junction box for wall mount applications. UL listed for wet / damp locations.

Light Output
plane delivers illuminance levels that exceed the National Electrical Codes (NEC) requirement for emergency egress. Recommended mounting 18" to 24" A.G. IES format photometric data available at **www.iolighting.com**.

Construction
Environmentally sealed, enclosed and gasketed 5.9" sq. corrosion resistant metal casting (stainless steel optional). Mounts directly to a UV stable, optically clear, high strength polycarbonate housing. LED luminaire modules contained within the housing are replaceable.

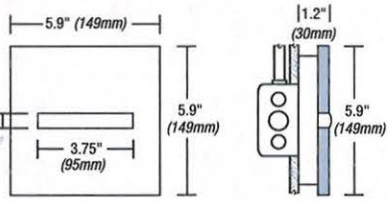
Mounting Options
plane mounts directly to a junction box while the driver (power supply) resides within the junction box. Three types of junction box configurations are compatible with **plane**:

1) 1½" deep, 4" octagonal junction box. Hanger bars must be side mounted.
2) 2⅛" deep, 4" octagonal junction box with side mounted hanger bars.
3) 2⅛" deep, 4" square junction box with plaster ring.

Electrical / Emergency Battery Back Up
120v or 277v energy saving current limiting Class 2 power supply (driver) must be located within a 1½" or 2⅛" deep, 4" square junction box with plaster ring. Optional emergency battery back up operates the step light at full brightness for a minimum of 90 minutes.

Power Consumption
Standard Output: 9.75 w

Dimensions



Step Optic
Precision molded polycarbonate lens with superior optical properties offers a 90° cut-off with 70% fixture efficiency.

Finish
Metal die-cast face plate may be polyester powder coated or plated. Plated finishes are for interior applications only. Face plate may also be specified in stainless steel.

Emergency
Bodine's AC/Emergency LED driver, "Odyssey," has been designed for the **plane** step light specifically. Bodine's Odyssey HB-DL7 may be used with either a switched or unswitched fixture. Installation is not recommended where the ambient temperature may fall below 0°C.

The center portion of the **plane** step light will illuminate for 90 minutes at full light output during emergency operation. This combination driver/battery back-up must be installed in a standard 4" square, 2⅛" deep junction box. **plane** mounts directly to this junction box with an **io** supplied mounting bracket. A single-pole push-button test switch and LED charging indicator light are also provided. Test switch location must be determined by designer. Test switch plate finish available in white only.

io Lighting 370 Corporate Woods Parkway Vernon Hills, IL 60061-3107 T 847.735.7000 F 847.735.7001 E info@iolighting.com W iolighting.com

2007 - io Lighting reserves the right to change specifications for product improvement without notification

Step Light Details

LED Magnetic Driver Specifications

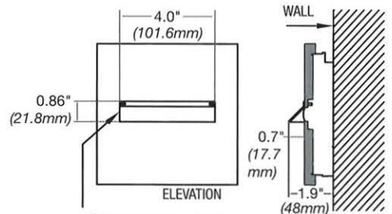
Input voltage:	120v or 277v
Output Load:	Reference Spec Sheets
Operating Temperature	-20˚F + 140˚F
of the Luminaire:	-30˚C + 60˚C
UL Class:	2
Surface Temperature	25˚C
Expected Life	50,000 hours

End of Life-Replacement

LED module replacement is made easy by logging onto **www.iolighting.com** and clicking on "LED module replacement." Replacement modules include quick-connect power fittings.

Visor Option

(A visor may be specified for full visual cut-off.)



45˚ Formed sheet metal visor mounted to the front face of casting. Visor includes sidewalls to completely shield view to lens.

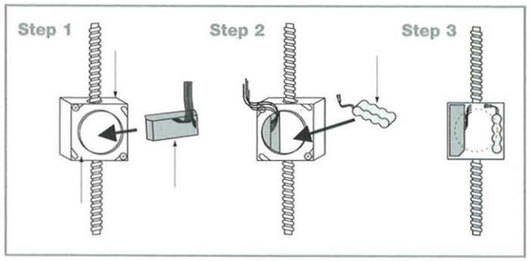
Emergency Battery Back-up

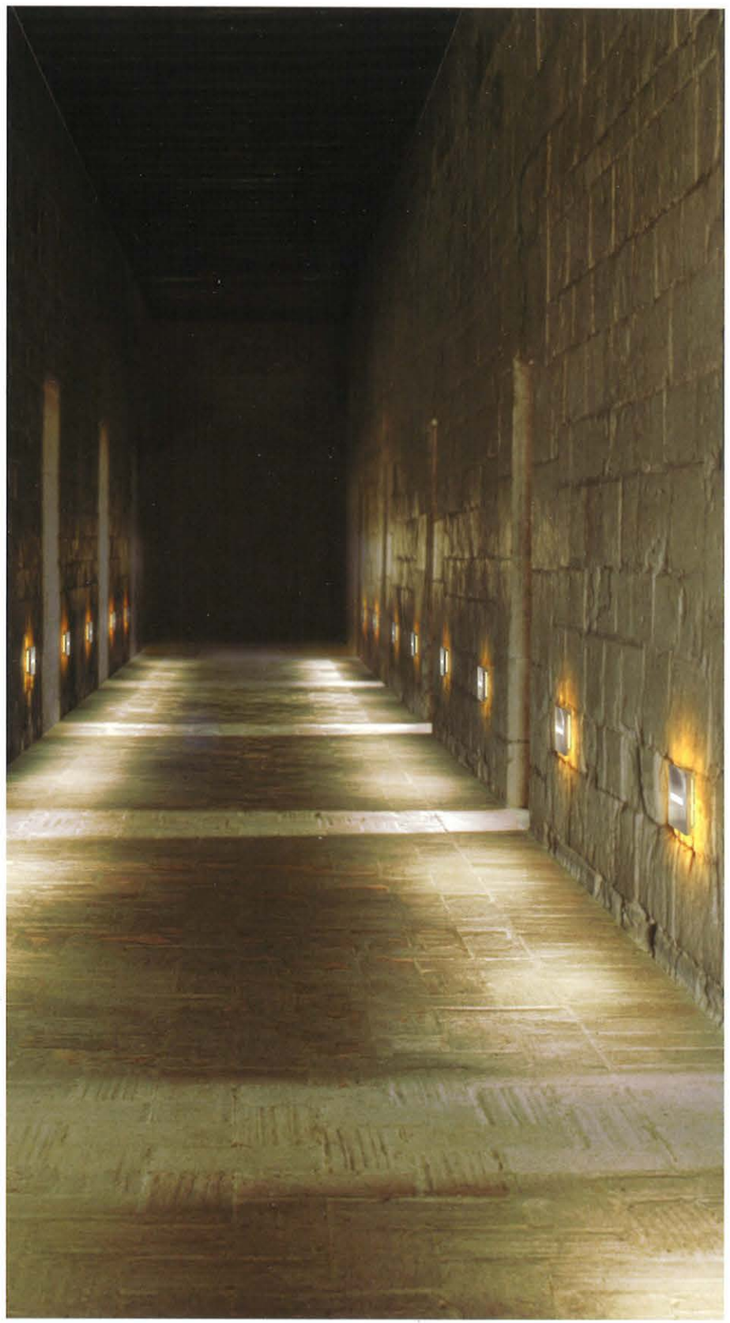
During normal operation, the HB-DL7 will illuminate three 1-watt high brightness LEDs and a 10 Vdc string of perimeter LEDs and simultaneously charge the battery. When AC power fails, the HB-DL7 automatically starts and operates three 1-watt LEDs. The LEDs operate in the emergency mode for a minimum of 90 minutes. When AC power is restored, the emergency driver automatically returns to the charging mode.

Bodine's Odyssey HB-DL7 may be used with either a switched or unswitched fixture. If a switched fixture is used, an unswitched hot lead must be connected to the emergency driver. The emergency driver must be fed from the same branch circuit as the AC driver (see diagrams). Installation is not recommended with fixtures where the ambient temperature may fall below 0˚C.

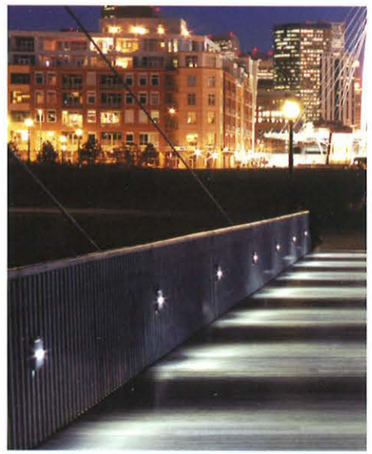
Mounting Details

The Odyssey Driver/Emergency Battery Back-up is designed to mount within a 2⅛" deep, 4" square junction box with plaster ring and side mounted hanger bars.

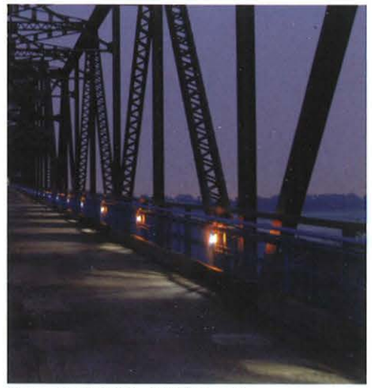




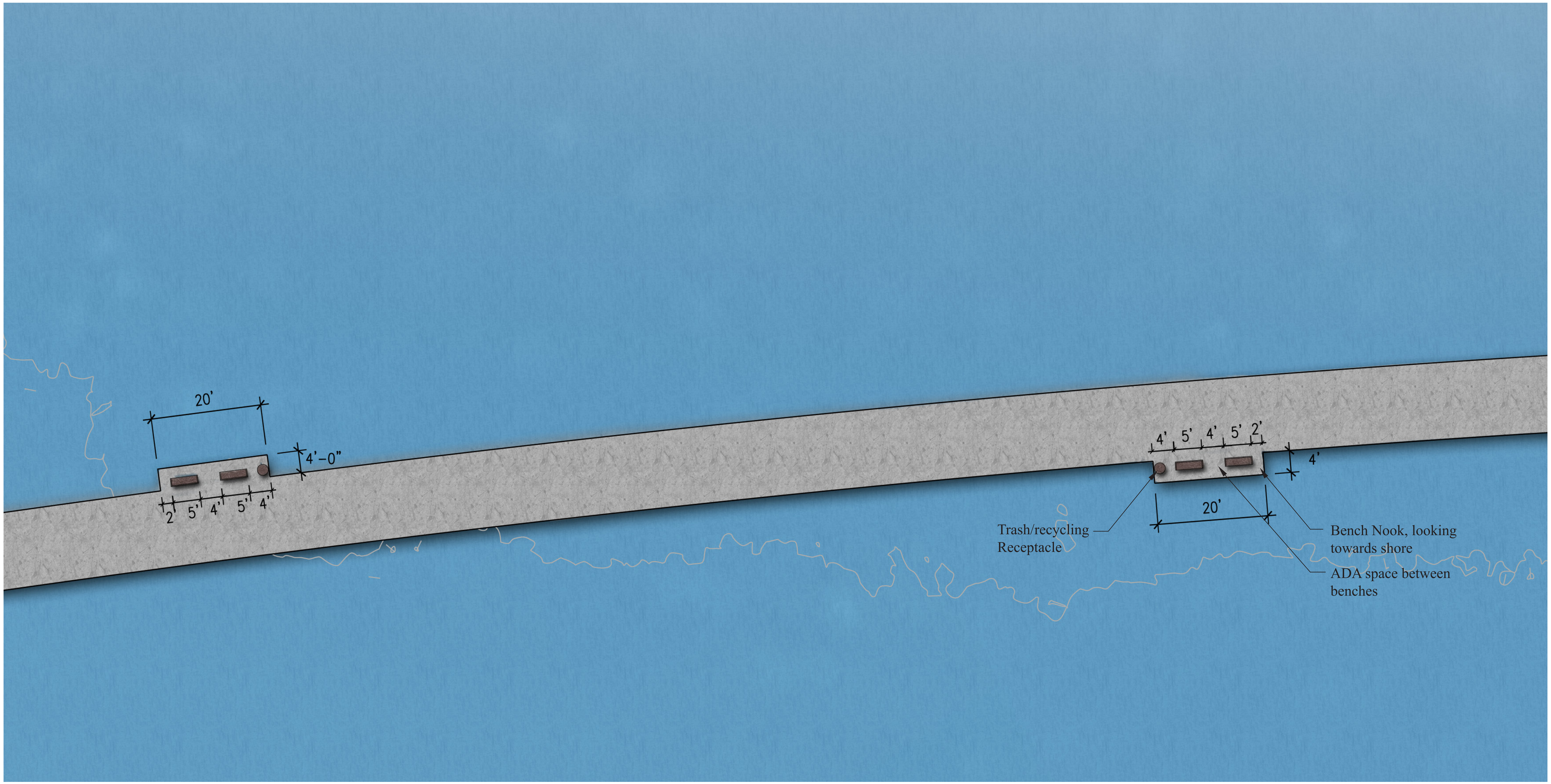
PLATT RIVER BRIDGE DAYTIME DETAIL - PLANE STEP LIGHT
PHOTOGRAPHER: CRAIG SPRING



PLATT RIVER BRIDGE - PLANE STEP LIGHT
PHOTOGRAPHER: CRAIG SPRING



CHAIN OF ROCKS BRIDGE - PLANE STEP LIGHT
PHOTOGRAPHER: DAVE PICKETT



Preferred Conceptual Design Overwater Walkway Trail

Bench Nook Enlargement

Walker Macy

Reid Middleton | Grette Associates
Landau Inc. | | RMC Architects
AjO Consulting | Herrenkohl Consulting

0 4 8ft 16ft

Bellingham Boulevard Park Over Water Walkway

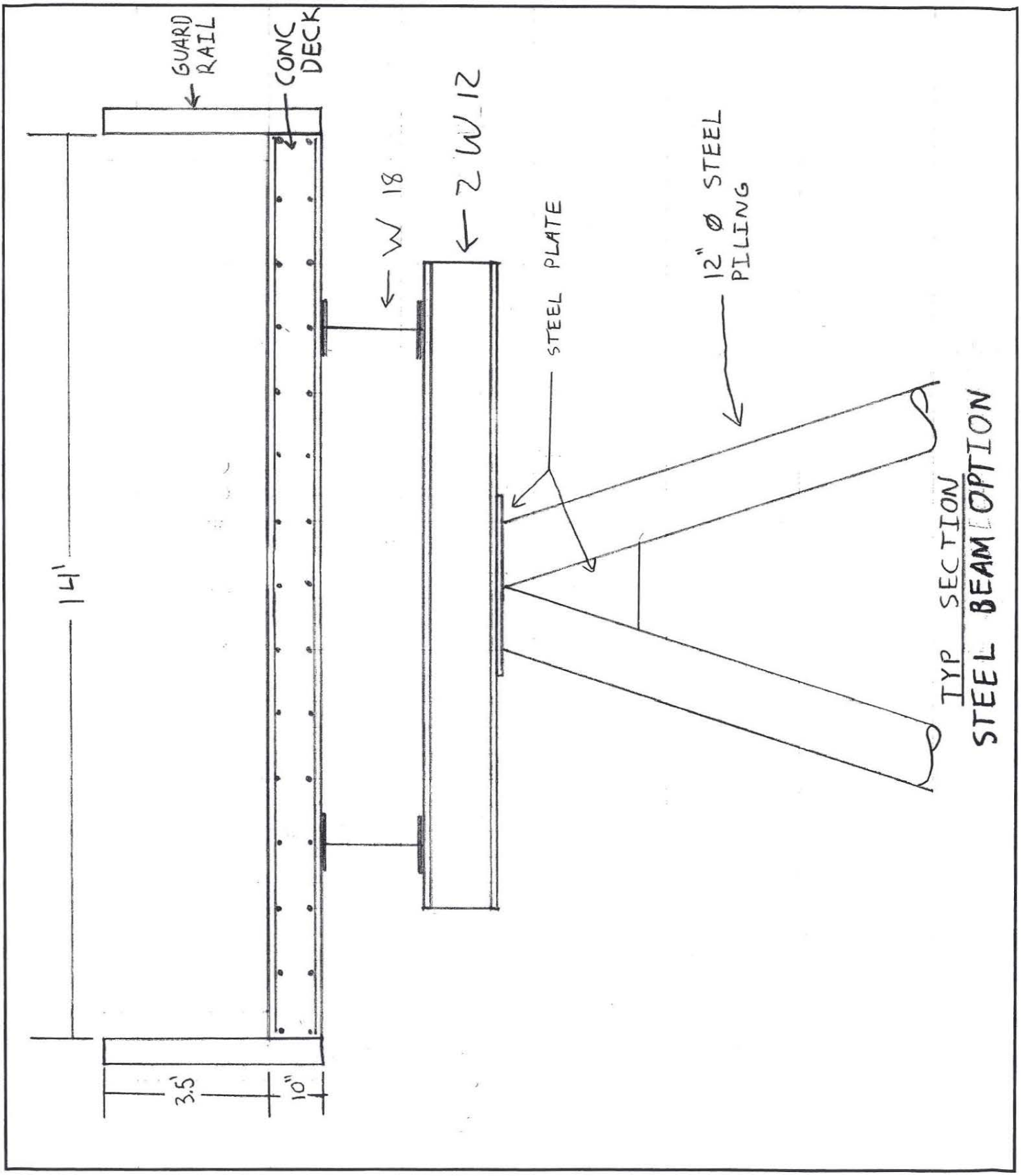
The City of Bellingham | August 2008

APPENDIX 17
Structural Concepts
Boulevard Park Overwater Walkway

ReidMiddleton

Client City of Bellingham
Project Boulevard Park
Option 1: Steel Beams
Project No. 24-08-001

Sheet 1A of
Design by SML
Date 5/2/08
Checked by
Date

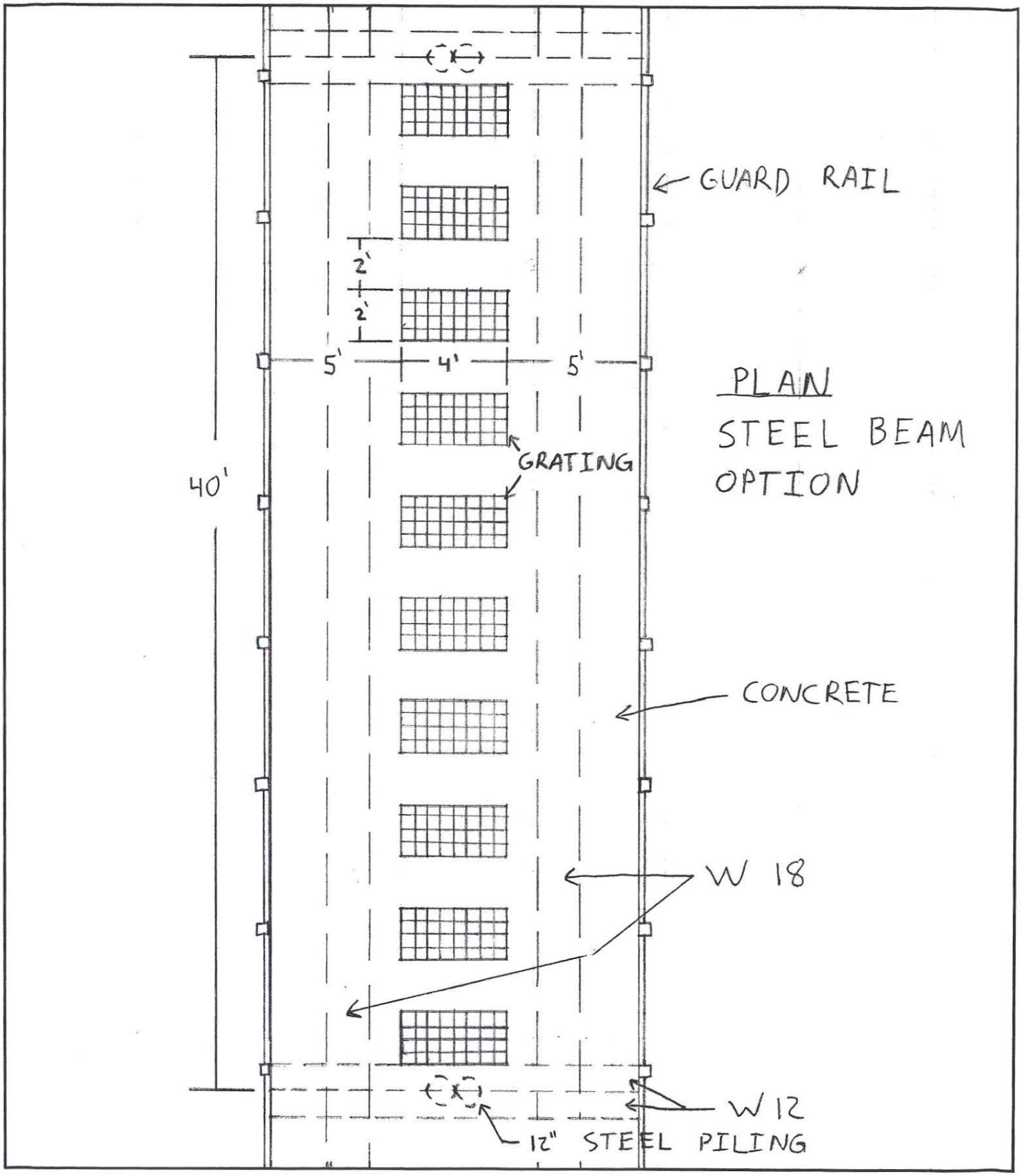


TYP SECTION
STEEL BEAM OPTION

ReidMiddleton

Client City of Bellingham
Project Boulevard Park
Project No. 24-08-001

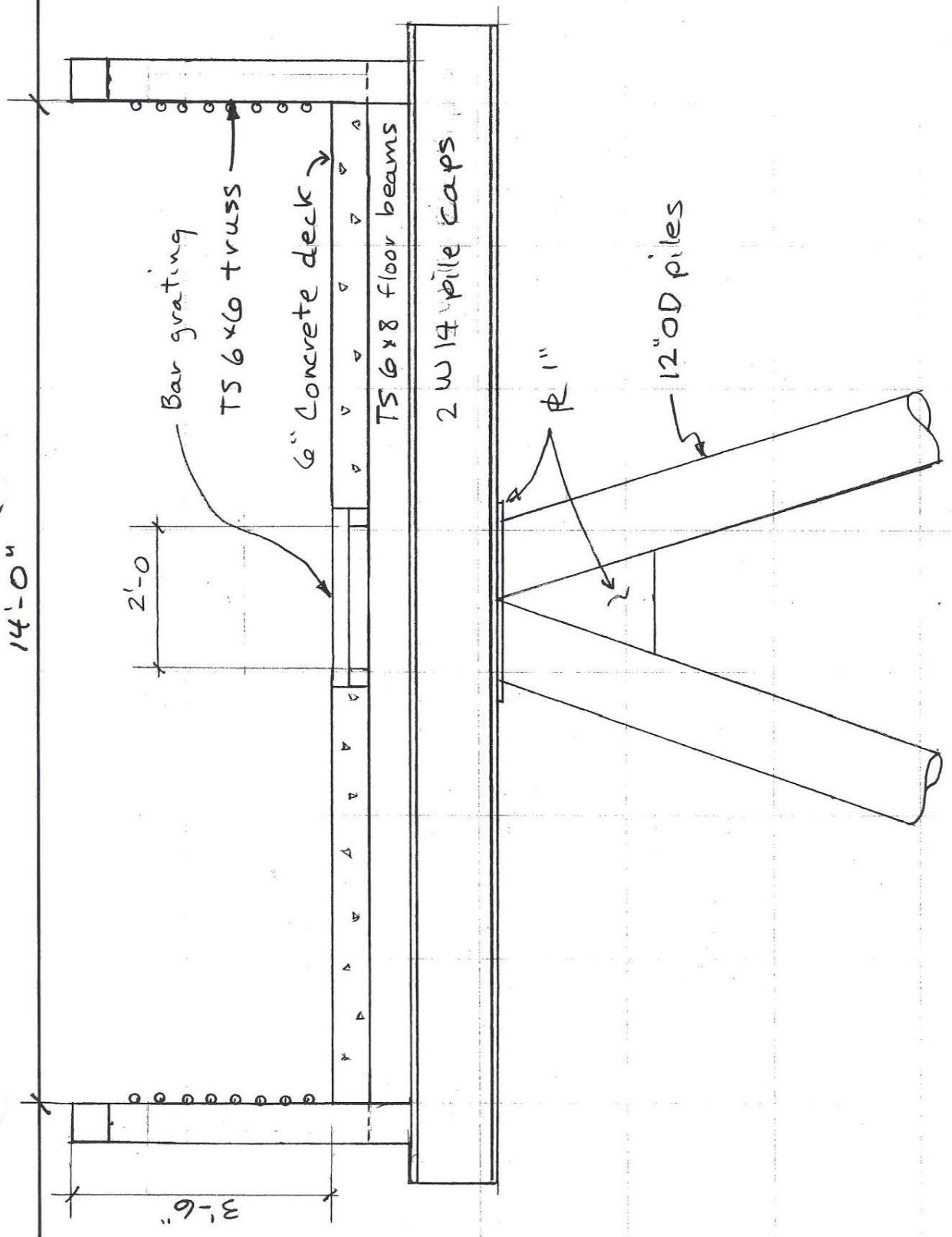
Sheet 1B of
Design by SML
Date 5/5/08
Checked by
Date



Reid Middleton
728 134th Street SW - Suite 200
Everett, WA 98204
Ph: 425 741-3800
Fax: 425 741-3900

Client City of Bellingham
Project Boulevard Park
Option 2: Steel or Aluminum Truss
Project No.

Sheet 2A of
Design by WSS
Date 5-5-08
Checked by
Date

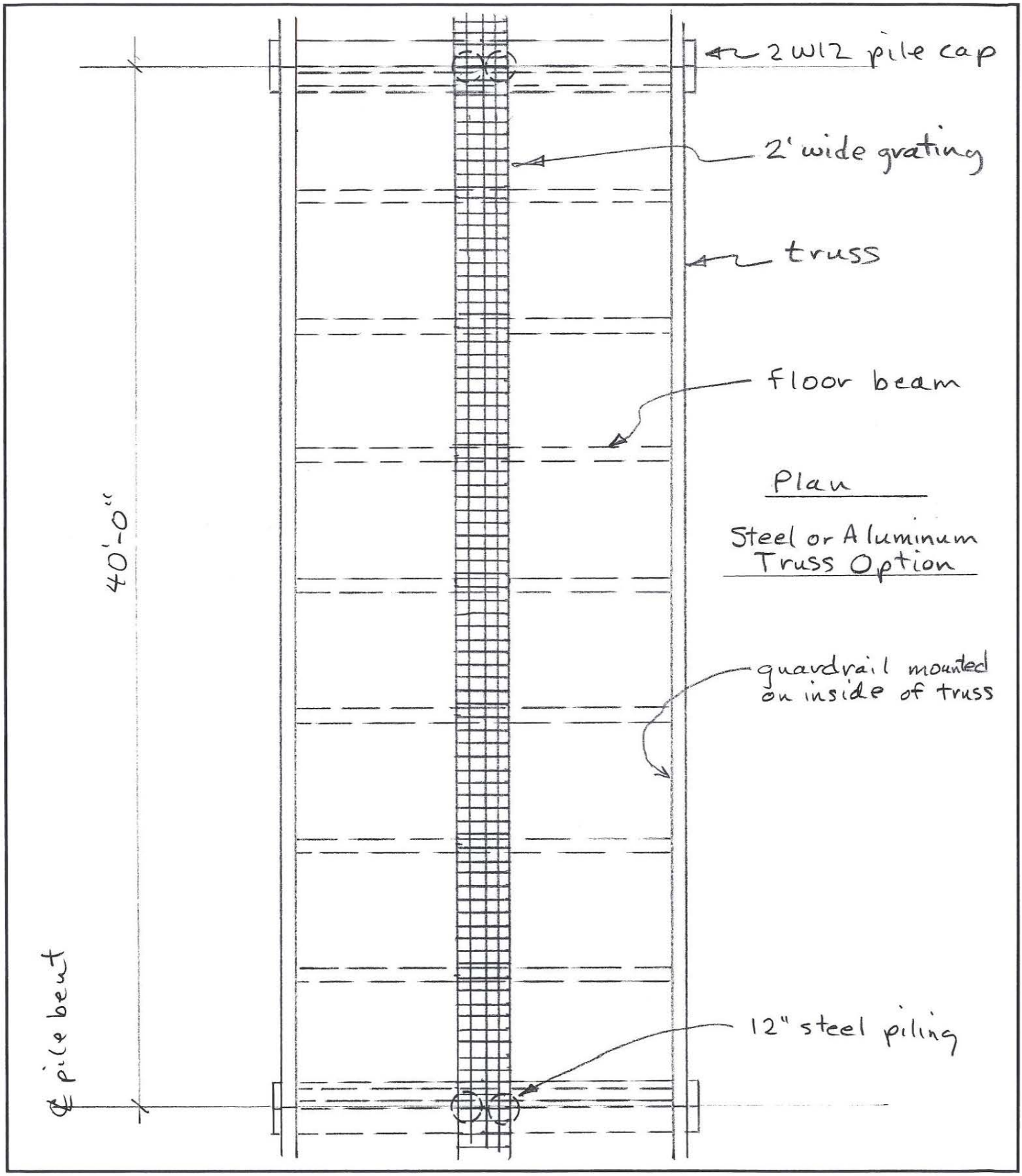


Typical Section
Steel or Aluminum Truss Option

ReidMiddleton
728 134th Street SW - Suite 200
Everett, WA 98204
Ph: 425 741-3800
Fax: 425 741-3900

Client City of Bellingham
Project Boulevard Park
Project No.

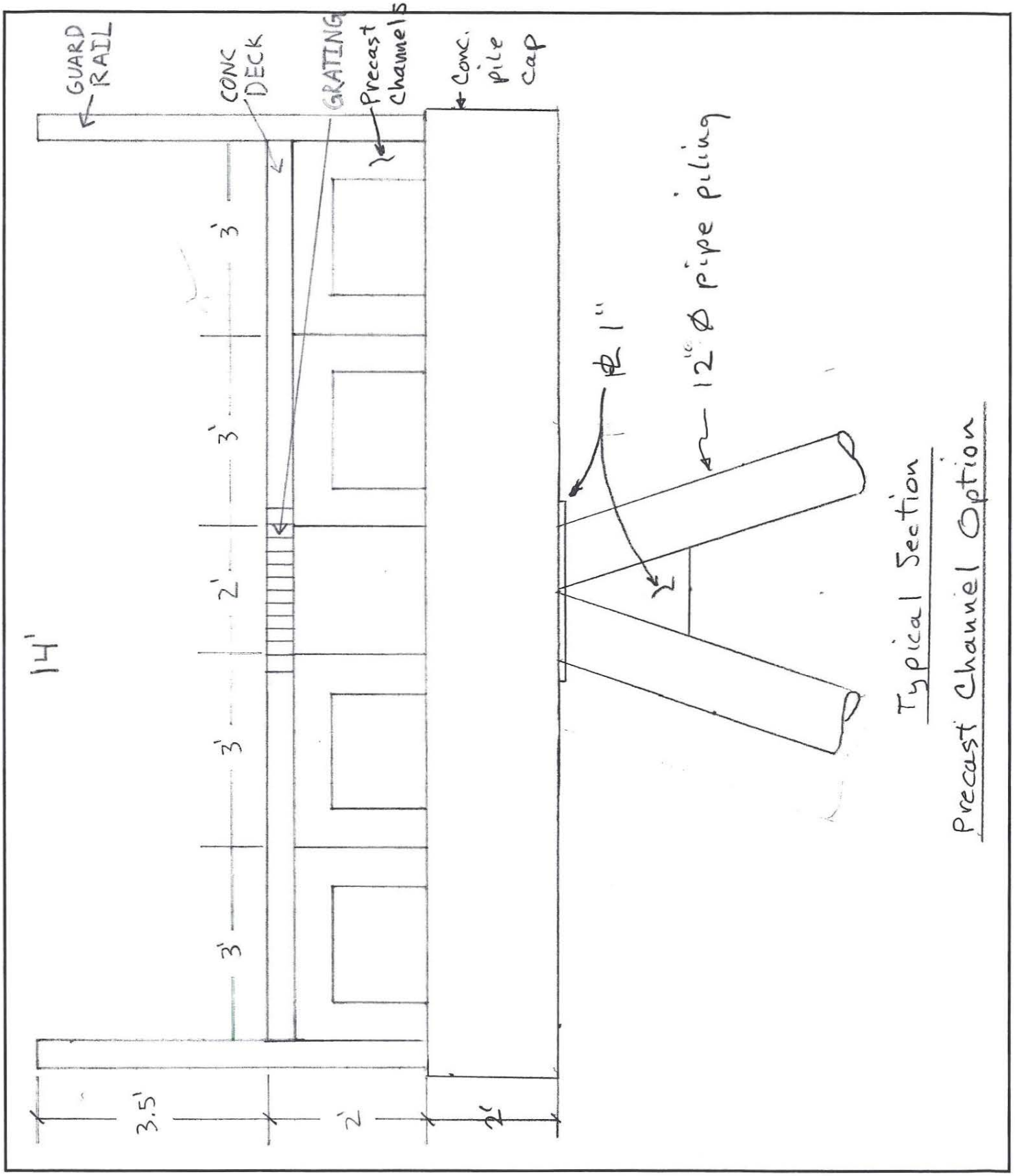
Sheet 2B of
Design by WSS
Date 5-5-08
Checked by
Date



ReidMiddleton

Client City of Bellingham
Project Boulevard Park
Option 3: Precast Channels
Project No. 24-08-001

Sheet 3A of
Design by WSS
Date 5-5-08
Checked by
Date



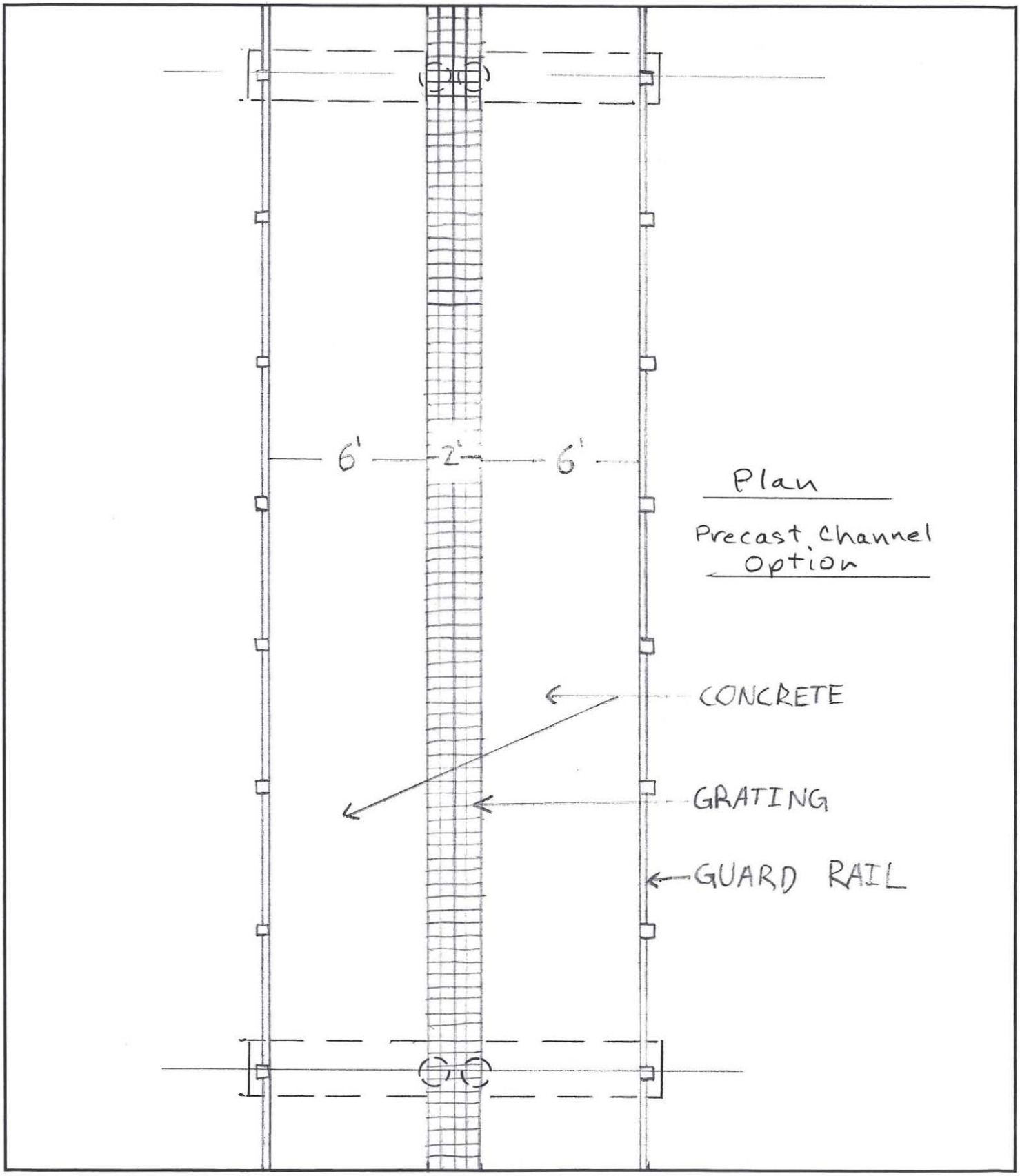
Typical Section
Precast Channel Option

ReidMiddleton

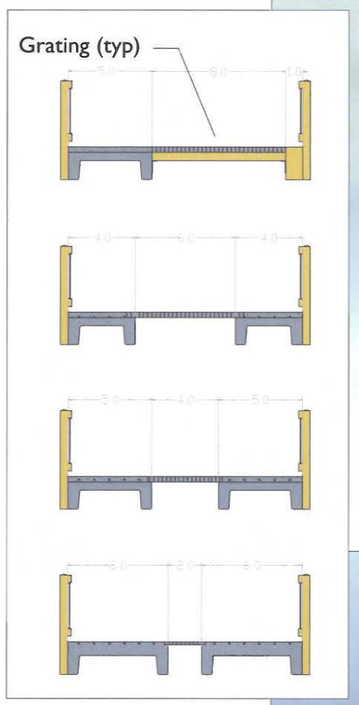
Client City of Bellingham
Project Boulevard Park

Sheet 3B of
Design by WSS
Date 5-5-08
Checked by
Date

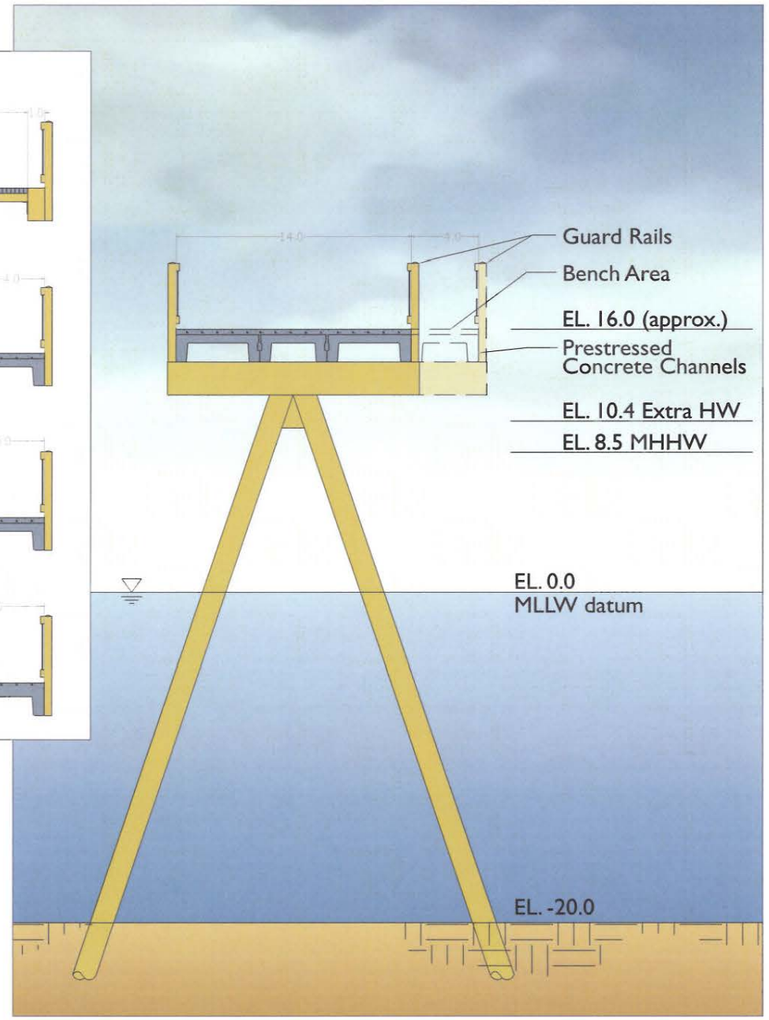
Project No.



BOULEVARD PARK

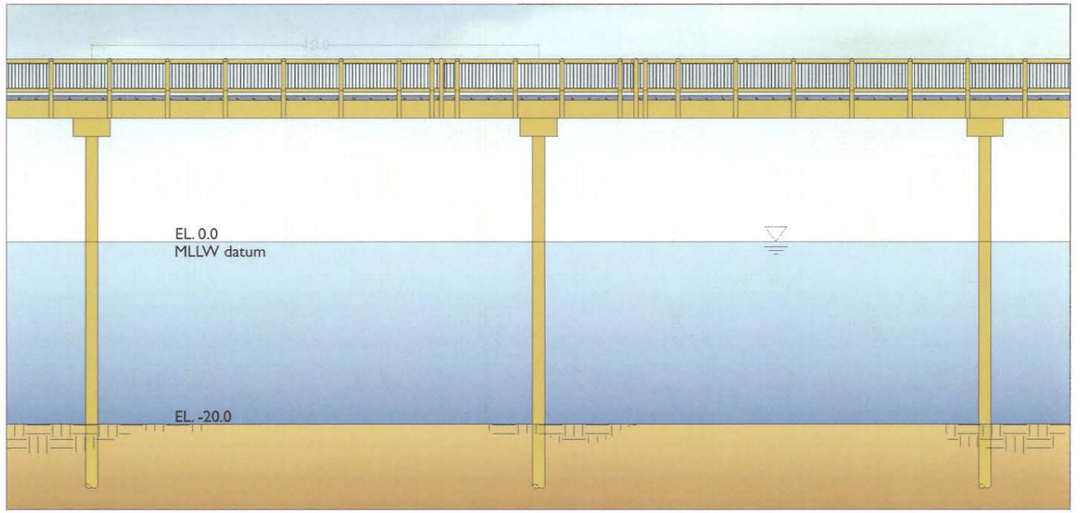


Alternative Grating Configurations



Boulevard Park Overwater Walkway (Concrete Channel Option) – Section

Taylor Dock Showing Concrete Channel Design



Boulevard Park Overwater Walkway (Presented Channel Option) – Elevation

Overwater Trail - Concrete Channel Option

Bellingham Parks & Recreation

Public Open House
June 26, 2008

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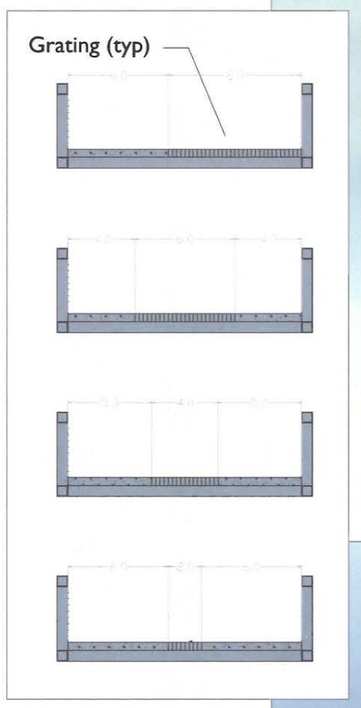
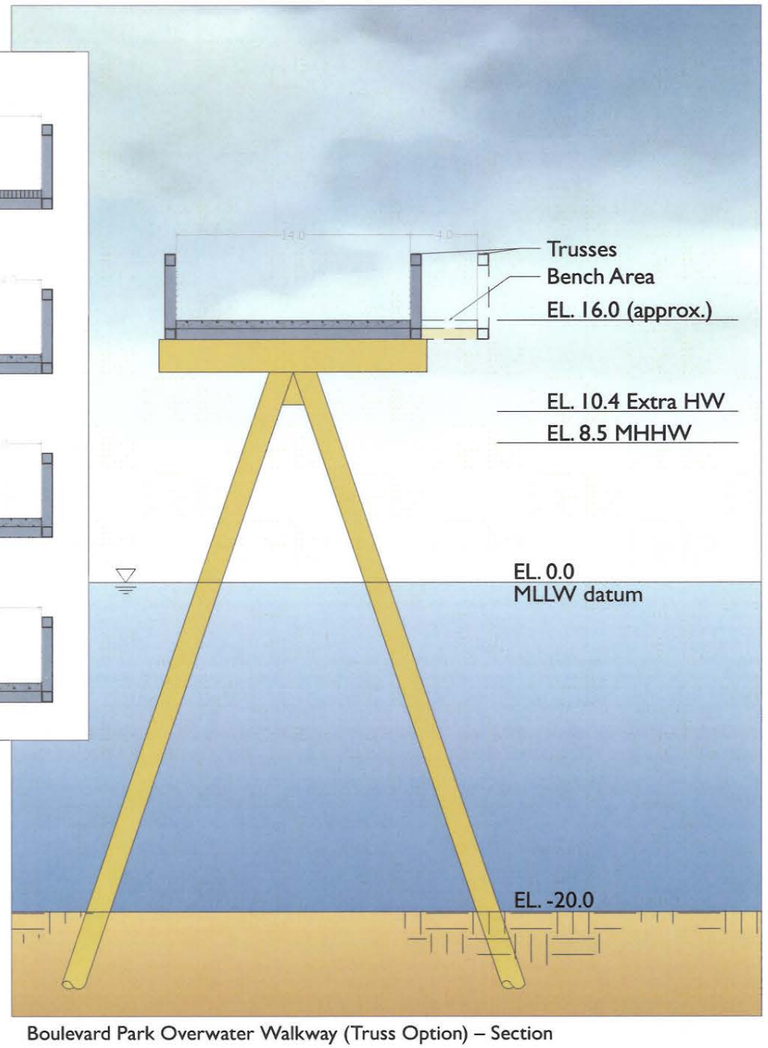
Landau Inc. | RMC Architects
AjO Consulting | Herrenkohl Consulting

BOULEVARD PARK

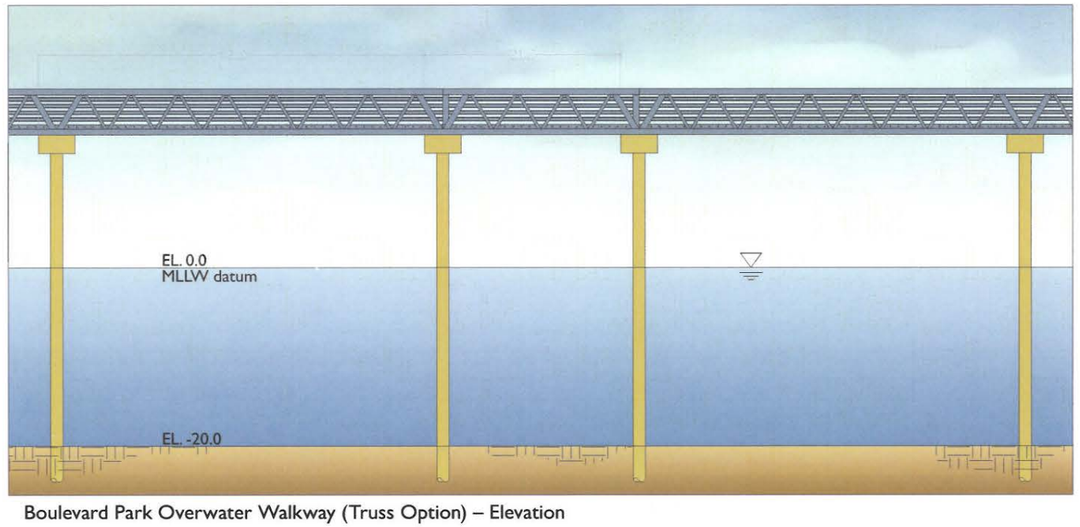


Alternative Grating Configurations



Boulevard Park Overwater Walkway (Truss Option) – Section

Sample Showing Truss Design (La Conner Marina)



Boulevard Park Overwater Walkway (Truss Option) – Elevation

Overwater Trail - Truss Option

Bellingham Parks & Recreation

Public Open House
June 26, 2008

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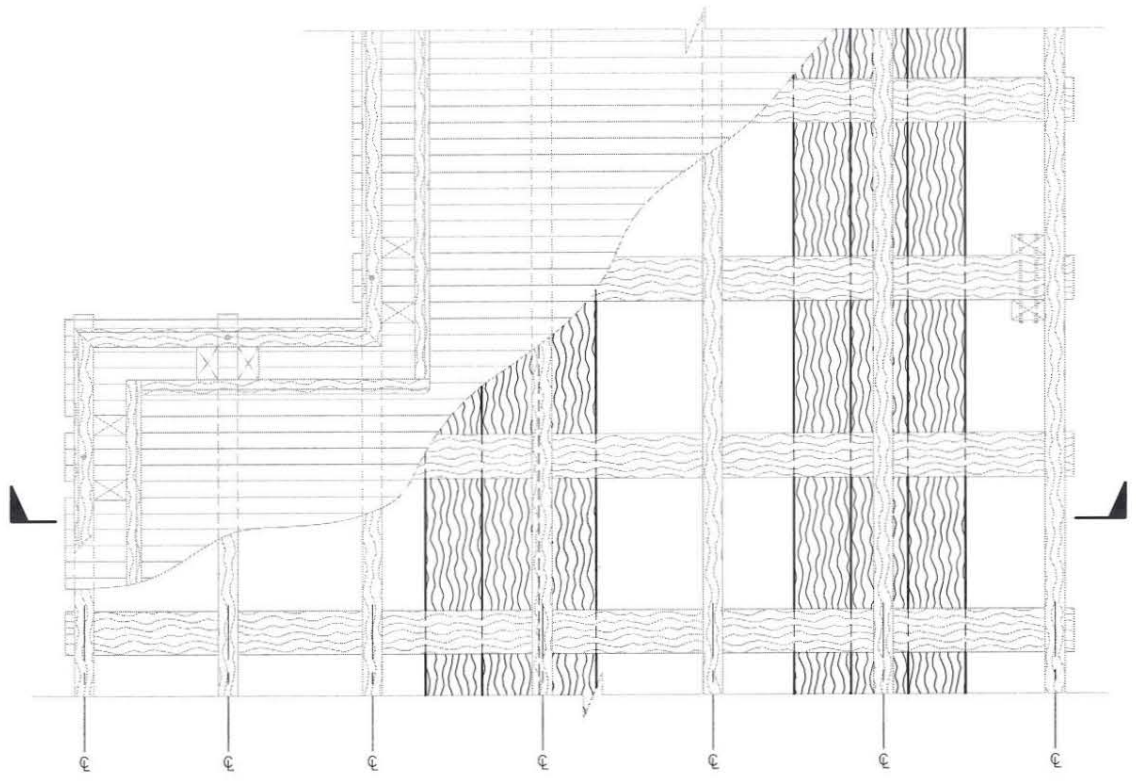
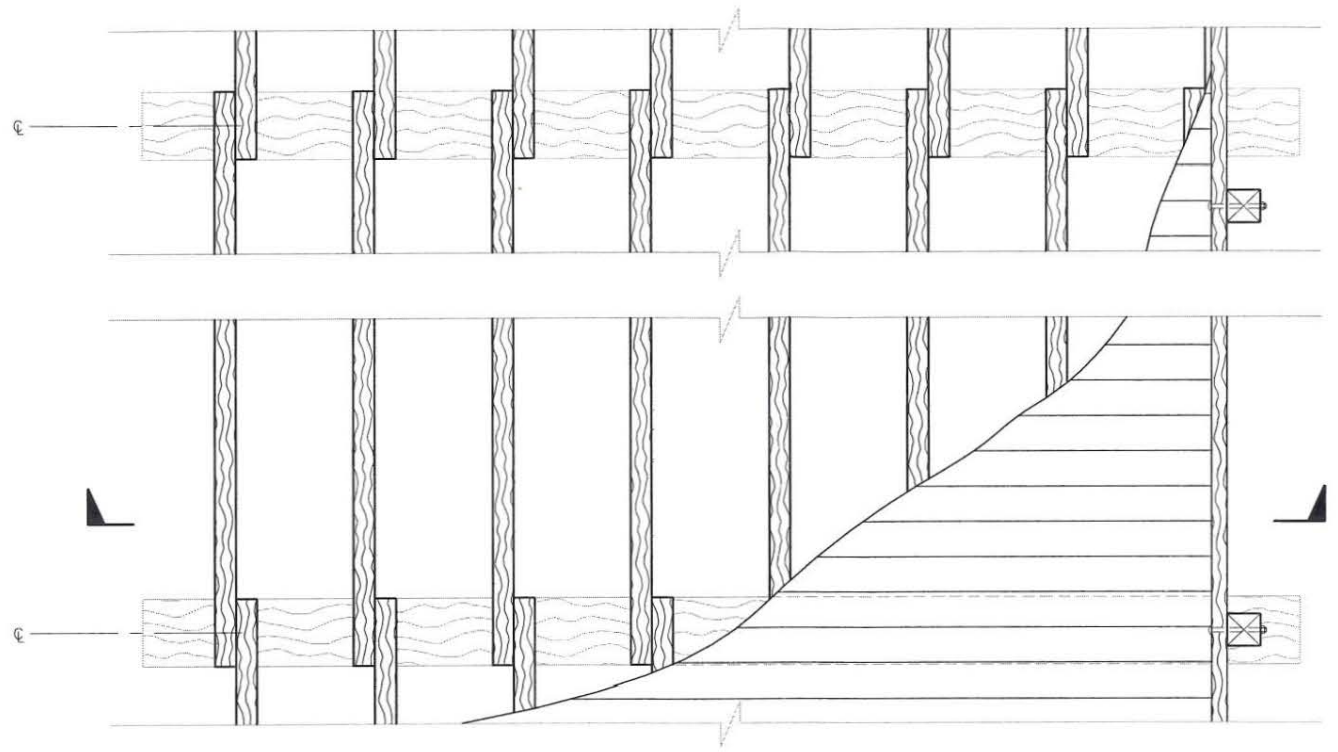
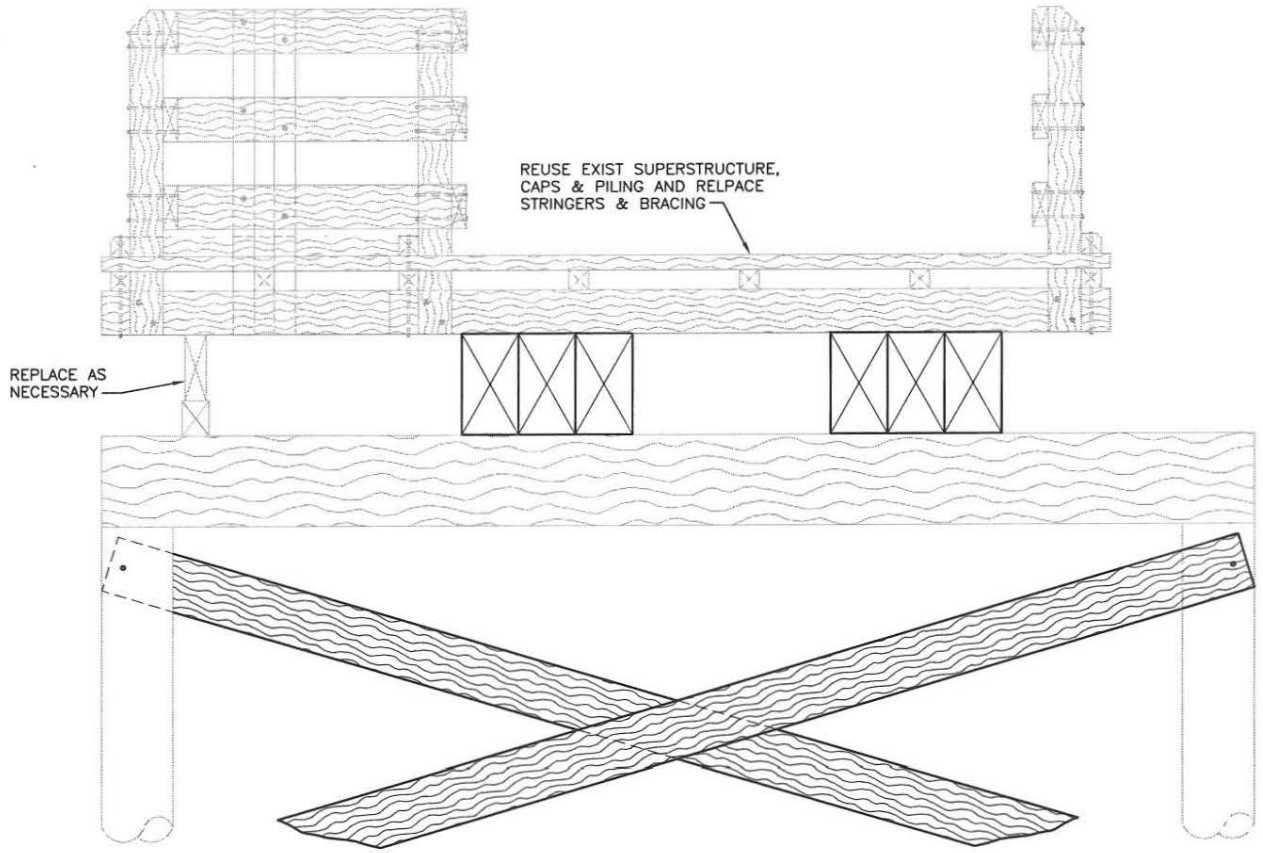
Walker Macy | Grette Associates
Landau Inc. | RMC Architects
AjO Consulting | Herrenkohl Consulting

APPENDIX 18
Structural Concepts
Pattle Point Trestle Renovation





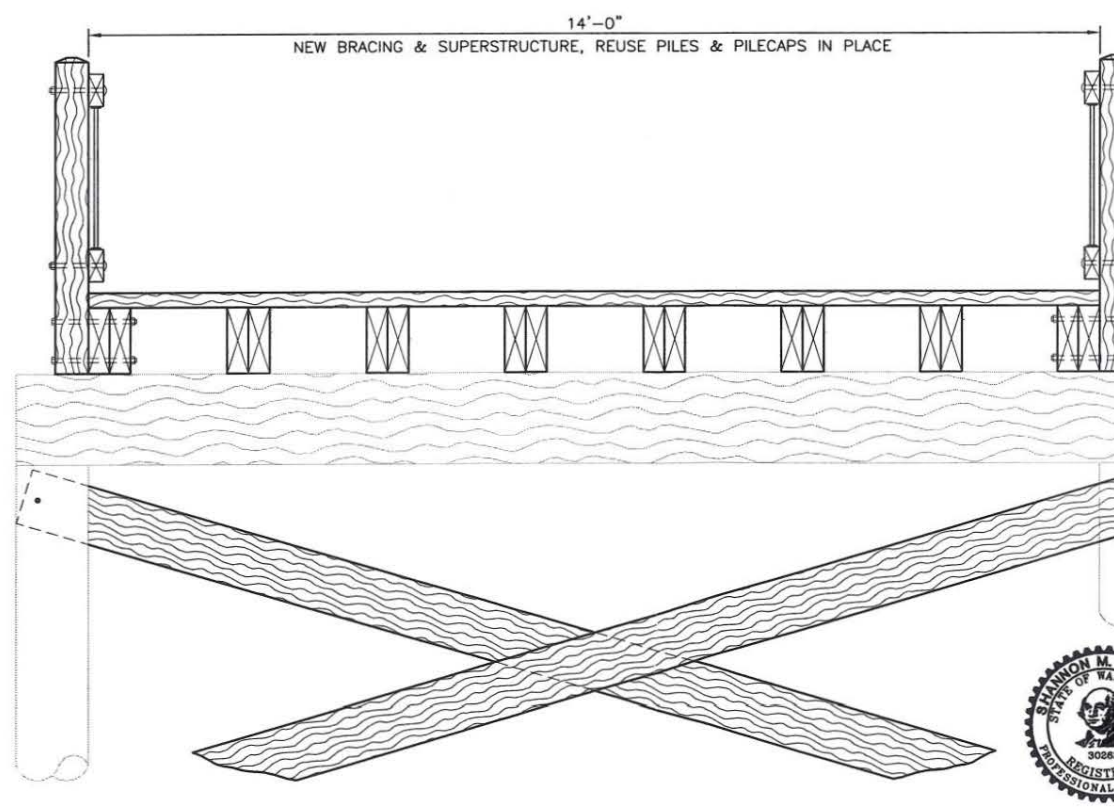


RECOMMENDED PRIORITY
FOR REPLACEMENT:

1. ABUTMENTS
2. CROSS BRACING
3. SHEATHING & STRINGERS

REPAIR EXISTING STRUCTURE OPTION 1

SCALE: 3/4"=1'-0"



REPLACE EXISTING SUPERSTRUCTURE OPTION 2

SCALE: 3/4"=1'-0"

NOTE: "L"
IF "L" DOES NOT MEASURE 1"
ADJUST SCALES ACCORDINGLY.

SHANNON M. KENSELAA
STATE OF WASHINGTON
30262
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	BY	REVISION

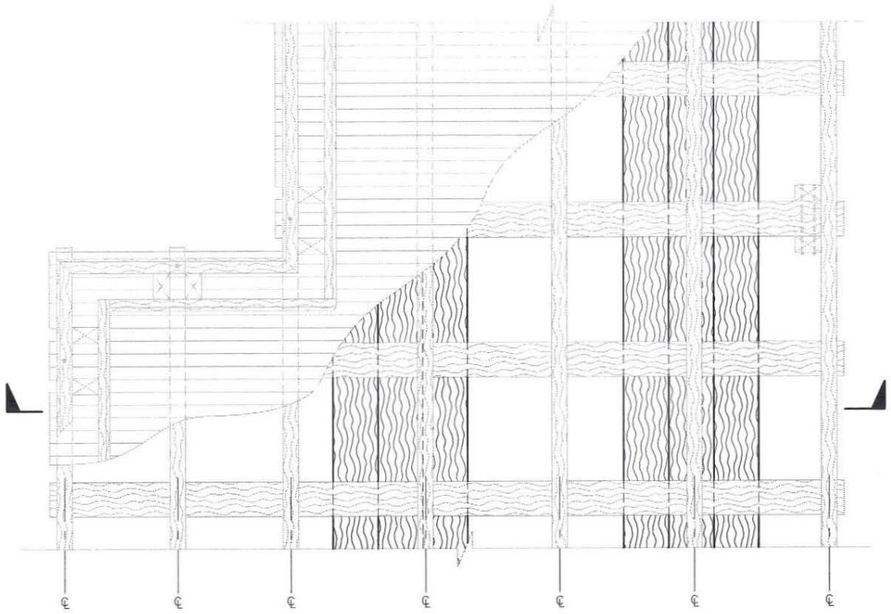
728 134th Street SW - Suite 200
Everett, Washington 98204
Ph: 425 741-3800

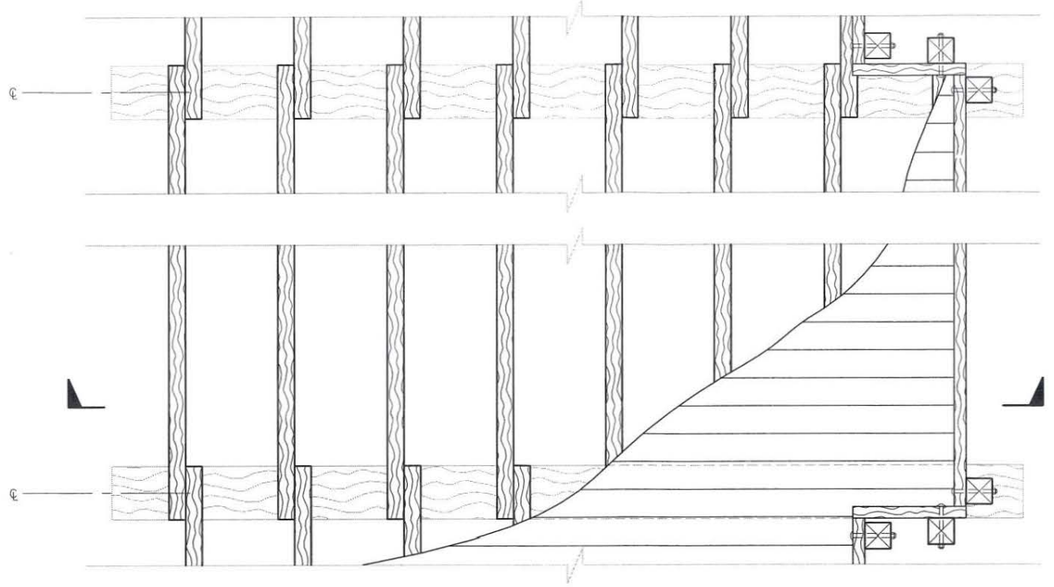
ReidMiddleton

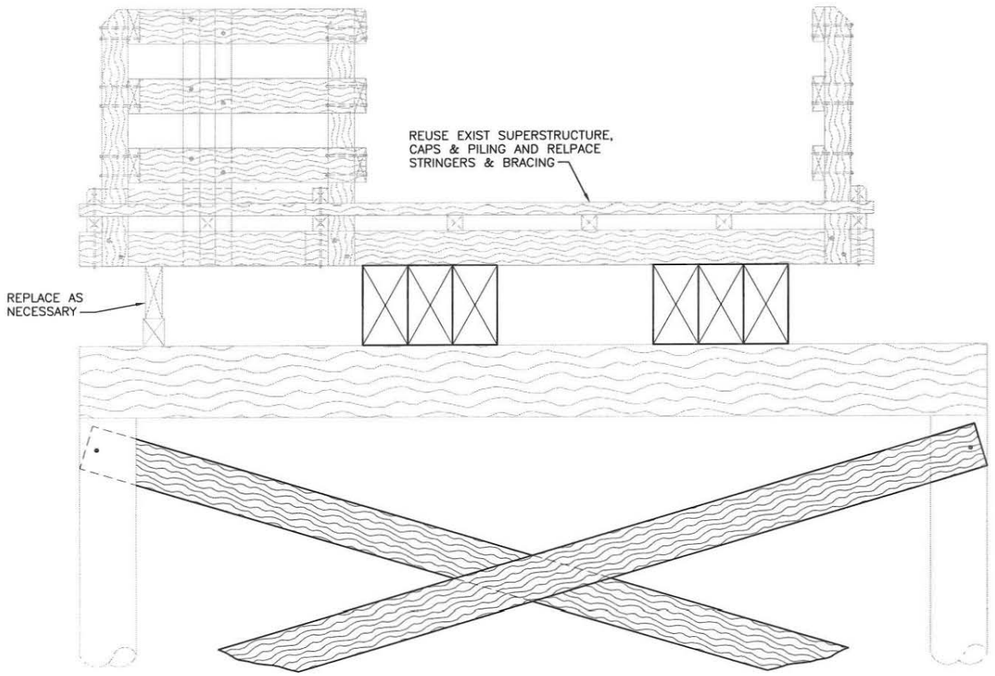
CITY OF BELLINGHAM
BOULEVARD PARK-PADDLE POINT TRESTLE

PADDLE POINT TRESTLE
SECTIONS AND DETAILS

SCALE	
DES. DJO	SHEET NO.
DR. DJO	C1.1
CH.	
F.B. ---	OF SHEETS
DATE 4/6/08	
FILE NO. 24-08-001	





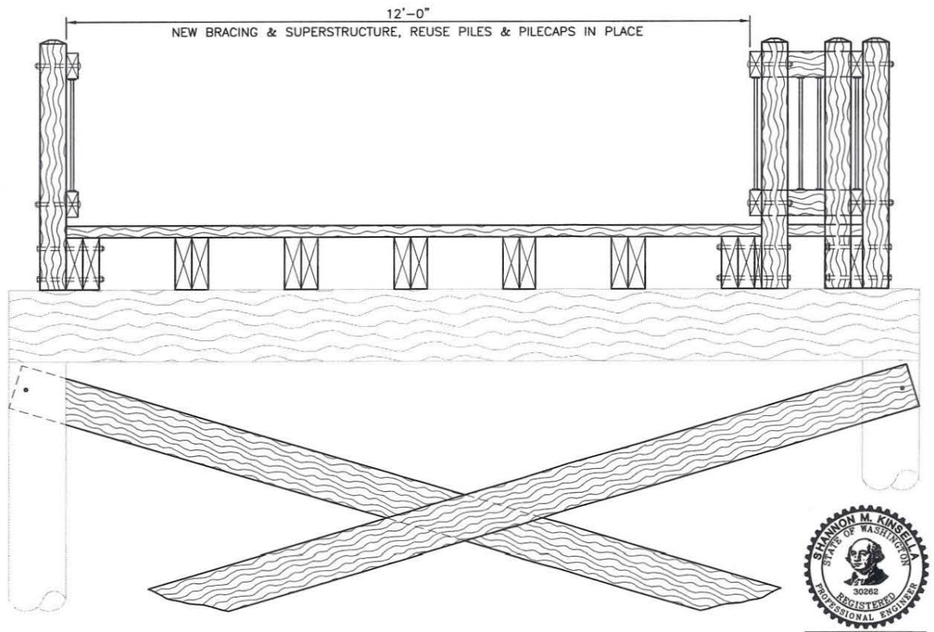


RECOMMENDED PRIORITY FOR REPLACEMENT:

1. ABUTMENTS
2. CROSS BRACING
3. SHEATHING & STRINGERS

REPAIR EXISTING STRUCTURE OPTION 1

SCALE: 3/4"=1'-0"



REPLACE EXISTING SUPERSTRUCTURE OPTION 2

SCALE: 3/4"=1'-0"

NOTE: "L" IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

SHANNON M. KINSELLA STATE OF WASHINGTON 30262 REGISTERED PROFESSIONAL ENGINEER

EXPIRES 9/29/

NO.	DATE	BY	REVISION

728 134th Street SW Suite 200
Everett, Washington 98204
Ph: 425 741-3800

ReidMiddleton

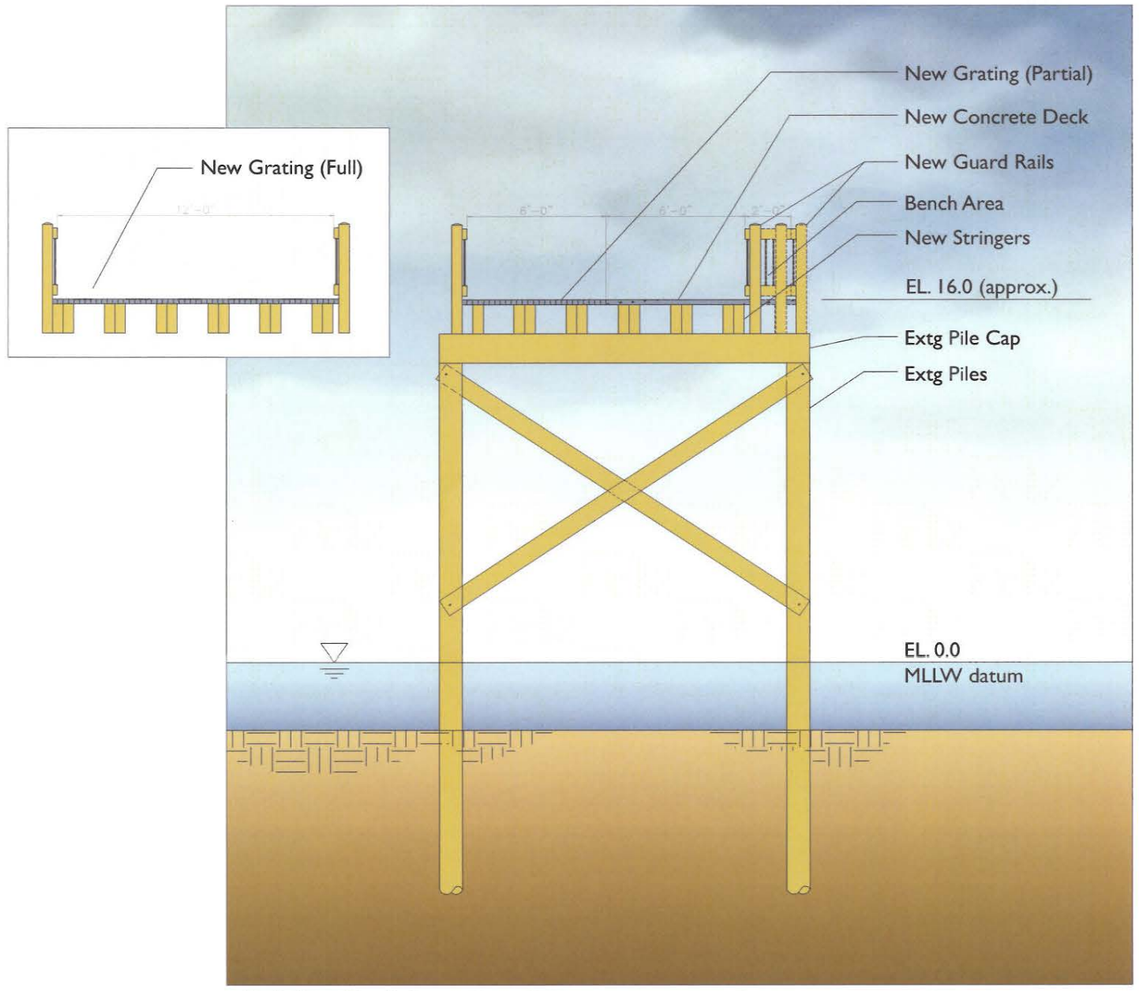
CITY OF BELLINGHAM

BOULEVARD PARK-PADDLE POINT TRESTLE

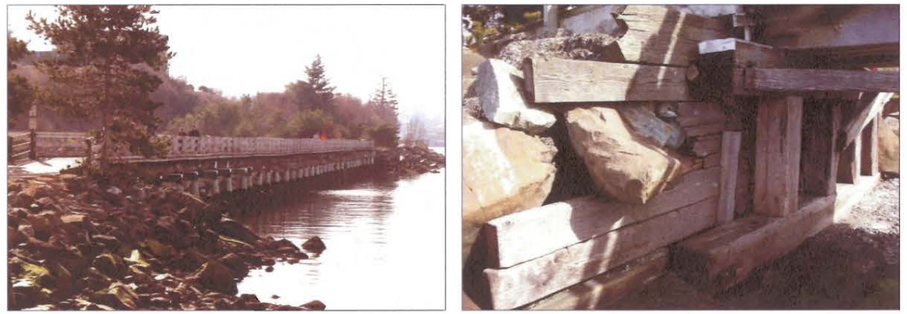
PADDLE POINT TRESTLE
SECTIONS AND DETAILS

SCALE	
DES. DJO	SHEET NO.
DR. DJO	C1.1
CH.	
F.B. --	OF SHEETS
DATE 4/6/08	
FILE NO. 24-08-001	

BOULEVARD PARK



Pattle Point Trestle Renovation – Section



Pattle Point Existing Conditions

Pattle Point Improvements

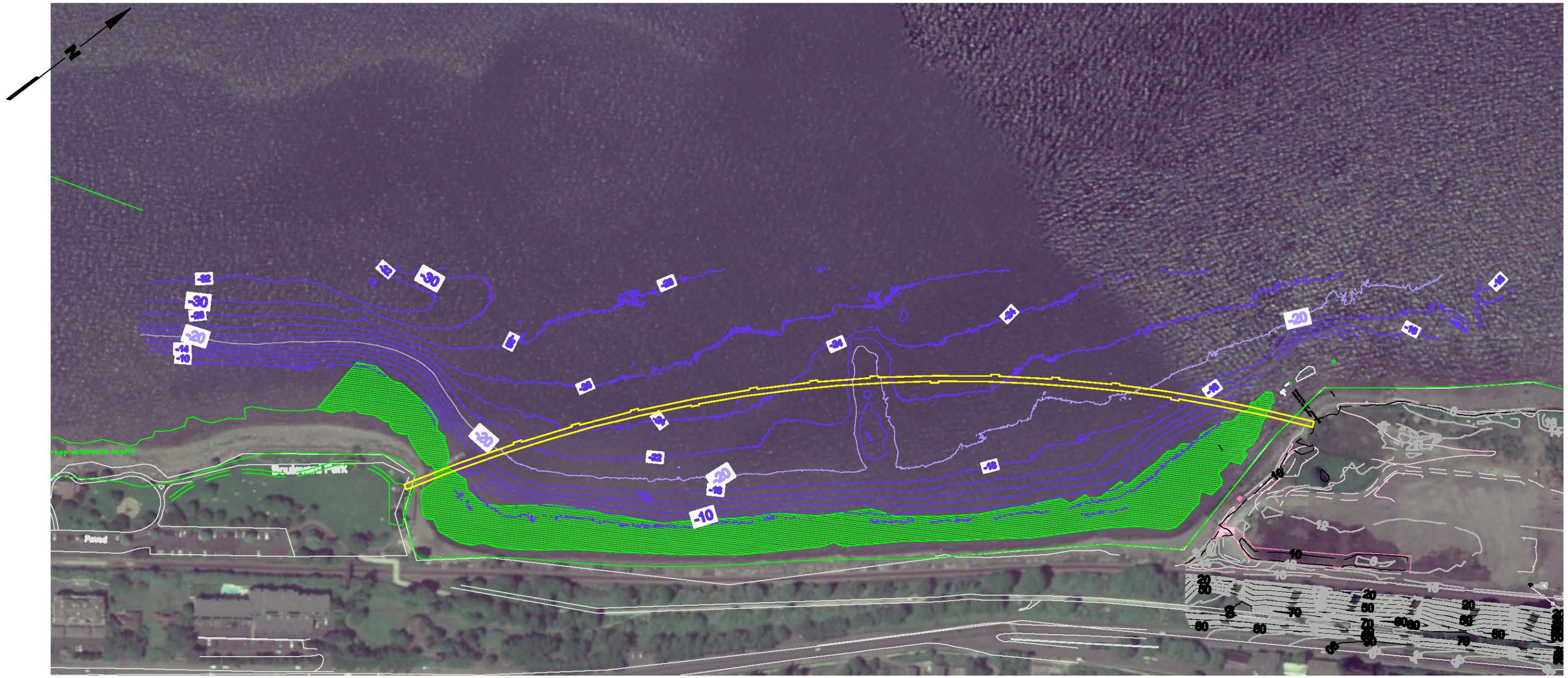
Bellingham Parks & Recreation

Public Open House
June 26, 2008

ReidMiddleton

Walker Macy | Grette Associates
Landau Inc. | RMC Architects
AjO Consulting | Herrenkohl Consulting

APPENDIX 19
Preferred Scheme
Boulevard Park Overwater Walkway

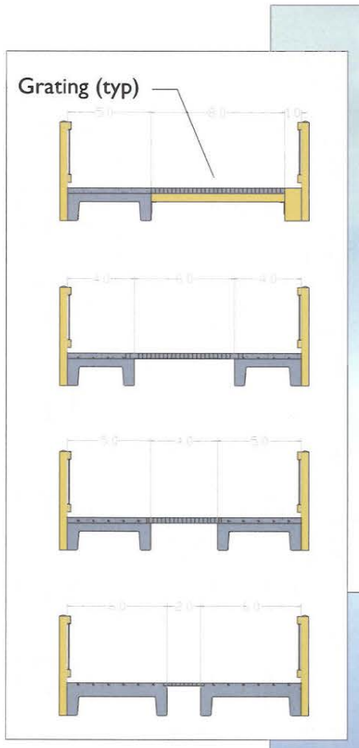


Preferred Conceptual Design Overwater Trail - Layout 1

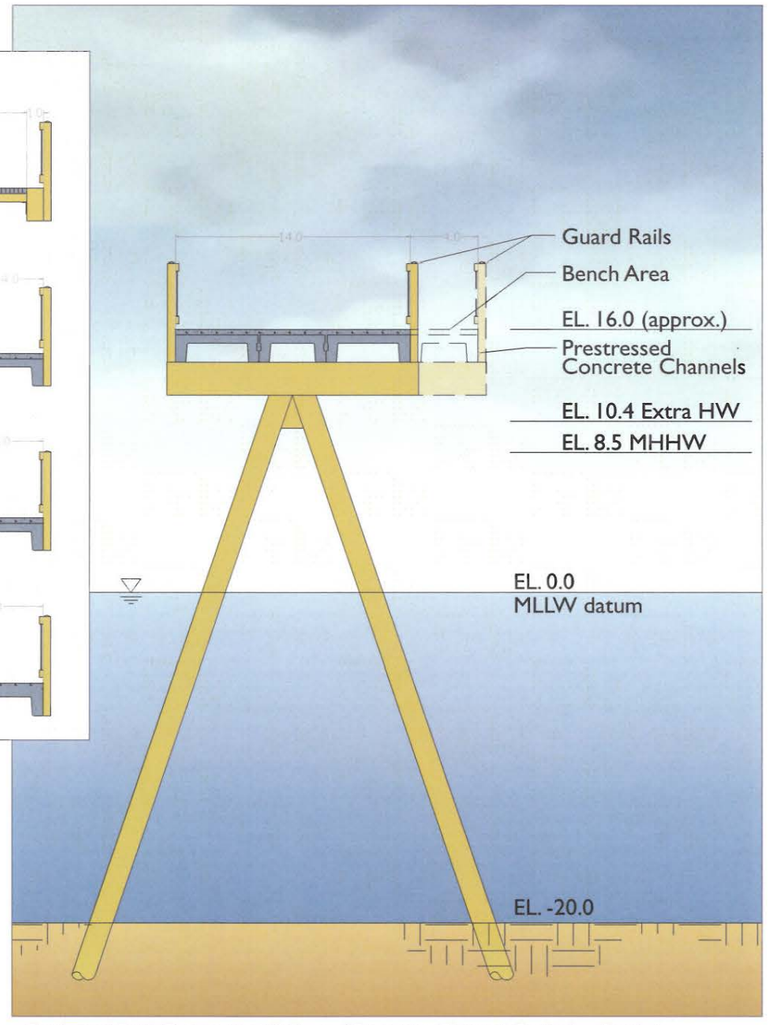
0 250 500

Scale In Feet

BOULEVARD PARK

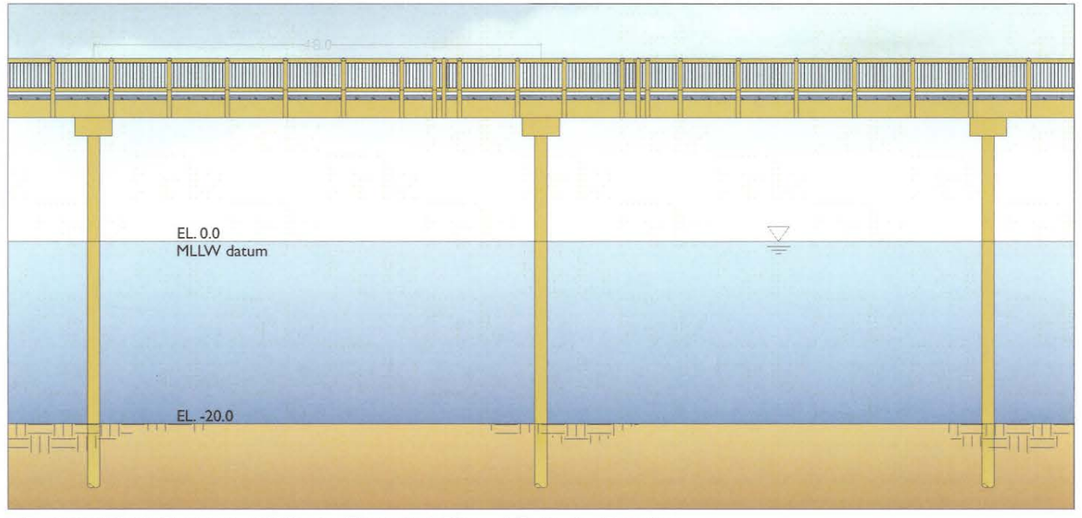


Alternative Grating Configurations



Boulevard Park Overwater Walkway (Concrete Channel Option) – Section

Taylor Dock Showing Concrete Channel Design



Boulevard Park Overwater Walkway (Presented Channel Option) – Elevation

Overwater Trail - Concrete Channel Option

Bellingham Parks & Recreation

Public Open House
June 26, 2008

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AjO Consulting | Herrenkohl Consulting

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OPINION OF PROBABLE CONSTRUCTION COSTS

728 134th Street SW, Suite 200
Everett, WA 98204

Boulevard Park (New Overwater Trail)
City of Bellingham

July 16, 2008
24-08-001

preliminary
H:\DOC\24Wf\08\001 Blvd Park\Cost Estimate\Preliminary Cost Estimate

PROJECT INFORMATION

Project title:	Boulevard Park (New Overwater Trail)
Project location:	City of Bellingham
Project description:	Construction of 2360 lf long pedestrian/bicycle overwater trail
Job number:	24-08-001
Client:	City of Bellingham
Submittal Status:	preliminary
Type of estimate :	preliminary
Estimator:	WS
Project manager:	SK
Q/A checker:	
File name/path:	H:\DOC\24Wf\08\001 Blvd Park\Cost Estimate\Preliminary Cost Estimate
Date:	July 16, 2008
Assumptions:	
Notes:	

Item No.	Description	Unit	Quantity	Unit Price	Subtotal	Total Cost
1.0	**MOBILIZATION / DEMOBILIZATION**					
1.01	Mobilization and Demobilization	LS	12%	$3,321,804	$398,616.48	
	MOBILIZATION / DEMOBILIZATION SUBTOTAL					**$398,616**
2.0	**DEMOLITION**					
2.01	Erosion and Sediment Control	LS	1	1000	$1,000.00	
2.02	Remove and Dispose of Existing Single Timber Piles	EA	4	200	$800.00	
2.03	Remove and Dispose of Existing Timber Pier	LS	1	8000	$8,000.00	
	DEMOLITION SUBTOTAL					**$9,800**
3.0	**CONSTRUCTION**					
3.01	Furnish Pipe Piles (16" dia. 0.5" t galv.)	LF	6,240	$100.00	$624,000.00	
3.02	Drive Pipe Piles	EA	104	$1,500.00	$156,000.00	
3.03	Furnish and Install Steel Pile Plate Assemblies (1" t coated)	LOC	52	$2,000.00	$104,000.00	
3.04	Furnish and Install Pile Caps	EA	52	$3,500.00	$182,000.00	
3.05	Furnish and Install Concrete Channel Deck (14' wide x 1912 LF)	SF	26,768	$40.00	$1,070,720.00	
3.06	Furnish and Install Concrete Deck Overlay (3" t)	SF	26,768	$5.00	$133,840.00	
3.06	Furnish and Install Concrete Beam Deck (1 ft wide x 500 LF)	SF	500	$69.00	$34,500.00	
3.07	Furnish and Install Grated Deck (8 ft wide x 500 LF)	SF	2,500	$45.00	$112,500.00	
3.08	Furnish and Install Guardrail	LF	4,824	$91.00	$438,984.00	
3.09	Furnish and Install Concrete Abutment	CY	7	$960.00	$6,720.00	
3.10	Furnish and Install Bench Nooks	EA	10	$6,060.00	$60,600.00	
3.11	Furnish and Install Electrical Service	LS	1	$20,950.00	$20,950.00	
3.12	Furnish and Install Pathway Lighting	LS	1	$365,200.00	$365,200.00	
3.13	Furnish and Install Lighting Plates	EA	393	$30.00	$11,790.00	
	CONSTRUCTION SUBTOTAL					**$3,321,804**
	BASE CONSTRUCTION COST					**$3,730,220**
	GENERAL CONTRACTOR OH & P @ 15%					**$559,533**
	SUBTOTAL					**$4,289,754**
	CONSTRUCTION CONTINGENCY @ 15%					**$643,500**

CONSTRUCTION COST		**$4,933,254**
SALES TAX @ 8.8%		**$434,100**
DESIGN @ 8%		**$394,700**
CONSTRUCTION ENGINEERING @ 6%		**$296,000**
PROJECT COST	**(Rounded)**	**$6,058,000**

Assumptions:

Remove Existing Single Timber Piles (4 ea)

Crew (6 men x $60 x 1 hr)	MH	6	60	$360.00
Derrick (1 hr x $200)	HR	1	200	$200.00
Disposal (4 piles x 0.5 sf x 30 ft x 60 pcf/(2000 lb /ton))	TON	1.8	100	$180.00
Total Cost				$740.00
Cost per Pile				$200.00

Remove Existing Timber Pier

Crew (6 men x $60 x 8 hr)	MH	48	60	$2,880.00
Derrick	HR	8	200	$1,600.00
Dispose of Piles (21 ea x 0.5 x 30' x 60 pcf / (2000 lb/ton)	TON	10	100	$1,000.00
Dispose of Deck (1240 sf x 10 bf x 4 pd/bf)/ (2000 lb/ton)	TON	25	100	$2,500.00
Total Cost				$7,980.00

Furnish Pipe Piles

Furnish Pipe Piles (104 ea x (34' + 20' embed + 5' cutoff) — see main estimate

Install Pipe Piles (Batter)

Labor (6 men x 8 hr)	MH	48	60	$2,880.00
Pile Driving Rig (1 day)	HR	8	200	$1,600.00
Vibratory Hammer	DAY	1	350	$350.00
Tug and Crew	HR	8	140	$1,120.00
Cost per 4 piles				$5,950.00
Cost per Pile				$1,487.50

Pile Plates

Furnish Steel Pile Plates (1"t x (1.75 sf + 6.86 sf))	LBS	350	$2.40	$840.00
Trim / Weld Steel Pile Plates (3 men x 6 hrs)	MH	18	$60.00	$1,080.00
Equipment Welder (2ea X 6 hr)	HR	12	$10.00	$120.00
Cost per location				$2,040.00

Pile Caps

Furnish Pile Cap Concrete (2' x 2' x 15')	CY	2	$120.00	$266.40
Furnish Pile Cap Rebar .015 x vol	LBS	441	$1.00	$441.00
Furnish Pile Cap Forms	SF	98	$2.00	$196.00
Furnish Falsework (4 reuses)	LBS	477	$0.50	$238.50
Install Falsework and Forms	MH	12	$60.00	$720.00
Place Rebar	LBS	441	$0.70	$308.70
Pour Concrete	MH	8	$60.00	$480.00
Strip	MH	6	$60.00	$360.00
Cure	MH	2	$60.00	$120.00
Equipment	HR	2	$200.00	$400.00
Cost per pile cap				$3,530.60
Cost per cubic yard				$1,590.36

Concrete Channel Beams

Furnish Concrete Channel Beams (14' x 192')(12 beams)	SF	2,688	$36.00	$96,768.00
Place 12 Beams (1 day)(7 man crew)	MH	56	$60.00	$3,360.00
Secure Panels 1/mh per ea)	MH	15	$60.00	$900.00
Floating Derrick	HR	8	$200.00	$1,600.00
Scow	DY	1	$200.00	$200.00
Tug and crew	HR	8	$150.00	$1,200.00

Furnish grout .12 x 1 x 192 x 2)	CF	23	$40.00	$920.00
Pour grout (1 cf/mh)	MH	23	$60.00	$1,380.00
Total cost				$106,328.00
Cost per square foot				$39.56
Cost per cubic yard				

Concrete Deck Overlay

Furnish 3" Concrete Deck Overlay (14' x 192' x .25)	CY	25	$120.00	$3,000.00
Furnish Rebar W2.9 6x6 (14' x 192' x .196 lbs)	LBS	526	$1.00	$526.00
Form (3 men 1 dy)	MH	24	$60.00	$1,440.00
Place Rebar	LBS	996	$0.75	$747.00
Pour (8 men 8 hr)	MH	64	$60.00	$3,840.00
Strip (3 men 6 hr)	MH	18	$60.00	$1,080.00
Cure (2 men 6 hr)	MH	12	$60.00	$720.00
Equipment, Pump	HR	6	$150.00	$900.00
Total cost				$12,253.00
Cost per square foot				$4.56
Cost per cubic yard				$490.12

Concrete Beam Deck

Furnish Concrete Beams (10 ea)	CY	36	$300.00	$10,800.00
Furnish New Form Materials (1 reuse)	SF	1,040	$2.50	$2,600.00
Construct Forms (34 panels @ 2 mh)	MH	68	$60.00	$4,080.00
Set and Strip Forms (68 panels @ 2 mh)	MH	136	$60.00	$8,160.00
Place 12 Beams (1 day)(7 man crew)	MH	56	$60.00	$3,360.00
Secure Panels 1/mh per ea)	MH	15	$60.00	$900.00
Floating Derrick	HR	8	$200.00	$1,600.00
Scow	DY	1	$200.00	$200.00
Tug and crew	HR	8	$150.00	$1,200.00
Total cost				$32,900.00
Cost per square foot				$68.54
Cost per cubic yard				$913.89

Grated Deck

Furnish 1 1/2" Molded ADA Deck (500' x 8')	SF	4,000	$15.00	$60,000.00
Furnish Grating Support Beams @ 1 ' = (4000/1) 15#/ft	LBS	60,000	$1.30	$78,000.00
Furnish Support Beam Supports (500 x 2 x 15 #/ft)	LBS	15,000	$1.30	$19,500.00
Furnish Embedded Support Beam Bolts (500 x 2 x 2#) 1.5	LBS	3,000	$1.50	$4,500.00
Install Support Beam Supports (1000 lf @ 60 lf / 3 mh)	MH	50	$60.00	$3,000.00
Install Support Beams (500 @ 8 / 3 mh)	MH	190	$60.00	$11,400.00
Install Grating (500 lf @ 25 lf / 3 mh	MH	60	$60.00	$3,600.00
Total cost				$180,000.00
Cost per square foot				$45.00

Guardrail

Furnish Guardrail 6 x 6 Posts (1 48' bent)(16 x 5.5')	BF	264	$0.85	$224.40
Furnish 4 x 6 Rails (48' x 4ea)	BF	768	$0.85	$652.80
Furnish Guardrail Rungs (5/8 " @ 4" & frame)(3.17 x 1.04# x 3 x 96 + 3.83# x 96 x 2)	LBS	1,684	$2.50	$4,210.00
Furnish Guardrail Hardware (16 x 6 x 1.3# bolts + 96 x .33# lags)	LBS	156	$1.50	$234.00
Install Posts 16 ea (4 men 4 hr)	MH	16	$60.00	$960.00
Install Rails 192 lf 48 post intersections (4 men @ 8 post int/ hr)	MH	24	$60.00	$1,440.00
Install Rung Panels 16 ea (2 men)	MH	8	$60.00	$480.00
Equipment Forklift	HR	14	$40.00	$560.00
Total cost				$8,761.20
Cost per linear foot				$91.26

Concrete Abutment

Furnish Abutment Concrete (24' x 4' x 1') x 2 ea	CY	7	$120.00	$840.00
Furnish Abutment Rebar (.01 x vol)	LBS	940	$1.00	$940.00
Furnish Abutment Forms (50' x 3' + 26) x 2	SF	350	$2.50	$875.00
Form (2 men 8 hrs)	MH	16	$60.00	$960.00
Place Rebar	LBS	940	$0.70	$658.00
Pour (4 men 4 hr)	MH	16	$60.00	$960.00
Strip & Patch (2 men 6 hr)	MH	12	$60.00	$720.00
Cure (2 men 3 hr)	MH	6	$60.00	$360.00
Equipment	HR	8	$50.00	$400.00
Total Cost				$6,713.00

Cost per Each				$3,356.50
Cost per Cubic Yard				$959.00
Bench Nook				
Furnish Bench Nook Concrete (cap ext, "L", overlay)	CY	4	$120.00	$512.40
Furnish Bench Nook Rebar (131 cf x vol)	LBS	564	$1.00	$564.00
Furnish Forms	SF	78	$2.50	$195.00
Furnish posts and rail (3 x 5.5 x 2 + 4 x 20 x 2)	BF	193	$0.85	$164.05
Furnish rung frames (1684# / 96') 8'	LBS	140	$2.50	$350.00
Form (2 men 4 hrs)	MH	8	$79.00	$632.00
Place Rebar	LBS	642	$0.70	$449.40
Pour Concrete (4 men 1hr)	MH	4	$60.00	$240.00
Strip and Patch (2 men 1 hr)	MH	2	$60.00	$120.00
Cure	MH	1	$60.00	$60.00
Total Cost				$3,286.85
Cost per Each				$6,061.30

J OMEGA ENGINEERING, INC.
Consulting Electrical Engineers

Memorandum

To:	Bill Swigart, P.E.	Date:	February 27, 2009
	Reid Middleton	Project:	Bellingham - Boulevard Park
Address:	728 134th Street SW, Suite 200	Project No.:	4064.00
	Everett, Washington 98204	Fax No.	
Subject:	Electrical Cost Estimate Criteria		

We have prepared a preliminary engineers estimate for the 2,360 linear foot overwater pedestrian walkway in Bellingham. The estimate is concept level and includes the following scope of work:

1. Electrical service – a new 100A, 480/277v electrical service will need to be installed near as near to the walkway as possible. Installation of this new service will involve the extension of a 12.47kV utility company primary, the installation of a new utility company transformer, and meter. For this estimate we have assumed that the nearest connection point for this 12.47kV line is near the park building (approximately 850 feet from the southern overwater walkway abutment). The owner would be responsible for excavation and backfill for underground primary power from the utility connection point to the transformer/service location. The utility company would provide the underground box(es), transformer, and wire.

   Note: installation of a new service may not be the least expensive alternative for connection of walkway lighting – depending on available site power. We have used this scenario because it represents a conservative value for budgeting purposes.

2. Electrical Service Equipment – the electrical equipment will be installed within a freestanding electrical pedestal (12"x 12"x 42"h). The utility company meter, time-clock, and small distribution panel, will be housed within the pedestal. The pedestal and utility company transformer would be located near the walkway abutment (within 50 feet per code).

3. Circuit wiring – electrical branch circuits will be extended from the electrical pedestal to the overwater walkway. The current concept is to divide LED light fixtures between (6) 277v, 1-phase circuits. With (110) 10-watt LED lights on each circuit the load on each circuit will be less than 3-amps. This is done to avoid excessive voltage drop. We have assumed that schedule 80 PVC on stainless steel mounting brackets will be fastened to the bottom side of the concrete panels.

4. Light fixtures – light fixtures are assumed to be IO Lighting Plane 9.5 watt LED fixtures mounted on 6 foot centers *alternately staggered* on each side of the walkway. The selected fixture does not provide ½ foot-candle horizontally beyond 7 feet. As a result the fixture

is not recommended for mounting on only one side of the 14-foot wide walkway. If staggering the fixtures along the walkway is not desired, the spacing should be no less than 8' on center on both sides. This would increase the number of fixtures to (590).

The following has been excluded:

1. Utility company charges – charges from the utility company, for the service connection, have not been included in this estimate. The scope of work for this portion of the system must be agreed to by the utility company. The utility company will not estimate their installation costs until they have gone through their own engineering and design process. This process can be roughly estimated by our office, based on previous experience, after an initial consultation with the utility company engineer. A new service application must be submitted to the utility, and site plan created, in order to formally open the project and get an engineer assigned.

2. Contingency – we recommend a 20% contingency for concept level estimates.

3. General contractor markup.

4. Light fixture mounting – mounting plates integrated into the handrail have not been included in this estimate.

5. Surface restoration – surface restoration for areas of trenching and backfill have not been included in this estimate.

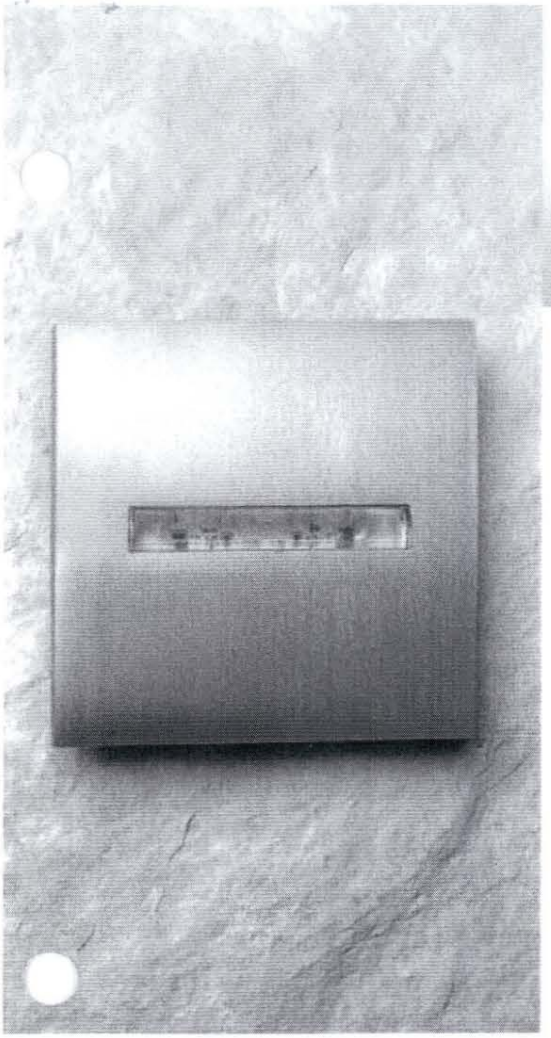
6. Floatation, scaffolding, supports – this estimate assumes that the general contractor will provide necessary access to the bottom of the walkway for installing electrical conduit and wire.

Agency	Specification No:	A-E Firm Name:	Sheet:
City of Bellingham		j Omega Engineering, Inc.	1 of 1
Project Title:	**Estimated By:** EJD	**Checked By:**	**Date:**
Boulevard Park	**Status of Design:** Conceptual		**Contract No:**

Description:	Quantity		Material Cost		Labor Cost		Engineering Estimate	
Division 16 Cost Estimate	Number	Unit	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total
Electrical Service								
- Underground primary (owner portion of PUD costs)								
>>Trenching/backfill	850	lf	$ -	$ -	$ 20	$ 17,000	$ 20	$ 17,000
- Service transformer (owner portion of PUD costs)								
>>Excavation	27	cf	$ -	$ -	$ 20	$ 540	$ 20	$ 540
- Underground Secondary								
>>Conduit (2" Sch. 40)	30	lf	$ 3	$ 90	$ 4	$ 120	$ 7	$ 210
- Service Equipment								
>>Weatherproof enclosure	1	ea	$ 1,200	$ 1,200	$ 200	$ 200	$ 1,400	$ 1,400
>>480/277v panel	1	ea	$ 850	$ 850	$ 150	$ 150	$ 1,000	$ 1,000
>>Meter base	1	ea	$ 100	$ 100	$ 150	$ 150	$ 250	$ 250
>>Timeclock/photocell	1	ea	$ 450	$ 450	$ 100	$ 250	$ 550	$ 550
				$ 2,690		$ 18,410		$ 20,950
Pathway Lighting								
- Light fixures (LED 9.75W)	393	ea	$ 507	$ 199,251	$ 100	$ 39,300	$ 607	$ 238,551
- Junction Boxes (light fixture backboxes)	393	ea	$ 10	$ 3,930	$ 32	$ 12,576	$ 42	$ 16,506
- Liquidtight conduit (1'2")	2640	lf	$ 4	$ 10,560	$ 5	$ 13,200	$ 9	$ 23,760
- Branch circuit wire (#12 THWN)	88	clf	$ 13	$ 1,144	$ 61	$ 5,368	$ 74	$ 6,512
- Conduit (Sched 80 PVC)	2360	lf	$ 6	$ 14,160	$ 8	$ 18,880	$ 14	$ 33,040
- Feeder wire (#10 THWN)	180	clf	$ 20	$ 3,600	$ 67	$ 12,060	$ 87	$ 15,660
- Conduit hangers (stainless steel)	480	ea	$ 15	$ 7,200	$ 50	$ 24,000	$ 65	$ 31,200
				$ 239,845		$ 125,384		$ 365,229

Notes:
- Contingency has not been applied.
- Estimate is in 2008 dollars.
- Subcontractor overhead and profit are inlcuded.
- General contractor m/u's are excluded.

Sheet total	$242,535	$143,794	$386,179



plane
STEP LIGHT

Application
The **plane** step light is an LED-based luminaire that offers a variety of different color combinations for edge glow accents and functional pathway lighting. For use in exterior and interior architectural applications. **plane** mounts directly to a recessed junction box for wall mount applications. UL listed for wet / damp locations.

Light Output
plane delivers illuminance levels that exceed the National Electrical Codes (NEC) requirement for emergency egress. Recommended mounting 18" to 24" A.G. IES format photometric data available at **www.iolighting.com**.

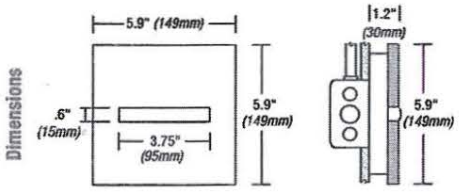
Construction
Environmentally sealed, enclosed and gasketed 5.9" sq. corrosion resistant metal casting (stainless steel optional). Mounts directly to a UV stable, optically clear, high strength polycarbonate housing. LED luminaire modules contained within the housing are replaceable.

Mounting Options
plane mounts directly to a junction box while the driver (power supply) resides within the junction box. Three types of junction box configurations are compatible with **plane**:

1) 1½" deep, 4" octagonal junction box. Hanger bars must be side mounted.
2) 2⅛" deep, 4" octagonal junction box with side mounted hanger bars.
3) 2⅛" deep, 4" square junction box with plaster ring.

Electrical / Emergency Battery Back Up
120v or 277v energy saving current limiting Class 2 power supply (driver) must be located within a 1½" or 2⅛" deep, 4" square junction box with plaster ring. Optional emergency battery back up operates the step light at full brightness for a minimum of 90 minutes.

Power Consumption
Standard Output: 9.75 w



Step Optic
Precision molded polycarbonate lens with superior optical properties offers a 90° cut-off with 70% fixture efficiency.

Finish
Metal die-cast face plate may be polyester powder coated or plated. Plated finishes are for interior applications only. Face plate may also be specified in stainless steel.

Emergency
Bodine's AC/Emergency LED driver, "Odyssey," has been designed for the **plane** step light specifically. Bodine's Odyssey HB-DL7 may be used with either a switched or unswitched fixture. Installation is not recommended where the ambient temperature may fall below 0°C.

The center portion of the **plane** step light will illuminate for 90 minutes at full light output during emergency operation. This combination driver/battery back-up must be installed in a standard 4" square, 2⅛" deep junction box. **plane** mounts directly to this junction box with an **io** supplied mounting bracket. A single-pole push-button test switch and LED charging indicator light are also provided. Test switch location must be determined by designer. Test switch plate finish available in white only.

io Lighting 370 Corporate Woods Parkway Vernon Hills, IL 60061-3107 T 847.735.7000 F 847.735.7001 E info@iolighting.com W iolighting.com
c UL us
2007 - io Lighting reserves the right to change specifications for product improvement without notification

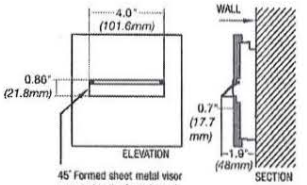
Step Light Details

LED Magnetic Driver Specifications

Input voltage:	120v or 277v
Output Load:	Reference Spec Sheets
Operating Temperature of the Luminaire:	-20°F + 140°F -30°C + 60°C
UL Class:	2
Surface Temperature	25°C
Expected Life	50,000 hours

End of Life-Replacement
LED module replacement is made easy by logging onto **www.iolighting.com** and clicking on "LED module replacement." Replacement modules include quick-connect power fittings.

Visor Option
(A visor may be specified for full visual cut-off.)



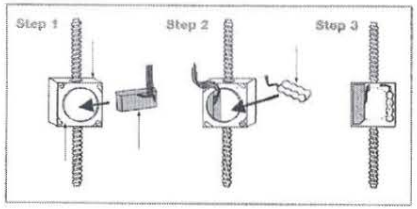
45° Formed sheet metal visor mounted to the front face of casting. Visor includes sidewalls to completely shield view to lens.

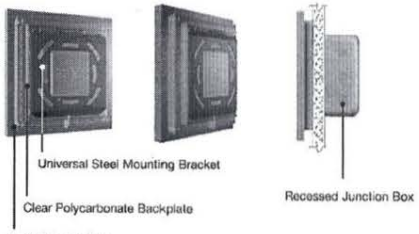
bodine.
Odyssey™
SERIES

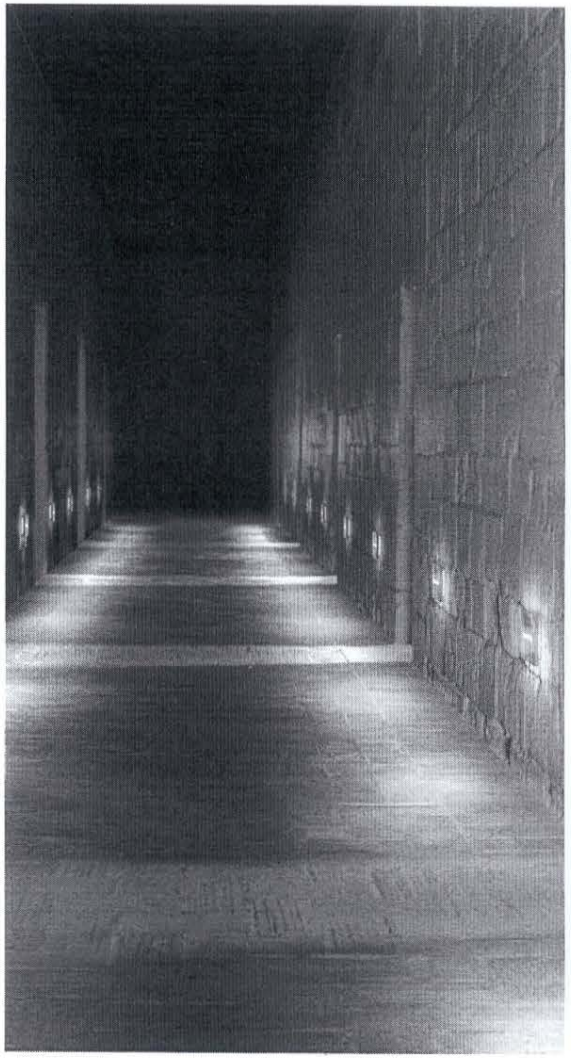
Emergency Battery Back-up
During normal operation, the HB-DL7 will illuminate three 1-watt high brightness LEDs and a 10 Vdc string of perimeter LEDs and simultaneously charge the battery. When AC power fails, the HB-DL7 automatically starts and operates three 1-watt LEDs. The LEDs operate in the emergency mode for a minimum of 90 minutes. When AC power is restored, the emergency driver automatically returns to the charging mode.

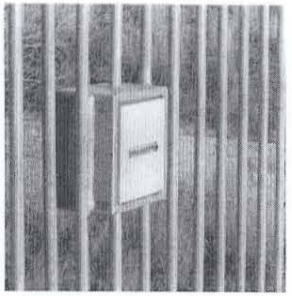
Bodine's Odyssey HB-DL7 may be used with either a switched or unswitched fixture. If a switched fixture is used, an unswitched hot lead must be connected to the emergency driver. The emergency driver must be fed from the same branch circuit as the AC driver (see diagrams). Installation is not recommended with fixtures where the ambient temperature may fall below 0°C.

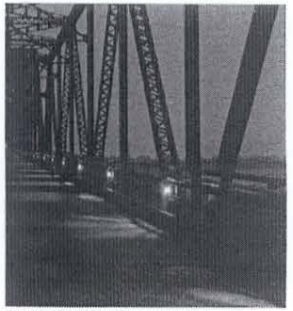
Mounting Details
The Odyssey Driver/Emergency Battery Back-up is designed to mount within a 2⅛" deep, 4" square junction box with plaster ring and side mounted hanger bars.



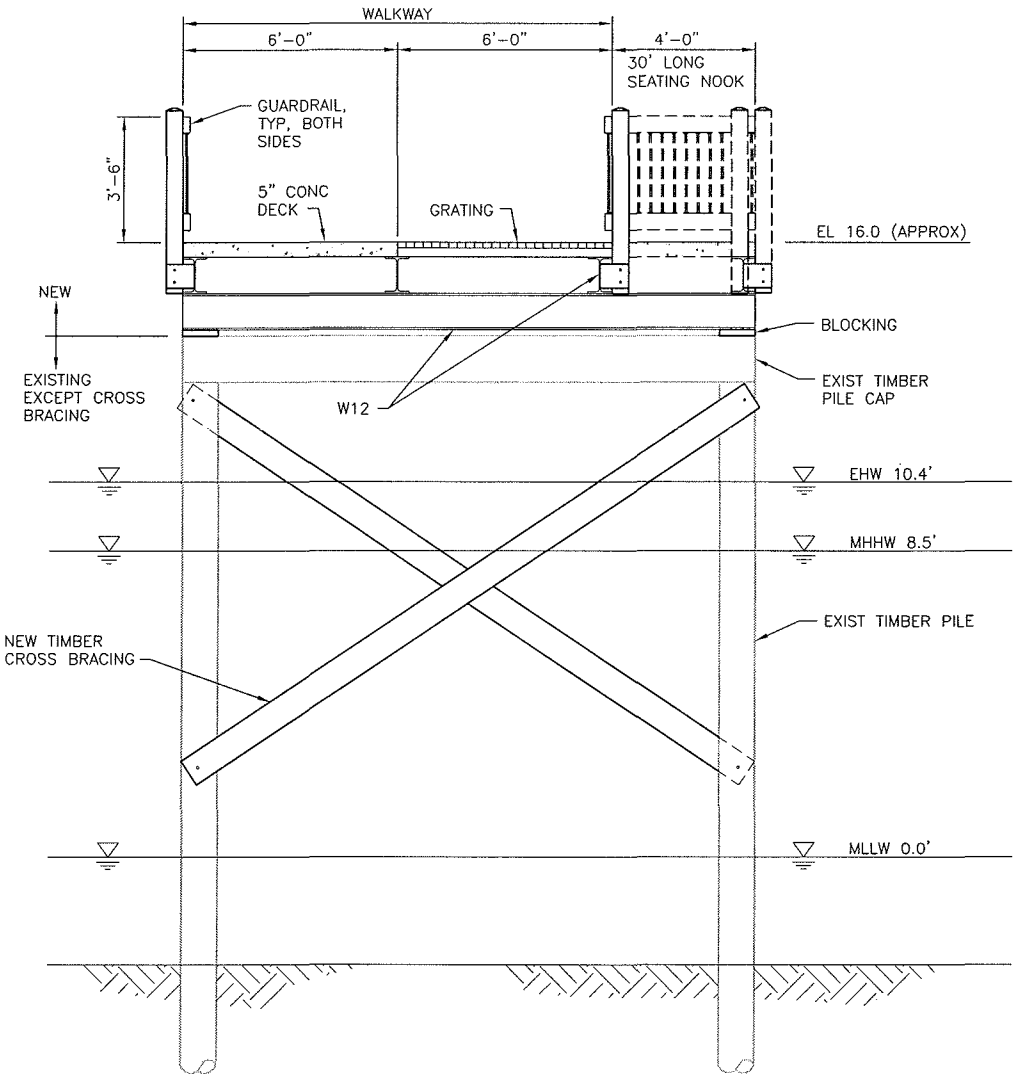








APPENDIX 20
Preferred Scheme
Pattle Point Trestle Renovation



PATTLE POINT TRESTLE REBUILD

SCALE: 3/16"=1'-0"

ReidMiddleton
728 134th Street SW · Suite 200
Everett, Washington 98204
Ph: 425 741-3800

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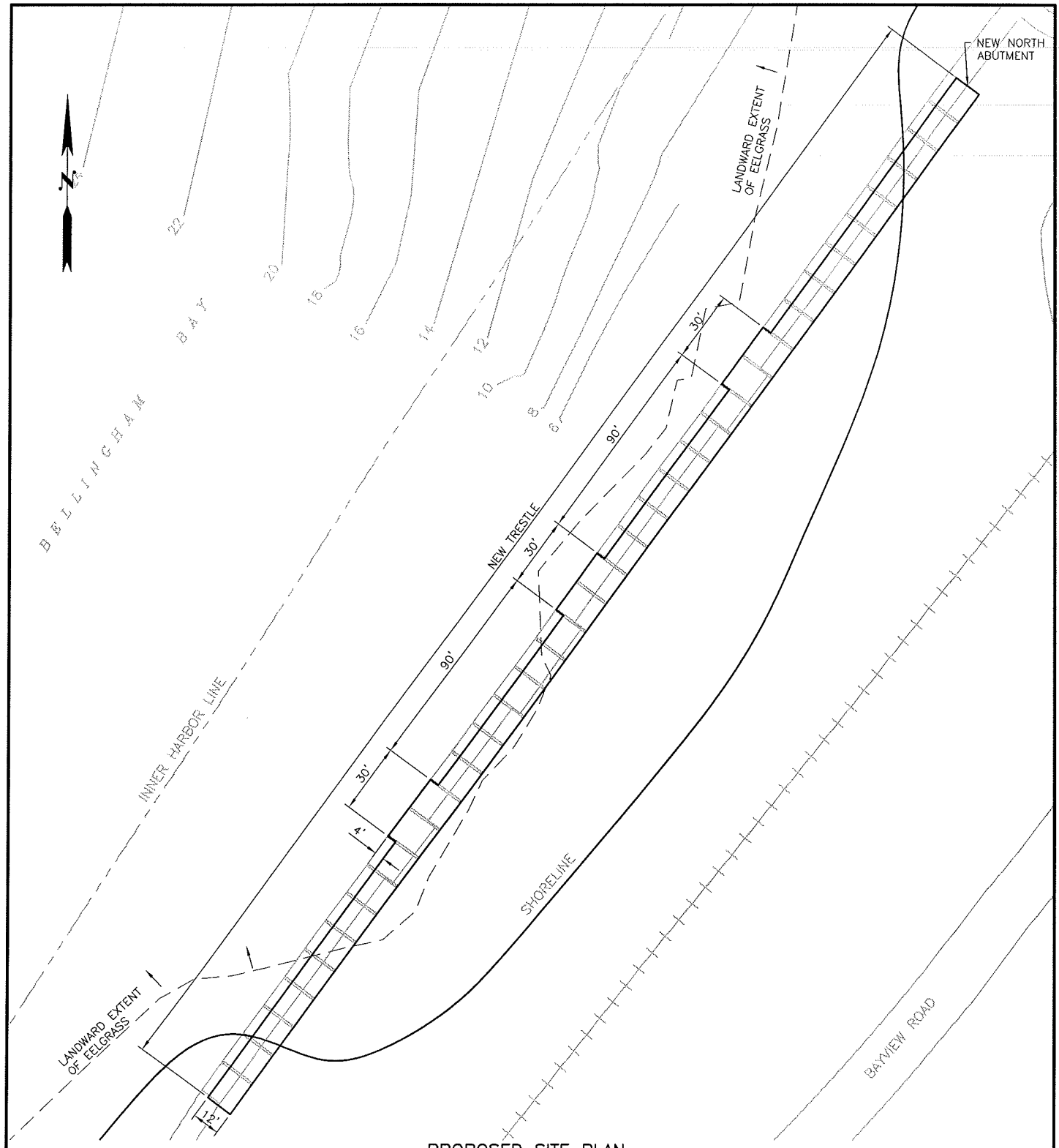

PROPOSED SITE PLAN

SCALE: 1"=60'

ReidMiddleton
728 134th Street SW · Suite 200
Everett, Washington 98204
Ph: 425 741-3800

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ReidMiddleton

OPINION OF PROBABLE CONSTRUCTION COSTS

728 134th Street SW, Suite 200
Everett, WA 98204

Boulevard Park (Pattle Point Trestle)
City of Bellingham

September 15, 2009
24-08-001

preliminary
H:\DOC\24Wf\08\001 Blvd Park\Cost Estimate\Preliminary Cost Estimate

PROJECT INFORMATION

Project title:	Boulevard Park (Pattle Point Trestle)
Project location:	City of Bellingham
Project description:	Renovation of Pedestrian / Bicycle Trestle
Job number:	24-08-001
Client:	City of Bellingham
Submittal Status:	preliminary
Type of estimate :	preliminary
Estimator:	WS
Project manager:	SK
Q/A checker:	
File name/path:	H:\DOC\24Wf\08\001 Blvd Park\Cost Estimate\Preliminary Cost Estimate
Date:	September 15, 2009
Assumptions:	
Notes:	

Item No.	Description	Unit	Quantity	Unit Price	Subtotal	Total Cost
1.0	**MOBILIZATION / DEMOBILIZATION**					
1.01	Mobilization and Demobilization	$	542,929	12%	$65,151.48	$65,200
	MOBILIZATION / DEMOBILIZATION SUBTOTAL					**$65,200**
2.0	**DEMOLITION**					
2.01	Erosion and Sediment Control	LS	1	$2,000.00	$2,000.00	
2.02	Remove and Dispose of Trestle Deck, Stringers, and Guardrail	LS	1	$46,000.00	$46,000.00	
2.03	Remove and Dispose of 4 pile caps	LS	1	$800.00	$800.00	
2.04	Remove and Dispose of Cross Bracing	LS	1	$2,500.00	$2,500.00	
	DEMOLITION SUBTOTAL					**$51,300**
3.0	**CONSTRUCTION**					
3.01	Furnish and Install Cross Bracing	PR	35	$270.00	$9,450.00	
3.02	Furnish and Install Timber Pile Caps	EA	4	$1,260.00	$5,040.00	
3.03	Furnish and Install Steel Pile Caps	EA	35	$1,010.00	$35,350.00	
3.04	Furnish and Install Steel Stringers	LF	1,560	$31.00	$48,360.00	
3.05	Furnish and Install Concrete Deck	SF	3,200	$18.00	$57,600.00	
3.06	Furnish and Install Grated Deck	SF	3,200	$39.00	$124,800.00	
3.07	Furnish and Install Guardrail	LF	1,040	$91.00	$94,640.00	
3.08	Furnish and Install Bench Nooks	EA	2	$6,060.00	$12,120.00	
3.09	Furnish and Install Electrical Service	LS	1	$20,950.00	$20,950.00	
3.10	Furnish and Install Pathway Lighting (87/393 ratio of Blvd Pk)	LS	1	$80,709.00	$80,709.00	
3.11	Furnish and Install Lighting Plates	EA	87	$30.00	$2,610.00	
	CONSTRUCTION SUBTOTAL					**$491,629**
	SUBTOTAL					**$608,129**
	BASE CONSTRUCTION COST					**$608,129**
	GENERAL CONTRACTOR OH & P @ 15%					**$91,219**
	SUBTOTAL					**$699,348**

CONSTRUCTION CONTINGENCY @ 15%		**$104,900**
CONSTRUCTION COST		**$804,248**
SALES TAX @ 8.8%		**$70,800**
DESIGN @ 8%		**$64,300**
CONSTRUCTION ENGINEERING @ 6%		**$48,300**
PROJECT COST	**(Rounded)**	**$988,000**

Assumptions:

Erosion and Sediment Control

Remove & Dispose of Trestle Deck, Pile Caps, and Bracing

Remove Deck, Stringers, and Guardrail (35 bents @ 7/sh 6m)	MHR	240.00	70.00	16,800.00
Remove 4 Pile Caps (2 crew hrs)	MHR	12.00	70.00	840.00
Remove Cross Bracing (35 bts @ 4/hr 4 men)	MHR	36.00	70.00	2,520.00
Derrick Barge	HR	51.00	200.00	10,200.00
Scow	DAY	6.00	200.00	1,200.00
Disposal Fees	TON	190.00	100.00	19,000.00
Total Cost				50,560.00
Cost per Ton				266.11
Cost per Square Foot				9.52

Furnish and Install Cross Bracing

Furnish 3x10 Cross Bracing	BF	1,740.00	0.90	1,566.00
Furnish Hardware	LBS	980.00	2.00	1,960.00
Install Cross Bracing (35 bts @ 2/hr (4 men)	MHR	72.00	60.00	4,320.00
Derrick Barge	HR	8.00	200.00	1,600.00
Scow	DAY	0.25	200.00	50.00
Total cost				9,496.00
Cost per Board Foot				5.46
Cost per Pair				271.31

Furnish and Install Timber Pile Caps

Furnish 4 ea 12x15 Pile Caps	BF	960.00	2.00	1,920.00
Furnish Hardware	LBS	980.00	2.00	1,960.00
Install 4 ea Pile Caps (2 crew hour)	MHR	12.00	60.00	720.00
Derrick Barge	HR	2.00	200.00	400.00
Scow	DAY	0.25	200.00	50.00
Total cost				5,050.00
Cost per Board Foot				5.26
Cost per Each				1,262.50

Furnish and Install Steel Pile Caps

Furnish 35 ea W 12 Pile Caps	LBS	29,700.00	1.00	29,700.00
Furnish Hardware	LBS	280.00	2.00	560.00
Install 35 ea Pile Caps (9 crew hour)	MHR	54.00	60.00	3,240.00
Derrick Barge	HR	9.00	200.00	1,800.00
Scow	DAY	1.00	200.00	200.00
Total cost				35,500.00
Cost per Pound				1.20
Cost per Each				1,014.29

Furnish and Install Steel Stringers

Furnish 1560 lf W 12 Steel Stringers	LBS	34,300.00	1.10	37,730.00
Furnish Hardware	LBS	100.00	2.00	200.00
Install 30' Stringers (52 ea @ 4/hr 8 men)	MHR	120.00	60.00	7,200.00
Derrick Barge	HR	13.00	200.00	2,600.00
Scow	DAY	2.00	200.00	400.00
Total cost				48,130.00
Cost per Pound				1.40
Cost per Linear Foot				30.85

Furnish and Install Concrete Deck

Furnish Concrete 5"t	CY	49.00	130.00	6,370.00
Furnish Reinforcing Steel	LBS	6,480.00	1.00	6,480.00
Furnish Steel Pan Forms	SF	3,190.00	4.00	12,760.00
Furnish Hardware Lag Screws	LBS	150.00	2.00	300.00
Install Pan Forms (3186 sf @ 90 sf/hr 2 men)	MHR	70.00	60.00	4,200.00
Install Rebar	LBS	6,500.00	0.70	4,550.00
Pour Concrete (49 cy @ 25 cy/sh 7 men)	MHR	179.00	60.00	10,740.00
Strip and Patch Concrete (1060 lf, 2 men)	MHR	40.00	60.00	2,400.00
Cure Concrete (1060 lf, 2 men)	MHR	32.00	60.00	1,920.00
Derrick Barge	HR	16.00	200.00	3,200.00
Tug	HR	16.00	140.00	2,240.00
Concrete Pump	HR	16.00	150.00	2,400.00
Total cost				57,560.00
Cost per Cubic Yard				1,174.69
Cost per Square Foot				18.07

Furnish and Install Grated Deck

Furnish Grated Deck	SF	3,190.00	15.00	47,850.00
Furnish Stainless Steel Grate Connectors	LBS	800.00	4.00	3,200.00
Furnish Steel Joists HSS 3x3x3/8 @ 1' oc (3120 lf)	LBS	37,720.00	1.30	49,036.00
Install Joists (520 ea @ 8/hr 3 men)	MH	195.00	60.00	11,700.00
Install Grated Deck (520 lf @ 10 lf/hr 3 men	MH	156.00	60.00	9,360.00
Service Grated Deck (Derrick Crew 3 men 8 hrs)	MH	24.00	60.00	1,440.00
Derrick Barge	HR	8.00	200.00	1,600.00
Total cost				124,186.00
Cost per Square Foot				38.93

Furnish and Install Guardrail

Cost per Blvd Park Estimate (per linear foot of guardrail)	91.26

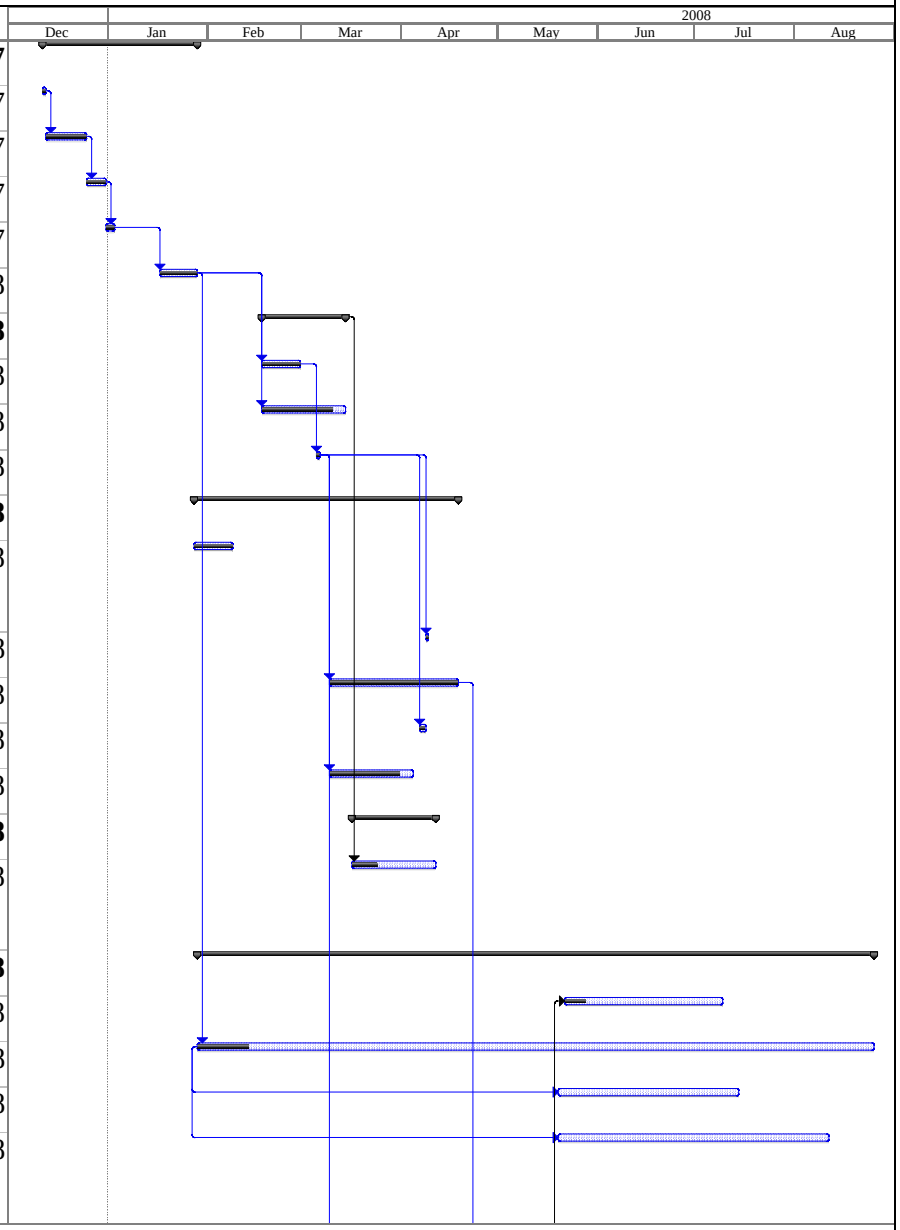
Furnish and Install Bench Nooks 6060.00

Cost per Blvd Park Estimate (per each)

APPENDIX 21
Preliminary Project Schedule

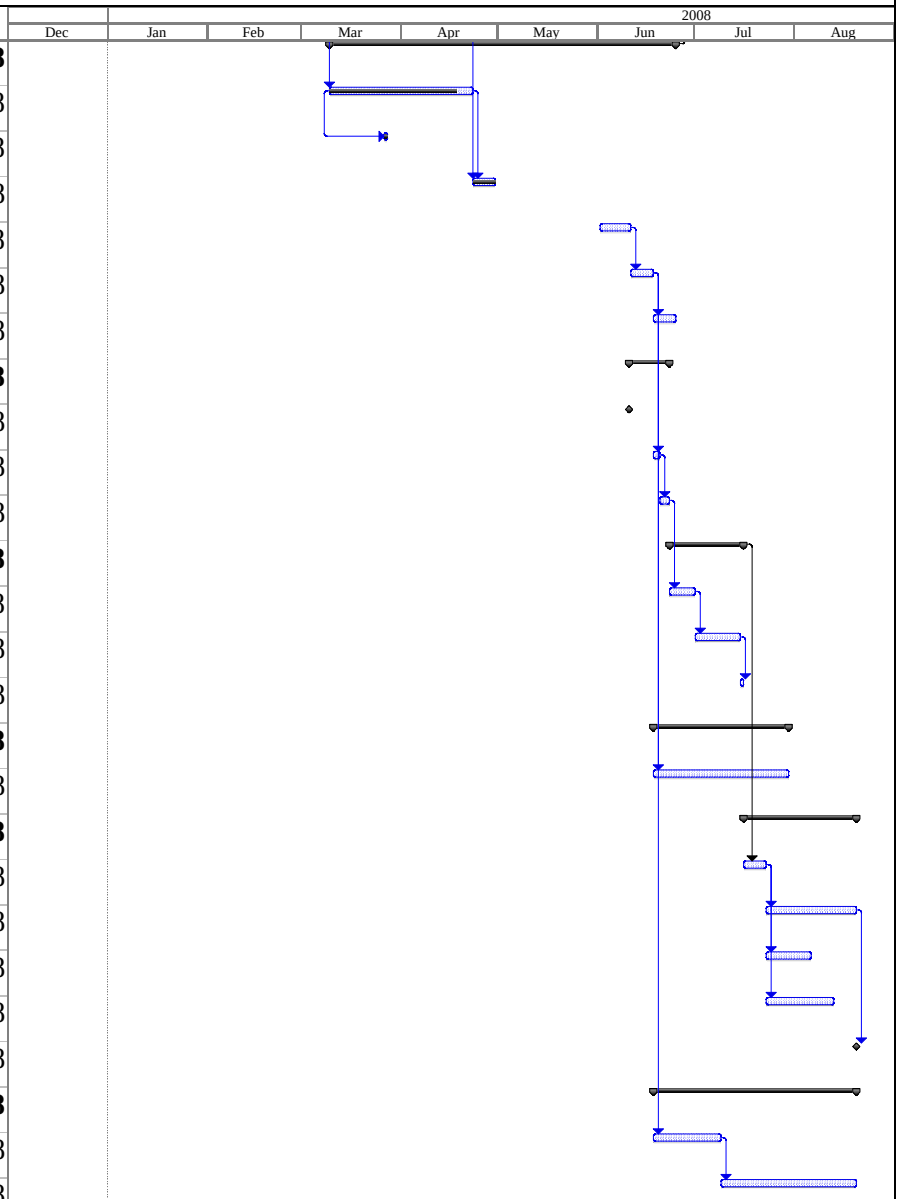
CITY OF BELLINGHAM
BOULEVARD PARK
Preliminary Project Schedule

ID	Name	Duration	Start
1	**Scoping**	**34 days**	**Wed 12/12/07**
2	Initial Scoping Meeting w/ City	1 day	Wed 12/12/07
3	Prepare Scope of Work	1.76 wks	Thu 12/13/07
4	City Review Draft Scope	4.1 days	Tue 12/25/07
5	Revise Scope of Work	2.28 days	Mon 12/31/07
6	City Issues Contract	1.54 wks	Thu 1/17/08
7	**Project Initiation and Kickoff Phase**	**20 days**	**Mon 2/18/08**
8	Information & Background Review	10 days	Mon 2/18/08
9	Base Map Preparation	20 days	Mon 2/18/08
10	Kickoff meeting	1 day	Thu 3/6/08
11	**Site Investigations**	**60 days**	**Mon 1/28/08**
12	Inspection and Assessment of Paddle Point Trestle Structure - Echelon	10 days	Mon 1/28/08
13	Visual Habitat Survey at Low Tides - Grette	0.9 days	Wed 4/9/08
14	Shoreline Assessment	6 wks	Mon 3/10/08
15	Geotechnical Field Investigation - Landau	2 days	Mon 4/7/08
16	Cultural Resources Evaluation - Landau	4 wks	Mon 3/10/08
17	**Data Gap Analysis**	**20 days**	**Mon 3/17/08**
18	Environmental Data Gap Analysis - Herrenkohl	20 days	Mon 3/17/08
19	**Agency Coordination**	**150 days**	**Tue 1/29/08**
20	Meet with Various Agencies	15 days	Thu 5/22/08
21	Agreed Order	150 days	Tue 1/29/08
22	Sampling and Analysis Plan	40 days	Tue 5/20/08
23	Environmental Grant Funding Assistance - Herrenkohl	60 days	Tue 5/20/08



CITY OF BELLINGHAM
BOULEVARD PARK
Preliminary Project Schedule

ID	Name	Duration	Start
24	**Preliminary Conceptual Design**	**77.5 days**	**Mon 3/10/08**
25	Preliminary Concept Designs	6.5 wks	Mon 3/10/08
26	Conceptual Design Meeting	1 day	Thu 3/27/08
27	Park Staff Review	5 days	Wed 4/23/08
28	Eelgrass Dive Survey	1.5 wks	Mon 6/2/08
29	Revise Concepts w/ Eelgrass Info	5 days	Wed 6/11/08
30	Opinion of Probable Construction Costs	5 days	Wed 6/18/08
31	**Public Input Process**	**8.5 days**	**Wed 6/11/08**
32	Potential Park Board Meeting Update	0 days	Wed 6/11/08
33	Setup & prepare for public mtgs	2 days	Wed 6/18/08
34	Public Open House	1 day	Fri 6/20/08
35	**Final Conceptual Design**	**17 days**	**Mon 6/23/08**
36	Revise Alternatives per Public Input	6 days	Mon 6/23/08
37	Finalize Conceptual Design	10 days	Tue 7/1/08
38	Parks Approve Final Conceptual Design	1 day	Tue 7/15/08
39	**Grant Funding Assistance**	**30 days**	**Wed 6/18/08**
40	Identification of Potential Grant Sources	30 days	Wed 6/18/08
41	**Permit Application Preparation**	**25 days**	**Wed 7/16/08**
42	Prepare Proj Description	1 wk	Wed 7/16/08
43	Prepare Biological Evaluation - Grette	20 days	Wed 7/23/08
44	Prepare SEPA	2 wks	Wed 7/23/08
45	Prepare JARPA	3 wks	Wed 7/23/08
46	Finalize Permit Applications	0 days	Wed 8/20/08
47	**Feasibility Report**	**45 days**	**Wed 6/18/08**
48	Draft Feasibility Report	15 days	Wed 6/18/08
49	Final Feasibility Report	30 days	Wed 7/9/08



APPENDIX 22
Potential Grant Sources Report

Boulevard Park Shoreline Study & Preliminary Design

Bellingham

2008

Identification of Potential Grant Sources

Prepared for the City of Bellingham
Department of Parks & Recreation
Prepared by AjO Consulting
For Reid Middleton

REFERENCE

City of Bellingham: *2007 Annual Budget Report/ 2008 Adopted Budget*

City of Bellingham: *2008-2013 Capital Facilities Plan (6 Year) Appendix E*

Waterfront Futures Project Report: *City of Bellingham and Port of Bellingham*

Washington State Department of Transportation/Whatcom Regional Planning

Washington State Auditor: *2007 City of Bellingham Audit Report*

City of Bellingham: *2007 Draft Shoreline Master Plan*

Catalog of Federal and Domestic Assistance

Recreation and Conservation Office (RCO)

Washington State Department of Ecology

U.S. Senators Maria Cantwell and Patty Murray

U.S. Representative Rick Larsen, 2nd Congressional District

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1. OVERVIEW / INTRODUCTION
   A. Background
   B. Vision
   C. Desired Outcome

2. FUNDING FEASIBILITY
   A. Federal Funding
   B. State Funding
   C. Private Funding
   D. Foundations & Grants

3. MARKETING

4. COMPREHENSIVE PLAN

APPENDIX

1. INTRODUCTION

A. Background

The City of Bellingham prepared a feasibility study regarding the future option to create an overwater walkway between Boulevard Park and Cornwall Avenue Landfill. This is part of a Phase I – Boulevard Park Shoreline & Overwater Walkway project. Boulevard Park has a long history of parkland development with property purchases and park development beginning in 1976. The initial acquisition was secured with matching grant funds provided through the U.S. Department of the Interior, National Park Service (NPS) administered Land and Water Conservation Fund (LWCF) managed by the Recreation and Conservation Office (RCO/ formerly the office of the Interagency Committee) state agency. Subsequently the park was developed with matching LWCF funds in 1979. The entire waterfront park system has had a long history of securing matching grant funds through the RCO with trail construction funded under the Washington Wildlife and Recreation Program (WWRP) Trails Program category. Additional enhancement funding has been secured for a number of critical links in the regional and urban trail system under the Federal Transportation Funds that provide recreational benefits. The state Pedestrian Safety and Mobilization Program funds have installed Americans with Disabilities Act (ADA) approved accessible trail connections and overpasses for bicycle and pedestrian trails.

B. Vision

The City of Bellingham Shoreline Draft Master Plan of 2007 defined the creation of an "Overwater walkway from the south end of the Cornwall Avenue Landfill to the north end of Boulevard Park" as part of its vision. The walkway will provide leisure improvements, upland and habitat enhancements, economic benefits, and interconnecting trail opportunities.

C. Desired Outcome

In any effort to research grant funding sources and matching grant opportunities, timing and availability of funding sources tend to change. Legislative and Congressional priorities, prerogatives and direction are cyclic by nature in both the U.S. Congress and the Washington State Legislature. It is therefore essential as the project moves forward that a finite funding timeline is established utilizing details arising from the analysis. New and changing grant opportunities will require additional consideration and thoughtful planning for implementation. As the City of Bellingham continues to plan under the Growth Management Act, Comprehensive and Capital Improvement Plans will identify annual funding sources as well as a long term vision for funding of this project. These planning steps will set into motion the ability to complete a strategic funding plan for the Boulevard Park Shoreline Overwater Walkway Project. The goal is to identify potential grant funding sources that compliment existing and proposed identified capital funds. This combined effort is to maximize opportunities for completion of the project as it moves on a calculated timeline that meets grant funding availability.

2. FUNDING FEASIBILITY

A. Federal

On the Federal level, Congress appropriates funds through a variety of programs that may provide potential funding sources for the Boulevard Park Shoreline Overwater Walkway Project. These include the federal Transportation Enhancement Act, Environmental Protection Act, Land and Water Conservation Fund Account and Historic Preservation administered by the National Park Service, VA-Housing and Urban Development (HUD) Economic Development Funding, Community Block Grant HUD, Environmental Protection Act with Brownfield's clean-up funding, United States Department of Agriculture low interest loans, National Marine Fisheries and through direct Congressional Appropriation. Links to government grant sources can be found at firstgov.com and grants.gov.

The Land and Water Conservation Fund (LWCF):
LWCF provides funding to assist in preserving, developing, and assuring accessibility to outdoor recreation resources including but not limited to parks, trails, wildlife lands, and other lands and facilities desirable for individual active participation. A portion of Federal revenue derived from sale or lease of off-shore oil and gas resources funds LWCF projects. The program is administered by the U.S. Department of the Interior through the National Park Service (NPS) and in Washington State by the Recreation and Conservation Office (RCO). Grant recipients must provide at least 50% matching funds in either cash or in-kind contributions.

The LWCF grant applications are due with a letter of intent to apply by March 1st annually to the RCO. Since beginning in 1965, the Land and

Water Conservation Fund has provided more than $66 million for 543 projects in 38 of the Washington State's 39 counties. Grantees provide a match to the grant request and have contributed more than $56 million, bringing the total investment to more than $122 million in Washington State.

In 1976 nearly five acres were acquired through LWCF grant matching funds by the City of Bellingham for Boulevard Park. Combined with properties owned by the Port of Bellingham, Whatcom County Parks and the Department of Natural Resources the lineal park was secured. In 1979 approximately ten acres with 1,400 front feet on Bellingham Bay were developed at Boulevard Park. The LWCF funding and grant agreements protect the site in perpetuity by contract agreement between the City of Bellingham and the NPS (RCO #76-016 and #70-015 and NPS #53-00319 and #53-00411-E for LWCF). It is important to understand that previously funded LWCF projects rank higher in securing subsequent project funding; therefore this is an ideal funding option for the shoreline over-water walkway trail connection.

Rivers, Trails, and Conservation Assistance Program (RTCA):
RTCA is a technical assistance program of the National Park Service (NPS) that implements the natural resource conservation and outdoor recreation mission of the NPS in cooperation with local communities and the states. RTCA provides planning assistance and project coordination to local governments and state agencies for trail planning, greenways, water trails, and special recreation projects. The President's FY 2009 budget proposal for RTCA proposes some cuts but recent Congressional appropriation returns this program to its previous level of funding. Through the RTCA program the National Park Service has launched a nationwide initiative to encourage healthful outdoor physical activity in National Parks and in local communities to demonstrate practical approaches for public land managers and community leaders who want to encourage active lifestyles. In messaging the value of the Boulevard Park overwater walkway and park enhancements, the National Park Service provides benefit support information through the *NPS's Pathways to Healthy Living; Promoting Physical Activity in Parks and Communities.* The data and support documentation reiterates the close-to-home value of recreation on neighborhood trails and greenways that is vital for

improving America's public health. Working with the National Park Service, grant seekers will realize the value of the current work and understand that as a value to local communities, the NPS is ideally positioned to respond to this urgent need to increase Americans' level of physical activity.

National Oceanic and Atmospheric Administration (NOAA):

The Puget Sound Restoration Fund continues efforts to restore natural habitat areas. Projects include many citizen driven efforts funded through the Community-based Restoration Program of the National Marine Fisheries Service. The NOAA funding opportunities bring *Community-based Restoration Program* **(CRP)** funds to citizen groups, public and nonprofit organizations, local governments and state and local agencies to restore fishery habitats. During open announcements, applications are directed to NOAA Restoration Center through Grants.gov. Any of the identified restoration elements of the Boulevard Park Plan may meet the funding criteria of the CRP NOAA program. http://www.noaa.gov/.

The Environmental Protection Agency (EPA):

EPA offers *Low Impact Development Stormwater Management Grants* **(LID)** providing financial assistance through the Washington State Department of Ecology Water Quality Program (http:www.ecy.wa.gov). One of the most effective ways to manage stormwater-runoff pollution is to minimize how much runoff occurs in the first place. As part of Governor Gregoire's "Puget Sound Initiative" LID-designed sites have fewer impervious surfaces and use vegetation, healthy soils, small-scale storage and dispersion and infiltration techniques to manage stormwater. To encourage information-sharing between other local governments and the public at large, applicants are encouraged to employ LID practices in parks, walkways and trails where the LID uses can be explained with interpretive signs or by other means. This grant program began as a pilot in 2006 with grants awarded over the past two years. If successful and federal funds continue to support the program, the Boulevard Park shoreline enhancements, access entrances and walkway surfaces would all meet the criteria of the LID grant goals. An example of a successful LID waterfront park grant recipient is Lions Field Park located in the City of Bremerton which was also an original LWCF federally funded development project. Contact: www.epa.gov/swerosps/bf/rlflst.htm

Federal Transportation's Federal Highway Administration (FHWA):
FHWA programs benefit the Nation's communities to improve quality of life, provide access for all, and preserve our heritage and similarly, provide programs that also benefit recreational interests. The FHWA has close partnerships with State Departments of Transportation (Washington State Department of Transportation – WDOT). Here are some examples related to funding support for recreation and pedestrian and bicyclist access that are available to assist with the Boulevard Park project.

Pedestrian Accommodations and Safety: FHWA provides funding for the Pedestrian and Bicycle Information Center (www.pedbikeinfo.org), operated by the University Of North Carolina Highway Safety Research Center (www.hsrc.unc.edu). As a research arm, vital statistical data can be used in the preparation of the grant narrative and to provide the justification and relationship values to the Boulevard Park project.

FHWA and the National Highway Traffic Safety Administration participate in the *Partnership for A Walkable America* (www.nsc.org/walkable.htm) with other government agencies and nongovernmental organizations who promote safety, health and access for pedestrians. *Walk to School Day* (www.walktoschool-use.org), promotes safe walking routes to schools. Many communities are discovering they need to do more to make their streets more walkable, and have begun programs to improve their pedestrian networks. Each of these local partnership programs express the importance of connections and links. Grants for capital project funding typically receive additional point scores when partnered with established non-profit support groups, or are working in partnership with local school districts as they plan for linking and connections for safer routes for all levels of users.

Physical Activity: The Centers for Disease Control and Prevention (CDC) is encouraging physical activity to improve healthy lifestyles. The CDC recommends walking and bicycling as two of the best forms of exercise, see: (www.eded.gov/nccdphp/dnpa/physicalactivity.htm). The CDC is planning an important role nationwide in the promotion and justification of the need for the capital infrastructure that allows the walking and bicycling activities to be added to local communities. The CDC is a vital source for preparing the collateral messaging needed for grant applications. The U.S. Department of Transportation (USDOT) and

FHWA have completed the *National Bicycling and Walking Study* (1994) which proposed doubling the amount of bicycling and walking facilities. All of the FHWA grant funded programs mentioned can help provide capital dollars to construct the walkway thus providing more safe places for exercise as it is a critical link in the waterfront trail system.

Trail Programs: FHWA participates with the U.S. Department of Agriculture Forest Service, Bureau of Land Management, National Park Service and the U.S. Fish and Wildlife Service on a Federal Interagency Council on Trails. Together the agencies signed a Memo-of-Understanding in January 2001 to promote National Scenic and National Historic Trails. These agencies work to support the National Trails System Act and other related legislation to fund trail systems.

Federal Surface Transportation Program (STP):

The STP is the largest single source of funding for shared use paths, trails and related projects in the United States. Prior to 1991 funds could be used only for highway projects or independent bicycle facilities. Today, bicycle transportation and pedestrian projects and programs are eligible for nearly all major funding programs. Recreational trails are also eligible under the Recreational Trails Program. The Federal Surface Transportation Program is codified in U.S. law under Title 23 U.S.C. It is generally reauthorized every four to six years.

As of 1991 Congress made a major policy shift in surface transportation through the *Intermodal Surface Transportation Efficiency Act* (**ISTEA**) and for the first time, trail projects became eligible for Federal highway program funds. Under the *Transportation Equity Act of the 21st Century* (**TEA-21**), enacted in June 1998, eligibility for trails and other related projects was broadened to include benefit to recreation.

The *Safe, Accountable, Flexible, Efficient Transportation Equity Act; A Legacy for Users* (**SAFETEA-LU**), enacted in August 2005, continues these programs, and also added a new *Safe Routes to School Program* administered through the Washington State Department of Transportation (WDOT).

Pedestrian and bicycle projects are eligible for STP funds. STP provides over $6 billion annually to states through a formula. Ten percent must be used for *Transportation Enhancement Activities* (**TE**). TE funds which are a Federal-aid reimbursement program in general are 80 percent maximum share. The TE funds may be used for project construction and

related activities, but not routine maintenance. TE projects must relate to surface transportation, but many TE project benefit recreation. Three of the twelve TE categories specifically benefit pedestrians, bicyclists and trails:

1. Pedestrian and bicycle facilities (which may include sidewalks, bicycle parking and pedestrian and bicycle transportation facilities, including shared use paths)

2. Pedestrian and bicycle safety and education activities, and

3. Preservation of abandoned railway corridors (rails-to-trails)

The first category has a direct relationship for capital grant funding to construct the Boulevard Park overwater walkway project.

U.S. Department of Housing and Urban Development (HUD):

As part of the Whatcom Waterway site clean-up located within Bellingham Bay, action could include grant opportunities that partner and collaborate with clean-up and federal fund appropriations providing opportunities for the overwater walkway project using an inter-agency partnership. The *Brownfields Economic Development Initiative (BEDI)* is a key competitive grant program that HUD administers to stimulate and promote economic and community development. BEDI grant funds are primarily targeted for use as a stimulus with a particular emphasis upon the redevelopment of brownfields sites in economic development projects. It also increases economic opportunities for low-and moderate-income persons as it creates or retains businesses and jobs which in turn ultimately increase the local tax base. HUD emphasizes the use of BEDI and Section 108 Loan Guarantee funds to finance projects and activities that will provide near-term results and demonstrable economic benefits. BEDI funds have been made available on a competitive basis. Instructions for submitting applications will be included in HUD's SuperNOFA [Notice Of Funding Available], which is published in the *Federal Register*. There is a cap of $1 million per BEDI award. Information about the program is available at http://www.hud.gov/offices/cpd/economicdevelopment/programs/bedi/index.dfm

HUD administers the *Community Development Block Grant Program (CDBG)* which provides block grants to eligible cities and urban areas. Approximately $100 million of CDBG funds are utilized annually for park and recreation projects which often are initiated along with more comprehensive community redevelopment initiatives. The President's budget for FY 2009 included $2.9 billion for the CDBG program.

Congressional Appropriation:

The City of Bellingham should consider introducing the Boulevard Park Shoreline Overwater Walkway Project to U.S. Senators Patty Murray and Maria Cantwell as well as to U.S. Representative Rick Larsen and their congressional staff. It is essential to provide a project description, outline of needs and project goals. To create their personal awareness of the project, invite congressional staff for a site visit to allow the opportunity for them to view the site, experience the present conditions and to understand the need for the project being developed through a community process of setting the project goals, vision and future capital funding needs.

Representative Larsen sits on the House Committee on Transportation and Infrastructure. Senator Murray committee assignments under the Committee on Appropriation is Chair of Transportation , Housing and Urban Development Sub-Committee; Energy and Water Development Sub-Committee; Labor, Heath and Human Services, she also is assigned to the Committee on the Budget. Senator Cantwell is assigned to Energy and Natural Resources and Commerce, Science and Transportation. Senator Murray and Senator Cantwell accept letters of proposals and applications for Senate appropriation requests. U.S. House member Rick Larsen also accepts appropriation requests.

Appointments to introduce the project in January will be essential. Project descriptions and letters of request for appropriation are due March 1st annually.

B. State Funding

Washington State provides various grants for public recreation acquisition and development through the Recreation and Conservation Office (RCO), the Department of Natural Resources (DNR) and the Washington Department of Fish and Wildlife Department (WDFW). Washington State Department of Ecology (ECY) funds Low Impact Development Grants (LID) and Coastal Zone Management (CZM/NOAA) programs. The Washington State Department of Transportation (WDOT) administers federal funds as well as state grants appropriated through the Washington State Legislature.

Recreation and Conservation Office (RCO):

Recreation and Conservation Funding Board (RCFB) administers several grant programs for recreation and habitat conservation purposes. Depending on the program, eligible project applicants can include municipal subdivisions of the state (cities, towns, and counties, or port, utility, park and recreation, and school districts), Native American tribes, state agencies, and in some cases, federal agencies and nonprofit organizations. To be considered for funding assistance, most grant programs require that the proposed project will be operated and maintained in perpetuity for the purposes for which funding is sought. Most grant programs also require that sponsors complete a systematic planning process prior to seeking RCFB funding. Grants are awarded by the RCFB Board based on a public, competitive process which weighs the merits of proposed projects against established program criteria. The grant programs that would reflect funding options for the Boulevard Park Shoreline project include:

In the *Washington Wildlife and Recreation Program* (WWRP) grant program applications could be submitted in three categories that reflect the goals and intent of the Boulevard Project. These categories would be in WWRP-Local Parks, WWRP-Water Access and WWRP-Trails. Grants are submitted through a letter of intent on the first of March in even numbered years. On June 1st grant applications must be complete. Grants are team evaluated and ranked by score. The RCFB recommends the ranked list to

the Governor who submits the list for capital funding through the Washington State Legislature on the odd numbered years during the full session of the Legislature. The WWRP-Trails category would be a primary source of optional grant funding as the overwater walkway completes a missing link in the waterfront trail system. The water access and local park categories would fund the park improvements designed at Boulevard Park and at the Cornwall Avenue walkway access point. The local match is 50% with a $500,000 grant maximum from RCO.

The *Aquatic Lands Enhancement Account* (ALEA) grant program provides grant-in-aid support for the purchase, improvement, or protection of aquatic lands for public purposes, and for providing and improving access to such lands. It is guided by concepts originally developed by DNR, including re-establishment of naturally self-sustaining ecological functions related to aquatic lands, providing or restoring public access to the water, and increasing public awareness of aquatic lands as a finite natural resource and irreplaceable public heritage. The Boulevard Park Shoreline Overwater Walkway Project is ideally suited for funding under this state sponsored grant program. There has historically been money funded through the ALEA for similar overwater walkway projects. Acquisition projects have a grant match maximum of $1,000,000 and development is limited to $500,000. Grant applications are due March 1st annually with a letter of intent. Grants are funded annually through revenues received from DNR waterway leases. Funds are available following approval of the ranked list of projects by the RCFB in November annually. Application available at http//: www.rco.wa.gov/ica/grants/alea_application.htm.

The *Non-Highway Road/Non-Motorized/Off-Road Vehicle Program* (NOVA) provides fund assistance for land and facilities that support motorized, nonmotorized and nonhighway road recreation. By statute, activities supported by the NOVA Program must be accessed via a "Nonhighway Road" (NHR). These are roads open to the public but not constructed with gasoline tax revenues.

The *Salmon Recovery Grant Program* (SRFB) goal is for the protection and restoration of salmon habitat. Grant funds also support feasibility assessments for future projects and other activities. Applicants must

provide at least 15 percent matching funds in either cash or in-kind contributions. All projects must come through the local lead entity group, which coordinates with regional organizations. The lead entity and regional organizations will evaluate and rank project proposals from their areas and submit a prioritized list to the Salmon Recovery Funding Board for consideration. Once project lists are submitted, a SRFB review panel, comprised of scientists from different disciplines, will review all projects. The panel will also meet with each regional organization and associated lead entities to consider the regional priorities in each list of projects. Grant sources are from State general obligation bonds and the federal Pacific Coastal Salmon Recovery Fund.

The Recreation and Conservation Office (RCO) requires that grant applicants complete and update their six-year Comprehensive Park, Recreation and Open Space Plans to be eligible for application for RCO funding. The City of Bellingham is currently completing their Comprehensive Park, Recreation and Open Space Plan which upon adoption and acceptance by the RCO makes them eligible to seek grant funding in 2009. The RCO Grant Manager contact for the City of Bellingham is: RCO Project Manager Dan Haws at dan.haws@rco.wa.gov, Natural Resources Building 1111 Washington Street, Floor 2 East, Olympia, WA. 98504-0917; 360-902-3079.

Department of Ecology:

Ecology administers a number of federally funded grant programs. As defined in the federal funding, *Low Impact Development* ***(LID)*** grants encourage projects based on hydrology and pollutant removal capacities through design. Bioretention areas, grass swalls, permeable pavements and vegetated roof tops are the most common practices studied as viable design options. The overwater walkway, the walkway approach and park improvements can use grant funds to construct techniques that reduce the amount of Effective Impervious Area (EIA) which have watershed benefits as the EIA is the directly connected impervious area to the storm drain system.

Coastal Zone Management Grants ***(CZM)****:* The Washington State Department of Ecology, within the Coastal Management Division has offered National Oceanic & Atmospheric Administration (NOAA) CZM 306A construction project grants that provide for environmental

education facility construction to enhance public access along the Puget Sound shoreline. 306A grants are awarded for capital construction. The federal project has a one year timeline for completion. It is important to have the project designed, permitted and ready for bid to allow for the completion of the construction grant in the limited timeframe allotted.

Washington State Department of Transportation (WDOT):
Safe Routes to School (SRTS): Funding for the Safe Routes to School Program was created from the reauthorized surface transportation program (as described in the Federal Funding section of this report). The *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU) is funded at $612 million for the next three years and each state will receive a minimum of $1-million per year. Washington State has made a commitment to match the federal appropriation for the Safe Routes to Schools program to double the available funding for this important program. The goal is to help students walking or biking to school to help decrease childhood obesity and related illness, traffic and air pollution. Projects include walkway improvements, signage, public awareness, education and traffic enforcement. The SRTS program is a good opportunity for park and recreational agencies to see cities receive non-traditional source funding since many trails and walkways are located on the traditional school routes. The Washington Department of Transportation (WDOT) administers the federal program as well as the state initiated SRTS program with additional grant funds. Schools are the lead in partnership with the City. $3 million is available for the next few years. State applications to WSDOT are due by October 1st.
http://safety.fhwa.dot.gov/saferruotes/statecontacts.htm

C. Private Funding

Donations: The donation of labor, land or cash by service agencies, private groups, corporations or individuals is a popular way to raise small amounts of money for specific projects. The private funds are critical to show commitment of non-government dollars and as a positive result can elevate the standing of the grant proposal. Such service agencies as the Kiwanis, Soroptimists and Rotary often fund small project improvements

in partnership or provide the donated labor match to bring the project to fruition. Environmental groups such as the Trust for Public Lands or The People for Puget Sound organize and in partnership provide volunteer labor for habitat restoration which can serve as a value for consideration toward the local match requirement on specific grants. Habitat enhancement element of the overall Boulevard Park Shoreline Overwater Walkway Plan design would be an ideal phase to work with donations and private labor programs. Principle property tax payers in the Bellingham area such as the Haggen Talbot Co. Ltd, Wal-Mart Real Estate Business Trust, Georgia Pacific West and Roundup Company (Fred Meyer) are sources of local contributions for civic and environmental benefits. As a partnership opportunity they should be contacted, provided with collateral project information and approached with regard to an initial request for partnership support funding. As with all grant programs, grant agencies are looking to local communities to work with local advocates, sponsors and private partners to bring the project to a funding level. Community advocates can elevate the level of project scores in a competitive funding cycle. In some grant programs, grants require private partnerships as a condition of application.

D. Foundations & Grants

Private grants and foundations: Many private foundations provide money for a wide range of projects. Grants are available for environmental protection, cultural enrichment and heritage preservation. In many cases, foundations require grant requests from non-profit 501c3 organizations. On all phases of the entire Boulevard Park project, staff should to work with or create a partnership with private non-profit organizations and seek opportunities to secure grant funds from private non-profit foundations.

Grant research is available from the Whatcom County Library System www.wcls.org. Additionally www.nozasearch.com provides a listing of private foundations in the Bellingham area with the IRS 990 public report forms providing contact and reporting information. Research of those listed indicates that on an average grants are given in the $60,000-$100,000 range.

3. MARKETING

The City of Bellingham Park and Recreation Department initiated the introduction of the project to the community at the June 26, 2008 public meeting. To begin the process of securing grant partnerships through federal, state and local private sources, it will be important to continue to market the value and benefits of the project as it relates to the future realization of the vision for the *Waterfront Futures Project*. To prepare future grant applications and presentations to potential funding sources it will be necessary to have collateral marketing pieces developed. This should include a brief fact sheet, a colorful brochure, and drafting of key messages for inclusion into grant applications and media articles.

4. COMPREHENSIVE PLAN

A. 2008 – 2014 Comprehensive Park and Recreation Plan

The City of Bellingham adopted plan is a vital document for receipt of matching grants through the Recreation and Conservation Office (RCO). The RCO requires an adopted Comprehensive Plan as a part of grant eligibility. Cities planning under the Growth Management Act must have a six-year Capital Facilities Plan (CFP) as an element of the Comprehensive Park Plan. Funding sources are identified for each of the park capital projects. The current adopted CFP identifies the Boulevard Park Shoreline and funding sources through 2009. Amendments and updates to the CFP can be made once a year as a part of the city-wide comprehensive plan annual update process.

APPENDIX

- Grants.gov Application Instructions/EPA 2008
- Department of Ecology/State of Washington; Example of Publication Summary FY 2007 Low Impact Development Stormwater Management Grant Program Guidelines
- National Center for Safe Routes to Schools information bulletin
- 2008 Call for Projects from Washington State Department of Transportation for state funds to provide Pedestrian and Bicycle Safety Grants
- Document addressing the preparing of project proposals for Federal Transportation Enhancement funds

Attachment A

Grants.gov Application Instructions
Funding Opportunity Number: EPA-R9-WTR3-08-006

General Application Instructions

The electronic submission of your application must be made by an official representative of your institution who is registered with Grants.gov. For more information, go to http://www.grants.gov and click on "Get Registered" on the left side of the page. *Note that the registration process may take a week or longer to complete.* If your organization is not currently registered with Grants.gov, please encourage your office to designate an AOR and ask that individual to begin the registration process as soon as possible.

To begin the application process under this grant announcement, go to http://www.grants.gov and click on the "Apply for Grants" tab on the left side of the page. Then click on "Apply Step 1: Download a Grant Application Package" to download the compatible Adobe viewer and obtain the application package. **To apply through grants.gov you must use Adobe Reader applications and download the compatible Adobe Reader version (Adobe Reader applications are available to download for free on the Grants.gov website. For more information on Adobe Reader please visit the help section on grants.gov at** http://www.grants.gov/help/help.jsp or http://www.grants.gov/aboutgrants/program_status.jsp).

Once you have downloaded the viewer, you may retrieve the application package by entering the Funding Opportunity Number, EPA-R9-WTR3-08-006, or the CFDA number that applies to the announcement (CFDA 66.439), in the appropriate field. You may also be able to access the application package by clicking on the Application button at the top right of the synopsis page for this announcement on http://www.grants.gov (to find the synopsis page, go to http://www.grants.gov and click on the "Find Grant Opportunities" button on the left side of the page and then go to Search Opportunities and use the Browse by Agency feature to find EPA opportunities).

Application Submission Deadline: Your organization's AOR must submit your complete application electronically to EPA through Grants.gov (http://www.grants.gov) no later than **5:00pm Pacific Standard Time on August 25, 2008.**

The full announcement can be found on this website:
http://www.epa.gov/region09/funding/rfps.html

Please submit *all* of the application materials described below.

Application Materials

The following forms and documents are required under this announcement:

1. Application for Federal Assistance (SF-424)
2. Budget Information for Non-Construction Programs (SF-424A)
3. Proposal Narrative- See Section IV.C of the announcement for requirements
4. Other attachments (e.g., letters of support)

The application package *must* include all of the following materials:

1. **Standard Form (SF) 424, Application for Federal Assistance**
   Complete the form. There are no attachments.
   Please note that the organizational Dun and Bradstreet (D&B) Data Universal Number System (DUNS) number must be included on the SF-424. Organizations may obtain a DUNS number at no cost by calling the toll-free DUNS number request line at 1-866-705-5711.

2. **SF-424A, Budget Information for Non-Construction Programs**
   Complete the form. There are no attachments.
   The total amount of federal funding requested for the two-year project period should be shown on line 5(e) and on line 6(k) of SF-424A. If indirect costs are included, the amount of indirect costs should be entered on line 6(j). The indirect cost rate (i.e., a percentage), the base (e.g., personnel costs and fringe benefits), and the amount should also be indicated on line 22. If indirect costs are requested, a copy of the Negotiated Indirect Cost Rate Agreement must be submitted as part of the application package. (See instructions for document 10 below.)

3. **Proposal Narrative**
   Prepare the proposal narrative as described in Section IV.C of the announcement. Complete the SF-LLL, Disclosure of Lobbying Activities form if your organization is involved in lobbying activities.

4. **Other Attachments Form**
   Complete the appropriate forms.

Application Preparation and Submission Instructions

Documents 1 and 2 listed under Application Materials above should appear in the "Mandatory Documents" box on the Grants.gov Grant Application Package page.

For documents 1 and 2, click on the appropriate form and then click "Open Form" below the box. The fields that must be completed will be highlighted in yellow. Optional fields and completed fields will be displayed in white. If you enter an invalid response or incomplete information in a field, you will receive an error message. When you have

finished filling out each form, click "Save." When you return to the electronic Grant Application Package page, click on the form you just completed, and then click on the box that says, "Move Form to Submission List." This action will move the document over to the box that says, "Mandatory Completed Documents for Submission."

For document 3, you will need to attach electronic files. Prepare your proposal as described in Section IV.C of the announcement and save the document to your computer as an MS Word file (EPA Region 9 cannot open documents prepared in WordPerfect so they will not be accepted.) When you are ready to attach your proposal to the application package, click on "Project Narrative Attachment Form," and open the form. Click "Add Mandatory Project Narrative File," and then attach your proposal (previously saved to your computer) using the browse window that appears. You may then click "View Mandatory Project Narrative File" to view it. Enter a brief descriptive title of your project in the space beside "Mandatory Project Narrative File Filename;" the filename should be no more than 40 characters long.

If there are other attachments such as letters of support that you would like to submit to accompany your proposal, you may use the "Other Attachments Form" in the "Optional Documents" box. After attaching the documents, please remember to highlight the "Other Attachments Form" and click "Move Form to Submission List" in order to move the documents to the box that says, "Optional Completed Documents for Submission."

Once you have finished filling out all of the forms/attachments and they appear in one of the "Completed Documents for Submission" boxes, click the "Save" button that appears at the top of the Web page. It is suggested that you save the document a second time, using a different name, since this will make it easier to submit an amended package later if necessary. Please use the following format when saving your file: "Applicant Name – FY09 – Assoc Prog Supp – 1st Submission" or "Applicant Name – FY 09 Assoc Prog Supp – Back-up Submission." If it becomes necessary to submit an amended package at a later date, then the name of the 2nd submission should be changed to "Applicant Name – FY09 Assoc Prog Supp – 2nd Submission."

Once your application package has been completed and saved, send it to your AOR for submission to U.S. EPA through Grants.gov. Please advise your AOR to close all other software programs before attempting to submit the application package through Grants.gov.

In the "Application Filing Name" box, your AOR should enter your organization's name (abbreviate where possible), the fiscal year (e.g., FY09), and the grant category (e.g., Assoc Prog Supp). The filing name should not exceed 40 characters. From the "Grant Application Package" page, your AOR may submit the application package by clicking the "Submit" button that appears at the top of the page. The AOR will then be asked to verify the agency and funding opportunity number for which the application package is being submitted. If problems are encountered during the submission process, the AOR should reboot his/her computer before trying to submit the application package again. [It may be necessary to turn off the computer (not just restart it) before attempting to submit

the package again.] If the AOR continues to experience submission problems, he/she may contact Grants.gov for assistance by phone at 1-800-518-4726 or email at http://www.grants.gov/help/help.jsp or contact Ephraim D. Leon-Guerrero at (415) 972-3444.

Applications submitted through grants.gov will be time and date stamped electronically.

If you have not received a confirmation of receipt from EPA (*not from* grants.gov) within 30 days of the application deadline please contact Ephraim D. Leon-Guerrero at (415) 972-3444.

Failure to do so may result in your application not being reviewed.

Publication Summary

TITLE	**FY 2007 Low Impact Development Stormwater Management Grant Program Guidelines**
MONTH-YEAR PUBLISHED	July 2006
ONLINE AVAILABILITY	View this publication in Acrobat PDF format 437 kilobytes, requires version 4.0 or later of Adobe Acrobat Reader Software *get Acrobat Reader*
SHORT DESCRIPTION	These guidelines describe how to apply for water quality financial assistance under the Low Impact Development (LID) Stormwater Management Grant Program from the Washington State Department of Ecology (Ecology) Water Quality Program. The guidelines also explain requirements of an applicant once Ecology awards a grant. Guidelines are not a comprehensive listing and explanation of all rules and policies that may apply to this funding program. The guidelines help facilitate the application process and initial steps of administering a funded project. Applicants should request additional information and consultation whenever needed. *(Also see abstract below)*
PUBLICATION NUMBER	06-10-055
AUTHOR(S)	Financial Management Section
PRINT AVAILABILITY	Request from the program. To conserve resources, limited quantities of this publication are available in print. To save and view the document on your personal computer, right click on the link to the document and select "save target as."
NUMBER OF PAGES	31
KEYWORDS	applicant, grant, guidelines, low impact development, stormwater management
RELATED WEB CONTENT	Grants & Loans
ABSTRACT	LONG DESCRIPTION
	These guidelines describe how to apply for water quality financial assistance under the Low Impact Development (LID) Stormwater Management Grant Program from the Washington State Department of Ecology (Ecology) Water Quality Program. The guidelines also explain requirements of an applicant once Ecology awards a grant. Guidelines are not a comprehensive listing and explanation of all rules and policies that may apply to this funding program. The

	guidelines help facilitate the application process and initial steps of administering a funded project. Applicants should request additional information and consultation whenever needed. The appendices to these guidelines contain additional information that will be useful to most applicants. Please review the list of appendices and use them as a resource. For example, Appendix A: FY 2007 Low Impact Development Stormwater Management Grant Program - at a Glance, summarizes main program features.

This page last updated March 3, 2008

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SafeRoutes
National Center for Safe Routes to School

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Local Funding

Looking for information on Federal funding from your State DOT? Search our interactive US map of State SRTS Coordinators

Local Safe Routes to School (SRTS) programs may benefit from local funding in addition to funds secured through the Federal-aid State SRTS program. Though some communities have implemented complex local government financing tools such as sales tax funding or bonds to fund SRTS programs, the easiest and most common way to access local funding is to identify existing pots of money that are currently flowing to transportation, safety or health issues and tap into them.

There are two categories of local funding through which to pursue SRTS funds: capital improvement projects and operating budgets:

Capital Improvement Projects

Capital improvement projects (CIPs) are new infrastructure projects implemented using public funds. These projects are identified through a capital improvement planning process which is tied to the local budget. During the planning process, the local government identifies and prioritizes capital improvements such as new roads and sidewalks, and then allocates funding for construction at least one year before the project is implemented.

Because CIPs may take a couple of years to complete, CIPs tend to have multi-year budgets. However, most CIPs have the capacity to make changes and fund newly identified projects and pressing needs. A local transportation planner or engineer serving on a SRTS taskforce or committee could assist in identifying infrastructure projects and including them in the capital improvement planning process.

Operating Budgets

Local operating budgets may provide avenues for non-infrastructure programs and infrastructure maintenance and repair. Transportation budgets may include funding for pedestrian and bicycle programs or school zone improvements. Police or Public safety budgets may include funding for traffic law enforcement or school crossing guards. Public school budgets may include opportunities for safety education or walking and bicycling encouragement programs. Recreation budgets may include funding for after school programs. Including a representative from these departments on a SRTS taskforce or committee allows complementary sources of funding to be more easily identified.

Most local operating budgets include funding for general maintenance and repair of infrastructure. Depending on the size of the budget, these funds can be used for inexpensive projects such as striping crosswalks or installing signage, or more costly projects such as installing curb ramps.

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Related Links
- 2007 Report to the Legislature and Project Lists
- 2005-2007 Report to the Legislature

Pedestrian and Bicycle Safety Grants
(State Funds)
2008 Call for Projects

PROJECT PROPOSALS DUE May 9, 2008

The Washington State Legislature included $74 million to support pedestrian and bicycle safety projects such as pedestrian and bicycle paths, sidewalks, safe routes to school and transit. A separate call is available for the Safe Routes to School program.

Purpose
The Pedestrian and Bicycle Safety Grants were established to address the nearly 400 statewide fatal and injury collisions involving pedestrians and bicycles each year. The following provides details for the Pedestrian & Bicycle Safety program.

Program Contacts
Region Local Program Engineers
or
Paula Reeves at 360-705-7258 or reevesp@wsdot.wa.gov

- Grant Criteria and Requirements
- Application Form (Word)
- Online Application Form
- Grant Evaluation

GRANT CRITERIA AND REQUIRMENTS

Examples of Eligible Projects
Projects that help reduce the nearly 400 fatal and injury collisions involving pedestrians and bicyclists that occur each year in Washington are eligible to apply for the Pedestrian and Bicycle Safety Grants. These safety focused projects may also support increased mobility and encourage more people to bicycle and walk. The following are examples of eligible projects and programs.

Engineering improvements – based on recent state and national research, arterial streets in urban areas with higher speeds and volumes are the locations with the most collisions and risk. The research also indicates that several treatments may effectively reduce pedestrian and bicycle collisions at these locations. Projects may include items such as:

- Intersection improvements such as: curb extensions, lighting, raised median, crosswalk enhancements, signs, signals and mid-block crossing treatments;
- Completing bicycle lanes and sidewalks;
- Constructing bicycle and pedestrian paths;
- Providing safe routes to transit;
- Pedestrian and bicycle safety improvements for at risk groups (children, elderly and people with disabilities).

Education efforts – inform the public about project and how it improves safety, educate the public about biking and walking safety in general, and include the broad range of transportation choices and events and activities that promote walking and biking safely. Projects may include items such as:

- Implementation of educational curricula.
- Distribution of educational materials.
- Walk or bike promotional programs.
- Pedestrian sting operations.

Eligible applicants
All public agencies in Washington are eligible to apply.

Funding
A total of $11 million of state funds is available for the Pedestrian and Bicycle Safety and Safe Routes to School grants.

Match requirement
While match is not a requirement, preference shall be given to projects that provide match. Projects are to be submitted as complete projects and fully funded.

Program Requirements
1. Grant recipients are required to report quarterly on the status of the project.
2. Grant recipients shall comply with the new state cultural resource requirements outlined in Executive Order 05-05.
3. Grant recipients shall provide a one-page project design concept for approval prior to construction.

Applications
The application shall be submitted online, or as a Microsoft Word document, or an Adobe Acrobat pdf file and include the following to be considered:

1. A completed Pedestrian and Bicycle Safety Grant Application Form.

Please do not include pictures, letters of support or other unsolicited supporting detail.

Submittal Process
Applications must either be sent on CD, submitted on-line, or by e-mail (paper submittals will not be accepted). Applications must be received by midnight **May 9, 2008.**

Applications on CD may be submitted to the following address:
ATTN: Pedestrian and Bicycle Safety
WSDOT Highways & Local Programs
310 Maple Park Ave SE
PO Box 47390
Olympia, WA 98504-7390

OR

Applications may be sent by e-mail to hlpgrants@wsdot.wa.gov

PROGRAM CONTACTS

Region Local Program Engineers
or
Paula Reeves at 360-705-7258 or reevesp@wsdot.wa.gov

GRANT EVALUATION

All proposals will be reviewed to ensure that they are complete and eligible for funding. An advisory group will evaluate the proposals and make recommendations. A site visit will be conducted by WSDOT staff prior to developing the list of priorities. A prioritized list of projects will be submitted to the Governor's office and the legislature by December 15, 2008, to select projects for funding. Announcements are expected by June 2009.

The following criteria will be used to evaluate the project proposals.

(1) Current Conditions – Do the current conditions indicate risk for pedestrians and/or bicyclists. Based on recent state and national research, arterial streets in urban areas with higher speeds and volumes, and housing mixed with commercial attractions, transit service, and other pedestrian and bicycle generators are the locations with the most collisions and risk.

5 Pts = High risk location. For example, a location with fatal or disabling pedestrian and/or bicyclist involved crash history on a high speed, high volume street/road in a population center.
3 Pts = Moderate risk location. For example, a location with pedestrian or bicyclist involved injury crash history on 30-40 mph, moderate volume road.
1 Pt = Lower risk location. For example, a location with demonstrated risk for pedestrians and bicyclists due to increasing development in the area, increasing traffic volumes, etc.

(2) Project Impact – How well will the project: reduce potential pedestrian and bicycle conflicts with motor vehicle traffic and/or establish safer and fully accessible crossings, walkways, trails or bikeways consistent with WSDOT Design Standards or the AASHTO "Guide for the Planning Design, and Operation of Pedestrian Facilities" or "Guide for the Development of Bicycle Facilities".

5 Pts = Substantial long term solution.
3 Pts = Moderate improvements.
1 Pt = Little or no safety improvement to be derived from the project.

(3) Implementation – Is there a demonstrated need for the proposed improvements, and, if appropriate for the project/program, a strong partnership among local agencies that will ensure this project moves ahead on time and on budget.

5 Pts = Clear, committed multi-agency partnership and/or ability to complete the project between June 2009 and June 2011.

3 Pts = Multi-agency partnership and/or completion date between June 2011 and June 2012.
1 Pt = No established partnerships or partnerships to be established after receipt of grant and/or completion date after June 2012.

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PREPARING PROJECT PROPOSALS

This document addresses most, but not all issues that a Project Sponsor must understand and have prepared for when applying for Federal Transportation Enhancement funds

1. DEVELOP CONCEPT

Define Project Eligibility – The project must fit in one of the 12 Enhancement activities and must have a relationship to surface transportation. In addition, projects should meet eligibility principles as outlined by the intent of the funding. See Guiding Principles and Questions for TE projects at www.fhwa.dot.gov/environment/te/principles_pt1.htm for more information and questions to ask.

Define Project Purpose – The project must be accessible to the general public or be targeted to a broad segment of the population, and should indicate sustainability or long-term worth.

Youth Service Corps – Federal guidance encourages the use of qualified youth conservation or service corps to perform appropriate transportation enhancement activities. See www.fhwa.dot.gov/environment/te/gmemo_youth.htm for more information on definitions and guidance.

Seek out "lessons learned" information – Visit other similarly funded projects. Talk with personnel to determine what worked and what did not work. Check the TE Clearinghouse website at www.enhancements.org/projectlist.asp to search for projects funded in North Carolina.

2. SOLICIT SUPPORT

Public involvement – The Enhancement Program supports the principal that public involvement should be an integral part of the project development process.

Local project support – Projects must have a local government agency that will act as the Sponsor. The Sponsor will sign a legal agreement with NCDOT to implement the project according to applicable state and federal regulations, provide fiduciary oversight, and assume maintenance. The Sponsor must also provide twenty percent (20%) of project costs as a cash match.

Guiding Questions:

- What is the support from the local community for this project?
- Has the Sponsor developed the project proposal as a result of an inclusive public involvement process?
- Is the Sponsor committed to long-term maintenance requirements?

Notes:

- Projects should have local support and be developed as a result of a meaningful public involvement process.

3. DEVELOP A PLAN OF ACTION

Regional Planning Organization – Work with your local planning agency (Rural Planning Organization or Metropolitan Planning Organization) to ensure the project is integrated into the regional planning process. Go to www.ncdot.org/financial/fiscal/Enhancement and click on Contact Info for your local planning organization.

Implementation Plan – Sponsors should develop a timeline of activities as to what must occur and when to successfully execute the project if awarded. The Sponsor should understand how program requirements, such as meeting federal design standards, environmental documentation, right-of-way certification, and advertising and awarding a construction contract pursuant to federal regulations, would affect project schedules and completion dates. A three-year window from project award to completion is recommended for most projects.

Guiding Questions:

- Will this project affect or be affected by any other proposed or planned Transportation Improvement Plan (TIP) projects in the area?
- Does the proposed schedule for planning and construction allow sufficient time for necessary activities? i.e. property (right of way) acquisition; review and approval of plans by appropriate agencies; other scheduled/proposed work.

Notes:

- Other TIP projects have the potential to delay Enhancement projects; most common are planned road widening or maintenance where a sidewalk or landscaping project is proposed.
- Federal Rulemaking (effective March 1, 2006) requires documentation of delays and adequate justification of and explanation for delays in order to keep projects active. Projects that FHWA considers inactive may have their funding withdrawn.

4. Assess Proposed Location

Right-of-way – Property for the project must be in public ownership or be accessible by the public (fee simple, permanent easement, lease) using Federal guidelines and requirements. See www.fhwa.dot.gov/environment/te/gmemo_uniformact.htm for a brief overview of the Uniform Act and Transportation Enhancements.

Guiding Questions:

- Does Sponsor own or control all the right of way/property needed for project? If not, is there a plan to obtain ownership or access to right of way/property within one year?
- Has Sponsor factored in the cost of right of way acquisition into their budget?

Notes:

- Sponsors who can show that they have all ROW/property necessary for the project may be considered more favorably than those projects that still need to acquire ROW.
- Right of way/acquisition costs are **not** reimbursable by Enhancement funds, except for two categories:
  1) Acquisition of scenic easements, scenic or historic sites; and
  2) Preservation of abandoned railroad corridors
- All acquisition of property (reimbursable or not) must be in accordance with Federal guidelines under the Uniform Act (see above website).
- The TE Unit does not encourage the use of eminent domain to acquire property. A Sponsor may use simplified acquisition procedures, as long as they inform an owner that the acquiring entity is unable or unwilling to use eminent domain. See www.fhwa.dot.gov/environment/te/gmemo_uniformact.htm
- Obtaining permission from a railroad to encroach or otherwise be in their right of way can be a time-consuming process. Many projects have failed due to unsuccessful negotiations with railroads.

Environmental Document – All Enhancement projects must be in compliance with the National Environmental Policy Act (NEPA). See www.fhwa.dot.gov/environment/te/gmemo_nepa.htm for more information.

Guiding Questions:

- Are there any resources (natural or cultural), which could be affected by the project that may need to be considered in the planning process? (MPO/RPO may be able to conduct a Geographic Information System (GIS) assessment of project location.)

Notes:

- All Enhancement projects can qualify as a Categorical Exclusion; however, if there are any potential environmental conflicts, such as wetlands, endangered species, historic properties, the Sponsor will need to complete a programmatic checklist that shows these issues have been addressed, either through a review by or securing a permit from a resource agency.
- Reviews from consulting agencies (US Fish and Wildlife, US Corps of Engineers, State Historic Preservation Office) can take several months—factor this time frame into implementation schedule.
- Important: If a project involves the rehabilitation of a historic property—one that is listed or determined eligible for listing on the National Register of Historic Places (NRHP)—all work should comply with the Secretary of Interior's Standards. Factor in additional costs for appropriate work into the budget. Call Sarah McBride at 919-733-6545 x:225 to determine if your resource is listed in or eligible for listing in the NRHP.

5. Develop a Detailed Budget

Budget – An accurate, well-thought out budget is integral to the successful development of a project proposal. Sponsors need to have a realistic understanding of project costs in order to maintain local support and plan for unexpected contingencies through construction.

Guiding Questions:

- Does Sponsor have an adequate budget that has factored in costs of any right of way acquisition, hiring engineering or architectural services, and contract administration?
- Does your budget reflect expected costs three (3) years from *proposal development*?

Local funding support – The Sponsor must be willing to commit in their budget twenty percent (20%) of eligible project costs as a cash match, plus additional funds for any cost overruns.

Maintenance – Sponsor should develop an acceptable maintenance strategy that takes into account upkeep costs over the useful life of the project. NOTE: Transportation Enhancement funds are not eligible for maintenance activities.

APPENDIX 23
Waterfront Development
Environmental Impact Statement (EIS)

The Draft EIS and Supplement EIS may be found on the internet as shown below:

Draft EIS:
http://www.portofbellingham.com/content/ArchivesItem_147_1692

Supplement EIS:
http://www.portofbellingham.com/content/ArchivesItem_147_1815_v