Interim Action Plan
Blaine Marina Inc. Site
Blaine, Washington

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Prepared for

Port of Bellingham
Bellingham, Washington

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

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LIST OF ABBREVIATIONS AND ACRONYMS

AST	Aboveground Storage Tank
BGS	Below Ground Surface
CQA	Construction Quality Assurance
DNR	Washington State Department of Natural Resources
DNS	Determination of Non-Significance
Ecology	Washington State Department of Ecology
EDR	Environmental Data Resources, Inc.
ft	Feet
HASP	Health and Safety Plan
HPA	Hydraulic Project Approval
JARPA	Joint Aquatic Resources Permit Application
MTCA	Model Toxics Control Act
PID	Photoionization Detector
Port	Port of Bellingham
RCW	Revised Code of Washington
RI/FS	Remedial Investigation/Feasibility Study
SEPA	State Environmental Policy Act
Site	Blaine Marina Inc. Site
SMP	Shoreline Master Program
TPH	Total Petroleum Hydrocarbons
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife

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1.0 INTRODUCTION

This document presents the work plan for a proposed interim action at the Blaine Marina Inc. site (Site). The Port of Bellingham (Port) plans to conduct an interim action at the Site, which is located in Blaine, Washington, as shown on Figure 1. The proposed interim action will address a failing section of bulkhead along the shoreline in the western portion of the Site, the limits of which are shown on Figure 2. Additional failure of this bulkhead could potentially result in the release of contaminated soil and groundwater to Blaine Harbor. A number of previous Site environmental investigations have identified the presence of petroleum hydrocarbon contamination in Site soil and groundwater, likely originating from the fueling facility on Site.

The Site is currently listed on the Washington State Department of Ecology (Ecology) Hazardous Sites List (FSID 2888) and is ranked 3 out of 5 on its priority list for cleanup, with a ranking of 1 being the highest priority for cleanup. The Port is currently working with Ecology to develop the plans for addressing contamination at the Site. A remedial investigation and feasibility study (RI/FS) will be conducted by the Port under an Agreed Order between the Port and Ecology to define the nature and extent of contamination, and to identify an appropriate remedy.

Because the failing section of bulkhead could result in a significant release of contamination to the surface waters of Blaine Harbor, the Port is proposing to implement an Interim Action immediately, in advance of the RI/FS. This interim action plan is being submitted to Ecology as the first deliverable under Agreed Order No. DE 9000 between the Port and Ecology. The interim action will be implemented in advance of selection of the final cleanup action for the Site and, as such, must not prevent the implementation of other reasonable alternatives for the final cleanup action [Washington Administrative Code (WAC) 173-340-430(3)(b)].

2.0 BACKGROUND

This section presents information on Site background, including a description of the Site (Section 2.1), a summary of historical and current uses of the Site (Section 2.2), and a description of the geologic and hydrogeologic setting (Section 2.3).

2.1 SITE DESCRIPTION

Blaine Harbor is located at the northern end of Drayton Harbor in Blaine, Washington, as shown on Figure 1. Blaine Harbor was originally created in the late 1930s by dredging 2 acres of tideflat to create a small boat harbor. An access road was constructed and adjacent tidelands were filled to provide a shore support for the area. In the late 1940s, four additional acres were dredged; additional tidelands were filled; and a breakwater, bulkheads, floats, and ramps were constructed. The upland area that was created at this time generally consists of hydraulic fill with timber bulkheads along the shoreline. In some areas, riprap was used instead of, or in conjunction with, the bulkheads to establish the shoreline. An additional 15 acres were dredged and an extension of the breakwater was completed in the mid-1950s (TEC 2001). The harbor and marina have been upgraded over the years to meet the demand for services, although much of the infrastructure supporting the harbor is from the original construction, and the footprint of the upland industrial area has remained largely unchanged. A portion of the southwestern end of the harbor includes state-owned lands that are managed by the Port under a Port Management Agreement with the Washington Department of Natural Resources (DNR).

Upland facilities in Blaine Harbor are leased from the Port. Business activity has historically been focused in an area along the western end of Blaine Harbor referred to herein as the Blaine Harbor Industrial Area, which comprises all of the upland area shown on Figure 2. The Port is in the planning phase of redeveloping the facilities in this area, including infrastructure from the original construction that is in need of replacement.

The Site is located in the western portion of the Blaine Harbor Industrial Area. The Inner Harbor Line shown on Figure 2 defines the boundary between property owned by the Port (east of the Inner Harbor Line), and property that is owned by the state and managed by the Port under contract to DNR (west of the Inner Harbor Line). The boundaries of this Site will be determined during the RI/FS process. The Port currently leases the Site to Blaine Marina Inc. (Blaine Marina), which has leased the property at the Site from the Port since the 1950s.

2.2 HISTORICAL AND CURRENT SITE USE

Blaine Marina has leased the property at the Site from the Port since the 1950s. Blaine Marina is a family-owned business that sells furniture, appliances, and fuel products. Since 1955, Blaine Marina has operated a tank farm that includes three 8,500-gallon aboveground fuel storage tanks (ASTs) to support its onsite fueling facility. The tanks have historically stored diesel and gasoline. Additionally, a 4,000-gallon horizontally oriented AST at this tank farm has been used to store home heating oil, which was transferred to tanker trucks for offsite delivery. The three vertically oriented, 8,500-gallon ASTs shown on Figure 2 are located in the northwestern portion of the Site and currently contain gasoline and diesel. A secondary containment area has been created around the ASTs with concrete stem walls.

Two releases of petroleum hydrocarbons are reported to have occurred at the Site. According to documents reviewed from 1996, there was a spill incident at the Site sometime prior to 1986; however, no records regarding the details of that spill were available. It is unclear whether this pre-1986 spill may be the same incident described as occurring in about 1986 in which a leak was found in a piping elbow that had to be replaced (Retec 1996a).

Additionally, a spill of approximately 500 to 700 gallons of No. 2 diesel was reported on May 2, 1990 (Retec 1996a). The spill was reported to have come from a valve in the crossover plumbing connecting two tanks that was accidentally left open during a fuel transfer. The spill was reportedly contained on site and cleaned up by a vactor truck. An Environmental Data Resources Inc. (EDR) report summary for the Site provided an Emergency Release Notification System database listing that indicates that an accidental release of 8,200 gallons of diesel occurred on May 4, 1990 due to an open valve (EDR 2011). It is likely that the May 2, 1990 release described in the Retec letter and the May 4, 1990 release described in the EDR report summary are the same release. However, the quantity of diesel that was actually released remains unconfirmed.

2.3 GEOLOGY AND HYDROGEOLOGY

General geologic information for the Site was obtained from the *Geologic Map of the Bellingham 1:100,00 Quadrangle, Washington* (Lapen 2000), published by the Washington Division of Geology and Earth Resources. According to Lapen, fill is present at the Site and overlies glaciomarine drift. Glaciomarine drift can have various distributions of gravel, sand, silt, and clay, although finer sediments (silt, and clay with fine sand) are most typical, with coarse sand and gravel occurring as "dropstones." Glaciomarine drift in the area is typically soft or loose, although where exposed to drying or other consolidation after deposition, it can form a hardened crust several feet in thickness.

Landau Associates conducted a geotechnical investigation of the bulkhead replacement area in January 2012. Three borings were advanced to depths up to about 50 feet (ft) below ground surface

(BGS). Subsurface geologic conditions observed during the investigation consisted of up to 15 ft of dredge fill material consisting of sandy, silty clay and lenses of silty sand. Below the fill, silty fine sand and fine sandy silt were present to a depth of about 25 ft BGS. Below a depth of about 25 ft BGS, very soft to medium stiff, silty clay and pockets of sandy clay are present to the maximum depth of the explorations.

Hydrogeology at the Site has not been adequately investigated to date, and will be evaluated during the RI/FS process. Groundwater levels near the shoreline are likely to be significantly influenced by changing tides, but are generally about 7 ft BGS. Surface water infiltrating at the Site appears to be the only source of groundwater recharge, which likely results in a general groundwater flow from the center of the upland area toward the surrounding shoreline.

3.0 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Several investigations have been conducted at the Site since 1990 to assess soil and groundwater quality for evidence of petroleum hydrocarbon releases from facility operations. Results for total petroleum hydrocarbon (TPH) analyses are summarized in Tables 1 and 2, and exploration locations are shown on Figure 3. As shown in the tables and on Figure 3, analysis of samples collected from many of these locations indicate concentrations of diesel-range or gasoline-range TPH in soil and groundwater that exceed the preliminary screening levels identified in the tables. Additionally, an oily sheen was observed on the surface of soil samples and on groundwater over a large area in the vicinity of the ASTs, and more recently near the section of failing bulkhead during Landau Associates' 2012 geotechnical investigation, as discussed below.

The analytical data for upland soil and groundwater from the past environmental investigations suggest that the TPH contamination observed in the subsurface likely originated near the ASTs. However, the extent of contamination is not well defined by the investigations to date, and most of the data are 15 to 20 years old, and may not represent current conditions. For the purposes of the planned interim action, the environmental conditions in the vicinity of the failing bulkhead are of the greatest relevance and are discussed below.

Based on the preliminary results of the geotechnical investigation conducted by Landau Associates in January 2012 to support engineering the bulkhead repair, it is likely that TPH contamination at the Site has migrated toward the failing bulkhead. This is supported by observations of gasoline-range TPH contamination, including sheen, which was encountered in geotechnical borings B-1-12, B-2-12, and B-3-12 advanced during the January 2012 investigation. Although conducted for geotechnical purposes, environmental samples were collected when odor, sheen, and high photoionization detector (PID) readings indicated the potential presence of TPH contamination at a depth of between about 7 ft and 9 ft BGS.

As indicated in Table 1, soil samples collected during the January 2012 investigation indicate the presence of gasoline-range TPH at concentrations well above the Washington State Model Toxics Control Act (MTCA) Method A cleanup level for unrestricted land uses, which is the preliminary screening level currently used to evaluate contamination at the Site. Concentrations of diesel-range TPH in these soil samples were below the preliminary screening level. These findings will be reported in the geotechnical report supporting the bulkhead repair design and will be presented in the RI/FS Work Plan in conjunction with other existing environmental data. These data were also considered in the evaluation and selection of the proposed interim action, as discussed in the following sections of this work plan.

4.0 INTERIM ACTION

This section presents the development, evaluation, and selection of the interim action proposed for the Site to address the failing bulkhead and prevent the potential spread of contaminated materials to Blaine Harbor. The purpose of the interim action is to protect human health and the environment, and more specifically, to provide adequate protection for environmental receptors in the adjacent marine surface water and sediment.

4.1 BASIS FOR INTERIM ACTION

MTCA distinguishes an interim action from a cleanup action in that an interim action only partially addresses the cleanup of a Site and achieves one of the following purposes [WAC 173-340-430(1)]:

- Is technically necessary to reduce the threat to human health and the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance [WAC 173-340-430(1)(a)].
- Corrects a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed [WAC 173-340-430(1)(b)].
- Is needed to complete a site hazard assessment, remedial investigation/feasibility study, or design a cleanup action [WAC 173-340-430(1)(c)].

An interim action must also meet one of the following general requirements [WAC 173-340-430(2)]:

- Achieve cleanup standards for a portion of the Site.
- Provide a partial cleanup (clean up hazardous substances from all or part of the Site, but not achieve cleanup standards).
- Provide a partial cleanup and not achieve cleanup standards, but provide information on how to achieve cleanup standards.

The proposed interim action is necessary to effectively contain the contamination and allow proper implementation of the complete RI/FS process. The proposed action meets the requirements of MTCA described above by reducing the threat to human health and the environment through eliminating or substantially reducing one or more pathways for exposure to a hazardous substance, as well as correcting a problem that may become substantially worse if remedial action is delayed. The interim action will provide a partial cleanup by containing contaminated soil that might otherwise be released to marine surface water and sediment, but it may not achieve cleanup standards (to be determined during the RI/FS).

4.2 PURPOSE OF THE INTERIM ACTION

The purpose of the interim action is to repair approximately 60 linear feet of existing timber bulkhead at the Site that is progressively failing. This section of bulkhead is located along the western side of Sigurdson Avenue, and consists of timber piling and timber lagging, with riprap placed along the toe of the structure. Most of the bulkhead in this area, including the piling and lagging, is damaged. It has shifted and bowed, and the top of the bulkhead is rotated outward toward the water.

Repairing this section of bulkhead is critical to preventing the release of contaminated upland soil and groundwater to marine surface water and sediment in Blaine Harbor. The interim action will include implementing a permanent repair of the bulkhead in the location indicated on Figure 2 that will ultimately be integrated with broader bulkhead repair and replacement, which will occur during redevelopment of the Blaine Harbor Industrial Area.

4.3 EVALUATION OF INTERIM ACTION ALTERNATIVES

The following three interim action alternatives were developed and evaluated as potential options for repairing the failing timber bulkhead (Reid Middleton 2011):

- Alternative 1 –Sheetpile Bulkhead
- Alternative 2 – Concrete Block Wall and Sheetpile Bulkhead
- Alternative 3 –Riprap Slope and Sheetpile Bulkhead.

Each of these alternatives could be designed and constructed to provide an effective repair of the failing section of bulkhead. For each of the alternatives, it is assumed that the fuel office building, which is currently supported by the bulkhead, will be deconstructed to the floor level by the tenant to relieve vertical and lateral loads on the existing bulkhead. But the existing bulkhead and building deck structure would remain in place until they are removed in conjunction with redevelopment activities.

MTCA requires that an interim action plan present the alternative interim actions considered and an explanation of why the proposed alternative was selected [WAC 173-340-430(7)(b)(ii)]. The following sections describe the alternatives considered for the interim action and the basis for selecting the proposed interim action.

4.3.1 ALTERNATIVE 1 –SHEETPILE BULKHEAD

This alternative involves driving steel sheetpiles into the ground on the upland side of the existing bulkhead, along a distance of approximately 60 ft, as shown on Figure 4a. The sheetpiles would be driven into the subsurface using a vibratory hammer until the final tip elevation is achieved. The new wall would be constructed directly adjacent to the existing bulkhead and a concrete pile cap would be

formed across the top of the sheetpiles at the head of the fuel pier to create a closure between the upland and the pier to maintain access. A cross-sectional view of Alternative 1 is provided on Figure 4b.

The steel sheetpile wall would be designed as a cantilever wall that assumes the existing timber bulkhead provides no support in front of the new wall. The tenant has already been directed to disconnect and drain the existing fuel lines that service the fuel dock. The fuel lines may be reinstalled through a penetration in the steel sheets, subject to Ecology approval. If the fuel lines are reinstalled, any penetrations through the new bulkhead will be sealed, as needed, to prevent the release of affected soil or groundwater to Blaine Harbor.

This alternative would not be affected by tide cycles, involves limited excavation of existing upland soil, and restores the full width of the roadway area. It is not anticipated that this alternative would disturb or require the excavation and management of TPH-impacted soil encountered in the vicinity of the bulkhead replacement.

4.3.2 ALTERNATIVE 2 – CONCRETE BLOCK WALL AND SHEETPILE BULKHEAD

This alternative involves constructing approximately 40 ft of concrete block wall behind the existing fuel office building and 20 ft of concrete-capped sheetpile wall behind the head of the fuel pier, as shown on Figures 5a and 5b. The concrete block wall would require a relatively large excavation in order to prepare a suitable foundation and set the bottom row of blocks that would create the base foundation layer for the wall. Variations of Alternative 2 with and without temporary construction shoring were evaluated. Construction of the concrete block wall without shoring would require laying back the excavation sidewalls to 1.5 horizontal to 1 vertical, which would require temporary rerouting of water and sewer utilities, as shown on Figure 5a. As a result, temporary shoring would likely be required to limit lateral excavation and support the existing utilities within the roadway area. The cantilever sheetpile section would be constructed in the same manner as Alternative 1 to allow continued access to the fuel pier.

Construction of this alternative would need to be coordinated with tidal cycles because the foundation work area and base layer of concrete blocks would sometimes be below groundwater level. Excavation and ground disturbance in the construction zone behind the existing bulkhead could affect water quality in Blaine Harbor by releasing turbid water and possibly TPH-impacted soil and groundwater. As a result, engineering controls such as a silt curtain and absorptive booms to protect surface water, as well as water quality monitoring, would likely be required. Additionally, material excavated during construction would likely include TPH-contaminated soil that would require appropriate management and treatment or disposal.

This alternative would be expected to have a limited effect on Site usage, although an approximately 2-ft gap would be created adjacent to the existing building area as a result of the concrete block wall batter that would require installation of a guardrail along the top of the wall. The fuel lines could be reconnected through a penetration in the steel sheetpile section of the wall, subject to Ecology approval.

4.3.3 ALTERNATIVE 3 – RIPRAP SLOPE AND SHEETPILE BULKHEAD

This alternative is similar to Alternative 2 and involves constructing a cut slope with riprap protection for approximately 40 ft behind the existing fuel office building and 20 ft of concrete-capped sheetpile wall behind the head of the fuel pier, as shown on Figure 6. This alternative requires excavation and disposal of a similar volume of soil behind the existing bulkhead as Alternative 2 with shoring and a significantly smaller excavation volume than Alternative 2 without shoring. However, it would result in a permanent loss of upland area, and would impact the use of the adjacent roadway. As with Alternative 2, the timing of construction would depend on the tides, as the lower portion of the riprap slope would sometimes be below groundwater level.

Similar to Alternative 2, ground disturbance in the construction zone behind the existing bulkhead could affect water quality in Blaine Harbor, and would require similar engineering controls and monitoring. This alternative would also result in the excavation of larger quantities of petroleum-impacted soil that would require management and treatment or disposal. The fuel lines could be reconnected through a penetration in the steel sheetpile section of the wall, subject to Ecology approval.

4.3.4 SELECTION OF THE PREFERRED ALTERNATIVE

Each of the three alternatives is considered technically feasible and could be constructed to provide an effective repair of the failing section of bulkhead. Other factors that were evaluated to select the preferred alternative include structural permanence, constructability, environmental impacts anticipated during implementation, potential impacts to Site usage, and cost. Alternative 1 was selected as the best option to implement at the Site based on the following factors:

- **Permanence and effectiveness of the remedy**

  Alternative 1 provides greater long-term structural integrity and is considered more permanent than the other alternatives because it would be more compatible with anticipated future bulkhead and pier repair and replacement along this portion of the marina.

- **Potential environmental impacts during implementation**

  1. Alternative 1 requires only a limited amount of excavation in shallow soils that are above the zone of likely TPH contamination, and thus is expected to result in minimal exposure of contaminated materials to construction workers or to other potential environmental receptors during implementation. Alternatives 2 and 3 each require a significantly deeper

and wider excavation, and would require construction personnel to use more stringent worker health and safety protocols.

2. Alternatives 2 and 3 would require excavating and disturbing soil that has the potential to affect marine surface water quality, including from TPH contamination. Alternative 1 will not expose any disturbed soil to potential interaction with marine surface water and would result in minimal potential impact to marine surface water and sediment.

3. Excavation associated with Alternatives 2 and 3 would generate substantial volumes of potentially contaminated soil, and possibly groundwater, which would require appropriate handling, management, transportation, and disposal. The added complexity and cost of material handling and disposal activities is not required to implement Alternative 1.

- **Potential impacts to long-term Site use**

  Alternative 1 would have the least impact on Site use in that roadway usage of Sigurdson Avenue would not be reduced by the interim action. Alternatives 2 and 3 would both result in a reduced roadway width, losing about 4 ft of roadway width for Alternative 2 and about 12 ft for Alternative 3, including required setbacks from the edge of the slope.

- **Potential to preclude future remedial action**

  None of the alternatives would preclude future remedial action. However, Alternatives 2 and 3 could increase the difficulty in addressing TPH contamination in the vicinity of the bulkhead. If Alternative 2 or 3 is implemented, any future remedial actions that would require access to the affected soil within the sloped portion of the bulkhead repair area could be implemented only by partially deconstructing the wall created by these alternatives. Because Alternative 1 includes the construction of a self-supporting vertical wall, there would be no limitations to accessing the affected soil in the future if needed to implement a remedial action.

- **Cost**

  Exclusive of costs for management and disposal of contaminated soil and groundwater, the three alternatives are similar in cost. However, Alternatives 2 and 3 would require the removal, management and disposal of petroleum hydrocarbon-contaminated soil and groundwater from about 6 ft BGS to the maximum depth of excavation. The management and disposal of contaminated soil and groundwater would significantly increase the costs for Alternatives 2 and 3. As a result, Alternative 1 is considered the least expensive alternative.

Based on the evaluation above, Alternative 1 was selected as the preferred alternative for the interim action. Alternative 1 is the alternative most compatible with long-term Site usage, can be constructed with the least difficulty, has the least potential to result in releases of hazardous substances to the environment during construction, avoids the generation of contaminated soil during construction, and has the least potential impact on future Site remedial actions. Additionally, the cost for Alternative 1 is significantly less than Alternatives 2 and 3 because it would not require the management of contaminated soil or groundwater.

4.4 INTERIM ACTION IMPLEMENTATION

Implementation of the interim action will consist primarily of the installation of interlocking steel sheetpiles, which is a standard construction technique for marine bulkheads. The sheetpile bulkhead will be installed about 2 to 3 ft behind the existing timber bulkhead. Because of the generally soft and loose soils at the Site, it is anticipated that a vibratory hammer can be used to install the sheetpiling. This is also based on the successful installation of 16-inch pipe piles using a vibratory hammer in similar soils around the wave barrier at the harbor entrance.

Installation of the sheetpiles will require the excavation of a shallow key trench along the alignment of the wall. The key trench should extend only 1 to 2 ft BGS and, as such, should not encounter any TPH-impacted soil. However, soil quality will be monitored during excavation for any indications of contamination (i.e., discoloration, odor, elevated PID readings) and any soil identified as potentially contaminated will be segregated for chemical analysis, as discussed in Section 4.6.2.

4.5 INTERIM ACTION TIMING

The Port intends to complete the repair of the failing bulkhead as soon as possible. Design of the repair was completed in April 2012, the Port selected a construction contractor in June 2012, and construction is anticipated to start in July 2012 and be completed by September 2012.

4.6 COMPLIANCE MONITORING

Compliance monitoring will be conducted to assure the effectiveness of the interim action. MTCA requires compliance monitoring for all cleanup actions, including interim actions, as described in WAC 173-340-410. Compliance monitoring is required to be conducted for the following three purposes, which are discussed further in the following sections:

- **Protection monitoring** to confirm that human health and the environment are adequately protected during construction, operation, and maintenance associated with the cleanup action.
- **Performance monitoring** to confirm that the cleanup action has attained cleanup standards and any other performance standards.
- **Confirmational monitoring** to confirm the long-term effectiveness of the cleanup action once the cleanup standards and other performance standards have been attained.

4.6.1 PROTECTION MONITORING

Protection monitoring addresses worker health and safety for activities related to construction activities during the interim action, as well as protection of the general public, if conditions are encountered that indicate that workers or the general public could be exposed to hazardous substances. As previously discussed, it is not anticipated that hazardous substances will be encountered during the

interim action, so implementation of protection monitoring will occur only if unanticipated conditions are encountered.

Worker health and safety will be addressed through a project health and safety plan (HASP), if required. The requirements for a project HASP will be included in the project construction documents, and the contractor will prepare the HASP if conditions are encountered that suggest construction workers may come into contact with hazardous substances. The HASP would address potential physical and chemical hazards associated with Site activities consistent with the requirements of WAC 173-340-810, and field monitoring to confirm that potential exposure to chemical hazards does not exceed health-based limits.

Anticipated potential physical hazards include working in proximity to heavy equipment, heat stress or cold stress, and vehicular traffic. Anticipated potential chemical hazards include exposure to Site contaminants through various exposure pathways (i.e., direct contact, inhalation, and ingestion). Because the interim action includes only limited excavation from depths not anticipated to contain hazardous substances at concentrations of concern, chemical exposure is unlikely to be an issue. Therefore, screening of work zone vapor conditions and soil quality will initially be conducted using visual and olfactory screening by an environmental professional. If indications of TPH contamination are observed, workspace air and excavated soil will be screened using a PID to determine if volatile organic compound concentrations are high enough to warrant the preparation and implementation of a contractor HASP. If so determined, intrusive activities would be halted until the HASP is implemented.

4.6.2 PERFORMANCE MONITORING

Performance monitoring typically consists of testing samples of affected media (soil, groundwater, sediment) to determine whether the cleanup action has achieved cleanup standards. However, this interim action does not include actions intended to achieve a final numerical standard (i.e., cleanup level) for any affected media. Therefore, performance monitoring will consist primarily of construction quality assurance (CQA) monitoring to confirm that the interim action is implemented in conformance with the interim action design drawings and specifications. CQA monitoring will include physical testing and construction observations.

Additionally, excavated material that exhibits visual, olfactory or field screening (i.e., PID) indications of potential contamination, or is intended for offsite use or disposal, will be sampled and tested to document contaminant concentrations. Soil samples will be analyzed for gasoline-, diesel-, and heavy oil-range TPH, benzene, toluene, ethylbenzene, and xylenes. Resource Conservation and Recovery Act-8 heavy metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) will also be analyzed for if offsite disposal is planned. Because of the volatile nature of gasoline-range TPH

contamination observed at the Site, U.S. Environmental Protection Agency Method 5035 sample collection procedures will be used. Soil samples will be collected after excavation.

As previously indicated, soil exhibiting indications of potential contamination will be segregated from soil that appears to be clean. Excavated soil will remain on Site pending the results of chemical analyses and waste profiling. Soil management procedures, including handling, storage, and best management practices to prevent migration of the soil away from the managed area will be addressed in the design documents and implemented by the contractor during construction activities. All soil that exceeds MTCA cleanup levels will be disposed of off site at an appropriate disposal facility based on the disposal profile, and in accordance with Washington State regulations. Soil that does not exhibit any visual, olfactory or field screening indications of potential contamination, or does not exceed MTCA cleanup levels, will be reused on Site as either backfill for the interim action or as general fill.

4.6.3 CONFIRMATION MONITORING

Confirmation monitoring will be conducted to confirm the long-term effectiveness of the interim action. Confirmation monitoring will consist of a final inspection of the repair as part of CQA monitoring, and periodic visual inspection of the repaired bulkhead to confirm that it continues to adequately shore the upland soils after installation.

5.0 APPLICABLE, RELEVANT, AND APPROPRIATE REGULATORY REQUIREMENTS

This interim action will be conducted by the Port under Agreed Order No. DE 9000 with Ecology. The Agreed Order requires identification of the permits or specific federal, state, or local requirements that the agency has determined are applicable and that are known at the time of entry of this Order. The Interim Action is exempt from the procedural requirements of Chapters 70.94, 70.95, 70.105, 77.55, 90.48, and 90.58 Revised Code of Washington (RCW). And, in accordance with WAC 173-340-710(9)(b)(vii) and (c), the Interim Action is exempt from any laws requiring or authorizing local government permits or approvals, but must still comply with the substantive requirements of such permits or approvals. The Agreed Order also requires the exempt permits or approvals and the applicable substantive requirements of those permits or approvals, as they are known at the time of entry of the Order, to be identified.

The following are considered either potentially applicable permits or substantive requirements that may be "legally applicable" or "relevant and appropriate" under WAC 173-340-710(2) to the proposed interim action identified in Section VII of the Agreed Order. Final determination of legally applicable or relevant and appropriate requirements will be made by Ecology as part of its review of this interim action plan.

5.1 STATE ENVIRONMENTAL POLICY ACT

Compliance with the State Environmental Policy Act (SEPA), Chapter 43.21C RCW, was achieved by conducting SEPA review in accordance with applicable regulatory requirements, including WAC 197-11-268, and Ecology guidance as presented in Ecology Policy 130A (Ecology 2004). The SEPA review was conducted concurrently with public review of the interim action plan and Agreed Order. The Port acted as the SEPA lead agency and coordinated the SEPA review. The Port issued a determination of non-significance (DNS) on April 14, 2012, and the SEPA review was completed April 24, 2012 after no public comments were received on the DNS.

5.2 THE SHORELINE MANAGEMENT ACT

The applicability and need for substantive compliance with the Shoreline Management Act is being made in consultation with the City of Blaine Shoreline Master Program (SMP). To comply with the SMP, the project must have no unreasonable adverse effects on the environment or other uses, no interference with public use of public shorelines, compatibility with surroundings, and no contradiction of purpose and intent of SMP designation. The interim action has been determined to meet the conditions of

the Urban shoreline designation and is consistent with the SMP, although likely would be exempt from substantial development requirements, due to the work being "normal maintenance or repair" pursuant to WAC 173-27-040(1)(b). The Port submitted a request for an exemption to the substantial development requirements on April 10, 2012 and received an exemption to the City of Blaine's SMP substantial development permit requirements on May 10, 2012.

5.3 HYDRAULIC PROJECT APPROVAL

Any work that will use, divert, obstruct, or change the bed or flow of state waters must do so under the terms of Hydraulic Project Approval (HPA) issued by the Washington Department of Fish and Wildlife (WDFW). WDFW HPA is administered under RCW 77.55 and rules set forth in WAC 220-110. The Port submitted a Joint Aquatic Resources Permit Application (JARPA) for the interim action to WDFW on April 25, 2012 and received an HPA from WDFW on May 8, 2012.

5.4 SECTION 10 OF THE RIVERS AND HARBORS ACT – FEDERAL PERMIT FOR WORK IN NAVIGABLE WATERS

All work related to the planned interim action is planned to occur within the upland portion of the Site (i.e., above the mean higher high water) and the need for a Section 10 permit is not anticipated. Due to the proximity to navigable waters, the U.S. Army Corps of Engineers has determined that a Section 10 permit is not required.

6.0 INTEGRATION WITH FINAL CLEANUP ACTION AND FUTURE LAND USE

The interim action will be integrated into the final Site cleanup action that will be completed following finalization of the Site RI/FS and issuance of a Cleanup Action Plan by Ecology. It is anticipated that the final cleanup action will be implemented within the next 3 years. The interim action is consistent with anticipated future land use. Based on the Wharf District Master Plan (Port of Bellingham 2007), future land use in this area is intended to provide continuing support for boaters, fishermen, and related retail businesses. Primarily, use of the area will be preserved for marine-related commercial and industrial uses, serving the commercial fishing industry.

7.0 USE OF THIS REPORT

As an exhibit to Agreed Order No. DE 9000, this report will become an integral and enforceable part of the Agreed Order, administered by the Washington State Department of Ecology. This Interim Action Plan has been prepared for the use of the Port of Bellingham and the Washington State Department of Ecology for specific application to the Blaine Marina Inc. Site. None of the information, conclusions, and recommendations included in this document can be used for any other project without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.

Jeremy Davis, P.E.
Senior Project Engineer

Lawrence D. Beard, P.E., L.G.
Principal

LDB/JMD/ccy

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N

0 0.5 1

Miles

Data Source: ESRI 2008

Y:\Projects\0010034\010.015\IAP\Mapdocs\Figure 1.mxd

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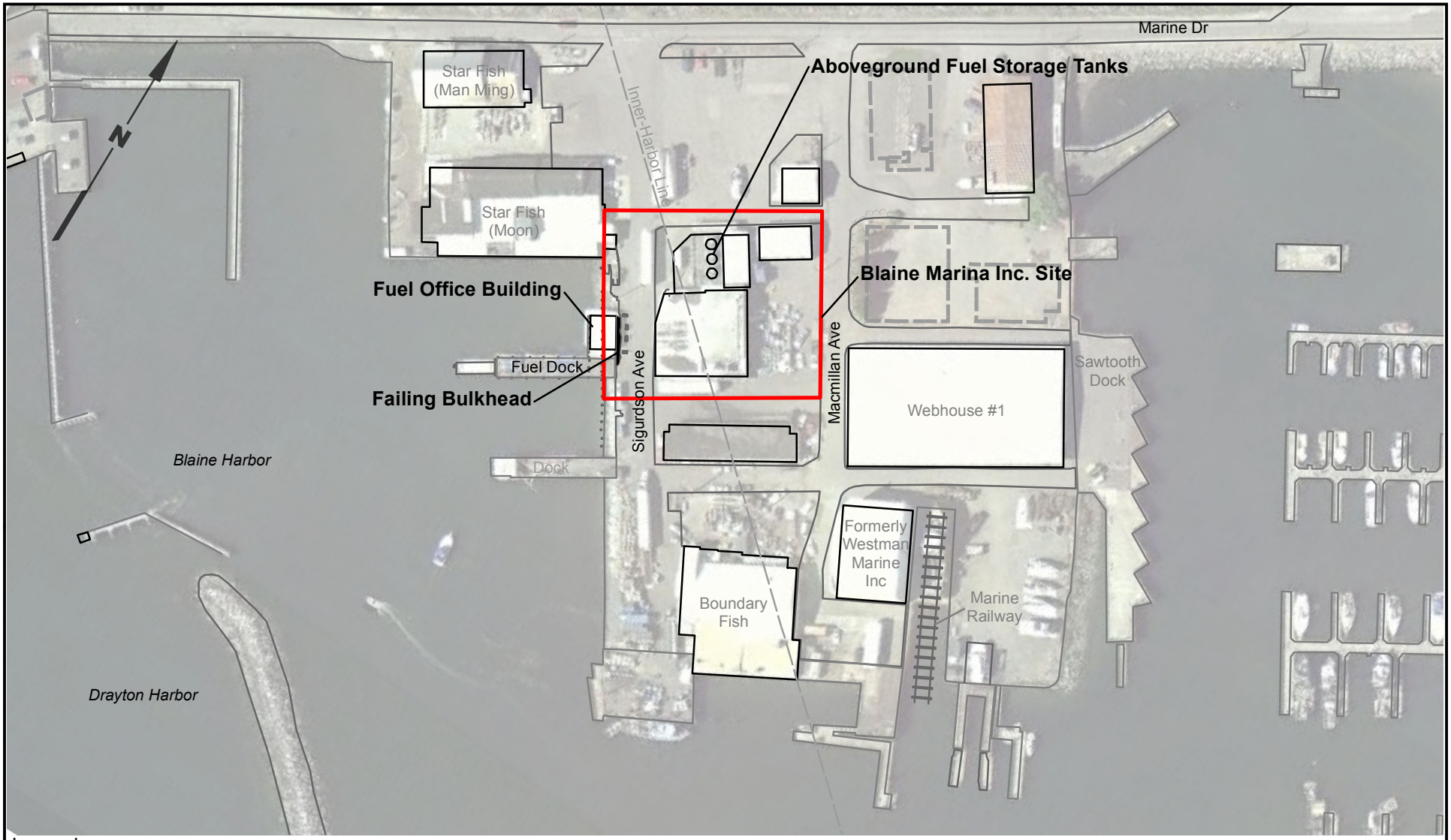
Blaine Marina Inc. Blaine Harbor Blaine, Washington	**Vicinity Map**	Figure 1

Y:\Projects\001034\010.015\IAP\Mapdocs\Figure 2.mxd 2/14/2012 NAD 1983 StatePlane Washington North FIPS 4601 Feet



Legend

- Approximate Blaine Marina Inc. Site Boundary; Site Limits to be Determined in the RI/FS
- Historical Building Location
- Existing Building Location

0 140 280

Scale in Feet

Data Sources: Wilson Engineering; Port of Blaine 2011; Walker and Associates, Inc; Google Earth Professional 2011

Note

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

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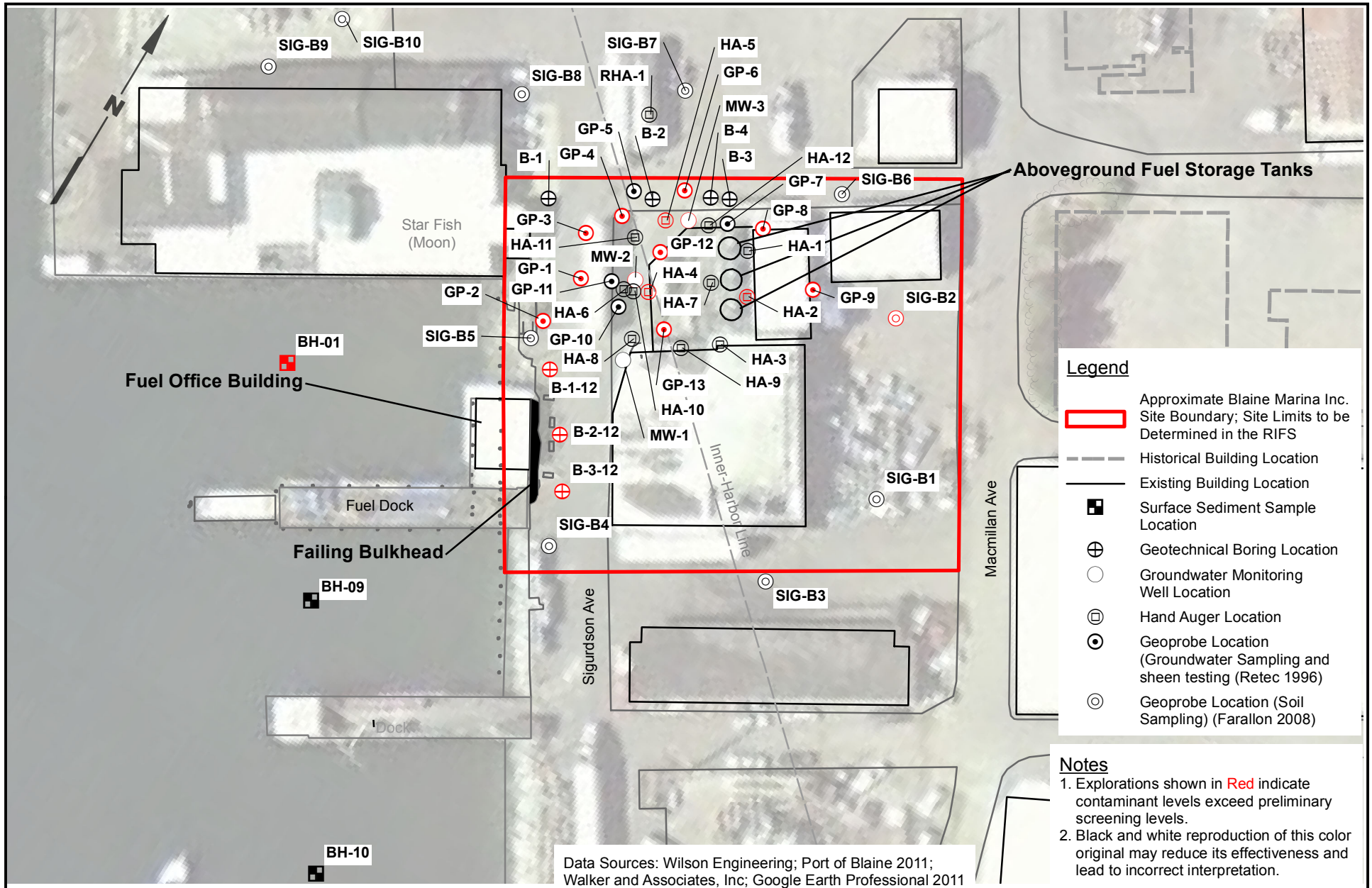
Blaine Marina Inc. Blaine Harbor Blaine, Washington	**Blaine Marina Inc. Site Plan**	Figure 2

Y:\Projects\001034\010.015\IAP\Mapdocs\Figure 3.mxd 2/14/2012 NAD 1983 StatePlane Washington North FIPS 4601 Feet



Notes

1. Explorations shown in Red indicate contaminant levels exceed preliminary screening levels.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Sources: Wilson Engineering; Port of Blaine 2011; Walker and Associates, Inc; Google Earth Professional 2011

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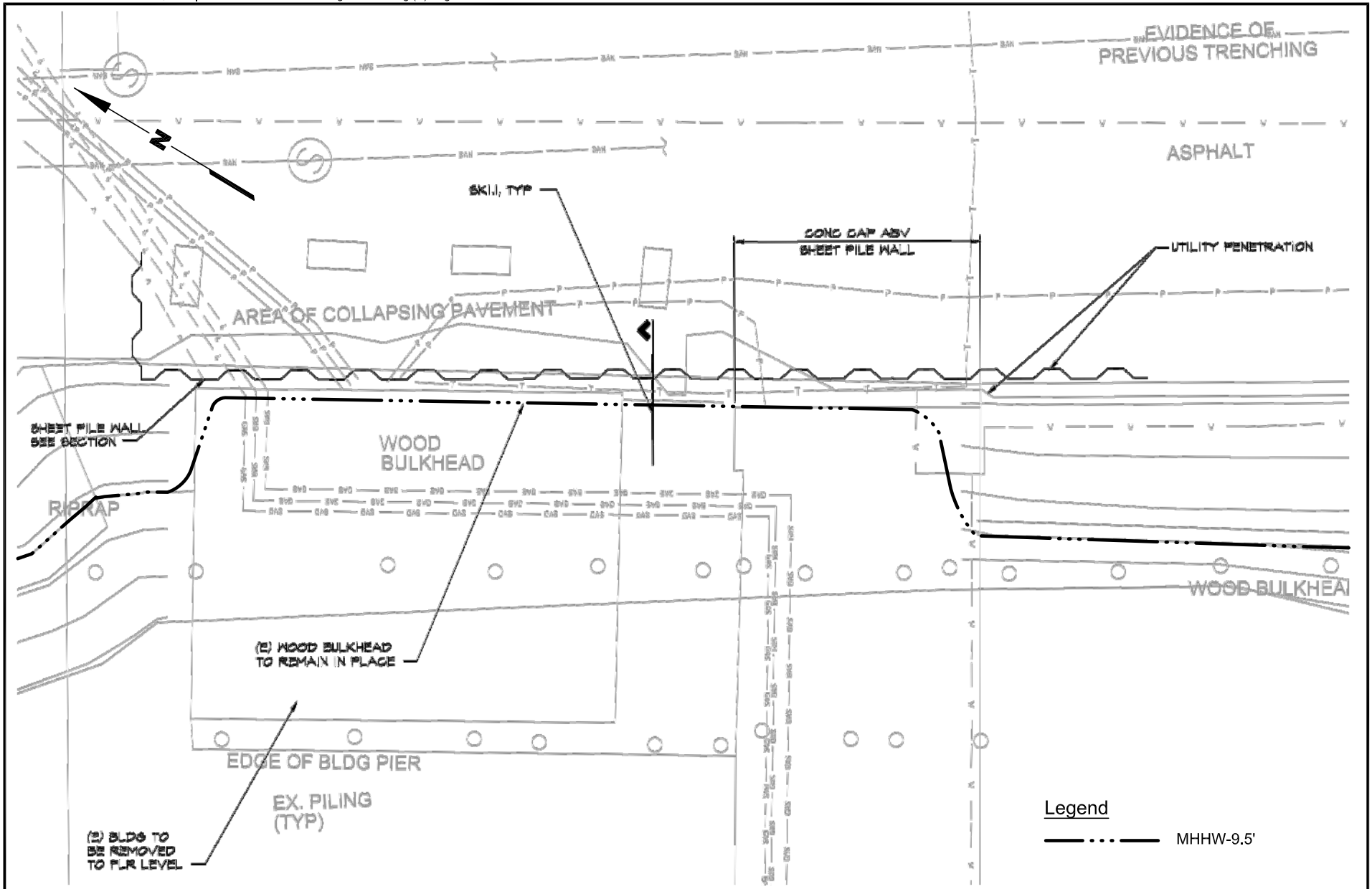
0 60 120

Scale in Feet

Blaine Marina Inc.
Blaine Harbor
Blaine, Washington

Blaine Marina Inc.
Previous Investigations

Figure
3



Source: Preliminary Design Details by Reid Middleton (02/08/12)

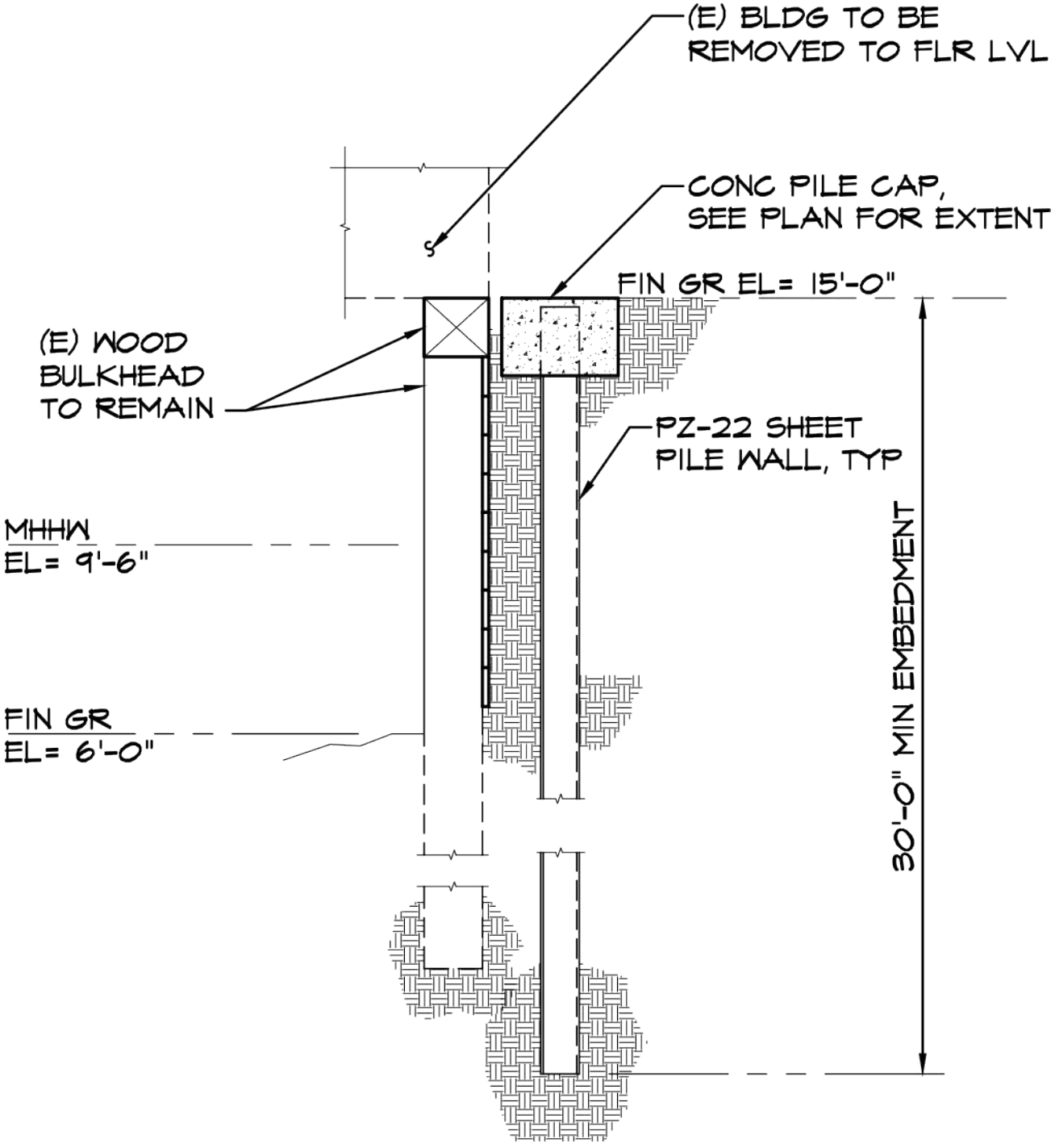
0 10 20
Scale in Feet

LANDAU ASSOCIATES

Blaine Marina Inc.
Blaine Harbor
Blaine, Washington

Interim Action Alternative 1
Sheetpile Bulkhead

Figure
4a

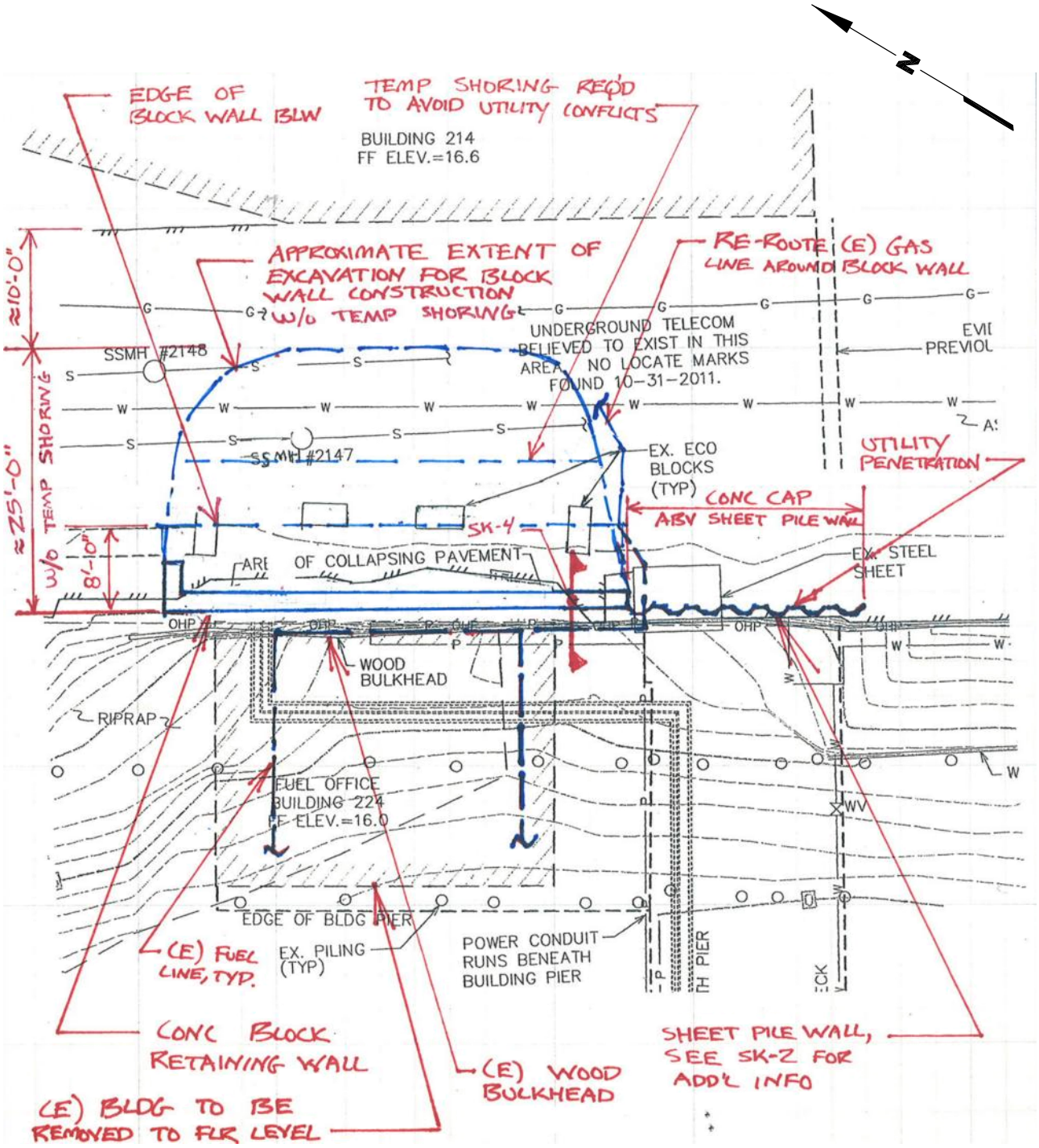


Not to Scale

Source: Preliminary Design Details by Reid Middleton (02/08/12)

Blaine Marina Inc. Blaine Harbor Blaine, Washington	**Interim Action Alternative 1 Sheetpile Bulkhead Section**	Figure **4b**

LANDAU ASSOCIATES



Not to Scale

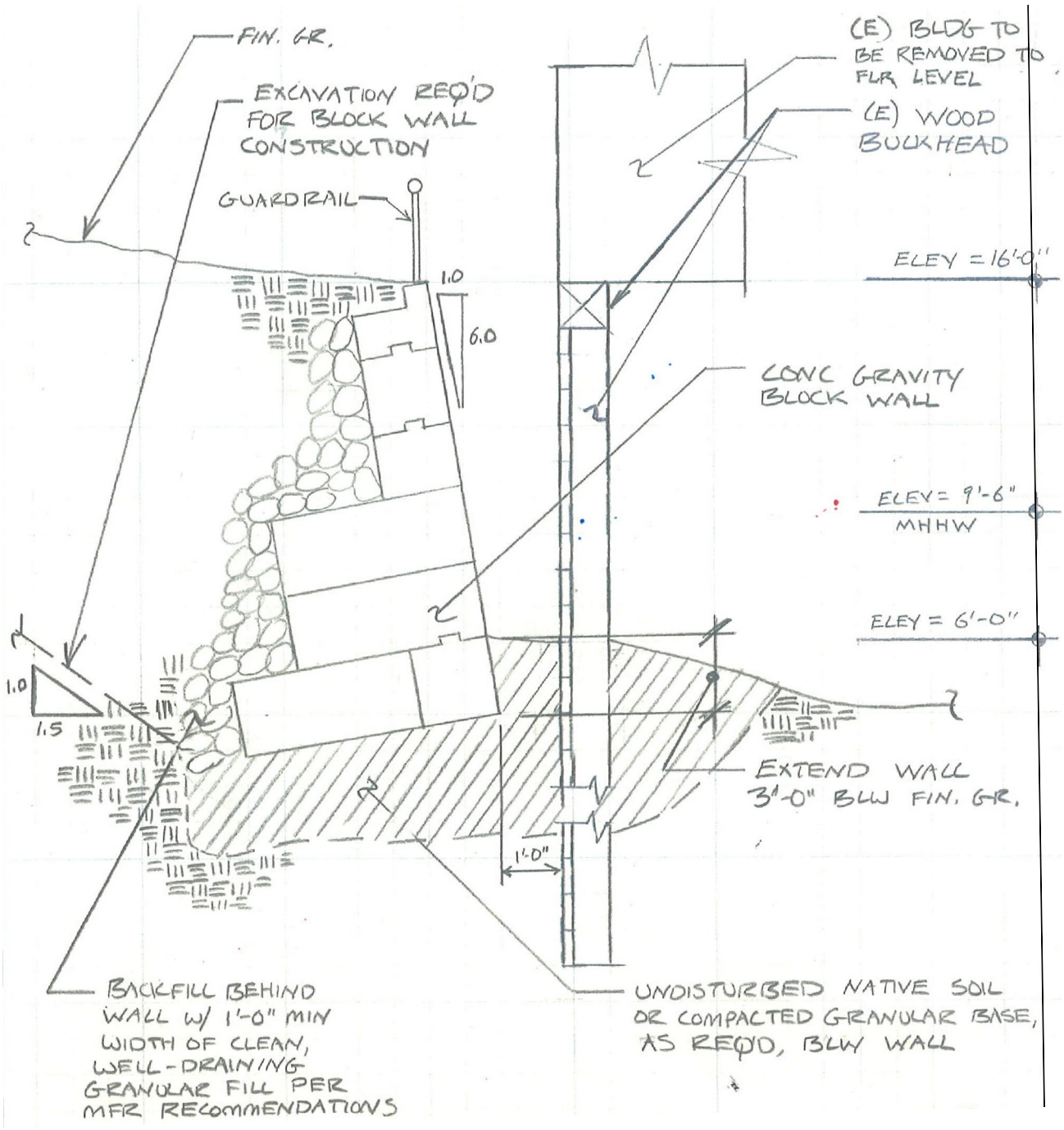
Note

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

Source: Preliminary Design Details by Reid Middleton (11/17/11)

Blaine Marina Inc. Blaine Harbor Blaine, Washington	**Interim Action Alternative 2 Concrete Block and Sheetpile Bulkhead**	Figure **5a**

LANDAU ASSOCIATES

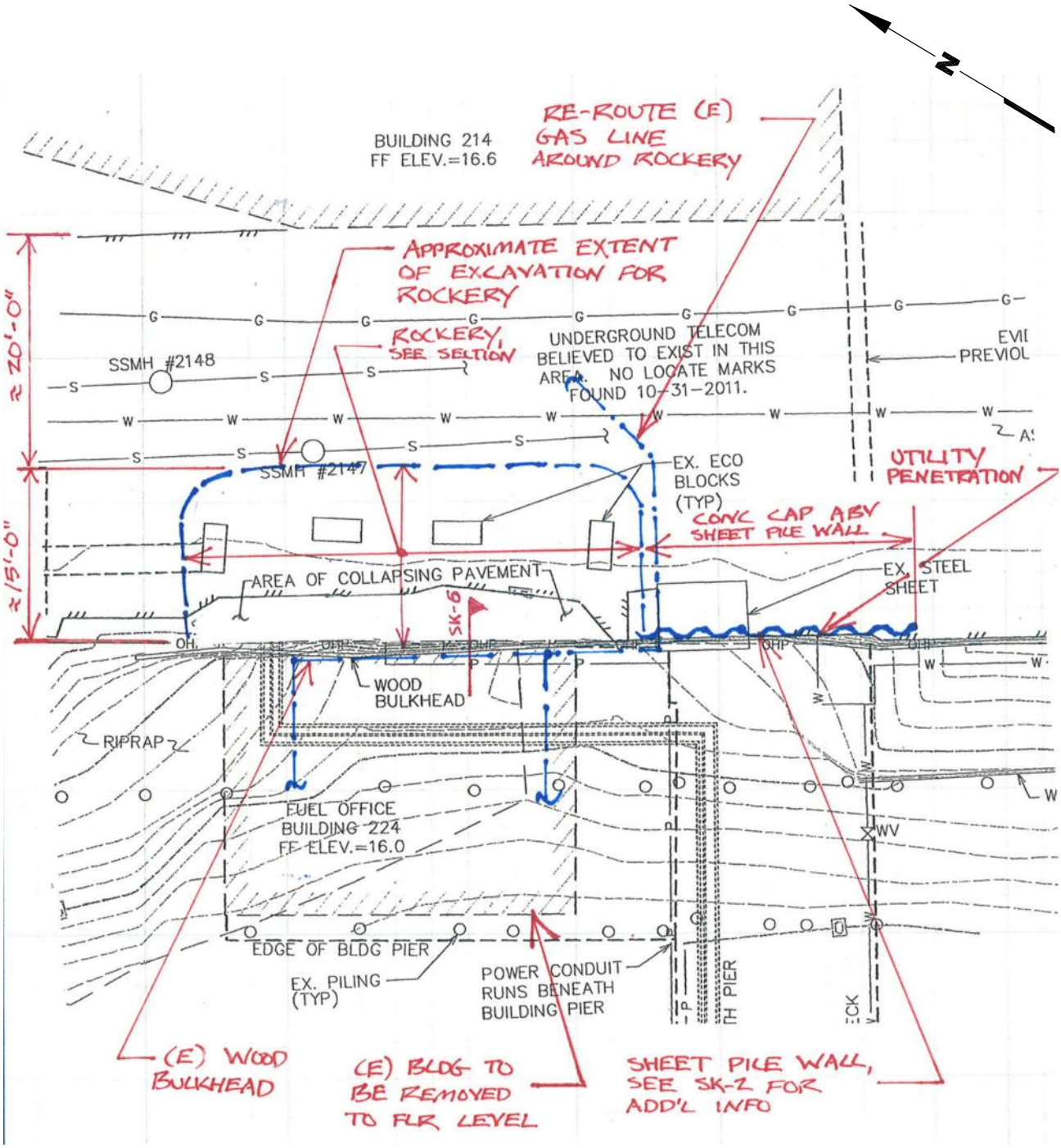


Not to Scale

Source: Preliminary Design Details by Reid Middleton (11/17/11)

Blaine Marina Inc. Blaine Harbor Blaine, Washington	**Interim Action Alternative 2 Concrete Block and Sheetpile Bulkhead Section**	Figure **5b**

LANDAU ASSOCIATES



Not to Scale

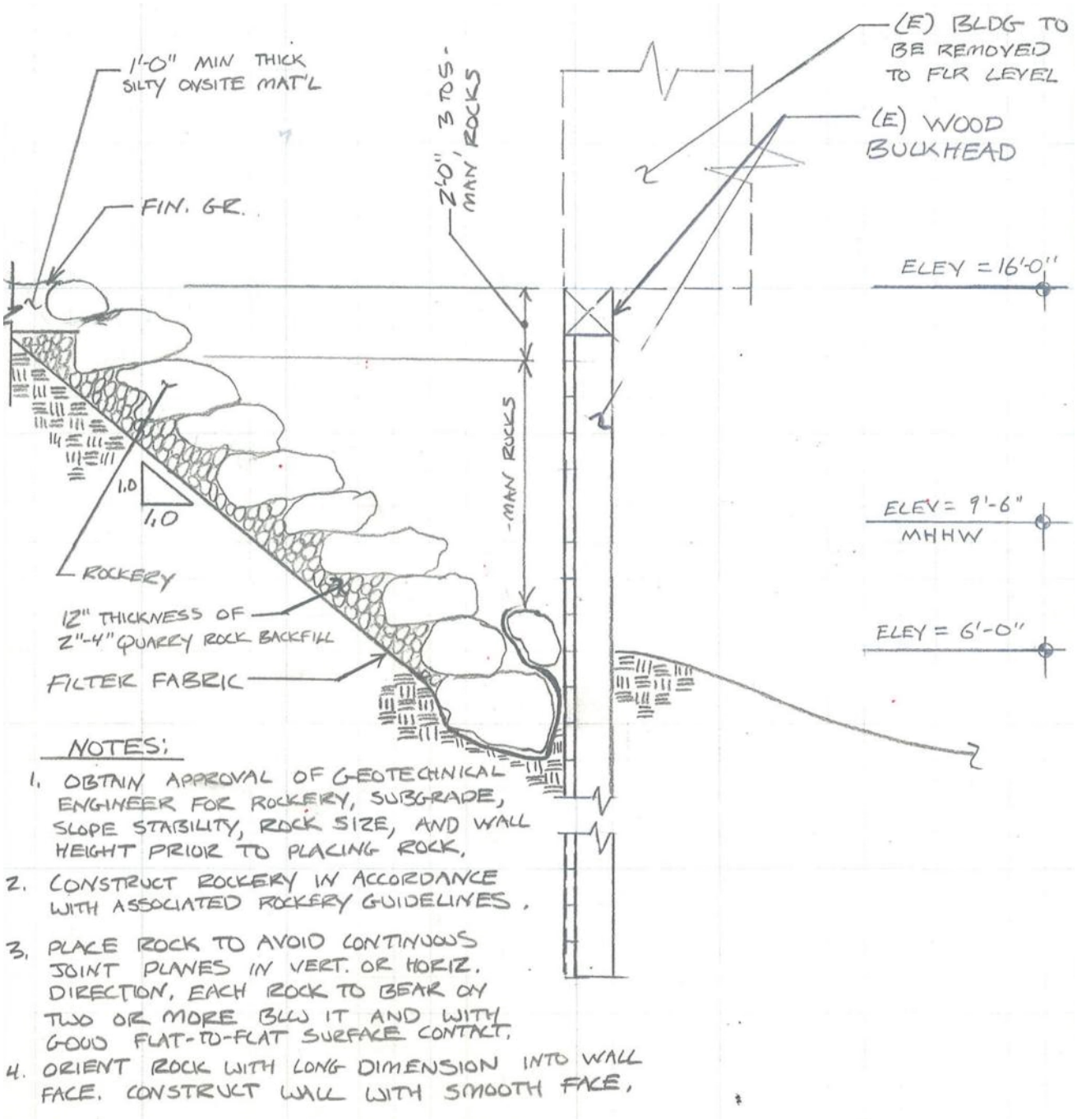
Note

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

Source: Preliminary Design Details by Reid Middleton (11/17/11)

Blaine Marina Inc. Blaine Harbor Blaine, Washington	**Interim Action Alternative 3 Riprap Slope and Sheetpile Bulkhead**	Figure **6a**

LANDAU ASSOCIATES



Not to Scale

Source: Preliminary Design Details by Reid Middleton (11/17/11)

Blaine Marina Inc. Blaine Harbor Blaine, Washington	**Interim Action Alternative 3 Riprap Slope and Sheetpile Bulkhead Section**	Figure **6b**

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TABLE 1
SUMMARY OF UPLAND SOIL ANALYTICAL RESULTS
BLAINE MARINA INC. – BLAINE, WASHINGTON

Sample ID	Screening	B-1	SIG-B1	SIG-B2	SIG-B3	SIG-B4	SIG-B5	SIG-B6	SIG-B7	SIG-B8	SIG-B10	HA-1	HA-2	HA-3	HA-4	HA-5	HA-6	HA-7	HA-8	HA-9	HA-10	HA-11	HA-12
Sample Date	Level (a)	Unknown	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/7/2008	1/8/2008	5/8/1990	5/8/1990	5/8/1990	5/8/1990	5/8/1990	5/8/1990	5/8/1990	5/8/1990	5/8/1990	5/8/1990	5/8/1990	5/8/1990
PETROLEUM HYDROCARBONS (mg/kg)																							
Total Petroleum Hydrocarbons (b)	2,000	**34**	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1,600**	**16,000**	**1,400**	**12,000**	**11,000**	**10**	**389**	**407**	**183**	**217**	**10**	**732**
Gasoline	100/30 (c)	NA	3.5 U	8.4 U	4.1 U	5.4 U	4.1 U	4.2 U	4 U	4.3 U	6.9 U												
Diesel	2,000	NA	27 U	**3,300**	33 U	32 U	34 U	34 U	34 U	33 U	**19,000**												
Motor Oil	2,000	NA	**68**	68 U	**70**	64 U	68 U	68 U	**210**	66 U	**15,000**												
BTEX (mg/kg)																							
Benzene	0.03	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.18**												
Toluene	7	NA	0.35 U	0.084 U	0.041 U	0.054 U	0.041 U	0.042 U	0.04 U	0.043 U	0.069 U												
Ethylbenzene	6	NA	0.35 U	0.084 U	0.041 U	0.054 U	0.041 U	0.042 U	0.04 U	0.043 U	0.72												
m, p-Xylene	9 total	NA	0.35 U	0.084 U	0.041 U	0.054 U	0.041 U	0.042 U	0.04 U	0.043 U	0.46												
o-Xylene		NA	0.35 U	0.084 U	0.041 U	0.054 U	0.041 U	0.042 U	0.04 U	0.043 U	0.15												

Sample ID	Screening	B-1 S-3 7.5'		B-2 S-3 7.5'		B-3 S-3 7.5'	
Sample Date	Level (a)	1/5/2012		1/5/2012		1/5/2012	
PETROLEUM HYDROCARBONS (mg/kg)							
NWTPH-Gx							
Gasoline	100/30 (c)	**680**		**6,100**		**1,800**	
NWTPH-Dx w/SGA							
Diesel	2,000	**140**		**510**		**330**	
Motor Oil	2,000	50	U	50	U	**150**	
BTEX (mg/kg)							
EPA Method 8021							
Benzene	0.03	0.30	U	3.4	U	3.0	U
Toluene	7	**0.89**		5.7	U	5.0	U
Ethylbenzene	6	**1.6**		**120**		**31**	
Xylenes	9	2.0	U	**120**		**42**	

Bold = Detected compound.
Boxed value = Concentration exceeds screening level.
NA = Not Analyzed.
U = Indicates the compound was undetected at the reported concentration.
(a) Washington State Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Uses.
(b) Historical data do not distinguish between gasoline-, diesel-, or motor oil-range total petroleum hydrocarbons.
(c) MTCA Method A cleanup level is 100 mg/kg if benzene is not present and the total of ethylbenzene, toluene, and xylenes is less than 1% of the gasoline mixture; otherwise the cleanup level is 30 mg/kg.

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS – PREVIOUS INVESTIGATIONS
BLAINE MARINA INC. – BLAINE, WASHINGTON

Sample ID	Sample Date	Diesel-Range Organics (mg/L)
GP-1	07/19/96	**55**
GP-2	07/19/96	**1.4**
GP-3	07/19/96	**160.5**
GP-4	07/19/96	**27.5**
GP-5	07/19/96	0.2 U
GP-6	07/19/96	**54.7**
GP-7	07/19/96	0.2 U
GP-8	07/19/96	**11.4**
GP-9	07/19/96	**13.4**
GP-10	07/19/96	**251**
GP-11	07/19/96	**85.6**
GP-12	07/19/96	NAPL
GP-13	07/19/96	**33.5**
MW-1	07/19/96	0.1 U
MW-2	07/19/96	NAPL
MW-3	07/19/96	NAPL
Preliminary Screening Level (a)		0.5

Notes:

Bold = Detected compound.

Boxed Value = Concentration exceeds preliminary screening level.

NAPL = Nonaqueous phase liquid encountered during sample collection; sample concentration is assumed to exceed the preliminary screening level.

U = Indicates the compound was undetected at the reported concentration.

(a) For the purposes of the Interim Action Plan, the preliminary screening level is the Washington State Model Toxics Control Act Method A cleanup level for groundwater (0.5 mg/L).