From:	Morris, Matthew (ECY)
To:	Jennifer Moore
Cc:	Clark Davis - Davis Law Office, PLLC (cdavis@cjd-law.com); Donald M. Lance; Peter Jewett; Candy Agostino
Subject:	RE: Gig Harbor Sportsman"s Club (Agreed Order No. DE 12803): Submittal of Revised RI/FS Work Plan Addendum No. 2
Date:	Friday, September 07, 2018 9:05:00 AM

Hello Jen,

I have reviewed the *Revised Remedial Investigation/Feasibility Study Work Plan Addendum No. 2* (submitted July 5, 2018) and approve the work plan with the following contingencies:

- Page 3 state, "*An Ecology biologist [*toxicologist*] will conduct a biological assessment [*preliminary habitat evaluation*] of the wooded portions of the GHSC Property as part of the NEBA*." No schedule was provided for the preliminary habitat evaluation. Please provide Ecology with several dates/times that will work with the GHSC to arrange for Ecology's toxicologist to visit the Site. The dates proposed must be within 45 calendar days from this notice. After the site visit, Ecology will provide a summary of the assessment which may recommend additional sampling locations (depth-weighted receptor adjustments) and/or additional evaluation by an experienced field biologist.
- Page 5 states, "*Farallon will conduct field screening of forest duff and surface soil for lead shot on the eastern and southeastern portions of the GHSC property as part of the NEBA*." No schedule was provided for the duff/soil field screening. Ecology will require the duff/soil field screening to begin within 60 calendar days of this notice.
- Page 5 states, "*These data [*field screening*] combined with the information provided by the Ecology biologist [*toxicologist*] will be used by the Ecology Site Manager to determine boring locations advanced on the eastern and southeastern portions of the GHSC Property…*" Within 30 calendar days of completing the field screening and receipt of Ecology's preliminary habitat evaluation summary, please propose boring locations to Ecology to delineate metals and PAHs in the duff/soil and a schedule to complete the work. The proposed soil boring locations should integrate any depth-weighted receptor sampling recommended through the preliminary habitat evaluation.
- Ecology's May 23, 2018 letter indicates a write-up of the stormwater pond functionality testing should be provided to Ecology after the proposed testing is completed (see comment 4a). Ecology will require the write-up to be submitted within 30 calendar days of receiving the laboratory results.

Please contact me with any questions or concerns, and keep me updated on the field work schedule as the scope of work progresses. I would like to make a Site visit on a rainy day to discuss/identify potential stormwater conveyance channels.

Thank you,

Matt

Matthew Morris, P.E.
Cleanup Project Manager
Ecology's Toxics Cleanup Program
Southwest Regional Office
Phone: (360) 407-7529
Matthew.Morris@ecy.wa.gov

From: Jennifer Moore [mailto:jmoore@farallonconsulting.com]

Sent: Thursday, July 05, 2018 2:43 PM

To: Morris, Matthew (ECY)

Cc: Clark Davis - Davis Law Office, PLLC (cdavis@cjd-law.com) ; Donald M. Lance ; Peter Jewett ; Candy Agostino

Subject: Gig Harbor Sportsman's Club (Agreed Order No. DE 12803): Submittal of Revised RI/FS Work Plan Addendum No. 2

Attached please find a PDF of the Revised Remedial Investigation/Feasibility Study Work Plan

Addendum No. 2 (Revised RI/FS Work Plan Addendum No. 2) for review by the Washington State Department of Ecology (Ecology). Farallon has noted Ecology's request for future reports and work plans to include a Table of Contents. Farallon will ensure that this comment is taken into account with the format of the next report or work plan that is submitted to Ecology. Please note that bookmarks have been incorporated into the PDF of the Revised RI/FS Work Plan Addendum No. 2 and can function as a Table of Contents for this document.

Farallon has also included red-lined versions of the body of the Revised RI/FS Work Plan Addendum No. 2 and the body of the Revised Sampling and Analysis Plan No. 2 to assist with Ecology's review of the changes made to the previous version of the document. Two hard copies of the full Revised RI/FS Work Plan Addendum No. 2 will be submitted to Ecology via mail.

Please let us know if you have any questions.

Thank you,

Jennifer L. Moore, Senior Scientist

Farallon Consulting | 975 5th Avenue Northwest | Issaquah, WA 98027

Direct: 425-394-4148 | Cell: 425-420-0014 | Bio |

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle
Oregon
Portland | Bend | Baker City
California
Oakland | Folsom | Irvine

July 5, 2018

Mr. Matthew Morris
Washington State Department of Ecology
Toxics Cleanup Program
PO Box 47775
Olympia, Washington 98504-7775

BY MAIL AND EMAIL

RE: REVISED REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN ADDENDUM NO. 2
GIG HARBOR SPORTSMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON
FARALLON PN: 1303-001

Dear Mr. Morris:

Farallon Consulting, L.L.C. (Farallon) has prepared this revised Addendum to the *Final Remedial Investigation/Feasibility Study Work Plan, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington* dated August 30, 2016, prepared by Farallon (RI/FS Work Plan) to supplement the scope of work for the Remedial Investigation/Feasibility Study (RI/FS) for the Gig Harbor Sportsman's Club (GHSC) property at 9721 Burnham Drive Northwest in Gig Harbor, Washington (herein referred to as the GHSC Property) (Figure 1) (Revised RI/FS Work Plan Addendum No. 2). GHSC has entered into Agreed Order No. DE 12803 with the Washington State Department of Ecology (Ecology) to complete an RI/FS for the GHSC Property. The purpose of this Revised RI/FS Work Plan Addendum No. 2 is to provide the revised scope of work for additional RI sampling activities in accordance with Agreed Order No. DE 12803 as discussed with Ecology during conference calls on October 16, 2017 and February 5, 2018 and as directed by Ecology in an email dated February 15, 2018 and in the letter regarding Remedial Investigation/Feasibility Study Work Plan Addendum No. 2 dated May 23, 2018, from Mr. Morris of Ecology to Ms. Jennifer L. Moore of Farallon (Ecology Letter). The results from the RI will be used to develop, evaluate, and select technically feasible cleanup alternatives in accordance with the Washington State Model Toxics Control Act Cleanup Regulation, as set forth in Chapter 173-340 of the Washington Administrative Code (WAC 173-340), and the Washington State Sediment Management Standards, as set forth in WAC 173-204.

BACKGROUND

Farallon conducted field sampling activities between January 2017 and June 2018 in accordance with the RI/FS Work Plan and the letter regarding Remedial Investigation Work Plan Addendum, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington dated December 22, 2016, from Ms. Moore and Mr. Peter D. Jewett of Farallon to Mr. Morris of Ecology. Additional subsurface investigation activities were conducted on the western and northeastern

portions of the GHSC Property by HWA Geosciences Inc. (HWA) between April and June 2017 to support a right-of-way expansion project being conducted by the City of Gig Harbor proximate to the northern and western portions of the GHSC Property.

Results of RI field activities conducted through October 2017 and the HWA subsurface investigation activities conducted between April and June 2017 indicated the presence of total naphthalenes and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in soil on the GHSC Property at concentrations exceeding the screening levels established in the RI/FS Work Plan (Table 1; Figure 2). Based on the results of the RI and the HWA subsurface investigations, in an email dated September 14, 2017, Ecology directed that additional soil sampling be conducted to provide lateral delineation of cPAHs in soil west of boring HB-3 and north of borings HB-25 and HB-26 (Figure 2).

Arsenic, antimony, and lead were detected at concentrations exceeding screening levels in soil on the GHSC Property (Table 2; Figure 3). Arsenic, antimony, and lead were detected at concentrations exceeding screening levels in sediments in the North Creek Tributary on the southeastern portion of the GHSC Property, and downstream of the GHSC Property proximate to the right-of-way of 97th Street Northwest (Table 3; Figure 3). Farallon observed lead shot in forest duff on the ground surface and in the stream bed of the North Creek Tributary proximate to sediment sample location SD-8 during sediment sampling activities conducted in September 2017.

In a conference call on October 16, 2017, Farallon; representatives of Ecology; and Mr. Clark Davis of Davis Law Office, PLLC, representative for GHSC, discussed metals results in soil and sediment on the eastern and southeastern portions of the GHSC Property and in the sediment downstream of the GHSC Property in the North Creek Tributary. During the call, Ecology directed that additional soil and sediment sampling in the wooded area on the eastern and southeastern portions of the GHSC Property and additional sediment sampling downstream of sediment sample location SD-6 in the North Creek Tributary be conducted as a part of the RI.

Farallon submitted surface water sample results (Tables 4 through 6) and calculated hardness-based screening levels (Table 7) to Ecology in an email dated January 26, 2018. Based on the sediment and surface water results collected to date and review of the *Assessment of Aquatic Toxicity in North Creek, Gig Harbor* dated April 2011, prepared by Ecology, Farallon proposed a modification to the planned scope of work for this RI/FS Work Plan Addendum No. 2 in a call with Ecology on February 5, 2018. The additional scope items that are a part of the scope of work in the Revised RI/FS Work Plan Addendum No. 2 include:

- Three surface water sampling events during the next first fall flush rain event and high-flow and low-flow events in the North Creek Tributary;
- Collection of sediment samples from surface water sample locations on and immediately downstream of the GHSC Property during the low-flow surface water sampling event; and
- Potential collection of pore water from the sediment and surface water sample locations on and immediately downstream of the GHSC Property if there are data gaps regarding potential stream toxicity after sediment and surface water results have been evaluated.

In an email dated February 15, 2018, Ecology directed the installation of a monitoring well proximate to the stormwater pond on the northwestern portion of the GHSC Property and collection of a sediment sample from the bottom of the stormwater pond. The stormwater pond contains stormwater run-off from the rifle and pistol range and allows the stormwater to evaporate or infiltrate. The stormwater pond was not designed or engineered, but rather field constructed into the topography of the rifle and pistol range. The infiltration rate of the stormwater pond is not known. Depth to groundwater proximate to the stormwater pond also is not known. Depth to groundwater at the nearest monitoring well, MW-01, 558 feet from the stormwater pond, ranged from 24.95 to 33.85 feet below ground surface (bgs) during the 2017 and 2018 groundwater monitoring events (Table 8; Figure 3).

The Ecology Letter provided written comments regarding Ecology's review of the letter regarding Remedial Investigation/Feasibility Study Work Plan Addendum No. 2, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington dated March 5, 2018, from Ms. Moore and Mr. Jewett of Farallon to Mr. Morris of Ecology. The revised scope of work for the next phase of the RI is provided in the following section.

SCOPE OF WORK

Multimedia sampling events will be conducted over the next several months to further the completion of the RI in accordance with the methods established in this Revised RI/FS Work Plan Addendum No. 2 and the *Revised Sampling and Analysis Plan No. 2, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington* dated July 5, 2018, prepared by Farallon (Revised SAP) and provided in Attachment 1.

The scope of work for the next phase of the RI includes:

- Conducting a net environmental benefit analysis (NEBA);
- Advancing borings to collect soil samples to characterize the nature and extent of cPAHs, lead, arsenic, and/or antimony detected in soil at concentrations exceeding applicable screening levels established in the RI/FS Work Plan;
- Collecting additional surface water samples;
- Collecting additional sediment samples;
- Potentially collecting pore water samples from the North Creek Tributary; and
- Assessing the functionality of the stormwater pond associated with the rifle/pistol range.

An Ecology biologist will conduct a biological assessment of the wooded portions of the GHSC Property as part of the NEBA. The purpose of the NEBA is to weigh the ecological costs and benefits of environmental and ecological restoration projects to prevent substantial injury to valuable habitat through the implementation of those projects. Farallon will conduct field screening for lead shot in forest duff and soil on the eastern and southeastern portions of the GHSC Property as a part of the NEBA. These two lines of evidence will inform the selection of boring

locations on the eastern and southeastern portions of the GHSC Property to facilitate depth-weighted receptor adjustments to complete the NEBA.

Samples collected for analysis for metals will be analyzed for arsenic, antimony, and lead only. This modification to the tiered metals analysis described in the *Revised Sampling and Analysis Plan, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington* dated December 22, 2016, prepared by Farallon is based on analytical results for soil, sediment, groundwater, and surface water samples collected across the GHSC Property during the RI, which indicate that arsenic, antimony, and lead are the only metals constituents present in media of potential concern for the GHSC Property at concentrations exceeding the screening levels established in the RI/FS Work Plan. In addition, concentrations of copper, originally considered a Tier 1 metal for analytical purposes, have not increased in areas where lead shot was observed in the field. For example, copper concentrations in the shallow soil samples collected from the boring for monitoring well MW-02, where lead shot was visible on the ground surface, are as low as the copper concentrations in the background metals sample collected from boring FB-35, where no historical shooting activities are known to have taken place. The average concentration of copper in soil on the shotgun range and down-range of the shooting stations is 16.26 milligrams per kilogram, which is less than the average natural background concentration for copper in the Puget Sound Region of 36 milligrams per kilogram as described in *Natural Background Soil Metals Concentrations in Washington State* dated October 1994, prepared by Ecology. Farallon considers copper concentrations in soil, sediment, and surface water on the shotgun range and in the North Creek Tributary to be natural background concentrations. This modification to the metals analyses is incorporated into the Revised SAP.

SOIL SAMPLING – cPAHs

Per the Ecology Letter, soil samples will be collected from one boring proximate to previous boring HB-3 on the northwest-adjacent property, Pierce County Parcel No. 4003250960, and two borings proximate to previous borings HB-25 and HB-26 on the southern right-of-way of Sentinel Drive, northeast of the GHSC Property (Figure 2), to provide lateral delineation of cPAHs in soil. Additional contingency borings will be advanced beyond these boring locations for collection of soil samples for potential analysis if further lateral delineation is deemed necessary after soil samples from the planned borings have been analyzed (Figure 2). Soil sampling on these properties will require Farallon to obtain off-site access agreements with the private property owner of Pierce County Parcel No. 4003250960 and with the City of Gig Harbor. Soil samples will be collected, homogenized, containerized, and transported to the laboratory in accordance with sampling protocols provided in the Revised SAP. Soil samples that are deeper than those initially analyzed, and soil samples collected from the same depth interval of the contingency borings, may be analyzed if cPAH concentrations in shallow soil samples exceed applicable screening levels for soil as established in the RI/FS Work Plan.

Borings will be advanced north of previous boring locations FB-06 and FB-07 to refine the lateral extent of soil with concentrations of cPAHs that exceed the screening levels established in the RI/FS Work Plan (Figure 2). Additional soil samples will be collected and analyzed from borings advanced in the forested areas on the eastern and southeastern portions of the GHSC Property as

a part of the NEBA evaluation. The number and locations of the borings to be advanced on the eastern and southeastern portions of the GHSC Property will be determined after the biological assessment has been conducted by Ecology and field screening for lead shot in forest duff and surface soil has been conducted in these same areas as described in the following section.

Soil samples to by analyzed for cPAHs will be analyzed by U.S. Environmental Protection Agency (EPA) Method 8270D/SIM.

Farallon will engage a drilling contractor to advance each boring to a total depth of 5 feet bgs using direct-push drilling techniques or hand-held tooling, depending on accessibility and drilling conditions. Public and private utility locates will be conducted prior to the advancement of the proposed borings. Soil samples will be collected from the ground surface and at depths of 0.5, 1.0, 2.0, and 5.0 feet bgs consistent with previous scopes of work, which are based on aerial deposition of contaminants of potential concern. Soil samples will be collected, homogenized, containerized, and transported to the laboratory in accordance with the Revised SAP.

SOIL SAMPLING – METALS

Farallon will conduct field screening of forest duff and surface soil for lead shot on the eastern and southeastern portions of the GHSC Property as a part of the NEBA. During the field screening, the eastern and southeastern portions of the GHSC Property will be divided into a sampling grid comprising 100- by 100-foot grid spacings (Figure 3). Farallon Field Scientists will collect 2.5 quarts of soil and forest duff from the center of each grid square, weigh the bulk sample, sieve the sample to recover the lead shot present therein, and reweigh the portion of the sample that was comprised of lead shot. This field screening methodology is described in more detail in the Revised SAP.

The results of the field screening described above will be used to calculate weight percentages for lead shot in each of the bulk samples. These data combined with the information provided by the Ecology biologist will be used by the Ecology Site Manager to determine boring locations to be advanced on the eastern and southeastern portions of the GHSC Property to facilitate completion of the NEBA. Discrete samples will be collected from these boring locations to further evaluate the nature and extent of metals contamination on the wooded portions of the GHSC Property and will facilitate calculation of depth-weighted receptor adjustments for the NEBA.

In addition, Farallon will collect soil samples from the proposed borings north of previous boring locations FB-06 and FB-07 for metals analysis to refine the northern extent of metals concentrations detected in soil samples collected from borings FB-06 and FB-07 (Figure 3). Soil samples collected for metals analysis will be analyzed for arsenic, antimony, and lead by EPA 6000 Series Methods and for pH by EPA Method 9045 D.

SURFACE WATER SAMPLING

Surface water samples will be collected from sample locations SD-3 through SD-10 (Figure 4) and the six new surface water and sediment sample locations shown on Figure 4 during the next first fall flush rain event in the fourth quarter of 2018, a high-flow event in the first quarter of 2019,

and a low-flow event in the second or third quarter of 2019. These data are expected to provide information regarding metals concentrations in the surface water of North Creek and the North Creek Tributary and improve understanding of the toxicity of the stream with regards to aquatic life. Cations, anions, and other measurements of water chemistry will be collected during each surface water sampling event to allow modeling of the metal toxicity, metal speciation, and the protective effects of competing cations into predictions of metal bioavailability. Toxicity modeling for lead will be conducted using the biotic ligand model in accordance with the methods described in the *Biotic Ligand Model Windows Interface, Research Version 3.16.2.41: User's Guide and Reference Manual* dated November 2017, prepared by WindWard Environmental LLC. The results of the biotic ligand model are intended for use during the FS to evaluate remedial options.

Additional surface water, soil, and sediment samples will be collected where surface water or stormwater enters the creek channels from natural channels observed in the field and from engineered stormwater conveyance systems to refine potential source areas on and outside the GHSC Property. Surface water samples will be collected, containerized, and transported to the laboratory in accordance with the Revised SAP.

Surface water samples will be measured in the field for turbidity, temperature, pH, conductivity, and oxidation/reduction potential using a Yellow Springs Instrument multi-parameter meter during collection of the surface water samples. Surface water flow will be measured at each location using a Global Water FP-101/201 stream flow meter or similar device. Surface water samples submitted to the laboratory will be analyzed for the following:

- Sulfate by ASTM International (ASTM) Method D516-07;
- Chloride by Standard Method (SM) 4500-Cl;
- Alkalinity by EPA Method 310.1;
- Calcium; magnesium; sodium; potassium; and total and dissolved arsenic, antimony, and lead by EPA Methods 200.7 and/or 200.8;
- Hardness by EPA Method 130.2 or SM 2340B;
- Sulfide by EPA Method 376.1;
- Dissolved organic carbon by SM 5310B; and
- Nitrate and nitrite by EPA 300.00 Series Methods.

SEDIMENT SAMPLING – NORTH CREEK TRIBUTARY

Sediment samples will be collected from existing sediment sample locations SD-6 through SD-9 and six new sediment sample locations between SD-5 and SD-9 to refine the zone of sediment with metals concentrations exceeding applicable screening levels in the North Creek Tributary and to assess potential effects of metals concentrations in sediment on surface water quality and toxicity to aquatic life in the North Creek Tributary (Figure 3). Farallon will advance sediment cores that extend deeper than previous coring at existing sediment sample locations SD-7 and SD-8 to vertically delineate metals concentrations detected at these sample locations. It is possible that

this coring will extend beyond the sediment boundary into the underlying soil, depending on the sediment thickness at these sample locations.

Additional sediment samples will be collected where surface water or stormwater enters the creek via natural channels or engineered conveyance systems to refine potential source areas for detections of contaminants in sediment samples collected from within the creek channels. Sediment and soil samples will be collected, homogenized, containerized, and transported to the laboratory in accordance with the Revised SAP.

Sediment samples will be analyzed for the following:

- Arsenic, antimony, and lead by EPA 6000 Series Methods;
- Simultaneously extracted metals (including cadmium, copper, lead, nickel, and zinc) and acid volatile sulfides by EPA Method EPA-821-R-91-100;
- Total organic carbon by EPA Method 9060A; and
- Particle-size distribution by Puget Sound Estuary Protocols (EPA – Region 10 1996) and/or ASTM Method D422s.

Additional sediment samples will be collected and analyzed for acute and chronic toxic effects on aquatic life from three sample locations that are anticipated to span the range of elevated lead concentrations exceeding the sediment cleanup objective of 360 milligrams per kilogram (i.e., downrange of the four most commonly used shooting stations on the shotgun range) (Figure 3). The Sediment Management Standards, as set forth in WAC 173-204-563(3)(d), require testing with three endpoints, including acute and chronic toxicity testing and one non-lethal endpoint such as organism growth. Sediment samples for toxicity testing will be analyzed as follows.

<u>Acute Effects</u>

- Hyalella azteca: 10-day mortality by ASTM Method E1706-05 (2010) and/or EPA Method 100.1;
- Chironomus dilutus: 10-day mortality by ASTM Method E1706-05 (2010) and/or EPA Method 100.2; and
- Chironomus dilutus: 10-day growth by ASTM Method E1706-05 (2010) and/or EPA Method 100.2.

<u>Chronic Effects</u>

- Hyalella azteca: 28-day mortality by EPA Method 100.4;
- Hyalella azteca: 28-day growth by EPA Method 100.4;
- Chironomus dilutus: 20-day mortality by EPA Method 100.5; and
- Chironomus dilutus: 20-day growth by EPA Method 100.5.

SEDIMENT SAMPLING – STORMWATER POND

A sediment sample also will be collected from the base of the stormwater pond on the northwestern portion of the GHSC Property proximate to the rifle range (Figure 3). For safety reasons, the sediment sample will be collected during a dry period in the third quarter of 2018, when the stormwater level in the pond will likely be at its lowest. A 5-foot core of sediment and soil will be collected from the center of the base of the stormwater pond to evaluate the functionality of the stormwater pond and to assess concentrations of arsenic, antimony, lead, and polycyclic aromatic hydrocarbons (PAHs). A small boat may be used to facilitate sediment sampling of the stormwater pond if the depth of stormwater is greater than knee-high for the field scientists. Multiple sediment and soil cores may be collected to provide sufficient sample material at each sample interval.

Metals and PAHs are known to become bound by treatment media and by native soil through cation exchange. It is reasonable to assume that metals and PAHs at the GHSC Property might similarly have bonded to the soil at and a few inches below the infiltrative surface of the stormwater pond. This is referred to as a form of in-situ capture. Given the estimated depth to groundwater, it is reasonable to anticipate that some appreciable percentage of metals and PAHs will have become captured well above the anticipated groundwater elevation. This capture can be anticipated to occur due to the same functions afforded by soil meeting treatment and treatment liner requirements identified in the *2012 Stormwater Management Manual for Western Washington* as amended in December 2014, prepared by Ecology (Ecology Manual); and the groundwater protection requirements identified in the *King County, Washington Surface Water Design Manual* dated April 24, 2016, prepared by King County Department of Natural Resources and Parks (King County Manual), which generally is accepted by Ecology and is complimentary to the Ecology Manual. The Pierce County and City of Gig Harbor stormwater manuals were also reviewed, but do not provide as detailed of a discussion on the subject as do the Ecology and King County Manuals.

The infiltration functionality of the stormwater pond will be evaluated by testing the infiltration rate using an approved test method suitable for submerged soil or the Ecology Pilot Infiltration Test method in an area proximate to and considered representative of the soil beneath the stormwater pond. The capture functionality will be evaluated by collecting sediment and/or soil samples from the upper 18 inches of the base material of the stormwater pond and from depths of 2, 3, and 5 feet below the base of the stormwater pond. These sediment and/or soil samples will be analyzed for:

- Cation exchange capacity by EPA Method 9081;
- Organic content by ASTM Method D2974; and
- Grain-size distribution by ASTM Method D422.

If field and laboratory data indicate that metals and PAHs have not migrated vertically, it is reasonable to anticipate that the stormwater pond has not impacted groundwater. If there are data gaps remaining after the stormwater pond functionality testing or if these data indicate that groundwater could be impacted, then the location and depth of a monitoring well will be proposed to Ecology to assess potential impacts to groundwater in the vicinity of the stormwater pond.

Sediment and/or soil samples collected to assess the concentrations of metals and PAHs will be collected from the same depth intervals as the stormwater pond functionality testing, and will be analyzed for the following:

- Arsenic, antimony, and lead by EPA 6000 Series Methods; and
- PAHs by EPA Method 8270D/SIM.

PORE WATER SAMPLING

Pore water samples will be collected from sample locations SD-6 through SD-9 and the six new surface water and sediment sample locations shown on Figure 4 if there are data gaps in Farallon's understanding of the risk to benthic organisms or the conceptual site model in the North Creek Tributary after surface water and sediment analytical results have been evaluated. Pore water data will assist in evaluating whether lead concentrations identified in sediment may be contributing to exceedances of surface water standards, determining the bioavailability of lead, and evaluating remedial options. Pore water samples will be collected, containerized, and transported to the laboratory in accordance with the Revised SAP.

Sediment pore water will be collected using a hand-deployed pore water extraction device similar to the device described in *High-Resolution Porewater Sampling Near the Groundwater/Surface Water Interface* dated April 2009, prepared by Ecology. The sampling end of the pore water extraction device is inserted into the sediment to the desired depth, and pore water is extracted using a syringe or peristaltic pump. Other pore water collection techniques using passive methods (e.g., peepers) may be used as needed to evaluate metal bioavailability. Pore water samples, if the additional data is needed, will be analyzed for total and dissolved arsenic, antimony, and lead by EPA Methods 200.7 and 200.8; and dissolved organic carbon by Standard Method SM 5310B.

MONITORING WELL INSTALLATION

Ecology directed the installation of a monitoring well proximate to the stormwater pond on the northwestern portion of the GHSC Property. Farallon will perform functionality and assessment testing of the stormwater pond in the third quarter of 2018. Based on these results, Farallon will notify Ecology if there are data gaps remaining after the functionality testing and if groundwater could be impacted by metals or PAHs. An addendum to the RI/FS Work Plan will be submitted to Ecology recommending the installation of a monitoring well if it is deemed necessary after the functionality and assessment testing.

QUALITY CONTROL SAMPLES

Field quality control samples will be collected in accordance with the methods described in the Revised SAP and evaluated in accordance with the *Quality Assurance Project Plan, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington* dated August 30, 2016, prepared by Farallon as Appendix C to the RI/FS Work Plan.

SCHEDULE

Farallon will begin off-site access discussions with the private property owner of Pierce County Parcel No. 4003250960 and the City of Gig Harbor upon receipt of Ecology approval of the

sampling locations proposed in this RI/FS Work Plan Addendum No. 2. The sampling schedule for these two properties is dependent upon the successful outcome of off-site access discussions with these parties; therefore, the off-site sampling may need to be scheduled separately from the other planned field work.

Surface water samples will be collected during the next first fall flush rain event in approximately October 2018, a high-flow event in the first quarter of 2019, and a low-flow event in the second or third quarter of 2019. Sediment samples from the North Creek Tributary will be collected during the third quarter of 2018. For safety reasons, sediment samples from the stormwater pond will be collected during a dry period in the third quarter of 2018 when the stormwater level in the stormwater pond is at its lowest. Infiltration testing will be conducted at approximately the same time.

CLOSING

Please contact either of the undersigned at (425) 295-0800 if you have questions or need additional information.

Sincerely,

Farallon Consulting, L.L.C.

Jennifer L. Moore
Senior Scientist

FOR
Peter D. Jewett, L.G., L.E.G.
Principal Engineering Geologist

Attachments: Figure 1, *Site Vicinity Map*
Figure 2, *Soil PAH Results and Proposed Boring Locations*
Figure 3, *Soil and Sediment Metals Results and Proposed Sampling/Field Screening Locations*
Figure 4, *Surface Water Metals Results and Proposed Sample Locations*
Table 1, *Soil Analytical Results for PAHs*
Table 2, *Soil Analytical Results for Metals*
Table 3, *Sediment Analytical Results for Metals*
Table 4, *Surface Water Analytical Results for PAHs*
Table 5, *Surface Water Analytical Results for Metals, North Creek Tributary*
Table 6, *Surface Water Analytical Results for Metals, North Creek*
Table 7, *Surface Water Hardness-Based Screening Level Calculations for Metals*
Table 8, *Groundwater Elevations*
Attachment 1, Revised Sampling and Analysis Plan No. 2

cc: Le Rodenberg, Gig Harbor Sportsman's Club (by email)
Clark Davis, Davis Law Office, PLLC (by email)

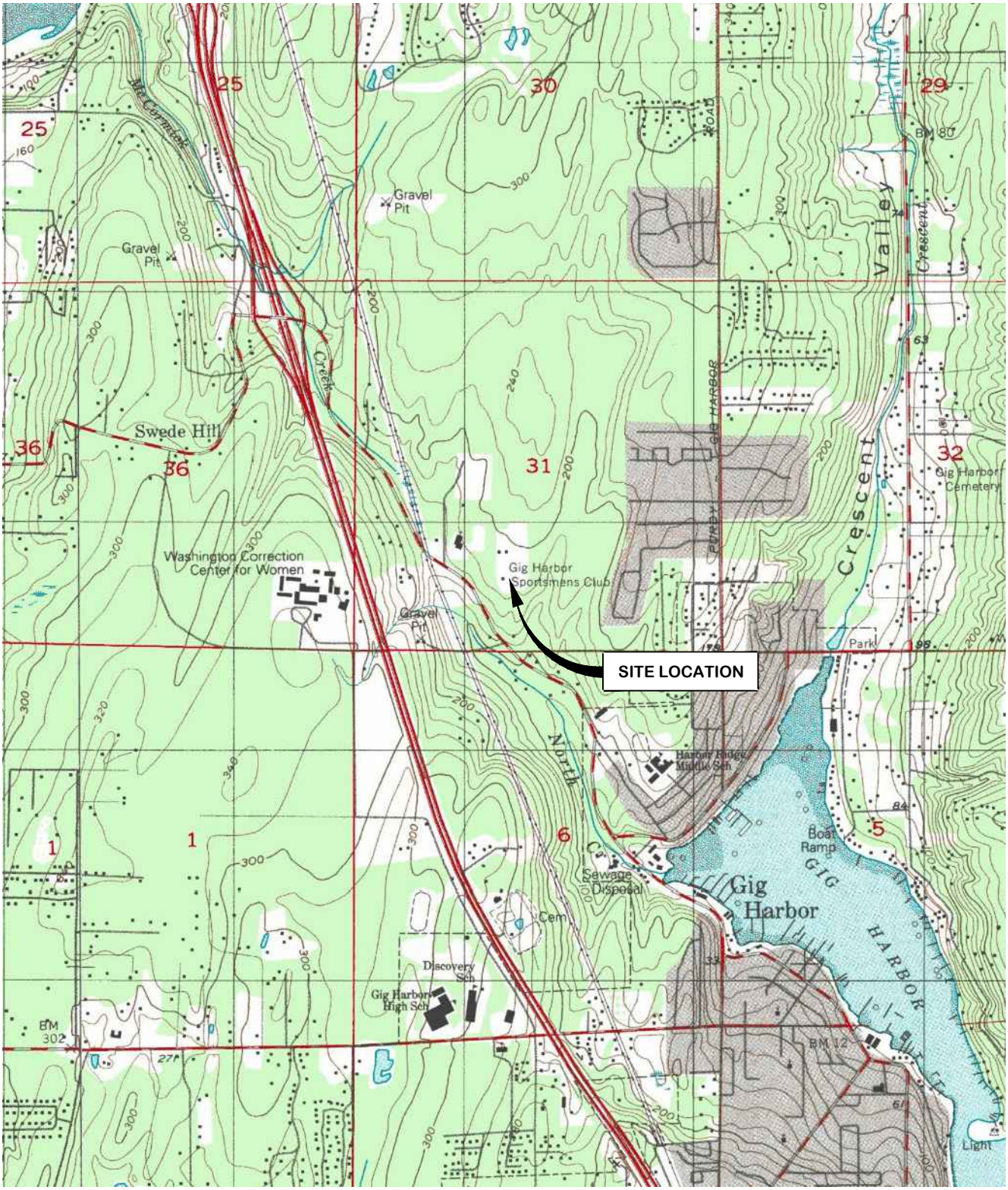
JM/PJ:mm

P:\1303001 Gig Harbor Sportsman's Club\Deliverables\RI-FS WP Addendum 2 Ltr\2018 RI-FS WP Add No 2 Ltr.docx

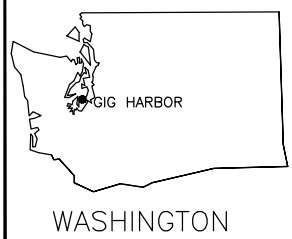
FIGURES

REVISED REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN ADDENDUM NO. 2
Gig Harbor Sportsman's Club
9721 Burnham Drive Northwest
Gig Harbor, Washington

Farallon PN: 1303-001



REFERENCE: 7.5 MINUTE USGS QUADRANGLE GIG HARBOR, WASHINGTON. DATED 1996



FARALLON CONSULTING
Quality Service for Environmental Solutions | farallonconsulting.com

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Bend | Baker City

California
Oakland | Folsom | Irvine

FIGURE 1

SITE VICINITY MAP
GIG HARBOR SPORTSMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON

FARALLON PN: 1303-001

Drawn By: JJ | Checked By: JM | Date: 06/27/2018 | Disk Reference: 1303-001


HARBOR HILL DRIVE
STORMWATER DETENTION PONDS
FB-01
FB-03
0.0' | 0.011 | 0.024
HB-23
0.0' | <0.0246 | 0.015
HB-21
0.0' | <0.024 | 0.0060
HB-22
0.0' | <0.0252 | 0.055
1.0' | <0.0234 | 0.0059
2.0' | <0.0234 | 0.0059
3.5' | <0.0216 | 0.0054
FB-04
HB-20
0.0' | <0.0252 | 0.013
HB-24
0.0' | <0.0246 | 0.018
FB-02
0.0' | 0.045 | 0.051
4003250960
HB-19
0.0' | <0.0249 | 0.025
HB-25
0.0' | 0.052 | **0.21**
SENTINEL DRIVE
FB-05
FB-09
HB-27
0.0' | <0.0267 | 0.040
FB-06
0.0' | 0.103 | **1.15**
0.5' | 0.041 | **0.95**
1.0' | 0.032 | **1.35**
3.6' | 0.0085 | 0.007
FB-07
0.0' | 0.071 | **4.9**
0.5' | <0.0216 | 0.027
1.0' | <0.0216 | 0.0054
FB-08
0.0' | <0.0288 | **0.20**
3.9' | <0.0231 | 0.0058
HB-26
0.0' | <0.0279 | **0.22**
HB-18
0.0' | 0.039 | 0.037
FB-10
0.5' | 1.1 | **282**
3.3' | <0.0219 | 0.034
FB-11
0.0' | <0.0246 | 0.046
STORMWATER POND
FB-13
0.0' | <0.0252 | 0.062
FB-12
0.5' | <0.45 | **14.7**
3.5' | <0.0216 | 0.0054
FB-15
0.0' | <0.0258 | 0.036
FB-16
0.0' | <0.0246 | 0.0066
FB-14
0.0' | **5.48** | **681**
1.0' | <0.0225 | 0.0057
2.0' | <0.0222 | 0.0056
3.7' | <0.0222 | 0.0056
HB-1
0.2' | <0.0246 | 0.0219
FB-17
0.5' | 0.0419 | **0.113**
3.9' | <0.0225 | 0.0057
FB-18
0.5' | <0.45 | **10.1**
3.8' | <0.0219 | **0.103**
RIFLE AND PISTOL RANGE
HB-2
0.2' | <0.0240 | 0.0255
FB-19
0.5' | <0.45 | **9.2**
2.9' | <0.0219 | 0.0055
FB-20
0.5' | 0.38 | **116**
3.1' | <0.0222 | 0.0060
FB-21
0.5' | 0.58 | **63**
3.8' | <0.0216 | 0.038
HB-3
0.2' | <0.0249 | **0.122**
0.6' | <0.0243 | **0.125**
1.2' | <0.0237 | 0.027
2.1' | <0.0237 | 0.016
FB-22
0.0' | 0.014 | **0.64**
3.0' | <0.0225 | 0.0057
FB-23
0.0' | 0.301 | **21.1**
0.5' | <0.132 | **1.67**
1.0' | <0.255 | **3.0**
2.9' | <0.0252 | 0.0063
MW-01
0.0' | <0.0234 | 0.016
0.5' | <0.0222 | 0.0056
FB-24
0.5' | **8.2** | **1203**
1.0' | <0.45 | **10.2**
2.0' | <0.0231 | 0.0058
3.1' | <0.0222 | 0.0061
FB-25
0.0' | <0.0246 | 0.0070
HB-11
10.5' | <0.0213 | 0.0054
15.0' | <0.0222 | 0.0056
HB-4
0.2' | <0.0243 | 0.03
SHOTGUN RANGE
HB-5
0.2' | <0.0237 | 0.096
HB-6
0.2' | <0.0255 | **0.153**
0.6' | <0.0228 | 0.013
1.3' | <0.0234 | 0.006
2.0' | <0.0231 | 0.0058
SHOT CURTAIN
FB-37
HB-12
10.5' | <0.0213 | 0.0054
15.0' | <0.0222 | 0.0056
FB-26
FB-38
0.0' | <0.42 | **10.2**
2.9' | <0.0234 | 0.0059
HB-7
0.2' | <0.0249 | **0.41**
0.7' | <0.0237 | 0.059
FB-27
0.0' | <0.0240 | **0.164**
3.7' | <0.0213 | 0.0054
FB-28
0.0' | 0.117 | **9.2**
0.5' | <0.0228 | **0.20**
1.0' | <0.0228 | 0.0058
FB-29
0.5' | 1.11 | **99**
1.0' | 0.43 | **37**
2.0' | <0.0243 | **0.41**
3.1' | <0.0249 | 0.036
MW-02
MW-03
HB-13
10.5' | <0.021 | 0.0053
15.5' | <0.0252 | 0.0063
FB-30
HB-8
0.2' | 0.014 | **0.59**
0.7' | <0.0231 | **0.53**
1.1' | <0.0234 | **0.23**
2.0' | <0.0237 | **0.24**
FB-39
1.0' | 4.35 | **387**
5.0' | <0.132 | **2.3**
10.0' | <0.135 | **1.00**
15.0' | <0.0225 | 0.044
20.0' | 0.43 | **42.7**
25.0' | <0.0219 | 0.014
FB-36
HB-15
0.5' | <0.0246 | 0.020
1.5' | <0.0246 | 0.0062
3.5' | <0.0228 | 0.0057
HB-14/14D
0.5' | 0.325 | **22.9**
1.5' | <0.0255 | **0.43**
3.5' | 0.106 | **1.09**
6.0' | <0.0228 | 0.0057
8.0' | <0.0228 | 0.0057
FB-31
0.0' | 0.45 | **37**
1.0' | <0.0225 | 0.065
2.0' | <0.0216 | 0.016
3.5' | <0.0219 | 0.020
HB-16
0.5' | <0.0246 | **0.22**
1.5' | 0.0099 | **0.16**
3.5' | <0.0273 | 0.0069
MW-04
0.5' | 0.11 | **5.0**
1.0' | <0.0237 | **0.122**
2.0' | <0.0222 | **0.50**
5.0' | <0.0234 | **0.115**
10.0' | 0.045 | **0.43**
20.0' | 0.0164 | **1.6**
HB-17
1.5' | <0.0231 | 0.0058
3.0' | <0.0231 | 0.035
10.5' | <0.0246 | 0.0062
15.5' | <0.0222 | 0.0056
FB-32
0.0' | <0.0252 | **0.196**
2.5' | <0.0216 | 0.0054
FB-33
0.0' | <0.0240 | 0.006
FB-40
0.0' | <0.0210 | 0.021
FB-41
0.0' | <0.0219 | 0.012
1.0' | 0.0177 | 0.0053
FB-34
BURNHAM DRIVE NORTHWEST
97th STREET NORTHWEST
FB-35
NORTH CREEK
NORTH CREEK TRIBUTARY

LEGEND

- PROPOSED BORING LOCATION
- BORING
- BACKGROUND BORING
- MONITORING WELL
- HWA SOIL SAMPLE LOCATION
- STREAM
- INTERMITTENT STREAM
- APPROXIMATE PROPERTY BOUNDARY
- PIERCE COUNTY PARCEL BOUNDARY
- 4003250960 PIERCE COUNTY PARCEL NUMBER

NOTES:
SOIL SAMPLE ANALYTICAL RESULT =
DEPTH FEET BGS | TOTAL NAPHTHALENES | cPAH TEC
SOIL RESULTS IN MILLIGRAMS PER KILOGRAM

BOLD = CONCENTRATIONS EXCEED MTCA METHOD A CLEANUP LEVEL
< = SOIL SAMPLE CONCENTRATIONS NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
BGS = BELOW GROUND SURFACE
cPAH = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON
TEC = TOXIC EQUIVALENT CONCENTRATION

N

0 90 180
SCALE IN FEET

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE
2. FIGURES WERE PRODUCED IN COLOR.
GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Bend | Baker City

California
Oakland | Folsom | Irvine

Quality Service for Environmental Solutions | farallonconsulting.com

FIGURE 2

SOIL PAH RESULTS AND
PROPOSED BORING LOCATIONS
GIG HARBOR SPORTMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON

FARALLON PN: 1303-001

Drawn By: tperrin | Checked By: JM | Date: 6/27/2018 | Disc Reference:

Path: Q:\Projects\1303 GigHarbor\Mapfiles\Figures 2_3_Soil_Metals\EcoSubmit2018June_FIG02_SoilPAHS_propborloc.mxd

FB-01
0.0' | — | <14 | — | 17
0.5' | — | <13 | — | 14

FB-02
0.0' | --- | 16 | --- | 130
0.5' | --- | 15 | --- | 230
3.6' | --- | <11 | --- | <5.4

FB-03
0.0' | — | 17 | — | 72
0.5' | — | <13 | — | 25
3.7' | — | <11 | — | <5.7

STORMWATER DETENTION PONDS

FB-04
0.0' | — | <20 | — | 100
0.5' | — | <11 | — | <5.6
3.7' | — | <11 | — | <5.7

FB-05
0.0' | — | <12 | — | 9.3
0.5' | — | <11 | — | 14
2.8' | — | <14 | — | 7.3

FB-06
0.0' | **40** | <16 | 10,000 | **2,400**
0.5' | **2,100** | **22** | 12,000 | **4,000**
3.6' | <6.0 | <12 | 21,000 | 14

FB-07
0.0' | — | <12 | — | 31
0.5' | — | <11 | — | 12

FB-08
0.0' | — | <14 | — | 34
0.5' | — | <14 | — | 37

FB-09
0.0' | — | <13 | — | 11

SD-10
0-0.3' | — | 2.7 | — | 8.5
0.3-0.8' | — | 5.4 | — | 16

FB-10
0.5' | **170** | <11 | 16,000 | **10,000**
3.3' | <5.5 | <11 | 12,000 | <5.5

FB-11
0.0' | — | <12 | — | 83
0.5' | — | <12 | — | 52
3.4' | — | <11 | — | <5.5

FB-12
0.5' | 7.6 | <11 | 12,000 | **680**
3.5' | — | <11 | — | <5.4

FB-13
0.0' | — | <13 | — | 96
0.5' | — | <12 | — | 29

FB-14
0.0' | — | <12 | — | 56
0.5' | — | <11 | — | 27

FB-15
0.0' | 13 | <13 | 22,000 | **1,800**
0.5' | 7.2 | <13 | 23,000 | **620**
3.8' | — | <12 | — | <5.9

FB-16
0.0' | — | <12 | — | <6.2

FB-17
0.5' | 9.9 | <11 | 16,000 | **860**
3.9' | — | <11 | — | <5.6

FB-18
0.5' | 17 | <11 | 19,000 | **530**
3.8' | — | <11 | — | <5.5

FB-19
0.5' | **49** | <11 | 17,000 | **1,500**
2.9' | <5.5 | <11 | 9,500 | <5.5

FB-20
0.5' | — | <11 | — | 89

FB-21
0.5' | 5.7 | <11 | 15,000 | **14,000**
3.8' | — | <11 | — | <5.4

FB-22
0.0' | — | <12 | — | 47
0.5' | — | <13 | — | 43
3.0' | — | <11 | — | <5.7

FB-23
0.0' | — | <14 | — | 79
0.5' | — | <13 | — | 94

FB-24
0.5' | — | <12 | — | 55
1.0' | — | <11 | — | 90

FB-25
0.0' | — | <12 | — | 65

FB-26

FB-27
0.0' | — | <12 | — | 9.7
0.5' | — | <12 | — | <5.8
3.7' | — | <11 | — | <5.3

FB-28
0.0' | 17 | <15 | 16,000 | **370**
0.5' | — | <11 | — | 12

FB-29
0.5' | — | <11 | — | 13
1.0' | — | <11 | — | 11

FB-30
0.0' | — | <11 | — | 16
0.5' | — | <12 | — | 62
3.7' | — | <11 | — | <5.5

FB-31
0.0' | — | <13 | — | 58
0.5' | — | <11 | — | <5.6

FB-32
0.0' | — | <13 | — | 29
0.5' | — | <11 | — | 6.6

FB-33
0.0' | — | <12 | — | 8.5

FB-34
0.5' | — | <12 | — | <6.0

FB-35
0.0' | — | <13 | — | 15
0.5' | — | <12 | — | 10

FB-36
0.0' | — | <11 | — | <5.4
0.5' | — | <11 | — | <5.4

FB-37
0.0' | — | <11 | — | 6.1
0.5' | — | <11 | — | <5.4

FB-38
0.0' | — | <11 | — | 74

FB-39

FB-40

FB-41

FS-NCS-1
NA | — | 4.2 | — | **300**

FS-NCS-2
NA | — | 8.3 | — | 240

FS-NCS-3
NA | — | 8.1 | — | 240

FS-NCS-4
NA | — | 6.1 | — | 220

FS-NCS-5
NA | — | **17** | — | **500**

MW-01
0.0' | 13 | <12 | 5,700 | **800**
0.5' | — | <11 | — | 73
50.0' | — | <11 | — | <5.5

MW-02
0.0' | 870 | 71 | 16,000 | 10,000
0.5' | 64 | <12 | 19,000 | 870
1.0' | 320 | 270 | 16,000 | 49,000
4.6' | <5.4 | <11 | 12,000 | <5.4
10.0' | <5.4 | <11| 13,000 | <5.4
30.0' | | <11 | | <5.6

MW-03
0.0' | — | <11 | — | 13
0.5' | — | <12 | — | 13
45.0' | — | <12 | — | <5.9

MW-04
0.5' | — | <12 | — | 30
1.0' | — | <12 | — | <5.9
2.0' | — | <11 | — | <5.6
50.0' | — | <11 | — | <5.7

SD-1
NA | — | — | — | 73

SD-2
NA | — | — | — | **420**

SD-6
0-0.3' | 3.8 | 10 | 11,000 | **380**
0.3-0.7' | — | 4.9 | — | 120

SD-7
0-0.3' | 13 | 9.9 | 13,000 | **590**
0.3-1.0' | 4.8 | 14 | 10,000 | **810**
1.0-1.5' | 2.9 | 2.9 | 7,100 | **380**

SD-8
0-0.3' |**1,100** | **270** | 15,000 | **44,000**
0.3-0.7' | **3,200** | **340** | 17,000 | **20,000**
0.7-1.0' | **4,800** | **510** | 15,000 | **28,000**

SD-9
0-0.3' | — | 5.3 | — | 18
0.75-0.9' | — | 2.9 | — | <6.1

HB-1, HB-2, HB-3, HB-4, HB-5, HB-6, HB-7, HB-8, HB-11, HB-12, HB-13, HB-14/14D, HB-15, HB-16, HB-17, HB-18, HB-19, HB-20, HB-21, HB-22, HB-23, HB-24, HB-25, HB-26, HB-27

STORMWATER POND

RIFLE AND PISTOL RANGE

SHOTGUN RANGE

SHOT CURTAIN

HARBOR HILL DRIVE

SENTINEL DRIVE

BURNHAM DRIVE NORTHWEST

97th STREET NORTHWEST

NORTH CREEK TRIBUTARY

NORTH CREEK

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

A B C

LEGEND

- PROPOSED SURFACE WATER AND/OR SEDIMENT SAMPLE LOCATION
- BORING
- BACKGROUND BORING
- MONITORING WELL
- SEDIMENT SAMPLE (FARALLON 2017)
- SEDIMENT SAMPLE (FARALLON 2014)
- SEDIMENT SAMPLE (FLOYD|SNIDER 2014)
- HWA SOIL SAMPLE LOCATION
- SEDIMENT SAMPLE LOCATION TO BE ANALYZED FOR ACUTE AND CHRONIC TOXIC EFFECTS
- APPROXIMATE PROPERTY BOUNDARY
- PIERCE COUNTY PARCEL BOUNDARY.
- A / 1 FIELD SCREENING GRID (100' x 100') AND GRID IDENTIFIER
- PROPOSED BORING LOCATION
- SURFACE WATER SAMPLE LOCATIONS
- OUTFALL
- STORM DITCH
- CONVEYANCE PIPING
- CULVERT
- STREAM
- INTERMITTENT STREAM

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

NOTES:
SOIL SAMPLE ANALYTICAL RESULT =
DEPTH FEET BGS | ANTIMONY | ARSENIC | IRON | LEAD
SOIL AND SEDIMENT RESULTS IN MILLIGRAMS PER KILOGRAM

BOLD = CONCENTRATIONS EXCEED APPLICABLE SOIL OR SEDIMENT SCREENING LEVELS
< = SAMPLE CONCENTRATIONS NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
BGS = BELOW GROUND SURFACE

N

0 80 160
SCALE IN FEET

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Bend | Baker City

California
Oakland | Folsom | Irvine

Quality Service for Environmental Solutions | farallonconsulting.com

FIGURE 3

SOIL AND SEDIMENT METALS RESULTS AND PROPOSED SAMPLING/FIELD SCREENING LOCATIONS
GIG HARBOR SPORTMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON

FARALLON PN: 1303-001

Drawn By: tperrin | Checked By: JM | Date: 6/29/2018 | Disc Reference:

Path: Q:\Projects\1303 GigHarbor\Mapfiles\Figures 2_3_Soil_Metals\EcoSubmit_2018June\FIGURE 03_Metals_PropBorLoc_SedStormwater.mxd

STORMWATER DETENTION PONDS

HARBOR HILL DRIVE

SENTINEL DRIVE

SD-10
10/25/2017 | **0.854** | **2.40**

STORMWATER POND

RIFLE AND PISTOL RANGE

SD-9
10/25/2017 | **0.898** | **2.97**

SHOTGUN RANGE

SHOT CURTAIN

SD-8
10/25/2017 | **32.5** | **2.70**

SD-7
10/25/2017 | **83.3** | **2.73**

97th STREET NORTHWEST

SD-6
10/25/2017 | **80.5** | **2.47**

BURNHAM DRIVE NORTHWEST

NORTH CREEK

NORTH CREEK TRIBUTARY

SD-3
10/25/2017 | **10.4** | 1.31

SD-5
10/25/2017 | **29.9** | **2.42**

SD-4
10/25/2017 | 0.140 | 0.93

LEGEND

- PROPOSED SURFACE WATER AND/OR SEDIMENT SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATIONS
- OUTFALL
- STORM DITCH
- CONVEYANCE PIPING
- CULVERT
- STREAM
- INTERMITTENT STREAM
- APPROXIMATE PROPERTY BOUNDARY
- PIERCE COUNTY PARCEL BOUNDARY.

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

NOTES:
SURFACE WATER RESULTS DEPICTED AS:
DATE SAMPLED | DISSOLVED LEAD | DISSOLVED COPPER
ANALYTICAL RESULTS IN MICROGRAMS PER LITER.

BOLD = CONCENTRATIONS EXCEED APPLICABLE SOIL OR SEDIMENT SCREENING LEVELS
< = SAMPLE CONCENTRATIONS NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED

N

0 120 240
SCALE IN FEET

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Bend | Baker City

California
Oakland | Sacramento | Irvine

Quality Service for Environmental Solutions | farallonconsulting.com

FIGURE 4

SURFACE WATER METALS RESULTS
AND PROPOSED SAMPLE LOCATIONS
GIG HARBOR SPORTMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON

FARALLON PN: 1303-001

Drawn By: tperrin | Checked By: JM | Date: 6/28/2018 | Disc Reference:

Path: Q:\Projects\1303 GigHarbor\Mapfiles\Figures 2_3_Soil_Metals\EcoSubmit2018June_FIG04_Surfacewater.mxd

TABLES

REVISED REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN ADDENDUM NO. 2
Gig Harbor Sportsman's Club
9721 Burnham Drive Northwest
Gig Harbor, Washington

Farallon PN: 1303-001

Table 1
Soil Analytical Results for PAHs
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sampled By	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]																		Analytical Results
					Non-Carcinogenic PAHs												Carcinogenic PAHs								
					Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Total Naphthalenes[3]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)Perylene	Fluoranthene	Fluorene	Phenanthrene	Pyrene	Benzo(a)pyrene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(j,k)Fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Indeno(1,2,3-cd)Pyrene	Total cPAHs TEC[4,5]	pH[6]
FB-02	Farallon	FB-02-0.0	0.0	2/1/2017	0.045	< 0.010	< 0.010	0.045	< 0.010	< 0.010	< 0.010	0.033	0.06	< 0.010	0.047	0.068	0.037	0.029	0.05	0.015	0.043	< 0.010	0.033	0.051	5.0
FB-03	Farallon	FB-03-0.0	0.0	2/1/2017	0.011	< 0.010	< 0.010	0.011	< 0.010	< 0.010	< 0.010	0.015	0.023	< 0.010	0.014	0.021	0.017	0.013	0.027	< 0.010	0.02	< 0.010	0.016	0.024	5.4
FB-06	Farallon	FB-06-0.0	0.0	1/31/2017	0.049	0.019	0.035	0.103	0.084	0.016	0.10	0.66	0.78	0.069	0.36	0.71	0.83	0.65	1.2	0.37	0.87	0.19	0.68	**1.15**	5.2
FB-06	Farallon	FB-06-0.5	0.5	1/31/2017	0.028	< 0.12	0.013	0.041	0.028	0.039	0.13	0.43	0.79	0.016	0.17	0.87	0.70	0.60	0.98	0.30	0.85	0.13	0.43	**0.95**	4.9
FB-06	Farallon	FB-06-1.0	1.0	1/31/2017	0.022	< 0.0087	0.010	0.032	0.066	< 0.0087	0.089	0.74	0.86	0.021	0.33	0.88	1.0	0.77	1.3	0.44	0.91	0.18	0.73	**1.35**	5.2
FB-06	Farallon	FB-06-3.6	3.6	1/31/2017	0.0085	< 0.0080	< 0.0080	0.0085	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	0.0098	< 0.0080	< 0.0080	0.011	< 0.0080	0.026	< 0.0080	< 0.0080	0.007	5.8
FB-07	Farallon	FB-07-0.0	0.0	1/31/2017	0.035	0.011	0.025	0.071	0.35	< 0.0083	0.42	2.6	3.2	0.096	1.3	3.1	3.7	2.7	4.4	1.2	2.6	0.61	3.3	**4.9**	6.0
FB-07	Farallon	FB-07-0.5	0.5	1/31/2017	< 0.0072	< 0.0072	< 0.0072	< 0.0216	< 0.0072	< 0.0072	< 0.0072	0.016	0.23	< 0.0072	0.0093	0.022	0.020	0.015	0.029	0.0089	0.019	< 0.0072	0.016	0.027	7.0
FB-07	Farallon	FB-07-1.0	1.0	1/31/2017	< 0.0072	< 0.0072	< 0.0072	< 0.0216	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	0.0054	7.0
FB-08	Farallon	FB-08-0.0	0.0	2/1/2017	< 0.0096	< 0.0096	< 0.0096	< 0.0288	0.01	< 0.0096	0.011	0.11	0.12	< 0.0096	0.05	0.13	0.15	0.11	0.17	0.054	0.12	0.028	0.11	**0.20**	5.7
FB-08	Farallon	FB-08-3.9 H	3.9	2/1/2017	< 0.0077	< 0.0077	< 0.0077	< 0.0231	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	0.0058	5.9
FB-10	Farallon	FB-10-0.5	0.5	2/1/2017	1.1	< 0.73	< 0.73	1.1	13	< 0.73	21	150	190	5.3	61	180	210	170	260	72	170	36	160	**282**	7.4
FB-10	Farallon	FB-10-3.3	3.3	2/1/2017	< 0.0073	< 0.0073	< 0.0073	< 0.0219	< 0.0073	< 0.0073	< 0.0073	0.017	0.025	< 0.0073	0.01	0.025	0.025	0.02	0.032	0.01	0.02	< 0.0073	0.019	0.034	6.6
FB-11	Farallon	FB-11-0.0	0.0	2/1/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	0.03	0.037	< 0.0082	0.016	0.036	0.032	0.028	0.048	0.015	0.033	0.0083	0.034	0.046	6.1
FB-12	Farallon	FB-12-0.5	0.5	2/1/2017	< 0.15	< 0.15	< 0.15	< 0.45	0.84	< 0.15	1.3	7.8	9.8	0.32	3.6	9.3	11	8.9	12	4.7	8.2	1.9	8.3	**14.7**	7.2
FB-12	Farallon	FB-12-3.5	3.5	2/1/2017	< 0.0072	< 0.0072	< 0.0072	< 0.0216	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	0.0054	6.3
FB-13	Farallon	FB-13-0.0	0.0	1/31/2017	< 0.0084	< 0.0084	< 0.0084	< 0.0252	< 0.0084	< 0.0084	< 0.0084	0.039	0.039	< 0.0084	0.015	0.041	0.046	0.027	0.062	0.018	0.040	0.0097	0.039	0.062	5.9
FB-14	Farallon	FB-14-0.0	0.0	1/31/2017	2.8	0.88	1.8	**5.48**	39	< 0.81	48	370	460	13	170	440	500	430	600	190	380	77	470	**681**	6.6
FB-14	Farallon	FB-14-1.0	1.0	1/31/2017	< 0.0075	< 0.0075	< 0.0075	< 0.0225	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	0.0057	5.6
FB-14	Farallon	FB-14-2.0	2.0	1/31/2017	< 0.0074	< 0.0074	< 0.0074	< 0.0222	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0056	5.8
FB-14	Farallon	FB-14-3.7	3.7	1/31/2017	< 0.0074	< 0.0074	< 0.0074	< 0.0222	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0056	6.1
FB-15	Farallon	FB-15-0.0	0.0	1/31/2017	< 0.0086	< 0.0086	< 0.0086	< 0.0258	0.0094	< 0.0086	< 0.0086	0.022	0.026	< 0.0086	0.015	0.025	0.026	0.017	0.037	0.011	0.025	< 0.0086	0.021	0.036	5.5
FB-16	Farallon	FB-16-0.0	0.0	2/2/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	0.0066	5.6
FB-17	Farallon	FB-17-0.5	0.5	2/1/2017	0.033	< 0.0074	0.0089	0.0419	0.011	0.017	0.036	0.092	0.075	< 0.0074	0.055	0.072	0.08	0.046	0.12	0.04	0.075	0.02	0.1	**0.113**	6.6
FB-17	Farallon	FB-17-3.9	3.9	2/1/2017	< 0.0075	< 0.0075	< 0.0075	< 0.0225	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	0.0057	6.4
FB-18	Farallon	FB-18-0.5	0.5	2/1/2017	< 0.15	< 0.15	< 0.15	< 0.45	0.55	< 0.15	0.84	5.9	6.8	0.2	2.4	6.5	7.5	5.9	8.9	3.2	5.8	1.4	6.2	**10.1**	7.4
FB-18	Farallon	FB-18-3.8	3.8	2/1/2017	< 0.0073	< 0.0073	< 0.0073	< 0.0219	< 0.0073	< 0.0073	0.0079	0.056	0.073	< 0.0073	0.028	0.074	0.077	0.057	0.10	0.028	0.063	0.013	0.057	**0.103**	6.4
FB-19	Farallon	FB-19-0.5	0.5	2/1/2017	< 0.15	< 0.15	< 0.15	< 0.45	0.46	< 0.15	0.85	5.3	6.3	0.19	2.3	6.1	6.8	5.7	7.8	3	5.3	1.2	5.4	**9.2**	7.3
FB-19	Farallon	FB-19-2.9	2.9	2/1/2017	< 0.0073	< 0.0073	< 0.0073	< 0.0219	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	0.0055	6.5
FB-20	Farallon	FB-20-0.5	0.5	2/1/2017	0.38	< 0.37	< 0.37	0.38	6	< 0.37	9.2	66	77	2.2	27	73	87	67	100	31	63	16	70	**116**	7.6
FB-20	Farallon	FB-200-0.5	0.5	2/1/2017	< 0.37	< 0.37	< 0.37	< 1.11	4	< 0.37	6.3	44	58	1.5	19	55	63	52	76	22	42	11	46	**84**	—
FB-20	Farallon	FB-20-3.1	3.1	2/1/2017	< 0.0074	< 0.0074	< 0.0074	< 0.0222	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0083	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0060	6.1
FB-21	Farallon	FB-21-0.5	0.5	2/1/2017	0.58	< 0.37	< 0.37	0.58	3	< 0.37	5.3	36	45	1.5	16	44	46	41	63	18	38	9.4	36	**63**	7.6
FB-21	Farallon	FB-210-0.5	0.5	2/1/2017	0.6	< 0.37	< 0.37	0.6	3.5	< 0.37	6	40	53	1.6	18	52	56	43	68	19	43	11	40	**75**	—
FB-21	Farallon	FB-21-3.8	3.8	2/1/2017	< 0.0072	< 0.0072	< 0.0072	< 0.0216	< 0.0072	< 0.0072	< 0.0072	0.022	0.024	< 0.0072	0.012	0.031	0.029	0.022	0.034	0.01	0.024	< 0.0072	0.021	0.038	6.3
FB-22	Farallon	FB-22-0.0	0.0	1/31/2017	0.014	< 0.0083	< 0.0083	0.014	0.028	< 0.0083	0.026	0.40	0.43	0.010	0.15	0.43	0.47	0.35	0.67	0.17	0.42	0.098	0.41	**0.64**	5.9
FB-22	Farallon	FB-22-3.0 H	3.0	1/31/2017	< 0.0075	< 0.0075	< 0.0075	< 0.0225	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	< 0.0075	0.0057	5.8
FB-23	Farallon	FB-23-0.0	0.0	1/31/2017	0.15	0.051	0.10	0.301	1.2	< 0.0092	1.9	9.5	16	0.51	7.1	16	16	13	18	5.3	12	2.6	11	**21.1**	6.1
FB-23	Farallon	FB-230-0.0	0.0	1/31/2017	0.017	0.027	0.069	0.113	0.22	< 0.0089	0.47	6.1	3.0	0.12	2.0	6.7	9.9	6.1	5.4	1.5	7.1	1.6	3.7	**11.8**	6.2
FB-23	Farallon	FB-23-0.5	0.5	1/31/2017	< 0.044	< 0.044	< 0.044	< 0.132	0.049	< 0.044	0.055	0.95	0.8	< 0.044	0.31	1.0	1.3	0.86	1.3	0.36	1.1	0.22	0.81	**1.67**	5.9
FB-23	Farallon	FB-23-1.0	1.0	1/31/2017	< 0.085	< 0.085	< 0.085	< 0.255	0.16	< 0.085	0.14	1.5	1.8	< 0.085	0.68	2.2	2.3	1.4	2.3	0.84	1.8	0.40	1.5	**3.0**	5.8
FB-23	Farallon	FB-23-2.9	2.9	1/31/2017	< 0.0084	< 0.0084	< 0.0084	< 0.0252	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	0.0063	5.2
MTCA Method A Cleanup Level for Soil[7]								**5**	**4,800[8]**	**NE**	**24,000[8]**	**NE**	**3,200[8]**	**3,200[8]**	**NE**	**2,400[8]**								**0.1**	**NE**

Table 1
Soil Analytical Results for PAHs
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sampled By	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]																	Analytical Results
					Non-Carcinogenic PAHs											Carcinogenic PAHs								
					Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Total Naphthalenes[3]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)Perylene	Fluoranthene	Fluorene	Phenanthrene	Pyrene	Benzo(a)pyrene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(j,k)Fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Indeno(1,2,3-cd)Pyrene	Total cPAHs TEC[4,5]	pH[6]
FB-24	Farallon	FB-24-0.5	0.5	1/31/2017	4.1	1.4	2.7	**8.2**	58	< 0.78	79	650	810	21	300	790	880	750	1,100	320	670	170	820	**1,203**	7.8
FB-24	Farallon	FB-24-1.0	1.0	1/31/2017	< 0.15	< 0.15	< 0.15	< 0.45	0.57	< 0.15	0.65	5.1	7.5	0.17	2.6	7.9	7.8	5.4	8.8	3.0	6.3	1.3	5.3	**10.2**	7.5
FB-24	Farallon	FB-24-2.0	2.0	1/31/2017	< 0.0077	< 0.0077	< 0.0077	< 0.0231	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	0.0058	7.3
FB-24	Farallon	FB-24-3.1	3.1	1/31/2017	< 0.0074	< 0.0074	< 0.0074	< 0.0222	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0074	< 0.0074	< 0.0074	0.0084	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0061	6.2
FB-25	Farallon	FB-25-0.0	0.0	2/2/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	< 0.0082	0.0086	< 0.0082	< 0.0082	0.0082	< 0.0082	< 0.0082	0.012	< 0.0082	< 0.0082	< 0.0082	< 0.0082	0.0070	5.4
FB-27	Farallon	FB-27-0.0	0.0	1/31/2017	< 0.0080	< 0.0080	< 0.0080	< 0.0240	< 0.0080	< 0.0080	< 0.0080	0.12	0.10	< 0.0080	0.036	0.10	0.12	0.092	0.16	0.045	0.096	0.026	0.11	**0.164**	5.6
FB-27	Farallon	FB-27-3.7 H	3.7	1/31/2017	< 0.0071	< 0.0071	< 0.0071	< 0.0213	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	0.0054	5.6
FB-28	Farallon	FB-28-0.0	0.0	1/31/2017	0.052	< 0.049	0.065	0.117	0.38	< 0.049	0.37	6.7	4.5	0.089	1.7	5.7	7.3	3.8	6.3	2.0	4.8	1.4	5.2	**9.2**	5.8
FB-28	Farallon	FB-28-0.5	0.5	1/31/2017	< 0.0076	< 0.0076	< 0.0076	< 0.0228	< 0.0076	< 0.0076	< 0.0076	0.11	0.12	< 0.0076	0.033	0.14	0.15	0.10	0.17	0.062	0.12	0.025	0.11	**0.20**	5.8
FB-28	Farallon	FB-28-1.0	1.0	1/31/2017	< 0.0076	< 0.0076	< 0.0076	< 0.0228	< 0.0076	< 0.0076	< 0.0076	< 0.0076	0.0079	< 0.0076	< 0.0076	0.017	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	0.0058	5.9
FB-29	Farallon	FB-29-0.5	0.5	1/31/2017	0.34	0.30	0.47	1.11	4.2	< 0.038	4.2	42	61	1.1	19	70	76	39	83	21	43	11	67	**99**	7.5
FB-29	Farallon	FB-29-1.0	1.0	1/31/2017	0.43	< 0.22	< 0.22	0.43	0.90	< 0.22	1.2	19	23	0.40	5.8	24	28	18	35	12	23	4.6	19	**37**	7.5
FB-29	Farallon	FB-29-2.0	2.0	1/31/2017	< 0.0081	< 0.0081	< 0.0081	< 0.0243	0.012	< 0.0081	0.011	0.20	0.25	< 0.0081	0.047	0.25	0.30	0.23	0.41	0.12	0.25	0.049	0.23	**0.41**	6.8
FB-29	Farallon	FB-29-3.1	3.1	1/31/2017	< 0.0083	< 0.0083	< 0.0083	< 0.0249	< 0.0083	< 0.0083	< 0.0083	0.021	0.025	< 0.0083	0.0092	0.030	0.027	0.019	0.031	0.011	0.024	< 0.0083	0.020	0.036	6.9
FB-31	Farallon	FB-31-0.0	0.0	1/31/2017	0.18	0.12	0.15	0.45	1.8	0.014	2.3	22	25	0.67	9.8	25	28	19	34	9.2	21	5.0	24	**37**	6.9
FB-31	Farallon	FB-31-1.0	1.0	1/31/2017	< 0.0075	< 0.0075	< 0.0075	< 0.0225	< 0.0075	< 0.0075	< 0.0075	0.035	0.043	< 0.0075	0.017	0.046	0.049	0.036	0.062	0.018	0.04	0.0079	0.035	0.065	6.3
FB-31	Farallon	FB-31-2.0	2.0	1/31/2017	< 0.0072	< 0.0072	< 0.0072	< 0.0216	< 0.0072	< 0.0072	< 0.0072	0.0095	0.011	< 0.0072	< 0.0072	0.012	0.012	0.0089	0.015	< 0.0072	0.0097	< 0.0072	0.0098	0.016	6.2
FB-31	Farallon	FB-31-3.5	3.5	1/31/2017	< 0.0073	< 0.0073	< 0.0073	< 0.0219	< 0.0073	< 0.0073	< 0.0073	0.013	0.015	< 0.0073	< 0.0073	0.016	0.015	0.011	0.019	< 0.0073	0.014	< 0.0073	0.013	0.020	6.5
FB-32	Farallon	FB-32-0.0	0.0	1/31/2017	< 0.0084	< 0.0084	< 0.0084	< 0.0252	< 0.0084	< 0.0084	0.0085	0.13	0.14	< 0.0084	0.051	0.16	0.14	0.11	0.22	0.053	0.15	0.032	0.13	**0.196**	5.7
FB-32	Farallon	FB-32-2.5	2.5	1/31/2017	< 0.0072	< 0.0072	< 0.0072	< 0.0216	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	0.0054	5.9
FB-33	Farallon	FB-33-0.0	0.0	2/2/2017	< 0.0080	< 0.0080	< 0.0080	< 0.0240	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	0.0060	5.5
FB-38	Farallon	FB-38-0.0	0.0	2/2/2017	< 0.14	< 0.14	< 0.14	< 0.42	0.16	< 0.14	0.3	5.7	5.7	< 0.14	0.99	5.9	7.7	5.8	8.5	3.4	5.6	1.3	5.9	**10.2**	7.7
FB-38	Farallon	FB-38-2.9	2.9	2/1/2017	< 0.0078	< 0.0078	< 0.0078	< 0.0234	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	0.0059	6.0
FB-39	Farallon	FB-39-1.0-083117	1.0	8/31/2017	2.0	0.95	1.4	4.35	14	< 0.22	20	210	250	7.9	98	260	290	220	360	100	230	55	210	**387**	—
FB-39	Farallon	FB-39-1.0-083117 (Sieved)	1.0	8/31/2017	0.71	0.36	0.52	1.59	8.0	< 0.21	11	100	110	3.2	42	110	130	100	150	51	99	25	100	**174**	—
FB-39	Farallon	FB-390-1.0-083117	1.0	8/31/2017	0.82	0.38	0.54	1.74	8.5	< 0.22	11	110	110	3.1	44	120	140	100	160	53	100	26	110	**186**	—
FB-39	Farallon	FB-390-1.0-083117 (Sieved)	1.0	8/31/2017	0.91	0.48	0.66	2.05	11	< 0.21	14	140	150	4.2	58	160	180	140	210	73	140	33	140	**241**	—
FB-39	Farallon	FB-39-5.0-083117	5.0	8/31/2017	< 0.044	< 0.044	< 0.044	< 0.132	0.11	< 0.044	0.17	1.3	1.7	0.047	0.64	1.9	1.7	1.5	2.1	0.72	1.4	0.30	1.3	**2.3**	—
FB-39	Farallon	FB-39-10.0-083117	10.0	8/31/2017	< 0.045	< 0.045	< 0.045	< 0.135	< 0.045	< 0.045	0.083	0.56	0.70	< 0.045	0.24	0.74	0.76	0.49	0.92	0.26	0.55	0.070	0.62	**1.00**	—
FB-39	Farallon	FB-39-15.0-083117	15.0	8/31/2017	< 0.0075	< 0.0075	< 0.0075	< 0.0225	< 0.0075	< 0.0075	< 0.0075	0.025	0.029	< 0.0075	0.012	0.031	0.033	0.025	0.041	0.012	0.025	< 0.0075	0.025	0.044	—
FB-39	Farallon	FB-39-20.0-083117	20.0	8/31/2017	0.17	0.11	0.15	0.43	1.8	< 0.044	3.1	21	26	0.78	8.9	28	32	23	42	10	20	4.9	25	**42.7**	—
FB-39	Farallon	FB-39-25.0-083117	25.0	8/31/2017	< 0.0073	< 0.0073	< 0.0073	< 0.0219	< 0.0073	< 0.0073	< 0.0073	0.0078	0.0096	< 0.0073	< 0.0073	0.011	0.011	< 0.0073	0.012	< 0.0073	0.0074	< 0.0073	< 0.0073	0.014	—
FB-40	Farallon	FB-40-0.0-083117	0.0	8/31/2017	< 0.0070	< 0.0070	< 0.0070	< 0.0210	< 0.0070	< 0.0070	< 0.0070	0.013	0.016	< 0.0070	0.0082	0.017	0.016	0.0099	0.022	< 0.0070	0.013	< 0.0070	0.013	0.021	—
FB-41	Farallon	FB-41-0.0-083117	0.0	8/31/2017	< 0.0073	< 0.0073	< 0.0073	< 0.0219	< 0.0073	< 0.0073	< 0.0073	< 0.0073	0.0082	< 0.0073	< 0.0073	0.015	0.0084	< 0.0073	0.012	< 0.0073	0.013	< 0.0073	0.0074	0.012	—
FB-41	Farallon	FB-41-1.0-083117	1.0	8/31/2017	0.0078	< 0.0070	0.0099	0.0177	0.0074	< 0.0070	< 0.0070	< 0.0070	0.0079	< 0.0070	0.0091	0.0080	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	< 0.0070	0.0053	—
MW-01	Farallon	MW-01-0.0	0.0	1/26/2017	< 0.0078	< 0.0078	< 0.0078	< 0.0234	< 0.0078	< 0.0078	< 0.0078	0.0095	0.0098	< 0.0078	< 0.0078	0.010	0.012	< 0.0078	0.014	< 0.0078	0.0093	< 0.0078	0.011	0.016	5.8
MW-01	Farallon	MW-01-0.5	0.5	1/26/2017	< 0.0074	< 0.0074	< 0.0074	< 0.0222	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0056	5.9
MW-02	Farallon	MW-02-0.0	0.0	1/27/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	0.044	0.055	< 0.0082	0.02	0.054	0.055	0.042	0.076	0.023	0.053	0.013	0.045	0.075	6.3
MW-02	Farallon	MW-020-0.0	0.0	1/27/2017	< 0.0082	< 0.0082	0.0084	0.0084	< 0.0082	< 0.0082	< 0.0082	0.027	0.034	< 0.0082	0.013	0.035	0.034	0.024	0.047	0.015	0.032	< 0.0082	0.028	0.047	6.1
MW-02	Farallon	MW-02-0.5	0.5	1/27/2017	< 0.0078	< 0.0078	< 0.0078	< 0.0234	< 0.0078	< 0.0078	< 0.0078	0.044	0.061	< 0.0078	0.024	0.058	0.059	0.043	0.077	0.025	0.049	0.012	0.045	0.080	6.1
MTCA Method A Cleanup Level for Soil[7]								**5**	**4,800[8]**	**NE**	**24,000[8]**	**NE**	**3,200[8]**	**3,200[8]**	**NE**	**2,400[8]**								**0.1**	**NE**

Table 1
Soil Analytical Results for PAHs
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sampled By	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]																	Analytical Results
					Non-Carcinogenic PAHs											Carcinogenic PAHs								
					Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Total Naphthalenes[3]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)Perylene	Fluoranthene	Fluorene	Phenanthrene	Pyrene	Benzo(a)pyrene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(j,k)Fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Indeno(1,2,3-cd)Pyrene	Total cPAHs TEC[4,5]	pH[6]
MW-04	Farallon	MW-04-0.5	0.5	1/31/2017	0.043	0.027	0.040	0.11	0.20	< 0.0079	0.42	2.8	3.4	0.085	1.9	5.0	3.9	2.6	3.9	1.2	3.0	0.62	2.8	**5.0**	6.9
MW-04	Farallon	MW-040-0.5	0.5	1/31/2017	0.032	0.019	0.027	0.078	0.17	< 0.0081	0.44	3.3	3.9	0.064	1.8	6.0	4.5	3.0	4.4	1.4	3.5	0.63	3.2	**5.8**	6.9
MW-04	Farallon	MW-04-1.0	1.0	1/31/2017	< 0.0079	< 0.0079	< 0.0079	< 0.0237	< 0.0079	< 0.0079	< 0.0079	0.066	0.095	< 0.0079	0.037	0.11	0.093	0.065	0.11	0.033	0.079	0.014	0.064	**0.122**	6.7
MW-04	Farallon	MW-04-2.0	2.0	1/31/2017	< 0.0074	< 0.0074	< 0.0074	< 0.0222	0.018	< 0.0074	0.03	0.25	0.38	0.0076	0.13	0.40	0.38	0.26	0.44	0.14	0.3	0.063	0.26	**0.50**	6.5
MW-04	Farallon	MW-04-5.0	5.0	1/31/2017	< 0.0078	< 0.0078	< 0.0078	< 0.0234	< 0.0078	< 0.0078	0.0099	0.066	0.084	< 0.0078	0.032	0.1	0.087	0.062	0.10	0.032	0.075	0.014	0.066	**0.115**	6.5
MW-04	Farallon	MW-04-10.0	10.0	1/31/2017	0.013	0.012	0.02	0.045	0.023	< 0.0077	0.04	0.24	0.27	0.012	0.17	0.4	0.33	0.26	0.36	0.091	0.27	0.055	0.22	**0.43**	6.8
MW-04	Farallon	MW-04-20.0 H	20.0	1/31/2017	0.0085	< 0.0074	0.0079	0.0164	0.081	< 0.0074	0.10	0.85	0.96	0.028	0.40	1.1	1.2	0.93	1.4	0.41	1.0	0.23	0.84	**1.6**	7.3
HB-1	HWA	HB-1-2"	0.2	4/5/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	0.014	0.014	< 0.0082	0.0082	0.014	0.016	0.012	0.023	< 0.0082	0.013	< 0.0082	0.014	0.0219	—
HB-2	HWA	HB-2-2"	0.2	4/5/2017	< 0.0080	< 0.0080	< 0.008	< 0.0240	< 0.008	< 0.008	< 0.0080	0.016	0.016	< 0.0080	< 0.0080	0.016	0.019	0.013	0.026	< 0.0080	0.014	< 0.008	0.017	0.0255	—
HB-3	HWA	HB-3-2"	0.2	4/5/2017	< 0.0083	< 0.0083	< 0.0083	< 0.0249	< 0.0083	< 0.0083	< 0.0083	0.075	0.071	< 0.0083	0.03	0.07	0.088	0.066	0.13	0.033	0.064	0.02	0.082	**0.122**	—
HB-3	HWA	HB-3-7"	0.6	4/5/2017	< 0.0081	< 0.0081	< 0.0081	< 0.0243	< 0.0081	< 0.0081	< 0.0081	0.081	0.07	< 0.0081	0.027	0.069	0.091	0.064	0.13	0.035	0.065	0.02	0.087	**0.125**	—
HB-3	HWA	HB-3-14"	1.2	4/5/2017	< 0.0079	< 0.0079	< 0.0079	< 0.0237	< 0.0079	< 0.0079	< 0.0079	0.016	0.015	< 0.0079	< 0.0079	0.015	0.02	0.012	0.028	0.0082	0.013	< 0.0079	0.019	0.027	—
HB-3	HWA	HB-3-25"	2.1	4/5/2017	< 0.0079	< 0.0079	< 0.0079	< 0.0237	< 0.0079	< 0.0079	< 0.0079	0.009	0.01	< 0.0079	< 0.0079	0.01	0.012	< 0.0079	0.017	< 0.0079	0.0091	< 0.0079	0.012	0.016	—
HB-4	HWA	HB-4-2"	0.2	4/5/2017	< 0.0081	< 0.0081	< 0.0081	< 0.0243	< 0.0081	< 0.0081	< 0.0081	0.019	0.018	< 0.0081	0.0088	0.018	0.022	0.015	0.034	< 0.0081	0.017	< 0.0081	0.02	0.030	—
HB-5	HWA	HB-5-2"	0.2	4/5/2017	< 0.0079	< 0.0079	< 0.0079	< 0.0237	< 0.0079	< 0.0079	< 0.0079	0.056	0.054	< 0.0079	0.019	0.056	0.071	0.051	0.096	0.025	0.051	0.015	0.059	0.096	—
HB-6	HWA	HB-6-2"	0.2	4/5/2017	< 0.0085	< 0.0085	< 0.0085	< 0.0255	< 0.0085	< 0.0085	< 0.0085	0.089	0.089	< 0.0085	0.04	0.086	0.11	0.097	0.16	0.043	0.085	0.024	0.10	**0.153**	—
HB-6	HWA	HB-6-7"	0.6	4/5/2017	< 0.0076	< 0.0076	< 0.0076	< 0.0228	< 0.0076	< 0.0076	< 0.0076	< 0.0076	0.0083	< 0.0076	< 0.0076	0.0084	0.01	< 0.0076	0.013	< 0.0076	< 0.0076	< 0.0076	0.0089	0.013	—
HB-6	HWA	HB-6-15"	1.3	4/5/2017	< 0.0078	< 0.0078	< 0.0078	< 0.0234	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	0.008	< 0.0078	< 0.0078	< 0.0078	< 0.0078	0.006	—
HB-6	HWA	HB-6-24"	2.0	4/5/2017	< 0.0077	< 0.0077	< 0.0077	< 0.0231	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	0.0058	—
HB-7	HWA	HB-7-2"	0.2	4/5/2017	< 0.0083	< 0.0083	< 0.0083	< 0.0249	0.018	< 0.0083	0.019	0.23	0.23	< 0.0083	0.087	0.21	0.30	0.24	0.40	0.10	0.20	0.062	0.27	**0.41**	—
HB-7	HWA	HB-7-8"	0.7	4/5/2017	< 0.0079	< 0.0079	< 0.0079	< 0.0237	< 0.0079	< 0.0079	< 0.0079	0.035	0.034	< 0.0079	0.013	0.034	0.043	0.032	0.062	0.013	0.032	0.0098	0.038	0.059	—
HB-8	HWA	HB-8-2"	0.2	4/5/2017	0.014	< 0.0084	< 0.0084	0.014	0.022	< 0.0084	0.027	0.35	0.32	< 0.0084	0.13	0.33	0.43	0.35	0.60	0.14	0.32	0.089	0.37	**0.59**	—
HB-8	HWA	HB-8-8"	0.7	4/5/2017	< 0.0077	< 0.0077	< 0.0077	< 0.0231	0.017	< 0.0077	0.024	0.31	0.27	< 0.0077	0.091	0.28	0.40	0.27	0.52	0.13	0.24	0.074	0.3	**0.53**	—
HB-8	HWA	HB-8-13"	1.1	4/5/2017	< 0.0078	< 0.0078	< 0.0078	< 0.0234	< 0.0078	< 0.0078	0.010	0.11	0.13	< 0.0078	0.04	0.13	0.17	0.11	0.23	0.059	0.12	0.03	0.13	**0.23**	—
HB-8	HWA	HB-8-24"	2.0	4/5/2017	< 0.0079	< 0.0079	< 0.0079	< 0.0237	0.010	< 0.0079	0.015	0.11	0.13	< 0.0079	0.044	0.13	0.18	0.13	0.22	0.067	0.11	0.03	0.13	**0.24**	—
HB-11	HWA	HB-11-10.5'	10.5	5/22/2017	< 0.0071	< 0.0071	< 0.0071	< 0.0213	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	0.0054	—
HB-11	HWA	HB-11-15'	15.0	5/22/2017	< 0.0074	< 0.0074	< 0.0074	< 0.0222	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0056	—
HB-12	HWA	HB-12-10.5'	10.5	5/22/2017	< 0.0071	< 0.0071	< 0.0071	< 0.0213	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	< 0.0071	0.0054	—
HB-12	HWA	HB-12-15'	15.0	5/22/2017	< 0.0074	< 0.0074	< 0.0074	< 0.0222	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0056	—
HB-13	HWA	HB-13-10.5'	10.5	5/22/2017	< 0.0070	< 0.0070	< 0.007	< 0.021	< 0.007	< 0.007	< 0.0070	< 0.0070	< 0.007	< 0.0070	< 0.0070	< 0.007	< 0.0070	< 0.0070	< 0.007	< 0.0070	< 0.007	< 0.007	< 0.0070	0.0053	—
HB-13	HWA	HB-13-15.5'	15.5	5/22/2017	< 0.0084	< 0.0084	< 0.0084	< 0.0252	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	0.0063	—
HB-14/14D	HWA	HB-14-6"	0.5	5/17/2017	0.046	0.24	0.039	0.325	0.82	0.015	0.71	12	14	0.25	4.6	15	17	12	21	6.6	13	3.1	15	**22.9**	—
HB-14/14D	HWA	HB-14-18"	1.5	5/17/2017	< 0.0085	< 0.0085	< 0.0085	< 0.0255	0.017	< 0.0085	0.02	0.24	0.27	< 0.0085	0.086	0.28	0.32	0.23	0.43	0.12	0.25	0.059	0.25	**0.43**	—
HB-14/14D	HWA	HB-14-42"	3.5	5/17/2017	0.026	0.028	0.052	0.106	0.048	< 0.008	0.047	0.59	0.69	0.019	0.23	0.72	0.81	0.6	1.1	0.29	0.6	0.15	0.63	**1.09**	—
HB-14/14D	HWA	HB-14D-6'	6.0	5/22/2017	< 0.0076	< 0.0076	< 0.0076	< 0.0228	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	0.0057	—
HB-14/14D	HWA	HB-14D-8'	8.0	5/22/2017	< 0.0076	< 0.0076	< 0.0076	< 0.0228	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	0.0057	—
HB-15	HWA	HB-15-6"	0.5	5/18/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	0.011	0.013	< 0.0082	< 0.0082	0.013	0.015	0.011	0.02	< 0.0082	0.012	< 0.0082	0.011	0.020	—
HB-15	HWA	HB-15-18"	1.5	5/18/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	0.0062	—
HB-15	HWA	HB-15-42"	3.5	5/18/2017	< 0.0076	< 0.0076	< 0.0076	< 0.0228	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	0.0057	—
HB-16	HWA	HB-16-6"	0.5	5/17/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	0.017	< 0.0082	0.012	0.12	0.14	< 0.0082	0.05	0.15	0.17	0.12	0.20	0.066	0.13	0.028	0.12	**0.22**	—
HB-16	HWA	HB-16-18"	1.5	5/17/2017	0.0099	< 0.0082	< 0.0082	0.0099	< 0.0082	< 0.0082	< 0.0082	0.084	0.10	< 0.0082	0.034	0.11	0.12	0.095	0.15	0.045	0.098	0.021	0.089	**0.16**	—
HB-16	HWA	HB-16-42"	3.5	5/17/2017	< 0.0091	< 0.0091	< 0.0091	< 0.0273	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	< 0.0091	0.0069	—
MTCA Method A Cleanup Level for Soil[7]								**5**	**4,800[8]**	**NE**	**24,000[8]**	**NE**	**3,200[8]**	**3,200[8]**	**NE**	**2,400[8]**								**0.1**	**NE**

Table 1
Soil Analytical Results for PAHs
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sampled By	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]												Analytical Results
					Non-Carcinogenic PAHs												
					Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Total Naphthalenes[3]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)Perylene	Fluoranthene	Fluorene	Phenanthrene	Pyrene
HB-17	HWA	HB-17-1.5'	1.5	5/22/2017	< 0.0077	< 0.0077	< 0.0077	< 0.0231	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077
HB-17	HWA	HB-17B-3'	3.0	5/22/2017	< 0.0077	< 0.0077	< 0.0077	< 0.0231	< 0.0077	< 0.0077	< 0.0077	0.023	0.019	< 0.0077	< 0.0077	0.021
HB-17	HWA	HB-17-10.5'	10.5	5/22/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082
HB-17	HWA	HB-17-15.5'	15.5	5/22/2017	< 0.0074	< 0.0074	< 0.0074	< 0.0222	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074
HB-18	HWA	HB-18-0"	0.0	6/19/2017	0.029	< 0.0094	0.010	0.039	< 0.0094	< 0.0094	< 0.0094	0.025	0.026	< 0.0094	0.021	0.026
HB-19	HWA	HB-19-0"	0.0	6/19/2017	< 0.0083	< 0.0083	< 0.0083	< 0.0249	< 0.0083	< 0.0083	< 0.0083	0.019	0.016	< 0.0083	0.0087	0.016
HB-20	HWA	HB-20-0"	0.0	6/19/2017	< 0.0084	< 0.0084	< 0.0084	< 0.0252	< 0.0084	< 0.0084	< 0.0084	0.0085	< 0.0084	< 0.0084	< 0.0084	< 0.0084
HB-21	HWA	HB-21-0"	0.0	6/19/2017	< 0.0080	< 0.0080	< 0.0080	< 0.024	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080
HB-22	HWA	HB-22-0"	0.0	6/19/2017	< 0.0084	< 0.0084	< 0.0084	< 0.0252	< 0.0084	< 0.0084	< 0.0084	0.029	0.038	< 0.0084	0.02	0.034
HB-22	HWA	HB-22-12"	1.0	6/19/2017	< 0.0078	< 0.0078	< 0.0078	< 0.0234	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078
HB-22	HWA	HB-22-24"	2.0	6/19/2017	< 0.0078	< 0.0078	< 0.0078	< 0.0234	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078
HB-22	HWA	HB-22-42"	3.5	6/19/2017	< 0.0072	< 0.0072	< 0.0072	< 0.0216	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072
HB-23	HWA	HB-23-0"	0.0	6/19/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	0.0092	0.011	< 0.0082	< 0.0082	0.01
HB-24	HWA	HB-24-0"	0.0	6/19/2017	< 0.0082	< 0.0082	< 0.0082	< 0.0246	< 0.0082	< 0.0082	< 0.0082	0.011	0.012	< 0.0082	< 0.0082	0.011
HB-25	HWA	HB-25-0"	0.0	6/19/2017	0.016	0.012	0.024	0.052	0.011	< 0.010	< 0.010	0.11	0.10	< 0.010	0.053	0.11
HB-26	HWA	HB-26-0"	0.0	6/19/2017	< 0.0093	< 0.0093	< 0.0093	< 0.0279	< 0.0093	< 0.0093	0.0093	0.12	0.09	< 0.0093	0.048	0.11
HB-27	HWA	HB-27-0"	0.0	6/19/2017	< 0.0089	< 0.0089	< 0.0089	< 0.0267	< 0.0089	< 0.0089	< 0.0089	0.024	0.028	< 0.0089	0.016	0.026
MTCA Method A Cleanup Level for Soil[7]								**5**	**4,800[8]**	**NE**	**24,000[8]**	**NE**	**3,200[8]**	**3,200[8]**	**NE**	**2,400[8]**

Sample Location	Sampled By	Sample Identification	Analytical Results (milligrams per kilogram)[2]														Analytical Results
			Carcinogenic PAHs														
			Benzo(a)pyrene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(j,k)Fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Indeno(1,2,3-cd)Pyrene	Total cPAHs TEC[4,5]	pH[6]						
HB-17	HWA	HB-17-1.5'	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	0.0058	—						
HB-17	HWA	HB-17B-3'	0.026	0.019	0.027	0.013	0.021	< 0.0077	0.021	0.035	—						
HB-17	HWA	HB-17-10.5'	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	0.0062	—						
HB-17	HWA	HB-17-15.5'	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	0.0056	—						
HB-18	HWA	HB-18-0"	0.026	0.023	0.048	0.0095	0.032	< 0.0094	0.026	0.037	—						
HB-19	HWA	HB-19-0"	0.018	0.013	0.028	< 0.0083	0.021	< 0.0083	0.017	0.025	—						
HB-20	HWA	HB-20-0"	0.0095	< 0.0084	0.013	< 0.0084	< 0.0084	< 0.0084	< 0.0084	0.013	—						
HB-21	HWA	HB-21-0"	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.0080	0.0060	—						
HB-22	HWA	HB-22-0"	0.040	0.031	0.057	0.018	0.034	< 0.0084	0.033	0.055	—						
HB-22	HWA	HB-22-12"	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	0.0059	—						
HB-22	HWA	HB-22-24"	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	< 0.0078	0.0059	—						
HB-22	HWA	HB-22-42"	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	0.0054	—						
HB-23	HWA	HB-23-0"	0.011	0.0084	0.016	< 0.0082	0.011	< 0.0082	0.0095	0.015	—						
HB-24	HWA	HB-24-0"	0.013	0.0092	0.019	< 0.0082	0.011	< 0.0082	0.011	0.018	—						
HB-25	HWA	HB-25-0"	0.16	0.12	0.19	0.047	0.13	0.018	0.11	**0.21**	—						
HB-26	HWA	HB-26-0"	0.17	0.13	0.17	0.044	0.14	0.023	0.096	**0.22**	—						
HB-27	HWA	HB-27-0"	0.028	0.023	0.048	0.013	0.029	< 0.0089	0.026	0.040	—						
MTCA Method A Cleanup Level for Soil[7]										**0.1**	**NE**						

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.

< denotes analyte not detected at or exceeding the reporting limit listed.

— denotes sample not analyzed.

[1]Depth in feet below ground surface.

[2]Analyzed by U.S. Environmental Protection Agency Method 8270D/SIM.

[3]Sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

[4]Total cPAHs derived using the total toxicity equivalency method in Section 708(8) of Chapter 173-340 of the Washington Administrative Code.

[5]For concentrations reported at less than the laboratory reporting limit, half the reporting limit was used to calculate the TEC.

[6]Analyzed by U.S. Environmental Protection Agency Method 9045D.

[7]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013, unless otherwise noted.

[8]Washington State Department of Ecology Cleanup Levels and Risk Calculations, under the MTCA Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway, https://fortress.wa.gov/ecy/clarc/Reporting/ChemicalQuery.aspx

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

Farallon = Farallon Consulting, L.L.C.

H = sample extracted and analyzed outside of holding time

HWA = HWA Geosciences Inc.

NE = not established

PAHs = polycyclic aromatic hydrocarbons

TEC = toxic equivalent concentration

Table 2
Soil Analytical Results for Metals
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]							Analytical Results[3]
				Antimony	Arsenic	Copper	Iron	Lead	Tin	Zinc	pH
FB-01	FB-01-0.0	0.0	2/1/2017	---	< 14	17	---	17	---	---	5.8
FB-01	FB-01-0.5	0.5	2/1/2017	---	< 13	21	---	14	---	---	5.4
FB-01	FB-010-0.5	0.5	2/1/2017	---	< 13	19	---	14	---	---	---
FB-02	FB-02-0.0	0.0	2/1/2017	---	16	15	---	130	---	---	5
FB-02	FB-02-0.5	0.5	2/1/2017	---	15	17	---	230	---	---	5
FB-02	FB-02-3.6	3.6	2/1/2017	---	< 11	7.1	---	< 5.4	---	---	5.7
FB-03	FB-03-0.0	0.0	2/1/2017	---	17	17	---	72	---	---	5.4
FB-03	FB-03-0.5	0.5	2/1/2017	---	< 13	14	---	25	---	---	5.5
FB-03	FB-03-3.7	3.7	2/1/2017	---	< 11	5.4	---	< 5.7	---	---	6.4
FB-04	FB-04-0.0	0.0	2/1/2017	---	< 20	16	---	100	---	---	4.3
FB-04	FB-04-0.5	0.5	2/1/2017	---	< 11	8.7	---	< 5.6	---	---	5.5
FB-04	FB-04-3.7	3.7	2/1/2017	---	< 11	< 1.1	---	< 5.7	---	---	6.1
FB-05	FB-05-0.0	0.0	2/1/2017	---	< 12	8	---	9.3	---	---	5.8
FB-05	FB-05-0.5	0.5	2/1/2017	---	< 11	11	---	14	---	---	5.7
FB-05	FB-05-2.8	2.8	2/1/2017	---	< 14	50	---	7.3	---	---	5.8
FB-06	FB-06-0.0	0.0	1/31/2017	**40**	< 16	16	10,000	**2,400**	36	67	5.2
FB-06	FB-06-0.5	0.5	1/31/2017	**2,100**	**22**	18	12,000	**4,000**	100	48	4.9
FB-06	FB-06-3.6	3.6	1/31/2017	< 6.0	< 12	15	21,000	14	< 6.0	37	5.8
FB-07	FB-07-0.0	0.0	1/31/2017	---	< 12	16	---	31	---	---	6.0
FB-07	FB-07-0.5	0.5	1/31/2017	---	< 11	10	---	12	---	---	7.0
FB-08	FB-08-0.0	0.0	2/1/2017	---	< 14	16	---	34	---	---	5.7
FB-08	FB-08-0.5	0.5	2/1/2017	---	< 14	15	---	37	---	---	5.6
FB-08	FB-080-0.5	0.5	2/1/2017	---	< 14	15	---	27	---	---	5.7
FB-09	FB-09-0.0	0.0	2/1/2017	---	< 13	14	---	11	---	---	5.6
FB-10	FB-10-0.5	0.5	2/1/2017	**170**	< 11	340	16,000	**10,000**	20	89	7.4
FB-10	FB-10-3.3	3.3	2/1/2017	< 5.5	< 11	7.9	12,000	< 5.5	< 5.5	18	6.6
MTCA Cleanup Levels for Soil[4]				**32[5]**	**20**	**3,200[5]**	**56,000[5]**	**250**	**48,000[5]**	**24,000[5]**	**NE**

Table 2
Soil Analytical Results for Metals
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]							Analytical Results[3]
				Antimony	Arsenic	Copper	Iron	Lead	Tin	Zinc	pH
FB-11	FB-11-0.0	0.0	2/1/2017	---	< 12	13	---	83	---	---	6.1
FB-11	FB-11-0.5	0.5	2/1/2017	---	< 12	13	---	52	---	---	5.4
FB-11	FB-11-3.4	3.4	2/1/2017	---	< 11	6.6	---	< 5.5	---	---	6.0
FB-12	FB-12-0.5	0.5	2/1/2017	7.6	< 11	58	12,000	**680**	< 5.6	24	7.2
FB-12	FB-12-3.5	3.5	2/1/2017	---	< 11	6.7	---	< 5.4	---	---	6.3
FB-13	FB-13-0.0	0.0	1/31/2017	---	< 13	180	---	96	---	---	5.9
FB-13	FB-13-0.5	0.5	1/31/2017	---	< 12	24	---	29	---	---	6.1
FB-14	FB-14-0.0	0.0	1/31/2017	---	< 12	8.9	---	56	---	---	6.6
FB-14	FB-14-0.5	0.5	1/31/2017	---	< 11	12	---	27	---	---	6.5
FB-15	FB-15-0.0	0.0	1/31/2017	13	< 13	16	22,000	**1,800**	< 6.5	35	5.5
FB-15	FB-15-0.5	0.5	1/31/2017	7.2	< 13	16	23,000	**620**	< 6.5	41	5.5
FB-15	FB-15-3.8	3.8	1/31/2017	---	< 12	14	---	< 5.9	---	---	6.4
FB-16	FB-16-0.0	0.0	2/2/2017	---	< 12	14	---	< 6.2	---	---	5.6
FB-17	FB-17-0.5	0.5	2/1/2017	9.9	< 11	120	16,000	**860**	< 5.6	70	6.6
FB-17	FB-17-3.9	3.9	2/1/2017	---	< 11	5.6	---	< 5.6	---	---	6.4
FB-18	FB-18-0.5	0.5	2/1/2017	17	< 11	26	19,000	**530**	< 5.7	40	7.4
FB-18	FB-18-3.8	3.8	2/1/2017	---	< 11	7	---	< 5.5	---	---	6.4
FB-19	FB-19-0.5	0.5	2/1/2017	**49**	< 11	180	17,000	**1,500**	< 5.7	49	7.3
FB-19	FB-19-2.9	2.9	2/1/2017	< 5.5	< 11	7.8	9,500	< 5.5	< 5.5	19	6.5
FB-20	FB-20-0.5	0.5	2/1/2017	---	< 11	11	---	89	---	---	7.6
FB-20	FB-200-0.5	0.5	2/1/2017	---	< 11	13	---	96	---	---	---
FB-21	FB-21-0.5	0.5	2/1/2017	5.7	< 11	20	15,000	**14,000**	< 5.6	27	7.6
FB-21	FB-210-0.5	0.5	2/1/2017	---	< 11	18	---	140	---	---	---
FB-21	FB-21-3.8	3.8	2/1/2017	---	< 11	6.8	---	< 5.4	---	---	6.3
FB-22	FB-22-0.0	0.0	1/31/2017	---	< 12	13	---	47	---	---	5.9
FB-22	FB-22-0.5	0.5	1/31/2017	---	< 13	14	---	43	---	---	5.9
FB-22	FB-22-3.0	3.0	1/31/2017	---	< 11	5.4	---	< 5.7	---	---	5.8
MTCA Cleanup Levels for Soil[4]				**32[5]**	**20**	**3,200[5]**	**56,000[5]**	**250**	**48,000[5]**	**24,000[5]**	**NE**

Table 2
Soil Analytical Results for Metals
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]							Analytical Results[3]
				Antimony	Arsenic	Copper	Iron	Lead	Tin	Zinc	pH
FB-23	FB-23-0.0	0.0	1/31/2017	---	< 14	13	---	79	---	---	6.1
FB-23	FB-230-0.0	0.0	1/31/2017	---	< 13	10	---	32	---	---	6.2
FB-23	FB-23-0.5	0.5	1/31/2017	---	< 13	12	---	94	---	---	5.9
FB-24	FB-24-0.5	0.5	1/31/2017	---	< 12	5.7	---	55	---	---	7.8
FB-24	FB-24-1.0	1.0	1/31/2017	---	< 11	7.2	---	90	---	---	7.5
FB-25	FB-25-0.0	0.0	2/2/2017	---	< 12	12	---	65	---	---	5.4
FB-27	FB-27-0.0	0.0	1/31/2017	---	< 12	14	---	9.7	---	---	5.6
FB-27	FB-27-0.5	0.5	1/31/2017	---	< 12	9.7	---	< 5.8	---	---	5.6
FB-27	FB-27-3.7	3.7	1/31/2017	---	< 11	6.4	---	< 5.3	---	---	5.6
FB-28	FB-28-0.0	0.0	1/31/2017	17	< 15	14	16,000	**370**	< 7.4	50	5.8
FB-28	FB-28-0.5	0.5	1/31/2017	---	< 11	10	---	12	---	---	5.8
FB-29	FB-29-0.5	0.5	1/31/2017	---	< 11	11	---	13	---	---	7.5
FB-29	FB-29-1.0	1.0	1/31/2017	---	< 11	9.4	---	11	---	---	7.5
FB-30	FB-30-0.0	0.0	1/31/2017	---	< 11	36	---	16	---	---	7.3
FB-30	FB-30-0.5	0.5	1/31/2017	---	< 12	21	---	62	---	---	6.3
FB-30	FB-30-3.7	3.7	1/31/2017	---	< 11	7.9	---	< 5.5	---	---	6.1
FB-31	FB-31-0.0	0.0	1/31/2017	---	< 13	12	---	58	---	---	6.9
FB-31	FB-31-0.5	0.5	1/31/2017	---	< 11	10	---	< 5.6	---	---	6.7
FB-32	FB-32-0.0	0.0	1/31/2017	---	< 13	14	---	29	---	---	5.7
FB-32	FB-32-0.5	0.5	1/31/2017	---	< 11	8.9	---	6.6	---	---	6.0
FB-33	FB-33-0.0	0.0	2/2/2017	---	< 12	13	---	8.5	---	---	5.5
FB-34	FB-34-0.5	0.5	2/2/2017	---	< 12	16	---	< 6.0	---	---	5.8
FB-35	FB-35-0.0	0.0	2/2/2017	---	< 13	14	---	15	---	---	5.5
FB-35	FB-35-0.5	0.5	2/2/2017	---	< 12	13	---	10	---	---	5.4
FB-36	FB-36-0.0	0.0	2/2/2017	---	< 11	80	---	< 5.4	---	---	7.3
FB-36	FB-36-0.5	0.5	2/2/2017	---	< 11	17	---	< 5.4	---	---	7.4
FB-37	FB-37-0.0	0.0	2/2/2017	---	< 11	13	---	6.1	---	---	6.8
FB-37	FB-370-0.0	0.0	2/2/2017	---	< 11	16	---	< 5.4	---	---	6.7
FB-37	FB-37-0.5	0.5	2/2/2017	---	< 11	8.3	---	< 5.4	---	---	6.6
MTCA Cleanup Levels for Soil[4]				**32[5]**	**20**	**3,200[5]**	**56,000[5]**	**250**	**48,000[5]**	**24,000[5]**	**NE**

Table 2
Soil Analytical Results for Metals
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)[2]							Analytical Results[3]
				Antimony	Arsenic	Copper	Iron	Lead	Tin	Zinc	pH
FB-38	FB-38-0.0	0.0	2/2/2017	---	< 11	26	---	74	---	---	7.7
MW-01	MW-01-0.0	0.0	1/26/2017	13	< 12	11	5,700	**800**	< 5.9	24	5.8
MW-01	MW-010-0.0	0.0	1/26/2017	---	13	11	---	**700**	---	---	5.8
MW-01	MW-01-0.5	0.5	1/26/2017	---	< 11	9.1	---	73	---	---	5.9
MW-01	MW-01-50.0	50.0	1/26/2017	---	< 11	5.5	---	< 5.5	---	---	7.8
MW-02	MW-02-0.0	0.0	1/27/2017	**870**	**71**	15	16,000	**10,000**	< 6.2	44	6.3
MW-02	MW-020-0.0	0.0	1/27/2017	**930**	**310**	19	16,000	**56,000**	52	43	6.1
MW-02	MW-02-0.5	0.5	1/27/2017	**64**	< 12	17	19,000	**870**	< 5.9	40	6.1
MW-02	MW-02-1.0	1.0	1/27/2017	**320**	**270**	28	16,000	**49,000**	10	37	6.1
MW-02	MW-02-4.6	4.6	1/27/2017	< 5.4	< 11	7.5	12,000	< 5.4	< 5.4	21	6.5
MW-02	MW-02-10.0	10	1/27/2017	< 5.4	< 11	7.7	13,000	< 5.4	< 5.4	16	7.2
MW-02	MW-02-30.0	30.0	1/27/2017	---	< 11	5.6	---	< 5.6	---	---	6.9
MW-03	MW-03-0.0	0.0	1/25/2017	---	< 11	12	---	13	---	---	5.5
MW-03	MW-030-0.0	0.0	1/25/2017	---	< 12	13	---	13	---	---	5.4
MW-03	MW-03-0.5	0.5	1/25/2017	---	< 12	12	---	13	---	---	5.5
MW-03	MW-03-45.0	45.0	1/25/2017	---	< 12	5.9	---	< 5.9	---	---	7.4
MW-04	MW-04-0.5	0.5	1/31/2017	---	< 12	14	---	30	---	---	6.9
MW-04	MW-040-0.5	0.5	1/31/2017	---	< 12	14	---	36	---	---	6.9
MW-04	MW-04-1.0	1.0	1/31/2017	---	< 12	19	---	< 5.9	---	---	6.7
MW-04	MW-04-2.0	2.0	1/31/2017	---	< 11	11	---	< 5.6	---	---	6.5
MW-04	MW-04-50.0	50.0	1/31/2017	---	< 11	5.9	---	< 5.7	---	---	7.9
MTCA Cleanup Levels for Soil[4]				**32[5]**	**20**	**3,200[5]**	**56,000[5]**	**250**	**48,000[5]**	**24,000[5]**	**NE**

NOTES:

Results in **bold** denote concentrations exceeding applicable cleanup levels.

NE = not established

< denotes analyte not detected at or exceeding the laboratory reporting limit listed.

— denotes sample not analyzed.

[1]Depth in feet below ground surface.

[2]Analyzed by U.S. Environmental Protection Agency Methods 6010C.

[3]Analyzed by U.S. Environmental Protection Agency Method 9045D.

[4]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013.

[5]Washington State Department of Ecology Cleanup Levels and Risk Calculations, under the MTCA Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway,

Table 3
Sediment Analytical Results for Metals
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sample Identification	Sampled By	Sample Depth (inches)[1]	Sample Date	Analytical Results (milligrams per kilogram dry weight)[2]						
					Antimony	Arsenic	Copper	Iron	Lead	Tin	Zinc
FS-NCS-1	NCS-1	Floyd|Snider		03/19/14	—	4.2	—	—	**300**	—	—
FS-NCS-2	NCS-2	Floyd|Snider		03/19/14	—	8.3	—	—	240	—	—
FS-NCS-3	NCS-3	Floyd|Snider		03/19/14	—	8.1	—	—	240	—	—
FS-NCS-4	NCS-4	Floyd|Snider		03/19/14	—	6.1	—	—	220	—	—
FS-NCS-5	NCS-5	Floyd|Snider		03/19/14	—	**17**	—	—	**500**	—	—
SD-1	SD1-072914	Farallon		07/29/14	—	—	3.3	—	73	—	—
SD-2	SD2-072914	Farallon		07/29/14	—	—	3.1	—	**420**	—	—
SD-3	SD3-SC-0-6-091117	Farallon	0-6	09/11/17	—	5.3	11	—	6.9	—	—
SD-4	SD4-SC-0-6-091117	Farallon	0-6	09/11/17	—	2.8	3.9	—	29	—	—
SD-5	SD5-SC-0-6-091117	Farallon	0-6	09/11/17	—	1.4	3.5	—	21	—	—
SD-6	SD6-SC-0-4-091217	Farallon	0-4	09/12/17	3.8	10	5.2	11,000	**380**	< 6.2	25
	SD6-SC-4-8-091217	Farallon	4-8	09/12/17	—	4.9	5.1	—	120	—	—
SD-7	SD7-SS-0-4-091217	Farallon	0-4	09/12/17	13	9.9	4.9	13,000	**590**	< 5.5	15
	SD7-SS-4-12-091217	Farallon	4-12	09/12/17	4.8	14	7.0	10,000	**810**	< 7.3	20
	SD7-SS-12-18-091217	Farallon	12-18	09/12/17	2.9	2.9	5.0	7,100	**380**	< 7.4	21
SD-8	SD8-SS-0-4-091217	Farallon	0-4	09/12/17	**1,100**	**270**	9.9	15,000	**44,000**	78	26
	SD28-SS-0-4-091217	Farallon	0-4	09/12/17	—	**44**	6.9	—	**3,500**	—	—
	SD8-SS-4-8-091217	Farallon	4-8	09/12/17	**3,200**	**340**	23	17,000	**20,000**	15	27
	SD8-SS-8-12-091217	Farallon	8-12	09/12/17	**4,800**	**510**	27	15,000	**28,000**	< 8.0	26
SD-9	SD9-SS-0-4-091217	Farallon	0-4	09/12/17	—	5.3	3.8	—	18	—	—
	SD9-SS-9-11-091217	Farallon	9-11	09/12/17	—	2.9	7.3	—	< 6.1	—	—
SD-10	SD10-SS-0-4-091217	Farallon	0-4	09/12/17	—	2.7	7.9	—	8.5	—	—
	SD10-SS-4-10-091217	Farallon	4-10	09/12/17	—	5.4	12	—	16	—	—
Freshwater Sediment Cleanup Objective[3]					**NE**	**14**	**400**	**NE**	**360**	**NE**	**3,200**
Soil Cleanup Levels[4]					**32**[5]	**20**	**3,200**[5]	**56,000**[5]	**250**	**48,000**[5]	**24,000**[5]

NOTES:

Results in **bold** denote concentrations exceeding applicable screening levels.

< denotes analyte not detected at or exceeding the reporting limit listed.

— denotes sample not analyzed.

Farallon = Farallon Consulting, L.L.C.

NE = not established

[1]Depth in inches below mudline.

[2]Analyzed by U.S. Environmental Protection Agency Method 6010 or 6020.

[3]Washington Freshwater State Sediment Cleanup Objectives, Table VI of Section 563 of Chapter 173-204 of the Washington Administrative Code, as revised February 2013.

[4]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013, unless otherwise noted.

[5]Washington State Department of Ecology Cleanup Levels and Risk Calculations, under the MTCA Standard Method B Formula Values for Soil (Unrestricted Land Use) - Direct Contact (Ingestion Only) and Leaching Pathway, https://fortress.wa.gov/ecy/clarc/Reporting/ChemicalQuery.aspx.

Table 4
Surface Water Analytical Results for PAHs
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sample Date	Sample Identification	Analytical Results (micrograms per liter)[1]																	
			Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
North Creek Tributary Results (Locations Ordered from Upstream to Downstream)																				
SD-10	10/25/2017	SD10-SW-102517	< 0.0033	< 0.0033	0.0021 J	0.0091	**0.0069**	**0.0059**	**0.0063**	**0.0062**	0.0071	**0.0095**	0.0058	< 0.0033	**0.0093**	0.0018 J	0.00097 J	0.0032 J	0.0027 J	0.0046
SD-9	10/25/2017	SD9-SW-102517	< 0.0034	< 0.0034	< 0.0034	0.00068 J	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	0.0022 J	**0.00059 J**	0.0020 J	0.0014 J	0.0030 J	0.0022 J	0.0013 J
SD-8	10/25/2017	SD8-SW-102517	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	0.00047 J	< 0.0034	< 0.0034	0.0018 J	0.0010 J	0.0020 J	< 0.0034	< 0.0034
SD-7	10/25/2017	SD7-SW-102517	< 0.0034	< 0.0034	0.0011 J	0.0020 J	**0.0013 J**	< 0.0034	< 0.0034	< 0.0034	0.0018 J	**0.0019** J	< 0.0034	0.0016 J	**0.0022 J**	0.0019 J	0.00098 J	0.0028 J	0.0018 J	0.0010 J
SD-6	10/25/2017	SD6-SW-102517	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	0.00050 J	0.0016 J	< 0.0033	0.0013 J	0.00055 J	0.0022 J	< 0.0033	< 0.0033
SD-5	10/25/2017	SD5-SW-102517	< 0.0034	< 0.0034	< 0.0034	0.00053 J	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	0.0019 J	< 0.0034	< 0.0034	0.0016 J	0.0010 J	0.0020 J	0.0014 J	0.0011 J
North Creek Results (Locations Ordered from Upstream to Downstream)																				
SD-3	10/25/2017	SD3-SW-102517	0.0012 J	< 0.0034	0.00059 J	0.00050 J	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	0.0020 J	0.0015 J	**0.00050 J**	0.0016 J	0.0011 J	0.0033 J	0.0018 J	0.0012 J
SD-4	10/25/2017	SD4-SW-102517	0.0021 J	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	< 0.0034	0.00095 J	0.0020 J	< 0.0034	0.0022 J	0.0012 J	0.0036	0.0017 J	< 0.0034
Applicable Washington State and Federal Surface Water Screening Levels																				
Surface Water Human Health, Water and Organisms, WAC 173-201A[2]			110	NE	3,100	NE	0.014	0.0014	0.014	0.014	1.4	0.0014	16	420	0.014	NE	NE	NE	NE	310
Surface Water Human Health, Organisms Only, WAC 173-201A[2]			110	NE	4,600	NE	0.021	0.0021	0.021	0.21	2.1	0.0021	16	610	0.021	NE	NE	NE	NE	460
Surface Water Human Health, Water and Organisms, 40 CFR 131.45[3]			30	NE	100	NE	0.00016	1.6E-05	0.00016	0.0016	0.016	1.6E-05	6	10	0.00016	NE	NE	NE	NE	960
Surface Water Human Health, Organisms Only, 40 CFR 131.45[3]			30	NE	100	NE	0.00016	1.6E-05	0.00016	0.0016	0.016	1.6E-05	6	10	0.00016	NE	NE	NE	NE	11,000

NOTES:

Results in **bold** denote concentrations exceeding Washington State screening levels.

Cells shaded grey denote non-detect results where the laboratory practical quantitation limit exceeds Washington State screening levels.

< denotes analyte not detected at or exceeding the reporting limit listed.

[1]Analyzed by U.S. Environmental Protection Agency Method 8270D/SIM.

[2]Value from Table 240 of Section 240 of the Water Quality Standards for Surface Waters of the State of Washington, as established in Chapter 173-201A of the Washington Administrative Code (WAC 173-201A), as amended on August 1, 2016.

[3]Value from Table 1, Human Health Criteria for Washington, as established in *Revision of Certain Federal Water Quality Criteria Applicable to Washington* (Part 131.45 of Title 40 of the Code of Federal Regulations [40 CFR 131.45]).

CWA = Clean Water Act

J = result is an estimate

NE = not established

PAHs = polycyclic aromatic hydrocarbons

Table 5
Surface Water Analytical Results for Metals
North Creek Tributary
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sampled By	Date	Sample Identification	Analytical Results (micrograms per liter)																		Analytical Results (milligrams per liter)
				Lead[1] (Total Recoverable)	Lead[1] (Dissolved)	Lead Fraction (Dissolved/ Total Recoverable)	Copper[1] (Total Recoverable)	Copper[1] (Dissolved)	Copper Fraction (Dissolved/ Total Recoverable)	Zinc[1] (Total Recoverable)	Zinc[1] (Dissolved)	Zinc Fraction (Dissolved/ Total Recoverable)	Antimony[1] (Total)	Antimony[1] (Dissolved)	Arsenic[1] (Total)	Arsenic[1] (Dissolved)	Iron[1] (Total)	Iron[1] (Dissolved)	Tin[1] (Total)	Tin[1] (Dissolved)	Calcium[1] (Total)	Magnesium[1] (Total)	Hardness[2]
North Creek Tributary Results (Locations Ordered from Upstream to Downstream)																						
SD-10	Farallon	10/25/2017	SD10-SW-102517	0.894	**0.854**	0.96	2.29	**2.40**	1.05	2.6	4.2	1.62	0.287	0.267	2.43	**2.34**	180	161	0.045 J	0.104	3,990	1,020	14.2
SD-9	Farallon	10/25/2017	SD9-SW-102517	1.28	**0.898**	0.70	2.60	**2.97**	1.14	2.8	2.8	1.00	0.331	0.294	1.91	**1.55**	394	148	< 0.050	0.137	3,840	992	13.7
SD-8	Farallon	10/25/2017	SD8-SW-102517	34.8	**32.5**	0.93	2.33	**2.70**	1.16	2.2	2.4	1.09	2.78	2.70	1.63	**1.69**	160	139	< 0.050	0.083	3,660	914	12.9
SD-7	Farallon	10/25/2017	SD7-SW-102517	87.0	**83.3**	0.96	2.31	**2.73**	1.18	1.8 J	2.9	1.61	6.38	**6.34**	1.81	**1.77**	147	134	0.039 J	0.203	3,540	884	12.5
SD-6	Farallon	10/25/2017	SD6-SW-102517	86.7	**80.5**	0.93	2.51	**2.47**	0.98	2.8	2.4	0.86	6.48	**6.39**	1.82	**1.71**	161	126	< 0.050	0.033 J	3,460	874	12.2
SD-5	Farallon	10/25/2017	SD5-SW-102517	33.8	**29.9**	0.88	1.88	**2.42**	1.29	9.0	2.4	0.27	4.54	4.47	1.50	**1.36**	270	210	< 0.050	0.068	5,060	1,800	20.0
Applicable Washington State and Federal Surface Water Screening Levels																						
Surface Water Aquatic Life, Fresh Water/Acute, WAC 173-201A[3]				**NA**	**7.36 [4]**		**NA**	**2.71 [4]**		**NA**	**21.91 [4]**		**NA**	**NE**	**NA**	**360**	**NA**	**NE**	**NE**	**NE**	**NE**	**NE**	
Surface Water Aquatic Life, Fresh Water/Chronic, WAC 173-201A[3]				**NA**	**0.29 [4]**		**NA**	**2.14 [4]**		**NA**	**20.01 [4]**		**NA**	**NE**	**NA**	**190**	**NA**	**1,000**	**NE**	**NE**	**NE**	**NE**	
Surface Water Human Health, Water and Organisms, WAC 173-201A[3]				**NE**	**NA**		**1,300**	**NA**		**2,300**	**NA**		**12**	**NA**	**10**	**NA**	**NE**	**NA**	**NE**	**NE**	**NE**	**NE**	
Surface Water Human Health, Organisms Only, WAC 173-201A[3]				**NE**	**NA**		**NE**	**NA**		**2,900**	**NA**		**180**	**NA**	**10**	**NA**	**NE**	**NA**	**NE**	**NE**	**NE**	**NE**	
Surface Water Human Health, Water and Organisms, 40 CFR 131.45[4]				**NE**			**NE**			**1,000**			**6**		**0.018**		**NE**		**NE**		**NE**	**NE**	
Surface Water Human Health, Organisms Only, 40 CFR 131.45[4]				**NE**			**NE**			**1,000**			**90**		**0.14**		**NE**		**NE**		**NE**	**NE**	

NOTES:

Results in **bold** denote concentrations exceeding Washington State screening levels. Dissolved metals concentrations evaluated for ecological criteria and total recoverable metals concentrations evaluated for human health criteria.

< denotes analyte not detected at or exceeding the reporting limit listed.

— denotes sample not analyzed.

[1]Analyzed by U.S. Environmental Protection Agency Method 200.7/200.8.

[2]Analyzed by Standard Method 2340B.

[3]Value from Table 240 of Section 240 of the Water Quality Standards for Surface Waters of the State of Washington, as established in Chapter 173-201A of the Washington Administrative Code (WAC 173-201A), as amended on August 1, 2016.

[4]Site-specific value calculated using hardness values for surface water samples collected from the Gig Harbor Sportsman's Club site. Calculations are based on formulas in Table 240 of Section 240 of the Water Quality Standards for Surface Waters of the State of Washington (WAC 173-201A), as amended on August 1, 2016. The screening levels provided are an average of individual screening levels calculated using location-specific data for sample points SD-5 through SD-10 in the North Creek Tributary.

[4]Value from Table 1, Human Health Criteria for Washington, as established in *Revision of Certain Federal Water Quality Criteria Applicable to Washington* (Part 131.45 of Title 40 of the Code of Federal Regulations [40 CFR 131.45]).

calc = calculated value
CWA = Clean Water Act
Farallon = Farallon Consulting, L.L.C.
NA = not applicable
NE = not established

Table 6
Surface Water Analytical Results for Metals
North Creek
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sampled By	Date	Sample Identification	Analytical Results (micrograms per liter)																		Analytical Results (milligrams per liter)
				Lead[1] (Total Recoverable)	Lead[1] (Dissolved)	Lead Fraction (Dissolved/ Total Recoverable)	Copper[1] (Total Recoverable)	Copper[1] (Dissolved)	Copper Fraction (Dissolved/ Total Recoverable)	Zinc[1] (Total Recoverable)	Zinc[1] (Dissolved)	Zinc Fraction (Dissolved/ Total Recoverable)	Antimony[1] (Total)	Antimony[1] (Dissolved)	Arsenic[1] (Total)	Arsenic[1] (Dissolved)	Iron[1] (Total)	Iron[1] (Dissolved)	Tin[1] (Total)	Tin[1] (Dissolved)	Calcium[1] (Total)	Magnesium[1] (Total)	Hardness[2]
North Creek Results (Locations Ordered from Upstream to Downstream)																						
SD-3	Farallon	10/25/2017	SD3-SW-102517	13.9	**10.4**	0.75	1.26	1.31	1.04	2.3	3.1	1.35	2.04	1.94	1.47	**1.24**	434	263	< 0.050	0.102	8,320	3,910	36.9
SD-4	Farallon	10/25/2017	SD4-SW-102517	0.154	0.140	0.91	0.81	0.93	1.15	2.0	2.3	1.15	0.096	0.096	1.39	**1.15**	659	338	< 0.050	0.035 J	10,700	4,820	46.6
Applicable Washington State and Federal Surface Water Screening Levels																						
Surface Water Aquatic Life, Fresh Water/Acute, WAC 173-201A[3]				**NA**	**7.36 [4]**		**NA**	**2.71 [4]**		**NA**	**21.91 [4]**		**NA**	**NE**	**NA**	**360**	**NA**	**NE**	**NE**	**NE**	**NE**	**NE**	
Surface Water Aquatic Life, Fresh Water/Chronic, WAC 173-201A[3]				**NA**	**0.29 [4]**		**NA**	**2.14 [4]**		**NA**	**20.01 [4]**		**NA**	**NE**	**NA**	**190**	**NA**	**1,000**	**NE**	**NE**	**NE**	**NE**	
Surface Water Human Health, Water and Organisms, WAC 173-201A[3]				**NE**	**NA**		**1,300**	**NA**		**2,300**	**NA**		**12**	**NA**	**10**	**NA**	**NE**	**NA**	**NE**	**NE**	**NE**	**NE**	
Surface Water Human Health, Organisms Only, WAC 173-201A[3]				**NE**	**NA**		**NE**	**NA**		**2,900**	**NA**		**180**	**NA**	**10**	**NA**	**NE**	**NA**	**NE**	**NE**	**NE**	**NE**	
Surface Water Human Health, Water and Organisms, 40 CFR 131.45[4]				**NE**			**NE**			**1,000**			**6**		**0.018**		**NE**		**NE**		**NE**	**NE**	
Surface Water Human Health, Organisms Only, 40 CFR 131.45[4]				**NE**			**NE**			**1,000**			**90**		**0.14**		**NE**		**NE**		**NE**	**NE**	

NOTES:

Results in **bold** denote concentrations exceeding Washington State screening levels. Dissolved concentrations evaluated for ecological criteria and total recoverable concentrations evaluated for human health criteria.

< denotes analyte not detected at or above the reporting limit listed.

— denotes sample not analyzed.

[1]Analyzed by U.S. Environmental Protection Agency Method 200.7/200.8.

[2]Analyzed by Standard Method 2340B.

[3]Value from Table 240 of Section 240 of the Water Quality Standards for Surface Waters of the State of Washington, as established in Chapter 173-201A of the Washington Administrative Code (WAC 173-201A), as amended on August 1, 2016.

[4]Site-specific value calculated using hardness values for surface water samples collected from the Gig Harbor Sportsman's Club site. Calculations are based on formulas in Table 240 of Section 240 of the Water Quality Standards for Surface Waters of the State of Washington (WAC 173-201A), as amended on August 1, 2016. The screening levels provided are an average of individual screening levels calculated using location-specific data for sample points SD-3 and SD-4 in North Creek.

[4]Value from Table 1, Human Health Criteria for Washington, as established in *Revision of Certain Federal Water Quality Criteria Applicable to Washington* (Part 131.45 of Title 40 of the Code of Federal Regulations [40 CFR 131.45]).

calc = calculated value

CWA = Clean Water Act

Farallon = Farallon Consulting, L.L.C.

NA = not applicable

NE = not established

Table 7
Surface Water Hardness-Based Screening Level Calculations for Metals
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Sample Location	Sampled By	Date	Sample Identification	Analytical Results (micrograms per liter)							Analytical Results (milligrams per liter)
				Acute Dissolved Lead Criteria[1] (hardness dependent)	Chronic Dissolved Lead Criteria[1] (hardness dependent)	Lead Conversion Factor (hardness dependent)	Acute Dissolved Copper Criteria[1] (hardness dependent)	Chronic Dissolved Copper Criteria[1] (hardness dependent)	Acute Dissolved Zinc Criteria[1] (hardness dependent)	Chronic Dissolved Zinc Criteria[1] (hardness dependent)	Hardness[2]
North Creek Tributary											
SD-5	Farallon	10/25/2017	SD5-SW-102517	10.79	0.42	1.0255	3.74	2.87	29.27	26.72	20.0
SD-6	Farallon	10/25/2017	SD6-SW-102517	6.16	0.24	1.0975	2.34	1.88	19.25	17.58	12.2
SD-7	Farallon	10/25/2017	SD7-SW-102517	6.33	0.25	1.0940	2.40	1.92	19.65	17.95	12.5
SD-8	Farallon	10/25/2017	SD8-SW-102517	6.56	0.26	1.0894	2.47	1.97	20.18	18.43	12.9
SD-9	Farallon	10/25/2017	SD9-SW-102517	7.03	0.27	1.0806	2.62	2.08	21.24	19.40	13.7
SD-10	Farallon	10/25/2017	SD10-SW-102517	7.32	0.29	1.0754	2.70	2.14	21.89	19.99	14.2
Calculated Average Cleanup Level for North Creek Tributary[3]				**7.36**	**0.29**	**NA**	**2.71**	**2.14**	**21.91**	**20.01**	**NA**
North Creek											
SD-3	Farallon	10/25/2017	SD3-SW-102517	21.49	0.84	0.9363	6.65	4.84	49.18	44.90	36.9
SD-4	Farallon	10/25/2017	SD4-SW-102517	27.87	1.09	0.9023	8.29	5.91	59.93	54.72	46.6
Calculated Average Cleanup Level for North Creek[3]				**24.68**	**0.96**	**NA**	**7.47**	**5.38**	**54.55**	**49.81**	**NA**

NOTES:

[1]Value from Table 240 of Section 250 of the Water Quality Standards for Surface Waters of the State of Washington, as established in Chapter 173-201A of the Washington Administrative Code (WAC 173-201A), as amended on August 1, 2016.
[2]Analyzed by Standard Method 2340B.
[3]Calculated cleanup levels for each location in a stream were averaged for use as the overall cleanup level for locations within that stream.

NA - not applicable, no calculation needed

Table 8
Groundwater Elevations
Gig Harbor Sportsman's Club
Gig Harbor, Washington
Farallon PN: 1303-001

Location	Monitoring Date	Top of Casing Elevation (feet NAVD88)[1]	Depth to Water (feet)[2]	Water Level Elevation (feet NAVD88)[1]
MW-01	2/8/2017	206.97	28.10	178.87
	6/23/2017[3]		24.95	182.02
	9/29/2017[4]		32.77	174.20
	12/4/2017[4]		33.85	173.12
	3/12/2018[4]		25.42	181.55
	6/12/2018[4]		28.91	178.06
MW-02	2/8/2017	181.64	21.55	160.09
	6/19/2017		18.37	163.27
	9/29/2017[4]		24.09	157.55
	12/4/2017[4]		25.41	156.23
	3/12/2018[4]		20.50	161.14
	6/12/2018[4]		21.68	159.96
MW-03	2/8/2017	192.39	41.18	151.21
	6/19/2017		37.84	154.55
	9/29/2017		40.55	151.84
	12/4/2017		41.18	151.21
	3/12/2018[4]		39.30	153.09
	6/12/2018[4]		39.85	152.54
MW-04	2/8/2017	193.78	31.92	161.86
	6/19/2017		29.92	163.86
	9/29/2017[4]		36.42	157.36
	12/4/2017[4]		37.85	155.93
	3/12/2018[4]		30.32	163.46
	6/12/2018[4]		33.14	160.64

Notes:

[1] In feet above mean sea level.

[2] In feet below top of well casing.

[3] Well MW-01 was inaccessible during the 6/19/2017 monitoring event when the other wells were measured.

[4] Water level measured after snap sampler was removed from well.

NAVD88 = North American Vertical Datum of 1988

ATTACHMENT 1
REVISED SAMPLING AND ANALYSIS PLAN NO. 2

REVISED REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN ADDENDUM NO. 2
Gig Harbor Sportsman's Club
9721 Burnham Drive Northwest
Gig Harbor, Washington

Farallon PN: 1303-001

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle
Oregon
Portland | Bend | Baker City
California
Oakland | Folsom | Irvine

REVISED SAMPLING AND ANALYSIS PLAN NO. 2

GIG HARBOR SPORTSMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON
FACILITY SITE IDENTIFICATION NO. 2566095
AGREED ORDER NO. DE 12803

Submitted by:
Farallon Consulting, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington 98027

Farallon PN: 1303-001

For:
Washington State Department of Ecology
Toxics Cleanup Program
PO Box 47775
Olympia, Washington 98504-7775

On Behalf of:
Gig Harbor Sportsman's Club
c/o Mr. Clark Davis
Davis Law Office, PLLC
7525 Pioneer Way, Suite 101
Gig Harbor, Washington 98335

July 5, 2018

Prepared by:

Jennifer L. Moore
Senior Scientist

Ryan Ostrom
Staff Environmental Scientist

Reviewed by:

FOR

Peter Jewett, L.G., L.E.G.
Principal Engineering Geologist

TABLE OF CONTENTS

FIGURES

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Revised Sampling and Analysis Plan No. 2 (Revised SAP) on behalf of the Gig Harbor Sportsman's Club (GHSC) in accordance with the requirements of Agreed Order No. DE 12803 entered into by GHSC and the Washington State Department of Ecology (Ecology) in November 2015, and in accordance with the Washington State Model Toxics Control Act Cleanup Regulation, as established in Chapter 173-340 of the Washington Administrative Code (WAC 173-340). This Revised SAP was prepared to incorporate additional scope items into the Remedial Investigation (RI) that were directed by the Ecology Site Manager, Mr. Matthew Morris, via emails and conference calls between September 2017 and February 2018 and in the letter regarding Remedial Investigation/Feasibility Study Work Plan Addendum No. 2 dated May 23, 2018, from Mr. Morris of Ecology to Ms. Jennifer L. Moore of Farallon (Ecology 2018), as described in the letter regarding Revised Remedial Investigation/Feasibility Study Work Plan Addendum No. 2, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington dated July 5, 2018, from Ms. Moore and Mr. Peter Jewett of Farallon to Mr. Morris of Ecology (Farallon 2018) (Revised RI/FS Work Plan Addendum No. 2). The Revised RI/FS Work Plan Addendum No. 2 is an addendum to the *Final Remedial Investigation/Feasibility Study Work Plan, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington* dated August 30, 2016, prepared by Farallon (2016a) (RI/FS Work Plan). Sampling conducted under this Revised SAP will also be conducted in accordance with the Washington State Sediment Management Standards, as established in WAC 173-204.

The purpose of the Revised SAP is to provide details pertaining to surface water, soil, sediment, and pore water sampling and analysis for the scope of work presented in the Revised RI/FS Work Plan Addendum No. 2, to be conducted at the GHSC property at 9721 Burnham Drive Northwest in Gig Harbor, Washington (herein referred to as the GHSC Property) (Figure 1). The Revised SAP meets the requirements for a Sampling and Analysis Plan as defined in WAC-173-340-820 and WAC 173-204-600. The scope of the RI is discussed further in the RI/FS Work Plan and in the Revised RI/FS Work Plan Addendum No 2. This Revised SAP summarizes the standards and procedures to be followed for surface water, soil, sediment, and pore water sample collection and analysis, and field quality control. Quality assurance and quality control (QA/QC) procedures and samples discussed in this Revised SAP are further detailed in the Quality Assurance Project Plan provided in Appendix C of the RI/FS Work Plan.

2.0 BACKGROUND

The GHSC Property includes an outdoor open firing range, shooting berms, a clubhouse, and a storage building constructed in 1950 (Pierce County Assessor-Treasurer's Office 2015). GHSC recently sold a portion of its property to the City of Gig Harbor for the Harbor Hill expansion project, which will connect Harbor Hill Drive and Burnham Drive Northwest by constructing a roadway across the former northern and western portions of the GHSC Property. The GHSC Property now comprises approximately 30.38 acres on Pierce County Parcel Nos. 222313073 and 0222314016 (Figure 2). The GHSC Property primarily is wooded, with the exceptions of an open grass field that comprises the shotgun firing range (shotgun range), buildings, and a bermed firing range for the use of rifles and pistols (rifle and pistol range) on the central and western portions of the GHSC Property. The use of the surrounding area is mixed commercial and residential. GHSC has been in operation since 1947.

An unnamed intermittent stream (herein referred to as the North Creek Tributary) traverses the eastern portion of the GHSC Property (Figure 2). The North Creek Tributary flows into North Creek, south of the GHSC Property. North Creek is a perennial salmon-bearing stream that flows to Gig Harbor in Puget Sound (Ecology 2008).

Current and historical operation on the GHSC Property may have resulted in releases to the environment of hazardous substances, including metals from shot, bullets, and bullet jackets and polycyclic aromatic hydrocarbons (PAHs) from commonly used clay targets.

Farallon conducted field sampling activities between January 2017 and June 2018 in accordance with the RI/FS Work Plan and the letter regarding Remedial Investigation Work Plan Addendum, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington dated December 22, 2016, from Ms. Moore and Mr. Jewett of Farallon to Mr. Morris of Ecology (Farallon 2016b). Additional subsurface investigation activities were conducted on the western and northeastern portions of the GHSC Property by HWA Geosciences Inc. between April and June 2017 to support the Harbor Hill expansion project being conducted by the City of Gig Harbor proximate to the northern and western portions of the GHSC Property.

Results of RI field activities conducted through October 2017 and the HWA Geosciences Inc. subsurface investigation activities conducted between April and June 2017 indicated the presence of total naphthalenes and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in soil on the GHSC Property at concentrations exceeding the screening levels established in the RI/FS Work Plan (Figure 2).

Arsenic, antimony, and lead were detected at concentrations exceeding screening levels in soil on the GHSC Property (Figure 3). Arsenic, antimony, and lead were detected at concentrations exceeding screening levels in sediments in the North Creek Tributary on the southeastern portion of the GHSC Property, and downstream of the GHSC Property proximate to the right-of-way of 97th Street Northwest (Figure 3). Farallon observed lead shot in forest duff on the ground surface

and in the stream bed of the North Creek Tributary proximate to sediment sample location SD-8 during sediment sampling activities conducted in September 2017.

The nature and extent of these hazardous substances, which have been identified as the constituents of potential concern (COPCs) for the RI, have not been adequately assessed. The COPCs are further discussed in the RI/FS Work Plan. The purpose of the RI is to characterize the nature and extent of COPCs resulting from current and historical GHSC operations, and to provide sufficient information to conduct a feasibility study to assess technically feasible cleanup alternatives for the GHSC Property.

3.0 SAMPLING PROCEDURES

This section details the sampling standards and procedures that will be applied in conducting the RI, presented below by potential media of concern. Soil and some sediment samples collected as part of the RI will be submitted to OnSite Environmental Inc. of Redmond, Washington under standard chain-of-custody protocols for analysis according to the procedures described below. Some sediment, surface water, and pore water samples will be submitted to ALS Environmental of Kelso, Washington. Sediment samples analyzed for acute and chronic toxic effects will be submitted to Northwestern Aquatic Sciences of Newport, Oregon. Samples will be submitted to the appropriate laboratories under standard chain-of-custody protocols for analysis according to the procedures described below.

An Ecology biologist will conduct a biological assessment of the wooded portions of the GHSC Property as part of a net environmental benefit analysis (NEBA). The purpose of the NEBA is to weigh the ecological costs and benefits of environmental and ecological restoration projects to prevent substantial injury to valuable habitat through the implementation of those projects. The Ecology biologist will evaluate the value of the habitat and make recommendations to the Ecology Site Manager, Mr. Morris, regarding potential boring locations that would complement the NEBA. Farallon will conduct field screening for lead in forest duff and soil on the eastern and southeastern portions of the GHSC Property as a part of the NEBA. These two lines of evidence will inform the selection of boring locations on the eastern and southeastern portions of the GHSC Property to facilitate depth-weighted receptor adjustments to complete the NEBA.

3.1 SOIL SAMPLING AND ANALYSIS – BORINGS

Farallon will engage public and private utility locators to clear proposed boring areas for utilities, and a drilling contractor to advance each boring to a total depth of 5 feet below ground surface (bgs) using direct-push drilling techniques or hand-held tooling, depending on accessibility and drilling conditions. Soil samples will be field screened for evidence of contamination, including odor, the presence of debris related to current and historical GHSC operations, and/or staining.

Shallow samples will be analyzed initially with the deeper samples retained in a sample refrigerator at the analytical laboratory for potential analysis. Deeper soil samples may be analyzed if COPC concentrations in shallow soil samples exceed applicable screening levels for soil as established in the RI/FS Work Plan. Soil samples will be retained at the laboratory until they are no longer needed for analysis or they exceed the holding time specified by the analytical method.

Northwest-Adjacent Property and Southern Right-of-Way of Sentinel Drive

Soil samples will be collected from two borings on the northwest-adjacent property, Pierce County Parcel No. 4003250960, and four borings on the southern right-of-way of Sentinel Drive, northeast of the GHSC Property (Figure 2), to provide lateral delineation of cPAHs in soil as directed by Ecology. The more distant borings in both areas are considered contingency borings that will be advanced in case additional lateral delineation is deemed necessary after the initial set of soil samples have been analyzed. Soil samples for these borings will be collected from the ground

surface and at depths of 0.5, 1.0, 2.0, 3.0, and 5.0 feet bgs consistent with previous scopes of work, which are based on aerial deposition of contaminants of potential concern. Soil samples will be containerized in specially cleaned, laboratory-provided glass sample containers for shipment to the laboratory for analysis as described in Section 3.1.2, Soil Sample Collection and Handling Procedures. Soil samples from the near borings will be analyzed using the vertically tiered approach described above. Similarly, soil samples from corresponding depths will be analyzed from the more distant contingency borings to provide lateral delineation, if needed.

Eastern and Southeastern Portions of the GHSC Property

Soil samples also will be collected from borings in the wooded areas on the eastern and southeastern portions of the GHSC Property to assess soil in these areas for potential metals contamination that could affect water quality and metals concentrations in the sediment of the North Creek Tributary. Collocated soil samples will be collected for cPAH analysis to refine the area impacted by clay targets on these portions of the GHSC Property. Forest duff present in the sampling area will be field screened for the presence of lead shot or clay shooting targets as described in the RI/FS Work Plan. Forest duff thickness at each boring location will be recorded as a positive number above ground surface on the boring log for each boring. Boring locations will be established after the biological assessment and field screening of soil and forest duff have been completed in the early stages of the NEBA.

3.1.1 Soil Sample Identification

The soil samples collected from borings advanced on the northwest-adjacent property, the southern right-of-way of Sentinel Drive, and the eastern and southeastern portions of the GHSC Property will be assigned unique sample identifiers, including the name of the boring, the depth at which the soil sample was collected in feet bgs, and the date the soil sample was collected (i.e., FB1-1.5-010118). The sample identifier will be placed on the sample label, the Field Report form, Sample Summary forms, and the Chain of Custody form.

3.1.2 Soil Sample Collection and Handling Procedures

Soil samples collected from the borings will be collected and handled in accordance with the procedures listed below:

- Clean Visqueen sheeting will be used to prevent sampling equipment and soil cores from contacting the ground surface.
- Soil descriptions will be recorded on boring logs for each boring, including at a minimum: sample depth or elevation, Unified Soil Classification System description, soil moisture, presence of lead shot or clay target fragments, and visual and olfactory indications of potential contamination. Forest duff thickness at each boring location, if present, will be recorded as a positive depth above ground surface on the boring log for each affected boring.
- Soil samples will be collected from the sample liner, split-spoon sampler, or decontaminated hand auger using decontaminated stainless-steel utensils and placed into a

decontaminated stainless-steel mixing bowl for homogenization. Non-dedicated sampling equipment will be decontaminated between uses, as appropriate.

- A representative portion of each soil sample will be spread across a clean sheet of white paper to inspect the soil for debris such as bullets, bullet fragments, metal shot, bullet jackets, and clay target fragments.
- The remaining soil will be placed in the stainless steel bowl and thoroughly homogenized using decontaminated stainless steel utensils until the soil is uniform in texture and color, placed into a specially cleaned laboratory-provided sample container, and stored on ice in a cooler for shipment to the laboratory under standard chain-of-custody protocols.

Soil samples collected for cPAH analysis will be analyzed by U.S. Environmental Protection Agency (EPA) Method 8270D/SIM. Soil samples collected for metals analysis will be analyzed for pH by EPA Method 9045D and for arsenic, antimony, and lead by EPA 6000 Series Methods.

Following evaluation of soil sampling results, an additional phase of investigation may be conducted to evaluate the nature and extent of contamination in soil if the lateral or vertical extent of contamination has not been adequately delineated.

3.2 FIELD SCREENING AND ANALYSIS OF FOREST DUFF AND SOIL FOR NEBA

Farallon will conduct field screening of forest duff and surface soil for lead shot on the eastern and southeastern portions of the GHSC Property as a part of the NEBA. During the field screening, the eastern and southeastern portions of the GHSC Property will be divided into a sampling grid comprising 100- by 100-foot grid spacings (Figure 3). Farallon Field Scientists will collect bulk samples of soil and forest duff from the center of each grid square. Each bulk sample will be weighed on a scale calibrated to the approximate weight of the bulk samples and sieved to recover the component of the bulk sample that was comprised of lead shot. The recovered lead shot will be reweighed on a scale calibrated to accurately read smaller weights. These data will be used to quantify the weight percent of lead shot that was present in the bulk sample.

3.2.1 Field Screening Sample Identification

The bulk forest duff and soil samples collected for field screening from the field screening grid on the eastern and southeastern portions of the GHSC Property will be assigned unique sample identifiers, including the name of the sample grid and the date the sample was collected (i.e., A1-010118 for a bulk sample collected from grid square A1 on January 1, 2018). The sample identifier will be placed on the sample label for the resealable plastic bag, the Field Report form, and the field screening sample summary forms.

3.2.2 Field Screening Sample Collection and Handling Procedures

Bulk forest duff and soil samples collected during the field screening process will be collected and handled in accordance with the procedures listed below:

- Soil descriptions will be recorded on the sample summary form for each evaluated grid square, including at a minimum: Unified Soil Classification System description of the samples, soil moisture, presence of lead shot or clay target fragments, and visual and olfactory indications of potential contamination. Forest duff thickness at each boring location, if present, will be recorded on the Field Report Form.
- Soil samples will be collected directly from the ground surface using decontaminated stainless-steel utensils and placed into a decontaminated 2.5-quart bucket. Any material piled above the top of the bucket will be scraped off with a ruler so that each bulk sample is exactly 2.5 quarts in volume.
- The bulk sample will be transferred from the bucket to a clean resealable gallon-sized plastic bag, labeled, and transported to the sample processing station.
- Each bulk sample will be weighed on a scale calibrated to the approximate weight of the bulk samples.
- Each bulk sample will then be individually processed through a series of sieves to remove coarse gravel and biological material and recover the lead shot. It is not practicable to use a shaking table to sieve the bulk samples, so the material will be washed through the sieves with water.
- After the bulk samples have been processed through the sieve, the lead shot will be recovered and reweighed on a scale calibrated to accurately read smaller weights, to quantify the amount of lead shot that was present in the bulk sample.

3.3 SURFACE WATER SAMPLING AND ANALYSIS

Surface water samples will be collected from sample locations SD-3 through SD-10 and the six new surface water and sediment sample locations shown on Figure 4 during the next first fall flush rain event in the fourth quarter of 2018, a high-flow event in the first quarter of 2019, and a low-flow event in the second or third quarter of 2019. Cations, anions, and other measurements of water chemistry will be collected during each surface water sampling event to allow modeling of the metal toxicity, metal speciation, and the protective effects of competing cations into predictions of metal bioavailability. Toxicity modeling for lead will be conducted using the biotic ligand model in accordance with the methods described in the *Biotic Ligand Model Windows Interface, Research Version 3.16.2.41: User's Guide and Reference Manual* dated November 2017, prepared by WindWard Environmental LLC (2017).

Additional surface water, soil, and sediment samples will be collected where surface water or stormwater enters the creek channels from natural channels observed in the field and from engineered stormwater conveyance systems to refine potential source areas inside and outside of the GHSC Property. If additional surface water, soil, and sediment samples are collected to identify

potential source areas, then those samples will be collected in accordance with the procedures outlined in the following sections of this Revised SAP:

- Surface water samples: Section 3.3, Surface Water Sampling and Analysis;
- Soil samples: Section 3.2, Field Screening and Analysis of Forest Duff and Soil for NEBA; and
- Sediment samples: Section 3.4, Sediment Sampling and Analysis of this Revised SAP.

3.3.1 Surface Water Sample Identification

The surface water samples will be assigned a unique sample identifier, including the name of the sample location, the medium sampled, and the date the sample was collected (e.g., SD-1-SW-010118). The sample identifier will be placed on the sample label, the Field Report form, Sample Summary forms, and the Chain of Custody form.

3.3.2 Surface Water Sample Collection and Handling Procedures

The surface water samples will be collected and handled in accordance with the procedures listed below:

- The samples will be collected by dipping the certified pre-cleaned laboratory-provided sample containers directly into the center of the stream channel flow using a swing sampler.
- Care will be taken not to handle the seal or inside cap of the container when the sample is placed into the containers, and the seals/caps will be secured.
- The sample container will be labeled with the medium (surface water), date, time sampled, sample identification and number, project name, project number, and sampler's initials.
- The sample will be logged on a Chain of Custody form and placed into a chilled cooler for transport to the laboratory under chain-of-custody protocols.
- Disposable sampling and health and safety supplies and equipment will be discarded in an appropriate waste receptacle.
- The depth of the flowing water at each surface water sample location will be measured, staked, and surveyed using a portable global positioning system (GPS) receiver, and plotted on a scaled drawing. Digital photographs of each location will be taken.

Surface water samples will be measured in the field for turbidity, temperature, pH, conductivity, and oxidation/reduction potential using a Yellow Springs Instrument multi-parameter meter during collection of the surface water samples. Surface water flow will be measured at each location using a Global Water FP-101/201 stream flow meter or similar device. Surface water samples submitted for laboratory analysis will include:

- Sulfate by ASTM International Method (ASTM) Method D516-07;
- Chloride by Standard Method (SM) 4500-Cl;

- Alkalinity by EPA Method 310.1;
- Calcium; magnesium; sodium; potassium; and total and dissolved arsenic, antimony, and lead by EPA Methods 200.7 and/or 200.8;
- Hardness by EPA Method 130.2 or SM 2340B;
- Sulfide by EPA Method 376.1;
- Dissolved organic carbon by SM 5310B; and
- Nitrate and nitrite by EPA 300.00 Series Methods.

The results from the surface water sampling will be evaluated; if COPCs are detected at concentrations exceeding preliminary screening levels, an additional phase of investigation will be required to evaluate the nature and extent of contamination in surface water.

3.4 SEDIMENT SAMPLING AND ANALYSIS

Sediment samples will be collected from the creek bed of the North Creek Tributary and the base of the stormwater pond on the northwestern portion of the GHSC Property (Figure 3) in accordance with the guidance provided in the *Sediment Cleanup User's Manual II* dated March 2015 and revised in December 2017, prepared by Ecology (2015). Sediment samples will be collected from four new locations along the North Creek Tributary on the eastern and southeastern portions of the GHSC property; two new locations along the North Creek Tributary, proximate to the bridge on 97th Street Northwest that crosses the North Creek Tributary, south of the GHSC Property; and one new location at the base of the stormwater pond on the northwestern portion of the GHSC Property (Figure 4). Previous sediment sample locations SD-6 through SD-9 will be resampled as a part of the proposed sediment sampling event to provide a temporal profile along the stream. Farallon will advance sediment cores that extend deeper than previous coring at existing sediment sample locations SD-7 and SD-8 to vertically delineate metals concentrations detected at these sample locations. Note that it is possible that this coring will extend beyond the sediment boundary into the underlying soil depending on the sediment thickness at these sample locations. Additional sediment samples will be collected where surface water or stormwater enters the creek via natural channels or engineered conveyance systems to refine potential source areas for detections of contaminants in sediment samples collected from within the creek channels.

The sediment samples will be collected proximate to the corresponding surface water samples using a sediment hand-corer with a Lexan sample liner or a decontaminated stainless steel trowel as described in Section 3.3.2, Sediment Sample Collection and Handling Procedures.

3.4.1 Sediment Sample Identification

The sediment samples will be assigned a unique sample identifier, including the name of the sample location, the medium sampled, the depth interval at which the sediment sample was collected in inches bgs, and the date the sediment sample was collected (e.g., SD1-SS-0-6-010118). Sample media include surface sediment (SS), which consists of grab surface sediment

samples obtained using a decontaminated stainless steel trowel when the stream bed is dry, and sediment cores (SC), which will be collected using a sediment hand-corer with a Lexan liner when overlying water is present. If coring at sediment sample locations SD-7 and SD-8 extend into the soil, then soil nomenclature discussed in Section 3.1.1, Soil Sample Identification, will be used to identify those samples. The sample identifier will be placed on the sample label, the Field Report form, Sample Summary forms, and the Chain of Custody form.

3.4.2 Sediment Sample Collection and Handling Procedures

The sediment samples collected from the creek bed of the North Creek Tributary will be collected and handled in accordance with the procedures listed below:

- Sediment samples will be collected during low-flow or dry conditions if possible, but not so long after a rainfall that the streambed and surrounding soil cannot be differentiated.
- If there is overlying water at the sample location, sediment samples will be collected using a sediment hand-corer and the water will be carefully siphoned off the top of the sediment sample immediately after collection, taking care to not lose any overlying fine-grained material.
- If there is no overlying water at the sample location (e.g., intermittent stream locations), sediment samples will be collected using a stainless steel trowel.
- Lithological information will be logged during each sampling event, including at a minimum: sample depth or elevation, Unified Soil Classification System description, presence of debris and/or organisms, sediment moisture, and visual and olfactory indications of potential contamination.
- The samples will be collected from the sample liner or decontaminated stainless steel sampling tip using decontaminated stainless steel utensils, placed into a decontaminated stainless steel mixing bowl, and thoroughly homogenized until the matrix is uniform in texture and color prior to being placed in specially cleaned laboratory-provided sample containers. Reusable non-dedicated sampling equipment will be decontaminated between uses, as appropriate.
- The homogenized sample will be placed into certified pre-cleaned laboratory-provided sample jars for the specified analyses.
- Care will be taken not to handle the seal or inside cap of the jar when the sample is placed into the sample containers, and the seals/caps will be secured.
- The sample jar will be labeled with the medium (sediment), date, time sampled, sample identification, project name, project number, and sampler's initials.
- The sample will be logged on a Chain of Custody form and placed into a chilled cooler for transport to the laboratory under standard chain-of-custody protocols.

- Disposable sampling and health and safety supplies and equipment will be discarded in an appropriate waste receptacle.
- The location of each sediment sample will be staked, surveyed using a GPS receiver, and plotted on a scaled drawing. Digital photographs of each location will be taken.

If the sediment sample location consists of a rocky streambed, Farallon Field Scientists will search for natural depositional areas to sample where finer-grained sediments have settled as those sediments will contain the highest concentrations of contaminants, and may also be areas where shot has come to rest. If there is any standing water, appropriate sampling procedures and equipment will be used to ensure that an intact sample is collected and that surface fines are not washed away. If there are no areas without mixed rocks and fines, Farallon Field Scientists will select sampling locations that appear to contain the highest ratio of fines to mixed rocks in the vicinity of the planned sample locations.

If the sampling location is not easily distinguished from the surrounding soil and/or has deep sediments, the total sampling depth will be selected based on the following:

- Depth of any organisms observed;
- Depth of plant roots observed; and
- Depth of obvious changes in the soil (e.g., horizons, soil types, anaerobic versus aerobic).

An initial test pit may be hand-dug proximate to each planned sediment sampling location to determine the total sediment sample depth based on the depth of the biologically active zone and soil layers observed in the test pit, with the rationale recorded in the field notebook. Multiple layers will be collected for analysis as practicable at each sediment sampling location.

Sediment samples from the North Creek Tributary will be analyzed for the following:

- Arsenic, antimony, and lead by EPA 6000 Series Methods;
- Simultaneously extracted metals (including cadmium, copper, lead, nickel, and zinc) and acid volatile sulfides by EPA Method EPA-821-R-91-100;
- Total organic carbon by EPA Method 9060A; and
- Particle-size distribution by Puget Sound Estuary Protocols (EPA – Region 10 1996) and/or ASTM Method D422.

Additional sediment samples will be collected and analyzed for acute and chronic toxic effects on aquatic life from three sample locations that are anticipated to span the range of elevated lead concentrations exceeding the sediment cleanup objective of 360 milligrams per kilogram (i.e., downrange of the four most commonly used shooting stations on the shotgun range) (Figure 3). The Sediment Management Standards, as set forth in WAC 173-204-563(3)(d), require testing with three endpoints, including acute and chronic toxicity testing and one non-lethal endpoint such as organism growth. Sediment samples for toxicity testing will be analyzed as follows.

Acute Effects

- Hyalella azteca: 10-day mortality by ASTM Method E1706-05 (2010) and/or EPA Method 100.1;
- Chironomus dilutus: 10-day mortality by ASTM Method E1706-05 (2010) and/or EPA Method 100.2; and
- Chironomus dilutus: 10-day growth by ASTM Method E1706-05 (2010) and/or EPA Method 100.2.

Chronic Effects

- Hyalella azteca: 28-day mortality by EPA Method 100.4;
- Hyalella azteca: 28-day growth by EPA Method 100.4;
- Chironomus dilutus: 20-day mortality by EPA Method 100.5; and
- Chironomus dilutus: 20-day growth by EPA Method 100.5.

Sediment and/or soil samples collected from the base of the stormwater pond on the northwestern portion of the GHSC Property at depths of 18 inches and 2, 3, and 5 feet below the base of the stormwater pond will be handled in accordance with the procedures listed below:

- For safety reasons, the sediment sample will be collected during a dry period in the third quarter of 2018, when the stormwater level in the pond is at its lowest.
- A small boat may be used to facilitate sediment sampling of the stormwater pond if the depth of stormwater is greater than knee-high for the field scientists.
- A 5-foot core of sediment and soil will be collected from the center of the base of the stormwater pond using a sediment hand-corer equipped with a Lexan liner to provide additional media for vertical delineation, if needed. Multiple sediment and soil cores may be collected to provide sufficient sample material at each sample interval.
- Overlying water will be carefully siphoned off the top of the sediment sample immediately after collection, taking care to not lose any overlying fine-grained material.
- Lithological information will be logged during each sampling event, including at a minimum: sample depth or elevation, Unified Soil Classification System description, presence of debris and/or organisms, sediment moisture, and visual and olfactory indications of potential contamination.
- The sample will be collected from the sample liner or using decontaminated stainless steel utensils, placed into a decontaminated stainless steel mixing bowl, and thoroughly homogenized until the matrix is uniform in texture and color prior to being placed in specially cleaned laboratory-provided sample containers. Reusable non-dedicated sampling equipment will be decontaminated between uses, as appropriate.

- Care will be taken not to handle the seal or inside cap of the jar when the sample is placed into the sample containers, and the seals/caps will be secured.
- The sample jar will be labeled with the medium (sediment), date, time sampled, sample identification, project name, project number, and sampler's initials.
- The sample will be logged on a Chain of Custody form and placed into a chilled cooler for transport to the analytical laboratory under standard chain-of-custody protocols.
- Disposable sampling and health and safety supplies and equipment will be discarded in an appropriate waste receptacle.
- The location of each sediment sample will be staked, surveyed using a GPS receiver, and plotted on a scaled drawing. Digital photographs of each location will be taken.

Sediment and/or soil samples collected from the base of the stormwater pond and below will be analyzed for the following parameters used to assess functionality and/or concentrations of COPCs:

- Arsenic, antimony, and lead by EPA 6000 Series Methods;
- PAHs by EPA Method 8270D/SIM;
- Cation exchange capacity by EPA Method 9081;
- Organic content by ASTM Method D2974; and
- Grain-size distribution by ASTM Method D422.

3.5 PORE WATER SAMPLING AND ANALYSIS

If there are data gaps after the surface water and sediment samples have been analyzed and evaluated, pore water samples may be collected from previous surface water and sediment sample locations SD-6 through SD-9; four new surface water and sediment sample locations on the eastern and southeastern portions of the GHSC Property; and two new surface water and sediment sample locations along the North Creek Tributary, proximate to the bridge on 97th Street Northwest that crosses the North Creek Tributary, south of the GHSC property (Figure 3). Pore water samples will be collected during a period of low flow in the North Creek Tributary using methodology similar to that described in *High-Resolution Porewater Sampling Near the Groundwater/Surface Water Interface* dated April 2009, prepared by Ecology. This method uses a stainless steel M.H.E Push Point Sampler coupled with a pump or syringe to extract pore water from the sample locations. Pore water samples will be collected, containerized, and transported to the laboratory as described in Section 3.4.2, Pore Water Sample Collection and Handling Procedures.

3.5.1 Pore Water Sample Identification

The pore water samples will be assigned a unique sample identifier, including the name of the sample location, the medium sampled, and the date the pore water sample was collected (e.g., SD1-

PW-010118). The sample identifier will be placed on the sample label, the Field Report form, Sample Summary forms, and the Chain of Custody form.

3.5.2 Pore Water Sample Collection and Handling Procedures

The sediment samples will be collected and handled in accordance with the procedures listed below:

- Sediment pore water will be collected using a pore water extraction device where the sampling end of the device is inserted into the sediment to the desired depth, a guard rod protecting the screen is removed, and pore water is extracted using a syringe or peristaltic pump;
- Because wading may disrupt bottom sediments and bias results, the field sampler will enter the area downstream of the sampling location and collect the sample while facing upstream;
- Reusable sampling equipment, including the extracting device, will be decontaminated between sample intervals by triple rinsing using a pressure sprayer and laboratory-provided distilled deionized water;
- Samples will be collected after purging and discarding a minimum of 1 to 2 times the interior volume of the sampling system;
- Each sample location will be identified with a pin for surveying the location using GPS;
- The sample container will be labeled with the medium (pore water), date, time sampled, sample identification, project name, project number, and sampler's initials;
- The sample will be logged on a Chain of Custody form and placed into a chilled cooler for transport to the laboratory under chain-of-custody protocols; and
- Disposable sampling and health and safety supplies and equipment will be discarded in an appropriate waste receptacle.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

The QA/QC procedures presented in this section are in accordance with the Quality Assurance Project Plan provided in Appendix C of the RI/FS Work Plan.

4.1 EQUIPMENT DECONTAMINATION PROCEDURES

Reusable non-dedicated equipment used in the collection of and in direct contact with soil, surface water, pore water, and/or sediment samples will be decontaminated prior to arrival at the GHSC Property, between samples collected, upon transition between sample locations, and upon exit from the GHSC Property as described below. The equipment will be:

- Rinsed and pre-cleaned with potable or distilled water;
- Washed in a solution of laboratory-grade non-phosphate–based soap (i.e., Liquinox);
- Rinsed three times with potable or distilled water;
- Rinsed three times with laboratory-grade distilled or deionized water; and
- Air dried.

If decontaminated equipment is not immediately used, it will be wrapped in aluminum foil (dull side facing the equipment) to prevent re-contamination.

Field technicians will wear disposable powder-free nitrile gloves during sample collection and processing. The gloves will be replaced between each sample interval to minimize the potential for cross-contamination of samples.

4.2 FIELD QUALITY CONTROL SAMPLES

Field quality control samples for this investigation will include field split samples, and equipment wipes and wipe blanks for soil and sediment samples.

4.2.1 Field Duplicate Samples

Field duplicate samples will be collected and analyzed to assess the variability associated with sample processing. Blind field duplicate samples will be collected at a minimum frequency of 1 for every 20 field samples processed for each sample medium. One field duplicate sample will be collected from each sample medium with fewer than 20 samples.

4.2.2 Equipment Wipes and Wipe Blanks

Equipment wipe samples will be collected to help identify possible contamination from the sampling environment or from sampling equipment. Equipment wipe samples will consist of clean ashless filter papers provided by the analytical laboratory, and will be collected at a minimum frequency of 1 for every 20 soil or sediment samples processed for each type of reusable non-dedicated equipment in direct contact with the soil and/or sediment being collected. Equipment

wipes will be prepared by wiping down the decontaminated sampling equipment with the filter paper between sampling stations.

One equipment wipe sample will be prepared for each type of analysis conducted, because the equipment can be wiped down only once for each piece of filter paper. This procedure ensures that the filter wipe result represents the most-conservative estimate of cross-contamination for each analysis type. Filter papers will be stored in pre-cleaned glass jars provided by the analytical laboratory. Filter papers will not be stored in plastic bags.

Wipe blanks will be submitted to the analytical laboratory for evaluation of potential background concentrations present in the filter papers used for the equipment wipes. Wipe blanks will be collected at a minimum frequency of one for each lot number of filter papers used for collecting the equipment wipes. Wipe blanks will be archived pending receipt of analytical results for the equipment wipe samples.

4.2.3 Deionized or Distilled Water Blanks

One deionized or distilled water blank will be collected for each container of deionized distilled water to evaluate potential background concentrations present in the laboratory-grade deionized distilled water used to decontaminate the equipment.

5.0 REFERENCES

Farallon Consulting, L.L.C. (Farallon). 2016a. *Final Remedial Investigation/Feasibility Study Work Plan, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington*. August 30.

_____. 2016b. Letter Regarding Remedial Investigation Work Plan Addendum, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington. From Jennifer L. Moore and Peter Jewett. To Matthew Morris, Washington State Department of Ecology. December 22.

_____. 2018. Revised Remedial Investigation/Feasibility Study Work Plan Addendum No. 2, Gig Harbor Sportsman's Club, 9721 Burnham Drive Northwest, Gig Harbor, Washington. From Jennifer L. Moore and Peter Jewett. To Matthew Morris, Washington State Department of Ecology. July 5.

Pierce County Assessor-Treasurer's Office. 2015. Current Property Appraisal Report for Parcel Nos. 0222313044 and 0222314016. <http://epip.co.pierce.wa.us/cfapps/atr/epip/search.cfm>. (August 11, 2015.)

U.S. Environmental Protection Agency (EPA) – Region 10. 1996. *Recommended Protocols for Measuring Conventional Sediment Variables in Puget Sound*. March. Revised April 2003.

Washington State Department of Ecology (Ecology). 2008. *Lead and Copper Concentrations in North Creek, Gig Harbor*. Publication No. 08-03-038. December.

_____. 2009. *High-Resolution Porewater Sampling Near the Groundwater/Surface Water Interface.* Publication No. 09-03-017. April.

_____. 2015. *Sediment Cleanup User's Manual II (SCUM II)*. Publication No. 12-09-057. March. Revised December 2017.

_____. 2018. Letter Regarding Remedial Investigation/Feasibility Study Work Plan Addendum No. 2. From Matthew Morris. To Jennifer L. Moore, Farallon Consulting, L.L.C. May 23.

WindWard Environmental LLC. 2017. *Biotic Ligand Model Windows Interface, Research Version 3.16.2.41: User's Guide and Reference Manual*. November.

6.0 LIMITATIONS

6.1 GENERAL LIMITATIONS

The conclusions contained in this report/assessment are based on professional opinions with regard to the subject matter. These opinions have been arrived at in accordance with currently accepted hydrogeologic and engineering standards and practices applicable to this location. The conclusions contained herein are subject to the following inherent limitations:

- **Accuracy of Information.** Farallon obtained, reviewed, and evaluated certain information used in this report/assessment from sources that were believed to be reliable. Farallon's conclusions, opinions, and recommendations are based in part on such information. Farallon's services did not include verification of its accuracy or authenticity. Should the information upon which Farallon relied prove to be inaccurate or unreliable, Farallon reserves the right to amend or revise its conclusions, opinions, and/or recommendations.
- **Reconnaissance and/or Characterization.** Farallon performed a reconnaissance and/or characterization of the GHSC Property that is the subject of this report/assessment to document current conditions. Farallon focused on areas deemed more likely to exhibit hazardous materials conditions. Contamination may exist in other areas of the GHSC Property that were not investigated or were inaccessible. Activities at the GHSC Property beyond Farallon's control could change at any time after the completion of this report/assessment.

For the foregoing reasons, Farallon cannot and does not warrant or guarantee that the GHSC Property is free of hazardous or potentially hazardous substances or conditions, or that latent or undiscovered conditions will not become evident in the future. Farallon's observations, findings, and opinions can be considered valid only as of the date of the report hereof.

This report/assessment has been prepared in accordance with the contract for services between Farallon and GHSC, and currently accepted industry standards. No other warranties, representations, or certifications are made.

6.2 LIMITATION ON RELIANCE BY THIRD PARTIES

Reliance by third parties is prohibited. This report/assessment has been prepared for the exclusive use of GHSC to address the unique needs of GHSC at the GHSC Property at a specific point in time. Services have been provided to GHSC in accordance with a contract for services between Farallon and GHSC, and generally accepted environmental practices for the subject matter at the time this report was prepared.

No other party may rely on this report unless Farallon agrees in advance to such reliance in writing. Any use, interpretation, or reliance upon this report/assessment by anyone other than GHSC is at the sole risk of that party, and Farallon will have no liability for such unauthorized use, interpretation, or reliance.

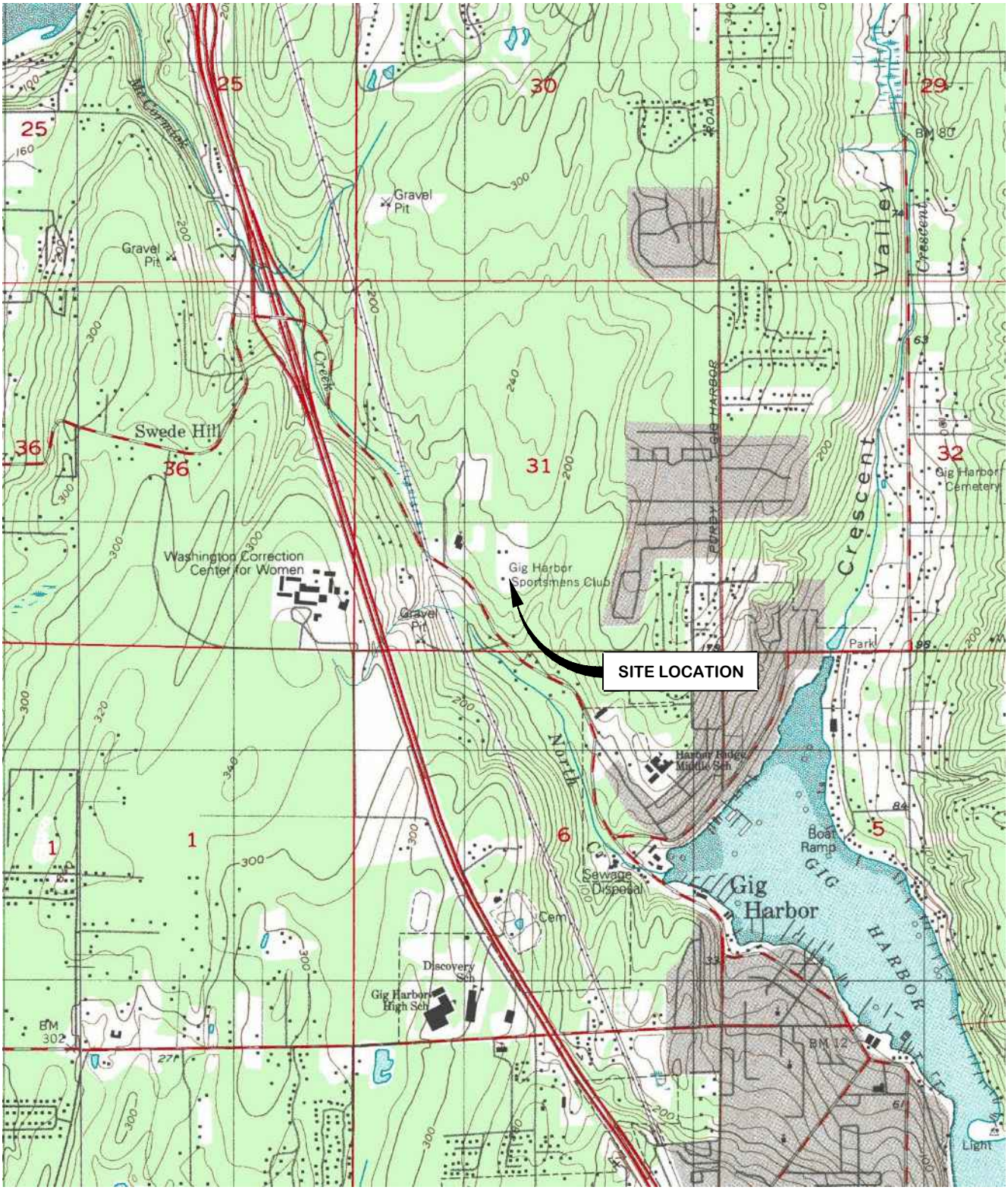
Do not rely on this report/assessment if:

- It was not prepared for you;
- It was not prepared for your project;
- It was not prepared for your specific property; or
- It was not prepared under an approved scope of work for which you are under contract with Farallon.

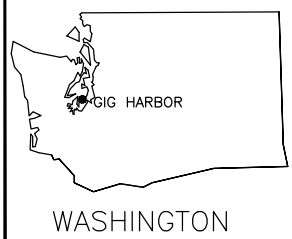
FIGURES

REVISED SAMPLING AND ANALYSIS PLAN NO. 2
Gig Harbor Sportsman's Club
9721 Burnham Drive Northwest
Gig Harbor, Washington

Farallon PN: 1303-001



REFERENCE: 7.5 MINUTE USGS QUADRANGLE GIG HARBOR, WASHINGTON. DATED 1996



FARALLON CONSULTING
Quality Service for Environmental Solutions | farallonconsulting.com

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Bend | Baker City

California
Oakland | Folsom | Irvine

FIGURE 1

SITE VICINITY MAP
GIG HARBOR SPORTSMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON

FARALLON PN: 1303-001

Drawn By: JJ | Checked By: JM | Date: 06/27/2018 | Disk Reference: 1303-001

STORMWATER DETENTION PONDS
HARBOR HILL DRIVE
SENTINEL DRIVE
4003250960
FB-01
FB-03
0.0' | 0.011 | 0.024
HB-21
0.0' | <0.024 | 0.0060
HB-22
0.0' | <0.0252 | 0.055
1.0' | <0.0234 | 0.0059
2.0' | <0.0234 | 0.0059
3.5' | <0.0216 | 0.0054
HB-23
0.0' | <0.0246 | 0.015
HB-20
0.0' | <0.0252 | 0.013
FB-04
HB-24
0.0' | <0.0246 | 0.018
FB-02
0.0' | 0.045 | 0.051
HB-19
0.0' | <0.0249 | 0.025
HB-25
0.0' | 0.052 | **0.21**
FB-05
FB-09
FB-06
0.0' | 0.103 | **1.15**
0.5' | 0.041 | **0.95**
1.0' | 0.032 | **1.35**
3.6' | 0.0085 | 0.007
FB-07
0.0' | 0.071 | **4.9**
0.5' | <0.0216 | 0.027
1.0' | <0.0216 | 0.0054
FB-08
0.0' | <0.0288 | **0.20**
3.9' | <0.0231 | 0.0058
HB-26
0.0' | <0.0279 | **0.22**
HB-27
0.0' | <0.0267 | 0.040
HB-18
0.0' | 0.039 | 0.037
FB-10
0.5' | 1.1 | **282**
3.3' | <0.0219 | 0.034
FB-11
0.0' | <0.0246 | 0.046
STORMWATER POND
FB-13
0.0' | <0.0252 | 0.062
FB-15
0.0' | <0.0258 | 0.036
FB-16
0.0' | <0.0246 | 0.0066
FB-12
0.5' | <0.45 | **14.7**
3.5' | <0.0216 | 0.0054
FB-14
0.0' | **5.48** | **681**
1.0' | <0.0225 | 0.0057
2.0' | <0.0222 | 0.0056
3.7' | <0.0222 | 0.0056
HB-1
0.2' | <0.0246 | 0.0219
FB-17
0.5' | 0.0419 | **0.113**
3.9' | <0.0225 | 0.0057
FB-18
0.5' | <0.45 | **10.1**
3.8' | <0.0219 | **0.103**
RIFLE AND PISTOL RANGE
HB-2
0.2' | <0.0240 | 0.0255
FB-19
0.5' | <0.45 | **9.2**
2.9' | <0.0219 | 0.0055
FB-20
0.5' | 0.38 | **116**
3.1' | <0.0222 | 0.0060
FB-21
0.5' | 0.58 | **63**
3.8' | <0.0216 | 0.038
HB-3
0.2' | <0.0249 | **0.122**
0.6' | <0.0243 | **0.125**
1.2' | <0.0237 | 0.027
2.1' | <0.0237 | 0.016
FB-22
0.0' | 0.014 | **0.64**
3.0' | <0.0225 | 0.0057
FB-23
0.0' | 0.301 | **21.1**
0.5' | <0.132 | **1.67**
1.0' | <0.255 | **3.0**
2.9' | <0.0252 | 0.0063
FB-24
0.5' | **8.2** | **1203**
1.0' | <0.45 | **10.2**
2.0' | <0.0231 | 0.0058
3.1' | <0.0222 | 0.0061
MW-01
0.0' | <0.0234 | 0.016
0.5' | <0.0222 | 0.0056
FB-25
0.0' | <0.0246 | 0.0070
HB-11
10.5' | <0.0213 | 0.0054
15.0' | <0.0222 | 0.0056
HB-4
0.2' | <0.0243 | 0.03
SHOTGUN RANGE
HB-5
0.2' | <0.0237 | 0.096
HB-6
0.2' | <0.0255 | **0.153**
0.6' | <0.0228 | 0.013
1.3' | <0.0234 | 0.006
2.0' | <0.0231 | 0.0058
SHOT CURTAIN
FB-37
HB-12
10.5' | <0.0213 | 0.0054
15.0' | <0.0222 | 0.0056
FB-26
FB-38
0.0' | <0.42 | **10.2**
2.9' | <0.0234 | 0.0059
HB-7
0.2' | <0.0249 | **0.41**
0.7' | <0.0237 | 0.059
FB-27
0.0' | <0.0240 | **0.164**
3.7' | <0.0213 | 0.0054
FB-28
0.0' | 0.117 | **9.2**
0.5' | <0.0228 | **0.20**
1.0' | <0.0228 | 0.0058
FB-29
0.5' | 1.11 | **99**
1.0' | 0.43 | **37**
2.0' | <0.0243 | **0.41**
3.1' | <0.0249 | 0.036
MW-02
MW-03
HB-13
10.5' | <0.021 | 0.0053
15.5' | <0.0252 | 0.0063
FB-30
HB-8
0.2' | 0.014 | **0.59**
0.7' | <0.0231 | **0.53**
1.1' | <0.0234 | **0.23**
2.0' | <0.0237 | **0.24**
FB-39
1.0' | 4.35 | **387**
5.0' | <0.132 | **2.3**
10.0' | <0.135 | **1.00**
15.0' | <0.0225 | 0.044
20.0' | 0.43 | **42.7**
25.0' | <0.0219 | 0.014
FB-36
HB-15
0.5' | <0.0246 | 0.020
1.5' | <0.0246 | 0.0062
3.5' | <0.0228 | 0.0057
HB-14/14D
0.5' | 0.325 | **22.9**
1.5' | <0.0255 | **0.43**
3.5' | 0.106 | **1.09**
6.0' | <0.0228 | 0.0057
8.0' | <0.0228 | 0.0057
FB-31
0.0' | 0.45 | **37**
1.0' | <0.0225 | 0.065
2.0' | <0.0216 | 0.016
3.5' | <0.0219 | 0.020
HB-16
0.5' | <0.0246 | **0.22**
1.5' | 0.0099 | **0.16**
3.5' | <0.0273 | 0.0069
MW-04
0.5' | 0.11 | **5.0**
1.0' | <0.0237 | **0.122**
2.0' | <0.0222 | **0.50**
5.0' | <0.0234 | **0.115**
10.0' | 0.045 | **0.43**
20.0' | 0.0164 | **1.6**
HB-17
1.5' | <0.0231 | 0.0058
3.0' | <0.0231 | 0.035
10.5' | <0.0246 | 0.0062
15.5' | <0.0222 | 0.0056
FB-32
0.0' | <0.0252 | **0.196**
2.5' | <0.0216 | 0.0054
FB-33
0.0' | <0.0240 | 0.006
FB-40
0.0' | <0.0210 | 0.021
FB-41
0.0' | <0.0219 | 0.012
1.0' | 0.0177 | 0.0053
FB-34
BURNHAM DRIVE NORTHWEST
FB-35
97th STREET NORTHWEST
NORTH CREEK TRIBUTARY
NORTH CREEK

LEGEND

- PROPOSED BORING LOCATION
- BORING
- BACKGROUND BORING
- MONITORING WELL
- HWA SOIL SAMPLE LOCATION
- STREAM
- INTERMITTENT STREAM
- APPROXIMATE PROPERTY BOUNDARY
- PIERCE COUNTY PARCEL BOUNDARY
- 4003250960 PIERCE COUNTY PARCEL NUMBER

NOTES:
SOIL SAMPLE ANALYTICAL RESULT =
DEPTH FEET BGS | TOTAL NAPHTHALENES | cPAH TEC
SOIL RESULTS IN MILLIGRAMS PER KILOGRAM

BOLD = CONCENTRATIONS EXCEED MTCA METHOD A CLEANUP LEVEL
< = SOIL SAMPLE CONCENTRATIONS NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
BGS = BELOW GROUND SURFACE
cPAH = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBON
TEC = TOXIC EQUIVALENT CONCENTRATION

N

0 90 180
SCALE IN FEET

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE
2. FIGURES WERE PRODUCED IN COLOR.
GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Bend | Baker City

California
Oakland | Folsom | Irvine

Quality Service for Environmental Solutions | farallonconsulting.com

FIGURE 2

SOIL PAH RESULTS AND
PROPOSED BORING LOCATIONS
GIG HARBOR SPORTMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON

FARALLON PN: 1303-001

Drawn By: tperrin | Checked By: JM | Date: 6/27/2018 | Disc Reference:

Path: Q:\Projects\1303 GigHarbor\Mapfiles\Figures 2_3_Soil_Metals\EcoSubmit2018June_FIG02_SoilPAHS_propborloc.mxd

FB-01
0.0' | — | <14 | — | 17
0.5' | — | <13 | — | 14

FB-02
0.0' | --- | 16 | --- | 130
0.5' | --- | 15 | --- | 230
3.6' | --- | <11 | --- | <5.4

FB-03
0.0' | — | 17 | — | 72
0.5' | — | <13 | — | 25
3.7' | — | <11 | — | <5.7

STORMWATER DETENTION PONDS

FB-04
0.0' | — | <20 | — | 100
0.5' | — | <11 | — | <5.6
3.7' | — | <11 | — | <5.7

FB-05
0.0' | — | <12 | — | 9.3
0.5' | — | <11 | — | 14
2.8' | — | <14 | — | 7.3

FB-06
0.0' | **40** | <16 | 10,000 | **2,400**
0.5' | **2,100** | **22** | 12,000 | **4,000**
3.6' | <6.0 | <12 | 21,000 | 14

FB-07
0.0' | — | <12 | — | 31
0.5' | — | <11 | — | 12

FB-08
0.0' | — | <14 | — | 34
0.5' | — | <14 | — | 37

FB-09
0.0' | — | <13 | — | 11

SD-10
0-0.3' | — | 2.7 | — | 8.5
0.3-0.8' | — | 5.4 | — | 16

FB-10
0.5' | **170** | <11 | 16,000 | **10,000**
3.3' | <5.5 | <11 | 12,000 | <5.5

FB-11
0.0' | — | <12 | — | 83
0.5' | — | <12 | — | 52
3.4' | — | <11 | — | <5.5

FB-12
0.5' | 7.6 | <11 | 12,000 | **680**
3.5' | — | <11 | — | <5.4

FB-13
0.0' | — | <13 | — | 96
0.5' | — | <12 | — | 29

FB-14
0.0' | — | <12 | — | 56
0.5' | — | <11 | — | 27

FB-15
0.0' | 13 | <13 | 22,000 | **1,800**
0.5' | 7.2 | <13 | 23,000 | **620**
3.8' | — | <12 | — | <5.9

FB-16
0.0' | — | <12 | — | <6.2

FB-17
0.5' | 9.9 | <11 | 16,000 | **860**
3.9' | — | <11 | — | <5.6

FB-18
0.5' | 17 | <11 | 19,000 | **530**
3.8' | — | <11 | — | <5.5

FB-19
0.5' | **49** | <11 | 17,000 | **1,500**
2.9' | <5.5 | <11 | 9,500 | <5.5

FB-20
0.5' | — | <11 | — | 89

FB-21
0.5' | 5.7 | <11 | 15,000 | **14,000**
3.8' | — | <11 | — | <5.4

FB-22
0.0' | — | <12 | — | 47
0.5' | — | <13 | — | 43
3.0' | — | <11 | — | <5.7

FB-23
0.0' | — | <14 | — | 79
0.5' | — | <13 | — | 94

FB-24
0.5' | — | <12 | — | 55
1.0' | — | <11 | — | 90

FB-25
0.0' | — | <12 | — | 65

FB-26

FB-27
0.0' | — | <12 | — | 9.7
0.5' | — | <12 | — | <5.8
3.7' | — | <11 | — | <5.3

FB-28
0.0' | 17 | <15 | 16,000 | **370**
0.5' | — | <11 | — | 12

FB-29
0.5' | — | <11 | — | 13
1.0' | — | <11 | — | 11

FB-30
0.0' | — | <11 | — | 16
0.5' | — | <12 | — | 62
3.7' | — | <11 | — | <5.5

FB-31
0.0' | — | <13 | — | 58
0.5' | — | <11 | — | <5.6

FB-32
0.0' | — | <13 | — | 29
0.5' | — | <11 | — | 6.6

FB-33
0.0' | — | <12 | — | 8.5

FB-34
0.5' | — | <12 | — | <6.0

FB-35
0.0' | — | <13 | — | 15
0.5' | — | <12 | — | 10

FB-36
0.0' | — | <11 | — | <5.4
0.5' | — | <11 | — | <5.4

FB-37
0.0' | — | <11 | — | 6.1
0.5' | — | <11 | — | <5.4

FB-38
0.0' | — | <11 | — | 74

FB-39

FB-40

FB-41

FS-NCS-1
NA | — | 4.2 | — | **300**

FS-NCS-2
NA | — | 8.3 | — | 240

FS-NCS-3
NA | — | 8.1 | — | 240

FS-NCS-4
NA | — | 6.1 | — | 220

FS-NCS-5
NA | — | **17** | — | **500**

MW-01
0.0' | 13 | <12 | 5,700 | **800**
0.5' | — | <11 | — | 73
50.0' | — | <11 | — | <5.5

MW-02
0.0' | 870 | 71 | 16,000 | 10,000
0.5' | 64 | <12 | 19,000 | 870
1.0' | 320 | 270 | 16,000 | 49,000
4.6' | <5.4 | <11 | 12,000 | <5.4
10.0' | <5.4 | <11| 13,000 | <5.4
30.0' | | <11 | | <5.6

MW-03
0.0' | — | <11 | — | 13
0.5' | — | <12 | — | 13
45.0' | — | <12 | — | <5.9

MW-04
0.5' | — | <12 | — | 30
1.0' | — | <12 | — | <5.9
2.0' | — | <11 | — | <5.6
50.0' | — | <11 | — | <5.7

SD-1
NA | — | — | — | 73

SD-2
NA | — | — | — | **420**

SD-6
0-0.3' | 3.8 | 10 | 11,000 | **380**
0.3-0.7' | — | 4.9 | — | 120

SD-7
0-0.3' | 13 | 9.9 | 13,000 | **590**
0.3-1.0' | 4.8 | 14 | 10,000 | **810**
1.0-1.5' | 2.9 | 2.9 | 7,100 | **380**

SD-8
0-0.3' |**1,100** | **270** | 15,000 | **44,000**
0.3-0.7' | **3,200** | **340** | 17,000 | **20,000**
0.7-1.0' | **4,800** | **510** | 15,000 | **28,000**

SD-9
0-0.3' | — | 5.3 | — | 18
0.75-0.9' | — | 2.9 | — | <6.1

HB-1, HB-2, HB-3, HB-4, HB-5, HB-6, HB-7, HB-8, HB-11, HB-12, HB-13, HB-14/14D, HB-15, HB-16, HB-17, HB-18, HB-19, HB-20, HB-21, HB-22, HB-23, HB-24, HB-25, HB-26, HB-27

STORMWATER POND

RIFLE AND PISTOL RANGE

SHOTGUN RANGE

SHOT CURTAIN

HARBOR HILL DRIVE

SENTINEL DRIVE

BURNHAM DRIVE NORTHWEST

97th STREET NORTHWEST

NORTH CREEK TRIBUTARY

NORTH CREEK

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

A B C

LEGEND

- PROPOSED SURFACE WATER AND/OR SEDIMENT SAMPLE LOCATION
- BORING
- BACKGROUND BORING
- MONITORING WELL
- SEDIMENT SAMPLE (FARALLON 2017)
- SEDIMENT SAMPLE (FARALLON 2014)
- SEDIMENT SAMPLE (FLOYD|SNIDER 2014)
- HWA SOIL SAMPLE LOCATION
- SEDIMENT SAMPLE LOCATION TO BE ANALYZED FOR ACUTE AND CHRONIC TOXIC EFFECTS
- APPROXIMATE PROPERTY BOUNDARY
- PIERCE COUNTY PARCEL BOUNDARY.
- A / 1 FIELD SCREENING GRID (100' x 100') AND GRID IDENTIFIER
- PROPOSED BORING LOCATION
- SURFACE WATER SAMPLE LOCATIONS
- OUTFALL
- STORM DITCH
- CONVEYANCE PIPING
- CULVERT
- STREAM
- INTERMITTENT STREAM

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

NOTES:
SOIL SAMPLE ANALYTICAL RESULT =
DEPTH FEET BGS | ANTIMONY | ARSENIC | IRON | LEAD
SOIL AND SEDIMENT RESULTS IN MILLIGRAMS PER KILOGRAM

BOLD = CONCENTRATIONS EXCEED APPLICABLE SOIL OR SEDIMENT SCREENING LEVELS
< = SAMPLE CONCENTRATIONS NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED
BGS = BELOW GROUND SURFACE

N

0 80 160
SCALE IN FEET

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Bend | Baker City

California
Oakland | Folsom | Irvine

Quality Service for Environmental Solutions | farallonconsulting.com

FIGURE 3

SOIL AND SEDIMENT METALS RESULTS AND PROPOSED SAMPLING/FIELD SCREENING LOCATIONS
GIG HARBOR SPORTMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON

FARALLON PN: 1303-001

Drawn By: tperrin | Checked By: JM | Date: 6/29/2018 | Disc Reference:

Path: Q:\Projects\1303 GigHarbor\Mapfiles\Figures 2_3_Soil_Metals\EcoSubmit_2018June\FIGURE 03_Metals_PropBorLoc_SedStormwater.mxd

STORMWATER DETENTION PONDS

HARBOR HILL DRIVE

SENTINEL DRIVE

SD-10
10/25/2017 | **0.854** | **2.40**

STORMWATER POND

RIFLE AND PISTOL RANGE

SD-9
10/25/2017 | **0.898** | **2.97**

SHOTGUN RANGE

SHOT CURTAIN

SD-8
10/25/2017 | **32.5** | **2.70**

SD-7
10/25/2017 | **83.3** | **2.73**

97th STREET NORTHWEST

SD-6
10/25/2017 | **80.5** | **2.47**

BURNHAM DRIVE NORTHWEST

NORTH CREEK

NORTH CREEK TRIBUTARY

SD-3
10/25/2017 | **10.4** | 1.31

SD-5
10/25/2017 | **29.9** | **2.42**

SD-4
10/25/2017 | 0.140 | 0.93

LEGEND

- PROPOSED SURFACE WATER AND/OR SEDIMENT SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATIONS
- OUTFALL
- STORM DITCH
- CONVEYANCE PIPING
- CULVERT
- STREAM
- INTERMITTENT STREAM
- APPROXIMATE PROPERTY BOUNDARY
- PIERCE COUNTY PARCEL BOUNDARY.

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

NOTES:
SURFACE WATER RESULTS DEPICTED AS:
DATE SAMPLED | DISSOLVED LEAD | DISSOLVED COPPER
ANALYTICAL RESULTS IN MICROGRAMS PER LITER.

BOLD = CONCENTRATIONS EXCEED APPLICABLE SOIL OR SEDIMENT SCREENING LEVELS
< = SAMPLE CONCENTRATIONS NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = SAMPLE NOT ANALYZED

N

0 120 240
SCALE IN FEET

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Bend | Baker City

California
Oakland | Sacramento | Irvine

Quality Service for Environmental Solutions | farallonconsulting.com

FIGURE 4

SURFACE WATER METALS RESULTS
AND PROPOSED SAMPLE LOCATIONS
GIG HARBOR SPORTMAN'S CLUB
9721 BURNHAM DRIVE NORTHWEST
GIG HARBOR, WASHINGTON

FARALLON PN: 1303-001

Drawn By: tperrin | Checked By: JM | Date: 6/28/2018 | Disc Reference:

Path: Q:\Projects\1303 GigHarbor\Mapfiles\Figures 2_3_Soil_Metals\EcoSubmit2018June_FIG04_Surfacewater.mxd