CITY OF BELLINGHAM • WASHINGTON •

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, BAYVIEW DRIVE

Tax Assessor Parcel Number(s): DNR AQUATIC LAND, 370201090495, 370201065455

Project Description: BOULEVARD PARK SHORELINE IMPROVEMENTS: REMOVAL OF DEBRIS AND CONSTRUCTION OF SOFT BEACHES + ROCK REVETMENTS.

Applicant/Agent ~~☒ Primary Contact for Application~~

Name: COASTAL GEOLOGIC SERVICES, INC **Phone:** 360 647-1845

Address: 1711 ELLIS ST #103 **Fax:** 360 671-6654

City, State, Zip: BELLINGHAM, WA 98225 **E-mail:** ALEXIS@COASTALGEO.COM

Owner(s) ☒ Applicant ☒ Primary Contact for Application

Name: BELLINGHAM PARKS **Phone:** 360 778 7000

Address: 3424 MERIDIAN ST **Fax:** 360 778 7001

City, State, Zip: BELLINGHAM, WA 98225 **E-mail:** 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 10/8/2012

City and State where this application is signed: BELLINGHAM (City), WA (State)

Planning

Permit Center
210 Lottie Street
Bellingham, WA 98225
phone: 360-778-8300
fax: 360-778-8301
www.cob.org

CRITICAL AREA PERMIT

(PLEASE PRINT CLEARLY OR TYPE IN BLUE OR BLACK INK)

The intent of the Critical Area Ordinance (Bellingham Municipal Code 16.55) is to designate and classify environmentally sensitive and hazardous areas and to protect, maintain, and restore these areas and their functions and values while also allowing for reasonable use of public and private property. To determine if a proposed activity or area is subject to the ordinance contact the Planning Division staff.

SUBMITTAL CHECKLIST – Your application will not be accepted unless all of the following are submitted:

☐ Pre-Application conference or waiver
- Required for applications that include a SEPA checklist (*Type II*).

☑ Land Use Application form and associated information outlined in the Critical Area Permit Packet
- All requested information must be provided.

☑ Filing fee INTERFUND TRANSFER
- Applicable fee as calculated by Planning staff. (*See separate Fee Schedule*)

☑ List of surrounding property owners *(For Type II & Type III-A applications only)*
- Complete the attached Names and Mailing Addresses of Surrounding Property Owners for property **within 500 feet**.

☑ SEPA Environmental checklist
- Submit if required (*including any wetland impacts – consult Planning Staff*)

☑ Critical Area Report & Maps (*Two 11" x 17" or larger scaled copies and one 8 ½" x 11" reduction*)
- See the attached Critical Area Report and Map Checklist for requirements.

☑ Specific Report
- The following reports are required depending on the type of critical area(s) impacted:

☐ ~~Wetlands and their buffers~~ ☐ ~~Frequently flooded areas~~ ☐ ~~Geologically hazardous~~ areas

☑ Fish and wildlife habitat conservation areas (*including streams*)

- Reports for two or more types of critical areas must meet the report requirements for each relevant type of critical area. (*See the specific checklist for report requirements*)

☑ Associated Land Use Applications
- Consult with Planning staff to determine if other land use permits are required.
- All Type II applications must be submitted concurrently.

Planning

Permit Center
210 Lottie Street
Bellingham, WA 98225
phone: 360-778-8300
fax: 360-778-8301
www.cob.org

CRITICAL AREA REPORT CHECKLIST

A Critical Area Report is required for all applications (BMC 16.55.210). The report must be prepared by a "qualified professional", as defined in BMC 16.55.510. All reports may require additional information as determined by the Planning Director. The Planning Director may approve a Critical Area Report supplemented by or composed of any previous studies required by other laws and regulations.

At a minimum, the report shall contain the following (BMC 16.55.210 C):

☑ The name and contact information of the applicant, a description of the proposal, and identification of the permit requested;

☑ Maps and site plans (*Two 11" x 17" or larger scaled copies and one 8 ½" x 11" reduction*)

- Vicinity map clearly showing the location of the property.
- Critical areas map showing all critical areas, required buffers, and existing topography based on City or surveyed data.
- Site plan detailing the development proposal (including stormwater facilities) and the limits of construction. This map should be overlaid on the critical area/topographical map.
- Topography map showing the location and extent of all grading, cut and fill, and post construction contours.

☑ The dates, names, and qualifications of the persons preparing the report and documentation of any fieldwork performed on the site;

☑ Identification and characterization of all critical areas, water bodies, and buffers adjacent to the proposed project area;

☑ A statement specifying the accuracy of the report, and all assumptions made and relied upon;

☑ An assessment of the probable cumulative impacts to critical areas resulting from development of the site and the proposed development;

☑ An analysis of site development alternatives including a no development alternative;

☑ A description of reasonable efforts made to apply mitigation sequencing pursuant to *Mitigation Sequencing* [Section 16.55.250] to avoid, minimize, and mitigate impacts to critical areas;

☑ Plans for adequate mitigation to offset any impacts, in accordance with *Mitigation Plan Requirements* (BMC 16.55.260) and additional requirements specified for each critical area.

☑ A discussion of the performance standards applicable to the critical area and proposed activity;

☑ Financial guarantees to ensure compliance; and

☑ Any additional information required for the critical area as specified in the corresponding chapter.

Planning

Permit Center
210 Lottie Street
Bellingham, WA 98225
phone: 360-778-8300
fax: 360-778-8301
www.cob.org

SPECIFIC REPORT REQUIREMENT - FISH AND WILDLIFE HABITAT CONSERVATION AREAS
(INCLUDING STREAMS)

In addition to the Critical Area Report, which is required for all applications, a specific report must be submitted based on the type of critical area. This supplemental report must also be prepared by a "qualified professional", as defined in BMC 16.55.510. All reports may require additional information as determined by the Planning Director.

Certain Critical Area applications may also require a Shoreline Substantial Development Permit as provided under the Shoreline Master Program (BMC 16.40). This may be the case for actions located in, on, over or near Chuckanut Creek, Squalicum Creek, Whatcom Creek, Lake Whatcom, Lake Padden and Bellingham Bay. Verify with Planning staff whether a Shoreline Substantial Development Permit is required for the project.

☑ Critical Area Report and Maps **(See separate requirement checklist)**

☑ Fish and Wildlife Conservation Report

- This report shall include all habitat conservation areas and recommended buffers within three hundred (300) feet of the project area.
- The report shall include all shoreline areas, floodplains, other critical areas, and related buffers within three hundred (300) feet of the project area.
- Detailed description of vegetation on and adjacent to the project area and its associated buffer;
- Identification of any species of local importance, priority species, or endangered, threatened, sensitive, or candidate species that have a primary association with habitat on or adjacent to the project area, and assessment of potential project impacts to the use of the site by the species;
- A discussion of any federal, state, or local special management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitats located on or adjacent to the project area;
- A detailed discussion of the direct and indirect potential impacts on habitat by the project, including potential impacts to water quality;
- A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing habitats and restore any habitat that was degraded prior to the current proposed land use activity and to be conducted in accordance with *Mitigation Sequencing* [Section 16.55.250]; and
- A discussion of ongoing management practices that will protect habitat after the project site has been developed, including proposed monitoring and maintenance programs.

MAILING LIST INSTRUCTIONS

Using the information from the Whatcom County Assessor's Office, applicants must **submit** an accurate mailing list, which includes the name, mailing address, and parcel number of each property owner within 500 feet (100 feet for Home Occupation Applications) of the exterior boundary of the subject property, AND typed mailing labels. Errors in mailing labels may result in process delays and re-notice fees. The following information should provide you with the necessary resources.

☑ **Obtain Property Ownership Information from the Whatcom County Assessor's Office**

- The Assessor's Office is open Monday –Friday 8:30 – 4:30 and is located on the first floor of the Whatcom County Courthouse, 311 Grand Avenue, Bellingham, 360-676-6790.
- 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).
- Utilize the Assessor's map to measure the required ownership notice distance (listed on the application) and record the parcel number for each property within or partially within the required distance of 500 feet *(100 feet for Home Occupation)* from the boundary of the project parcel. 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.
- Record the property owner's name and mailing address by accessing each parcel number via the computer terminals at the Assessor's Office or through the Internet by accessing the database under "Real Property Search" at www.whatcomcounty.us/assessor/index.jsp. 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.

☑ **Print addresses on Avery 5160 labels** (or in Avery 5160 label format) – *Example provided*

- Labels must include the address of the:
  - ☑ Owner
  - ☐ Applicant / Contact for the proposal
  - ☑ All property owners with the required 500 foot radius (100 feet for Home Occupation Applications)
  - ☑ Bellingham Herald
  - ☑ Applicable Mayor's Neighborhood Advisory Commission (MNAC) representative
  - ☑ Applicable Neighborhood Association(s) representative.

Alabama Hill	Cordata	Irongate	Roosevelt	South Hill
Barkley	Cornwall Park	King Mountain	Samish	Sunnyland
Birchwood	Edgemoor	Lettered Streets	Sehome	Whatcom Falls
CBD	Fairhaven	Meridian	Silver Beach	WWU
Columbia	Happy Valley	Puget	South	York

- The addresses should fit on one **Avery 5160 label** - format example provided.
- Please **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**

☑ **Submit the notarized Address Information Verification with a copy of the parcel numbers and property owner's name and mailing address information attached.**

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 or to obtain addresses. This information can also be found on the city's website at http://www.cob.org/documents/planning/applications-forms/nbrhd-media-notification-list.pdf

Planning

Permit Center
210 Lottie Street
Bellingham, WA 98225
phone: 360-778-8300
fax: 360-778-8301
www.cob.org

Address Information Verification

I/We GINA AUSTIN, 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' of the subject is complete and correct according to the records of the Whatcom Assessor's Office as of 9/19, 2012. 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: GMAustin

Date: 10/8/2012

Signature: —

Date: —

STATE OF WASHINGTON)
) SS
COUNTY OF WHATCOM)

SUBSCRIBED AND SWORN TO BEFORE ME THIS 8th DAY OF October, 2012.

ELIZABETH J. HAVEMAN NOTARY PUBLIC STATE OF WASHINGTON COMMISSION EXPIRES 1-26-15

Elizabeth J. Haveman
Signature of Notary Public:

Elizabeth J. Haveman
Name Printed

01/26/15
My appointment expires

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 of 500 feet from the boundary of the project site:

1. The Mayor's Neighborhood Advisory Commission member; and

2. The neighborhood association president.

Feel free to 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 or to obtain addresses. This information can also be found on the city's website at http://www.cob.org/documents/planning/applications-forms/permit-center-publications/nbrhd-media-notification-list.pdf.

The following neighborhoods are within the required notice radius:

(check all that apply)

- ☐ Alabama Hill
- ☐ Barkley
- ☐ Birchwood
- ☐ CBD
- ☐ Columbia
- ☐ Cordata
- ☐ Cornwall Park
- ☐ Edgemoor
- ☐ Fairhaven
- ☐ Happy Valley
- ☐ Irongate
- ☐ King Mountain
- ☐ Lettered Streets
- ☐ Meridian
- ☐ Puget
- ☐ Roosevelt
- ☐ Samish
- ☐ Sehome
- ☐ Silver Beach
- ☐ South
- ☑ South Hill
- ☐ Sunnyland
- ☐ Whatcom Falls
- ☐ WWU
- ☐ York

As you get ready to prepare your labels keep the following checklist in mind:

- ☐ The information was acquired from the Assessor's office or database
- ☐ Address for the following members have been included on the label sheet:
  - ☐ The property owner
  - ☐ The applicant
  - ☐ Every property owner within the required radius of 500 feet
  - ☐ The Mayor's Neighborhood Advisory Commission (MNAC) representative
  - ☐ The appropriate neighborhood association(s) representative
  - ☐ The Bellingham Herald *(address provided on the sample label page)*
- ☐ The mailing information has been printed on Avery 5160 labels (or another similar brand)
- ☐ All of the information **completely fits** on the label
- ☐ Mailing information has been notarized

CITY OF BELLINGHAM
PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
Planning Division
210 Lottie Street, Bellingham, WA 98225
(360) 676-6982

Critical Areas Report
Fish and Wildlife Conservation

1. Project Name:

   Boulevard Park Shoreline Improvements

2. Applicant:

   Gina Austin, PE, City of Bellingham Parks and Recreation Department
   3424 Meridian Street
   Bellingham, WA 98225
   (360) 778-7000
   GAustin@cob.org

3. Prepared by:

Chris Fairbanks
Fairbanks Environmental Services, Inc.
517 Briar Road
Bellingham, WA 98225
(360) 647-1748
Fbks-ES@msn.com

Jim Johannessen
Coastal Geologic Services, Inc.
1711 Ellis Street
Bellingham, WA 98225
(360) 647-1845
Jim@CoastalGeo.com

4. Prepared on: June 25, 2012

5. Proposed schedule:

   Phase 1 Construction period starting after July 16, 2014 and ending before February 15, 2015
   Duration of project is expected to be approximately 12 to 16 weeks

   Phase 2 Construction period starting after July 16, 2015 and ending before February 15, 2016, pending funding.

6. Critical Areas:

   Eastern shoreline of Bellingham Bay at Boulevard Park:
   Approximately 1,050 feet from Pattle Point Trestle northward
   From elevation 14 feet to -2 feet relative to mean lower low water (MLLW)
   Tidelands with marine vegetation and eelgrass
   Potential forage fish spawning habitat

7. Additional Environmental Reports directly related to Project.

Biological Evaluation prepared by Fairbanks Environmental Services, Inc. June 2012
Wave Model for Boulevard Park prepared by Coastal Geologic Services, Inc. March 2012
Geotechnical Engineering Report prepared by Materials Testing & Consulting, Inc. May 2012
Eelgrass assessment and delineation by Fairbanks Environmental and Coastal Geologic May 2012
Feasibility Report: Boulevard Park Shoreline & Overwater walkways by Reid Middleton 2009
Pattle Point Trestle Archeological Potential Assessment, Wessen & Wahl, July 2009*
Boulevard Park Overwater Walkway Eelgrass Survey, Grette Associates LLC, July 14, 2008*
Pattle Point Overwater Walkway Eelgrass Survey, Grette Associates LLC, July 14, 2008*
(* studies included in Feasibility Report for Boulevard Park Shoreline & Overwater walkways)

8. Alternatives Analysis

An informal analysis of alternative solutions for protecting the shoreline of Boulevard Park is included in Appendix 7 of the Feasibility Report for Boulevard Park Shoreline and Overwater Walkways (http://www.cob.org/government/departments/parks/projects/boulevard-over-water-walkway.aspx). This Shoreline Assessment report describes the failing conditions of shoreline protection measures and conditions of the shoreline. Recommendations of the report are to use a combination of soft-shore and hard-shore revetments to protect and stabilize the shoreline. No action would lead to continued degradation of the shoreline, loss of Park upland and loss of Park infrastructure. Public safety would also continue to decline.

9. Project Description:

The Project will stabilize and protect the shoreline, enhance the intertidal zone and provide safe public access to the beach. This Project will use soft-shore methods where large and medium gravel is placed on the beach that will absorb wave energy and mimic natural coastal processes along approximately 1,050 feet of the shoreline between the elevations of 14 feet above and -2 feet MLLW. Construction activities will be conducted from on shore and when tidal elevations allow for placement of beach gravel "in the dry" to minimize fine sediment from being transported from the Project site. Heavy equipment such as track mounted excavators and backhoes, gravel loaders, and dump trucks will be used. Construction activities will include removal of undesirable material from the beach such as concrete rubble, derelict iron machine parts, broken piling, and failing revetments. A portion of the West Beach Project site will be excavated to achieve sufficient depth for beach nourishment materials. Beach fill material will be composed of large and medium gravel. Drift sills will be constructed using large angular boulders that will hold the enhanced beaches in place. The sills will be built on top of a rock foundation that will extend four feet below the existing beach grade in the footprint of the drift sills. Existing rock revetments will be repaired and reconstructed to extend their utility.

The Project will be completed in four general phases:

Phase I: Staging; Set up temporary construction area with fencing and load transfer area to support heavy equipment.

Phase II: Removal of undesirable beach material, failing revetment rubble and rock
Stockpiling reusable material
Hauling away unusable material to be recycled or to a certified landfill
Excavation of portion of West Beach project site

Phase III: Construction, in order of:
Drift sills
Revetments
Enhanced beach
Landscaping

Phase IV: Demobilization of equipment, fencing and temporary loading area, Landscaping, reseeding, and mulching

Sequencing of the Project will be determined by the City of Bellingham Parks Department with the selected contractor to maximize efficiency.
The project area has a shore length of approximately 1,050 feet. The project area is from the northern terminus of the Pattle Point foot bridge to the approximately 125 feet southwest of the northern end of the Park (see attached drawings). An area approximately 610 feet long will be enhanced through beach nourishment with three drift sills to maintain beach nourishment sediment in this highly impacted, urban shore. The project will also include approximately 440 feet of shore with reconstructed rock revetments. The beach nourishment footprint would generally extend 70 to 85 feet waterward of the current concrete rubble revetment with the greatest width in the north end of the West Beach reach of the project, north of the playground. The toe of the nourishment area would be between -1 feet and +2 feet MLLW. The southern reach of nourishment area, Pete's Beach, will have a surface slope of 7:1 (horizontal: vertical) with approximately 11,150 square feet of gravel nourishment sediment to replace the existing rocks, spalls, and concrete that currently cover 60% of the natural surface. The non-native beach material will first be removed.

Preparation of the West Beach reach for beach nourishment will require removal of approximately 30,000 square feet of mostly concrete and rock with some spalls and bricks that cover 70 to 90 percent of the intertidal surface. Some of the concrete rubble and non-native material may be left in place on the lower beach and be used as a foundation for the gravel beach. Medium to large gravel will be placed on the beach at a 6.5:1 slope in the southern cell and 6:1 in the northern cell. Approximately 6,540 cubic yards of beach material will be required which, will be composed primarily of 0.3-2.0 inch, washed, rounded gravel. The backshore nourishment would include a mix of coarse sand to fine gravel, ranging from approximately 0.04 inch to 1.0 inches, with approximately 75% finer than ¼ inch. Coarser material will be included to both mimic natural beach conditions in this area and to aid in longevity of sediment in the project area. The use of "pit-run" or "bank-run" material may be able to make up the majority of the backshore, sandy nourishment sediment.

The rock drift sills would extend from the shore to the tidal elevation of -2.0 feet MLLW in order to maintain the beach nourishment sediment in this severely sediment-starved setting. The top of the drift sills will be constructed 1 to 2 feet above finished beach grade, with gaps in the rock anticipated to be at the elevation of the adjacent nourished beaches. Therefore the sills will not be able to "trap" any sediment that may be transported by littoral drift, but will aid in holding placed sediment onsite. It is important to note that this reach of shoreline is mapped as "no appreciable net shore-drift" primarily because the railway has blocked all natural sources of sediment that would contribute to shore-drift. This is true for the entire project area shore. Achieving a three-foot minimum thickness of the beach gravel on the enhanced beaches is critical to absorb wave energy, wave uprush, and to allow water to percolate into and back down

the beach. This is the mechanism which moves gravel onshore during storms but does not remove gravel offshore. The minimum depth is also important to avoid erosion of the underlying fine woody debris that appears to be susceptible to erosion. The enhanced beaches will be built with several feet of gravel over the existing beach surface however; excavation will be needed in portions of the West Beach reach to allow for the minimum gravel depth of three feet. Excavation of no more than three feet at the toe of the enhanced beach tapering to zero depth near the middle of the beach will be limited to a total area of approximately 12,100 square feet at the West Beach site with a total of 780 cubic yards (see attached drawings). Excavation will expose the sawmill wood waste that was historically used as fill and to minimize erosion and mobilization of this fine woody debris, the excavated area will be covered with gravel as soon as possible after it has been exposed. It is likely that excavation and subsequent filling will occur over two or three low-tide events; exposed excavated areas will be covered with at least one foot of gravel before it is inundated by the rising tide. Total excavation and fill areas and volumes are listed below in Table 2.

Table 1. Total area and volumes of excavation and fill

PROJECT ELEMENT	AREA (SQUARE FEET)	VOLUME (CUBIC YARDS)
Removal of rubble	30,000	1,325
Excavation of beach material and fill for drift sills and enhanced beach	18,117	1,675
Construction of drift sill	6,025	2,000
Construction of enhanced beach	48,920	4,135[1]

1. Includes approximately 405 cubic yards of rubble that will be reused as fill

Rock drift sills constructed of 2 to 3-foot angular boulder will extend from the shore to the tidal elevation of -2.0 feet MLLW. The purpose of the sills is generally to contain the beach nourishment gravel in this severely sediment-starved setting. The top of the drift sills will be constructed 1 to 2 feet above finished down-drift beach grade, with gaps in the rock at the elevation of the adjacent nourished beaches. Therefore the sills will not be able to "trap" any sediment that may be transported by littoral drift, but will aid in holding placed sediment onsite. It is important to note that this reach of shoreline is mapped as "no appreciable net shore-drift" primarily because the railway has blocked all natural sources of sediment that would contribute to shore-drift. This is true for the entire project area shore.

The drift sills will be built on top of a rock foundation that will extend four feet below the existing beach grade in the footprint of the drift sills. This foundation will be constructed of large (4-foot) angular boulders from a local quarry.

The Pete's Beach reach drift sill would have a footprint approximately 1,120 square feet with 50 square feet of the footprint being below the MLLW elevation. The West Beaches southern drift sill would have a footprint approximately 2,450 square feet with 560 square feet of the footprint being below the MLLW elevation. The West Beaches northern drift sill would have a footprint approximately 2,520 square feet with 920 square feet of the footprint being below the MLLW elevation.

The reconstructed rock revetment sections will have a slope of 2:1 with design elevation ranging from +13 feet to +14 feet MLLW using large armor stones over smaller rock and spall on geotextile fabric. Approximately 195 feet of the new rockery will be installed in the Northwest

Shore reach and 40 feet of revetment will be reconstructed between the West Beaches and the coffee shop while. Pete's Beach will have approximately 205 lineal feet of new rockery landward of beach nourishment sediment.

Backshore nourishment will include a mix of coarse sand to fine gravel, ranging from approximately 0.04 inch to 1.0 inches, with approximately 75% finer than ¼ inch. Coarser material will be included to both mimic natural beach conditions in this area and to aid in longevity of sediment in the project area. The use of "pit-run" or "bank-run" material may be able to make up the majority of the backshore, sandy nourishment sediment. Large angular rock will be placed along a portion of the toe of the constructed beach near each sill to help hold the placed gravel in place (attached project drawings).

10. Effected Area

- Upland Action Area: 300-foot radius around the Project site during construction phase.
- In-water Action Area: 300-foot radius around Project site during construction phase.

Terrestrial Habitat

Boulevard Park is located within the City limits and is surrounding by multi-family residences overlooking the park. An active railroad line runs between the Park and the residential buildings with several freight and passenger trains running daily. The Park and surrounding area is nearly fully developed and the park is heavily used for public recreation. Terrestrial habitat includes maintained lawns in the Park with native and non-native trees and shrubs.

Marine habitat within the Project Area includes:

Estuarine habitat
Non-rocky shelf habitat

Estuarine Habitat

The Project Area is within Bellingham Bay which is the estuary of the Nooksack River. The Nooksack River supports runs of Chinook salmon and bull trout and this shoreline is identified as Critical Habitat for ESA listed Puget Sound Chinook salmon and Puget Sound bull trout.

Non-rocky shelf Habitat

The intertidal zone along the shoreline of Boulevard Park has a low slope with a fringe of eelgrass and turf algae. This habitat type is used for rearing and as a migration corridor for juvenile salmon, rockfish, juvenile groundfish and juvenile pelagic species.

Marine Vegetation

Marine vegetation in the intertidal zone is primarily the green alga *Ulva* and brown alga *Fucus* with a mix of green and red algae with an overall coverage of approximately 10 percent. Eelgrass is present in the Project site. The inner boundary and density of the eelgrass has been delineated during an extreme low tide event on June 6th 2012 by Coastal Geologic and Fairbanks Environmental Services. The outer boundary can be estimated along the depth contour of -11 feet MLLW based on results of a study by WDNR. The density of eelgrass was documented by counting the number of eelgrass shoots within a ¼-square meter quadrate placed at three-foot intervals along a 90-foot transect set parallel to the shoreline at the edge of the water at approximately -3 feet MLLW, approximately 5 to 10 feet waterward of the inner margin of the

eelgrass. Thirty counts were made along each transect at three locations. The density of eelgrass at each location was:

Pete's Beach:	117 shoots per square meter
Playground Beach:	172 shoots per square meter
West Beach:	89 shoots per square meter

Forage Fish Spawning Habitat

Potential spawning habitat for surf smelt (*Hypomesus pretiosus*) has been identified at two locations in the Project Area (WDFW salmonscape). This habitat consists of mixed sand and gravel at the tidal elevation of +7 feet MLLW to the extreme high water mark and is located at Pete's Beach, the south end of the Project Area under the Pattle Point trestle, and along the West Beach near the north end of the Project Area. Surf smelt spawning has been documented by the presence of surf smelt eggs south of Pete's Beach only, under and inside of the Pattle Point trestle. West Beach is identified as a potential spawning site; surf smelt eggs have not been found in the gravel of West Beach. Sand lance spawning has not been documented in the Action Area. In Bellingham Bay, forage fish may spawn at any time of the year.

Water and Sediment Quality

Water and sediment has not been identified as impaired in the Action Area. Padden Creek has been listed on the State 303d list as a Category 5 for fecal coliform and impaired dissolved oxygen. Padden Creek is approximately 0.6 miles to the south of the Project site. Sediments impaired with LPAH and HPAH have been mapped 370 feet to the west of the Project Site. This sediment will not be disturbed by the Project activities.

A portion of the Boulevard Park Shoreline Improvement Project overlaps two Washington State cleanup sites under the Model Toxic Control Act. The City is conducting a remedial investigation, with Ecology supervision, of the South State Street Manufactured Gas Plant cleanup site (Ecology Facility ID #2865). Portions of the property may be contaminated from previous industrial uses. The second cleanup site includes the Whatcom Waterway site (Ecology Facility ID# 2899). This site extends to the Boulevard Park Shoreline sediments. Contamination may be present at depth in the sediments near Boulevard Park. The Whatcom Waterway site is currently in the cleanup action stage. Natural recovery of sediments was identified as a sufficient cap for contaminated sediments near the Whatcom Waterway. Therefore, no cleanup action is anticipated to occur in-water near the Boulevard Park site.

Any actions required as a result of the Boulevard Park Shoreline project will be coordinated directly with the Department of Ecology and could include additional BMPs.

Net Shore-Drift

The Department of Ecology coastal atlas indicates that there is no appreciable net shore-drift along the eastern shoreline of Bellingham Bay (https://fortress.wa.gov/ecy/coastalatlas2001/viewer.htm). This is primarily due to shoreline armoring that blocks sediment input along this shoreline. Wind driven waves along the Boulevard Park shoreline have adequate power to move sediment. However, sediment input along this reach is absent due to shoreline modification.

Groundwater Seeps

Several groundwater seeps were observed in the intertidal zone on the project area near the tidal elevation of -1.5 feet MLLW. A strong hydrogen sulfide odor is associated with

these seeps along with mats of *Beggiatoa* bacteria and a zone where growth of marine vegetation is absent (Photo 4). Similar sites near Tacoma, WA have been studied by Elliott, Spear and Wyllie-Echeverria (2006) where *Beggiatoa* mats are associated with sediment containing high levels of wood waste and hydrogen sulfide with a negative correlation of the abundance of eelgrass. These seeps occur where seawater has saturated sawmill wood waste that is under the beach material. The wood waste acts as a giant sponge that is recharged at each high tide and then releases water at low tide. The seeps carry hydrogen sulfide produced from the bacterial decay of the organic material in anaerobic conditions. Hydrogen sulfide is toxic to marine vegetation which is evident in the zones around the ground water seeps where plant growth is inhibited. Sediment around the seeps is also saturated with hydrogen sulfide and this appears to limit the inner margin of the eelgrass bed. The proposed Project will not likely alter the hydrology or volume of the seeps; however, the location of the seeps may be altered Excavation at the toe of the West Beach site may open new 'conduits' for the flow allowing the groundwater to reach the surface at the toe of the enhanced beach. Studying issues of seeps in intertidal zone is a fairly recent scientific endeavor and only a few recent papers related to wood waste along the shorelines of the Salish Sea have been published.

11. Protected Species

The proposed Boulevard Shoreline Improvement Project will occur along the eastern shoreline of Bellingham Bay and activities will take place both above and below the ordinary high water mark. Federally listed species that may be affected by the Project are listed below in Table 3:

Table 2. United States Endangered Species Act listed species that may be affected by the Boulevard Shoreline Improvement Project.

Species	Status[1]	Jurisdiction
Marbled murrelet (*Brachyramphus marmoratus*)	T	USFWS
Coastal Puget Sound Bull trout (*Salvelinus confluentus*)	T	USFWS
Coastal Puget Sound Bull trout critical habitat		USFWS
Puget Sound ESU Chinook salmon (*Oncorhynchus tshawytscha*)	T	NMFS
Puget Sound ESU Chinook salmon critical habitat		NMFS
Puget Sound steelhead trout (*Oncorhynchus mykiss*)	T	NMFS
Bocaccio rockfish (*Sebastes paucispinis*)	T	NMFS
Canary rockfish (*Sebastes pinniger*)	T	NMFS
Yelloweye rockfish (*Sebastes ruberrimus*)	E	NMFS
Steller sea lion (*Eumetopias jubatus*)	T	NMFS
Southern resident killer whale (*Orcinus orca*)	E	NMFS
Southern resident killer whale critical habitat		NMFS

1. Status: **T**hreatened or **E**ndangered.

Washington State Dept of Fish and Wildlife Priority Species that may be affected by the Project:

bald eagle
Brandt's cormorant
brant
bufflehead
common loon
common murrelet
western grebe
Dungeness crab
great blue heron
Barrow's goldeneye

common goldeneye
harlequin duck
marbled murrelet
Pacific harbor porpoise
Pacific salmon
bull trout
coastal cutthroat trout
steelhead trout
Steller sea lion
surf smelt

12. Effects

Potential impacts to the aquatic habitat as a result of Boulevard Shoreline Improvement Project may include:

- Temporary increased turbidity from a sediment plume related to removal of rubble from beach and placement of gravel material
- Temporary impacts to water quality due to construction activities such as potential fuel, oil and hydraulic fluid spills

The proposed Project is located in Bellingham Bay, the estuary of the Nooksack River that carries a high sediment load into the bay and this body of water naturally has high turbidity. A localized increase of turbidity however, may cause juvenile salmon, rockfish and other sensitive species to avoid the disturbance and move off shore into deeper water.

13. Conservation Measures

The following conservation measures have been incorporated into the project to protect and minimize the impact to the aquatic habitat.

1. Timing limitations: In-water work will only be allowed from July 16 through February 15 for the protection of salmon and bull trout.

a) Work below the ordinary high water line shall not occur from March 2 through July 15 of any year for the protection of migrating juvenile salmonids.

b) Work below the ordinary high water line shall not occur from February 16 through July 15 of any year for the protection of bull trout.

2. All work below the OHWM will be conducted 'in the dry' when beach is exposed during low-tide events.

3. Excavated areas below the OHWM will be covered with at least one foot of gravel, or large rock at the sill excavation sites, prior to being inundated by the rising tide. Wood waste fill will not be exposed to marine water or waves during excavation.

4. The contractor will have a prepared Stormwater Pollution Prevention Plan (SWPPP) as required by Washington State Department of Ecology. Element 9 of this plan would address specific actions to prevent petroleum products from being discharged into surface waters. The contractor will also have oil-absorbent materials on site to be used in the event of a petroleum product spill and measures to avoid petroleum products or other deleterious materials from enter surface waters will be taken.

5. Project activities shall not degrade water quality to the detriment of fish life.

6. Eelgrass and macroalgae will not be adversely impacted due to any project activities.

7. Project activities will be conducted to minimize siltation of the beach area and bed.

8. The following BMPs described in Stormwater Management Manual for Western Washington Volume II; Construction Stormwater Pollution Prevention (Ecology 2005) will be followed to minimize the amount of fine sediment from entering marine water and storm drains in the project area:

   BMP C105: Stabilize Construction Entrance with quarry spalls or hog fuel
   BMP C121: Mulching with straw
   BMP C140: Dust control; spray area with water as needed to control dust
   BMP C220: Storm Drain Inlet Protection
   BMP C230: Straw Bale Barrier
   BMP C233: Silt Fence

9. Project area will be landscaped, reseeded and mulched as needed to stabilize disturbed soil.

14. Mitigation Measures

The Project is "self-mitigating" in that enhancements to the beach will improve the existing conditions and allow natural coastal processes to maintain the beach area. The enhanced beach is designed to mimic natural beach conditions and will absorb wave energy. Existing eelgrass beds will not be impacted as part of the Project.

Trees that will be removed as part of this project will be replaced at a 1:1 ratio.

15. Conclusion

Conservation measures designed into the project will avoid and minimize the temporary impacts to critical areas that may occur during the construction period. After construction of the Project, Ecological processes and functions will be enhanced and provide a net gain to the critical areas and habitats.

After the shoreline improvements have been completed, park trails will be rebuilt and landscaping will completed to replace trees and shrubs that were removed.

No long-term impacts to critical areas, habitat, and species are anticipated and no cumulative impacts are expected.

CITY OF BELLINGHAM
PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
Planning Division
210 Lottie Street, Bellingham, WA 98225
(360) 676-6982

ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of proposed project, if applicable:

   Boulevard Park Shoreline Improvements

2. Name of applicant: Address and phone number of applicant and contact person:

   Gina Austin, PE, City of Bellingham Parks and Recreation Department
   3424 Meridian Street
   Bellingham, WA 98225
   (360) 778-7000
   GAustin@cob.org

4. Date checklist prepared: June 25, 2012

5. Agency requesting checklist: City of Bellingham

6. Proposed timing or schedule (including phasing, if applicable):

   Construction period starting after July 16, 2014 and ending before February 15, 2015
   Duration of project is expected to be approximately 12 to 16 weeks

   Phase 2 Construction period starting after July 16, 2015 and ending before February 15, 2016, pending funding.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

   A portion of the Boulevard Park Shoreline Improvement Project overlaps two Washington State cleanup sites under the Model Toxic Control Act. The City is conducting a remedial investigation, with Ecology supervision, of the South State Street Manufactured Gas Plant cleanup site (Ecology Facility ID #2865). Portions of the property may be contaminated from previous industrial uses. The second cleanup site includes the Whatcom Waterway site (Ecology Facility ID# 2899). This site extends to the Boulevard Park Shoreline sediments. Contamination may be present at depth in the sediments near Boulevard Park. The Whatcom Waterway site is currently in the cleanup action stage. Natural recovery of sediments was identified as a sufficient cap for

contaminated sediments near the Whatcom Waterway. Therefore, no cleanup action is anticipated to occur in-water near the Boulevard Park site.

An Overwater Walkway Project that would build an overwater walkway from the north end of Boulevard Park to the Cornwall Avenue landing is currently under review. The Boulevard Park Shoreline Improvement project is interrelated but not dependent on the Overwater Walkway Project.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Biological Evaluation prepared by Fairbanks Environmental Services, Inc. June 2012
Wave Model for Boulevard Park prepared by Coastal Geologic Services, Inc. March 2012
Geotechnical Engineering Report prepared by Materials Testing & Consulting, Inc. May 2012
Eelgrass assessment and delineation by Fairbanks Environmental and Coastal Geologic June 2012
Feasibility Report: Boulevard Park Shoreline & Overwater walkways by Reid Middleton 2009
Pattle Point Trestle Archeological Potential Assessment, Wessen & Wahl, July 2009*
Boulevard Park Overwater Walkway Eelgrass Survey, Grette Associates LLC, July 14, 2008*
Pattle Point Overwater Walkway Eelgrass Survey, Grette Associates LLC, July 14, 2008*
(* studies included in Feasibility Report for Boulevard Park Shoreline & Overwater walkways)

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

A proposed Project to build an Overwater Walkway from the north end of Boulevard Park to the Cornwall landfill is currently under review.

10. 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)

11. 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. (Lead agencies may modify this form to include additional specific information on project description.)

The Project will stabilize and protect the shoreline, enhance the intertidal zone and provide safe public access to the beach. This Project will use soft-shore methods where large and medium gravel is placed on the beach that will absorb wave energy and mimic natural coastal processes along approximately 1,050 feet of the shoreline between the elevations of 14 feet above and -2 feet MLLW. Construction activities will be conducted from on shore and when tidal elevations allow for placement of beach gravel "in the dry" to minimize fine sediment

from being transported from the Project site. Heavy equipment such as track mounted excavators and backhoes, gravel loaders, and dump trucks will be used. Construction activities will include removal of undesirable material from the beach such as concrete rubble, derelict iron machine parts, broken piling, and failing revetments. A portion of the West Beach Project site will be excavated to achieve sufficient depth for beach nourishment materials. Beach fill material will be composed of large and medium gravel. Drift sills will be constructed using large angular boulders that will hold the enhanced beaches in place. The sills will be built on top of a rock foundation that will extend four feet below the existing beach grade in the footprint of the drift sills. Existing rock revetments will be repaired and reconstructed to extend their utility.

The Project will be completed in four general phases:

Phase I: Staging; Set up temporary construction area with fencing and load transfer area to support heavy equipment.

Phase II: Removal of undesirable beach material, failing revetment rubble and rock
Excavating material from intertidal area where needed for drift sills, and beach nourishment
Stockpiling reusable material
Hauling away unusable material to be recycled or to a certified landfill
Excavation of portion of West Beach project site

Phase III: Construction, in order of:
Drift sills
Revetments
Enhanced beach
Landscaping

Phase IV: Demobilization of equipment, fencing and temporary loading area, Landscaping, reseeding, and mulching

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The Boulevard Park Shoreline Improvement Project (Project) is located along the eastern shoreline of Bellingham Bay in Boulevard Park (48°43.9'N, 122°30.2'W) (See attached Project drawings).

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other .

b. What is the steepest slope on the site?
one percent or less

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.

Boulevard Park has a low bank shoreline where fill material was placed historically to expand the low lying shoreline waterward into Bellingham Bay. Much of this fill material consists of wood debris and saw dust, with fill soil overlying it, and with additional rubble material from demolished buildings and roads that were used as revetments to control coastal erosion. Broken pilings from a historic pier are located throughout the intertidal beach. A thin veneer of small gravel with debris overlaying sawdust generally characterizes the current beach substrate.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

The shoreline of Boulevard Park has a low slope that is exposed to wind driven waves from predominate southwest winds of winter and northwest winds of the summer. These waves have eroded the shoreline and toppled revetments that had been placed to protect the shoreline. Angular boulders and quarry spalls have been used to protect the shoreline in the recent years. Prior to development of the Park, broken concrete and rubble was placed at the shoreline and intertidal zone. These materials are spread across the intertidal zone along with jagged broken piling stubs and miscellaneous material that have created hazardous conditions to the public who walk into the intertidal zone. Objectives of the Boulevard Park Shoreline Improvements project are to provide erosion control, nearshore habitat enhancement, and safe beach access along the west shore of Boulevard Park using beach nourishment and reconstructed erosion control structures, as well as associated minor park infrastructure modification.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

The Purpose of the Project is to stabilize and protect the shoreline and intertidal zone of Boulevard Park with a soft-shore method that will absorb wave energy and provide improved public safety for park users.

Beach nourishment gravel will be medium and large gravel (0.3 to 2.0 inch) - 3,730 cubic yards
Drift sill rock will be large angular boulders (2 to 4 foot) - 2,000 cubic yards

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Preparation of enhancement site will require excavation in portions of the intertidal zone (see project drawings). Activity below the OHWM may contribute to minor erosion of fine sediment during the construction period which may increase turbidity of the nearshore marine water.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Finished Park trails will have approximately same area of impervious surfaces including existing trails and parking.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

All work below the OHWM will be conducted 'in the dry' when beach is exposed during low-tide events.

Excavated areas below the OHWM will be covered with at least one foot of gravel, or large rock at the sill excavation sites, prior to being inundated by the rising tide. Wood waste fill will not be exposed to marine water or waves during excavation.

The contractor will have a prepared Stormwater Pollution Prevention Plan (SWPPP) as required by Washington State Department of Ecology. Element 9 of this plan would address specific actions to prevent petroleum products from being discharged into surface waters. The contractor will also have oil-absorbent materials on site to be used in the event of a petroleum product spill and measures to avoid petroleum products or other deleterious materials from enter surface waters will be taken.

Project activities will be conducted to minimize siltation of the beach area and bed.

The following BMPs described in Stormwater Management Manual for Western Washington Volume II; Construction Stormwater Pollution Prevention (Ecology 2005) will be followed to minimize the amount of fine sediment from entering marine water and storm drains in the project area:

BMP C105: Stabilize Construction Entrance with quarry spalls or hog fuel
BMP C121: Mulching with straw
BMP C220: Storm Drain Inlet Protection
BMP C230: Straw Bale Barrier
BMP C233: Silt Fence

Project area will be landscaped, reseeded and mulched as needed to stabilize disturbed soil.

2. Air

a. What types of emissions 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.

Diesel powered heavy equipment such as track mounted excavators, backhoes, gravel loaders, and dump trucks will be used to excavate and transport material to and from the work site.

Some dust will be also be emitted as material is moved to and from the work site.

Wood waste fill may emit an odor of hydrogen sulfide during excavation from the intertidal zone.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Washington State Dept of Ecology Stormwater Control BMP C140: Spray construction area with water as needed to control dust.

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.

Eastern shoreline of Bellingham Bay in Boulevard Park

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.

Construction activities will be conducted from on shore and when tidal elevations allow for placement of beach gravel "in the dry" to minimize fine sediment from being transported from the Project site. Heavy equipment such as track mounted excavators and backhoes, gravel loaders, and dump trucks will be used to remove rubble, excavate beach material and place drift sill boulders and beach gravel. The Project will be completed in four general phases:

Phase I: Staging; Set up temporary construction area with fencing and load transfer area to support heavy equipment.

Phase II: Removal of undesirable beach material, failing revetment rubble and rock
Excavating material from intertidal area where needed
Stockpiling reusable material
Hauling away unusable material to be recycled or to a certified landfill

Phase III: Construction, in order of:
Drift sills
Revetments
Enhanced beach
Landscaping

Phase IV: Demobilization of equipment, fencing and temporary loading area, Landscaping, reseeding, and mulching

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 ELEMENT	AREA (SQUARE FEET)	VOLUME (CUBIC YARDS)
Removal of rubble	30,000	1,325
Excavation of beach material and fill for drift sills and enhanced beach	18,117	1,675
Construction of drift sill	6,025	2,000
Construction of enhanced beach	48,920	4,135[1]

1. Includes approximately 405 cubic yards of rubble that will be reused as fill.

Beach gravel (0.3-2.0 inches) will be from an approved upland borrow pit with high quality well rounded gravel

Large angular rock for construction of drift sills, sill foundation and toe of beach will be from a local approved rock quarry

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No

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.

No

b. Ground water:

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No

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 the following 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.

None proposed

c. Water runoff (including stormwater):

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.

Water runoff will originate as stormwater that will be collected in existing stormwater drains in the existing parking lot. Uncollected stormwater may flow into Bellingham Bay.

2) Could waste materials enter ground or surface waters? If so, generally describe.

Fuel and hydraulic oil spills may occur on site that could be transported by stormwater into Bellingham Bay.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

The contractor will have a prepared Stormwater Pollution Prevention Plan (SWPPP) as required by Washington State Department of Ecology. Element 9 of this plan would address specific actions to prevent petroleum products from being discharged into surface waters. The contractor will also have oil-absorbent materials on site to be used in the event of a petroleum product spill and measures to avoid petroleum products or other deleterious materials from enter surface waters will be taken.

Project activities will be conducted to minimize siltation of the beach area and bed.

The following BMPs described in Stormwater Management Manual for Western Washington Volume II; Construction Stormwater Pollution Prevention (Ecology 2005) will be followed to minimize the amount of fine sediment from entering marine water and storm drains in the project area:

BMP C105: Stabilize Construction Entrance with quarry spalls or hog fuel
BMP C121: Mulching with straw
BMP C140: Dust control; spray area with water as needed to control dust
BMP C220: Storm Drain Inlet Protection
BMP C230: Straw Bale Barrier
BMP C233: Silt Fence

Project area will be landscaped, reseeded and mulched as needed to stabilize disturbed soil.

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

—— other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Trees, shrubs , and grass will be removed along the shoreline as needed and replaced in kind as part of the landscaping design at a 1:1 ratio.

A band of native eelgrass is present waterward of the project which will not be disturbed. No kelp beds are present in the Project area

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:

The Project site will be restored, seeded, and landscaped with plants appropriate for a public park with preference to native trees and shrubs. A landscaping design will be completed

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: seabirds
mammals: deer, bear, elk, beaver, other: river otter, mink, seals, sea lions, whales
fish: bass, salmon, trout, herring, shellfish, other: surf smelt

b. List any threatened or endangered species known to be on or near the site.

Species	Status[1]	Jurisdiction
Marbled murrelet (*Brachyramphus marmoratus*)	T	USFWS
Coastal Puget Sound Bull trout (*Salvelinus confluentus*)	T	USFWS
Puget Sound ESU Chinook salmon (*Oncorhynchus tshawytscha*)	T	NMFS
Puget Sound steelhead trout (*Oncorhynchus mykiss*)	T	NMFS
Bocaccio rockfish (*Sebastes paucispinis*)	T	NMFS
Canary rockfish (*Sebastes pinniger*)	T	NMFS
Yelloweye rockfish (*Sebastes ruberrimus*)	E	NMFS
Steller sea lion (*Eumetopias jubatus*)	T	NMFS
Southern resident killer whale (*Orcinus orca*)	E	NMFS

1. Status: **T**hreatened or **E**ndangered.

c. Is the site part of a migration route? If so, explain.

Nearshore water is used as a migration corridor for salmon and sea run trout.

d. Proposed measures to preserve or enhance wildlife, if any:

Timing limitations: In-water work will only be allowed from July 16 through February 15 for the protection of salmon and bull trout.

Work below the ordinary high water line shall not occur from March 2 through July 15 of any year for the protection of migrating juvenile salmonids.

Work below the ordinary high water line shall not occur from February 16 through July 15 of any year for the protection of bull trout.

All work below the OHWM will be conducted 'in the dry' when beach is exposed during low-tide events.

Excavated areas below the OHWM will be covered with at least one foot of gravel, or large rock at the sill excavation sites, prior to being inundated by the rising tide. Wood waste fill will not be exposed to marine water or waves during excavation.

The contractor will have a prepared Stormwater Pollution Prevention Plan (SWPPP) as required by Washington State Department of Ecology. Element 9 of this plan would address specific actions to prevent petroleum products from being discharged into surface waters. The contractor will also have oil-absorbent materials on site to be used in the event of a petroleum product spill and measures to avoid petroleum products or other deleterious materials from enter surface waters will be taken.

Eelgrass and macroalgae will not be adversely impacted due to any project activities.

Project activities will be conducted to minimize siltation of the beach area and bed.

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.

Diesel fuel will be used to power heavy equipment

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

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:

None proposed

7. **Environmental health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Accidental spills of fuel and petroleum products may occur.

1) Describe special emergency services that might be required.

Fuel and oils spill response

2) Proposed measures to reduce or control environmental health hazards, if any:

The contractor will have a prepared Stormwater Pollution Prevention Plan (SWPPP) as required by Washington State Department of Ecology. Element 9 of this plan would address specific actions to prevent petroleum products from being discharged into surface waters.

The contractor will also have oil-absorbent materials on site to be used in the event of a petroleum product spill and measures to avoid petroleum products or other deleterious materials from enter surface waters will be taken.

b. **Noise**

1) What types of noise exist in the area which may affect your project (for example:traffic, equipment, operation, other)?

In addition to vehicle traffic from Park users, several passenger and freight trains run on the BNSF mainline that is located along the eastern boundary of Boulevard Park

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.

Heavy equipment such as track mounted excavators and backhoes, gravel loaders, and dump trucks will be used and will raise noise levels to above normal levels for the period of construction. Noise levels will not exceed ambient conditions within a radius of approximately 300 feet from the Project site.

3) Proposed measures to reduce or control noise impacts, if any:

None proposed

8. Land and shoreline use

a. What is the current use of the site and adjacent properties?

The Project site is currently used as a public park. Adjacent properties are also used as public park and the Burlington Northern Santa Fe Railroad main line runs parallel to the park along the eastern edge of the parking area. Multi-family residential building also surround the Park

b. Has the site been used for agriculture? If so, describe.

No

c. Describe any structures on the site.

1. Paddle Pt trestle provides pedestrian access along the shoreline to the south of the Project site
2. Woods Coffee shop is located in a historic building at the south end of the Project site
3. An outdoor stage area is located at the north end of the park and north of the Project site
4. Restroom facilities are located in a separate building at the north end of the park.

d. Will any structures be demolished? If so, what?

No

e. What is the current zoning classification of the site?

Public land

f. What is the current comprehensive plan designation of the site?

Public land

g. If applicable, what is the current shoreline master program designation of the site?

Urban conservancy

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

Nearshore is designated as critical habitat for:

Chinook salmon
Bull trout
Southern resident killer whales

i. Approximately how many people would reside or work in the completed project?

None, there are no residence on site. The on-site coffee shop will not be impacted.

j. Approximately how many people would the completed project displace?

None

k. Proposed measures to avoid or reduce displacement impacts, if any:

None proposed.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposal will improve shoreline conditions of Boulevard Park and will be consistent with current land use.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Not applicable

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

Not applicable

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?

Not applicable

b. What views in the immediate vicinity would be altered or obstructed?

Not applicable; views will not be impacted

c. Proposed measures to reduce or control aesthetic impacts, if any:

Not applicable

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Much of the Project work must be conducted during low tides which may occur at night. Temporary work lights may be required during these times.

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?

Not applicable

d. Proposed measures to reduce or control light and glare impacts, if any:

The need for work lights will be temporary.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Boulevard Park is very popular and has heavy use. Recreational activities include: walking running bicycle riding, skateboarding, roller skating, playground activities and summer music events.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Only temporarily during the construction period; existing trails will be blocked

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 stabilize the shoreline and provide safe public access to the shoreline and intertidal zone; the Project will improve recreation opportunities for park users.

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

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

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. Boulevard Park was established in 1980.

c. Proposed measures to reduce or control impacts, if any:

None proposed.

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.

Vehicle access to Boulevard Park is via Bay View Drive which is accessible from South State Street and from the 11th Street.

b. Is 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 with several stops within walking distance to the Park (approximately 500 feet).

c. How many parking spaces would the completed project have? How many would the project eliminate?

None

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).

No

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Yes, the BNSF railway mainline runs along the eastern boundary of Boulevard Park (see attached vicinity map)

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

Vehicle traffic is not expected to be altered by the Project.

g. Proposed measures to reduce or control transportation impacts, if any:

None 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.

No impacts are expected

b. Proposed measures to reduce or control direct impacts on public services, if any.

None proposed

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse 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.

Utilities will not be required for the 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: .....

Date Submitted: .....

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) Form[1,2]

USE BLACK OR BLUE INK TO ENTER ANSWERS IN THE WHITE SPACES BELOW.

US Army Corps of Engineers
Seattle District

AGENCY USE ONLY

Date received:

Agency reference #: _____

Tax Parcel #(s): _____

_____

_____

Part 1–Project Identification

1. Project Name (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) [help]
Boulevard Park Shoreline Improvements

Part 2–Applicant

The person and/or organization responsible for the project. [help]

2a. Name (Last, First, Middle)			
Austin, Gina G.			
2b. Organization (If applicable)			
City of Bellingham Parks and Recreation			
2c. Mailing Address (Street or PO Box)			
3424 Meridian Street			
2d. City, State, Zip			
Bellingham, Washington 98225			
2e. Phone (1)	**2f.** Phone (2)	**2g.** Fax	**2h.** E-mail
(360)778-7000	( )	(360)778-7001	gaustin@cob.org

[1] Additional forms may be required for the following permits:
- If your project may qualify for Department of the Army authorization through a Regional General Permit (RGP), contact the U.S. Army Corps of Engineers for application information (206) 764-3495.
- If your project might affect species listed under the Endangered Species Act, you will need to fill out a Specific Project Information Form (SPIF) or prepare a Biological Evaluation. Forms can be found at http://www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=mainpage_ESA
- Not all cities and counties accept the JARPA for their local Shoreline permits. If you need a Shoreline permit, contact the appropriate city or county government to make sure they accept the JARPA.

[2] To access an online JARPA form with [help] screens, go to http://www.epermitting.wa.gov/site/alias__resourcecenter/jarpa_jarpa_form/9984/jarpa_form.aspx.

For other help, contact the Governor's Office of Regulatory Assistance at 1-800-917-0043 or help@ora.wa.gov.

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)			
Blue, Alexis			
3b. Organization (If applicable)			
Coastal Geologic Services, Inc.			
3c. Mailing Address (Street or PO Box)			
1711 Elis Street # 103			
3d. City, State, Zip			
Bellingham, Washington 98225			
3e. Phone (1)	**3f.** Phone (2)	**3g.** Fax	**3h.** E-mail
(360)647-1845	( )	(360)671-6654	alexis@coastalgeo.com

Part 4–Property Owner(s)

Contact information for people or organizations owning the property(ies) where the project will occur. Consider both **upland and aquatic** ownership because the upland owners may not own the adjacent aquatic land. [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 upland property owners. Complete the section below and fill out JARPA Attachment A for each additional property owner.

☐ Your project is on Department of Natural Resources (DNR)-managed aquatic lands. If you don't know, contact the DNR at (360) 902-1100 to determine aquatic land ownership. If yes, complete JARPA Attachment E to apply for the Aquatic Use Authorization.

4a. Name (Last, First, Middle)			
Austin, Gina, G.			
4b. Organization (If applicable)			
City of Bellingham Parks and Recreation			
4c. Mailing Address (Street or PO Box)			
3424 Meridian Street			
4d. City, State, Zip			
Bellingham, Washington 98225			
4e. Phone (1)	**4f.** Phone (2)	**4g.** Fax	**4h.** E-mail
(360-778-7000)	( )	(360)778-7001	gaustin@cob.org

Part 5–Project Location(s)

Identifying information about the property or properties where the project will occur. [help]

☐ There are multiple project locations (e.g. linear projects). Complete the section below and use JARPA Attachment B for each additional project location.

5a. Indicate the type of ownership of the property. (Check all that apply.) [help]

☐ Private
☐ Federal
☒ Publicly owned (state, county, city, special districts like schools, ports, etc.)
☐ Tribal
☒ Department of Natural Resources (DNR) – managed aquatic lands (Complete JARPA Attachment E)

5b. Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5p.) [help]

Bayview Drive

5c. City, State, Zip (If the project is not in a city or town, provide the name of the nearest city or town.) [help]

Bellingham, Washington 98225

5d. County [help]

Whatcom

5e. Provide the section, township, and range for the project location. [help]

¼ Section	Section	Township	Range
Northwest	1	37N	02E

5f. Provide the latitude and longitude of the project location. [help]

- Example: 47.03922 N lat. / -122.89142 W long. (Use decimal degrees - NAD 83)

48.73166 N latitude; 122.50333 W longitude

5g. List the tax parcel number(s) for the project location. [help]

- The local county assessor's office can provide this information.

370201090495, 370201065455

5h. Contact information for all adjoining property owners. (If you need more space, use JARPA Attachment C.) [help]

Name	Mailing Address	Tax Parcel # (if known)
City of Bellingham	3424 Meridian Street Bellingham, Washington 98225	370201090495
Whatcom County Parks and Recreation	3373 Mount Baker Highway Bellingham, Washington 98226	370201065455
Washington Department of Natural Resources	919 N Township Street Sedro Woolley, WA 98284-9384	

5i. List all wetlands on or adjacent to the project location. [help]

N/A

5j. List all waterbodies (other than wetlands) on or adjacent to the project location. [help]

Bellingham Bay

5k. Is any part of the project area within a 100-year floodplain? [help]

☐ Yes ☒ No ☐ Don't know

5l. Briefly describe the vegetation and habitat conditions on the property. [help]

Marine vegetation in the intertidal zone is primarily the green alga Ulva and brown alga Fucus with a mix of green and red algae with an overall coverage of approximately 10 percent. A continuous band of native eelgrass (Zostera marina) is present waterward of the park shoreline The inner boundary runs between the tidal elevation of -1.5 feet and -3.0 feet MLLW and was delineated during an extreme low tide event by Coastal Geologic Services and Fairbanks Environmental Services. The outer boundary is estimated along the depth contour of -11 feet MLLW The density of eelgrass at each Project reach is:

Pete's Beach:	117 shoots per square meter
Playground Beach:	172 shoots per square meter
West Beach:	89 shoots per square meter

The park upland is primarily mowed grass with a variety of native and non-native ornamental trees and shrubs.

5m. Describe how the property is currently used. [help]

The site is currently used as a public park.

5n. Describe how the adjacent properties are currently used. [help]

Adjacent properties are also used as public park and the Burlington Northern Santa Fe Railroad main line runs parallel to the park along the eastern edge of the parking area.

5o. Describe the structures (above and below ground) on the property, including their purpose(s) and current condition. [help]

5p. Provide driving directions from the closest highway to the project location, and attach a map. [help]

1. Paddle Pt trestle provides pedestrian access along the shoreline to the south of the Project site
2. Woods Coffee shop is located in a historic building at the south end of the Project site
3. Stage area used as summer music venue is located at the north end of the park and north of the Project site
4. Restroom facilities are located in a separate building at the north end of the park and north of the Project site

Part 6–Project Description

6a. Briefly summarize the overall project. You can provide more detail in 6b. [help]

The Project will stabilize and protect the shoreline, enhance the intertidal zone and provide safe public access to the beach. This Project will use soft-shore methods where large and medium gravel is placed on the beach that will absorb wave energy and mimic natural coastal processes along approximately 1,050 feet of the shoreline between the elevations of 14 feet above and -2 feet MLLW. Construction activities will be conducted from on shore and when tidal elevations allow for placement of beach gravel "in the dry" to minimize fine sediment from being transported from the Project site. Heavy equipment such as track mounted excavators and backhoes, gravel loaders, and dump trucks will be used. Construction activities will include removal of undesirable material from the beach such as concrete rubble, derelict iron machine parts, broken piling, and failing revetments. A portion of the West Beach Project site will be excavated to achieve sufficient depth for beach nourishment materials. Drift sills will be constructed using large angular boulders that will hold the enhanced beaches in place. Beach fill material will be composed of large and medium gravel. Existing rock revetments will be repaired and reconstructed to extend their utility.

6b. Describe the purpose of the project and why you want or need to perform it. [help]

The Purpose of the Project is to stabilize and protect the shoreline and intertidal zone of Boulevard Park with a soft-shore method that will absorb wave energy and provide improved public safety for park users. The existing shoreline armoring is ineffective. The project site is currently used as a public park. There is artificial fill placed at the shoreline edge from previous industrial uses. This fill is eroding into Bellingham Bay, causing damage to the park and an unsafe condition for the public.

6c. Indicate the project category. (Check all that apply) [help]

☐ Commercial ☐ Residential ☐ Institutional ☐ Transportation ☒ Recreational
☒ Maintenance ☒ Environmental Enhancement

6d. Indicate the major elements of your project. (Check all that apply) [help]

☐ Aquaculture	☐ Culvert	☐ Float	☐ Retaining Wall (upland)
☒ Bank Stabilization	☐ Dam / Weir	☐ Floating Home	☐ Road
☐ Boat House	☐ Dike / Levee / Jetty	☐ Geotechnical Survey	☐ Scientific

☐ Boat Launch ☐ Boat Lift ☐ Bridge ☐ Bulkhead ☐ Buoy ☐ Channel Modification	☐ Ditch ☐ Dock / Pier ☐ Dredging ☐ Fence ☐ Ferry Terminal ☐ Fishway	☐ Land Clearing ☐ Marina / Moorage ☐ Mining ☐ Outfall Structure ☐ Piling/Dolphin ☐ Raft	Measurement Device ☐ Stairs ☐ Stormwater facility ☐ Swimming Pool ☐ Utility Line
☐ Other:			

6e. Describe how you plan to construct each project element checked in 6d. 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 floodplain.

The Project will be completed in four general stages for phase 1 and 2:

Stage I: Staging; Set up temporary construction area with fencing and load transfer area to support heavy equipment. Duration: 5 days

Stage II: Removal of undesirable beach material, failing revetment rubble and excavation of fill material below the OHWM. Duration: 2 - 3 weeks

Stockpiling reusable material

Hauling away unusable material to be recycled or to a certified landfill

Stage III: Construction of Project elements along the shoreline of Bellingham Bay. Duration: 2 - 4 weeks

In order of:

Drift sills

Revetments

Enhanced beach

Landscaping

Stage IV: Demobilization of equipment, fencing and temporary loading area, Landscaping, reseeding, and mulching. Duration: 1 - 2 weeks

Sequencing of the Project will be determined by the City of Bellingham Parks Department with the selected contractor to maximize efficiency. The schedule is contingent on weather and tides.

6f. What are the anticipated 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 date: _____ End date: _____ ☒ See JARPA Attachment D

6g. Fair market value of the project, including materials, labor, machine rentals, etc. [help]

$900,000

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.) [help]

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 and answer 7g.
- **If No, or Not applicable**, explain below why a mitigation plan should not be required.

☐ Yes ☐ No ☒ Not applicable

7g. Summarize what the mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan. [help]

N/A

7h. Use the table below to list the type and rating of each wetland impacted, the extent and duration of the impact, and the type and amount of mitigation proposed. Or if you are submitting a mitigation plan with a

similar table, you can state (below) where we can find this information in the plan. [help]

Activity (fill, drain, excavate, flood, etc.)	Wetland Name[1]	Wetland type and rating category[2]	Impact area (sq. ft. or Acres)	Duration of impact[3]	Proposed mitigation type[4]	Wetland mitigation area (sq. ft. or acres)

[1] If no official name for the wetland exists, create a unique name (such as "Wetland 1"). The name should be consistent with other project documents, such as a wetland delineation report.
[2] Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package.
[3] Indicate the days, months or years the wetland will be measurably impacted by the activity. Enter "permanent" if applicable.
[4] 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: _____

7i. For all filling activities identified in 7h, 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]

N/A

7j. For all excavating activities identified in 7h, describe the excavation method, type and amount of material in cubic yards you will remove, and where the material will be disposed. [help]

N/A

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

1. Timing limitations: In-water work will only be allowed from July 16 through February 15 for the protection of salmon and bull trout.
   a. Work below the ordinary high water line shall not occur from March 2 through July 15 of any year for the protection of migrating juvenile salmonids.
   b. Work below the ordinary high water line shall not occur from February 16 through July 15 of any year for the protection of bull trout.

2. All work below the OHWM will be conducted 'in the dry' when beach is exposed during low tide events

3. Excavated areas below the OHWM will be covered with at least one foot of gravel prior to being inundated by the rising tide. Wood waste fill will not be exposed to marine water or waves during excavation.

4. The contractor will have a prepared Stormwater Pollution Prevention Plan (SWPPP) as required by Washington State Department of Ecology. Element 9 of this plan would address specific actions to prevent petroleum products from being discharged into surface waters. The contractor will also have oil-absorbent materials on site to be used in the event of a petroleum product spill and measures to avoid petroleum products or other deleterious materials from enter surface waters will be taken.

5. Project activities shall not degrade water quality to the detriment of fish life.

6. Eelgrass and macroalgae will not be adversely impacted due to any project activities.

7. Project activities will be conducted to minimize siltation of the beach area and bed.

8. The following BMPs described in Stormwater Management Manual for Western Washington Volume II; Construction Stormwater Pollution Prevention (Ecology 2005) will be followed to minimize the amount of fine sediment from entering marine water and storm drains in the project area:

   BMP C105: Stabilize Construction Entrance with quarry spalls or hog fuel
   BMP C121: Mulching with straw
   BMP C220: Storm Drain Inlet Protection
   BMP C230: Straw Bale Barrier
   BMP C233: Silt Fence

9. Project area will be landscaped, reseeded and mulched as needed to stabilize disturbed soil.

8b. Will your project impact a waterbody or the area around a waterbody? [help]

☐ Yes ☒ No

8c. 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 and answer 8d.
- **If No, or Not applicable,** explain below why a mitigation plan should not be required.

☐ Yes ☐ No ☒ Not applicable

The Project is "self-mitigating" in that enhancements to the beach will improve the existing conditions and allow natural coastal processes to maintain the beach area. The enhanced beach is designed to mimic natural beach conditions and will absorb wave energy.

8d. Summarize what the mitigation plan is meant to accomplish. Describe how a watershed approach was used to design the plan.

- If you already completed 7g you do not need to restate your answer here. [help]

N/A

8e. Summarize impact(s) to each waterbody in the table below. [help]

Activity (clear, dredge, fill, pile drive, etc.)	Waterbody name[1]	Impact location[2]	Duration of impact[3]	Amount of material (cubic yards) to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
Removal of undesirable material	Bellingham Bay	Boulevard Park shoreline	2- 3 weeks	1,325 cubic yards	30,000 square feet of intertidal area below OHWM
Excavation of beach fill material for new beach gravel and drift sill	Bellingham Bay	Boulevard Park shoreline	2 week	1,675 cubic yards of beach fill to be removed	18,117 square feet of beach area
Construction of drift sills	Bellingham Bay	Boulevard Park shoreline	2 - 3 weeks	2,000 cubic yards of large angular rock	6,025 square feet of beach area
Construction of enhanced beaches	Bellingham Bay	Boulevard Park shoreline	2 - 4 weeks	4,135 Cubic yards of large and medium gravel (0.3-2.0 inches)	48,920 square feet of beach area

[1] If no official name for the waterbody exists, create a unique name (such as "Stream 1") The name should be consistent with other documents provided.
[2] 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.
[3] Indicate the days, months or years the waterbody will be measurably impacted by the work. Enter "permanent" if applicable.

8f. For all activities identified in 8e, 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]

Beach gravel (0.3-2.0 inches) will be from an approved upland borrow pit with high quality well rounded gravel

Approximately 405 cubic yards of rubble will be reused as fill under the beach gravel

Large angular rock for construction of drift sills, sill foundation and toe of beach will be from a local approved rock quarry.

Beach gravel: 3,730 cubic yards

Drift Sill: 2,000 cubic yards

8g. For all excavating or dredging activities identified in 8e, describe the method for excavating or dredging, type and amount of material you will remove, and where the material will be disposed. [help]

Construction activities will be conducted from on shore and when tidal elevations allow for excavation of beach fill and placement of beach gravel "in the dry" to minimize fine sediment from being transported from the Project site. Heavy equipment such as track mounted excavators and backhoes, gravel loaders, and dump trucks will be used to excavate and transport material to and from the work site.

Excavation may occur during 4 or 5 low-tide events for each phase. Wood waste material that was historically used as fill will be excavated from below the OHWM and the excavation site will be covered with one foot of gravel material or, large rock at the sill excavation sites, before the excavated area is inundated by the rising tide. Wood waste material will not be exposed as the tide rises.

Part 9–Additional Information

Any additional information you can provide helps the reviewer(s) understand your project. Complete as much of this section as you can. It is ok if you cannot answer a question.

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
City of Bellingham, Planning	Steve Sundin	(360) 778-8300	May 31, 2012
Washington State Dept. of Fish and Wildlife	Brian Williams	(360) 466-4345 ext 250	May 31, 2012
Washington State Dept. of Natural Resources	Terry Carten	(360) 854-2846	July 16, 2012
US Fisheries and Wildlife Service	Karen Myers	(360) 753-9098	May 31, 2012

9b. Are any of the wetlands or waterbodies identified in Part 7 or Part 8 of this JARPA 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

Construction activities will be conducted from on shore and when tidal elevations allow for excavation of beach fill and placement of beach gravel "in the dry" to minimize fine sediment from being transported from the Project site.

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 Urban Conservancy

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.

☒ Shoreline ☐ Fish ☐ Non-Fish Perennial ☐ Non-Fish Seasonal

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: Name of manual: 2005 Stormwater management manual for Western Washington: Volume II, Construction stormwater pollution prevention. Washington State Dept of Ecology Water Quality Program. Publication No. 05-10-30. Olympia, WA.

9i. Does the project site have known contaminated sediment? [help]

- **If Yes**, please describe below.

☒ Yes ☐ No

See attachment Supplemental 9i

9j. 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. Boulevard Park was established in 1980.

9k. Has a cultural resource (archaeological) survey been performed on the project area? [help]

- **If Yes**, attach it to your JARPA package.

☒ Yes ☐ No *(as part of a feasibility study for other projects in the area)*

9l. 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	EFFECT	TAKE
Marbled murrelet (*Brachyramphus marmoratus*)	NLTAA*	None
Coastal Puget Sound Bull trout (*Salvelinus confluentus*)	NLTAA	None
Coastal Puget Sound Bull trout critical habitat	Will not adversely modify	
Puget Sound ESU chinook salmon (*Oncorhynchus tshawytscha*)	NLTAA	None
Puget Sound ESU chinook salmon critical habitat	Will not adversely modify	
Puget Sound Steelhead trout (*Oncorhynchus mykiss*)	NLTAA	None
Bocaccio rockfish (*Sebastes paucispinis*)	NLTAA	None
Canary rockfish (*Sebastes pinniger*)	NLTAA	None
Yelloweye rockfish (*Sebastes ruberrimus*)	NLTAA	None
Steller sea lion (*Eumetopias jubatus*)	No effect	None
Southern resident killer whale (*Orcinus orca*)	No effect	None
Southern resident killer whale critical habitat	Will not adversely modify	

NLTAA: Not Likely to Adversely Affect.

9m. 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–SEPA Compliance and Permits

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.
- For a list of addresses to send your JARPA to, click on agency addresses for completed JARPA.

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 December 2012.

☐ I am applying for a Fish Habitat Enhancement Exemption. (Check the box below in 10b.) [help]

☐ 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.

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 – Attach Exemption Form

Effective July 10, 2012, you must submit a check for $150 to Washington Department of Fish and Wildlife, unless your project qualifies for an exemption or alternative payment method below. **Do not send cash.**

Check the appropriate boxes:

☒ $150 check enclosed. (Check # 477803)
Attach check made payable to Washington Department of Fish and Wildlife.

☐ Charge to billing account under agreement with WDFW. (Agreement # _____)

☐ My project is exempt from the application fee. (Check appropriate exemption)
- ☐ HPA processing is conducted by applicant-funded WDFW staff. (Agreement # _____)
- ☐ Mineral prospecting and mining.
- ☐ Project occurs on farm and agricultural land. (Attach a copy of current land use classification recorded with the county auditor, or other proof of current land use.)
- ☐ Project is a modification of an existing HPA originally applied for, prior to July 10, 2012. (HPA # _____)

Washington Department of Natural Resources:

☒ Aquatic Use Authorization

Complete JARPA Attachment E and submit a check for $25 payable to the Washington Department of Natural Resources. **Do not send cash.**

Washington Department of Ecology:

☒ Section 401 Water Quality Certification

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 are required before submitting the JARPA package. The JARPA package includes the JARPA form, project plans, photos, etc. [help]

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. _____ (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. _____ (initial)

Applicant Printed Name	Applicant Signature	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.

Authorized Agent Printed Name	Authorized Agent Signature	Date

11c. Property Owner Signature (if not applicant). [help]
Not required if project is on existing rights-of-way or easements.

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 Printed Name	Property Owner Signature	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) at (800) 917-0043.
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 rev. 06-12

CITY OF BELLINGHAM

BOULEVARD PARK SHORELINE IMPROVEMENTS

SURVEY NOTES

2009 NORTH BOULEVARD PARK AND SHORELINE BASE MAPPING SURVEY BY LARRY STEELE & ASSOCIATES LAND SURVEYORS FOR CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT

PROJECT DATUM

MEAN LOWER LOW WATER (MLLW)
BENCH MARKS:
1) NGS TIDAL BENCHMARK V-454
ELEVATION =16.47 FT MLLW (16.00 NAVD88)
2) BRASS PLUG MONUMENT (CITY OF BELLINGHAM ID #538)
ELEVATION = 24.62 FT MLLW (24.15 FT NAVD88)

NOTE: TIDE DATUMS WERE OBTAINED FROM NATIONAL OCEAN SERVICE DATA SHEET 9449211 DATED 12/12/2003

EELGRASS MAPPING

CHRIS FAIRBANKS OF FAIRBANKS ENVIRONMENTAL AND ALEXIS BLUE, PE OF COASTAL GEOLOGIC SERVICES MAPPED THE INNER MARGIN OF EELGRASS ON JUNE 6, 2012 DURING A LOWTIDE EVENT BETWEEN 11:30AM AND 1:15PM WITH A HANDHELD TRIMBLE GEO-HX 6000

INDEX TO DRAWINGS

CITY OF BELLINGHAM

MAYOR
KELLY LYNNVILLE

PARK DIRECTOR
JAMES KING

PROJECT ENGINEER
GINA GOBO AUSTIN, P.E.

VICINITY MAP

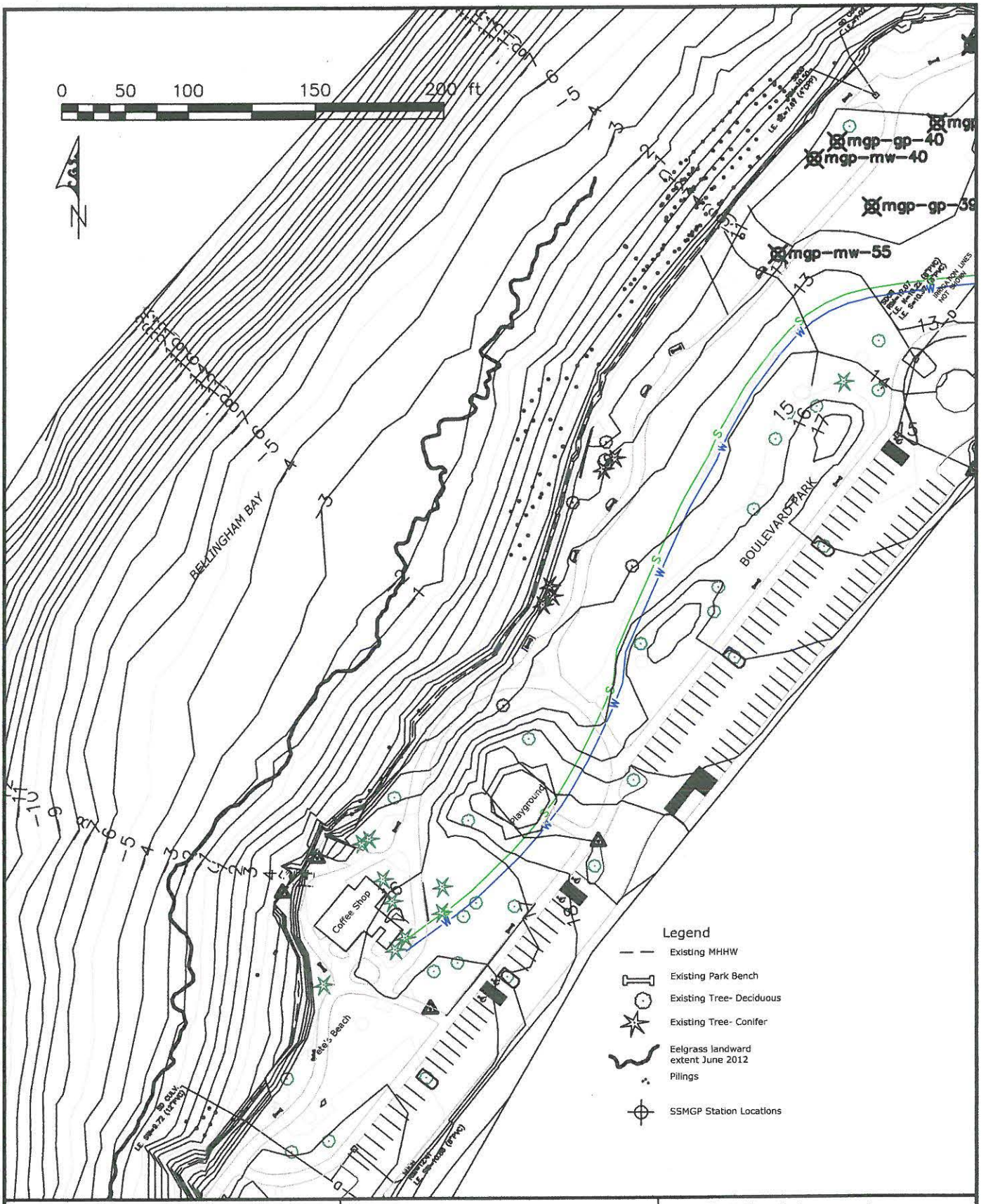
COASTAL GEOLOGIC SERVICES

Wilson SURVEY/ENGINEERING

MTC Northwest Testing & Consulting, Inc.

C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11

PURPOSE: Shoreline improvements **DATUM:** MLLW (MHHW = +8.5' MLLW) **ADJACENT PROPERTY OWNERS:** Washington State Department of Natural Resources Whatcom County Burlington Northern Sante Fe Railway Company	**Boulevard Park Shoreline Improvements** **Cover Sheet/Vicinity Map** **City of Bellingham** 210 Lottie Street Bellingham, WA 98225	**PROPOSED:** Shoreline improvements **IN:** Bellingham Bay **COUNTY:** Whatcom **STATE:** WA **APPLICATION BY:** City of Bellingham **Sheet 1 of 11** **10Sep12**



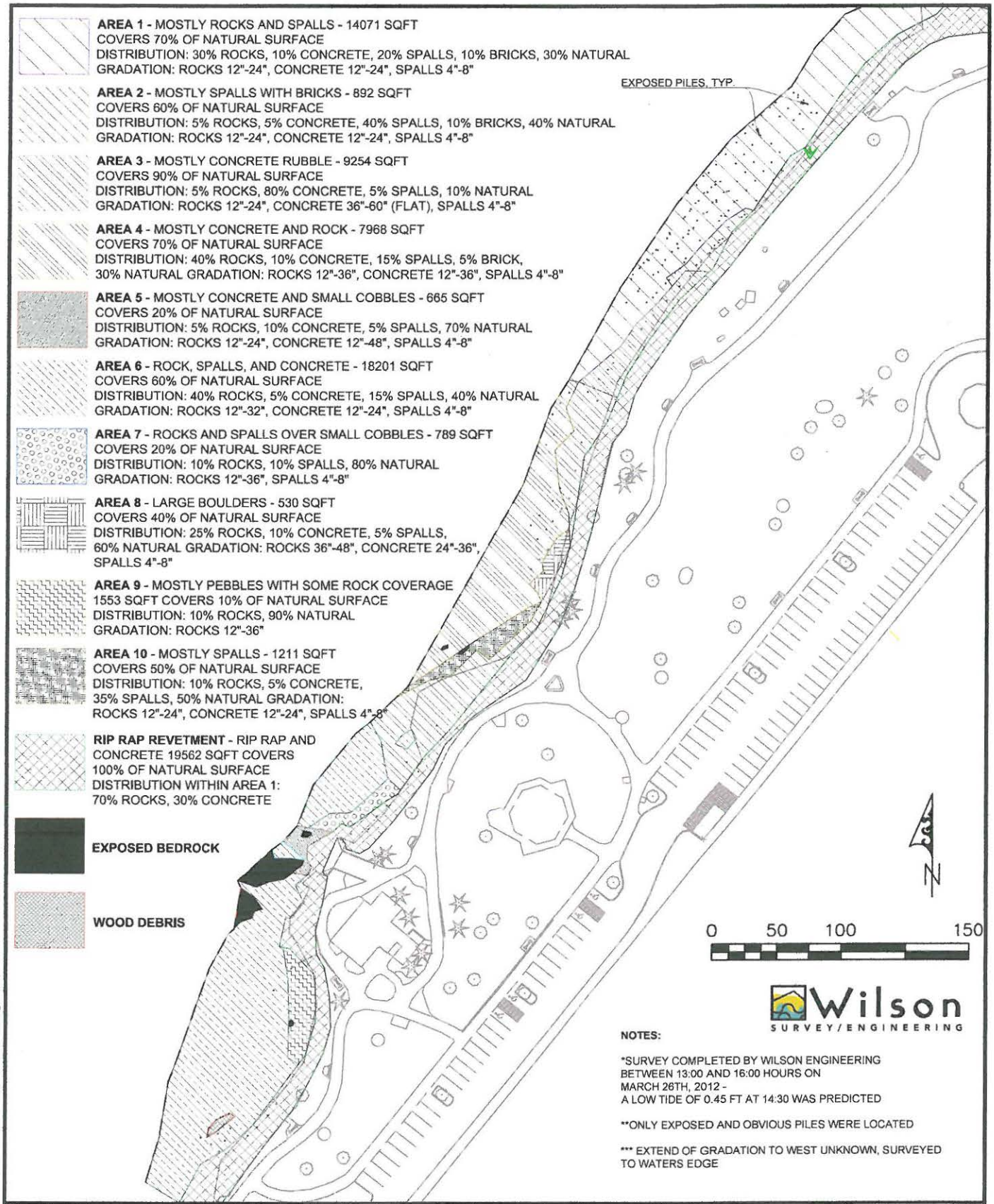
PURPOSE: Shoreline improvements
DATUM: MLLW (MHHW = +8.5' MLLW)
ADJACENT PROPERTY OWNERS:
Washington State Department of Natural Resources
Whatcom County
Burlington Northern Sante Fe Railway Company

Boulevard Park Shoreline Improvements
Existing Conditions
scale as shown
City of Bellingham
210 Lottie Street
Bellingham, WA 98225

PROPOSED: Shoreline improvements
IN: Bellingham Bay
COUNTY: Whatcom **STATE:** WA
APPLICATION BY: City of Bellingham

Sheet 2 **of** 11 **10Sep12**

C:\Civil3DProjects\Whatcom Co\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11



AREA 1 - MOSTLY ROCKS AND SPALLS - 14071 SQFT
COVERS 70% OF NATURAL SURFACE
DISTRIBUTION: 30% ROCKS, 10% CONCRETE, 20% SPALLS, 10% BRICKS, 30% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-24", SPALLS 4"-8"

AREA 2 - MOSTLY SPALLS WITH BRICKS - 892 SQFT
COVERS 60% OF NATURAL SURFACE
DISTRIBUTION: 5% ROCKS, 5% CONCRETE, 40% SPALLS, 10% BRICKS, 40% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-24", SPALLS 4"-8"

AREA 3 - MOSTLY CONCRETE RUBBLE - 9254 SQFT
COVERS 90% OF NATURAL SURFACE
DISTRIBUTION: 5% ROCKS, 80% CONCRETE, 5% SPALLS, 10% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 36"-60" (FLAT), SPALLS 4"-8"

AREA 4 - MOSTLY CONCRETE AND ROCK - 7968 SQFT
COVERS 70% OF NATURAL SURFACE
DISTRIBUTION: 40% ROCKS, 10% CONCRETE, 15% SPALLS, 5% BRICK,
30% NATURAL GRADATION: ROCKS 12"-36", CONCRETE 12"-36", SPALLS 4"-8"

AREA 5 - MOSTLY CONCRETE AND SMALL COBBLES - 665 SQFT
COVERS 20% OF NATURAL SURFACE
DISTRIBUTION: 5% ROCKS, 10% CONCRETE, 5% SPALLS, 70% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-48", SPALLS 4"-8"

AREA 6 - ROCK, SPALLS, AND CONCRETE - 18201 SQFT
COVERS 60% OF NATURAL SURFACE
DISTRIBUTION: 40% ROCKS, 5% CONCRETE, 15% SPALLS, 40% NATURAL
GRADATION: ROCKS 12"-32", CONCRETE 12"-24", SPALLS 4"-8"

AREA 7 - ROCKS AND SPALLS OVER SMALL COBBLES - 789 SQFT
COVERS 20% OF NATURAL SURFACE
DISTRIBUTION: 10% ROCKS, 10% SPALLS, 80% NATURAL
GRADATION: ROCKS 12"-36", SPALLS 4"-8"

AREA 8 - LARGE BOULDERS - 530 SQFT
COVERS 40% OF NATURAL SURFACE
DISTRIBUTION: 25% ROCKS, 10% CONCRETE, 5% SPALLS,
60% NATURAL GRADATION: ROCKS 36"-48", CONCRETE 24"-36",
SPALLS 4"-8"

AREA 9 - MOSTLY PEBBLES WITH SOME ROCK COVERAGE
1553 SQFT COVERS 10% OF NATURAL SURFACE
DISTRIBUTION: 10% ROCKS, 90% NATURAL
GRADATION: ROCKS 12"-36"

AREA 10 - MOSTLY SPALLS - 1211 SQFT
COVERS 50% OF NATURAL SURFACE
DISTRIBUTION: 10% ROCKS, 5% CONCRETE,
35% SPALLS, 50% NATURAL GRADATION:
ROCKS 12"-24", CONCRETE 12"-24", SPALLS 4"-8"

RIP RAP REVETMENT - RIP RAP AND
CONCRETE 19562 SQFT COVERS
100% OF NATURAL SURFACE
DISTRIBUTION WITHIN AREA 1:
70% ROCKS, 30% CONCRETE

EXPOSED BEDROCK

WOOD DEBRIS

Wilson SURVEY/ENGINEERING

NOTES:

*SURVEY COMPLETED BY WILSON ENGINEERING
BETWEEN 13:00 AND 16:00 HOURS ON
MARCH 26TH, 2012 -
A LOW TIDE OF 0.45 FT AT 14:30 WAS PREDICTED

**ONLY EXPOSED AND OBVIOUS PILES WERE LOCATED

*** EXTEND OF GRADATION TO WEST UNKNOWN, SURVEYED
TO WATERS EDGE

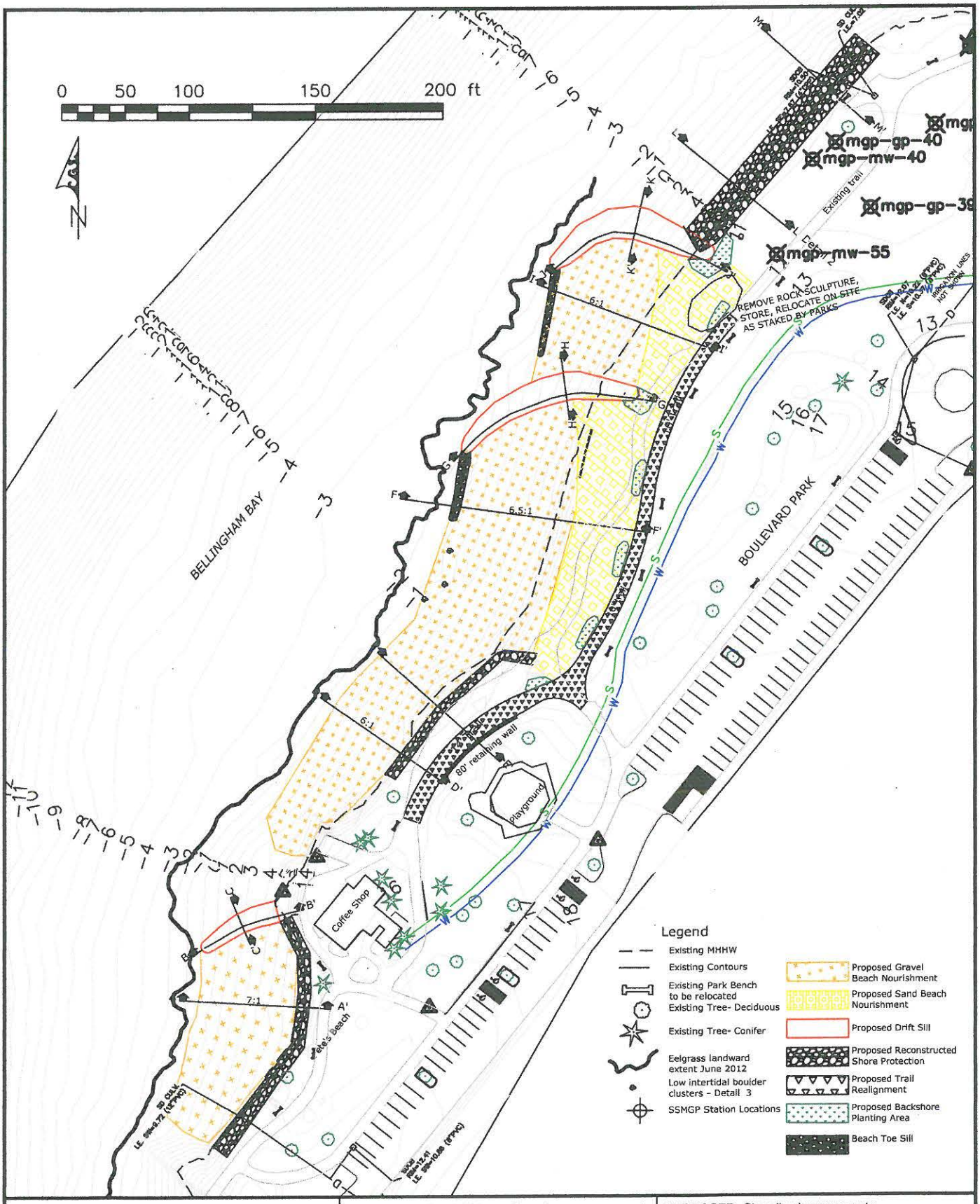
PURPOSE: Shoreline improvements
DATUM: MLLW (MHHW = +8.5' MLLW)
ADJACENT PROPERTY OWNERS:
Washington State Department of Natural Resources
Whatcom County
Burlington Northern Sante Fe Railway Company

Boulevard Park Shoreline Improvements
Existing Beach Conditions
scale as shown
City of Bellingham
210 Lottie Street
Bellingham, WA 98225

PROPOSED: Shoreline improvements
IN: Bellingham Bay
COUNTY: Whatcom **STATE:** WA
APPLICATION BY: City of Bellingham

10Sep12

C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\Gradation&CoverageHatch



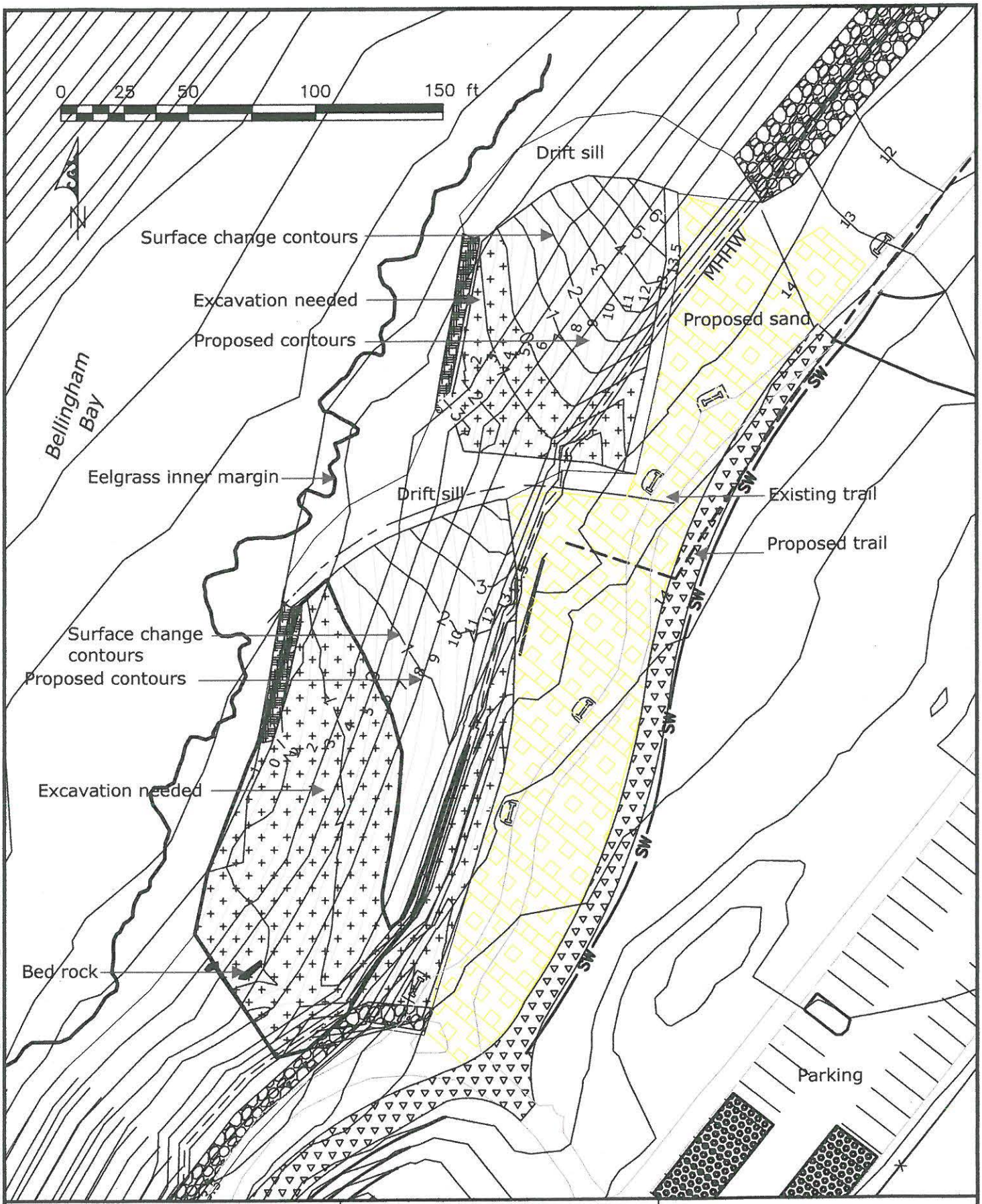
C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11

PURPOSE: Shoreline improvements
DATUM: MLLW (MHHW = +8.5' MLLW)
ADJACENT PROPERTY OWNERS:
Washington State Department of Natural Resources
Whatcom County
Burlington Northern Sante Fe Railway Company

Boulevard Park Shoreline Improvements
Proposed Conditions
scale as shown
City of Bellingham
210 Lottie Street
Bellingham, WA 98225

PROPOSED: Shoreline improvements
IN: Bellingham Bay
COUNTY: Whatcom **STATE:** WA
APPLICATION BY: City of Bellingham

10Sep12



PURPOSE: Shoreline improvements
DATUM: MLLW (MHHW = +8.5' MLLW)
ADJACENT PROPERTY OWNERS:
Washington State Department of Natural Resources
Whatcom County
Burlington Northern Sante Fe Railway Company

Boulevard Park Shoreline Improvements
Excavation Prism
scale as shown
City of Bellingham
210 Lottie Street
Bellingham, WA 98225

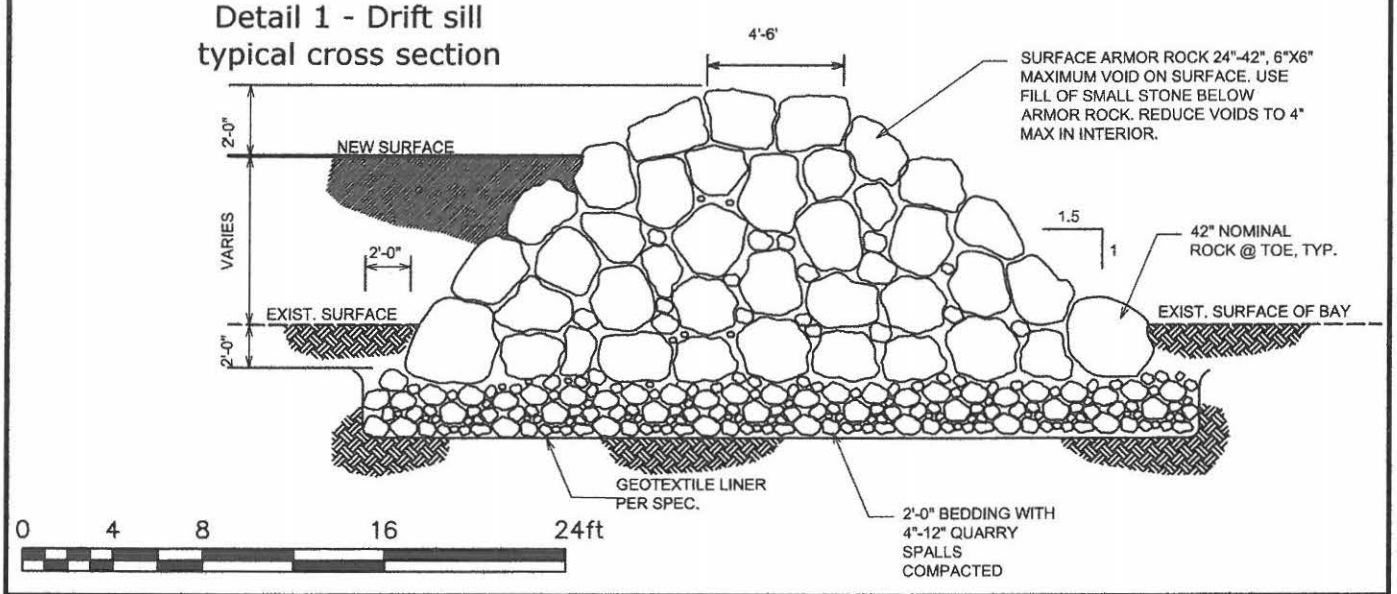
PROPOSED: Shoreline improvements
IN: Bellingham Bay
COUNTY: Whatcom **STATE:** WA
APPLICATION BY: City of Bellingham

Sheet 5 **of** 12

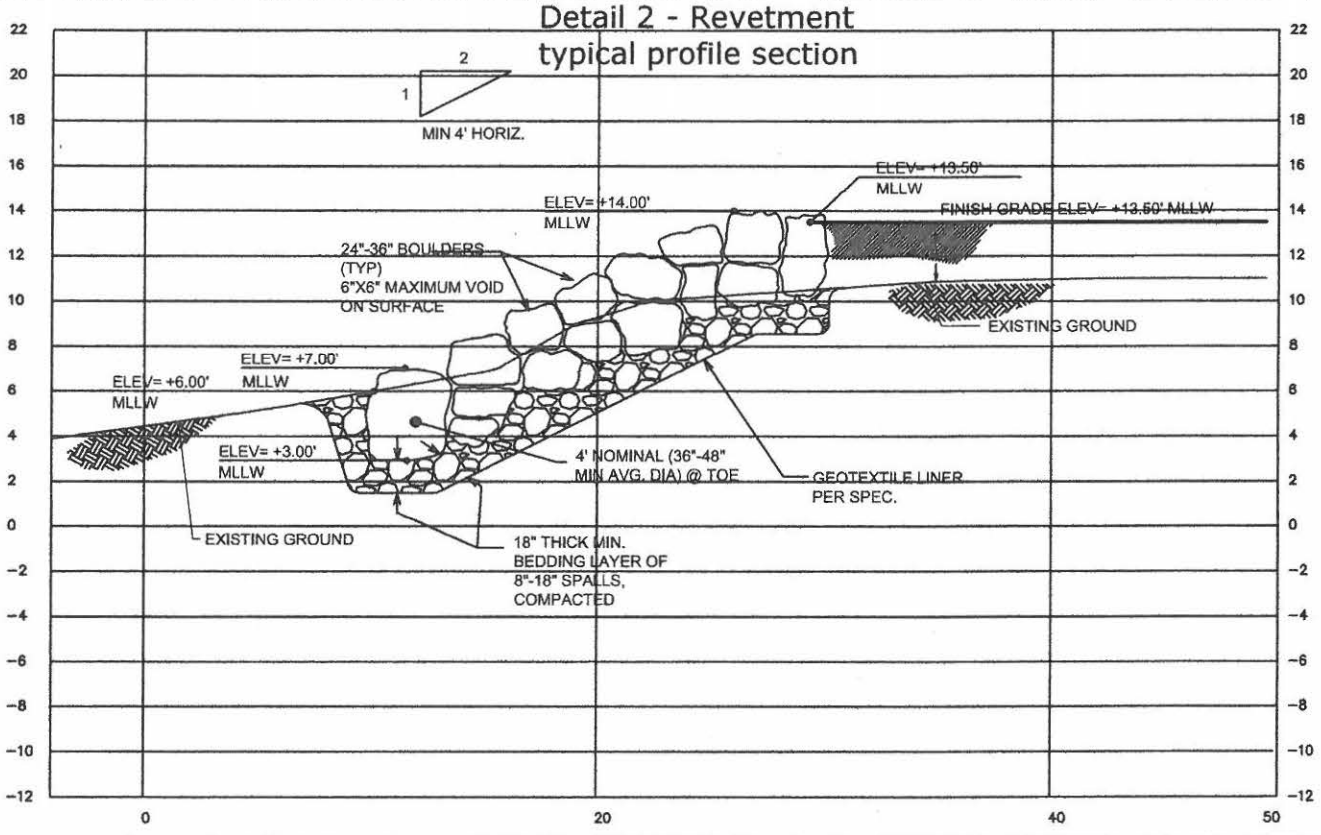
10Sept12

C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11

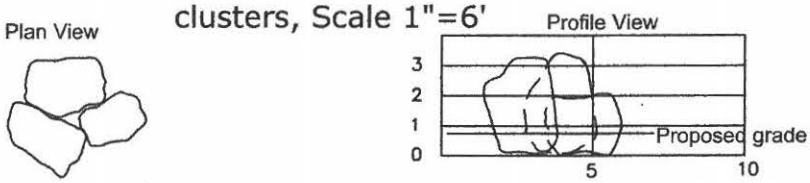
Detail 1 - Drift sill typical cross section



Detail 2 - Revetment typical profile section



Detail 3 - Boulder clusters, Scale 1"=6'



PURPOSE: Shoreline improvements
DATUM: MLLW (MHHW = +8.5' MLLW)
ADJACENT PROPERTY OWNERS:
Washington State Department of Natural Resources
Whatcom County
Burlington Northern Sante Fe Railway Company

Boulevard Park Shoreline Improvements
Site Details 1, 2, 3
scale as noted
City of Bellingham
210 Lottie Street
Bellingham, WA 98225

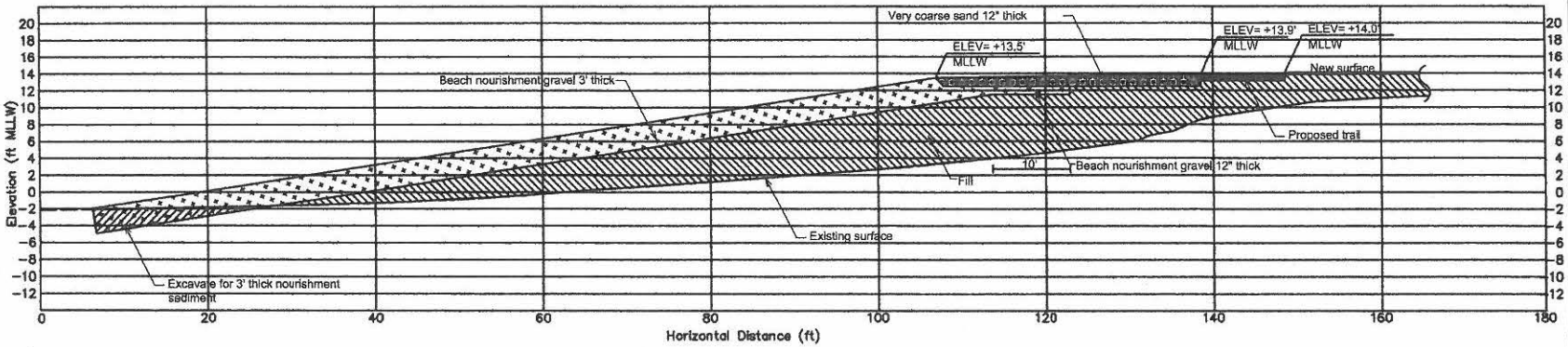
PROPOSED: Shoreline improvements
IN: Bellingham Bay
COUNTY: Whatcom **STATE:** WA
APPLICATION BY: City of Bellingham

10Sep12

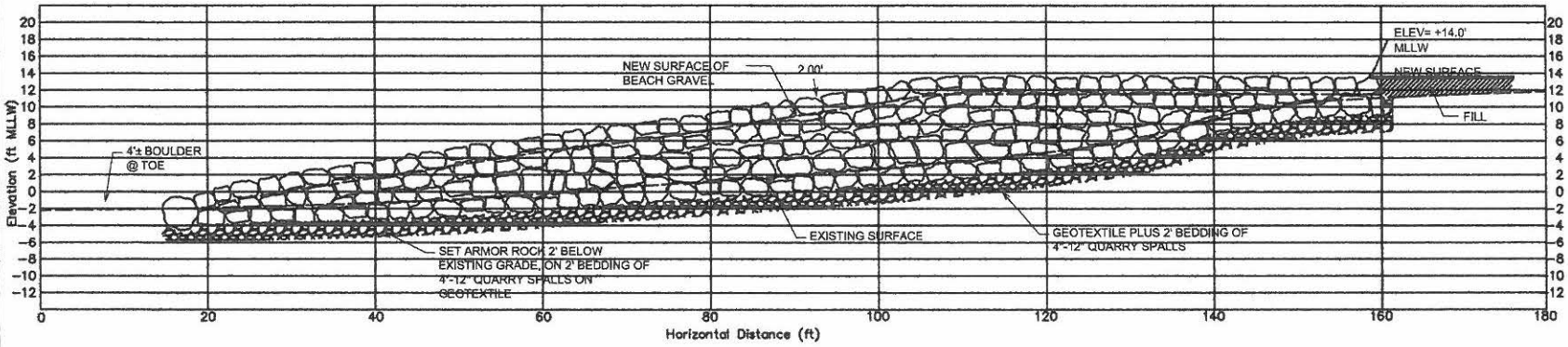
C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11

0 10 20 40 60 ft

Detail 4 - Beach Nourishment typical profile section



Detail 5 - Drift sill typical profile section



PROPOSED: Shoreline improvements
IN: Bellingham Bay **STATE:** WA
COUNTY: Whatcom
APPLICATION BY: City of Bellingham

10Sep12

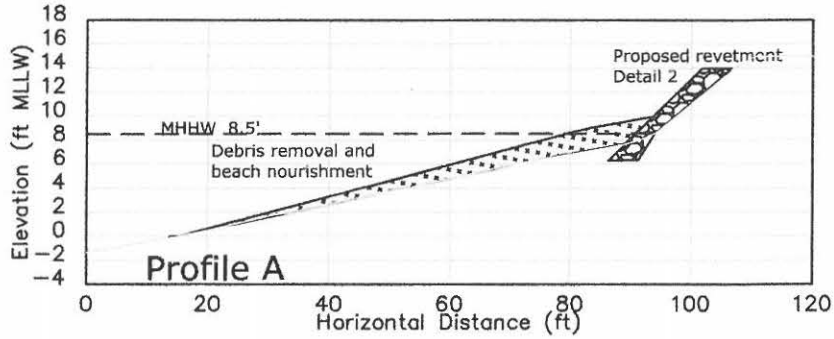
Sheet 7 of 11

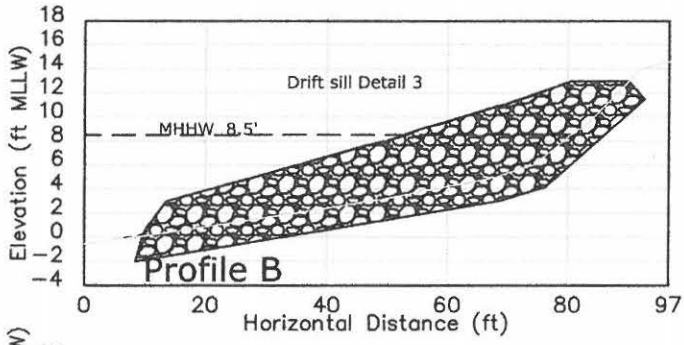
Boulevard Park Shoreline Improvements
Details 4 and 5
scale as noted
City of Bellingham
210 Lottie Street
Bellingham, WA 98225

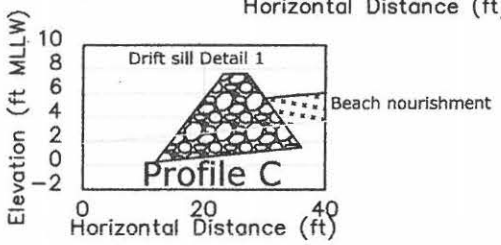
PURPOSE: Shoreline improvements
DATUM: MLLW (MHHW = +8.5' MLLW)
ADJACENT PROPERTY OWNERS:
Washington State Department of Natural Resources
Whatcom County
Burlington Northern Sante Fe Railway Company

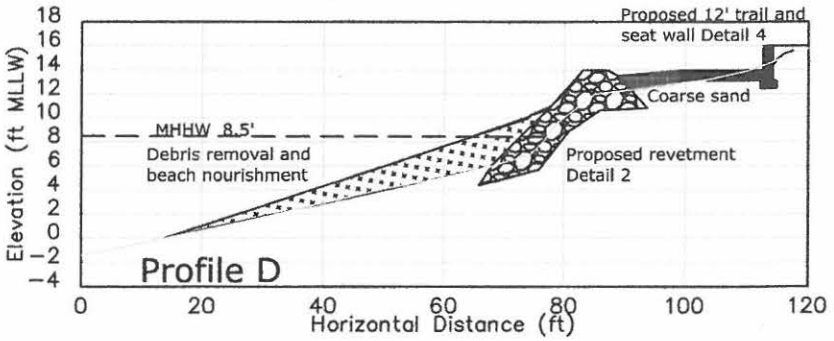
C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11

0 15 30 60 120 ft









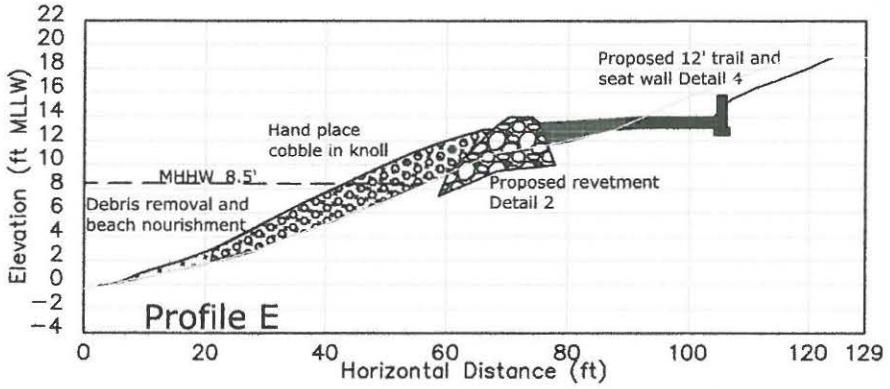
Legend

Existing
Proposed ———

C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11

PURPOSE: Shoreline improvements **DATUM:** MLLW (MHHW = +8.5' MLLW) **ADJACENT PROPERTY OWNERS:** Washington State Department of Natural Resources Whatcom County Burlington Northern Sante Fe Railway Company	**Boulevard Park Shoreline Improvements** **Cross Sections A, B, C and D** scale as shown **City of Bellingham** 210 Lottie Street Bellingham, WA 98225	**PROPOSED:** Shoreline improvements **IN:** Bellingham Bay **COUNTY:** Whatcom **STATE:** WA **APPLICATION BY:** City of Bellingham **Sheet 8 of 11** **10Sep12**

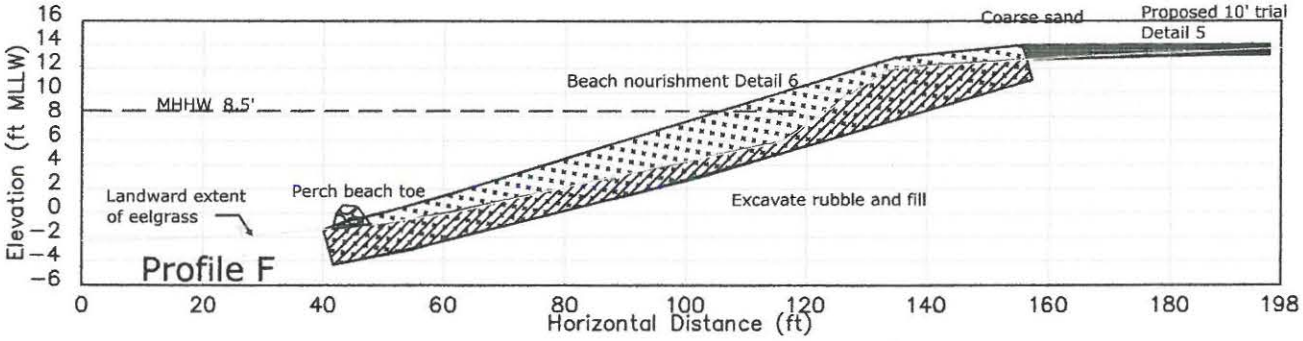
0 15 30 60 120 ft

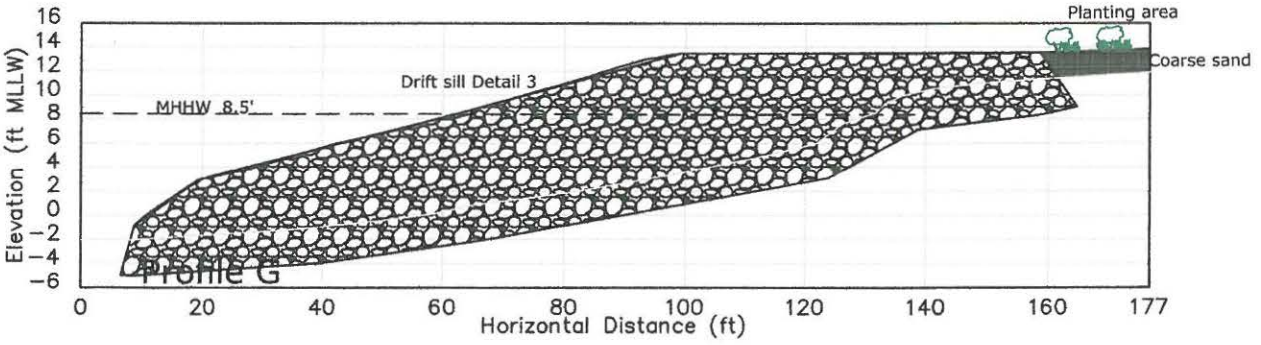


Legend

Existing

Proposed ———

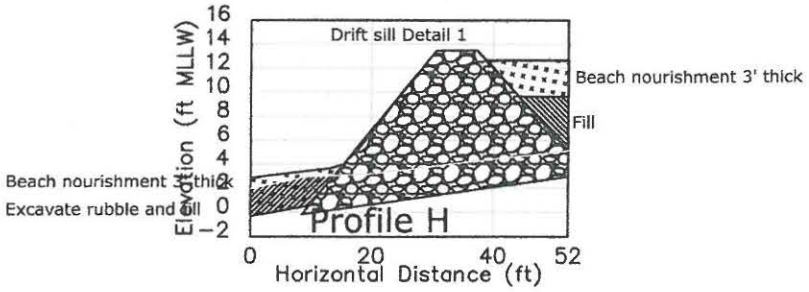


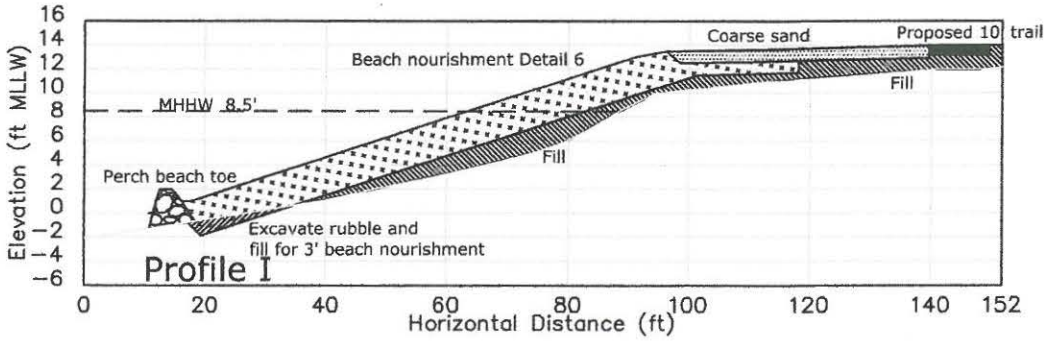


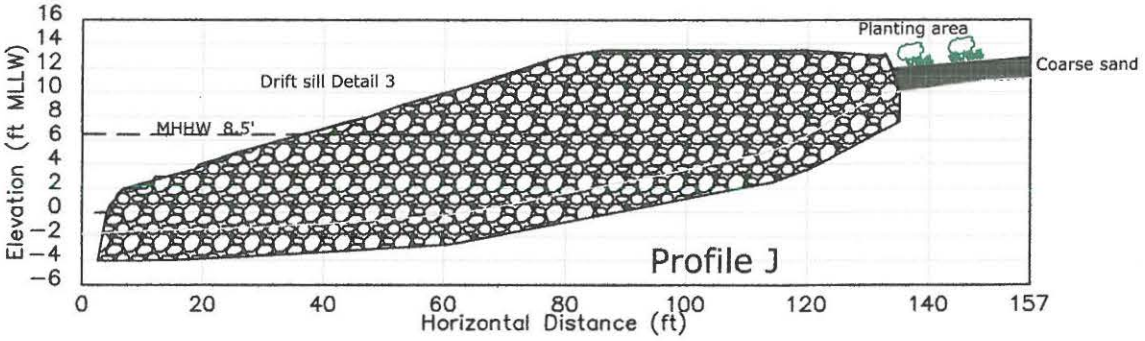
C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11

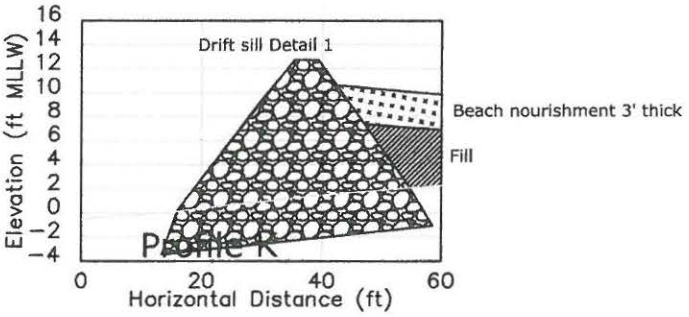
PURPOSE: Shoreline Improvements **DATUM:** MLLW (MHHW = +8.5' MLLW) **ADJACENT PROPERTY OWNERS:** Washington State Department of Natural Resources Whatcom County Burlington Northern Sante Fe Railway Company	**Boulevard Park Shoreline Improvements** **Cross Sections E, F and G** scale as shown **City of Bellingham** 210 Lottie Street Bellingham, WA 98225	**PROPOSED:** Shoreline improvements **IN:** Bellingham Bay **COUNTY:** Whatcom **STATE:** WA **APPLICATION BY:** City of Bellingham **Sheet 9 of 11** **10Sep12**

0 15 30 60 120 ft









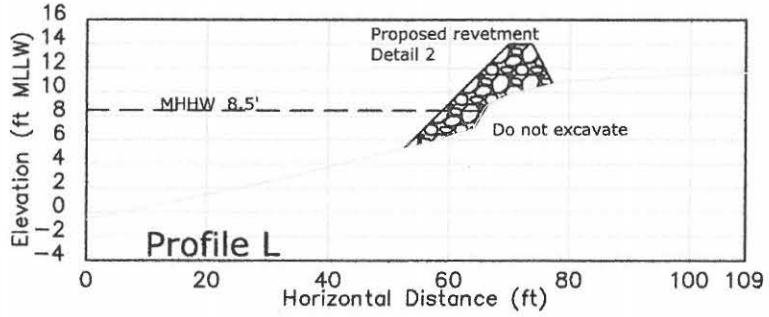
Legend

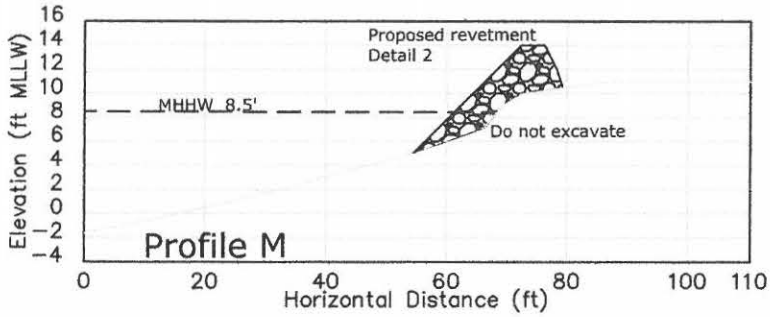
Existing
Proposed _____

C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11

PURPOSE: Shoreline improvements **DATUM:** MLLW (MHHW = +8.5' MLLW) **ADJACENT PROPERTY OWNERS:** Washington State Department of Natural Resources Whatcom County Burlington Northern Sante Fe Railway Company	**Boulevard Park Shoreline Improvements** **Cross Sections H, I, J and K** scale as shown **City of Bellingham** 210 Lottie Street Bellingham, WA 98225	**PROPOSED:** Shoreline improvements **IN:** Bellingham Bay **COUNTY:** Whatcom **STATE:** WA **APPLICATION BY:** City of Bellingham **Sheet** 10 **of** 11 **10Sep12**

0 15 30 60 120 ft





Legend

Existing
Proposed ——

C:\Civil3DProjects\WhatcomCo\Bellingham\BoulevardPark\CGS_Blvd_11040_30_deliverable_postcomments8x11

PURPOSE: Shoreline improvements **DATUM:** MLLW (MHHW = +8.5' MLLW) **ADJACENT PROPERTY OWNERS:** Washington State Department of Natural Resources Whatcom County Burlington Northern Sante Fe Railway Company	**Boulevard Park Shoreline Improvements** **Cross Sections L and M** scale as shown **City of Bellingham** 210 Lottie Street Bellingham, WA 98225	**PROPOSED:** Shoreline improvements **IN:** Bellingham Bay **COUNTY:** Whatcom **STATE:** WA **APPLICATION BY:** City of Bellingham **Sheet** 11 **of** 11 **10Sep12**

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) [help]

US Army Corps of Engineers
Seattle District

AGENCY USE ONLY

Date received:

Agency reference #: _____

Tax Parcel #(s): _____

TO BE COMPLETED BY APPLICANT [help]

Project Name: _____

Attachment A:
For additional property owner(s) [help]

Use this attachment only if you have more than one property owner. Complete one attachment for each additional property owner impacted by the project.

Signatures of property owners are not needed for repair or maintenance activities on existing rights-of-way or easements.

Use black or blue ink to enter answers in white spaces below.

1. Name (Last, First, Middle) and Organization (if applicable)			
Washington State Department of Natural Resources Orca Straits District			
2. Mailing Address (Street or PO Box)			
919 N Township Street			
3. City, State, Zip			
Sedro Woolley, WA 98284-9384			
4. Phone (1)	**5.** Phone (2)	**6.** Fax	**7.** E-mail
(360)856-3500	( )	( )	TERENCE.CARTEN@dnr.wa.gov
Address or tax parcel number of property you own:			
State-owned aquatic lands			
Signature of Property Owner			

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.

JoAnn E. Gustafson
Printed Name

J E Gustafson, District Manager
Signature 7-23-12

If you require this document in another format, contact the Governor's Office of Regulatory Assistance (ORA) at (800) 917-0043. 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-020-09 rev. 06-12

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) [help]

US Army Corps of Engineers
Seattle District

AGENCY USE ONLY

Date received:

Agency reference #: _____

Tax Parcel #(s): _____

_____

_____

TO BE COMPLETED BY APPLICANT [help]

Project Name: _____

Attachment A:
For additional property owner(s) [help]

Use this attachment only if you have more than one property owner. Complete one attachment for each additional property owner impacted by the project.

Signatures of property owners are not needed for repair or maintenance activities on existing rights-of-way or easements.

Use black or blue ink to enter answers in white spaces below.

1. Name (Last, First, Middle) and Organization (if applicable)			
Whatcom County			
2. Mailing Address (Street or PO Box)			
3373 Mount Baker Highway			
3. City, State, Zip			
Bellingham, Washington 98226			
4. Phone (1)	**5.** Phone (2)	**6.** Fax	**7.** E-mail
(360)733-2900	( )	( )	MMcFarla@co.whatcom.wa.us
Address or tax parcel number of property you own:			
370201065455			
Signature of Property Owner			

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.

MICHAEL MCFARLANE
Printed Name

Signature

If you require this document in another format, contact the Governor's Office of Regulatory Assistance (ORA) at (800) 917-0043. 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-020-09 rev. 06-12

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) [help]

US Army Corps of Engineers
Seattle District

AGENCY USE ONLY

Date received:

Agency reference #: _____

Tax Parcel #(s): _____

_____

TO BE COMPLETED BY APPLICANT [help]

Project Name: _____

Attachment D:
Construction sequence [help]

Use this attachment only if your project will be constructed in phases or stages. Complete the outline showing the construction sequence and timing of activities, including the start and end dates of each phase or stage.

Use black or blue ink to enter answers in white spaces below.

Phase or Stage	Start Date	End Date	Activity Description
1	July 16, 2014	February 15, 2015	Construct "west beach" beach north of existing playground to north revetment, including debris removal, construction of drift sill, beach restoration, and associated upland work*
2	July 16, 2015	February 16, 2016	Construct north revetment, construct beach to the south of existing playground and coffee shop, construct beach north of "west beach" including debris removal, construction of drift sills, beach restoration, and associated upland work*
			*Note: The project is being phased due to availability of funding. If all funding becomes available during phase 1, phase 2 work will be constructed at the same time as phase 1

If you require this document in another format, contact the Governor's Office of Regulatory Assistance (ORA) at (800) 917-0043. 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-023-09 rev. 06-12

US Army Corps of Engineers
Seattle District

AGENCY USE ONLY
Date received:_____; ☐ Town
☐ Application Fee Received; ☐ Fee N/A
☐ New Application; ☐ Renewal Application
Type/Prefix #:_____; NaturE Use Code:_____
LM Initials & BP#:_____
RE Assets Finance BP#:_____
New Application Number:_____
Trust(s):_____; County:_____
AQR Plate #(s):_____
Gov Lot #(s): _____
Tax Parcel #(s):_____

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) [help]

Attachment E:
Aquatic Use Authorization on Department of Natural Resources (DNR)-managed aquatic lands [help]

Complete this attachment and submit it with the completed JARPA form only if you are applying for an Aquatic Use Authorization with DNR. Call (360) 902-1100 or visit www. bit.ly/dnr_aquatic_lease for more information.

- DNR recommends you discuss your proposal with a DNR land manager before applying for regulatory permits. Contact your regional land manager for more information on potential permit and survey requirements. You can find your regional land manager by calling (360) 902-1100 or going to http://www.dnr.wa.gov/Publications/aqr_land_manager_map.pdf. [help]
- The applicant may not begin work on DNR managed aquatic lands until DNR grants an Aquatic Use Authorization.
- Include a $25 non-refundable application processing fee, payable to the "Washington Department of Natural Resources." (Contact your Land Manager to determine if and when you are required to pay this fee.) [help]

DNR may reject the application at any time prior to issuing the applicant an Aquatic Use Authorization. [help]

1. Applicant Name (Last, First, Middle)

Austin, Gina G.

2. Organization Name (If applicable)

City of Bellingham Parks and Recreation

3. Which of the following applies to Applicant? Check one and, if applicable, attach the written authority – bylaws, power of attorney, etc. [help]

☒ Corporation	☐ Individual
☐ Limited Partnership	☐ Marital Community (Identify spouse):_____
☐ General Partnership	☒ Government Agency
☐ Limited Liability Company	☐ Other (Please Explain):
Home State of Registration: _____	

4. Washington UBI (Unified Business Identifier) number, if applicable: [help]
5. Are you aware of any existing or previously expired Aquatic Use Authorizations at the project location?
☒ Yes ☐ No ☐ Don't know If Yes, Authorization number(s):__ DNR Agreement #23-085019, HA2351, HA2483_____
6. Do you intend to sublease the property to someone else?
☐ Yes ☒ No If Yes, contact your Land Manager to discuss subleasing.
7. If fill material was used previously on DNR-managed aquatic lands, describe below the type of fill material and the purpose for using it. [help]
The existing site includes fill from previous industrial practices.

To be completed by DNR and a copy returned to the applicant.

Signature for projects on DNR-managed aquatic lands:

Applicant must obtain the signature of DNR Aquatics District Manager OR Assistant Division Manager if the project is located on DNR-managed aquatic lands.

I, a designated representative of the Dept. of Natural Resources, am aware that the project is being proposed on Dept. of Natural Resources-managed aquatic lands and agree that the applicant or his/her representative may pursue the necessary regulatory permits. My signature does not authorize the use of DNR-managed aquatic lands for this project.

JoAnn Gustafson	J E Gustafson	7-23-12
Printed Name	**Signature**	
Dept. of Natural Resources District Manager or Assistant Division Manager	Dept. of Natural Resources District Manager or Assistant Division Manager	Date

If you require this document in another format, contact the Governor's Office of Regulatory Assistance (ORA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341.
ORA Publication ENV-049-12

SUPPLEMENTAL

9i. Does the project site have known contaminated sediment?

The Boulevard Park Shoreline Improvements site is adjacent to and includes a 100 ft to 150 ft portion of the South State Street Manufactured Gas Plant MTCA site (SSSMGP Site), currently being investigated through an Agreed Order between the City of Bellingham, Puget Sound Energy, and the Washington State Department of Ecology (Herrenkohl Consulting and Landau Associates 2009, 2011). No excavation, only the construction of a revetment for shoreline protection is proposed within the SSSMGP Site area (refer to Plans C1.0 and C1.2). Two to three feet of beach excavation and removal is proposed to the southwest of the planned revetment and the SSSMGP Site but soils and sediments are not expected to be contaminated based on data collected in support of the SSSMGP Site remedial investigation (Herrenkohl Consulting and Landau Associates 2011, 2012).

One surface sediment sample location and two upland borings/monitoring well locations are in the vicinity of the Boulevard Park Shoreline Improvement site boundary (refer to C1.0 and C1.2). Results for surface sediments (0-12 cm) collected from BLVD-SS-03, a surface sediment sample located approximately 150 ft northeast of the proposed revetment, were below the Sediment Management Standards (SMS) for metals, and total petroleum hydrocarbons were only slightly above the detection limit[1]. Moreover, all surface sediment samples collected and analyzed in support of the SSSMGP remedial investigation were below SMS chemical and biological criteria (Herrenkohl Consulting and Landau Associates 2011). Based on these results, disturbance of surface sediments during construction of the revetment and other shoreline features proposed for the Boulevard Park Shoreline Improvements project are not expected to cause adverse impacts to benthic biota.

Surface soils (0-3.5 ft) in the vicinity of the proposed revetment and excavation area (stations MGP-GP-40 and MGP-GP-55) were also analyzed for metals and PAHs. Carcinogenic PAHs (cPAHs toxicity equivalent quotients) were below MTCA risk-based screening levels for soils at station MGP-GP-55 (samples 1-2 ft and 2.5-3.5 ft) and only slightly over this level at station MGP-GP-40 (sample 0.5-1 ft) (Herrenkohl Consulting and Landau Associates 2011 and 2012). Metals (e.g., lead) were also below MTCA screening levels in surface soils (0-0.5 ft) analyzed from MGP-GP-40. It should be noted that MGP-GP-55 was located closest to the planned excavation area and considered most representative of soils to be disturbed during construction. Based on these results, disturbance of surface soils as part of the Boulevard Park Shoreline Improvements project are not expected to be of significant risk to humans and the environment.

---

[1] Semivolatile organics were not analyzed for this sample based on the low concentration of TPH in the sample.

References

Herrenkohl Consulting and Landau Associates. 2009. Focused Environmental Site Assessment, Boulevard Park Shoreline Development and Overwater Walkway, Bellingham, Washington. Prepared for the City of Bellingham, Parks & Recreation Department, Bellingham, Washington. Prepared by Herrenkohl Consulting LLC of Bellingham, Washington and Landau Associates Inc., of Edmonds, Washington in association with Reid Middleton of Everett, Washington. April 17.

Herrenkohl Consulting and Landau Associates. 2011. Remedial Investigation Interim Data Report, South State Street Manufactured Gas Plant Remedial Investigation and Feasibility Study, Bellingham, Washington. Prepared for the City of Bellingham, Parks & Recreation Department, Bellingham, Washington and Puget Sound Energy, Environmental Services, Bellevue, Washington. Prepared by Herrenkohl Consulting LLC of Bellingham, Washington and Landau Associates Inc., of Edmonds, Washington. July 29.

Herrenkohl Consulting and Landau Associates. 2012. Draft Addendum 3 Sampling and Analysis Plan/Quality Assurance Project Plan, South State Street Manufactured Gas Plant Remedial Investigation and Feasibility Study, Bellingham, Washington. Prepared for the City of Bellingham, Parks & Recreation Department, Bellingham, Washington and Puget Sound Energy, Environmental Services, Bellevue, Washington. Prepared by Herrenkohl Consulting LLC of Bellingham, Washington and Landau Associates Inc., of Edmonds, Washington. August 2012.

Boulevard Park Shoreline Improvements
Biological Evaluation

Table of Contents

List of Tables

List of Photographs

List of Attached Figures

List of Attached Project Drawings

1.0 Executive Summary

The City of Bellingham Parks and Recreation is proposing to make improvements to the shoreline of Boulevard Park that will stabilize and protect the shoreline, enhance the intertidal zone and provide safe public access to the beach. This Project will use soft-shore methods where large and medium gravel is placed on the beach that will absorb wave energy and mimic natural coastal processes.

Boulevard Park is located along the eastern shoreline of Bellingham Bay and the Project will improve approximately 1,050 feet of the shoreline between the elevations of 14 feet above and -2 feet below Mean Lower Low Water. A continuous band of native eelgrass (*Zostera marina*) is present waterward of the park shoreline, which will not be disturbed by Project actions.

Construction activities will include removal of undesirable material from the beach such as concrete rubble, derelict iron machine parts, broken piling, and failing revetments. Drift sills will be constructed using large angular boulders that will hold the enhanced beaches in place. Beach material will be composed of large and medium gravel. Existing rock revetments will be repaired and reconstructed to extend their utility.

This Biological Evaluation (BE) assesses the existing environmental conditions of the Project area and potential impacts to species that are listed under the Endangered Species Act and their critical habitat that may be affected by the proposed project. This BE includes recommendations for Determination of Effects which are summarized below.

Table 1 Summary of effect determination on ESA listed species and critical habitat.

SPECIES	EFFECT	TAKE
Marbled murrelet (*Brachyramphus marmoratus*)	NLTAA*	None
Coastal Puget Sound Bull trout (*Salvelinus confluentus*)	NLTAA	None
Coastal Puget Sound Bull trout critical habitat	Will not adversely modify	
Puget Sound ESU chinook salmon (*Oncorhynchus tshawytscha*)	NLTAA	None
Puget Sound ESU chinook salmon critical habitat	Will not adversely modify	
Puget Sound Steelhead trout (*Oncorhynchus mykiss*)	NLTAA	None
Bocaccio rockfish (*Sebastes paucispinis*)	NLTAA	None
Canary rockfish (*Sebastes pinniger*)	NLTAA	None
Yelloweye rockfish (*Sebastes ruberrimus*)	NLTAA	None
Steller sea lion (*Eumetopias jubatus*)	No effect	None
Southern resident killer whale (*Orcinus orca*)	No effect	None
Southern resident killer whale critical habitat	Will not adversely modify	

NLTAA: Not Likely to Adversely Affect. NA: Not applicable

The Project will take place in estuarine nearshore and non-rocky shelf habitat which is Essential Fish Habitat (EFH) for west coast groundfish, Pacific salmon, and coastal pelagic species. An assessment of EFH is included with the determination that the Boulevard Shoreline Improvement Project will not adversely affect EFH of west coast groundfish, Pacific salmon and coastal pelagic species.

2.0 Project Location

The Boulevard Park Shoreline Improvement Project (Project) is located along the eastern shoreline of Bellingham Bay in Boulevard Park (48°43.9'N, 122°30.2'W) (Figure 1). The Project includes approximately 1,050 feet of the shoreline from the Paddle Point Trestle near the coffee shop at the south end and extending northward. Improvements will be made from the elevation of 14 feet above Mean Lower Low Water (MLLW) to -2 feet MLLW.

Five reaches have been designated along this shoreline (Figure 2), each reach has distinct physical characteristics and distinct transition areas between reaches. Project elements have been designed to improve shoreline functions within four of the reaches and to integrate functions within the entire Boulevard Park shoreline.

- Pete's Beach; from the Paddle Point Trestle to the coffee shop
- Coffee Shop; directly waterward of the coffee shop defined by existing concrete structures
- Playground; North of coffee shop reach
- West Beach; From playground reach to derelict pilings in shoreline, northern end of project
- Northwest Beach; north of Project boundary from derelict pilings to north end of park; Project actions will not occur in this reach

3.0 Project Purpose

The Purpose of the Project is to stabilize and protect the shoreline and intertidal zone of Boulevard Park with a soft-shore method that will absorb wave energy and provide improved public safety for park users.

The shoreline of Boulevard Park has a low slope that is exposed to wind driven waves from predominate southwest winds of winter and northwest winds of the summer. These waves have eroded the shoreline and toppled revetments that had been placed to protect the shoreline. Angular boulders and quarry spalls have been used to protect the shoreline in the recent years. Prior to development of the Park, broken concrete and rubble was placed at the shoreline and intertidal zone. These materials are spread across the intertidal zone along with jagged broken piling stubs and miscellaneous material that have created hazardous conditions to the public who walk into the intertidal zone. Objectives of the Boulevard Park Shoreline Improvements project are to provide erosion control, nearshore habitat enhancement, and safe beach access along the west shore of Boulevard Park using beach nourishment and reconstructed erosion control structures, as well as associated minor park infrastructure modification.

4.0 Project Description

4.1 Action Area

- Upland Action Area: 300-foot radius around the Project site during construction phase.
- In-water Action Area: 300-foot radius around Project site during construction phase.

Construction activities will be conducted from on shore and when tidal elevations allow for placement of beach gravel "in the dry" to minimize fine sediment from being transported from the Project site. Heavy equipment such as track mounted excavators and backhoes, gravel

loaders, and dump trucks will be used and will raise noise levels to above normal levels for the period of construction. Removing rubble, and excavating beach material and placing drift sill boulders and beach gravel will be completed "in the dry" to minimize entrainment of fine sediment into the marine waters. These direct effects will not exceed ambient conditions within a radius of approximately 300 feet from the Project site. The equipment will access the construction site via the Park entrance and across a portion of the Boulevard Park lawn which will be temporarily converted into a staging area. Best Management Practices (BMPs) outlined as Conservation Measures will be followed to minimize the transport of fine sediment into Bellingham Bay. The Project will be completed in four general phases:

Phase I: Staging; Set up temporary construction area with fencing and load transfer area to support heavy equipment.

Phase II: Removal of undesirable beach material, failing revetment rubble and rock
Excavating material from intertidal area where needed
Stockpiling reusable material
Hauling away unusable material to be recycled or to a certified landfill

Phase III: Construction, in order of:
Drift sills
Revetments
Enhanced beach
Landscaping

Phase IV: Demobilization of equipment, fencing and temporary loading area,
Landscaping, reseeding, and mulching

Sequencing of the Project will be determined by the City of Bellingham Parks Department with the selected contractor to maximize efficiency.

The project area has a shore length of approximately 1,050 feet. The project area is from the northern terminus of the Pattle Point foot bridge to the approximately 125 feet southwest of the northern end of the Park (Figure 2). An area approximately 610 feet long will be enhanced through beach nourishment with three drift sills to maintain beach nourishment sediment in this highly impacted, urban shore. The project will also include approximately 540 feet of shore with reconstructed rock revetments. The beach nourishment footprint would generally extend 70 to 85 feet waterward of the current concrete rubble revetment with the greatest width in the north end of the West Beach reach of the project, north of the playground. The toe of the nourishment area would be between -1 feet and +2 feet MLLW. The southern reach of nourishment area, Pete's Beach, will have a surface slope of 7:1 (horizontal: vertical) with approximately 10,850 square feet of gravel nourishment sediment to replace the existing rocks, spalls, and concrete that currently cover 60% of the natural surface. The non-native beach material will first be removed. Approximately 350 CY of beach nourishment material will be needed for the proposed slopes after the non-native beach material is removed.

Preparation of the West Beach reach for beach nourishment will require removal of approximately 38,150 square feet of mostly concrete and rock with some spalls and bricks that cover 70 to 90 percent of the intertidal surface. Some of the concrete rubble and non-native material may be reused on the lower beach and be used as a foundation for the gravel beach. Medium to large gravel will be placed on the beach at a 6.5:1 slope in the southern cell and 6:1

in the northern cell. Approximately 3,730 cubic yards of beach material will be required which, will be composed primarily of 0.3-2.0 inch, washed, rounded gravel (Table 2).
Achieving a three-foot minimum thickness of the beach gravel on the enhanced beaches is critical to absorb wave energy, wave uprush, and to allow water to percolate into and back down the beach. This is the mechanism which moves gravel onshore during storms but does not remove gravel offshore. The minimum depth is also important to avoid erosion of the underlying fine woody debris that appears to be susceptible to erosion. The enhanced beaches will be built with several feet of gravel over the existing beach surface however; excavation will be needed in portions of the West Beach reach to allow for the minimum gravel depth of three feet. Excavation of no more than three feet at the toe of the enhanced beach tapering to zero depth near the middle of the beach will be limited to a total area of approximately 12,100 square feet at the West Beach site with a total of 780 cubic yards (attached project drawings sheet). Excavation will expose the sawmill wood waste that was historically used as fill and to minimize erosion and mobilization of this fine woody debris, the excavated area will be covered with gravel as soon as possible after it has been exposed. It is likely that excavation and subsequent filling will occur over two or three low-tide events; exposed excavated areas will be covered with at least one foot of gravel before it is inundated by the rising tide. Total excavation and fill areas and volumes are listed below in Table 2.

Table 2. Total area and volumes of excavation and fill

PROJECT ELEMENT	AREA (SQUARE FEET)	VOLUME (CUBIC YARDS)
Removal of rubble	30,000	1,325
Excavation of beach material and fill for drift sills and enhanced beach	18,117	1,675
Construction of drift sill	6,025	2,000
Construction of enhanced beach	48,920	4,135[1]

1. Includes approximately 405 cubic yards of rubble that will be reused as fill

Rock drift sills constructed of 2 to 3-foot angular boulder will extend from the shore to the tidal elevation of -2.0 ft MLLW. The purpose of the sills is generally to contain the beach nourishment gravel in this severely sediment-starved setting. The top of the drift sills will be constructed 1 to 2 feet above finished down-drift beach grade, with gaps in the rock at the elevation of the adjacent nourished beaches. Therefore the sills will not be able to "trap" any sediment that may be transported by littoral drift, but will aid in holding placed sediment onsite. It is important to note that this reach of shoreline is mapped as "no appreciable net shore-drift" primarily because the railway has blocked all natural sources of sediment that would contribute to shore-drift. This is true for the entire project area shore.

The drift sills will be built on top of a rock foundation that will extend four feet below the existing beach grade in the footprint of the drift sills. This foundation will be constructed of large (4-foot) angular boulders from a local quarry.

Backshore nourishment will include a mix of coarse sand to fine gravel, ranging from approximately 0.04 inch to 1.0 inches, with approximately 75% finer than ¼ inch. Coarser material will be included to both mimic natural beach conditions in this area and to aid in longevity of sediment in the project area. The use of "pit-run" or "bank-run" material may be able to make up the majority of the backshore, sandy nourishment sediment. Large angular rock

will be placed along a portion of the toe of the constructed beach near each sill to help hold the placed gravel in place (attached project drawings).

The drift sill at Pete's Beach will have a footprint approximately 975 square feet with 50 square feet of the footprint being below the MLLW elevation. The West Beaches southern drift sill will have a footprint approximately 2,685 square feet with 730 square feet of the footprint being below the MLLW elevation. The West Beaches northern drift sill will have a footprint approximately 2,905 square feet with 1,275 square feet of the footprint being below the MLLW elevation.

Reconstructed rock revetment sections will have a slope of 2:1 with design elevation ranging from +13 feet to +14 feet MLLW using large armor stones over smaller rock and spall on geotextile fabric. Approximately 205 feet of the new rockery will be installed in the Northwest Shore reach and 130 feet of revetment will be reconstructed between the West Beaches and the coffee shop. Pete's Beach will have approximately 205 lineal feet of new rockery landward of beach nourishment sediment.

5.0 Existing Conditions

Boulevard Park is located within the City limits and is surrounding by multi-family residences overlooking the park. An active railroad line runs between the Park and the residential buildings with several freight and passenger trains running daily. The Park and surrounding area is nearly fully developed and the park is heavily used for public recreation.

Boulevard Park has a low bank shoreline where fill material was placed historically to expand the low lying shoreline waterward into Bellingham Bay. Much of this fill material consists of wood debris and saw dust, with fill soil overlying it, and with additional rubble material from demolished buildings and roads that were used as revetments to control coastal erosion. Broken pilings from a historic pier are located throughout the intertidal beach. A thin veneer of small gravel with debris overlaying sawdust generally characterizes the current beach substrate. This substrate type offers low complexity for intertidal fauna with very little interstitial space for refugia. The shoreline is continually being eroded and the exposed debris, slick concrete surfaces and uneven rubble pose a safety hazard to park users; a safe connection to the public beach does not exist.

Project activities will occur in the upper beach and shallow intertidal zone, between tidal elevations of +14 feet and -2 feet MLLW. Substrate in this area is primarily angular rock rip rap at the shoreline with concrete rubble, mixed rubble such as bricks and rock, and exposed piling. A survey of the substrate coverage was completed by Wilson Engineering on March 26, 2012 at a +0.5 foot tide and results of this survey are shown on Figure 3. Photographs of the beach conditions at a tidal elevation of +0.5feet MLLW are included as Figure 4.

Sawmill wood waste was used to fill much of the intertidal area at Boulevard Park when a commercial sawmill operated at this location prior to 1925. The depth of the wood waste has not be determined but it does exceed 6 feet and may exceed 16 feet at the toe of the propose West Beach site. Materials Testing & Consulting, Inc. used a 6-foot hand auger to dig into the intertidal sediment and a 16-foot Wildcat Dynamic Cone penetrator to test the resistance of the

material. At two locations near the toe of the West Beach site the hand auger revealed sawmill waste to the depth of 6 feet. Resistance to penetration of the material was consistently 'very loose' to the depth of 16 feet at these same locations. This material will be exposed as the beach is excavated to achieve the designed depth of beach-nourishment gravel. Beach gravel will be placed over the excavation area as soon as possible. Excavation may occur over two or three low-tide events but the excavated area will be covered with at least one foot of gravel before it is inundated by the rising tide.

5.1 Marine Vegetation

Marine vegetation in the intertidal zone is primarily the green alga *Ulva* and brown alga *Fucus* with a mix of green and red algae with an overall coverage of approximately 10 percent. Eelgrass is present in the Project site. The inner boundary and density of the eelgrass has been delineated during an extreme low tide event on June 6th 2012 by Coastal Geologic and Fairbanks Environmental Services (Figure 5). The outer boundary can be estimated along the depth contour of -11 feet MLLW based on results of a study by WDNR (Gaeckle 2009). The density of eelgrass was documented by counting the number of eelgrass shoots within a ¼-square meter quadrate placed at three-foot intervals along a 90-foot transect set parallel to the shoreline at the edge of the water at approximately -3 feet MLLW, approximately 5 to 10 feet waterward of the inner margin of the eelgrass. Thirty counts were made along each transect at three locations (Figure 5 and Photos 1 and 2). The density of eelgrass at each location was:

Pete's Beach:	117 shoots per square meter
Playground Beach:	172 shoots per square meter
West Beach:	89 shoots per square meter

5.2 Forage Fish Spawning Habitat

Potential spawning habitat for surf smelt (*Hypomesus pretiosus*) has been identified at two locations in the Project Area (WDFW salmonscape). This habitat consists of mixed sand and gravel at the tidal elevation of +7 feet MLLW to the extreme high water mark (Penttila 2007) and is located at Pete's Beach, the south end of the Project Area under the Pattle Point trestle, and along the West Beach near the north end of the Project Area. Surf smelt spawning has been documented by the presence of surf smelt eggs south of Pete's Beach only, under and inside of the Pattle Point trestle. West Beach is identified as a potential spawning site; surf smelt eggs have not been found in the gravel of West Beach. Sand lance spawning has not been documented in the Action Area. In Bellingham Bay, forage fish may spawn at any time of the year (Penttila 2007).

5.3 Water and Sediment Quality

Water and sediment has not been identified as impaired in the Action Area. Padden Creek has been listed on the State 303d list as a Category 5 for fecal coliform and impaired dissolved oxygen. Padden Creek is approximately 0.6 miles to the south of the Project site. Sediments impaired with LPAH and HPAH have been mapped 370 feet to the west of the Project Site. This sediment will not be disturbed by the Project activities.

A portion of the Boulevard Park Shoreline Improvement Project overlaps two Washington State cleanup sites under the Model Toxic Control Act. The City is conducting a remedial investigation, with Ecology supervision, of the South State Street Manufactured Gas Plant cleanup site (Ecology Facility ID #2865). Portions of the property may be contaminated from

previous industrial uses. The second cleanup site includes the Whatcom Waterway site (Ecology Facility ID# 2899). This site extends to the Boulevard Park Shoreline sediments. Contamination may be present at depth in the sediments near Boulevard Park. The Whatcom Waterway site is currently in the cleanup action stage. Natural recovery of sediments was identified as a sufficient cap for contaminated sediments near the Whatcom Waterway. Therefore, no cleanup action is anticipated to occur in-water near the Boulevard Park site.

Any actions required as a result of the Boulevard Park Shoreline project will be coordinated directly with the Department of Ecology and could include additional BMPs.

5.4 Net Shore-Drift

The Department of Ecology coastal atlas indicates that there is no appreciable net shore-drift along the eastern shoreline of Bellingham Bay (https://fortress.wa.gov/ecy/coastalatlas2001/viewer.htm). This is primarily due to shoreline armoring that blocks sediment input along this shoreline. Wind driven waves along the Boulevard Park shoreline have adequate power to move sediment. However, sediment input along this reach is absent due to shoreline modification.

5.5 Groundwater Seeps

Several groundwater seeps were observed in the intertidal zone on the project area near the tidal elevation of -1.5 feet MLLW (Figure 5 and Photo 3). A strong hydrogen sulfide odor is associated with these seeps along with mats of *Beggiatoa* bacteria and a zone where growth of marine vegetation is absent (Photo 4). Similar sites near Tacoma, WA have been studied by Elliott, Spear and Wyllie-Echeverria (2006) where *Beggiatoa* mats are associated with sediment containing high levels of wood waste and hydrogen sulfide with a negative correlation of the abundance of eelgrass. These seeps occur where seawater has saturated sawmill wood waste that is under the beach material. The wood waste acts as a giant sponge that is recharged at each high tide and then releases water at low tide. The seeps carry hydrogen sulfide produced from the bacterial decay of the organic material in anaerobic conditions. Hydrogen sulfide is toxic to marine vegetation which is evident in the zones around the ground water seeps where plant growth is inhibited. Sediment around the seeps is also saturated with hydrogen sulfide and this appears to limit the inner margin of the eelgrass bed (Figure 5). The proposed Project will not likely alter the hydrology or volume of the seeps, however, the location of the seeps may be altered. Excavation at the toe of the West Beach site may open new 'conduits' for the flow allowing the groundwater to reach the surface at the toe of the enhanced beach. Studying issues of seeps in intertidal zone is a fairly recent scientific endeavor and only a few recent papers related to wood waste along the shorelines of the Salish Sea have been published.

5.6 Effected Habitat

Marine habitat within the Project Area includes:

1. Estuarine habitat
2. Non-rocky shelf habitat

5.6.1 Estuarine Habitat

The Project Area is within Bellingham Bay which is the estuary of the Nooksack River. The Nooksack River supports runs of Chinook salmon and bull trout and this shoreline is identified as Critical Habitat for ESA listed Puget Sound Chinook salmon and Puget Sound bull trout.

5.6.2 Non-rocky shelf Habitat

The intertidal zone along the shoreline of Boulevard Park has a low slope with a fringe of eelgrass and turf algae (WDFW 2012). This habitat type is used for rearing and as a migration corridor for juvenile salmon, rockfish, juvenile groundfish and juvenile pelagic species.

6.0 Marine Species and Critical Habitat

The proposed Boulevard Shoreline Improvement Project will occur along the eastern shoreline of Bellingham Bay and activities will take place both above and below the ordinary high water mark. Federally listed species that may be affected by the Project are listed below in Table 3:

Table 3. United State Endangered Species Act listed species that may be affected by the Boulevard Shoreline Improvement Project.

Species	Status[1]	Jurisdiction
Marbled murrelet (*Brachyramphus marmoratus*)	T	USFWS
Coastal Puget Sound Bull trout (*Salvelinus confluentus*)	T	USFWS
Coastal Puget Sound Bull trout critical habitat		USFWS
Puget Sound ESU Chinook salmon (*Oncorhynchus tshawytscha*)	T	NMFS
Puget Sound ESU Chinook salmon critical habitat		NMFS
Puget Sound steelhead trout *(Oncorhynchus mykiss*)	T	NMFS
Bocaccio rockfish (*Sebastes paucispinis*)	T	NMFS
Canary rockfish (*Sebastes pinniger*)	T	NMFS
Yelloweye rockfish (*Sebastes ruberrimus*)	E	NMFS
Steller sea lion (*Eumetopias jubatus*)	T	NMFS
Southern resident killer whale (*Orcinus orca*)	E	NMFS
Southern resident killer whale critical habitat		NMFS

1. Status: Threatened or Endangered.

6.1 Birds

6.1.1 Marbled Murrelet

Marbled murrelets (*Brachyramphus marmoratus*) were listed as threatened by the USFWS in 1992. Marbled murrelets are year-round residents on Washington marine waters. These birds forage in sheltered waterways and harbors generally within 1.2 miles of shore, selecting feeding areas that are closer to shore than other alcid seabirds that forage in Washington waters. Pacific sand lance (*Ammodytes hexapterus*) is the primary prey species of marbled murrelets, constituting over 65% of their diet, especially during the breeding season (Burkett 1995). Other prey species include pacific herring (*Clupea harengus*), seaperch (*Cymatogaster aggregata*), euphausiids and other marine invertebrates (Burkett 1995).

Marbled murrelets breed from April 1 to September 15 and nest in mature and old growth forests within 60 miles of marine waters. There are no known marbled murrelet nest sites and no potential murrelet-nesting habitat in the Action Area (WDFW 2012).

Potential threats to marbled murrelet populations include loss of old-growth forest, disturbance during nesting, nest predation, oil spills, entanglement in gill nets, and disturbance during

foraging (Ralph et al. 1995). Marbled murrelets forage and winter in marine habitats around the San Juan Islands in relatively low densities with the highest numbers generally observed in fall (Speich and Wahl 1995). No marbled murrelet nests and no concentrations of sea birds are documented in the action area (WDFW 2012).

6.2 Salmonids

The Salish Sea supports several species of anadromous salmonids. These include Chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*O. keta*), coho salmon (*O. kisutch*), pink salmon (*O. gorbuscha*), sockeye salmon (*O. nerka*), steelhead trout (*O. mykiss*), and sea-run cutthroat trout (*O. clarki clarki*). Two anadromous char species, bull trout (*Salvelinus confluentus*) and Dolly Varden (*S. malma*) are also known to use these waters. Dolly Varden and bull trout are similar in appearance and are often mistaken for the other.

While there is no suitable habitat for spawning in the Action Area, adult and juvenile salmonid species migrate and rear throughout the Salish Sea. Salmonid species, as well as other marine species, use eelgrass meadows for foraging and cover. No specific surveys were conducted to determine presence of Chinook salmon, steelhead trout, bull trout, or Dolly Varden in the project vicinity, however it is likely that these fish may be present throughout the year in the Project site.

6.2.1 Coastal/Puget Sound Bull Trout and Dolly Varden

Coastal/Puget Sound Bull trout were listed as threatened under the Endangered Species Act (64 FR 58909) on November 01, 1999. Washington State Dolly Varden was proposed for listing as threatened due to similarity of appearance to Bull trout (66 FR 1628) on January 09, 2001. Bull trout and Dolly Varden are managed jointly by WDFW because they co-exist, and have very similar life histories and habitat requirements (WDFW 1998).

Bull trout populations of anadromous, fluvial and possibly resident life histories occupy the Nooksack River system. Spawning is known to occur in many of the tributaries to the upper three forks of the Nooksack River (USFWS 2004). The Boulevard Project area is likely used as a migration corridor by adult, subadult and juvenile char. Adult upstream migration occurs from May through November and outmigration occurs from January through July therefore, adult native char may be in the project area at any time of the year. Subadult char migration periodicity overlaps with the adult fish and may be in the project area at any time throughout the year. Juvenile char migrate downstream from March through July and possibly into August and therefore may be in the project area at this time.

6.2.2 Coastal/Puget Sound Bull Trout Critical Habitat

The final designation of critical habitat for Coastal-Puget Sound distinct population segments of bull trout (Salvelinus confluentus) was published on September 26, 2005 in the Federal Register (70 FR 56212). The estuarine and marine waters of the Salish Sea provide foraging and migration habitat for amphidromous bull trout outside of freshwater core areas. Amphidromous bull trout use nearshore habitat along the eastern shore of Salish Sea from the Canadian border south to the Nisqually River delta. Bull trout have also been documented using nearshore habitat of islands along this eastern shore, especially in the northern part of the sound. Critical habitat includes nearshore areas, including tidally influenced freshwater heads of estuaries, and stream channels within the proposed stream reach. The eastern shoreline of Bellingham Bay and Project action area are included in bull trout critical habitat.

USFWS (2010, 75FR2269) has recently identified nine Principle constituent elements (PCEs) for bull trout critical habitat that include:

1. Springs, seeps, groundwater sources, and subsurface water connectivity (hyporehic flows) to contribute to water quality and quantity and provide thermal refugia.
2. Migratory habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.
3. An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.
4. Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes with features such as large wood, side channels, pools, undercut banks and substrates, to provide a variety of depths, gradients, velocities, and structure.
5. Water temperatures ranging from 2° to 15°C (36° to 59° F), with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range will vary depending on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shade, such as that provided by riparian habitat; and local groundwater influence.
6. Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount (e.g., less than 12 percent) of fine substrate less than 0.85 mm (0.03 in.) in diameter and minimal embeddedness of these fines in larger substrates are characteristic of these conditions.
7. A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, they minimize departures from a natural hydrograph.
8. Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.
9. Few or no nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass; inbreeding (e.g., brook trout); or competitive (e.g., brown trout) species present.

Of these PCEs, numbers 2,3,4,5, and 8 apply to the Boulevard Park Project. The Project will remove low functioning substrate and enhance the ecological function of the intertidal habitat along the shoreline that is used as a migratory corridor by salmonids and will not adversely modify PCEs of Bull Trout critical habitat.

6.2.3 Puget Sound Chinook Salmon

Puget Sound Chinook salmon was listed as threatened under ESA (64FR 14308) on August 2, 1999 and a recent five-year review of this listing completed on August 15, 2011 concluded that Puget Sound Chinook salmon should remain listed as threatened (76FR 50448). Spawning populations of Chinook salmon are distributed along the Pacific Coast of North America from the Ventura River in southern California to Point Hope, Alaska, and in northeast Asia from the Anadyr River south to Hokkaido, Japan (Wydoski and Whitney, 2003). Chinook salmon can be found throughout the year in the Salish Sea.

Three unique stocks of Chinook salmon have been identified in the Nooksack basin:

1. North Fork early-run (spring) that spawns in the North and Middle forks of the Nooksack river as well as some tributaries
2. South Fork early-run that spawns primarily in the main stem of the South Fork of the Nooksack River
3. Late-run or Fall Chinook that spawn throughout the river system. Although this is an introduced and hatchery enhanced stock, many of these fish spawn naturally throughout the river system and are considered part of the Puget Sound Chinook Salmon population.

Fall Chinook have also been observed spawning in Padden Creek, Squalicum Creek and Whatcom Creek (WDFW 2012, salmonscape).

Factors leading to the decline of Chinook salmon populations in Puget Sound include:

- Degradation of spawning and rearing habitat due to human activities
- Limited access to historic spawning habitat due to development activities
- Altered stream flow regimes and water temperatures
- Loss of riparian vegetation and soils that alter hydrologic and erosion rates
- Increased sedimentation,
- Decreased large woody debris (LWD) in rivers and loss of potential recruitment of LWD
- Filled estuarine rearing areas
- Channelizing and diking of rivers leading to loss of rearing and spawning habitat
- Dams blocking access to historic spawning and rearing channels and altering hydrologic regimes, water temperature and sediment transport
- Over exploitation of Chinook stocks by commercial and recreation fisheries have contributed to lower numbers of returning adult salmon
- Introduction of non-native species have increased populations of predator and competitive species
- Hatchery programs have led to competition between artificially produced fish with naturally reproduced fish, mixed separate genetic stocks, and transmit disease between hatchery and naturally produced fish.

6.2.4 Puget Sound Chinook Salmon Critical Habitat

The final designation of critical habitat for Puget Sound evolutionary significant unit of Chinook salmon was published on September 2, 2005 (70 FR 52630). The Bellingham Bay is within the nearshore marine critical area (Unit 19). This unit includes all nearshore zones (including areas adjacent to islands) of the Strait of Georgia (south of the international border), Puget Sound, Hood Canal, and the Strait of Juan de Fuca from extreme high water out to a depth of 100 feet (30m). PCEs of the nearshore marine critical habitat include:

- Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation
- Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

6.2.5 Steelhead Trout

The Puget Sound population of steelhead trout (*Oncorhynchus mykiss*) was listed as threatened under the Endangered Species Act on June 11, 2007 (72 FR 26722) and a recent five-year review

of this listing completed on August 15, 2011 concluded that Puget Sound steelhead trout should remain listed as threatened (76FR 50448). The biological review team determined that naturally spawning winter and summer run steelhead populations and two hatchery steelhead stocks within Puget Sound constitute a Distinct Population Segment (DPS) that is reproductively isolated from other groupings of West Coast steelhead. Historically, steelhead trout were distributed along the marine waters and inland rivers of west coast North America and northern Asia from northern Mexico to the Kamchatka peninsula. Human development has negatively impacted spawning and rearing habitat and has created barriers to upstream migration in much of the historic range (Wydoski and Whitney 2003, 71 FR 15666). Steelhead is a sea-run form of *O. mykiss* and rainbow trout is the freshwater resident form. Offspring from either form may either reside in its natal freshwater system or migrate out to marine waters after rearing in freshwater from one to seven years (Wydoski and Whitney 2003).

The Nooksack River supports four runs of steelhead trout:

1. Mainstem and North Fork winter-run steelhead trout
2. Middle Fork winter-run steelhead trout
3. South Fork winter-run steelhead trout
4. South Fork summer-run steelhead trout

Winter-run steelhead trout have also been documented in Padden Creek, Whatcom Creek and Squalicum Creek (WDFW 2012, salmonscape).

Factors contributing to Puget Sound steelhead decline are:

- Destruction and modification of spawning and rearing habitat in freshwater and estuarine systems;
- Over fishing for commercial, recreational, scientific or educational purposes;
- Disease and predation by especially non-native species;
- Inadequacy of existing regulatory mechanisms e.g. fisheries management and land use regulations;
- Other natural and manmade factors such as Pacific Decadal Oscillation and climate change.

Critical habitat designation has not been determined and will be reviewed after the final listing notification has been published.

6.3 Rockfish

Bocaccio (*Sebastes paucispinis*)
Canary (*Sebastes pinniger*)
Yelloweye (*Sebastes ruberrimus*)

Puget Sound/Georgia Basin Distinct Population Segments (DPSs) of bocaccio rockfish have been listed as endangered and canary rockfish and yelloweye rockfish have be listed as threatened under the Endangered Species Act effective on July 27, 2010 (75 FR 22276).

The Puget Sound/Georgia basin DPS of these three species of rockfish have declined due to:

- Over fishing for commercial and recreational purposes
- Degradation of habitat for juvenile and adult fish
- Degradation of water quality including episodic low dissolved oxygen and elevated contaminant levels.
- Inadequacy of existing regulatory mechanisms.

Rockfish have a long life span and mature late in life. As the fish mature, the female is able to reproduce more larvae. However, reproductive success is sporadic dependent on environmental stresses. Rockfish are generally congregated around specific habitat and tend to stay within a small home range exhibiting a high fidelity to specific locations. These attributes make rockfish highly susceptible to overfishing; fishers target known rockfish habitat and harvest larger fish with higher reproductive potential. Populations that are depleted of the age structure with a robust genetic diversity may require decades to recover.

Adult bocaccio, canary and yelloweye rockfish are associated with high-relief rocky habitat and are most abundant at depth greater than 150 feet. This habitat is extremely limited in Puget Sound with only 83.8 square miles. Much of this habitat has been impacted by derelict fishing gear, construction of bridges and utility infrastructure (Palsson et al. 2009).

Juvenile bocaccio and canary rockfish utilize shallow nearshore water with rock, cobble substrate with attached algae and kelp beds. The rock and algae provide refuge from predators where food sources are plentiful (Love et al. 1991). Puget Sound kelp beds have been impacted by shoreline development, industrial development and water quality degradation.

Very little information is available regarding the early life history of yelloweye rockfish; young juveniles (1 to 4 inches) have been observed along areas of high relief in water depth greater than 15 feet (Love et al. 1991). Generally, juveniles and subadults yelloweye rockfish are more commonly observed in shallower water, and are associated with rocky reefs, kelp canopies, and artificial structures such as piers and oil platforms as compared with than adult yelloweye rockfish (www.nmfs.noaa.gov/pr/species/fish/yelloweyerockfish.htm).

Contaminants and toxins such as mercury and hydrocarbons have been found in adult rockfish collected in the San Juan Islands. These contaminants may reduce reproductive success in bocaccio, canary and yelloweye rockfish similarly to other rockfish species that have been studied. Sewage, nutrients and animal wastes also impact water quality with reduced dissolved oxygen and fish kills have been documented in Hood Canal and periods of low dissolved oxygen are becoming more widespread in Puget Sound (Palsson et al. 2009).

Critical habitat designation has not been determined and will be reviewed after the final listing notification has been published.

6.4 Marine Mammals

6.4.1 Steller's Sea Lion

The Steller sea lion can be found from the Channel Islands of southern California north to the Pribilof Islands of the Bering Sea and west to the Kamchatka Peninsula (Jameson and Peeters, 1988). Breeding and pupping rookeries are formed from May to August with adults and

juveniles dispersing widely afterward. Both males and females are present throughout the year in the inland waters of Washington with peak counts of 1,000 animals present during the fall and winter months. Over its range, Steller sea lion populations have declined significantly over the last 15 years. The distinct population segment east of 144° west longitude which includes Washington State is currently listed as threatened in Washington under the Endangered Species Act (ESA) (Jeffries et. al. 2000). The distinct population segment west of 144° west longitude has been listed as endangered. Critical habitat for both populations is identified as 3,000 feet landward, seaward and skyward of rookeries, major haulouts and aquatic foraging zones.

Washington haulout sites are primarily along the outer coast from the Columbia River to Cape Flattery and also along the Vancouver Island side of the Strait of Juan de Fuca. Haulout sites are primarily on jetties, offshore rocks and coastal islands, with occasional sites on navigation buoys in Puget Sound. Breeding rookeries are located along the Oregon and British Columbia coasts, with no breeding rookeries found in Washington (Jeffries et. al. 2000). Haulout sites are not documented within the Boulevard Park Action Area (WDFW 2012).

6.4.2 Southern Resident Killer Whale

NOAA Fisheries has listed southern resident killer whales as endangered under the ESA on November 15, 2005 (70 FR 69903). This listing became effective on February 16, 2006 and a five-year review published in January 2011 found that the status should remain as endangered. Eastern North Pacific killer whale populations are classified as one of three distinct forms: residents, transients, and offshores. The southern resident killer whale population is distributed in the Pacific coastal waters from central California to the Queen Charlotte Islands, and may be a subspecies of Orcinus orca (Krahn et al. 2004). The southern resident population is comprised of about 90 animals within a single clan (J) which is composed of three pods (J, K, and L). Since the late 1990s, the three southern resident killer whale pods have spent much of the year ($\geq$ 7 months) in the inland waters of Washington and British Columbia, Canada. This geographic region is bounded by Race Rocks at the southern end of Vancouver Island and Port Angeles on the Olympic Peninsula (i.e., the east end of the Strait of Juan de Fuca), the Fraser River Delta in British Columbia, the San Juan Islands, and the north end of the Quimper Peninsula in Washington. Southern resident killer whales typically arrive in this region along major corridors of migrating Pacific salmon by late spring (May-June) and depart during winter (December-February). During early fall, southern resident killer whales expand their routine movements into Puget Sound to likely take advantage of chum and chinook salmon runs (Wiles 2004). Southern resident killer whales face a number of potential threats including:

1. Reductions of quality and quantity in prey availability;
2. Exposure to environmental contaminants, and;
3. Disturbance by whale-watching vessels and underwater noise (Wiles 2004)

These whales have experienced large historic declines in their main prey, salmon, which has obvious consequences for the community. Furthermore, organochlorine pollutants, primarily PCBs and DDT residues, are another threat. Southern resident killer whales are now considered among the most highly contaminated marine mammals in the world and exceed the chemical toxicity concentrations believed to cause health problems in other marine mammals. Hearing is crucial for the well-being of killer whales, yet threshold levels at which underwater noise becomes harmful to killer whales are unknown (Krahn et al. 2004). Recent models designed to evaluate vessel noise levels relative to killer whales' hearing detection capabilities predicted that

the sounds of fast boats are audible to killer whales at distances of up to 16 km, can mask their calls up to 14 km away, can elicit behavioral responses within 200 m, and may cause temporary hearing impairment after 30 – 50 min of exposure within 450 m (Krahn et al. 2004). Several studies have linked vessel noise and traffic with short-term behavioral changes in southern resident killer whales. These include changes in swimming speed and call duration, unpredictable travel paths, alteration of dive times, movement to open water, and unusual surface pattern behaviors (Wiles 2004).

6.4.3 Southern Resident Killer Whale Critical Habitat

Proposed critical habitat for southern resident killer whale was published on June 15, 2006 (71FR 34571) that specifies three areas for designation:

- The summer core area in Haro Strait and waters around the San Juan Islands
- Puget Sound
- Strait of Juan de Fuca

Primary constituent elements of SRKW critical habitat are:

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; and,
3. Passage conditions to allow for migration, resting, and foraging

The summer core area that includes all U.S. marine waters relative to a contiguous shoreline delimited by the line at a depth of 20 feet (6.1 m) relative to extreme high water in Whatcom and San Juan counties; and in Skagit County west and north of the Deception Pass Bridge. The Boulevard Project will be constructed landward of the tidal elevation of -2 feet MLLW however, a portion of the Action Area may extend beyond the 20-foot depth elevation and therefore the Project may include a portion of the summer core area.

7.0 Analysis of Effects

The proposed Boulevard Shoreline Improvement Project will replace a heavily modified shoreline with a gravel beach designed to mimic natural processes. The gravel beach will be held in place with drift sills designed to allow some shore-drift to occur. The enhanced beach will increase the substrate complexity and improve ecological function of the shoreline. Negative environmental impacts may occur as the enhanced beaches are being constructed. Construction activities will be conducted 'in the dry' when the beach is exposed during low tide periods to minimize entraining sediment into the marine waters. Heavy equipment will operate from the shore to remove the existing rubble and concrete debris from the beach, build drift sills, construct revetments, and place gravel onto the prepared beaches. Primary effects will be from fine sediment entering the marine waters due to disturbance of the intertidal sediment and disturbance of upland area; stormwater may transport disturbed sediment into Bellingham Bay. Operations of heavy equipment also have the potential for spills of fuel and hydraulic fluid.

7.1 Direct Effects

Potential impacts to the aquatic habitat as a result of Boulevard Shoreline Improvement Project may include:

- Temporary increased turbidity from a sediment plume related to removal of rubble from beach and placement of gravel material
- Temporary impacts to water quality due to construction activities such as potential fuel, oil and hydraulic fluid spills

The proposed Project is located in Bellingham Bay, the estuary of the Nooksack River that carries a high sediment load into the bay and this body of water naturally has high turbidity. A localized increase of turbidity however, may cause juvenile salmon to avoid the disturbance and move off shore into deeper water.

Discharges of petroleum products will not be allowed as required by the WDFW HPA and as listed below as a Conservation Measures No. X.

7.2 Indirect Effects

The proposed Project may indirectly affect ESA listed species by impacting:

- Salmonid migration routes due to alteration of shoreline slope
- Forage fish spawning habitat

The existing intertidal substrate from the OHWM to -2 feet MLLW will be enhanced with gravel to mimic natural slope and natural ecological function. After placement, the gravel beach will be sorted and contoured by wave action and will become a more natural beach profile within one or two winter seasons. Juvenile salmonids may avoid migrating over the newly placed gravel until after it has been 'conditioned' by waves and natural processes. The existing eelgrass bed will not be altered and will continue to provide refugia to juvenile salmonids.

Surf smelt spawning has been documented on the gravel beach directly south of Pete's Beach reach, underneath and inside of the Paddle Point Trestle which is not within the footprint of the beach enhancement sites. The documented spawning area may be vulnerable to increased sedimentation or contamination from fuel or hydraulic oil spills. The potential spawning substrate will be altered by the Project.

8.0 Conservation Measures

The following conservation measures have been incorporated into the project to protect and minimize the impact to the aquatic habitat.

1. Timing limitations: In-water work will only be allowed from July 16 through February 15 for the protection of salmon and bull trout.
   a. Work below the ordinary high water line shall not occur from March 2 through July 15 of any year for the protection of migrating juvenile salmonids.
   b. Work below the ordinary high water line shall not occur from February 16 through July 15 of any year for the protection of bull trout.

2. All work below the OHWM will be conducted 'in the dry' when beach is exposed during low-tide events.

3. Excavated areas below the OHWM will be covered with at least one foot of gravel, or large rock at the sill excavation sites, prior to being inundated by the rising tide. Wood waste fill will not be exposed to marine water or waves during excavation.

4. The contractor will have a prepared Stormwater Pollution Prevention Plan (SWPPP) as required by Washington State Department of Ecology. Element 9 of this plan would address specific actions to prevent petroleum products from being discharged into surface waters. The contractor will also have oil-absorbent materials on site to be used in the event of a petroleum product spill and measures to avoid petroleum products or other deleterious materials from enter surface waters will be taken.

5. Project activities shall not degrade water quality to the detriment of fish life.

6. Eelgrass and macroalgae will not be adversely impacted due to any project activities.

7. Project activities will be conducted to minimize siltation of the beach area and bed.

8. The following BMPs described in Stormwater Management Manual for Western Washington Volume II; Construction Stormwater Pollution Prevention (Ecology 2005) will be followed to minimize the amount of fine sediment from entering marine water and storm drains in the project area:

   BMP C105: Stabilize Construction Entrance with quarry spalls or hog fuel
   BMP C121: Mulching with straw
   BMP C140: Dust control; spray area with water as needed to control dust
   BMP C220: Storm Drain Inlet Protection
   BMP C230: Straw Bale Barrier
   BMP C233: Silt Fence

9. Project area will be landscaped, reseeded and mulched as needed to stabilize disturbed soil.

9.0 Determination of Effects

The following table lists the summary of the effects analysis recommended by this Biological Evaluation for federally listed ESA species.

Table 4. Summary of effect determination on ESA listed species and critical habitat.

SPECIES	EFFECT	TAKE
Marbled murrelet (*Brachyramphus marmoratus*)	NLTAA*	None
Coastal Puget Sound Bull trout (*Salvelinus confluentus*)	NLTAA	None
Coastal Puget Sound Bull trout critical habitat	Will not adversely modify	
Puget Sound ESU chinook salmon (*Oncorhynchus tshawytscha*)	NLTAA	None
Puget Sound ESU chinook salmon critical habitat	Will not adversely modify	
Puget Sound Steelhead trout (*Oncorhynchus mykiss*)	NLTAA	None
Bocaccio rockfish (*Sebastes paucispinis*)	NLTAA	None

SPECIES	EFFECT	TAKE
Canary rockfish (*Sebastes pinniger*)	NLTAA	None
Yelloweye rockfish (*Sebastes ruberrimus*)	NLTAA	None
Steller sea lion (*Eumetopias jubatus*)	No effect	None
Southern resident killer whale (*Orcinus orca*)	No effect	None
Southern resident killer whale critical habitat	Will not adversely modify	

NLTAA: Not Likely to Adversely Affect.

Table 4 is the first half of a matrix of Project activities with potential exposure to stressor, with duration and frequency of exposure. Table 5 is the second half of the matrix connecting project activities with listed species and response to stressors and the conservation measures which will avoid and minimize negative effects on these species.

Table 5. Exposure matrix connecting Project activities with stressors and duration of exposure.

Activity	Exposure				
	Stressor	**Extent**	**When**	**Duration**	**Frequency**
Phase I: Staging of construction area	Stormwater may transport fine sediment from the disturbed upland soil into marine waters; raising turbidity in nearshore zone	Within 50 yards of shoreline and Project boundary	Initial staging of construction area	5 days	Once; first week of construction phase
Phase II: Removal of undesirable beach material; track mounted excavators and backhoes working 'in the dry'	Fine sediment from beach face may be entrained into marine water; raising turbidity in nearshore zone	Within 50 yards of shoreline and Project boundary	Second week of Project; contractor will determine sequencing of project maximize efficiency of time and equipment	1 to 2 days at each beach enhancement site	Three times; once at each beach enhancement site: Pete's Beach, Playground Beach, West Beach
Excavation of beach material and woodwaste at West Beach site	Mobilization of fine woody debris into marine water; raising turbidity in nearshore zone	Within 50 yards of shoreline and Project boundary	Second week of Project; contractor will determine sequencing of project maximize efficiency of time and equipment	2 to 3 days during low tide at West Beach enhancement site	2 to 3 events during low tide at West Beach enhancement site
Phase III. Construction of drift sills, revetments and enhanced beaches. Work will be done 'in the dry'	Fine sediment from beach face may be entrained into marine water; raising turbidity in nearshore zone	Within 50 yards of shoreline and Project boundary	Third week of Project; contractor will determine sequencing of project to maximize efficiency of time and equipment	2 to 5 days at each beach enhancement site	Three times; once at each beach enhancement site: Pete's Beach, Playground Beach, West Beach
Phase IV. Demobilization of construction equipment and staging area; landscaping, reseeding and mulching	Stormwater may transport fine sediment from the disturbed upland soil into marine waters; raising turbidity in nearshore zone	Within 50 yards of shoreline and Project boundary	Last week of Project;	2 to 5 days for demobilization of equipment and staging area. Landscaping may require 1 - 2 weeks.	Once; Last week or two of Project sequence
Use of heavy Equipment; accidental leaks and spillage of petroleum products	Contamination of marine water due to accidental spill of petroleum products	Any loss of petroleum products will be contained on site	During duration of project	At no time	At no time

Table 6. Exposure matrix connecting Project activities with ESA listed species and life stage and their response to stressor. Conservation measures are included.

Activity	Life History Form present in Action Area	Response(s) to Stressor	Minimization Measures	Performance Standards
Phase I: Staging of construction area	**BT**: juvenile/subadult **Chinook:** juv/subadult **Steelhead:** juv/subadult **Rockfish** juv **Prey:** forage fish larvae, juv, adult; macroinvertebrates **Murrelet** adult feeding	Fish may move offshore into deeper water, prey species may avoid areas with elevated turbidity, sediment may degrade forage fish spawning habitat	Conservation Measure (CM) 1. Timing; work below OHWM will occur between July 16 and Feb 15. CM 8; Ecy BMPs C105 Stabilize construction entrance, C220 Storm drain inlet protection, C233 Silt fence	Elevated turbidity will be minimized and undetectable beyond 150 feet of shoreline
Phase II: Removal of undesirable beach material; track mounted excavators and backhoes working 'in the dry' Excavation of beach material and woodwaste at West Beach site	**BT**: juvenile/subadult **Chinook:** juv/subadult **Steelhead:** juv/subadult **Rockfish** juv **Prey:** forage fish larvae, juv, adult; macroinvertebrates **Murrelet** adult feeding	Fish may move offshore into deeper water, prey species may avoid areas with elevated turbidity, sediment may degrade forage fish spawning habitat	CM 2; All work below the OHWM will be completed 'in the dry' CM 3; Excavated areas will be covered with gravel prior to rising tide	Elevated turbidity will be minimized and undetectable beyond 150 feet of shoreline
Phase III. Construction of drift sills, revetments and enhanced beaches. Work will be completed 'in the dry'	**BT**: juvenile/subadult **Chinook:** juv/subadult **Steelhead:** juv/subadult **Rockfish** juv **Prey:** forage fish larvae, juv, adult; macroinvertebrates **Murrelet** adult feeding	Fish may move offshore into deeper water, prey species may avoid areas with elevated turbidity, sediment may degrade forage fish spawning habitat	CM 2; All work below the OHWM will be completed 'in the dry'	Elevated turbidity will be minimized and undetectable beyond 150 feet of shoreline
Phase IV. Demobilization of construction equipment and staging area; landscaping, reseeding and mulching	**BT**: juvenile/subadult **Chinook:** juv/subadult **Steelhead:** juv/subadult **Rockfish** juv **Prey:** forage fish larvae, juv, adult; macroinvertebrates **Murrelet** adult feeding	Fish may move offshore into deeper water, prey species may avoid areas with elevated turbidity, sediment may degrade forage fish spawning habitat	CM 8; Ecy BMPs C105 Stablilie construction entrance, C220 Storm drain inlet protection, C233 Silt fence	Elevated turbidity will be minimized and undetectable beyond 150 feet of shoreline
Use of heavy Equipment; accidental leaks and spillage of petroleum products	**BT**: juvenile/subadult **Chinook:** juv/subadult **Steelhead:** juv/subadult **Rockfish** juv **Prey:** forage fish larvae, juv, adult; macroinvertebrates **Murrelet** adult feeding	Fish may move offshore to avoid contaminated water. Petroleum may degrade forage fish spawning habitat	CM 4; Contractor will have a SWPP plan with contingency plan for accidental loss of petroleum products	No loss of petroleum products will occur.

9.1 Effects on Listed Species

9.1.1 Marbled Murrelet

There are no known marbled murrelet nest sites in the project vicinity (WDFW 2012). Potential nesting habitat does not exist in or near the Action Area. Foraging habitat however is available in the Action Area. Shorelands adjacent to the Action Area already have considerable human developments and associated activities, including railroad traffic, park users, private and commercial boat traffic, and other recreational endeavors. The Boulevard Park Shoreline Improvement Project is not expected to adversely impact prey resources or prey habitat for the marbled murrelet. The Project may affect, but is not likely to adversely affect, individual marbled murrelets or populations in the project vicinity.

9.1.2 Coastal/Puget Sound Bull Trout

The Project may affect, but not likely to adversely affect, Coastal/Puget Sound bull trout. Juvenile native char are isolated from the project area because of their freshwater distribution. It is unlikely that adult bull trout or Dolly Varden will be found in the Action Area, although they may occasionally migrate through the Action Area.

The Project may impact the following PCEs of bull trout critical habitat (Nos. 2, 3, 4, 5, and 8):

Migratory habitats and marine foraging habitats
An abundant food base
Complex marine shoreline
Adequate thermal refugia
Sufficient water quality

The heavily impacted intertidal zone and shoreline within the Project Area will be enhanced with large and medium gravel, and boulders which will mimic a natural shoreline. The existing eelgrass bed will not be affected. The PCEs of bull trout critical habitat may be altered however, the Project will not adversely modify the PCEs of critical habitat for bull trout.

9.1.3 Puget Sound Chinook Salmon

The Project may affect, but not likely to adversely affect, Puget Sound Chinook salmon. Chinook salmon utilize the Action Area for migration and rearing, but there is no appropriate spawning habitat for Chinook salmon in the Action Area. The short-term period of work may have a temporary effect on fish that may be present however, the Project is not expected to have a long-term impact on habitat or fish resources that comprise the forage base for Puget Sound Chinook salmon.

Project activities will occur within designated critical habitat for Chinook salmon. PCEs of the nearshore marine critical habitat include:

- Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation
- Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

The heavily impacted intertidal zone and shoreline within the Project Area will be enhanced with large and medium gravel, and boulders which will mimic a natural shoreline. The existing eelgrass bed will not be affected. The PCEs of Chinook salmon critical habitat may be altered however, the Project will not adversely modify the PCEs of critical habitat for Puget Sound Chinook salmon.

9.1.4 Puget Sound Steelhead trout

The Project may affect, but not likely to adversely affect, Puget Sound steelhead trout. Steelhead trout may utilize the Action Area for rearing, but there is no appropriate spawning habitat in the Action Area. The short-term construction work may have a temporary effect on fish that may be present. The Project is not expected to have a long-term impact on habitat or fish resources that comprise the forage base for Puget Sound steelhead trout.

9.1.5 Rockfish

The Project may affect, but not likely to adversely affect, rockfish. There is no rocky shelf habitat or kelp beds in the Action Area where adult rockfish might be found however, juvenile rockfish may utilize the Action Area for rearing. The short-term construction work may have a temporary effect on fish that may be present but, the Project is not expected to have a long-term impact on shallow water nearshore habitat used by juvenile rockfish or fish resources that comprise the forage base for adult rockfish.

9.1.6 Steller's Sea Lion

The Project will have no effect on Steller sea lions. Critical life-history phases such as breeding and pupping do not occur in this area. Individual sea lions may be present in the action area, however the action is unlikely to disturb foraging behavior and the project is not expected to impact fish resources that are the forage base of the Steller's sea lion.

9.1.7 Southern Resident Killer Whale

The Project will have no effect on southern resident killer whales. It is unlikely that killer whales will be present in the action area during the construction operations and since work will be completed 'in the dry'; it is unlikely that these activities will disturb the whale's behavior or impact their forage base.

A portion of Action Area may extend beyond the 20-foot depth contour relative to the extreme high water mark and is therefore may be within the summer core area of critical habitat for southern resident killer whales; the Project however will not hinder free passage of killer whales. The Project is not expected to alter water quality or impact prey species of the southern resident killer whale and therefore, impacts to water quality and the whale's forage base will be discountable. The Project will not adversely modify critical habitat for southern resident killer whales.

10.0 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 and reauthorized in 2005, requires Federal agencies to consult with NOAA-Fisheries on activities that may adversely affect Essential Fish Habitat (EFH). The objective of this EFH assessment is to describe potential adverse effects to designated EFH for federally managed west coast groundfish, Pacific salmon and coastal pelagic species. EFH

includes those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. EFH has been further interpreted as:

- Aquatic areas and their associated physical, chemical, and biological properties that are used by fish;
- Aquatic areas historically used by fish where appropriate substrate includes sediment, hard bottom, structures underlying the waters, and;
- Associated biological communities and habitat necessary to support a sustainable fishery and the managed species' contribution to a healthy ecosystem.

The Boulevard Shoreline Improvement Project will be constructed in estuarine nearshore habitat and adjacent to non-rocky shelf habitat that is waterward of the Project site. These habitat types are EFH for many species of west coast groundfish, pacific salmon and coastal pelagic species. The Project will enhance a beach with medium to large gravel that will provide ecological services equivalent to a natural bed and will not alter the non-rocky shelf habitat waterward of the Project site. The Project will not adversely affect EFH of west coast groundfish, Pacific salmon and coastal pelagic species. A matrix with Project activity, affected EFH, stressors, and conservation measures selected to avoid and minimize effects is included as Table 6.

Table 7. **Affected Essential Fish Habitat by Boulevard Park Shoreline Improvements**

ACTIVITY	AFFECTED EFH	STRESSOR	CONSERVATION MEASURES (see page 8 and 9)
Phase I: Staging of Construction Area	Estuarine nearshore habitat for groundfish, pelagic and salmonids	Stormwater may transport fine sediment from the disturbed upland soil into marine waters; raising turbidity in nearshore zone	1, 3, 4, 5, 6, 7
Phase II: Removal of undesirable beach material; track mounted excavators and backhoes working 'in the dry'	Estuarine nearshore habitat for groundfish, pelagic and salmonids	Fine sediment from beach face may be entrained into marine water; raising turbidity in nearshore zone	1, 2, 3, 4, 5, 6, 7
Phase III. Construction of drift sills, revetments and enhanced beaches. Work will be completed 'in the dry'	Estuarine nearshore habitat for groundfish, pelagic and salmonids	Fine sediment from beach face may be entrained into marine water; raising turbidity in nearshore zone	1, 2, 3, 4, 5, 6, 7
Phase IV. Demobilization of construction equipment and staging area; landscaping, reseeding and mulching	Estuarine nearshore habitat for groundfish, pelagic and salmonids	Stormwater may transport fine sediment from the disturbed upland soil into marine waters; raising turbidity in nearshore zone	1, 3, 4, 5, 6, 7, 8
Use of heavy Equipment; accidental leaks and spillage of petroleum products	Estuarine nearshore habitat for groundfish, pelagic and salmonids	Contamination of estuarine water due to accidental spill of petroleum products	2, 3, 4

11.0 References

Burkett, E.E. 1995. Marbled murrelet food habitats and prey ecology. Pages 223-246 *in* Ralph, C. J., G. L. Hunt, M. G. Raphael, and J. F. Piatt., Tech. Eds. 1995. Ecology and conservation of the marbled murrelet. Gen. Tech. Rep. PSW-GTR-152. Pacific Southwest Research Station, Forest Service, U.S. Dept. Agr., Albany, CA. 420pp.

Ecology. 2005. Stormwater management manual for Western Washington: Volume II, Construction stormwater pollution prevention. Washington State Dept of Ecology Water Quality Program. Publication No. 05-10-30. Olympia, WA.

Elliott, J.K., E. Spear, and S. Wyllie-Echerverria. 2006. Mats of *Beggiatoa* bacteria reveal that organic pollution from lumber mills inhibits growth of *Zostera marina.* Marine Ecology 27; 372-380.

Gaeckle, J. 2009. Eelgrass (*Zostera marina* L.) abundance and depth distribution along the City of Bellingham waterfront Whatcom County, Washington. Final report to the City of Bellingham. Washington State Dept of Natural Resources. Olympia, WA.

Jameson, Jr., E.W., and J.J. Peeters, 1988, California Mammals: Berkeley, CA, University of California Press, 403 p.

Jeffries, S.J., P.J. Gearin, H.R. Huber, D.L. Saul, and D.A. Pruett. 2000. Atleas of seal and sea lion haulout sites in Washington. Wash Dept. of Fish and Wildlife, Olympia, WA.

Krahn, M. M., M. J. Ford, W. F. Perrin, P. R. Wade, R. P. Angliss, M. B. Hanson, B. L. Taylor, G. M. Ylitalo, M. E. Dahlheim, J. E. Stein, and R. S. Waples. 2004. 2004 status review of Southern Resident killer whales (*Orcinus orca*) under the Endangered Species Act. U. S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-62.

Love, M.S, M. Carr, and L. Haldorson. 1991. The ecology of substrate-associated juveniles of the genus *Sebastes.* Environmental Biology of Fishes. 30:225-243.

National Marine Fisheries Service (NMFS). 2005. Preliminary draft Conservation Plan for Southern Resident Killer Whales (*Orcinus orca*).

NOAA Fisheries. 2003. Non-fishing impacts to essential fish habitat and recommended conservation measures. J. Hansen, M. Helvey and R. Strach eds. NOAA-Fisheries Seattle, WA.

NOAA-Fisheries. 2005. Pacific coast groundfish fishery management plan, essential fish habitat designation and minimization of adverse impacts; Draft environmental impact statement. Prepared by NOAA-Fisheries. Seattle, WA.

Pacific Fishery Management Council (PFMC). 1999. Identification and description of essential fish habitat, adverse impacts, and recommended conservation measures for salmon: Amendment 14 to the pacific coast salmon plan. Pacific Fishery Management Council. Portland, OR.

Palsson, W.A., T.-S. Tsou, G.G. Barbman, R.M. Buckley, J.E. West, M.L. Mills, Y.W. Cheng and R. E. Pacunski. 2009. The biology and assessment of rockfishes in Puget Sound. Washington Dept of Fish and Wildlife, Olympia WA.

Penttila, D. 2007. Marine Forage Fishes in Puget Sound. Puget Sound Nearshore Partnership Report No. 2007-03. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington.

Ralph, C. J., G. L. Hunt, M. G. Raphael, and J. F. Piatt., Tech. Eds. 1995. Ecology and conservation of the marbled murrelet. Gen. Tech. Rep. PSW-GTR-152. Pacific Southwest Research Station, Forest Service, U.S. Dept. Agr., Albany, CA. 420pp.

Speich, S. M., and T. R. Wahl. 1995. Marbled murrelet populations in Washington – marine habitat preferences and variability of occurrence. Pages 313-326 *in* Ralph, C. J., G. L. Hunt, M. G. Raphael, and J. F. Piatt., Tech. Eds. 1995. Ecology and conservation of the marbled murrelet. Gen. Tech. Rep. PSW-GTR-152. Pacific Southwest Research Station, Forest Service, U.S. Dept. Agr., Albany, CA. 420pp.

U.S. Fish and Wildlife Service. 2004. Draft Recovery Plan for the Coastal-Puget Sound Distinct Population Segment of Bull Trout (*Salvelinus confluentus*). Volume I (of II): Puget Sound Management Unit. Portland, Oregon.

Washington State Department of Fish and Wildlife (WDFW). 1998. Salmonid stock inventory, bull trout and Dolly Varden. WDFW Fisheries Management Division, Olympia WA.

Washington Department of Fish and Wildlife (WDFW). 2012. WDFW Priority habitats and species maps. Production date: April 19, 2012.

Washington Department of Wildlife. 1993. Status of the Steller (northern) sea lion (Eumetopias jubatus) in Washington. Unpubl. rep., 103 p. Available Washington Department of Wildlife, 600 Capital Way N., Olympia WA 98501.

Wiles, G. J. 2004. Washington State status report for the killer whale. Washington Department of Fish and Wildlife, Olympia.

Wydoski, R.S., and R.R. Whitney, 2003, Inland fishes of Washington: Seattle, WA, University of Washington Press and Am Fisheries Soc.

Photo 1. Eelgrass survey transect parallel to shoreline at Pete's Beach. Tide = -2.8 MLLW

Photo 2. Eelgrass survey transect parallel to shoreline at West Beach. Tide = -3.0 MLLW

Photo 3. Groundwater seep with area where vegetation growth is inhibited. Tide = -1.1 MLLW

Photo 4. Closeup of groundwater seep where growth of vegetation is inhibited. Tide = -2.0 MLLW

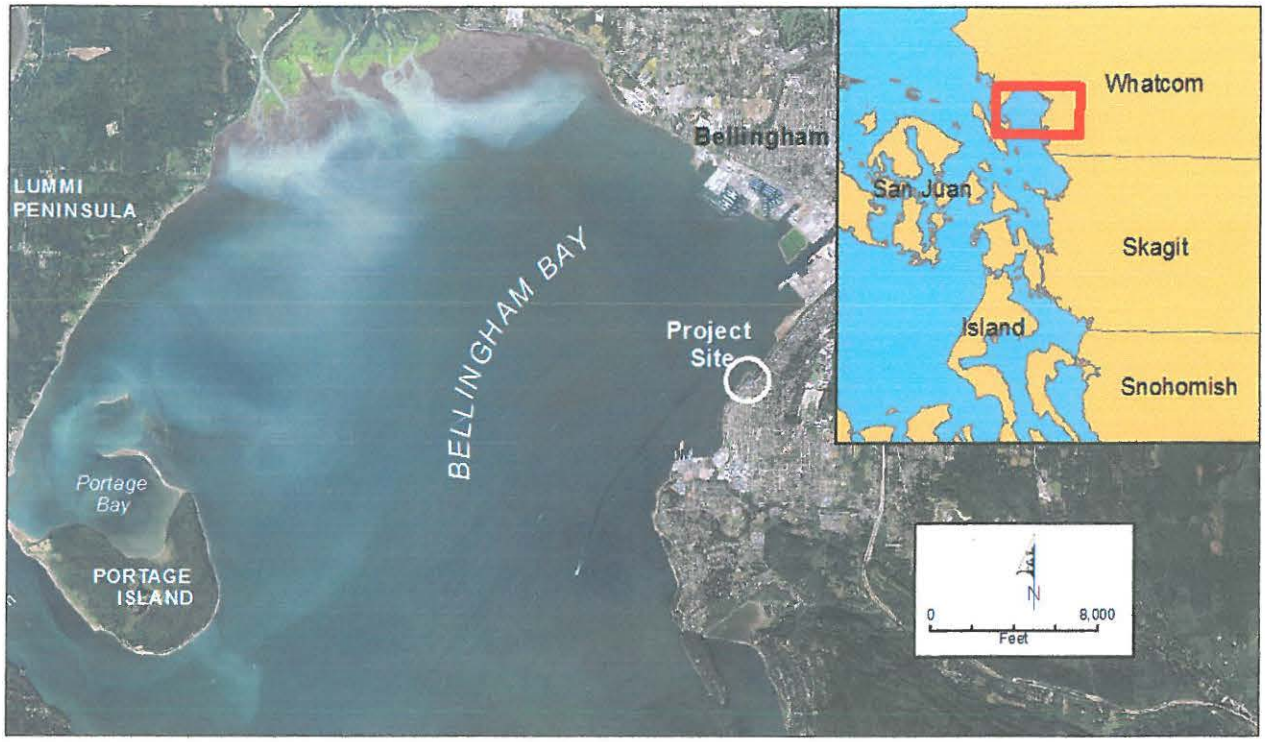


Figure 1 Vicinity Map

Figure 2 Project site map

AREA 1 - MOSTLY ROCKS AND SPALLS - 14071 SQFT
COVERS 70% OF NATURAL SURFACE
DISTRIBUTION: 30% ROCKS, 10% CONCRETE, 20% SPALLS, 10% BRICKS, 30% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-24", SPALLS 4"-8"

AREA 2 - MOSTLY SPALLS WITH BRICKS - 892 SQFT
COVERS 60% OF NATURAL SURFACE
DISTRIBUTION: 5% ROCKS, 5% CONCRETE, 40% SPALLS, 10% BRICKS, 40% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-24", SPALLS 4"-8"

AREA 3 - MOSTLY CONCRETE RUBBLE - 9254 SQFT
COVERS 90% OF NATURAL SURFACE
DISTRIBUTION: 5% ROCKS, 80% CONCRETE, 5% SPALLS, 10% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 36"-60" (FLAT), SPALLS 4"-8"

AREA 4 - MOSTLY CONCRETE AND ROCK - 7968 SQFT
COVERS 70% OF NATURAL SURFACE
DISTRIBUTION: 40% ROCKS, 10% CONCRETE, 15% SPALLS, 5% BRICK, 30% NATURAL
GRADATION: ROCKS 12"-36", CONCRETE 12"-36", SPALLS 4"-8"

AREA 5 - MOSTLY CONCRETE AND SMALL COBBLES - 665 SQFT
COVERS 20% OF NATURAL SURFACE
DISTRIBUTION: 5% ROCKS, 10% CONCRETE, 5% SPALLS, 70% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-48", SPALLS 4"-8"

AREA 6 - ROCK, SPALLS, AND CONCRETE - 18201 SQFT
COVERS 60% OF NATURAL SURFACE
DISTRIBUTION: 40% ROCKS, 5% CONCRETE, 15% SPALLS, 40% NATURAL
GRADATION: ROCKS 12"-32", CONCRETE 12"-24", SPALLS 4"-8"

AREA 7 - ROCKS AND SPALLS OVER SMALL COBBLES - 789 SQFT
COVERS 20% OF NATURAL SURFACE
DISTRIBUTION: 10% ROCKS, 10% SPALLS, 80% NATURAL
GRADATION: ROCKS 12"-36", SPALLS 4"-8"

AREA 8 - LARGE BOULDERS - 530 SQFT
COVERS 40% OF NATURAL SURFACE
DISTRIBUTION: 25% ROCKS, 10% CONCRETE, 5% SPALLS, 60% NATURAL
GRADATION: ROCKS 36"-48", CONCRETE 24"-36", SPALLS 4"-8"

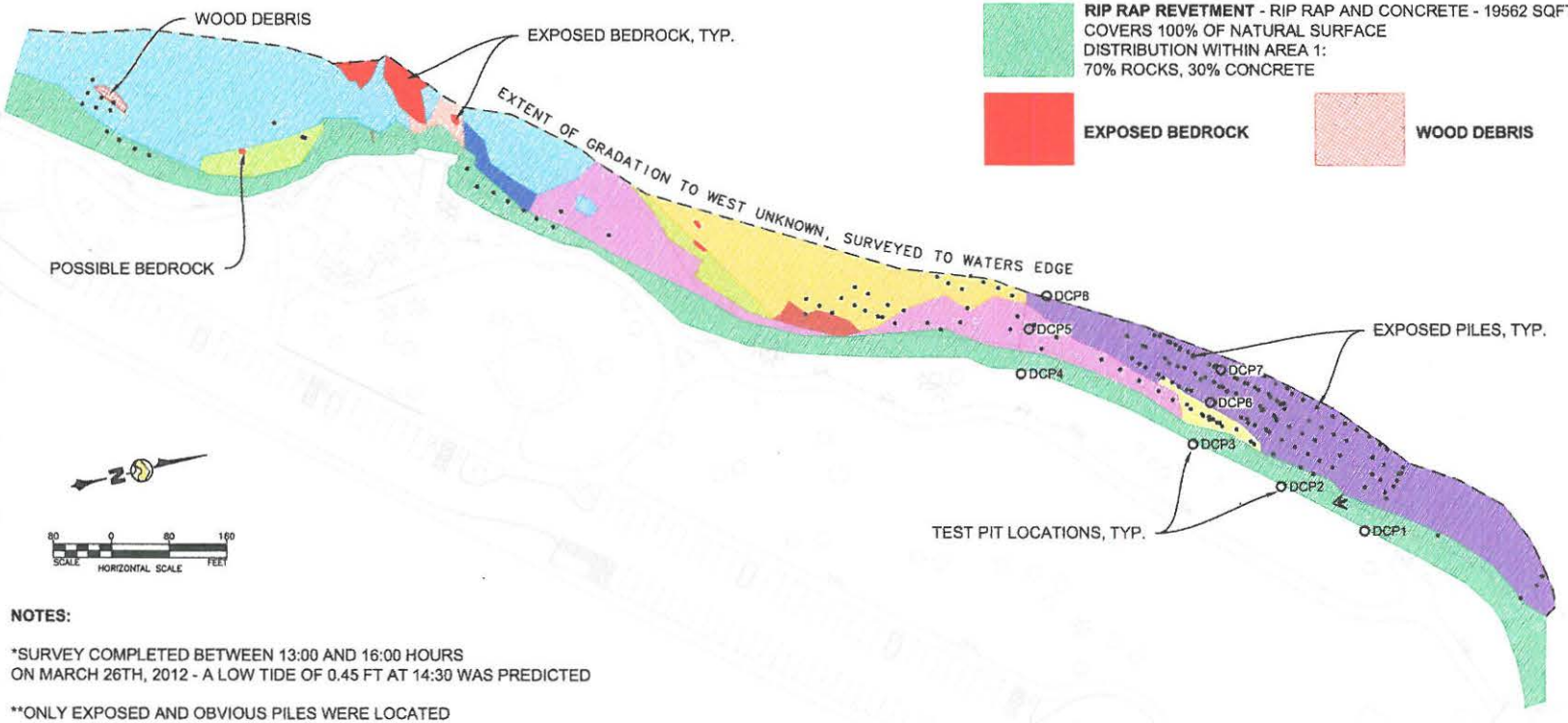
AREA 9 - MOSTLY PEBBLES WITH SOME ROCK COVERAGE - 1553 SQFT
COVERS 10% OF NATURAL SURFACE
DISTRIBUTION: 10% ROCKS, 90% NATURAL
GRADATION: ROCKS 12"-36"

AREA 10 - MOSTLY SPALLS - 1211 SQFT
COVERS 50% OF NATURAL SURFACE
DISTRIBUTION: 10% ROCKS, 5% CONCRETE, 35% SPALLS, 50% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-24", SPALLS 4"-8"

RIP RAP REVETMENT - RIP RAP AND CONCRETE - 19562 SQFT
COVERS 100% OF NATURAL SURFACE
DISTRIBUTION WITHIN AREA 1:
70% ROCKS, 30% CONCRETE

EXPOSED BEDROCK

WOOD DEBRIS



NOTES:

*SURVEY COMPLETED BETWEEN 13:00 AND 16:00 HOURS
ON MARCH 26TH, 2012 - A LOW TIDE OF 0.45 FT AT 14:30 WAS PREDICTED

**ONLY EXPOSED AND OBVIOUS PILES WERE LOCATED

WILSON ENGINEERING, LLC
805 DUPONT STREET
BELLINGHAM, WA 98225
(360) 733-8100 • FAX (360) 647-9061
www.wilsonengineering.com
Wilson SURVEY/ENGINEERING

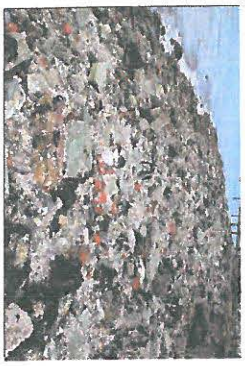
CITY OF BELLINGHAM
PARKS AND RECREATION DEPARTMENT
BELLINGHAM WASHINGTON
BOULEVARD PARK SHORELINE
BEACH COVERAGE AND GRADATION MAP

DESIGNED BY
DRAWN BY SJW
CHECKED BY

DATE 3/28/2012
SCALE AS SHOWN
JOB NUMBER 2011-129
SHEET 1 OF 2

W:\2011\2011-129 Coastal Geological Services - Blvd Park Beach Restoration\Dwg\Exhibits\Gradation&Coverage.dwg, 3/29/2012 11:47:40 AM, Scott

AREA 1



AREA 2

AREA 3

AREA 4

AREA 5

AREA 6

AREA 7

AREA 8

AREA 9

AREA 10

RIP RAP

RIP RAP

SHEET	DATE	CITY OF BELLINGHAM PARKS AND RECREATION DEPARTMENT	DESIGNED BY	Wilson SURVEY/ENGINEERING	WILSON ENGINEERING, LLC 805 DUPONT STREET BELLINGHAM, WA 98225 (360) 733-6100 • FAX (360) 647-9061 www.wilsonengineering.com
2	3/29/2012		DRAWN BY SJW		
OF	SCALE AS SHOWN	BELLINGHAM WASHINGTON	CHECKED BY		
2	JOB NUMBER 2011-129	BOULEVARD PARK SHORELINE BEACH COVERAGE AND GRADATION IMAGES			

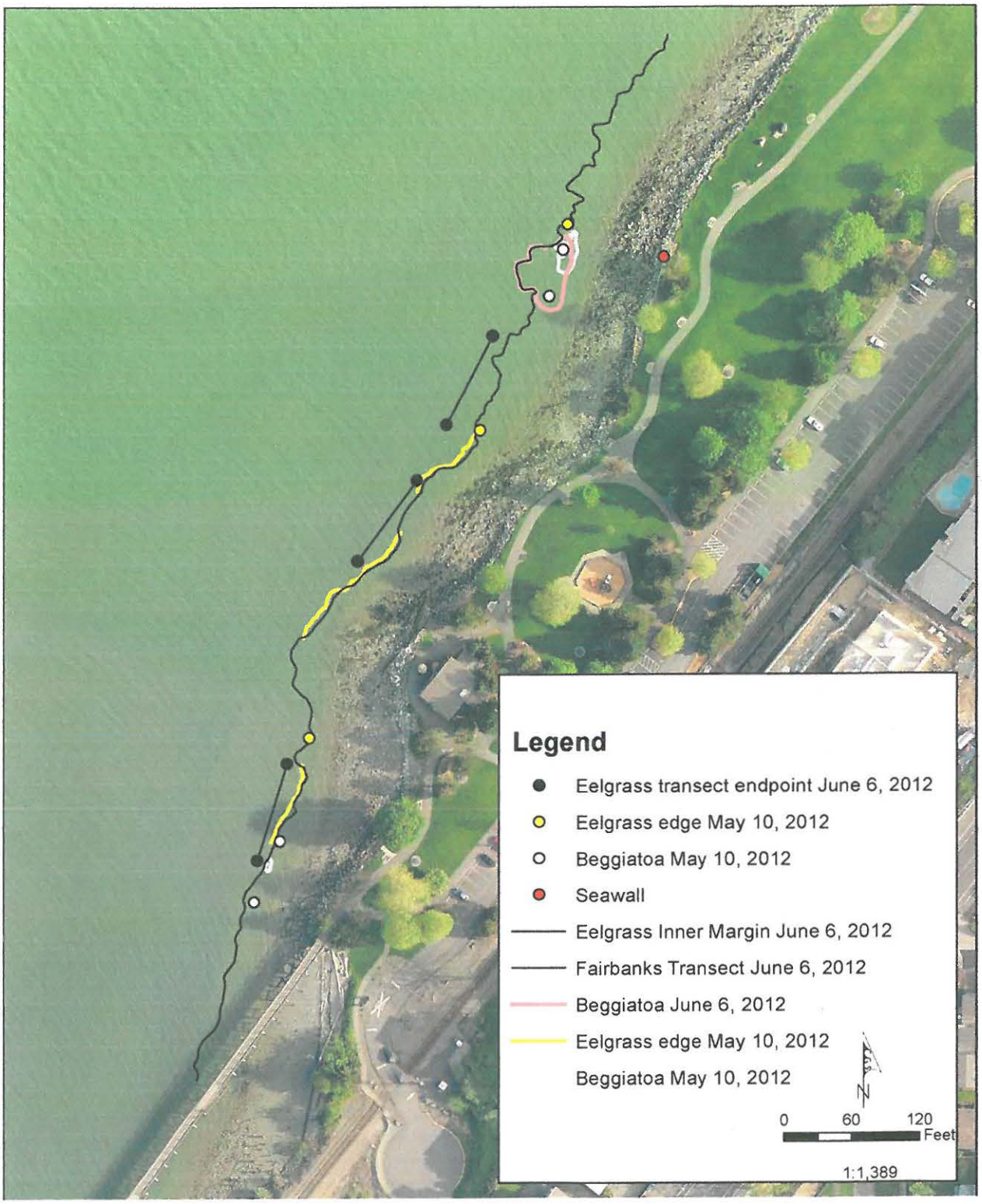


Figure 5 Inner margin of eelgrass bed, eelgrass density survey transects, and groundwater seeps with Beggiatoa mats

CITY OF BELLINGHAM

BOULEVARD PARK SHORELINE IMPROVEMENTS
30% DESIGN

SURVEY NOTES

2009 NORTH BOULEVARD PARK AND SHORELINE BASEMAPPING SURVEY BY LARRY STEELE & ASSOCIATES LAND SURVEYORS FOR CITY OF BELLINGHAM PARKS & RECREATION DEPARTMENT

PROJECT DATUM

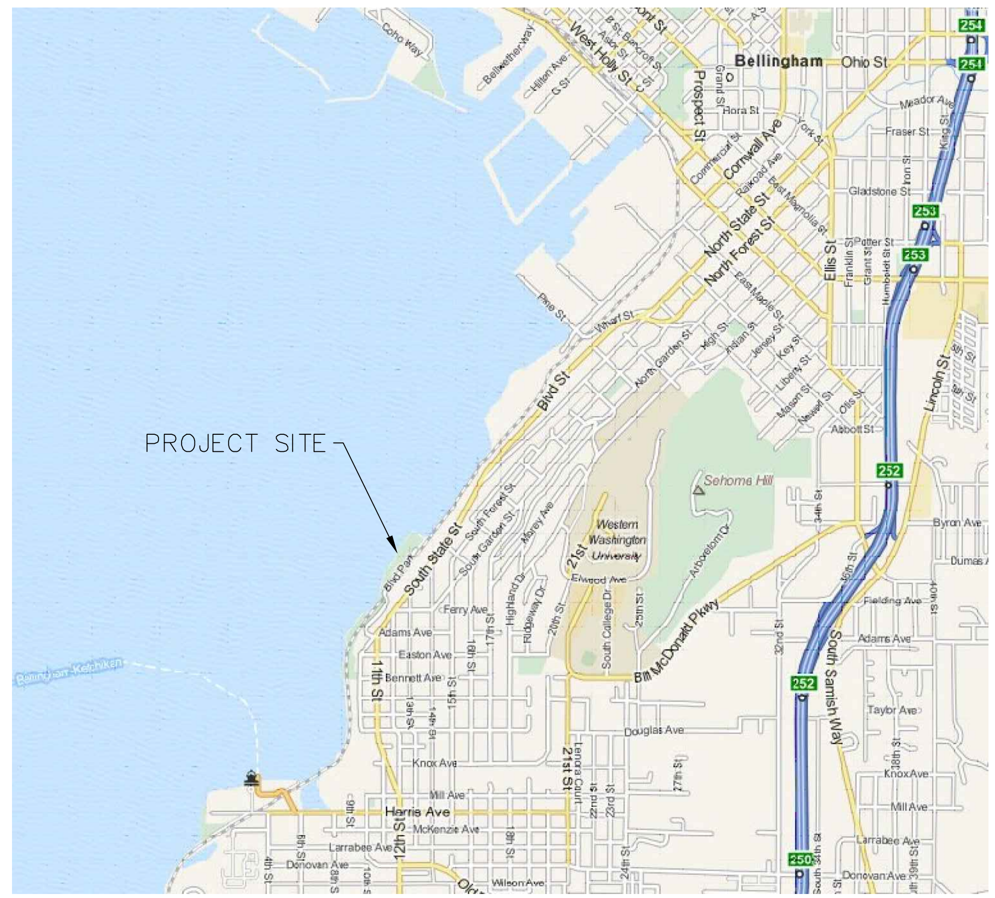
MEAN LOWER LOW WATER (MLLW)
BENCH MARKS:
1) NGS TIDAL BENCHMARK V-454
ELEVATION =16.47 FT MLLW (16.00 NAVD88)
2) BRASS PLUG MONUMENT (CITY OF BELLINGHAM ID #538)
ELEVATION = 24.62 FT MLLW (24.15 FT NAVD88)

NOTE: TIDE DATUMS WERE OBTAINED FROM NATIONAL OCEAN SERVICE DATA SHEET 9449211 DATED 12/12/2003

EELGRASS MAPPING

CHRIS FAIRBANKS OF FAIRBANKS ENVIRONMENTAL AND ALEXIS BLUE, PE OF COASTAL GEOLOGIC SERVICES MAPPED THE INNER MARGIN OF EELGRASS ON JUNE 6, 2012 DURING A LOWTIDE EVENT BETWEEN 11:30AM AND 1:15PM WITH A HANDHELD TRIMBLE GEO-HX 6000

VICINITY MAP



INDEX TO DRAWINGS

COASTAL GEOLOGIC SERVICES

Fairbanks Environmental

Wilson SURVEY/ENGINEERING

MTC Materials Testing & Consulting, Inc.

30% DESIGN - NOT FOR CONSTRUCTION

COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/12
3/22/12
4/21/12

DRAWN BY: AB & SW
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED:
2009

Boulevard Park Shoreline Improvements
Cover Sheet / Vicinity Map
City of Bellingham -
Parks/Design & Development Division

DRAFT

DATUM
MLLW=0.0'

SCALE: AS NOTED
DATE:
06/26/2012
SHEET:
G1.0

0 40 80 160 240 ft

LEGEND

= MHHW

= INLET PROTECTION

= STRAW WADDLE

= ORANGE BARRIER FENCE

NOTE: SEE SHEETS C.XX AND C.XX FOR EROSION CONTROL DETAILS

BELLINGHAM BAY

Coffee Shop

Pete's Beach

Playground

BOULEVA

CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE.

PROVIDE FLAGGER AT TRAIL CROSSING.

INSTALL STEEL SHEETS, AS REQUIRED TO PROTECT EXISTING UTILITIES

CONSTRUCTION STOCKPILE AREA

INSTALL ORANGE BARRIER FENCE AROUND PERIMETER OF CONSTRUCTION AREA.

CONSTRUCT TEMPORARY PATH 8-FT WIDE WITH GEOTEXTILE COVERED WITH 4" OF WOOD CHIPS (TYP.)

STAGING AREA

IRRIGATION LINES NOT SHOWN

IP

SW

SF

30% DESIGN, NOT FOR CONSTRUCTION

COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/12
4/21/12
6/08/12
6/25/12

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED: 2009

Boulevard Shoreline Improvements

Site Plan - Construction Staging

City of Bellingham - Parks/Design & Development Division

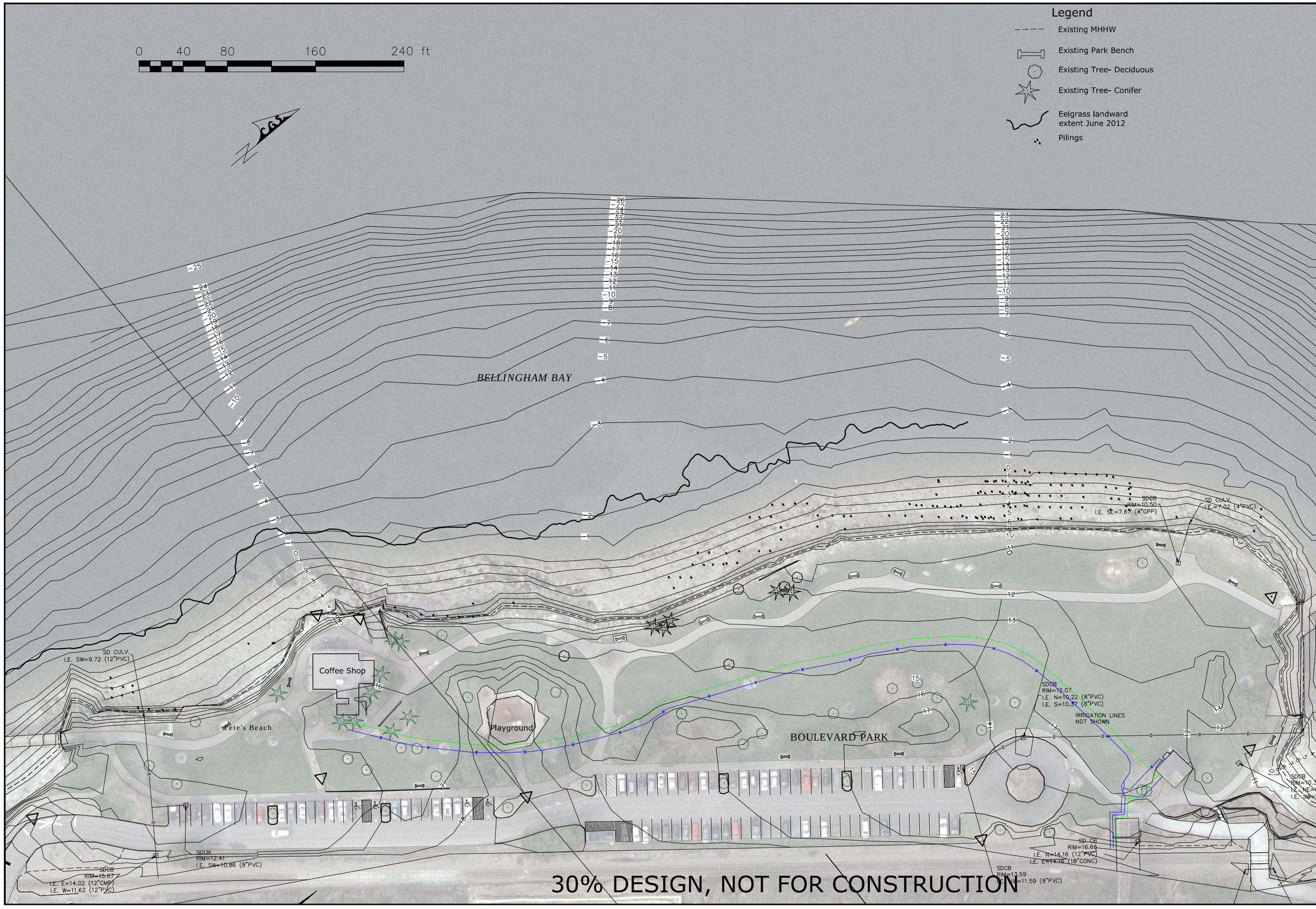
DRAFT

MLLW=0.0'

SCALE: AS NOTED

DATE: 06/27/2012

SHEET: G1.1



30% DESIGN, NOT FOR CONSTRUCTION

COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/12
4/21/12
6/08/12
6/25/12

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED: 2009

Boulevard Shoreline Improvements

Site Plan - Existing Conditions

City of Bellingham -
Parks/Design & Development Division

DRAFT

MLLW=0.0'

SCALE: AS NOTED
DATE: 06/26/2012
SHEET: C1.0

AREA 1 - MOSTLY ROCKS AND SPALLS - 14071 SQFT
COVERS 70% OF NATURAL SURFACE
DISTRIBUTION: 30% ROCKS, 10% CONCRETE, 20% SPALLS, 10% BRICKS, 30% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-24", SPALLS 4"-8"

AREA 2 - MOSTLY SPALLS WITH BRICKS - 892 SQFT
COVERS 60% OF NATURAL SURFACE
DISTRIBUTION: 5% ROCKS, 5% CONCRETE, 40% SPALLS, 10% BRICKS, 40% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-24", SPALLS 4"-8"

AREA 3 - MOSTLY CONCRETE RUBBLE - 9254 SQFT
COVERS 90% OF NATURAL SURFACE
DISTRIBUTION: 5% ROCKS, 80% CONCRETE, 5% SPALLS, 10% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 36"-60" (FLAT), SPALLS 4"-8"

AREA 4 - MOSTLY CONCRETE AND ROCK - 7968 SQFT
COVERS 70% OF NATURAL SURFACE
DISTRIBUTION: 40% ROCKS, 10% CONCRETE, 15% SPALLS, 5% BRICK, 30% NATURAL
GRADATION: ROCKS 12"-36", CONCRETE 12"-36", SPALLS 4"-8"

AREA 5 - MOSTLY CONCRETE AND SMALL COBBLES - 665 SQFT
COVERS 20% OF NATURAL SURFACE
DISTRIBUTION: 5% ROCKS, 10% CONCRETE, 5% SPALLS, 70% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-48", SPALLS 4"-8"

AREA 6 - ROCK, SPALLS, AND CONCRETE - 18201 SQFT
COVERS 60% OF NATURAL SURFACE
DISTRIBUTION: 40% ROCKS, 5% CONCRETE, 15% SPALLS, 40% NATURAL
GRADATION: ROCKS 12"-32", CONCRETE 12"-24", SPALLS 4"-8"

AREA 7 - ROCKS AND SPALLS OVER SMALL COBBLES - 789 SQFT
COVERS 20% OF NATURAL SURFACE
DISTRIBUTION: 10% ROCKS, 10% SPALLS, 80% NATURAL
GRADATION: ROCKS 12"-36", SPALLS 4"-8"

AREA 8 - LARGE BOULDERS - 530 SQFT
COVERS 40% OF NATURAL SURFACE
DISTRIBUTION: 25% ROCKS, 10% CONCRETE, 5% SPALLS, 60% NATURAL
GRADATION: ROCKS 36"-48", CONCRETE 24"-36", SPALLS 4"-8"

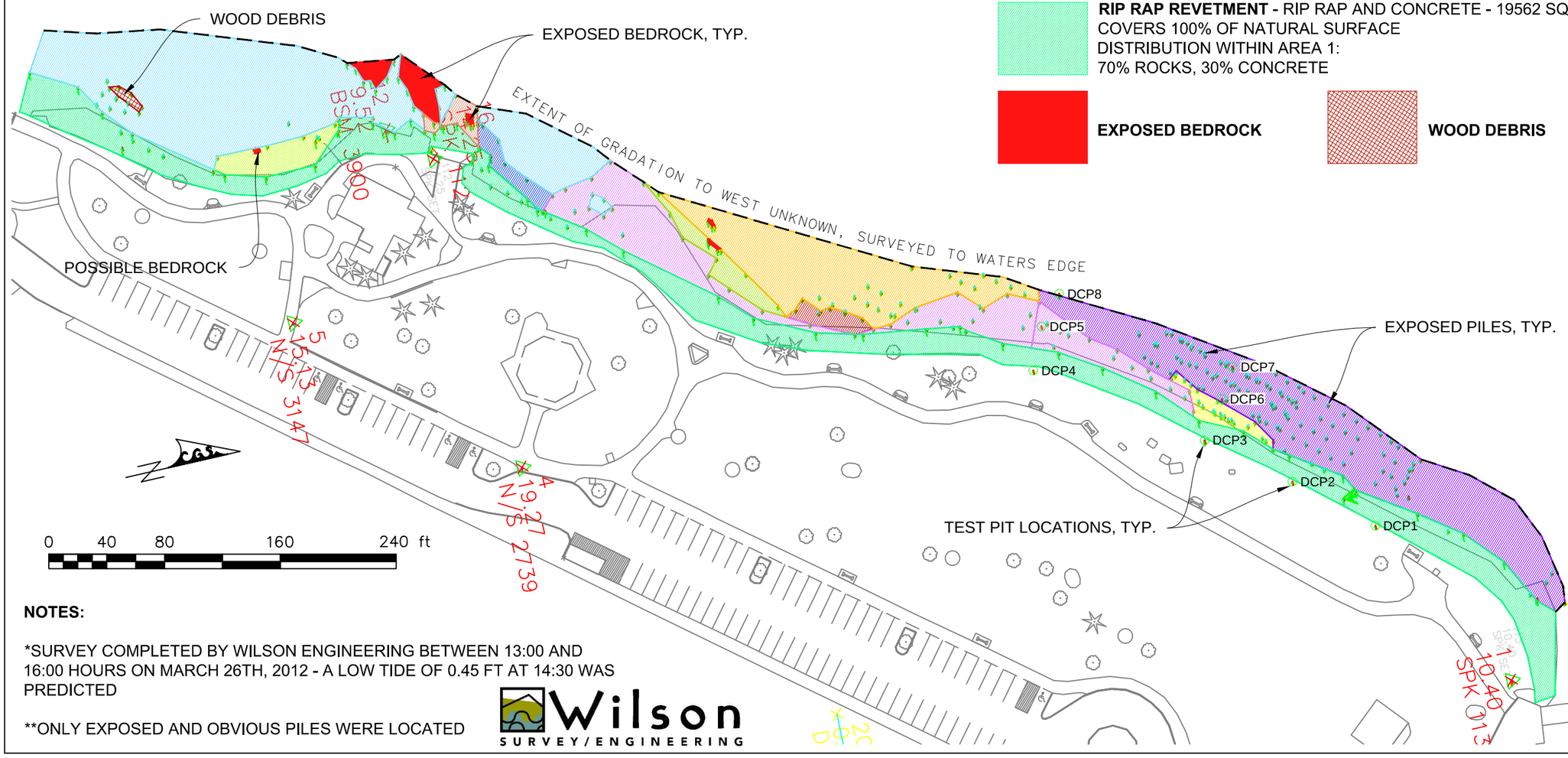
AREA 9 - MOSTLY PEBBLES WITH SOME ROCK COVERAGE - 1553 SQFT
COVERS 10% OF NATURAL SURFACE
DISTRIBUTION: 10% ROCKS, 90% NATURAL
GRADATION: ROCKS 12"-36"

AREA 10 - MOSTLY SPALLS - 1211 SQFT
COVERS 50% OF NATURAL SURFACE
DISTRIBUTION: 10% ROCKS, 5% CONCRETE, 35% SPALLS, 50% NATURAL
GRADATION: ROCKS 12"-24", CONCRETE 12"-24", SPALLS 4"-8"

RIP RAP REVETMENT - RIP RAP AND CONCRETE - 19562 SQFT
COVERS 100% OF NATURAL SURFACE
DISTRIBUTION WITHIN AREA 1:
70% ROCKS, 30% CONCRETE

EXPOSED BEDROCK

WOOD DEBRIS



NOTES:

*SURVEY COMPLETED BY WILSON ENGINEERING BETWEEN 13:00 AND 16:00 HOURS ON MARCH 26TH, 2012 - A LOW TIDE OF 0.45 FT AT 14:30 WAS PREDICTED

**ONLY EXPOSED AND OBVIOUS PILES WERE LOCATED

Wilson SURVEY/ENGINEERING

COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/2012
4/21/2012
6/08/2012
6/25/2012

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED: 2009

Boulevard Shoreline Improvements

Existing Beach Conditions

City of Bellingham - Parks/Design & Development Division

DRAFT

MLLW=0.0'

SCALE: AS NOTED
DATE: 06/26/2012
SHEET: C1.1

0 40 80 160 240 ft

Legend

- Existing MHHW
- Existing Contours
- Existing Park Bench
- Existing Tree- Deciduous
- Existing Tree- Conifer
- Eelgrass landward extent June 2012
- Low intertidal boulder clusters - Detail 7
- Proposed Gravel Beach Nourishment
- Proposed Sand Beach Nourishment
- Proposed Drift Sill
- Proposed Reconstructed Shore Protection
- Proposed Trail Realignment
- Proposed Backshore Planting Area
- Beach Toe Sill

BELLINGHAM BAY

Pete's Beach

Coffee Shop

Playground

BOULEVARD PARK

12' trail

80' seat wall

Existing trail

APPROXIMATE LOCATION PER PARKS DEPT.

IRRIGATION LINES NOT SHOWN

SD CULV.
I.E. SW=9.72 (12"PVC)

SDCB
RIM=15.67
I.E. E=14.02 (12"CMP)
I.E. W=11.62 (12"PVC)

SDCB
RIM=12.41
I.E. SW=10.86 (8"PVC)

SDCB
RIM=10.50
I.E. SE=7.67 (4"CPP)

SD CULV.
I.E.=7.02 (4"PVC)

SDCB
RIM=12.07
I.E. N=10.22 (8"PVC)
I.E. S=10.37 (8"PVC)

SD CB
RIM=16.66
I.E. N=14.16 (12"PVC)
I.E. E=14.16 (18"CONC)

SDCB
RIM=13.59
I.E. W=11.59 (8"PVC)

SDCB
RIM=10.3
I.E. NE=9
I.E. SW=9

6:1 7:1 6.5:1

30% DESIGN, NOT FOR CONSTRUCTION

COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/12
4/21/12
6/08/12
6/25/12

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:

DATE SURVEYED:
2009

Boulevard Shoreline Improvements

Site Plan - Proposed Conditions

City of Bellingham - Parks/Design & Development Division

DRAFT

MLLW=0.0'

SCALE: AS NOTED

DATE: 06/26/2012

SHEET: C1.2

0 40 80 160 240 ft

BELLINGHAM BAY

Péte's Beach

Coffee Shop

Playground

BOULEVARD PARK

SLOPE @ 20% TO DAYLIGHT

SLOPE @ 1% TO DAYLIGHT

SLOPE TRAIL @ 4% MATCH EXISTING

IRRIGATION LINES NOT SHOWN

30% DESIGN, NOT FOR CONSTRUCTION

COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/12
4/21/12
6/08/12
6/25/12

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED: 2009

Boulevard Shoreline Improvements

Site Plan - Grading

City of Bellingham - Parks/Design & Development Division

DRAFT

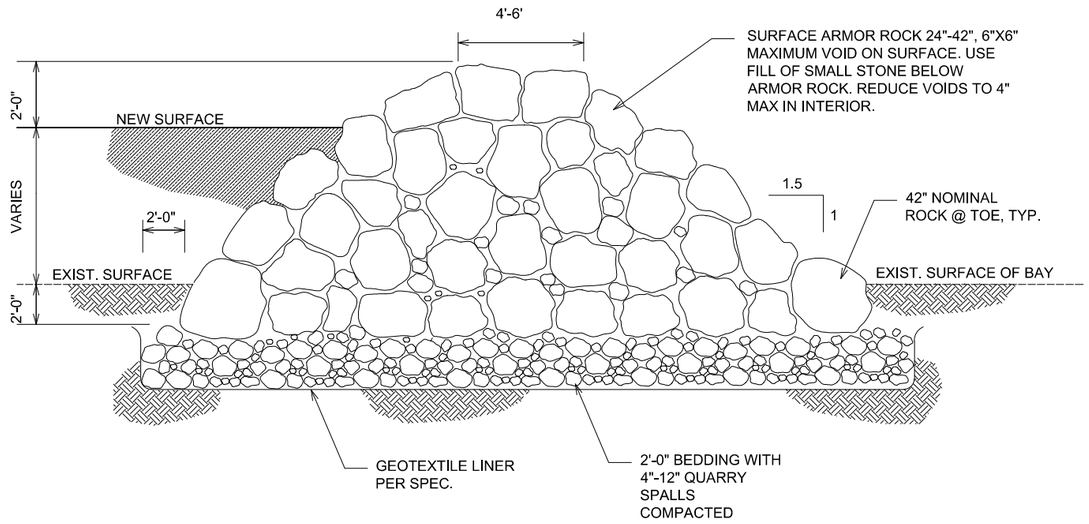
MLLW=0.0'

SCALE: AS NOTED

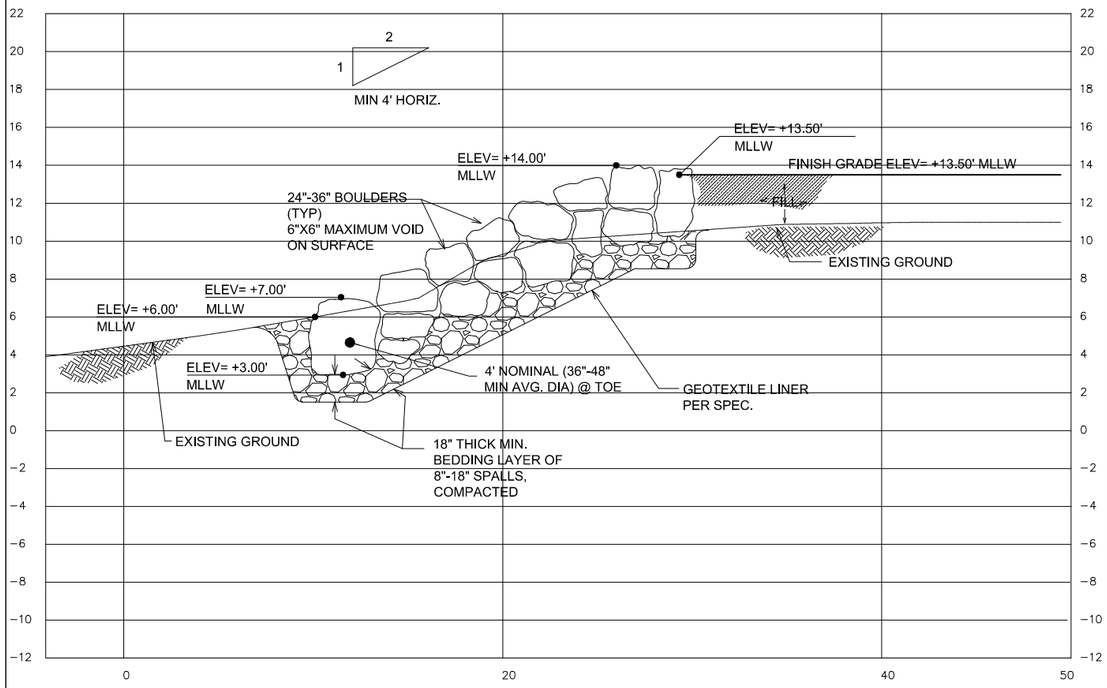
DATE: 06/26/2012

SHEET: C1.3

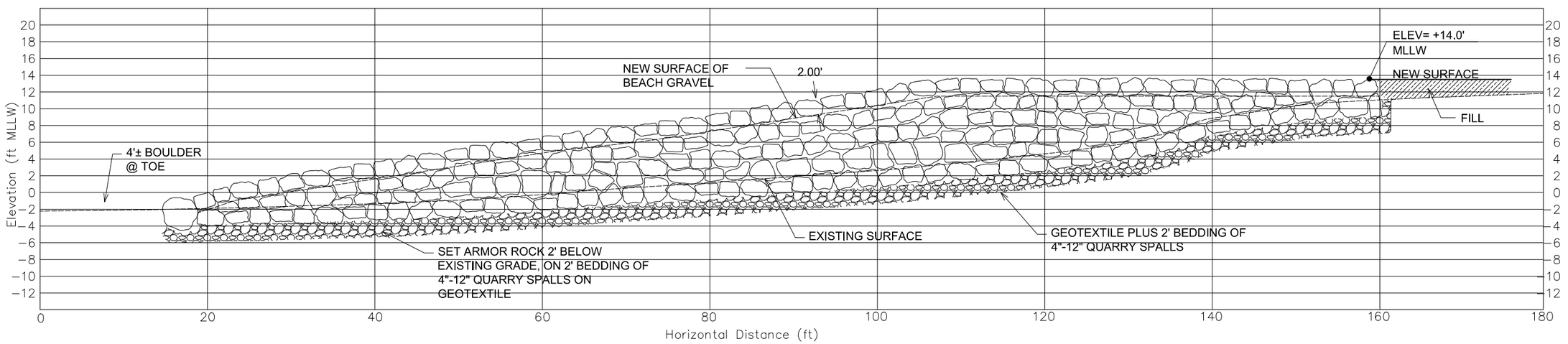
Detail 1 - Drift sill typical cross section



Detail 2 - Revetment typical cross section



Detail 3 - Drift sill typical profile section



COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/2012
4/23/2012
6/08/2012
6/25/2012

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED: 2009

Boulevard Shoreline Improvements

Design Details 1, 2 and 3

City of Bellingham - Parks/Design & Development Division

DRAFT

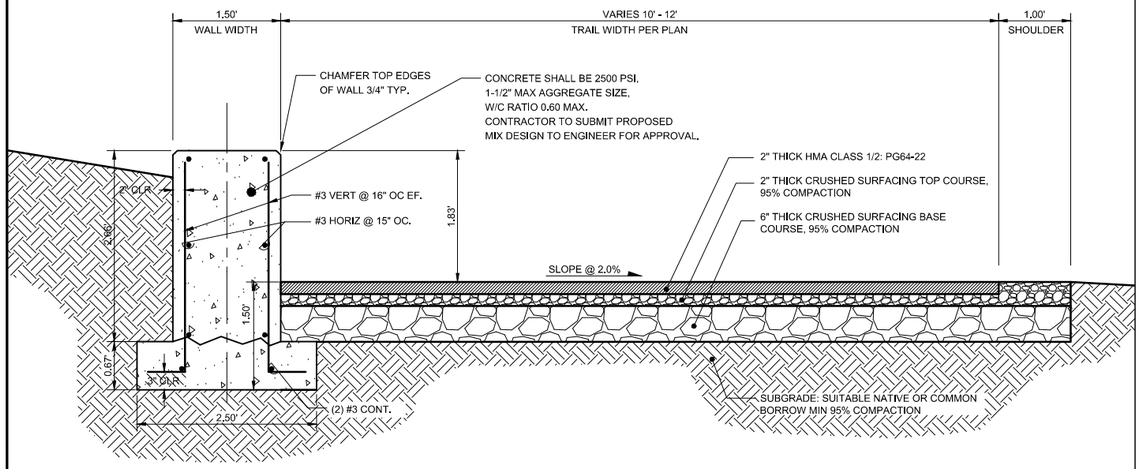
MLLW=0.0'

SCALE: AS NOTED

DATE: 06/27/2012

SHEET: C1.4

Detail 4 - Trail and seat wall typical section



NOTES:

1) ASPHALT TRAIL SHALL BE CONSTRUCTED IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION AND LATEST CITY OF BELLINGHAM STANDARD ASPHALT TRAIL DETAIL.

2) TESTING AND QUALITY CONTROL OF ASPHALT AND AGGREGATES SHALL BE PER WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.

3) WHERE TRAIL IS LOCATED OVER BURIED UTILITIES, THE ENTIRE TRENCH SHALL BE BACKFILLED WITH IMPORTED GRAVEL AND COMPACTED TO 95% MAXIMUM DENSITY.

4) SECTION SHOWN IS FOR TYPICAL CONDITIONS. TRAIL MAY BE MODIFIED TO ACCOMMODATE SITE SPECIFIC REQUIREMENTS.

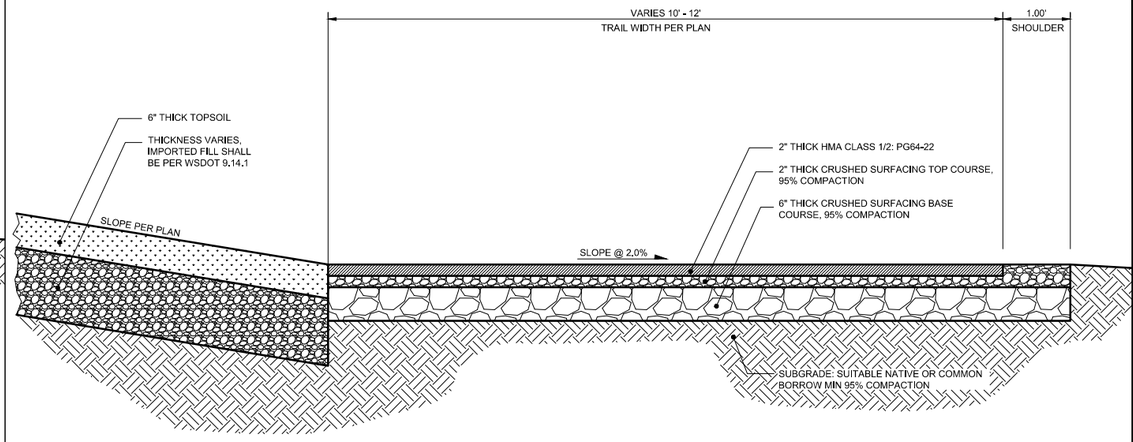
5) SUBGRADE COMPACTION MUST BE CERTIFIED BY AN APPROVED SPECIAL INSPECTION AND TESTING AGENCY OR GEOTECHNICAL ENGINEER.

6) WHERE PAVED TRAIL OCCURS WITHIN OR OVER ROOT ZONES OF EXISTING TREES, CONSULT WITH PARK ARBORIST BEFORE WORK COMMENCES.

7) ROOT BARRIER SHALL BE INSTALLED AS SHOWN ON THE PROJECT PLANS OR AS DIRECTED BY THE PARK PROJECT MANAGER.

8) TOP OF WALL SHALL BE EQUIPPED WITH SKATE DETERRENT BRASS FLAT BARS WITH 3/4" TO 1" BEVEL SPACED 5-FT O.C. FB1.OB" with 5/8" Dia A307 Galvanized post-installed anchor bolt with counter sunk bolt head, 4" embedment, as manufactured by Ravensforge, or approved equal, and approved by sales@skateabate.com, phone: (619) 218-1343. The anchor bolt shall be secured using an epoxy injection adhesive by Hilti or equivalent. The entire backing of the flat bar shall also be epoxied to the concrete surface. The contractor shall provide shop drawings showing all details before installation.

Detail 5 - Trail typical section



NOTES:

1) ASPHALT TRAIL SHALL BE CONSTRUCTED IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION AND LATEST CITY OF BELLINGHAM STANDARD ASPHALT TRAIL DETAIL.

2) TESTING AND QUALITY CONTROL OF ASPHALT AND AGGREGATES SHALL BE PER WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.

3) WHERE TRAIL IS LOCATED OVER BURIED UTILITIES, THE ENTIRE TRENCH SHALL BE BACKFILLED WITH IMPORTED GRAVEL AND COMPACTED TO 95% MAXIMUM DENSITY.

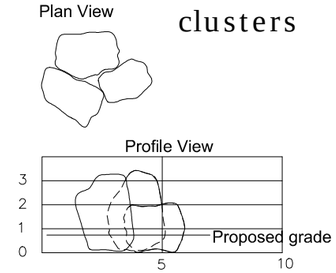
4) SECTION SHOWN IS FOR TYPICAL CONDITIONS. TRAIL MAY BE MODIFIED TO ACCOMMODATE SITE SPECIFIC REQUIREMENTS.

5) SUBGRADE COMPACTION MUST BE CERTIFIED BY AN APPROVED SPECIAL INSPECTION AND TESTING AGENCY OR GEOTECHNICAL ENGINEER.

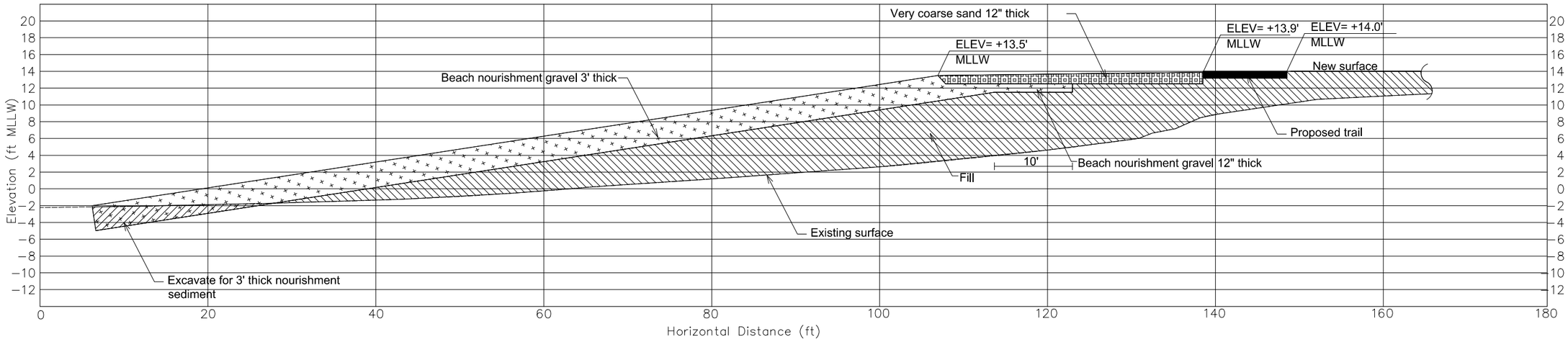
6) WHERE PAVED TRAIL OCCURS WITHIN OR OVER ROOT ZONES OF EXISTING TREES, CONSULT WITH PARK ARBORIST BEFORE WORK COMMENCES.

7) ROOT BARRIER SHALL BE INSTALLED AS SHOWN ON THE PROJECT PLANS OR AS DIRECTED BY THE PARK PROJECT MANAGER.

Detail 7 - Low intertidal boulder clusters



Detail 6 - Beach nourishment and backshore sand typical profile section



COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/2012
4/23/2012
6/08/2012
6/25/2012

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED: 2009

Boulevard Shoreline Improvements

Design Details 4, 5, 6 and 7

City of Bellingham - Parks/Design & Development Division

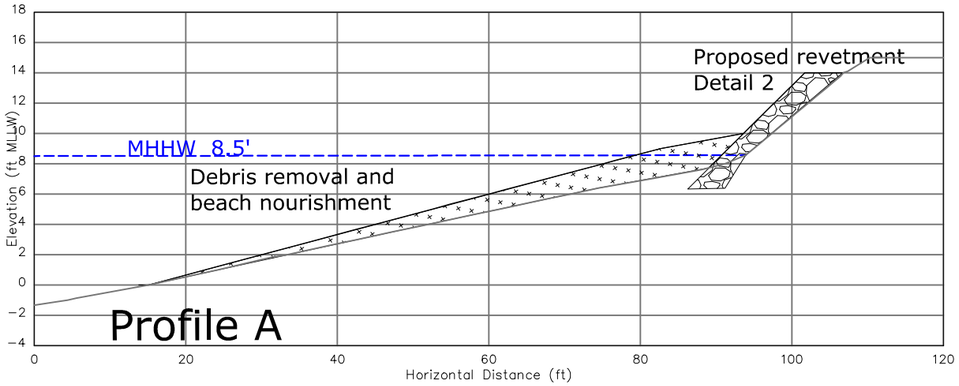
DRAFT

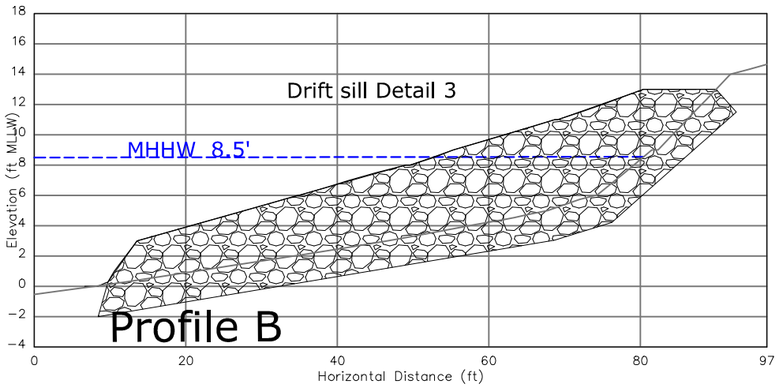
MLLW=0.0'

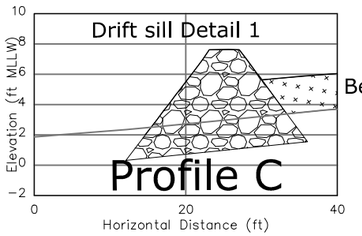
SCALE: AS NOTED

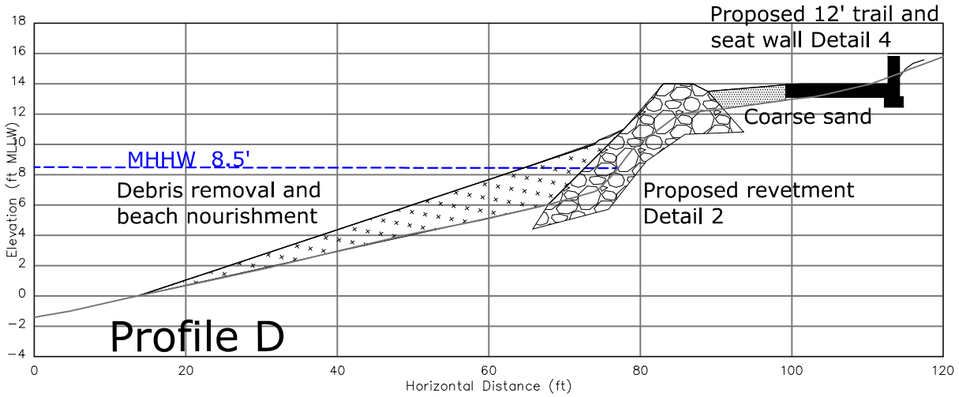
DATE: 06/27/2012

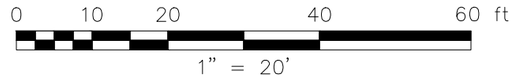
SHEET: C1.5











Legend

Existing

Proposed

COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/2012
4/23/2012
6/08/2012
6/25/2012

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED: 2009

Boulevard Shoreline Improvements

Cross Sections A, B, C and D

City of Bellingham - Parks/Design & Development Division

DRAFT

MLLW=0.0'

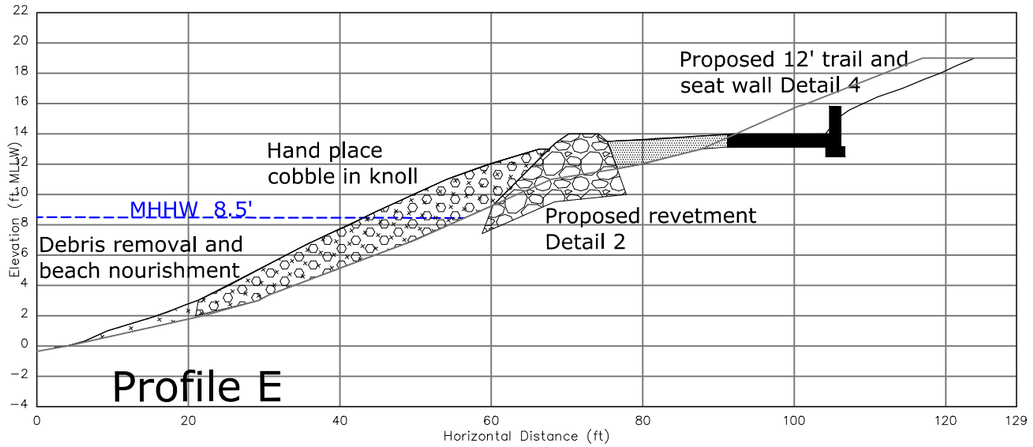
SCALE: AS NOTED

DATE: 06/26/2012

SHEET: C1.6

0 10 20 40 60 ft

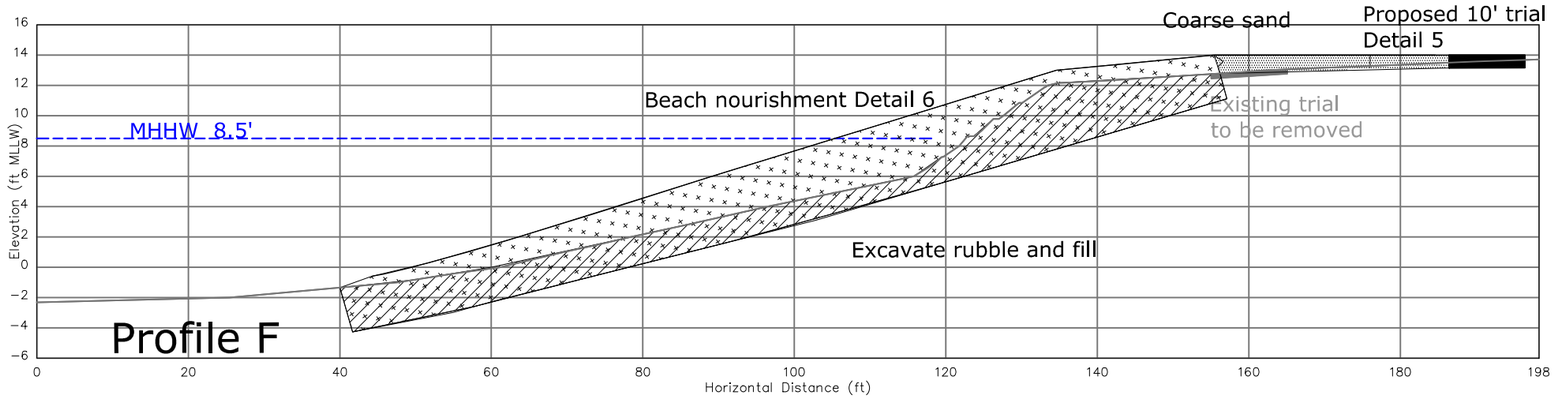
1" = 20'

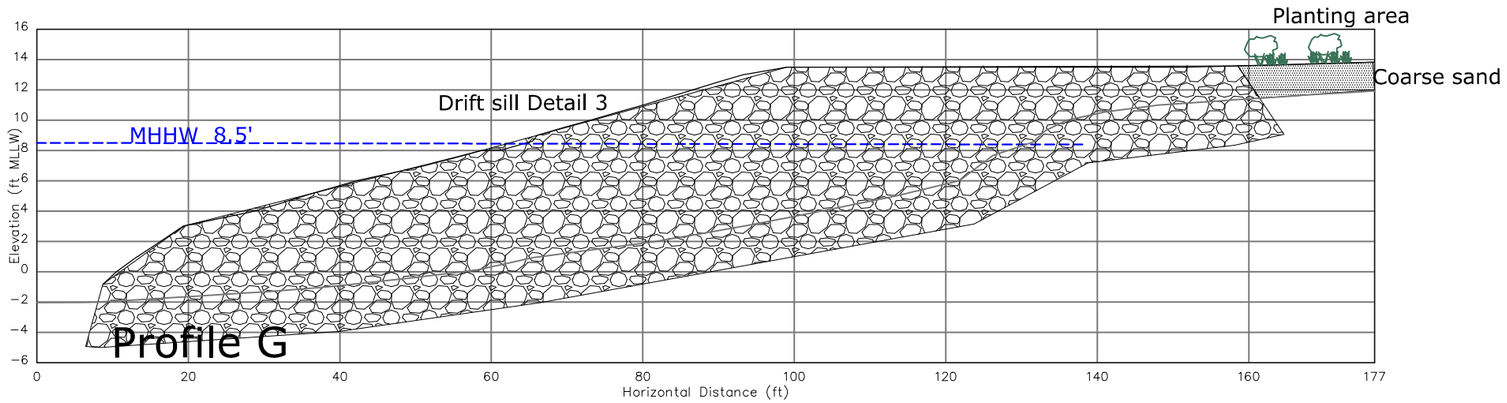


Legend

Existing ——————

Proposed ——————





COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/2012
4/23/2012
6/08/2012
6/25/2012

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED:
2009

Boulevard Shoreline Improvements

Cross Sections - E, F and G

City of Bellingham -
Parks/Design & Development Division

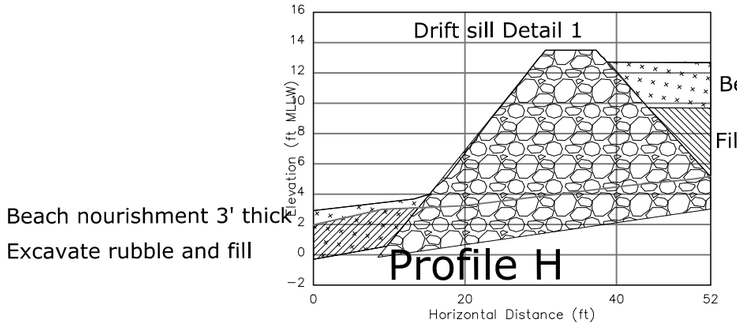
DRAFT

MLLW=0.0'

SCALE: AS NOTED

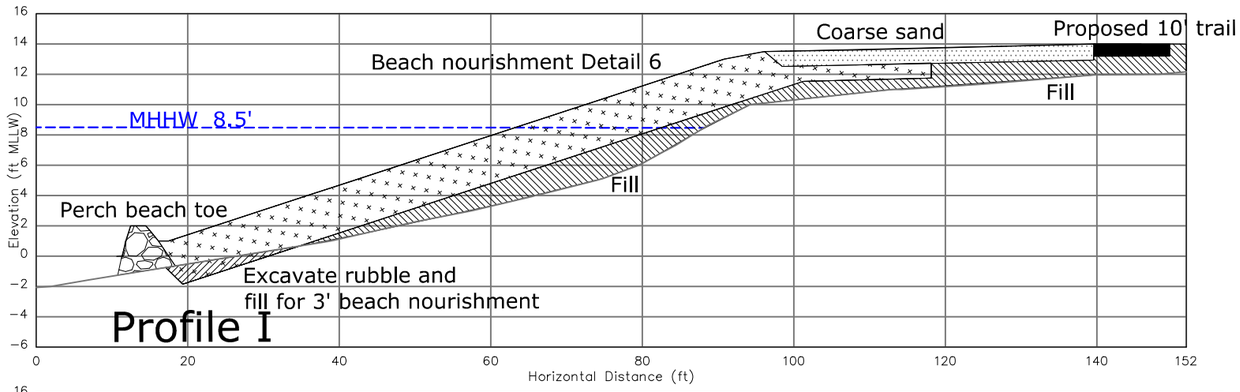
DATE:
06/26/2012

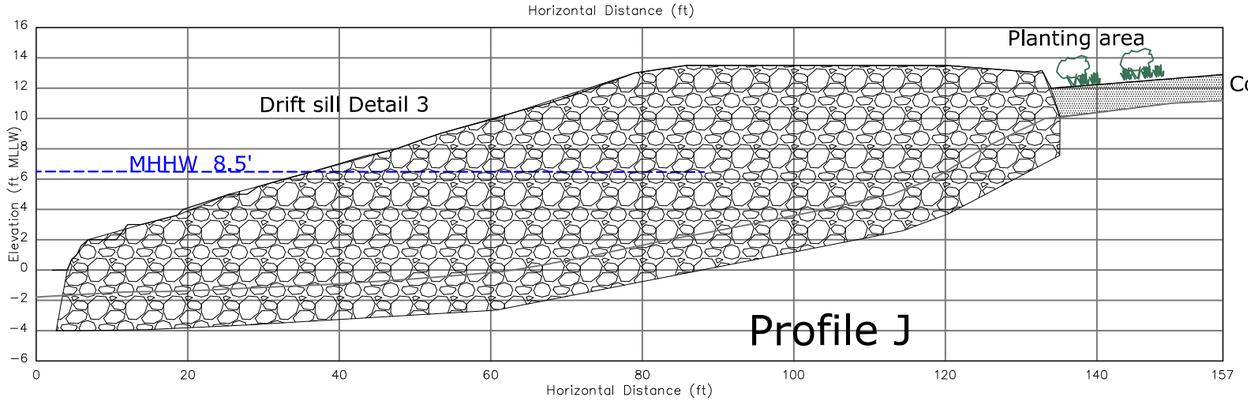
SHEET:
C1.7

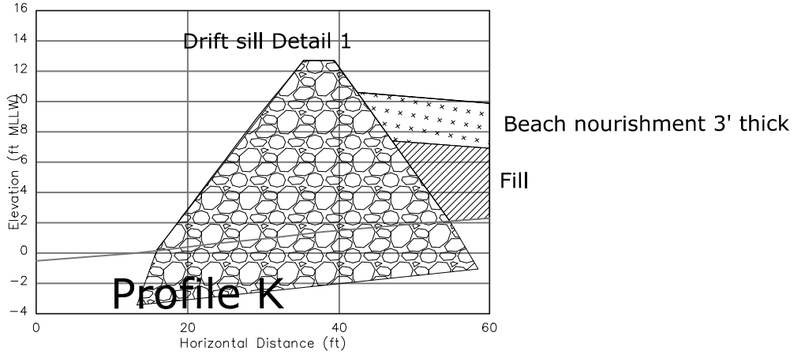


0 10 20 40 60 ft

1" = 20'







Legend

Existing _____

Proposed _____

COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/2012
4/22/2012
6/08/2012
6/25/2012

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED: 2009

Boulevard Shoreline Improvements

Cross Sections H, I, J and K

City of Bellingham - Parks/Design & Development Division

DRAFT

MLLW=0.0'

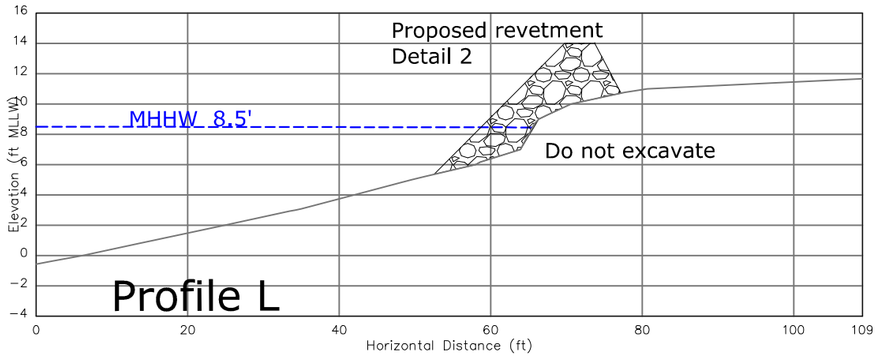
SCALE: AS NOTED

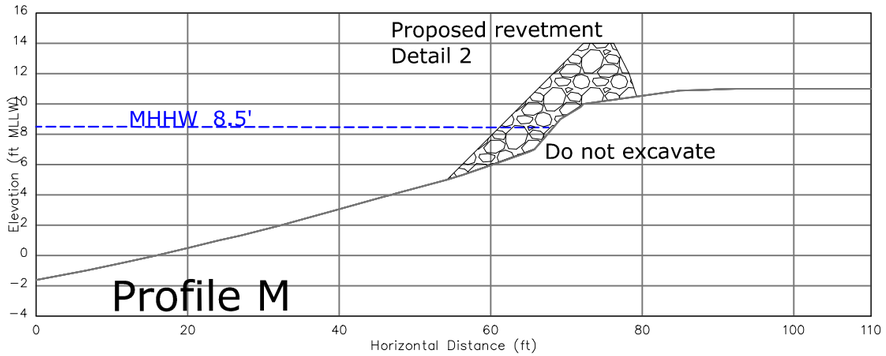
DATE: 06/26/2012

SHEET: C1.8

0 10 20 40 60 ft

1" = 20'





Legend

Existing

Proposed

COASTAL GEOLOGIC SERVICES
1711 Ellis St, suite 103
Bellingham, WA 98225
360-647-1845 - coastalgeo.com

REVISIONS
3/17/2012
4/23/2012
6/08/2012
6/25/2012

DRAWN BY: ACB
DESIGNED BY: JWJ
CHECKED BY:
DATE SURVEYED:
2009

Boulevard Shoreline Improvements

Cross Sections L-M

City of Bellingham - Parks/Design & Development Division

DRAFT

MLLW=0.0'

SCALE: AS NOTED

DATE:
06/26/2012

SHEET:
C1.9