Interim Action Work Plan

Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street Issaquah, Washington

Ecology Cleanup Site ID: 16581

Farallon PN: 1754-009

September 26, 2025

Prepared by:

DRAFT

Sarah Snyder, L.G.

Senior Geologist

Reviewed by:

DRAFT

Eric Buer, L.H.G.

Principal Hydrogeologist

Public Review Draft

Prepared for:

Eastside Fire and Rescue

and

City of Issaquah

Prepared by:

Farallon Consulting, L.L.C.

1809 7th Avenue, Suite 1111

Seattle, Washington 98101

TABLE OF CONTENTS

FIGURES IV

TABLES V

APPENDICES VI

ACRONYMS AND ABBREVIATIONS VII

EXECUTIVE SUMMARY X

1.0 INTRODUCTION 1-1
- 1.1 PURPOSE AND OBJECTIVE 1-2
- 1.2 KEY PROJECT PERSONNEL 1-2
- 1.3 REGULATORY INTERACTIONS 1-3
- 1.4 ABBREVIATED CLASS B AFFF BACKGROUND 1-4
- 1.5 WORK PLAN ORGANIZATION 1-5

2.0 SITE DESCRIPTION AND BACKGROUND 2-1
- 2.1 LOWER ISSAQUAH VALLEY REGIONAL SETTING 2-1
- 2.2 SITE DESCRIPTION 2-1
- 2.3 EFR HQ SOURCE AREA DESCRIPTION 2-2
- 2.4 LAND USE 2-2
  - 2.4.1 Historical Land Uses 2-2
  - 2.4.2 Current Land Use 2-3
  - 2.4.3 Adjacent and Surrounding Land Use 2-3
- 2.5 GEOLOGY AND HYDROGEOLOGY 2-3
  - 2.5.1 Geology 2-3
  - 2.5.2 Hydrogeology 2-5
  - 2.5.3 Municipal Water Supply 2-7

3.0 EFR HQ SOURCE AREA INVESTIGATIONS AND PILOT TEST 3-1
- 3.1 EFR HQ SOURCE AREA INVESTIGATIONS 3-1
- 3.2 SUMMARY OF PILOT TEST ACTIVITIES 3-2
- 3.3 SUMMARY OF PILOT TEST RESULTS 3-2

4.0 CONCEPTUAL SITE MODEL 4-1
- 4.1 PREMISE OF RELEASES 4-1
- 4.2 CONTAMINANTS OF POTENTIAL CONCERN 4-1
- 4.3 MEDIA OF CONCERN 4-2
  - 4.3.1 Soil 4-2
  - 4.3.2 Groundwater 4-2
  - 4.3.3 Surface Water 4-2
  - 4.3.4 Sediment 4-4
- 4.4 SCREENING LEVELS 4-4
  - 4.4.1 Soil Screening Levels 4-4
  - 4.4.2 Groundwater Screening Levels 4-4

Public Review Draft

4.4.3 Surface Water Screening Levels 4-5
4.4.4 Sediment Screening Levels 4-5
4.5 NATURE AND EXTENT OF CONTAMINATION 4-5
4.5.1 Confirmed and Suspected Source Areas 4-6
4.5.2 Extent of Contamination in Soil 4-6
4.5.3 Extent of Contamination in Groundwater 4-6
4.6 FATE AND TRANSPORT 4-7
4.6.1 Soil to Groundwater 4-7
4.6.2 Soil to Surface Water 4-7
4.6.3 Groundwater to Surface Water and Sediment 4-8
4.7 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS 4-8
4.7.1 Soil Direct Contact, Soil to Groundwater 4-8
4.7.2 Groundwater Ingestion 4-8
4.7.3 Groundwater to Surface Water and Sediment 4-9
4.7.4 Vapor Inhalation 4-9
4.7.5 Terrestrial Ecological Evaluation 4-9

5.0 SCOPE OF WORK 5-1
5.1 OBJECTIVES 5-1
5.2 INTERIM ACTION 5-1
5.2.1 Description of Work Elements and Sequence of Activities 5-1
5.2.2 Screening and Remediation Levels 5-2
5.2.3 Expansion of Permeable Reactive Barrier 5-3
5.2.4 Bench Testing 5-3
5.2.5 Source Area Preparation and Mobilization 5-3
5.2.6 Excavation and In-Situ Stabilization of PFAS Contaminated Soil 5-4
5.2.7 Capping 5-4
5.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS 5-4
5.4 PERMITTING AND OTHER REGULATORY REQUIREMENTS 5-5
5.4.1 State Environmental Policy Act 5-5
5.4.2 City of Issaquah Site Work Permit 5-6
5.4.3 Underground Injection Control Permit 5-6
5.5 INADVERTENT DISCOVERIES 5-6
5.6 CLIMATE CHANGE CONSIDERATIONS 5-6
5.6.1 Sea Level Rise 5-7
5.6.2 Flooding 5-7
5.6.3 Wildfires 5-7
5.6.4 Landslides and Erosion 5-7
5.6.5 Drought 5-8
5.7 PFAS WASTE PROFILING AND DISPOSAL 5-8
5.7.1 Soil Cuttings 5-8
5.7.2 Wastewater 5-9
5.7.3 Disposable Consumables 5-9

6.0 PERFORMANCE AND COMPLIANCE MONITORING 6-1
6.1 PROTECTION MONITORING 6-1
6.2 SOIL PERFORMANCE MONITORING 6-1

Public Review Draft

6.3 SOIL CONFIRMATION MONITORING 6-1
6.4 GROUNDWATER PERFORMANCE MONITORING 6-2

7.0 SCHEDULE AND REPORTING 7-1
7.1 EIM DATA SUBMITTALS 7-1
7.2 INVESTIGATION SCHEDULE AND KEY MILESTONES 7-1
7.3 INTERIM ACTION REPORT 7-1

8.0 REFERENCES 8-1

9.0 LIMITATIONS 9-1
9.1 GENERAL LIMITATIONS 9-1
9.2 LIMITATION ON RELIANCE BY THIRD PARTIES 9-1

Public Review Draft

FIGURES

Figure 1 *Lower Issaquah Valley Vicinity Map*

Figure 2 *EFR HQ IVES Site Plan*

Figure 3 *EFR HQ Source Area Plan*

Figure 4 *EFR HQ Source Area Cross Section A-A'*

Figure 5 *EFR HQ Source Area Groundwater Elevations*

Figure 6 *EFR HQ Source Area Soil PFAS Concentrations*

Figure 7 *EFR HQ Source Area Soil PFAS Concentrations <5 feet bgs*

Figure 8 *EFR HQ Source Area Soil PFAS Concentrations 5-9.9 feet bgs*

Figure 9 *EFR HQ Source Area Soil PFAS Concentrations 10-14.9 feet bgs*

Figure 10 *EFR HQ Source Area Soil PFAS Concentrations >15 feet bgs*

Figure 11 *EFR HQ Source Area Groundwater PFAS Concentrations*

Figure 12 *Conceptual Site Model*

Figure 13 EFR HQ Source Area *Proposed Interim Action Elements and Extents*

Public Review Draft

TABLES

Table 1 *Soil Screening Levels*

Table 2 *Groundwater Screening Levels*

Table 3 *Monitoring Well Construction Details*

Table 4 *Summary of Groundwater Elevation Data*

Table 5 *Summary of Groundwater Head Differences*

Table 6 *Soil Analytical Results for PFAS*

Table 7 *Shallow Groundwater Analytical Results for PFAS*

Table 8 *Intermediate and Deep Groundwater Analytical Results for PFAS*

Table 9 *Groundwater Quality Indicator Parameters for EFR HQ Source Area Monitoring Wells*

Public Review Draft

APPENDICES

Appendix A	Agreed Order No. DE 23520
Appendix B	Engineering Design Report
Appendix C	Inadvertent Discovery Plan
Appendix D	Climate Change Evaluation
Appendix E	Health and Safety Plan
Appendix F	Sampling and Analysis Plan
Appendix G	Quality Assurance Project Plan
Appendix H	Compliance Monitoring Plan
Appendix I	Preliminary Project Schedule

Public Review Draft

ACRONYMS AND ABBREVIATIONS

AFFF	aqueous film-forming foam
AFFF Training Areas	collectively, the West Playfield AFFF Training Area, Dodd Field AFFF Training Area, Newport Way Northwest AFFF Training Area, and Median Strip AFFF Training Area
AO	Agreed Order No. DE 23520
bgs	below ground surface
COPCs	constituents of potential concern
CSM	conceptual site model
Draft RI Report	Draft Remedial Investigation Report
EAGL	Ecology's Administration of Grants and Loans
Ecology	Washington State Department of Ecology
EFR	Eastside Fire and Rescue
EFR HQ IVES Site	Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary Site
EFR HQ Source Area	Eastside Fire and Rescue Headquarters Source Area at 175 Newport Way Northwest in Issaquah, Washington
EPA	U.S. Environmental Protection Agency
Farallon	Farallon Consulting, L.L.C.
FTOHs	fluorotelomer alcohols
6:2 FTS	6:2 fluorotelomer sulfonic acid
GenX	hexafluoropropylene oxide dimer acid
HASP	Health and Safety Plan
IAA	Interagency Agreement
IAWP	Interim Action Work Plan
IDP	Inadvertent Discovery Plan
IDW	Investigation derived waste
IVES	Issaquah Valley Elementary School

Public Review Draft

IVES Source Area	Issaquah Valley Elementary School Source Area at 555 Northwest Holly Street in Issaquah, Washington
MCLs	Maximum Contaminant Levels
MFRT Site	Memorial Field and Rainier Trail Site, CSID No. 16582, FSID No. 57044
MTCA	Model Toxics Control Act Cleanup Regulation
µg/L	micrograms per liter
NAVD88	North American Vertical Datum of 1988
NWN	Newport Way Northwest
PFAS	per- and poly-fluorinated alkyl substances
PFCs	perfluorinated compounds
PFHxA	perfluoro-hexanoic acid
PFHxS	perfluorohexane sulfonic acid
PFOA	perfluoro-octanoic acid
PFOS	perfluorooctane sulfonate
PFNA	perfluoro-nonanoic acid
PFDA	perfluoro-decanoic acid
PLP	potentially liable person
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RI/FS	Remedial Investigation and Feasibility Study
SAP	Sampling and Analysis Plan
SEPA	State Environmental Policy Act
Site	Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary Site, CSID No. 16581, FSID No. 87761647
Source Areas	collectively, the EFR HQ Source Area and IVES Source Area
the City	City of Issaquah
U.S. EPA	U.S. Environmental Protection Agency

Public Review Draft

WAC	Washington Administrative Code
WQC	water quality criteria

Public Review Draft

EXECUTIVE SUMMARY

Farallon Consulting, L.L.C. (Farallon) has prepared this Interim Action Work Plan (IAWP) on behalf of Eastside Fire and Rescue (EFR) and the City of Issaquah (the City) for the EFR Headquarters (HQ) and Issaquah Valley Elementary School (IVES) Site (Site) (Figure 1). EFR and the City were identified as the potentially liable persons (PLPs) for the Site.

This IAWP documents the work elements necessary to complete an interim action at the Site in accordance with the requirements of Agreed Order No. DE 23520 (AO) between the Washington State Department of Ecology (Ecology) and the PLPs. The AO is included as Appendix A.

As described in the AO, local firefighting entities historically conducted firefighting training exercises at the Site, which included lawful deployment of aqueous film-forming foam (AFFF) containing perfluorooctane sulfonate (PFOS) and additional per- and poly-fluorinated alkyl substances (PFAS). The historical training activities are considered releases to the environment. The confirmed releases have impacted vadose zone soil at two source areas, the EFR HQ Source Area at 175 Newport Way Northwest and IVES Source Area at 555 Northwest Holly Street in Issaquah, Washington (collectively referred to as the Source Areas).

The confirmed releases have impacted shallow groundwater at the Source Areas. The City withdraws groundwater from production wells at locations down-gradient of the Site and a completed exposure pathway for groundwater has been confirmed.[1] Ecology believes the actions required by the AO are in the public's interest. This IAWP has been prepared to document the planned interim action activities at the Site. This IAWP has been prepared to document the planned interim action at the EFR HQ Source Area.

The purpose of this work plan is to document the work elements necessary to complete an interim action at the EFR HQ Source Area in accordance with Chapter 173-340-430 of the Washington Administrative Code (WAC 173-340-430). The planned interim action activities were developed with Ecology and include completion of an interim action at the EFR HQ Source Area that will reduce the contaminant mass of PFAS leaching from vadose zone soil

[1] A treatment system reduces PFAS concentrations in water entering the distribution system to below drinking water standards.

Public Review Draft

to groundwater at the NWN AFFF Training Area, which contains the greatest known mass of treatable PFAS in vadose zone soil and groundwater at the Site.

Public Review Draft

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Interim Action Work Plan (IAWP) on behalf of Eastside Fire and Rescue (EFR) and the City of Issaquah (the City) for the EFR Headquarters (HQ) and Issaquah Valley Elementary School (IVES) Site (Site) (Figure 1). EFR and the City were identified as the potentially liable persons (PLPs) for the Site.

This IAWP documents the work elements necessary to complete an interim action at the Site in accordance with the requirements of Agreed Order No. DE 23520 (AO) between the Washington State Department of Ecology (Ecology) and the PLPs. The AO is included as Appendix A.

As described in the AO, local firefighting entities historically conducted firefighting training exercises at the Site, which included lawful deployment of aqueous film-forming foam (AFFF) containing perfluorooctane sulfonate (PFOS) and additional per- and poly-fluorinated alkyl substances (PFAS). The historical training activities are considered releases to the environment. The confirmed releases have impacted vadose zone soil at two source areas, the EFR HQ Source Area at 175 Newport Way Northwest and IVES Source Area at 555 Northwest Holly Street in Issaquah, Washington (collectively referred to as the Source Areas).

The confirmed releases have impacted shallow groundwater at the Source Areas. The City withdraws groundwater from production wells at locations down-gradient of the Site and a completed exposure pathway for groundwater has been confirmed.[2] Ecology believes the actions required by the AO are in the public's interest. This IAWP has been prepared to document the planned interim action activities at the Site. This IAWP has been prepared to document the planned interim action at the EFR HQ Source Area.

AFFF training was performed at two locations on the EFR HQ Source Area (Figures 1 and 2):

- An area that currently is covered with lawn near the fire hydrant on the north-central portion (Median Strip AFFF Training Area); and
- The western gravel-surfaced area of the EFR Headquarters Source Area (Newport Way Northwest [NWN] AFFF Training Area).

[2] A treatment system reduces PFAS concentrations in water entering the distribution system to below drinking water standards.

Public Review Draft

AFFF training was performed at two locations on the IVES Source Area (Figures 1 and 2):

- An area that currently is covered with lawn on the southern area of the west playfield at IVES (West Playfield AFFF Training Area); and
- An area that currently is covered with lawn, trees, turf, and asphalt along the western side of Dodd Field (Dodd Field AFFF Training Area).

The Median Strip AFFF Training Area, NWN AFFF Training Area, West Playfield AFFF Training Area, and Dodd Field AFFF Training Area are collectively referred to as the AFFF Training Areas. The Source Areas are depicted on Figures 1 and 2, and Figure 3 shows the EFR HQ Source Area plan. Screening levels for soil and groundwater are presented on Tables 1 and 2, respectively.

1.1 PURPOSE AND OBJECTIVE

The purpose of this work plan is to document the work elements necessary to complete an interim action at the EFR HQ Source Area in accordance with Chapter 173-340-430 of the Washington Administrative Code (WAC 173-340-430).

The objectives of the scope of work presented herein were developed with Ecology and include:

- Completion of an interim action at the EFR HQ Source Area that will reduce the contaminant mass of PFAS leaching from vadose zone soil to groundwater at the NWN AFFF Training Area, which contains the greatest known mass of treatable PFAS in vadose zone soil and groundwater at the Site.

1.2 KEY PROJECT PERSONNEL

Key Project Personnel include the following:

- EFR's PLP Representative – Ben Lane, Fire Chief, EFR;
- The City's PLP Representative – Julie Wartes, Senior Environmental and Regulatory Program Administrator, Public Works Department, City of Issaquah;
- Project Coordinator for the PLPs – Sarah Snyder, L.G., Senior Geologist, Farallon; and
- Project Coordinator for Ecology – Vance Atkins, L.G., L.H.G., Hydrogeologist, Ecology.

Public Review Draft

1.3 REGULATORY INTERACTIONS

Concentrations of PFOS and PFAS were initially detected in a water sample collected from the City of Issaquah drinking water production well COI-PW04 in 2015. Ecology initially received a report about potential contamination from PFAS at the Source Areas in January 2016; PFAS were not listed at hazardous substances at the time. Additional investigation to further evaluate the nature and extent of PFAS impacts at the Source Areas was performed by EFR in coordination with the City and Ecology in 2018, 2020, 2021, and 2022. The originally reported contaminants, PFAS and PFOS, were confirmed to be hazardous substances under Washington State Model Toxics Control Act (MTCA) in October 2021.

Lawful training activities associated with AFFF deployment were identified as a potential source of the impacts to the drinking water aquifer. Ecology provided funding for investigation activities under six previous interagency agreements (IAAs), including:

- $46,795 to EFR under IAA No. C1800181 to further evaluate the soil and groundwater impacts at the known AFFF training locations;
- $50,000 to the City under IAA No. C2000069 to perform groundwater modeling to better understand the fate and transport of PFAS in the Lower Issaquah Valley;
- $449,015 to EFR under IAA No. C2000071 to further evaluate the soil and groundwater impacts at the EFR HQ Source Area and regional groundwater impacts;
- $300,000 to EFR under IAA No. C2100056 to further evaluate the soil and groundwater impacts at the EFR HQ Source Area and perform a pilot test of a permeable reactive barrier (PRB) comprised of colloidal activated carbon at the EFR HQ Source Area;
- $350,000 to EFR under IAA No. C2200169 to further evaluate the soil and groundwater impacts and prepare a draft Remedial Investigation Report for the Site; and
- $400,000 to the City under IAA No. C2200183 to perform additional groundwater modeling for the Lower Issaquah Valley.

The previous investigations are documented in the Draft Remedial Investigation Report prepared by Farallon dated October 13, 2023 (Farallon 2023) (Draft RI Report). The Draft RI

Public Review Draft

Report included data from the following prior key reports and additional reports referenced in Section 8:

- *Summary of PFCs Results for Creek Samples Collected September 29, 2016* prepared by Corona Environmental Consulting on behalf of Sammamish Plateau Water and Sewer District dated October 20, 2016;
- *Hydrogeological Characterization Report – Issaquah, Washington* prepared by Geosyntec Consultants, Inc. on behalf of the City dated November 16, 2016 (Geosyntec 2016b);
- *Per- and Poly-Fluoroalkyl Substances Characterization Study Summary Report – Lower Issaquah Valley, Issaquah, Washington* prepared by Farallon on behalf of EFR dated March 27, 2019 (Farallon 2019); and
- *Per- and Poly-Fluoroalkyl Substances Additional Characterization Study Summary Report – Lower Issaquah Valley, Issaquah, Washington* prepared by Farallon on behalf of EFR dated April 14, 2021 (Farallon 2921a).

Based on the results of prior investigation activities, the PLPs engaged in negotiations with Ecology to enter into an AO to perform remedial actions at the Site in accordance with the requirements of MTCA and supervision from Ecology.

Ecology and the PLPs held an open public comment period for the AO in May 2024. Agreed Order No. DE 23520 was signed by the PLPs and Ecology with an effective date of February 24, 2025. The AO requires the PLPs conduct a remedial investigation and feasibility study (RI/FS) for the Site and to prepare a detailed IAWP. The AO establishes that Ecology will not take additional enforcement action against the PLPs to require those remedial actions specified in the AO so long as the PLPs comply with the provisions of the order.

1.4 ABBREVIATED CLASS B AFFF BACKGROUND

Since approximately 1966, Class B AFFF has been used to fight hydrocarbon and other fires with flammable vapors (Place and Field 2012). Class B AFFF forms a film or blanket of suds across the surface of flammable liquids that denies fuel vapors contact with the ambient atmosphere. Without sufficient oxygen, the fuel fire is extinguished. Class B AFFF offers additional benefits spreading across liquid fuel and remaining in place to prevent re-ignition. The effectiveness of Class B AFFF using fluorochemicals (i.e., PFAS) at “knocking down” and smothering hydrocarbon fuel fires resulted in widespread use by civilian and military fire departments.

Public Review Draft

The largest purchaser of AFFF in the United States was the U.S. military, which also established a specification (MIL-F-24385) that included requirements for short term toxicity, chemical and biological oxygen demand, and total fluorine content. Many facilities, including Federal Aviation Administration airports, petroleum fuel tank farms, and military bases, relied on, or were required to comply with, the MIL-F-24385 standard for purchasing Class B AFFF. The specification was updated in 2023 to require AFFF formulations be PFAS free. EFR transitioned to PFAS-free AFFF formulations in 2017.

In general, training exercises conducted by local firefighting entities at the Source Areas involved setting up AFFF application systems and practice by participants to produce an effective AFFF mixture at the hose nozzle. Farallon's understanding based on interviews with EFR firefighting personnel (Farallon 2016, 2018) is that the foam mixtures were typical 3 percent solutions prior to 2002, after which reformulation of the AFFF concentrate allowed for more-diluted 1 percent solutions to be used. Typical volumes of AFFF concentrate used for training were on the order of one to three 5-gallon buckets per event, requiring between approximately 1,500 to 4,500 gallons of water; the resulting foam volume would have been considerably larger.

During training exercises, AFFF was sprayed on the ground, vegetation, and adjacent buildings and then was washed down with service water from fire hydrants at each training area. Equipment on fire trucks and hoses in contact with AFFF typically was washed off in the field at the end of the training event, and foam remaining in the training area was dispersed to the extent possible by spraying additional water on the area (Farallon 2019).

1.5 WORK PLAN ORGANIZATION

This IAWP has been organized into the following sections:

- **Section 2, Site Description and Background,** presents descriptions of the Site, EFR HQ Source Area, and AFFF Training Areas, including a description of the Lower Issaquah Valley regional setting, geology and hydrogeology, and historical uses of the EFR HQ Source Area, including adjacent and surrounding land uses.
- **Section 3, EFR HQ Source Area Investigations and Pilot Test,** presents a summary of previous investigations and a pilot test completed at the EFR HQ Source Area.
- **Section 4, Conceptual Site Model,** presents the conceptual site model for the Site, including the premise of releases, contaminants of potential concern, media of

Public Review Draft

concern, screening levels, nature and extent of contamination, fate and transport, and potential receptors and exposure pathways.

- **Section 5, Scope of Work,** presents the objectives, technical elements, inadvertent discoveries, climate change considerations, and waste profiling and disposal for the planned interim action activities.
- **Section 6, Performance and Compliance Monitoring**, details the protection monitoring, soil performance and confirmation monitoring, and groundwater performance monitoring for the planned interim action activities.
- **Section 7, Schedule and Reporting,** details the EIM data submittals, interim action schedule and key milestones, and interim action reporting requirements.
- **Section 8, References,** provides a list of the source materials used in preparing this work plan.
- **Section 9, Limitations,** presents Farallon's standard limitations associated with conducting the work reported herein and preparing this report.

Public Review Draft

2.0 SITE DESCRIPTION AND BACKGROUND

This section presents descriptions of the Site, EFR HQ Source Area, and NWN and Median Strip AFFF Training Areas, including a description of the Lower Issaquah Valley regional setting, geology and hydrogeology, historical uses of the Source Areas, including adjacent and surrounding land uses.

2.1 LOWER ISSAQUAH VALLEY REGIONAL SETTING

The Lower Issaquah Valley is approximately 14 miles east of Seattle and extends from the south end of Lake Sammamish approximately 2.5 miles to the southeast where the Issaquah Valley begins to constrict south of East Sunset Way (Figure 1). Lower Issaquah Valley floor elevations range from approximately 40 to 160 feet North American Vertical Datum of 1988 (NAVD88). The Lower Issaquah Valley is bisected by Issaquah Creek, which runs longitudinally along the valley floor and flows to the north into Lake Sammamish. The City is in the northern portion of the Lower Issaquah Valley. Drinking water for the City is pumped from a system of four wells (COI-PW01, COI-PW02, COI-PW04, and COI-PW05, Figure 2) and purchased through service water delivery by the Cascade Water Alliance.

According to the Western Regional Climate Center (2018), the climate of the greater Seattle area, including Puget Sound and the Lower Issaquah Valley, is maritime and characterized by cool summers and mild winters influenced by ocean air. Based on data published for the Snoqualmie Falls, Washington meteorological station (Identification No. 457773), the average annual minimum temperature for the Lower Issaquah Valley is 32 degrees Fahrenheit, and the average annual maximum temperature is 76 degrees Fahrenheit. The annual precipitation ranges from 33 to 81 inches, with an average of 5 to 8 inches per month from October through March (Western Regional Climate Center 2018).

2.2 SITE DESCRIPTION

Based on existing data, the Site comprises the two Source Areas, including the EFR HQ Source Area at 175 Newport Way Northwest and IVES Source Area at 555 Northwest Holly Street in Issaquah, Washington (Figures 1 and 2). The interim action discussed in this document will occur at the EFR HQ Source Area.

As described in the AO, local firefighting entities historically conducted firefighting training exercises at the Site which included lawful deployment of AFFF containing PFOS and PFAS. The historical AFFF training activities are considered releases to the environment. The known releases have impacted vadose zone soil at two Source Areas, including the EFR HQ

Public Review Draft

Source Area and IVES Source Area; and impacted groundwater which is a source for the City's drinking water.

2.3 EFR HQ SOURCE AREA DESCRIPTION

The EFR HQ Source Area consists of King County Parcel No. 2824069165, which totals approximately 2.5 acres of land owned by King County Fire District 10. AFFF training was performed at two locations at the EFR HQ Source Area (Figure 3):

- An area that currently is covered with lawn near the fire hydrant on the north-central portion (Median Strip AFFF Training Area); and
- The western gravel-surfaced area of the EFR HQ Source Area (NWN AFFF Training Area.

2.4 LAND USE

A description of the historical and current land uses of the Source Areas and adjacent and surrounding properties is provided below.

2.4.1 Historical Land Uses

Based on King County records, Fire District 10 built on the EFR HQ Source Area in 1982 and operated headquarters and mechanical maintenance facilities as well as an active fire station through 1999. The original main building was converted to serve primarily as the current administrative office and maintenance facility for EFR by approximately 2002. Active fire station operations were moved to other properties throughout the jurisdiction after 2002.

The majority of the training events were performed on the NWN AFFF Training Area from approximately the early 1980s through the late 1990s at a frequency of up to 12 times per year. Residual AFFF associated with training exercises was washed down with service water on the EFR HQ Source Area, some of which was captured by the property's stormwater management system that routed water to a detention basin on the eastern portion of the property near Newport Way Northwest (Figure 3). Any unused AFFF concentrate solution collected from on-board engine tanks or unused buckets was disposed of from 175 Newport Way Northwest by a hazardous waste disposal contractor.

Active fire station operations and AFFF training at the EFR HQ Source Area were reduced beginning in 1999, when the facility transitioned fully into serving as EFR's administrative office and maintenance facility. Typically, one to three 5-gallon buckets of AFFF concentrate

Public Review Draft

was expended during each training event. Training was performed at an area that currently is covered with lawn near the fire hydrant on the north-central portion of the property (Median Strip AFFF Training Area) and at the western gravel-surfaced portion of the property (NWN AFFF Training Area). Some AFFF mixture may also have been sprayed at the base of the hillside west of the western property boundary.

2.4.2 Current Land Use

The EFR HQ Source Area is currently used as an office and vehicle maintenance facility for EFR. The EFR HQ Source Area is developed with the EFR HQ building, two storage buildings, asphalt-paved drive lanes and parking lots, a stormwater detention basin, a gravel lot, and vegetated areas (Figure 3).

2.4.3 Adjacent and Surrounding Land Use

Adjacent properties are primarily residential (north, east, and south). The parcel to the west is undeveloped steep slope and open space preservation that separates the EFR HQ Source Area from single family home residential developments.

2.5 GEOLOGY AND HYDROGEOLOGY

A description of the Lower Issaquah Valley and EFR HQ Source Area geology and hydrogeology, including groundwater potability, is provided below.

2.5.1 Geology

The geology of the Lower Issaquah Valley comprises a series of interbedded sand-gravel and silt-clay layers overlying the bedrock units that form the adjacent foothills to the east and west of the Lower Issaquah Valley. Based on drilling observations and review of historical boring logs, the following general geologic units and sequence were identified for the Site:

- Surficial deposits of silty sand, silt, and fill material with a maximum thickness of approximately 30 feet. The surficial unit was observed to generally be thinner and discontinuous on the eastern side of the Lower Issaquah Valley.
- A coarse gravel and sand unit with occasional silt interbeds ranging from 40 to approximately 55 feet thick.
- Silt, or silt and clay with occasional sand interbeds. Silt was observed on the western portion of the Lower Issaquah Valley between the coarse gravel and sand and poorly graded sand units ranging in thickness from approximately 10 feet (IES-MW01) to 45 feet (COI-MW07) thick.

Public Review Draft

- Brown to gray poorly graded medium to coarse sand and gravel matching the description of the A-Zone Aquifer (see below). The A-Zone Aquifer is estimated to be approximately 60 to 70 feet thick based on drilling at wells IES-MW12, COI-MW08, and COI-PW04.
- An aquitard comprising interbedded firm gray clay, dense gray sand, and firm gray silt that is approximately 25 to 30 feet thick at monitoring well COI-MW08. Based on upward groundwater gradients observed at this location, localized confined to semi-confined conditions are present in this area.
- The B-Zone Aquifer, comprising primarily gray fine to coarse sand with silt and gravel beds up to 100 feet thick.
- A hard gray silt (basement silt) that is likely weathered bedrock was observed beneath the EFR HQ Source Area. This unit dips to the east and likely extends further under the Lower Issaquah Valley.

Previous drilling in the basement silt at monitoring well NWN-MW09 was terminated after 45 feet of continuous drilling in the same unit. Drilling approximately 120 feet to the east at monitoring well NWN-MW08 did not encounter the basement silt, although the wells were drilled to comparable final completion depths indicating the basement unit is likely deeper to the east of the EFR HQ Source Area under the Lower Issaquah Valley alluvial units.

Based on the results of subsurface investigations completed at the EFR HQ Source Area, the following subsurface conditions exist at the property (Figure 4):

- The western and central portions of the EFR HQ Source Area are underlain by silty sand and sand to a depth of approximately 10 to 13 feet bgs. Surficial silty sand and sand were not observed on the eastern portion of the EFR HQ Source Area, where coarse sand and gravel was observed at the ground surface.
- The silty sand and sand unit is underlain by a continuous coarse sand and gravel to depths between 23 and approximately 50 feet bgs.
- A continuous hard gray silt (referred to as “basement silt”) was observed under the NWN AFFF Training Area. The silt continues to the east and was observed at monitoring well NWN-MW09 at a depth of 53 feet bgs.

The basement silt was observed in the boring for monitoring well NWN-MW09 to the maximum depth explored of 95 feet bgs, but was not encountered in the boring for

Public Review Draft

monitoring well NWN-MW08 to the east, suggesting that the contact continues to dip to the east and increase in depth below other alluvial units in the Lower Issaquah Valley.

A geologic cross-section for the EFR HQ Source Area is provided on Figure 4. Boring and monitoring well locations are presented on Figure 3.

2.5.2 Hydrogeology

For clarity of discussion, water-bearing zones identified in the Lower Issaquah Valley were previously divided into shallow, intermediate, and deep intervals, as summarized below:

- The shallow groundwater interval is defined as depths between approximately 5 and 60 feet bgs;
- The intermediate groundwater interval is defined as depths between approximately 60 and 120 feet bgs; and
- The deep groundwater interval is defined as depths greater than 120 feet bgs.

The shallow, intermediate, and deep groundwater divisions were established for the purpose of evaluating migration of surficial releases of PFAS into the deeper subsurface and provide a convenient nomenclature when discussing groundwater within selected depth intervals. Shallow, intermediate, and deep groundwater labels are not specific to a single production aquifer or specific lithologic unit.

2.5.2.1 EFR HQ Source Area Shallow Groundwater

Groundwater within the shallow interval at the Site flows approximately to the north-northeast. Shallow groundwater at the EFR HQ Source Area flows predominantly toward the northeast in proximity to the NWN AFFF Training Area then transitions to a north-northeast flow direction in the central to eastern area of the property (Figure 5).

Shallow groundwater was encountered between approximately 15 to 18 feet bgs under the NWN AFFF Training Area (Table 4). Shallow groundwater consistently flows to the east-northeast under the NWN AFF Training Area; groundwater gradients have ranged from 0.02 to 0.05 feet per foot (Figure 5). Shallow groundwater flow on the eastern portion of the EFR HQ Source Area flows approximately north, with gradients ranging from approximately 0.006 to 0.007 foot per foot (Figure 5). Average groundwater flow velocity measured with passive flux meters reported a groundwater velocity of approximately 6 centimeters per day across the majority of the EFR HQ Source Area.

Public Review Draft

Surface water elevations in the southern area of the Site at station STR-05 in the Main fork of Issaquah Creek are slightly higher than groundwater elevations in the shallow groundwater interval proximate to STR-05. Relative elevations of groundwater and surface water indicate that the Main fork of Issaquah Creek is a losing stream in the southern portion of the Site, which includes the vicinity of the EFR HQ Source Area. Losing streams lose water as they flow downstream due to infiltration of water from the stream into the ground which recharges to the unconfined shallow interval aquifer.

Surface water elevations at station STR-01 and STR-02 located downstream of the confluence of the East and Main forks of Issaquah Creek are lower than shallow groundwater elevations in the vicinity, indicating that Issaquah Creek transitions to a gaining stream downstream of the confluence of the East and Main forks between STR-02 and STR-05. In a gaining stream scenario, groundwater discharges to surface water in the stream.

Groundwater elevations and shallow interval groundwater elevation contours for the EFR HQ Source Area are presented on Figure 5. Monitoring well construction details and groundwater elevation data are summarized in Tables 3 and 4.

2.5.2.2 EFR HQ Source Area Intermediate Groundwater

Site intermediate groundwater flow fluctuates from north-northeast to north-northwest. Intermediate groundwater gradients across the Site were approximately 0.002 feet per foot. Similar to shallow groundwater flow directions were consistent between monitoring events. Intermediate monitoring well NWN-MW08 is located on the EFR HQ Source Area. Potentiometric head fluctuated by approximately 7 feet seasonally during the 2020 through 2023 monitoring period.

Vertical gradients between intermediate and deep groundwater were evaluated at two monitoring wells pairs COI-MW05/IESMW12 and IES-MW06/IES-MW11 at the Site. All four wells are screened in the A-Zone Aquifer. Vertical gradients were consistently downward in the IES-MW06/IES-MW11 well pair, located in the south-central portion of the Site on the southern boundary of the IVES Source Area (Table 5). The vertical gradient between intermediate and deep groundwater fluctuated in well pair COI-MW05/IES-MW12; a downward gradient was reported in the September 2022 monitoring event and upward gradients were reported in December 2022 through May 2023 (Table 5).

Public Review Draft

2.5.2.3 EFR HQ Source Area Deep Groundwater

Deep groundwater in the A-Zone Aquifer was gauged at monitoring wells IES-MW11 and IES-MW12, located down-gradient of the EFR HQ Source Area. The gradient between the two wells ranged from 0.0004 to 0.002 feet per foot. The May 2023 flow direction using potentiometric elevations from IES-MW11, IES-MW12, and COI-TW03 was to the northwest with a gradient of 0.002 feet per foot. The vertical gradient between deep groundwater in the A-Zone Aquifer and B-Zone Aquifer measured at monitoring well pair IES-MW12/COI-MW03 was upward in the February and May 2023 monitoring events (Table 5), suggesting localized confined to semi-confined conditions in this area.

2.5.3 Municipal Water Supply

A description of the municipal water supply production aquifers and beneficial use is provided below.

2.5.3.1 Production Aquifers

An investigation performed in 1993 as part of the Lower Issaquah Valley Wellhead Protection Plan reported multiple water-bearing zones totaling approximately 300 feet in thickness. Both the A-Zone and B-Zone Aquifers may exhibit confined or semi-confined conditions locally due to silt beds or other aquitards. Previous investigations have not been able to establish whether any confining unit is laterally continuous (Golder 1993); on a regional scale, the aquifers behave as a single unconfined aquifer.

City production well COI-PW04 extracts intermediate groundwater from the A-Zone Aquifer between depths of 77 and 102 feet bgs, City production well COI-PW05 extracts deep groundwater from the B-Zone Aquifer between depths of 323 and 405 feet bgs (Table 3).

Descriptions of the production wells are provided below (Geosyntec Consultants, Inc. [Geosyntec] 2023):

- City wells COI-PW01, -PW02, and -PW04, and Darigold production well DG-PW01 are screened in the A-Zone Aquifer, comprising brown to grayish brown loosely consolidated sands and gravels and gray loosely consolidated fine to coarse sand with silt. The A-Zone Aquifer is approximately 65 feet thick based on drilling observations at monitoring well COI-MW08. The A-Zone Aquifer is first encountered at a depth of approximately 75 feet bgs between elevations 20 and 0 NAVD88 and was identified in intermediate and deep wells drilled as part of the remedial investigation.

Public Review Draft

- City well COI-PW05 is screened in the B-Zone Aquifer, comprising primarily gray fine to coarse sand with silt and gravel beds. The B-Zone Aquifer is approximately 100 feet thick based on drilling observations at production well COI-MW05 and monitoring well COI-MW08. The B-Zone Aquifer was encountered at 144 feet bgs at elevation -74 feet NAVD88 during drilling at COI-MW08.

The A-Zone Aquifer and B-Zone Aquifer are separated by an aquitard comprising interbedded firm gray clay, dense gray sand, and firm gray silt at COI-MW08 approximately 26 feet in thickness between 134 to 160 feet bgs (Geosyntec 2023). Previous resistivity studies estimated the aquitard thickness between 30 and 50 feet (Golder 2000).

Since 2016, water withdrawn from the A-Zone Aquifer at production well COI-PW04 has been treated at the point of entry to the distribution system with granular activated carbon. The treatment has reduced PFAS concentrations in service water to less than applicable screening levels.

2.5.3.2 Beneficial Use

Farallon performed an evaluation of beneficial use in the Lower Issaquah Valley as presented in the 2023 Draft RI Report using publicly available information provided through the Ecology Water Rights Search tool.[3] This search produced the following records within the Lower Issaquah Valley with water right certificates for groundwater, confirmed withdrawals, and pumping rates:

- City of Issaquah – Record No. G1-08632CWRIS – COI-PW01 is a public supply well that pumps at a maximum rate of 630 gallons per minute and is allocated a maximum withdrawal of 1,000 acre-feet per year.
- City of Issaquah – Record No. G1-10071CWRIS – COI-PW02 is a public supply well that pumps at a maximum rate of 1,200 gallons per minute and is allocated a maximum withdrawal of 1,600 acre-feet per year.
- City of Issaquah – Record No. G1-24633CWRIS – COI-PW04 is a public supply well that pumps at a maximum rate of 1,000 gallons per minute and is allocated a maximum withdrawal of 1,600 acre-feet per year.

[3] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-rights-search

Public Review Draft

- City of Issaquah – Record No. G1-24809CWRIS – COI-PW05 is a public supply well that pumps at a maximum rate of 250 gallons per minute and is allocated a maximum withdrawal of 200 acre-feet per year.
- Darigold – Record No. G1-21648C – DG-PW01 is a private supply well that pumps a maximum rate of 1,100 gallons per minute and is allocated a maximum withdrawal of 1,232 acre feet per year.

Farallon reviewed Washington State Department of Health's Source Water Assessment Program Mapping tool[4] for the vicinity of the Site, which identified the following records within the Site vicinity:

- Darigold – Water System ID AC581 (Inactive);
- Lakeside Gravel Co – Water System ID 45280 (Inactive);
- Sammamish Valley Water Association – Water System ID 75697 (Inactive);
- Leland and Fine – Water System ID 46715 (Inactive);
- Hugh Steele Water System – Water System ID 10686 (Active, Group B water system serving up to 5 people with a well depth of 50 feet);
- L. Hansen Water – Water System ID 05269 (Active, Group B water system serving up to 5 people with an unknown well depth);
- Smith and Smith – Water System ID 00042 (Active, Group B water system serving up to 5 people with a well depth of 83 feet);
- Triple A – Issaquah Community – Water System ID 61951 (Active, Group B water system serving up to 8 people with a well depth of 420 feet);
- Pine Lake Water System Association – Water System ID 18025 (Active, Group B water system serving up to 24 people with two wells at depths of 120 and 325 feet);
- Hawley/Dwarte Water System – Water System ID 29061 (Inactive);
- G Connors – Water System ID 14617 (Inactive);
- Overdale Water Association – Water System ID 65000 (Inactive); and
- Merrit Industries Inc – Water System ID 54055 (Inactive).

[4] https://experience.arcgis.com/experience/9dc3fd45206d450f828ebd7ed9cdf7be

Public Review Draft

Additional groundwater withdrawal locations for Sammamish Plateau Water & Sewer District and Lake Sammamish State Park are located north of Interstate-90; a migration pathway, if any, to these locations from the Site has not been confirmed but may require further evaluation in the future.

Four additional groundwater water claims were identified within the Site vicinity:

- Pickering Bros. – Record No. G1-143524CL;
- John E. George – Record No. G1-157977CL;
- Clement D. Janus – Record No. G1-129065CL; and
- David L Wilson – Record No. G1-111033CL.

All four of the additional claims remain at the active claim phase; no withdrawal of groundwater was allocated in Ecology's records and no verification of groundwater use has been performed. The drinking water exposure pathway for the active water systems and additional claims will be evaluated based on the results of the remedial investigation being performed for the Site, if warranted.

Public Review Draft

3.0 EFR HQ SOURCE AREA INVESTIGATIONS AND PILOT TEST

The following section presents a summary of previous investigations and a pilot test completed at the EFR HQ Source Area between 2015 and 2023.

3.1 EFR HQ SOURCE AREA INVESTIGATIONS

In 2015, service water sampling performed as required by the Unregulated Contaminant Monitoring Rule 3 (UCMR3) [5] initially identified PFAS in production well COI-PW04 raw water. Based on the results of the UCMR3 monitoring, the City of Issaquah performed a subsurface investigation in the Lower Issaquah Valley to evaluate potential sources of PFAS to production well COI-PW04. The investigation consisted of discrete shallow soil sampling at the EFR HQ Source Area, installation of seven new intermediate groundwater monitoring wells (COI-MW01 through COI-MW07) through the Lower Issaquah Valley, and additional sampling of raw water in production wells COI-PW04 and COI-PW05 (Geosyntec 2016a).

This section presents a summary of additional investigation activities at the EFR HQ Source Area performed by Farallon between 2018 and 2023. Results of the investigation activities summarized in this section are presented in Section 4. The following investigation activities were performed by Farallon between 2018 and 2023:

- Advancement of three borings (NWN-R01 through NWN-R03) for soil and/or reconnaissance groundwater sampling; completion of multi-incremental soil sampling within the Median Strip AFFF Training Area (DU-05) and stormwater detention basin (DU-06); installation of four shallow groundwater monitoring wells (NWN-MW01 through NWN-MW04); collection of shallow soil samples using a hand auger; and sampling of the installed monitoring wells and existing monitoring wells (Farallon 2019); and
- Advancement of 22 borings for soil and/or reconnaissance groundwater sampling; installation of 11 shallow monitoring wells; installation of one intermediate monitoring well; collection of shallow soil samples using a hand auger west of the NWN AFFF Training Area; and sampling the installed monitoring wells and existing monitoring wells (Figures 6 through 11) (Farallon 2021a, 2023).

[5] The Safe Drinking Water Act requires EPA to establish criteria and adopt regulations for a program to monitor unregulated contaminants and publish a list of up to 30 contaminants to be monitored every 5 years. 42 USC § 300g–1(b)(1)(B).

Public Review Draft

3.2 SUMMARY OF PILOT TEST ACTIVITIES

In coordination with Ecology and pursuant to the terms and conditions of IAA C2000056, a pilot test was performed to install and evaluate the performance of a PRB as a potential treatment technology for PFAS in groundwater at the EFR HQ Source Area. Construction of the PRB was completed in October 2021 and comprised injection of 12,000 pounds of PlumeStop colloidal activated carbon product through 21 injection points into the subsurface to form the PRB on the eastern (down-gradient) edge of the NWN AFFF training area (Figure 3).

The pilot test consisted of injections at 21 locations in the target depth interval of approximately 14 to 25 feet bgs, from the basement silt contact to the top of shallow groundwater as previously measured in monitoring well NWN-MW10. The pilot test design estimated a working radius of influence of approximately 3.3 feet and 5-foot spacing between injection points. Final dimensions of the PRB were 15 feet wide by 55 feet long, oriented north-south (Figure 3). Injections were performed using a 1.5-inch-diameter direct-push injection tool string with a 3-foot-long sheathed injection screen. Injection points were driven using a 78-series direct-push drill rig. PlumeStop reagent was mixed on the property to a final concentration of 24,000 milligrams of concentrate per liter of solution and was injected at rates of 3.5 to 7 gallons per minute.

3.3 SUMMARY OF PILOT TEST RESULTS

Following PRB installation, shallow groundwater monitoring reported a steep decline in concentrations of PFAS in groundwater at monitoring well NWN-MW10, located immediately down-gradient of the PRB, between October 2021 and February 2022. Based on field observations, evidence of PlumeStop reagent was observed in groundwater at NWN-MW10 following the PRB installation. A summary of groundwater quality indicator parameters for EFR HQ Source Area monitoring wells is provided in Table 9. All reported concentrations of PFAS exceeding MTCA Method B cleanup levels (i.e., perfluorohexane sulfonic acid [PFHxS], perfluoro-octanoic acid [PFOA], PFOS, perfluoro-nonanoic acid [PFNA], and perfluoro-decanoic acid [PFDA]) declined by an order of magnitude or more.

Concentrations of PFHxS, PFOA, PFNA, and PFDA in groundwater, which exceeded MTCA Method B cleanup levels prior to PRB construction, declined to less than MTCA Method B cleanup levels in the sampling event following PRB injections. PFNA and PFDA concentrations in groundwater remained less than cleanup levels in all subsequent monitoring events. PFHxS and PFOA rebounded slightly following PRB construction to

Public Review Draft

concentrations exceeding MTCA Method B cleanup levels, but at concentrations over an order of magnitude less than pre-pilot test concentrations (Table 7). PFNA concentrations rebounded to concentrations exceeding MTCA Method B cleanup levels during the January 2022 monitoring event, but reduced to concentrations less than cleanup levels during subsequent monitoring events (Table 7).

Concentrations of PFOS declined approximately 60-fold following PRB injections. However, PFOS concentrations continued to exceed MTCA Method B cleanup levels in groundwater following PRB construction (Table 7). PFOS concentrations rebounded slightly in samples collected from monitoring well NWN-MW10, but the approximately 60-fold reductions in concentrations were sustained throughout the remainder of the monitoring period.

Groundwater sampling performed at monitoring well NWN-MW17, installed in 2022, indicates that concentrations of PFHxS, PFOA, PFOS, PFNA, and PFDA in groundwater on the up-gradient side of the PRB remain between 100- and 350-times MTCA Method B cleanup levels.

Prior to PRB construction, strong seasonal fluctuations in PFAS concentrations in groundwater were observed in samples collected from monitoring wells in, or proximate to, the NWN AFFF training area, indicating shallow soil continued to act as an ongoing seasonal source of PFAS to groundwater during periods of saturation. Following completion of the PRB, seasonal fluctuations in PFAS concentrations in groundwater were significantly reduced or eliminated in samples collected from NWN-MW10, down-gradient of the PRB. Seasonal fluctuations continued at monitoring wells up-gradient of the PRB.

Concentrations of PFAS measured in groundwater collected from monitoring well NWN-MW06, cross-gradient of the PRB, declined relative to analytical results for samples collected prior to PRB construction. However, the overall reductions were not as significant as those observed in samples collected from monitoring well NWN-MW10, directly down-gradient of the PRB. Concentrations of PFAS in groundwater at monitoring well NWN-MW06 also continued to show minor seasonal response to changes in groundwater elevation during the performance monitoring period. The analytical results indicate that PFAS concentrations in groundwater at monitoring well NWN-MW06 have been measurably reduced by the PRB; however, because of its position relative to the zone of treatment (proximate but at a cross-gradient position) and the untreated up-gradient source in the NWN AFFF Training Area, the effects were reduced when compared with the down-gradient monitoring wells results at NWN-MW10.

Public Review Draft

PFAS concentrations measured in groundwater at monitoring well NWN-MW07, down-gradient of monitoring well NWN-MW10, declined significantly following construction of the PRB but continued to show some response to changes in groundwater elevation and reported concentrations of PFHxS, PFOA, PFOS, PFNA, and PFDA above MTCA Method B cleanup levels. NWN-MW07 is located at the approximate midpoint between the PRB and Median Strip AFFF Training Area on the EFR HQ Source Area. No observable effects on PFAS concentrations in groundwater were reported in samples collected from monitoring wells NWN-MW03 and NWN-MW09, located in the Median Strip AFFF Training Area where additional AFFF impacts to groundwater previously were identified.

Public Review Draft

4.0 CONCEPTUAL SITE MODEL

This section presents a preliminary conceptual site model (CSM) based on data collected at the Site to date. The CSM includes discussion of the Source Areas and premise of the releases, constituents of potential concern (COPCs), media of concern, screening levels, nature and extent of contamination based on existing data, contaminant fate and transport, and potential exposure pathways and receptors. Figure 12 illustrates the preliminary CSM for the Site.

4.1 PREMISE OF RELEASES

Local firefighting entities historically conducted firefighting training exercises at the Source Areas which included lawful deployment of AFFF containing PFOS and PFAS. The historical AFFF training activities impacted vadose zone soil and groundwater at the Site and are considered releases to the environment. The release has impacted shallow, intermediate, and deep groundwater beneath and down-gradient of the Source Areas. The releases and migration of hazardous substances were first confirmed by investigation performed jointly by the PLPs in 2018 (Farallon 2019). Contaminant fate and transport from vadose zone soil to groundwater is discussed further in Section 4.6.

4.2 CONTAMINANTS OF POTENTIAL CONCERN

The following constituents were detected in soil at concentrations exceeding applicable screening levels and are retained as COPCs at the EFR HQ IVES Site (Table 1):

- Perfluorohexanoic Acid (PFHxA);
- Perfluorohexane Sulfonic Acid (PFHxS);
- PFOA;
- PFOS;
- PFNA;
- PFDA;
- 6:2 Fluorotelomer Sulfonic Acid (6:2 FTS); and
- Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX).

Public Review Draft

The following constituents were detected in groundwater at concentrations exceeding applicable screening levels and are retained as COPCs at the EFR HQ IVES Site (Table 2):

- Perfluorobutane Sulfonic Acid (PFBS);
- PFHxS;
- PFOA;
- PFOS;
- PFNA; and
- PFDA.

4.3 MEDIA OF CONCERN

This section presents a summary of the media of concern at the Site based on the results of remedial investigation activities completed to date.

4.3.1 Soil

PFAS have been detected in soil in exceedance of MTCA Method B cleanup levels within both Source Areas. Therefore, soil is a medium of concern at the Site.

4.3.2 Groundwater

PFAS have been detected in groundwater in exceedance of MTCA Method B cleanup levels within both Source Areas. Therefore, groundwater is a medium of concern at the Site.

4.3.3 Surface Water

The closest surface water body to the Source Areas is the Main fork of Issaquah Creek located west-adjacent to the IVES Source Area and approximately 500 feet west of the EFR HQ Source Area. As detailed in Section 3.2, surface water in the Main fork of Issaquah Creek in the vicinity of the Source Areas was previously sampled and PFAS constituents were not detected at the laboratory practical quantitation limits.

As detailed in Section 2.4.2, the Main fork of Issaquah Creek transitions to a gaining stream (i.e., groundwater discharges to surface water in the stream) downstream of the confluence of the Main and East forks of Issaquah Creek, which is proximate to the IVES Source Area.

Groundwater does not discharge to surface water in the vicinity of the EFR HQ Source Area. Monitoring of groundwater and surface water elevations indicates that the Main fork of

Public Review Draft

Issaquah Creek adjacent to the EFR HQ Source Area is a losing stream. Generally, downward vertical gradients from shallow groundwater to the intermediate groundwater interval were measured consistently throughout monitoring from 2020 to 2023 within the southern area of the Site and upward vertical gradients were measured within proximity to Issaquah Creek in the northern area of the Site. Seasonal fluctuations in vertical gradients were measured at well pair NDS-MW03/NDS-MW04, which is proximate to the confluence of the Main and East forks of Issaquah Creek.

Based on upward gradients and gaining section of the Main fork of Issaquah Creek within the northern portion of the Site, the groundwater to surface water pathway at the Site is potentially complete.

The ground surfaces of the AFFF Training Areas are pervious, allowing infiltration of stormwater. Infiltration of stormwater through these pervious surfaces prevents the runoff of stormwater from the Site which may have been in contact with contaminated soil. The remainder of the ground surface in the EFR HQ Source Area with exception to the stormwater detention basin is covered by impervious surfaces, preventing contact of stormwater with contaminated soil.

Previous testing of the stormwater detention basin indicated PFAS impacts to soil exceeded applicable cleanup levels in surficial soil. Stormwater collection and drainage to the stormwater detention basin comprises a series of catch basins in the paved parking area surrounding the EFR Headquarters Building, and the release is likely associated with former training activity wash-down and/or minor spills of AFFF detergent. The stormwater detention basin is fully vegetated with grass and does not have exposed soil.

The remainder of the ground surface in the IVES Source Area includes both impervious and pervious surfaces, with pervious surfaces separating the AFFF Training Areas and Issaquah Creek.

Based on the reported concentrations of PFAS in surficial soil in the stormwater detention basin, the soil to surface water pathway may potentially be complete at the stormwater detention basin at the EFR HQ Source Area. The groundwater to surface water pathway has also been established as potentially complete at the Site. Therefore, surface water is retained as a medium of concern at the Site.

Public Review Draft

4.3.4 Sediment

As described above, the soil to surface water pathway may potentially be complete and the groundwater to surface water pathway is potentially complete at the Site. Therefore, sediment is retained as a medium of concern at the Site.

4.4 SCREENING LEVELS

In accordance with WAC 173-340-350(3)(a), cleanup standards will not be established and a cleanup action will not be selected until completion of the remedial investigation. This subsection presents screening levels for the purpose of conducting the remedial investigation.

4.4.1 Soil Screening Levels

Cleanup levels evaluated as screening levels for COPCs at the Site include MTCA Method B direct contact cleanup levels for soil, MTCA cleanup levels for vadose zone soil protective of groundwater, MTCA cleanup levels for saturated soil protective of groundwater, and analytical method reporting limits.

The most stringent value of the MTCA cleanup level for vadose zone soil protective of groundwater or MTCA cleanup level for saturated soil protective of groundwater was selected as the screening level for a given COPC. Because vadose zone and saturated soil are both present at the Site, screening levels for both vadose zone and saturated soil protective of groundwater are established as soil screening levels for vadose zone and saturated soil, respectively.

In accordance with WAC 173-340-700(6)(d), in the case that cleanup levels are less than natural background levels or levels that can be reliably measured, the cleanup level shall be established at a concentration equal to the practical quantitation limit or natural background concentration, whichever is higher. As such, the analytical method reporting limit is selected as the screening level for select COPCs (Table 1).

Soil cleanup levels evaluated for use as soil screening levels and selected screening levels by COPC are presented in Tables 1 and 6.

4.4.2 Groundwater Screening Levels

Cleanup levels evaluated as screening levels for COPCs at the Site include MTCA Method B groundwater cleanup levels and U.S. Environmental Protection Agency (EPA) Maximum

Public Review Draft

Contaminant Levels (MCLs). If both a Method B equation value and an MCL are established for a COPC that is a carcinogen, the MCL is used as the screening level when the ratio of the MCL to the Method B equation value does not exceed 10; in these cases the MCL represents an acceptable risk threshold of no more than 1×10^{-5} cancer risk[6]. If the ratio of the MCL to the equation value is greater than 10, the MCL is adjusted down to the 10 times the equation value and this become the screening level. If both a Method B cleanup level and an MCL are established for a COPC that is not carcinogenic, the minimum of the two values is the screening level.

Groundwater cleanup levels and MCLs evaluated for use as groundwater screening levels and selected screening levels by COPC are presented in Tables 2, 7, and 8.

4.4.3 Surface Water Screening Levels

Cleanup levels evaluated as screening levels for COPCs at the Site include EPA surface water quality criteria (WQC) protective of freshwater aquatic life (acute and chronic exposure) and PFAS concentrations protective of ecological receptors in surface water based on a literature review (Ecology 2023). PFOS and PFOA are the only PFAS constituents with established WQC. Therefore, the minimum of the WQC and the literature-based values will be used as screening levels for PFOS and PFOA. Recommended PFAS concentrations protective of ecological receptors in surface water published by Ecology (2023) will be used as screening levels for the remaining COPCs.

4.4.4 Sediment Screening Levels

Sediment cleanup levels have not been established as of the date of this IAWP. Sediment screening levels will be established for the Site in coordination with Ecology.

4.5 NATURE AND EXTENT OF CONTAMINATION

The following section presents a summary of the current understanding of the nature and extent of contamination at the Site based on existing data.

Public Review Draft

[6] Per WAC 173-340-720(7)(a) cleanups must attain a Site hazard index of 1 and an excess cancer risk of one in 100,000.

4.5.1 Confirmed and Suspected Source Areas

The following sections describe confirmed source areas where COPCs have been identified associated with historical AFFF training exercises and other suspected source areas that were evaluated as part of preparation of the IAWP.

4.5.1.1 Confirmed Source Areas

Confirmed source areas at the Site include the EFR HQ and IVES Source Areas where AFFF is known to have been used lawfully for the purpose of training for fire-fighting personnel. The use of AFFF at these locations has resulted in the release of PFAS to soil and groundwater as confirmed by previous environmental investigation activities.

4.5.1.2 Suspected Source Areas

Limited soil sampling has been performed within the stormwater detention basin and paved asphalt area of the EFR HQ Source Area. Additional remedial investigation is required to confirm if vadose zone contamination in these areas is a source to shallow groundwater or surface water contamination. The additional investigation will be performed in accordance with the Ecology-approved Remedial Investigation Work Plan.

4.5.2 Extent of Contamination in Soil

Analytical results of soil samples collected within the two Source Areas indicate that soil within the former AFFF training areas, as previously estimated and sampled in 2018, exceed applicable soil screening levels for protection of groundwater.

Soil analytical results are summarized in Table 6. A cross-section presenting the estimated vertical extent of soil contamination at the EFR HQ Source Area is included on Figure 4. The current understanding of the lateral extent of soil contamination within the EFR HQ Source Area is depicted on Figure 6. Figures 7 through 10 present the lateral extent of soil contamination in the upper 0 to 5 feet bgs, 5 to 10 feet bgs, 10 to 15 feet bgs, and greater than 15 feet bgs beneath the EFR HQ Source Area, respectively.

4.5.3 Extent of Contamination in Groundwater

The following sections summarize the current understanding of the nature and extent of contamination in groundwater based on existing data. Groundwater analytical results are summarized in Tables 7 and 8. The lateral extent of groundwater contamination at the EFR HQ Source Area is illustrated on Figure 11.

Public Review Draft

4.5.3.1 Shallow Groundwater Interval

Analytical results of groundwater samples collected from permanent monitoring wells screened within the shallow groundwater interval at the Site indicate that shallow groundwater beneath, cross-, and down-gradient from the EFR HQ and IVES Source Areas is contaminated with PFAS constituents (including PFBS, PFHxS, PFOA, PFOS, PFNA, and PFDA) at concentrations exceeding applicable screening levels (Figure 11; Table 7).

4.5.3.2 Intermediate Groundwater Interval

Analytical results of groundwater samples collected from permanent monitoring wells screening within the intermediate groundwater interval at the Site indicate that intermediate groundwater beneath, cross-, and down-gradient from the EFR HQ and IVES Source Areas is contaminated with PFAS constituents (including PFHxS, PFOA, PFOS, PFNA, and PFDA) at concentrations exceeding applicable screening levels (Figure 11; Table 8).

4.5.3.3 Deep Groundwater Interval

No monitoring wells at or directly down-gradient of the EFR HQ IVES Source Area are screened in the deep groundwater interval. Analytical results of groundwater samples collected from permanent monitoring wells screening within the deep groundwater interval at the Site indicate that intermediate groundwater beneath, cross-, and down-gradient from the IVES Source Area is contaminated with PFAS constituents (including PFHxS, PFOA, PFOS, and PFNA) at concentrations exceeding applicable screening levels (Table 8).

4.6 FATE AND TRANSPORT

A summary of the contaminant fate and transport at the Site is provided below.

4.6.1 Soil to Groundwater

The presence of soil contaminated with PFAS at concentrations exceeding applicable screening levels has been confirmed within both Source Areas. PFAS have been detected in shallow groundwater beneath and down-gradient from the Source Areas. Based on these data, the migration of PFAS from soil to groundwater has been confirmed to be complete at the EFR HQ and IVES Source Areas.

4.6.2 Soil to Surface Water

Reported concentrations of PFAS in the stormwater detention basin exceed applicable screening levels. Although the stormwater detention basin is covered by grass and no bare

Public Review Draft

soil is present, the surficial soil may still be a potential source to surface water during high-runoff events.

4.6.3 Groundwater to Surface Water and Sediment

Monitoring of groundwater and surface water elevations at the Site has demonstrated the Main fork of Issaquah Creek to be a losing stream in the southern portion of the Site (including the vicinity of the EFR HQ Source Area) and a gaining stream in the northern portion of the Site. Seasonal variations in vertical flow directions have been observed at well pair NDS-MW03/NDS-MW04, which is proximate to the confluence of the Main and East forks of Issaquah Creek. Based on these data, the groundwater to surface water and sediment pathways is potentially complete.

4.7 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS

A summary of the potential receptors and exposure pathways at the Site is provided below.

4.7.1 Soil Direct Contact, Soil to Groundwater

Multi-incremental soil sampling within both Source Areas and the stormwater detention basin confirmed the presence of soil contaminated with PFAS at concentrations exceeding applicable screening levels at depths as shallow as 0 to 0.5 feet bgs (Figures 6 and 7; Table 6). These soil samples were collected from pervious surfaces within both Source Areas and groundwater contamination at the source areas has been confirmed. Based on the presence of exposed contaminated soils at the ground surface, the soil direct contact exposure pathway is complete within both Source Areas.

As summarized in Section 4.6.1, the soil to groundwater migration pathway has been confirmed to be complete.

4.7.2 Groundwater Ingestion

Point of entry treatment at production well COI-PW04 with granular activated carbon has reduced concentrations of PFAS to less than applicable screening levels. However, the engineering control must remain in-place to ensure that groundwater entering the distribution system does not contain PFAS at concentrations exceeding applicable screening levels.

Based on the confirmed presence of PFAS in the vicinity of and down-gradient from the Source Areas, the confirmed presence of PFAS contamination in shallow and intermediate

Public Review Draft

interval groundwater, and confirmed presence of PFAS at concentrations exceeding applicable screening levels in raw water extracted at City production well COI-PW04, the groundwater ingestion and direct contact exposure pathways are considered complete, though the treatment system reduces concentrations to below screening levels.

4.7.3 Groundwater to Surface Water and Sediment

As detailed in Section 4.6.2, the Main fork of Issaquah Creek has been demonstrated to be a losing stream in the southern portion of the Site and a gaining stream in the northern portion of the Site. Therefore, the groundwater to surface water and sediment exposure pathways are potentially complete.

4.7.4 Vapor Inhalation

The EPA defines volatile chemicals as compounds having a Henry's Law constant greater than 0.00001 atmosphere cubic meter per mole or a vapor pressure greater than 1 millimeter of mercury and a molecular weight less than 200 (EPA 2023). At least four PFAS, including 4:2, 6:2, 8:2, and 10:2 fluorotelomer alcohols (FTOHs), have sufficient vapor pressure to be designated as vapor-forming chemicals. These compounds do not have established cleanup levels, and were not included in analysis of soil or groundwater samples collected from the Site to date by EPA Method 527 Modified.

A study performed collaboratively by the Oregon State University Department of Chemistry and Department of Environmental and Molecular Biology did not identify 4:2, 6:2, 8:2, or 10:2 FTOHs as fluorochemicals present in AFFF. The study included analysis of 40 common AFFF mixtures used by the U.S. military, including those manufactured by 3M, National Foam, Ansul, Angus, Chemguard, Buckeye, and Fireade (Place and Field 2012).

Based on the limited number of PFAS that may potentially pose a vapor intrusion risk and that those same chemicals have not been documented as part of most commercially available AFFF formulations, the vapor intrusion and vapor inhalation pathways at the Site are considered incomplete.

4.7.5 Terrestrial Ecological Evaluation

A terrestrial ecological evaluation (TEE) is required by WAC 173-340-7490 at any site where a release of a hazardous substances to soil has occurred. The regulation requires that one of the following actions be taken:

- Documenting a TEE exclusion using the criteria presented in WAC 173-340-7491;

Public Review Draft

- Conducting a simplified TEE in accordance with WAC 173-340-7492; or
- Conducting a site-specific TEE in accordance with WAC 173-340-7493.

The EFR HQ Source Area is east-adjacent to a steep vegetated slope that has been preserved below existing developments to the west. At least 1.5 acres of contiguous undeveloped land are present within 500 feet of the EFR HQ Source Area.

The future remedy will more likely than not require excavation and/or treatment and future capping of shallow vadose source material at the EFR HQ Source Area. Under WAC 173-340-7491(1)(b), this end state allows the Site to be excluded from performing a TEE. The need to perform a simplified or site-specific TEE will be further evaluated as part of the RI/FS process. If a TEE is required, the analysis will be presented at that time.

Public Review Draft

5.0 SCOPE OF WORK

This section presents the objectives, technical elements, ARARs, permitting requirements, inadvertent discoveries, climate change considerations, and waste profiling and disposal for the planned interim action.

5.1 OBJECTIVES

The objectives of the interim action were developed with Ecology and include performing an interim action that meets the requirements of MTCA. The scope of work for the interim action includes:

- Excavation and in-situ stabilization of accessible soil contamination with high concentrations of PFAS above the water table to remove vadose zone sources[7] to groundwater.
- Expansion of the PRB to further reduce exposure risk from the soil to groundwater pathway and reduce migration of PFAS down-gradient from the NWN AFFF Training Area.
- Installation of an impervious asphalt cap to mitigate the direct contact exposure pathway, and to reduce rainwater infiltration that could mobilize vadose zone soil contamination from soil to groundwater. Performing performance groundwater monitoring in accordance with the Sampling and Analysis Plan (SAP) and Quality Assurance Program Plan (QAPP) to evaluate interim action performance and efficacy reducing concentrations of PFAS in groundwater.

5.2 INTERIM ACTION

Details of the interim action are summarized below.

5.2.1 Description of Work Elements and Sequence of Activities

The proposed interim action includes the following elements to reduce the threat to human health and the environment:

- Expansion of the pilot test PRB along the northern and eastern edges of the NWN AFFF Training Area to further reduce exposure risk from the soil to groundwater pathway;

[7] Concentrations in the vadose zone are higher than concentrations in the saturated zone.

Public Review Draft

- Vadose zone source treatment, including a combination of excavation and in-situ stabilization, of accessible soil above the water table with total PFAS concentrations greater than 1 milligram per kilogram (mg/kg) of PFAS to remove vadose zone sources to groundwater; and

- Installation of an impervious asphalt cap in the NWN AFFF Training Area, including installation of associated stormwater drainage infrastructure.

Additional details of the interim action work elements and sequence of activities are provided in the Engineering Design Report (EDR) in Appendix B. The proposed interim action elements and extents are illustrated on Figure 13.

5.2.2 Screening and Remediation Levels

The screening levels are the concentrations of COCs that are to be met for each medium of concern at the points of compliance for the Site. Remediation levels are defined as a concentration of hazardous substances in soil, air, or water above which a particular cleanup action component will be required as part of a cleanup action at a site (WAC 173-340-200). Remediation levels are appropriate for use at sites where the cleanup action involves containment of contaminated soil in accordance with WAC 173-340-740 (6)(f).

The remediation levels for soil and screening levels for groundwater are summarized below.

5.2.2.1 Soil

The remediation level for vadose zone soil that will be removed or amended in-situ within the NWN AFFF Training Area is 1 mg/kg of total PFAS, including all of the PFAS chemicals with screening levels. Soil with total PFAS concentrations less than 1 mg/kg will remain in-situ depending on depth; the direct contact exposure pathway will be mitigated by the installation of an approximately 26,000-square-foot impervious asphalt cap over the NWN AFFF Training Area. The soil to groundwater pathway will be addressed by the impervious asphalt cap, which will reduce rainwater infiltration that could mobilize vadose zone soil contamination from soil to groundwater, and through the expanded PRB, which will immobilize contamination in place.

Screening levels for soil are the greater of the MTCA Method B direct contact values for protection of groundwater or the laboratory method reporting limit. Soil samples will be compared to unsaturated and saturated values as appropriate.

Public Review Draft

5.2.2.2 Groundwater

The groundwater screening levels for the interim action include the groundwater screening levels discussed in Section 4.4.2 and summarized in Table 2.

5.2.3 Expansion of Permeable Reactive Barrier

Performance monitoring results from the PRB pilot test indicated that injected colloidal activated carbon products (i.e., Regenesis' PlumeStop) provide a technically feasible and highly effective treatment technology for PFAS in groundwater at the EFR HQ Source Area. The interim action includes construction of a full-scale PRB at the northern and eastern down-gradient edges of the NWN AFFF Training Area to immobilize PFAS in the subsurface, reducing their long-term mobility and impacts to groundwater. The full-scale PRB will expand upon the pilot test PRB installed in 2021 along the eastern down-gradient edge of the NWN AFF Training Area.

Additional details of the implementation of the PRB expansion are included in the EDR (Appendix B). The proposed PRB expansion is illustrated on Figure 13.

5.2.4 Bench Testing

Up to two borings will be advanced within the proposed source treatment areas to collect soil samples for bench testing to determine the appropriate treatment product dosing rate of the selected colloidal activated carbon-based stabilization product to reduce PFAS leachability by a minimum of 95 percent, as determined based on pre- and post-treatment analytical results. Borings will be advanced with a sonic drill rig during the mobilization for the remedial investigation activities to be performed under the Ecology-approved Remedial Investigation Work Plan. The borings will be located within the treatment areas to 10 feet bgs (Figure 13). Two soil samples will be collected from each boring at 5 and 10 feet bgs. Soil samples will be submitted to the remediation contractor for bench testing. Bench testing results will be provided to Ecology for review prior to implementation of the interim action.

5.2.5 Source Area Preparation and Mobilization

Prior to performing the interim action, existing monitoring wells (NWN-MW04, NWN-MW10, NWN-MW12, NWN-MW13, and NWN-MW17) located within the source treatment area will require decommissioning to facilitate access for excavation and in-situ soil stabilization. Monitoring wells will be decommissioned by a Washington-licensed well driller in accordance

Public Review Draft

with the Minimum Standards for Construction and Maintenance of Wells as established in WAC 173-160.

Contractor mobilization and site preparation includes preparation of construction plans; mobilization of equipment, materials, and staff; and preparing for construction activities. Additionally, designated control zones and staging areas will be established during mobilization. Additional details of mobilization and site preparation are included in the EDR (Appendix B).

5.2.6 Excavation and In-Situ Stabilization of PFAS Contaminated Soil

Vadose zone source treatment is designed to further enhance overall groundwater treatment performance by reducing the available source mass of PFAS through direct excavation and reducing the mobility of PFAS in vadose soil through blending with carbon-based amendments. Excavated soil will be disposed of off the property at a licensed and permitted Subtitle C treatment, storage, and disposal facility. The combined actions will treat approximately 5,500 tons of PFAS-contaminated soil within the NWN AFFF Training Area.

Additional details of the implementation of the vadose zone source treatment are included in the EDR (Appendix B). The proposed vadose zone source treatment area is illustrated on Figure 13.

5.2.7 Capping

An impervious asphalt cap will be constructed in the NWN AFFF Training Area following completion of soil stabilization, excavation, stormwater infrastructure installation, and backfilling and compaction activities. The planned asphalt cap is approximately 26,000 square feet. Additional details of the planned capping and associated stormwater infrastructure are included in the EDR (Appendix B).

5.3 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

The primary ARARs related to the interim action are the following:

- Model Toxics Control Act, Chapter 70A.305 of the Revised Code of Washington (Chapter 70A.305 RCW);
- Washington State Solid Waste Management Laws and Regulations (Chapter 70.95 RCW; Chapter 173-351 WAC; and Chapter 173-304 WAC); and

Public Review Draft

- Guidance for Investigating and Remediating PFAS Contamination in Washington State, revised June 2023, prepared by Ecology (2023).

Other ARARs that may be applicable for the interim action are the following:

- The Water Quality Standards for Groundwaters of the State of Washington (Chapter 173-200 WAC);
- The Hazardous Waste Management Act (Chapter 70.105 of the Revised Code of Washington [Chapter 70.105 RCW]);
- Dangerous Waste Regulations (Chapter 173-303 WAC);
- Accreditation of Environmental Laboratories (Chapter 173-50 WAC);
- The Occupational Safety and Health Act (Part 1910 of Title 29 of the Code of Federal Regulations [29 CFR 1910] and Chapter 296-62 WAC);
- Washington Industrial Safety and Health Act (Chapter 49.17 RCW; Chapter 296-62 WAC);
- The State Environmental Policy Act (Chapter 43.21 RCW; Chapter 197-11 WAC; and Chapter 173-802 WAC);
- Maximum Contaminant Levels, National Primary Drinking Water Regulations (WAC 246-290-310 and 46 CFR 141);
- Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 WAC);
- Safety Standards for Construction Work (Chapter 296-155 WAC); and
- Applicable local permits and ordinances indicated by the City of Issaquah Municipal Code.

5.4 PERMITTING AND OTHER REGULATORY REQUIREMENTS

The following sections describe the permitting and substantive requirements applicable to the interim action.

5.4.1 State Environmental Policy Act

The State Environmental Policy Act (SEPA) (WAC 197-11) and the SEPA procedures (WAC 173-802) provide the framework for state agencies to evaluate the environmental consequences of a project and ensure appropriate measures are taken to mitigate

Public Review Draft

environmental impacts. SEPA is applicable to the interim action excavation activities. A SEPA Checklist will be prepared and submitted for the interim action excavation activities.

5.4.2 City of Issaquah Site Work Permit

A Site Work Permit application will be prepared and submitted for the interim action excavation, paving, and utility expansion activities. In addition to a full site plan and civil drawings, the Site Work Permit application will include a Geotechnical Design Report, a project-specific Temporary Erosion and Sediment Control plan, and a Construction Impact Mitigation Plan. A topographic survey will be conducted of the EFR HQ Source Area by a Washington State-licensed surveyor in conjunction with preparation of the permit application.

5.4.3 Underground Injection Control Permit

Before remedial injections are conducted, authorization from Ecology's Underground Injection Control (UIC) program is required. The UIC program is administered by Ecology in accordance with Chapter 173-218 of the Washington Administrative Code to protect groundwater by regulating the discharge of fluids from UIC injection wells, and a UIC authorization is required for all remedial injection activities.

5.5 INADVERTENT DISCOVERIES

An Inadvertent Discovery Plan (IDP) was prepared for the Site to outline the procedures to perform in the event of a discovery of archaeological materials or human remains. The IDP is included as Appendix C.

5.6 CLIMATE CHANGE CONSIDERATIONS

In accordance with WAC 173-340-350(6)(f), Farallon evaluated current and projected local and regional climatological characteristics to determine whether any could potentially affect the migration of hazardous substances or the resilience of the interim action for the EFR HQ Source Area. According to Ecology's Sustainable Remediation: Climate Change Resiliency and Green Remediation dated November 2017, revised January 2023 (Ecology 2017) (Ecology Climate Guidance), sea level rise, flooding, extreme precipitation, wildfires, landslides and erosion, and drought are the climate-related impacts that generally pose the highest potential risk for upland cleanup sites.

Based on the location of the EFR HQ Source Area in a highly developed area in Issaquah, and the elevation of the EFR HQ Source Area with respect to sea level, current and projected

Public Review Draft

local and regional climatological characteristics are not anticipated to affect the migration of hazardous substances or the resilience of the interim action at the EFR HQ Source Area. A summary of the climate change evaluation is presented in the following sections.

5.6.1 Sea Level Rise

The EFR HQ Source Area is located at an elevation of approximately 90 feet North American Vertical Datum of 1988. Therefore, sea level rise is not anticipated to affect the migration of hazardous substances or the resilience of the interim action at the EFR HQ Source Area.

5.6.2 Flooding

Farallon reviewed Federal Emergency Management Agency flood maps for the vicinity of the EFR HQ Source Area, which indicate that the EFR HQ Source Area is in an area of minimal flood hazard (Appendix D). Additionally, Farallon reviewed the King County iMap for the vicinity of the EFR HQ Source Area, which indicates that the EFR HQ Source Area is not located within mapped wetlands or a 100-year floodplain (Appendix D). Therefore, climate changes to precipitation are unlikely to cause increased flooding at the EFR HQ Source Area that could affect the migration of hazardous substances or the resilience of the interim action at the EFR HQ Source Area.

5.6.3 Wildfires

The Ecology Climate Guidance indicates that increased risk of wildfires is a potential climate-related hazard in areas proximate to fuel sources such as forests and grasslands. Due to the location of the EFR HQ Source Area in a highly developed area, fuel sources for wildfires are not present and the threat that wildfires could affect the migration of hazardous substances or the resilience of the interim action at the EFR HQ Source Area is unlikely.

5.6.4 Landslides and Erosion

Farallon reviewed the King County iMap for the vicinity of the EFR HQ Source Area, which indicates that the EFR HQ Source Area is not located within a critical erosion hazard area or unstable soils (Appendix D). Additionally, the EFR HQ Source Area is in a relatively flat and highly developed area, with minimal exposed ground surface. The area west of the EFR HQ Source Area has a steep slope and is classified as a landslide hazard area. Although landslides onto the EFR HQ Source Area are possible, they are unlikely to affect the migration of hazardous substances or the resilience of the interim action, which will be below the ground surface.

Public Review Draft

5.6.5 Drought

The Ecology Climate Guidance indicates that cleanup sites vulnerable to drought include groundwater sites vulnerable to a lowered water table, sediment sites in drought-prone waterbodies, and mines and landfills reliant on rain to maintain vegetative cover for slope stability. Groundwater elevations have remained relatively stable at the EFR HQ Source Area since groundwater monitoring began in 2018 and the EFR HQ Source Area does not appear to be vulnerable to a lowered water table. Therefore, drought is not considered to be a likely climate-related impact that could affect the migration of hazardous substances or the resilience of the interim action at the EFR HQ Source Area.

5.7 PFAS WASTE PROFILING AND DISPOSAL

Based on existing data for the EFR HQ Source Area, all soil within the planned interim action area is contaminated with PFAS as a result of AFFF training. The selected interim action includes in-situ stabilization which minimizes the need for off-property transport and disposal of PFAS-contaminated soil. However, an estimated 630 cubic yards will require off-property disposal to allow for soil mixing. The upper approximately 1.4 feet of the planned treatment area will be excavated for off-property disposal. Existing laboratory analytical data will be used to profile soil for disposal.

Excavated soil will either be direct loaded into trucks or roll-off containers for off-property disposal. If needed, soil may be temporarily stockpiled on top of plastic sheeting and covered with plastic sheeting when not in use.

Investigation-derived waste (i.e., soil cuttings, wastewater, and disposable equipment) generated during the interim action activities may be contaminated with PFAS and will be containerized and temporarily stored at the EFR HQ Source Area pending waste profiling and selection of a disposal method. The specific criteria for tracking the sampling and analysis of the waste to identify appropriate disposal options for each of the expected waste streams are discussed below.

5.7.1 Soil Cuttings

Soil cuttings will be generated during the interim action and monitoring well installation following completion of the interim action. Soil cuttings from soil boring and monitoring well installation will be containerized in Department of Transportation-approved steel drums. Drums will be appropriately labeled, sealed, and stored on-Site pending completion of waste profiling for disposal. Upon completion of waste profiling, the drums will be removed from

Public Review Draft

the EFR HQ Source Area for off-site disposal in accordance with local, state, and federal regulations.

Soil waste will be removed and waste manifests will be uploaded to Ecology's Administration of Grants and Loans (EAGL) database at least 30 days prior to expiration of the One-Time Grant Agreement No. OTGP-2025-EFR-00087.

5.7.2 Wastewater

Wastewater will be generated during monitoring well purging and equipment decontamination. Wastewater from monitoring well development and purging and equipment decontamination will be containerized in Department of Transportation-approved steel drums. Drums will be appropriately labeled, sealed, and stored on-Site pending completion of waste profiling for disposal. Upon completion of waste profiling, the drums will be removed from the EFR HQ Source Area for off-site disposal in accordance with local, state, and federal regulations.

Wastewater will be removed and waste manifests will be uploaded to Ecology's Administration of Grants and Loans (EAGL) database at least 30 days prior to expiration of the One-Time Grant Agreement No. OTGP-2025-EFR-00087.

5.7.3 Disposable Consumables

Disposable consumables in the form of plastic gloves, disposable sampling devices and equipment, plastic sheeting used for containment during drilling, and similar wastes will be disposed of as municipal solid waste.

Public Review Draft

6.0 PERFORMANCE AND COMPLIANCE MONITORING

This section presents a summary of performance and compliance monitoring to be performed during the interim action.

6.1 PROTECTION MONITORING

A Site-specific Health and Safety Plan (HASP) was prepared for the EFR HQ Source Area. The HASP identifies hazards associated with the EFR HQ Source Area and scope of work and establishes procedures for implementation of the scope of work as they relate to Site hazards. The HASP is included in Appendix E.

Construction workers encountering contaminated soil will have completed 40-Hour Hazardous Waste Operations and Emergency Response training in accordance with 29 CFR 1910.120 and will have completed Annual 8-Hour Hazardous Waste Operations and Emergency Response refresher training, as needed.

6.2 SOIL PERFORMANCE MONITORING

Performance soil samples were collected during the prior remedial investigation activities to assist with defining the lateral and vertical extent of contaminated soil and classifying the soil for segregation and disposal. Soil analytical results for samples collected during the remedial investigation are summarized in Table 6 and illustrated on Figures 6 through 10.

Soil performance monitoring will involve collecting in-situ soil samples for laboratory analysis to quantify concentrations of COPCs in soil and to perform bench testing. Bench testing will be conducted to determine the appropriate treatment product dosing rate of the selected CAC-based stabilization product to reduce PFAS leachability by a minimum of 95 percent.

Discrete soil samples will be collected from the treatment area during pre-interim action bench testing. Soil samples will be collected in accordance with the SAP and QAPP. The SAP is included in Appendix F and the QAPP is included in Appendix G.

6.3 SOIL CONFIRMATION MONITORING

Confirmation soil samples were collected during the prior remedial investigation activities to assist with defining the lateral and vertical extent of contaminated soil exceeding the proposed soil remediation level. The efficacy of the interim action will be monitored through groundwater performance monitoring detailed in Section 6.4.

Public Review Draft

6.4 GROUNDWATER PERFORMANCE MONITORING

Groundwater performance monitoring will be completed to monitor the efficacy of the interim action. Groundwater monitoring will be performed in accordance with the Compliance Monitoring Plan (Appendix H). Groundwater samples will be collected and analyzed in accordance with the SAP and QAPP included in Appendices F and G, respectively.

Public Review Draft

7.0 SCHEDULE AND REPORTING

7.1 EIM DATA SUBMITTALS

Data will be submitted to Ecology's Environmental Information Management System (EIM) database within 30 days of submitting the Final Interim Action Report to Ecology.

7.2 INVESTIGATION SCHEDULE AND KEY MILESTONES

A preliminary project schedule outlining key milestones for the interim action in accordance with the AO and One-Time Grant Agreement No. OTGP-2025-EFR-00087 is presented in Appendix I.

7.3 INTERIM ACTION REPORT

As outlined in the project schedule included as Appendix I, the Interim Action Report will be uploaded to the EAGL database as draft for agency review (DFAR) within 60 days following completion of the interim action field activities, including completion of the second semi-annual compliance groundwater monitoring event.

A final Remedial Investigation Report, including Ecology's comments to the DFAR Interim Action Report will be uploaded to the EAGL database within 30 days following receipt of final comments to the DFAR Interim Action Report.

A summary of the interim action will be included with the Remedial Investigation Report for the EFR HQ IVES Site. The Interim Action Report will be included as an attachment to the Remedial Investigation Report, which will include a public comment period.

Public Review Draft

8.0 REFERENCES

City of Issaquah. 2017. Memorandum Regarding Soil Sampling Results – East Sunset Way Sites. January 31.

Corona Environmental Consulting. 2016. Summary of Perfluorinated Compounds (PFCs) Results for Water Samples Collected August 29, 2016. September 21.

Eastside Fire and Rescue (EFR). 2017. Letter Regarding Summary of Activities Related to Perfluorooctane Sulfonic Acid (PFOS) Investigation from former Fire Chief Jeff Clark of EFR to the City of Issaquah and Sammamish Plateau Water District. June 12.

Farallon Consulting, L.L.C. (Farallon). 2016. Interview Regarding Firefighting Training Exercises Between a Representative of Farallon and Bob Butterfield and Kelly Revfem, Representatives of Eastside Fire and Rescue. November 13.

———. 2018. Dodd Fields and Rainier Trail Areas of Interest Groundwater Sampling Summary, Lower Issaquah Valley PFAS Characterization Study. November 9.

———. 2019. *Per- and Poly-Fluoroalkyl Substances Characterization Study Summary Report, Lower Issaquah Valley.* Prepared for EFR. March 27.

———. 2021a. *Per- and Poly-Fluoroalkyl Substances Additional Characterization Study Summary Report, Lower Issaquah Valley.* April 14.

———. 2021b. *Potential Source Evaluation, Lower Issaquah Valley Additional PFAS Characterization Study.* April 7.

———. 2023. *Draft Remedial Investigation Report, Eastside Fire and Rescue Headquarters Site, 174 Newport Way Northwest, Issaquah, Washington.* Prepared for Eastside Fire and Rescue. October 2023.

Geosyntec Consultants, Inc. (Geosyntec). 2016a. Initial Hydrogeologic Assessment, Wells 4 and 5. March 4.

———. 2016b. *Hydrogeological Characterization Report, Issaquah, Washington.* Prepared for the City of Issaquah. November 16.

———. 2023. *Draft Well Installation Completion Report, Lower Issaquah Valley, Issaquah Washington.* Prepared for the City of Issaquah. January.

Public Review Draft

Golder Associates. 1993. *Lower Issaquah Valley Wellhead Protection Plan Volume 1.* Prepared for the Sammamish Plateau Water and Sewer District. November 15.

———. 2000. *Groundwater Exploration and Pumping Tests, Lower Issaquah Valley.* Prepared for the City of Issaquah. January.

Interstate Technology Regulatory Council (ITRC). 2017. *History and Use of Per- and Polyfluoroalkyl Substances (PFAS)*. November.

Place Benjamin J. and Jennifer A Field. 2012. *Identification of Novel Fluorochemicals in Aqueous Film-Forming Foams (AFFF) Used by the Military.* Environmental Science and Technology vol 46 no 13. July 3.

U.S. Environmental Protection Agency (EPA). 2023. *Subsurface Per- and Poly-Fluoroalkyl Substances (PFAS) Distribution at Two Contaminated Sites.* November.

Washington State Department of Ecology (Ecology). 2017. *Sustainable Remediation: Climate Change Resiliency and Green Remediation – A Guide for Cleanup Project Managers.* Revised January 2023. November.

———. 2018. IAA No. C1800181 between the State of Washington, Department of Ecology and Eastside Fire and Rescue. July 10.

———. 2019a. IAA No. C2000069 between The State of Washington, Department of Ecology and the City of Issaquah. December 18.

———. 2019b. IAA No. C2000071 between The State of Washington, Department of Ecology and Eastside Fire and Rescue. December 3.

———. 2021. IAA No. C2100056 between The State of Washington, Department of Ecology and Eastside Fire and Rescue. March 29.

———. 2022a. IAA No. C2200169 between The State of Washington, Department of Ecology and Eastside Fire and Rescue. April 13.

———. 2022b. IAA No. C2200183 between The State of Washington, Department of Ecology and the City of Issaquah. April 13.

———. 2022c. Early Notice Letter Regarding a Release of Hazardous Substances: Eastside Fire and Rescue Headquarters. April 14.

Public Review Draft

——. 2022d. Early Notice Letter Regarding a Release of Hazardous Substances: Issaquah Valley Elementary School and Dodd Fields Park. April 14.

——. 2023. *Guidance for Investigating and Remediating PFAS Contamination in Washington State.* Publication No. 22-09-058. June.

Western Regional Climate Center. Greater Seattle Area Climate Data. <https://wrcc.dri.edu/>. (July 16, 2018.)

Public Review Draft

9.0 LIMITATIONS

9.1 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 Site 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 Site that were not investigated or were inaccessible. Site activities 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 Site 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.

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

9.2 LIMITATION ON RELIANCE BY THIRD PARTIES

Reliance by third parties is prohibited. This report/assessment has been prepared for the exclusive use of the PLPs to address the unique needs of the PLPs at the EFR HQ IVES Site at a specific point in time.

This is not a general grant of reliance. No one other than the PLPs may rely on this report unless Farallon agrees in advance to such reliance in writing. Any unauthorized use,

Public Review Draft

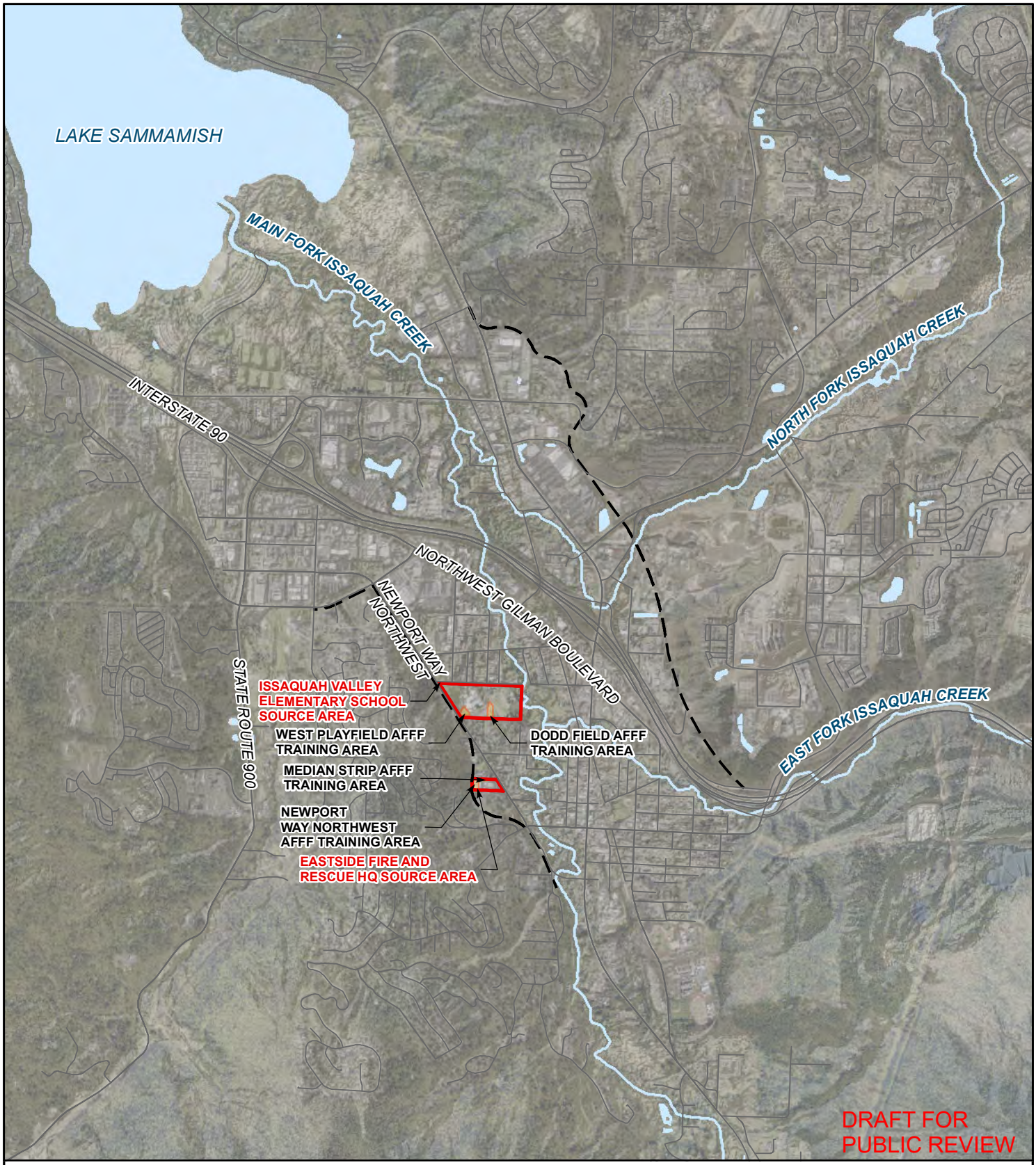
interpretation, or reliance on this report/assessment is at the sole risk of that party and Farallon will have no liability for such unauthorized use, interpretation, or reliance.

Public Review Draft

FIGURES

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009



LEGEND

- CREEK
- LOWER ISSAQUAH VALLEY
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- SOURCE AREA

0 2,500

SCALE IN FEET

N

FARALLON CONSULTING

Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

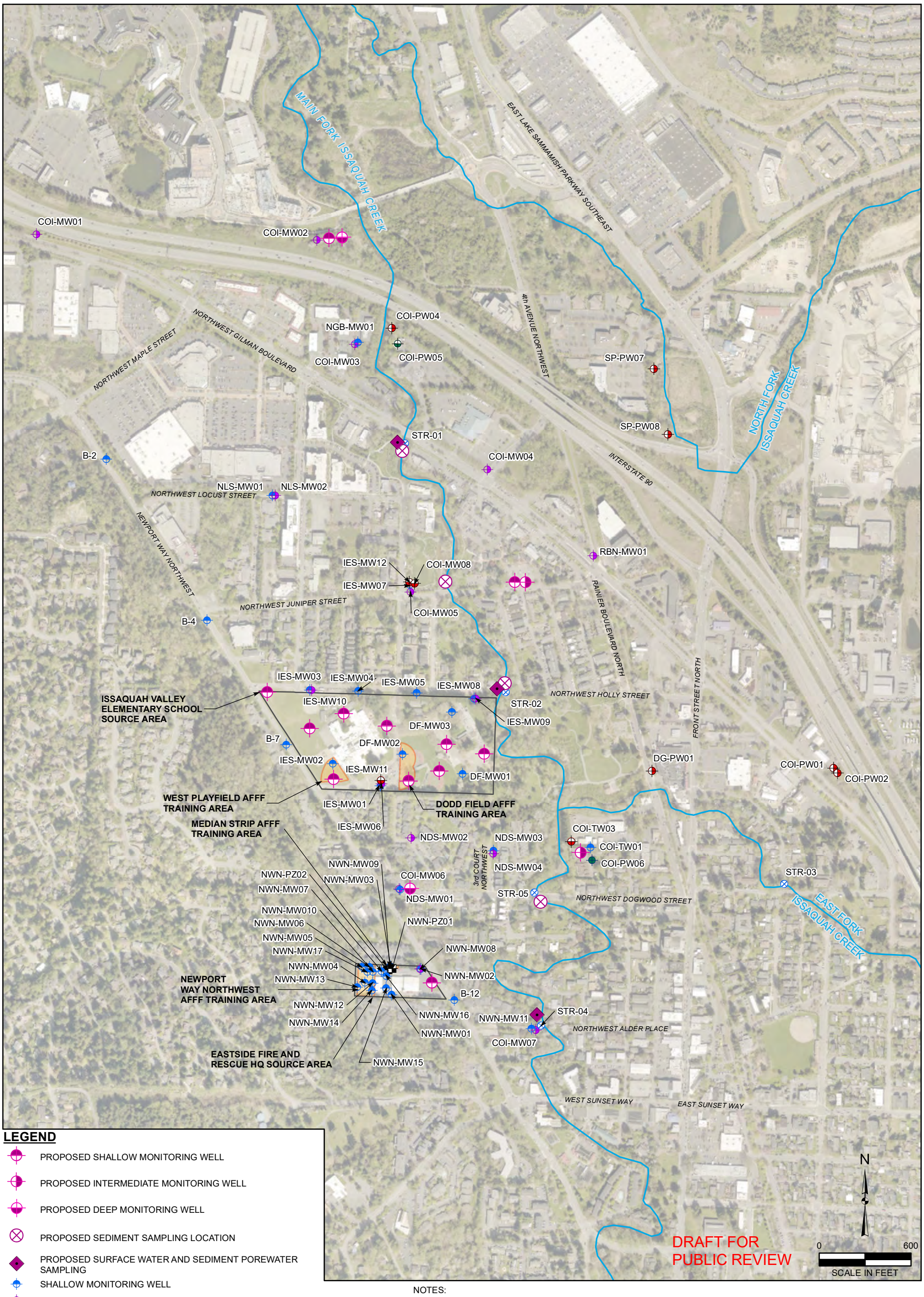
FIGURE 1

LOWER ISSAQUAH VALLEY VICINITY MAP
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock Checked By: SS Date: 5/29/2025 Disc Reference:

Document Path: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-01_Vicinity.mxd



LEGEND

- PROPOSED SHALLOW MONITORING WELL
- PROPOSED INTERMEDIATE MONITORING WELL
- PROPOSED DEEP MONITORING WELL
- PROPOSED SEDIMENT SAMPLING LOCATION
- PROPOSED SURFACE WATER AND SEDIMENT POREWATER SAMPLING
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- DEEP MONITORING WELL
- PIEZOMETER
- STREAM GAUGING STATION
- INTERMEDIATE PRODUCTION WELL
- DEEP PRODUCTION WELL
- PRODUCTION WELL
- LISTED SITE
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- A A' LINE OF CROSS-SECTION

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

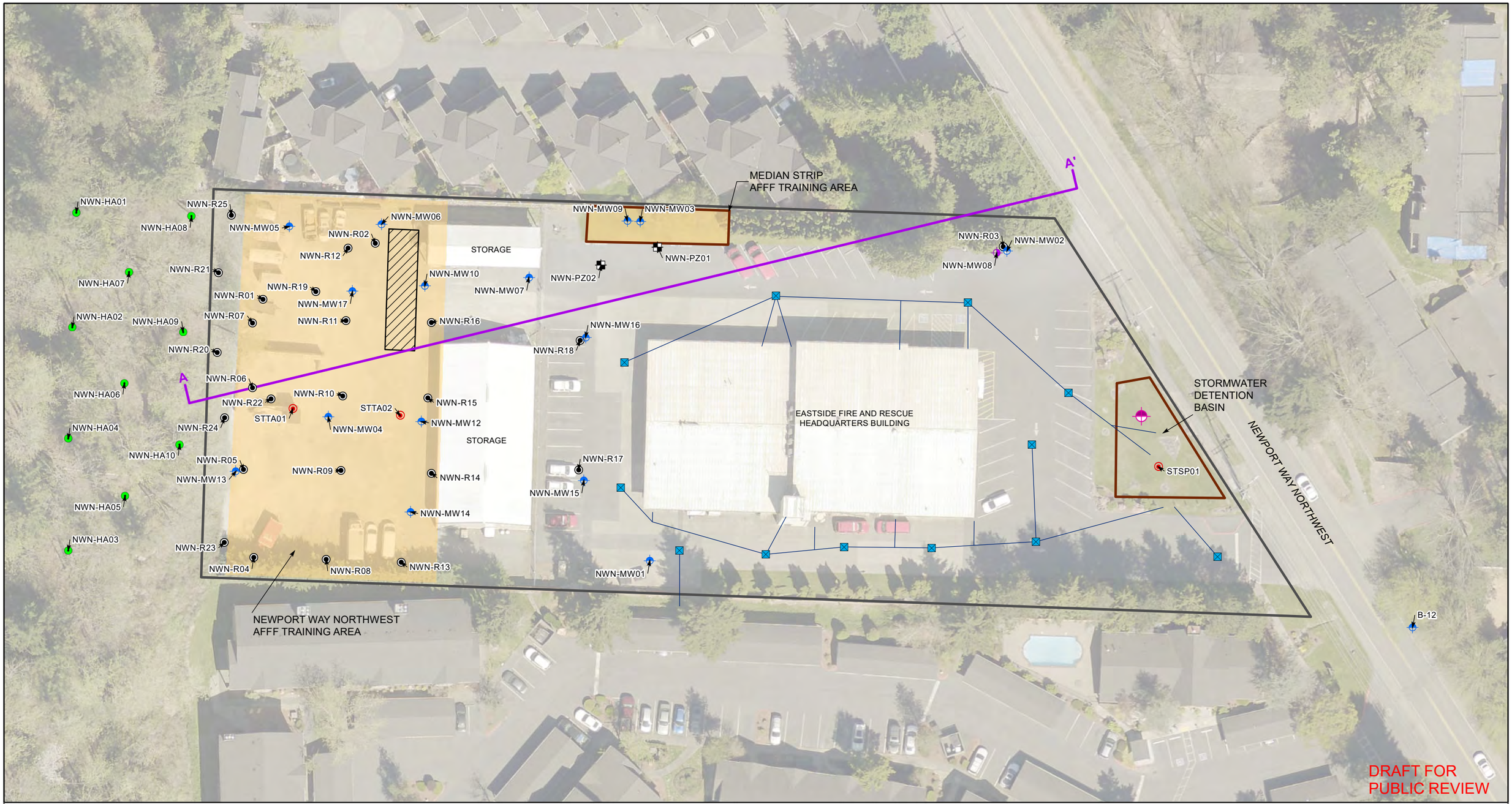
FIGURE 2

EFR HQ IVES SITE PLAN
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-008

Drawn By: jjones | Checked By: SS | Date: 9/3/2025 | Disc Reference:

Path: Q:\Projects\1754 EastsideFireRescue\008 Remedial Inv\001\Figure-02_EFRHQ-IVES_SitePlan.mxd



LEGEND

- PROPOSED SHALLOW MONITORING WELL
- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- CATCH BASIN
- STORMWATER LINE
- LINE OF CROSS-SECTION
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

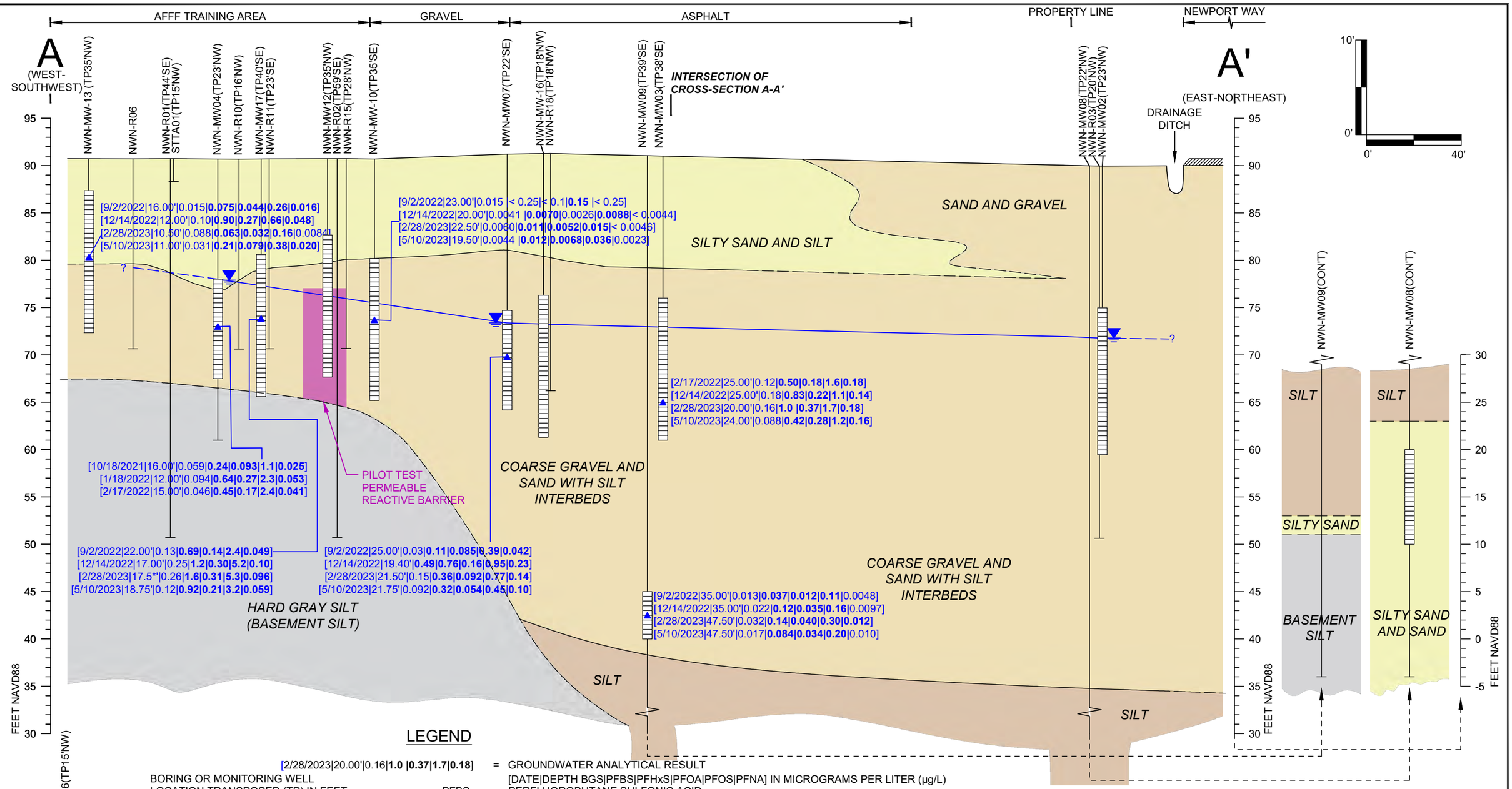
California
Oakland | Irvine

FIGURE 3

EFR SOURCE AREA PLAN
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-02_EFR-HQ-Plan.mxd



LEGEND

[2/28/2023|20.00'|0.16|**1.0 |0.37|1.7|0.18**] = GROUNDWATER ANALYTICAL RESULT [DATE|DEPTH BGS|PFBS|PFHxS|PFOA|PFOS|PFNA] IN MICROGRAMS PER LITER (µg/L)

BORING OR MONITORING WELL LOCATION TRANSPOSED (TP) IN FEET, NORTHWEST (NW) OR SOUTHEAST (SE), TO CROSS-SECTION LINE

NWN-R06(TP15'NW)

GROUNDWATER SAMPLE

GROUNDWATER LEVEL (DASHED WHERE INFERRED)

STRATIGRAPHIC CONTACT (DASHED WHERE INFERRED)

BLANK CASING OR BORING

GROUNDWATER ELEVATION (APRIL 13, 2020)

WELL SCREEN

PFBS = PERFLUOROBUTANE SULFONIC ACID
PFHxS = PERFLUOROHEXANE SULFONIC ACID
PFOA = PERFLUOROOCTANOIC ACID
PFOS = PERFLUOROOCTANE SULFONIC ACID
PFNA = PERFLUORONONANOIC ACID
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT
BOLD = DENOTES CONCENTRATIONS THAT EXCEED APPLICABLE WASHINGTON STATE DEPARTMENT OF ECOLOGY INVESTIGATORY LEVELS
NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988
AFFF = AQUEOUS FILM FORMING FOAM

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

NOTES (CON'T):
3. STANDARD PRODUCT NAMES ARE PROVIDED FOR PFOS AND PFOA. BOTH COMPOUNDS WILL BE IN THEIR IONIC FORM WHEN ENCOUNTERED IN THE ENVIRONMENT.
4. ADDITIONAL ANALYTICAL DATA AVAILABLE IN REPORT TABLES.

DRAFT FOR PUBLIC REVIEW

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com
Washington: Bellevue | Bellingham | Seattle
Oregon: Portland | Baker City
California: Oakland | Irvine

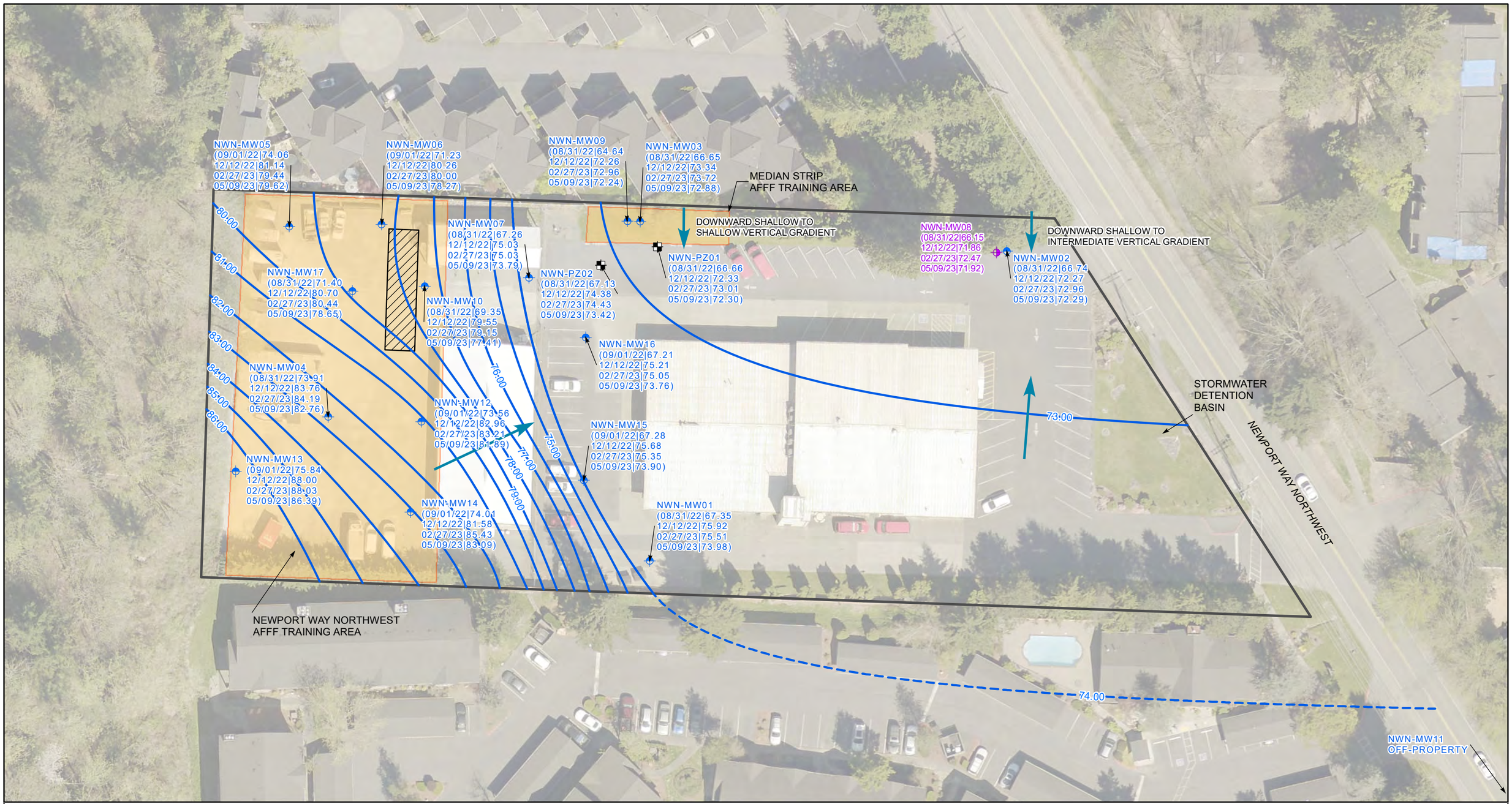
Drawn By: RB Checked By: SS

FIGURE 4

EFR HQ SOURCE AREA CROSS SECTION A-A'
EFR HQ IVES SITE
175 NEWPORT WAY NW AND 555 NW HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-008

R:\Projects\1754-008\CAD\Figures\2025.08\1754-008 X Section B-B' dwg 9/2/2025 10:38 AM (Ryan Bates)



LEGEND

- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING
- PIEZOMETER
- PROPERTY BOUNDARY
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

2/17/22|74.53 SHALLOW GROUNDWATER MEASUREMENT DATE AND ELEVATION

2/17/22|72.89 INTERMEDIATE GROUNDWATER MEASUREMENT DATE AND ELEVATION

86.00 GROUNDWATER ELEVATION CONTOUR (MAY 9, 2023) (DASHED WHERE INFERRED)

APPROXIMATE DIRECTION OF SHALLOW GROUNDWATER FLOW

GROUNDWATER ELEVATIONS IN NORTH AMERICAN VERTICAL DATUM OF 1988.
EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

0 50
SCALE IN FEET

N

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

DRAFT FOR PUBLIC REVIEW

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

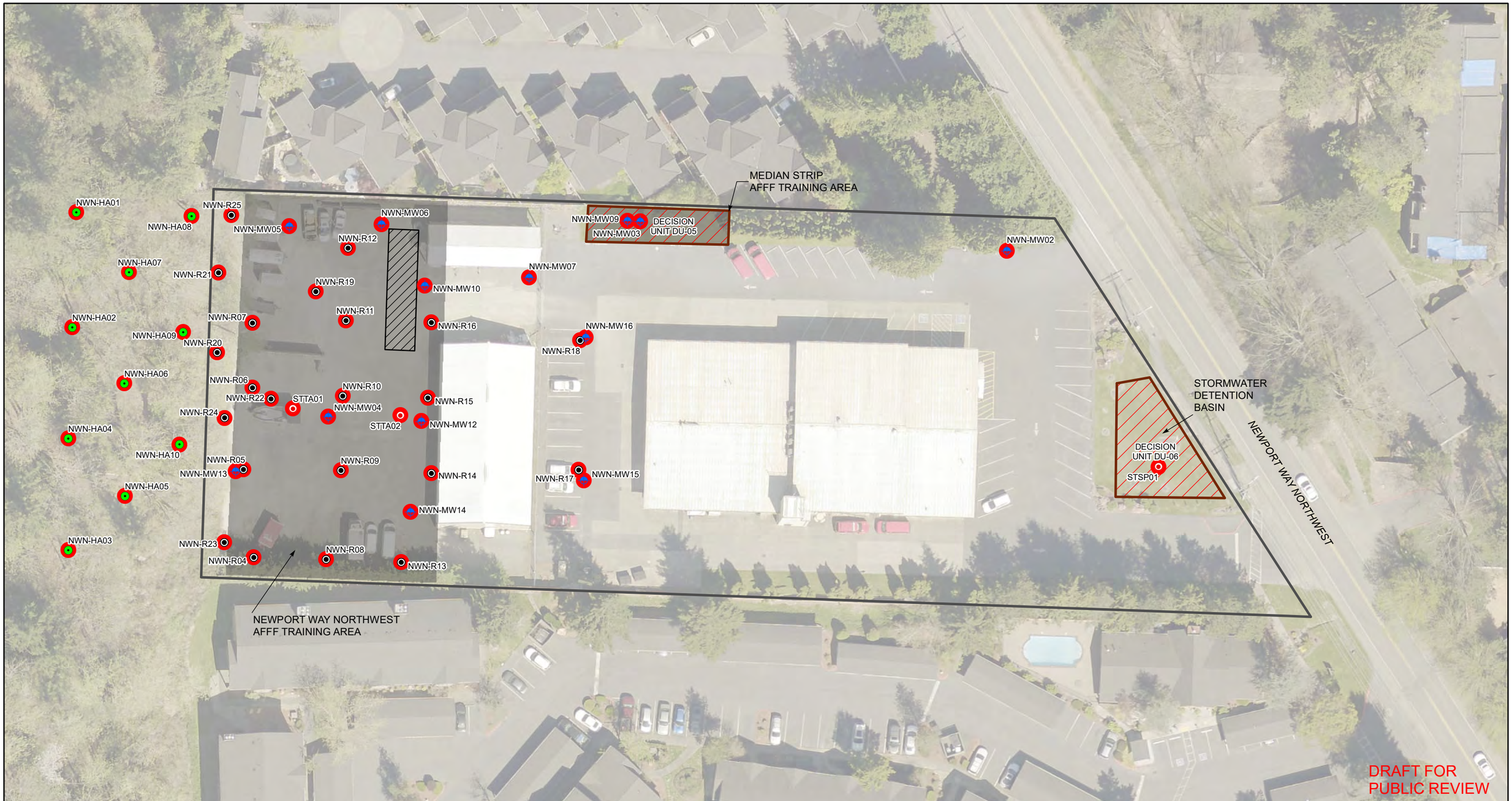
California
Oakland | Irvine

FIGURE 5

EFR HQ SOURCE AREA GROUNDWATER ELEVATIONS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 5/22/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-04_EFR-HQ_GW-Elv.mxd



LEGEND

- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS WITHIN DECISION UNIT
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

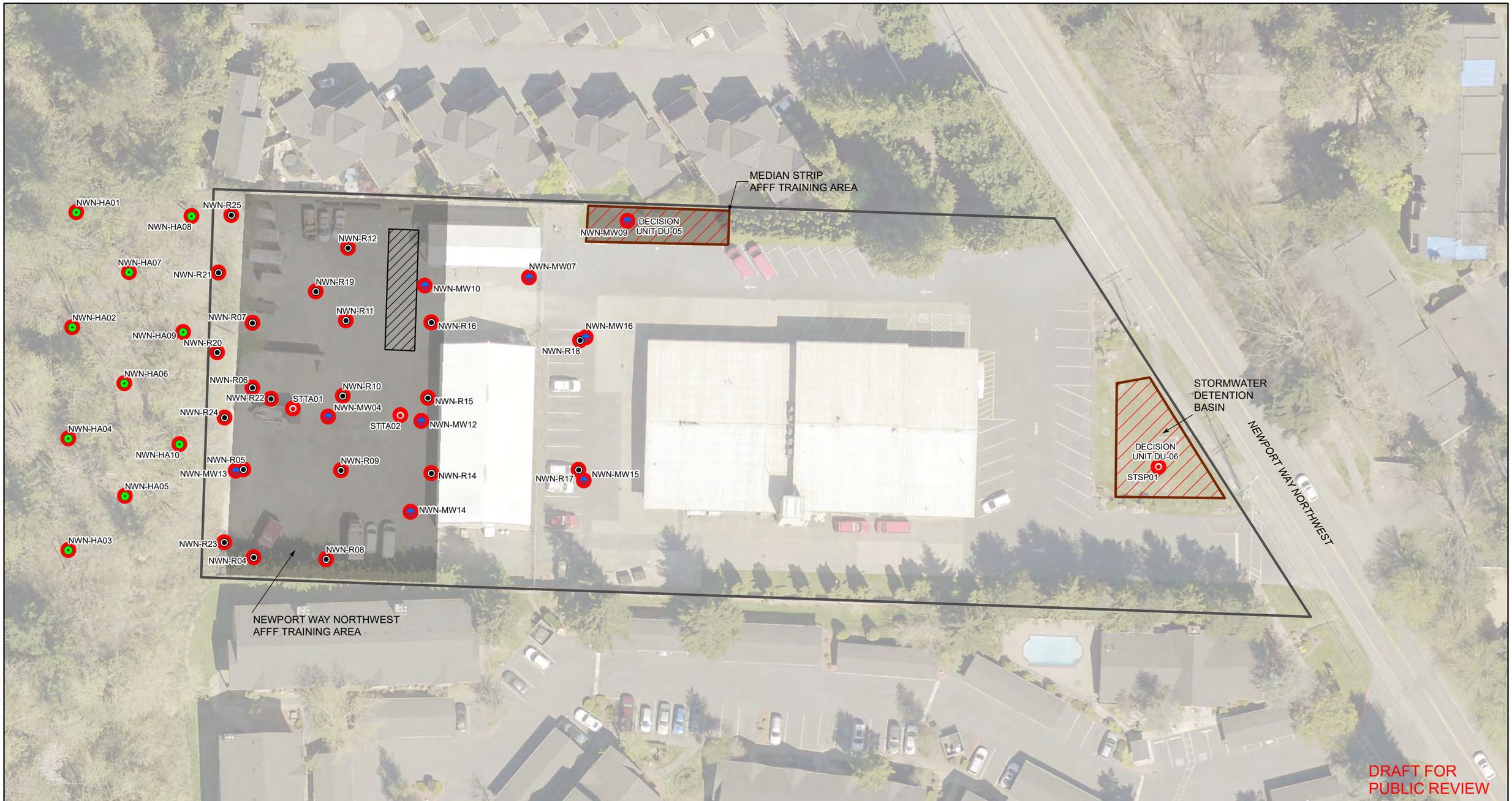
California
Oakland | Irvine

FIGURE 6

EFR HQ IVES SITE SOIL PFAS CONCENTRATIONS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-05_EFR-HQ_Soil-PFAS_All.mxd



LEGEND

- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS WITHIN DECISION UNIT
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

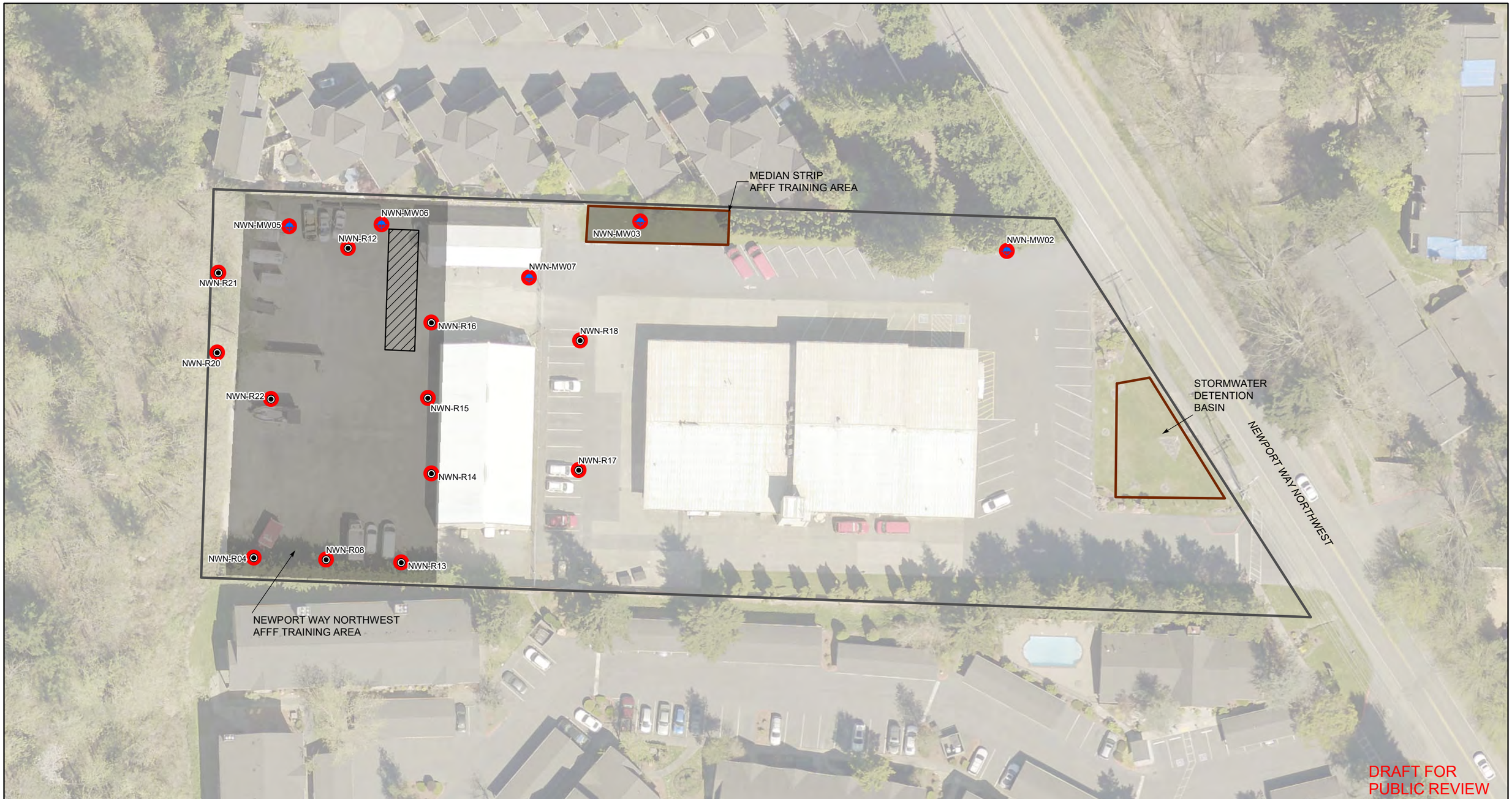
California
Oakland | Irvine

FIGURE 7

EFR HQ SOURCE AREA SOIL PFAS CONCENTRATIONS
<5 FEET BELOW GROUND SURFACE
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-06_EFR-HQ_Soil-PFAS_Lift_1.mxd



LEGEND

- BORING
- SHALLOW MONITORING WELL
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

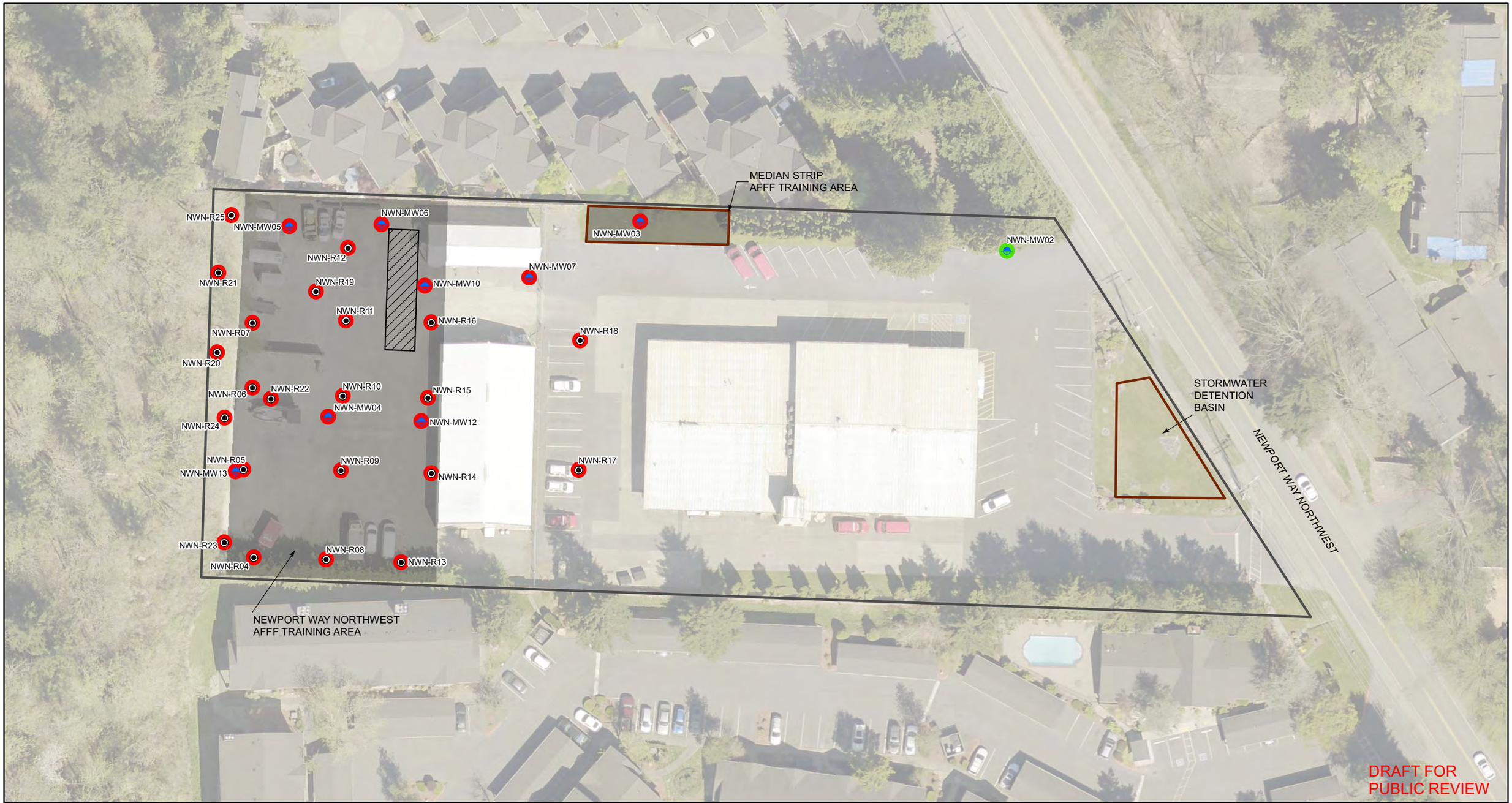
California
Oakland | Irvine

FIGURE 8

EFR HQ SOURCE AREA SOIL PFAS CONCENTRATIONS
5 TO 9.9 FEET BELOW GROUND SURFACE
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: Imurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-07_EFR-HQ_Soil-PFAS_Lift_2.mxd



LEGEND

- BORING
- SHALLOW MONITORING WELL
- DENOTES ALL PFAS REPORTED AS NOT DETECTED AT OR EXCEEDING THE LABORATORY REPORTING LIMIT
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

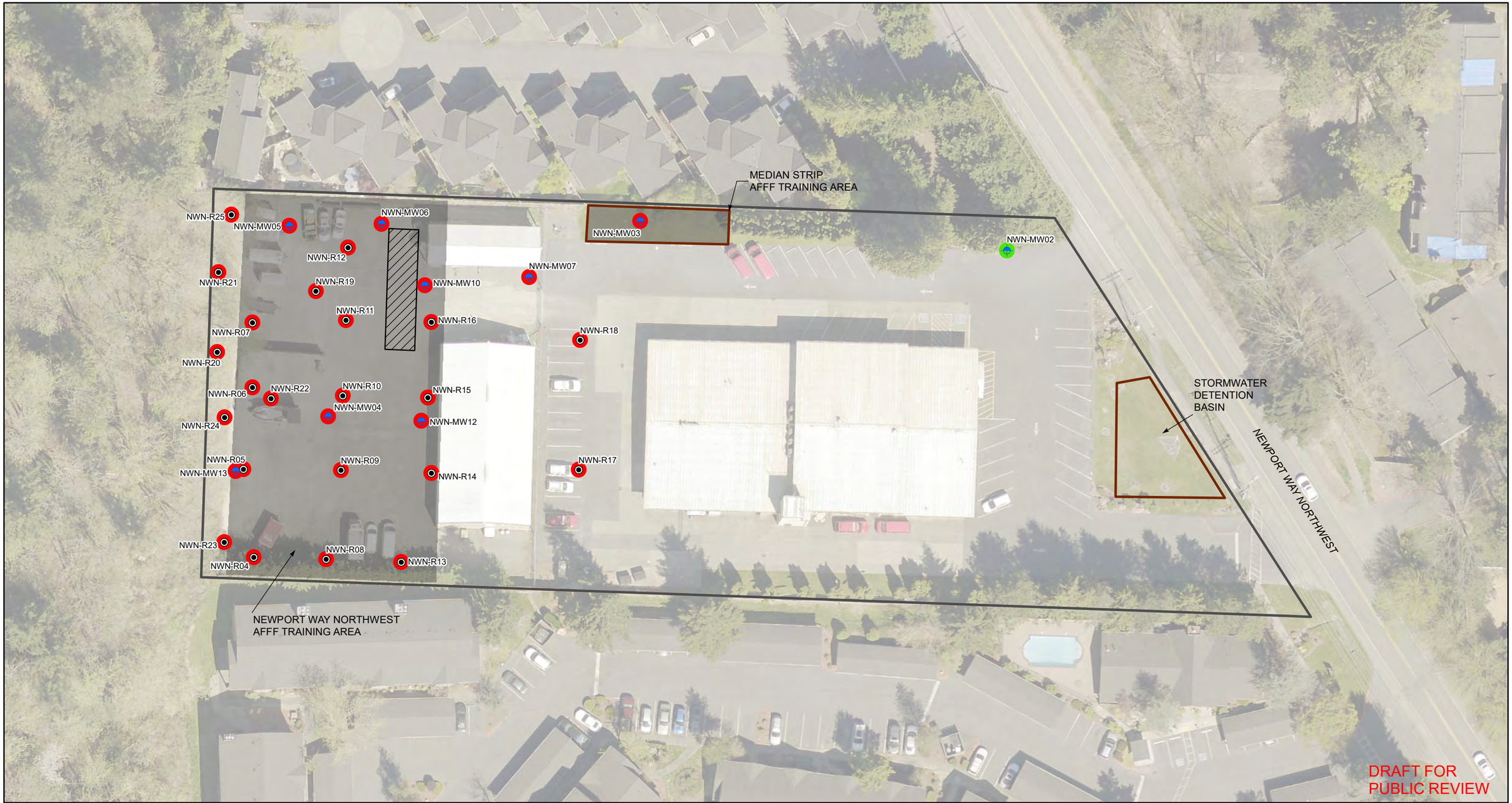
California
Oakland | Irvine

FIGURE 9

EFR HQ SOURCE AREA SOIL PFAS CONCENTRATIONS
10 TO 14.9 FEET BELOW GROUND SURFACE
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-08_EFR-HQ_Soil-PFAS_Lift_3.mxd



LEGEND

- BORING
- SHALLOW MONITORING WELL
- DENOTES ALL PFAS REPORTED AS NOT DETECTED AT OR EXCEEDING THE LABORATORY REPORTING LIMIT
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

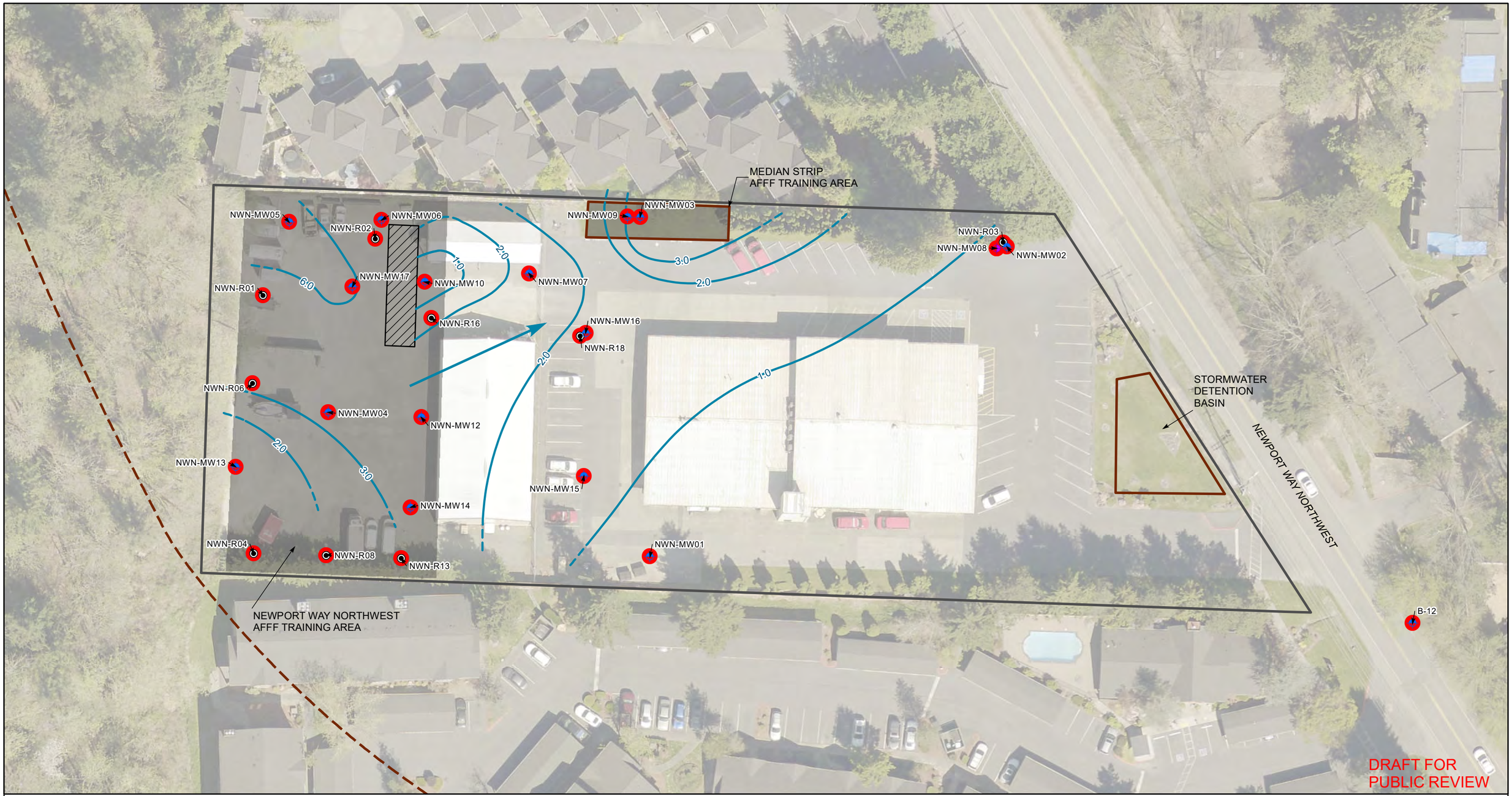
California
Oakland | Irvine

FIGURE 10

EFR HQ SOURCE AREA SOIL PFAS CONCENTRATIONS
>15 FEET BELOW GROUND SURFACE
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-09_EFR-HQ_Soil-PFAS_Lift_4.mxd



LEGEND

- BORING
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- ISOCONCENTRATION CONTOUR OF PFAS IN GROUNWATER IN MICROGRAMS PER LITER (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- APPROXIMATE MAXIMUM EXTENT OF PFAS IN GROUNDWATER THAT EXCEEDS AT LEAST ONE SCREENING LEVEL IN SHALLOW GROUNDWATER ZONE
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

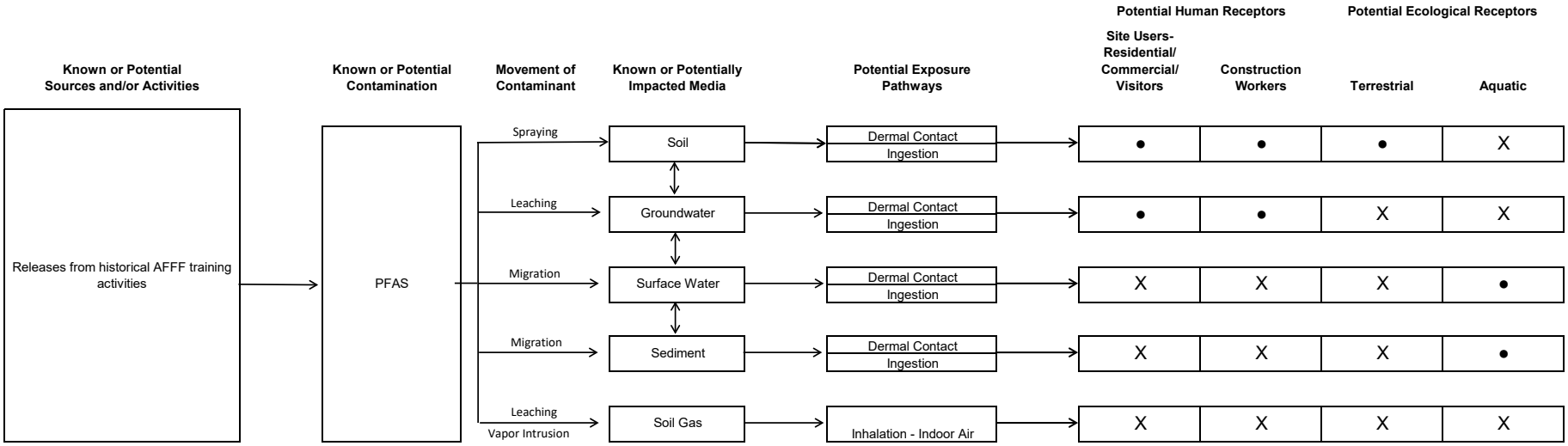
FIGURE 11

EFR HQ SOURCE AREA GROUNDWATER
AVERAGE TOTAL PFAS CONCENTRATIONS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-10_EFR-HQ_GW-PFAS.mxd

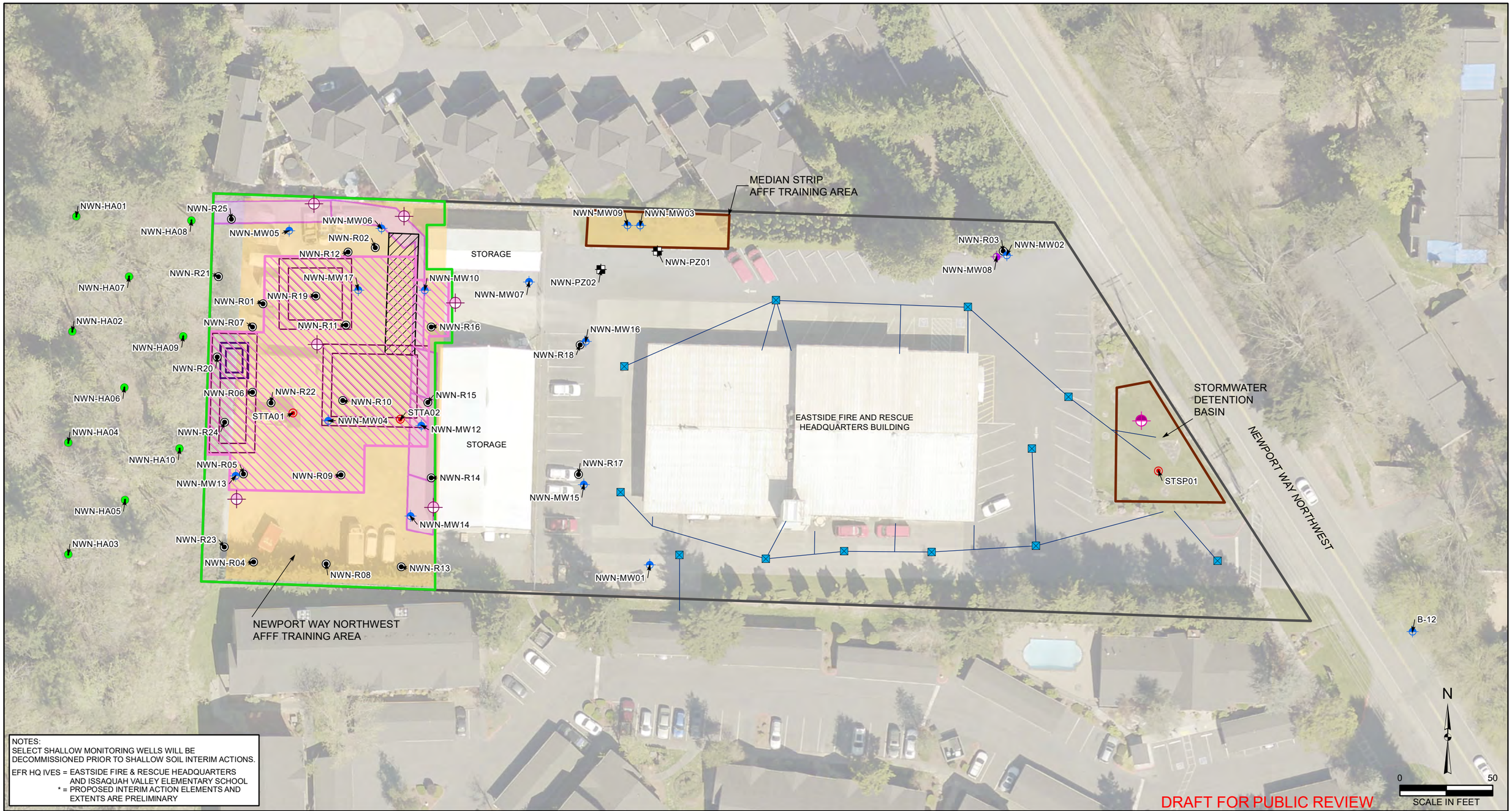
Figure 12
Conceptual Site Model: EFR HQ IVES Site



LEGEND:

X	Pathway is not complete. No evaluation required
Δ	Pathway is or may be complete off-site, but not on-site. No evaluation required.
○	Pathway is or may be complete, but is judged to be minor or unlikely. Quantitative data collection not required.
●	Pathway is or may be complete, collect quantitative data.

DRAFT FOR
PUBLIC REVIEW



NOTES:
SELECT SHALLOW MONITORING WELLS WILL BE DECOMMISSIONED PRIOR TO SHALLOW SOIL INTERIM ACTIONS.

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
* = PROPOSED INTERIM ACTION ELEMENTS AND EXTENTS ARE PRELIMINARY

DRAFT FOR PUBLIC REVIEW

LEGEND

- PROPOSED SHALLOW MONITORING WELL (REMEDIAL INVESTIGATION)
- PROPOSED SHALLOW COMPLIANCE MONITORING WELL
- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- CATCH BASIN
- STORMWATER LINE
- PROPOSED AREA TO RESTORE WITH ASPHALT PAVEMENT CAP
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT (0 TO 5 FEET BELOW GROUND SURFACE)
- PROPOSED VADOSE ZONE SOIL TREATMENT AREA (5 TO 10 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPOSED VADOSE ZONE SOIL TREATMENT AREA (10 TO 13 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPOSED FULL SCALE PERMEABLE REACTIVE BARRIER*
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIGURE 13

EFR HQ SOURCE AREA PROPOSED
INTERIM ACTION ELEMENTS AND EXTENTS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: rbates | Checked By: SS | Date: 9/23/2025

Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-11_Proposed_IA_Extents.mxd

TABLES

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

Table 1
Soil Screening Levels
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Constituent of Potential Concern	Soil Screening Levels										
			Protection of Groundwater (mg/kg)[1]		Adjustment Factors	Proposed Soil Screening Level (mg/kg)					
	Method B Direct Contact (mg/kg)[1]	Method C Direct Contact (mg/kg)[1]	Vadose Zone Protection of Groundwater	Saturated Zone Protection of Groundwater	Laboratory Method Reporting Limit (mg/kg)	Vadose Zone	Saturated Zone	Maximum Reported Value (mg/kg)	Property	Sample Identification	Retained as Soil COPC
Per– and Polyfluoroalkyl Substances											
Perfluorobutanoic Acid (PFBA)	80	3,500	0.044	0.0029	0.00010	0.044	0.0029	**0.010**	Eastside Fire & Rescue	NWN-R10-200320-3.0	**No**
Perfluorobutane Sulfonic Acid (PFBS)	24	1,100	0.025	0.0017	0.00010	0.025	0.0017	**0.025**	Eastside Fire & Rescue	NWN-MW12-3	**No**
Perfluorohexanoic Acid (PFHxA)	40	1,800	0.035	0.0025	0.00010	0.035	0.0025	**0.066**	Eastside Fire & Rescue	NWN-R10-200320-3.0	**Yes**
Perfluorohexane Sulfonic Acid (PFHxS)	0.000032	0.0014	0.00000004	0.0000000026	0.00010	0.0001	0.0001	**0.21**	Eastside Fire & Rescue	NWN-MW12-3	**Yes**
Perfluorooctanoic Acid (PFOA)	0.000034	0.0045	0.000025	0.0000016	0.00010	0.0001	0.0001	**0.094**	Eastside Fire & Rescue	NWN-MW10-3	**Yes**
Perfluorooctane Sulfonic Acid (PFOS)	0.008	0.35	0.000046	0.0000026	0.00010	0.0001	0.0001	**3.6**	Eastside Fire & Rescue	NWN-R19-3	**Yes**
Perfluorononanoic Acid (PFNA)	0.20	8.8	0.000089	0.0000053	0.00010	0.0001	0.0001	**1.4**	Eastside Fire & Rescue	NWN-R15-200319-5.0	**Yes**
Perfluorodecanoic Acid (PFDA)	0.00016	0.0070	0.00000038	0.000000022	0.00010	0.0001	0.0001	**0.013**	Eastside Fire & Rescue	NWN-MW12-3	**Yes**
6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	16	700	0.074	0.004	0.00010	0.074	0.004	**0.48**	Eastside Fire & Rescue	NWN-R09-200320-3.0	**Yes**
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	0.24	11	0.00012	0.0000069	0.00010	0.00012	0.0001	**0.0014**	Eastside Fire & Rescue	NWN-R15-200319-10.0	**Yes**

NOTES:

Values highlighted in mint green are selected soil screening level.

Bold values exceed proposed screening level

[1]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State MTCA, Standard Method B and C Values for Soil from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC.

COPC = constituent of potential concern

mg/kg = milligrams per kilogram

Table 2
Groundwater Screening Levels
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Constituent of Potential Concern	Groundwater Screening Levels							
	Method B Groundwater Noncancer (µg/l)[1]	Federal Maximum Contaminant Levels (MCLs) (µg/l)[2]	Adjustment Factors: Laboratory Method Reporting Limit (µg/l)	Proposed Groundwater Screening Level (µg/l)	Reported Maximum Value (µg/l)	Property	Sample Identification	Retained as Groundwater COPC
Per– and Polyfluoroalkyl Substances								
Perfluorobutanoic Acid (PFBA)	8.0	NE	0.0020	8.0	0.46	Eastside Fire & Rescue	NWN-MW44-102920	No
Perfluorobutane Sulfonic Acid (PFBS)	4.8	Note 2	0.0020	4.8	**0.49**	Eastside Fire & Rescue	NWN-MW07-121422	**Yes**
Perfluorohexanoic Acid (PFHxA)	8.0	NE	0.0020	8.0	1.6	Eastside Fire & Rescue	NWN-MW14-20220118	No
Perfluorohexane Sulfonic Acid (PFHxS)	0.0000064	0.01	0.0020	0.0020	**2.0**	Eastside Fire & Rescue	NWN-MW06-200417	**Yes**
Perfluorooctanoic Acid (PFOA)	0.000003	0.004	0.0010	0.004	**1.0**	Eastside Fire & Rescue	NWN-MW12-20220118	**Yes**
Perfluorooctane Sulfonic Acid (PFOS)	0.0016	0.004	0.0010	0.004	**8.6**	Eastside Fire & Rescue	NWN-MW06-200417	**Yes**
Perfluorononanoic Acid (PFNA)	0.04	0.01	0.0020	0.01	**0.64**	Eastside Fire & Rescue	NWN-MW07-20220118	**Yes**
Perfluorodecanoic Acid (PFDA)	0.000032	NE	0.0020	0.0050	**0.14**	Eastside Fire & Rescue	NWN-R06-200320-10.0W	**Yes**
6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	3.2	NE	0.0020	3.2	2.4	Eastside Fire & Rescue	NWN-MW12-20220118	No
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	0.024	0.01	0.0020	0.01	ND	---	---	No

NOTES:

Values highlighted in mint green are selected groundwater screening level.

Bold values exceed proposed screening level

--- denotes criteria is not applicable

NE = Not established

ND = reported non-detect at the laboratory method reporting limit

[1]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State MTCA, Standard Method B and C Values for Soil from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC, unless otherwise noted.

[2]U.S. Environmental Protection Agency (EPA) National Primary Drinking Water Regulations, 40 Code of Federal Regulations Part 141. The EPA set a Hazard Index MCL of 1 for PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS to account for the combined and co-occurring levels of these PFAS in drinking water.

Table 3
Monitoring Well Construction Details
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Well ID	Previous Monitoring Well ID	Well Owner	Ground Surface Elevation (feet NAVD88)	Top of Casing Elevation (feet NAVD88)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Screened Length (feet)	Screen Top Elevation (feet NAVD88)	Screen Bottom Elevation (feet NAVD88)
Water Production Wells									
COI-PW03	Well 3	City of Issaquah	NM	NM	77	102	25	---	---
COI-PW04	Well 4	City of Issaquah	NM	66.19	77	102	25	-10.81	-35.81
COI-PW05	Well 5	City of Issaquah	NM	67.16	323	405	82	-255.84	-337.84
COI-PW06	Well 6	City of Issaquah	NM	NM	323	405	82	---	---
Geotechnical Wells-Newport Way Northwest									
B-2	---	City of Issaquah	80.98	80.54	20	30	10	60.54	50.54
B-4	---	City of Issaquah	74.37	73.83	20	30	10	53.83	43.83
B-7	---	City of Issaquah	NM	NM	22.5	32.5	10	NM	NM
B-12	---	City of Issaquah	NM	NM	20	30	10	NM	NM
Resource Protection Monitoring Wells									
Issaquah Valley Elementary School Source Area									
IES-MW01	---	Eastside Fire & Rescue	76.52	76.31	16	26	10	60.31	50.31
IES-MW02	---	Eastside Fire & Rescue	74.43	73.74	15	25	10	58.74	48.74
IES-MW03	---	Eastside Fire & Rescue	73.09	72.70	15	25	10	57.7	47.7
IES-MW04	---	Eastside Fire & Rescue	72.97	72.43	15	30	15	57.43	42.43
IES-MW05	---	Eastside Fire & Rescue	72.75	72.76	20	30	10	52.76	42.76
IES-MW06	---	Eastside Fire & Rescue	76.29	75.92	80	90	10	-4.08	-14.08
IES-MW08	---	Eastside Fire & Rescue	72.55	72.07	20	30	10	52.07	42.07
IES-MW09	---	Eastside Fire & Rescue	72.45	72.18	75	85	10	-2.82	-12.82
IES-MW10	---	Eastside Fire & Rescue	73.08	72.66	75	85	10	-2.34	-12.34
IES-MW11	---	Eastside Fire & Rescue	75.92	75.69	120	130	10	-44.31	-54.31
DF-MW01	EB-1W	Eastside Fire & Rescue	77.99	77.71	5	15	10	72.71	62.71
DF-MW02	EB-5W	Eastside Fire & Rescue	74.57	74.21	15	25	10	59.21	49.21
DF-MW03	EB-3W	Eastside Fire & Rescue	74.71	74.35	20	30	10	54.35	44.35

Table 3
Monitoring Well Construction Details
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Well ID	Previous Monitoring Well ID	Well Owner	Ground Surface Elevation (feet NAVD88)	Top of Casing Elevation (feet NAVD88)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Screened Length (feet)	Screen Top Elevation (feet NAVD88)	Screen Bottom Elevation (feet NAVD88)
Eastside Fire & Rescue Headquarters Source Area									
NWN-MW01	---	Eastside Fire & Rescue	90.93	90.69	15	30	15	75.69	60.69
NWN-MW02	---	Eastside Fire & Rescue	90.04	89.84	15	30	15	74.84	59.84
NWN-MW03	---	Eastside Fire & Rescue	91.60	91.35	15	30	15	76.35	61.35
NWN-MW04	---	Eastside Fire & Rescue	90.68	90.41	13	23	10	77.41	67.41
NWN-MW05	---	Eastside Fire & Rescue	90.65	90.34	7	17	10	83.34	73.34
NWN-MW06	---	Eastside Fire & Rescue	91.19	90.98	15	25	10	75.98	65.98
NWN-MW07	---	Eastside Fire & Rescue	91.28	90.89	16.5	26.5	10	74.39	64.39
NWN-MW08	---	Eastside Fire & Rescue	90.37	89.95	70	80	10	19.95	9.95
NWN-MW09	---	Eastside Fire & Rescue	91.63	91.29	45	50	5	46.29	41.29
NWN-MW10	---	Eastside Fire & Rescue	91.04	90.66	10	25	15	80.66	65.66
NWN-MW12	---	Eastside Fire & Rescue	91.04	90.56	8	23	15	82.56	67.56
NWN-MW13	---	Eastside Fire & Rescue	90.28	89.80	3	18	15	86.80	71.80
NWN-MW14	---	Eastside Fire & Rescue	91.01	90.68	8	23	15	82.68	67.68
NWN-MW15	---	Eastside Fire & Rescue	90.77	90.37	15	30	15	75.37	60.37
NWN-MW16	---	Eastside Fire & Rescue	90.87	90.55	15	30	15	75.55	60.55
NWN-MW17	---	Eastside Fire & Rescue	91.04	90.74	10	25	15	80.74	65.74
NWN-PZ01	---	Eastside Fire & Rescue	91.20	90.76	20	30	10	70.76	60.76
NWN-PZ02	---	Eastside Fire & Rescue	90.99	90.44	20	30	10	70.44	60.44
Lower Issaquah Valley Regional Wells									
COI-MW01	MW01	City of Issaquah	58.36	58.4	28	38	10	30.4	20.4
COI-MW02	MW02	City of Issaquah	59.7	62.8	70	90	20	-7.2	-27.2
COI-MW03	MW03	City of Issaquah	63.16	62.9	78	98	20	-15.1	-35.1
COI-MW04	MW04	City of Issaquah	73.3	73.1	70	90	20	3.1	-16.9
COI-MW05	MW05	City of Issaquah	72.05	71.9	70	90	20	1.9	-18.1
COI-MW06	MW06	City of Issaquah	86.5	86.3	80	100	20	6.3	-13.7
COI-MW07	MW07	City of Issaquah	90.7	90.3	100	110	10	-9.7	-19.7
COI-MW08	---	City of Issaquah	70.22	69.85	238	248	10	-168.15	-178.15
COI-PW05-OBS	COI Well5OBS	City of Issaquah	NM	NM	223	405	182	---	---
COI-TW01[1]	COI-MW1	City of Issaquah	NM	NM	10	20	10	---	---
COI-TW03[1]	COI-TW3	City of Issaquah	NM	81.8	284	289	5	-202.2	-207.2
IES-MW07	---	Eastside Fire & Rescue	70.54	70.25	20	30	10	50.25	40.25
IES-MW12	---	Eastside Fire & Rescue	70.06	69.77	120	130	10	-50.23	-60.23

Table 3
Monitoring Well Construction Details
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Well ID	Previous Monitoring Well ID	Well Owner	Ground Surface Elevation (feet NAVD88)	Top of Casing Elevation (feet NAVD88)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Screened Length (feet)	Screen Top Elevation (feet NAVD88)	Screen Bottom Elevation (feet NAVD88)
Lower Issaquah Valley Regional Wells (continued)									
NDS-MW01	---	Eastside Fire & Rescue	86.16	85.48	22	32	10	63.48	53.48
NDS-MW02	---	Eastside Fire & Rescue	82.10	81.75	71	81	10	10.75	0.75
NDS-MW03	---	Eastside Fire & Rescue	82.54	82.07	25	35	10	57.07	47.07
NDS-MW04	---	Eastside Fire & Rescue	82.19	81.71	72	82	10	9.71	-0.29
NGB-MW01	---	Eastside Fire & Rescue	63.34	62.96	20	30	10	42.96	32.96
NLS-MW01	---	Eastside Fire & Rescue	66.96	66.62	19.5	29.5	10	47.12	37.12
NLS-MW02	---	Eastside Fire & Rescue	67.12	66.88	70	80	10	-3.12	-13.12
NWN-MW11	---	Eastside Fire & Rescue	90.91	90.58	15	25	10	75.58	65.58

NOTES:
— denotes not applicable.
[1]TOC elevation calculated by Geosyntec, 2016

bgs = below ground surface
NAVD88 = North American Vertical Datum of 1988
NM = not measured

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Eastside Fire & Rescue Headquarters Source Area					
NWN-MW01	Shallow	10/26/2018	90.69	21.43	69.26
		3/10/2020		15.33	75.36
		4/13/2020		17.56	73.13
		7/14/2020		21.35	69.34
		10/26/2020		20.17	70.52
		7/29/2021		23.68	67.01
		8/12/2021		24.33	66.36
		9/1/2021		25.00	65.69
		1/17/2022		10.86	79.83
		2/17/2022		17.65	73.04
		8/31/2022		23.34	67.35
		12/12/2022		14.77	75.92
		2/27/2023		15.18	75.51
		5/9/2023		16.71	73.98
NWN-MW02	Shallow	10/26/2018	89.84	21.10	68.74
		3/10/2020		16.70	73.14
		4/13/2020		18.24	71.60
		7/14/2020		21.38	68.46
		10/26/2020		20.45	69.39
		7/29/2021		23.63	66.21
		8/12/2021		24.12	65.72
		2/17/2022		18.47	71.37
		8/31/2022		23.10	66.74
		12/12/2022		17.57	72.27
		2/27/2023		16.88	72.96
		5/9/2023		17.55	72.29
NWN-MW03	Shallow	10/26/2018	91.35	22.77	68.58
		4/13/2020		19.16	72.19
		7/14/2020		22.69	68.66
		10/26/2020		21.87	69.48
		7/29/2021		25.23	66.12
		8/12/2021		25.76	65.59
		9/1/2021		26.40	64.95
		10/18/2021		24.18	67.17
		12/9/2021		16.17	75.18
		1/17/2022		13.07	78.28
		2/17/2022		19.49	71.86
		8/31/2022		24.70	66.65
		12/12/2022		18.01	73.34
		2/27/2023		17.63	73.72
		5/9/2023		18.47	72.88
NWN-MW04	Shallow	10/26/2018	90.41	13.20	77.21
		4/13/2020		8.71	81.70
		7/14/2020		12.65	77.76
		10/26/2020		10.72	79.69
		7/29/2021		15.57	74.84
		8/12/2021		16.40	74.01
		9/1/2021		17.04	73.37
		10/18/2021		13.31	77.10
		12/9/2021		5.91	84.50
		1/18/2022		5.43	84.98
		2/17/2022		8.28	82.13
		8/31/2022		16.50	73.91
		12/12/2022		6.65	83.76
		2/27/2023		6.22	84.19
		5/9/2023		7.65	82.76

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Eastside Fire & Rescue Headquarters Source Area (continued)					
NWN-MW05	Shallow	4/13/2020	90.34	11.51	78.83
		7/14/2020		14.92	75.42
		10/26/2020		12.80	77.54
		7/29/2021		16.23	74.11
		8/12/2021		16.24	74.10
		2/17/2022		11.47	78.87
		9/1/2022		16.28	74.06
		12/12/2022		9.20	81.14
		2/27/2023		10.90	79.44
		5/9/2023		10.72	79.62
NWN-MW06	Shallow	4/13/2020	90.98	13.71	77.27
		7/14/2020		16.60	74.38
		10/26/2020		14.58	76.40
		7/29/2021		18.68	72.30
		8/12/2021		19.30	71.68
		9/1/2021		19.85	71.13
		10/18/2021		17.20	73.78
		12/9/2021		10.11	80.87
		1/18/2022		9.14	81.84
		2/17/2022		13.48	77.50
		9/1/2022		19.75	71.23
		12/12/2022		10.72	80.26
		2/27/2023		10.98	80.00
		5/9/2023		12.71	78.27
NWN-MW07	Shallow	4/13/2020	90.89	17.92	72.97
		7/14/2020		21.70	69.19
		10/26/2020		20.58	70.31
		7/29/2021		24.00	66.89
		8/12/2021		24.50	66.39
		9/1/2021		25.29	65.60
		10/18/2021		23.06	67.83
		12/9/2021		14.07	76.82
		1/18/2022		11.96	78.93
		2/17/2022		18.00	72.89
		8/31/2022		23.63	67.26
		12/12/2022		15.86	75.03
		2/27/2023		15.86	75.03
		5/9/2023		17.10	73.79
NWN-MW08	Intermediate	4/13/2020	89.95	18.87	71.08
		7/14/2020		22.15	67.80
		10/26/2020		20.77	69.18
		7/29/2021		24.71	65.24
		8/12/2021		25.16	64.79
		2/17/2022		19.13	70.82
		8/31/2022		23.80	66.15
		12/12/2022		18.09	71.86
		2/27/2023		17.48	72.47
		5/9/2023		18.03	71.92
NWN-MW09	Shallow	4/13/2020	91.29	19.73	71.56
		7/14/2020		22.92	68.37
		10/26/2020		22.03	69.26
		7/29/2021		25.19	66.10
		8/12/2021		25.73	65.56
		9/1/2021		26.31	64.98
		10/18/2021		24.11	67.18
		12/9/2021		17.24	74.05
		1/17/2022		14.16	77.13
		2/17/2022		19.97	71.32
		8/31/2022		26.65	64.64
		12/12/2022		19.03	72.26
		2/27/2023		18.33	72.96
		5/9/2023		19.05	72.24

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Eastside Fire & Rescue Headquarters Source Area (continued)					
NWN-MW10	Shallow	7/29/2021	90.66	19.93	70.73
		8/12/2021		21.02	69.64
		9/1/2021		21.38	69.28
		10/18/2021		19.12	71.54
		12/9/2021		10.48	80.18
		1/18/2022		9.41	81.25
		2/17/2022		14.23	76.43
		8/31/2022		21.31	69.35
		12/12/2022		11.11	79.55
		2/27/2023		11.51	79.15
		5/9/2023		13.25	77.41
NWN-MW12	Shallow	7/29/2021	90.56	15.98	74.58
		8/12/2021		16.79	73.77
		9/1/2021		17.41	73.15
		10/18/2021		13.96	76.60
		12/9/2021		6.86	83.70
		1/18/2022		6.37	84.19
		2/17/2022		9.18	81.38
		9/1/2022		17.00	73.56
		12/12/2022		7.60	82.96
		2/27/2023		7.35	83.21
		5/9/2023		8.67	81.89
NWN-MW13	Shallow	7/29/2021	89.80	13.32	76.48
		8/12/2021		13.94	75.86
		9/1/2021		14.55	75.25
		10/18/2021		10.10	79.70
		12/9/2021		1.54	88.26
		1/18/2022		1.26	88.54
		2/17/2022		3.40	86.40
		9/1/2022		13.96	75.84
		12/12/2022		1.80	88.00
		2/27/2023		1.77	88.03
		5/9/2023		3.41	86.39
NWN-MW14	Shallow	7/29/2021	90.68	15.70	74.98
		8/12/2021		16.53	74.15
		9/1/2021		20.10	70.58
		1/18/2022		4.38	86.30
		2/17/2022		7.94	82.74
		9/1/2022		16.67	74.01
		12/12/2022		9.10	81.58
		2/27/2023		5.25	85.43
		5/9/2023		7.59	83.09
NWN-MW15	Shallow	7/29/2021	90.37	23.40	66.97
		8/12/2021		24.03	66.34
		9/1/2021		24.71	65.66
		1/17/2022		10.63	79.74
		2/17/2022		17.33	73.04
		9/1/2022		23.09	67.28
		12/12/2022		14.69	75.68
		2/27/2023		15.02	75.35
		5/9/2023		16.47	73.90
NWN-MW16	Shallow	7/29/2021	90.55	23.83	66.72
		8/12/2021		24.40	66.15
		9/1/2021		25.08	65.47
		1/17/2022		11.17	79.38
		2/17/2022		17.72	72.83
		9/1/2022		23.34	67.21
		12/12/2022		15.34	75.21
		2/27/2023		15.50	75.05
		5/9/2023		16.79	73.76

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Eastside Fire & Rescue Headquarters Source Area (continued)					
NWN-MW17	Shallow	8/31/2022	90.74	19.34	71.40
		12/12/2022		10.04	80.70
		2/27/2023		10.30	80.44
		5/9/2023		12.09	78.65
NWN-PZ01	Shallow	4/13/2020	90.76	19.15	71.61
		7/14/2020		22.43	68.33
		10/26/2020		21.48	69.28
		7/29/2021		NM	---
		8/12/2021		NM	---
		8/31/2022		24.10	66.66
		12/12/2022		18.43	72.33
		2/27/2023		17.75	73.01
		5/9/2023		18.46	72.30
NWN-PZ02	Shallow	4/13/2020	90.44	17.76	72.68
		7/14/2020		21.41	69.03
		10/26/2020		20.34	70.10
		7/29/2021		NM	---
		8/12/2021		NM	---
		8/31/2022		23.31	67.13
		12/12/2022		16.06	74.38
		2/27/2023		16.01	74.43
		5/9/2023		17.02	73.42
Issaquah Valley Elementary School Source Area					
IES-MW01	Shallow	10/26/2018	76.31	7.52	68.79
		3/10/2020		6.51	69.80
		4/13/2020		7.58	68.73
		7/13/2020		9.66	66.65
		10/26/2020		9.30	67.01
		8/31/2022		11.30	65.01
		12/12/2022		7.02	69.29
		2/27/2023		6.51	69.80
		5/9/2023		7.06	69.25
IES-MW02	Shallow	10/26/2018	73.74	7.15	66.59
		3/10/2020		4.56	69.18
		4/13/2020		5.65	68.09
		7/13/2020		8.02	65.72
		10/26/2020		7.30	66.44
IES-MW03	Shallow	10/26/2018	72.7	7.74	64.96
		3/10/2020		5.00	67.70
		4/13/2020		5.82	66.88
		7/13/2020		8.12	64.58
		10/26/2020		7.26	65.44
		8/31/2022		8.96	63.74
		12/12/2022		5.03	67.67
		2/27/2023		4.63	68.07
		5/9/2023		5.18	67.52
IES-MW04	Shallow	10/26/2018	72.43	6.79	65.64
		3/10/2020		4.73	67.70
		4/13/2020		5.57	66.86
		7/13/2020		7.74	64.69
		10/26/2020		6.92	65.51
		8/31/2022		8.65	63.78
		12/12/2022		4.81	67.62
		2/27/2023		4.50	67.93
		5/9/2023		5.03	67.40
IES-MW06	Intermediate	4/13/2020	75.92	7.66	68.26
		7/13/2020		10.01	65.91
		10/26/2020		11.31	64.61
		8/31/2022		10.44	65.48
		12/12/2022		6.91	69.01
		2/27/2023		6.38	69.54
		5/9/2023		6.92	69.00

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Issaquah Valley Elementary School Source Area					
IES-MW10	Intermediate	4/13/2020	72.66	6.12	66.54
		7/13/2020		9.10	63.56
		10/26/2020		7.95	64.71
		8/31/2022		9.60	63.06
		12/12/2022		5.05	67.61
		2/27/2023		4.61	68.05
		5/9/2023		5.17	67.49
IES-MW11	Deep	8/31/2022	75.69	14.66	61.03
		12/12/2022		7.11	68.58
		2/27/2023		6.80	68.89
		5/9/2023		6.96	68.73
IES-MW05	Shallow	10/26/2018	72.26	9.68	62.58
		3/10/2020		4.83	67.43
		4/13/2020		5.51	66.75
		7/13/2020		7.30	64.96
		10/26/2020		6.63	65.63
		8/31/2022		NM	---
		12/12/2022		4.94	67.32
		2/27/2023		4.73	67.53
		5/9/2023		5.20	67.06
IES-MW08	Shallow	4/13/2020	72.07	6.21	65.86
		7/13/2020		7.15	64.92
		10/26/2020		6.75	65.32
		8/31/2022		7.81	64.26
		12/12/2022		5.78	66.29
		2/27/2023		5.79	66.28
		5/9/2023		6.14	65.93
IES-MW09	Intermediate	4/13/2020	72.18	5.10	67.08
		7/13/2020		6.92	65.26
		10/26/2020		6.45	65.73
		8/31/2022		7.98	64.20
		12/12/2022		4.26	67.92
		2/27/2023		4.23	67.95
		5/9/2023		4.65	67.53
DF-MW01	Shallow	10/26/2018	77.71	10.99	66.72
		3/10/2020		8.61	69.10
		4/13/2020		9.53	68.18
		7/13/2020		11.39	66.32
		10/26/2020		10.79	66.92
		8/31/2022		12.50	65.21
		12/12/2022		8.84	68.87
		2/27/2023		8.71	69.00
		5/9/2023		9.24	68.47
DF-MW02	Shallow	8/3/2018	74.21	10.05	64.16
		10/26/2018		8.10	66.11
		3/10/2020		5.51	68.70
		4/13/2020		6.46	67.75
		7/13/2020		8.56	65.65
		10/26/2020		7.89	66.32
		8/31/2022		9.66	64.55
		12/12/2022		5.72	68.49
		2/27/2023		5.43	68.78
		5/9/2023		6.00	68.21
DF-MW03	Shallow	8/3/2018	74.35	10.09	64.26
		3/10/2020		7.07	67.28
		4/13/2020		7.76	66.59
		7/13/2020		9.13	65.22
		10/26/2020		8.60	65.75
		8/31/2022		NM	---
		12/12/2022		NM	---
		3/1/2023		7.35	67.00
		5/9/2023		7.52	66.83

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Geotechnical Wells-Newport Way Northwest					
B-4	Shallow	2/28/2023	73.83	6.15	67.68
B-7	Shallow	2/28/2023	NS	10.89	NM
Lower Issaquah Valley Regional Wells					
COI-MW01	Intermediate	8/31/2022	58.4	3.93	54.47
		12/12/2022		2.30	56.10
		2/27/2023		2.30	56.10
		5/9/2023		2.47	55.93
COI-MW02	Intermediate	10/26/2018	62.80	3.71	59.09
		3/10/2020		1.98	60.82
		4/13/2020		2.65	60.15
		7/13/2020		5.14	57.66
		10/27/2020		3.13	59.67
		9/1/2021		NM	---
		12/12/2022		NM	---
		2/27/2023		0.36	62.44
		5/9/2023		1.34	61.46
COI-MW03	Intermediate	10/24/2018	62.90	5.92	56.98
		3/10/2020		NM	--
		4/13/2020		4.46	58.44
		7/14/2020		6.61	56.29
		10/26/2020		4.75	58.15
		8/31/2022		6.09	56.81
		12/12/2022		1.45	61.45
		2/27/2023		1.20	61.70
		5/9/2023		2.96	59.94
COI-MW04	Intermediate	10/24/2018	73.10	10.20	62.90
		3/10/2020		8.19	64.91
		4/13/2020		9.03	64.07
		7/13/2020		11.69	61.41
		10/26/2020		9.68	63.42
		8/31/2022		12.61	60.49
		12/12/2022		NM	---
		2/27/2023		NM	---
		5/9/2023		8.01	65.09
COI-MW05	Intermediate	10/25/2018	71.90	8.09	63.81
		3/10/2020		5.96	65.94
		4/13/2020		6.71	65.19
		7/13/2020		8.72	63.18
		10/26/2020		8.72	63.18
		9/2/2022		9.61	62.29
		12/12/2022		5.86	66.04
		2/27/2023		5.55	66.35
		5/9/2023		6.09	65.81
COI-MW06	Intermediate	10/25/2018	86.30	18.62	67.68
		3/10/2020		15.22	71.08
		4/13/2020		16.51	69.79
		7/13/2020		19.51	66.79
		10/26/2020		18.21	68.09
		8/31/2022		21.02	65.28
		12/12/2022		15.55	70.75
		2/27/2023		14.95	71.35
		5/9/2023		15.52	70.78
COI-MW07	Intermediate	10/25/2018	90.30	19.44	70.86
		3/10/2020		15.94	74.36
		4/13/2020		17.25	73.05
		7/13/2020		20.66	69.64
		10/26/2020		19.18	71.12
		8/31/2022		NM	--
		12/12/2022		16.35	73.95
		2/27/2023		15.83	74.47
		5/9/2023		16.32	73.98

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Lower Issaquah Valley Regional Wells (continued)					
COI-MW08	Deep	1/12/2023	69.85	2.23	67.62
		2/27/2023		2.30	67.55
		5/9/2023		2.72	67.13
COI-TW01[1]	Shallow	5/9/2023	81.9	11.38	70.52
COI-TW03[1]	Deep	5/9/2023	81.8	11.24	70.56
IES-MW07	Shallow	4/13/2020	70.25	5.46	64.79
		7/13/2020		7.21	63.04
		10/26/2020		6.30	63.95
		8/31/2022		8.04	62.21
		12/12/2022		4.57	65.68
		2/27/2023		4.42	65.83
		5/9/2023		4.96	65.29
IES-MW12	Deep	8/31/2022	69.77	8.79	60.98
		12/12/2022		3.29	66.48
		2/27/2023		3.02	66.75
		5/9/2023		3.53	66.24
NDS-MW01	Shallow	4/13/2020	85.48	15.32	70.16
		7/13/2020		18.11	67.37
		10/26/2020		17.32	68.16
		8/31/2022		19.73	65.75
		12/12/2022		14.84	70.64
		2/27/2023		14.09	71.39
		5/9/2023		14.71	70.77
NDS-MW02	Intermediate	4/13/2020	81.75	12.39	69.36
		7/13/2020		14.66	67.09
		10/26/2020		14.33	67.42
		12/12/2022		11.85	69.90
		2/27/2023		11.35	70.40
		5/9/2023		11.87	69.88
NDS-MW03	Shallow	4/13/2020	82.07	12.43	69.64
		7/13/2020		15.09	66.98
		10/26/2020		14.17	67.90
		8/31/2022		NM	---
		12/12/2022		11.85	70.22
		2/27/2023		11.41	70.66
		5/9/2023		11.89	70.18
NDS-MW04	Intermediate	4/13/2020	81.71	12.42	69.29
		7/13/2020		15.67	66.04
		10/26/2020		14.15	67.56
		12/12/2022		11.41	70.30
		2/27/2023		10.94	70.77
		5/9/2023		11.47	70.24
NGB-MW01	Shallow	8/31/2022	62.96	7.84	55.12
		12/12/2022		6.49	56.47
		2/27/2023		6.45	56.51
		5/9/2023		6.75	56.21
NLS-MW01	Shallow	8/31/2022	66.62	5.48	61.14
		12/12/2022		1.88	64.74
		2/27/2023		1.62	65.00
		5/9/2023		2.10	64.52
NLS-MW02	Intermediate	8/31/2022	66.88	6.22	60.66
		12/12/2022		2.21	64.67
		2/27/2023		2.00	64.88
		5/9/2023		2.60	64.28

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Lower Issaquah Valley Regional Wells (continued)					
NWN-MW11	Shallow	4/13/2020	90.58	16.93	73.65
		7/13/2020		19.35	71.23
		10/26/2020		18.47	72.11
		7/29/2021		NM	---
		8/12/2021		NM	---
		9/1/2021		21.57	69.01
		2/17/2022		17.26	73.32
		8/31/2022		NM	NM
		12/12/2022		16.41	74.17
		2/27/2023		15.89	74.69
		5/9/2023		16.34	74.24
Lower Issaquah Valley Creek Monitoring Stations[3]					
STR-01	Creek	4/13/2020	Reference Elevation Reported in Error	---	---
		7/13/2020		---	---
		10/26/2020		---	---
		8/31/2022	71.63	14.37	57.26
		12/12/2022		13.60	58.03
		2/27/2023		14.29	57.34
		5/9/2023		14.39	57.24
STR-02	Creek	4/13/2020	66.79	2.12	64.67
		7/13/2020		2.5	64.29
		10/26/2020		1.42	65.37
		8/31/2022	77.45	NM	---
		12/12/2022		12.58	64.87
		2/27/2023		12.79	64.66
		5/9/2023		13.06	64.39
STR-05	Creek	8/31/2022	89.49	17.50	71.99
		12/12/2022		15.70	73.79
		2/27/2023		16.20	73.29
		5/9/2023		16.60	72.89

NOTES:

--- denotes not available

[1] Elevations reported in North American Vertical Datum of 1988.

[2] In feet below top of well casing.

[3] Fixed Monitoring Location

Farallon = Farallon Consulting, L.L.C.

NM = not measured

NS = not surveyed

Table 5
Summary of Shallow Groundwater Head Differences
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Well Pair	Zone	Measurement Date	Middle of Screened Interval Elevation (feet)[1]		Groundwater Elevation (feet)[1]		Groundwater Elevation Head Differential (feet)	Gradient		
			Upper	Lower	Upper Screen	Lower Screen		Vertical Gradient	Direction	
IES-MW01 to IES-MW06	Shallow Intermediate	4/13/2020	55.31	-9.08	68.73	68.26	0.47	-0.007	DOWN	↓
		7/13/2020			66.65	65.91	0.74	-0.011	DOWN	↓
		10/26/2020			67.01	64.61	2.40	-0.037	DOWN	↓
		9/1/2022			65.01	65.48	-0.47	0.007	UP	↑
		12/12/2022			69.29	69.01	0.28	-0.004	DOWN	↓
		2/27/2023			69.80	69.54	0.26	-0.004	DOWN	↓
		5/9/2023			69.25	69.00	0.25	-0.004	DOWN	↓
IES-MW03 to IES-MW10	Shallow Intermediate	4/13/2020	52.7	-7.34	66.88	66.54	0.34	-0.006	DOWN	↓
		7/13/2020			64.58	63.56	1.02	-0.017	DOWN	↓
		10/26/2020			65.44	64.71	0.73	-0.012	DOWN	↓
		8/31/2022			63.74	63.06	0.68	-0.011	DOWN	↓
		12/12/2022			67.67	67.61	0.06	-0.001	DOWN	↓
		2/27/2023			68.07	68.05	0.02	0.000	NEUTRAL	
		5/9/2023			67.52	-1.92	69.44	-1.156	DOWN	↓
IES-MW07 to COI-MW05	Shallow Intermediate	4/13/2020	45.25	-8.1	64.79	65.19	-0.40	0.007	UP	↑
		7/13/2020			63.04	63.18	-0.14	0.003	UP	↑
		10/26/2020			63.95	64.26	-0.31	0.006	UP	↑
		8/31/2022			60.69	63.86	-3.17	0.059	UP	↑
		12/12/2022			65.68	66.04	-0.36	0.007	UP	↑
		2/27/2023			65.83	66.35	-0.52	0.010	UP	↑
		5/9/2023			65.29	65.81	-0.52	0.010	UP	↑
IES-MW08 to IES-MW09	Shallow Intermediate	4/13/2020	47.07	-7.82	65.86	67.08	-1.22	0.022	UP	↑
		7/13/2020			64.92	65.26	-0.34	0.006	UP	↑
		10/26/2020			65.32	65.73	-0.41	0.007	UP	↑
		8/31/2022			64.26	64.70	-0.44	0.008	UP	↑
		12/12/2022			66.29	67.92	-1.63	0.030	UP	↑
		2/27/2023			66.28	67.95	-1.67	0.030	UP	↑
		5/9/2023			65.93	67.53	-1.60	0.029	UP	↑
NDS-MW01 to COI-MW06	Shallow Intermediate	4/13/2020	58.48	-3.7	70.16	69.79	0.37	-0.006	DOWN	↓
		7/13/2020			67.37	66.79	0.58	-0.009	DOWN	↓
		10/26/2020			68.16	68.09	0.07	-0.001	DOWN	↓
		8/31/2022			65.75	65.28	0.47	-0.008	DOWN	↓
		12/12/2022			70.64	70.75	-0.11	0.002	UP	↑
		2/27/2023			71.39	71.35	0.04	-0.001	DOWN	↓
		5/9/2023			70.77	70.78	-0.01	0.0002	UP	↑
NDS-MW03 to NDS-MW04	Shallow Intermediate	4/13/2020	52.07	4.71	69.64	69.29	0.35	-0.007	DOWN	↓
		7/13/2020			66.98	66.04	0.94	-0.020	DOWN	↓
		10/26/2020			67.90	67.56	0.34	-0.007	DOWN	↓
		12/12/2022			70.22	70.30	-0.08	0.002	UP	↑
		2/27/2023			70.66	70.77	-0.11	0.002	UP	↑
		5/9/2023			70.18	70.24	-0.06	0.001	UP	↑

Table 5
Summary of Shallow Groundwater Head Differences
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Well Pair	Zone	Measurement Date	Middle of Screened Interval Elevation (feet)[1]		Groundwater Elevation (feet)[1]		Groundwater Elevation Head Differential (feet)	Gradient		
			Upper	Lower	Upper Screen	Lower Screen		Vertical Gradient	Direction	
NGB-MW01 to COI-MW03	Shallow Intermediate	8/31/2022	37.96	-25.1	55.12	56.81	-1.69	0.027	UP	↑
		12/12/2022			56.47	61.45	-4.98	0.079	UP	↑
		2/27/2023			56.51	61.70	-5.19	0.082	UP	↑
		5/9/2023			56.21	59.94	-3.73	0.059	UP	↑
NLS-MW01 to NLS-MW02	Shallow Intermediate	8/31/2022	42.12	-8.12	61.14	60.66	0.48	-0.010	DOWN	↓
		12/12/2022			64.74	64.67	0.07	-0.001	DOWN	↓
		2/27/2023			65.00	64.88	0.12	-0.002	DOWN	↓
		5/9/2023			64.52	64.28	0.24	-0.005	DOWN	↓
NWN-MW02 to NWN-MW08	Shallow Intermediate	4/13/2020	65.72	14.95	71.60	71.08	0.52	-0.010	DOWN	↓
		7/14/2020	64.15		68.46	67.80	0.66	-0.013	DOWN	↓
		10/26/2020	64.615		69.39	69.18	0.21	-0.004	DOWN	↓
		9/29/2021	63.025		66.21	65.24	0.97	-0.020	DOWN	↓
		8/12/2021	62.78		65.72	64.79	0.93	-0.019	DOWN	↓
		2/17/2022	65.605		71.37	70.82	0.55	-0.011	DOWN	↓
		8/31/2022	63.29		66.74	66.15	0.59	-0.012	DOWN	↓
		12/12/2022	66.055		72.27	71.86	0.41	-0.008	DOWN	↓
		2/27/2023	66.4		72.96	72.47	0.49	-0.010	DOWN	↓
		5/9/2023	66.065		72.29	71.92	0.37	-0.007	DOWN	↓
NWN-MW03 and NWN-MW09	Shallow to Shallow	12/9/2021	68.265	43.79	75.18	74.05	1.13	-0.046	DOWN	↓
		1/17/2022	69.815		78.28	77.13	1.15	-0.044	DOWN	↓
		2/17/2022	66.605		71.86	71.32	0.54	-0.024	DOWN	↓
		8/31/2022	64		66.65	64.64	2.01	-0.099	DOWN	↓
		12/12/2022	67.345		73.34	72.26	1.08	-0.046	DOWN	↓
		2/27/2023	67.535		73.72	72.96	0.76	-0.032	DOWN	↓
		5/9/2023	67.115		72.88	72.24	0.64	-0.027	DOWN	↓
NWN-MW11 to COI-MW07	Shallow Intermediate	4/13/2020	69.615	-14.7	73.65	73.05	0.60	-0.007	DOWN	↓
		7/13/2020	68.405		71.23	69.64	1.59	-0.019	DOWN	↓
		10/26/2020	68.845		72.11	71.12	0.99	-0.012	DOWN	↓
		12/12/2022	69.875		74.17	73.95	0.22	-0.003	DOWN	↓
		2/27/2023	70.135		74.69	74.47	0.22	-0.003	DOWN	↓
		5/9/2023	69.91		74.24	73.98	0.26	-0.003	DOWN	↓
COI-MW05 to IES-MW12	Intermediate Deep	9/2/2022	-8.1	-55.23	62.29	60.98	1.31	-0.028	DOWN	↓
		12/12/2022			66.04	66.48	-0.44	0.009	UP	↑
		2/27/2023			66.35	66.75	-0.40	0.008	UP	↑
		5/9/20233			65.81	66.24	-0.43	0.009	UP	↑
IES-MW06 to IES-MW11	Intermediate Deep	8/31/2022	-9.08	-49.31	65.48	61.03	4.45	-0.111	DOWN	↓
		12/12/2022			69.01	68.58	0.43	-0.011	DOWN	↓
		2/27/2023			69.54	68.89	0.65	-0.016	DOWN	↓
		5/9/2023			69.00	68.73	0.27	-0.007	DOWN	↓
IES-MW12 to COI-MW08	Deep Deep	2/27/2023	-58.23	-173.15	66.75	67.55	-0.80	0.007	UP	↑
		5/9/2023			66.24	67.13	-0.89	0.008	UP	↑

NOTES:

[1] Elevations in feet North American Vertical Datum of 1988. Where the water table intersected the screened interval of shallow zone wells, the "middle of screened interval elevation" was calculated as the mid-point between the top of the saturated zone to the bottom of the screen.

Table 6
Soil Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Type	Zone	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram)[1]									
							Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
2016 Hydrogeological Characterization Investigation																
Eastside Fire & Rescue Headquarters Source Area																
STSP01	Geosyntec	7/22/2016	COI-STSP01-20160722	Discrete	Unsaturated	2.2 - 2.3	**---**	< 0.0019	0.00058	< 0.0019	< 0.00072	**0.023**	**0.00077**	**0.0012**	---	---
STTA01	Geosyntec	7/22/2016	COI-STTA01-20160722	Discrete	Unsaturated	2.2 - 2.3	**---**	0.0089	0.03	**0.08**	**0.011**	**1.3**	**0.0097**	< 0.00054	---	---
STTA02	Geosyntec	7/22/2016	COI-STTA02-20160722	Discrete	Unsaturated	3.8 - 3.9	**---**	0.0045	0.015	**0.025**	**0.0043**	**0.18**	**0.033**	**0.0039**	---	---
	Geosyntec	7/22/2016	COI-STTA02-20160722-DUP	Discrete	Unsaturated	3.8 - 3.9	**---**	0.0054	0.019	**0.029**	**0.0052**	**0.25**	**0.043**	**0.0045**	---	---
2018 Subsurface Investigation																
Issaquah Valley Elementary School Source Area																
DU-1A	Farallon	8/6/2018	DU-1A-COMPOSITE	MI	Unsaturated	0.0 - 0.5	0.00037	< 0.00082	0.00072 J	**0.00022**	**0.0011**	**0.0028**	**0.00034**	**0.0015**	< 0.00082	---
DU-1B	Farallon	8/7/2018	DU-1B-COMPOSITE	MI	Unsaturated	0.0 - 0.5	< 0.00098	< 0.00098	0.00024 J	**0.00017 J**	**0.00053**	**0.0024**	< 0.00098	**0.0005** J	< 0.00098	---
IES-R02	Farallon	8/10/2018	IES-R02-180810-12	Discrete	Unsaturated	12.0	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	---
	Farallon	8/10/2018	IES-R02-180810-23	Discrete	Saturated	23.0	< 0.00096	< 0.00096	< 0.00096	**0.0002**	< 0.00096	**0.00055**	< 0.00096	< 0.00096	< 0.00096	---
DU-2A	Farallon	8/8/2018	DU-2A-COMPOSITE	MI	Unsaturated	0.0 - 0.5	0.0010	< 0.0010	0.00096 J	**0.0024**	**0.00094** J	**0.085**	**0.0011**	**0.00082** J	< 0.0010	---
DU-2B	Farallon	8/9/2018	DU-2B-COMPOSITE	MI	Unsaturated	0.0 - 0.5	< 0.00096	< 0.00096	0.00026 J	**0.00086** J	**0.00042** J	**0.016**	< 0.00096	**0.00028** J	< 0.00096	---
DF-R01	Farallon	9/6/2018	DF-R01-180906-3.5	Discrete	Unsaturated	3.5	0.00044 J	< 0.0012	0.00049 J	**0.0036**	**0.00040** J	**0.043**	**0.0072**	**0.00037** J	< 0.0012	---
Eastside Fire & Rescue Headquarters Source Area																
DU-05	Farallon	8/14/2018	DU-05-COMPOSITE	MI	Unsaturated	0.0 - 0.5	0.00061 J	0.00019 J	0.00068 J	**0.0039**	**0.00077** J	**0.024**	**0.00057** J	**0.00039** J	0.00019 J	---
DU-06	Farallon	8/15/2018	DU-06 COMPOSITE	MI	Unsaturated	0.0 - 0.5	0.00088 J	0.00021 J	0.0014	**0.0049**	**0.0015**	**0.026**	**0.00063** J	**0.00093** J	0.0015	---
NWN-MW02	Farallon	10/18/2018	NWN-MW02-181018-10	Discrete	Unsaturated	10.0	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	---
	Farallon	10/18/2018	NWN-MW02-181018-19	Discrete	Unsaturated	19.0	< 0.0010	< 0.0010	< 0.0010	**0.00026** J	< 0.0010	**0.0064**	< 0.0010	< 0.0010	< 0.0010	---
NWN-MW03	Farallon	10/18/2018	NWN-MW03-181018-12	Discrete	Unsaturated	12.0	< 0.0013	< 0.0013	0.00039 J	**0.0036**	**0.00036** J	**0.056**	< 0.0013	< 0.0013	< 0.0013	---
	Farallon	10/18/2018	NWN-MW03-181018-25	Discrete	Unsaturated	25.0	< 0.0010	< 0.0010	0.00028 J	**0.00045** J	**0.00021** J	**0.0064**	**0.00023** J	< 0.0010	0.0018	---
NWN-MW04	Farallon	10/19/2018	NWN-MW04-181019-5	Discrete	Unsaturated	5.0	0.00068 J	0.00081 J	0.0039	**0.0061**	**0.0017**	**0.086**	**0.0025**	< 0.0013	0.011	---
	Farallon	10/19/2018	NWN-MW04-181019-DUP	Discrete	Unsaturated	5.0	0.00044 J	0.00073 J	0.0025	**0.0049**	**0.0015**	**0.088**	**0.0019**	< 0.0014	0.0077	---
	Farallon	10/19/2018	NWN-MW04-181019-13	Discrete	Unsaturated	13.0	< 0.0012	< 0.0012	0.00027 J	**0.00059** J	**0.00034** J	**0.016**	**0.00048** J	< 0.0012	0.0022	---
2020 through 2022 Subsurface Investigations																
Eastside Fire & Rescue Headquarters Source Area																
NWN-R04	Farallon	3/18/2020	NWN-R04-200318-5.0	Discrete	Unsaturated	5.0	0.0016	0.00083 J	0.0081	**0.0070**	**0.0010** J	**0.013**	< 0.0014	< 0.0014	0.016	**0.0007** J
	Farallon	3/18/2020	NWN-R04-200318-10.0	Discrete	Saturated	10.0	0.0013 J	0.00063 J	**0.0065**	**0.0053**	**0.0011** J	**0.0092**	< 0.0014	< 0.0014	**0.017**	**0.00089** J
	Farallon	3/18/2020	NWN-R04-200318-15.0	Discrete	Saturated	15.0	0.00051 J	< 0.0013	0.0025	**0.0020**	**0.00041** J	**0.0056**	< 0.0013	< 0.0013	**0.0073**	**0.0012** J
NWN-R05	Farallon	3/20/2020	NWN-R05-200320-3.0	Discrete	Unsaturated	3.0	0.00092 J	< 0.0013	0.0032	**0.0032**	**0.0021**	**0.83**	**0.0035**	**0.00049** J	0.0041	**0.00033** J
	Farallon	3/20/2020	NWN-R05-200320-5.0	Discrete	Saturated	5.0	< 0.0014	< 0.0014	0.0013 J	**0.0014** J	**0.00098** J	**0.23**	**0.0010** J	**0.0004** J	0.0023	**0.00024** J
	Farallon	3/20/2020	NWN-R05-200320-10.0	Discrete	Saturated	10.0	< 0.0012	< 0.0012	< 0.00099	< 0.0012	**0.00022** J	**0.04**	< 0.0012	< 0.00099	0.00079 J	< 0.00012
MTCA Method B Direct Contact Cleanup Levels for Soil[3]							**80**	**24**	**40**	**0.000032**	**0.000034**	**0.008**	**0.20**	**0.00016**	**16**	**0.24**
MTCA Method C Industrial Direct Contact Cleanup Levels for Soil[3]							**3,500**	**1,100**	**1,800**	**0.0014**	**0.0045**	**0.35**	**8.8**	**0.0070**	**700**	**11**
MTCA Cleanup Levels for Soil Protective of Groundwater Vadose @ 13 Degrees Celsius[3]							**0.044**	**0.025**	**0.035**	**0.00000004**	**0.000025**	**0.000046**	**0.000089**	**0.00000038**	**0.074**	**0.00012**
MTCA Cleanup Levels for Soil Protective of Groundwater Saturated[3]							**0.0029**	**0.0017**	**0.0025**	**0.0000000026**	**0.0000016**	**0.0000026**	**0.0000053**	**0.000000022**	**0.004**	**0.0000069**
Analytical Method Reporting Limit							**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**

Table 6
Soil Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Type	Zone	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram)[1]									
							Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
NWN-R06	Farallon	3/20/2020	NWN-R06-200320-2.0	Discrete	Unsaturated	2.0	0.0018	0.00090 J	0.0083	**0.017**	**0.0066**	**1.2**	**0.0043**	< 0.0011	0.047	**0.00019** J
	Farallon	3/20/2020	NWN-R06-200320-5.0	Discrete	Unsaturated	5.0	0.00059 J	0.00035 J	0.0019	**0.0039**	**0.0025**	**0.67**	**0.00064** J	**0.0006** J	0.014	**0.00027** J
	Farallon	3/20/2020	NWN-R06-200320-10.0	Discrete	Saturated	10.0	< 0.0013	< 0.0013	0.00071 J	**0.0017**	**0.00063** J	**0.094**	**0.00053** J	**0.0014**	**0.0052**	< 0.00013
NWN-R07	Farallon	3/20/2020	NWN-R07-200320-3.0	Discrete	Unsaturated	3.0	0.0022	0.0035	0.011	**0.077**	**0.0053**	**0.051**	**0.00045** J	< 0.0011	0.057	**0.00019** J
	Farallon	3/20/2020	NWN-R07-200320-5.0	Discrete	Unsaturated	5.0	0.0020	0.0034	0.011	**0.071**	**0.0061**	**0.10**	**0.00075** J	< 0.0011	0.052	**0.00046** J
	Farallon	3/20/2020	NWN-R07-200320-10.0	Discrete	Unsaturated	10.0	< 0.0013	0.00039 J	0.0016	**0.0065**	**0.00090** J	**0.063**	< 0.0013	< 0.0010	0.0074	< 0.00013
NWN-R08	Farallon	3/18/2020	NWN-R08-200318-5.0	Discrete	Unsaturated	5.0	0.0014	< 0.0013	0.0053	< 0.0013	**0.0022**	**0.016**	< 0.0013	< 0.0013	0.017	**0.00086** J
	Farallon	3/18/2020	NWN-R08-200318-10.0	Discrete	Saturated	10.0	< 0.0011	< 0.0011	0.00073 J	< 0.0011	**0.00088** J	**0.0089**	< 0.0011	< 0.0011	**0.0056**	**0.00079** J
	Farallon	3/18/2020	NWN-R08-200318-15.0	Discrete	Saturated	15.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.00026** J	< 0.0011	< 0.0011	0.00026 J	**0.00058** J
NWN-R09	Farallon	3/20/2020	NWN-R09-200320-3.0	Discrete	Unsaturated	3.0	0.0051	0.0045	**0.037**	**0.061**	**0.0079**	**0.93**	**0.033**	**0.00039** J	**0.48**	**0.0003** J
	Farallon	3/20/2020	NWN-R09-200320-5.0	Discrete	Unsaturated	5.0	0.00062 J	0.00046 J	0.0043	**0.0039**	**0.00085** J	**0.15**	**0.0018**	< 0.0011	0.035	**0.00036** J
	Farallon	3/20/2020	NWN-R09-200320-10.0	Discrete	Saturated	10.0	0.0011 J	0.00076 J	**0.0064**	**0.0078**	**0.0011** J	**0.12**	**0.0027**	< 0.0010	**0.073**	< 0.00013
NWN-R10	Farallon	3/20/2020	NWN-R10-200320-3.0	Discrete	Unsaturated	3.0	0.010	0.016	**0.066**	**0.066**	**0.014**	**0.10**	**0.058**	**0.0028**	**0.081**	**0.00028** J
	Farallon	3/20/2020	NWN-R10-200320-5.0	Discrete	Unsaturated	5.0	0.0096	0.017	**0.060**	**0.12**	**0.037**	**0.78**	**0.074**	**0.0027**	**0.19**	**0.00049** J
	Farallon	3/20/2020	NWN-R10-200320-10.0	Discrete	Unsaturated	10.0	0.0029	0.0046	0.015	**0.019**	**0.0037**	**0.30**	**0.0060**	**0.0016**	0.023	< 0.0001
NWN-R11	Farallon	3/20/2020	NWN-R11-200320-3.0	Discrete	Unsaturated	3.0	0.0063	0.010	**0.037**	**0.14**	**0.022**	**0.034**	**0.0037**	< 0.0008	**0.09**	**0.00015** J
	Farallon	3/20/2020	NWN-R11-200320-5.0	Discrete	Unsaturated	5.0	0.0036	0.0050	0.025	**0.15**	**0.015**	**0.33**	**0.0050**	< 0.0008	0.059	**0.00023** J
	Farallon	3/20/2020	NWN-R11-200320-10.0	Discrete	Unsaturated	10.0	0.00098	0.0012	0.0057	**0.03**	**0.0039**	**0.081**	**0.0060**	< 0.0008	0.027	< 0.0001
NWN-R12	Farallon	3/23/2020	NWN-R12-200323-5.0	Discrete	Unsaturated	5.0	0.0011	0.0019	0.0085	**0.066**	**0.0099**	**0.65**	**0.0020**	< 0.0008	**0.078**	**0.00029** J
	Farallon	3/23/2020	NWN-R12-200323-10.0	Discrete	Unsaturated	10.0	0.00057 J	0.00086 J	0.0040	**0.028**	**0.0063**	**0.39**	**0.0012**	< 0.0008	0.035	< 0.0001
	Farallon	3/23/2020	NWN-R12-200323-15.0	Discrete	Unsaturated	15.0	0.00039 J	0.00045 J	0.0020	**0.012**	**0.0021**	**0.13**	**0.00035** J	< 0.0008	0.014	< 0.0001
NWN-R13	Farallon	3/18/2020	NWN-R13-200318-6.5	Discrete	Unsaturated	6.5	0.00051 J	< 0.0011	0.0024	< 0.0011	**0.00081** J	**0.0036**	< 0.0011	**0.00032** J	0.0075	**0.00038** J
	Farallon	3/18/2020	NWN-R13-200318-10.0	Discrete	Saturated	10.0	0.0020	< 0.0011	**0.010**	**0.00081** J	**0.0027**	**0.031**	**0.00057** J	**0.0003** J	**0.091**	**0.00038** J
	Farallon	3/18/2020	NWN-R13-200318-15.0	Discrete	Saturated	15.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.00046** J	< 0.0011	< 0.0011	0.00066 J	**0.00045** J
NWN-R14	Farallon	3/19/2020	NWN-R14-200319-5.0	Discrete	Unsaturated	5.0	0.0014	0.0033	0.0091	**0.041**	**0.0053**	**0.089**	**0.0037**	< 0.0012	0.048	< 0.0012
	Farallon	3/19/2020	NWN-R14-200319-10.0	Discrete	Unsaturated	10.0	< 0.0013	0.00044 J	0.0011 J	**0.0016**	**0.00033** J	**0.0046**	< 0.0013	< 0.0013	0.0028	< 0.0013
	Farallon	3/19/2020	NWN-R14-200319-15.0	Discrete	Saturated	15.0	< 0.0012	< 0.0012	0.00096 J	**0.0012**	**0.00033** J	**0.0052**	< 0.0012	< 0.0012	0.0027	< 0.0012
NWN-R15	Farallon	3/19/2020	NWN-R15-200319-5.0	Discrete	Unsaturated	5.0	0.0091	0.017	**0.049**	**0.19**	**0.067**	**0.54**	**1.4**	**0.0056**	**0.24**	**0.0014**
	Farallon	3/19/2020	NWN-R15-200319-10.0	Discrete	Unsaturated	10.0	0.0053	0.012	0.029	**0.11**	**0.038**	**0.49**	**1.1**	**0.0062**	**0.18**	**0.0014**
	Farallon	3/19/2020	NWN-R15-200319-15.0	Discrete	Saturated	15.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.0053**	**0.00056** J	< 0.0011	0.0019	< 0.0011
NWN-R16	Farallon	3/19/2020	NWN-R16-200319-5.0	Discrete	Unsaturated	5.0	0.0019	0.0030	0.011	**0.021**	**0.0060**	**0.15**	**0.066**	**0.0024**	0.025	**0.00056** J
	Farallon	3/19/2020	NWN-R16-200319-10.0	Discrete	Unsaturated	10.0	< 0.0010	0.00042 J	0.0015	**0.0018**	**0.00046** J	**0.021**	**0.0039**	< 0.0010	0.0036	**0.00062** J
	Farallon	3/19/2020	NWN-R16-200319-15.0	Discrete	Saturated	15.0	< 0.0010	0.00052 J	0.0020	**0.0028**	**0.0010**	**0.032**	**0.018**	**0.00041** J	**0.0057**	**0.00085** J
NWN-R17	Farallon	3/19/2020	NWN-R17-200319-5.0	Discrete	Unsaturated	5.0	< 0.0011	< 0.0011	0.00037 J	**0.0018**	< 0.0011	**0.0014**	< 0.0011	< 0.0011	< 0.0011	**0.0013**
	Farallon	3/19/2020	NWN-R17-200319-10.0	Discrete	Unsaturated	10.0	< 0.0010	< 0.0010	< 0.0010	**0.00061** J	**0.00015** J	**0.0039**	< 0.0010	< 0.0010	0.0016	**0.00051** J
	Farallon	3/19/2020	NWN-R17-200319-15.0	Discrete	Unsaturated	15.0	< 0.0010	< 0.0010	0.00049 J	< 0.0010	< 0.0010	**0.0021**	< 0.0010	< 0.0010	0.00036 J	**0.00059** J
NWN-R18	Farallon	3/19/2020	NWN-R18-200319-5.0	Discrete	Unsaturated	5.0	< 0.0012	< 0.0012	0.00043 J	**0.0028**	**0.00074** J	**0.0042**	< 0.0012	< 0.0012	0.001 J	**0.00069** J
	Farallon	3/19/2020	NWN-R18-200319-10.0	Discrete	Unsaturated	10.0	< 0.0012	< 0.0012	0.00064 J	**0.0019**	**0.00045** J	**0.0091**	**0.00054** J	< 0.0012	0.0013	**0.00095** J
	Farallon	3/19/2020	NWN-R18-200319-15.0	Discrete	Unsaturated	15.0	< 0.0011	< 0.0011	< 0.0011	**0.0010** J	**0.00028** J	**0.0071**	< 0.0011	< 0.0011	0.00047 J	**0.0011** J
MTCA Method B Direct Contact Cleanup Levels for Soil[3]							**80**	**24**	**40**	**0.000032**	**0.000034**	**0.008**	**0.20**	**0.00016**	**16**	**0.24**
MTCA Method C Industrial Direct Contact Cleanup Levels for Soil[3]							**3,500**	**1,100**	**1,800**	**0.0014**	**0.0045**	**0.35**	**8.8**	**0.0070**	**700**	**11**
MTCA Cleanup Levels for Soil Protective of Groundwater Vadose @ 13 Degrees Celsius[3]							**0.044**	**0.025**	**0.035**	**0.00000004**	**0.000025**	**0.000046**	**0.000089**	**0.00000038**	**0.074**	**0.00012**
MTCA Cleanup Levels for Soil Protective of Groundwater Saturated[3]							**0.0029**	**0.0017**	**0.0025**	**0.0000000026**	**0.0000016**	**0.0000026**	**0.0000053**	**0.000000022**	**0.004**	**0.0000069**
Analytical Method Reporting Limit							**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**

Table 6
Soil Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Type	Zone	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram)[1]									
							Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
NWN-MW05	Farallon	3/23/2020	NWN-MW05-200323-6.0	Discrete	Unsaturated	6.0	0.00057 J	0.00051 J	0.0031	**0.0046**	**0.0013**	**0.25**	**0.0011**	< 0.0008	0.015	**0.00021** J
	Farallon	3/23/2020	NWN-MW05-200323-10.0	Discrete	Unsaturated	10.0	< 0.00082	0.00027 J	0.0016	**0.0030**	**0.00069** J	**0.12**	**0.00046** J	< 0.0008	0.0046	< 0.0001
	Farallon	3/23/2020	NWN-MW05-200323-15.0	Discrete	Unsaturated	15.0	< 0.0010	< 0.0010	< 0.00081	**0.00048** J	**0.00021** J	**0.012**	< 0.0010	< 0.00081	0.00079 J	< 0.0001
NWN-MW06	Farallon	3/23/2020	NWN-MW06-200323-6.0	Discrete	Unsaturated	6.0	< 0.00096	0.00027 J	0.00088 J	**0.0045**	**0.0013**	**0.22**	**0.0048**	**0.0017**	0.0044	**0.00023** J
	Farallon	3/23/2020	NWN-MW06-200323-10.0	Discrete	Unsaturated	10.0	< 0.0010	0.00042 J	0.00065 J	**0.0050**	**0.00087** J	**0.13**	**0.0019**	**0.00075** J	0.0032	< 0.0001
	Farallon	3/23/2020	NWN-MW06-200323-15.0	Discrete	Unsaturated	15.0	< 0.00084	0.00033 J	0.00065 J	**0.0033**	**0.00053** J	**0.077**	**0.00096**	**0.00062** J	0.0019	< 0.0001
NWN-MW07	Farallon	3/30/2020	NWN-MW07_200330-5	Discrete	Unsaturated	5.0	< 0.0011	< 0.0011	0.00036 J	**0.0015**	**0.00025** J	**0.031**	**0.00049** J	**0.00038** J	0.0048	< 0.0011
	Farallon	3/30/2020	NWN-MW07_200330-10	Discrete	Unsaturated	10.0	0.00047 J	0.00080 J	0.0021	**0.0054**	**0.0013**	**0.056**	**0.0082**	**0.00061** J	0.0056	< 0.0012
	Farallon	3/30/2020	NWN-MW07_200330-15	Discrete	Unsaturated	15.0	< 0.00097	< 0.00097	0.00037 J	**0.00049** J	< 0.00097	**0.0031**	**0.00045** J	< 0.00097	0.0019	< 0.00097
NWN-MW09	Farallon	3/19/2020	NWN-MW09-200319-5	Discrete	Unsaturated	5.0	< 0.0014	< 0.0014	0.00056 J	**0.0015**	**0.00069** J	**0.078**	< 0.0014	< 0.0014	< 0.0014	< 0.0014
NWN-MW10	Farallon	6/15/2021	NWN-MW10-3	Discrete	Unsaturated	3.0	0.0037	0.0099	0.032	**0.21**	**0.094**	**0.44**	**0.9**	**0.0013**	**0.11**	< 0.0011
	Farallon	6/15/2021	NWN-MW10-5	Discrete	Unsaturated	5.0	0.0019	0.0046	0.019	**0.14**	**0.0039**	**0.00087** J	**0.0096**	< 0.0011	0.0094	< 0.0011
	Farallon	6/15/2021	NWN-MW10-10	Discrete	Unsaturated	10.0	< 0.0010	0.00028 J	0.00067 J	**0.0018**	**0.00041** J	**0.039**	**0.0028**	< 0.0010	0.0023	< 0.0010
NWN-MW12	Farallon	6/15/2021	NWN-MW12-3	Discrete	Unsaturated	3.0	0.0018	0.025	**0.065**	**0.21**	**0.047**	**0.48**	**0.62**	**0.013**	0.066	< 0.0013
	Farallon	6/15/2021	NWN-MW12-5	Discrete	Unsaturated	5.0	0.0016	0.0030	0.0049	**0.0031**	**0.00086** J	**0.0052**	**0.0056**	< 0.0012	0.00096 J	< 0.0012
	Farallon	6/15/2021	NWN-MW12-10	Discrete	Unsaturated	10.0	0.0036	0.0071	0.0095	**0.0024**	**0.00063** J	**0.0042**	**0.0071**	< 0.0014	0.00048 J	< 0.0014
NWN-MW13	Farallon	6/15/2021	NWN-MW13-3	Discrete	Unsaturated	3.0	0.0018	0.00068 J	0.0031	**0.019**	**0.0026**	**0.54**	**0.0033**	**0.0009** J	0.0029	< 0.0012
	Farallon	6/15/2021	NWN-MW13-5	Discrete	Unsaturated	5.0	0.0010 J	0.00035 J	0.0022	**0.0039**	**0.0011** J	**0.046**	**0.00087** J	< 0.0013	0.0017	< 0.0013
	Farallon	6/15/2021	NWN-MW13-10	Discrete	Unsaturated	10.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.00026** J	**0.0065**	< 0.0011	**0.00031** J	0.0011	< 0.0011
NWN-MW14	Farallon	6/15/2021	NWN-MW14-3	Discrete	Unsaturated	3.0	< 0.0012	0.00056 J	0.0018	**0.011**	**0.0013**	**0.028**	< 0.0012	< 0.0012	0.0014	< 0.0012
	Farallon	6/15/2021	NWN-MW14-5	Discrete	Unsaturated	5.0	< 0.0011	0.00052 J	0.0018	**0.015**	**0.0020**	**0.046**	**0.00051** J	< 0.0011	0.0014	< 0.0011
	Farallon	6/15/2021	NWN-MW144-5	Discrete	Unsaturated	5.0	< 0.0011	0.00052 J	0.0015	**0.012**	**0.0014**	**0.041**	< 0.0011	< 0.0011	0.0011 J	< 0.0011
NWN-MW15	Farallon	6/17/2021	NWN-MW15-3	Discrete	Unsaturated	3.0	< 0.0011	< 0.0011	< 0.0011	**0.00061** J	< 0.0011	**0.0091**	< 0.0011	< 0.0011	< 0.0011	< 0.0011
	Farallon	6/17/2021	NWN-MW15-5	Discrete	Unsaturated	5.0	< 0.0011	0.00030 J	0.00072 J	**0.0020**	**0.00025** J	**0.0012**	< 0.0011	< 0.0011	< 0.0011	< 0.0011
NWN-MW16	Farallon	6/17/2021	NWN-MW11-3	Discrete	Unsaturated	3.0	< 0.00093	< 0.00093	0.00034 J	**0.0010**	**0.00023** J	**0.011**	< 0.00093	< 0.00093	< 0.00093	< 0.00093
	Farallon	6/17/2021	NWN-MW11-5	Discrete	Unsaturated	5.0	< 0.0011	< 0.0011	< 0.0011	**0.00071** J	**0.00015** J	**0.022**	< 0.0011	< 0.0011	0.00021 J	< 0.0011
	Farallon	6/17/2021	NWN-MW111-5	Discrete	Unsaturated	5.0	< 0.0012	< 0.0012	< 0.0012	**0.00063** J	**0.00022** J	**0.054**	< 0.0012	< 0.0012	0.0005 J	< 0.0012
NWN-R19	Farallon	6/15/2021	NWN-R19-3	Discrete	Unsaturated	3.0	0.0055	0.0058	0.035	**0.12**	**0.027**	**3.6**	**0.032**	**0.0069**	**0.28**	< 0.0011
	Farallon	6/15/2021	NWN-R19-5	Discrete	Unsaturated	5.0	0.0024	0.0026	0.014	**0.043**	**0.01**	**1.5**	**0.016**	**0.0065**	**0.12**	< 0.0011
	Farallon	6/15/2021	NWN-R19-10	Discrete	Unsaturated	10.0	< 0.00091	< 0.00091	0.00085 J	**0.0018**	**0.00040** J	**0.018**	< 0.00091	< 0.00091	0.003	< 0.00091
NWN-R20	Farallon	6/15/2021	NWN-R20-3	Discrete	Unsaturated	3.0	0.00069 J	0.00032 J	0.0027	**0.0097**	**0.0041**	**0.89**	**0.0047**	**0.0029**	0.011	< 0.00098
	Farallon	6/15/2021	NWN-R20-5	Discrete	Unsaturated	5.0	< 0.0013	< 0.0013	0.0018	**0.0028**	**0.00099** J	**0.14**	< 0.0013	< 0.0013	0.0051	< 0.0013
	Farallon	6/15/2021	NWN-R20-10	Discrete	Unsaturated	10.0	0.00064 J	0.00036 J	0.0027	**0.013**	**0.0042**	**2.5**	**0.0045**	**0.00049** J	0.023	< 0.0014
	Farallon	6/15/2021	NWN-R20-15	Discrete	Unsaturated	15.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.0023**	< 0.0011	< 0.0011	0.00031 J	< 0.0011
NWN-R21	Farallon	6/15/2021	NWN-R21-3	Discrete	Unsaturated	3.0	0.00043 J	< 0.0011	0.00094 J	**0.0027**	**0.00060** J	**0.076**	**0.0012**	**0.00088** J	0.0047	< 0.0011
	Farallon	6/15/2021	NWN-R21-6	Discrete	Unsaturated	6.0	< 0.0011	0.00060 J	0.0020	**0.019**	**0.0036**	**0.64**	**0.0031**	**0.00067** J	0.0052	< 0.0011
	Farallon	6/15/2021	NWN-R211-6	Discrete	Unsaturated	6.0	< 0.0010	0.0014	0.0033	**0.023**	**0.0042**	**0.35**	**0.0022**	**0.00039** J	0.0032	< 0.0010
	Farallon	6/15/2021	NWN-R21-10	Discrete	Unsaturated	10.0	< 0.00098	< 0.00098	0.00052 J	**0.0018**	**0.00045** J	**0.042**	**0.00041** J	< 0.00098	0.0012	< 0.00098
	Farallon	6/15/2021	NWN-R21-15	Discrete	Saturated	15.0	< 0.0011	< 0.0011	< 0.0011	**0.00042** J	**0.00016** J	**0.0047**	< 0.0011	< 0.0011	0.00037 J	< 0.0011
MTCA Method B Direct Contact Cleanup Levels for Soil[3]							**80**	**24**	**40**	**0.000032**	**0.000034**	**0.008**	**0.20**	**0.00016**	**16**	**0.24**
MTCA Method C Industrial Direct Contact Cleanup Levels for Soil[3]							**3,500**	**1,100**	**1,800**	**0.0014**	**0.0045**	**0.35**	**8.8**	**0.0070**	**700**	**11**
MTCA Cleanup Levels for Soil Protective of Groundwater Vadose @ 13 Degrees Celsius[3]							**0.044**	**0.025**	**0.035**	**0.00000004**	**0.000025**	**0.000046**	**0.000089**	**0.00000038**	**0.074**	**0.00012**
MTCA Cleanup Levels for Soil Protective of Groundwater Saturated[3]							**0.0029**	**0.0017**	**0.0025**	**0.0000000026**	**0.0000016**	**0.0000026**	**0.0000053**	**0.000000022**	**0.004**	**0.0000069**
Analytical Method Reporting Limit							**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**

Table 6
Soil Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Type	Zone	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram)[1]									
							Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
NWN-R22	Farallon	6/15/2021	NWN-R22-0.5-2.0-H	Discrete	Unsaturated	0.5 - 2.0	0.0027	0.0032	0.012	**0.10**	**0.022**	**2.7**	**0.019**	**0.0018**	**0.17**	< 0.0010
	Farallon	6/15/2021	NWN-R22-3	Discrete	Unsaturated	3.0	0.0081	0.018	**0.040**	**0.19**	**0.025**	**3.3**	**0.0029**	< 0.0015	**0.22**	< 0.0015
	Farallon	6/15/2021	NWN-R22-5	Discrete	Unsaturated	5.0	0.0028	0.0049	0.014	**0.03**	**0.0040**	**0.39**	**0.00073** J	< 0.0013	0.03	< 0.0013
	Farallon	6/15/2021	NWN-R22-10	Discrete	Unsaturated	10.0	< 0.0011	< 0.0011	0.00045 J	**0.0011** J	**0.00040** J	**0.14**	**0.00044** J	**0.00065** J	0.0031	< 0.0011
	Farallon	6/15/2021	NWN-R22-15	Discrete	Unsaturated	15.0	< 0.0011	< 0.0011	0.00054 J	**0.00068** J	**0.00021** J	**0.017**	< 0.0011	< 0.0011	0.0015	< 0.0011
NWN-R23	Farallon	8/18/2022	FB-01-2.5	Discrete	Unsaturated	2.5	< 0.0013	< 0.0013	0.0010 J	**0.0064**	**0.00025** J	**0.0019**	< 0.0013	< 0.0013	< 0.0013	< 0.0013
	Farallon	8/18/2022	FB-01-5.0	Discrete	Unsaturated	5.0	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	**0.0013**	< 0.0012	< 0.0012	< 0.0012	< 0.0012
	Farallon	8/18/2022	FB-01-10.0	Discrete	Unsaturated	10.0	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	**0.00044** J	< 0.0012	< 0.0012	< 0.0012	< 0.0012
NWN-R24	Farallon	8/18/2022	FB-02-2.5	Discrete	Unsaturated	2.5	0.00078 J	0.00070 J	0.0026	**0.0048**	**0.0024**	**0.66**	**0.0018**	**0.0029**	0.024	< 0.0013
	Farallon	8/18/2022	FB-02-5.0	Discrete	Unsaturated	5.0	0.00070 J	0.00044 J	0.0027	**0.0051**	**0.0026**	**1.3**	**0.0020**	**0.006**	0.021	< 0.0013
	Farallon	8/18/2022	FB-02-10.0	Discrete	Unsaturated	10.0	0.00054 J	0.00027 J	0.0017	**0.0036**	**0.0013**	**0.43**	**0.00069** J	**0.0018**	0.012	< 0.0012
NWN-R25	Farallon	8/18/2022	FB-03-2.5	Discrete	Unsaturated	2.5	< 0.0010	< 0.0010	< 0.0010	< 0.0010	**0.00018** J	**0.022**	< 0.0010	< 0.0010	0.00076 J	< 0.0010
	Farallon	8/18/2022	FB-03-5.0	Discrete	Unsaturated	5.0	< 0.0014	< 0.0014	0.0016	**0.0010** J	**0.00047** J	**0.058**	< 0.0014	< 0.0014	0.0017	< 0.0014
	Farallon	8/18/2022	FB-03-10.0	Discrete	Unsaturated	10.0	< 0.0012	< 0.0012	0.0010 J	**0.00073** J	**0.00040** J	**0.025**	< 0.0012	< 0.0012	0.002	< 0.0012
NWN-HA01	Farallon	8/9/2022	HA-01-2.0	Discrete	Unsaturated	2.0	< 0.0010	< 0.0010	< 0.0010	**0.0021**	**0.00027** J	**0.0012**	< 0.0010	< 0.0010	< 0.0010	< 0.0010
NWN-HA02	Farallon	8/9/2022	HA-02-2.0	Discrete	Unsaturated	2.0	< 0.0011	0.00026 J	< 0.0011	< 0.0011	< 0.0011	**0.0013**	< 0.0011	< 0.0011	< 0.0011	< 0.0011
NWN-HA03	Farallon	8/9/2022	HA-03-2.0	Discrete	Unsaturated	2.0	0.00098 J	< 0.0011	0.0010 J	**0.00049** J	**0.00043** J	**0.0043**	< 0.0011	< 0.0011	< 0.0011	< 0.0011
NWN-HA04	Farallon	8/9/2022	HA-04-2.0	Discrete	Unsaturated	2.0	0.00094 J	< 0.0010	0.0013	**0.00064** J	**0.00041** J	**0.0046**	< 0.0010	< 0.0010	< 0.0010	< 0.0010
NWN-HA05	Farallon	8/9/2022	HA-05-2.0	Discrete	Unsaturated	2.0	0.0039	< 0.00096	0.0028	**0.0026**	**0.0030**	**0.08**	**0.0060**	< 0.00096	< 0.00096	< 0.00096
NWN-HA06	Farallon	8/9/2022	HA-06-2.0	Discrete	Unsaturated	2.0	0.0022	0.00078 J	0.0020	**0.018**	**0.0038**	**0.45**	**0.0020**	**0.00043** J	0.00057 J	< 0.0011
NWN-HA07	Farallon	8/9/2022	HA-07-2.0	Discrete	Unsaturated	2.0	0.00095 J	0.00048 J	0.00087 J	**0.00094** J	**0.00085** J	**0.0073**	< 0.00098	< 0.00098	< 0.00098	< 0.00098
NWN-HA08	Farallon	8/18/2022	HA-08-2.0	Discrete	Unsaturated	2.0	< 0.0012	< 0.0012	0.00079 J	**0.0018**	**0.00070** J	**0.03**	**0.00068** J	**0.00065** J	0.0017	< 0.0012
NWN-HA09	Farallon	8/18/2022	HA-09-2.0	Discrete	Unsaturated	2.0	< 0.0010	< 0.0010	0.0011	**0.0017**	**0.00087** J	**0.045**	**0.00057** J	**0.0027**	0.0037	< 0.0010
NWN-HA10	Farallon	8/18/2022	HA-10-2.0	Discrete	Unsaturated	2.0	0.0018	0.00040 J	0.0025	**0.0066**	**0.0017**	**0.36**	**0.0020**	**0.00057** J	0.0016	< 0.0011
MTCA Method B Direct Contact Cleanup Levels for Soil[3]							**80**	**24**	**40**	**0.000032**	**0.000034**	**0.008**	**0.20**	**0.00016**	**16**	**0.24**
MTCA Method C Industrial Direct Contact Cleanup Levels for Soil[3]							**3,500**	**1,100**	**1,800**	**0.0014**	**0.0045**	**0.35**	**8.8**	**0.0070**	**700**	**11**
MTCA Cleanup Levels for Soil Protective of Groundwater Vadose @ 13 Degrees Celsius[3]							**0.044**	**0.025**	**0.035**	**0.00000004**	**0.000025**	**0.000046**	**0.000089**	**0.00000038**	**0.074**	**0.00012**
MTCA Cleanup Levels for Soil Protective of Groundwater Saturated[3]							**0.0029**	**0.0017**	**0.0025**	**0.0000000026**	**0.0000016**	**0.0000026**	**0.0000053**	**0.000000022**	**0.004**	**0.0000069**
Analytical Method Reporting Limit							**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**

NOTES:

Values **bolded** and highlighted in goldenrod exceed their applicable screening level.

Values highlighted in mint green are selected screening levels.

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

— denotes sample not analyzed or information unknown.

[1]Depth in feet below ground surface.

[2]Samples collected in 2016 analyzed by U.S. Environmental Protection Agency (EPA) Method 537; samples collected in 2018 and later analyzed by EPA Method 537 Modified.

[3]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State MTCA, Standard Method B and C Values for Soil from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC, dated Janurary 2025.

Farallon = Farallon Consulting, L.L.C.

Geosyntec = Geosyntec Consultants, Inc.

J = result is an estimate

MI = multi-incremental

NE = not established

PFAS = per- and poly-fluoroalkyl substances

Table 7
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Reconnaissance Groundwater Samples														
Eastside Fire & Rescue Headquarters Source Area														
NWN-R01	Farallon	8/24/2018	NWN_R01_180824_19	19.0	0.25	0.31	0.89	**2.3**	**0.39**	**7.3**	**0.078**	**0.02**	2.2	---
	Farallon	8/24/2018	NWN_R01_180824_19_DUPLICATE	19.0	0.23	0.31	0.84	**1.8**	**0.39**	**6.8**	**0.091**	**0.02**	2.2	---
NWN-R02	Farallon	8/23/2018	NMW-R02-180823-23	23.0	0.24	0.30	0.82	**1.90**	**0.45**	**9.50**	**0.24**	**0.04**	2.3	---
NWN-R03	Farallon	8/22/2018	NMW-R03-180822-28	28.0	0.010	0.018	0.044	**0.180**	**0.032**	**0.380**	**0.015**	**0.0095**	0.011	---
	Farallon	8/23/2018	NMW-R03-180823-39	39.0	0.0090 J	0.011	0.035	**0.120**	**0.021**	**0.25**	**0.015**	**0.011**	0.007	---
NWN-R04	Farallon	3/18/2020	NWN-R04-12.0	12.0	0.05	0.065	0.25	**0.22**	**0.024**	**0.18**	0.0025 J	< 0.004	0.49	< 0.0040
NWN-R06	Farallon	3/20/2020	NWN-R06-200320-10.0W	10.0	0.38	0.38	1.1	**3**	**0.65**	**21**	**0.3**	**0.14**	1.5	< 0.0008
NWN-R08	Farallon	3/18/2020	NWN-R08-13.0	13.0	0.058	0.029	0.17	**0.15**	**0.10**	**0.39**	**0.024**	**0.0094**	0.27	< 0.0040
NWN-R13	Farallon	3/18/2020	NWN-R13-14.0	14.0	0.15	0.013	0.56	**0.063**	**0.17**	**0.51**	**0.034**	**0.014**	0.94	< 0.0041
NWN-R16	Farallon	3/19/2020	NWN-R16-17.0	17.0	0.31	0.34	1.6	**2**	**0.83**	**7.4**	**9.6**	**0.055**	1.8	< 0.0040
NWN-R18	Farallon	3/19/2020	NWN-R18-23.0	23.0	0.091	0.041	0.35	**0.23**	**0.14**	**2.0**	**0.11**	**0.017**	1.2	< 0.0040
NWN-MW08	Farallon	3/20/2020	NWN-MW08-200320-53	53.0	0.053	0.077	0.14	**0.31**	**0.038**	**0.3**	**0.012**	**0.0041** J	0.056	0.00045 J
NWN-MW09	Farallon	3/19/2020	NWN-MW09-200319-43	43.0	0.13	0.071	0.46	**0.34**	**0.14**	**2.0**	**0.086**	**0.0071**	1.3	0.0003 J
Issaquah Valley Elementary School Source Area														
IES-R01	Farallon	8/8/2018	IES-R01-180808	20.0	0.0091	0.025	0.036	**0.11**	**0.012**	**0.27**	**0.011**	< 0.0045	0.019	---
IES-R02	Farallon	8/10/2018	IES-R02-180810 (1140)	15.0	< 0.0093	0.02	0.041	**0.13**	**0.023**	**0.21**	0.0088	**0.0013** J	< 0.0046	---
	Farallon	8/10/2018	IES-R02-180810 (1305)	25.0	0.031	0.068	0.15	**0.36**	**0.045**	**0.72**	**0.026**	**0.0027** J	0.17	---
IES-R03	Farallon	8/9/2018	IES-R03-180809 (0925)	13.5	< 0.0091	< 0.0045	0.0025 J	**0.0022** J	0.0035	0.0031 J	< 0.0045	< 0.0045	0.0018 J	---
	Farallon	8/9/2018	IES-R03-180809 (1110)	24.0	0.024	0.051	0.088	**0.23**	**0.026**	**0.38**	**0.012**	**0.0021** J	0.012	---
IES-R04	Farallon	8/9/2018	IES-R04-180809	23.0	< 0.012	0.033	0.082	**0.20**	**0.03**	**0.36**	**0.034**	**0.0021** J	0.077	---
IES-R05	Farallon	8/10/2018	IES-R05-180810 (0825)	11.0	< 0.0091	0.01	0.008	**0.017**	**0.0092**	**0.028**	0.0012 J	< 0.0045	< 0.0045	---
	Farallon	8/10/2018	IES-R05-180810 (0940)	28.0	0.013	0.039	0.053	**0.20**	**0.026**	**0.51**	**0.04**	**0.0022** J	0.046	---
Lower Issaquah Valley Regional Wells														
COI-MW01	Geosyntec	5/26/2016	MW01_30 TO 40_20160526	30 - 40	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	5/26/2016	MW01_55 TO 65_20160526	55 - 65	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
COI-MW02	Geosyntec	5/31/2016	MW02_40TO50_20160531	40 - 50	---	0.0073	0.0051	**0.0077**	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
COI-MW03	Geosyntec	5/24/2016	MW03_10 TO 20_20160524	10 - 20	---	0.019	0.012	**0.031**	**0.0046**	**0.01**	0.0027	< 0.0025	---	---
	Geosyntec	5/24/2016	MW03_40 TO 50_20160524	40 - 50	---	0.036	0.021	**0.08**	**0.0075**	**0.11**	0.0091	< 0.0025	---	---
COI-MW04	Geosyntec	5/27/2016	MW04_29 TO 39_20160527	29 - 39	---	0.0051	< 0.0025	**0.0084**	< 0.0025	0.0028	< 0.0025	< 0.0025	---	---
COI-MW05	Geosyntec	5/23/2016	MW05_10 TO 20_20160523	10 - 20	---	0.03	0.036	**0.039**	**0.022**	**0.013**	0.0084	< 0.0025	---	---
COI-MW06	Geosyntec	10/5/2016	COI-MW06-20161005-19.5-24.5	19.5 - 24.5	---	0.03	0.061	**0.14**	**0.021**	**0.30**	0.0069	< 0.0025	---	---
	Geosyntec	10/6/2016	COI-MW06-20161006-34.5-39.5	34.5 - 39.5	---	0.052	0.10	**0.24**	**0.036**	**0.50**	**0.021**	< 0.0025	---	---
	Geosyntec	10/6/2016	COI-MW06-20161006-51-56	51 - 56	---	0.073	0.13	**0.3**	**0.04**	**0.74**	**0.022**	< 0.0025	---	---
COI-MW07	Geosyntec	10/7/2016	COI-MW07-20161007-20-25	20 - 25	---	0.0044	0.011	**0.0094**	**0.029**	**0.025**	< 0.0025	< 0.0025	---	---
	Geosyntec	10/7/2016	COI-MW07-20161007-35-40	35 - 40	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	**0.0042**	< 0.0025	< 0.0025	---	---
	Geosyntec	10/7/2016	COI-MW07-20161007-65-70	65 - 70	---	< 0.0025	< 0.0025	**0.0037**	< 0.0025	**0.018**	< 0.0025	< 0.0025	---	---
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 7
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Shallow Groundwater Monitoring Well Samples														
Eastside Fire & Rescue Headquarters Source Area														
NWN-MW01	Farallon	10/26/2018	NWN-MW01-181026	24.0	0.0078 J	0.0072	0.023	**0.013**	**0.012** J	**0.052**	0.0030 J	**0.00094** J	< 0.0042	---
	Farallon	4/16/2020	NWN-MW01-200416	25.0	0.0028 J	0.0070	< 0.0092	**0.033**	0.0032	**0.063**	< 0.0041	< 0.0041	0.0024 J	< 0.0041
	Farallon	9/2/2021	NWN-MW01-20210902	28.0	0.0043	0.015	< 0.0092	**0.0091**	**0.0056**	**0.062**	< 0.0042	< 0.0042	< 0.0042	< 0.0042
	Farallon	1/17/2022	NWN-MW01-20220117	20.0	< 0.0044	0.0036 J	< 0.0092	**0.0095**	0.0039	**0.028**	< 0.0044	< 0.0044	0.001 J	< 0.0044
	Farallon	2/17/2022	NWN-MW01-20220217	25.0	0.0013 J	0.0036 J	< 0.0094	**0.014**	0.0020	**0.031**	< 0.0047	< 0.0047	< 0.0047	---
	Farallon	2/28/2023	NWN-MW01-022823	22.5	0.00047 J	0.0056	< 0.0092	**0.017**	0.0040	**0.051**	0.0013 J	< 0.0045	< 0.0045	< 0.0045
	Farallon	5/10/2023	NWN-MW01-051023	23.5	< 0.0045	0.0063	< 0.0092	**0.030**	0.0037	**0.042**	< 0.0045	< 0.0045	< 0.0045	< 0.0045
NWN-MW02	Farallon	10/26/2018	NWN-MW02-181026	26.0	0.0066 J	0.012	0.0097	**0.14**	**0.0091**	**0.086**	0.0043	**0.0029** J	0.0038 J	---
	Farallon	4/16/2020	NWN-MW02-200416	24.0	0.017	0.047	0.051	**0.19**	**0.023**	**0.61**	0.0047	**0.0013** J	0.045	< 0.0040
	Farallon	10/29/2020	NWN-MW02-102920	27.0	0.021	0.021	0.042	**0.27**	**0.020**	**0.27**	0.0067	**0.0035** J	0.034	< 0.0045
	Farallon	2/28/2023	NWN-MW02-022823	20.0	0.018	0.061	0.060	**0.16**	**0.021**	**0.29**	0.0050	< 0.0046	0.21	< 0.0046
	Farallon	5/10/2023	NWN-MW02-051023	24.0	0.012	0.032	0.057	**0.14**	**0.019**	**0.40**	0.0033 J	< 0.0046	0.025	< 0.0046
NWN-MW03	Farallon	10/26/2018	NWN-MW03-181026	26.0	0.17	0.061	0.55	**0.26**	**0.16**	**1.0**	**0.13**	**0.0081**	1.3	---
	Farallon	4/17/2020	NWN-MW03-200417	25.0	0.22	0.13	0.96	**0.58**	**0.37**	**2.2**	**0.23**	**0.011**	2.2	< 0.0040
	Farallon	7/16/2020	NWN-MW03-200716		0.11	0.046	0.48	**0.20**	**0.17**	**0.90**	**0.081**	**0.0056**	1.2	< 0.0040
	Farallon	10/29/2020	NWN-MW03-102920	26.0	0.16	0.074	0.44	**0.30**	**0.12**	**0.68**	**0.073**	**0.0056**	0.97 E	< 0.0042
	Farallon	9/2/2021	NWN-MW03-20210902	29.0	0.088	0.035	0.30	**0.16**	**0.097**	**0.82**	**0.056**	**0.0046**	0.75	< 0.0042
	Farallon	10/18/2021	NWN-MW03-20211018	27.0	0.12	0.04	0.36	**0.20**	**0.13**	**0.78** H*	**0.073**	**0.0058**	0.82	< 0.0045
	Farallon	12/9/2021	NWN-MW03-20211209	22.0	0.24	0.22	0.76	**0.70**	**0.29**	**1.9**	**0.17**	**0.0089**	1.7	< 0.0045
	Farallon	1/17/2022	NWN-MW03-20220117	20.0	0.25	0.23	0.84	**0.90**	**0.24**	**2.4**	**0.28**	**0.0099**	1.5	< 0.0044
	Farallon	2/17/2022	NWN-MW03-20220217	25.0	0.21	0.12	0.76	**0.50**	**0.18**	**1.6**	**0.18**	**0.0077**	1.7	---
	Farallon	12/14/2022	NWN-MW03-121422[H]	25.0	0.23	0.18	0.67	**0.83**	**0.22**	**1.1**	**0.14**	**0.0071**	1.1	< 0.0045
	Farallon	12/14/2022	DUPLICATE 1[H]		0.27	0.17	0.72	**1.1**	**0.27**	**1.4**	**0.16**	**0.0085**	0.99	< 0.0044
	Farallon	2/28/2023	NWN-MW03-022823	20.0	0.24	0.19	0.88	**0.58** J	**0.33**	**1.6**	**0.18**	**0.0076**	1.9	< 0.0046
	Farallon	2/28/2023	NWN-MW33-022823		0.25	0.16	0.98	**1.0** J	**0.37**	**1.7**	**0.18**	**0.0094**	1.9	< 0.0045
	Farallon	5/10/2023	NWN-MW03-051023	24.0	0.15	0.08	0.70	**0.41**	**0.28**	**1.1**	**0.15**	**0.0073**	1.1	< 0.0045
	Farallon	5/10/2023	NWN-MW33-051023		0.16	0.088	0.67	**0.42**	**0.28**	**1.2**	**0.16**	**0.009**	1.2	< 0.0046
NWN-MW04	Farallon	10/26/2018	NWN-MW04-181026	13.0 - 23.0	0.17	0.14	0.67	**0.61**	**0.20**	**2.2**	**0.057**	**0.017**	1.1	---
	Farallon	10/26/2018	NWN-MW04-181026-DUP		0.17	0.13	0.67	**0.65**	**0.21**	**2.4**	**0.057**	**0.016**	1.3	---
	Farallon	4/17/2020	NWN-MW04-200417	18.0	0.065	0.041	0.24	**0.31**	**0.13**	**2.6**	**0.043**	**0.013**	0.86	< 0.0040
	Farallon	4/17/2020	NWN-MW44-200417		0.064	0.039	0.24	**0.27**	**0.13**	**2.7**	**0.042**	**0.012**	0.86	< 0.0040
	Farallon	7/16/2020	NWN-MW04-200716		0.055	0.021	0.19	**0.15**	**0.091**	**1.5**	**0.028**	**0.011**	0.46	< 0.0041
	Farallon	7/16/2020	NWN-MW44-200716		0.053	0.023	0.19	**0.15**	**0.089**	**1.3**	**0.025**	**0.01**	0.56	< 0.0042
	Farallon	10/29/2020	NWN-MW04-102920		0.15	0.079	0.45	**0.34**	**0.14**	**1.6**	**0.033**	**0.012**	0.78	< 0.0044
	Farallon	10/29/2020	NWN-MW44-102920		0.46	0.28	0.48	**0.32**	**0.15**	**1.7**	**0.036**	**0.012**	0.82	< 0.0043
	Farallon	9/2/2021	NWN-MW04-20210902	20.0	0.064	0.037	0.22	**0.21**	**0.094**	**1.4**	**0.027**	**0.0083**	0.74	< 0.0042
	Farallon	10/18/2021	NWN-MW04-20211018	16.0	0.087	0.059	0.22	**0.24**	**0.093**	**1.1** H*	**0.025**	**0.0094**	0.49	< 0.0044
	Farallon	12/9/2021	NWN-MW04-20211209	12.0	0.20	0.15	0.61	**0.69**	**0.31**	**1.9**	**0.044**	**0.012**	1.2	< 0.0045
	Farallon	1/18/2022	NWN-MW04-20220118		0.20	0.094	0.56	**0.64**	**0.27**	**2.3**	**0.053**	**0.013**	1.4	< 0.0044
	Farallon	2/17/2022	NWN-MW04-20220217	15.0	0.11	0.046	0.36	**0.45**	**0.17**	**2.4**	**0.041**	**0.013**	1.0	---
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 7
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Eastside Fire & Rescue Headquarters Source Area (continued)														
NWN-MW05	Farallon	4/16/2020	NWN-MW05-200416	15.0	0.19	0.26	0.49	**1.6**	**0.32**	**4.7**	**0.095**	**0.033**	0.8	< 0.0040
	Farallon	7/16/2020	NWN-MW05-200716		0.21	0.18	0.58	**1.3**	**0.33**	**2.8**	**0.080**	**0.015**	0.84	< 0.0039
	Farallon	10/29/2020	NWN-MW05-102920		0.48	0.081	1.1	**1.8**	**0.49**	**4.8**	**0.12**	**0.04**	1.4	< 0.0045
	Farallon	2/28/2023	NWN-MW05-022823	12.0	0.30	0.30	0.77	**2.3**	**0.44**	**4.0**	**0.10**	**0.027**	1.3	< 0.0045
	Farallon	2/28/2023	NWN-MW55-022823		0.26	0.28	0.73	**2.2**	**0.42**	**4.2**	**0.095**	**0.029**	1.2	< 0.0045
	Farallon	5/10/2023	NWN-MW05-051023	14.0	0.14	0.17	0.45	**1.5**	**0.29**	**3.8**	**0.090**	**0.027**	0.58	< 0.0044
	Farallon	5/10/2023	NWN-MW55-051023		0.14	0.16	0.48	**1.7**	**0.29**	**3.4**	**0.088**	**0.03**	0.5	< 0.0044
NWN-MW06	Farallon	4/17/2020	NWN-MW06-200417	20.0	0.24	0.31	0.79	**2.0**	**0.41**	**8.6**	**0.12**	**0.033**	1.2	< 0.0042
	Farallon	7/16/2020	NWN-MW06-200716		0.15	0.17	0.49	**0.99**	**0.28**	**5.0**	**0.076**	**0.026**	1.1	< 0.0039
	Farallon	9/1/2021	NWN-MW06-20210901	23.0	0.14	0.15	0.44	**1.1**	**0.25**	**6.8**	**0.075**	**0.023**	1.2	< 0.0042
	Farallon	10/18/2021	NWN-MW06-20211018	20.0	0.15	0.14	0.43	**1.0** H*	**0.21**	**3.5** H*	**0.059**	**0.019**	0.89	< 0.0043
	Farallon	12/9/2021	NWN-MW06-20211209	18.0	0.15	0.016	0.063	**0.072**	**0.019**	**0.23**	0.0058	< 0.0044	0.07	< 0.0044
	Farallon	1/18/2022	NWN-MW06-20220118	15.0	0.30	0.12	0.38	**0.59**	**0.12**	**1.4**	**0.039**	**0.004** J	0.46	< 0.0045
	Farallon	2/17/2022	NWN-MW06-20220217	19.0	0.29	0.039	0.19	**0.14**	**0.029**	**0.33**	0.0056	< 0.0045	0.093	---
NWN-MW07	Farallon	4/17/2020	NWN-MW07-200417	21.5	0.17	0.16	0.74	**0.65**	**0.22**	**2.9**	**0.29**	**0.014**	1.5	< 0.0041
	Farallon	4/17/2020	NWN-MW77-200417		0.16	0.16	0.70	**0.64**	**0.21**	**3.0**	**0.27**	**0.013**	1.6	< 0.0041
	Farallon	7/16/2020	NWN-MW07-200716		0.10	0.086	0.43	**0.36**	**0.14**	**2.0**	**0.22**	**0.012**	1.1	< 0.0041
	Farallon	10/29/2020	NWN-MW07-102920	22.0	0.31	0.31	1.2	**0.75**	**0.16**	**1.7**	**0.26**	**0.011**	1.4 E	< 0.0044
	Farallon	10/18/2021	NWN-MW07-20211018	25.0	0.16	0.14	0.52	**0.24**	**0.14**	**0.67** H*	**0.083**	**0.0034** J	0.96	< 0.0045
	Farallon	12/9/2021	NWN-MW07-20211209	18.0	0.21	0.15	0.80	**0.47**	**0.37**	**0.83**	**0.15**	**0.007**	2.2	< 0.0045
	Farallon	1/18/2022	NWN-MW07-20220118		0.33	0.41	1.5	**1.3**	**0.35**	**2.6**	**0.64**	**0.015**	1.8	< 0.0044
	Farallon	2/17/2022	NWN-MW07-20220217	22.0	0.14	0.056	0.28	**0.17**	**0.042**	**0.49**	**0.092**	**0.0035** J	0.73	---
	Farallon	9/2/2022	NWN-MW07	25.0	0.063	0.03	0.20	**0.11**	**0.085**	**0.39**	**0.042**	**0.003** J	0.66	< 0.0042
	Farallon	9/2/2022	NWN-MW07-DUP		0.069	0.03	0.22	**0.11**	**0.093**	**0.43**	**0.041**	**0.0034** J	0.69	< 0.0043
	Farallon	12/14/2022	NWN-MW07-121422[H]	19.4	0.38	0.49	1.2	**0.76**	**0.16**	**0.95**	**0.23**	**0.0055**	1.2	< 0.0044
	Farallon	12/14/2022	DUPLICATE 2[H]		0.38	0.35	1.2	**0.71**	**0.18**	**0.87**	**0.23**	**0.0058**	1.0	< 0.0044
	Farallon	2/28/2023	NWN-MW07-022823	21.5	0.19	0.15	0.58	**0.36**	**0.092**	**0.77**	**0.14**	**0.0057**	0.96	< 0.0045
	Farallon	2/28/2023	NWN-MW77-022823		0.17	0.16	0.49	**0.35**	**0.079**	**0.61**	**0.12**	**0.0051**	0.60	< 0.0045
	Farallon	5/10/2023	NWN-MW07-051023	21.8	0.12	0.092	0.41	**0.32**	**0.054**	**0.45**	**0.10**	**0.0035** J	0.26	< 0.0045
	Farallon	5/10/2023	NWN-MW77-051023		0.10	0.081	0.34	**0.23**	**0.045**	**0.38**	**0.080**	**0.0032** J	0.26	< 0.0045
NWN-MW09	Farallon	4/17/2020	NWN-MW09-200417	47.5	0.029	0.025	0.099	**0.091**	**0.022**	**0.23**	0.0092	< 0.0040	0.13	< 0.0040
	Farallon	7/16/2020	NWN-MW09-200716		0.012	0.011	0.038	**0.031**	**0.011**	**0.10**	0.0046	< 0.0041	0.021	< 0.0041
	Farallon	10/29/2020	NWN-MW09-102920	45.0	0.011	0.0089	0.024	**0.027**	**0.011**	**0.092**	0.0037 J	< 0.0043	0.018	< 0.0043
	Farallon	9/2/2021	NWN-MW09-20210902	30.0	0.026	0.019	0.077	**0.073**	**0.019**	**0.22**	**0.011**	< 0.0042	0.10	< 0.0042
	Farallon	10/18/2021	NWN-MW09-20211018	24.0	0.012	0.012	0.035	**0.032**	**0.011**	**0.10** H*	0.0041 J	< 0.0045	0.023	< 0.0045
	Farallon	12/9/2021	NWN-MW09-20211209	22.0	0.046	0.036	0.14	**0.17**	**0.047**	**0.25**	**0.012**	**0.0013** J	0.13	< 0.0044
	Farallon	1/17/2022	NWN-MW09-22020117	20.0	0.038	0.033	0.12	**0.15**	**0.038**	**0.33**	**0.013**	< 0.0045	0.18	< 0.0045
	Farallon	2/17/2022	NWN-MW09-20220217	25.0	0.029	0.021	0.095	**0.12**	**0.022**	**0.31**	0.0096	< 0.0046	0.10	---
	Farallon	9/2/2022	NWN-MW09	35.0	0.011	0.013	0.031	**0.037**	**0.012**	**0.11**	0.0048	< 0.0042	0.023	< 0.0042
	Farallon	12/14/2022	NWN-MW09-121422[H]		0.032	0.022	0.096	**0.12**	**0.035**	**0.16**	0.0097	< 0.0045	0.11	< 0.0045
	Farallon	2/28/2023	NWN-MW09-022823	47.5	0.036	0.032	0.12	**0.14**	**0.040**	**0.30**	**0.012**	**0.0018** J	0.18	< 0.0046
	Farallon	5/10/2023	NWN-MW09-051023		0.024	0.017	0.098	**0.084**	**0.034**	**0.20**	0.010	< 0.0045	0.12	< 0.0045
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 7
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Eastside Fire & Rescue Headquarters Source Area (continued)														
NWN-MW10	Farallon	9/1/2021	NWN-MW10-20210901	23.5	0.092	0.073	0.30	**0.46**	**0.14**	**2.4**	**0.051**	**0.0094**	0.82	< 0.0042
	Farallon	9/1/2021	NWN-MW99-20210901		0.097	0.076	0.32	**0.49**	**0.14**	**2.6**	**0.057**	**0.01**	0.76	< 0.0044
	Farallon	10/18/2021	NWN-MW10-20211018	22.0	0.11	0.074	0.36	**0.41**	**0.12**	**1.6** H*	**0.19**	**0.0066**	0.60	< 0.0045
	Farallon	10/18/2021	NWN-MW-99-20211018		0.099	0.073	0.33	**0.37**	**0.11**	**1.2** H*	**0.17**	**0.0064**	0.57	< 0.0045
	Farallon	12/9/2021	NWN-MW10-20211209	18.0	0.042	0.0012 J	< 0.0092	**0.0034** J	0.0016 J	**0.011**	0.0018 J	< 0.0044	0.0067	< 0.0044
	Farallon	12/9/2021	NWN-MW99-20211209		0.04	0.00087 J	< 0.0092	**0.0043**	0.0011 J	**0.011**	0.0015 J	< 0.0043	0.006	< 0.0043
	Farallon	1/18/2022	NWN-MW10-20220118	15.0	0.055	0.0027 J	0.011	**0.0099**	0.0039	**0.047**	**0.011**	< 0.0045	0.015	< 0.0045
	Farallon	1/18/2022	NWN-MW99-20220118		0.057	0.0031 J	0.012	**0.012**	0.0036	**0.054**	**0.014**	< 0.0045	0.016	< 0.0045
	Farallon	2/17/2022	NWN-MW10-20220217	19.0	0.062	0.0020 J	0.017	**0.0079**	0.0025	**0.025**	< 0.0045	< 0.0045	0.016	---
	Farallon	2/17/2022	NWN-MW99-20220217		0.067	0.0020 J	0.019	**0.0085**	0.0027	**0.026**	< 0.0045	< 0.0045	0.017	---
	Farallon	9/2/2022	NWN-MW10	23.0	0.089 J	0.015 J	< 0.5	< 0.25	< 0.1	**0.15 J**	< 0.25	< 0.25	0.05 J	< 0.25
	Farallon	12/14/2022	NWN-MW10-121422[H]	20.0	0.08	0.0041 J	0.022	**0.0070**	0.0026	**0.0088**	< 0.0044	< 0.0044	0.0048	< 0.0044
	Farallon	2/28/2023	NWN-MW10-022823	22.5	0.083	0.0060	0.031	**0.011**	**0.0052**	**0.015**	< 0.0046	< 0.0046	0.014	< 0.0046
	Farallon	5/10/2023	NWN-MW10-051023	19.5	0.062	0.0044 J	0.037	**0.012**	**0.0068**	**0.036**	0.0023 J	< 0.0045	0.016	< 0.0045
NWN-MW12	Farallon	9/1/2021	NWN-MW12-20210901	20.0	0.047	0.023	0.18	**0.095**	**0.05**	**0.46**	**0.016**	**0.0025** J	0.40	< 0.0042
	Farallon	10/18/2021	NWN-MW12-20211018	18.0	0.096	0.084	0.33	**0.34**	**0.097**	**0.65** H*	**0.024**	**0.0036** J	0.65	< 0.0043
	Farallon	12/9/2021	NWN-MW12-20211209	12.0	0.27	0.071	1.0	**0.33**	**0.60**	**0.84**	**0.055**	**0.010**	2.0	< 0.0045
	Farallon	1/18/2022	NWN-MW12-20220118		0.34	0.084	1.6	**0.43**	**1.0**	**0.88**	**0.059**	**0.012**	2.4	< 0.0045
	Farallon	2/17/2022	NWN-MW12-20220217	15.0	0.21	0.057	0.81	**0.37**	**0.49**	**0.89**	**0.045**	**0.0093**	2.1	---
NWN-MW13	Farallon	9/2/2021	NWN-MW13-20210902	17.0	0.029 J	0.0081	0.084	**0.065**	**0.041**	**0.38**	**0.019**	**0.0045** J	0.31	< 0.0045
	Farallon	10/18/2021	NWN-MW13-20211018	14.0	0.12	0.049	0.26	**0.24**	**0.14**	**0.48**	**0.026**	**0.0087**	0.64	< 0.0045
	Farallon	12/9/2021	NWN-MW13-20211209	12.0	0.085	0.066	0.21	**0.52**	**0.17**	**0.75**	**0.03**	**0.015**	0.76	< 0.0045
	Farallon	1/18/2022	NWN-MW13-20220118		0.076	0.051	0.16	**0.56**	**0.12**	**0.60**	**0.031**	**0.014**	0.61	< 0.0045
	Farallon	2/17/2022	NWN-MW13-20220217	9.0	0.033	0.016	0.081	**0.14**	**0.053**	**0.37**	**0.017**	**0.0088**	0.29	---
	Farallon	9/2/2022	NWN-MW13	16.0	0.032	0.015	0.093	**0.075**	**0.044**	**0.26**	**0.016**	**0.0055**	0.29	< 0.0042
	Farallon	12/14/2022	NWN-MW13-121422[H]	12.0	0.16	0.10	0.43	**0.90**	**0.27**	**0.66**	**0.048**	**0.023**	0.92	< 0.0044
	Farallon	2/28/2023	NWN-MW13-022823	10.5	0.017	0.0088	0.039	**0.063**	**0.032**	**0.16**	0.0084	**0.0061**	0.13	< 0.0043
	Farallon	5/10/2023	NWN-MW13-051023	11.0	0.040	0.031	0.12	**0.21**	**0.079**	**0.38**	**0.020**	**0.011**	0.35	< 0.0045
NWN-MW14	Farallon	1/18/2022	NWN-MW14-20220118	12.0	0.32	0.088	1.6	**0.57**	**0.98**	**1.2**	**0.084**	**0.029**	2.3	< 0.0045
	Farallon	2/17/2022	NWN-MW14-20220217	15.0	0.11	0.032	0.44	**0.23**	**0.19**	**0.69**	**0.031**	**0.01**	1.4	---
NWN-MW15	Farallon	9/2/2021	NWN-MW15-20210902	28.0	0.066	0.045	0.25	**0.17**	**0.064**	**1.3**	**0.059**	**0.0043**	0.10	< 0.0042
	Farallon	1/17/2022	NWN-MW15-20220117	20.0	0.062	0.084	0.17	**0.41**	**0.074**	**1.2**	0.0086	< 0.0044	0.47	< 0.0044
	Farallon	2/17/2022	NWN-MW15-20220217	25.0	0.054	0.087	0.19	**0.32**	**0.04**	**0.78**	0.0064	< 0.0048	0.12	---
NWN-MW16	Farallon	9/2/2021	NWN-MW16-20210902	28.0	0.05	0.016	0.15	**0.063**	**0.037**	**0.25**	0.0079	< 0.0042	0.16	< 0.0042
	Farallon	1/17/2022	NWN-MW16-20220117	20.0	0.061	0.055	0.20	**0.31**	**0.069**	**1.0**	**0.040**	**0.0031** J	0.44	< 0.0045
	Farallon	2/17/2022	NWN-MW16-20220217	25.0	0.11	0.043	0.46	**0.24**	**0.14**	**0.71**	**0.047**	**0.0039** J	1.5	---
	Farallon	12/14/2022	NWN-MW16-121422[H]	22.5	0.15	0.079	0.43	**0.49**	**0.12**	**0.69**	**0.039**	**0.0037** J	0.47	< 0.0045
	Farallon	2/28/2023	NWN-MW16-022823	23.0	0.052	0.049	0.17	**0.18**	**0.091**	**0.51**	**0.026**	**0.0026** J	0.88	< 0.0045
	Farallon	5/10/2023	NWN-MW16-051023	24.0	0.10	0.041	0.45	**0.22**	**0.23**	**0.56**	**0.059**	**0.004** J	1.1	< 0.0046
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 7
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Eastside Fire & Rescue Headquarters Source Area (continued)														
NWN-MW17	Farallon	9/2/2022	NWN-MW17	22.0	0.10	0.13	0.29	**0.69**	**0.14**	**2.4**	**0.049**	**0.017** J	0.57	< 0.021
	Farallon	12/14/2022	NWN-MW17-121422[H]	17.0	0.26	0.25	0.63	**1.2**	**0.30**	**5.2**	**0.10**	**0.019**	1.2	< 0.0042
	Farallon	2/28/2023	NWN-MW17-022823	17.5*	0.27	0.26	0.75	**1.6**	**0.31**	**5.3**	**0.096**	**0.021**	1.2	< 0.0045
	Farallon	5/10/2023	NWN-MW17-051023	18.8	0.14	0.12	0.48	**0.92**	**0.21**	**3.2**	**0.059**	**0.015**	0.66	< 0.0043
Issaquah Valley Elementary School Source Area														
IES-MW01	Farallon	10/26/2018	1ES-MW05-181026	21.0	0.0072 J	0.019	0.018	**0.062**	**0.0097**	**0.19**	0.0077	< 0.0041	0.012	---
	Farallon	4/15/2020	IES-MW01-200415		0.010	0.023	0.031	**0.086**	**0.011**	**0.27**	0.0071	< 0.0041	0.028	< 0.0041
	Farallon	7/14/2020	IES-MW01-200714		0.0075	0.017	0.022	**0.058**	**0.0095**	**0.18**	0.0053	< 0.0039	0.018	< 0.0039
	Farallon	10/27/2020	IES-MW01-102720		0.0065	0.015	0.017	**0.039**	**0.0066**	**0.17**	0.0047	< 0.0042	0.012	< 0.0042
	Farallon	9/2/2022	IES-MW01		0.0073	0.019	0.017	**0.058**	**0.0087**	**0.22**	0.0053	< 0.0045	0.014	< 0.0045
	Farallon	12/15/2022	IES-MW01-121522[H]		0.0058	0.019	0.019	**0.069**	**0.0084**	**0.20**	0.0051	< 0.0043	0.012	< 0.0043
	Farallon	3/1/2023	IES-MW01-030123		0.0072	0.026	0.026	**0.081**	**0.0089**	**0.21**	0.0053	< 0.0045	0.019	< 0.0045
	Farallon	5/11/2023	IES-MW01-051123		0.0049	0.020	0.024	**0.056**	**0.0082**	**0.17**	0.0054	< 0.0044	0.014	< 0.0044
IES-MW02	Farallon	10/26/2018	1ES-MW03-181026	20.0	0.021	0.050	0.062	**0.190**	**0.019**	**0.24**	0.0065	**0.00065** J	0.0039 J	---
	Farallon	4/16/2020	IES-MW02-200416		0.018	0.044	0.059	**0.190**	**0.018**	**0.29**	0.0065	< 0.0040	0.006	< 0.0040
	Farallon	7/15/2020	IES-MW02-200715		0.014	0.034	0.041	**0.14**	**0.014**	**0.20**	0.0046	< 0.0040	0.0017 J	< 0.0040
	Farallon	10/27/2020	IES-MW02-102720	22.0	0.022	0.057	0.066	**0.17**	**0.017**	**0.26**	0.0056	< 0.0045	0.0041 J	< 0.0045
IES-MW03	Farallon	10/26/2018	1ES-MW01-181026	20.0	0.0056 J	0.015	0.016	**0.065**	**0.0056**	**0.076**	0.0014 J	< 0.0042	0.0029 J	---
	Farallon	4/15/2020	IES-MW03-200415		0.0083	0.020	0.022	**0.080**	**0.0049**	**0.075**	< 0.0042	< 0.0042	0.0031 J	< 0.0042
	Farallon	7/14/2020	IES-MW03-200714		0.0055	0.013	0.014	**0.063**	**0.0041**	**0.055**	0.0011 J	< 0.0041	0.0014 J	< 0.0041
	Farallon	10/27/2020	IES-MW03-102720	19.0	0.0064	0.015	0.014	**0.054**	**0.0045**	**0.066**	0.0011 J	< 0.0042	0.0016 J	< 0.0042
	Farallon	9/1/2022	IES-MW03	20.0	0.0037 J	0.01	< 0.0092	**0.043**	0.0038	**0.062**	0.0014 J	< 0.0045	0.00067 J	< 0.0045
	Farallon	12/13/2022	IES-MW03-121322[H]		0.0050	0.014	0.014	**0.069**	**0.0060**	**0.077**	< 0.0045	< 0.0045	0.0015 J	< 0.0045
	Farallon	3/1/2023	IES-MW03-030123		0.0063	0.018	0.018	**0.11**	**0.0075**	**0.11**	0.0032 J	< 0.0045	0.0029 J	< 0.0045
	Farallon	5/11/2023	IES-MW03-051123		0.0032 J	0.015	0.015	**0.08**	**0.0056**	**0.082**	0.0021 J	< 0.0045	0.0012 J	< 0.0045
IES-MW04	Farallon	10/26/2018	1ES-MW02-181026	20.0	0.029	0.055	0.10	**0.26**	**0.037**	**0.53**	**0.022**	**0.0012** J	0.16	---
	Farallon	10/27/2020	IES-MW04-1022720	23.0	0.019	0.04	0.060	**0.13**	**0.019**	**0.35**	**0.011**	< 0.0043	0.05	< 0.0043
	Farallon	12/15/2022	IES-MW04-121522[H]	22.0	0.03	0.066	0.096	**0.31**	**0.037**	**0.59**	**0.015**	< 0.0044	0.056	< 0.0044
	Farallon	3/2/2023	IES-MW04-030223	22.5*	0.036	0.11	0.10	**0.40**	**0.042**	**0.71**	**0.019**	**0.0015** J	0.062	< 0.0045
	Farallon	5/11/2023	IES-MW04-051123	22.5	0.025	0.066	0.097	**0.31**	**0.036**	**0.64**	**0.016**	< 0.0044	0.034	< 0.0044
IES-MW05	Farallon	10/26/2018	1ES-MW04-181026	25.0	0.012	0.022	0.034	**0.12**	**0.019**	**0.38**	**0.033**	**0.0012** J	0.012	---
	Farallon	4/15/2020	IES-MW05-200415		0.021	0.045	0.067	**0.26**	**0.025**	**0.59**	**0.041**	**0.0017** J	0.029	< 0.0041
	Farallon	7/14/2020	IES-MW05-200714		0.013	0.026	0.042	**0.20**	**0.022**	**0.48**	**0.038**	**0.0013** J	0.010	< 0.0042
IES-MW08	Farallon	4/15/2020	IES-MW08-200415	25.0	0.0027 J	0.0062	< 0.0092	**0.025**	0.0040	**0.074**	0.0040 J	< 0.0040	< 0.0040	< 0.0040
	Farallon	10/27/2020	IES-MW08-102720		0.0012 J	0.0017 J	< 0.0092	**0.0024** J	0.0025	**0.011**	0.0012 J	< 0.0043	0.00069 J	< 0.0043
	Farallon	9/1/2022	IES-MW08		0.0015 J	0.0042 J	< 0.0092	**0.0078**	0.0032	**0.022**	0.0018 J	< 0.0045	< 0.0045	< 0.0045
	Farallon	12/13/2022	IES-MW08-121322[H]		0.0020 J	0.0056	< 0.0092	**0.021**	0.0040	**0.034**	0.0030 J	< 0.0044	< 0.0044	< 0.0044
	Farallon	3/1/2023	IES-MW08-030123		0.0057	0.019	0.019	**0.11**	**0.011**	**0.23**	**0.012**	**0.0016** J	0.0021 J	< 0.0045
	Farallon	5/11/2023	IES-MW08-051123		0.0030 J	0.014	0.015	**0.074**	**0.010**	**0.17**	**0.013**	< 0.0046	0.0013 J	< 0.0046
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 7
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Issaquah Valley Elementary School Source Area (continued)														
DF-MW01	Farallon	10/27/2020	DF-MW01-102720	12	0.00091 J	0.0034 J	< 0.0092	**0.018**	0.0018	**0.042**	0.0025 J	< 0.0042	< 0.0042	< 0.0042
	Farallon	12/15/2022	DF-MW01-121522[H]	10.0	< 0.0042	0.0042	< 0.0092	**0.018**	0.0022	**0.053**	0.0041 J	0.0013 J	< 0.0042	< 0.0042
	Farallon	3/1/2023	DF-MW01-030123	12.0*	< 0.0045	0.0057	< 0.0092	**0.040**	0.0039	**0.068**	0.0049	0.0018 J	< 0.0045	< 0.0045
	Farallon	5/11/2023	DF-MW01-051123	12.5	< 0.0045	0.0050	< 0.0092	**0.029**	0.0025	**0.045**	0.0035 J	< 0.0045	< 0.0045	< 0.0045
DF-MW02	Farallon	8/3/2018	DF-MW02-180803	17.0	0.0044 J	0.022	0.012	**0.23**	**0.010**	**0.55**	**0.025**	0.0020 J	0.0030 J	---
	Farallon	8/3/2018	QA/QC-01-180803		0.0042 J	0.020	0.011	**0.20**	**0.0093**	**0.52**	**0.025**	0.0016 J	0.0020 J	---
	Farallon	4/14/2020	DF-MW02-200414	20.0	0.0027 J	0.014	< 0.0092	**0.12**	**0.0075**	**0.44**	**0.019**	0.0016 J	< 0.0041	< 0.0041
	Farallon	10/27/2020	DF-MW02-102720	18.0	0.0043 J	0.019	0.010	**0.15**	**0.0083**	**0.38**	**0.017**	0.0018 J	< 0.0044	< 0.0044
	Farallon	10/27/2020	DF-MW22-102720		0.0042 J	0.016	0.010	**0.18**	**0.0087**	**0.38**	**0.019**	0.0012 J	< 0.0044	< 0.0044
DF-MW03	Farallon	8/3/2018	DF-MW03-180803	18.0	0.0048 J	0.0079	0.012	**0.033**	**0.0062**	**0.13**	**0.0092**	0.00073 J	0.0033 J	---
	Farallon	3/1/2023	DF-MW03-030123	25.0	0.0085	0.025	0.028	**0.14**	**0.016**	**0.36**	**0.023**	0.0013 J	0.0038 J	< 0.0044
	Farallon	5/11/2023	DF-MW03-051123		0.0075	0.021	0.029	**0.16**	**0.020**	**0.45**	**0.033**	< 0.0046	0.0035 J	< 0.0046
Lower Issaquah Valley Regional Wells														
B-2	Farallon	10/29/2020	B-2-102920	25.0	0.0019 J	0.0024 J	< 0.0092	**0.0032** J	0.00077 J	0.0036 J	< 0.0043	< 0.0043	0.018	< 0.0043
B-4	Farallon	7/16/2020	B-4-200716	20.0 - 30.0	0.00094 J	0.0052	< 0.0092	**0.014**	0.00078 J	**0.012**	< 0.0040	< 0.0040	< 0.0040	< 0.004
	Farallon	2/28/2023	B-4-022823	25.0	0.00067 J	0.0093	< 0.0093	**0.019**	0.0035	**0.014**	< 0.0046	**0.0015** J	0.0017 J	< 0.0046
B-7	HWA	2/12/2020	B7-GW	22.5 - 32.5	0.013	0.027	---	**0.31**	**0.017**	**0.27**	0.0058	< 0.0041	< 0.0041	---
	Farallon	2/28/2023	B-7-022823	27.5	0.0069	0.014	0.017	**0.17**	**0.0099**	**0.12**	0.003 J	< 0.0045	0.0014 J	< 0.0045
B-12	HWA	2/12/2020	B12-GW	20.0 - 30.0	< 0.0042	0.011	---	**0.039**	**0.0070**	**0.042**	< 0.0042	< 0.0042	< 0.0042	---
	HWA	2/12/2020	DUP-GW		< 0.0040	0.010	---	**0.041**	**0.0071**	**0.040**	< 0.0040	< 0.0040	< 0.0040	---
COI-TW01	Geosyntec	5/17/2016	COI-MW1-051716	84-94	---	< 0.003	< 0.003	< 0.003	< 0.003	0.0034	< 0.003	< 0.003	---	---
IES-MW07	Farallon	4/15/2020	IES-MW07-200415	25.0	0.028	0.066	0.084	**0.21**	**0.023**	**0.53**	**0.026**	< 0.0041	0.043	< 0.0041
	Farallon	10/27/2020	IES-MW07-102720		0.016	0.038	0.041	**0.1**	**0.014**	**0.34**	**0.016**	< 0.0043	0.0092	< 0.0043
	Farallon	9/2/2022	IES-MW07		0.021	0.05	0.055	**0.2**	**0.023**	**0.68**	**0.032**	< 0.0045	0.017	< 0.0045
	Farallon	12/28/2022	IES-MW07-122822		0.0056	0.024 J	0.014	**0.065** J	**0.0052 J**	**0.095** J	**0.011** J	< 0.0044	0.10	< 0.0044
	Farallon	3/2/2023	IES-MW07-030223		0.021	0.073	0.052	**0.21**	**0.021**	**0.47**	**0.028**	**0.0012** J	0.0086	< 0.0045
	Farallon	5/12/2023	IES-MW07-051223		0.020	0.062	0.065	**0.22**	**0.021**	**0.43**	**0.024**	< 0.0042	0.011	< 0.0042
NDS-MW01	Farallon	4/16/2020	NDS-MW01-200416	27.0	0.048	0.085	0.17	**0.55**	**0.062**	**1.3**	**0.021**	**0.0022** J	0.25	< 0.0039
	Farallon	7/15/2020	NDS-MW01-200715		0.038	0.068	0.12	**0.39**	**0.050**	**0.86**	**0.016**	**0.0013** J	0.15	< 0.0040
	Farallon	10/29/2020	NDS-MW01-102920	26.0	0.022	0.035	0.058	**0.22**	**0.024**	**0.49**	**0.011**	**0.0012** J	0.026	< 0.0045
	Farallon	9/2/2022	NDS-MW01	27.0	0.031	0.05	0.092	**0.35**	**0.044**	**1.2**	**0.019**	**0.0017** J	0.065	< 0.0046
	Farallon	12/14/2022	NDS-MW01-121422[H]		0.028	0.063	0.078	**0.36**	**0.041**	**0.77**	**0.017**	**0.0012** J	0.046	< 0.0044
	Farallon	3/1/2023	NDS-MW01-030123		0.045	0.094	0.12	**0.50**	**0.05**	**1.3**	**0.019**	**0.0019** J	0.14	< 0.0045
	Farallon	5/10/2023	NDS-MW01-051023		0.044	0.064	0.15	**0.57**	**0.061**	**1.4**	**0.022**	**0.0019** J	0.14	< 0.0045
NDS-MW03	Farallon	4/16/2020	NDS-MW03-200416	30.0	0.0011 J	0.0067	< 0.0092	**0.012**	0.0040	**0.022**	0.0014 J	< 0.0040	< 0.0040	< 0.0040
	Farallon	10/28/2020	NDS-MW03-102820	31.0	0.0011 J	0.0051	< 0.0092	**0.007**	0.0025	**0.016**	< 0.0045	< 0.0045	< 0.0045	< 0.0045
	Farallon	12/14/2022	NDS-MW03-121422[H]	30.0	0.0012 J	0.0046	< 0.0092	**0.011**	0.0035	**0.014**	< 0.0045	< 0.0045	0.00092 J	< 0.0045
	Farallon	2/28/2023	NDS-MW03-022823		< 0.0044	0.0050	< 0.0092	**0.0086**	0.0037	**0.022**	< 0.0044	< 0.0044	< 0.0044	< 0.0044
	Farallon	5/10/2023	NDS-MW03-051023		< 0.0044	0.0046	< 0.0092	**0.0074**	0.0034	**0.018**	< 0.0044	< 0.0044	< 0.0044	< 0.0044
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 7
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Lower Issaquah Valley Regional Wells (continued)														
NGB-MW01	Farallon	9/1/2022	NGB-MW01	30.0	0.017	0.086	0.043	**0.14**	**0.015**	**0.11**	**0.01**	< 0.0046	0.034	< 0.0046
	Farallon	12/13/2022	NGB-MW01-121322[H]	25.0	0.018	0.081	0.052	**0.16**	**0.016**	**0.094**	**0.0097**	< 0.0045	0.011	< 0.0045
	Farallon	3/2/2023	NGB-MW01-030223		0.019	0.089	0.065	**0.18**	**0.023**	**0.099**	**0.013**	< 0.0045	0.016	< 0.023
	Farallon	5/12/2023	NGB-MW01-051223		0.015	0.071	0.055	**0.15**	**0.016**	**0.10**	**0.011**	< 0.0045	0.0085	< 0.0045
NLS-MW01	Farallon	9/2/2022	NLS-MW01	25.0	0.014	0.032	0.035	**0.11**	**0.013**	**0.14**	0.0040 J	0.0012 J	0.0078	< 0.0045
	Farallon	12/13/2022	NLS-MW01-121322[H]		0.012	0.025	0.028	**0.099**	**0.011**	**0.093**	0.0023 J	0.0014 J	0.0039 J	< 0.0045
	Farallon	3/2/2023	NLS-MW01-030223	24.5	0.0099	0.034	0.023	**0.084**	**0.012**	**0.11**	0.0032 J	0.0019 J	0.0065	< 0.0043
	Farallon	5/12/2023	NLS-MW01-051223		0.0065	0.018	0.023	**0.066**	**0.0092**	**0.085**	0.0030 J	< 0.0045	0.003 J	< 0.0045
NWN-MW11	Farallon	4/15/2020	NWN-MW11-200415	20.0	< 0.0039	0.00054 J	< 0.0092	< 0.0039	0.00087 J	0.0017 J	< 0.0039	< 0.0039	< 0.0039	< 0.0039
	Farallon	7/15/2020	NWN-MW11-200715		< 0.0039	0.00037 J	< 0.0092	< 0.0039	< 0.0016	0.0013 J	< 0.0039	< 0.0039	< 0.0039	< 0.0039
	Farallon	10/29/2020	NWN-MW11-102920	22.0	0.0005 J	0.0006 J	< 0.0092	< 0.0043	0.0011 J	0.0020 J	< 0.0043	< 0.0043	< 0.0043	< 0.0043
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

NOTES:

Results in **bold** denote concentrations exceeding applicable MCLs and/or Cleanup Levels.

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

— denotes sample not analyzed or information unknown.

[1]Depth in feet below ground surface.

[2]Samples collected in 2016 analyzed by U.S. Environmental Protection Agency (EPA) Method 537; samples collected in 2018 and later analyzed by EPA Method 537 Modified.

[3]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State Model Toxics Control Act Cleanup Regulation (MTCA), Standard Method B Values for Groundwater from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC, dated January 2025.

[4]EPA National Primary Drinking Water Regulations, 40 Code of Federal Regulations Part 141. The EPA set a Hazard Index MCL of 1 for PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS to account for the combined and co-occurring levels of these PFAS in drinking water.

E = result exceeded calibration range of instrument and is an estimate

Farallon = Farallon Consulting, L.L.C.

Geosyntec = Geosyntec Consultants, Inc.

H = sample analyzed outside of holding time; results are estimates

HWA = HWA Geosciences Inc.

J = result is an estimate

NE = not established

PFAS = per- and poly-fluoroalkyl substances

* indicates the sample intake depth was not reported; value represents the center of the well screen when fully saturated or center of water column when screen was not fully saturated.

Table 8
Intermediate and Deep Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
Eastside Fire & Rescue Headquarters Source Area														
NWN-MW08	Farallon	4/17/2020	NWN-MW08-200417	75.0	< 0.0040	0.00080 J	< 0.0092	**0.0013** J	0.00063 J	**0.0046**	< 0.0040	< 0.0040	0.011	< 0.0040
	Farallon	7/15/2020	NWN-MW08-200715		0.00062 J	0.00089 J	< 0.0092	**0.0042**	0.00077 J	**0.0047**	< 0.0040	< 0.0040	0.0073	< 0.0040
	Farallon	10/29/2020	NWN-MW08-102920	71.0	0.00045 J	0.00081 J	< 0.0092	**0.0016** J	0.00052 J	0.0016 J	< 0.0045	< 0.0045	0.0022 J	< 0.0045
	Farallon	2/28/2023	NWN-MW08-022823	75.0	< 0.0045	0.0013 J	< 0.0092	< 0.0045	0.00074 J	0.00054 J	0.0013 J	< 0.0045	0.00081 J	< 0.0045
	Farallon	5/10/2023	NWN-MW08-051023		< 0.0046	0.00075 J	< 0.0093	< 0.0046	< 0.0019	0.00068 J	< 0.0046	< 0.0046	0.0011 J	< 0.0046
Issaquah Valley Elementary School Source Area														
IES-MW06	Farallon	4/15/2020	IES-MW06-200415	85.0	0.0012 J	0.0049	< 0.0092	**0.0079**	0.0013 J	**0.015**	< 0.0040	< 0.0040	0.04	< 0.0040
	Farallon	7/14/2020	IES-MW06-200714		0.00095 J	0.0053	< 0.0092	**0.0042**	0.00095 J	0.0018 J	< 0.0039	< 0.0039	0.00061 J	< 0.0039
	Farallon	10/27/2020	IES-MW06-102720		0.0017 J	0.0087	< 0.0092	**0.0056**	0.0014 J	0.0018 J	< 0.0042	< 0.0042	< 0.0042	< 0.0042
	Farallon	9/1/2022	IES-MW06		0.0017 J	0.0081	< 0.0092	**0.0071**	0.0015 J	0.0016 J	< 0.0045	< 0.0045	< 0.0045	< 0.0045
	Farallon	12/15/2022	IES-MW06-121522[H]		0.0013 J	0.015	0.011	**0.015**	0.0032	0.0021 J	< 0.0043	< 0.0043	< 0.0043	< 0.0043
	Farallon	3/1/2023	IES-MW06-030123		0.0019 J	0.018	0.013	**0.018**	0.0040	0.0026 J	0.0023 J	< 0.0044	0.00062 J	< 0.0044
	Farallon	5/11/2023	IES-MW06-051123		0.00082 J	0.015	0.012	**0.013**	0.0032	0.0027 J	0.0014 J	< 0.0044	0.00069 J	< 0.0044
IES-MW09	Farallon	4/15/2020	IES-MW09-200415	80.0	< 0.0040	0.0021 J	< 0.0092	**0.0057**	0.0016 J	**0.052**	0.0038 J	< 0.0040	0.00096 J	< 0.0040
	Farallon	7/14/2020	IES-MW09-200714		< 0.0040	0.0015 J	< 0.0092	**0.0035** J	0.00084 J	**0.0080**	< 0.0040	< 0.0040	< 0.0040	< 0.0040
	Farallon	10/27/2020	IES-MW09-102720	76.0	0.00044 J	0.0021 J	< 0.0092	**0.0036** J	0.00072 J	**0.0072**	< 0.0042	< 0.0042	< 0.0042	< 0.0042
	Farallon	9/1/2022	IES-MW09	80.0	0.00084 J	0.0020 J	< 0.0092	**0.0051**	0.00074 J	**0.0099**	0.0012 J	< 0.0042	< 0.0042	< 0.0042
	Farallon	12/13/2022	IES-MW09-121322[H]		< 0.0047	0.0018 J	< 0.0094	**0.0029** J	0.00099 J	**0.0083**	< 0.0047	< 0.0047	< 0.0047	< 0.0047
	Farallon	3/1/2023	IES-MW09-030123		< 0.0045	0.0041 J	< 0.0092	**0.0082**	0.0010 J	**0.016**	0.0014 J	< 0.0045	< 0.0045	< 0.0045
	Farallon	5/11/2023	IES-MW09-051123		< 0.0045	0.0018 J	< 0.0092	**0.0061**	0.00071 J	**0.0099**	< 0.0045	< 0.0045	< 0.0045	< 0.0045
IES-MW10	Farallon	4/16/2020	IES-MW10-200416	80.0	0.071	0.11	0.27	**0.55**	**0.066**	**1.2**	**0.030**	**0.0024** J	0.33	< 0.0040
	Farallon	7/14/2020	IES-MW10-200714		0.062	0.099	0.24	**0.45**	**0.067**	**1.1**	**0.028**	**0.0021** J	0.31	< 0.0041
	Farallon	10/27/2020	IES-MW10-102720		0.068	0.12	0.24	**0.4**	**0.058**	**1.0**	**0.025**	**0.0019** J	0.27	< 0.0045
	Farallon	9/1/2022	IES-MW10		0.059	0.12	0.19	**0.59**	**0.072**	**1.3**	**0.029**	**0.002** J	0.31	< 0.0046
	Farallon	9/1/2022	IES-MW10-DUP		0.066	0.12	0.22	**0.7**	**0.078**	**1.6**	**0.036**	**0.0021** J	0.32	< 0.0046
	Farallon	12/13/2022	IES-MW10-121322[H]		0.071	0.14	0.22	**0.6**	**0.075**	**1.1**	**0.030**	**0.0018** J	0.32	< 0.0045
	Farallon	3/1/2023	IES-MW10-030123		0.067	0.14	0.20	**0.78**	**0.077**	**1.5**	**0.029**	**0.0026** J	0.35	< 0.0045
	Farallon	5/11/2023	IES-MW10-051123		0.052	0.094	0.22	**0.57**	**0.072**	**1.3**	**0.032**	**0.0015** J	0.24	< 0.0044
IES-MW11	Farallon	9/1/2022	IES-MW11	125.0	0.0090 J	0.037	< 0.046	**0.044**	**0.0059** J	**0.031**	< 0.021	< 0.021	0.0077 J	< 0.021
	Farallon	12/15/2022	IES-MW11-121522[H]		0.0083	0.047	0.042	**0.071**	**0.0084**	**0.027**	0.0023 J	< 0.0043	0.017	< 0.0043
	Farallon	3/1/2023	IES-MW11-030123		0.0050	0.028	0.025	**0.037**	**0.0063**	**0.032**	0.0019 J	< 0.0045	0.066	< 0.0045
	Farallon	5/11/2023	IES-MW11-051123		0.013	0.072	0.077	**0.092**	**0.014**	**0.024**	0.0025 J	< 0.0049	0.029	< 0.0049
IES-MW12	Farallon	9/2/2022	IES-MW12	125.0	< 0.13	0.049 J	< 0.25	**0.14**	**0.016** J	**0.22**	**0.044** J	< 0.13	0.021 J	< 0.13
	Farallon	12/28/2022	IES-MW12-122822	110.0	0.016	0.043 J	0.040	**0.16** J	**0.016** J	**0.38** J	**0.019** J	< 0.0044	0.014	< 0.0044
	Farallon	3/2/2023	IES-MW12-030223	125.0*	0.0026 J	0.016	0.013	**0.037**	**0.0042**	**0.052**	0.0077	< 0.0045	0.46	< 0.0045
	Farallon	5/12/2023	IES-MW12-051223	125.0	0.00098 J	0.010	0.0093	**0.024**	0.0029	**0.034**	0.0066	< 0.0043	0.32	< 0.0043
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 8
Intermediate and Deep Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
Lower Issaquah Valley Regional Wells														
COI-TW03	Geosyntec	5/17/2016	COI-TW3-051716	Unknown	---	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	---	---
COI-MW01	Geosyntec	6/7/2016	COI-MW01-060716	28.0 - 38.0	---	< 0.0025	< 0.0025	< 0.0025	**0.0068**	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW01-20161017		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
COI-MW02	Geosyntec	6/7/2016	COI-MW02-060716	70.0 - 90.0	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW02-2016017		---	0.008	< 0.0025	**0.005**	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Farallon	10/25/2018	C01-MW02-181025	80.0	< 0.0083	0.0049	< 0.0042	**0.0026** J	< 0.0017	< 0.0042	< 0.0042	< 0.0042	< 0.0042	---
	Farallon	3/2/2023	COI-MW02-030223		< 0.0044	0.0016 J	< 0.0092	< 0.0044	0.00067 J	0.00090 J	0.0012 J	< 0.0044	0.00077 J	< 0.0044
	Farallon	5/11/2023	COL-MW02-051123		< 0.0042	0.0013 J	< 0.0092	< 0.0042	< 0.0017	< 0.0042	< 0.0042	< 0.0042	< 0.0042	< 0.0042
COI-MW03	Geosyntec	6/7/2016	COI-MW03-060716	78.0 - 98.0	---	0.092	0.065	**0.28**	**0.029**	**0.44**	**0.051**	< 0.0025	---	---
	Geosyntec	6/7/2016	COI-MW03-060716-DUP		---	0.094	0.067	**0.30**	**0.030**	**0.46**	**0.051**	< 0.0025	---	---
	Geosyntec	6/21/2016	COI-MW03-20160621		---	0.062	0.033	**0.17**	**0.020**	**0.26**	**0.016**	< 0.0025	---	---
	Geosyntec	6/21/2016	COI-MW03-20160621-DUP		---	0.059	0.033	**0.17**	**0.019**	**0.26**	**0.018**	< 0.0025	---	---
	Geosyntec	6/28/2016	COI-MW03-20160628		---	0.049	0.031	**0.11**	**0.012**	**0.17**	**0.016**	< 0.0025	---	---
	Geosyntec	6/28/2016	COI-MW03-20160628-DUP		---	0.047	0.026	**0.097**	**0.012**	**0.15**	**0.013**	< 0.0025	---	---
	Geosyntec	7/6/2016	COI-MW03-20160716		---	0.025	0.015	**0.062**	**0.0051** J	**0.100**	0.0061	< 0.0025	---	---
	Geosyntec	7/6/2016	COI-MW03-20160716-DUP		---	0.026	0.014	**0.062**	**0.0071** J	**0.100**	0.0056	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-MW03-20160713		---	0.031	0.016	**0.075**	**0.006**	**0.088**	0.0063	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-MW03-20160713 DUP		---	0.029	0.014	**0.070**	**0.0053**	**0.100**	0.0055	< 0.0025	---	---
	Geosyntec	7/20/2016	COI-MW03-20160720		---	0.032	0.017	**0.080**	**0.0062**	**0.098**	0.0063	< 0.0025	---	---
	Geosyntec	7/20/2016	COI-MW03-20160720-DUP		---	0.033	0.017	**0.074**	**0.0063**	**0.100**	0.0071	< 0.0025	---	---
	Geosyntec	7/28/2016	COI-MW03-20160728		---	0.071	0.039	**0.17**	**0.016**	**0.360**	**0.025**	< 0.0025	---	---
	Geosyntec	7/28/2016	COI-MW03-20160728-DUP		---	0.072	0.035	**0.16**	**0.015**	**0.330**	**0.022**	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW03-2016017		---	0.032	0.018	**0.067**	**0.0059**	**0.088**	0.0055	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW03-20161017-DUP		---	0.033	0.018	**0.070**	**0.0061**	**0.099**	0.0056	< 0.0025	---	---
	Farallon	10/24/2018	C01-MW03-181024	88.0	0.0087	0.039	0.025	**0.048**	**0.0071**	**0.053**	0.0048	< 0.0042	0.0052	---
	Farallon	4/15/2020	C01-MW03-200415		0.012	0.046	0.031	**0.11**	**0.010**	**0.14**	0.0068	< 0.0039	0.0074	< 0.0039
	Farallon	10/28/2020	COL-MW03-102820	94.0	0.012	0.049	0.028	**0.073**	**0.0084**	**0.099**	0.0053	< 0.0046	0.0041 J	< 0.0046
	Farallon	9/1/2022	COI-MW03	78.0 - 98.0	0.013	0.042	0.042	**0.097**	**0.0090**	**0.097**	0.0052	< 0.0044	0.55	< 0.0044
	Farallon	12/13/2022	COI-MW03-121322[H]	78.0 - 98.0	0.02	0.055	0.053	**0.19**	**0.016**	**0.14**	0.0069	< 0.0047	0.012	< 0.0047
	Farallon	3/2/2023	COI-MW03-030223	78.0 - 98.0	0.021	0.072	0.058	**0.21**	**0.018**	**0.19**	0.0080	< 0.0044	0.017	< 0.0044
	Farallon	5/12/2023	COL-MW03-051223	78.0 - 98.0	0.011	0.039	0.042	**0.091**	**0.010**	**0.093**	0.0060	< 0.0044	0.028	< 0.0044
COI-MW04	Geosyntec	6/7/2016	COI-MW04-060716	70.0 - 90.0	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.0030	< 0.0025	< 0.0025	---	---
	Geosyntec	6/21/2016	COI-MW04-20160621		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	6/28/2016	COI-MW04-20160628		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	7/6/2016	COI-MW04-20160716		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-MW04-20160713		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	7/20/2016	COI-MW04-20160720		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	7/27/2016	COI-MW04-20160727		---	< 0.0025	< 0.0025	< 0.0025	0.0039	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW04-20161017		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.0025	< 0.0025	< 0.0025	---	---
	Farallon	10/24/2018	C01-MW04-101024	80.0	< 0.0083	0.0017 J	< 0.0042	**0.0034** J	< 0.0017	0.0023 J	< 0.0042	< 0.0042	< 0.0042	---
	Farallon	10/28/2020	COL-MW04-102820	74.0	0.0013 J	0.0018 J	< 0.0092	**0.0024** J	0.00064 J	0.0031 J	< 0.0045	< 0.0045	0.002 J	< 0.0045
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 8
Intermediate and Deep Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
Lower Issaquah Valley Regional Wells (continued)														
COI-MW05	Geosyntec	6/7/2016	COI-MW05-060716	70.0 - 90.0	---	0.057	0.040	**0.16**	**0.017**	**0.39**	0.0086	< 0.0025	---	---
	Geosyntec	6/21/2016	COI-MW05-20160621		---	0.054	0.042	**0.17**	**0.013**	**0.49**	0.008	< 0.0025	---	---
	Geosyntec	6/28/2016	COI-MW05-20160628		---	0.07	0.056	**0.18**	**0.017**	**0.50**	0.01	< 0.0025	---	---
	Geosyntec	7/6/2016	COI-MW05-20160716		---	0.056	0.039	**0.17**	**0.011**	**0.48**	0.0075	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-MW05-20160713		---	0.058	0.054	**0.21**	**0.018**	**0.44**	**0.012**	< 0.0025	---	---
	Geosyntec	7/20/2016	COI-MW05-20160720		---	0.052	0.040	**0.18**	**0.013**	**0.51**	0.0093	< 0.0025	---	---
	Geosyntec	7/28/2016	COI-MW05-20160728		---	0.066	0.049	**0.18**	**0.018**	**0.51**	0.0087	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW05-20161017		---	0.061	0.048	**0.17**	**0.015**	**0.40**	0.0079	< 0.0025	---	---
	Farallon	10/25/2018	C01-MW05-181025	80.0	0.022	0.050	0.080	**0.14**	**0.019**	**0.29**	**0.011**	**0.00073** J	0.045	---
	Farallon	4/15/2020	C01-MW05-200415		0.0091	0.025	0.025	**0.084**	**0.0083**	**0.26**	0.0068	< 0.0039	0.005	< 0.0039
	Farallon	7/14/2020	COI-MW05-200714		0.011	0.031	0.039	**0.11**	**0.011**	**0.24**	0.0073	< 0.0039	0.0095	< 0.0039
	Farallon	10/27/2020	COL-MW05-102720		0.013	0.039	0.037	**0.09**	**0.0098**	**0.23**	0.0074	< 0.0045	0.0075	< 0.0045
	Farallon	9/2/2022	COI-MW05	75.0	0.021	0.065	0.063	**0.21**	**0.02**	**0.42**	**0.011**	< 0.0046	0.021	< 0.0046
	Farallon	12/15/2022	COI-MW05-121522[H]	80.0	0.016	0.063	0.051	**0.23**	**0.016**	**0.31**	0.0091	< 0.0045	0.0087	< 0.0045
	Farallon	3/2/2023	COI-MW05-030223		0.016	0.062	0.051	**0.18**	**0.019**	**0.34**	0.0085	**0.0014** J	0.0079	< 0.0045
	Farallon	5/12/2023	COL-MW05-051223		0.013	0.049	0.05	**0.17**	**0.016**	**0.30**	0.0097	< 0.0044	0.0053	< 0.0044
COI-MW06	Geosyntec	10/17/2016	COI-MW06-20161017	80.0 - 100.0	---	0.096	0.22	**0.49**	**0.08**	**2.2**	**0.053**	**0.0029**	---	---
	Farallon	10/25/2018	C01-MW06-181025	90.0	0.15	0.23	0.60	**1.1**	**0.25**	**3.3**	**0.15**	**0.0065**	0.37	---
	Farallon	4/16/2020	C01-MW06-200416		0.10	0.18	0.43	**0.93**	**0.15**	**2.5**	**0.065**	**0.0051**	1.1	< 0.0040
	Farallon	4/16/2020	C01-MW66-200416		0.10	0.18	0.39	**0.87**	**0.15**	**2.5**	**0.065**	**0.0055**	1.2	< 0.0039
	Farallon	7/15/2020	COI-MW06-200715		0.058	0.10	0.21	**0.43**	**0.087**	**1.4**	**0.038**	**0.0032** J	0.70	< 0.0041
	Farallon	7/15/2020	COI-MW66-200715		0.059	0.097	0.23	**0.42**	**0.087**	**1.4**	**0.040**	**0.0031** J	0.69	< 0.0042
	Farallon	10/29/2020	COL-MW06-102920	96.0	0.058	0.088	0.21	**0.45**	**0.08**	**1.4**	**0.035**	**0.0036** J	0.47	< 0.0045
	Farallon	10/29/2020	COL-MW66-102920		0.059	0.075	0.20	**0.52**	**0.075**	**1.4**	**0.042**	**0.0041** J	0.51	< 0.0044
	Farallon	9/2/2022	COI-MW06	90.0	0.069	0.093	0.23	**0.63**	**0.11**	**1.9**	**0.052**	**0.0047**	0.68	< 0.0042
	Farallon	12/14/2022	COI-MW06-121422[H]		0.14	0.20	0.50	**0.79**	**0.19**	**2.0**	**0.078**	**0.0061**	0.87	< 0.0043
	Farallon	12/14/2022	DUPLICATE 3[H]		0.11	0.17	0.40	**0.72**	**0.15**	**1.6**	**0.074**	**0.0043** J	0.88	< 0.0045
	Farallon	3/1/2023	COI-MW06-030123		0.074	0.11	0.25	**0.61**	**0.11**	**2.3**	**0.050**	**0.0047**	0.74	< 0.0044
	Farallon	3/1/2023	COI-MW66-030123		0.070	0.098	0.23	**0.60**	**0.10**	**2.0**	**0.043**	**0.0047**	0.64	< 0.0045
	Farallon	5/11/2023	COL-MW06-051123		0.059	0.077	0.25	**0.60**	**0.096**	**2.0**	**0.049**	**0.0034** J	0.49	< 0.0045
	Farallon	5/11/2023	COL-MW66-051123		0.057	0.076	0.24	**0.55**	**0.093**	**1.9**	**0.043**	**0.0032** J	0.55	< 0.0046
COI-MW07	Geosyntec	10/17/2016	COI-MW07-20161017	100.0 - 110.0	---	< 0.0025	< 0.0025	**0.0049**	0.003	**0.0049**	< 0.0025	< 0.0025	---	---
	Farallon	10/25/2018	C01-MW07-181025	105.0	< 0.0083	0.00097 J	0.0011 J	**0.0031** J	0.0022	0.0033 J	< 0.0042	< 0.0042	0.0023 J	---
	Farallon	4/15/2020	C01-MW07-200415		0.00054 J	0.0015 J	< 0.0092	**0.0028** J	0.0012 J	0.0031 J	< 0.0040	< 0.0040	0.00069 J	< 0.0040
	Farallon	7/15/2020	COI-MW07-200715		0.0011 J	0.0019 J	< 0.0092	**0.0043**	0.0019	0.0036 J	< 0.0039	< 0.0039	< 0.0039	< 0.0039
	Farallon	10/29/2020	COL-MW07-102920		0.0013 J	0.002 J	< 0.0092	**0.0072**	0.0025	**0.0043**	< 0.0043	< 0.0043	< 0.0043	< 0.0043
COI-MW08[5]	Farallon	1/12/2023	COI-MW08-011223	245.0	< 0.25	0.043 J	< 0.50	**0.16** J	**0.025** J	**0.37**	< 0.25	< 0.25	0.062 J	< 0.25
	Farallon	3/2/2023	COI-MW08-030223	125.0	< 0.0046	0.0088	0.013	**0.041**	**0.0055**	**0.086**	0.0056	< 0.0046	0.013	< 0.0046
	Farallon	5/12/2023	COL-MW08-051223	243.0	0.012	0.040	0.047	**0.16**	**0.021**	**0.29**	**0.029**	< 0.0040	0.076	< 0.0040
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 8
Intermediate and Deep Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
Lower Issaquah Valley Regional Wells (continued)														
COI-PW04	COI	9/22/2020	WELL 4 RAW WATER-43	NA	---	0.0358 J	---	**0.108**	**0.0105 J**	**0.311**	**0.0116** J	---	---	---
	COI	10/20/2020	WELL 4 RAW WATER-44	NA	---	0.0316 J	---	**0.120**	**0.00854 J**	**0.287**	0.00949 J	---	---	---
	COI	1/6/2023	MDA0161-06	NA	0.00814	0.0251	0.0262	**0.0928**	**0.00782**	**0.258**	0.00814	---	---	< 0.001
	COI	3/8/2023	MDC0264-01	NA	0.00778	0.0252	0.0246	**0.0900**	**0.00789**	**0.230**	**0.0101**	---	---	< 0.001
	COI	5/3/2023	MDE0193-01	NA	0.00771	0.0247	0.0266	**0.0886**	**0.00741**	**0.226**	0.00723	---	---	< 0.001
	COI	6/7/2023	MDF0248-03	NA	0.00794	0.0234	0.0259	**0.0938**	**0.00686**	**0.242**	0.00723	---	---	< 0.002
	COI	7/19/2023	MDG0615-01	NA	0.00753	0.0219	0.0224	**0.087**	**0.00781**	**0.212**	0.00815	---	---	< 0.002
	COI	8/2/2023	MDH0118-01	NA	0.00766	0.0223	0.0263	**0.0894**	**0.00754**	**0.230**	0.00778	---	---	< 0.002
COI-PW05	Geosyntec	7/6/2016	COI-WELL 5-20160716	NA	---	0.0064	0.0060	**0.022**	0.0028	**0.032**	0.0035	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-WELL5-20160713	NA	---	0.0081	0.0072	**0.026**	0.0031	**0.032**	0.0043	< 0.0025	---	---
	Geosyntec	7/27/2016	COI-WELL5-20160727	NA	---	0.0041	0.0030	**0.014**	0.0037	**0.019**	< 0.0025	< 0.0025	---	---
	Geosyntec	2/11/2021	MBB0292-2	NA	---	< 0.0900	---	**0.0245**	< 0.0200	**0.0436**	---	---	---	---
	Geosyntec	3/11/2021	MBC0332-02	NA	---	< 0.0900	---	**0.0232**	< 0.0200	**0.0452**	---	---	---	---
	Geosyntec	5/6/2021	MBE0152-02	NA	---	< 0.0900	---	**0.0218**	< 0.0200	**0.0496**	---	---	---	---
	Geosyntec	6/3/2021	MBF0100-02	NA	---	< 0.0900	---	**0.0236**	< 0.0200	**0.0472**	---	---	---	---
COI-PW05-OBS	Geosyntec	7/6/2016	COI-WELL 50BS-20160716	330 - 450	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
NDS-MW02	Farallon	4/16/2020	NDS-MW02-200416	76.0	0.011	0.04	0.024	**0.14**	**0.010**	**0.29**	**0.041**	< 0.0040	0.001 J	< 0.0040
	Farallon	10/28/2020	NDS-MW02-102820	77.0	0.012	0.034	0.026	**0.12**	**0.0093**	**0.26**	**0.020**	< 0.0045	< 0.0045	< 0.0045
NDS-MW04	Farallon	4/16/2020	NDS-MW04-200416	77.0	< 0.0040	0.0013 J	< 0.0092	**0.0026** J	0.0012 J	**0.0076**	< 0.0040	< 0.0040	< 0.0040	< 0.0040
	Farallon	7/15/2020	NDS-MW04-200715		< 0.0039	0.00092 J	< 0.0092	**0.0026** J	0.00078 J	**0.0043**	< 0.0039	< 0.0039	< 0.0039	< 0.0039
	Farallon	10/28/2020	NDS-MW04-102820	78.0	0.00066 J	0.00065 J	< 0.0092	**0.0018** J	0.00072 J	0.0033 J	< 0.0045	< 0.0045	< 0.0045	< 0.0045
NLS-MW02	Farallon	9/2/2022	NLS-MW02	75.0	0.01 J	0.021	< 0.046	**0.084**	**0.0082**	**0.13**	< 0.02	< 0.02	0.0043 J	< 0.02
	Farallon	12/13/2022	NLS-MW02-121322[H]		0.01	0.015	0.022	**0.091**	**0.0077**	**0.11**	0.0028 J	< 0.0045	0.0025 J	< 0.0045
	Farallon	3/2/2023	NLS-MW02-030223	75.0*	0.0057	0.017	0.022	**0.068**	**0.0063**	**0.11**	0.0027 J	< 0.0045	0.0035 J	< 0.0045
	Farallon	5/12/2023	NLS-MW02-051223	75.0	0.0036 J	0.013	0.015	**0.053**	**0.0050**	**0.084**	0.0027 J	< 0.0044	0.0023 J	< 0.0044
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

NOTES:

Results in **bold** denote concentrations exceeding applicable MCLs and/or Cleanup Levels.

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

— denotes sample not analyzed or information unknown.

[1]Depth in feet below ground surface.

[2]Samples collected in 2016 analyzed by U.S. Environmental Protection Agency (EPA) Method 537; samples collected in 2018 and later analyzed by EPA Method 537 Modified.

[3]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State Model Toxics Control Act Cleanup Regulation (MTCA), Standard Method B Values for Groundwater from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC, dated January 2025.

[4]EPA National Primary Drinking Water Regulations, 40 Code of Federal Regulations Part 141. The EPA set a Hazard Index MCL of 1 for PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS to account for the combined and co-occurring levels of these PFAS in drinking water.

[5] Monitoring well sampled on 1/12/23 and 3/2/23 using a QED MP15 CO2 controller with teflon bladder, sampled on 5/12/2023 using a PFAS free rated Solinst 408 valve pump and high pressure nitrogen controller.

COI = City of Issaquah

Farallon = Farallon Consulting, L.L.C.

Geosyntec = Geosyntec Consultants, Inc.

H = sample analyzed outside of holding time; results are estimates

J = result is an estimate

NE = not established

PFAS = per- and poly-fluoroalkyl substances

* indicates the sample intake depth was not reported; value represents the center of the well screen when fully saturated or center of water column when screen was not fully saturated.

Table 9
Groundwater Quality Indicator Parameters for EFR HQ Source Area Monitoring Wells
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Temperature (°C)	Specific Conductivity (mS/cm)	pH	Dissolved Oxygen (mg/l)	Turbidity (NTU)	ORP (mV)
Shallow Groundwater Monitoring Well Samples								
Eastside Fire & Rescue Headquarters Source Area								
NWN-MW01	Farallon	10/26/2018	12.9	0.228	6.29	1.63	2.7	23.8
	Farallon	4/16/2020	11.3	0.132	6.27	5.53	4.6	320.0
	Farallon	9/2/2021	13.3	0.181	8.18	0.94	19.56	299.7
	Farallon	1/17/2022	7.2	0.170	5.97	8.97	4.82	257.0
	Farallon	2/17/2022	8.4	0.215	6.04	5.69	10.24	316.4
	Farallon	2/28/2023	7.3	0.234	6.45	7.50	9.56	304.3
	Farallon	5/10/2023	9.3	0.158	6.41	5.44	8.87	250.8
NWN-MW02	Farallon	10/26/2018	13.2	0.150	5.95	2.20	25.0	138.4
	Farallon	4/16/2020	13.9	0.167	5.99	4.57	-	166.2
	Farallon	10/29/2020	13.3	0.144	5.90	2.43	5.86	62.4
	Farallon	2/28/2023	11.4	0.145	5.48	9.65	13.46	327.9
	Farallon	5/10/2023	13.9	0.169	5.91	5.50	24.22	267.5
NWN-MW03	Farallon	10/26/2018	13.2	0.172	6.08	2.51	9.8	80.3
	Farallon	4/17/2020	13.3	0.174	6.18	0.29	-	80.3
	Farallon	7/16/2020	12.2	0.160	4.78	0.18	-	156.00
	Farallon	10/29/2020	13.0	0.166	6.17	1.75	10	277.70
	Farallon	9/2/2021	13.9	0.136	8.01	1.48	71.34	245.00
	Farallon	10/18/2021	13.4	0.232	5.70	2.45	16.73	111.30
	Farallon	12/9/2021	11.3	0.25	6.35	2.21	3.89	246.30
	Farallon	1/17/2022	11.3	0.232	5.48	1.70	4.59	247.00
	Farallon	2/17/2022	11.7	0.231	5.77	1.13	3.97	255.10
	Farallon	12/14/2022	11.9	0.178	6.01	1.94	-	201.30
	Farallon	2/28/2023	12.6	0.127	5.81	7.19	18.26	249.00
	Farallon	5/10/2023	11.6	0.172	5.97	0.40	7.05	145.60
NWN-MW04	Farallon	10/26/2018	13.6	0.176	5.97	0.95	3.3	110.8
	Farallon	4/17/2020	11.7	0.146	6.04	0.40	2.5	215.3
	Farallon	7/16/2020	15.0	0.178	5.75	0.26	-	119.6
	Farallon	10/29/2020	13.3	0.186	6.15	0.24	5.63	313.5
	Farallon	9/2/2021	12.1	0.148	6.10	0.32	20.91	249.6
	Farallon	10/18/2021	13.1	0.271	5.70	0.41	4.54	121.5
	Farallon	12/9/2021	10.5	0.258	6.35	0.74	3.56	229.5
	Farallon	1/18/2022	10.0	0.234	5.76	0.89	4.18	267.6
	Farallon	2/17/2022	9.6	0.223	5.75	0.72	4.01	245.3

Table 9
Groundwater Quality Indicator Parameters for EFR HQ Source Area Monitoring Wells
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Eastside Fire & Rescue Headquarters Source Area (continued)								
NWN-MW05	Farallon	4/16/2020	10.1	0.125	5.95	0.47	3.8	224.5
	Farallon	7/16/2020	14.9	0.129	5.87	0.42	-	35.1
	Farallon	10/29/2020	13.2	0.156	5.87	0.41	9.88	49.3
	Farallon	2/28/2023	7.8	0.206	6.06	1.92	10.29	287.2
	Farallon	5/10/2023	10.0	0.148	6.08	0.03	7.01	199.2
NWN-MW06	Farallon	4/17/2020	10.2	0.136	5.93	0.57	23	226.7
	Farallon	7/16/2020	13.2	0.140	5.92	0.46	-	48.1
	Farallon	9/1/2021	13.3	0.132	5.70	0.31	31.25	314.1
	Farallon	10/18/2021	13.1	0.218	5.66	0.55	13.09	112.2
	Farallon	12/9/2021	10.7	0.236	6.37	0.71	67.23	221.0
	Farallon	1/18/2022	9.9	0.212	5.67	1.03	9.33	219.3
	Farallon	2/17/2022	10.4	0.224	5.67	0.81	10.21	232.1
NWN-MW07	Farallon	4/17/2020	12.7	0.142	5.93	0.82	4	235.2
	Farallon	7/16/2020	15.7	0.152	5.60	0.77	-	101.9
	Farallon	10/29/2020	13.3	0.175	5.87	4.30	7.74	68.7
	Farallon	10/18/2021	13.7	0.254	5.68	2.52	20.85	117.3
	Farallon	12/9/2021	12.3	0.248	6.45	1.38	4.44	237.0
	Farallon	1/18/2022	11.6	0.238	5.72	1.37	4.72	237.9
	Farallon	2/17/2022	11.5	0.231	5.75	0.90	3.99	244.4
	Farallon	9/2/2022	13.4	0.174	5.92	0.72	4.30	247.5
	Farallon	12/14/2022	11.7	0.275	5.88	8.34	17.66	254.3
	Farallon	2/28/2023	10.8	0.123	5.67	8.15	13.90	277.9
	Farallon	5/10/2023	11.6	0.153	6.05	0.28	10.83	200.0
NWN-MW09	Farallon	4/17/2020	13.0	0.198	6.35	0.85	-	104.2
	Farallon	7/16/2020	13.6	0.183	6.17	0.75	72	52.7
	Farallon	10/29/2020	12.7	0.204	6.33	0.31	8.46	299.1
	Farallon	9/2/2021	15.4	0.149	5.73	2.14	20.95	179.2
	Farallon	10/18/2021	13.4	0.247	5.93	1.14	11.41	83.7
	Farallon	12/9/2021	10.7	0.247	6.56	2.54	7.42	229.2
	Farallon	1/17/2022	10.9	0.242	5.77	2.87	8.03	248.8
	Farallon	2/17/2022	11.6	0.230	5.93	2.87	9.43	237.4
	Farallon	9/2/2022	15.8	0.195	6.26	0.74	50.84	245.3
	Farallon	12/14/2022	11.1	0.292	6.25	7.80	20.67	146.4
	Farallon	2/28/2023	11.4	0.134	6.06	8.99	35.21	299.9
	Farallon	5/10/2023	12.4	0.175	6.19	3.10	29.04	225.4

Table 9
Groundwater Quality Indicator Parameters for EFR HQ Source Area Monitoring Wells
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Eastside Fire & Rescue Headquarters Source Area (continued)								
NWN-MW10	Farallon	7/30/2021	15.2	0.145	6.27	0.73	20.54	137.7
	Farallon	9/1/2021	15.8	0.155	6.43	0.72	24.57	212.9
	Farallon	10/18/2021	13.5	0.271	5.72	0.70	17.96	102.8
	Farallon	12/9/2021	11.7	0.279	6.47	0.95	38.47	185.0
	Farallon	1/18/2022	11.1	0.267	5.78	0.78	36.25	174.9
	Farallon	2/17/2022	10.5	0.241	5.68	0.83	20.36	199.4
	Farallon	9/2/2022	14.7	0.181	6.11	0.45	111.32	302.2
	Farallon	12/14/2022	11.6	0.274	5.98	7.85	18.76	230.0
	Farallon	2/28/2023	9.3	0.122	5.68	8.00	14.34	281.7
	Farallon	5/10/2023	10.8	0.155	6.14	0.00	9.81	222.6
NWN-MW12	Farallon	9/1/2021	14.9	0.154	6.82	0.43	41.61	140.5
	Farallon	10/18/2021	13.3	0.249	5.76	0.40	7.36	90.7
	Farallon	12/9/2021	10.4	0.261	6.43	0.72	5.13	120.7
	Farallon	1/18/2022	10.6	0.261	5.75	0.78	4.84	116.1
	Farallon	2/17/2022	10.8	0.259	5.60	0.66	4.43	137.9
NWN-MW13	Farallon	9/2/2021	12.3	0.250	5.75	0.50	21.71	20.4
	Farallon	10/18/2021	13.0	0.335	5.80	3.34	4.42	161.8
	Farallon	12/9/2021	9.7	0.379	6.42	1.49	6.61	218.5
	Farallon	1/18/2022	8.9	0.236	5.97	1.61	7.85	269.9
	Farallon	2/17/2022	8.7	0.254	5.90	0.98	6.21	242.1
	Farallon	9/2/2022	14.3	0.208	6.18	0.65	19.56	162.4
	Farallon	12/14/2022	10.3	0.280	6.04	8.34	39.43	254.1
	Farallon	2/28/2023	8.0	0.286	6.35	2.76	20.23	290.8
	Farallon	5/10/2023	9.3	0.185	6.29	0.49	3.82	232.7
NWN-MW14	Farallon	7/30/2021	13.5	0.164	6.26	1.06	29.85	130.5
	Farallon	1/18/2022	8.6	0.263	5.81	0.82	4.32	25.5
	Farallon	2/17/2022	8.6	0.249	5.71	0.80	22.81	63.9
NWN-MW15	Farallon	9/2/2021	13.8	0.147	9.34	0.36	70.63	222.8
	Farallon	1/17/2022	10.0	0.186	5.62	5.57	119.02	267.0
	Farallon	2/17/2022	10.1	0.224	5.84	2.41	25.23	291.0
NWN-MW16	Farallon	9/2/2021	14.4	0.146	8.22	0.44	66.92	317.9
	Farallon	1/17/2022	10.9	0.202	5.58	1.89	8.06	246.3
	Farallon	2/17/2022	10.9	0.210	5.77	1.13	6.21	275.3
	Farallon	12/14/2022	12.3	0.174	5.58	0.48	3.32	206.1
	Farallon	2/28/2023	10.8	0.237	6.24	3.68	16.23	269.7
	Farallon	5/10/2023	11.8	0.161	6.10	0.74	7.33	200.4

Table 9
Groundwater Quality Indicator Parameters for EFR HQ Source Area Monitoring Wells
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Eastside Fire & Rescue Headquarters Source Area (continued)								
NWN-MW17	Farallon	9/2/2022	13.2	0.176	6.22	0.41	13.80	-90.4
	Farallon	12/14/2022	11.5	0.178	5.79	1.26	3.22	207.6
	Farallon	2/28/2023	9.4	0.123	5.73	7.78	13.69	282.2
	Farallon	5/10/2023	11.4	0.170	6.06	0.07	2.70	221.4

NOTES:

^{o}C = degrees Celsius

Farallon = Farallon Consulting, L.L.C.

mS/cm = milliSiemens per centimeter

mV = millivolts

NTU = nephelometric turbidity unit

ORP = oxidation-reduction potential

- = parameter not measured

APPENDIX A
AGREED ORDER NO. DE 23520

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

Docusign Envelope ID: 25DFB8D7-70CC-4A40-9774-DADEB402219C

State of Washington
Department of Ecology

In the Matter of Remedial Action by:
Eastside Fire & Rescue and City of Issaquah
Agreed Order
No. DE 23520

To: Chief Ben Lane
Eastside Fire & Rescue
175 Newport Way NW
Issaquah, WA 98027

Mary Lou Pauly
Mayor
P.O. Box 1307
Issaquah, WA 98027

1. Introduction 2
2. Jurisdiction 2
3. Parties Bound 2
4. Definitions 2
5. Findings of Fact 3
6. Ecology Determinations 5
7. Work to be Performed 6
8 Terms and Conditions 9
   - 8.1 Payment of Remedial Action Costs 9
   - 8.2 Designated Project Coordinators 10
   - 8.3 Performance 11
   - 8.4 Access 11
   - 8.5 Sampling, Data Submittal, and Availability 12
   - 8.6 Public Participation 12
   - 8.7 Access to Information 14
   - 8.8 Retention of Records 14
   - 8.9 Resolution of Disputes 14
   - 8.10 Extension of Schedule 16
   - 8.11 Amendment of Order 17
   - 8.12 Endangerment 18
   - 8.13 Reservation of Rights 18
   - 8.14 Transfer of Interest in Property 19

Docusign Envelope ID: 25DFB8D7-70CC-4A40-9774-DADEB402219C

8.15 Compliance with Applicable Laws..... 19
8.16 Periodic Review ..... **Error! Bookmark not defined.**
8.17 Indemnification..... 21
9. Satisfaction of Order 21
10. Enforcement 21

Exhibit A Location Diagram
Exhibit B Scope of Work
Exhibit C Interim Action Summary

1. Introduction

The mutual objective of the State of Washington, Department of Ecology (Ecology), Eastside Fire & Rescue (EFR) and City of Issaquah (the City) under this Agreed Order (Order) is to provide for remedial action at facilities where there have been releases or threatened releases of hazardous substances. This Order requires EFR and the City (collectively referred to as the PLPs) to conduct remedial investigations (RIs) and feasibility studies (FSs) per WAC 173-340-350, WAC 173-340-351, and WAC 173-204-550, and conduct an interim action. Ecology believes the actions required by this Order are in the public interest.

2. Jurisdiction

This Order is issued pursuant to the Model Toxics Control Act (MTCA), RCW 70A.305.

3. Parties Bound

This Agreed Order shall apply to and be binding upon the Parties to this Order, their successors and assigns. The undersigned representative of each Party hereby certifies that he or she is fully authorized to enter into this Order and to execute and legally bind such Party to comply with this Order. The PLPs agree to undertake all actions required by the terms and conditions of this Order. No change in ownership or corporate status shall alter a PLP's responsibility under this Order. The PLPs shall provide a copy of this Order to all agents, contractors, and subcontractors retained to perform work required by this Order, and shall ensure that all work undertaken by such agents, contractors, and subcontractors complies with this Order.

4. Definitions

Unless otherwise specified herein, the definitions set forth in RCW 70A.305, WAC 173-204 and WAC 173-340 shall control the meanings of the terms in this Order.

4.1 Site

The EFR HQ IVES site (Site) constitutes a facility under RCW 70A.305.020(8). The Site is defined by where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, or placed, or otherwise come to be located. Based upon factors currently known to Ecology, the Site comprises source areas on two properties, 175 Newport Way NW (EFR Headquarters) and 555 NW Holly St (IVES/Dodd Fields), in Issaquah, as shown in the Location Diagram (Exhibit A).

4.2 Parties

Refers to the State of Washington, Department of Ecology, Eastside Fire & Rescue (EFR), and the City of Issaquah (the City).

4.3 Potentially Liable Persons (PLP(s))

Refers to EFR and the City.

4.4 Agreed Order or Order

Refers to this Order and each of the exhibits to this Order. All exhibits are integral and enforceable parts of this Order.

5. Findings of Fact

Ecology makes the following findings of fact, without any express or implied admissions of such facts by the PLPs:

5.1

Based upon factors currently known to Ecology, the Site is generally located in the vicinities of the following addresses:

- EFR Headquarters: 175 Newport Way NW, Issaquah (parcel 2824069165 at latitude 47.53229, longitude -122.04431)
- IVES/Dodd Fields: 555 NW Holly Street, Issaquah (parcel 2824069012 at latitude 47.53664, longitude -122.04536).

5.2

EFR conducted firefighting training exercises with aqueous film-forming foam (AFFF) containing perfluorooctane sulfonate (PFOS) and additional per- and poly-fluorinated alkyl substances (PFAS) at EFR Headquarters and IVES/Dodd Fields. EFR has stated it conducted training exercises with AFFF consistent with industry standards to effectively prepare for first response to emergent hazards.

5.3

The City is a member of EFR and the City conducted firefighting training exercises at IVES/Dodd Fields prior to the formation of EFR. The City's training included use of aqueous film-forming foam containing PFOS and additional PFAS.

5.4

Between 2018 and the present, EFR in consultation with the City and Ecology has conducted initial site characterization sampling of soil and groundwater at the Site and a pilot study at EFR Headquarters. The following reports describe this work:

- Per- and Poly-Fluoroalkyl Substances Characterization Study Summary Report, Lower Issaquah Valley, Issaquah, Washington. Farallon Consulting. March 27, 2019.
- Per- and Poly-Fluoroalkyl Substances Additional Characterization Study Summary Report, Lower Issaquah Valley, Issaquah, Washington. Farallon Consulting. April 14, 2021.
- Per- and Poly-Fluoroalkyl Substances Pilot Test Summary Report, 175 Newport Way Northwest, Issaquah, Washington. Farallon Consulting. July 29, 2022.

5.5

Between 2020 and the present, the City has conducted groundwater modeling of the transport of PFAS in the Lower Issaquah Valley. The following reports describe this work:

- Groundwater Flow and PFAS Transport Modeling Report, Issaquah, Washington. Geosyntec Consultants. September 13, 2021.
- Preliminary Groundwater Flow Model Calibration, Lower Issaquah Valley. Geosyntec Consultants. December 30, 2022.
- Regional Conceptual Hydrogeological Model. Geosyntec Consultants. December 30, 2022.
- Groundwater Flow and Fate and Transport Model Calibration Report, Lower Issaquah Valley. Geosyntec Consultants. August 2023.

5.6

At each EFR Headquarters and IVES/Dodd Fields, PFOS and additional PFAS have been detected in soil and in groundwater at concentrations exceeding MTCA cleanup levels.

5.7

The groundwater plume emanating from EFR Headquarters extends approximately 1,500 feet north to IVES/Dodd Fields, which contributes to the plume. The co-mingled plume then extends approximately 2,500 feet north to a drinking water well operated by the City (COI-PW04), under certain pumping conditions. The entire length of the plume beginning at EFR Headquarters and extending to at least COI-PW04 is part of the EFR HQ IVES Site.

6. Ecology Determinations

Ecology makes the following determinations, without any express or implied admissions of such determinations (and underlying facts) by the PLPs.

6.1

EFR is an "owner or operator" as defined in RCW 70A.305.020(22) of a "facility" as defined in RCW 70A.305.020(8).

6.2

The City is an "owner or operator" as defined in RCW 70A.305.020(22) of a "facility" as defined in RCW 70A.305.020(8).

6.3

Based upon all factors known to Ecology, a "release" or "threatened release" of "hazardous substance(s)" as defined in RCW 70A.305.020(32), (13), respectively, has occurred at the Site.

6.4

Based upon credible evidence, Ecology issued a PLP status letter to EFR dated January 11, 2023, pursuant to RCW 70A.305.040, .020(26), and WAC 173-340-500 for the source areas at EFR Headquarters and IVES/Dodd Fields. By letter dated March 27, 2023, EFR, jointly with the City, voluntarily waived its rights to notice and comment and accepted Ecology's determination that EFR is a PLP under RCW 70A.305.040. Ecology issued a PLP determination letter dated December 11, 2023, naming EFR as a PLP for the EFR HQ IVES Site.

6.5

Based upon credible evidence, Ecology issued a PLP status letter to the City dated January 11, 2023, pursuant to RCW 70A.305.040, .020(26), and WAC 173-340-500 for the source areas at EFR Headquarters and IVES/Dodd Fields. By letter dated March 27, 2023, the City, jointly with the EFR, voluntarily waived its rights to notice and comment and accepted Ecology's determination that the City is a PLP under RCW 70A.305.040 for IVES/Dodd. The City indicated that they had not trained at EFR Headquarters, but the

comingled plume from EFR Headquarters and IVES/Dodd Fields makes the City a PLP for the entire EFR HQ IVES Site. Ecology issued a PLP determination letter dated November 14, 2023, naming the City as a PLP for the EFR HQ IVES Site.

6.6

Pursuant to RCW 70A.305.030(1), .050(1), Ecology may require PLPs to investigate or conduct other remedial actions with respect to any release or threatened release of hazardous substances, whenever it believes such action to be in the public interest. Based on the foregoing facts, Ecology believes the remedial actions required by this Order are in the public interest.

6.7

Under WAC 173-340-430, an interim action is a remedial action that is technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance, that corrects a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed, or that is needed to provide for completion of a site hazard assessment, remedial investigation/feasibility study, or design of a cleanup action plan. The PLPs will complete an interim action at the EFR HQ property as described in Exhibit C, Interim Action Summary. Conducting the Interim Action prior to completion of the Site-wide FS presents an opportunity to remediate the largest identified release to date more expeditiously and at less cost than would be the case if the remedy was completed later. Based on these circumstances, Ecology has determined that an interim action is warranted under WAC 173-340-430.

7. Work to be Performed

Based on the Findings of Fact and Ecology Determinations, it is hereby ordered that the PLPs take the following remedial actions at the Site. These remedial actions must be conducted in accordance with WAC 173-340 and 173-204:

7.1

The PLPs will complete Remedial Investigations, Feasibility Studies, submit a detailed Interim Action Work Plan (IAWP), and then implement the Interim Action in accordance with the Ecology-approved plan, in accordance with the schedule and terms of the Scope of Work and Schedule, Exhibit B, and all other requirements of this Order. The following naming conventions shall be used for documents: Agency Review Draft (designation for the first time Ecology receives a document); Public Review Draft (designates a document ready for public comment); and Final (designation for a document after public comment and Ecology approval).

7.2

To effectuate the work to be performed under this Order in the most efficient manner, certain PLPs may elect to take the lead in performing various aspects of the work required under this Order. Language in this Order, and the exhibits attached hereto, may reflect this agreement among the PLPs. However, the PLPs remain strictly, jointly, and severally liable for the performance of any and all obligations under this Order. In the event the party identified as a lead should fail to timely and properly complete performance of all or any portion of its work, all PLPs must perform that remaining work, if any.

7.3

If the PLPs learn of a significant change in conditions at the Site, including but not limited to a statistically significant increase in contaminant and/or chemical concentrations in any media, the PLPs, within seven (7) days of learning of the change in condition, shall notify Ecology in writing of said change and provide Ecology with any reports or records (including laboratory analyses, sampling results) relating to the change in conditions.

7.4

The PLPs shall submit to Ecology written monthly Progress Reports that describe the actions taken during the previous month to implement the requirements of this Order. All Progress Reports shall be submitted by the fifteenth (15th) day of the month in which they are due after the effective date of this Order. Unless otherwise specified by Ecology, Progress Reports and any other documents submitted pursuant to this Order shall be sent by email to Ecology's project coordinator. The Progress Reports shall include the following:

7.4.1

A list of on-site activities that have taken place during the month.

7.4.2

Detailed description of any deviations from required tasks not otherwise documented in project plans or amendment requests.

7.4.3

Description of all deviations from the Scope of Work and Schedule (Exhibit B) during the current month and any planned deviations in the upcoming month.

7.4.4

For any deviations in schedule, a plan for recovering lost time and maintaining compliance with the schedule.

7.4.5

All raw data (including laboratory analyses) received during the previous quarter (if not previously submitted to Ecology), together with a detailed description of the underlying samples collected.

7.4.6

A list of deliverables for the upcoming month.

7.5

All plans or other deliverables submitted by the PLPs for Ecology's review and approval under the Scope of Work and Schedule (Exhibit B) shall, upon Ecology's approval, become integral and enforceable parts of this Order. The PLPs shall take any action required by such deliverable.

7.6

Under WAC 173-340-430, an interim action is a remedial action that is technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance, that corrects a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed, or that is needed to provide for completion of a site hazard assessment, remedial investigation/feasibility study, or design of a cleanup action plan.

Any Party may propose an additional interim action under this Order. If the Parties are in agreement concerning the additional interim action, the Subject PLPs shall prepare and submit to Ecology an Interim Action Work Plan, including a scope of work and schedule, by the date determined by Ecology. Ecology will provide public notice and opportunity to comment on the Interim Action Work Plan in accordance with WAC 173-340-600(16).

The Subject PLPs shall not conduct the interim action until Ecology approves the Interim Action Work Plan. Upon approval by Ecology, the Interim Action Work Plan becomes an integral and enforceable part of this Order, and [Subject PLP(s)] is required to conduct the interim action in accordance with the approved Interim Action Work Plan. Ecology reserves its authority to require additional interim action(s) under a separate order or other enforcement action under RCW 70A.305, or to undertake the interim action(s) itself.

7.7 If Ecology determines that the PLPs have failed to make sufficient progress or failed to implement the remedial action, in whole or in part, Ecology may, after notice to the PLPs, perform any or all portions of the remedial action or at Ecology's discretion allow the PLPs opportunity to correct. In an emergency, Ecology is not required to provide notice to the PLPs, or an opportunity for dispute resolution. The PLPs shall reimburse Ecology for the costs of doing such work in accordance with Section 8.1 (Payment of Remedial Action Costs). Ecology reserves the right to enforce requirements of this Order under Section 10 (Enforcement).

7.8

Except where necessary to abate an emergency situation or where required by law, the PLPs shall not perform any remedial actions at the Site outside those remedial actions required by this Order to address the contamination that is the subject of this Order, unless Ecology concurs, in writing, with such additional remedial actions pursuant to Section 8.11 (Amendment of Order). In the event of an emergency, or where actions are taken as required by law, the PLPs must notify Ecology in writing of the event and remedial action(s) planned or taken as soon as practical but no later than within twenty-four (24) hours of the discovery of the event.

7.9

Ecology hereby incorporates into this Order the previous remedial actions described in Section 5 (Findings of Fact). Reimbursement for specific project tasks under a grant agreement with Ecology is contingent upon a determination by Ecology's Toxics Cleanup Program that the retroactive costs are eligible under WAC 173-332A-320(6), the work performed complies with the substantive requirements of WAC 173-340, and the work is consistent with the remedial actions required under this Order. The costs associated with Ecology's determination on the past independent remedial actions described in Section 5 (Findings of Fact), are recoverable under this Order.

8. Terms and Conditions

8.1 Payment of Remedial Action Costs

The PLPs shall pay to Ecology costs incurred by Ecology pursuant to this Order and consistent with WAC 173-340-550(2). These costs shall include work performed by Ecology or its contractors for, or on, the Site under RCW 70A.305, including remedial actions and Order preparation, negotiation, oversight, and administration. These costs shall include work performed both prior to and subsequent to the issuance of this Order. Ecology's costs shall include costs of direct activities and support costs of direct activities as defined in WAC 173 340 550(2).

Ecology has accumulated $44,806.63 in remedial action costs related to the Site as of 10/31/2024. For all Ecology costs incurred, the PLPs shall pay the required amount within thirty (30) days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff, the amount of time spent by involved staff members on the project, and a description of the activities conducted by involved staff including attorneys. Itemized statements shall be prepared quarterly. Pursuant to WAC 173-340-550(4), failure to pay Ecology's costs within ninety (90) days of receipt of the itemized statement of costs will result in interest charges at the rate of twelve percent (12%) per annum, compounded monthly.

In addition to other available relief, pursuant to RCW 19.16.500, Ecology may utilize a collection agency and/or, pursuant to RCW 70A.305.060, file a lien against real property subject to the remedial actions to recover unreimbursed remedial action costs.

8.2 Designated Project Coordinators

The project coordinator for Ecology is:

Brett T. Carp, Aquatics Unit Supervisor
P.O. Box 330316
Shoreline, WA 98133
(206) 594-0094
brec461@ECY.WA.GOV

The project coordinator for the PLPs is:

Eric Buer, Principal Hydrogeologist
Farallon Consulting, L.L.C.
1809 7th Avenue, Suite 1111
Seattle, WA 98103
206-661-3536
ebuer@farallonconsulting.com

Each project coordinator shall be responsible for overseeing the implementation of this Order. Ecology's project coordinator will be Ecology's designated representative for the Site. To the maximum extent possible, communications between Ecology and the PLPs, and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order shall be directed through the project coordinators. The project coordinators may designate, in writing, working level staff contacts for all or portions of the implementation of the work to be performed required by this Order.

Any Party may change its respective project coordinator. Written notification shall be given to the other Parties at least ten (10) calendar days prior to the change.

8.3 Performance

All geologic and hydrogeologic work performed pursuant to this Order shall be under the supervision and direction of a geologist or hydrogeologist licensed by the State of Washington or under the direct supervision of an engineer registered by the State of Washington, except as otherwise provided for by RCW 18.43 and 18.220.

All engineering work performed pursuant to this Order shall be under the direct supervision of a professional engineer registered by the State of Washington, except as otherwise provided for by RCW 18.43.130.

All construction work performed pursuant to this Order shall be under the direct supervision of a professional engineer or a qualified technician under the direct supervision of a professional engineer. The professional engineer must be registered by the State of Washington, except as otherwise provided for by RCW 18.43.130.

Any documents submitted containing geologic, hydrogeologic, or engineering work shall be under the seal of an appropriately licensed professional as required by RCW 18.43 and 18.220.

The PLPs shall notify Ecology in writing of the identity of any engineer(s) and geologist(s), contractor(s), subcontractor(s), and other key personnel to be used in carrying out the terms of this Order, in advance of their involvement at the Site.

8.4 Access

Ecology or any Ecology authorized representative shall have access to enter and freely move about all property at the Site that the PLPs either own, control, or have access rights to at all reasonable times for the purposes of, inter alia: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Order; reviewing the PLPs' progress in carrying out the terms of this Order; conducting such tests or collecting such samples as Ecology may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Order; and verifying the data submitted to Ecology by the PLPs. Ecology or any Ecology authorized representative shall give reasonable notice before entering any Site property owned or controlled by the PLPs unless an emergency prevents such notice. All persons who access the Site pursuant to this section shall comply with any applicable health and safety plan(s). Ecology employees and their representatives shall not be required to sign any liability release or waiver as a condition of Site property access.

The PLPs shall make best efforts to secure access rights for those properties within the Site not owned or controlled by the PLPs where remedial activities or investigations will be performed pursuant to this Order. As used in this Section, "best efforts" means the efforts that a reasonable person in the position of the PLPs would use so as to achieve the goal in a timely manner, including the cost of employing professional assistance and the payment of reasonable sums of money to secure access and/or use restriction agreements, as required by this Section. If, within 45 days after the effective date of this Order, the PLPs are unable to accomplish what is required through "best efforts," they shall notify Ecology, and include a description of the steps taken to comply with the requirements. If Ecology deems it appropriate, it may assist the PLPs, or take independent action, in obtaining such access and/or use restrictions. Ecology reserves the right to seek payment from the PLPs for all costs, including cost of attorneys' time, incurred by Ecology in obtaining such access or agreements to restrict land, water, or other resource use.

8.5 Sampling, Data Submittal, and Availability

With respect to the implementation of this Order, the PLPs shall make the results of all sampling, laboratory reports, and/or test results generated by them or on their behalf available to Ecology. Pursuant to WAC 173-340-840(5), all sampling data shall be submitted to Ecology in both printed and electronic formats in accordance with Section 7 (Work to be Performed), Ecology's Toxics Cleanup Program Policy 840 (Data Submittal Requirements), and/or any subsequent procedures specified by Ecology for data submittal.

If requested by Ecology, the PLPs shall allow Ecology and/or its authorized representative to take split or duplicate samples of any samples collected by the PLPs pursuant to implementation of this Order. The PLPs shall notify Ecology seven (7) days in advance of any sample collection or work activity at the Site. Ecology shall, upon request, allow the PLPs and/or their authorized representative to take split or duplicate samples of any samples collected by Ecology pursuant to the implementation of this Order, provided that doing so does not interfere with Ecology's sampling. Without limitation on Ecology's rights under Section 8.4 (Access), Ecology shall notify the PLPs prior to any sample collection activity unless an emergency prevents such notice.

In accordance with WAC 173-340-830(4)(a), all hazardous substance analyses shall be conducted by a laboratory accredited under WAC 173-50 for the specific analyses to be conducted, unless otherwise approved by Ecology.

8.6 Public Participation

Ecology shall maintain the responsibility for public participation at the Site. However, the PLPs shall cooperate with Ecology, and shall:

8.6.1

If agreed to by Ecology, develop appropriate mailing lists and prepare drafts of public notices and fact sheets at important stages of the remedial action, such as the submission of work plans, remedial investigation/feasibility study reports, cleanup action plans, and engineering design reports. As appropriate, Ecology will edit, finalize, and distribute such fact sheets and prepare and distribute public notices of Ecology's presentations and meetings.

8.6.2

Notify Ecology's project coordinator prior to the preparation of all press releases and fact sheets, and before meetings related to remedial action work to be performed at the Site with the interested public and/or local governments. Likewise, Ecology shall notify the PLPs prior to the issuance of all press releases and fact sheets related to the Site, and before meetings related to the Site with the interested public and local governments. For all press releases, fact sheets, meetings, and other outreach efforts by the PLPs that do not receive prior Ecology approval, the PLPs shall clearly indicate to their audience that the press release, fact sheet, meeting, or other outreach effort was not sponsored or endorsed by Ecology.

8.6.3

When requested by Ecology, participate in public presentations on the progress of the remedial action at the Site. Participation may be through attendance at public meetings to assist in answering questions or as a presenter.

8.6.4

When requested by Ecology, arrange and maintain a repository to be located at:

Issaquah Library
10 W Sunset Way
Issaquah, WA 98027

At a minimum, copies of all public notices, fact sheets, and documents relating to public comment periods shall be promptly placed in these repositories. A copy of all documents related to this Site shall be maintained in the repository at Ecology's Northwest Regional Office in Shoreline, Washington.

8.7 Access to Information

The PLPs shall provide to Ecology, upon request, copies of all records, reports, documents, and other information (including records, reports, documents, and other information in electronic form) (hereinafter referred to as "Records") within the PLPs' possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Order, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information regarding the work. The PLPs shall also make available to Ecology, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the work.

Nothing in this Order is intended to waive any right the PLPs may have under applicable law to limit disclosure of Records protected by the attorney work-product privilege and/or the attorney-client privilege. If the PLPs withhold any requested Records based on an assertion of privilege, the PLPs shall provide Ecology with a privilege log specifying the Records withheld and the applicable privilege. No Site-related data collected pursuant to this Order shall be considered privileged, including: (1) any data regarding the Site, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, radiological, biological, or engineering data, or the portion of any other record that evidences conditions at or around the Site; or (2) the portion of any Record that Respondents are required to create or generate pursuant to this Order.

Notwithstanding any provision of this Order, Ecology retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under any other applicable statutes or regulations.

8.8 Retention of Records

During the pendency of this Order, and for ten (10) years from the date of completion of the work performed pursuant to this Order, the PLPs shall preserve all records, reports, documents, and underlying data in their possession relevant to the implementation of this Order and shall insert a similar record retention requirement into all contracts with project contractors and subcontractors.

8.9 Resolution of Disputes

8.9.1

In the event that the PLPs elect to invoke dispute resolution the PLPs must utilize the procedure set forth below.

8.9.1.1 Upon the triggering event (receipt of Ecology's project coordinator's written decision or an itemized billing statement), the PLPs have

fourteen (14) calendar days within which to notify Ecology's project coordinator in writing of their dispute (Informal Dispute Notice).

8.9.1.2 The Parties' project coordinators shall then confer in an effort to resolve the dispute informally. The Parties shall informally confer for up to fourteen (14) calendar days from receipt of the Informal Dispute Notice. If the project coordinators cannot resolve the dispute within those fourteen (14) calendar days, then within seven (7) calendar days Ecology's project coordinator shall issue a written decision (Informal Dispute Decision) stating: the nature of the dispute; the PLPs' position with regards to the dispute; Ecology's position with regards to the dispute; and the extent of resolution reached by informal discussion.

8.9.1.3 The PLPs may then request regional management review of the dispute. The PLPs must submit this request (Formal Dispute Notice) in writing to the Northwest Region Toxics Cleanup Section Manager within seven (7) calendar days of receipt of Ecology's Informal Dispute Decision. The Formal Dispute Notice shall include a written statement of dispute setting forth: the nature of the dispute; the PLPs' position with respect to the dispute; and the information relied upon to support its position.

8.9.1.4 The Section Manager shall conduct a review of the dispute and shall endeavor to issue a written decision regarding the dispute (Decision on Dispute) within thirty (30) calendar days of receipt of the Formal Dispute Notice. The Decision on Dispute shall be Ecology's final decision on the disputed matter.

8.9.2

The Parties agree to only utilize the dispute resolution process in good faith and agree to expedite, to the extent possible, the dispute resolution process whenever it is used.

8.9.3

Implementation of these dispute resolution procedures shall not provide a basis for delay of any activities required in this Order, unless Ecology agrees in writing to a schedule extension.

8.9.4

In case of a dispute, failure to either proceed with the work required by this Order or timely invoke dispute resolution may result in Ecology's determination

that insufficient progress is being made in preparation of a deliverable, and may result in Ecology undertaking the work under Section 7 (Work to be Performed) or initiating enforcement under Section 10 (Enforcement).

8.10 Extension of Schedule

8.10.1

The PLPs' request for an extension of schedule shall be granted only when a request for an extension is submitted in a timely fashion, generally at least thirty (30) days prior to expiration of the deadline for which the extension is requested, and good cause exists for granting the extension. All extensions shall be requested in writing. The request shall specify:

8.10.1.1 The deadline that is sought to be extended.

8.10.1.2 The length of the extension sought.

8.10.1.3 The reason(s) for the extension.

8.10.1.4 Any related deadline or schedule that would be affected if the extension were granted.

8.10.2

The burden shall be on the PLPs to demonstrate to the satisfaction of Ecology that the request for such extension has been submitted in a timely fashion and that good cause exists for granting the extension. Good cause may include, but may not be limited to:

8.10.2.1 Circumstances beyond the reasonable control and despite the due diligence of the PLPs including delays caused by unrelated third parties or Ecology, such as (but not limited to) delays by Ecology in reviewing, approving, or modifying documents submitted by the PLPs.

8.10.2.2 Required review and approval by PLP governing body (e.g. Board of Directors) beyond the control of the PLPs.

8.10.2.3 A shelter in place or work stoppage mandated by state or local government order due to public health and safety emergencies.

8.10.2.4 Acts of God, including fire, flood, blizzard, extreme temperatures, storm, or other unavoidable casualty.

8.10.2.5 Endangerment as described in Section 8.12 (Endangerment).

However, neither increased costs of performance of the terms of this Order nor changed economic circumstances shall be considered circumstances beyond the reasonable control of the PLPs.

8.10.3

Ecology shall act upon the PLPs' written request for extension in a timely fashion. Ecology shall give the PLPs written notification of any extensions granted pursuant to this Order. A requested extension shall not be effective until approved by Ecology. Unless the extension is a substantial change, it shall not be necessary to amend this Order pursuant to Section 8.11 (Amendment of Order) when a schedule extension is granted.

8.10.4

At the PLPs' request, an extension shall only be granted for such period of time as Ecology determines is reasonable under the circumstances. Ecology may grant schedule extensions exceeding ninety (90) days only as a result of one of the following:

8.10.4.1 Delays in the issuance of a necessary permit which was applied for in a timely manner.

8.10.4.2 Other circumstances deemed exceptional or extraordinary by Ecology.

8.10.4.3 Endangerment as described in Section 8.12 (Endangerment).

8.11 Amendment of Order

The project coordinators may verbally agree to minor changes to the work to be performed without formally amending this Order. Minor changes will be documented in writing by Ecology within seven (7) days of verbal agreement.

Except as provided in Section 8.13 (Reservation of Rights), substantial changes to the work to be performed shall require formal amendment of this Order. This Order may only be formally amended by the written consent of both Ecology and the PLPs. Ecology will provide its written consent to a formal amendment only after public notice and opportunity to comment on the formal amendment.

When requesting a change to the Order, the PLPs shall submit a written request to Ecology for approval. Ecology shall indicate its approval or disapproval in writing and in a timely manner after the written request is received. If Ecology determines that the change is substantial, then the Order must be formally amended. Reasons for the disapproval of a proposed change to this Order shall be stated in writing. If Ecology does

not agree to a proposed change, the disagreement may be addressed through the dispute resolution procedures described in Section 8.9 (Resolution of Disputes).

8.12 Endangerment

In the event Ecology determines that any activity being performed at a Site under this Order is creating or has the potential to create a danger to human health or the environment on or surrounding the Site, Ecology may direct the PLPs to cease such activities for such period of time as it deems necessary to abate the danger. The PLPs shall immediately comply with such direction.

In the event the PLPs determine that any activity being performed at a Site under this Order is creating or has the potential to create a danger to human health or the environment, the PLPs may cease such activities. The PLPs shall notify Ecology's project coordinator as soon as possible, but no later than twenty-four (24) hours after making such determination or ceasing such activities. Upon Ecology's direction, the PLPs shall provide Ecology with documentation of the basis for the determination or cessation of such activities. If Ecology disagrees with the PLPs' cessation of activities, it may direct the PLPs to resume such activities.

If Ecology concurs with or orders a work stoppage pursuant to this section, the PLPs' obligations with respect to the ceased activities shall be suspended until Ecology determines the danger is abated, and the time for performance of such activities, as well as the time for any other work dependent upon such activities, shall be extended in accordance with Section 8.10 (Extension of Schedule) for such period of time as Ecology determines is reasonable under the circumstances.

Nothing in this Order shall limit the authority of Ecology, its employees, agents, or contractors to take or require appropriate action in the event of an emergency.

8.13 Reservation of Rights

This Order is not a settlement under RCW 70A.305. Ecology's signature on this Order in no way constitutes a covenant not to sue or a compromise of any of Ecology's rights or authority. Ecology will not, however, bring an action against the PLPs to recover remedial action costs paid to and received by Ecology under this Order. In addition, Ecology will not take additional enforcement actions against the PLPs regarding remedial actions required by this Order, provided the PLPs comply with this Order.

Ecology nevertheless reserves its rights under RCW70A.305, including the right to require additional or different remedial actions at a Site should it deem such actions necessary to protect human health or the environment, and to issue orders requiring such remedial actions. Ecology also reserves all rights regarding the injury to, destruction of, or loss of

natural resources resulting from the release or threatened release of hazardous substances at a Site.

By entering into this Order, the PLPs do not admit to any liability for the Site. Although the PLPs are committing to conducting the work required by this Order under the terms of this Order, the PLPs expressly reserve all rights available under law, including but not limited to the right to seek cost recovery or contribution against third parties, and the right to assert any defenses to liability in the event of enforcement.

8.14 Transfer of Interest in Property

No voluntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated by the PLPs without provision for continued implementation of all requirements of this Order and implementation of any remedial actions found to be necessary as a result of this Order.

Prior to the PLPs' transfer of any interest in all or any portion of the Site, and during the effective period of this Order, the PLPs shall provide a copy of this Order to any prospective purchaser, lessee, transferee, assignee, or other successor in said interest; and, at least thirty (30) days prior to any transfer, the PLPs shall notify Ecology of said transfer. Upon transfer of any interest, the PLPs shall notify all transferees of the restrictions on the activities and uses of the property under this Order and incorporate any such use restrictions into the transfer documents.

8.15 Compliance with Applicable Laws

8.15.1 Applicable Laws

All actions carried out by the PLPs pursuant to this Order shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits or approvals, except as provided in RCW 70A.305.090. At this time, no federal, state, or local requirements have been identified as being applicable to the actions required by this Order. The PLPs have a continuing obligation to identify additional applicable federal, state, and local requirements which apply to actions carried out pursuant to this Order, and to comply with those requirements. As additional federal, state, and local requirements are identified by Ecology or the PLPs, Ecology will document in writing if they are applicable to actions carried out pursuant to this Order, and the PLPs must implement those requirements.

8.15.2 Relevant and Appropriate Requirements.

All actions carried out by the PLPs pursuant to this Order shall be done in accordance with relevant and appropriate requirements identified by Ecology. At this time, no relevant and appropriate requirements have been identified as

being applicable to the actions required by this Order. If relevant and appropriate requirements are identified by Ecology or the PLPs, Ecology will document in writing if they are applicable to actions carried out pursuant to this Order and the PLPs must implement those requirements.

8.15.3

Pursuant to RCW 70A.305.090(1), the PLPs may be exempt from the procedural requirements of RCW 70A.15, 70A.205, 70A.300, 77.55, 90.48, and 90.58 and of any laws requiring or authorizing local government permits or approvals. However, the PLPs shall comply with the substantive requirements of such permits or approvals. For permits and approvals covered under RCW 70A.305.090(1) that have been issued by local government, the Parties agree that Ecology has the non-exclusive ability under this Order to enforce those local government permits and/or approvals. At this time, no state or local permits or approvals have been identified as being applicable but procedurally exempt under this section.

8.15.4

The PLPs have a continuing obligation to determine whether additional permits or approvals addressed in RCW 70A.305.090(1) would otherwise be required for the remedial action under this Order. In the event either Ecology or the PLPs determine that additional permits or approvals addressed in RCW 70A.305.090(1) would otherwise be required for the remedial action under this Order, they shall promptly notify the other Parties of their determination. Ecology shall determine whether Ecology or the PLPs shall be responsible to contact the appropriate state and/or local agencies. If Ecology so requires, the PLPs shall promptly consult with the appropriate state and/or local agencies and provide Ecology with written documentation from those agencies of the substantive requirements those agencies believe are applicable to the remedial action. Ecology shall make the final determination on the additional substantive requirements that must be met by the PLPs and on how the PLPs must meet those requirements. Ecology shall inform the PLPs in writing of these requirements. Once established by Ecology, the additional requirements shall be enforceable requirements of this Order. The PLPs shall not begin or continue the remedial action potentially subject to the additional requirements until Ecology makes its final determination.

Pursuant to RCW 70A.305.090(2), in the event Ecology determines that the exemption from complying with the procedural requirements of the laws referenced in RCW 70A.305.090(1) would result in the loss of approval from a federal agency that is necessary for the state to administer any federal law, the

exemption shall not apply and the PLPs shall comply with both the procedural and substantive requirements of the laws referenced in RCW 70A.305.090(1), including any requirements to obtain permits or approvals.

8.16 Indemnification

To the extent permitted by law, the PLPs agree to indemnify and save and hold the State of Washington, its employees, and agents harmless from any and all claims or causes of action (1) for death or injuries to persons, or (2) for loss or damage to property, to the extent arising from or on account of acts or omissions of the PLPs, their officers, employees, agents, or contractors in entering into and implementing this Order. However, the PLPs shall not indemnify the State of Washington nor save nor hold its employees and agents harmless from any claims or causes of action to the extent arising out of the negligent acts or omissions of the State of Washington, or the employees or agents of the State, in entering into or implementing this Order.

9. Satisfaction of Order

The provisions of this Order shall be deemed satisfied upon the PLPs' receipt of written notification from Ecology that the PLPs have completed the remedial activity required by this Order, as amended by any modifications, and that the PLPs have complied with all other provisions of this Agreed Order.

10. Enforcement

Pursuant to RCW 70A.305.050, this Order may be enforced as follows:

10.1

The Attorney General may bring an action to enforce this Order in a state or federal court.

10.2

The Attorney General may seek, by filing an action, if necessary, to recover amounts spent by Ecology for investigative and remedial actions and orders related to the Site.

10.3

A liable party who refuses, without sufficient cause, to comply with any term of this Order will be liable for:

10.3.1

Up to three (3) times the amount of any costs incurred by the State of Washington as a result of its refusal to comply.

10.3.2

Civil penalties of up to twenty-five thousand dollars ($25,000) per day for each day it refuses to comply.

10.4

This Order is not appealable to the Washington Pollution Control Hearings Board. This Order may be reviewed only as provided under RCW 70A.305.070.

Effective date of this Order: February 24, 2025

Eastside Fire & Rescue



Ben Lane
Fire Chief
175 Newport Way NW

Issaquah, WA 98027
425.677.3554

Docusign Envelope ID: 25DFB8D7-70CC-4A40-9774-DADEB402219C

Effective date of this Order: February 24, 2025

City of Issaquah

DocuSigned by:
Mary Lou Pauly
CEFF8F8628D7468...

Mary Lou Pauly
Mayor
P.O. Box 1307
Issaquah, WA 98027
(425) 539-3654

City Clerk Attestation: DocuSigned by: Tisha Giesen FE989FA7135144C...

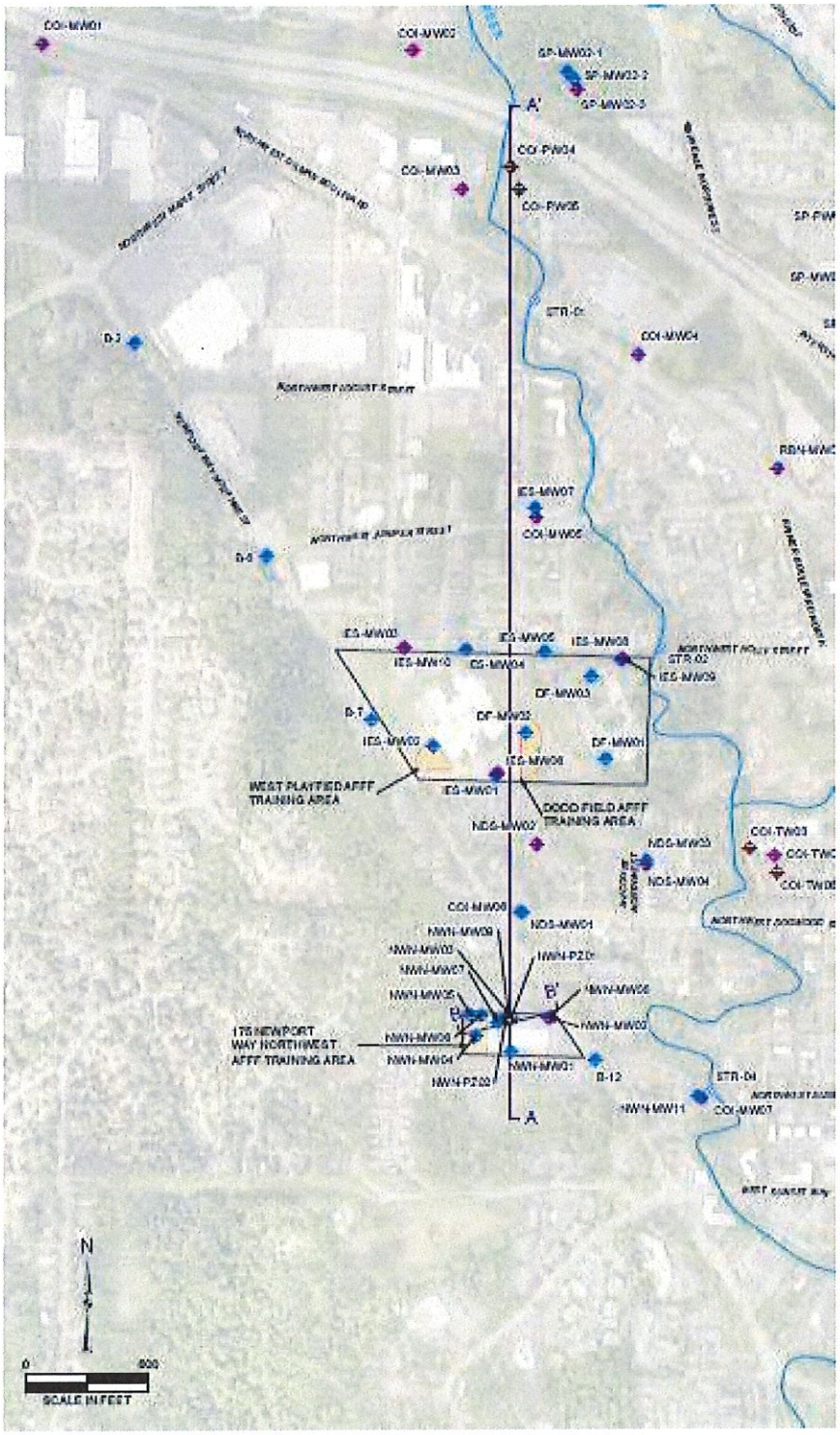
State of Washington
Department of Ecology

Kimberly Wooten PhD

Dr. Kimberly Wooten
Section Manager
Toxics Cleanup Program
Northwest Regional Office
206-594-0093

Docusign Envelope ID: 25DFB8D7-70CC-4A40-9774-DADEB402219C

Exhibit A —Site Location



Docusign Envelope ID: 25DFB8D7-70CC-4A40-9774-DADEB402219C

Exhibit B —Scope of Work and Schedule

Scope of Work

Purpose

The work under this Agreed Order (AO) involves completing Remedial Investigations (RIs), Feasibility Studies (FSs), conducting an Interim Action, and conducting additional interim actions if required or agreed to by Ecology. A RI and FS will be conducted for the Eastside Fire and Rescue Headquarters Issaquah Valley Elementary School Site (EFR HQ IVES Site), which comprises two previously identified source areas: EFR HQ and IVES/Dodd Fields and the underlying comingled groundwater plume that extends from the EFR HQ to the City of Issaquah production well COI-PW04. The purpose of the RI and FS and any interim action for the EFR HQ IVES Site is to provide sufficient data, analysis, and evaluations to enable Ecology to select cleanup alternatives for the source areas and for the comingled groundwater plume emanating from the source areas.

The PLPs shall coordinate with Ecology throughout the cleanup process and shall keep Ecology informed of changes to any work plan or other project plans for the Site, and of any issues or problems as they develop.

The Scope of Work (SOW) for the Site is divided into eight major tasks as follows:

Task 1. EFR HQ Interim Action Work Plan
Task 2. EFR HQ Interim Action
Task 3. EFR HQ IVES RI Work Plan
Task 4. EFR HQ IVES RI
Task 5. EFR HQ IVES Feasibility Study
Task 6. SEPA Compliance
Task 7. Public Participation
Task 8. Additional Interim Action(s) (if required)

Task 1. EFR HQ Interim Action Work Plan

The PLPs will prepare and submit for Ecology approval an Agency Review Draft Interim Action Work Plan (IAWP) for EFR HQ with detail commensurate with the work to be performed, as described in Exhibit C, Interim Action Summary.

The Agency Review Draft IAWP shall include, as appropriate:

- Description of the interim action including its purpose, general requirements, and relationship to the (final) cleanup action (to the extent known);

- Summary of relevant RI/FS information, including at a minimum existing site conditions and alternative interim actions considered;
- Information regarding design and construction requirements, including a proposed schedule and personnel roles and responsibilities;
- Compliance Monitoring Plan;
- SAP/QAPP
- Permits required.

The PLPs will also submit a copy of the Health and Safety Plan for the project.

The PLPs shall prepare two (2) copies of the Agency Review Draft IAWP, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology for review. The PLPs shall incorporate Ecology's comments and resubmit to Ecology. The PLPs shall incorporate Ecology's comments and then prepare four (4) copies of the Public Review Draft Interim Action Work Plan, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats and two hard copies, and submit them to Ecology.

After a public notice and comment period for the Public Review Draft IAWP (and SEPA determination), Ecology will approve the IAWP (if appropriate) and the document will be considered Final. The PLPs shall prepare two (2) copies of the Final IAWP, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology. Once approved by Ecology, the PLPs will implement the interim action according with the approved schedule.

Task 2. EFR HQ Interim Action

PLPs will implement the interim action in accordance with the Final IAWP. Upon successful completion of the work, an Agency Review Draft Interim Action Report will be prepared as a separate deliverable. The PLPs shall prepare two (2) copies of the Agency Review Draft Interim Action Report, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology for review and approval. After incorporating Ecology's comments on the Agency Review Draft Interim Action Report and after Ecology approval, the PLPs shall prepare two (2) copies of the Final Interim Action Report, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology. The Interim Action Report will not be considered final until after Ecology's approval.

Task 3. EFR HQ IVES RI Work Plan

The PLPs shall prepare a Remedial Investigation Work Plan (Work Plan). The purpose of the Work Plan is to present the scope and schedule to complete the RI activities. The Work Plan shall describe the project management strategy for implementing and documenting the RI activities. The Work Plan shall present the personnel involved in conducting the RI.

Prior to drafting the Work Plan, Parties will meet to review requirements for the Work Plan, scope further characterization activities, discuss the preliminary Conceptual Site Model, and identify project data needs and possible interim actions.

The Work Plan shall describe facility information; site history and conditions; including previous operations; past field investigations, including any data collection and analysis of soils, air, groundwater, surface water, and sediments; a conceptual site model showing contaminants, migration pathways in all environmental media, and potential receptors; geology and groundwater system characteristics; past, current, and future land use; identification of natural resources and ecological receptors; hazardous substances and their sources, etc., in compliance with WAC 173-340-350 and WAC 173-204-550.

The Work Plan will compile, evaluate, and present all existing environmental data on site soil and groundwater to identify data gaps. If necessary, additional investigation to address essential data gaps may be recommended. The Work Plan will include specific data collection procedures in a separate Sampling and Analysis Plan (SAP) and a Quality Assurance Project Plan (QAPP) as attachments to the Work Plan in compliance with WAC 173-340-820 and WAC 173-204-600 for defining the nature and extent of contamination. The PLPs will also submit a copy of the Health and Safety Plan (HASP) for the project as an attachment to the Work Plan.

The SAP will identify the proposed number and location of all environmental samples and methods, including soil borings, groundwater monitoring wells, soil, groundwater, stormwater, seep, catch basin and sediment samples, approximate depths. The SAP will describe the sampling objectives, the rationale for the sampling approach (based upon the identified data gaps), and plans for data use, and shall provide a detailed description of sampling tasks. The SAP shall describe specifications for sample identifiers; sampling equipment; the type, number, and location of samples to be collected; the analyses to be performed; descriptions of sampling equipment and methods to be used; sample documentation; sample containers, collection, and handling; data and records management; and schedule.

The QAPP will be prepared in accordance with the Guidance for Preparation of Quality Assurance Project Plans, EPA Region 10, Quality Data Management Program, QA/R-5 and requirements of the EPA Contract Laboratory Program. The QAPP will also follow Ecology's Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies (July 2004) and Analysis Plan Appendix (February 2008). Laboratories must meet the accreditation standards established in WAC 173-50. Data quality objectives will reflect the criteria or threshold values used for the source control evaluation.

The SAP and QAPP attachments may be submitted to Ecology separately for initial review and approval. As with all environmental work at the site, work may not begin without written

approval from Ecology. The plan shall provide seven (7) days notice to Ecology prior to beginning sampling. Ecology may obtain split samples.

The PLPs or their contractors shall submit all new sampling data generated under the Work Plan and any other recently collected data to Ecology for entry into the Environmental Information Management System (EIM) in accordance with WAC 173-340-840(5) and Ecology's Toxics Cleanup Program Policy 840: Data Submittal Requirements. Only validated data will be entered into the EIM database. Existing data will be submitted within 30 days of submittal of the Agency Draft Work Plan.

Work Plan tasks and subtasks will include the following, but are not limited to:

- A detailed scope and schedule of actions needed to complete the RI.
- Sampling and analysis of soil and groundwater.
- Compile, evaluate, and present all existing environmental data on site soil and groundwater to identify data gaps.
    - If necessary, additional investigations to address essential data gaps.
    - Validated Data be entered into the EIM database.
- Develop a SAP and QAPP in compliance with WAC 173-340-820 and WAC 173-204-600 for defining the nature and extent of contamination.
    - The SAP and QAPP will be submitted to Ecology separately for initial review and approval.

The PLPs will provide Ecology with an Agency Review Draft Work Plan. Once Ecology reviews and approves the Work Plan, it will be considered the Final Work Plan. The Work Plan shall not be implemented until approved by Ecology. Once approved by Ecology, the PLP will implement the Final Work Plan according to the schedule contained in this Exhibit.

The PLPs shall prepare two (2) copies of the Agency Review Draft Work Plan, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology for review and comment. After incorporating Ecology's comments on the Agency Review Draft Work Plan and after Ecology approval, the PLP shall prepare two (2) copies of the Final Work Plan, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology.

Task 4. EFR HQ IVES Remedial Investigation

The PLPs shall conduct an RI that meets the requirements of WAC 173-340 and WAC 173-204-550 according to the Work Plan as approved by Ecology. The RI will determine the nature and extent of contamination exceeding preliminary Model Toxics Control Act (MTCA) cleanup levels, preliminary Sediment Management Standards (SMS) cleanup standards, and other regulatory

requirements at the Site. The RI must provide sufficient data and information to define the nature and extent of contamination.

Field sampling and analysis will be completed in general accordance with the SAP and QAPP. Deviation(s) from the approved SAP and QAPP must be communicated to Ecology immediately and documented as required by Ecology.

The PLPs shall provide interim data reports and updates to Ecology as new site data and information become available as part of monthly progress reporting. Laboratory analysis data shall also be provided in electronic format when it has been validated. Raw laboratory data will be provided to Ecology upon request.

Prior to submittal of the Agency Review Draft RI Report, a Key Project Meeting will be held. During the Key Project Meeting, Ecology and the PLPs will review available data and an updated conceptual site model and discuss the content and organization of the Draft RI Report.

The PLPs shall compile the results of the site investigation into an Agency Review Draft RI Report. The PLPs shall prepare two (2) copies of the Agency Review Draft RI Report, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology for review and comment.

After incorporating Ecology's comments on the Agency Review Draft RI Report, the PLPs shall combine the RI report with the FS report (Task 5). The remainder of the report preparation process is described in Task 5.

If the data collected during this investigation is insufficient to define the nature and extent of contamination, and/or to select a cleanup action plan an additional phase of investigation shall be conducted to define the extent of contamination.

Task 5. EFR HQ IVES Feasibility Study

The PLPs shall use the information obtained in the RI to prepare an Agency Review Draft Feasibility Study Report (FS) for the Site that meets the applicable requirements of WAC 173-340 according to the Schedule in this exhibit. The Agency Review Draft FS will evaluate remedial alternatives for site cleanup, consistent with MTCA and SMS requirements to ensure protection of human health and the environment by eliminating, reducing, or otherwise controlling risk posed through each exposure pathway and migration route.

Prior to beginning the FS, a Key Project Meeting will be held to review ARARs, potential remedial alternatives and establish points of compliance.

The Agency Review Draft FS must include a detailed analysis of each remedial alternative according to the applicable requirements of WAC 173-340-351 and 173-204-550. The remedial alternatives will be evaluated for compliance with the applicable requirements of WAC 173-340-360 and 173-204-570.

The remedial alternative that is judged to best satisfy the evaluation criteria will be identified. Justification for the selection will be provided, and the recommended remedial alternative further developed, in the FS Report.

The PLPs shall prepare two (2) copies of the Agency Review Draft FS, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology for review. After addressing Ecology's comments on the Agency Review Draft FS, the PLPs shall combine the EFR HQ IVES RI (Task 4) and FS and prepare four (4) copies of the Public Review Draft RI/FS, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats and two hard copies, and submit them to Ecology for distribution and public comment.

Electronic survey data for monitoring locations, electronic lab data, and GIS maps of contaminant distribution shall also be provided for the Public Review Draft RI/FS Report either in the report or as attachments. After incorporating public comments on the Public Review Draft RI/FS Report and receiving Ecology approval, the PLPs shall prepare two (2) copies of the Final RI/FS Report, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology. The RI/FS report will not be considered final until after Ecology's approval.

Task 6. Groundwater Modeling

The PLPs shall be responsible for evaluating groundwater fate and transport of PFAS throughout the Lower Issaquah Valley using three-dimensional groundwater modeling as requested by Ecology. Groundwater modeling may be used to evaluate how remedial actions and modifications to pumping rates in water supply wells impact transport of PFAS in groundwater. If Ecology requests groundwater modeling work be conducted, that request will include a schedule for the work.

Task 7. SEPA Compliance

The PLPs shall be responsible for complying with the State Environmental Policy Act (SEPA) Rules including preparing and submitting an environmental checklist. If the result of the threshold determination is a determination of significance (DS), the PLPs shall be responsible for the preparation of Draft and Final Environmental Impact Statements. The PLPs shall assist Ecology with coordinating SEPA public involvement requirements with MTCA public involvement requirements whenever possible, such that public comment periods and meetings or hearings can be held concurrently.

Task 8. Public Participation

The PLPs shall support Ecology in presenting the Public Review Draft RI Report and the Public Review Draft FS Reports and SEPA evaluations at one public meeting or hearing each for EFR HQ and IVES/Dodd (two public meetings or hearings). The PLPs will assist Ecology with presentations at any additional meetings or hearings that might be necessary for SEPA compliance or as part of the Public Participation Plan.

After the public comment periods are completed, the PLPs shall prepare an Agency Review Draft Responsiveness Summary that addresses public comments. The PLPs shall prepare two (2) copies of the Agency Review Draft Responsiveness Summary, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology for review and approval.

After addressing Ecology's comments and after Ecology approval, the PLPs shall prepare two (2) copies of the Final Responsiveness Summary, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology for distribution.

Task 9. Additional Interim Actions (if required)

Remedial actions implemented prior to completion of the RI/FS, including those that:

- are technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance;
- correct a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed; or
- are needed to provide for completion of the remedial investigation/feasibility study or design of the cleanup action

will be considered interim actions, will be implemented in accordance with WAC 173-340-430 and the AO, and will be designed in a manner that will not foreclose reasonable alternatives for any final cleanup action that may be required.

As detailed in the AO, if required by Ecology, or if proposed by the PLPs and approved by Ecology, the PLPs will implement an interim action. Based upon information in the Agency Review Draft RI Report, interim action(s) may be needed to expedite control of releases to sediments or other environmental media pursuant to WAC 173-340-430.

The scope of the interim actions may include, but not be limited to, typical source control or containment elements such as:

- Soil removal;

- Groundwater remediation;
- Repair, slip lining, replacement, or closure of stormwater conveyances or other structures such as conduit, vaults, catch basins, etc.;
- Removal of underground storage tanks and pipes;
- Removal of old drain fields or former surface impoundments;
- Proper abandonment of old wells;
- Removal of contaminated building or other structural material;
- Construction of a treatment facility; and/or
- Shoreline stabilization such as bulkhead repair, erosion or seepage control, and grading or clearing.

If an interim action is to be performed, the PLPs will prepare and submit for Ecology approval an Agency Review Draft Interim Action Work Plan (IAWP) with detail commensurate with the work to be performed. The Agency Review Draft IAWP shall include, as appropriate:

- Description of the interim action including its purpose, general requirements, and relationship to the (final) cleanup action (to the extent known);
- Summary of relevant RI/FS information, including at a minimum existing site conditions and alternative interim actions considered;
- Information regarding design and construction requirements, including a proposed schedule and personnel roles and responsibilities;
- Compliance Monitoring Plan;
- SAP/QAPP
- Permits required.

The PLPs will also submit a copy of the Health and Safety Plan for the project. The PLPs will be responsible for complying with the State Environmental Policy Act (SEPA) Rules including preparing and submitting an environmental checklist for the interim action and will assist Ecology with presentations at any additional meetings or hearings that might be necessary for SEPA compliance or as part of the Public Participation Plan.

The PLPs shall prepare two (2) copies of the Agency Review Draft Interim Action Work Plan, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology for review. The PLPs shall incorporate Ecology's comments and then prepare four (4) copies of the Public Review Draft Interim Action Work Plan, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats and two hard copies, and submit them to Ecology. After a public notice and comment period for the Public Review Draft IAWP (and SEPA determination), Ecology will approve the IAWP (if appropriate) and the document will be

Docusign Envelope ID: 25DFB8D7-70CC-4A40-9774-DADEB402219C

considered Final. The PLPs shall prepare two (2) copies of the Final Interim Action Work Plan, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology. Once approved by Ecology, the PLPs will implement the interim action according with the approved schedule.

Upon successful completion of the work, an Agency Review Draft Interim Action Report will be prepared as a separate deliverable. The PLPs shall prepare two (2) copies of the Agency Review Draft Interim Action Report, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology for review and approval. After incorporating Ecology's comments on the Agency Review Draft Interim Action Report and after Ecology approval, the PLPs shall prepare two (2) copies of the Final Interim Action Report, including one electronic copy each in Word (.doc) and Adobe (.pdf) formats, and submit them to Ecology. The Interim Action Report will not be considered final until after Ecology's approval.

Schedule of Deliverables

The schedule for deliverables described in the Agreed Order and the Scope of Work is presented below. If the date for submission of any item or notification required by this Schedule of Deliverables occurs on a weekend, state or federal holiday, the date for submission of that item or notification is extended to the next business day following the weekend or holiday.

Where a deliverable due date is triggered by Ecology notification, comments or approval, the starting date for the period shown is the date the PLPs received such notification, comments or approval by certified mail, return receipt requested, or by email unless otherwise noted below. Where triggered by Ecology receipt of a deliverable, the starting date for the period shown is the date Ecology receives the deliverable by certified mail, return receipt requested, or the date of Ecology signature on a hand-delivery form, or the date of the email to Ecology.

Deliverable	Completion Time
Progress Reports	15th day of the month beginning after effective date of Agreed Order
Interim Action	
Agency Review Draft IAWP	60 days following effective date of Agreed Order
Public Review Draft IAWP	45 days following Ecology's comments on the Agency Review Draft IAWP
Final IAWP	45 days following receipt of public comments on the Public Review Draft IAWP
Agency Review Draft Interim Action Report	60 days following completion of the interim action
Final Interim Action Report	30 days following Ecology's comments on the Agency Review Draft Interim Action Report
Remedial Investigation	
Agency Review Draft RI Work Plan	60 days following effective date of Agreed Order
Final RI Work Plan	30 days following receipt of final Ecology comments on Agency Review Draft RI Work Plan
Completion of RI Field Work	18 months following completion of Final RI WP
Agency Review Draft RI Report	45 days following receipt of final laboratory data

Schedule Continues on Next Page

Feasibility Study	
Agency Review Draft FS Report	60 days following receipt of final Ecology comments on Agency Review Draft RI Report
RI/FS Report	
Public Review Draft RI/FS Report	45 days following receipt of Ecology's comments on Agency Review Draft FS Report
Final RI/FS Report	45 days following receipt of public comments on Public Review Draft RI/FS Report

Notes:
Schedule is in calendar days.

Docusign Envelope ID: 25DFB8D7-70CC-4A40-9774-DADEB402219C

Exhibit C —Interim Action Summary

Purpose

Under WAC 173-340-430, an interim action is a remedial action that is technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance, that corrects a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed, or that is needed to provide for completion of a site hazard assessment, remedial investigation/feasibility study, or design of a cleanup action plan.

The PLPs will complete an evaluation of an Interim Action, which may include removal of contaminated soil at Eastside Fire and Rescue (EFR) Headquarters and/or expansion of a permeable reactive barrier in the subsurface or similar groundwater treatment system. Conducting an interim action prior to completion of the Site-wide FS presents an opportunity to remediate this area more expeditiously and at less cost than if the remedy was completed at a later time.

Scope

The PLPs will prepare an Interim Action Work Plan (IAWP) as described in Task 1 of Exhibit B, Scope of Work and Schedule of the Agreed Order. The IAWP will include the following information:

- Description of the interim action including its purpose, general requirements, and relationship to the (final) cleanup action (to the extent known);
- Summary of relevant Remedial Investigation information, including locations and depths of per- and poly-fluorinated alkyl substance (PFAS) soil contamination at EFR Headquarters;
- Evaluation of the estimated costs of excavation, transportation, and disposal and the mass of PFAS removed for each cell to at least three different depths including the seasonal low water table associated with each major component of the interim action;
- Information regarding design and construction requirements, a proposed schedule, and personnel roles and responsibilities;
- Identification of any data gaps related to the design of the interim action and, if applicable, a sampling and analysis plan to fill the data gaps;
- Required plans for sampling and analysis, quality assurance, and compliance monitoring;
- Permitting and cultural resource consultation requirements.

docusign

Certificate Of Completion

Envelope Id: 25DFB8D7-70CC-4A40-9774-DADEB402219C
Subject: Please Docusign: 32500095 2024-11-25 EFR HQ IVE Draft AO (1).pdf
Source Envelope:
Document Pages: 37
Certificate Pages: 5
AutoNav: Enabled
EnvelopeId Stamping: Enabled
Time Zone: (UTC-08:00) Pacific Time (US & Canada)

Signatures: 2
Initials: 0

Status: Completed

Envelope Originator:
Natalie McNabb
135 E. Sunset Way
Issaquah, WA 98027
nataliem@issaquahwa.gov
IP Address: 73.118.135.178

Record Tracking

Status: Original
2/14/2025 12:58:38 PM

Holder: Natalie McNabb
nataliem@issaquahwa.gov

Location: DocuSign

Signer Events	Signature	Timestamp
Mary Lou Pauly MaryLouP@issaquahwa.gov Mayor City of Issaquah Security Level: Email, Account Authentication (None)	DocuSigned by: Mary Lou Pauly CEFF9F862CD7468... Signature Adoption: Pre-selected Style Using IP Address: 73.221.163.168	Sent: 2/14/2025 1:03:33 PM Viewed: 2/14/2025 1:18:41 PM Signed: 2/14/2025 1:18:48 PM
Electronic Record and Signature Disclosure: Accepted: 4/24/2020 3:14:11 PM ID: fb5789bf-b489-4341-8866-85f86dbb2ca2		
Tisha Gieser TishaG@issaquahwa.gov City Clerk City of Issaquah Security Level: Email, Account Authentication (None)	DocuSigned by: Tisha Gieser FE989FA7135144C... Signature Adoption: Uploaded Signature Image Using IP Address: 146.129.251.131	Sent: 2/14/2025 1:18:49 PM Viewed: 2/14/2025 1:19:37 PM Signed: 2/14/2025 1:19:42 PM
Electronic Record and Signature Disclosure: Not Offered via DocuSign		

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp
Christen Boyd Christen.Boyd@issaquahwa.gov Department Operations Specialist Security Level: Email, Account Authentication (None)	COPIED	Sent: 2/14/2025 1:19:43 PM
Electronic Record and Signature Disclosure: Not Offered via DocuSign		

Carbon Copy Events	Status	Timestamp
Emily Moon emilym@issaquahwa.gov Public Works Director Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Not Offered via DocuSign	COPIED	Sent: 2/14/2025 1:19:43 PM
Julie Wartes Juliew@issaquahwa.gov City of Issaquah Security Level: Email, Account Authentication (None), Login with SSO **Electronic Record and Signature Disclosure:** Not Offered via DocuSign	COPIED	Sent: 2/14/2025 1:19:43 PM Viewed: 2/14/2025 1:34:23 PM

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	2/14/2025 1:03:33 PM
Envelope Updated	Security Checked	2/14/2025 1:05:52 PM
Envelope Updated	Security Checked	2/14/2025 1:05:52 PM
Envelope Updated	Security Checked	2/14/2025 1:05:52 PM
Certified Delivered	Security Checked	2/14/2025 1:19:37 PM
Signing Complete	Security Checked	2/14/2025 1:19:42 PM
Completed	Security Checked	2/14/2025 1:19:43 PM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

ELECTRONIC RECORD AND SIGNATURE DISCLOSURE

From time to time, City of Issaquah (we, us or Company) may be required by law to provide to you certain written notices or disclosures. Described below are the terms and conditions for providing to you such notices and disclosures electronically through the DocuSign system. Please read the information below carefully and thoroughly, and if you can access this information electronically to your satisfaction and agree to this Electronic Record and Signature Disclosure (ERSD), please confirm your agreement by selecting the check-box next to 'I agree to use electronic records and signatures' before clicking 'CONTINUE' within the DocuSign system.

Getting paper copies

At any time, you may request from us a paper copy of any record provided or made available electronically to you by us. You will have the ability to download and print documents we send to you through the DocuSign system during and immediately after the signing session and, if you elect to create a DocuSign account, you may access the documents for a limited period of time (usually 30 days) after such documents are first sent to you. After such time, if you wish for us to send you paper copies of any such documents from our office to you, you will be charged a $0.00 per-page fee. You may request delivery of such paper copies from us by following the procedure described below.

Withdrawing your consent

If you decide to receive notices and disclosures from us electronically, you may at any time change your mind and tell us that thereafter you want to receive required notices and disclosures only in paper format. How you must inform us of your decision to receive future notices and disclosure in paper format and withdraw your consent to receive notices and disclosures electronically is described below.

Consequences of changing your mind

If you elect to receive required notices and disclosures only in paper format, it will slow the speed at which we can complete certain steps in transactions with you and delivering services to you because we will need first to send the required notices or disclosures to you in paper format, and then wait until we receive back from you your acknowledgment of your receipt of such paper notices or disclosures. Further, you will no longer be able to use the DocuSign system to receive required notices and consents electronically from us or to sign electronically documents from us.

All notices and disclosures will be sent to you electronically

Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through the DocuSign system all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

How to contact City of Issaquah:

You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:
To contact us by email send messages to: gust@issaquahwa.gov

To advise City of Issaquah of your new email address

To let us know of a change in your email address where we should send notices and disclosures electronically to you, you must send an email message to us at gust@issaquahwa.gov and in the body of such request you must state: your previous email address, your new email address. We do not require any other information from you to change your email address.

If you created a DocuSign account, you may update it with your new email address through your account preferences.

To request paper copies from City of Issaquah

To request delivery from us of paper copies of the notices and disclosures previously provided by us to you electronically, you must send us an email to gust@issaquahwa.gov and in the body of such request you must state your email address, full name, mailing address, and telephone number. We will bill you for any fees at that time, if any.

To withdraw your consent with City of Issaquah

To inform us that you no longer wish to receive future notices and disclosures in electronic format you may:

i. decline to sign a document from within your signing session, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;

ii. send us an email to gust@issaquahwa.gov and in the body of such request you must state your email, full name, mailing address, and telephone number. We do not need any other information from you to withdraw consent.. The consequences of your withdrawing consent for online documents will be that transactions may take a longer time to process..

Required hardware and software

The minimum system requirements for using the DocuSign system may change over time. The current system requirements are found here: https://support.docusign.com/guides/signer-guide-signing-system-requirements.

Acknowledging your access and consent to receive and sign documents electronically

To confirm to us that you can access this information electronically, which will be similar to other electronic notices and disclosures that we will provide to you, please confirm that you have read this ERSD, and (i) that you are able to print on paper or electronically save this ERSD for your future reference and access; or (ii) that you are able to email this ERSD to an email address where you will be able to print on paper or save it for your future reference and access. Further, if you consent to receiving notices and disclosures exclusively in electronic format as described herein, then select the check-box next to 'I agree to use electronic records and signatures' before clicking 'CONTINUE' within the DocuSign system.

By selecting the check-box next to 'I agree to use electronic records and signatures', you confirm that:

- You can access and read this Electronic Record and Signature Disclosure; and
- You can print on paper this Electronic Record and Signature Disclosure, or save or send this Electronic Record and Disclosure to a location where you can print it, for future reference and access; and
- Until or unless you notify City of Issaquah as described above, you consent to receive exclusively through electronic means all notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you by City of Issaquah during the course of your relationship with City of Issaquah.

APPENDIX B
ENGINEERING DESIGN REPORT

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

Engineering Design Report

Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site 175 Newport Way Northwest and 555 Northwest Holly Street Issaquah, Washington

Ecology Cleanup Site ID: 16581

Farallon PN: 1754-009

September 26, 2025

Prepared by:

DRAFT
Ryan Hultgren, P.E.
Senior Engineer

DRAFT
Sarah Snyder, L.G.
Senior Geologist

Reviewed by:

DRAFT
Eric Buer, L.H.G.
Principal Hydrogeologist

Prepared for:
Eastside Fire and Rescue
and
The City of Issaquah

Prepared by:
Farallon Consulting, L.L.C.
1809 7th Avenue, Suite 1111
Seattle, Washington 98101

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1
1.1 PURPOSE 1-3
1.2 INTERIM ACTION CONTACTS 1-3
1.3 REPORT ORGANIZATION 1-3

2.0 SITE DESCRIPTION AND BACKGROUND 2-1
2.1 SITE DESCRIPTION 2-1
2.2 EFR HQ SOURCE AREA DESCRIPTION 2-1
2.3 LAND USE 2-2
2.3.1 Historical Land Uses 2-2
2.3.2 Current Land Uses 2-2
2.3.3 Adjacent and Surrounding Land Uses 2-3
2.4 GEOLOGY 2-3
2.5 HYDROGEOLOGY 2-4

3.0 CONCEPTUAL SITE MODEL SUMMARY 3-1
3.1 PREMISE OF RELEASES 3-1
3.2 CONTAMINANTS OF POTENTIAL CONCERN 3-1
3.3 MEDIA OF CONCERN 3-2
3.3.1 Soil 3-2
3.3.2 Groundwater 3-2
3.3.3 Surface Water 3-2
3.3.4 Sediment 3-4
3.4 SCREENING LEVELS 3-4
3.4.1 Soil Screening Levels 3-4
3.4.2 Groundwater Screening Levels 3-5
3.4.3 Surface Water Screening Levels 3-5
3.4.4 Sediment Screening Levels 3-5
3.5 NATURE AND EXTENT OF CONTAMINATION 3-6
3.5.1 Confirmed and Suspected Source Areas 3-6
3.5.2 Extent of Contamination in Soil 3-6
3.5.3 Extent of Contamination in Groundwater 3-7
3.6 FATE AND TRANSPORT 3-7
3.6.1 Soil to Groundwater 3-8
3.6.2 Soil to Surface Water 3-8
3.6.3 Groundwater to Surface Water and Sediment 3-8
3.7 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS 3-8
3.7.1 Soil direct contact, soil to groundwater 3-8
3.7.2 Groundwater Ingestion 3-9
3.7.3 Groundwater to Surface Water and Sediment 3-9
3.7.4 Vapor Inhalation 3-9

4.0 INTERIM ACTION OVERVIEW 4-1

5.0 DESIGN AND IMPLEMENTATION 5-1
5.1 PERMEABLE REACTIVE BARRIER EXPANSION 5-1
5.2 VADOSE ZONE SOURCE TREATMENT 5-2
5.2.1 Performance Groundwater Monitoring 5-3
5.3 PERMITTING 5-3
5.3.1 State Environmental Policy Act 5-3
5.3.2 City of Issaquah Site Work Permit 5-3
5.3.3 Underground Injection Control Permit 5-4
5.3.4 Inadvertent Discoveries 5-4
5.4 MOBILIZATION AND SITE PREPARATION 5-4
5.5 PERMEABLE REACTIVE BARRIER EXPANSION 5-5
5.5.1 PRB Design Assumptions 5-6
5.5.2 PRB Installation 5-7
5.6 VADOSE ZONE SOURCE TREATMENT 5-8
5.6.1 In-Situ Stabilization Design Assumptions 5-9
5.6.2 Bench Testing 5-10
5.6.3 Geotechnical Evaluation 5-11
5.6.4 In-situ Stabilization Field Testing 5-12
5.6.5 Source Treatment Implementation 5-13
5.6.6 Backfilling and Compaction 5-13
5.6.7 Stormwater Management 5-14
5.6.8 Asphalt Pavement Cap Installation 5-15
5.7 COMPLIANCE MONITORING WELL INSTALLATION 5-15
5.8 CONTAMINATED MEDIA MANAGEMENT 5-1
5.8.1 Soil Cuttings 5-2
5.8.2 Excavated Soil 5-2
5.8.3 Wastewater 5-3
5.8.4 Disposable Equipment 5-3
5.9 ENGINEERING AND INSTITUTIONAL CONTROLS 5-3
5.10 PROPERTY-SPECIFIC DESIGN ISSUES 5-4
5.11 SPILL CONTROL DURING CONSTRUCTION 5-5
5.12 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT 5-5
5.12.1 Short-Term Protection 5-5
5.12.2 Long-Term Protection 5-6
5.13 INTERIM ACTION REPORT 5-7
5.14 INTERIM ACTION SCHEDULE 5-7

6.0 PERFORMANCE AND COMPLIANCE MONITORING 6-1
6.1 PROTECTION MONITORING 6-1
6.2 SOIL PERFORMANCE MONITORING 6-1
6.3 SOIL CONFIRMATION MONITORING 6-2
6.4 GROUNDWATER PERFORMANCE MONITORING 6-2

7.0 REFERENCES 7-1

8.0 LIMITATIONS 8-1
8.1 GENERAL LIMITATIONS 8-1
8.2 LIMITATION ON RELIANCE BY THIRD PARTIES 8-2

FIGURES

Figure 1 *Lower Issaquah Valley Vicinity Map*

Figure 2 *EFR HQ Source Area Plan*

Figure 3 *EFR HQ Source Area Cross Section A-A'*

Figure 4 *EFR HQ Source Area Groundwater Elevations*

Figure 5 EFR HQ Source Area Summary of Soil PFAS Concentrations

Figure 6 *EFR HQ Source Area Soil Total PFAS Concentrations <5 Feet Below Ground Surface and Proposed Treatment Extents*

Figure 7 *EFR HQ Source Area Soil Total PFAS Concentrations 5-9.9 Feet Below Ground Surface and Proposed Treatment Extents*

Figure 8 *EFR HQ Source Area Soil Total PFAS Concentrations 10-14.9 Feet Below Ground Surface and Proposed Treatment Extents*

Figure 9 *EFR HQ Source Area Soil Total PFAS Concentrations >15 Feet Below Ground Surface*

Figure 10 *EFR HQ Source Area Groundwater Average Total PFAS Concentrations*

Figure 11 *EFR HQ Source Area Proposed Interim Action Elements and Extents*

Figure 12 *EFR HQ Source Area Proposed Interim Action Permeable Reactive Barrier Expansion*

TABLES

Table 1 *Soil Screening Levels*

Table 2 *Groundwater Screening Levels*

Table 3 *Monitoring Well Construction Details*

Table 4 *Summary of Groundwater Elevation Data*

Table 5 *Soil Analytical Results for PFAS*

Table 6 *Shallow Groundwater Analytical Results for PFAS*
Table 7 *Intermediate and Deep Groundwater Analytical Results for PFAS*
Table 8 *Permeable Reactive Barrier Design Parameters*
Table 9 *Vadose Zone Source Treatment Quantities*

APPENDICES

Appendix A Engineering Drawing Set and Specifications
Appendix B Injection and In-Situ Stabilization Design Documents

ACRONYMS AND ABBREVIATIONS

AFFF	aqueous film-forming foam
AFFF Training Areas	collectively, the West Playfield AFFF Training Area, Dodd Field AFFF Training Area, Newport Way Northwest AFFF Training Area, and Median Strip AFFF Training Area
AO	Agreed Order No. DE 23520
bgs	below ground surface
btoc	below top of casing
CAC	colloidal activated carbon
COPCs	constituents of potential concern
CSM	conceptual site model
Draft RI Report	Draft Remedial Investigation Report
Ecology	Washington State Department of Ecology
EFR	Eastside Fire and Rescue
EFR HQ IVES Site	Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary Site
EFR HQ Source Area	Eastside Fire and Rescue Headquarters Source Area at 175 Newport Way Northwest in Issaquah, Washington
EPA	U.S. Environmental Protection Agency
Farallon	Farallon Consulting, L.L.C.
FTOHs	fluorotelomer alcohols
6:2 FTS	6:2 fluorotelomer sulfonic acid
GenX	hexafluoropropylene oxide dimer acid
HASP	Health and Safety Plan
IAA	Interagency Agreement

IAWP	Interim Action Work Plan
IDP	Inadvertent Discovery Plan
IDW	Investigation derived waste
IVES	Issaquah Valley Elementary School
IVES Source Area	Issaquah Valley Elementary School Source Area at 555 Northwest Holly Street in Issaquah, Washington
MCLs	Maximum Contaminant Levels
MFRT Site	Memorial Field and Rainier Trail Site, CSID No. 16582, FSID No. 57044
MTCA	Model Toxics Control Act Cleanup Regulation
µg/L	micrograms per liter
NAVD88	North American Vertical Datum of 1988
NWN	Newport Way Northwest
PFAS	per- and poly-fluorinated alkyl substances
PFCs	perfluorinated compounds
PFHxA	perfluoro-hexanoic acid
PFHxS	perfluorohexane sulfonic acid
PFOA	perfluoro-octanoic acid
PFOS	perfluorooctane sulfonate
PFNA	perfluoro-nonanoic acid
PFDA	perfluoro-decanoic acid
PLP	potentially liable person
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RI/FS	Remedial Investigation and Feasibility Study

SAP	Sampling and Analysis Plan
SEPA	State Environmental Policy Act
Site	Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary Site, CSID No. 16581, FSID No. 87761647
Source Areas	collectively, the EFR HQ Source Area and IVES Source Area
the City	City of Issaquah
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
WQC	water quality criteria

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Engineering Design Report (EDR) on behalf of Eastside Fire and Rescue (EFR) and the City of Issaquah (the City) for the EFR Headquarters (HQ) and Issaquah Valley Elementary School (IVES) Site (Site) (Figure 1). EFR and the City were identified as the potentially liable persons (PLPs) for the Site.

This EDR documents the design, construction, and implementation of the proposed interim action at the Site in accordance with the requirements of Agreed Order No. DE 23520 (AO) between the Washington State Department of Ecology (Ecology) and the PLPs.

As described in the AO, local firefighting entities historically conducted firefighting training exercises at the Site, which included lawful deployment of aqueous film-forming foam (AFFF) containing perfluorooctane sulfonate (PFOS) and additional per- and poly-fluorinated alkyl substances (PFAS). The historical training activities are considered releases to the environment. The confirmed releases have impacted vadose zone soil at two source areas, the EFR HQ Source Area at 175 Newport Way Northwest and IVES Source Area at 555 Northwest Holly Street in Issaquah, Washington (collectively referred to as the Source Areas).

The confirmed releases have impacted shallow groundwater at the Source Areas. The City withdraws groundwater from production wells at locations down-gradient of the Site and a completed exposure pathway for groundwater has been confirmed.[1] Ecology believes the actions required by the AO are in the public's interest. This EDR has been prepared to provide the design of an interim action for the EFR HQ Source Area (Figure 1). This EDR was prepared in accordance with the Washington State Model Toxics Control Act Cleanup Regulation (MTCA), as established in Chapter 173-340 Section 400 of the WAC. This EDR was prepared as a standalone document to be included as an appendix to the Interim Action Work Plan (IAWP).

[1] A treatment system reduces PFAS concentrations in water entering the distribution system to below drinking water standards.

AFFF training was performed at two locations on the EFR HQ Source Area (Figures 1 and 2):

- An area that currently is covered with lawn near the fire hydrant on the north-central portion (Median Strip AFFF Training Area); and
- The western gravel-surfaced area of the EFR Headquarters Source Area (Newport Way Northwest [NWN] AFFF Training Area).

AFFF training was performed at two locations on the IVES Source Area (Figure 1):

- An area that currently is covered with lawn on the southern area of the west playfield at IVES (West Playfield AFFF Training Area); and
- An area that currently is covered with lawn, trees, turf, and asphalt along the western side of Dodd Field (Dodd Field AFFF Training Area).

The Median Strip AFFF Training Area, NWN AFFF Training Area, West Playfield AFFF Training Area, and Dodd Field AFFF Training Area are collectively referred to as the AFFF Training Areas. The Source Areas are depicted on Figure 1 and Figure 2 shows the EFR HQ Source Area plan. Screening levels for soil and groundwater are presented in Tables 1 and 2, respectively.

A comprehensive remedial investigation was performed at the EFR HQ Source Area between 2018 and 2023 to define the nature and extent of contamination at the EFR HQ Source Area. Additional remedial investigation is ongoing for the Site.

Elimination or treatment of the PFAS source mass at the EFR HQ Source Area would substantially reduce the contaminant mass of PFAS leaching from vadose zone soil to groundwater at the NWN AFFF Training Area, which is the largest identified mass of treatable PFAS in vadose zone soil and groundwater at the Site. Addressing the PFAS source mass at the NWN AFFF Training Area, through interim actions such as described in this EDR, will reduce future costs for groundwater treatment, significantly reduce the flux of PFAS entering the subsurface, and inform future feasibility study and design work to identify the final cleanup action for the Site.

1.1 PURPOSE

The purpose of this EDR is to document the design, construction, and implementation of the interim action to be conducted at the EFR HQ Source Area in accordance with the requirements of the AO. This EDR was prepared in general accordance with the requirements specified in WAC 173-340-400 for cleanup action implementation and will be included as an appendix to the IAWP. The purpose of the interim action is to protect human health and the environment by eliminating risks posed by constituents of potential concern (COPCs) identified at the EFR HQ Source Area.

1.2 INTERIM ACTION CONTACTS

The Key Project Personnel include the following:

- EFR's PLP Representative – Ben Lane, Fire Chief, EFR;
- The City's PLP Representative – Julie Wartes, Senior Environmental and Regulatory Program Administrator, Public Works Engineering Department, City of Issaquah;
- Project Coordinator for the PLPs – Sarah Snyder, L.G., Senior Geologist, Farallon;
- Project Coordinator for Ecology – Vance Atkins, L.G., L.H.G., Hydrogeologist, Ecology; and
- Interim Action Contractors – To be determined.

1.3 REPORT ORGANIZATION

This EDR has been organized into the following sections:

- **Section 2, Site Description and Background,** presents descriptions of the Site, EFR HQ Source Area, and AFFF Training Areas, including a description of the EFR HQ Source Area geology and hydrogeology, and historical uses of the EFR HQ Source Area, including adjacent and surrounding land uses.
- **Section 3, Conceptual Site Model Summary**, presents the conceptual site model for the Site, including the premise of releases, contaminants of potential concern, media of concern, screening levels, nature and extent of contamination, fate and transport, and potential receptors and exposure pathways.

- **Section 4, Interim Action Overview**, provides a summary of the selected interim action and key work elements of the interim action.
- **Section 5, Design and Implementation**, provides a summary of the main engineering design elements; applicable local, state, and federal laws; and describes implementation of the main interim action work elements.
- **Section 6, Performance and Compliance Monitoring,** describes the protection, performance, and confirmational monitoring that will be conducted as part of the cleanup action.
- **Section 7, References,** provides a list of the documents used in preparing this EDR.
- **Section 8, Limitations,** presents Farallon's standard limitations associated with conducting the work reported herein and preparing this EDR.

2.0 SITE DESCRIPTION AND BACKGROUND

This section presents descriptions of the Site, EFR HQ Source Area, and NWN and Median Strip AFFF Training Areas, including a description of geology and hydrogeology, historical uses of the Source Areas, including adjacent and surrounding land uses. Further details regarding the Lower Issaquah Valley and EFR HQ IVES Site can be found in the IAWP.

2.1 SITE DESCRIPTION

Based on existing data, the Site comprises two Source Areas, including the EFR HQ Source Area at 175 Newport Way Northwest and IVES Source Area at 555 Northwest Holly Street in Issaquah, Washington (Figure 1). The interim action discussed in this document will occur at the EFR HQ Source Area.

As described in the AO, local firefighting entities historically conducted firefighting training exercises at the EFR HQ Property which included lawful deployment of AFFF containing PFOS and PFAS. The historical AFFF training activities are considered releases to the environment. The known releases have impacted vadose zone soil at two Source Areas, including the EFR HQ Source Area at 175 Newport Way Northwest and IVES Source Area at 555 Northwest Holly Street in Issaquah, Washington; and impacted groundwater which is a source for the City's drinking water. The stormwater detention basin on the eastern portion of King County Parcel No. 2824069165 has also been identified as a release to soil, likely as a result of historical washdown and/or minor spills of AFFF detergent; the basin has not been confirmed as a source to groundwater.

2.2 EFR HQ SOURCE AREA DESCRIPTION

The EFR HQ Source Area consists of King County Parcel No. 2824069165, which totals approximately 2.5 acres of land owned by King County Fire District 10. AFFF training was performed at two locations at the EFR HQ Source Area (Figure 2):

- An area that currently is covered with lawn near the fire hydrant on the north-central portion (Median Strip AFFF Training Area); and
- The western gravel-surfaced area of the EFR HQ Source Area (Newport Way Northwest AFFF Training Area).

2.3 LAND USE

A description of the historical and current land uses of the Source Areas and adjacent and surrounding properties is provided below.

2.3.1 Historical Land Uses

Based on King County records, Fire District 10 built on the EFR HQ Source Area in 1982 and operated headquarters and mechanical maintenance facilities as well as an active fire station through 1999. The original main building was converted to serve primarily as the current administrative office and maintenance facility for EFR by approximately 2002. Active fire station operations were moved to other properties throughout the jurisdiction after 2002.

The majority of the training events were performed on the NWN AFFF Training Area from approximately the early 1980s through the late 1990s at a frequency of up to 12 times per year. Residual AFFF associated with training exercises was washed down with service water on the EFR HQ Source Area, some of which was captured by the property's stormwater management system that routed water to a detention basin on the eastern portion of the property near Newport Way Northwest (Figure 2). Any unused AFFF concentrate solution collected from on-board engine tanks or unused buckets was disposed of from 175 Newport Way Northwest by a hazardous waste disposal contractor.

Active fire station operations and AFFF training at the EFR HQ Source Area were reduced beginning in 1999, when the facility transitioned fully into serving as EFR's administrative office and maintenance facility. Typically, one to three 5-gallon buckets of AFFF concentrate was expended during each training event. Training was performed at an area that currently is covered with lawn near the fire hydrant on the north-central portion of the property (Median Strip AFFF Training Area) and at the western gravel-surfaced portion of the property (NWN AFFF Training Area). Some AFFF mixture may also have been sprayed at the base of the hillside west of the western property boundary.

2.3.2 Current Land Uses

The EFR HQ Source Area is currently used as an office and vehicle maintenance facility for EFR. The EFR HQ Source Area is developed with the EFR HQ building, two storage buildings,

asphalt-paved drive lanes and parking lots, a stormwater detention basin, a gravel lot, and vegetated areas (Figure 2).

2.3.3 Adjacent and Surrounding Land Uses

Adjacent properties are primarily residential (north, east, and south). The parcel to the west is undeveloped steep slope and open space preservation that separates the EFR HQ Source Area from single family home residential developments.

2.4 GEOLOGY

A description of the EFR HQ Source Area geology is provided below. Additional description of the geology of the Lower Issaquah Valley and Site is provided in the IAWP.

Based on the results of subsurface investigations completed at the EFR HQ Source Area, the following subsurface conditions exist at the property (Figure 3):

- The western and central portions of the EFR HQ Source Area are underlain by silty sand and sand to a depth of approximately 10 to 13 feet below ground surface (bgs). Surficial silty sand and sand were not observed on the eastern portion of the EFR HQ Source Area, where coarse sand and gravel was observed at the ground surface.
- The silty sand and sand unit is underlain by a continuous coarse sand and gravel to depths between 23 and approximately 50 feet bgs.
- A continuous hard gray silt (referred to as “basement silt”) was observed under the NWN AFFF Training Area. The silt continues to the east and was observed at monitoring well NWN-MW09 at a depth of 53 feet bgs.

The basement silt was observed in the boring for monitoring well NWN-MW09 to the maximum depth explored of 95 feet bgs but was not encountered in the boring for monitoring well NWN-MW08 to the east, suggesting that the contact continues to dip to the east and increase in depth below other alluvial units in the Lower Issaquah Valley.

A geologic cross-section for the EFR HQ Source Area is provided on Figure 3. Boring and monitoring well locations are presented on Figure 2.

2.5 HYDROGEOLOGY

For clarity of discussion, water-bearing zones identified in the Lower Issaquah Valley were previously divided into shallow, intermediate, and deep intervals, as summarized below:

- The shallow groundwater interval is defined as depths between approximately 5 and 60 feet bgs;
- The intermediate groundwater interval is defined as depths between approximately 60 and 120 feet bgs; and
- The deep groundwater interval is defined as depths greater than 120 feet bgs.

The shallow, intermediate, and deep groundwater divisions were established for the purpose of evaluating migration of surficial releases of PFAS into the deeper subsurface and provide a convenient nomenclature when discussing groundwater within selected depth intervals. Shallow, intermediate, and deep groundwater labels are not specific to a single production aquifer or specific lithologic unit. Monitoring well construction details for existing Site monitoring wells are summarized on Table 3.

2.5.1.1 EFR HQ Source Area Shallow Groundwater

Groundwater within the shallow interval at the Site flows approximately to the north-northeast. Shallow groundwater at the EFR HQ Source Area flows predominantly towards the northeast in proximity to the NWN AFFF Training Area then transitions to a north-northeast flow direction in the central to eastern area of the property (Figure 4).

Shallow groundwater was encountered between approximately 15 to 18 feet bgs under the NWN AFFF Training Area (Table 4). Shallow groundwater consistently flows to the east-northeast under the NWN AFF Training Area; groundwater gradients have ranged from 0.02 to 0.05 feet per foot (Figure 4). Shallow groundwater flow on the eastern portion of the EFR HQ Source Area flows approximately north, with gradients ranging from approximately 0.006 to 0.007 foot per foot (Figure 4). Average groundwater flow velocity measured with passive flux meters reported a groundwater velocity of approximately 6 centimeters per day across the majority of the EFR HQ Source Area.

Surface water elevations in the southern portion of the Site at station STR-05 in the Main fork of Issaquah Creek are slightly higher than proximate shallow groundwater elevations.

Relative elevations of groundwater and surface water indicate that the Main fork of Issaquah Creek is a losing stream in the southern portion of the Site, which includes the vicinity of the EFR HQ Source Area. Losing streams lose water as it flows downstream due to infiltration of water from the stream into the ground which recharges to the unconfined shallow interval aquifer.

Surface water elevations at station STR-01 and STR-02 located downstream of the confluence of the East and Main forks of Issaquah Creek are lower than shallow groundwater elevations in the vicinity, indicating that Issaquah Creek transitions to a gaining stream downstream of the confluence of the East and Main forks between STR-02 and STR-05. In a gaining stream scenario, groundwater discharges to surface water in the stream.

Groundwater elevations and shallow groundwater elevation contours for the EFR HQ Source Area are presented on Figure 4. Monitoring well construction details and groundwater elevation data are summarized in Tables 3 and 4.

2.5.1.1 EFR HQ Source Area Intermediate Groundwater

Site intermediate groundwater flow fluctuates from north-northeast to north-northwest. Intermediate groundwater gradients across the Site were approximately 0.002 feet per foot. Similar to shallow groundwater flow directions were consistent between monitoring events. Intermediate monitoring well NWN-MW08 is located on the EFR HQ Source Area. Potentiometric head fluctuated by approximately 7 feet seasonally during the 2020 through 2023 monitoring period. Additional details of Site intermediate groundwater are included in the IAWP.

2.5.1.2 EFR HQ Source Area Deep Groundwater

No monitoring wells at or directly down-gradient of the EFR HQ IVES Source Area are screened in the deep groundwater interval. Additional details of Site deep groundwater are included in the IAWP.

3.0 CONCEPTUAL SITE MODEL SUMMARY

This section presents a summary of the preliminary conceptual site model (CSM) based on data collected at the Site to date. The CSM includes discussion of the Source Areas and premise of the releases, constituents of potential concern (COPCs), media of concern, screening levels, nature and extent of contamination based on existing data, contaminant fate and transport, and potential exposure pathways and receptors.

3.1 PREMISE OF RELEASES

Local firefighting entities historically conducted firefighting training exercises at the Source Areas which included lawful deployment of AFFF containing PFOS and PFAS. The historical AFFF training activities impacted vadose zone soil and groundwater at the Site and are considered releases to the environment. The release has impacted shallow, intermediate, and deep groundwater beneath and down-gradient of the Source Areas. The releases and migration of hazardous substances were first confirmed by investigation performed jointly by the PLPs in 2018 (Farallon 2019). Contaminant fate and transport from vadose zone soil to groundwater is discussed further in Section 4.6.

3.2 CONTAMINANTS OF POTENTIAL CONCERN

The following constituents were detected in soil at concentrations exceeding applicable screening levels and are retained as COPCs at the EFR HQ IVES Site (Table 1):

- Perfluorohexanoic Acid (PFHxA);
- Perfluorohexane Sulfonic Acid (PFHxS);
- PFOA;
- PFOS;
- PFNA;
- PFDA;
- 6:2 Fluorotelomer Sulfonic Acid (6:2 FTS); and
- Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX).

The following constituents were detected in groundwater at concentrations exceeding applicable screening levels and are retained as COPCs at the EFR HQ IVES Site (Table 2):

- Perfluorobutane Sulfonic Acid (PFBS);
- PFHxS;
- PFOA;
- PFOS;
- PFNA; and
- PFDA.

3.3 MEDIA OF CONCERN

This section presents a summary of the media of concern at the Site based on the results of remedial investigation activities completed to date.

3.3.1 Soil

PFAS have been detected in soil in exceedance of MTCA Method B cleanup levels within both Source Areas. Therefore, soil is a medium of concern at the Site.

3.3.2 Groundwater

PFAS have been detected in groundwater in exceedance of MTCA Method B cleanup levels within both Source Areas. Therefore, groundwater is a medium of concern at the Site.

3.3.3 Surface Water

The closest surface water body to the Source Areas is the Main fork of Issaquah Creek located west-adjacent to the IVES Source Area and approximately 500 feet west of the EFR HQ Source Area. Surface water in the Main fork of Issaquah Creek in the vicinity of the Source Areas was previously sampled and PFAS constituents were not detected at the laboratory practical quantitation limits.

The Main fork of Issaquah Creek transitions to a gaining stream (i.e., groundwater discharges to surface water in the stream) downstream of the confluence of the Main and East forks of Issaquah Creek which is proximate to the IVES Source Area.

Groundwater does not discharge to surface water in the vicinity of the EFR HQ Source Area. Monitoring of groundwater and surface water elevations indicates that the Main fork of Issaquah Creek adjacent to the EFR HQ Source Area is a losing stream. Generally, downward vertical gradients from shallow groundwater to the intermediate groundwater interval were measured consistently throughout monitoring from 2020 to 2023 within the southern area of the Site and upward vertical gradients were measured within proximity to Issaquah Creek in the northern area of the Site. Seasonal fluctuations in vertical gradients were measured at well pair NDS-MW03/NDS-MW04, which is proximate to the confluence of the Main and East forks of Issaquah Creek.

Based on upward gradients and gaining section of the Main fork of Issaquah Creek within the northern portion of the Site, the groundwater to surface water pathway at the Site is potentially complete.

The ground surfaces of the AFFF Training Areas are pervious, allowing infiltration of stormwater. Infiltration of stormwater through these pervious surfaces prevents the runoff of stormwater from the Site which may have been in contact with contaminated soil. The remainder of the ground surface in the EFR HQ Source Area with exception to the stormwater detention basin is covered by impervious surfaces, preventing contact of stormwater with contaminated soil.

Previous testing of the stormwater detention basin indicated PFAS impacts to soil exceeded applicable cleanup levels in surficial soil. Stormwater collection and drainage to the stormwater detention basin comprises a series of catch basins in the paved parking area surrounding the EFR Headquarters Building, the release is likely associated with former training activity wash-down and/or minor spills of AFFF detergent. The stormwater detention basin is fully vegetated with grass and does not have exposed soil.

The remainder of the ground surface in the IVES Source Area includes both impervious and pervious surfaces, with pervious surfaces separating the AFFF Training Areas and Issaquah Creek.

Based on the reported concentrations of PFAS in surficial soil in the stormwater detention basin, the soil to surface water pathway may potentially be complete at the stormwater detention basin at the EFR HQ Source Area. The groundwater to surface water pathway has

also been established as potentially complete at the Site. Therefore, surface water is retained as a medium of concern at the Site.

3.3.4 Sediment

As described above, the soil to surface water pathway may potentially be complete and the groundwater to surface water pathway is potentially complete at the Site. Therefore, sediment is retained as a medium of concern at the Site.

3.4 SCREENING LEVELS

In accordance with WAC 173-340-350(3)(a), cleanup standards will not be established and a cleanup action will not be selected until completion of the remedial investigation. This subsection presents screening levels for the purpose of conducting the remedial investigation.

3.4.1 Soil Screening Levels

Cleanup levels evaluated as screening levels for COPCs at the Site include MTCA Method B direct contact cleanup levels for soil, MTCA cleanup levels for vadose zone soil protective of groundwater, MTCA cleanup levels for saturated soil protective of groundwater, and analytical method reporting limits.

The most stringent value of the MTCA cleanup level for vadose zone soil protective of groundwater or MTCA cleanup level for saturated soil protective of groundwater was selected as the screening level for a given COPC. Because vadose zone and saturated soil are both present at the Site, screening levels for both vadose zone and saturated soil protective of groundwater are established as soil screening levels for vadose zone and saturated soil, respectively.

In accordance with WAC 173-340-700(6)(d), in the case that cleanup levels are less than natural background levels or levels that can be reliably measured, the cleanup level shall be established at a concentration equal to the practical quantitation limit or natural background concentration, whichever is higher. As such, the analytical method reporting limit is selected as the screening level for select COPCs (Table 1).

Soil cleanup levels evaluated for use as soil screening levels and selected screening levels by COPC are presented in Tables 1 and 5.

3.4.2 Groundwater Screening Levels

Cleanup levels evaluated as screening levels for COPCs at the Site include MTCA Method B groundwater cleanup levels and U.S. Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs). If both a Method B equation value and an MCL are established for a COPC that is a carcinogen, the MCL is used as the screening level when the ratio of the MCL to the Method B equation value does not exceed 10; in these cases the MCL represents an acceptable risk threshold of no more than 1×10^{-5} cancer risk[2]. If the ratio of the MCL to the equation value is greater than 10, the MCL is adjusted down to the 10 times the equation value and this become the screening level. If both a Method B cleanup level and an MCL are established for a COPC that is not carcinogenic, the minimum of the two values is the screening level.

Groundwater cleanup levels and MCLs evaluated for use as groundwater screening levels and selected screening levels by COPC are presented in Tables 2, 6, and 7.

3.4.3 Surface Water Screening Levels

Cleanup levels evaluated as screening levels for COPCs at the Site include EPA surface water quality criteria (WQC) protective of freshwater aquatic life (acute and chronic exposure) and PFAS concentrations protective of ecological receptors in surface water based on a literature review (Ecology 2023). PFOS and PFOA are the only PFAS constituents with established WQC.

Therefore, the minimum of the WQC and the literature-based values will be used as screening levels for PFOS and PFOA. Recommended PFAS concentrations protective of ecological receptors in surface water published by Ecology (2023) will be used as screening levels for the remaining COPCs.

3.4.4 Sediment Screening Levels

Sediment cleanup levels have not been established as of the date of this IAWP. Sediment screening levels will be established for the Site in coordination with Ecology.

[2] Per WAC 173-340-720(7)(a) cleanups must attain a Site hazard index of 1 and an excess cancer risk of one in 100,000.

3.5 NATURE AND EXTENT OF CONTAMINATION

The following section presents a summary of the current understanding of the nature and extent of contamination at the Site based on existing data.

3.5.1 Confirmed and Suspected Source Areas

The following sections describe confirmed source areas where COPCs have been identified associated with historical AFFF training exercises and other suspected source areas that were evaluated as part of preparation of the IAWP.

3.5.1.1 Confirmed Source Areas

Confirmed source areas at the Site include the EFR HQ and IVES Source Areas where AFFF is known to have been used lawfully for the purpose of training for fire-fighting personnel. The use of AFFF at these locations has resulted in the release of PFAS to soil and groundwater as confirmed by previous environmental investigation activities.

3.5.1.2 Suspected Source Areas

Limited soil sampling has been performed within the stormwater detention basin and paved asphalt area of the EFR HQ Source Area. Additional remedial investigation is required to confirm if vadose zone contamination in these areas is a source to shallow groundwater or surface water contamination. The additional investigation will be performed in accordance with the Ecology-approved Remedial Investigation Work Plan.

3.5.2 Extent of Contamination in Soil

Analytical results of soil samples collected within the two Source Areas indicate that soil within the former AFFF training areas, as previously estimated and sampled in 2018, exceed applicable soil screening levels for protection of groundwater.

Soil analytical results are summarized in Table 5. A cross-section presenting the estimated vertical extent of soil contamination at the EFR HQ Source Area is included as Figure 3. The current understanding of the lateral extent of soil contamination within the EFR HQ Source Area is depicted on Figure 5. Figures 6 through 9 present the lateral extent of soil contamination in the upper 0 to 5 feet bgs, 5 to 10 feet bgs, 10 to 15 feet bgs, and greater than 15 feet bgs beneath the EFR HQ Source Area, respectively.

3.5.3 Extent of Contamination in Groundwater

The following sections summarize the current understanding of the nature and extent of contamination in groundwater based on existing data. Groundwater analytical results are summarized in Tables 6 and 7. The lateral extent of groundwater contamination at the EFR HQ Source Area is illustrated on Figure 10.

3.5.3.1 Shallow Groundwater Interval

Analytical results of groundwater samples collected from permanent monitoring wells screened within the shallow groundwater interval at the Site indicate that shallow groundwater beneath, cross-, and down-gradient from the EFR HQ and IVES Source Areas is contaminated with PFAS constituents (including PFBS, PFHxS, PFOA, PFOS, PFNA, and PFDA) at concentrations exceeding applicable screening levels (Figure 10; Table 6).

3.5.3.2 Intermediate Groundwater Interval

Analytical results of groundwater samples collected from permanent monitoring wells screening within the intermediate groundwater interval at the Site indicate that intermediate groundwater beneath, cross-, and down-gradient from the EFR HQ and IVES Source Areas is contaminated with PFAS constituents (including PFHxS, PFOA, PFOS, PFNA, and PFDA) at concentrations exceeding applicable screening levels (Figure 10; Table 7).

3.5.3.3 Deep Groundwater Interval

No monitoring wells at or directly down-gradient of the EFR HQ IVES Source Area are screened in the deep groundwater interval. Analytical results of groundwater samples collected from permanent monitoring wells screening within the deep groundwater interval at the Site indicate that intermediate groundwater beneath, cross-, and down-gradient from the IVES Source Area is contaminated with PFAS constituents (including PFHxS, PFOA, PFOS, and PFNA) at concentrations exceeding applicable screening levels (Table 7).

3.6 FATE AND TRANSPORT

A summary of the contaminant fate and transport at the Site is provided below.

3.6.1 Soil to Groundwater

The presence of soil contaminated with PFAS at concentrations exceeding applicable screening levels has been confirmed within both Source Areas. PFAS have been detected in shallow groundwater beneath and down-gradient from the Source Areas. Based on these data, the migration of PFAS from soil to groundwater has been confirmed to be complete at the EFR HQ and IVES Source Areas.

3.6.2 Soil to Surface Water

Reported concentrations of PFAS in the stormwater detention basin exceed applicable screening levels. Although the stormwater detention basin is covered by grass and no bare soil is present, the surficial soil may still be a potential source to surface water during high-runoff events.

3.6.3 Groundwater to Surface Water and Sediment

Monitoring of groundwater and surface water elevations at the Site has demonstrated the Main fork of Issaquah Creek to be a losing stream in the southern portion of the Site (including the vicinity of the EFR HQ Source Area) and a gaining stream in the northern portion of the Site. Seasonal variations in vertical flow directions have been observed at well pair NDS-MW03/NDS-MW04, which is proximate to the confluence of the Main and East forks of Issaquah Creek. Based on these data, the groundwater to surface water and sediment pathways is potentially complete.

3.7 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS

A summary of the potential receptors and exposure pathways at the Site is provided below.

3.7.1 Soil direct contact, soil to groundwater

Multi-incremental soil sampling within both Source Areas and the stormwater detention basin confirmed the presence of soil contaminated with PFAS at concentrations exceeding applicable screening levels at depths as shallow as 0 to 0.5 feet bgs (Table 5, Figures 5 and 6). These soil samples were collected from pervious surfaces within both Source Areas and groundwater contamination at the source areas has been confirmed. Based on the presence of exposed contaminated soils at the ground surface, the soil direct contact exposure pathway is complete within both Source Areas.

As summarized in Section 4.6.1, the soil to groundwater migration pathway has been confirmed to be complete.

3.7.2 Groundwater Ingestion

Point of entry treatment at production well COI-PW04 with granular activated carbon has reduced concentrations of PFAS to less than applicable screening levels. However, the engineering control must remain in place to ensure that groundwater entering the distribution system does not contain PFAS at concentrations greater than applicable screening levels.

Based on the confirmed presence of PFAS in the vicinity of and down-gradient from the Source Areas, the confirmed presence of PFAS contamination in shallow and intermediate interval groundwater, and confirmed presence of PFAS at concentrations greater than applicable screening levels in raw water extracted at City production well COI-PW04, the groundwater ingestion and direct contact exposure pathways are considered complete, though the treatment system reduces concentrations to less than screening levels.

3.7.3 Groundwater to Surface Water and Sediment

As detailed in Section 4.6.2, the Main fork of Issaquah Creek has been demonstrated to be a losing stream in the southern portion of the Site and a gaining stream in the northern portion of the Site. Therefore, the groundwater to surface water and sediment exposure pathways are potentially complete.

3.7.4 Vapor Inhalation

The EPA defines volatile chemicals as compounds having a Henry's Law constant greater than 0.00001 atmosphere cubic meter per mole or a vapor pressure greater than 1 millimeter of mercury and a molecular weight less than 200 (EPA 2023). At least four PFAS, including 4:2, 6:2, 8:2, and 10:2 fluorotelomer alcohols (FTOHs), have sufficient vapor pressure to be designated as vapor-forming chemicals. These compounds do not have established cleanup levels, and were not included in analysis of soil or groundwater samples collected from the Site to date by EPA Method 527 Modified.

A study performed collaboratively by the Oregon State University Department of Chemistry and Department of Environmental and Molecular Biology did not identify 4:2, 6:2, 8:2, or 10:2 FTOHs as fluorochemicals present in AFFF. The study included analysis of 40 common

AFFF mixtures used by the US Military, including those manufactured by 3M, National Foam, Ansul, Angus, Chemguard, Buckeye, and Fireade (Place and Field 2012).

Based on the limited number of PFAS that may potentially pose a vapor intrusion risk and that the those same chemicals have not been documented as part of most commercially available AFFF formulations, the vapor intrusion and vapor inhalation pathways at the Site are considered incomplete.

4.0 INTERIM ACTION OVERVIEW

The proposed interim action includes the following elements to reduce the threat to human health and the environment:

- Expansion of the pilot test PRB along the northern and eastern edges of the NWN AFFF Training Area to further reduce exposure risk from the soil to groundwater pathway. This element includes construction of an approximately 272.5-foot-long PRB using injections of colloidal activated carbon (CAC) at the northern and eastern down-gradient edges of the NWN AFFF Training Area to immobilize PFAS constituents in the subsurface, reducing their long-term mobility and impacts to groundwater. The PRB will be constructed to reduce PFAS concentrations in monitoring wells down-gradient from the PRB to less than MTCA Method B cleanup levels for potable groundwater;
- Vadose zone source treatment, including a combination of excavation and in-situ stabilization, of accessible soil above the water table with total PFAS concentrations[3] greater than a remediation level of 1 milligram per kilogram (mg/kg) of PFAS to remove vadose zone sources to groundwater. The source treatment includes a combination of in-situ stabilization of soil in areas with higher PFAS concentrations and limited soil removal and off-property disposal at a permitted Subtitle C disposal facility. The combined source treatment area includes approximately 5,550 tons of PFAS-contaminated soil within the upper 5 to 13 feet of the NWN AFFF Training Area; and
- Installation of an impervious asphalt cap to mitigate the direct contact exposure pathway, and to reduce rainwater infiltration that could mobilize vadose zone soil contamination from soil to groundwater.

The interim action was designed to maximize the quantity (volume) of soil treated focusing on the concentrations of PFAS in soil. In-situ stabilization of contaminated soil minimizes off-property transport and disposal costs and provides the lowest unit-cost for treatment of vadose soil that will still meet future cleanup action expectations per WAC 173-340-370. Expansion of the existing PRB along the down-gradient northern and eastern edges of the

[3] Measured as the total concentration of PFAS with screening levels in Washington State.

NWN AFFF Training Area provides for additional treatment of PFAS in shallow groundwater to meet groundwater screening levels as close as practicable to the Source Area. The proposed interim action elements and extents are shown on Figure 11.

5.0 DESIGN AND IMPLEMENTATION

This section describes the design criteria and rationale for the interim action elements and the steps to implement the interim action. The proposed interim action involves the following elements to reduce the threat to human health and the environment:

- Expansion of the pilot test PRB along the northern and eastern edges of the NWN AFFF Training Area to further reduce exposure risk from the soil to groundwater pathway.
- Vadose zone source treatment, including a combination of excavation and in-situ stabilization, of accessible soil above the water table with total PFAS concentrations greater than a remediation level of 1 mg/kg of PFAS to remove vadose zone sources to groundwater.
- Installation of an impervious asphalt cap within the NWN AFFF Training Area and associated stormwater infrastructure to mitigate the direct contact exposure pathway, and to reduce rainwater infiltration that could mobilize vadose zone soil contamination from soil to groundwater.
- Performance groundwater monitoring following completion of construction to evaluate interim action efficacy eliminating the soil to groundwater migration pathway.

The current design assumes that a geotechnical evaluation of excavation sidewalls, backfill compaction, storage buildings, asphalt cap construction, and utility trench backfill materials for stormwater drainage infrastructure is required. The geotechnical evaluation will be completed by a qualified Professional Engineer licensed in Washington State.

5.1 PERMEABLE REACTIVE BARRIER EXPANSION

An approximately 272.5-foot-long PRB will be installed using injections of a CAC reagent (Regenesis' PlumeStop or equivalent) to reduce PFAS concentrations in monitoring wells down-gradient from the PRB to less than MTCA Method B cleanup levels for potable groundwater. The PRB expansion will include approximately 212.5 feet of new PRB segments along the northern and eastern down-gradient edges of the NWN AFFF Training Area, and 60 feet of additional injections on the down-gradient side (east) of the pilot test

PRB. The estimated PRB treatment depth interval will range from approximately 6 to 26 feet bgs, depending on the depth of the underlying basement silt and extending up to the top of the seasonal high water table.

5.2 VADOSE ZONE SOURCE TREATMENT

The second element of the interim action includes vadose zone source treatment to eliminate the soil to groundwater migration pathway for residual PFAS in the NWN AFFF Training Area. The vadose zone source treatment includes in-situ stabilization of PFAS-contaminated soil via mixing with a CAC reagent to reduce PFAS mobility; excavation of PFAS-contaminated soil for off-property disposal at a licensed and permitted Subtitle C treatment, storage, and disposal facility; and restoring the NWN AFFF Training Area with an impervious asphalt cap and stormwater drainage improvements.

In-situ stabilization of PFAS contamination will target areas within the NWN AFFF Training Area with total PFAS concentrations in soil greater than 1 mg/kg. Due to the mixing process and addition of the CAC amendment, it is estimated that up to approximately 10 percent of the total volume of soil to be treated will be removed prior to treatment to account for potential net swelling of the soil following treatment, backfilling, and compaction. Additional soil will be excavated from areas within the NWN AFFF Training Area with total PFAS concentrations greater than 1 mg/kg to facilitate grading and placement of the asphalt cap and installation of stormwater drainage infrastructure (stormwater catch basins, vault, and associated drainage piping) for management of stormwater runoff from the cap. Excavated soil will be temporarily stockpiled and transported to an off-property Subtitle C disposal facility. The stabilization and excavation vadose zone actions will treat approximately 5,550 tons of PFAS-contaminated soil within the upper 13 feet of the NWN AFFF Training Area.

30-percent engineering plans and specifications have been developed to provide details for the interim action design and to serve as a basis for contractor bidding. The 30-percent engineering drawings and specifications are included in Appendix A and will be reviewed and revised in consultation with Ecology up to 100-percent completion prior to soliciting bids for construction. Preliminary injection and in-situ stabilization design documents are included in Appendix B.

5.2.1 Performance Groundwater Monitoring

Groundwater monitoring will be performed following completion of construction to evaluate the efficacy of the interim action in accordance with the Compliance Monitoring Plan included with the IAWP. The performance and compliance groundwater monitoring program will begin approximately 3 months following completion of both the PRB and in-situ soil stabilization activities. The monitoring schedule for performance and compliance monitoring of the interim action at the EFR HQ Source Area will consist of one year of semi-annual groundwater monitoring.

It is expected that following completion of the semi-annual monitoring, additional performance and compliance monitoring of interim actions completed within the EFR HQ Source Area will be performed as part of the compliance monitoring program for the EFR HQ IVES Site. Additional performance groundwater monitoring may be performed as part of the EFR HQ IVES Site Remedial Investigation. Groundwater samples will be collected and analyzed in accordance with the SAP and QAPP.

5.3 PERMITTING

The following sections describe the permitting and substantive requirements applicable to the interim action.

5.3.1 State Environmental Policy Act

The State Environmental Policy Act (SEPA) (WAC 197-11) and the SEPA procedures (WAC 173-802) provide the framework for state agencies to evaluate the environmental consequences of a project and ensure appropriate measures are taken to mitigate environmental impacts. SEPA is applicable to the interim action excavation activities. A SEPA Checklist will be prepared and submitted for the interim action excavation activities.

5.3.2 City of Issaquah Site Work Permit

A site work permit application will be prepared and submitted for the interim action excavation, paving, and utility expansion activities. In addition to a full site plan and civil drawings, the site work permit application will include a Geotechnical Design Report, a project-specific Temporary Erosion and Sediment Control plan, and a Construction Impact Mitigation Plan. A topographic survey will be conducted of the EFR HQ Source Area by a

Washington State-licensed surveyor in conjunction with preparation of the permit application.

5.3.3 Underground Injection Control Permit

Before remedial injections are conducted, authorization from Ecology's Underground Injection Control (UIC) program is required. The UIC program is administered by Ecology in accordance with Chapter 173-218 of the Washington Administrative Code to protect groundwater by regulating the discharge of fluids from UIC injection wells, and a UIC authorization is required for all remedial injection activities.

5.3.4 Inadvertent Discoveries

An Inadvertent Discovery Plan (IDP) was prepared for the Site to outline the procedures to perform in the event of a discovery of archaeological materials or human remains. The IDP is included with the IAWP.

5.4 MOBILIZATION AND SITE PREPARATION

Contractor mobilization and site preparation includes preparation of construction plans; mobilization of equipment, materials, and staff; and preparing for construction activities. Mobilization and site preparation will consist of the following:

- Prepare construction plans, including a Site-Specific Health and Safety Plan (HASP) and IAWP.
- Installation of security and erosion controls per permitted construction plans.
- Place signs announcing the construction activities, safety warnings, and traffic control.
- Designate work zone areas for materials and equipment storage, contractor parking, temporary stockpiles.
- Provide temporary utilities to support interim actions, including power, water, and sanitation for contractor personnel.
- Mobilize equipment and materials to the site.
- Construct contaminated soil holding (stockpile) areas with berms and impermeable liners to prevent the release of potential contaminants during storage.

- Construct a decontamination facility for site equipment and construction personnel.
- Consult with property personnel and conduct public and private utility locates to assess whether underground utilities may be encountered in the interim action areas.
- Monitoring wells NWN-MW04, NWN-MW10, NWN-MW12, NWN-MW13, and NWN-MW17 are located in the planned source treatment area and will be decommissioned in accordance with WAC 173-160. The wells will be decommissioned after installation of the PRB but prior to the start of source excavation and stabilization activities.

5.5 PERMEABLE REACTIVE BARRIER EXPANSION

Performance monitoring results from the PRB pilot test demonstrated that a CAC PRB was technically feasible to implement and an effective treatment technology for reducing the mobility and concentrations of PFAS in groundwater at the EFR HQ Source Area. The interim action includes construction of a full-scale PRB at the northern and eastern down-gradient edges of the NWN AFFF Training Area to immobilize PFAS in the subsurface, reducing their long-term mobility and impacts to groundwater. The full-scale PRB will expand upon the pilot test PRB installed in 2021 along the eastern down-gradient edge of the NWN AFF Training Area.

The key design criteria for installation of the full-scale PRB include the following:

- Reduce PFAS constituent concentrations down-gradient from the PRB to levels less than their respective MTCA Method B cleanup levels for potable groundwater.
- Expand the PRB length along the northern and eastern edges of the NWN AFFF Training Area to be down-gradient from areas with higher dissolved phase PFAS concentrations (e.g., wells NWN-MW05, NWN-MW06, NWN-MW12, NWN-MW14, and NWN-MW-17).
- Extend the vertical injection interval upwards to the top of the seasonal high water table observed in existing monitoring wells at the NWN AFFF Training Area (approximately 6 to 11 feet bgs).

The PRB segments are shown on Figure 12.

5.5.1 PRB Design Assumptions

The preliminary design for the full-scale PRB was developed by Farallon in consultation with Regenesis based on the design parameters evaluated for and the results from the pilot test PRB (e.g., Darcy groundwater flow velocity, maximum PFOS mass flux estimates, groundwater flow direction(s), hydraulic gradient, and treatment effectiveness). An approximately 272.5-foot long, 24- to 26-foot deep, and 13-foot wide PRB will be installed using injections of a CAC reagent to immobilize PFAS and reduce migration in groundwater from the NWN AFFF Training Area.

The PRB expansion will include approximately 112.5 feet (Segments A and B) and 100 feet (Segments D, E, and F) of new wall segments, respectively, along the northern and eastern down-gradient edges of the NWN AFFF Training Area, and 60 feet (Segment C) of additional injections on the down-gradient side (east) of the pilot test PRB (Figure 12). New PRB segments will include a staggered double row of injections spaced 5 feet apart. A single row of injections spaced 5 feet apart will be added along the pilot test PRB. A total of 97 injection locations will be used; the estimated counts of injections by segment of the PRB are summarized in Table 8 and shown on Figure 12.

The estimated PRB treatment depth interval will range from approximately 6 to 26 feet bgs but will vary in starting depth and thickness across the PRB based on typical depths to groundwater and the basement silt (Figure 12). In contrast with the pilot test PRB injection interval of 14 to 25 feet bgs, the PRB reagent injections will start at shallower depths (up to 6 feet bgs), to accommodate seasonal variations in the groundwater table. It is assumed that a higher volume of injectate solution (approximately 55 gallons) will be required in vadose (unsaturated) zone conditions than in the saturated zone (approximately 40 gallons). Injection volumes assume treatment of achieving approximately 100 percent of the effective porosity in the vadose zone soil and approximately 70 percent of the effective porosity in the saturated zone soil. The target radius of influence for injections is approximately 3.3 feet, which is based on achieving 30 percent overlap between injection locations, for a design PRB width of 13 feet. A summary of the PRB design details, including the number of injections per segment and injection depth intervals, volumes, and CAC concentrations for the vadose and saturated zones is provided in Table 9.

The remediation contractor and/or reagent manufacturer as applicable, will determine an appropriate CAC reagent injection concentration to reduce dissolved phase concentrations for individual PFAS constituents to concentrations less than their applicable MTCA Method B cleanup levels for potable groundwater.

5.5.2 PRB Installation

EFR personnel will be consulted, and public and private utility locates conducted to assess whether underground utilities may be encountered in the interim action areas. An air knife or other clearance method (e.g., hand augering) will be used to clear the upper 5 feet of injection locations where underground utilities are suspected. Otherwise, it is assumed that air knifing will not be conducted at each injection location.

A retractable screen type tooling with a 2- to 3-foot screened section advanced by a direct-push drill rig will be used for injection activities. The application will be completed at flow rates of approximately 2 to 5 gallons per minute (per injection point) and at pressures typically ranging from 20 to 60 pounds per square inch; however, some areas of the PRB may require up to 100 pounds per square inch to initiate flow. A multi-point injection process will be implemented to reduce the number of field days; and a distance of approximately 20 feet or greater will be maintained at all times between any actively pumping injection points.

The injection program will consist of injecting a CAC reagent at 85 injection points arranged in two rows, with 5-foot spacing between points in each row, and 5-foot spacing between the two rows. The 12 additional injections on the down-gradient side of the pilot test PRB will be arranged in a single row. The injection treatment interval will target depths ranging between 6 and 26 feet bgs, based on segment of the PRB (Table 8), and be completed in 2- to 3-foot intervals using a retractable screen starting from total depth to 6 feet bgs.

Placement of the CAC reagent will be verified through confirmation coring and monitoring in temporary piezometers, soil borings, and proximate existing and/or new shallow monitoring wells. Approximately three soil confirmation soil borings will be advanced and three temporary piezometers will be installed for this purpose. Two performance groundwater monitoring events will also be conducted to evaluate treatment effectiveness of the PRB. A discussion of soil and groundwater performance monitoring for evaluating the PRB is presented in Section 6.

5.6 VADOSE ZONE SOURCE TREATMENT

The vadose zone interim action is designed to further enhance overall groundwater treatment performance by the expanded PRB by eliminating the soil to groundwater migration pathway. The vadose zone source treatment action includes in-situ stabilization of PFAS-contaminated soil to reduce PFAS mobility; limited excavation of untreated PFAS-contaminated soil for off-property disposal at a licensed and permitted Subtitle C treatment, storage, and disposal facility; and restoring the NWN AFFF Training Area with an impervious asphalt cap.

The combined stabilization and excavation actions will treat approximately 5,550 tons of PFAS-contaminated soil within the NWN AFFF Training Area. An additional approximately 50 tons of soil will be removed for off-property disposal from stormwater drainage piping trenches in other areas of the property to connect the new infrastructure to the existing system. Implementation of the vadose zone source treatment interim action will include the activities described below. Except where noted, the activities will be conducted by a Contractor to EFR.

The key design criteria for the vadose zone source treatment interim action include:

- Identifying a CAC-based stabilization product and concentration dosing rate capable of reducing PFAS mobility (leachability) in property soils by a minimum of 95-percent.
- Maximizing the lateral and vertical extents of PFAS-contaminated soil that will be treated via stabilization and excavation.
- Determining the estimated expansion of volume for the silty sand and sand present in the upper 13 feet of the subsurface (Figure 3) after undergoing mechanical soil mixing with the stabilization reagent and backfilling and compacting the treated soil in the excavation.
- Determining excavation slope and/or shoring requirements, asphalt cap construction details, and utility trench backfill details.
- Evaluating stormwater drainage and management infrastructure improvements to account for additional runoff from the asphalt cap.

- Estimating the volume (and mass) of untreated PFAS-contaminated soil that will be excavated for off-property disposal at a Subtitle C landfill to provide for expansion of the stabilized soil in the NWN AFFF Training Area and facilitate installation of the asphalt cap and stormwater drainage infrastructure in the NWN AFFF Training Area.
- Identifying disposal facilities that will accept AFFF-impacted soil and evaluating transport and disposal costs for excavated soil.

5.6.1 In-Situ Stabilization Design Assumptions

Source treatment activities, including in-situ stabilization and excavation of PFAS-contaminated soils and containment with an asphalt cap, will be conducted at the NWN AFFF Training Area in the EFR HQ Source Area. In-situ stabilization and excavation will be conducted where calculated total (summed) concentrations of PFAS constituents with applicable screening levels are above 1 mg/kg in soil within 13 feet of ground surface. Interim action source treatment activities will be conducted a minimum of 5 feet from existing structures. Proposed extents of the in-situ stabilization and excavation areas from 0 to 5 feet bgs, 5 to 10 feet bgs, and 10 to 13 feet bgs, are shown on Figures 6, 7, and 8, respectively.

Excavation of untreated PFAS-contaminated soil for off-property disposal will be conducted in the NWN AFFF Training Area to account for potential swelling of the stabilized soil following treatment, backfilling, and compaction and to facilitate grading and placement of the asphalt cap and installation of stormwater management infrastructure (e.g., catch basins, underground storage vault, and drainage piping). Untreated soil from the areas identified with total PFAS concentrations greater than 1 mg/kg will be excavated, stockpiled temporarily, and transported off-property for disposal at a Subtitle C landfill. Remaining soil in those extents will be treated via in-situ stabilization, and backfilled and compacted into the excavation extents. The estimated depth, area, in-place (bank) volume, and mass of soil for in-situ stabilization and excavation for off-property disposal in these areas are summarized in Table 9.

Overlays of the proposed in-situ stabilization and excavation areas and approximate locations of the stormwater management infrastructure are provided in Appendix A. As shown in Appendix A, several stormwater management features will be located within the extents of PFAS-contaminated soils at concentrations greater than 1 mg/kg. Excavation of

the soil from these areas for off-property disposal will maximize treatment of soil with total PFAS concentrations greater than 1 mg/kg. Remaining soil with total PFAS concentrations exceeding 1 mg/kg in these areas will be treated via in-situ stabilization.

The estimated soil volumes in the treatment area with total PFAS concentrations greater than 1 mg/kg assume a 5-foot vertical cut along the excavation perimeter and then a 1-to-1 slope to the base of the excavation at 5, 10, or 13 feet bgs as applicable in the treatment area. A geotechnical engineering field representative will be responsible for evaluating and determining appropriate measures to maintain building integrity and excavation sidewall stability during excavation and in-situ stabilization activities, as necessary.

In-situ stabilization of PFAS-contaminated soil will be conducted using CAC-based products mechanically mixed into soil to achieve a minimum of 95-percent reduction in leachability of PFAS constituents from soil. The preliminary design for the vadose zone source treatment via in-situ stabilization was developed by Farallon in consultation with Regenesis. SourceStop, a CAC-based treatment product developed by Regenesis, or an equivalent product, will be used as the stabilization reagent. A bench scale test will be conducted using property soils to evaluate the CAC reagent dose rate and percent reduction in leachability of PFAS constituents from soil.

SourceStop, or equivalent, will be mechanically broadcast and distributed into the soil using either bucket mixing or auger-type mixing methods at a dosage rate estimated to be between 0.5 and 1 percent by weight. During the mixing process and when in contact with water, SourceStop is designed to disintegrate and release the CAC to coat soil with a thin layer of activated carbon. SourceStop particles are designed to absorb PFAS contamination and reduce PFAS mass flux below the soil and into groundwater.

5.6.2 Bench Testing

Approximately 8 to 10 kilograms (kg) of soil representative of NWN AFFF Training Area and PFAS contamination within the treatment zone will be provided to the remediation contractor for the bench test. Up to two borings will be advanced within the proposed source treatment areas to collect soil samples for bench testing. Borings will be advanced with a sonic drill rig during the mobilization for the remedial investigation activities to be performed under the Ecology-approved Remedial Investigation Work Plan.

The borings will be located within the 10 feet bgs treatment areas (Figure 11). Two soil samples will be collected from each boring at 5 and 10 feet bgs. Soil samples will be submitted to the remediation contractor for bench testing. The Contractor will coordinate with and contract an independent laboratory to conduct treatability and mobility testing to determine the property-specific dose of CAC reagent to achieve a minimum 95 percent reduction in PFAS mobility in the treatment area.

A bench test will be conducted to determine the appropriate treatment product dosing rate of the selected CAC-based stabilization product to reduce PFAS leachability by a minimum of 95 percent. Laboratory testing to assess the mobility of PFAS constituents from the untreated and treated soil will be conducted via the U.S. Environmental Protection Agency (EPA) Method 1312 synthetic precipitation leaching procedure (SPLP) and analysis of the extract by EPA Method 1633 for PFAS constituents to demonstrate minimum 95 percent reduction in their mobility. SPLP is a technique used to determine the mobility of chemicals in liquids, soils, and wastes. Reported concentrations of PFAS constituents in the extracts from the pre- and post-treatment samples will be used to calculate the percent reduction following treatment with the CAC reagent. Laboratory testing will also be conducted using the EPA Method 1311 toxicity characteristic leaching procedure (TCLP) and analysis by EPA Method 1633 for PFAS constituents for evaluation of waste disposal criteria.

Bench testing results will be provided to Ecology for review prior to implementation of the vadose zone treatment.

5.6.3 Geotechnical Evaluation

A geotechnical evaluation will be conducted to provide recommendations for temporary excavations to achieve design depths, backfill compaction, asphalt cap construction, and utility trench backfill and bedding materials. The geotechnical evaluation will include a limited field investigation including advancing two hollow-stem auger (HSA) test borings to approximately 20 feet bgs. Soil samples will be collected at 2.5- and 5-foot intervals in conjunction with Standard Penetration Test (SPT) sampling methods and in general accordance with ASTM test method D-1586. Laboratory testing to evaluate the volume increase resulting from mixing the property-specific dose CAC reagent with property soils and compacting, may also be conducted. The geotechnical evaluation will be completed by a qualified Professional Engineer licensed in Washington State and a report prepared to

summarize recommendations. The report will be submitted to Ecology for approval prior to field implementation of the vadose zone treatment.

5.6.4 In-situ Stabilization Field Testing

Prior to implementation across the entire interim action treatment area, a field test of the in-situ stabilization process will be conducted to assess the net volume expansion (if any) following backfilling and compacting the stabilized soil in the treatment area. A field test of the in-situ stabilization process will be conducted in an approximately 800-square-foot portion of the treatment area (e.g., 20 by 40 feet), or a different area as recommended by the Contractor and approved by Farallon. The results of the field test will be used to determine whether an adjustment to estimated quantities of untreated soil to excavate and dispose of off-property is required (higher or lower) or whether more soil can be treated by in-situ stabilization.

Estimated swell factors (i.e., expansion of volume) provided by remediation contractors for stabilized soils ranged from 0 to approximately 15 percent. Compaction of the treated soil back into the excavation will result in shrinking of the soil (estimated to be approximately -5 to -14 percent), but it is unknown if there will be a net swelling of the treated soil. The proposed in-situ stabilization treatment volumes of source soil assume a conservative range of 5 to 10 percent net swell factor after stabilizing the silty sand and sand present in the upper 13 feet of the subsurface (Figure 3), and backfilling and compacting into the excavated area. For a range of 5 to 10 percent swell factors, it is estimated that approximately 100 to 180 cubic yards or 170 to 310 tons of soil (approximately 0.2 to 0.4 feet of soil from the 12,935-square-foot stabilization treatment area extent) would require off-property disposal to accommodate placement and compaction of the stabilized soil into the excavation.

The results from the in-situ stabilization field test will be reviewed with the Contractor and PLPs to evaluate whether more PFAS-contaminated soil can be treated by in-situ stabilization rather than off-property disposal. The in-situ stabilization field test will be conducted as part of the same mobilization as the full-scale field implementation.

5.6.5 Source Treatment Implementation

Stabilization of PFAS-contaminated soil will include mechanically mixing a CAC-based product into soil within the treatment area. The Contractor will excavate to the target depth (e.g., 5, 10, or 13 feet bgs) using standard earth moving equipment, which may include a track hoe and backhoe, and temporarily stockpile excavated soil adjacent to the excavation or in another designated location (see Section 5.5). Excavations deeper than 4 feet bgs will include a 1:1 slope back.

Once the engineer has confirmed the target depth has been achieved, the Contractor will follow protocols provided by the CAC reagent manufacturer for applying the stabilization reagent and mixing in soil to treat the remaining soil within the treatment areas (up to approximately 1,875 cubic yards or 3,195 tons, at a 5 percent swelling factor; Table 9). These steps are anticipated to include mechanically broadcasting the stabilization reagent (in solid form) at the previously determined dose rate into the soil and distributing using either bucket mixing or auger-type mixing methods. Following treatment, the stabilized soil will be placed back into the excavation area and compacted as described in Section 5.6.6 and in accordance with design specifications.

5.6.6 Backfilling and Compaction

The treatment areas will be backfilled once distribution of the stabilizing reagent is complete, in accordance with the design specifications, and untreated soil to provide for swelling of the stabilized soil and depth for asphalt cap installation (see Section 5.6.8) has been removed for off-property disposal. Treated soil (by in-situ stabilization) and imported structural backfill material (as required) will be placed in uniform horizonal layers of loose lift thickness not exceeding 12 inches to bring the treatment areas to finished site grade. All materials will meet 95 percent compaction as specified by ASTM International (ASTM) Method D1557 Modified. Excavated soil not treated by in-situ stabilization (swell material or to facilitate asphalt cap and stormwater infrastructure installation) shall be transported off-property for disposal at a Subtitle C facility and not be reused as excavation backfill.

The Contractor will perform compaction testing at a frequency of one test for every 500 square feet for every 2 feet of fill. Compaction testing of the lower lifts (bottom of the treatment area) may not be feasible due to safety concerns. The Contractor is to use best

judgement for when it is safe for personnel to test compaction lifts. Compaction testing documentation will be provided to Ecology as part of the construction record.

Structural backfill used for the excavation shall consist of imported, well-graded, granular material such as Washington State Department of Transportation's (WSDOT) Gravel Borrow (WSDOT Standards and Specifications, 2024, 9-03.14(1)), or an approved equivalent. Imported crushed surface top course (CSTC) for restoring disturbed gravel pavement to match existing grade shall meet WSDOT Specifications, 2025, Section 9-03.9[3]).

Imported material to be used for backfill will be analyzed for PFAS constituents and common environmental contaminants [e.g., PFAS, petroleum hydrocarbons, metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, copper, nickel, and zinc), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs)] prior to import onsite in order to show that imported fill is not contaminated.

5.6.7 Stormwater Management

Management of stormwater runoff from the NWN AFFF Training Area asphalt cap (see Section 5.6.8) will include installation of up to five new stormwater catch basins, a water quality filter, an underground concrete storage vault with capacity for approximately 9,375 cubic feet of water, and approximately 327 linear feet of underground drainage piping. Installation of the new stormwater management infrastructure will be conducted concurrently with in-situ soil stabilization and excavation activities in the NWN AFFF Training Area and prior to installation of the asphalt cap. Trenching through existing pavement areas east of the NWN AFFF Training Area will be required to install and connect the new drainage piping to existing piping on the west side of the EFR HQ Building, which drains to the stormwater detention basin. Proposed stormwater infrastructure locations are shown in the design drawings included in Appendix A. Further design details for the stormwater management system will be included with the 60-percent engineering plans and specifications design submittal.

Installation of the stormwater infrastructure will require excavation of untreated soil for off-property disposal, and potential reuse of untreated soil as pipe bedding material. Within the NWN AFFF Training Area, off-property disposal to a Subtitle C landfill of approximately 490 cubic yards of soil is anticipated, for installation of approximately 229 linear feet of drainage piping (60 cubic yards) and approximately 430 cubic yards for installation of the

underground stormwater vault. An additional approximately 50 tons of soil will be removed for off-property disposal from the stormwater drain piping trench to connect the new piping to the existing catch basin west of the EFR HQ Building. The geotechnical evaluation (Section 5.6.3) will include an assessment of whether the native silty sand and sandy soils can be used for backfilling the piping trenches. However, soil generated from trenches outside the NWN AFFF Training Area to install the new drainage piping to the existing catch basin is anticipated to require off-property disposal at either a Subtitle C or Subtitle D landfill, based on PFAS testing results in those areas.

5.6.8 Asphalt Pavement Cap Installation

An impervious asphalt cap will be constructed in the NWN AFFF Training Area (Figure 11) in accordance with the design specifications, following completion of soil stabilization, excavation, stormwater infrastructure installation, and backfilling and compaction activities. The approximately 26,000-square-foot asphalt cap will be constructed with, from top to bottom, 6 inches of hot-mix asphalt (HMA), 4 inches of mineral aggregate Type 2 base course, and a woven geotextile for separation between the cap and underlying treated and untreated soil. A conceptual drawing for the asphalt pavement cap and stormwater drainage infrastructure improvements is included in Appendix A. To facilitate placement of the cap, it is anticipated that approximately 805 cubic yards of soil will be excavated from the NWN AFFF Training Area for off-property disposal at a Subtitle C landfill. This volume of soil accounts for 26,000 square feet to a depth of approximately 10 inches. Further design details for the asphalt cap will be included with the 60-percent engineering plans and specifications design submittal.

5.7 COMPLIANCE MONITORING WELL INSTALLATION

Following completion of vadose zone source treatment, up to six shallow compliance monitoring wells will be installed at the EFR HQ Source Area (Figures 11 and 12). The monitoring wells will be installed to depths of approximately 20 to 30 feet bgs and constructed of 2-inch-diameter, Schedule 40 polyvinyl chloride, with approximately 10 to 15 feet of slotted well screen, similar to the existing shallow monitoring wells at the EFR HQ Source Area. The compliance monitoring wells will be installed in accordance with the Minimum Standards for Construction and Maintenance of Wells as established in WAC 173-160.

Four compliance monitoring wells are proposed to be installed along the northern and eastern down-gradient edges of the PRB to monitor PFAS concentrations in groundwater following installation of the PRB (Figures 11 and 12). These four wells will be located within approximately 5 feet and down-gradient of the PRB. One compliance monitoring well is proposed to be installed within the central portion of the NWN AFFF Training Area and one well is proposed to be installed outside the southwestern extent of the source treatment area (Figures 11 and 12).

Details of groundwater performance monitoring are provided in Section 6.4 and the Compliance Monitoring Plan included with the IAWP.

5.8 CONTAMINATED MEDIA MANAGEMENT

Based on existing data for the EFR HQ Source Area, all soil within the planned interim action area is contaminated with PFAS. The selected interim action includes in-situ stabilization which minimizes the need for off-property transport and disposal of PFAS-contaminated soil.

However, an estimated 100 to 180 cubic yards will require off-property disposal to allow for expansion of the soil after mixing with the stabilization reagent and an additional approximately 1,295 cubic yards will be disposed of off-property to facilitate installation of the asphalt cap and stormwater management infrastructure. Pending the results of the initial in-situ stabilization field test to assess expansion of the treated soil, it is estimated that the upper approximately 0.2 to 0.4 feet of the 12,935-square-foot planned treatment area will be excavated for off-property disposal. Existing laboratory analytical data and/or additional testing results required by the disposal facility will be used to profile soil for disposal.

Construction workers encountering PFAS-contaminated soil will have completed 40-Hour Hazardous Waste Operations and Emergency Response training in accordance with Part 1910.120 of Title 29 of the Code of Federal Regulations and will have completed Annual 8-Hour Hazardous Waste Operations and Emergency Response refresher training, as needed.

Investigation-derived waste (i.e., soil cuttings, wastewater, and disposable equipment) generated during the interim action activities may be contaminated with PFAS and will be containerized and temporarily stored at the EFR HQ Source Area pending waste profiling and selection of a disposal method and/or directly transported off-property for disposal (i.e., excavated soils). PFAS-contaminated wastes will be managed in accordance with Washington State Solid Waste Management Laws and Regulations (Chapter 70.95 of the Revised Code of Washington; WAC 173-351 and 173-304) and Dangerous Waste designations (WAC 173-303).

As of the preparation of this EDR, PFAS-contaminated soil has not yet been characterized or classified as a hazardous waste by the EPA nor has Washington State classified soil contaminated with spent PFAS as Hazardous Waste unless halogenated organic compounds

in total meet Dangerous Waste or Extremely Hazardous Waste criteria (WAC 173-303-100). However, given the potential for either or both these classifications to occur, it is assumed that PFAS-contaminated soil requiring off-property disposal will be managed and transported for disposal at a Subtitle C landfill.

The specific criteria for tracking the sampling and analysis of the waste to identify appropriate disposal options for each of the expected waste streams are discussed below.

5.8.1 Soil Cuttings

Soil cuttings will be generated during pre-interim action bench testing and monitoring well installation following completion of the interim action.

Soil cuttings will be temporarily stored in 55-gallon drums or similar U.S. Department of Transportation–approved containers pending analytical results and profiling. Drums will be temporarily stored at the EFR HQ Source Area. The waste soil will be segregated based on the location(s) where the soil was generated. The soil cuttings container used for waste storage will be labeled according to content, date, and origin. Soil cuttings containers and locations will be tracked using a Waste Inventory Tracking Sheet and maintained in Farallon's project files. Soil analytical results will be used to generate waste disposal profiles. Once the profiles are approved for an appropriately licensed permanent disposal facility, the drums will be removed by a qualified contractor.

5.8.2 Excavated Soil

Soil will be excavated during the source treatment excavation and in-situ stabilization interim action activities. If direct loading of excavated soil into trucks or roll-off boxes is not feasible, temporary stockpiles will be maintained by the Contractor as needed to segregate excavated PFAS-contaminated soil from other materials (e.g., imported fill or gravel). Stockpiles shall be established and maintained in accordance with all federal, state, and local erosion control requirements.

At its own discretion, the Contractor will determine the best means and methods to construct and maintain stockpiles and to prevent intermixing of soil segregated by disposal category to the maximum extent practicable given the constraints of the interim action work areas. The Contractor may consider use of physical barriers such as traffic plates beneath stockpiles to protect clean underlying soil, and/or concrete blocks between stockpiles to

prevent commingling of segregated soil. When materials are loaded onsite, proper measures shall be in place to prevent dispersion of materials in areas other than original or final locations. Plastic sheeting should be placed on top of inactive stockpiles to prevent wind or runoff transport of PFAS-contaminated soil, and to prevent stockpile cross-contamination pending load-out.

The Contractor is responsible for manifesting trucks loaded with PFAS-contaminated soil, and tracking quantities of soil delivered to the disposal facility. Documentation of soil disposal will be maintained in the project file and used for regulatory closure purposes under MTCA. Excavations will be backfilled with treated soil and suitable imported material, and compacted according to the geotechnical specifications required for gravel resurfacing in accordance with current and future use plans for the treatment area.

5.8.3 Wastewater

Wastewater will be generated during monitoring well purging and equipment decontamination. Wastewater will be segregated into 55-gallon drums or similar U.S. Department of Transportation–approved containers for temporary storage at the same location as the waste soil drums.

Wastewater containers will be labeled according to the content, date, and origin and/or generating activity. Wastewater containers will be tracked using a Waste Inventory Tracking Sheet and maintained in Farallon's project files. Analytical results will be used to generate a profile for disposal. Once the profiles are approved for an appropriately licensed permanent disposal facility, the drums will be removed by a qualified contractor.

5.8.4 Disposable Equipment

Disposable personal protective clothing (e.g., coveralls, nitrile gloves, boot covers) and sampling devices (e.g., plastic scoops, bailers) will be cleaned, placed into plastic garbage bags, and disposed of as nonhazardous waste.

5.9 ENGINEERING AND INSTITUTIONAL CONTROLS

The interim action includes implementing engineering controls (ECs), including contaminant source removal, in-situ stabilization, sorption technologies, capping the NWN AFFF Training Area, and implementing a compliance groundwater monitoring program. Future interim or

cleanup actions may include other ECs, such as contaminant source removal from the Median Strip AFFF Training Area and/or the Stormwater Detention Basin, and capping the Median Strip AFFF Training Area, to further reduce the potential for leaching of PFAS contamination from vadose zone soils into groundwater and establishing institutional controls (ICs) and environmental covenants to control site uses that could potentially expose receptors to contaminated media including soil and groundwater.

5.10 PROPERTY-SPECIFIC DESIGN ISSUES

The EFR HQ Source Area is used for vehicle maintenance, and headquarters administrative uses and various training. Design and construction staging should allow for the continued operation and use of the property during implementation of the interim action. The following facility-specific design issues have been identified and are explained below.

- An interim action construction staging plan and timeline will be important components of the project manual to ensure that sufficient room is available for implementing the interim action. Alternative parking and equipment storage areas may need to be designated to accommodate PRB installation and earthwork activities. Access to the work areas must be restricted by fencing or other means.

- Utilities must be protected in place.

- Where possible, soil cuttings or excavated soils requiring off-property disposal should be directly loaded into waste containers (e.g., roll-off boxes) and transported off-property without the need for stockpiling. If necessary, stockpiled soils are anticipated to be placed along the northern and/or southern edges of the NWN AFFF Training Area outside of the active interim action areas. Stockpiled soil locations will be relocated as necessary during capping activities and installation of stormwater drainage infrastructure in the NWN AFFF Training Area, to provide access to the 26,000-square-foot area.

- Noise levels during installation of the PRB and earthmoving activities must comply with state and local ordinances.

- Flooding is possible but not expected; the EFR HQ Source Area is located away from potential flooding areas.

- Landslides and erosion are also possible, but not expected; the EFR HQ Source Area is not located within a critical erosion hazard area or unstable soils, and is located in a relatively flat and highly developed area with minimal exposed ground surface.
- The shallow groundwater present at the EFR HQ Source Area is expected to fluctuate seasonally; interim action field activities will be scheduled to account for the range of water level fluctuation observed at the NWN AFFF Training Area.

5.11 SPILL CONTROL DURING CONSTRUCTION

Spill potential during the remedial action is limited to fuel and lubrication oil from construction equipment and CAC chemical products used for in-situ soil stabilization and for installation of the PRB. Per WAC 173-340-400(4)(a)(ix), spill potential during the interim action will be addressed as follows:

- All chemicals will be stored with secondary containment;
- Areas containing chemicals will be secured and locked to prevent unauthorized access; and
- The remediation contractor will maintain a spill control kit for equipment-related spills during implementation of the interim action.

5.12 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Short-term protection of human health and the environment pertains to implementation of the interim action. Long-term protection involves the period following installation of the PRB and excavation and in-situ soil stabilization activities through the compliance monitoring period. Based on EFR HQ Source Area conditions, the most likely exposure routes of concern are the potential inadvertent ingestion or inhalation of soil or dust, and dermal absorption of surface materials. A description of the short- and long-term protection measures to be included in the interim action, per WAC 173-340-400(4)(a)(x), are included below.

5.12.1 Short-Term Protection

Short-term protection of human health and the environment involves risks associated with the PFAS contamination in soil and groundwater, the chemical reagents for treating PFAS contamination, environmental drilling with soil sampling, groundwater sampling, excavation and construction activities, in-situ soil mixing and stabilization, and remedial injections.

Materials below the surface of the treatment area may present potential risks to human health or the environment during construction. Excavating soil material and mechanically mixing with SourceStop (or similar) CAC stabilization reagents and backfilling the excavation may expose workers to hazardous substances. Mixing PlumeStop (or similar CAC products) on the surface and injecting through direct push drilling tooling to install the PRB may expose workers to hazardous substances. Workers will use personal protective equipment (PPE) to reduce the risks involved with handling hazardous site materials. If construction activities produce visible dust, the contractor will apply water to surface materials to control fugitive dust emissions.

The contractor will decontaminate all equipment that may be exposed to contaminated materials and describe such decontamination procedures as part of the construction submittals. The contractor will dispose of all waste materials in accordance with applicable federal, state, and local laws and regulations. All workers on-site will be required to have up-to-date Hazardous Waste Operations and Emergency Response (HAZWOPER) certification.

The interim action also involves activities typically associated with construction sites that could pose risks to human health. These activities include working near moving heavy equipment, noise from heavy equipment, tripping and falling hazards, and lifting heavy objects. The Contractor's HASP will address construction-related safety hazards to on-site workers.

A security fence, safety cones, and/or barricades will surround the construction activities to prevent unauthorized personnel from entering the construction areas. Signage will also be displayed prominently on fencing/barricades and in other locations. Traffic control measures will be enacted where necessary. Traffic control measures will be conducted to minimize interference with normal traffic patterns.

5.12.2 Long-Term Protection

The interim action includes limited source removal and in-situ stabilization at confirmed source areas where total PFAS in soil concentrations exceed 1 mg/kg and installation of a PRB to reduce PFAS constituent concentrations in groundwater down-gradient from the PRB to levels less than their respective MTCA Method B cleanup levels for potable groundwater. Long-term protection will be achieved by additional interim or cleanup actions to remove the contaminated materials and reducing exposure to the COPCs present on-site.

5.13 INTERIM ACTION REPORT

Following completion of the interim action elements described in this EDR, the Interim Action Report will be uploaded to the Ecology's Administration of Grants and Loans (EAGL) database as draft for agency review (DFAR) within 60 days following completion of the interim action field activities, including completion of the second semi-annual compliance groundwater monitoring event.

A final Remedial Investigation Report, including Ecology's comments to the DFAR Interim Action Report will be uploaded to the EAGL database within 30 days following receipt of final comments to the DFAR Interim Action Report.

A summary of the interim action will be included with the Remedial Investigation Report for the EFR HQ IVES Site. The Interim Action Report will be included as an attachment to the Remedial Investigation Report, which will include a public comment period.

5.14 INTERIM ACTION SCHEDULE

The design plans and construction specifications are expected to be finalized in fourth quarter 2025 through first quarter 2026. Implementation of the interim action is expected to be conducted between the spring and fall of 2026, with expansion of the PRB occurring in spring/early summer timeframe, followed by the vadose zone source treatment during late summer/early fall when groundwater levels are typically lower.

The anticipated phases of work for the implementation of the interim action are as follows:

- **Phase 1.** Conduct bench tests to determine dose rate for in-situ stabilization with the selected CAC reagent and to demonstrate a minimum 95 percent reduction in PFAS mobility. Farallon will collect and provide representative PFAS-contaminated soil from the NWN AFFF Training Area. Advance two test borings using an HSA drill rig to complete a geotechnical evaluation. The ongoing remedial investigation activities at the Site include performing two semi-annual groundwater monitoring events at existing Site monitoring wells, including wells located at the EFR HQ Source Area. Results from the remedial investigation activities will provide current groundwater quality conditions prior to implementation of the interim action.

- **Phase 2.** Obtain applicable permits and authorization from Ecology's UIC program (Section 5.1) to conduct remedial injection activities and complete installation of the full-scale PRB expansion along the northern and eastern edges of the NWN AFFF Training Area.
- **Phase 3.** Decommission existing groundwater monitoring wells located in the vadose zone source treatment area.
- **Phase 4.** Vadose zone source treatment including the following activities:
    - Field testing in-situ stabilization to assess expansion factor following backfilling and compaction of treated soil. Revising, as applicable, estimated quantity of untreated soil (excess soil) to excavate for off-property disposal.
    - Excavation, stockpiling and/or direct loading out excess untreated soil for transport to the off-property waste disposal facility.
    - In-situ stabilization of PFAS-contaminated soil via mechanical soil mixing, followed by backfilling and compacting treated soil.
    - Importing backfill (if needed) and gravel resurfacing material and completing backfill, grading, and compaction of the treated source area.
- **Phase 5.** Install new shallow compliance groundwater monitoring wells and conduct compliance monitoring including two semi-annual groundwater monitoring events approximately three and nine months after the vadose zone source treatment interim action.
- **Phase 6.** Preparation of an Interim Action Report following completion of compliance groundwater monitoring associated with the interim action (i.e., two rounds of groundwater sampling events).

6.0 PERFORMANCE AND COMPLIANCE MONITORING

This section presents a summary of performance and compliance monitoring to be performed during the interim action.

6.1 PROTECTION MONITORING

A Site-specific HASP was prepared for the EFR HQ Source Area. The HASP identifies hazards associated with the EFR HQ Source Area and scope of work and establishes procedures for implementation of the scope of work as they relate to Site hazards. The HASP is included with the IAWP.

Construction workers encountering contaminated soil will have completed 40-Hour Hazardous Waste Operations and Emergency Response training in accordance with 29 CFR 1910.120 and will have completed Annual 8-Hour Hazardous Waste Operations and Emergency Response refresher training, as needed.

6.2 SOIL PERFORMANCE MONITORING

Performance soil samples were collected during the prior remedial investigation activities to assist with defining the lateral and vertical extent of contaminated soil and classifying the soil for segregation and disposal. Soil analytical results for samples collected during the remedial investigation are summarized in Table 5 and illustrated on Figures 5 through 9.

Soil performance monitoring will involve collecting in-situ soil samples for laboratory analysis to quantify concentrations of COPCs in soil and to perform bench testing. Bench testing will be conducted to determine the appropriate treatment product dosing rate of the selected CAC-based stabilization product to reduce PFAS leachability by a minimum of 95 percent.

Discrete soil samples will be collected from the treatment area during pre-interim action bench testing. Soil samples will be collected in accordance with the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP). The SAP and QAPP are included with the IAWP.

6.3 SOIL CONFIRMATION MONITORING

Confirmation soil samples were collected during the prior remedial investigation activities to assist with defining the lateral and vertical extent of contaminated soil exceeding the proposed soil remediation level. The efficacy of the interim action will be monitored through groundwater performance monitoring detailed in Section 6.4.

6.4 GROUNDWATER PERFORMANCE MONITORING

Groundwater performance monitoring will be completed to monitor the efficacy of the interim action. Groundwater monitoring will be performed in accordance with the Compliance Monitoring Plan included with the IAWP. Groundwater samples will be collected and analyzed in accordance with the SAP and QAPP.

7.0 REFERENCES

City of Issaquah. 2017. Memorandum Regarding Soil Sampling Results – East Sunset Way Sites. January 31.

Corona Environmental Consulting. 2016. Summary of Perfluorinated Compounds (PFCs) Results for Water Samples Collected August 29, 2016. September 21.

Eastside Fire and Rescue (EFR). 2017. Letter Regarding Summary of Activities Related to Perfluorooctane Sulfonic Acid (PFOS) Investigation from former Fire Chief Jeff Clark of EFR to the City of Issaquah and Sammamish Plateau Water District. June 12.

Farallon Consulting, L.L.C. (Farallon). 2016. Interview Regarding Firefighting Training Exercises Between a Representative of Farallon and Bob Butterfield and Kelly Revfem, Representatives of Eastside Fire and Rescue. November 13.

———. 2018. Dodd Fields and Rainier Trail Areas of Interest Groundwater Sampling Summary, Lower Issaquah Valley PFAS Characterization Study. November 9.

———. 2019. *Per- and Poly-Fluoroalkyl Substances Characterization Study Summary Report, Lower Issaquah Valley.* Prepared for EFR. March 27.

———. 2021a. *Per- and Poly-Fluoroalkyl Substances Additional Characterization Study Summary Report, Lower Issaquah Valley.* April 14.

———. 2021b. *Potential Source Evaluation, Lower Issaquah Valley Additional PFAS Characterization Study.* April 7.

———. 2023. *Draft Remedial Investigation Report, Eastside Fire and Rescue Headquarters Site, 174 Newport Way Northwest, Issaquah, Washington.* Prepared for Eastside Fire and Rescue. October 2023.

Geosyntec Consultants, Inc. (Geosyntec). 2016a. Initial Hydrogeologic Assessment, Wells 4 and 5. March 4.

———. 2016b. *Hydrogeological Characterization Report, Issaquah, Washington.* Prepared for the City of Issaquah. November.

——. 2023. Draft Well Installation Completion Report, Lower Issaquah Valley, Issaquah Washington. Prepared for the City of Issaquah. January.

Golder Associates. 1993. *Lower Issaquah Valley Wellhead Protection Plan Volume 1.* Prepared for the Sammamish Plateau Water and Sewer District. November 15.

——. 2000. *Groundwater Exploration and Pumping Tests, Lower Issaquah Valley.* Prepared for the City of Issaquah. January.

Interstate Technology Regulatory Council (ITRC). 2017. *History and Use of Per- and Polyfluoroalkyl Substances (PFAS)*. November.

Place Benjamin J. and Jennifer A Field. 2012. *Identification of Novel Fluorochemicals in Aqueous Film-Forming Foams (AFFF) Used by the Military.* Environmental Science and Technology vol 46 no 13. July 3.

U.S. Environmental Protection Agency (EPA). 2023. *Subsurface Per- and Poly-Fluoroalkyl Substances (PFAS) Distribution at Two Contaminated Sites.* November.

Washington State Department of Ecology (Ecology). 2018. IAA No. C1800181 between the State of Washington, Department of Ecology and Eastside Fire and Rescue. July 10.

——. 2019a. IAA No. C2000069 between The State of Washington, Department of Ecology and the City of Issaquah. December 18.

——. 2019b. IAA No. C2000071 between The State of Washington, Department of Ecology and Eastside Fire and Rescue. December 3.

——. 2021. IAA No. C2100056 between The State of Washington, Department of Ecology and Eastside Fire and Rescue. March 29.

——. 2022a. IAA No. C2200169 between The State of Washington, Department of Ecology and Eastside Fire and Rescue. April 13.

——. 2022b. IAA No. C2200183 between The State of Washington, Department of Ecology and the City of Issaquah. April 13.

——. 2022c. Early Notice Letter Regarding a Release of Hazardous Substances: Eastside Fire and Rescue Headquarters. April 14.

——. 2022d. Early Notice Letter Regarding a Release of Hazardous Substances: Issaquah Valley Elementary School and Dodd Fields Park. April 14.

——. 2023. *Guidance for Investigating and Remediating PFAS Contamination in Washington State.* Publication No. 22-09-058. June.

Western Regional Climate Center. Greater Seattle Area Climate Data. <https://wrcc.dri.edu/>. (July 16, 2018.)

8.0 LIMITATIONS

8.1 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 Site 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 Site that were not investigated or were inaccessible. Site activities 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 Site 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.

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

8.2 LIMITATION ON RELIANCE BY THIRD PARTIES

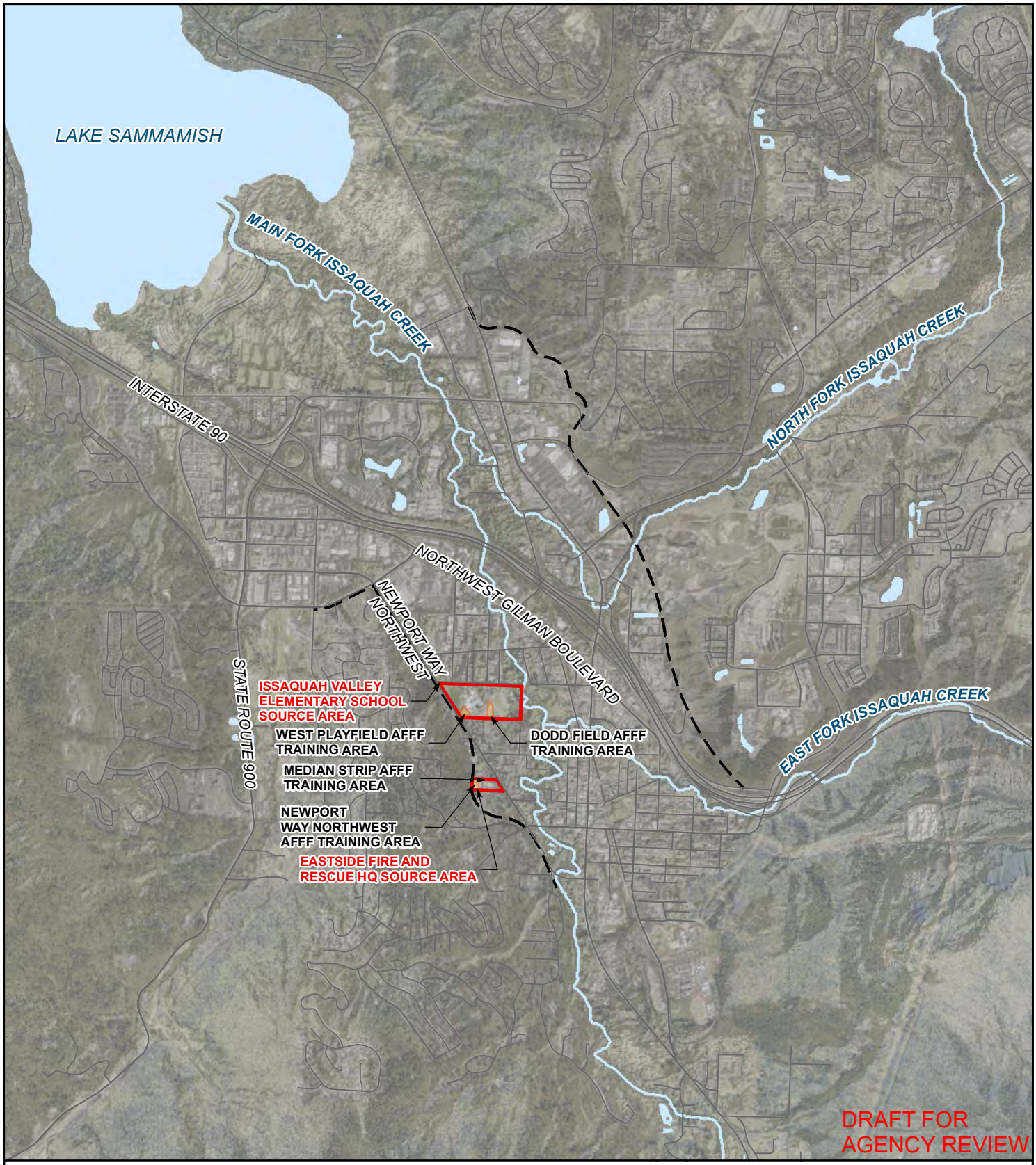
Reliance by third parties is prohibited. This report/assessment has been prepared for the exclusive use of the PLPs to address the unique needs of the PLPs at the EFR HQ IVES Site at a specific point in time.

This is not a general grant of reliance. No one other than the PLPs may rely on this report unless Farallon agrees in advance to such reliance in writing. Any unauthorized use, interpretation, or reliance on this report/assessment is at the sole risk of that party and Farallon will have no liability for such unauthorized use, interpretation, or reliance.

FIGURES

ENGINEERING DESIGN REPORT
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009



LEGEND

- CREEK
- LOWER ISSAQUAH VALLEY
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- SOURCE AREA

0 2,500

SCALE IN FEET

N

FARALLON CONSULTING

Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

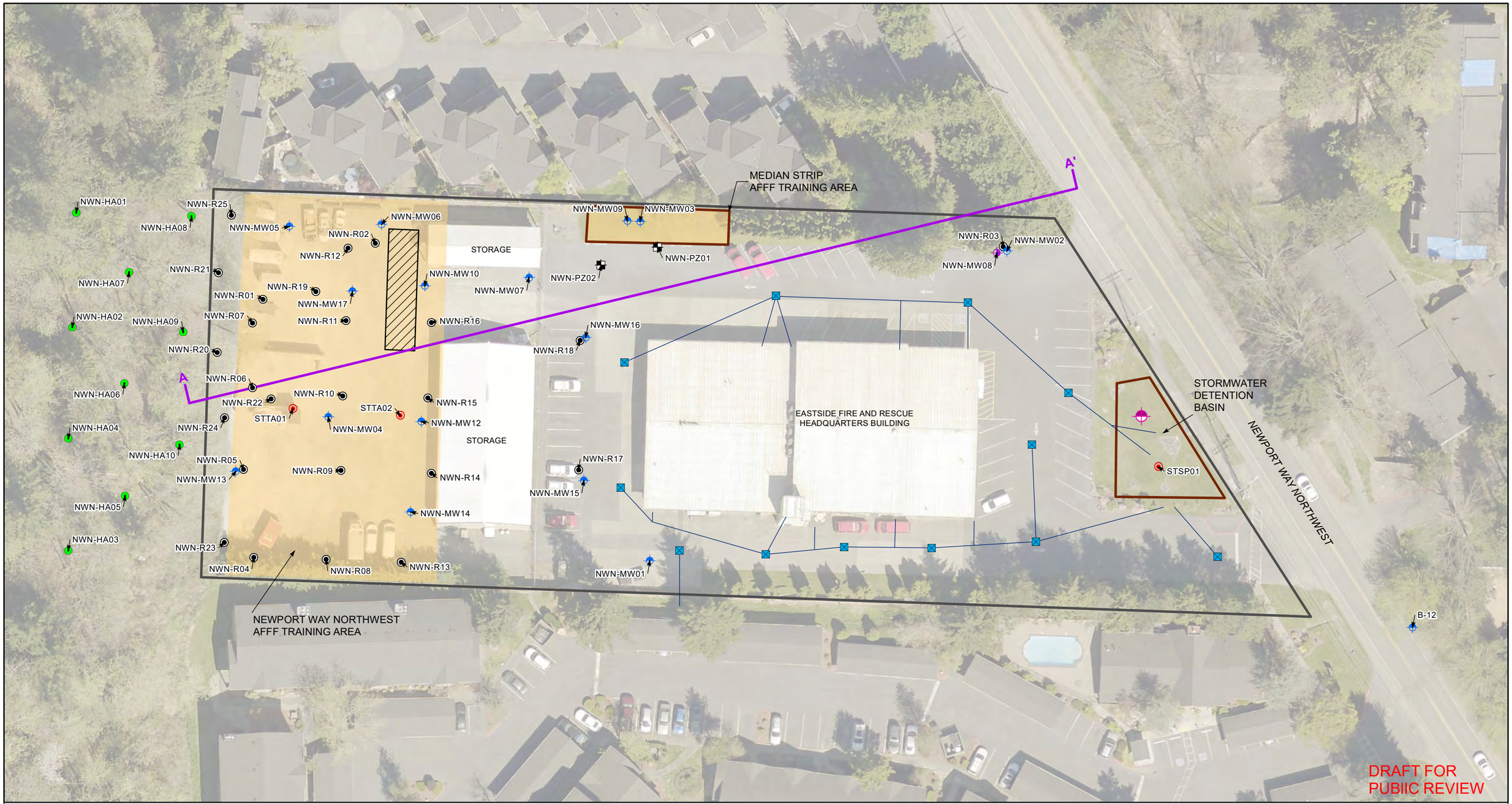
FIGURE 1

LOWER ISSAQUAH VALLEY VICINITY MAP
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock Checked By: SS Date: 5/29/2025 Disc Reference:

Document Path: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-01_Vicinity.mxd



LEGEND

- PROPOSED SHALLOW MONITORING WELL
- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- CATCH BASIN
- STORMWATER LINE
- A A' LINE OF CROSS-SECTION
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

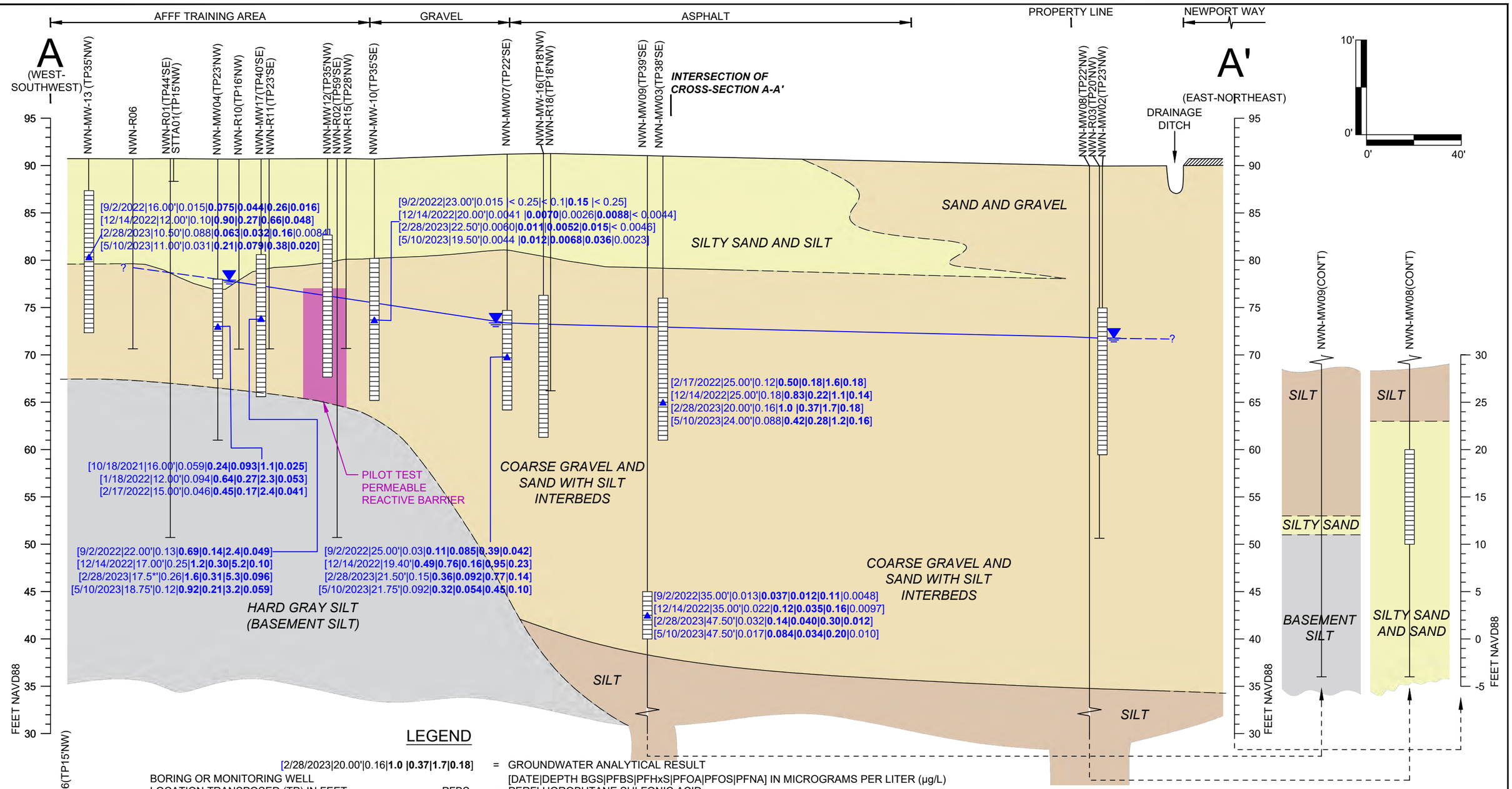
California
Oakland | Irvine

FIGURE 2

EFR SOURCE AREA PLAN
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-02_EFR-HQ-Plan.mxd



LEGEND

[2/28/2023|20.00'|0.16|**1.0 |0.37|1.7|0.18**] = GROUNDWATER ANALYTICAL RESULT [DATE|DEPTH BGS|PFBS|PFHxS|PFOA|PFOS|PFNA] IN MICROGRAMS PER LITER (µg/L)

NWN-R06(TP15'NW) — BORING OR MONITORING WELL LOCATION TRANSPOSED (TP) IN FEET, NORTHWEST (NW) OR SOUTHEAST (SE), TO CROSS-SECTION LINE

GROUNDWATER SAMPLE

GROUNDWATER LEVEL (DASHED WHERE INFERRED)

STRATIGRAPHIC CONTACT (DASHED WHERE INFERRED)

BLANK CASING OR BORING

GROUNDWATER ELEVATION (APRIL 13, 2020)

WELL SCREEN

PFBS = PERFLUOROBUTANE SULFONIC ACID
PFHxS = PERFLUOROHEXANE SULFONIC ACID
PFOA = PERFLUOROOCTANOIC ACID
PFOS = PERFLUOROOCTANE SULFONIC ACID
PFNA = PERFLUORONONANOIC ACID
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT
BOLD = DENOTES CONCENTRATIONS THAT EXCEED APPLICABLE WASHINGTON STATE DEPARTMENT OF ECOLOGY INVESTIGATORY LEVELS
NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988
AFFF = AQUEOUS FILM FORMING FOAM

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

NOTES (CON'T):
3. STANDARD PRODUCT NAMES ARE PROVIDED FOR PFOS AND PFOA. BOTH COMPOUNDS WILL BE IN THEIR IONIC FORM WHEN ENCOUNTERED IN THE ENVIRONMENT.
4. ADDITIONAL ANALYTICAL DATA AVAILABLE IN REPORT TABLES.

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com
Washington: Bellevue | Bellingham | Seattle
Oregon: Portland | Baker City
California: Oakland | Irvine

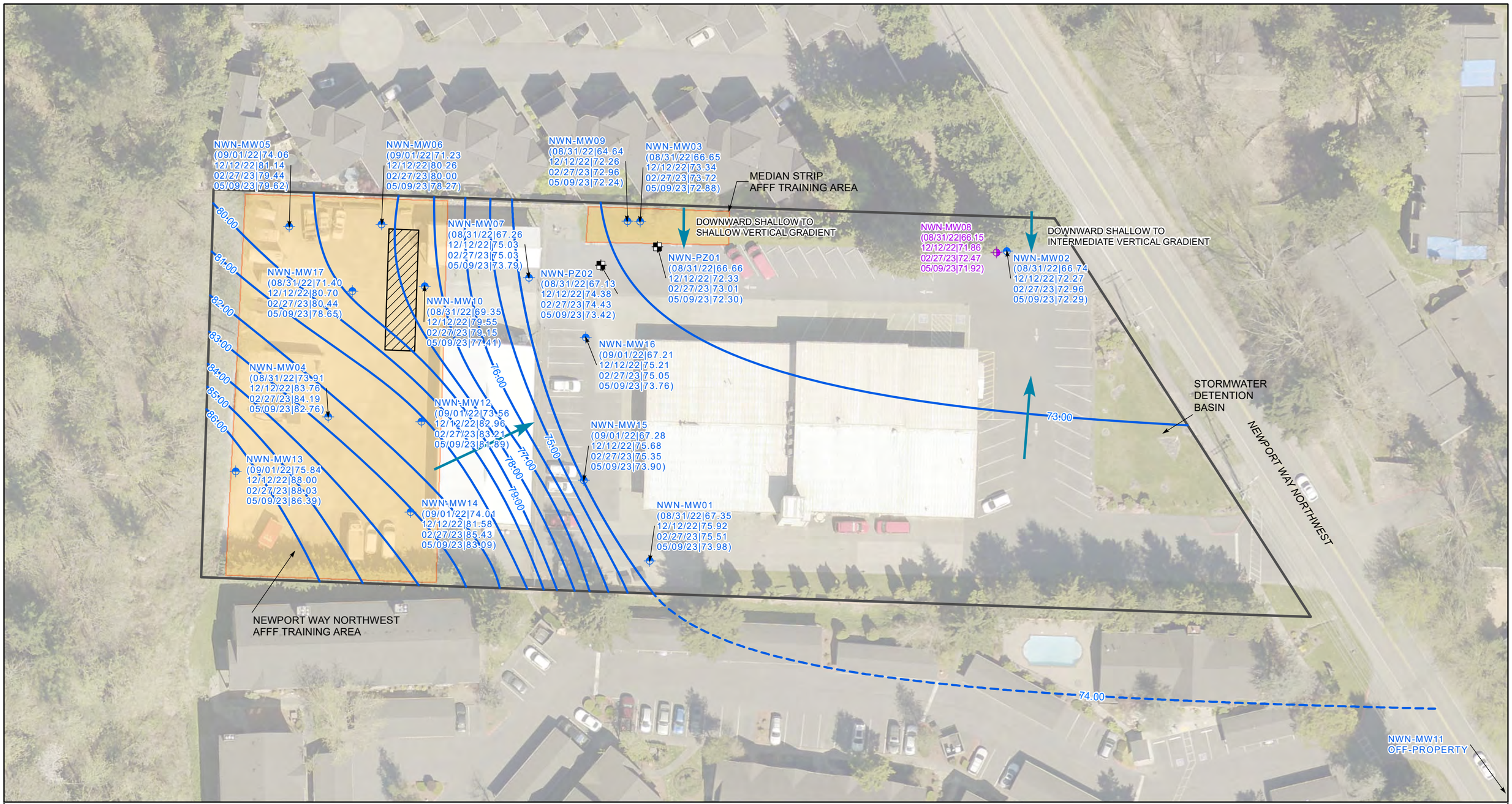
Drawn By: RB Checked By: SS

FIGURE 3

EFR HQ SOURCE AREA CROSS SECTION B-B'
EFR HQ IVES SITE
175 NEWPORT WAY NW AND 555 NW HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-008

R:\Projects\1754-008\CAD\Figures\2025.08\1754-008 X Section B-B' dwg 9/2/2025 10:38 AM (Ryan Bates)



LEGEND

- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING
- PIEZOMETER
- PROPERTY BOUNDARY
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

2/17/22|74.53 — SHALLOW GROUNDWATER MEASUREMENT DATE AND ELEVATION

2/17/22|72.89 — INTERMEDIATE GROUNDWATER MEASUREMENT DATE AND ELEVATION

86.00 — GROUNDWATER ELEVATION CONTOUR (MAY 9, 2023) (DASHED WHERE INFERRED)

APPROXIMATE DIRECTION OF SHALLOW GROUNDWATER FLOW

GROUNDWATER ELEVATIONS IN NORTH AMERICAN VERTICAL DATUM OF 1988.
EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

0 50
SCALE IN FEET

N

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

DRAFT FOR PUBIIC REVIEW

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

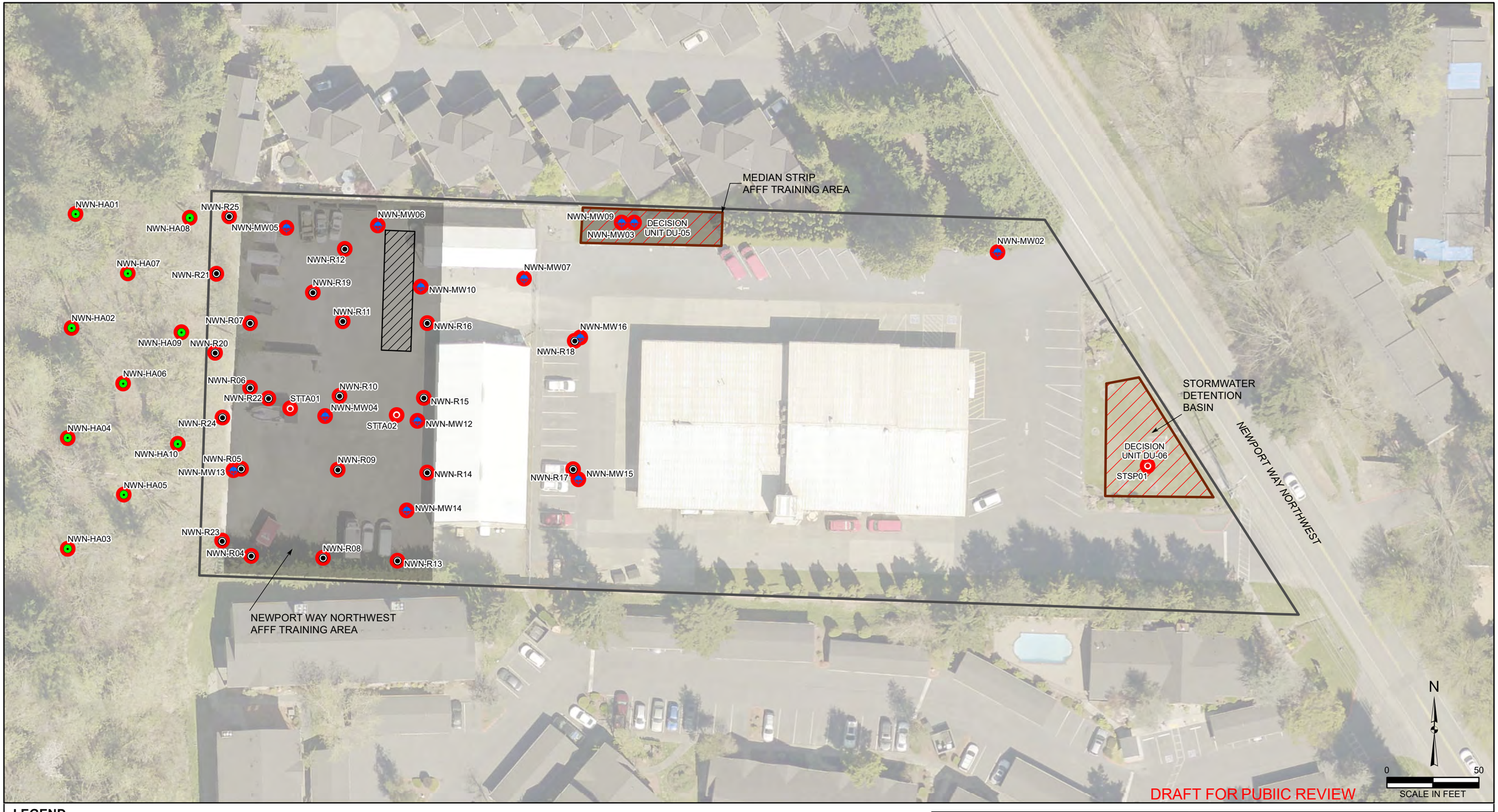
California
Oakland | Irvine

FIGURE 4

EFR HQ SOURCE AREA GROUNDWATER ELEVATIONS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 5/22/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-04_EFR-HQ_GW-Elv.mxd



LEGEND

- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS WITHIN DECISION UNIT
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIGURE 5

EFR HQ SOURCE AREA SUMMARY OF SOIL PFAS CONCENTRATIONS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND 555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 6/5/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-05_EFR-HQ_Soil-PFAS_All.mxd

NOTES:
TOTAL PFAS IS THE SUM OF PFBA, PFBS, PFHxA, PFHxS, PFOA, PFOS, PFNA, PFDA, 6:2 FTS, AND GenX.
NON-DETECT RESULTS ARE TREATED AS ZERO (0) FOR PURPOSES OF THE SUMMATION.
SOIL ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM.
WHERE TWO OR MORE SOIL SAMPLE RESULTS ARE AVAILABLE FOR THE SELECTED SOIL INTERVAL AT ONE LOCATION, THE HIGHEST TOTAL PFAS CONCENTRATION WAS SELECTED TO REPRESENT THAT LOCATION FOR MAPPING PURPOSES.
THE MULTI-INCREMENTAL DU HAVE A SINGLE RESULT THAT REPRESENTS THE ENTIRE POLYGON.

6:2 FTS	=	6:2 FLUOROTELOMER SULFONIC ACID
PFAS	=	PER- AND POLYFLUOROALKYL SUBSTANCES
PFBA	=	PERFLUOROBUTANOIC ACID
PFBS	=	PERFLUOROBUTANE SULFONIC ACID
PFDA	=	PERFLUORODECANOIC ACID
PFHxA	=	PERFLUOROHEXANOIC ACID
PFHxS	=	PERFLUOROHEXANE SULFONIC ACID
PFOA	=	PERFLUOROOCTANOIC ACID
PFOS	=	PERFLUOROOCTANE SULFONIC ACID
PFNA	=	PERFLUORONONANOIC ACID
GenX	=	HEXAFLUOROPROPYLENE OXIDE DIMER ACID
PPM	=	PARTS PER MILLION
EFR HQ IVES	=	EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

PROPOSED AREA TO RESTORE WITH ASPHALT PAVEMENT CAP
MEDIAN STRIP AFFF TRAINING AREA
STORMWATER DETENTION BASIN
NEWPORT WAY NORTHWEST
NEWPORT WAY NORTHWEST AFFF TRAINING AREA

NWN-HA01 0.004
NWN-R25 0.023
NWN-HA08 0.036
NWN-HA07 0.011
NWN-R21 0.087
NWN-HA02 0.002
NWN-HA09 0.056
NWN-R07 0.208
NWN-R20 0.926
NWN-HA06 0.48
NWN-HA04 0.008
NWN-HA10 0.377
NWN-R05 0.848
NWN-HA05 0.098
NWN-MW13 0.574
NWN-HA03 0.007
NWN-R23 0.01
NWN-R19 4.112
NWN-R11 0.343
NWN-R06 1.286
NWN-R22 3.804
STTA01 1.44
NWN-R24 0.7
NWN-R10 0.414
STTA02 0.356
NWN-R09 1.559
NWN-MW14 0.044
NWN-MW10 1.801
NWN-MW12 1.528
NWN-MW16 0.013
NWN-MW15 0.01
DU-05 0.031
DU-06 0.038
STSP01 0.026

N
0 50
SCALE IN FEET

DRAFT FOR PUBIIC REVIEW

LEGEND

- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- SOIL EXCEEDING PROPOSED REMEDIATION LEVEL OF 1 PPM FOR TOTAL PFAS
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- PROPOSED AREA TO RESTORE WITH ASPHALT PAVEMENT CAP
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT (0 TO 5 FEET BELOW GROUND SURFACE)
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

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

TOTAL PFAS
- 0-0.01
- 0.01-0.1
- 0.1-0.5
- 0.5-1.0
- 1.0-3.0
- 3.0-6.0
- >6.0

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle
Oregon
Portland | Baker City
California
Oakland | Irvine

FIGURE 6
EFR HQ SOURCE AREA SOIL TOTAL PFAS CONCENTRATIONS <5 FEET BELOW GROUND SURFACE AND PROPOSED TREATMENT EXTENTS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND 555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON
FARALLON PN: 1754-009

Drawn By: rbates | Checked By: SS | Date: 9/23/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\IAWP\Figure-06_EFR-HQ_Soil-PFAS_Lift_1.mxd

NOTES:
TOTAL PFAS IS THE SUM OF PFBA, PFBS, PFHxA, PFHxS, PFOA, PFOS, PFNA, PFDA, 6:2 FTS, AND GenX.
NON-DETECT RESULTS ARE TREATED AS ZERO (0) FOR PURPOSES OF THE SUMMATION.
SOIL ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM.
WHERE TWO OR MORE SOIL SAMPLE RESULTS ARE AVAILABLE FOR THE SELECTED SOIL INTERVAL AT ONE LOCATION, THE HIGHEST TOTAL PFAS CONCENTRATION WAS SELECTED TO REPRESENT THAT LOCATION FOR MAPPING PURPOSES.
THE MULTI-INCREMENTAL DU HAVE A SINGLE RESULT THAT REPRESENTS THE ENTIRE POLYGON.

6:2 FTS	=	6:2 FLUOROTELOMER SULFONIC ACID
PFAS	=	PER- AND POLYFLUOROALKYL SUBSTANCES
PFBA	=	PERFLUOROBUTANOIC ACID
PFBS	=	PERFLUOROBUTANE SULFONIC ACID
PFDA	=	PERFLUORODECANOIC ACID
PFHxA	=	PERFLUOROHEXANOIC ACID
PFHxS	=	PERFLUOROHEXANE SULFONIC ACID
PFOA	=	PERFLUOROOCTANOIC ACID
PFOS	=	PERFLUOROOCTANE SULFONIC ACID
PFNA	=	PERFLUORONONANOIC ACID
GenX	=	HEXAFLUOROPROPYLENE OXIDE DIMER ACID
PPM	=	PARTS PER MILLION
EFR HQ IVES	=	EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

MEDIAN STRIP
AFFF TRAINING AREA

STORMWATER
DETENTION
BASIN

NEWPORT WAY NORTHWEST

NEWPORT WAY NORTHWEST
AFFF TRAINING AREA

NWN-R25 0.063
NWN-MW05 0.276
NWN-MW06 0.238
NWN-R12 0.818
NWN-MW09 0.081
NWN-MW07 0.039
NWN-R21 0.674
NWN-R19 1.715
NWN-MW10 0.189
NWN-R11 0.593
NWN-R07 0.247
NWN-R16 0.287
NWN-MW16 0.055
NWN-R18 0.01
NWN-R20 0.151
NWN-R06 0.695
NWN-R10 1.291
NWN-R15 2.519
NWN-R22 0.476
NWN-R24 1.341
NWN-MW04 0.113
NWN-MW12 0.025
NWN-R17 0.005
NWN-R05 0.238
NWN-R09 0.197
NWN-R14 0.201
NWN-MW13 0.057
NWN-MW15 0.004
NWN-MW14 0.067
NWN-R23 0.001
NWN-R08 0.043
NWN-R04 0.048
NWN-R13 0.016

N

0 50
SCALE IN FEET

DRAFT FOR PUBIIC REVIEW

LEGEND

- BORING
- SHALLOW MONITORING WELL
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- SOIL EXCEEDING PROPOSED REMEDIATION LEVEL OF 1 PPM FOR TOTAL PFAS
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT (5 TO 10 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

TOTAL PFAS

- 0-0.01
- 0.01-0.1
- 0.1-0.5
- 0.5-1.0
- 1.0-3.0
- 3.0-6.0
- >6.0

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIGURE 7

EFR HQ SOURCE AREA SOIL TOTAL PFAS CONCENTRATIONS 5-9.9 FEET BELOW GROUND SURFACE AND PROPOSED TREATMENT EXTENTS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON
FARALLON PN: 1754-009

Drawn By: rbates | Checked By: SS | Date: 9/17/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\IAWP\Figure-07_EFR-HQ_Soil-PFAS_Lift_2.mxd

NOTES:
TOTAL PFAS IS THE SUM OF PFBA, PFBS, PFHxA, PFHxS, PFOA, PFOS, PFNA, PFDA, 6:2 FTS, AND GenX.
NON-DETECT RESULTS ARE TREATED AS ZERO (0) FOR PURPOSES OF THE SUMMATION.
SOIL ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM.
WHERE TWO OR MORE SOIL SAMPLE RESULTS ARE AVAILABLE FOR THE SELECTED SOIL INTERVAL AT ONE LOCATION, THE HIGHEST TOTAL PFAS CONCENTRATION WAS SELECTED TO REPRESENT THAT LOCATION FOR MAPPING PURPOSES.
THE MULTI-INCREMENTAL DU HAVE A SINGLE RESULT THAT REPRESENTS THE ENTIRE POLYGON.

6:2 FTS = 6:2 FLUOROTELOMER SULFONIC ACID
PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES
PFBA = PERFLUOROBUTANOIC ACID
PFBS = PERFLUOROBUTANE SULFONIC ACID
PFDA = PERFLUORODECANOIC ACID
PFHxA = PERFLUOROHEXANOIC ACID
PFHxS = PERFLUOROHEXANE SULFONIC ACID
PFOA = PERFLUOROOCTANOIC ACID
PFOS = PERFLUOROOCTANE SULFONIC ACID
PFNA = PERFLUORONONANOIC ACID
GenX = HEXAFLUOROPROPYLENE OXIDE DIMER ACID
PPM = PARTS PER MILLION
EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

MEDIAN STRIP
AFFF TRAINING AREA

NWN-R25 0.029
NWN-MW05 0.131
NWN-MW06 0.143
NWN-R12 0.466
NWN-R21 0.046
NWN-R19 0.024
NWN-MW03 0106
NWN-MW07 0.08
NWN-MW10 0.047
NWN-MW02 0
NWN-R07 0.08
NWN-R11 0.156
NWN-R16 0.033
NWN-R18 0.015
NWN-R20 2.549
NWN-R06 0.104
NWN-R10 0.376
NWN-R15 1.972
NWN-R22 0.146
NWN-R24 0.452
NWN-MW04 0.02
NWN-MW12 0.035
NWN-R05 0.041
NWN-R09 0.213
NWN-R14 0.011
NWN-R17 0.007
NWN-MW13 0.008
NWN-R23 0.0004
NWN-R04 0.042
NWN-R08 0.017
NWN-R13 0.139

STORMWATER DETENTION BASIN

NEWPORT WAY NORTHWEST

NEWPORT WAY NORTHWEST AFFF TRAINING AREA

N

0 50
SCALE IN FEET

DRAFT FOR PUBIIC REVIEW

LEGEND

- BORING
- SHALLOW MONITORING WELL
- DENOTES ALL PFAS REPORTED AS NOT DETECTED AT OR EXCEEDING THE LABORATORY REPORTING LIMIT
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- SOIL EXCEEDING PROPOSED REMEDIATION LEVEL OF 1 PPM FOR TOTAL PFAS
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT (10 TO 13 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

TOTAL PFAS

- 0-0.01
- 0.01-0.1
- 0.1-0.5
- 0.5-1.0
- 1.0-3.0
- 3.0-6.0
- >6.0

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIGURE 8

EFR HQ SOURCE AREA SOIL TOTAL PFAS CONCENTRATIONS 10-14.9 FEET BELOW GROUND SURFACE AND PROPOSED TREATMENT EXTENTS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON
FARALLON PN: 1754-009

Drawn By: rbates | Checked By: SS | Date: 9/17/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\IAWP\Figure-08_EFR-HQ_Soil-PFAS_Lift_3.mxd

NOTES:
TOTAL PFAS IS THE SUM OF PFBA, PFBS, PFHxA, PFHxS, PFOA, PFOS, PFNA, PFDA, 6:2 FTS, AND GenX.
NON-DETECT RESULTS ARE TREATED AS ZERO (0) FOR PURPOSES OF THE SUMMATION.
SOIL ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM.
WHERE TWO OR MORE SOIL SAMPLE RESULTS ARE AVAILABLE FOR THE SELECTED SOIL INTERVAL AT ONE LOCATION, THE HIGHEST TOTAL PFAS CONCENTRATION WAS SELECTED TO REPRESENT THAT LOCATION FOR MAPPING PURPOSES.
THE MULTI-INCREMENTAL DU HAVE A SINGLE RESULT THAT REPRESENTS THE ENTIRE POLYGON.

6:2 FTS	=	6:2 FLUOROTELOMER SULFONIC ACID
PFAS	=	PER- AND POLYFLUOROALKYL SUBSTANCES
PFBA	=	PERFLUOROBUTANOIC ACID
PFBS	=	PERFLUOROBUTANE SULFONIC ACID
PFDA	=	PERFLUORODECANOIC ACID
PFHxA	=	PERFLUOROHEXANOIC ACID
PFHxS	=	PERFLUOROHEXANE SULFONIC ACID
PFOA	=	PERFLUOROOCTANOIC ACID
PFOS	=	PERFLUOROOCTANE SULFONIC ACID
PFNA	=	PERFLUORONONANOIC ACID
GenX	=	HEXAFLUOROPROPYLENE OXIDE DIMER ACID
PPM	=	PARTS PER MILLION
EFR HQ IVES	=	EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

MEDIAN STRIP
AFFF TRAINING AREA

NWN-MW03
0.009

NWN-MW05
0.013

NWN-MW06
0.085

NWN-R12
0.161

NWN-R21
0.006

NWN-MW07
0.006

NWN-MW02
0.007

NWN-R16
0.063

NWN-R18
0.01

NWN-R20
0.003

NWN-R22
0.02

NWN-R15
0.008

NWN-R17
0.004

NWN-R14
0.01

NWN-R04
0.02

NWN-R08
0.001

NWN-R13
0.002

NEWPORT WAY NORTHWEST
AFFF TRAINING AREA

STORMWATER
DETENTION
BASIN

NEWPORT WAY NORTHWEST

N

0 50
SCALE IN FEET

DRAFT FOR PUBIIC REVIEW

LEGEND

- BORING
- SHALLOW MONITORING WELL
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

TOTAL PFAS

- 0-0.01
- 0.01-0.1
- 0.1-0.5
- 0.5-1.0
- 1.0-3.0
- 3.0-6.0
- >6.0

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

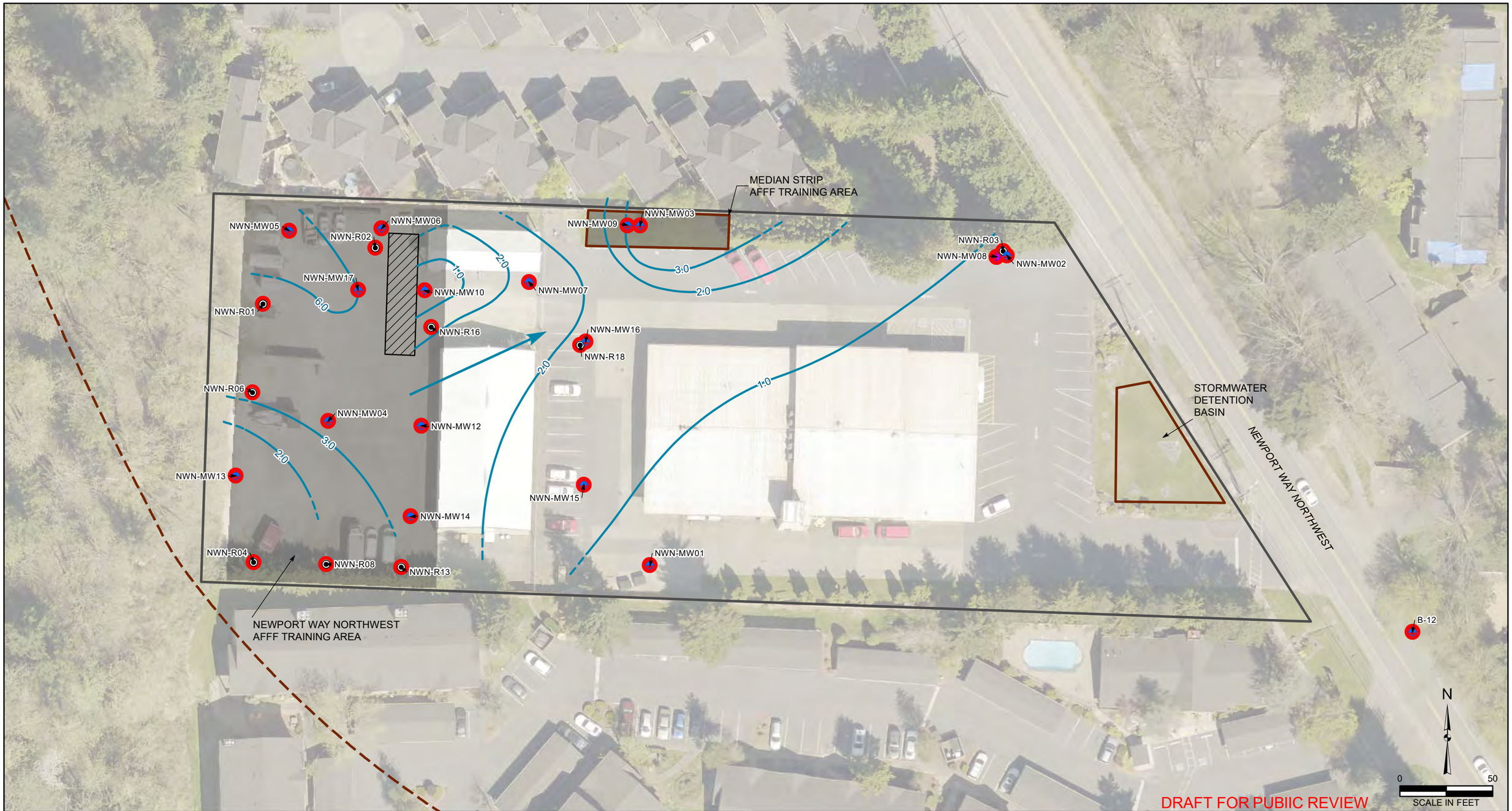
California
Oakland | Irvine

FIGURE 9

EFR HQ SOURCE AREA SOIL TOTAL PFAS CONCENTRATIONS
>15 FEET BELOW GROUND SURFACE
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 6/5/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\IAWP\Figure-09_EFR-HQ_Soil-PFAS_Lift_4.mxd



LEGEND

- BORING
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- DENOTES ONE OR MORE PFAS DETECTED AT A CONCENTRATION EXCEEDING CLEANUP LEVELS
- ISOCONCENTRATION CONTOUR OF PFAS IN GROUNDWATER IN MICROGRAMS PER LITER (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- APPROXIMATE MAXIMUM EXTENT OF PFAS IN GROUNDWATER THAT EXCEEDS AT LEAST ONE SCREENING LEVEL IN SHALLOW GROUNDWATER ZONE
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT (DU)
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIGURE 10

EFR HQ SOURCE AREA GROUNDWATER
AVERAGE TOTAL PFAS CONCENTRATIONS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 9/12/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-10_EFR-HQ_GW-PFAS.mxd

MEDIAN STRIP
AFFF TRAINING AREA

NWN-HA01
NWN-R25
NWN-HA08
NWN-MW06
NWN-MW05
NWN-R02
NWN-R12
NWN-R21
NWN-HA07
NWN-MW17
NWN-MW10
NWN-R19
NWN-R01
NWN-MW07
NWN-HA02
NWN-R07
NWN-R11
NWN-R16
NWN-HA09
NWN-R20
NWN-HA06
NWN-R06
NWN-R22
NWN-R10
NWN-R15
STTA01
STTA02
NWN-MW04
NWN-HA04
NWN-R24
NWN-MW12
NWN-HA10
NWN-R05
NWN-MW13
NWN-R09
NWN-R14
NWN-HA05
NWN-MW14
NWN-HA03
NWN-R23
NWN-R04
NWN-R08
NWN-R13

STORAGE
STORAGE

NWN-MW09
NWN-MW03
NWN-PZ01
NWN-PZ02
NWN-MW16
NWN-R18
NWN-R17
NWN-MW15
NWN-MW01

EASTSIDE FIRE AND RESCUE
HEADQUARTERS BUILDING

NWN-R03
NWN-MW02
NWN-MW08

STORMWATER
DETENTION
BASIN

STSP01

NEWPORT WAY NORTHWEST

NEWPORT WAY NORTHWEST
AFFF TRAINING AREA

B-12

N

0 50
SCALE IN FEET

DRAFT FOR PUBIIC REVIEW

NOTES:
SELECT SHALLOW MONITORING WELLS WILL BE DECOMMISSIONED PRIOR TO SHALLOW SOIL INTERIM ACTIONS.

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
* = PROPOSED INTERIM ACTION ELEMENTS AND EXTENTS ARE PRELIMINARY

LEGEND

- PROPOSED SHALLOW MONITORING WELL (REMEDIAL INVESTIGATION)
- PROPOSED SHALLOW COMPLIANCE MONITORING WELL
- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- CATCH BASIN
- STORMWATER LINE
- PROPOSED AREA TO RESTORE WITH ASPHALT PAVEMENT CAP
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT (0 TO 5 FEET BELOW GROUND SURFACE)
- PROPOSED VADOSE ZONE SOIL TREATMENT AREA (5 TO 10 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPOSED VADOSE ZONE SOIL TREATMENT AREA (10 TO 13 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPOSED FULL SCALE PERMEABLE REACTIVE BARRIER*
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

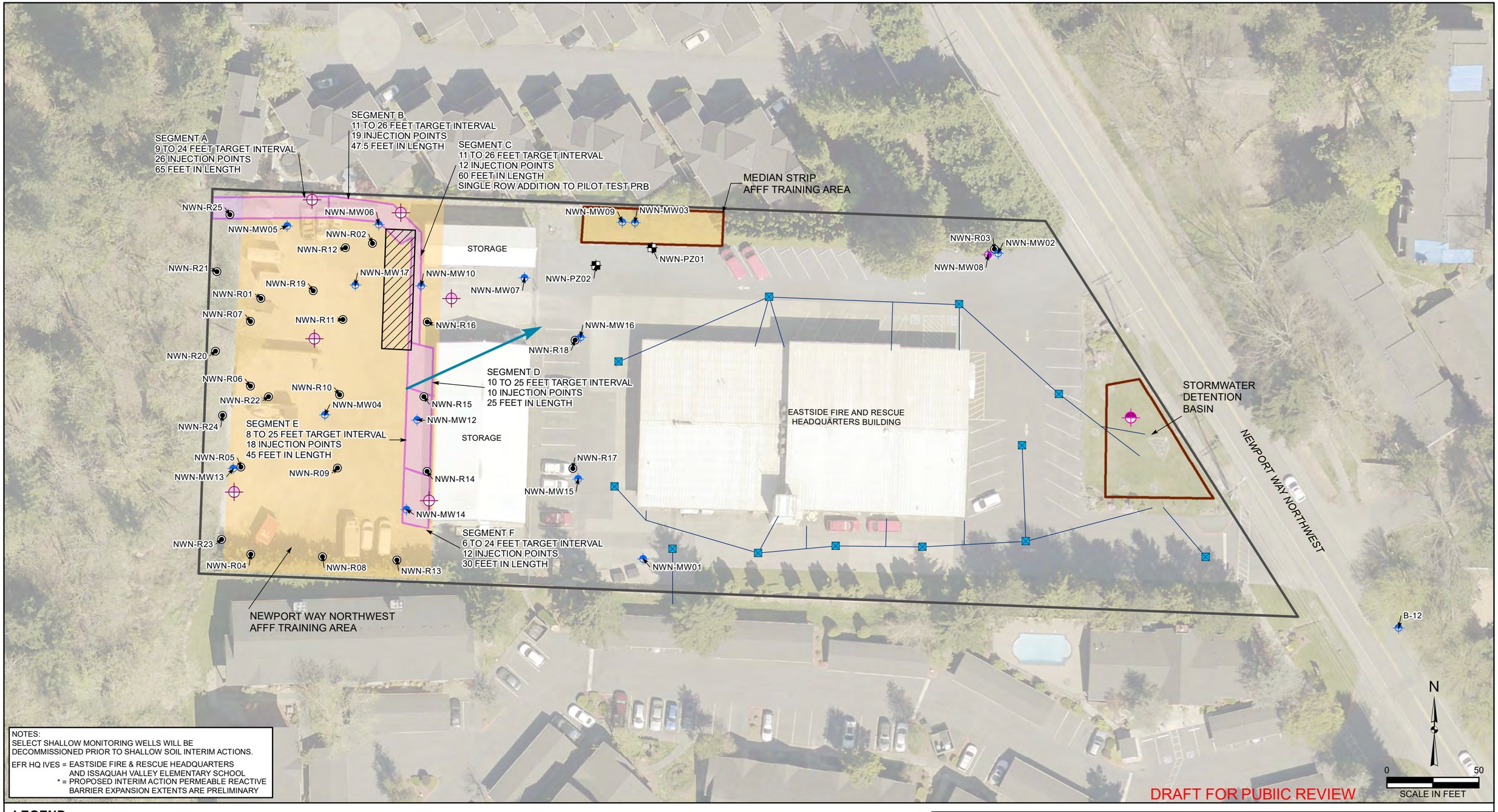
FIGURE 11

EFR HQ SOURCE AREA PROPOSED
INTERIM ACTION ELEMENTS AND EXTENTS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: rbates | Checked By: SS | Date: 9/23/2025

Disc Reference:
Q:\Projects\1754 EastsideFireRescue\009\001\Figure-11_Proposed_IA_Extents.mxd



NOTES:
SELECT SHALLOW MONITORING WELLS WILL BE DECOMMISSIONED PRIOR TO SHALLOW SOIL INTERIM ACTIONS.

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
* = PROPOSED INTERIM ACTION PERMEABLE REACTIVE BARRIER EXPANSION EXTENTS ARE PRELIMINARY

LEGEND

- PROPOSED SHALLOW MONITORING WELL (REMEDIAL INVESTIGATION)
- PROPOSED SHALLOW COMPLIANCE MONITORING WELL
- BORING
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- CATCH BASIN
- STORMWATER LINE
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- PROPOSED FULL SCALE PERMEABLE REACTIVE BARRIER*
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIGURE 12

EFR HQ SOURCE AREA PROPOSED INTERIM ACTION
PERMEABLE REACTIVE BARRIER EXPANSION
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: rbates | Checked By: SS | Date: 9/23/2025

Disc Reference:
Q:\Projects\1754 EastsideFireRescue\009\001\Figure-12_Proposed_IA_PRB.mxd

TABLES

ENGINEERING DESIGN REPORT
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

Table 1
Soil Screening Levels
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Constituent of Potential Concern	Soil Screening Levels										
			Protection of Groundwater (mg/kg)[1]		Adjustment Factors	Proposed Soil Screening Level (mg/kg)					
	Method B Direct Contact (mg/kg)[1]	Method C Direct Contact (mg/kg)[1]	Vadose Zone Protection of Groundwater	Saturated Zone Protection of Groundwater	Laboratory Method Reporting Limit (mg/kg)	Vadose Zone	Saturated Zone	Maximum Reported Value (mg/kg)	Property	Sample Identification	Retained as Soil COPC
Per– and Polyfluoroalkyl Substances											
Perfluorobutanoic Acid (PFBA)	80	3,500	0.044	0.0029	0.00010	0.044	0.0029	**0.010**	Eastside Fire & Rescue	NWN-R10-200320-3.0	**No**
Perfluorobutane Sulfonic Acid (PFBS)	24	1,100	0.025	0.0017	0.00010	0.025	0.0017	**0.025**	Eastside Fire & Rescue	NWN-MW12-3	**No**
Perfluorohexanoic Acid (PFHxA)	40	1,800	0.035	0.0025	0.00010	0.035	0.0025	**0.066**	Eastside Fire & Rescue	NWN-R10-200320-3.0	**Yes**
Perfluorohexane Sulfonic Acid (PFHxS)	0.000032	0.0014	0.00000004	0.0000000026	0.00010	0.0001	0.0001	**0.21**	Eastside Fire & Rescue	NWN-MW12-3	**Yes**
Perfluorooctanoic Acid (PFOA)	0.000034	0.0045	0.000025	0.0000016	0.00010	0.0001	0.0001	**0.094**	Eastside Fire & Rescue	NWN-MW10-3	**Yes**
Perfluorooctane Sulfonic Acid (PFOS)	0.008	0.35	0.000046	0.0000026	0.00010	0.0001	0.0001	**3.6**	Eastside Fire & Rescue	NWN-R19-3	**Yes**
Perfluorononanoic Acid (PFNA)	0.20	8.8	0.000089	0.0000053	0.00010	0.0001	0.0001	**1.4**	Eastside Fire & Rescue	NWN-R15-200319-5.0	**Yes**
Perfluorodecanoic Acid (PFDA)	0.00016	0.0070	0.00000038	0.000000022	0.00010	0.0001	0.0001	**0.013**	Eastside Fire & Rescue	NWN-MW12-3	**Yes**
6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	16	700	0.074	0.004	0.00010	0.074	0.004	**0.48**	Eastside Fire & Rescue	NWN-R09-200320-3.0	**Yes**
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	0.24	11	0.00012	0.0000069	0.00010	0.00012	0.0001	**0.0014**	Eastside Fire & Rescue	NWN-R15-200319-10.0	**Yes**

NOTES:

Values highlighted in mint green are selected soil screening level.

Bold values exceed proposed screening level

[1]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State MTCA, Standard Method B and C Values for Soil from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC.

COPC = constituent of potential concern

mg/kg = milligrams per kilogram

Table 2
Groundwater Screening Levels
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Constituent of Potential Concern	Groundwater Screening Levels							
	Method B Groundwater Noncancer (µg/l)[1]	Federal Maximum Contaminant Levels (MCLs) (µg/l)[2]	Adjustment Factors: Laboratory Method Reporting Limit (µg/l)	Proposed Groundwater Screening Level (µg/l)	Reported Maximum Value (µg/l)	Property	Sample Identification	Retained as Groundwater COPC
Per– and Polyfluoroalkyl Substances								
Perfluorobutanoic Acid (PFBA)	8.0	NE	0.0020	8.0	0.46	Eastside Fire & Rescue	NWN-MW44-102920	No
Perfluorobutane Sulfonic Acid (PFBS)	4.8	Note 2	0.0020	4.8	**0.49**	Eastside Fire & Rescue	NWN-MW07-121422	**Yes**
Perfluorohexanoic Acid (PFHxA)	8.0	NE	0.0020	8.0	1.6	Eastside Fire & Rescue	NWN-MW14-20220118	No
Perfluorohexane Sulfonic Acid (PFHxS)	0.0000064	0.01	0.0020	0.0020	**2.0**	Eastside Fire & Rescue	NWN-MW06-200417	**Yes**
Perfluorooctanoic Acid (PFOA)	0.000003	0.004	0.0010	0.004	**1.0**	Eastside Fire & Rescue	NWN-MW12-20220118	**Yes**
Perfluorooctane Sulfonic Acid (PFOS)	0.0016	0.004	0.0010	0.004	**8.6**	Eastside Fire & Rescue	NWN-MW06-200417	**Yes**
Perfluorononanoic Acid (PFNA)	0.04	0.01	0.0020	0.01	**0.64**	Eastside Fire & Rescue	NWN-MW07-20220118	**Yes**
Perfluorodecanoic Acid (PFDA)	0.000032	NE	0.0020	0.0050	**0.14**	Eastside Fire & Rescue	NWN-R06-200320-10.0W	**Yes**
6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	3.2	NE	0.0020	3.2	2.4	Eastside Fire & Rescue	NWN-MW12-20220118	No
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	0.024	0.01	0.0020	0.01	ND	---	---	No

NOTES:

Values highlighted in mint green are selected groundwater screening level.

Bold values exceed proposed screening level

--- denotes criteria is not applicable

NE = Not established

ND = reported non-detect at the laboratory method reporting limit

[1]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State MTCA, Standard Method B and C Values for Soil from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC, unless otherwise noted.

[2]U.S. Environmental Protection Agency (EPA) National Primary Drinking Water Regulations, 40 Code of Federal Regulations Part 141. The EPA set a Hazard Index MCL of 1 for PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS to account for the combined and co-occurring levels of these PFAS in drinking water.

Table 3
Monitoring Well Construction Details
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Well ID	Previous Monitoring Well ID	Well Owner	Ground Surface Elevation (feet NAVD88)	Top of Casing Elevation (feet NAVD88)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Screened Length (feet)	Screen Top Elevation (feet NAVD88)	Screen Bottom Elevation (feet NAVD88)
Water Production Wells									
COI-PW03	Well 3	City of Issaquah	NM	NM	77	102	25	---	---
COI-PW04	Well 4	City of Issaquah	NM	66.19	77	102	25	-10.81	-35.81
COI-PW05	Well 5	City of Issaquah	NM	67.16	323	405	82	-255.84	-337.84
COI-PW06	Well 6	City of Issaquah	NM	NM	323	405	82	---	---
Geotechnical Wells-Newport Way Northwest									
B-2	---	City of Issaquah	80.98	80.54	20	30	10	60.54	50.54
B-4	---	City of Issaquah	74.37	73.83	20	30	10	53.83	43.83
B-7	---	City of Issaquah	NM	NM	22.5	32.5	10	NM	NM
B-12	---	City of Issaquah	NM	NM	20	30	10	NM	NM
Resource Protection Monitoring Wells									
Issaquah Valley Elementary School Source Area									
IES-MW01	---	Eastside Fire & Rescue	76.52	76.31	16	26	10	60.31	50.31
IES-MW02	---	Eastside Fire & Rescue	74.43	73.74	15	25	10	58.74	48.74
IES-MW03	---	Eastside Fire & Rescue	73.09	72.70	15	25	10	57.7	47.7
IES-MW04	---	Eastside Fire & Rescue	72.97	72.43	15	30	15	57.43	42.43
IES-MW05	---	Eastside Fire & Rescue	72.75	72.76	20	30	10	52.76	42.76
IES-MW06	---	Eastside Fire & Rescue	76.29	75.92	80	90	10	-4.08	-14.08
IES-MW08	---	Eastside Fire & Rescue	72.55	72.07	20	30	10	52.07	42.07
IES-MW09	---	Eastside Fire & Rescue	72.45	72.18	75	85	10	-2.82	-12.82
IES-MW10	---	Eastside Fire & Rescue	73.08	72.66	75	85	10	-2.34	-12.34
IES-MW11	---	Eastside Fire & Rescue	75.92	75.69	120	130	10	-44.31	-54.31
DF-MW01	EB-1W	Eastside Fire & Rescue	77.99	77.71	5	15	10	72.71	62.71
DF-MW02	EB-5W	Eastside Fire & Rescue	74.57	74.21	15	25	10	59.21	49.21
DF-MW03	EB-3W	Eastside Fire & Rescue	74.71	74.35	20	30	10	54.35	44.35

Table 3
Monitoring Well Construction Details
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Well ID	Previous Monitoring Well ID	Well Owner	Ground Surface Elevation (feet NAVD88)	Top of Casing Elevation (feet NAVD88)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Screened Length (feet)	Screen Top Elevation (feet NAVD88)	Screen Bottom Elevation (feet NAVD88)
Eastside Fire & Rescue Headquarters Source Area									
NWN-MW01	---	Eastside Fire & Rescue	90.93	90.69	15	30	15	75.69	60.69
NWN-MW02	---	Eastside Fire & Rescue	90.04	89.84	15	30	15	74.84	59.84
NWN-MW03	---	Eastside Fire & Rescue	91.60	91.35	15	30	15	76.35	61.35
NWN-MW04	---	Eastside Fire & Rescue	90.68	90.41	13	23	10	77.41	67.41
NWN-MW05	---	Eastside Fire & Rescue	90.65	90.34	7	17	10	83.34	73.34
NWN-MW06	---	Eastside Fire & Rescue	91.19	90.98	15	25	10	75.98	65.98
NWN-MW07	---	Eastside Fire & Rescue	91.28	90.89	16.5	26.5	10	74.39	64.39
NWN-MW08	---	Eastside Fire & Rescue	90.37	89.95	70	80	10	19.95	9.95
NWN-MW09	---	Eastside Fire & Rescue	91.63	91.29	45	50	5	46.29	41.29
NWN-MW10	---	Eastside Fire & Rescue	91.04	90.66	10	25	15	80.66	65.66
NWN-MW12	---	Eastside Fire & Rescue	91.04	90.56	8	23	15	82.56	67.56
NWN-MW13	---	Eastside Fire & Rescue	90.28	89.80	3	18	15	86.80	71.80
NWN-MW14	---	Eastside Fire & Rescue	91.01	90.68	8	23	15	82.68	67.68
NWN-MW15	---	Eastside Fire & Rescue	90.77	90.37	15	30	15	75.37	60.37
NWN-MW16	---	Eastside Fire & Rescue	90.87	90.55	15	30	15	75.55	60.55
NWN-MW17	---	Eastside Fire & Rescue	91.04	90.74	10	25	15	80.74	65.74
NWN-PZ01	---	Eastside Fire & Rescue	91.20	90.76	20	30	10	70.76	60.76
NWN-PZ02	---	Eastside Fire & Rescue	90.99	90.44	20	30	10	70.44	60.44
Lower Issaquah Valley Regional Wells									
COI-MW01	MW01	City of Issaquah	58.36	58.4	28	38	10	30.4	20.4
COI-MW02	MW02	City of Issaquah	59.7	62.8	70	90	20	-7.2	-27.2
COI-MW03	MW03	City of Issaquah	63.16	62.9	78	98	20	-15.1	-35.1
COI-MW04	MW04	City of Issaquah	73.3	73.1	70	90	20	3.1	-16.9
COI-MW05	MW05	City of Issaquah	72.05	71.9	70	90	20	1.9	-18.1
COI-MW06	MW06	City of Issaquah	86.5	86.3	80	100	20	6.3	-13.7
COI-MW07	MW07	City of Issaquah	90.7	90.3	100	110	10	-9.7	-19.7
COI-MW08	---	City of Issaquah	70.22	69.85	238	248	10	-168.15	-178.15
COI-PW05-OBS	COI Well5OBS	City of Issaquah	NM	NM	223	405	182	---	---
COI-TW01[1]	COI-MW1	City of Issaquah	NM	NM	10	20	10	---	---
COI-TW03[1]	COI-TW3	City of Issaquah	NM	81.8	284	289	5	-202.2	-207.2
IES-MW07	---	Eastside Fire & Rescue	70.54	70.25	20	30	10	50.25	40.25
IES-MW12	---	Eastside Fire & Rescue	70.06	69.77	120	130	10	-50.23	-60.23

Table 3
Monitoring Well Construction Details
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Well ID	Previous Monitoring Well ID	Well Owner	Ground Surface Elevation (feet NAVD88)	Top of Casing Elevation (feet NAVD88)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Screened Length (feet)	Screen Top Elevation (feet NAVD88)	Screen Bottom Elevation (feet NAVD88)
Lower Issaquah Valley Regional Wells (continued)									
NDS-MW01	---	Eastside Fire & Rescue	86.16	85.48	22	32	10	63.48	53.48
NDS-MW02	---	Eastside Fire & Rescue	82.10	81.75	71	81	10	10.75	0.75
NDS-MW03	---	Eastside Fire & Rescue	82.54	82.07	25	35	10	57.07	47.07
NDS-MW04	---	Eastside Fire & Rescue	82.19	81.71	72	82	10	9.71	-0.29
NGB-MW01	---	Eastside Fire & Rescue	63.34	62.96	20	30	10	42.96	32.96
NLS-MW01	---	Eastside Fire & Rescue	66.96	66.62	19.5	29.5	10	47.12	37.12
NLS-MW02	---	Eastside Fire & Rescue	67.12	66.88	70	80	10	-3.12	-13.12
NWN-MW11	---	Eastside Fire & Rescue	90.91	90.58	15	25	10	75.58	65.58

NOTES:
— denotes not applicable.
[1]TOC elevation calculated by Geosyntec, 2016

bgs = below ground surface
NAVD88 = North American Vertical Datum of 1988
NM = not measured

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Eastside Fire & Rescue Headquarters Source Area					
NWN-MW01	Shallow	10/26/2018	90.69	21.43	69.26
		3/10/2020		15.33	75.36
		4/13/2020		17.56	73.13
		7/14/2020		21.35	69.34
		10/26/2020		20.17	70.52
		7/29/2021		23.68	67.01
		8/12/2021		24.33	66.36
		9/1/2021		25.00	65.69
		1/17/2022		10.86	79.83
		2/17/2022		17.65	73.04
		8/31/2022		23.34	67.35
		12/12/2022		14.77	75.92
		2/27/2023		15.18	75.51
		5/9/2023		16.71	73.98
NWN-MW02	Shallow	10/26/2018	89.84	21.10	68.74
		3/10/2020		16.70	73.14
		4/13/2020		18.24	71.60
		7/14/2020		21.38	68.46
		10/26/2020		20.45	69.39
		7/29/2021		23.63	66.21
		8/12/2021		24.12	65.72
		2/17/2022		18.47	71.37
		8/31/2022		23.10	66.74
		12/12/2022		17.57	72.27
		2/27/2023		16.88	72.96
		5/9/2023		17.55	72.29
NWN-MW03	Shallow	10/26/2018	91.35	22.77	68.58
		4/13/2020		19.16	72.19
		7/14/2020		22.69	68.66
		10/26/2020		21.87	69.48
		7/29/2021		25.23	66.12
		8/12/2021		25.76	65.59
		9/1/2021		26.40	64.95
		10/18/2021		24.18	67.17
		12/9/2021		16.17	75.18
		1/17/2022		13.07	78.28
		2/17/2022		19.49	71.86
		8/31/2022		24.70	66.65
		12/12/2022		18.01	73.34
		2/27/2023		17.63	73.72
		5/9/2023		18.47	72.88
NWN-MW04	Shallow	10/26/2018	90.41	13.20	77.21
		4/13/2020		8.71	81.70
		7/14/2020		12.65	77.76
		10/26/2020		10.72	79.69
		7/29/2021		15.57	74.84
		8/12/2021		16.40	74.01
		9/1/2021		17.04	73.37
		10/18/2021		13.31	77.10
		12/9/2021		5.91	84.50
		1/18/2022		5.43	84.98
		2/17/2022		8.28	82.13
		8/31/2022		16.50	73.91
		12/12/2022		6.65	83.76
		2/27/2023		6.22	84.19
		5/9/2023		7.65	82.76

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Eastside Fire & Rescue Headquarters Source Area (continued)					
NWN-MW05	Shallow	4/13/2020	90.34	11.51	78.83
		7/14/2020		14.92	75.42
		10/26/2020		12.80	77.54
		7/29/2021		16.23	74.11
		8/12/2021		16.24	74.10
		2/17/2022		11.47	78.87
		9/1/2022		16.28	74.06
		12/12/2022		9.20	81.14
		2/27/2023		10.90	79.44
		5/9/2023		10.72	79.62
NWN-MW06	Shallow	4/13/2020	90.98	13.71	77.27
		7/14/2020		16.60	74.38
		10/26/2020		14.58	76.40
		7/29/2021		18.68	72.30
		8/12/2021		19.30	71.68
		9/1/2021		19.85	71.13
		10/18/2021		17.20	73.78
		12/9/2021		10.11	80.87
		1/18/2022		9.14	81.84
		2/17/2022		13.48	77.50
		9/1/2022		19.75	71.23
		12/12/2022		10.72	80.26
		2/27/2023		10.98	80.00
		5/9/2023		12.71	78.27
NWN-MW07	Shallow	4/13/2020	90.89	17.92	72.97
		7/14/2020		21.70	69.19
		10/26/2020		20.58	70.31
		7/29/2021		24.00	66.89
		8/12/2021		24.50	66.39
		9/1/2021		25.29	65.60
		10/18/2021		23.06	67.83
		12/9/2021		14.07	76.82
		1/18/2022		11.96	78.93
		2/17/2022		18.00	72.89
		8/31/2022		23.63	67.26
		12/12/2022		15.86	75.03
		2/27/2023		15.86	75.03
		5/9/2023		17.10	73.79
NWN-MW08	Intermediate	4/13/2020	89.95	18.87	71.08
		7/14/2020		22.15	67.80
		10/26/2020		20.77	69.18
		7/29/2021		24.71	65.24
		8/12/2021		25.16	64.79
		2/17/2022		19.13	70.82
		8/31/2022		23.80	66.15
		12/12/2022		18.09	71.86
		2/27/2023		17.48	72.47
		5/9/2023		18.03	71.92
NWN-MW09	Shallow	4/13/2020	91.29	19.73	71.56
		7/14/2020		22.92	68.37
		10/26/2020		22.03	69.26
		7/29/2021		25.19	66.10
		8/12/2021		25.73	65.56
		9/1/2021		26.31	64.98
		10/18/2021		24.11	67.18
		12/9/2021		17.24	74.05
		1/17/2022		14.16	77.13
		2/17/2022		19.97	71.32
		8/31/2022		26.65	64.64
		12/12/2022		19.03	72.26
		2/27/2023		18.33	72.96
		5/9/2023		19.05	72.24

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Eastside Fire & Rescue Headquarters Source Area (continued)					
NWN-MW10	Shallow	7/29/2021	90.66	19.93	70.73
		8/12/2021		21.02	69.64
		9/1/2021		21.38	69.28
		10/18/2021		19.12	71.54
		12/9/2021		10.48	80.18
		1/18/2022		9.41	81.25
		2/17/2022		14.23	76.43
		8/31/2022		21.31	69.35
		12/12/2022		11.11	79.55
		2/27/2023		11.51	79.15
		5/9/2023		13.25	77.41
NWN-MW12	Shallow	7/29/2021	90.56	15.98	74.58
		8/12/2021		16.79	73.77
		9/1/2021		17.41	73.15
		10/18/2021		13.96	76.60
		12/9/2021		6.86	83.70
		1/18/2022		6.37	84.19
		2/17/2022		9.18	81.38
		9/1/2022		17.00	73.56
		12/12/2022		7.60	82.96
		2/27/2023		7.35	83.21
		5/9/2023		8.67	81.89
NWN-MW13	Shallow	7/29/2021	89.80	13.32	76.48
		8/12/2021		13.94	75.86
		9/1/2021		14.55	75.25
		10/18/2021		10.10	79.70
		12/9/2021		1.54	88.26
		1/18/2022		1.26	88.54
		2/17/2022		3.40	86.40
		9/1/2022		13.96	75.84
		12/12/2022		1.80	88.00
		2/27/2023		1.77	88.03
		5/9/2023		3.41	86.39
NWN-MW14	Shallow	7/29/2021	90.68	15.70	74.98
		8/12/2021		16.53	74.15
		9/1/2021		20.10	70.58
		1/18/2022		4.38	86.30
		2/17/2022		7.94	82.74
		9/1/2022		16.67	74.01
		12/12/2022		9.10	81.58
		2/27/2023		5.25	85.43
		5/9/2023		7.59	83.09
NWN-MW15	Shallow	7/29/2021	90.37	23.40	66.97
		8/12/2021		24.03	66.34
		9/1/2021		24.71	65.66
		1/17/2022		10.63	79.74
		2/17/2022		17.33	73.04
		9/1/2022		23.09	67.28
		12/12/2022		14.69	75.68
		2/27/2023		15.02	75.35
		5/9/2023		16.47	73.90
NWN-MW16	Shallow	7/29/2021	90.55	23.83	66.72
		8/12/2021		24.40	66.15
		9/1/2021		25.08	65.47
		1/17/2022		11.17	79.38
		2/17/2022		17.72	72.83
		9/1/2022		23.34	67.21
		12/12/2022		15.34	75.21
		2/27/2023		15.50	75.05
		5/9/2023		16.79	73.76

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Eastside Fire & Rescue Headquarters Source Area (continued)					
NWN-MW17	Shallow	8/31/2022	90.74	19.34	71.40
		12/12/2022		10.04	80.70
		2/27/2023		10.30	80.44
		5/9/2023		12.09	78.65
NWN-PZ01	Shallow	4/13/2020	90.76	19.15	71.61
		7/14/2020		22.43	68.33
		10/26/2020		21.48	69.28
		7/29/2021		NM	---
		8/12/2021		NM	---
		8/31/2022		24.10	66.66
		12/12/2022		18.43	72.33
		2/27/2023		17.75	73.01
		5/9/2023		18.46	72.30
NWN-PZ02	Shallow	4/13/2020	90.44	17.76	72.68
		7/14/2020		21.41	69.03
		10/26/2020		20.34	70.10
		7/29/2021		NM	---
		8/12/2021		NM	---
		8/31/2022		23.31	67.13
		12/12/2022		16.06	74.38
		2/27/2023		16.01	74.43
		5/9/2023		17.02	73.42
Issaquah Valley Elementary School Source Area					
IES-MW01	Shallow	10/26/2018	76.31	7.52	68.79
		3/10/2020		6.51	69.80
		4/13/2020		7.58	68.73
		7/13/2020		9.66	66.65
		10/26/2020		9.30	67.01
		8/31/2022		11.30	65.01
		12/12/2022		7.02	69.29
		2/27/2023		6.51	69.80
		5/9/2023		7.06	69.25
IES-MW02	Shallow	10/26/2018	73.74	7.15	66.59
		3/10/2020		4.56	69.18
		4/13/2020		5.65	68.09
		7/13/2020		8.02	65.72
		10/26/2020		7.30	66.44
IES-MW03	Shallow	10/26/2018	72.7	7.74	64.96
		3/10/2020		5.00	67.70
		4/13/2020		5.82	66.88
		7/13/2020		8.12	64.58
		10/26/2020		7.26	65.44
		8/31/2022		8.96	63.74
		12/12/2022		5.03	67.67
		2/27/2023		4.63	68.07
		5/9/2023		5.18	67.52
IES-MW04	Shallow	10/26/2018	72.43	6.79	65.64
		3/10/2020		4.73	67.70
		4/13/2020		5.57	66.86
		7/13/2020		7.74	64.69
		10/26/2020		6.92	65.51
		8/31/2022		8.65	63.78
		12/12/2022		4.81	67.62
		2/27/2023		4.50	67.93
		5/9/2023		5.03	67.40
IES-MW06	Intermediate	4/13/2020	75.92	7.66	68.26
		7/13/2020		10.01	65.91
		10/26/2020		11.31	64.61
		8/31/2022		10.44	65.48
		12/12/2022		6.91	69.01
		2/27/2023		6.38	69.54
		5/9/2023		6.92	69.00

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Issaquah Valley Elementary School Source Area					
IES-MW10	Intermediate	4/13/2020	72.66	6.12	66.54
		7/13/2020		9.10	63.56
		10/26/2020		7.95	64.71
		8/31/2022		9.60	63.06
		12/12/2022		5.05	67.61
		2/27/2023		4.61	68.05
		5/9/2023		5.17	67.49
IES-MW11	Deep	8/31/2022	75.69	14.66	61.03
		12/12/2022		7.11	68.58
		2/27/2023		6.80	68.89
		5/9/2023		6.96	68.73
IES-MW05	Shallow	10/26/2018	72.26	9.68	62.58
		3/10/2020		4.83	67.43
		4/13/2020		5.51	66.75
		7/13/2020		7.30	64.96
		10/26/2020		6.63	65.63
		8/31/2022		NM	---
		12/12/2022		4.94	67.32
		2/27/2023		4.73	67.53
		5/9/2023		5.20	67.06
IES-MW08	Shallow	4/13/2020	72.07	6.21	65.86
		7/13/2020		7.15	64.92
		10/26/2020		6.75	65.32
		8/31/2022		7.81	64.26
		12/12/2022		5.78	66.29
		2/27/2023		5.79	66.28
		5/9/2023		6.14	65.93
IES-MW09	Intermediate	4/13/2020	72.18	5.10	67.08
		7/13/2020		6.92	65.26
		10/26/2020		6.45	65.73
		8/31/2022		7.98	64.20
		12/12/2022		4.26	67.92
		2/27/2023		4.23	67.95
		5/9/2023		4.65	67.53
DF-MW01	Shallow	10/26/2018	77.71	10.99	66.72
		3/10/2020		8.61	69.10
		4/13/2020		9.53	68.18
		7/13/2020		11.39	66.32
		10/26/2020		10.79	66.92
		8/31/2022		12.50	65.21
		12/12/2022		8.84	68.87
		2/27/2023		8.71	69.00
		5/9/2023		9.24	68.47
DF-MW02	Shallow	8/3/2018	74.21	10.05	64.16
		10/26/2018		8.10	66.11
		3/10/2020		5.51	68.70
		4/13/2020		6.46	67.75
		7/13/2020		8.56	65.65
		10/26/2020		7.89	66.32
		8/31/2022		9.66	64.55
		12/12/2022		5.72	68.49
		2/27/2023		5.43	68.78
		5/9/2023		6.00	68.21
DF-MW03	Shallow	8/3/2018	74.35	10.09	64.26
		3/10/2020		7.07	67.28
		4/13/2020		7.76	66.59
		7/13/2020		9.13	65.22
		10/26/2020		8.60	65.75
		8/31/2022		NM	---
		12/12/2022		NM	---
		3/1/2023		7.35	67.00
		5/9/2023		7.52	66.83

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Geotechnical Wells-Newport Way Northwest					
B-4	Shallow	2/28/2023	73.83	6.15	67.68
B-7	Shallow	2/28/2023	NS	10.89	NM
Lower Issaquah Valley Regional Wells					
COI-MW01	Intermediate	8/31/2022	58.4	3.93	54.47
		12/12/2022		2.30	56.10
		2/27/2023		2.30	56.10
		5/9/2023		2.47	55.93
COI-MW02	Intermediate	10/26/2018	62.80	3.71	59.09
		3/10/2020		1.98	60.82
		4/13/2020		2.65	60.15
		7/13/2020		5.14	57.66
		10/27/2020		3.13	59.67
		9/1/2021		NM	---
		12/12/2022		NM	---
		2/27/2023		0.36	62.44
		5/9/2023		1.34	61.46
COI-MW03	Intermediate	10/24/2018	62.90	5.92	56.98
		3/10/2020		NM	--
		4/13/2020		4.46	58.44
		7/14/2020		6.61	56.29
		10/26/2020		4.75	58.15
		8/31/2022		6.09	56.81
		12/12/2022		1.45	61.45
		2/27/2023		1.20	61.70
		5/9/2023		2.96	59.94
COI-MW04	Intermediate	10/24/2018	73.10	10.20	62.90
		3/10/2020		8.19	64.91
		4/13/2020		9.03	64.07
		7/13/2020		11.69	61.41
		10/26/2020		9.68	63.42
		8/31/2022		12.61	60.49
		12/12/2022		NM	---
		2/27/2023		NM	---
		5/9/2023		8.01	65.09
COI-MW05	Intermediate	10/25/2018	71.90	8.09	63.81
		3/10/2020		5.96	65.94
		4/13/2020		6.71	65.19
		7/13/2020		8.72	63.18
		10/26/2020		8.72	63.18
		9/2/2022		9.61	62.29
		12/12/2022		5.86	66.04
		2/27/2023		5.55	66.35
		5/9/2023		6.09	65.81
COI-MW06	Intermediate	10/25/2018	86.30	18.62	67.68
		3/10/2020		15.22	71.08
		4/13/2020		16.51	69.79
		7/13/2020		19.51	66.79
		10/26/2020		18.21	68.09
		8/31/2022		21.02	65.28
		12/12/2022		15.55	70.75
		2/27/2023		14.95	71.35
		5/9/2023		15.52	70.78
COI-MW07	Intermediate	10/25/2018	90.30	19.44	70.86
		3/10/2020		15.94	74.36
		4/13/2020		17.25	73.05
		7/13/2020		20.66	69.64
		10/26/2020		19.18	71.12
		8/31/2022		NM	--
		12/12/2022		16.35	73.95
		2/27/2023		15.83	74.47
		5/9/2023		16.32	73.98

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Lower Issaquah Valley Regional Wells (continued)					
COI-MW08	Deep	1/12/2023	69.85	2.23	67.62
		2/27/2023		2.30	67.55
		5/9/2023		2.72	67.13
COI-TW01[1]	Shallow	5/9/2023	81.9	11.38	70.52
COI-TW03[1]	Deep	5/9/2023	81.8	11.24	70.56
IES-MW07	Shallow	4/13/2020	70.25	5.46	64.79
		7/13/2020		7.21	63.04
		10/26/2020		6.30	63.95
		8/31/2022		8.04	62.21
		12/12/2022		4.57	65.68
		2/27/2023		4.42	65.83
		5/9/2023		4.96	65.29
IES-MW12	Deep	8/31/2022	69.77	8.79	60.98
		12/12/2022		3.29	66.48
		2/27/2023		3.02	66.75
		5/9/2023		3.53	66.24
NDS-MW01	Shallow	4/13/2020	85.48	15.32	70.16
		7/13/2020		18.11	67.37
		10/26/2020		17.32	68.16
		8/31/2022		19.73	65.75
		12/12/2022		14.84	70.64
		2/27/2023		14.09	71.39
		5/9/2023		14.71	70.77
NDS-MW02	Intermediate	4/13/2020	81.75	12.39	69.36
		7/13/2020		14.66	67.09
		10/26/2020		14.33	67.42
		12/12/2022		11.85	69.90
		2/27/2023		11.35	70.40
		5/9/2023		11.87	69.88
NDS-MW03	Shallow	4/13/2020	82.07	12.43	69.64
		7/13/2020		15.09	66.98
		10/26/2020		14.17	67.90
		8/31/2022		NM	---
		12/12/2022		11.85	70.22
		2/27/2023		11.41	70.66
		5/9/2023		11.89	70.18
NDS-MW04	Intermediate	4/13/2020	81.71	12.42	69.29
		7/13/2020		15.67	66.04
		10/26/2020		14.15	67.56
		12/12/2022		11.41	70.30
		2/27/2023		10.94	70.77
		5/9/2023		11.47	70.24
NGB-MW01	Shallow	8/31/2022	62.96	7.84	55.12
		12/12/2022		6.49	56.47
		2/27/2023		6.45	56.51
		5/9/2023		6.75	56.21
NLS-MW01	Shallow	8/31/2022	66.62	5.48	61.14
		12/12/2022		1.88	64.74
		2/27/2023		1.62	65.00
		5/9/2023		2.10	64.52
NLS-MW02	Intermediate	8/31/2022	66.88	6.22	60.66
		12/12/2022		2.21	64.67
		2/27/2023		2.00	64.88
		5/9/2023		2.60	64.28

Table 4
Summary of Groundwater Elevation Data
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Location	Zone	Date Measured	Well Head Elevation (feet)[1]	Depth to Water (feet)[2]	Groundwater Elevation (feet)[1]
Lower Issaquah Valley Regional Wells (continued)					
NWN-MW11	Shallow	4/13/2020	90.58	16.93	73.65
		7/13/2020		19.35	71.23
		10/26/2020		18.47	72.11
		7/29/2021		NM	---
		8/12/2021		NM	---
		9/1/2021		21.57	69.01
		2/17/2022		17.26	73.32
		8/31/2022		NM	NM
		12/12/2022		16.41	74.17
		2/27/2023		15.89	74.69
		5/9/2023		16.34	74.24
Lower Issaquah Valley Creek Monitoring Stations[3]					
STR-01	Creek	4/13/2020	Reference Elevation Reported in Error	---	---
		7/13/2020		---	---
		10/26/2020		---	---
		8/31/2022	71.63	14.37	57.26
		12/12/2022		13.60	58.03
		2/27/2023		14.29	57.34
		5/9/2023		14.39	57.24
STR-02	Creek	4/13/2020	66.79	2.12	64.67
		7/13/2020		2.5	64.29
		10/26/2020		1.42	65.37
		8/31/2022	77.45	NM	---
		12/12/2022		12.58	64.87
		2/27/2023		12.79	64.66
		5/9/2023		13.06	64.39
STR-05	Creek	8/31/2022	89.49	17.50	71.99
		12/12/2022		15.70	73.79
		2/27/2023		16.20	73.29
		5/9/2023		16.60	72.89

NOTES:

--- denotes not available

[1] Elevations reported in North American Vertical Datum of 1988.

[2] In feet below top of well casing.

[3] Fixed Monitoring Location

Farallon = Farallon Consulting, L.L.C.

NM = not measured

NS = not surveyed

Table 5
Soil Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Type	Zone	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram)[1]									
							Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
2016 Hydrogeological Characterization Investigation																
Eastside Fire & Rescue Headquarters Source Area																
STSP01	Geosyntec	7/22/2016	COI-STSP01-20160722	Discrete	Unsaturated	2.2 - 2.3	---	< 0.0019	0.00058	< 0.0019	< 0.00072	**0.023**	**0.00077**	**0.0012**	---	---
STTA01	Geosyntec	7/22/2016	COI-STTA01-20160722	Discrete	Unsaturated	2.2 - 2.3	---	0.0089	0.03	**0.08**	**0.011**	**1.3**	**0.0097**	< 0.00054	---	---
STTA02	Geosyntec	7/22/2016	COI-STTA02-20160722	Discrete	Unsaturated	3.8 - 3.9	---	0.0045	0.015	**0.025**	**0.0043**	**0.18**	**0.033**	**0.0039**	---	---
	Geosyntec	7/22/2016	COI-STTA02-20160722-DUP	Discrete	Unsaturated	3.8 - 3.9	---	0.0054	0.019	**0.029**	**0.0052**	**0.25**	**0.043**	**0.0045**	---	---
2018 Subsurface Investigation																
Issaquah Valley Elementary School Source Area																
DU-1A	Farallon	8/6/2018	DU-1A-COMPOSITE	MI	Unsaturated	0.0 - 0.5	0.00037	< 0.00082	0.00072 J	**0.00022**	**0.0011**	**0.0028**	**0.00034**	**0.0015**	< 0.00082	---
DU-1B	Farallon	8/7/2018	DU-1B-COMPOSITE	MI	Unsaturated	0.0 - 0.5	< 0.00098	< 0.00098	0.00024 J	**0.00017 J**	**0.00053**	**0.0024**	< 0.00098	**0.0005** J	< 0.00098	---
IES-R02	Farallon	8/10/2018	IES-R02-180810-12	Discrete	Unsaturated	12.0	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	< 0.00097	---
	Farallon	8/10/2018	IES-R02-180810-23	Discrete	Saturated	23.0	< 0.00096	< 0.00096	< 0.00096	**0.0002**	< 0.00096	**0.00055**	< 0.00096	< 0.00096	< 0.00096	---
DU-2A	Farallon	8/8/2018	DU-2A-COMPOSITE	MI	Unsaturated	0.0 - 0.5	0.0010	< 0.0010	0.00096 J	**0.0024**	**0.00094** J	**0.085**	**0.0011**	**0.00082** J	< 0.0010	---
DU-2B	Farallon	8/9/2018	DU-2B-COMPOSITE	MI	Unsaturated	0.0 - 0.5	< 0.00096	< 0.00096	0.00026 J	**0.00086** J	**0.00042** J	**0.016**	< 0.00096	**0.00028** J	< 0.00096	---
DF-R01	Farallon	9/6/2018	DF-R01-180906-3.5	Discrete	Unsaturated	3.5	0.00044 J	< 0.0012	0.00049 J	**0.0036**	**0.00040** J	**0.043**	**0.0072**	**0.00037** J	< 0.0012	---
Eastside Fire & Rescue Headquarters Source Area																
DU-05	Farallon	8/14/2018	DU-05-COMPOSITE	MI	Unsaturated	0.0 - 0.5	0.00061 J	0.00019 J	0.00068 J	**0.0039**	**0.00077** J	**0.024**	**0.00057** J	**0.00039** J	0.00019 J	---
DU-06	Farallon	8/15/2018	DU-06 COMPOSITE	MI	Unsaturated	0.0 - 0.5	0.00088 J	0.00021 J	0.0014	**0.0049**	**0.0015**	**0.026**	**0.00063** J	**0.00093** J	0.0015	---
NWN-MW02	Farallon	10/18/2018	NWN-MW02-181018-10	Discrete	Unsaturated	10.0	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	< 0.00096	---
	Farallon	10/18/2018	NWN-MW02-181018-19	Discrete	Unsaturated	19.0	< 0.0010	< 0.0010	< 0.0010	**0.00026** J	< 0.0010	**0.0064**	< 0.0010	< 0.0010	< 0.0010	---
NWN-MW03	Farallon	10/18/2018	NWN-MW03-181018-12	Discrete	Unsaturated	12.0	< 0.0013	< 0.0013	0.00039 J	**0.0036**	**0.00036** J	**0.056**	< 0.0013	< 0.0013	< 0.0013	---
	Farallon	10/18/2018	NWN-MW03-181018-25	Discrete	Unsaturated	25.0	< 0.0010	< 0.0010	0.00028 J	**0.00045** J	**0.00021** J	**0.0064**	**0.00023** J	< 0.0010	0.0018	---
NWN-MW04	Farallon	10/19/2018	NWN-MW04-181019-5	Discrete	Unsaturated	5.0	0.00068 J	0.00081 J	0.0039	**0.0061**	**0.0017**	**0.086**	**0.0025**	< 0.0013	0.011	---
	Farallon	10/19/2018	NWN-MW04-181019-DUP	Discrete	Unsaturated	5.0	0.00044 J	0.00073 J	0.0025	**0.0049**	**0.0015**	**0.088**	**0.0019**	< 0.0014	0.0077	---
	Farallon	10/19/2018	NWN-MW04-181019-13	Discrete	Unsaturated	13.0	< 0.0012	< 0.0012	0.00027 J	**0.00059** J	**0.00034** J	**0.016**	**0.00048** J	< 0.0012	0.0022	---
2020 through 2022 Subsurface Investigations																
Eastside Fire & Rescue Headquarters Source Area																
NWN-R04	Farallon	3/18/2020	NWN-R04-200318-5.0	Discrete	Unsaturated	5.0	0.0016	0.00083 J	0.0081	**0.0070**	**0.0010** J	**0.013**	< 0.0014	< 0.0014	0.016	**0.0007** J
	Farallon	3/18/2020	NWN-R04-200318-10.0	Discrete	Saturated	10.0	0.0013 J	0.00063 J	**0.0065**	**0.0053**	**0.0011** J	**0.0092**	< 0.0014	< 0.0014	**0.017**	**0.00089** J
	Farallon	3/18/2020	NWN-R04-200318-15.0	Discrete	Saturated	15.0	0.00051 J	< 0.0013	0.0025	**0.0020**	**0.00041** J	**0.0056**	< 0.0013	< 0.0013	**0.0073**	**0.0012** J
NWN-R05	Farallon	3/20/2020	NWN-R05-200320-3.0	Discrete	Unsaturated	3.0	0.00092 J	< 0.0013	0.0032	**0.0032**	**0.0021**	**0.83**	**0.0035**	**0.00049** J	0.0041	**0.00033** J
	Farallon	3/20/2020	NWN-R05-200320-5.0	Discrete	Saturated	5.0	< 0.0014	< 0.0014	0.0013 J	**0.0014** J	**0.00098** J	**0.23**	**0.0010** J	**0.0004** J	0.0023	**0.00024** J
	Farallon	3/20/2020	NWN-R05-200320-10.0	Discrete	Saturated	10.0	< 0.0012	< 0.0012	< 0.00099	< 0.0012	**0.00022** J	**0.04**	< 0.0012	< 0.00099	0.00079 J	< 0.00012
MTCA Method B Direct Contact Cleanup Levels for Soil[3]							**80**	**24**	**40**	**0.000032**	**0.000034**	**0.008**	**0.20**	**0.00016**	**16**	**0.24**
MTCA Method C Industrial Direct Contact Cleanup Levels for Soil[3]							**3,500**	**1,100**	**1,800**	**0.0014**	**0.0045**	**0.35**	**8.8**	**0.0070**	**700**	**11**
MTCA Cleanup Levels for Soil Protective of Groundwater Vadose @ 13 Degrees Celsius[3]							**0.044**	**0.025**	**0.035**	**0.00000004**	**0.000025**	**0.000046**	**0.000089**	**0.00000038**	**0.074**	**0.00012**
MTCA Cleanup Levels for Soil Protective of Groundwater Saturated[3]							**0.0029**	**0.0017**	**0.0025**	**0.0000000026**	**0.0000016**	**0.0000026**	**0.0000053**	**0.000000022**	**0.004**	**0.0000069**
Analytical Method Reporting Limit							**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**

Table 5
Soil Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Type	Zone	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram)[1]									
							Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
NWN-R06	Farallon	3/20/2020	NWN-R06-200320-2.0	Discrete	Unsaturated	2.0	0.0018	0.00090 J	0.0083	**0.017**	**0.0066**	**1.2**	**0.0043**	< 0.0011	0.047	**0.00019** J
	Farallon	3/20/2020	NWN-R06-200320-5.0	Discrete	Unsaturated	5.0	0.00059 J	0.00035 J	0.0019	**0.0039**	**0.0025**	**0.67**	**0.00064** J	**0.0006** J	0.014	**0.00027** J
	Farallon	3/20/2020	NWN-R06-200320-10.0	Discrete	Saturated	10.0	< 0.0013	< 0.0013	0.00071 J	**0.0017**	**0.00063** J	**0.094**	**0.00053** J	**0.0014**	**0.0052**	< 0.00013
NWN-R07	Farallon	3/20/2020	NWN-R07-200320-3.0	Discrete	Unsaturated	3.0	0.0022	0.0035	0.011	**0.077**	**0.0053**	**0.051**	**0.00045** J	< 0.0011	0.057	**0.00019** J
	Farallon	3/20/2020	NWN-R07-200320-5.0	Discrete	Unsaturated	5.0	0.0020	0.0034	0.011	**0.071**	**0.0061**	**0.10**	**0.00075** J	< 0.0011	0.052	**0.00046** J
	Farallon	3/20/2020	NWN-R07-200320-10.0	Discrete	Unsaturated	10.0	< 0.0013	0.00039 J	0.0016	**0.0065**	**0.00090** J	**0.063**	< 0.0013	< 0.0010	0.0074	< 0.00013
NWN-R08	Farallon	3/18/2020	NWN-R08-200318-5.0	Discrete	Unsaturated	5.0	0.0014	< 0.0013	0.0053	< 0.0013	**0.0022**	**0.016**	< 0.0013	< 0.0013	0.017	**0.00086** J
	Farallon	3/18/2020	NWN-R08-200318-10.0	Discrete	Saturated	10.0	< 0.0011	< 0.0011	0.00073 J	< 0.0011	**0.00088** J	**0.0089**	< 0.0011	< 0.0011	**0.0056**	**0.00079** J
	Farallon	3/18/2020	NWN-R08-200318-15.0	Discrete	Saturated	15.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.00026** J	< 0.0011	< 0.0011	0.00026 J	**0.00058** J
NWN-R09	Farallon	3/20/2020	NWN-R09-200320-3.0	Discrete	Unsaturated	3.0	0.0051	0.0045	**0.037**	**0.061**	**0.0079**	**0.93**	**0.033**	**0.00039** J	**0.48**	**0.0003** J
	Farallon	3/20/2020	NWN-R09-200320-5.0	Discrete	Unsaturated	5.0	0.00062 J	0.00046 J	0.0043	**0.0039**	**0.00085** J	**0.15**	**0.0018**	< 0.0011	0.035	**0.00036** J
	Farallon	3/20/2020	NWN-R09-200320-10.0	Discrete	Saturated	10.0	0.0011 J	0.00076 J	**0.0064**	**0.0078**	**0.0011** J	**0.12**	**0.0027**	< 0.0010	**0.073**	< 0.00013
NWN-R10	Farallon	3/20/2020	NWN-R10-200320-3.0	Discrete	Unsaturated	3.0	0.010	0.016	**0.066**	**0.066**	**0.014**	**0.10**	**0.058**	**0.0028**	**0.081**	**0.00028** J
	Farallon	3/20/2020	NWN-R10-200320-5.0	Discrete	Unsaturated	5.0	0.0096	0.017	**0.060**	**0.12**	**0.037**	**0.78**	**0.074**	**0.0027**	**0.19**	**0.00049** J
	Farallon	3/20/2020	NWN-R10-200320-10.0	Discrete	Unsaturated	10.0	0.0029	0.0046	0.015	**0.019**	**0.0037**	**0.30**	**0.0060**	**0.0016**	0.023	< 0.0001
NWN-R11	Farallon	3/20/2020	NWN-R11-200320-3.0	Discrete	Unsaturated	3.0	0.0063	0.010	**0.037**	**0.14**	**0.022**	**0.034**	**0.0037**	< 0.0008	**0.09**	**0.00015** J
	Farallon	3/20/2020	NWN-R11-200320-5.0	Discrete	Unsaturated	5.0	0.0036	0.0050	0.025	**0.15**	**0.015**	**0.33**	**0.0050**	< 0.0008	0.059	**0.00023** J
	Farallon	3/20/2020	NWN-R11-200320-10.0	Discrete	Unsaturated	10.0	0.00098	0.0012	0.0057	**0.03**	**0.0039**	**0.081**	**0.0060**	< 0.0008	0.027	< 0.0001
NWN-R12	Farallon	3/23/2020	NWN-R12-200323-5.0	Discrete	Unsaturated	5.0	0.0011	0.0019	0.0085	**0.066**	**0.0099**	**0.65**	**0.0020**	< 0.0008	**0.078**	**0.00029** J
	Farallon	3/23/2020	NWN-R12-200323-10.0	Discrete	Unsaturated	10.0	0.00057 J	0.00086 J	0.0040	**0.028**	**0.0063**	**0.39**	**0.0012**	< 0.0008	0.035	< 0.0001
	Farallon	3/23/2020	NWN-R12-200323-15.0	Discrete	Unsaturated	15.0	0.00039 J	0.00045 J	0.0020	**0.012**	**0.0021**	**0.13**	**0.00035** J	< 0.0008	0.014	< 0.0001
NWN-R13	Farallon	3/18/2020	NWN-R13-200318-6.5	Discrete	Unsaturated	6.5	0.00051 J	< 0.0011	0.0024	< 0.0011	**0.00081** J	**0.0036**	< 0.0011	**0.00032** J	0.0075	**0.00038** J
	Farallon	3/18/2020	NWN-R13-200318-10.0	Discrete	Saturated	10.0	0.0020	< 0.0011	**0.010**	**0.00081** J	**0.0027**	**0.031**	**0.00057** J	**0.0003** J	**0.091**	**0.00038** J
	Farallon	3/18/2020	NWN-R13-200318-15.0	Discrete	Saturated	15.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.00046** J	< 0.0011	< 0.0011	0.00066 J	**0.00045** J
NWN-R14	Farallon	3/19/2020	NWN-R14-200319-5.0	Discrete	Unsaturated	5.0	0.0014	0.0033	0.0091	**0.041**	**0.0053**	**0.089**	**0.0037**	< 0.0012	0.048	< 0.0012
	Farallon	3/19/2020	NWN-R14-200319-10.0	Discrete	Unsaturated	10.0	< 0.0013	0.00044 J	0.0011 J	**0.0016**	**0.00033** J	**0.0046**	< 0.0013	< 0.0013	0.0028	< 0.0013
	Farallon	3/19/2020	NWN-R14-200319-15.0	Discrete	Saturated	15.0	< 0.0012	< 0.0012	0.00096 J	**0.0012**	**0.00033** J	**0.0052**	< 0.0012	< 0.0012	0.0027	< 0.0012
NWN-R15	Farallon	3/19/2020	NWN-R15-200319-5.0	Discrete	Unsaturated	5.0	0.0091	0.017	**0.049**	**0.19**	**0.067**	**0.54**	**1.4**	**0.0056**	**0.24**	**0.0014**
	Farallon	3/19/2020	NWN-R15-200319-10.0	Discrete	Unsaturated	10.0	0.0053	0.012	0.029	**0.11**	**0.038**	**0.49**	**1.1**	**0.0062**	**0.18**	**0.0014**
	Farallon	3/19/2020	NWN-R15-200319-15.0	Discrete	Saturated	15.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.0053**	**0.00056** J	< 0.0011	0.0019	< 0.0011
NWN-R16	Farallon	3/19/2020	NWN-R16-200319-5.0	Discrete	Unsaturated	5.0	0.0019	0.0030	0.011	**0.021**	**0.0060**	**0.15**	**0.066**	**0.0024**	0.025	**0.00056** J
	Farallon	3/19/2020	NWN-R16-200319-10.0	Discrete	Unsaturated	10.0	< 0.0010	0.00042 J	0.0015	**0.0018**	**0.00046** J	**0.021**	**0.0039**	< 0.0010	0.0036	**0.00062** J
	Farallon	3/19/2020	NWN-R16-200319-15.0	Discrete	Saturated	15.0	< 0.0010	0.00052 J	0.0020	**0.0028**	**0.0010**	**0.032**	**0.018**	**0.00041** J	**0.0057**	**0.00085** J
NWN-R17	Farallon	3/19/2020	NWN-R17-200319-5.0	Discrete	Unsaturated	5.0	< 0.0011	< 0.0011	0.00037 J	**0.0018**	< 0.0011	**0.0014**	< 0.0011	< 0.0011	< 0.0011	**0.0013**
	Farallon	3/19/2020	NWN-R17-200319-10.0	Discrete	Unsaturated	10.0	< 0.0010	< 0.0010	< 0.0010	**0.00061** J	**0.00015** J	**0.0039**	< 0.0010	< 0.0010	0.0016	**0.00051** J
	Farallon	3/19/2020	NWN-R17-200319-15.0	Discrete	Unsaturated	15.0	< 0.0010	< 0.0010	0.00049 J	< 0.0010	< 0.0010	**0.0021**	< 0.0010	< 0.0010	0.00036 J	**0.00059** J
NWN-R18	Farallon	3/19/2020	NWN-R18-200319-5.0	Discrete	Unsaturated	5.0	< 0.0012	< 0.0012	0.00043 J	**0.0028**	**0.00074** J	**0.0042**	< 0.0012	< 0.0012	0.001 J	**0.00069** J
	Farallon	3/19/2020	NWN-R18-200319-10.0	Discrete	Unsaturated	10.0	< 0.0012	< 0.0012	0.00064 J	**0.0019**	**0.00045** J	**0.0091**	**0.00054** J	< 0.0012	0.0013	**0.00095** J
	Farallon	3/19/2020	NWN-R18-200319-15.0	Discrete	Unsaturated	15.0	< 0.0011	< 0.0011	< 0.0011	**0.0010** J	**0.00028** J	**0.0071**	< 0.0011	< 0.0011	0.00047 J	**0.0011** J
MTCA Method B Direct Contact Cleanup Levels for Soil[3]							**80**	**24**	**40**	**0.000032**	**0.000034**	**0.008**	**0.20**	**0.00016**	**16**	**0.24**
MTCA Method C Industrial Direct Contact Cleanup Levels for Soil[3]							**3,500**	**1,100**	**1,800**	**0.0014**	**0.0045**	**0.35**	**8.8**	**0.0070**	**700**	**11**
MTCA Cleanup Levels for Soil Protective of Groundwater Vadose @ 13 Degrees Celsius[3]							**0.044**	**0.025**	**0.035**	**0.00000004**	**0.000025**	**0.000046**	**0.000089**	**0.00000038**	**0.074**	**0.00012**
MTCA Cleanup Levels for Soil Protective of Groundwater Saturated[3]							**0.0029**	**0.0017**	**0.0025**	**0.0000000026**	**0.0000016**	**0.0000026**	**0.0000053**	**0.000000022**	**0.004**	**0.0000069**
Analytical Method Reporting Limit							**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**

Table 5
Soil Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Type	Zone	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram)[1]									
							Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
NWN-MW05	Farallon	3/23/2020	NWN-MW05-200323-6.0	Discrete	Unsaturated	6.0	0.00057 J	0.00051 J	0.0031	**0.0046**	**0.0013**	**0.25**	**0.0011**	< 0.0008	0.015	**0.00021** J
	Farallon	3/23/2020	NWN-MW05-200323-10.0	Discrete	Unsaturated	10.0	< 0.00082	0.00027 J	0.0016	**0.0030**	**0.00069** J	**0.12**	**0.00046** J	< 0.0008	0.0046	< 0.0001
	Farallon	3/23/2020	NWN-MW05-200323-15.0	Discrete	Unsaturated	15.0	< 0.0010	< 0.0010	< 0.00081	**0.00048** J	**0.00021** J	**0.012**	< 0.0010	< 0.00081	0.00079 J	< 0.0001
NWN-MW06	Farallon	3/23/2020	NWN-MW06-200323-6.0	Discrete	Unsaturated	6.0	< 0.00096	0.00027 J	0.00088 J	**0.0045**	**0.0013**	**0.22**	**0.0048**	**0.0017**	0.0044	**0.00023** J
	Farallon	3/23/2020	NWN-MW06-200323-10.0	Discrete	Unsaturated	10.0	< 0.0010	0.00042 J	0.00065 J	**0.0050**	**0.00087** J	**0.13**	**0.0019**	**0.00075** J	0.0032	< 0.0001
	Farallon	3/23/2020	NWN-MW06-200323-15.0	Discrete	Unsaturated	15.0	< 0.00084	0.00033 J	0.00065 J	**0.0033**	**0.00053** J	**0.077**	**0.00096**	**0.00062** J	0.0019	< 0.0001
NWN-MW07	Farallon	3/30/2020	NWN-MW07_200330-5	Discrete	Unsaturated	5.0	< 0.0011	< 0.0011	0.00036 J	**0.0015**	**0.00025** J	**0.031**	**0.00049** J	**0.00038** J	0.0048	< 0.0011
	Farallon	3/30/2020	NWN-MW07_200330-10	Discrete	Unsaturated	10.0	0.00047 J	0.00080 J	0.0021	**0.0054**	**0.0013**	**0.056**	**0.0082**	**0.00061** J	0.0056	< 0.0012
	Farallon	3/30/2020	NWN-MW07_200330-15	Discrete	Unsaturated	15.0	< 0.00097	< 0.00097	0.00037 J	**0.00049** J	< 0.00097	**0.0031**	**0.00045** J	< 0.00097	0.0019	< 0.00097
NWN-MW09	Farallon	3/19/2020	NWN-MW09-200319-5	Discrete	Unsaturated	5.0	< 0.0014	< 0.0014	0.00056 J	**0.0015**	**0.00069** J	**0.078**	< 0.0014	< 0.0014	< 0.0014	< 0.0014
NWN-MW10	Farallon	6/15/2021	NWN-MW10-3	Discrete	Unsaturated	3.0	0.0037	0.0099	0.032	**0.21**	**0.094**	**0.44**	**0.9**	**0.0013**	**0.11**	< 0.0011
	Farallon	6/15/2021	NWN-MW10-5	Discrete	Unsaturated	5.0	0.0019	0.0046	0.019	**0.14**	**0.0039**	**0.00087** J	**0.0096**	< 0.0011	0.0094	< 0.0011
	Farallon	6/15/2021	NWN-MW10-10	Discrete	Unsaturated	10.0	< 0.0010	0.00028 J	0.00067 J	**0.0018**	**0.00041** J	**0.039**	**0.0028**	< 0.0010	0.0023	< 0.0010
NWN-MW12	Farallon	6/15/2021	NWN-MW12-3	Discrete	Unsaturated	3.0	0.0018	0.025	**0.065**	**0.21**	**0.047**	**0.48**	**0.62**	**0.013**	0.066	< 0.0013
	Farallon	6/15/2021	NWN-MW12-5	Discrete	Unsaturated	5.0	0.0016	0.0030	0.0049	**0.0031**	**0.00086** J	**0.0052**	**0.0056**	< 0.0012	0.00096 J	< 0.0012
	Farallon	6/15/2021	NWN-MW12-10	Discrete	Unsaturated	10.0	0.0036	0.0071	0.0095	**0.0024**	**0.00063** J	**0.0042**	**0.0071**	< 0.0014	0.00048 J	< 0.0014
NWN-MW13	Farallon	6/15/2021	NWN-MW13-3	Discrete	Unsaturated	3.0	0.0018	0.00068 J	0.0031	**0.019**	**0.0026**	**0.54**	**0.0033**	**0.0009** J	0.0029	< 0.0012
	Farallon	6/15/2021	NWN-MW13-5	Discrete	Unsaturated	5.0	0.0010 J	0.00035 J	0.0022	**0.0039**	**0.0011** J	**0.046**	**0.00087** J	< 0.0013	0.0017	< 0.0013
	Farallon	6/15/2021	NWN-MW13-10	Discrete	Unsaturated	10.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.00026** J	**0.0065**	< 0.0011	**0.00031** J	0.0011	< 0.0011
NWN-MW14	Farallon	6/15/2021	NWN-MW14-3	Discrete	Unsaturated	3.0	< 0.0012	0.00056 J	0.0018	**0.011**	**0.0013**	**0.028**	< 0.0012	< 0.0012	0.0014	< 0.0012
	Farallon	6/15/2021	NWN-MW14-5	Discrete	Unsaturated	5.0	< 0.0011	0.00052 J	0.0018	**0.015**	**0.0020**	**0.046**	**0.00051** J	< 0.0011	0.0014	< 0.0011
	Farallon	6/15/2021	NWN-MW144-5	Discrete	Unsaturated	5.0	< 0.0011	0.00052 J	0.0015	**0.012**	**0.0014**	**0.041**	< 0.0011	< 0.0011	0.0011 J	< 0.0011
NWN-MW15	Farallon	6/17/2021	NWN-MW15-3	Discrete	Unsaturated	3.0	< 0.0011	< 0.0011	< 0.0011	**0.00061** J	< 0.0011	**0.0091**	< 0.0011	< 0.0011	< 0.0011	< 0.0011
	Farallon	6/17/2021	NWN-MW15-5	Discrete	Unsaturated	5.0	< 0.0011	0.00030 J	0.00072 J	**0.0020**	**0.00025** J	**0.0012**	< 0.0011	< 0.0011	< 0.0011	< 0.0011
NWN-MW16	Farallon	6/17/2021	NWN-MW11-3	Discrete	Unsaturated	3.0	< 0.00093	< 0.00093	0.00034 J	**0.0010**	**0.00023** J	**0.011**	< 0.00093	< 0.00093	< 0.00093	< 0.00093
	Farallon	6/17/2021	NWN-MW11-5	Discrete	Unsaturated	5.0	< 0.0011	< 0.0011	< 0.0011	**0.00071** J	**0.00015** J	**0.022**	< 0.0011	< 0.0011	0.00021 J	< 0.0011
	Farallon	6/17/2021	NWN-MW111-5	Discrete	Unsaturated	5.0	< 0.0012	< 0.0012	< 0.0012	**0.00063** J	**0.00022** J	**0.054**	< 0.0012	< 0.0012	0.0005 J	< 0.0012
NWN-R19	Farallon	6/15/2021	NWN-R19-3	Discrete	Unsaturated	3.0	0.0055	0.0058	0.035	**0.12**	**0.027**	**3.6**	**0.032**	**0.0069**	**0.28**	< 0.0011
	Farallon	6/15/2021	NWN-R19-5	Discrete	Unsaturated	5.0	0.0024	0.0026	0.014	**0.043**	**0.01**	**1.5**	**0.016**	**0.0065**	**0.12**	< 0.0011
	Farallon	6/15/2021	NWN-R19-10	Discrete	Unsaturated	10.0	< 0.00091	< 0.00091	0.00085 J	**0.0018**	**0.00040** J	**0.018**	< 0.00091	< 0.00091	0.003	< 0.00091
NWN-R20	Farallon	6/15/2021	NWN-R20-3	Discrete	Unsaturated	3.0	0.00069 J	0.00032 J	0.0027	**0.0097**	**0.0041**	**0.89**	**0.0047**	**0.0029**	0.011	< 0.00098
	Farallon	6/15/2021	NWN-R20-5	Discrete	Unsaturated	5.0	< 0.0013	< 0.0013	0.0018	**0.0028**	**0.00099** J	**0.14**	< 0.0013	< 0.0013	0.0051	< 0.0013
	Farallon	6/15/2021	NWN-R20-10	Discrete	Unsaturated	10.0	0.00064 J	0.00036 J	0.0027	**0.013**	**0.0042**	**2.5**	**0.0045**	**0.00049** J	0.023	< 0.0014
	Farallon	6/15/2021	NWN-R20-15	Discrete	Unsaturated	15.0	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	**0.0023**	< 0.0011	< 0.0011	0.00031 J	< 0.0011
NWN-R21	Farallon	6/15/2021	NWN-R21-3	Discrete	Unsaturated	3.0	0.00043 J	< 0.0011	0.00094 J	**0.0027**	**0.00060** J	**0.076**	**0.0012**	**0.00088** J	0.0047	< 0.0011
	Farallon	6/15/2021	NWN-R21-6	Discrete	Unsaturated	6.0	< 0.0011	0.00060 J	0.0020	**0.019**	**0.0036**	**0.64**	**0.0031**	**0.00067** J	0.0052	< 0.0011
	Farallon	6/15/2021	NWN-R211-6	Discrete	Unsaturated	6.0	< 0.0010	0.0014	0.0033	**0.023**	**0.0042**	**0.35**	**0.0022**	**0.00039** J	0.0032	< 0.0010
	Farallon	6/15/2021	NWN-R21-10	Discrete	Unsaturated	10.0	< 0.00098	< 0.00098	0.00052 J	**0.0018**	**0.00045** J	**0.042**	**0.00041** J	< 0.00098	0.0012	< 0.00098
	Farallon	6/15/2021	NWN-R21-15	Discrete	Saturated	15.0	< 0.0011	< 0.0011	< 0.0011	**0.00042** J	**0.00016** J	**0.0047**	< 0.0011	< 0.0011	0.00037 J	< 0.0011
MTCA Method B Direct Contact Cleanup Levels for Soil[3]							**80**	**24**	**40**	**0.000032**	**0.000034**	**0.008**	**0.20**	**0.00016**	**16**	**0.24**
MTCA Method C Industrial Direct Contact Cleanup Levels for Soil[3]							**3,500**	**1,100**	**1,800**	**0.0014**	**0.0045**	**0.35**	**8.8**	**0.0070**	**700**	**11**
MTCA Cleanup Levels for Soil Protective of Groundwater Vadose @ 13 Degrees Celsius[3]							**0.044**	**0.025**	**0.035**	**0.00000004**	**0.000025**	**0.000046**	**0.000089**	**0.00000038**	**0.074**	**0.00012**
MTCA Cleanup Levels for Soil Protective of Groundwater Saturated[3]							**0.0029**	**0.0017**	**0.0025**	**0.0000000026**	**0.0000016**	**0.0000026**	**0.0000053**	**0.000000022**	**0.004**	**0.0000069**
Analytical Method Reporting Limit							**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**

Table 5
Soil Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Type	Zone	Sample Depth (feet)[1]	Analytical Results (milligrams per kilogram)[1]									
							Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
NWN-R22	Farallon	6/15/2021	NWN-R22-0.5-2.0-H	Discrete	Unsaturated	0.5 - 2.0	0.0027	0.0032	0.012	**0.10**	**0.022**	**2.7**	**0.019**	**0.0018**	**0.17**	< 0.0010
	Farallon	6/15/2021	NWN-R22-3	Discrete	Unsaturated	3.0	0.0081	0.018	**0.040**	**0.19**	**0.025**	**3.3**	**0.0029**	< 0.0015	**0.22**	< 0.0015
	Farallon	6/15/2021	NWN-R22-5	Discrete	Unsaturated	5.0	0.0028	0.0049	0.014	**0.03**	**0.0040**	**0.39**	**0.00073** J	< 0.0013	0.03	< 0.0013
	Farallon	6/15/2021	NWN-R22-10	Discrete	Unsaturated	10.0	< 0.0011	< 0.0011	0.00045 J	**0.0011** J	**0.00040** J	**0.14**	**0.00044** J	**0.00065** J	0.0031	< 0.0011
	Farallon	6/15/2021	NWN-R22-15	Discrete	Unsaturated	15.0	< 0.0011	< 0.0011	0.00054 J	**0.00068** J	**0.00021** J	**0.017**	< 0.0011	< 0.0011	0.0015	< 0.0011
NWN-R23	Farallon	8/18/2022	FB-01-2.5	Discrete	Unsaturated	2.5	< 0.0013	< 0.0013	0.0010 J	**0.0064**	**0.00025** J	**0.0019**	< 0.0013	< 0.0013	< 0.0013	< 0.0013
	Farallon	8/18/2022	FB-01-5.0	Discrete	Unsaturated	5.0	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	**0.0013**	< 0.0012	< 0.0012	< 0.0012	< 0.0012
	Farallon	8/18/2022	FB-01-10.0	Discrete	Unsaturated	10.0	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	**0.00044** J	< 0.0012	< 0.0012	< 0.0012	< 0.0012
NWN-R24	Farallon	8/18/2022	FB-02-2.5	Discrete	Unsaturated	2.5	0.00078 J	0.00070 J	0.0026	**0.0048**	**0.0024**	**0.66**	**0.0018**	**0.0029**	0.024	< 0.0013
	Farallon	8/18/2022	FB-02-5.0	Discrete	Unsaturated	5.0	0.00070 J	0.00044 J	0.0027	**0.0051**	**0.0026**	**1.3**	**0.0020**	**0.006**	0.021	< 0.0013
	Farallon	8/18/2022	FB-02-10.0	Discrete	Unsaturated	10.0	0.00054 J	0.00027 J	0.0017	**0.0036**	**0.0013**	**0.43**	**0.00069** J	**0.0018**	0.012	< 0.0012
NWN-R25	Farallon	8/18/2022	FB-03-2.5	Discrete	Unsaturated	2.5	< 0.0010	< 0.0010	< 0.0010	< 0.0010	**0.00018** J	**0.022**	< 0.0010	< 0.0010	0.00076 J	< 0.0010
	Farallon	8/18/2022	FB-03-5.0	Discrete	Unsaturated	5.0	< 0.0014	< 0.0014	0.0016	**0.0010** J	**0.00047** J	**0.058**	< 0.0014	< 0.0014	0.0017	< 0.0014
	Farallon	8/18/2022	FB-03-10.0	Discrete	Unsaturated	10.0	< 0.0012	< 0.0012	0.0010 J	**0.00073** J	**0.00040** J	**0.025**	< 0.0012	< 0.0012	0.002	< 0.0012
NWN-HA01	Farallon	8/9/2022	HA-01-2.0	Discrete	Unsaturated	2.0	< 0.0010	< 0.0010	< 0.0010	**0.0021**	**0.00027** J	**0.0012**	< 0.0010	< 0.0010	< 0.0010	< 0.0010
NWN-HA02	Farallon	8/9/2022	HA-02-2.0	Discrete	Unsaturated	2.0	< 0.0011	0.00026 J	< 0.0011	< 0.0011	< 0.0011	**0.0013**	< 0.0011	< 0.0011	< 0.0011	< 0.0011
NWN-HA03	Farallon	8/9/2022	HA-03-2.0	Discrete	Unsaturated	2.0	0.00098 J	< 0.0011	0.0010 J	**0.00049** J	**0.00043** J	**0.0043**	< 0.0011	< 0.0011	< 0.0011	< 0.0011
NWN-HA04	Farallon	8/9/2022	HA-04-2.0	Discrete	Unsaturated	2.0	0.00094 J	< 0.0010	0.0013	**0.00064** J	**0.00041** J	**0.0046**	< 0.0010	< 0.0010	< 0.0010	< 0.0010
NWN-HA05	Farallon	8/9/2022	HA-05-2.0	Discrete	Unsaturated	2.0	0.0039	< 0.00096	0.0028	**0.0026**	**0.0030**	**0.08**	**0.0060**	< 0.00096	< 0.00096	< 0.00096
NWN-HA06	Farallon	8/9/2022	HA-06-2.0	Discrete	Unsaturated	2.0	0.0022	0.00078 J	0.0020	**0.018**	**0.0038**	**0.45**	**0.0020**	**0.00043** J	0.00057 J	< 0.0011
NWN-HA07	Farallon	8/9/2022	HA-07-2.0	Discrete	Unsaturated	2.0	0.00095 J	0.00048 J	0.00087 J	**0.00094** J	**0.00085** J	**0.0073**	< 0.00098	< 0.00098	< 0.00098	< 0.00098
NWN-HA08	Farallon	8/18/2022	HA-08-2.0	Discrete	Unsaturated	2.0	< 0.0012	< 0.0012	0.00079 J	**0.0018**	**0.00070** J	**0.03**	**0.00068** J	**0.00065** J	0.0017	< 0.0012
NWN-HA09	Farallon	8/18/2022	HA-09-2.0	Discrete	Unsaturated	2.0	< 0.0010	< 0.0010	0.0011	**0.0017**	**0.00087** J	**0.045**	**0.00057** J	**0.0027**	0.0037	< 0.0010
NWN-HA10	Farallon	8/18/2022	HA-10-2.0	Discrete	Unsaturated	2.0	0.0018	0.00040 J	0.0025	**0.0066**	**0.0017**	**0.36**	**0.0020**	**0.00057** J	0.0016	< 0.0011
MTCA Method B Direct Contact Cleanup Levels for Soil[3]							**80**	**24**	**40**	**0.000032**	**0.000034**	**0.008**	**0.20**	**0.00016**	**16**	**0.24**
MTCA Method C Industrial Direct Contact Cleanup Levels for Soil[3]							**3,500**	**1,100**	**1,800**	**0.0014**	**0.0045**	**0.35**	**8.8**	**0.0070**	**700**	**11**
MTCA Cleanup Levels for Soil Protective of Groundwater Vadose @ 13 Degrees Celsius[3]							**0.044**	**0.025**	**0.035**	**0.00000004**	**0.000025**	**0.000046**	**0.000089**	**0.00000038**	**0.074**	**0.00012**
MTCA Cleanup Levels for Soil Protective of Groundwater Saturated[3]							**0.0029**	**0.0017**	**0.0025**	**0.0000000026**	**0.0000016**	**0.0000026**	**0.0000053**	**0.000000022**	**0.004**	**0.0000069**
Analytical Method Reporting Limit							**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**	**0.001**

NOTES:

Values **bolded** and highlighted in goldenrod exceed their applicable screening level.

Values highlighted in mint green are selected screening levels.

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

— denotes sample not analyzed or information unknown.

[1]Depth in feet below ground surface.

[2]Samples collected in 2016 analyzed by U.S. Environmental Protection Agency (EPA) Method 537; samples collected in 2018 and later analyzed by EPA Method 537 Modified.

[3]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State MTCA, Standard Method B and C Values for Soil from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC, dated Janurary 2025.

Farallon = Farallon Consulting, L.L.C.

Geosyntec = Geosyntec Consultants, Inc.

J = result is an estimate

MI = multi-incremental

NE = not established

PFAS = per- and poly-fluoroalkyl substances

Table 6
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Reconnaissance Groundwater Samples														
Eastside Fire & Rescue Headquarters Source Area														
NWN-R01	Farallon	8/24/2018	NWN_R01_180824_19	19.0	0.25	0.31	0.89	**2.3**	**0.39**	**7.3**	**0.078**	**0.02**	2.2	---
	Farallon	8/24/2018	NWN_R01_180824_19_DUPLICATE	19.0	0.23	0.31	0.84	**1.8**	**0.39**	**6.8**	**0.091**	**0.02**	2.2	---
NWN-R02	Farallon	8/23/2018	NMW-R02-180823-23	23.0	0.24	0.30	0.82	**1.90**	**0.45**	**9.50**	**0.24**	**0.04**	2.3	---
NWN-R03	Farallon	8/22/2018	NMW-R03-180822-28	28.0	0.010	0.018	0.044	**0.180**	**0.032**	**0.380**	**0.015**	**0.0095**	0.011	---
	Farallon	8/23/2018	NMW-R03-180823-39	39.0	0.0090 J	0.011	0.035	**0.120**	**0.021**	**0.25**	**0.015**	**0.011**	0.007	---
NWN-R04	Farallon	3/18/2020	NWN-R04-12.0	12.0	0.05	0.065	0.25	**0.22**	**0.024**	**0.18**	0.0025 J	< 0.004	0.49	< 0.0040
NWN-R06	Farallon	3/20/2020	NWN-R06-200320-10.0W	10.0	0.38	0.38	1.1	**3**	**0.65**	**21**	**0.3**	**0.14**	1.5	< 0.0008
NWN-R08	Farallon	3/18/2020	NWN-R08-13.0	13.0	0.058	0.029	0.17	**0.15**	**0.10**	**0.39**	**0.024**	**0.0094**	0.27	< 0.0040
NWN-R13	Farallon	3/18/2020	NWN-R13-14.0	14.0	0.15	0.013	0.56	**0.063**	**0.17**	**0.51**	**0.034**	**0.014**	0.94	< 0.0041
NWN-R16	Farallon	3/19/2020	NWN-R16-17.0	17.0	0.31	0.34	1.6	**2**	**0.83**	**7.4**	**9.6**	**0.055**	1.8	< 0.0040
NWN-R18	Farallon	3/19/2020	NWN-R18-23.0	23.0	0.091	0.041	0.35	**0.23**	**0.14**	**2.0**	**0.11**	**0.017**	1.2	< 0.0040
NWN-MW08	Farallon	3/20/2020	NWN-MW08-200320-53	53.0	0.053	0.077	0.14	**0.31**	**0.038**	**0.3**	**0.012**	**0.0041** J	0.056	0.00045 J
NWN-MW09	Farallon	3/19/2020	NWN-MW09-200319-43	43.0	0.13	0.071	0.46	**0.34**	**0.14**	**2.0**	**0.086**	**0.0071**	1.3	0.0003 J
Issaquah Valley Elementary School Source Area														
IES-R01	Farallon	8/8/2018	IES-R01-180808	20.0	0.0091	0.025	0.036	**0.11**	**0.012**	**0.27**	**0.011**	< 0.0045	0.019	---
IES-R02	Farallon	8/10/2018	IES-R02-180810 (1140)	15.0	< 0.0093	0.02	0.041	**0.13**	**0.023**	**0.21**	0.0088	**0.0013** J	< 0.0046	---
	Farallon	8/10/2018	IES-R02-180810 (1305)	25.0	0.031	0.068	0.15	**0.36**	**0.045**	**0.72**	**0.026**	**0.0027** J	0.17	---
IES-R03	Farallon	8/9/2018	IES-R03-180809 (0925)	13.5	< 0.0091	< 0.0045	0.0025 J	**0.0022** J	0.0035	0.0031 J	< 0.0045	< 0.0045	0.0018 J	---
	Farallon	8/9/2018	IES-R03-180809 (1110)	24.0	0.024	0.051	0.088	**0.23**	**0.026**	**0.38**	**0.012**	**0.0021** J	0.012	---
IES-R04	Farallon	8/9/2018	IES-R04-180809	23.0	< 0.012	0.033	0.082	**0.20**	**0.03**	**0.36**	**0.034**	**0.0021** J	0.077	---
IES-R05	Farallon	8/10/2018	IES-R05-180810 (0825)	11.0	< 0.0091	0.01	0.008	**0.017**	**0.0092**	**0.028**	0.0012 J	< 0.0045	< 0.0045	---
	Farallon	8/10/2018	IES-R05-180810 (0940)	28.0	0.013	0.039	0.053	**0.20**	**0.026**	**0.51**	**0.04**	**0.0022** J	0.046	---
Lower Issaquah Valley Regional Wells														
COI-MW01	Geosyntec	5/26/2016	MW01_30 TO 40_20160526	30 - 40	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	5/26/2016	MW01_55 TO 65_20160526	55 - 65	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
COI-MW02	Geosyntec	5/31/2016	MW02_40TO50_20160531	40 - 50	---	0.0073	0.0051	**0.0077**	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
COI-MW03	Geosyntec	5/24/2016	MW03_10 TO 20_20160524	10 - 20	---	0.019	0.012	**0.031**	**0.0046**	**0.01**	0.0027	< 0.0025	---	---
	Geosyntec	5/24/2016	MW03_40 TO 50_20160524	40 - 50	---	0.036	0.021	**0.08**	**0.0075**	**0.11**	0.0091	< 0.0025	---	---
COI-MW04	Geosyntec	5/27/2016	MW04_29 TO 39_20160527	29 - 39	---	0.0051	< 0.0025	**0.0084**	< 0.0025	0.0028	< 0.0025	< 0.0025	---	---
COI-MW05	Geosyntec	5/23/2016	MW05_10 TO 20_20160523	10 - 20	---	0.03	0.036	**0.039**	**0.022**	**0.013**	0.0084	< 0.0025	---	---
COI-MW06	Geosyntec	10/5/2016	COI-MW06-20161005-19.5-24.5	19.5 - 24.5	---	0.03	0.061	**0.14**	**0.021**	**0.30**	0.0069	< 0.0025	---	---
	Geosyntec	10/6/2016	COI-MW06-20161006-34.5-39.5	34.5 - 39.5	---	0.052	0.10	**0.24**	**0.036**	**0.50**	**0.021**	< 0.0025	---	---
	Geosyntec	10/6/2016	COI-MW06-20161006-51-56	51 - 56	---	0.073	0.13	**0.3**	**0.04**	**0.74**	**0.022**	< 0.0025	---	---
COI-MW07	Geosyntec	10/7/2016	COI-MW07-20161007-20-25	20 - 25	---	0.0044	0.011	**0.0094**	**0.029**	**0.025**	< 0.0025	< 0.0025	---	---
	Geosyntec	10/7/2016	COI-MW07-20161007-35-40	35 - 40	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	**0.0042**	< 0.0025	< 0.0025	---	---
	Geosyntec	10/7/2016	COI-MW07-20161007-65-70	65 - 70	---	< 0.0025	< 0.0025	**0.0037**	< 0.0025	**0.018**	< 0.0025	< 0.0025	---	---
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 6
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Shallow Groundwater Monitoring Well Samples														
Eastside Fire & Rescue Headquarters Source Area														
NWN-MW01	Farallon	10/26/2018	NWN-MW01-181026	24.0	0.0078 J	0.0072	0.023	**0.013**	**0.012** J	**0.052**	0.0030 J	**0.00094** J	< 0.0042	---
	Farallon	4/16/2020	NWN-MW01-200416	25.0	0.0028 J	0.0070	< 0.0092	**0.033**	0.0032	**0.063**	< 0.0041	< 0.0041	0.0024 J	< 0.0041
	Farallon	9/2/2021	NWN-MW01-20210902	28.0	0.0043	0.015	< 0.0092	**0.0091**	**0.0056**	**0.062**	< 0.0042	< 0.0042	< 0.0042	< 0.0042
	Farallon	1/17/2022	NWN-MW01-20220117	20.0	< 0.0044	0.0036 J	< 0.0092	**0.0095**	0.0039	**0.028**	< 0.0044	< 0.0044	0.001 J	< 0.0044
	Farallon	2/17/2022	NWN-MW01-20220217	25.0	0.0013 J	0.0036 J	< 0.0094	**0.014**	0.0020	**0.031**	< 0.0047	< 0.0047	< 0.0047	---
	Farallon	2/28/2023	NWN-MW01-022823	22.5	0.00047 J	0.0056	< 0.0092	**0.017**	0.0040	**0.051**	0.0013 J	< 0.0045	< 0.0045	< 0.0045
	Farallon	5/10/2023	NWN-MW01-051023	23.5	< 0.0045	0.0063	< 0.0092	**0.030**	0.0037	**0.042**	< 0.0045	< 0.0045	< 0.0045	< 0.0045
NWN-MW02	Farallon	10/26/2018	NWN-MW02-181026	26.0	0.0066 J	0.012	0.0097	**0.14**	**0.0091**	**0.086**	0.0043	**0.0029** J	0.0038 J	---
	Farallon	4/16/2020	NWN-MW02-200416	24.0	0.017	0.047	0.051	**0.19**	**0.023**	**0.61**	0.0047	**0.0013** J	0.045	< 0.0040
	Farallon	10/29/2020	NWN-MW02-102920	27.0	0.021	0.021	0.042	**0.27**	**0.020**	**0.27**	0.0067	**0.0035** J	0.034	< 0.0045
	Farallon	2/28/2023	NWN-MW02-022823	20.0	0.018	0.061	0.060	**0.16**	**0.021**	**0.29**	0.0050	< 0.0046	0.21	< 0.0046
	Farallon	5/10/2023	NWN-MW02-051023	24.0	0.012	0.032	0.057	**0.14**	**0.019**	**0.40**	0.0033 J	< 0.0046	0.025	< 0.0046
NWN-MW03	Farallon	10/26/2018	NWN-MW03-181026	26.0	0.17	0.061	0.55	**0.26**	**0.16**	**1.0**	**0.13**	**0.0081**	1.3	---
	Farallon	4/17/2020	NWN-MW03-200417	25.0	0.22	0.13	0.96	**0.58**	**0.37**	**2.2**	**0.23**	**0.011**	2.2	< 0.0040
	Farallon	7/16/2020	NWN-MW03-200716		0.11	0.046	0.48	**0.20**	**0.17**	**0.90**	**0.081**	**0.0056**	1.2	< 0.0040
	Farallon	10/29/2020	NWN-MW03-102920	26.0	0.16	0.074	0.44	**0.30**	**0.12**	**0.68**	**0.073**	**0.0056**	0.97 E	< 0.0042
	Farallon	9/2/2021	NWN-MW03-20210902	29.0	0.088	0.035	0.30	**0.16**	**0.097**	**0.82**	**0.056**	**0.0046**	0.75	< 0.0042
	Farallon	10/18/2021	NWN-MW03-20211018	27.0	0.12	0.04	0.36	**0.20**	**0.13**	**0.78** H*	**0.073**	**0.0058**	0.82	< 0.0045
	Farallon	12/9/2021	NWN-MW03-20211209	22.0	0.24	0.22	0.76	**0.70**	**0.29**	**1.9**	**0.17**	**0.0089**	1.7	< 0.0045
	Farallon	1/17/2022	NWN-MW03-20220117	20.0	0.25	0.23	0.84	**0.90**	**0.24**	**2.4**	**0.28**	**0.0099**	1.5	< 0.0044
	Farallon	2/17/2022	NWN-MW03-20220217	25.0	0.21	0.12	0.76	**0.50**	**0.18**	**1.6**	**0.18**	**0.0077**	1.7	---
	Farallon	12/14/2022	NWN-MW03-121422[H]	25.0	0.23	0.18	0.67	**0.83**	**0.22**	**1.1**	**0.14**	**0.0071**	1.1	< 0.0045
	Farallon	12/14/2022	DUPLICATE 1[H]		0.27	0.17	0.72	**1.1**	**0.27**	**1.4**	**0.16**	**0.0085**	0.99	< 0.0044
	Farallon	2/28/2023	NWN-MW03-022823	20.0	0.24	0.19	0.88	**0.58** J	**0.33**	**1.6**	**0.18**	**0.0076**	1.9	< 0.0046
	Farallon	2/28/2023	NWN-MW33-022823		0.25	0.16	0.98	**1.0** J	**0.37**	**1.7**	**0.18**	**0.0094**	1.9	< 0.0045
	Farallon	5/10/2023	NWN-MW03-051023	24.0	0.15	0.08	0.70	**0.41**	**0.28**	**1.1**	**0.15**	**0.0073**	1.1	< 0.0045
	Farallon	5/10/2023	NWN-MW33-051023		0.16	0.088	0.67	**0.42**	**0.28**	**1.2**	**0.16**	**0.009**	1.2	< 0.0046
NWN-MW04	Farallon	10/26/2018	NWN-MW04-181026	13.0 - 23.0	0.17	0.14	0.67	**0.61**	**0.20**	**2.2**	**0.057**	**0.017**	1.1	---
	Farallon	10/26/2018	NWN-MW04-181026-DUP		0.17	0.13	0.67	**0.65**	**0.21**	**2.4**	**0.057**	**0.016**	1.3	---
	Farallon	4/17/2020	NWN-MW04-200417	18.0	0.065	0.041	0.24	**0.31**	**0.13**	**2.6**	**0.043**	**0.013**	0.86	< 0.0040
	Farallon	4/17/2020	NWN-MW44-200417		0.064	0.039	0.24	**0.27**	**0.13**	**2.7**	**0.042**	**0.012**	0.86	< 0.0040
	Farallon	7/16/2020	NWN-MW04-200716		0.055	0.021	0.19	**0.15**	**0.091**	**1.5**	**0.028**	**0.011**	0.46	< 0.0041
	Farallon	7/16/2020	NWN-MW44-200716		0.053	0.023	0.19	**0.15**	**0.089**	**1.3**	**0.025**	**0.01**	0.56	< 0.0042
	Farallon	10/29/2020	NWN-MW04-102920		0.15	0.079	0.45	**0.34**	**0.14**	**1.6**	**0.033**	**0.012**	0.78	< 0.0044
	Farallon	10/29/2020	NWN-MW44-102920		0.46	0.28	0.48	**0.32**	**0.15**	**1.7**	**0.036**	**0.012**	0.82	< 0.0043
	Farallon	9/2/2021	NWN-MW04-20210902	20.0	0.064	0.037	0.22	**0.21**	**0.094**	**1.4**	**0.027**	**0.0083**	0.74	< 0.0042
	Farallon	10/18/2021	NWN-MW04-20211018	16.0	0.087	0.059	0.22	**0.24**	**0.093**	**1.1** H*	**0.025**	**0.0094**	0.49	< 0.0044
	Farallon	12/9/2021	NWN-MW04-20211209	12.0	0.20	0.15	0.61	**0.69**	**0.31**	**1.9**	**0.044**	**0.012**	1.2	< 0.0045
	Farallon	1/18/2022	NWN-MW04-20220118		0.20	0.094	0.56	**0.64**	**0.27**	**2.3**	**0.053**	**0.013**	1.4	< 0.0044
	Farallon	2/17/2022	NWN-MW04-20220217	15.0	0.11	0.046	0.36	**0.45**	**0.17**	**2.4**	**0.041**	**0.013**	1.0	---
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 6
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Eastside Fire & Rescue Headquarters Source Area (continued)														
NWN-MW05	Farallon	4/16/2020	NWN-MW05-200416	15.0	0.19	0.26	0.49	**1.6**	**0.32**	**4.7**	**0.095**	**0.033**	0.8	< 0.0040
	Farallon	7/16/2020	NWN-MW05-200716		0.21	0.18	0.58	**1.3**	**0.33**	**2.8**	**0.080**	**0.015**	0.84	< 0.0039
	Farallon	10/29/2020	NWN-MW05-102920		0.48	0.081	1.1	**1.8**	**0.49**	**4.8**	**0.12**	**0.04**	1.4	< 0.0045
	Farallon	2/28/2023	NWN-MW05-022823	12.0	0.30	0.30	0.77	**2.3**	**0.44**	**4.0**	**0.10**	**0.027**	1.3	< 0.0045
	Farallon	2/28/2023	NWN-MW55-022823		0.26	0.28	0.73	**2.2**	**0.42**	**4.2**	**0.095**	**0.029**	1.2	< 0.0045
	Farallon	5/10/2023	NWN-MW05-051023	14.0	0.14	0.17	0.45	**1.5**	**0.29**	**3.8**	**0.090**	**0.027**	0.58	< 0.0044
	Farallon	5/10/2023	NWN-MW55-051023		0.14	0.16	0.48	**1.7**	**0.29**	**3.4**	**0.088**	**0.03**	0.5	< 0.0044
NWN-MW06	Farallon	4/17/2020	NWN-MW06-200417	20.0	0.24	0.31	0.79	**2.0**	**0.41**	**8.6**	**0.12**	**0.033**	1.2	< 0.0042
	Farallon	7/16/2020	NWN-MW06-200716		0.15	0.17	0.49	**0.99**	**0.28**	**5.0**	**0.076**	**0.026**	1.1	< 0.0039
	Farallon	9/1/2021	NWN-MW06-20210901	23.0	0.14	0.15	0.44	**1.1**	**0.25**	**6.8**	**0.075**	**0.023**	1.2	< 0.0042
	Farallon	10/18/2021	NWN-MW06-20211018	20.0	0.15	0.14	0.43	**1.0** H*	**0.21**	**3.5** H*	**0.059**	**0.019**	0.89	< 0.0043
	Farallon	12/9/2021	NWN-MW06-20211209	18.0	0.15	0.016	0.063	**0.072**	**0.019**	**0.23**	0.0058	< 0.0044	0.07	< 0.0044
	Farallon	1/18/2022	NWN-MW06-20220118	15.0	0.30	0.12	0.38	**0.59**	**0.12**	**1.4**	**0.039**	**0.004** J	0.46	< 0.0045
	Farallon	2/17/2022	NWN-MW06-20220217	19.0	0.29	0.039	0.19	**0.14**	**0.029**	**0.33**	0.0056	< 0.0045	0.093	---
NWN-MW07	Farallon	4/17/2020	NWN-MW07-200417	21.5	0.17	0.16	0.74	**0.65**	**0.22**	**2.9**	**0.29**	**0.014**	1.5	< 0.0041
	Farallon	4/17/2020	NWN-MW77-200417		0.16	0.16	0.70	**0.64**	**0.21**	**3.0**	**0.27**	**0.013**	1.6	< 0.0041
	Farallon	7/16/2020	NWN-MW07-200716		0.10	0.086	0.43	**0.36**	**0.14**	**2.0**	**0.22**	**0.012**	1.1	< 0.0041
	Farallon	10/29/2020	NWN-MW07-102920	22.0	0.31	0.31	1.2	**0.75**	**0.16**	**1.7**	**0.26**	**0.011**	1.4 E	< 0.0044
	Farallon	10/18/2021	NWN-MW07-20211018	25.0	0.16	0.14	0.52	**0.24**	**0.14**	**0.67** H*	**0.083**	**0.0034** J	0.96	< 0.0045
	Farallon	12/9/2021	NWN-MW07-20211209	18.0	0.21	0.15	0.80	**0.47**	**0.37**	**0.83**	**0.15**	**0.007**	2.2	< 0.0045
	Farallon	1/18/2022	NWN-MW07-20220118		0.33	0.41	1.5	**1.3**	**0.35**	**2.6**	**0.64**	**0.015**	1.8	< 0.0044
	Farallon	2/17/2022	NWN-MW07-20220217	22.0	0.14	0.056	0.28	**0.17**	**0.042**	**0.49**	**0.092**	**0.0035** J	0.73	---
	Farallon	9/2/2022	NWN-MW07	25.0	0.063	0.03	0.20	**0.11**	**0.085**	**0.39**	**0.042**	**0.003** J	0.66	< 0.0042
	Farallon	9/2/2022	NWN-MW07-DUP		0.069	0.03	0.22	**0.11**	**0.093**	**0.43**	**0.041**	**0.0034** J	0.69	< 0.0043
	Farallon	12/14/2022	NWN-MW07-121422[H]	19.4	0.38	0.49	1.2	**0.76**	**0.16**	**0.95**	**0.23**	**0.0055**	1.2	< 0.0044
	Farallon	12/14/2022	DUPLICATE 2[H]		0.38	0.35	1.2	**0.71**	**0.18**	**0.87**	**0.23**	**0.0058**	1.0	< 0.0044
	Farallon	2/28/2023	NWN-MW07-022823	21.5	0.19	0.15	0.58	**0.36**	**0.092**	**0.77**	**0.14**	**0.0057**	0.96	< 0.0045
	Farallon	2/28/2023	NWN-MW77-022823		0.17	0.16	0.49	**0.35**	**0.079**	**0.61**	**0.12**	**0.0051**	0.60	< 0.0045
	Farallon	5/10/2023	NWN-MW07-051023	21.8	0.12	0.092	0.41	**0.32**	**0.054**	**0.45**	**0.10**	**0.0035** J	0.26	< 0.0045
	Farallon	5/10/2023	NWN-MW77-051023		0.10	0.081	0.34	**0.23**	**0.045**	**0.38**	**0.080**	**0.0032** J	0.26	< 0.0045
NWN-MW09	Farallon	4/17/2020	NWN-MW09-200417	47.5	0.029	0.025	0.099	**0.091**	**0.022**	**0.23**	0.0092	< 0.0040	0.13	< 0.0040
	Farallon	7/16/2020	NWN-MW09-200716		0.012	0.011	0.038	**0.031**	**0.011**	**0.10**	0.0046	< 0.0041	0.021	< 0.0041
	Farallon	10/29/2020	NWN-MW09-102920	45.0	0.011	0.0089	0.024	**0.027**	**0.011**	**0.092**	0.0037 J	< 0.0043	0.018	< 0.0043
	Farallon	9/2/2021	NWN-MW09-20210902	30.0	0.026	0.019	0.077	**0.073**	**0.019**	**0.22**	**0.011**	< 0.0042	0.10	< 0.0042
	Farallon	10/18/2021	NWN-MW09-20211018	24.0	0.012	0.012	0.035	**0.032**	**0.011**	**0.10** H*	0.0041 J	< 0.0045	0.023	< 0.0045
	Farallon	12/9/2021	NWN-MW09-20211209	22.0	0.046	0.036	0.14	**0.17**	**0.047**	**0.25**	**0.012**	**0.0013** J	0.13	< 0.0044
	Farallon	1/17/2022	NWN-MW09-22020117	20.0	0.038	0.033	0.12	**0.15**	**0.038**	**0.33**	**0.013**	< 0.0045	0.18	< 0.0045
	Farallon	2/17/2022	NWN-MW09-20220217	25.0	0.029	0.021	0.095	**0.12**	**0.022**	**0.31**	0.0096	< 0.0046	0.10	---
	Farallon	9/2/2022	NWN-MW09	35.0	0.011	0.013	0.031	**0.037**	**0.012**	**0.11**	0.0048	< 0.0042	0.023	< 0.0042
	Farallon	12/14/2022	NWN-MW09-121422[H]		0.032	0.022	0.096	**0.12**	**0.035**	**0.16**	0.0097	< 0.0045	0.11	< 0.0045
	Farallon	2/28/2023	NWN-MW09-022823	47.5	0.036	0.032	0.12	**0.14**	**0.040**	**0.30**	**0.012**	**0.0018** J	0.18	< 0.0046
	Farallon	5/10/2023	NWN-MW09-051023		0.024	0.017	0.098	**0.084**	**0.034**	**0.20**	0.010	< 0.0045	0.12	< 0.0045
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 6
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Eastside Fire & Rescue Headquarters Source Area (continued)														
NWN-MW10	Farallon	9/1/2021	NWN-MW10-20210901	23.5	0.092	0.073	0.30	**0.46**	**0.14**	**2.4**	**0.051**	**0.0094**	0.82	< 0.0042
	Farallon	9/1/2021	NWN-MW99-20210901		0.097	0.076	0.32	**0.49**	**0.14**	**2.6**	**0.057**	**0.01**	0.76	< 0.0044
	Farallon	10/18/2021	NWN-MW10-20211018	22.0	0.11	0.074	0.36	**0.41**	**0.12**	**1.6** H*	**0.19**	**0.0066**	0.60	< 0.0045
	Farallon	10/18/2021	NWN-MW-99-20211018		0.099	0.073	0.33	**0.37**	**0.11**	**1.2** H*	**0.17**	**0.0064**	0.57	< 0.0045
	Farallon	12/9/2021	NWN-MW10-20211209	18.0	0.042	0.0012 J	< 0.0092	**0.0034** J	0.0016 J	**0.011**	0.0018 J	< 0.0044	0.0067	< 0.0044
	Farallon	12/9/2021	NWN-MW99-20211209		0.04	0.00087 J	< 0.0092	**0.0043**	0.0011 J	**0.011**	0.0015 J	< 0.0043	0.006	< 0.0043
	Farallon	1/18/2022	NWN-MW10-20220118	15.0	0.055	0.0027 J	0.011	**0.0099**	0.0039	**0.047**	**0.011**	< 0.0045	0.015	< 0.0045
	Farallon	1/18/2022	NWN-MW99-20220118		0.057	0.0031 J	0.012	**0.012**	0.0036	**0.054**	**0.014**	< 0.0045	0.016	< 0.0045
	Farallon	2/17/2022	NWN-MW10-20220217	19.0	0.062	0.0020 J	0.017	**0.0079**	0.0025	**0.025**	< 0.0045	< 0.0045	0.016	---
	Farallon	2/17/2022	NWN-MW99-20220217		0.067	0.0020 J	0.019	**0.0085**	0.0027	**0.026**	< 0.0045	< 0.0045	0.017	---
	Farallon	9/2/2022	NWN-MW10	23.0	0.089 J	0.015 J	< 0.5	< 0.25	< 0.1	**0.15 J**	< 0.25	< 0.25	0.05 J	< 0.25
	Farallon	12/14/2022	NWN-MW10-121422[H]	20.0	0.08	0.0041 J	0.022	**0.0070**	0.0026	**0.0088**	< 0.0044	< 0.0044	0.0048	< 0.0044
	Farallon	2/28/2023	NWN-MW10-022823	22.5	0.083	0.0060	0.031	**0.011**	**0.0052**	**0.015**	< 0.0046	< 0.0046	0.014	< 0.0046
	Farallon	5/10/2023	NWN-MW10-051023	19.5	0.062	0.0044 J	0.037	**0.012**	**0.0068**	**0.036**	0.0023 J	< 0.0045	0.016	< 0.0045
NWN-MW12	Farallon	9/1/2021	NWN-MW12-20210901	20.0	0.047	0.023	0.18	**0.095**	**0.05**	**0.46**	**0.016**	**0.0025** J	0.40	< 0.0042
	Farallon	10/18/2021	NWN-MW12-20211018	18.0	0.096	0.084	0.33	**0.34**	**0.097**	**0.65** H*	**0.024**	**0.0036** J	0.65	< 0.0043
	Farallon	12/9/2021	NWN-MW12-20211209	12.0	0.27	0.071	1.0	**0.33**	**0.60**	**0.84**	**0.055**	**0.010**	2.0	< 0.0045
	Farallon	1/18/2022	NWN-MW12-20220118		0.34	0.084	1.6	**0.43**	**1.0**	**0.88**	**0.059**	**0.012**	2.4	< 0.0045
	Farallon	2/17/2022	NWN-MW12-20220217	15.0	0.21	0.057	0.81	**0.37**	**0.49**	**0.89**	**0.045**	**0.0093**	2.1	---
NWN-MW13	Farallon	9/2/2021	NWN-MW13-20210902	17.0	0.029 J	0.0081	0.084	**0.065**	**0.041**	**0.38**	**0.019**	**0.0045** J	0.31	< 0.0045
	Farallon	10/18/2021	NWN-MW13-20211018	14.0	0.12	0.049	0.26	**0.24**	**0.14**	**0.48**	**0.026**	**0.0087**	0.64	< 0.0045
	Farallon	12/9/2021	NWN-MW13-20211209	12.0	0.085	0.066	0.21	**0.52**	**0.17**	**0.75**	**0.03**	**0.015**	0.76	< 0.0045
	Farallon	1/18/2022	NWN-MW13-20220118		0.076	0.051	0.16	**0.56**	**0.12**	**0.60**	**0.031**	**0.014**	0.61	< 0.0045
	Farallon	2/17/2022	NWN-MW13-20220217	9.0	0.033	0.016	0.081	**0.14**	**0.053**	**0.37**	**0.017**	**0.0088**	0.29	---
	Farallon	9/2/2022	NWN-MW13	16.0	0.032	0.015	0.093	**0.075**	**0.044**	**0.26**	**0.016**	**0.0055**	0.29	< 0.0042
	Farallon	12/14/2022	NWN-MW13-121422[H]	12.0	0.16	0.10	0.43	**0.90**	**0.27**	**0.66**	**0.048**	**0.023**	0.92	< 0.0044
	Farallon	2/28/2023	NWN-MW13-022823	10.5	0.017	0.0088	0.039	**0.063**	**0.032**	**0.16**	0.0084	**0.0061**	0.13	< 0.0043
	Farallon	5/10/2023	NWN-MW13-051023	11.0	0.040	0.031	0.12	**0.21**	**0.079**	**0.38**	**0.020**	**0.011**	0.35	< 0.0045
NWN-MW14	Farallon	1/18/2022	NWN-MW14-20220118	12.0	0.32	0.088	1.6	**0.57**	**0.98**	**1.2**	**0.084**	**0.029**	2.3	< 0.0045
	Farallon	2/17/2022	NWN-MW14-20220217	15.0	0.11	0.032	0.44	**0.23**	**0.19**	**0.69**	**0.031**	**0.01**	1.4	---
NWN-MW15	Farallon	9/2/2021	NWN-MW15-20210902	28.0	0.066	0.045	0.25	**0.17**	**0.064**	**1.3**	**0.059**	**0.0043**	0.10	< 0.0042
	Farallon	1/17/2022	NWN-MW15-20220117	20.0	0.062	0.084	0.17	**0.41**	**0.074**	**1.2**	0.0086	< 0.0044	0.47	< 0.0044
	Farallon	2/17/2022	NWN-MW15-20220217	25.0	0.054	0.087	0.19	**0.32**	**0.04**	**0.78**	0.0064	< 0.0048	0.12	---
NWN-MW16	Farallon	9/2/2021	NWN-MW16-20210902	28.0	0.05	0.016	0.15	**0.063**	**0.037**	**0.25**	0.0079	< 0.0042	0.16	< 0.0042
	Farallon	1/17/2022	NWN-MW16-20220117	20.0	0.061	0.055	0.20	**0.31**	**0.069**	**1.0**	**0.040**	**0.0031** J	0.44	< 0.0045
	Farallon	2/17/2022	NWN-MW16-20220217	25.0	0.11	0.043	0.46	**0.24**	**0.14**	**0.71**	**0.047**	**0.0039** J	1.5	---
	Farallon	12/14/2022	NWN-MW16-121422[H]	22.5	0.15	0.079	0.43	**0.49**	**0.12**	**0.69**	**0.039**	**0.0037** J	0.47	< 0.0045
	Farallon	2/28/2023	NWN-MW16-022823	23.0	0.052	0.049	0.17	**0.18**	**0.091**	**0.51**	**0.026**	**0.0026** J	0.88	< 0.0045
	Farallon	5/10/2023	NWN-MW16-051023	24.0	0.10	0.041	0.45	**0.22**	**0.23**	**0.56**	**0.059**	**0.004** J	1.1	< 0.0046
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 6
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Eastside Fire & Rescue Headquarters Source Area (continued)														
NWN-MW17	Farallon	9/2/2022	NWN-MW17	22.0	0.10	0.13	0.29	**0.69**	**0.14**	**2.4**	**0.049**	**0.017** J	0.57	< 0.021
	Farallon	12/14/2022	NWN-MW17-121422[H]	17.0	0.26	0.25	0.63	**1.2**	**0.30**	**5.2**	**0.10**	**0.019**	1.2	< 0.0042
	Farallon	2/28/2023	NWN-MW17-022823	17.5*	0.27	0.26	0.75	**1.6**	**0.31**	**5.3**	**0.096**	**0.021**	1.2	< 0.0045
	Farallon	5/10/2023	NWN-MW17-051023	18.8	0.14	0.12	0.48	**0.92**	**0.21**	**3.2**	**0.059**	**0.015**	0.66	< 0.0043
Issaquah Valley Elementary School Source Area														
IES-MW01	Farallon	10/26/2018	1ES-MW05-181026	21.0	0.0072 J	0.019	0.018	**0.062**	**0.0097**	**0.19**	0.0077	< 0.0041	0.012	---
	Farallon	4/15/2020	IES-MW01-200415		0.010	0.023	0.031	**0.086**	**0.011**	**0.27**	0.0071	< 0.0041	0.028	< 0.0041
	Farallon	7/14/2020	IES-MW01-200714		0.0075	0.017	0.022	**0.058**	**0.0095**	**0.18**	0.0053	< 0.0039	0.018	< 0.0039
	Farallon	10/27/2020	IES-MW01-102720		0.0065	0.015	0.017	**0.039**	**0.0066**	**0.17**	0.0047	< 0.0042	0.012	< 0.0042
	Farallon	9/2/2022	IES-MW01		0.0073	0.019	0.017	**0.058**	**0.0087**	**0.22**	0.0053	< 0.0045	0.014	< 0.0045
	Farallon	12/15/2022	IES-MW01-121522[H]		0.0058	0.019	0.019	**0.069**	**0.0084**	**0.20**	0.0051	< 0.0043	0.012	< 0.0043
	Farallon	3/1/2023	IES-MW01-030123		0.0072	0.026	0.026	**0.081**	**0.0089**	**0.21**	0.0053	< 0.0045	0.019	< 0.0045
	Farallon	5/11/2023	IES-MW01-051123		0.0049	0.020	0.024	**0.056**	**0.0082**	**0.17**	0.0054	< 0.0044	0.014	< 0.0044
IES-MW02	Farallon	10/26/2018	1ES-MW03-181026	20.0	0.021	0.050	0.062	**0.190**	**0.019**	**0.24**	0.0065	**0.00065** J	0.0039 J	---
	Farallon	4/16/2020	IES-MW02-200416		0.018	0.044	0.059	**0.190**	**0.018**	**0.29**	0.0065	< 0.0040	0.006	< 0.0040
	Farallon	7/15/2020	IES-MW02-200715		0.014	0.034	0.041	**0.14**	**0.014**	**0.20**	0.0046	< 0.0040	0.0017 J	< 0.0040
	Farallon	10/27/2020	IES-MW02-102720	22.0	0.022	0.057	0.066	**0.17**	**0.017**	**0.26**	0.0056	< 0.0045	0.0041 J	< 0.0045
IES-MW03	Farallon	10/26/2018	1ES-MW01-181026	20.0	0.0056 J	0.015	0.016	**0.065**	**0.0056**	**0.076**	0.0014 J	< 0.0042	0.0029 J	---
	Farallon	4/15/2020	IES-MW03-200415		0.0083	0.020	0.022	**0.080**	**0.0049**	**0.075**	< 0.0042	< 0.0042	0.0031 J	< 0.0042
	Farallon	7/14/2020	IES-MW03-200714		0.0055	0.013	0.014	**0.063**	**0.0041**	**0.055**	0.0011 J	< 0.0041	0.0014 J	< 0.0041
	Farallon	10/27/2020	IES-MW03-102720	19.0	0.0064	0.015	0.014	**0.054**	**0.0045**	**0.066**	0.0011 J	< 0.0042	0.0016 J	< 0.0042
	Farallon	9/1/2022	IES-MW03	20.0	0.0037 J	0.01	< 0.0092	**0.043**	0.0038	**0.062**	0.0014 J	< 0.0045	0.00067 J	< 0.0045
	Farallon	12/13/2022	IES-MW03-121322[H]		0.0050	0.014	0.014	**0.069**	**0.0060**	**0.077**	< 0.0045	< 0.0045	0.0015 J	< 0.0045
	Farallon	3/1/2023	IES-MW03-030123		0.0063	0.018	0.018	**0.11**	**0.0075**	**0.11**	0.0032 J	< 0.0045	0.0029 J	< 0.0045
	Farallon	5/11/2023	IES-MW03-051123		0.0032 J	0.015	0.015	**0.08**	**0.0056**	**0.082**	0.0021 J	< 0.0045	0.0012 J	< 0.0045
IES-MW04	Farallon	10/26/2018	1ES-MW02-181026	20.0	0.029	0.055	0.10	**0.26**	**0.037**	**0.53**	**0.022**	**0.0012** J	0.16	---
	Farallon	10/27/2020	IES-MW04-1022720	23.0	0.019	0.04	0.060	**0.13**	**0.019**	**0.35**	**0.011**	< 0.0043	0.05	< 0.0043
	Farallon	12/15/2022	IES-MW04-121522[H]	22.0	0.03	0.066	0.096	**0.31**	**0.037**	**0.59**	**0.015**	< 0.0044	0.056	< 0.0044
	Farallon	3/2/2023	IES-MW04-030223	22.5*	0.036	0.11	0.10	**0.40**	**0.042**	**0.71**	**0.019**	**0.0015** J	0.062	< 0.0045
	Farallon	5/11/2023	IES-MW04-051123	22.5	0.025	0.066	0.097	**0.31**	**0.036**	**0.64**	**0.016**	< 0.0044	0.034	< 0.0044
IES-MW05	Farallon	10/26/2018	1ES-MW04-181026	25.0	0.012	0.022	0.034	**0.12**	**0.019**	**0.38**	**0.033**	**0.0012** J	0.012	---
	Farallon	4/15/2020	IES-MW05-200415		0.021	0.045	0.067	**0.26**	**0.025**	**0.59**	**0.041**	**0.0017** J	0.029	< 0.0041
	Farallon	7/14/2020	IES-MW05-200714		0.013	0.026	0.042	**0.20**	**0.022**	**0.48**	**0.038**	**0.0013** J	0.010	< 0.0042
IES-MW08	Farallon	4/15/2020	IES-MW08-200415	25.0	0.0027 J	0.0062	< 0.0092	**0.025**	0.0040	**0.074**	0.0040 J	< 0.0040	< 0.0040	< 0.0040
	Farallon	10/27/2020	IES-MW08-102720		0.0012 J	0.0017 J	< 0.0092	**0.0024** J	0.0025	**0.011**	0.0012 J	< 0.0043	0.00069 J	< 0.0043
	Farallon	9/1/2022	IES-MW08		0.0015 J	0.0042 J	< 0.0092	**0.0078**	0.0032	**0.022**	0.0018 J	< 0.0045	< 0.0045	< 0.0045
	Farallon	12/13/2022	IES-MW08-121322[H]		0.0020 J	0.0056	< 0.0092	**0.021**	0.0040	**0.034**	0.0030 J	< 0.0044	< 0.0044	< 0.0044
	Farallon	3/1/2023	IES-MW08-030123		0.0057	0.019	0.019	**0.11**	**0.011**	**0.23**	**0.012**	**0.0016** J	0.0021 J	< 0.0045
	Farallon	5/11/2023	IES-MW08-051123		0.0030 J	0.014	0.015	**0.074**	**0.010**	**0.17**	**0.013**	< 0.0046	0.0013 J	< 0.0046
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 6
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Issaquah Valley Elementary School Source Area (continued)														
DF-MW01	Farallon	10/27/2020	DF-MW01-102720	12	0.00091 J	0.0034 J	< 0.0092	**0.018**	0.0018	**0.042**	0.0025 J	< 0.0042	< 0.0042	< 0.0042
	Farallon	12/15/2022	DF-MW01-121522[H]	10.0	< 0.0042	0.0042	< 0.0092	**0.018**	0.0022	**0.053**	0.0041 J	0.0013 J	< 0.0042	< 0.0042
	Farallon	3/1/2023	DF-MW01-030123	12.0*	< 0.0045	0.0057	< 0.0092	**0.040**	0.0039	**0.068**	0.0049	0.0018 J	< 0.0045	< 0.0045
	Farallon	5/11/2023	DF-MW01-051123	12.5	< 0.0045	0.0050	< 0.0092	**0.029**	0.0025	**0.045**	0.0035 J	< 0.0045	< 0.0045	< 0.0045
DF-MW02	Farallon	8/3/2018	DF-MW02-180803	17.0	0.0044 J	0.022	0.012	**0.23**	**0.010**	**0.55**	**0.025**	0.0020 J	0.0030 J	---
	Farallon	8/3/2018	QA/QC-01-180803		0.0042 J	0.020	0.011	**0.20**	**0.0093**	**0.52**	**0.025**	0.0016 J	0.0020 J	---
	Farallon	4/14/2020	DF-MW02-200414	20.0	0.0027 J	0.014	< 0.0092	**0.12**	**0.0075**	**0.44**	**0.019**	0.0016 J	< 0.0041	< 0.0041
	Farallon	10/27/2020	DF-MW02-102720	18.0	0.0043 J	0.019	0.010	**0.15**	**0.0083**	**0.38**	**0.017**	0.0018 J	< 0.0044	< 0.0044
	Farallon	10/27/2020	DF-MW22-102720		0.0042 J	0.016	0.010	**0.18**	**0.0087**	**0.38**	**0.019**	0.0012 J	< 0.0044	< 0.0044
DF-MW03	Farallon	8/3/2018	DF-MW03-180803	18.0	0.0048 J	0.0079	0.012	**0.033**	**0.0062**	**0.13**	**0.0092**	0.00073 J	0.0033 J	---
	Farallon	3/1/2023	DF-MW03-030123	25.0	0.0085	0.025	0.028	**0.14**	**0.016**	**0.36**	**0.023**	0.0013 J	0.0038 J	< 0.0044
	Farallon	5/11/2023	DF-MW03-051123		0.0075	0.021	0.029	**0.16**	**0.020**	**0.45**	**0.033**	< 0.0046	0.0035 J	< 0.0046
Lower Issaquah Valley Regional Wells														
B-2	Farallon	10/29/2020	B-2-102920	25.0	0.0019 J	0.0024 J	< 0.0092	**0.0032** J	0.00077 J	0.0036 J	< 0.0043	< 0.0043	0.018	< 0.0043
B-4	Farallon	7/16/2020	B-4-200716	20.0 - 30.0	0.00094 J	0.0052	< 0.0092	**0.014**	0.00078 J	**0.012**	< 0.0040	< 0.0040	< 0.0040	< 0.004
	Farallon	2/28/2023	B-4-022823	25.0	0.00067 J	0.0093	< 0.0093	**0.019**	0.0035	**0.014**	< 0.0046	**0.0015** J	0.0017 J	< 0.0046
B-7	HWA	2/12/2020	B7-GW	22.5 - 32.5	0.013	0.027	---	**0.31**	**0.017**	**0.27**	0.0058	< 0.0041	< 0.0041	---
	Farallon	2/28/2023	B-7-022823	27.5	0.0069	0.014	0.017	**0.17**	**0.0099**	**0.12**	0.003 J	< 0.0045	0.0014 J	< 0.0045
B-12	HWA	2/12/2020	B12-GW	20.0 - 30.0	< 0.0042	0.011	---	**0.039**	**0.0070**	**0.042**	< 0.0042	< 0.0042	< 0.0042	---
	HWA	2/12/2020	DUP-GW		< 0.0040	0.010	---	**0.041**	**0.0071**	**0.040**	< 0.0040	< 0.0040	< 0.0040	---
COI-TW01	Geosyntec	5/17/2016	COI-MW1-051716	84-94	---	< 0.003	< 0.003	< 0.003	< 0.003	0.0034	< 0.003	< 0.003	---	---
IES-MW07	Farallon	4/15/2020	IES-MW07-200415	25.0	0.028	0.066	0.084	**0.21**	**0.023**	**0.53**	**0.026**	< 0.0041	0.043	< 0.0041
	Farallon	10/27/2020	IES-MW07-102720		0.016	0.038	0.041	**0.1**	**0.014**	**0.34**	**0.016**	< 0.0043	0.0092	< 0.0043
	Farallon	9/2/2022	IES-MW07		0.021	0.05	0.055	**0.2**	**0.023**	**0.68**	**0.032**	< 0.0045	0.017	< 0.0045
	Farallon	12/28/2022	IES-MW07-122822		0.0056	0.024 J	0.014	**0.065** J	**0.0052 J**	**0.095** J	**0.011** J	< 0.0044	0.10	< 0.0044
	Farallon	3/2/2023	IES-MW07-030223		0.021	0.073	0.052	**0.21**	**0.021**	**0.47**	**0.028**	**0.0012** J	0.0086	< 0.0045
	Farallon	5/12/2023	IES-MW07-051223		0.020	0.062	0.065	**0.22**	**0.021**	**0.43**	**0.024**	< 0.0042	0.011	< 0.0042
NDS-MW01	Farallon	4/16/2020	NDS-MW01-200416	27.0	0.048	0.085	0.17	**0.55**	**0.062**	**1.3**	**0.021**	**0.0022** J	0.25	< 0.0039
	Farallon	7/15/2020	NDS-MW01-200715		0.038	0.068	0.12	**0.39**	**0.050**	**0.86**	**0.016**	**0.0013** J	0.15	< 0.0040
	Farallon	10/29/2020	NDS-MW01-102920	26.0	0.022	0.035	0.058	**0.22**	**0.024**	**0.49**	**0.011**	**0.0012** J	0.026	< 0.0045
	Farallon	9/2/2022	NDS-MW01	27.0	0.031	0.05	0.092	**0.35**	**0.044**	**1.2**	**0.019**	**0.0017** J	0.065	< 0.0046
	Farallon	12/14/2022	NDS-MW01-121422[H]		0.028	0.063	0.078	**0.36**	**0.041**	**0.77**	**0.017**	**0.0012** J	0.046	< 0.0044
	Farallon	3/1/2023	NDS-MW01-030123		0.045	0.094	0.12	**0.50**	**0.05**	**1.3**	**0.019**	**0.0019** J	0.14	< 0.0045
	Farallon	5/10/2023	NDS-MW01-051023		0.044	0.064	0.15	**0.57**	**0.061**	**1.4**	**0.022**	**0.0019** J	0.14	< 0.0045
NDS-MW03	Farallon	4/16/2020	NDS-MW03-200416	30.0	0.0011 J	0.0067	< 0.0092	**0.012**	0.0040	**0.022**	0.0014 J	< 0.0040	< 0.0040	< 0.0040
	Farallon	10/28/2020	NDS-MW03-102820	31.0	0.0011 J	0.0051	< 0.0092	**0.007**	0.0025	**0.016**	< 0.0045	< 0.0045	< 0.0045	< 0.0045
	Farallon	12/14/2022	NDS-MW03-121422[H]	30.0	0.0012 J	0.0046	< 0.0092	**0.011**	0.0035	**0.014**	< 0.0045	< 0.0045	0.00092 J	< 0.0045
	Farallon	2/28/2023	NDS-MW03-022823		< 0.0044	0.0050	< 0.0092	**0.0086**	0.0037	**0.022**	< 0.0044	< 0.0044	< 0.0044	< 0.0044
	Farallon	5/10/2023	NDS-MW03-051023		< 0.0044	0.0046	< 0.0092	**0.0074**	0.0034	**0.018**	< 0.0044	< 0.0044	< 0.0044	< 0.0044
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 6
Shallow Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (GenX)
Lower Issaquah Valley Regional Wells (continued)														
NGB-MW01	Farallon	9/1/2022	NGB-MW01	30.0	0.017	0.086	0.043	**0.14**	**0.015**	**0.11**	**0.01**	< 0.0046	0.034	< 0.0046
	Farallon	12/13/2022	NGB-MW01-121322[H]	25.0	0.018	0.081	0.052	**0.16**	**0.016**	**0.094**	**0.0097**	< 0.0045	0.011	< 0.0045
	Farallon	3/2/2023	NGB-MW01-030223		0.019	0.089	0.065	**0.18**	**0.023**	**0.099**	**0.013**	< 0.0045	0.016	< 0.023
	Farallon	5/12/2023	NGB-MW01-051223		0.015	0.071	0.055	**0.15**	**0.016**	**0.10**	**0.011**	< 0.0045	0.0085	< 0.0045
NLS-MW01	Farallon	9/2/2022	NLS-MW01	25.0	0.014	0.032	0.035	**0.11**	**0.013**	**0.14**	0.0040 J	0.0012 J	0.0078	< 0.0045
	Farallon	12/13/2022	NLS-MW01-121322[H]		0.012	0.025	0.028	**0.099**	**0.011**	**0.093**	0.0023 J	0.0014 J	0.0039 J	< 0.0045
	Farallon	3/2/2023	NLS-MW01-030223	24.5	0.0099	0.034	0.023	**0.084**	**0.012**	**0.11**	0.0032 J	0.0019 J	0.0065	< 0.0043
	Farallon	5/12/2023	NLS-MW01-051223		0.0065	0.018	0.023	**0.066**	**0.0092**	**0.085**	0.0030 J	< 0.0045	0.003 J	< 0.0045
NWN-MW11	Farallon	4/15/2020	NWN-MW11-200415	20.0	< 0.0039	0.00054 J	< 0.0092	< 0.0039	0.00087 J	0.0017 J	< 0.0039	< 0.0039	< 0.0039	< 0.0039
	Farallon	7/15/2020	NWN-MW11-200715		< 0.0039	0.00037 J	< 0.0092	< 0.0039	< 0.0016	0.0013 J	< 0.0039	< 0.0039	< 0.0039	< 0.0039
	Farallon	10/29/2020	NWN-MW11-102920	22.0	0.0005 J	0.0006 J	< 0.0092	< 0.0043	0.0011 J	0.0020 J	< 0.0043	< 0.0043	< 0.0043	< 0.0043
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

NOTES:

Results in **bold** denote concentrations exceeding applicable MCLs and/or Cleanup Levels.

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

— denotes sample not analyzed or information unknown.

[1]Depth in feet below ground surface.

[2]Samples collected in 2016 analyzed by U.S. Environmental Protection Agency (EPA) Method 537; samples collected in 2018 and later analyzed by EPA Method 537 Modified.

[3]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State Model Toxics Control Act Cleanup Regulation (MTCA), Standard Method B Values for Groundwater from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC, dated January 2025.

[4]EPA National Primary Drinking Water Regulations, 40 Code of Federal Regulations Part 141. The EPA set a Hazard Index MCL of 1 for PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS to account for the combined and co-occurring levels of these PFAS in drinking water.

E = result exceeded calibration range of instrument and is an estimate

Farallon = Farallon Consulting, L.L.C.

Geosyntec = Geosyntec Consultants, Inc.

H = sample analyzed outside of holding time; results are estimates

HWA = HWA Geosciences Inc.

J = result is an estimate

NE = not established

PFAS = per- and poly-fluoroalkyl substances

* indicates the sample intake depth was not reported; value represents the center of the well screen when fully saturated or center of water column when screen was not fully saturated.

Table 7
Intermediate and Deep Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
Eastside Fire & Rescue Headquarters Source Area														
NWN-MW08	Farallon	4/17/2020	NWN-MW08-200417	75.0	< 0.0040	0.00080 J	< 0.0092	**0.0013** J	0.00063 J	**0.0046**	< 0.0040	< 0.0040	0.011	< 0.0040
	Farallon	7/15/2020	NWN-MW08-200715		0.00062 J	0.00089 J	< 0.0092	**0.0042**	0.00077 J	**0.0047**	< 0.0040	< 0.0040	0.0073	< 0.0040
	Farallon	10/29/2020	NWN-MW08-102920	71.0	0.00045 J	0.00081 J	< 0.0092	**0.0016** J	0.00052 J	0.0016 J	< 0.0045	< 0.0045	0.0022 J	< 0.0045
	Farallon	2/28/2023	NWN-MW08-022823	75.0	< 0.0045	0.0013 J	< 0.0092	< 0.0045	0.00074 J	0.00054 J	0.0013 J	< 0.0045	0.00081 J	< 0.0045
	Farallon	5/10/2023	NWN-MW08-051023		< 0.0046	0.00075 J	< 0.0093	< 0.0046	< 0.0019	0.00068 J	< 0.0046	< 0.0046	0.0011 J	< 0.0046
Issaquah Valley Elementary School Source Area														
IES-MW06	Farallon	4/15/2020	IES-MW06-200415	85.0	0.0012 J	0.0049	< 0.0092	**0.0079**	0.0013 J	**0.015**	< 0.0040	< 0.0040	0.04	< 0.0040
	Farallon	7/14/2020	IES-MW06-200714		0.00095 J	0.0053	< 0.0092	**0.0042**	0.00095 J	0.0018 J	< 0.0039	< 0.0039	0.00061 J	< 0.0039
	Farallon	10/27/2020	IES-MW06-102720		0.0017 J	0.0087	< 0.0092	**0.0056**	0.0014 J	0.0018 J	< 0.0042	< 0.0042	< 0.0042	< 0.0042
	Farallon	9/1/2022	IES-MW06		0.0017 J	0.0081	< 0.0092	**0.0071**	0.0015 J	0.0016 J	< 0.0045	< 0.0045	< 0.0045	< 0.0045
	Farallon	12/15/2022	IES-MW06-121522[H]		0.0013 J	0.015	0.011	**0.015**	0.0032	0.0021 J	< 0.0043	< 0.0043	< 0.0043	< 0.0043
	Farallon	3/1/2023	IES-MW06-030123		0.0019 J	0.018	0.013	**0.018**	0.0040	0.0026 J	0.0023 J	< 0.0044	0.00062 J	< 0.0044
	Farallon	5/11/2023	IES-MW06-051123		0.00082 J	0.015	0.012	**0.013**	0.0032	0.0027 J	0.0014 J	< 0.0044	0.00069 J	< 0.0044
IES-MW09	Farallon	4/15/2020	IES-MW09-200415	80.0	< 0.0040	0.0021 J	< 0.0092	**0.0057**	0.0016 J	**0.052**	0.0038 J	< 0.0040	0.00096 J	< 0.0040
	Farallon	7/14/2020	IES-MW09-200714		< 0.0040	0.0015 J	< 0.0092	**0.0035** J	0.00084 J	**0.0080**	< 0.0040	< 0.0040	< 0.0040	< 0.0040
	Farallon	10/27/2020	IES-MW09-102720	76.0	0.00044 J	0.0021 J	< 0.0092	**0.0036** J	0.00072 J	**0.0072**	< 0.0042	< 0.0042	< 0.0042	< 0.0042
	Farallon	9/1/2022	IES-MW09	80.0	0.00084 J	0.0020 J	< 0.0092	**0.0051**	0.00074 J	**0.0099**	0.0012 J	< 0.0042	< 0.0042	< 0.0042
	Farallon	12/13/2022	IES-MW09-121322[H]		< 0.0047	0.0018 J	< 0.0094	**0.0029** J	0.00099 J	**0.0083**	< 0.0047	< 0.0047	< 0.0047	< 0.0047
	Farallon	3/1/2023	IES-MW09-030123		< 0.0045	0.0041 J	< 0.0092	**0.0082**	0.0010 J	**0.016**	0.0014 J	< 0.0045	< 0.0045	< 0.0045
	Farallon	5/11/2023	IES-MW09-051123		< 0.0045	0.0018 J	< 0.0092	**0.0061**	0.00071 J	**0.0099**	< 0.0045	< 0.0045	< 0.0045	< 0.0045
IES-MW10	Farallon	4/16/2020	IES-MW10-200416	80.0	0.071	0.11	0.27	**0.55**	**0.066**	**1.2**	**0.030**	**0.0024** J	0.33	< 0.0040
	Farallon	7/14/2020	IES-MW10-200714		0.062	0.099	0.24	**0.45**	**0.067**	**1.1**	**0.028**	**0.0021** J	0.31	< 0.0041
	Farallon	10/27/2020	IES-MW10-102720		0.068	0.12	0.24	**0.4**	**0.058**	**1.0**	**0.025**	**0.0019** J	0.27	< 0.0045
	Farallon	9/1/2022	IES-MW10		0.059	0.12	0.19	**0.59**	**0.072**	**1.3**	**0.029**	**0.002** J	0.31	< 0.0046
	Farallon	9/1/2022	IES-MW10-DUP		0.066	0.12	0.22	**0.7**	**0.078**	**1.6**	**0.036**	**0.0021** J	0.32	< 0.0046
	Farallon	12/13/2022	IES-MW10-121322[H]		0.071	0.14	0.22	**0.6**	**0.075**	**1.1**	**0.030**	**0.0018** J	0.32	< 0.0045
	Farallon	3/1/2023	IES-MW10-030123		0.067	0.14	0.20	**0.78**	**0.077**	**1.5**	**0.029**	**0.0026** J	0.35	< 0.0045
	Farallon	5/11/2023	IES-MW10-051123		0.052	0.094	0.22	**0.57**	**0.072**	**1.3**	**0.032**	**0.0015** J	0.24	< 0.0044
IES-MW11	Farallon	9/1/2022	IES-MW11	125.0	0.0090 J	0.037	< 0.046	**0.044**	**0.0059** J	**0.031**	< 0.021	< 0.021	0.0077 J	< 0.021
	Farallon	12/15/2022	IES-MW11-121522[H]		0.0083	0.047	0.042	**0.071**	**0.0084**	**0.027**	0.0023 J	< 0.0043	0.017	< 0.0043
	Farallon	3/1/2023	IES-MW11-030123		0.0050	0.028	0.025	**0.037**	**0.0063**	**0.032**	0.0019 J	< 0.0045	0.066	< 0.0045
	Farallon	5/11/2023	IES-MW11-051123		0.013	0.072	0.077	**0.092**	**0.014**	**0.024**	0.0025 J	< 0.0049	0.029	< 0.0049
IES-MW12	Farallon	9/2/2022	IES-MW12	125.0	< 0.13	0.049 J	< 0.25	**0.14**	**0.016** J	**0.22**	**0.044** J	< 0.13	0.021 J	< 0.13
	Farallon	12/28/2022	IES-MW12-122822	110.0	0.016	0.043 J	0.040	**0.16** J	**0.016** J	**0.38** J	**0.019** J	< 0.0044	0.014	< 0.0044
	Farallon	3/2/2023	IES-MW12-030223	125.0*	0.0026 J	0.016	0.013	**0.037**	**0.0042**	**0.052**	0.0077	< 0.0045	0.46	< 0.0045
	Farallon	5/12/2023	IES-MW12-051223	125.0	0.00098 J	0.010	0.0093	**0.024**	0.0029	**0.034**	0.0066	< 0.0043	0.32	< 0.0043
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 7
Intermediate and Deep Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
Lower Issaquah Valley Regional Wells														
COI-TW03	Geosyntec	5/17/2016	COI-TW3-051716	Unknown	---	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	---	---
COI-MW01	Geosyntec	6/7/2016	COI-MW01-060716	28.0 - 38.0	---	< 0.0025	< 0.0025	< 0.0025	**0.0068**	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW01-20161017		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
COI-MW02	Geosyntec	6/7/2016	COI-MW02-060716	70.0 - 90.0	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW02-2016017		---	0.008	< 0.0025	**0.005**	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Farallon	10/25/2018	C01-MW02-181025	80.0	< 0.0083	0.0049	< 0.0042	**0.0026** J	< 0.0017	< 0.0042	< 0.0042	< 0.0042	< 0.0042	---
	Farallon	3/2/2023	COI-MW02-030223		< 0.0044	0.0016 J	< 0.0092	< 0.0044	0.00067 J	0.00090 J	0.0012 J	< 0.0044	0.00077 J	< 0.0044
	Farallon	5/11/2023	COL-MW02-051123		< 0.0042	0.0013 J	< 0.0092	< 0.0042	< 0.0017	< 0.0042	< 0.0042	< 0.0042	< 0.0042	< 0.0042
COI-MW03	Geosyntec	6/7/2016	COI-MW03-060716	78.0 - 98.0	---	0.092	0.065	**0.28**	**0.029**	**0.44**	**0.051**	< 0.0025	---	---
	Geosyntec	6/7/2016	COI-MW03-060716-DUP		---	0.094	0.067	**0.30**	**0.030**	**0.46**	**0.051**	< 0.0025	---	---
	Geosyntec	6/21/2016	COI-MW03-20160621		---	0.062	0.033	**0.17**	**0.020**	**0.26**	**0.016**	< 0.0025	---	---
	Geosyntec	6/21/2016	COI-MW03-20160621-DUP		---	0.059	0.033	**0.17**	**0.019**	**0.26**	**0.018**	< 0.0025	---	---
	Geosyntec	6/28/2016	COI-MW03-20160628		---	0.049	0.031	**0.11**	**0.012**	**0.17**	**0.016**	< 0.0025	---	---
	Geosyntec	6/28/2016	COI-MW03-20160628-DUP		---	0.047	0.026	**0.097**	**0.012**	**0.15**	**0.013**	< 0.0025	---	---
	Geosyntec	7/6/2016	COI-MW03-20160716		---	0.025	0.015	**0.062**	**0.0051** J	**0.100**	0.0061	< 0.0025	---	---
	Geosyntec	7/6/2016	COI-MW03-20160716-DUP		---	0.026	0.014	**0.062**	**0.0071** J	**0.100**	0.0056	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-MW03-20160713		---	0.031	0.016	**0.075**	**0.006**	**0.088**	0.0063	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-MW03-20160713 DUP		---	0.029	0.014	**0.070**	**0.0053**	**0.100**	0.0055	< 0.0025	---	---
	Geosyntec	7/20/2016	COI-MW03-20160720		---	0.032	0.017	**0.080**	**0.0062**	**0.098**	0.0063	< 0.0025	---	---
	Geosyntec	7/20/2016	COI-MW03-20160720-DUP		---	0.033	0.017	**0.074**	**0.0063**	**0.100**	0.0071	< 0.0025	---	---
	Geosyntec	7/28/2016	COI-MW03-20160728		---	0.071	0.039	**0.17**	**0.016**	**0.360**	**0.025**	< 0.0025	---	---
	Geosyntec	7/28/2016	COI-MW03-20160728-DUP		---	0.072	0.035	**0.16**	**0.015**	**0.330**	**0.022**	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW03-2016017		---	0.032	0.018	**0.067**	**0.0059**	**0.088**	0.0055	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW03-20161017-DUP		---	0.033	0.018	**0.070**	**0.0061**	**0.099**	0.0056	< 0.0025	---	---
	Farallon	10/24/2018	C01-MW03-181024	88.0	0.0087	0.039	0.025	**0.048**	**0.0071**	**0.053**	0.0048	< 0.0042	0.0052	---
	Farallon	4/15/2020	C01-MW03-200415		0.012	0.046	0.031	**0.11**	**0.010**	**0.14**	0.0068	< 0.0039	0.0074	< 0.0039
	Farallon	10/28/2020	COL-MW03-102820	94.0	0.012	0.049	0.028	**0.073**	**0.0084**	**0.099**	0.0053	< 0.0046	0.0041 J	< 0.0046
	Farallon	9/1/2022	COI-MW03	78.0 - 98.0	0.013	0.042	0.042	**0.097**	**0.0090**	**0.097**	0.0052	< 0.0044	0.55	< 0.0044
	Farallon	12/13/2022	COI-MW03-121322[H]	78.0 - 98.0	0.02	0.055	0.053	**0.19**	**0.016**	**0.14**	0.0069	< 0.0047	0.012	< 0.0047
	Farallon	3/2/2023	COI-MW03-030223	78.0 - 98.0	0.021	0.072	0.058	**0.21**	**0.018**	**0.19**	0.0080	< 0.0044	0.017	< 0.0044
	Farallon	5/12/2023	COL-MW03-051223	78.0 - 98.0	0.011	0.039	0.042	**0.091**	**0.010**	**0.093**	0.0060	< 0.0044	0.028	< 0.0044
COI-MW04	Geosyntec	6/7/2016	COI-MW04-060716	70.0 - 90.0	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.0030	< 0.0025	< 0.0025	---	---
	Geosyntec	6/21/2016	COI-MW04-20160621		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	6/28/2016	COI-MW04-20160628		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	7/6/2016	COI-MW04-20160716		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-MW04-20160713		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	7/20/2016	COI-MW04-20160720		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	7/27/2016	COI-MW04-20160727		---	< 0.0025	< 0.0025	< 0.0025	0.0039	< 0.0025	< 0.0025	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW04-20161017		---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.0025	< 0.0025	< 0.0025	---	---
	Farallon	10/24/2018	C01-MW04-101024	80.0	< 0.0083	0.0017 J	< 0.0042	**0.0034** J	< 0.0017	0.0023 J	< 0.0042	< 0.0042	< 0.0042	---
	Farallon	10/28/2020	COL-MW04-102820	74.0	0.0013 J	0.0018 J	< 0.0092	**0.0024** J	0.00064 J	0.0031 J	< 0.0045	< 0.0045	0.002 J	< 0.0045
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 7
Intermediate and Deep Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
Lower Issaquah Valley Regional Wells (continued)														
COI-MW05	Geosyntec	6/7/2016	COI-MW05-060716	70.0 - 90.0	---	0.057	0.040	**0.16**	**0.017**	**0.39**	0.0086	< 0.0025	---	---
	Geosyntec	6/21/2016	COI-MW05-20160621		---	0.054	0.042	**0.17**	**0.013**	**0.49**	0.008	< 0.0025	---	---
	Geosyntec	6/28/2016	COI-MW05-20160628		---	0.07	0.056	**0.18**	**0.017**	**0.50**	0.01	< 0.0025	---	---
	Geosyntec	7/6/2016	COI-MW05-20160716		---	0.056	0.039	**0.17**	**0.011**	**0.48**	0.0075	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-MW05-20160713		---	0.058	0.054	**0.21**	**0.018**	**0.44**	**0.012**	< 0.0025	---	---
	Geosyntec	7/20/2016	COI-MW05-20160720		---	0.052	0.040	**0.18**	**0.013**	**0.51**	0.0093	< 0.0025	---	---
	Geosyntec	7/28/2016	COI-MW05-20160728		---	0.066	0.049	**0.18**	**0.018**	**0.51**	0.0087	< 0.0025	---	---
	Geosyntec	10/17/2016	COI-MW05-20161017		---	0.061	0.048	**0.17**	**0.015**	**0.40**	0.0079	< 0.0025	---	---
	Farallon	10/25/2018	C01-MW05-181025	80.0	0.022	0.050	0.080	**0.14**	**0.019**	**0.29**	**0.011**	**0.00073** J	0.045	---
	Farallon	4/15/2020	C01-MW05-200415		0.0091	0.025	0.025	**0.084**	**0.0083**	**0.26**	0.0068	< 0.0039	0.005	< 0.0039
	Farallon	7/14/2020	COI-MW05-200714		0.011	0.031	0.039	**0.11**	**0.011**	**0.24**	0.0073	< 0.0039	0.0095	< 0.0039
	Farallon	10/27/2020	COL-MW05-102720		0.013	0.039	0.037	**0.09**	**0.0098**	**0.23**	0.0074	< 0.0045	0.0075	< 0.0045
	Farallon	9/2/2022	COI-MW05	75.0	0.021	0.065	0.063	**0.21**	**0.02**	**0.42**	**0.011**	< 0.0046	0.021	< 0.0046
	Farallon	12/15/2022	COI-MW05-121522[H]	80.0	0.016	0.063	0.051	**0.23**	**0.016**	**0.31**	0.0091	< 0.0045	0.0087	< 0.0045
	Farallon	3/2/2023	COI-MW05-030223		0.016	0.062	0.051	**0.18**	**0.019**	**0.34**	0.0085	**0.0014** J	0.0079	< 0.0045
	Farallon	5/12/2023	COL-MW05-051223		0.013	0.049	0.05	**0.17**	**0.016**	**0.30**	0.0097	< 0.0044	0.0053	< 0.0044
COI-MW06	Geosyntec	10/17/2016	COI-MW06-20161017	80.0 - 100.0	---	0.096	0.22	**0.49**	**0.08**	**2.2**	**0.053**	**0.0029**	---	---
	Farallon	10/25/2018	C01-MW06-181025	90.0	0.15	0.23	0.60	**1.1**	**0.25**	**3.3**	**0.15**	**0.0065**	0.37	---
	Farallon	4/16/2020	C01-MW06-200416		0.10	0.18	0.43	**0.93**	**0.15**	**2.5**	**0.065**	**0.0051**	1.1	< 0.0040
	Farallon	4/16/2020	C01-MW66-200416		0.10	0.18	0.39	**0.87**	**0.15**	**2.5**	**0.065**	**0.0055**	1.2	< 0.0039
	Farallon	7/15/2020	COI-MW06-200715		0.058	0.10	0.21	**0.43**	**0.087**	**1.4**	**0.038**	**0.0032** J	0.70	< 0.0041
	Farallon	7/15/2020	COI-MW66-200715		0.059	0.097	0.23	**0.42**	**0.087**	**1.4**	**0.040**	**0.0031** J	0.69	< 0.0042
	Farallon	10/29/2020	COL-MW06-102920	96.0	0.058	0.088	0.21	**0.45**	**0.08**	**1.4**	**0.035**	**0.0036** J	0.47	< 0.0045
	Farallon	10/29/2020	COL-MW66-102920		0.059	0.075	0.20	**0.52**	**0.075**	**1.4**	**0.042**	**0.0041** J	0.51	< 0.0044
	Farallon	9/2/2022	COI-MW06	90.0	0.069	0.093	0.23	**0.63**	**0.11**	**1.9**	**0.052**	**0.0047**	0.68	< 0.0042
	Farallon	12/14/2022	COI-MW06-121422[H]		0.14	0.20	0.50	**0.79**	**0.19**	**2.0**	**0.078**	**0.0061**	0.87	< 0.0043
	Farallon	12/14/2022	DUPLICATE 3[H]		0.11	0.17	0.40	**0.72**	**0.15**	**1.6**	**0.074**	**0.0043** J	0.88	< 0.0045
	Farallon	3/1/2023	COI-MW06-030123		0.074	0.11	0.25	**0.61**	**0.11**	**2.3**	**0.050**	**0.0047**	0.74	< 0.0044
	Farallon	3/1/2023	COI-MW66-030123		0.070	0.098	0.23	**0.60**	**0.10**	**2.0**	**0.043**	**0.0047**	0.64	< 0.0045
	Farallon	5/11/2023	COL-MW06-051123		0.059	0.077	0.25	**0.60**	**0.096**	**2.0**	**0.049**	**0.0034** J	0.49	< 0.0045
	Farallon	5/11/2023	COL-MW66-051123		0.057	0.076	0.24	**0.55**	**0.093**	**1.9**	**0.043**	**0.0032** J	0.55	< 0.0046
COI-MW07	Geosyntec	10/17/2016	COI-MW07-20161017	100.0 - 110.0	---	< 0.0025	< 0.0025	**0.0049**	0.003	**0.0049**	< 0.0025	< 0.0025	---	---
	Farallon	10/25/2018	C01-MW07-181025	105.0	< 0.0083	0.00097 J	0.0011 J	**0.0031** J	0.0022	0.0033 J	< 0.0042	< 0.0042	0.0023 J	---
	Farallon	4/15/2020	C01-MW07-200415		0.00054 J	0.0015 J	< 0.0092	**0.0028** J	0.0012 J	0.0031 J	< 0.0040	< 0.0040	0.00069 J	< 0.0040
	Farallon	7/15/2020	COI-MW07-200715		0.0011 J	0.0019 J	< 0.0092	**0.0043**	0.0019	0.0036 J	< 0.0039	< 0.0039	< 0.0039	< 0.0039
	Farallon	10/29/2020	COL-MW07-102920		0.0013 J	0.002 J	< 0.0092	**0.0072**	0.0025	**0.0043**	< 0.0043	< 0.0043	< 0.0043	< 0.0043
COI-MW08[5]	Farallon	1/12/2023	COI-MW08-011223	245.0	< 0.25	0.043 J	< 0.50	**0.16** J	**0.025** J	**0.37**	< 0.25	< 0.25	0.062 J	< 0.25
	Farallon	3/2/2023	COI-MW08-030223	125.0	< 0.0046	0.0088	0.013	**0.041**	**0.0055**	**0.086**	0.0056	< 0.0046	0.013	< 0.0046
	Farallon	5/12/2023	COL-MW08-051223	243.0	0.012	0.040	0.047	**0.16**	**0.021**	**0.29**	**0.029**	< 0.0040	0.076	< 0.0040
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

Table 7
Intermediate and Deep Groundwater Analytical Results for PFAS
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Sample Location	Sampled By	Sample Date	Sample Identification	Sample Depth (feet)[1]	Analytical Results (micrograms per liter)[2]									
					Perfluoro-butanoic Acid (PFBA)	Perfluorobutane Sulfonic Acid (PFBS)	Perfluoro-hexanoic Acid (PFHxA)	Perfluorohexane Sulfonic Acid (PFHxS)	Perfluoro-octanoic Acid (PFOA)	Perfluorooctane Sulfonic Acid (PFOS)	Perfluoro-nonanoic Acid (PFNA)	Perfluoro-decanoic Acid (PFDA)	6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
Lower Issaquah Valley Regional Wells (continued)														
COI-PW04	COI	9/22/2020	WELL 4 RAW WATER-43	NA	---	0.0358 J	---	**0.108**	**0.0105 J**	**0.311**	**0.0116** J	---	---	---
	COI	10/20/2020	WELL 4 RAW WATER-44	NA	---	0.0316 J	---	**0.120**	**0.00854 J**	**0.287**	0.00949 J	---	---	---
	COI	1/6/2023	MDA0161-06	NA	0.00814	0.0251	0.0262	**0.0928**	**0.00782**	**0.258**	0.00814	---	---	< 0.001
	COI	3/8/2023	MDC0264-01	NA	0.00778	0.0252	0.0246	**0.0900**	**0.00789**	**0.230**	**0.0101**	---	---	< 0.001
	COI	5/3/2023	MDE0193-01	NA	0.00771	0.0247	0.0266	**0.0886**	**0.00741**	**0.226**	0.00723	---	---	< 0.001
	COI	6/7/2023	MDF0248-03	NA	0.00794	0.0234	0.0259	**0.0938**	**0.00686**	**0.242**	0.00723	---	---	< 0.002
	COI	7/19/2023	MDG0615-01	NA	0.00753	0.0219	0.0224	**0.087**	**0.00781**	**0.212**	0.00815	---	---	< 0.002
	COI	8/2/2023	MDH0118-01	NA	0.00766	0.0223	0.0263	**0.0894**	**0.00754**	**0.230**	0.00778	---	---	< 0.002
COI-PW05	Geosyntec	7/6/2016	COI-WELL 5-20160716	NA	---	0.0064	0.0060	**0.022**	0.0028	**0.032**	0.0035	< 0.0025	---	---
	Geosyntec	7/13/2016	COI-WELL5-20160713	NA	---	0.0081	0.0072	**0.026**	0.0031	**0.032**	0.0043	< 0.0025	---	---
	Geosyntec	7/27/2016	COI-WELL5-20160727	NA	---	0.0041	0.0030	**0.014**	0.0037	**0.019**	< 0.0025	< 0.0025	---	---
	Geosyntec	2/11/2021	MBB0292-2	NA	---	< 0.0900	---	**0.0245**	< 0.0200	**0.0436**	---	---	---	---
	Geosyntec	3/11/2021	MBC0332-02	NA	---	< 0.0900	---	**0.0232**	< 0.0200	**0.0452**	---	---	---	---
	Geosyntec	5/6/2021	MBE0152-02	NA	---	< 0.0900	---	**0.0218**	< 0.0200	**0.0496**	---	---	---	---
	Geosyntec	6/3/2021	MBF0100-02	NA	---	< 0.0900	---	**0.0236**	< 0.0200	**0.0472**	---	---	---	---
COI-PW05-OBS	Geosyntec	7/6/2016	COI-WELL 50BS-20160716	330 - 450	---	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	---	---
NDS-MW02	Farallon	4/16/2020	NDS-MW02-200416	76.0	0.011	0.04	0.024	**0.14**	**0.010**	**0.29**	**0.041**	< 0.0040	0.001 J	< 0.0040
	Farallon	10/28/2020	NDS-MW02-102820	77.0	0.012	0.034	0.026	**0.12**	**0.0093**	**0.26**	**0.020**	< 0.0045	< 0.0045	< 0.0045
NDS-MW04	Farallon	4/16/2020	NDS-MW04-200416	77.0	< 0.0040	0.0013 J	< 0.0092	**0.0026** J	0.0012 J	**0.0076**	< 0.0040	< 0.0040	< 0.0040	< 0.0040
	Farallon	7/15/2020	NDS-MW04-200715		< 0.0039	0.00092 J	< 0.0092	**0.0026** J	0.00078 J	**0.0043**	< 0.0039	< 0.0039	< 0.0039	< 0.0039
	Farallon	10/28/2020	NDS-MW04-102820	78.0	0.00066 J	0.00065 J	< 0.0092	**0.0018** J	0.00072 J	0.0033 J	< 0.0045	< 0.0045	< 0.0045	< 0.0045
NLS-MW02	Farallon	9/2/2022	NLS-MW02	75.0	0.01 J	0.021	< 0.046	**0.084**	**0.0082**	**0.13**	< 0.02	< 0.02	0.0043 J	< 0.02
	Farallon	12/13/2022	NLS-MW02-121322[H]		0.01	0.015	0.022	**0.091**	**0.0077**	**0.11**	0.0028 J	< 0.0045	0.0025 J	< 0.0045
	Farallon	3/2/2023	NLS-MW02-030223	75.0*	0.0057	0.017	0.022	**0.068**	**0.0063**	**0.11**	0.0027 J	< 0.0045	0.0035 J	< 0.0045
	Farallon	5/12/2023	NLS-MW02-051223	75.0	0.0036 J	0.013	0.015	**0.053**	**0.0050**	**0.084**	0.0027 J	< 0.0044	0.0023 J	< 0.0044
MTCA Method B Groundwater Cleanup Levels[3]					**8.0**	**4.8**	**8.0**	**0.0000064**	**0.000003**	**0.0016**	**0.04**	**0.000032**	**3.2**	**0.024**
Federal Maximum Contaminant Levels (MCLs)[4]					**NE**	**Note 4**	**NE**	**0.01**	**0.004**	**0.004**	**0.01**	**NE**	**NE**	**0.01**

NOTES:

Results in **bold** denote concentrations exceeding applicable MCLs and/or Cleanup Levels.

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

— denotes sample not analyzed or information unknown.

[1]Depth in feet below ground surface.

[2]Samples collected in 2016 analyzed by U.S. Environmental Protection Agency (EPA) Method 537; samples collected in 2018 and later analyzed by EPA Method 537 Modified.

[3]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State Model Toxics Control Act Cleanup Regulation (MTCA), Standard Method B Values for Groundwater from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC, dated January 2025.

[4]EPA National Primary Drinking Water Regulations, 40 Code of Federal Regulations Part 141. The EPA set a Hazard Index MCL of 1 for PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS to account for the combined and co-occurring levels of these PFAS in drinking water.

[5] Monitoring well sampled on 1/12/23 and 3/2/23 using a QED MP15 CO2 controller with teflon bladder, sampled on 5/12/2023 using a PFAS free rated Solinst 408 valve pump and high pressure nitrogen controller.

COI = City of Issaquah

Farallon = Farallon Consulting, L.L.C.

Geosyntec = Geosyntec Consultants, Inc.

H = sample analyzed outside of holding time; results are estimates

J = result is an estimate

NE = not established

PFAS = per- and poly-fluoroalkyl substances

* indicates the sample intake depth was not reported; value represents the center of the well screen when fully saturated or center of water column when screen was not fully saturated.

Table 8
Permeable Reactive Barrier Design Parameters
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Design Information	Segment A	Segment B	Segment C	Segment D	Segment E	Segment F	Totals
PlumeStop® (pounds)	14,813	10,825	6,837	5,697	11,623	8,204	58,000
Number of Injection Points	26	19	12	10	18	12	97
Row Type	Double	Double	Single	Double	Double	Double	--
Injection Spacing (feet)	5	5	5	5	5	5	--
Total Segment Length (feet)	65	47.5	60	25	45	30	272.5
Vadose Zone Interval (feet)	9 to 13	11 to 15	11 to 15	10 to 14	8 to 12	6 to 10	--
Aquifer Zone Interval (feet)	13 to 24	15 to 26	15 to 26	14 to 25	12 to 25	10 to 24	--
Vadose Injection Concentration (mg/L)	16,551	16,551	16,551	16,551	16,551	16,551	--
Saturated Injection Concentration (mg/L)	22,758	22,758	22,758	22,758	22,758	22,758	--
Gallons per Foot - Vadose Zone	55	55	55	55	55	55	--
Gallons per Foot - Aquifer Zone	40	40	40	40	40	40	--
Total Gallons Injected	17,086	12,486	7,886	6,572	13,406	9,463	66,900

NOTES:
mg/L = milligrams per liter
Design details presented above were adapted from a design prepared September 17, 2025 by Regenesis Remediation Solutions of San Clemente, California (Regenesis).
See accompanying report for further details.

Table 9
Vadose Zone Source Treatment Quantities
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Line	Description	Average Area (sf)	ISS / Excavation Depth (feet)	Volume (bcf)	Volume (bcy)	Mass (tons)	Notes
Soil Treatment Extents - Total PFAS > 1 mg/kg							
1	0 to 5 foot lift w/ 1:1 slope at base	12,935	5.0	64,675	2,400	4,075	Volume available for ISS treatment in these areas will be reduced by asphalt cap and stormwater features (Lines 6-9)
2	5 to 10 foot lift (NWN-R15), 1:1 slope	2,100	5.0	10,500	390	665	
3	5 to 10 foot lift (NWN-R19), 1:1 slope	1,200	5.0	6,000	225	380	
4	5 to 10 foot lift (NWN-R20 & NWN-R24), 1:1 slope	1,230	5.0	6,150	230	390	
5	10 to 13 foot lift (NWN-R20), 1:1 slope	210	3.0	630	25	40	
Subtotals				**87,955**	**3,270**	**5,550**	
Soil Excavation for Off-Property Disposal to Facilitate Asphalt Cap and Stormwater Infrastructure Installations							
Line	**Description**	**Average Area (sf)**	**Excavation Depth (feet)**	**Volume (bcf)**	**Volume (bcy)**	**Mass (tons)**	**Notes**
6	0 to 5 foot lift, for 10-inch thick asphalt cap	26,000	0.833	21,670	805	1,365	
7	0 to 5 foot lift, for stormwater drainage piping and catch basins	687	2.167	1,490	60	95	229 linear feet, 3-feet wide by 2-2/12 feet deep
8	0 to 5 foot lift, for stormwater vault	2,079	4.167	8,665	325	550	Vault excavation in 0-5 ft lift: 27-ft long, 77-ft wide, 4.167-ft tall
9	5 to 10 foot lift, for stormwater vault	2,079	1.333	2,775	105	175	Vault excavation in 5-10 ft lift: 27-ft long, 77-ft wide, 1.333-ft tall
Subtotals				**34,600**	**1,295**	**2,185**	

In-Situ Stabilization (ISS) and Soil Excavation for Swelling			**5% Swelling Factor**				**10% Swelling Factor**			
Line	**Description**	**Average Area (sf)**	**ISS / Excavation Depth (feet)**	**Volume (bcf)**	**Volume (bcy)**	**Mass (tons)**	**ISS / Excavation Depth (feet)**	**Volume (bcf)**	**Volume (bcy)**	**Mass (tons)**
10	0 to 5 foot lift; off-property disposal for swelling factor	12,935	0.20	2,590	100	170	0.38	4,855	180	310
11	0 to 5 foot lift; ISS (reduced by lines 6-8)	12,935	4.80	30,260	1,110	1,895	4.63	27,995	1,030	1,755
12	5 to 10 foot lift (NWN-R15); ISS (reduced by line 9)	2,100	5.0	7,725	285	490	5.0	7,725	285	490
13	5 to 10 foot lift (NWN-R19), 1:1 slope; ISS	1,200	5.0	6,000	225	380	5.0	6,000	225	380
14	5 to 10 foot lift (NWN-R20 & NWN-R24), 1:1 slope; ISS	1,230	5.0	6,150	230	390	5.0	6,150	230	390
15	10 to 13 foot lift (NWN-R20), 1:1 slope; ISS	210	3.0	630	25	40	3.0	630	25	40
Treatment Via In-Situ Stabilization Subtotal				**50,765**	**1,875**	**3,195**		**48,500**	**1,795**	**3,055**
Excavation for Off-Property Disposal Subtotal (Swelling, Asphalt Cap, Stormwater Infrastructure)				**37,190**	**1,395**	**2,355**		**39,455**	**1,475**	**2,495**
Total Treatment and Excavation Volume and Mass				**87,955**	**3,270**	**5,550**		**87,955**	**3,270**	**5,550**

NOTES:

sf = square feet; ft = feet

bgs = below ground surface

bcf = bank cubic feet; bcy = bank cubic yards

Assumes 1.7 tons per cubic yard sand. Estimated mass rounded up to nearest 5 tons.

Excavations from 5 to 10 and 10 to 13 feet bgs assume a 1:1 slope back on all four sides. Volume calculated as the average of the base and top areas x treatment area depth.

Lines 1 to 5: Calculate total volume and mass to treat via in-situ stabilization (ISS) or excavation based on total PFAS concentrations greater than 1 milligram per kilogram (mg/kg).

Lines 6 to 9: Calculate total volume and mass to excavate for off-property disposal at a Subtitle C facility to facilitate installation of a 10-inch thick asphalt cap and stormwater management infrastructure (drainage piping, concrete vault).

Line 10: Calculates volume and mass of soil to excavate from the 0 to 5 foot lift for off-property disposal to facilitate net swelling of 5 and 10 percent (%) following compaction of the in-situ stabilized soil.

Lines 11 to 12: Calculate net volume of soil to be treated via in-situ stabilization from the 0-5 and 5-10 foot lifts after excavation of soil for the asphalt cap and stormwater management infrastructure.

APPENDIX A
ENGINEERING DRAWING SET AND SPECIFICATIONS

ENGINEERING DESIGN REPORT
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

Technical Specifications – 30% Design Submittal

EFR HQ Source Area Interim Action
Eastside Fire and Rescue Headquarters and
Issaquah Valley Elementary School Site
175 Newport Way Northwest
Issaquah, Washington

Farallon PN: 1754-009

Ecology Cleanup Site ID: 16581

September 26, 2025

Prepared by:

DRAFT
Ryan Hultgren
Senior Engineer

DRAFT
Adia Jumper
Associate Engineer

Reviewed by:

DRAFT
Eric Buer
Principal Hydrogeologist

For:
Eastside Fire and Rescue
and
City of Issaquah

Submitted by:
Farallon Consulting, L.L.C.
1809 7th Avenue, Suite 1111
Seattle, Washington 98101

1.0 GENERAL

A. The CONTRACTOR will supply all materials, equipment, labor, and supplies necessary to complete interim action elements, including groundwater treatment and vadose zone soil treatment earthwork, at the Eastside Fire and Rescue Headquarters (EFR HQ) property located at 175 Newport Way Northwest in Issaquah, Washington (Property). The CONTRACTOR will implement the interim remedial action as shown in Attachments A and B and in accordance with applicable manufacturers' specifications.

B. The CONTRACTOR may propose alternative installation configurations and/or propose substitute products in writing to Eastside Fire and Rescue (EFR) and the City of Issaquah (the CITY) and Farallon Consulting, L.L.C. (FARALLON) for approval. Any changes to implementation of the interim action to accommodate alternative installation configurations and/or substitute products will be discussed and approved by EFS, the CITY, and FARALLON prior to the CONTRACTOR proceeding with the proposed change. The CONTRACTOR will assume all responsibility for making and coordinating all necessary alterations in the planned methodology to accommodate substitute products. All modifications to existing improvements, or any other work required to implement the installation of alternative products and/or substitute equipment made necessary by such substitution, will be submitted to EFR, the CITY, and FARALLON for approval.

C. The CONTRACTOR will identify deviations from the Engineering Drawings provided in Attachment A that are necessary to avoid utility conflicts and costs associated with the deviations. The CONTRACTOR will coordinate with EFR, the CITY, and FARALLON for approval of these deviations prior to implementation and will document the approved construction in as-built drawings.

D. The CONTRACTOR will provide timely notice to EFR, the CITY, and FARALLON of all on-Property construction activities to allow EFR, the CITY, and/or FARALLON inspection personnel to be present. The CONTRACTOR will be responsible for coordinating all required inspections with local permitting agencies and will be responsible for any fees and costs associated with such inspections.

E. The CONTRACTOR will maintain copies of the project plans and specifications, all permits (if applicable), and other project documentation on the Property. The CONTRACTOR will provide EFR, the CITY, and FARALLON with copies of all inspection reports, permits, plans, field notes, and other project documentation.

1.1 STAGING

A. EFS, the CITY, and FARALLON will designate an area to be used by the contractor for material staging on the Property, if necessary. The contractor will establish and secure this location.

1.2 HEALTH AND SAFETY

A. The contractor will be responsible for providing its employees and subcontractors and vendors with a Health and Safety Plan specific to the project. Daily "tailgate" style meetings will precede each day's activities when on the Property. At daily tailgate meetings, Property-specific hazards will be outlined, and proper safety precautions to minimize these hazards will be identified.

B. Construction workers at the Property may become exposed to soil and groundwater impacted with constituents of potential concern (COPCs), including aqueous film-forming foam (AFFF) containing perfluorooctane sulfonate (PFOS) and additional per- and poly-fluorinated alkyl substances (PFAS). The following constituents have been identified as COPCs in soil: Perfluorohexanoic Acid (PFHxA), Perfluorohexane Sulfonic Acid (PFHxS), Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonic Acid (PFOS), Perfluorononanoic Acid (PFNA), Perfluorodecanoic Acid (PFDA), 6:2 Fluorotelomer Sulfonic Acid (6:2 FTS), and Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX). The following constituents have been identified as COPCs in groundwater: Perfluorobutane Sulfonic Acid (PFBS), PFHxS, PFOA, PFOS, PFNA, and PFDA.

C. CONTRACTORS will wear appropriate-level personal protective equipment based on exposure to PFAS-contaminated soil and/or groundwater. PFAS-contaminated soil and groundwater will be managed only by CONTRACTORS with appropriate Occupational Safety and Health Administration 40-hour Hazardous Waste Operations and Emergency Response certification.

1.3 PROPERTY ACCESS AND WORK HOURS

A. The Property is located at 175 Newport Way Northwest in Issaquah, Washington. The Property consists of King County Parcel No. 2824069165, which totals approximately 2.5 acres of land owned by King County Fire District 10. The Property contains several fire station buildings and an office building used by EFR. Interim action activities will primarily be conducted within the extents of the Newport Way Northwest AFFF Training Area (NWN AFFF Training Area). Construction activities will be limited to the hours of 7 a.m. to 6 p.m., Monday through Friday and/or in accordance with City of Issaquah Municipal Code Chapter 16.35. Prior to work commencement, EFR will remove or move existing above-ground temporary structures and/or equipment to avoid conflicts with the CONTRACTOR's workspace.

1.4 UTILITIES

A. The CONTRACTOR will locate and mark utilities within the excavation areas before starting excavation activities. The CONTRACTOR will confirm underground utility locations within the project work area described in Attachment A. EFR, the CITY, and FARALLON will be contacted immediately if a conflict is found between existing conditions and the project design.

B. The CONTRACTOR will protect in-place or cut and temporarily cap all utilities within the excavation areas and restore all utilities prior to completion of the project. If active utilities are temporarily capped, the CONTRACTOR will provide temporary services or temporary utilities, so utilities operate as in the original Property conditions.

C. Water is available to the CONTRACTOR for use. Other utilities or services are unavailable for CONTRACTOR use on the Property. The CONTRACTOR will provide needed utilities for the scope of work and worker health and safety, including electricity and supplemental lighting. Restroom facilities are available at the Property.

1.5 PROTECTION OF PROPERTY

A. The CONTRACTOR will maintain provisions to protect any property or adjacent property from damage caused by the CONTRACTOR's equipment, personnel, and/or work-related activities. If any damage occurs, the CONTRACTOR will be responsible for promptly returning the Property to the pre-existing condition, and to the satisfaction of EFR and FARALLON.

B. Any lost or damaged equipment incurred during the work will be replaced at the CONTRACTOR's sole expense.

1.6 PERMITTING REQUIREMENTS

A. The following permits will be applied for (or are on file) and incorporated into the contract:

1. State Environmental Policy Act (SEPA).

2. City of Issaquah Site Work Permit.

3. Underground Injection Control (UIC) Permit.

4. Inadvertent Discoveries.

B. The project Engineering Drawings included in Attachment A will be submitted to respective permitting departments as required. There may be minor adjustments to Engineering Drawings included in Attachment A and the project scope may be adjusted after respective permits review.

C. The CONTRACTOR shall supply EFR and FARALLON with its Washington State Unified Business Identifier Number and City of Issaquah Business License Tax Certificate Number after Notice to Proceed is awarded. Prior to construction, the CONTRACTOR will be responsible for securing and/or ensuring that all permits required have been procured for interim remedial actions.

D. Permits to be obtained by the CONTRACTOR: The Contractor shall apply and pay for, obtain, maintain, and conform to the following listed permits and additional or other applicable permits, codes, and regulations as may govern work. Obtain permits prior to the start of construction.

1. Notification of well construction. Notification must be provided to the Washington State Department of Ecology (Ecology) at least 72 hours prior to drilling. Any associated well drilling permits required.

2. Notification of well decommissioning. Notification must be provided to the Washington State Department of Ecology (Ecology) at least 72 hours prior to decommissioning a well. Any associated well drilling permits required.

E. The CONTRACTOR shall submit copies of any license or permit applications, or other regulatory documentation, to EFR and FARALLON for acknowledgement and review prior to submittal to local jurisdictions or authorities.

1.7 REGULATORY REQUIREMENTS

A. The CONTRACTOR shall conform to all applicable regulations and requirements including but not limited to:

1. Occupational Safety and Health Act (20 CFR 1910 and 1926).

2. Washington Industrial Safety and Health Act (WAC 296-62).

3. City of Issaquah Building Code Land Development Standards.

4. Resource Conservation and Recovery Act and Washington State Dangerous Waste regulations (WAC 173-303). If soil excavated during construction is determined to be a hazardous or dangerous waste, CONTRACTOR shall comply with reporting requirements and documentation associated with this waste.

5. If generated waste is designated hazardous, CONTRACTOR shall comply with the Standards Applicable to Transporters of Hazardous Waste (29 CFR 107 and 171; 40 CFR 263).

6. National Electrical Code.

7. Washington Industrial Safety and Health Act (Chapter 49.17 RCW; Chapter 296-62 WAC).

1.8 WARRANTY

A. The CONTRACTOR warrants that all materials and equipment will be new unless otherwise specified, of good quality, in conformance with the contract documents,

and free from defective workmanship and materials. At EFR or FARALLON's request, the CONTRACTOR will furnish satisfactory evidence of the quality and type of materials and equipment furnished. The CONTRACTOR further warrants that the work will be free from material defects not intrinsic in the design or the materials required in the Contract Documents. The CONTRACTOR's warranty period will extend for 1 year commencing on the date of substantial completion.

B. PLACEHOLDER. To be determined if warranty information regarding treatment effectiveness is appropriate to include in these specifications.

1.9 GENERAL CLIMATE CONDITIONS

A. Location: Issaquah, Washington. Installation: Outdoors. Ambient air temperature range: 15 to 100 degrees Fahrenheit. Relative humidity of ambient air: 40 to 100 percent.

2.0 SUBMITTALS

2.1 GROUNDWATER TREATMENT CONTRACTOR SUBMITTALS

A. Technical Execution Plan;

1. Implementation schedule, including restoration;
2. Procurement of Materials;
3. Site Preparation;
4. Equipment staging on the Property; and
5. Waste Management Plan.

B. Site-specific Health and Safety Plan;

C. Copies of all inspection reports;

D. Copies of public utility notifications and documents;

E. Copies of private utility location documents;

F. Manufacturer cut sheets and testing data for all products;

G. Waste disposal profiles for contaminated soil and water wastes;

H. Disposal documents if contaminated soil and/or water is encountered and removed for off-site disposal;

I. Receipts of product imported and installed at the Property;

J. License(s) for Washington State-licensed well drillers;

K. Notices of Intention to install soil borings and monitoring wells;

L. Soil boring and temporary piezometer installation logs; and

M. All contractor field notes and other project documentation.

2.2 EARTHWORK CONTRACTOR SUBMITTALS

A. Technical Execution Plan;

1. Implementation schedule, including restoration;
2. Procurement of Materials;
3. Demolition and Site Preparation; and
4. Equipment staging on the Property; and
5. Waste Management Plan.

B. Site-specific Health and Safety Plan;

C. Copies of all inspection reports;

D. Copies of public utility notifications and documents;

E. Copies of private utility location documents;

F. Manufacturer cut sheets for all products and materials;

G. Laboratory analytical reports for representative samples of backfill materials;

H. Waste disposal profiles for contaminated soil and water wastes;

I. Disposal documents if contaminated soil and/or water is encountered and removed for off-site disposal;

J. Receipts of backfill material imported and placed on the Property;

K. Geotechnical report to confirm backfill and compaction requirements are consistent with current land use;

L. Notices of Intention to decommission and construct, as applicable, shallow groundwater monitoring wells;

M. License(s) for Washington State-licensed well drillers;

N. Monitoring well decommissioning and installation logs; and

O. All contractor field notes and other project documentation.

P. Additional submittals may be required by the Civil Design engineer for components related to the stormwater system installation.

3.0 GROUNDWATER TREATMENT

3.1 DESCRIPTION OF WORK

A. Groundwater treatment will include installation of a permeable reactive barrier (PRB) along the northern and eastern boundary of the Newport Way Northwest AFFF Training Area. The installation is an extension of the existing PRB pilot test area. See Attachment A, Sheets EN2.00 and EN3.00.

3.2 PRODUCTS

A. The PRB will be constructed with PlumeStop® (PlumeStop), a proprietary Colloidal Activated Carbon™ material, developed and distributed by REGENESIS Remediation Services, or equivalent.

3.3 INSTALLATION

A. Installation will be completed in accordance with manufacturers specifications, included in Attachment B, "Newport Way AFFF Training Area Preliminary PlumeStop® Design and Application Proposal".

B. The general methodology will consist of the following:

1. PlumeStop, or equivalent, will be handled and delivered to the injection location using a custom-built injection system designed to mix and provide the solution at the specified concentration.
2. Direct Push Technology drilling and tooling will be used to inject the PlumeStop® solution into the subsurface.

3. The injections shall be installed in the designed formation presented in Attachment A, Sheet EN3.00.

4.0 EARTHWORK

A. All materials will meet the standards of Washington State Department of Transportation (WSDOT) Standard Specifications, 2025. See Attachment A, Sheet EN6.00 – Part 2 Earthwork.

B. Direct loading/unloading will be used where possible. If needed to complete the work, stockpiles will be established and maintained in keeping with all federal, state, and local erosion control requirements. Stockpiling areas will be proposed by the CONTRACTOR and approved by EFR and FARALLON.

C. FARALLON may periodically be required to obtain and field-screen soil samples from the excavation areas. The CONTRACTOR will assist and support FARALLON in obtaining soil samples as required.

4.1 TEMPORARY EROSION AND SEDIMENT CONTROL

A. Temporary erosion and sediment control (TESC) facilities must be constructed prior to and in conjunction with all grading activities, and in such a manner as to ensure that sediment-laden water does not enter the drainage system during the construction period. These TESC facilities will be upgraded to include additional control measures as needed for unexpected storm events. See Attachment A, Sheet EN4.00 – TESC Plan, Notes, and Details.

4.2 DEMOLITION

A. Wells (5) shall be decommissioned in accordance with Ecology WAC 173-160-381 by a driller licensed in the state of Washington. The driller shall file a notice of intent to Ecology to decommission the well and submit a decommissioning report to Ecology within 30 days of completion, per WAC 173-106-141. See Attachment D, Sheet EN3.00 – TESC Plan, Notes, and Details and Attachment E, Sheet C01, Temporary Erosion & Sediment Control Plan and Sheet D01, TESCP Details.

4.3 VADOSE ZONE SOIL TREATMENT

A. Soil remediation will occur via use of in-situ technology to introduce the specified product, SourceStop® (SourceStop), or equivalent, into the subsurface to prevent leaching of existing COPCs. The site-specific dosing and implementation methodology is provided by the product manufacturer in Attachment B, “Preliminary PFAS Soil Treatment: Farallon Consulting – ChL69998 – Newport Way AFFF Training Area – WA – Rev.1.”.

B. Following soil remediation activities, a geotechnical review must be conducted to confirm backfill and compaction standards have been met for current and future land use.

4.4 STORMWATER SYSTEM INSTALLATION

A. Stormwater system installation shall occur in accordance with specifications provided by the civil design engineer.

4.5 IMPERVIOUS ASPHALT CAP INSTALLATION

A. The impervious cap installation shall occur in accordance with the specifications provided by the civil design engineer.

4.6 MONITORING WELL INSTALLATION

A. This Section includes furnishing all labor, supervision, material, transportation, tools, supplies, equipment, and appurtenances necessary for the drilling, sampling, logging, and installation of six new shallow groundwater monitoring wells, following completion of the vadose zone source treatment.

B. Wells shall be installed in accordance with Minimum Standards for Construction and Maintenance of Wells as established in WAC 173-160. Drilling and well installation shall be completed by a Washington State-licensed well driller in accordance with WAC 173-160.

C. Shallow monitoring well installation. The work includes the complete construction of five new monitoring wells including well casing and drilling. New well locations as shown in Attachment A, Sheet 1.00. The work includes:

1. Using direct push technology, drill a minimum 4.5-inch diameter hole to a depth up to 30 feet below ground surface (feet bgs), or as directed by FARALLON.

2. Install a 2-inch diameter well casing and 10 to 15 feet of 0.020-inch, machine-slotted well screen at depth intervals as directed by FARALLON, and backfill the annular space between the casing and the borehole with filter pack and sealant material.

3. Additional details to be provided regarding installation, well monument, development, and waste disposal.

B. The new monitoring wells will be developed using a submersible pump. Each monitoring well will be developed until the majority of fine-grained sediment has been removed from the well screen and adjacent sand pack.

C. The new wells will be surveyed using the Washington State Plane North coordinates system and measuring the top of casing elevations in North American Vertical Datum of 1988 by a Washington State Professionally Licensed Land Surveyor.

4.7 SOIL DISPOSAL

A. The CONTRACTOR will place excavated impacted soil into a container or stockpile on plastic sheeting until disposal options are determined by FARALLON. FARALLON will obtain and prepare required disposal documents for impacted soil in accordance with state and federal regulations. The CONTRACTOR will properly dispose of soil, as instructed by FARALLON. Disposal facility must be approved by FARALLON. It is anticipated that any untreated soil will be impacted and require disposal at a Subtitle C Landfill.

B. Excess treated soil generated from soil remediation will be tested and characterized by FARALLON for waste profile development. To be determined if excess treated soil will require disposal at a Subtitle C or Subtitle D landfill.

C. FARALLON may periodically be required to obtain and field-screen soil samples. The CONTRACTOR will assist and support FARALLON in obtaining soil samples as required.

4.8 PRODUCTS

A. All materials will meet the standards of the 2025 WSDOT Standard Specifications, or the most recent edition.

B. Backfill Soil. Satisfactory on-site soil or soil imported from off the Property for use as fill or backfill will meet WSDOT Standard Specification 9-03.14(1) criteria. Backfill for pipe bedding will meet WSDOT Standard Specification 9-03.12(3) criteria.

C. Crushed surfacing top course (CSTC). CSTC will meet WSDOT standard specification 9-03.9(3).

D. PlumeStop. PlumeStop, or an equivalent liquid colloidal activated carbon material, shall be stored and handled in accordance with vendor specifications.

E. SourceStop. SourceStop, or an equivalent solid colloidal activated carbon material, shall be stored and handled in accordance with vendor specifications.

ATTACHMENT A
30% DESIGN DRAWINGS

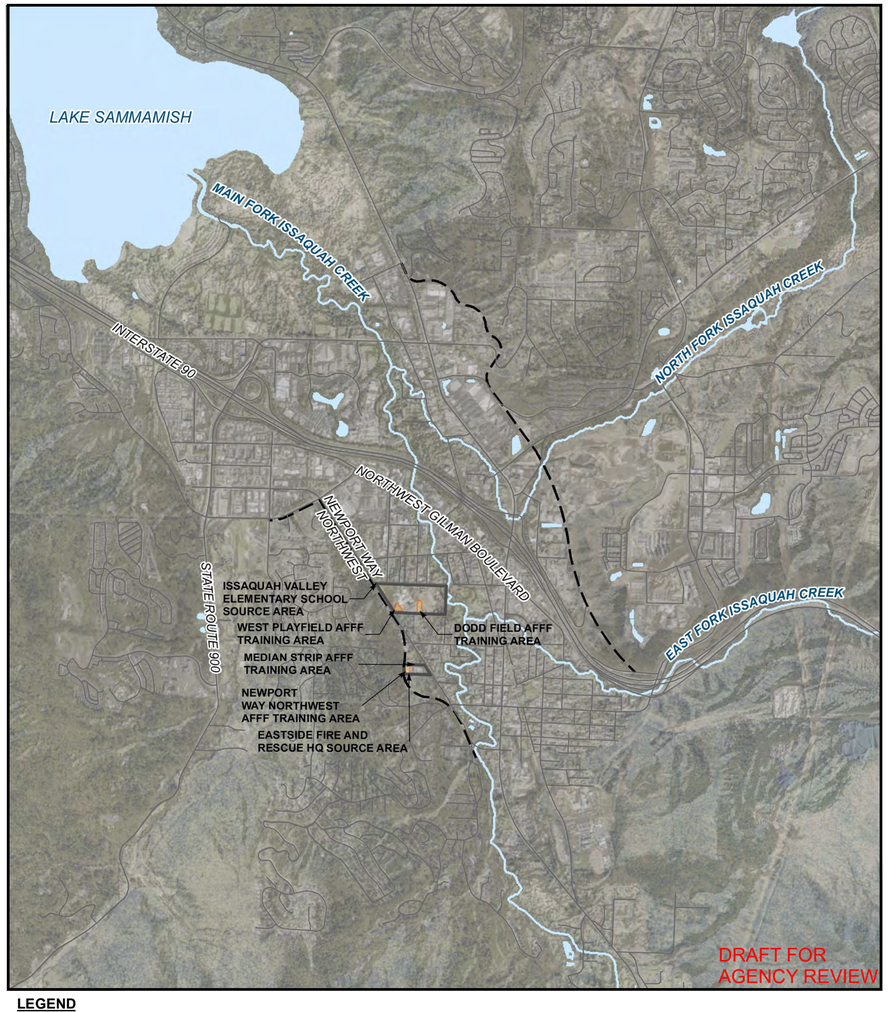
EFR HQ SOURCE AREA INTERIM ACTION
Eastside Fire and Rescue
175 Newport Way Northwest
Issaquah, Washington

Farallon PN: 1754-009

EASTSIDE FIRE AND RESCUE (EFR) HEADQUARTERS (HQ) AND ISSAQUAH VALLEY ELEMENTARY SCHOOL (IVES) SITE
CSID: CSID: 16581, FSID: 87761647
EFR HQ SOURCE AREA INTERIM ACTION

175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

SITE VICINITY MAP



LEGEND

- CREEK
- LOWER ISSAQUAH VALLEY
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- LISTED SITE

0 2,500
SCALE IN FEET

N

DRAWING INDEX

SHEET #	SHEET NAME
EN0.00	COVER, VICINITY MAP, AND DRAWING INDEX
EN0.10	GENERAL NOTES, LEGEND, SYMBOLS, AND ABBREVIATIONS
EN1.00	SITE PLAN - EXISTING CONDITION
EN2.00	INTERIM ACTION ELEMENTS
EN3.00	PERMEABLE REACTIVE BARRIER WALL
EN4.00	TESC PLAN
EN4.10	VADOSE ZONE SOURCE TREATMENT
EN5.00	DETAILS
EN6.00	SPECIFICATIONS

DIRECTORY

ENVIRONMENTAL CONSULTANT
FARALLON CONSULTING
1809 7TH AVENUE
SUITE 1111
SEATTLE, WASHINGTON 98101

PRIMARY CONTACT: SARAH SNYDER
PHONE: (717) 395-0268
EMAIL: SSNYDER@FARALLONCONSULTING.COM

ENGINEER CONTACT: RYAN P. HULTGREN, P.E.
PHONE: (253) 442-6947
EMAIL: RHULTGREN@FARALLONCONSULTING.COM

LEAD AGENCY OVERSEEING CLEANUP
WASHINGTON STATE DEPARTMENT OF ECOLOGY
TOXICS CLEANUP PROGRAM
300 DESMOND DRIVE SOUTHEAST
LACEY, WASHINGTON 98503

SITE MANAGER: VANCE ATKINS

PROPERTY OWNER
KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WA 98027
(425) 313-3200

APP.	SS
CKD.	RH
BY	RB
REVISION/DESCRIPTION	30% DESIGN SUBMITTAL
DATE	9/25/2025

PRELIMINARY PLANS
"NOT FOR CONSTRUCTION"

FARALLON CONSULTING
1809 7th Avenue
Suite 111;
Seattle, Washington 98101
(425) 226-5600
farallonconsulting.com

PREPARED FOR:
KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY
NORTHWEST
ISSAQUAH, WA 98027

COVER, VICINITY MAP, AND DRAWING INDEX

EFR HQ SOURCE AREA INTERIM ACTION
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

811 Know what's below. Call before you dig.

PROJECT LOCATION (S,T,R):

JURISDICTION FILE NO.:

FARALLON PROJECT NO.:
1754-009

SHEET
EN0.00

\\172.16.101.3\2Drafting\Projects\1754-009\CADD\Engineering Drawings\001 - 2025.05.28\1754-009_SheetSet_2025.09.25_1ML.dwg 2025/09/25 1:05 PM (RYAN.BATES)

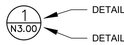
ELECTRICAL ABBREVIATIONS

A/AMP	AMP
AC	ALTERNATING CURRENT
BD	BUS DUCT
C	CURRENT
CB	CIRCUIT BREAKER
CLG	CEILING
DC	DIRECT CURRENT
DIS	DISCONNECT
DP	DOUBLE POLE
DT	DOUBLE THROW
EG	ENCLOSED AND GASKETED
E(OH)	ELECTRICAL (OVERHEAD)
E(UG)	ELECTRICAL (UNDERGROUND)
EMER	EMERGENCY
EPO	EMERGENCY POWER OFF
EMT	ELECTRICAL METALLIC TUBING
EXP	EXPOSED
FBO	FURNISHED BY OTHERS
FLEX	FLEXIBLE METAL CONDUIT
FRN	DUAL ELEMENT FUSE
GEN	GENERATOR
GFIC	GROUND FAULT INTERRUPTER
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
HOA	HAND-OFF-AUTO SWITCH
IRD	INFRARED DETECTOR
HP	HORSE POWER
HZ	CYCLES PER SECOND
JB	JUNCTION BOX
LFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
M	MOTOR/MOTOR STARTER COIL
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NON-FUSED
NO	NORMALLY OPEN
OL	OVERLOADS
PBS	PUSHBUTTON
PF	POWER FACTOR
PL	PILOT LIGHT
PLC	PROGRAMMABLE LOGIC CONTROLLER
RC	RIGID CONDUIT
RCPT	RECEPTACLE
SN	SOLID NEUTRAL
SP	SINGLE POLE
ST	SINGLE THROW
SW	SWITCH
TF/TRAN	TRANSFORMER
UF	UNDERFLOOR
UG	UNDERGROUND
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VP	VAPOR PROOF
WHT	WHITE
WP	WEATHER PROOF
XP	EXPLOSION PROOF

STANDARD ABBREVIATIONS

AF	AIR FILTER
AB	AGGREGATE BASE
AC	ASPHALTIC CONCRETE
APPROX	APPROXIMATELY
AF	AIR FILTER
AS	AIR SPARGE
BF	BLIND FLANGE
B.G.S.	BELOW GROUND SURFACE
BLDG	BUILDING
BOP	BOTTOM OF PIPE
BV	BALL VALVE
CAS	CENTRAL AREA AIR SPARGE
CONC	CONCRETE
CPLG	COUPLING
℄ /CL	CENTERLINE
CV	CONTROL VALVE/CHECK VALVE
DC	DOUBLE CONTAINED
Ø/DIA	DIAMETER
DWG	DRAWING
DP	DUAL PHASE
DPI	DIFFERENTIAL PRESSURE INDICATOR
EF	EACH FACE
EL/ELEV	ELEVATION
ELEC	ELECTRICAL
ELB	ELBOW
EPDM	ETHYLENE PROPYLENE RUBBER
EXIST/(E)	EXISTING
EXP	EXPANSION
EW	EACH WAY
EA	EACH
FC	FAIL CLOSE
FO	FAIL OPEN
FLXC	FLEXIBLE CONNECTION
FM	FLOW METER
FL	FLOW LINE
FT	FOOT
FUT	FUTURE
FIN GR	FINISHED GRADE
FE	FLANGED END
FNPT	FEMALE NATIONAL PIPE THREAD
GA	GAUGE
GAC	GRANULAR ACTIVATED CARBON
GALV	GALVANIZED
GI	GALVANIZED IRON
GPM	GALLONS PER MINUTE
GR	GRADE
GND	GROUND
GSKT	GASKET
GW	GROUNDWATER
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HP	HORSEPOWER/HIGH PRESSURE
HR	HOUR
HS	HOSE
HYD	HYDRANT
HOA	HAND OFF AUTOMATIC
ID	INSIDE DIAMETER
IN	INCHES
INV	INVERT
IPS	IRON PIPE SIZE
JT	JOINT
JB	JUNCTION BOX
KO	KNOCK OUT
LSHH	LEVEL SWITCH
M	MOTOR
MAX	MAXIMUM
MH	MANHOLE
MJ	MECHANICAL JOINT
MIN	MINUTE/MINIMUM
MISC	MISCELLANEOUS
MNPT	MALE NATIONAL PIPE THREAD
MP	METER PUMP
MON.PORT	MONITORING PORT
MW	MONITORING WELL
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO.	NUMBER
N	NEW
NTS	NOT TO SCALE
NPDES	NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
OC	ON CENTER
OD	OUTSIDE DIAMETER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OVHD	OVERHEAD
#/LB	POUND
PB	PULL BOX
PBF	PROVIDED BY FARALLON
PC	PORTLAND CEMENT
PCC	PORTLAND CEMENT CONCRETE
PG	PRESSURE GAS
PL	PROPERTY LINE/PIPE LINE
PO	PUMP OUT
P	PRESSURE
PRV	PRESSURE RELEASE VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH, ABSOLUTE
PSIG	POUNDS PER SQUARE INCH, GAUGE
PTW	PRESSURE TREATMENT
PVC	POLYVINYL CHLORIDE
PV	PROCESS VARIABLE
PR	PAIR
PUE	PUBLIC UTILITY EASEMENT
R	RADIUS/RISER
RC	REINFORCED CONCRETE
REQ	REQUIRED
REF	REFERENCE
SCH	SCHEDULE
SDR	STANDARD DIMENSION RATIO
SECT	SECTION
SHT	SHEET
SPEC	SPECIFICATION
SQ	SQUARE
STA	STATION
STD	STANDARD
STL	STEEL
SBO	SUPPLIED BY OWNER
ST	SAMPLE TAP
STR	STRAINER
SS	STAINLESS STEEL
STL	STEEL
SVE	SOIL VAPOR EXTRACTION
SW	SWITCH
TYP	TYPICAL
TOC	TOP OF CASING/CURB
TOS	TOP OF STEEL
TOW	TOP OF WALL
UBC	UNIFORM BUILDING CODE
UGPS	UNDERGROUND PULL SECTION
UTIL	UTILITY
V	VALVE/VENT/VOLTS
VAC	VACUUM
VAR	VARIES/VARIABLE
VERT	VERTICAL
VP	VAPOR
VRV	VACUUM RELIEF VALVE
W/	WITH
W/O	WITHOUT
WS	WATER SURFACE/WATER STOP

STANDARD SYMBOLS



GENERAL NOTES

1. READ ALL NOTES AND REVIEW ENTIRE PLAN SET PRIOR TO COMMENCEMENT OF WORK ACTIVITIES.
2. ESTABLISH EXACT PROJECT BOUNDARIES PRIOR TO COMMENCEMENT OF WORK, AND RECONFIRM BOUNDARY LINES WHEN COORDINATING WITH NEIGHBORING PROPERTY OWNERS.
3. VERIFY SITE CONTROL POINTS PROVIDED ON PLANS. VERIFY DIMENSIONS AND ORIENTATION PRIOR TO STAKING OF SITE POINTS.
4. A COPY OF THE PROJECT DESIGN DRAWINGS AND SPECIFICATIONS SHALL BE MAINTAINED ON THE JOB SITE AT ALL TIMES.
5. COPIES OF ALL PERMITS SHALL BE MAINTAINED ON THE JOB SITE AT ALL TIMES. THE CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL LOCATIONS, DIMENSIONS AND QUANTITIES.
7. UTILITIES SHOWN IN THIS DRAWING SET ARE BASED ON INFORMATION PROVIDED BY OTHERS. INFORMATION SHOWN SHALL BE CONSIDERED APPROXIMATE AND INCOMPLETE. CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO COMMENCEMENT OF WORK ACTIVITIES.
8. THE CONTRACTOR SHALL HAVE A PRIVATE UTILITY LOCATE SERVICE VERIFY ALL UTILITIES AND/OR OTHERWISE FIELD VERIFY EXACT LOCATIONS AND MARK THEIR LOCATIONS ON THE GROUND PRIOR TO STARTING CONSTRUCTION. FARALLON SHALL BE CONTACTED IMMEDIATELY IF A CONFLICT IS FOUND BETWEEN EXISTING UTILITIES AND THE PROJECT DESIGN.
9. ENGINEER SHALL BE NOTIFIED OF DISCREPANCIES BETWEEN CONTRACT DRAWINGS AND ACTUAL SITE CONDITIONS.
10. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE JOB SITE CONDITIONS AND ENSURE THE SAFETY OF ALL PERSONS AND PROPERTY FOR THE DURATION OF ON-SITE PROJECT WORK. THE CONTRACTOR SHALL PROTECT STRUCTURES, UTILITIES, AND PAVING FROM DAMAGE, DIRECT OR INDIRECT, RESULTING FROM THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY OVER THE DURATION OF ON-SITE ACTIVITIES AND NOT BE LIMITED TO NORMAL WORKING HOURS.
11. MAINTAIN FULL OPERATION OF PUBLIC ROADWAYS. KEEP CLEAN AND FREE OF DEBRIS, DIRT, AND OTHER PROJECT RELATED ITEMS. SWEEP AS NEEDED TO MEET PROJECT REQUIREMENTS. COORDINATE WITH OWNER AND PIERCE COUNTY ALL DISRUPTIONS TO SERVICES. REPAIR ALL DAMAGE TO MATCH EXISTING CONDITIONS.
12. GENERAL CONTRACTOR AND, IF SUBCONTRACTED, THE EARTHWORK SUBCONTRACTOR ARE RESPONSIBLE FOR ANY EARTHWORK QUANTITY ESTIMATES.
13. ON-SITE SOILS MAY ONLY BE USED IN ACCORDANCE WITH PROJECT REQUIREMENTS AND SUBJECT TO APPROVAL OF PROPER COMPLIANCE BY THE PROJECT ENGINEER.
14. REVIEW AND PROPERLY COORDINATE ALL WORK OF ALL DISCIPLINES PRIOR TO CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO, IRRIGATION LINES, SLEEVES, AND UTILITY CONDUITS.
15. ALL EXCAVATIONS SHALL BE PERFORMED IN STRICT ACCORDANCE WITH APPLICABLE U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND THE WASHINGTON INDUSTRIAL SAFETY AND HEALTH ACT (WISHA) REGULATIONS. THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THE SAFETY OF ALL CONSTRUCTION OPERATIONS.
16. NO TRENCHES SHALL BE LEFT OPEN WHEN WORK IS NOT IN PROGRESS. ALL OPEN EXCAVATIONS SHALL BE SECURELY FENCED AND COVERED IF SO REQUIRED.
17. THE CONTRACTOR SHALL DISPOSE OF MATERIALS REMOVED FROM THIS SITE AT APPROPRIATE AND PERMITTED RECEIVING FACILITIES.
18. CONFIRM ALL UTILITY ALIGNMENTS AND CROSSINGS PRIOR TO ORDERING MATERIALS AND PRIOR TO STAKING.
19. UPON COMPLETION OF SITE WORK, CLEAN ALL SITE SURFACES (PAVEMENTS, CURBS, STAIRS, WALKS, ETC.).
20. ROUTE DISCHARGE PIPING IN ACCORDANCE WITH ASTM E2121-13 SECTION 7.3.2.9 ROOF LINE, MINIMUM 10 FT AWAY FROM HVAC INTAKE AND AT LEAST 12 INCHES ABOVE THE SURFACE OF THE ROOF.

MAP SYMBOLOGY AND LEGEND

- PROPOSED SHALLOW MONITORING WELL (REMEDIAL INVESTIGATION)
- PROPOSED SHALLOW COMPLIANCE MONITORING WELL
- SHALLOW MONITORING WELL TO BE DECOMMISSIONED
- BORING
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- PROPOSED NEW CATCH BASIN
- PROPOSED NEW STORMWATER LINE
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER
- PERMEABLE REACTIVE BARRIER
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT
- PROPOSED AREA TO RESTORE WITH ASPHALT PAVEMENT CAP

PIPING, ELECTRICAL AND EQUIPMENT SYMBOLS

- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- DIAPHRAM OPERATED VALVE
- SOLENOID VALVE (S)
- MOTOR OPERATED VALVE (M)
- PRESSURE REGULATING VALVE
- DRAIN (D)
- WELD CAP
- SCREWED CAP
- SCREWED PLUG
- FLANGE
- BLIND FLANGE
- REDUCER/INCREASER
- DIRECTION OF FLOW
- UNION
- FLEXIBLE PIPE COUPLING
- BLOWER OR FAN
- CENTRIFUGAL PUMP
- PITOT TUBE
- STRAINER
- TRAP
- FILTER (AF)
- Ø DIAMETER
- FEMALE ADAPTER
- SILENCER (S)
- NEEDLE VALVE
- FLOW METER
- HOSE BIB
- SAMPLE TAP/MONITORING PORT
- HEAT EXCHANGER
- PRESSURE RELIEF OR AIR RELIEF
- VACUUM RELIEF
- NORMALLY OPEN (NO)
- NORMALLY CLOSED (NC)
- CONDUIT RUN EXPOSED
- CONDUIT RUN UNDERGROUND
- EXIST CONDUIT RUN UNDERGROUND
- MAGNETIC STARTER
- DUPLEX RECEPTICAL, 15A; WP-WEATHER PROOF
- ELAPSED TIME METER (ETM)
- FUSE
- FUSED DISCONNECT
- CAMLOCK CONNECTION
- VERTICAL PIPERUN
- GROUND
- GROUND ROD (3/4" COPPER WELD)
- HEATER STRIP
- JUNCTION BOX, PB-PULLBOX (J)
- KILOWATT HOUR METER (KWH)
- MOTOR (M)
- MOTOR OVERLOAD
- NON-FUSABLE DISCONNECT SWITCH
- PILOT LIGHT, R=RED, W=WHITE, G=GREEN
- SELECTOR SWITCH AO=AUTO OFF, HOA=HAND OFF AUTO
- SWITCH, 120-277V, 2-2POLE, 20A
- THERMOSTAT (T)
- TIME DELAY RELAY, CR=CONTROL RELAY (TD)
- TRANSFORMER
- UNDERGROUND PULLBOX
- WEATHER PROTECTED (W.P.)
- 120/208V PANEL
- 277/480V PANEL
- *HIGH LIGHT STANDARD
- REVISION TO PLANS (X)

INSTRUMENTATION ABBREVIATIONS AND SYMBOLS

INSTRUMENT LEGEND

FIRST LETTER INITIATING VARIABLE		SUCCEEDING LETTERS OUTPUT FUNCTIONS
A	ANALYSIS	ALARM
B	BURNER	
C	CONDUCTIVITY	CONTROL
D	DENSITY	DIFFERENTIAL
E	POTENTIAL (VOLTS)	PRIMARY ELEMENT
F	FLOW RATE	RATIO (FRACTION)
G	FIRE ALARM	GLASS (SIGHT GAUGE)
H	HAND (MANUALLY)	HIGH
I	CURRENT (AMPERES)	INDICATE
J	POWER	
K	TIME	
L	LEVEL	LEAK, LOW
M	MOISTURE/HUMIDITY	LIGHT (PILOT)
N	EQUIPMENT STATUS	
P	PRESSURE/VACUUM	POINT (TEST CONNECTION)
Q	QUANTITY	INTEGRATE (TOTALIZE)
R		RECORD/PRINT
S	SPEED	SWITCH
T	TEMPERATURE	TRANSMIT
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION/VOLUME	VALVE/DAMPER
W	WEIGHT/FORCE/TORQUE	
X	UNCLASSIFIED	UNCLASSIFIED
Y		RELAY/COMPUTE
Z	POSITION	DRIVE/ACTUATE

INSTRUMENT SYMBOLS

SYMBOL	DESCRIPTION
M	MOTOR
HOA	HAND-OFF-AUTO SELECTOR SWITCH
	LOCALLY MOUNTED INSTRUMENT
	CONTROL PANEL MOUNTED INSTRUMENT
I	INTERLOCK
-10	PLC SHUTDOWN ALARM

NO.	DESCRIPTION	DATE	BY	RB	CKD.	RH	APP.	SS
	30% DESIGN SUBMITTAL	9/25/2025						

PRELIMINARY PLANS
"NOT FOR CONSTRUCTION"

FARALLON CONSULTING
1809 7th Avenue
Suite 111;
Seattle, Washington 98101
(425) 295-0800
farallonconsulting.com

PREPARED FOR:
KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY
NORTHWEST
ISSAQUAH, WA 98027

GENERAL NOTES, LEGEND, SYMBOLS, AND ABBREVIATIONS

EFR HQ SOURCE AREA INTERIM ACTION
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

811 Know what's below. Call before you dig.

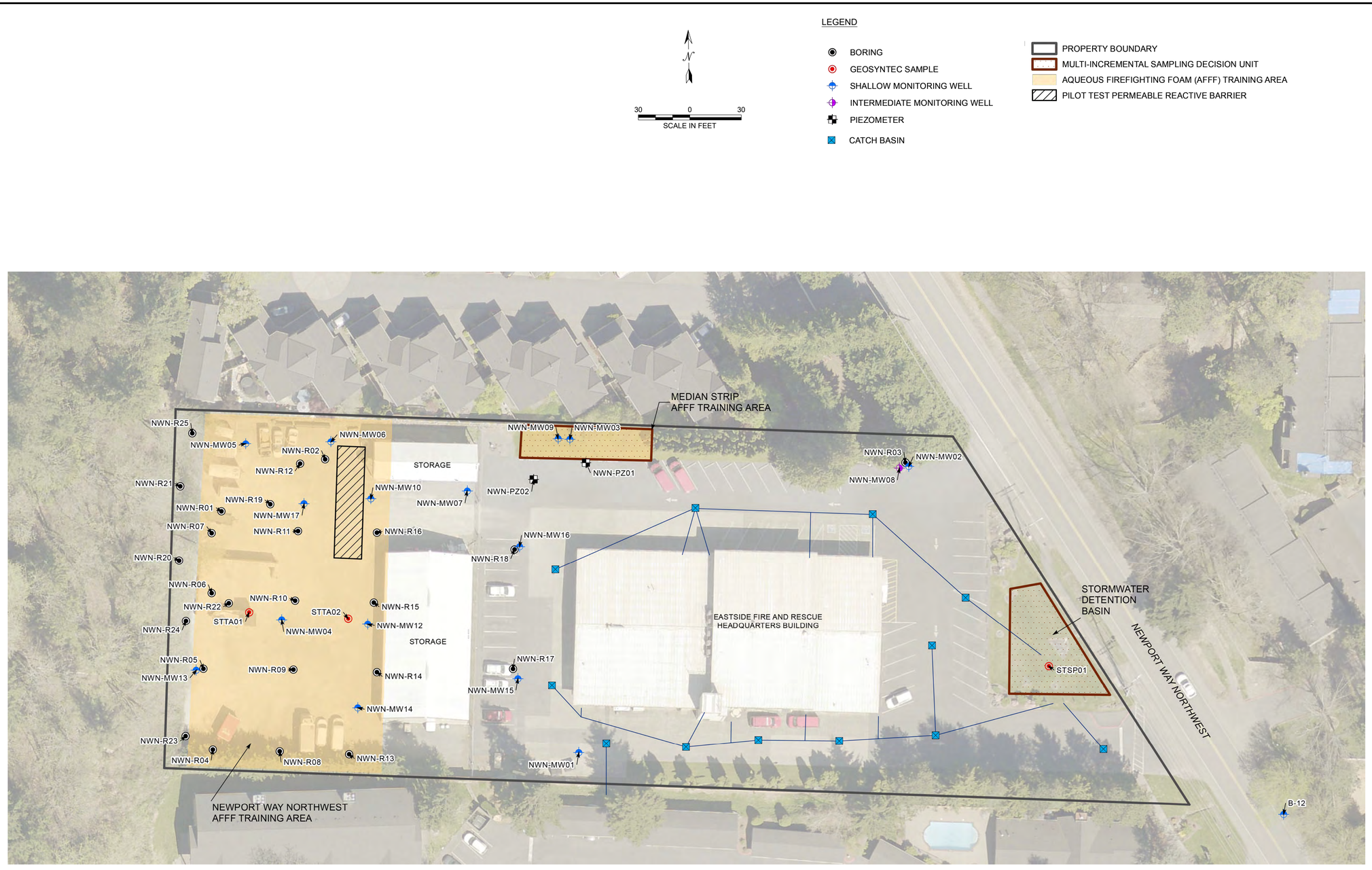
PROJECT LOCATION (S,T,R):

JURISDICTION FILE NO.:

FARALLON PROJECT NO.:
1754-009

SHEET
EN0.10

\\172.16.101.32\Drafting\Projects\1754-009\CAD\Engineering Drawings\001 - 2025.05.09\1754-009_SheetSet_2025.09.25_1AM.dwg 2025/09/25 1:06 PM (RYAN BATES)



APP.	CKD.	BY	REVISION/DESCRIPTION	DATE
SS	RH	RB	30% DESIGN SUBMITTAL	9/22/2025

PRELIMINARY PLANS
"NOT FOR CONSTRUCTION"

FARALLON CONSULTING
1809 7th Avenue
Suite 111
Seattle, Washington 98101
(425) 295-0800
farallonconsulting.com

PREPARED FOR:

KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY
NORTHWEST
ISSAQUAH, WA 98027

SITE PLAN - EXISTING CONIDTION

EFR HQ SOURCE AREA INTERIM ACTION
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

811 Know what's below. Call before you dig.

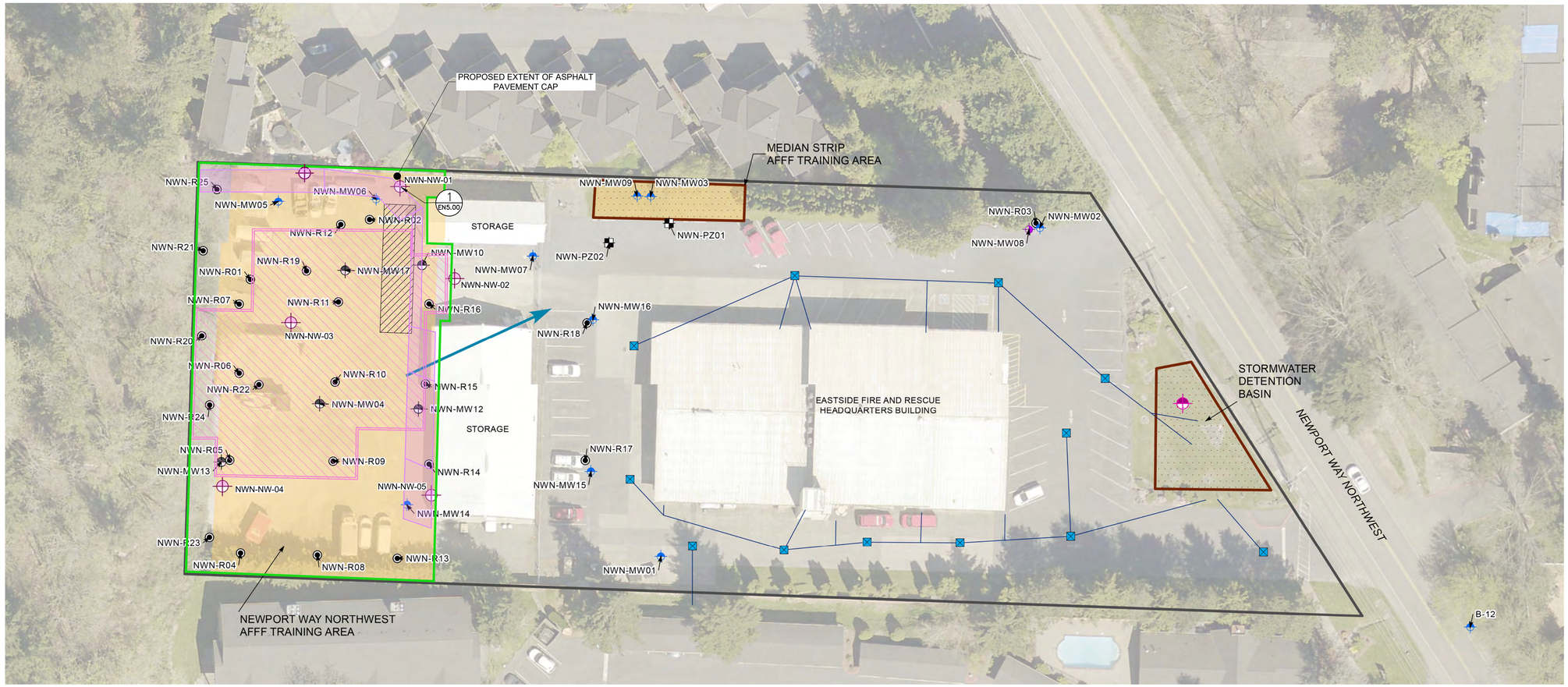
PROJECT LOCATION (S,T,R):

JURISDICTION FILE NO.:

FARALLON PROJECT NO.:
1754-009

SHEET
EN1.00

I:\72_16_101-32\Cadfiles\Projects\1754-009\CAD\Engineering-Drawings\001 - 2025.05.29\1754-009_SheetSet_2025.09.25_1(Active).dwg 2025/09/25 1:06 PM (RYAN BATES)



N

30 0 30

SCALE IN FEET

LEGEND

- PROPOSED SHALLOW MONITORING WELL (REMEDIAL INVESTIGATION)
- PROPOSED SHALLOW COMPLIANCE MONITORING WELL
- SHALLOW MONITORING WELL TO BE DECOMMISSIONED
- BORING
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- PROPOSED NEW CATCH BASIN
- PROPOSED NEW STORMWATER LINE
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER
- PERMEABLE REACTIVE BARRIER
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT
- PROPOSED AREA TO RESTORE WITH ASPHALT PAVEMENT CAP

NOTES:

1. PERMEABLE REACTIVE BARRIER SHALL BE INSTALLED IN SPRING 2026, PRIOR TO COMMENCEMENT OF EARTHWORK ACTIVITIES
2. SELECT MONITORING WELLS WILL BE DECOMMISSIONED PRIOR TO INTERIM ACTIONS. REFERENCE DETAIL 2 ON SHEET EN5.00

DATE	REVISION/DESCRIPTION	BY	CKD.	APP.
9/25/2025	30% DESIGN SUBMITTAL	RB	RH	SS

PRELIMINARY PLANS
"NOT FOR CONSTRUCTION"

FARALLON CONSULTING
1809 7th Avenue
Suite 111.
Seattle, Washington 98101
(425) 295-0800
farallonconsulting.com

PREPARED FOR:

KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY
NORTHWEST
ISSAQUAH, WA 98027

INTERIM ACTION ELEMENTS

EFR HQ SOURCE AREA INTERIM ACTION
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

811 Know what's below. Call before you dig.

PROJECT LOCATION (S,T,R):

JURISDICTION FILE NO.:

FARALLON PROJECT NO.:
1754-009

SHEET

EN2.00

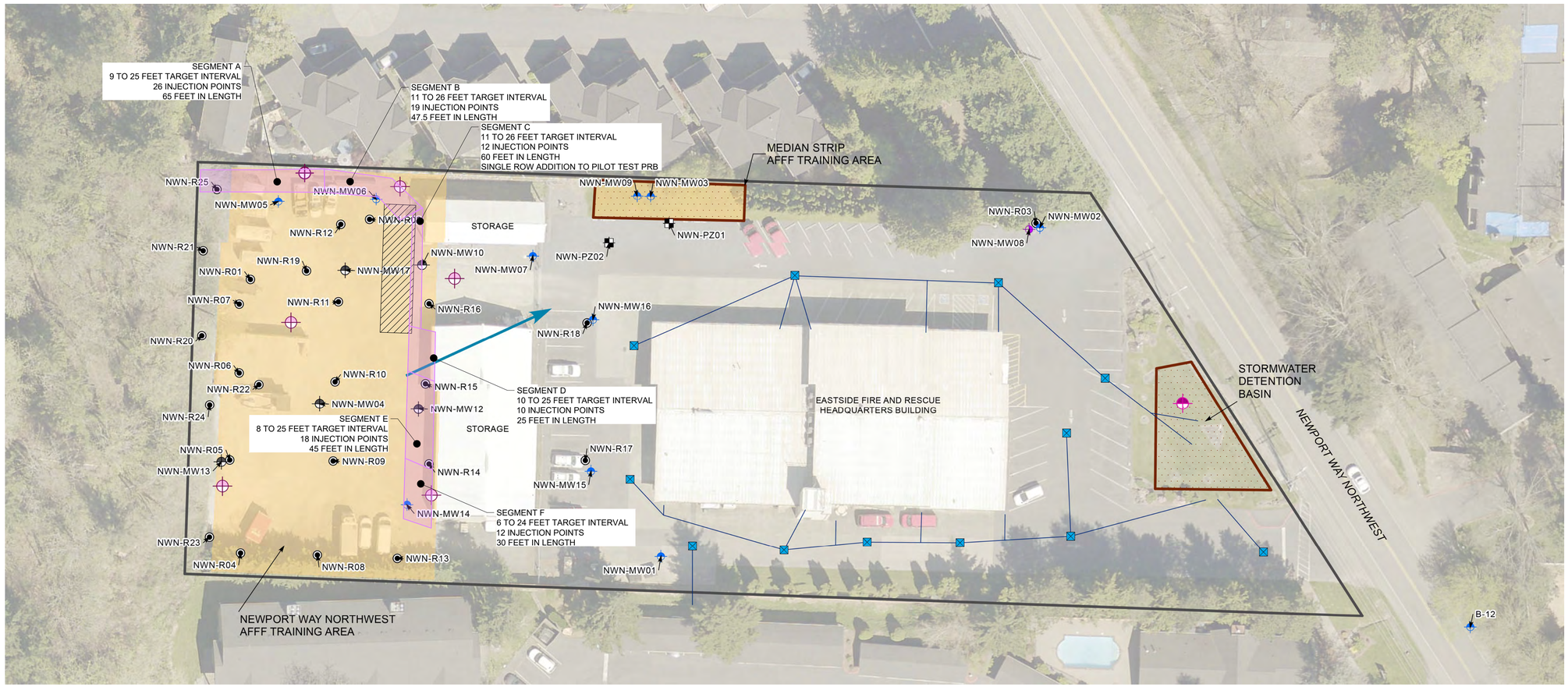
\\172.16.101.32\Drafting\Projects\1754-009\CADD\Engineering Drawings\001 - 2025.05.28\1754-009 SheetSet 2025.09.25 1Art.dwg 2025/09/25 1:06 PM (RYAN BATES)

LEGEND

- PROPOSED SHALLOW MONITORING WELL (REMEDIAL INVESTIGATION)
- PROPOSED SHALLOW COMPLIANCE MONITORING WELL
- SHALLOW MONITORING WELL TO BE DECOMMISSIONED
- BORING
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- PROPOSED NEW CATCH BASIN
- PROPOSED NEW STORMWATER LINE
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER
- PERMEABLE REACTIVE BARRIER

N

30 0 30
SCALE IN FEET



APP.	SS
CKD.	RH
BY	RB

DATE	REVISION/DESCRIPTION
9/25/2025	30% DESIGN SUBMITTAL

PRELIMINARY PLANS
"NOT FOR CONSTRUCTION"

FARALLON CONSULTING
1809 7th Avenue
Suite 111.
Seattle, Washington 98101
(425) 295-0800
farallonconsulting.com

PREPARED FOR:
KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY
NORTHWEST
ISSAQUAH, WA 98027

PERMEABLE REACTIVE BARRIER WALL

EFR HQ SOURCE AREA INTERIM ACTION
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

811 Know what's below. Call before you dig.

PROJECT LOCATION (S,T,R):

JURISDICTION FILE NO.:

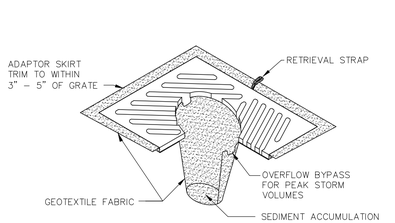
FARALLON PROJECT NO.:
1754-009

SHEET
EN3.00

\\172.16.101.32\Drafting\Projects\1754-009\CAD\Engineering Drawings\001 - 2025.05.28\1754-009 SheetSet 2025.09.25 1A5.dwg 2025/09/25 1:06 PM (RYAN BATES)

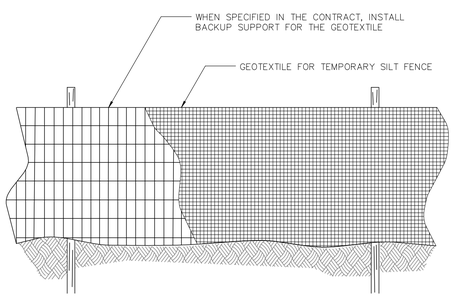
GENERAL NOTES

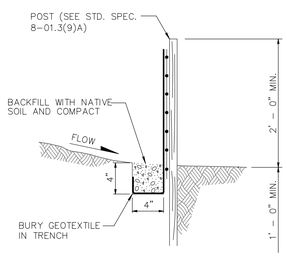
1. THE IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL FACILITIES IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR ON A DAILY BASIS AND UNTIL ALL CONSTRUCTION IS APPROVED.
2. TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) FACILITIES MUST BE CONSTRUCTED PRIOR TO AND IN CONJUNCTION WITH ALL GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT-LADEN WATER DOES NOT ENTER THE DRAINAGE SYSTEM DURING THE CONSTRUCTION PERIOD. THESE TESC FACILITIES SHALL BE UPGRADED TO INCLUDE ADDITIONAL CONTROL MEASURES AS NEEDED FOR UNEXPECTED STORM EVENTS.
3. THE BEST MANAGEMENT PRACTICES SHOWN ON THE TESC PLAN MAY NEED FIELD ADJUSTMENTS TO ENSURE THE TESC PERFORMS IN ACCORDANCE WITH THE 2024 DEPARTMENT OF ECOLOGY STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON, VOLUME II.
4. ANY SIGNIFICANT CHANGES REQUIRED TO MEET SITE OBJECTIVES THAT ARE OUTSIDE OF THE PERMITTED REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER.
5. THE CONTRACTOR SHALL PERFORM PRIVATE AND PUBLIC UTILITY LOCATES PRIOR TO PERFORMING ANY UNDERGROUND WORK. CALL 1-800-424-5555.
6. CONTRACTOR TO ATTEND PRE-CONSTRUCTION MEETING PRIOR TO BEGINNING WORK.
7. ALL PERSONNEL ARE TO PERFORM WORK ACCORDING TO THEIR SITE-SPECIFIC HEALTH AND SAFETY PLANS (HASP) PER OSHA REGULATIONS; TITLE 29 CFR 1910, AND MUST KEEP A COPY OF THE HASP ON-SITE AT ALL TIMES.
8. WORK HOURS ARE RESTRICTED TO THE CITY OF ISSAQUAH'S PERMITTED WORK HOURS.
9. ALL WORK SHALL BE PERFORMED PER APPROVED PERMITS, PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL MAINTAIN THESE DOCUMENTS ON-SITE.
10. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL LAWS.



SEDIMENT RETENTION (INLET PROTECTION "FILTER SOCK") NOTES:
1. INSERT SHALL BE INSTALLED PRIOR TO CLEARING AND GRADING ACTIVITY, OR UPON PLACEMENT OF A NEW CATCH BASIN.
2. SEDIMENT SHALL BE REMOVED FROM THE UNIT WHEN IT BECOMES ONE–THIRD FULL.
3. SEDIMENT REMOVAL SHALL BE ACCOMPLISHED BY REMOVING THE INSERT, EMPTYING, AND RE–INSERTING IT INTO THE CATCH BASIN.

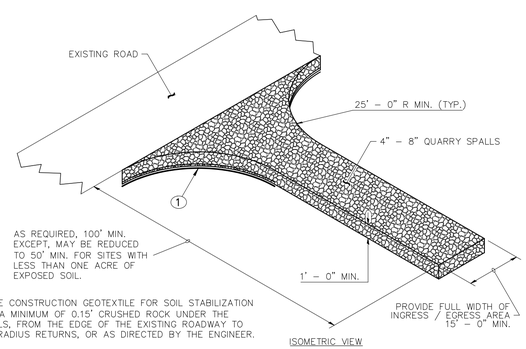
1 INLET PROTECTION
EN 4.00 N.T.S.





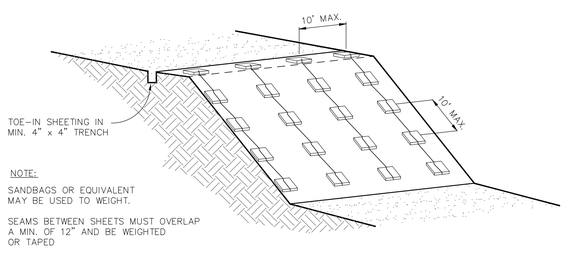
NOTES:
1. MAXIMIZE DETENTION OF STORMWATER BY PLACING FENCE AS FAR AWAY FROM THE TOE OF SLOPE AS POSSIBLE WITHOUT ENCROACHING ON SENSITIVE AREAS OR OUTSIDE OF THE CLEARING BOUNDARIES.
2. INSTALL SILT FENCING ALONG CONTOURS WHENEVER POSSIBLE.
3. INSTALL THE ENDS OF THE SILT FENCE TO POINT SLIGHTLY UP–SLOPE TO PREVENT SEDIMENT FROM FLOWING AROUND THE ENDS OF THE FENCE.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH STANDARD SPECIFICATIONS.

2 SILT FENCE DETAIL
EN 4.00 N.T.S.



(1) PLACE CONSTRUCTION GEOTEXTILE FOR SOIL STABILIZATION AND A MINIMUM OF 0.15' CRUSHED ROCK UNDER THE SPALLS, FROM THE EDGE OF THE EXISTING ROADWAY TO THE RADIUS RETURNS, OR AS DIRECTED BY THE ENGINEER.

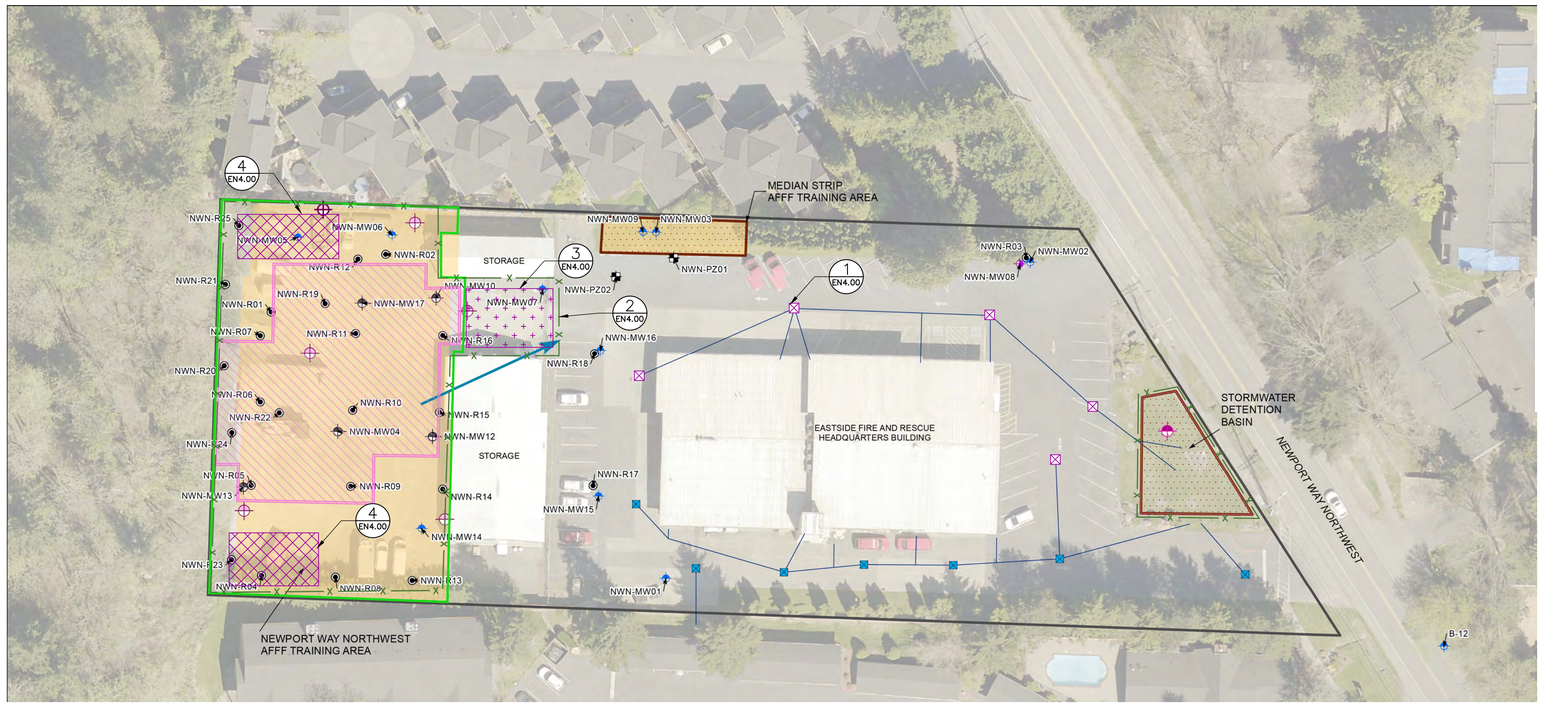
3 STABILIZED CONSTRUCTION ENTRANCE DETAIL
EN 4.00 N.T.S.



NOTE:
SANDBAGS OR EQUIVALENT MAY BE USED TO WEIGHT.

SEAMS BETWEEN SHEETS MUST OVERLAP A MIN. OF 12" AND BE WEIGHTED OR TAPED

4 PLASTIC STOCKPILE COVERING
EN 4.00 N.T.S.



LEGEND

- PROPOSED SHALLOW MONITORING WELL (REMEDIAL INVESTIGATION)
- PROPOSED SHALLOW COMPLIANCE MONITORING WELL
- SHALLOW MONITORING WELL TO BE DECOMMISSIONED
- BORING
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- PROPOSED NEW CATCH BASIN
- PROPOSED NEW STORMWATER LINE
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- CATCH BASIN WITH INLET PROTECTION
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT
- PROPOSED STOCKPILE AREA
- PROPOSED CONSTRUCTION ENTRANCE
- SILT FENCE
- PROPOSED AREA TO RESTORE WITH ASPHALT PAVEMENT CAP

40 0 40
SCALE IN FEET

APP.	SS
CKD.	RH
BY	RB
REVISION/DESCRIPTION	30% DESIGN SUBMITTAL
DATE	9/25/2025

PRELIMINARY PLANS
"NOT FOR CONSTRUCTION"

FARALLON CONSULTING
1809 7th Avenue
Suite 111
Seattle, Washington 98101
(425) 295-0800
farallonconsulting.com

PREPARED FOR:
KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY
NORTHWEST
ISSAQUAH, WA 98027

TESC PLAN, NOTES, AND DETAILS

EFR HQ SOURCE AREA INTERIM ACTION
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

811 Know what's below. Call before you dig.

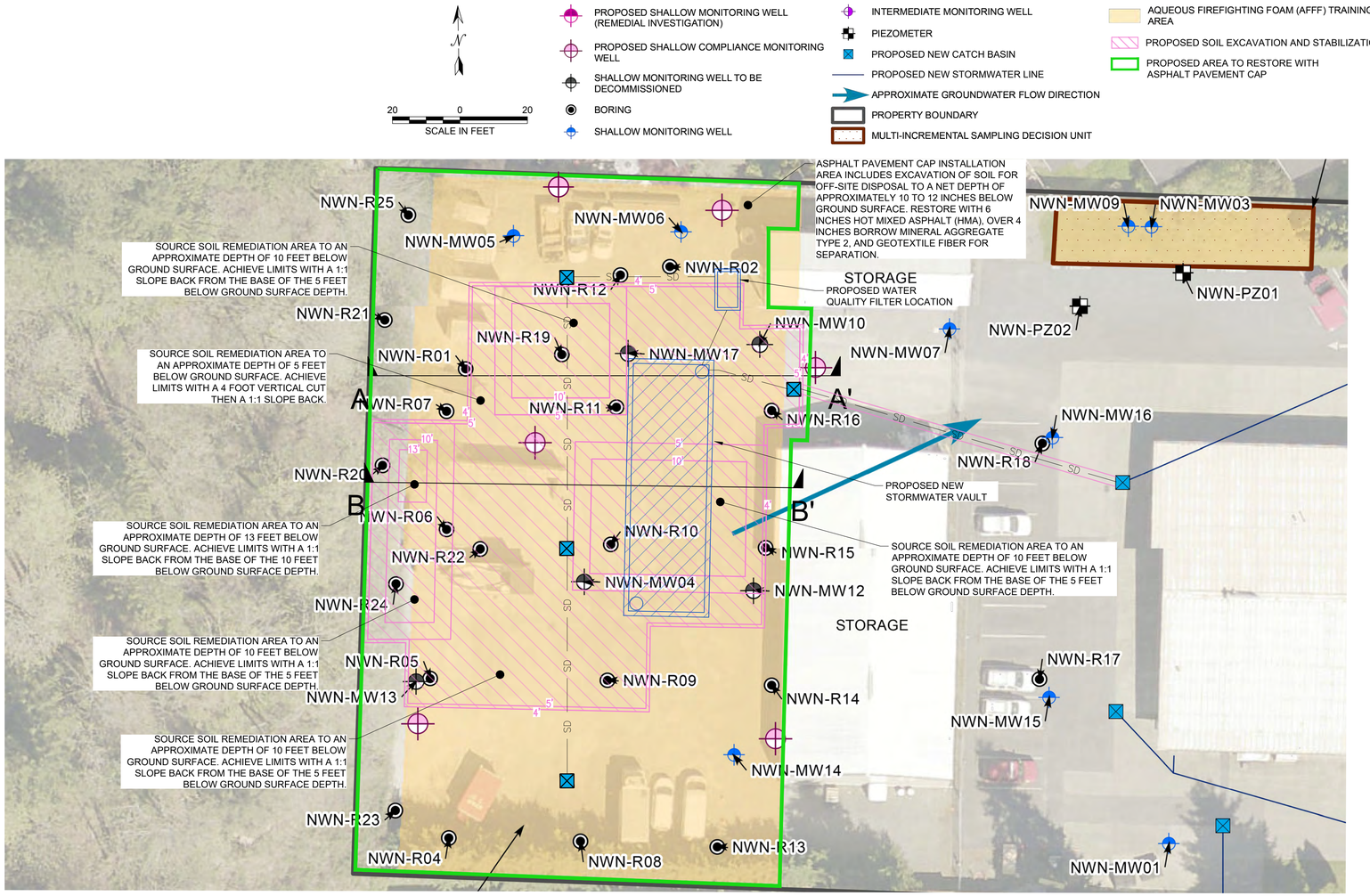
PROJECT LOCATION (S,T,R):

JURISDICTION FILE NO.:

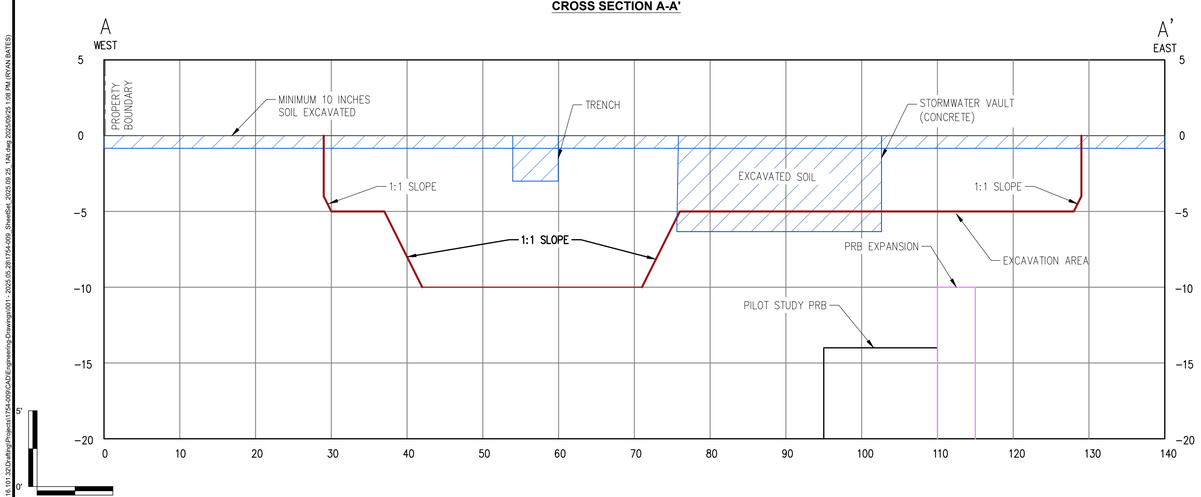
FARALLON PROJECT NO.:
1754-009

SHEET
EN4.00

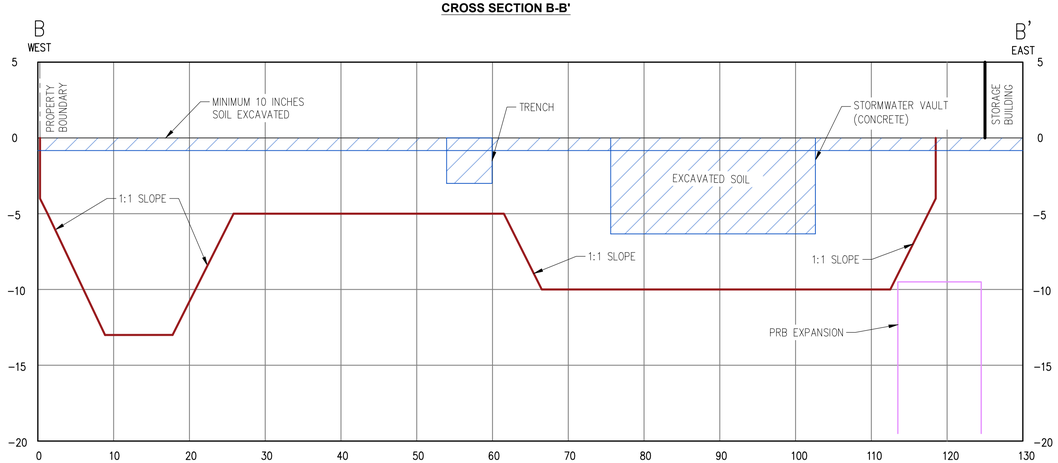
\\172.16.101.12\Data\Projects\1754-009\CAD\Engineering\Drawings\001 - 2025.09.26\1754-009 - SheetSet - 2025.09.25 - 1st.dwg 2025/09/25 1:07 PM (RYAN BATES)



CROSS SECTION A-A'



CROSS SECTION B-B'



APP.	CKD.		DATE	REVISION/DESCRIPTION
SS	RH	RB	9/25/2025	30% DESIGN SUBMITTAL
		BY		

PRELIMINARY PLANS
"NOT FOR CONSTRUCTION"

FARALLON CONSULTING
1809 7th Avenue
Suite 111:
Seattle, Washington 98101
(425) 295-0800
farallonconsulting.com

PREPARED FOR:

KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY
NORTHWEST
ISSAQUAH, WA 98027

VADOSE ZONE SOURCE TREATMENT

EFR HQ SOURCE AREA INTERIM ACTION
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

811 Know what's below. Call before you dig.

PROJECT LOCATION (S,T,R):

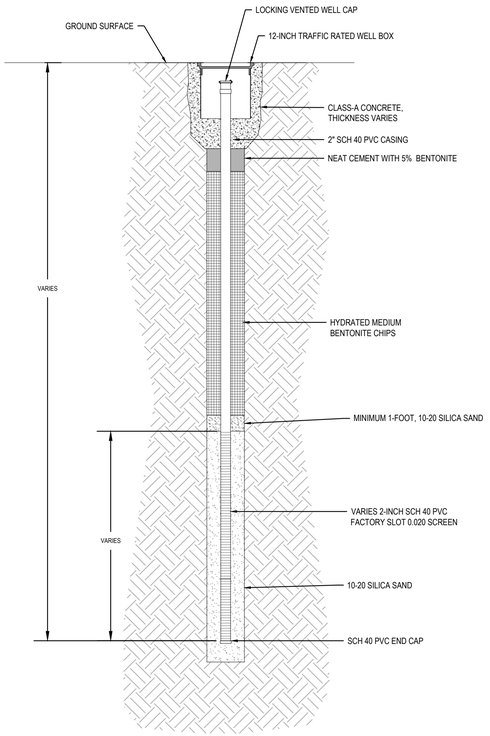
JURISDICTION FILE NO.:

FARALLON PROJECT NO.:
1754-009

SHEET

EN4.10

\\172.16.101.12\Data\Projects\1754-009\CAD\Engineering\Drawings\001 - 2025.09.29\1754-009_SheetSet_2025.09.25_1st.dwg 2025/09/25 1:08 PM (RYAN BATES)



MONITORING WELL CONSTRUCTION DIAGRAM

NTS

NOTES:

1. SIX (6) NEW SHALLOW MONITORING WELLS INSTALLED IN ACCORDANCE WITH WAC 173-160 BY WASHINGTON STATE-LICENSED DRILLER.

MONITORING WELL DETAILS:

1. EXISTING WELLS NWN-MW04, NWM-MW10, NWN-MW12, NWN-MW13, AND NWN-MW17 SHALL BE DECOMMISSIONED IN ACCORDANCE WITH ECOLOGY WAC 173-160-381 BY A DRILLER LICENSED IN THE STATE OF WASHINGTON. DRILLER SHALL FILE A NOTICE OF INTENT TO ECOLOGY TO DECOMMISSION THE WELLS AND SUBMIT A DECOMMISSIONING REPORT TO ECOLOGY WITHIN 30 DAYS OF COMPLETION, PER WAC 173-160-141.
2. NEW MONITORIING WELLS SHALL BE INSTALLED IN ACCORDANCE WITH ECOLOGY WAC 173-160 FOR RESOURCE PROTECTION WELLS BY A DRILLER LICENSED IN THE STATE OF WASHINGTON. DRILLER SHALL FILE A NOTICE OF INTENT TO ECOLOGY TO INSTALL THE WELLS AND SUBMIT A WELL CONSTRUCTION REPORT FOR EACH WELL TO ECOLOGY WITHIN 30 DAYS OF COMPLETION, PER WAC 173-160-141. WELL IDS NWN-NW01 TO NWN-NW06 ARE TEMPORARY WELL IDS, TO BE UPDATED PRIOR TO INSTALLATION.

EXISTING SHALLOW MONITORING WELLS TO BE DECOMMISSIONED

WELL ID	NORTHING	EASTING	SCREEN INTERVAL
NWN-MW04	196494.73	1341096.07	13 TO 23
NWN-MW10	196565.08	1341148.09	10 TO 25
NWN-MW12	196492.08	1341146.31	8 TO 23
NWN-MW13	196465.29	1341046.29	3 TO 18
NWN-MW17	196565.29	1341112.30	10 TO 25

WELL ID	NORTHING	EASTING	SCREEN INTERVAL
NWN-NW01	196604.93	1341136.99	TBD
NWN-NW02	196558.23	1341164.59	TBD
NWN-NW03	196535.94	1341090.16	TBD
NWN-NW04	196452.67	1341046.84	TBD
NWN-NW05	196448.27	1341152.86	TBD
NWN-NW06	196611.88	1341088.54	TBD

DATE	REVISION/DESCRIPTION	BY	CKD	APP.
9/25/2025	30% DESIGN SUBMITTAL	RB	RH	SS

PRELIMINARY PLANS
"NOT FOR CONSTRUCTION"

FARALLON CONSULTING
1809 7th Avenue
Suite 111;
Seattle, Washington 98101
(425) 295-0800
farallonconsulting.com

PREPARED FOR:

KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY
NORTHWEST
ISSAQUAH, WA 98027

DETAILS

EFR HQ SOURCE AREA INTERIM ACTION
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

811 Know what's below. Call before you dig.

PROJECT LOCATION (S,T,R):

JURISDICTION FILE NO.:

FARALLON PROJECT NO.:
1754-009

SHEET

EN5.00

I:\72.16.101.332\x-dwg\Projects\1754-009\GA\Engineering\Drawings\001 - 2025.09.18\1754-009 SheetSet 2025.09.25, VM.dwg 2025/09/25 1:08 PM (RYAN.BATES)

PART 1 GENERAL

SYSTEM DESCRIPTION

A. FURNISH, DELIVER, INSTALL, AND TEST EQUIPMENT AS SPECIFIED HEREIN AND AS REQUIRED TO CONDUCT WORK.

SUBMITTALS

A. SUBMIT DATA AND/OR MANUFACTURER CUT SHEETS TO DEMONSTRATE CONFORMANCE TO SPECIFICATION REQUIREMENTS.
B. PRODUCT DATA: SUBMIT MANUFACTURER'S PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR EACH MATERIAL, COMPONENT, AND/OR PRODUCT USED.
C. SUBMIT FINAL AS-BUILT DRAWINGS.

QUALIFICATIONS

A. TREATMENT EQUIPMENT FURNISHED UNDER THIS SECTION SHALL BE OF MANUFACTURERS WHO HAVE BEEN REGULARLY ENGAGED IN DESIGN, MANUFACTURE, AND/OR PRODUCTION OF THE MATERIAL AND EQUIPMENT FOR AT LEAST 5 YEARS.

DELIVERY, STORAGE, AND HANDLING

A. EQUIPMENT AND MATERIALS FURNISHED UNDER THIS SECTION SHALL BE PREPARED AND PROTECTED FOR SHIPMENT, SHIPPED, AND STORED UNTIL INSTALLATION PER MANUFACTURERS' INSTRUCTIONS.

QUALITY ASSURANCE

A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS OF ACCEPTABLE MANUFACTURERS, WHICH HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR 3 YEARS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

GUARANTEE AND WARRANTY

A. SUPPLIERS OF EQUIPMENT SHALL GUARANTEE PERFORMANCE AT DESIGN CONDITIONS.
B. SUPPLIERS OF EQUIPMENT AND MATERIAL SHALL WARRANT THEM FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP FOR AT LEAST 12 MONTHS FROM INITIAL ACCEPTANCE.

END OF SECTION

PART 2 EARTHWORK

SUMMARY

A. SOILS SHALL BE MIXED IN PLACE FOR STABILIZATION USING AN EXCAVATION BUCKET OR AUGER. SHALLOW SOIL MAY BE TEMPORARILY STOCKPILED TO ALLOW FOR ACCESS TO DEEP SOIL.
B. TEMPORARILY STOCKPILED SOIL MAY BE PLACED IN THE EXCAVATION AREA FOR IN SITU STABILIZATION.
C. PERFORM EXCAVATION, FILLING, COMPACTION, AND GRADING OPERATIONS AS REQUIRED FOR BELOW-GRADE IMPROVEMENTS. PROVIDE TRENCHING AND BACKFILL FOR UNDERGROUND WORK AND UTILITIES.
D. PROVIDE SUBBASE MATERIALS, SELECT BACKFILL, COMMON BORROW, AND STRUCTURAL FILL MATERIALS FOR PAVEMENTS, AND RESTORATION AS INDICATED ON THE DRAWINGS.
E. PROVIDE SUITABLE FILL FROM OFF THE SITE IF ON-SITE QUANTITIES ARE INSUFFICIENT OR UNACCEPTABLE, AND LEGALLY DISPOSE OF EXCESS FILL OFF THE SITE.
F. EXCESS EXCAVATED SOIL WILL BE STOCKPILED AND SAMPLED. IT IS ANTICIPATED THAT STOCKPILED SOIL WILL NOT BE SUITABLE BACKFILL AND WILL REQUIRE DISPOSAL OFF-SITE.

SUBMITTALS

A. PRODUCT DATA: SUBMIT MANUFACTURER'S PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR EACH MATERIAL AND PRODUCT USED.
B. TEST REPORTS: SUBMIT FOR APPROVAL ALL TEST REPORTS, LISTS OF MATERIALS AND GRADATION PROPOSED FOR USE.

MATERIALS

A. BORROW SOIL: SATISFACTORY ON-SITE SOIL OR SOIL IMPORTED FROM OFF THE SITE FOR USE AS FILL OR BACKFILL PER WSDOT STANDARD SPECIFICATION 9-03.14(1)
B. BACKFILL FOR PIPE ZONE BEDDING: IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 9-03.12(3)
C. CRUSHED SURFACING TOP COURSE (CSTC): IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 9-03.9(3)
D. HOT MIX ASPHALT (HMA) SHALL BE HMA CLASS 1/2 INCH OR AS APPROVED BY THE ENGINEER. HMA SHALL BE INSTALLED IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION SECTION 5-04.
E. CONCRETE SHALL BE 3000 PSI OR AS APPROVED BY THE ENGINEER.

EXECUTION

A. MAINTAIN STABILITY OF EXCAVATIONS; COORDINATE SHORING AND BRACING AS REQUIRED BY JURISDICTIONAL AUTHORITIES. PREVENT OR INHIBIT SURFACE AND SUBSURFACE WATER FROM ACCUMULATING IN EXCAVATIONS. STOCKPILE SATISFACTORY MATERIALS FOR REUSE AND ALLOW FOR PROPER DRAINAGE.
B. COMPACT MATERIALS AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698 BY AERATION OR WETTING TO THE FOLLOWING PERCENTAGES OF MAXIMUM DRY DENSITY:
   1. UNPAVED AREAS: TOP 6 INCHES OF SUBGRADE AND EACH FILL LAYER TO 90 PERCENT MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698.
C. PLACE ACCEPTABLE MATERIALS IN LIFTS NO MORE THAN 8" FOR MATERIALS COMPACTED BY HEAVY EQUIPMENT AND NOT MORE THAN 4" DEEP FOR MATERIALS COMPACTED BY HAND EQUIPMENT TO SUBGRADES INDICATED AS FOLLOWS:
   1. GRADE TO WITHIN ½" ABOVE OR BELOW REQUIRED SUBGRADE AND WITHIN A TOLERANCE OF 1" IN 10'.
   2. CONTROL EROSION TO PREVENT RUNOFF INTO SEWERS OR DAMAGE TO SLOPED OR SURFACED AREAS IN COMPLIANCE WITH THE PROJECT TEMPORARY EROSION AND SEDIMENT CONTROL PLAN AND LOCAL REGULATIONS.
   3. PROTECT NEWLY GRADED AREAS FROM TRAFFIC AND EROSION. RECOMPACT AND REGRADE SETTLED, DISTURBED, AND DAMAGED AREAS AS NECESSARY TO RESTORE QUALITY, APPEARANCE, AND CONDITION OF WORK.
   4. CONTROL DUST TO PREVENT HAZARDS TO ADJACENT PROPERTIES AND VEHICLES. IMMEDIATELY REPAIR OR REMEDY DAMAGE CAUSED BY DUST INCLUDING AIR FILTERS IN EQUIPMENT AND VEHICLES. CLEAN SOILED SURFACES.
   5. DISPOSE OF WASTE AND UNSUITABLE MATERIALS OFF THE SITE IN A LEGAL MANNER.

END OF SECTION

PART 3 PRODUCTS

GENERAL

A. EQUIPMENT AND MATERIALS FURNISHED UNDER THIS SECTION SHALL BE NEW.

SERVICE CONDITIONS

A.	LOCATION:	ISSAQUAH, WASHINGTON
B.	INSTALLATION:	OUTDOORS
C.	AMBIENT AIR TEMPERATURE RANGE:	15 TO 100 DEGREES FAHRENHEIT.
D.	RELATIVE HUMIDITY OF AMBIENT AIR:	40 TO 100 PERCENT

END OF SECTION

APP.	SS
CKD.	RH
BY	RB
REVISION/DESCRIPTION	30% DESIGN SUBMITTAL
DATE	9/25/2025

PRELIMINARY PLANS
"NOT FOR CONSTRUCTION"

FARALLON CONSULTING
1809 7th Avenue
Suite 111;
Seattle, Washington 98101
(425) 256-3800
farallonconsulting.com

PREPARED FOR:
KING COUNTY FIRE DISTRICT 10
EASTSIDE FIRE AND RESCUE
175 NEWPORT WAY
NORTHWEST
ISSAQUAH, WA 98027

SPECIFICATIONS

EFR HQ SOURCE AREA INTERIM ACTION
175 NEWPORT WAY NORTHWEST
ISSAQUAH, WASHINGTON

811 Know what's below. Call before you dig.

PROJECT LOCATION (S,T,R):

JURISDICTION FILE NO.:

FARALLON PROJECT NO.:
1754-009

SHEET
EN6.00

I:\TZ\16.101.32\Cr-dwg\Projects\1754-009\CAD\Engineering\Drawings\001 - 2025.09.26\1754-009_SheetSet_2025.09.25_1AN.dwg 2025/09/29 1:08 PM (IRVIN.BATES)

ATTACHMENT B
INJECTION AND IN-SITU STABILIZATION DESIGN DOCUMENTS

EFR HQ SOURCE AREA INTERIM ACTION
Eastside Fire and Rescue
175 Newport Way Northwest
Issaquah, Washington

Farallon PN: 1754-009

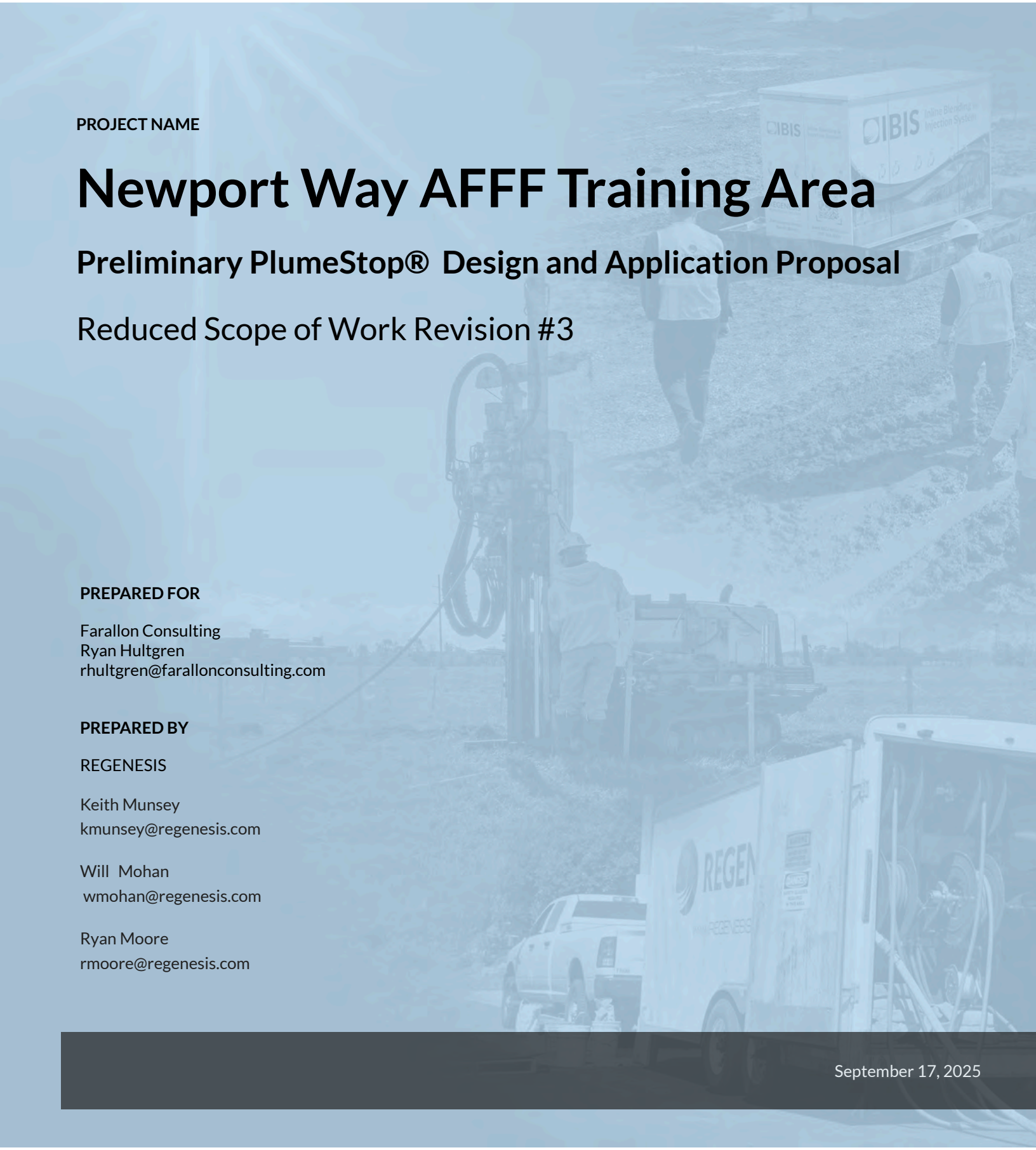
REGENESIS®

PROJECT NAME

Newport Way AFFF Training Area

Preliminary PlumeStop® Design and Application Proposal

Reduced Scope of Work Revision #3



PREPARED FOR

Farallon Consulting
Ryan Hultgren
rhultgren@farallonconsulting.com

PREPARED BY

REGENESIS

Keith Munsey
kmunsey@regenesis.com

Will Mohan
wmohan@regenesis.com

Ryan Moore
rmoore@regenesis.com

September 17, 2025

Project Summary

In this document, REGENESIS outlines a comprehensive approach, encompassing the proposed solution, project objectives, recommended technologies, a concise application design summary, and a treatment area depiction.

Proposed Approach

REGENESIS Remediation Services (RRS) will install a PlumeStop® Colloidal Activated Carbon™ (PlumeStop) permeable adsorptive barrier (PAB) to stop per- and polyfluoroalkyl substances (PFAS) from migrating off-site. The PlumeStop PRB will remove PFAS from the aqueous phase by greatly enhancing PFAS sorption onto the aquifer matrix, preventing further plume migration and eliminating the potential exposure risk.

This proposal provides remedial designs and cost estimates for the following:

- Installation of a 273-foot long PRB with an estimated treatment depth generally between 6' to 26' below ground surface (bgs), but variable throughout the proposed barrier. See Figures 1 and 2.
- The design accounts for spatial and seasonal variations in water table depth, performance well screen intervals, and estimated depth to refusal on the hard silt layer. See Figure 1 and the Remedial Design Table on page 4.
- A portion of the PRB will provide a single row of points to fortify the previous pilot test barrier segment.
- Regenesis will do some initial site testing during the first few field days. RRS will conduct injection testing in the vadose zone to optimize PlumeStop distribution.
- The proposed barrier is designed to provide PFAS treatment for decades.

Treatment Objective

- The treatment objectives are based on the State of Washington MTCA Method B for PFAS Compounds for perfluorooctane sulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), and perfluorohexane sulfonic acid (PFHxS).

Projected Cost

- **$667,098.55**
- *A 10-year PlumeShield® Performance Warranty may be included upon review of the final site conceptual model and remedial baseline data review at an additional cost.

Case Studies

- PlumeStop Case Study: Martha's Vineyard Airport Successfully Treated Using PlumeStop to Eliminate PFAS
- PlumeStop Case Study: NY Brownfield PFAS + CVOC Remediation
- PlumeStop Case Study: PFAS Treatment at Camp Grayling Army Airfield
- PlumeStop Case Study: Successful Remediation of PFAS at Fairbanks Alaska Airport

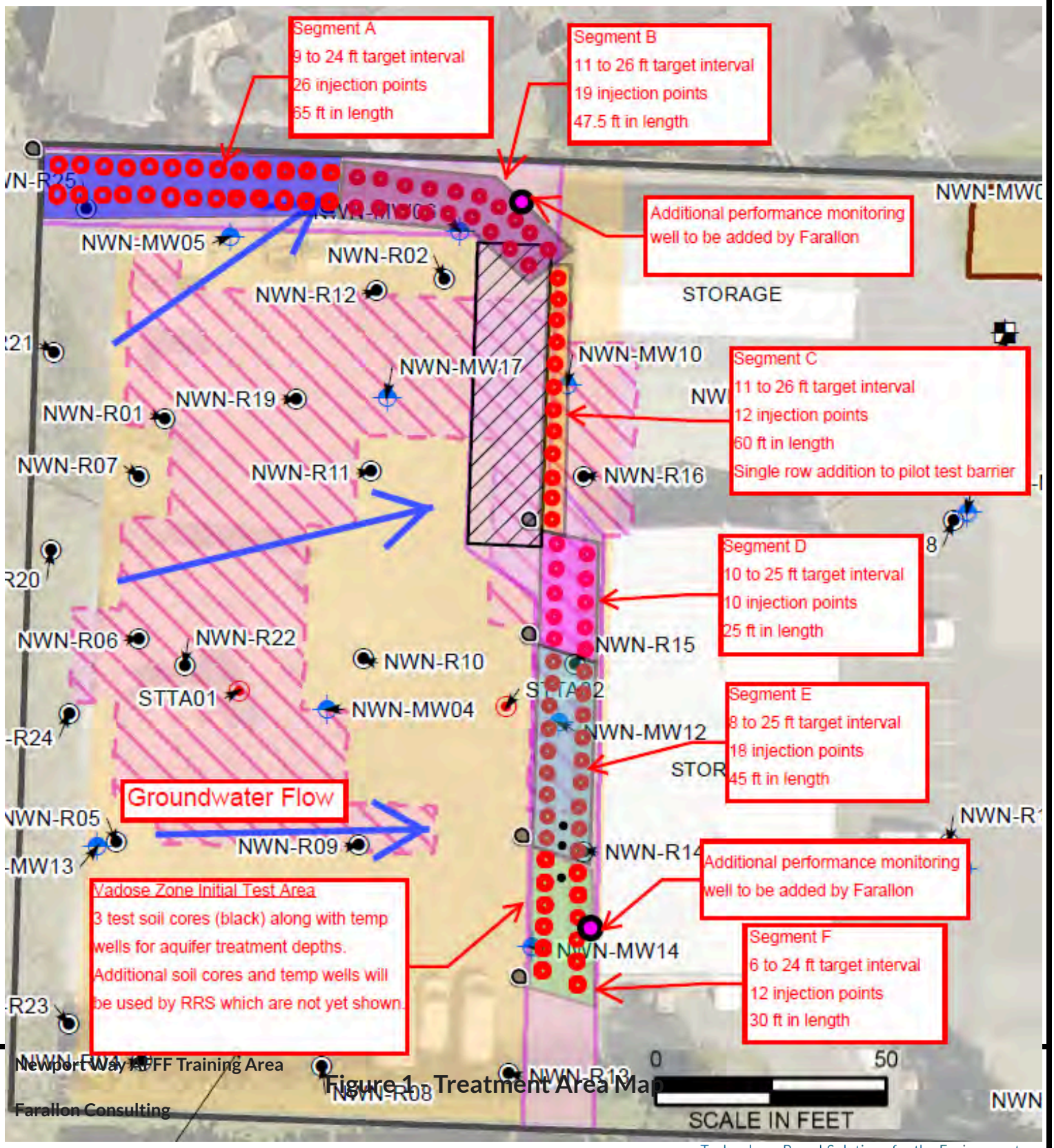
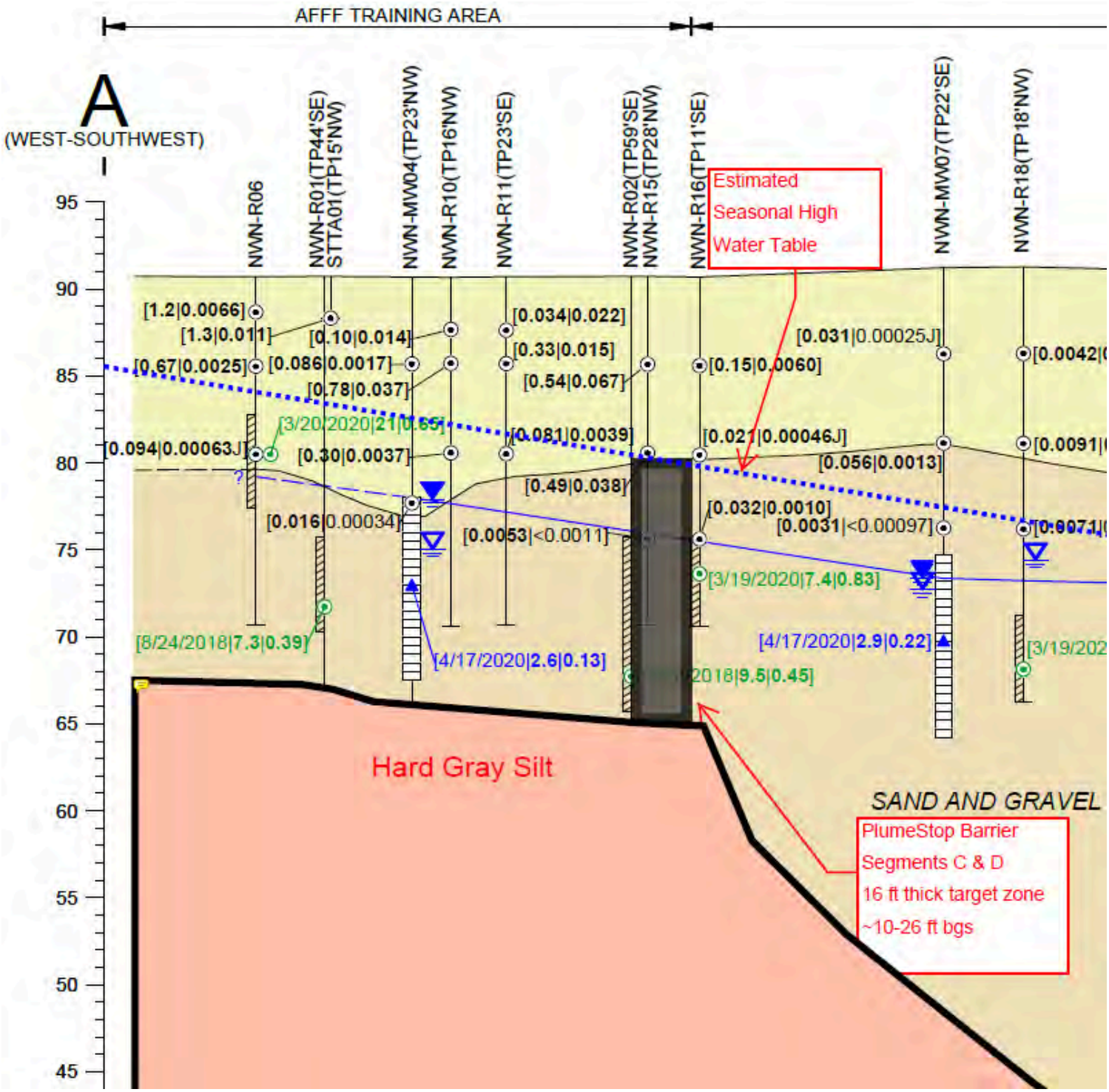


Figure 1. Treatment Area Map

Newport Way AFFF Training Area

Farallon Consulting

September 17, 2025



Newport Way AFFF Training Area

Farallon Consulting

September 17, 2025

Figure 2 - Generalized Cross Section of Treatment Zone

REGENESIS
Technology-Based Solutions for the Environment

Project Info

EFR HQ IVES Site - 175 Newport Way NW

Issaquah, WA

Full Scale PlumeStop Barrier Design - Dissolved Phase PFAS Plume

Prepared For:

Farallon Consulting

Design Information	Segment A	Segment B	Segment C	Segment D	Segment E	Segment F	Totals
PlumeStop lbs	14,813	10,825	6,837	5,697	11,623	8,204	58000
Number of Pts	26	19	12	10	18	12	97
Row Type	Double	Double	Single	Double	Double	Double	Double
Injection Spacing (ft)	5	5	5	5	5	5	5
Total Length (ft)	65	47.5	60	25	45	30	273
Vadose Zone Interval (ft)	9 to 13	11 to 15	11 to 15	10 to 14	8 to 12	6 to 10	
Aquifer Zone Interval (ft)	13 to 24	15 to 26	15 to 26	14 to 25	12 to 25	10 to 24	
Vadose Injection Concentration (mg/L)	16,551	16,551	16,551	16,551	16,551	16,551	
Aquifer Injection Concentration (mg/L)	22,758	22,758	22,758	22,758	22,758	22,758	
Gallons Per Foot - Vadose Zone*	55.00	55.00	55.00	55.00	55.00	55.00	
Gallons Per Foot - Aquifer Zone	40.00	40.00	40.00	40.00	40.00	40.00	
Total Gallons Injected	17,086	12,486	7,886	6,572	13,406	9,463	66900

PlumeStop is to be applied via DPT injection using bottom up injections with 2 ft retractable screens. Actual target interval to be adjusted based on inj pt location, depth to refusal and seasonal high groundwater depth. Proposed target intervals are shown on Figure 1. Product may be shifted to other intervals or nearest borings to compensate for drilling or injection conditions throughout the barrier. The barrier is to be a staggard double row, with the exception along the pilot test section, (Segment C) which is to be a single row. The upper 4 feet of the target interval is to be injected at 55 gallons per ft @16,551 mg/L and the lower sections injected at 40 gallons per ft @22,758 mg/L. The total barrier length, when installed, will be about 273 linear ft.

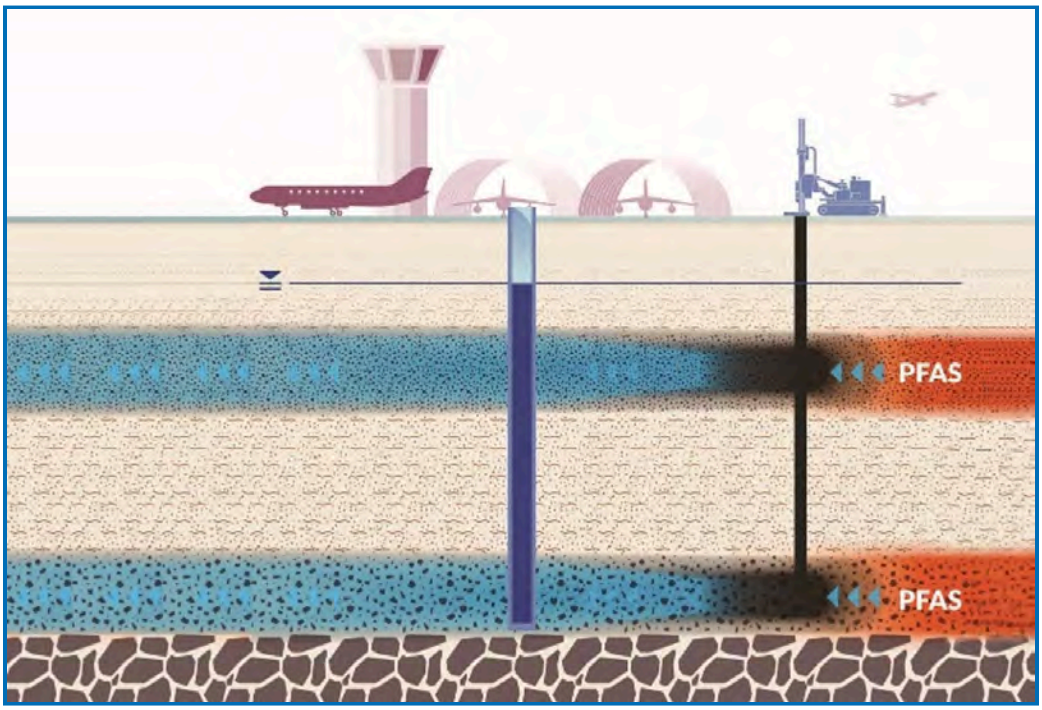
Technical Approach

RRS will apply PlumeStop in a PAB configuration across the plume to intercept and treat the PFAS mass flux zones, thereby removing the PFAS contaminants in groundwater. Deploying this approach will prevent the further expansion of the contamination plume, significantly reducing the potential exposure risk to downgradient receptors. This PRB will be applied as indicated in Figure 1 above.

PlumeStop's patented CAC formula* contains organic polymers that maintain blood-cell-sized (i.e., 1 to 2 microns) carbon particles in suspension without clumping. This key material innovation of PlumeStop allows it to move through the much larger soil/rock pore throats while uniformly painting the subsurface materials with highly reactive carbon. Without this innovation, the carbon particles aggregate and cannot be injected into a treatment area without creating significant gaps in the treatment that render it ineffective.

With the aquifer matrix transformed into a vast sorption surface totaling 100 acres per pound of CAC, this groundbreaking technology facilitates rapid contaminant sorption. PlumeStop routinely eliminates groundwater contaminants within a treatment area by the first post-injection monitoring event, making it a solution that can quickly achieve the most stringent cleanup goals.

*US Patents: 7,585,132; 9,770,743; 9,776,898; 10,005,684. Europe Patents: 3,027,562 and 3,105,190.



PlumeStop is applied as a permeable barrier transecting a contaminant mass flux zone.

Qualifiers (Design Considerations)

A list of pertinent qualifiers has been provided below to define the performance expectations for this remedy. REGENESIS will be happy to discuss these with you in detail.

- Seepage velocity/mass flux is a primary driver in determining the required PlumeStop dosing of a treatment zone. Passive flux meters have already been installed at the site during the pilot test to confirm the contaminant mass flux rates and groundwater velocity.
- Farallon Consulting is responsible for determining the groundwater flow direction, which guides the placement/orientation of the proposed barrier to ensure it is perpendicular to flow throughout the hydrologic cycle. The PRB's location and orientation, as presented in this proposal, are to be confirmed by Farallon Consulting.
- PFAS contaminants located beyond the proposed barrier before implementation may be left untreated. Areas downgradient the PlumeStop barrier are subject to matrix back-diffusion of contaminants, subsurface heterogeneities, and groundwater flow anomalies.
- This design assumes that the overall trend in PFAS concentration is not increasing.
- This design assumes that there is not a significant amount of soil-bound mass near the target area.
- This design assumes that no other incompatible treatments have been applied or will be applied near this barrier in the future.
- The designation of In-Area Performance Monitoring Wells assumes they will be positioned within five (5) feet and downgradient of the PRB.

Performance Objectives and Monitoring

The proposed remedy is intended to inhibit the migration of PFAS compounds emanating downgradient of the installed PRB. Prior to implementation, REGENESIS will work with Farallon Consulting to determine site-specific performance objectives and the applicability of a PlumeShield Performance Warranty.

To measure performance at your site, we recommend that the following analytical parameters be collected at key wells within the zone of influence of treatment. COCs at the site are PFAS compounds.

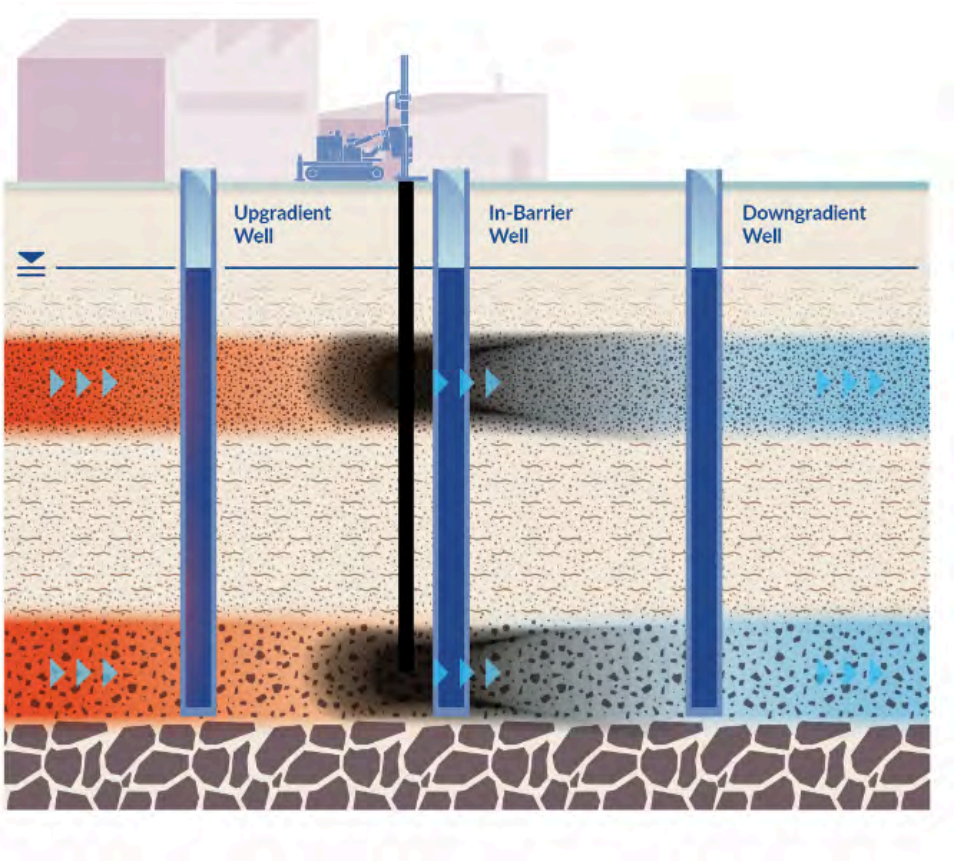
In-Situ Performance Monitoring Parameters	
Analytical Parameter	**Method**
Contaminants of Concern (COC's)	Varies
pH	Meter reading taken in flow-through cell (DO can also be measured with a Hach kit)
Dissolved Oxygen (DO)	
Oxidation Reduction Potential (ORP)	
Total Organic Carbon (TOC)	EPA 415.1 or EPA 9060

The recommended monitoring frequency is quarterly.

REGENESIS recommends that monitoring wells be installed by Farallon and adequately positioned to assess the performance of this remedy. These wells will serve as crucial instruments for reflecting the effectiveness of our treatment process and ensuring regulatory compliance. Additional monitoring wells are shown on Figure 1 near MW-05 and MW-14 and positioned to measured PFAS concentrations from within the barrier treatment.. Note that the new wells should be located within 5 feet and downgradient of the PlumeStop injection points and screened similarly to the nearby upgradient wells.

The figure below visually represents the ideal monitoring well placement to assess the barrier performance.

Recommended Performance Monitoring Well Network



PROJECT SEQUENCE

The table below outlines the sequence of steps toward the final design, warranty applicability, and project implementation.

PROJECT SEQUENCE
☐ **Establish Performance Expectations and Monitoring Requirements** Performance monitoring well network, regulatory targets, and remedial timeframes shall be established before developing a final scope of work.
☐ **Evaluate PlumeShield Performance Warranty Program** Once Performance expectations and monitoring requirements are well understood, REGENESIS will work with Farallon Consulting to determine the applicability and terms of the PlumeShield Warranty Program.
☐ **Finalize Design and Cost Estimate** REGENESIS submits the final design and cost estimate with PlumeShield Warranty Program if applicable.
☐ **Project Implementation** • Sign acceptance of the proposal • Finalize contract documents • Confirm account credit status • Complete remediation services logistics evaluation • Complete Design Verification Testing • Confirm delivery address and date • Schedule application and ship product • Initiate project application • Post remedy sampling • Performance evaluation

RRS Statement of Qualifications

RRS provides turn-key remediation planning, design, and application services. RRS field scientists are college degreed professionals who understand the details of each remediation design, the conceptual site model, the remediation chemistry being applied, the significance of the designed amendment dosing and achieving subsurface distribution, and how a breakdown of any one of these and other factors can result in poor remediation performance. They have the unique background and experience to understand the significance of modifications made in the field.

RRS' direct management of the injection program optimizes the design and ultimately, the overall remedy performance. No one has more professional experience handling and applying *in situ* remediation products than RRS personnel.

RRS has been offering industry-leading application services combined with excellence in field activity management for over a decade. We succeed by meeting the cleanup objectives established by the environmental engineering firms who contract our services. To produce this outcome, we employ field-experienced, disciplined, and dedicated project teams who work with our clients to address the unique requirements of each project site. Astute technical insight and timely, direct, and honest communication are hallmarks of RRS. Our reputation for meeting or exceeding clients' objectives has been proven in project successes throughout North America.

Further information on what sets RRS apart is provided in the following technical resources:

- RRS: Performance Driven, Results Based
- The RRS Difference
- RRS Project Experience

With decades of application experience, RRS is strategically located across the country to mobilize and assist on a wide range of sites throughout the US.

RRS consistently completes over 100 Projects annually across the US. For a current map of projects completed please click t



RRS Scope of Services

RRS, as part of its role, will operate under the guidance of Farallon Consulting to execute the remedial actions in the field, employing the chosen remediation methodologies. The collaboration between RRS and Farallon Consulting will entail joint responsibilities in carrying out this scope of services. The distribution of responsibilities is elaborated upon in this section as well as under the Assumptions/Qualification segment.

Site Preparation and Setup

RRS will commence work with an initial health and safety site orientation with all personnel present for the site work. A site reconnaissance will be conducted to familiarize the project site and treatment area as part of the site orientation. Notable observations will include vehicle and pedestrian traffic, proximity to sensitive receptors, visual confirmation of private and public utilities located within the treatment area, location of the water source, and product staging area. Once complete, the injection and support equipment will be staged and secured at the most optimal location to conduct the work. Additional site preparation and setup activities may be required based on the final scope of work that are not included here.

At the outset of each day, RRS will convene a safety tailgate meeting to discuss the day's objectives, procedures, and assigned roles and review health and safety concerns. All personnel on-site will be required to participate and acknowledge the information discussed prior to commencing that day's work activities. This proposal's health and safety section provides additional information regarding our health and safety mindset. All on-site personnel will comply with the Occupational Safety and Health Administration (OSHA) 1910.120 HAZWOPER training requirements.

General Means and Methods

A custom-built injection system (see below) will be utilized to handle and deliver the remediation technologies into the contaminated soil and groundwater. The system is designed to mix and provide the remediation solution at the specified solution concentration while allowing our experienced personnel to make on-site modifications to the design if needed.

RRS will be outfitted with various injection tool alternatives compatible with the selected diameter Direct Push Technology (DPT) rods. The injection tool configuration will be advanced to the upper or lower extent of the target treatment zone, and injections will be conducted utilizing either a bottom-up or top-down technique based on the subsurface lithology. The remediation solution will be injected at discrete intervals to cover the entire treatment zone. Injection volumes will be applied at intervals designated by the final remedial design as the injection rods are pushed/pulled through the vertical treatment interval. This process will be repeated until the prescribed injection volumes are completed per injection location. To the extent practical, active injection locations will be spread out over the work area to limit overfilling of the aquifer's pore volume, resulting in unnecessary surfacing of the remediation solution. These procedures may be modified in the field based on observations of the injected remediation technologies.

Pressure, flow rate, and overall volume will be closely monitored and digitally recorded for each injection interval. Simultaneous injections at multiple locations may be performed to enhance efficiencies on-site. RRS will vigilantly monitor the injection locations and surroundings for any surfacing indications, and a spill response kit will remain on standby.

Reagent Distribution Monitoring

Throughout the application, RRS will implement a site-specific Placement Validation (PV) plan utilizing a series of test to monitoring distribution and influence of the remediation technologies. The field tests may include pre-injection soil cores to view the lithology and confirm vertical treatment as designed; installation of temporary piezometers to monitor water level, groundwater parameters, and groundwater color; and any other field test deemed viable for distribution and influence monitoring. Ultimately, real-time data will be collected and analyzed to corroborate design assumptions and the dispersion of the reagents in the subsurface (particularly PlumeStop).

Additionally, groundwater parameters will be monitored in any nearby monitoring wells and temporary piezometers in the immediate area of the injection activities. Monitoring will be conducted utilizing a downhole water quality meter, well bailers, and water level indicator before, during, and after the application. The following parameters will be monitored: depth to water, color (PlumeStop concentration kits), temperature, conductivity, dissolved oxygen (DO), and oxidation-reduction potential (ORP).

Guided by the collected information, the project team may introduce adjustments to the remediation design to enhance the injection application's efficacy. These adjustments might involve alterations in injection concentrations and volume per location.

Application Summary Report Deliverable

Upon the conclusion of the injection operation, RRS will demobilize all equipment and personnel from the site. A comprehensive injection summary report, encompassing details of injection points (interval depths, injection pressure/flow rates, reagent volume, time elapsed, and surfacing occurrences), on-site observations, and any notable information, will be prepared and submitted to Farallon Consulting.



Inline Blending and Injection System

The remediation technologies will be mixed and delivered to the target treatment zone using our Inline Blending and Injection System (IBIS).



IBIS is a self-contained and compact unit configured on a small skid-based frame allowing for easy handling and injection of liquid amendments. The injection system mixes water with up to four liquid remediation amendments in formulated ratios and mechanically blends them through an inline static mixer to produce a final solution for direct application into a treatment zone.

IBIS is equipped with several positive displacement pumps that connect directly to bulk reagent storage containers and a water supply. These pumps are used in combination with mass flow meters in programmable ratios for proper remediation solution ratio control with onboard electronic automation protecting against out-of-ratio mixing. Using mass flow measurements in formulated ratios, IBIS ensures near perfect amendment dosing and blending while eliminating the need for batch tank mixing.

The accurate dosing and blending process is based on the final remedial design dose ratios, which, as part of the initial setup, is programmed into the system by the RRS field scientist through an interactive and fully viewable touch screen.

IBIS can process up to four remediation amendments to deliver a final blended mixture for injection at up to six separate delivery discharge lines simultaneously. IBIS's electronic control features auto-adjust to regulate and maintain safe operating injection flow rates and pressures throughout the delivery system.



Injection flow rates, pressures and volume totals at each line are logged by IBIS continuously during operation. These and other pertinent injection data can be accessed in real-time to keep project stakeholders informed and guide remedial decision-making in the field without communication delays.

IBIS requires an approximate footprint of 15 feet by 15 feet, which includes a designated area for the connection to bulk reagent containers and a dedicated power supply provided by RRS. The system can easily be moved through conventional skid means using a forklift or similar equipment. Discharge lines can reach well beyond the system footprint through the addition of 100 linear-foot injection hose sections.

Benefits of IBIS

The automated features of IBIS simplify labor-intensive and repetitive tasks, such as mixing reagents and collecting data. This efficiency saves valuable time and allows our field scientists to focus on strategic thinking and problem-solving. By streamlining these processes, our field scientists can leverage their strengths to enhance monitoring of reagent distribution, confirm influences, and improve remediation outcomes. Some specific advantages of using IBIS include:

- Electronic programming of pressure and flow transducers within the system captures relevant injection data at a higher frequency (every 30 seconds) with no manual entry or potential for accidental errors.
- The automated data acquisition is easily downloadable for improved backend analysis and can be provided to clients daily, enhancing communication with stakeholders.
- Programming and shutdown alarms prevented out-of-ratio reagent mixing to guarantee reliability and repeatability, ensuring reagent application consistency throughout the project implementation schedule.
- The automated process eliminates the need to manually weigh, measure, and transfer raw reagents, reducing labor, errors, and waste.
- Mix water and raw reagents are metered and mixed directly from the source, streamlining the process and reducing space requirements.
- Improve Health and Safety through reduced material handling, noise reduction, and reduced spill risks.

IBIS was specifically designed and built to increase onsite efficiencies, reduce labor requirements, and improve reagent dose delivery ratios to the remediation sites through advanced mechanical instrumentation and automated controls. For additional information on IBIS please click the link: **Download IBIS Brochure & IBIS Webpage.**

IBIS Key Benefits

Efficient & Streamlined



Accuracy



Reat-Time Data Collection



Project Responsibilities

RRS will work with Farallon Consulting to implement the scope of work associated with the application of the selected remediation technologies. Responsibilities for the implementation of this project will be shared between RRS and Farallon Consulting. Responsibilities for each are listed below and further under the Assumptions/Qualifications section.

RRS Responsibilities:

- RRS will provide and ship the specified quantities of the remediation technologies to the site address provided by Farallon Consulting. RRS will coordinate with Farallon Consulting prior to any shipment of product.
- RRS will provide qualified and experienced 40-hour HAZWOPER-certified personnel to implement and manage the remediation application scope of work.
- RRS will take delivery of the remediation technology and stage inside a secure location where the material will not be affected by inclement weather and is accessible by forklift or other equivalent means.
- RRS will provide the means to maneuver the product around the site (forklift or equivalent) as needed during the application activities.
- RRS will provide a custom-built injection system and other miscellaneous support equipment to handle, prepare, and apply the remediation technologies during the application process.
- RRS will perform site reconnaissance and pre-application activities that include H&S orientation, sensitive receptor identification and protection, treatment area identification, and equipment staging.
- RRS will prepare a site-specific health and safety plan.
- RRS will provide site safety equipment, including cones and caution tape, to delineate the immediate work area while making efforts to limit the impact on business operations at the site.
- RRS will perform real-time reagent distribution diagnostics during injection activities to allow for field modifications, as needed, to ensure optimal results.
- RRS will monitor the injection flow rates and pressures and observe signs of reagent surfacing around active injection areas. If surfacing is detected, RRS will stop or slow down injection activities at that location to stop additional surfacing and remove/vacuum up recoverable surfaced fluid.
- RRS will work directly with our design team to fill any data gaps identified during the injection application, thereby more effectively maintaining the project objectives and goals.
- RRS will generate a detailed injection summary report upon completion of the injection event. Items to be incorporated will include injection depths, material quantities, injection flow rates and pressures, an injection location map, implementation pictures, and other noteworthy field observations.

Farallon Consulting Responsibilities:

- Farallon Consulting will coordinate project schedule and remediation technology order with REGENESIS to ensure adequate shipping and mobilization time.
- Farallon Consulting will coordinate site access with property owner to coincide with project schedule and identify a secure product staging area.
- Farallon Consulting will provide a water source (e.g., hydrant) capable of producing at least 30 gpm for the duration of the project within 300 ft. of the project staging area, at no cost to RRS. Farallon Consulting will coordinate and provide a backflow preventer for on-site hydrant utilization.
- Farallon Consulting will subcontract a Direct Push Technology contractor with a qualified operator and crew of sufficient size to advance the appropriate tooling to the targeted treatment depth. The Direct Push Technology contractor will be equipped with:
    - Track-mounted DPT rig (Geoprobe 7822 or similar) with two-person crew
    - 150 feet of 1.5-inch Geoprobe threaded rods and 30 feet of quick-link extension rods
    - Bentonite (granular and hole plug)
    - Thread tape to seal rods
- Farallon Consulting will coordinate with the Direct Push Technology contractor and request a public utility locate through the nationwide “811 call before you dig” resource to approximate the location of buried public utilities at the site.
- Should private underground utilities be within or near the treatment area, Farallon Consulting will contract with a private utility locating service provider to identify and mark the approximate location prior to RRS mobilization.
- Farallon Consulting will procure any necessary permits needed to complete the project including right of way, UIC and municipal.
- Farallon Consulting is responsible for all soil, air and groundwater sampling and analysis.
- Should surfaced/short-circuited remediation technology material need to be containerized, Farallon Consulting is responsible for the classification, transportation and disposal of the waste.
- Farallon Consulting will provide a depth to water meter and multiprobe with low-flow pump and a flow-through cell capable of reaching the water table and well screen interval while on-site for injection activities.
- Farallon Consulting will provide access to a restroom during on-site hours.
- All empty product containers will be the responsibility of Farallon Consulting for proper disposal/recycling. General refuse will be collected and disposed of in a Farallon Consulting provided refuse container on-site.
- Any traffic control requirement beyond providing cones and caution tape is the responsibility of Farallon Consulting.

RRS Assumptions and Qualifications

In generating this proposal, RRS relied upon professional judgment and site-specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to estimate product quantities and subsurface placement required to achieve the remedial goals. The attached design summary tables specify the assumptions used to complete the remedial design. We request that these modeling input assumptions be verified by your firm before injection. Other assumptions and qualifications are as follows:

- The product and services cost outlined will be valid for 60 days from the proposal date. If beyond 60 days, RRS reserves the right to update the cost.
- The freight charges included for product delivery above are estimated at the time of proposal generation. Actual freight charges are neither set nor guaranteed by RRS and are calculated when the product order is placed. This price may vary from what is estimated above. Actual freight charges for product delivery will be invoiced.
- Freight delivery time frames cannot be guaranteed and RRS will not be responsible for any delays or increased costs associated with those delays.
- If applicable, sales tax charges for product, freight, and services are considered estimated at the time of proposal submittal. The appropriate sales tax category (i.e., product, freight, and services) and actual sales tax rate are finalized at the time of invoice and may change from date of proposal submittal.
- RRS will have access to the site for equipment operation and secure storage of materials and equipment throughout the project duration. Access to each work area location will be clear and free of obstructions. RRS also assumes the injection system can be staged within 80 feet of the furthest injection point location.
- For safety reasons, access to the treatment area will be limited to RRS and Farallon Consulting personnel.
- RRS is not responsible for treatment chemistry infiltration into undesired locations beyond our visible control. The remediation design and injection procedures contain the necessary precautions to minimize the likelihood of surfacing of the treatment chemistry.
- RRS personnel will have access to the site for work up to 12 hours per day, Monday through Friday (daylight hours). However, the standard workday does not exceed 10 hours, with travel time Monday through Friday. A 10-hour workday does not mean 10 hours on-site and/or injection pumping. Additional charges may apply for work completed on Saturday and Sunday.
- RRS is not responsible for damage to unmarked utilities and subsurface structures. Farallon Consulting will review as-built drawings with RRS and confirm clearance prior to injection activities and the remedial fluids being distributed throughout the subsurface.
- Ground surface restoration costs have not been included. Additional charges will apply if surface restoration is needed.
- Site conditions can change over time and should be monitored post-injection. RRS is not responsible for changing site conditions after completing the scope of work and demobilizing. Such changes include but are not limited to changes related to applicable borehole abandonment (i.e., swelling of backfill material), surface restoration, well conditions, and on-site utilities.

Health and Safety Plan

RRS is committed to providing a safe and healthy working environment for all on-site employees, including Farallon Consultings and contractors on-site. Before mobilization, RRS will develop a site-specific Health and Safety Plan (HASP) and designate an on-site safety officer. All personnel on-site are required to participate in daily safety tailgate meetings to proactively identify potential hazards and mitigate risks to the full extent possible.

In addition to the hours of rigorous safety training courses all personnel are required to complete, RRS also incorporates a behavior-based safety program by utilizing our DoneSafe mobile application (app) interface on every site. This app encourages our personnel to actively search for potential on-site risks and document mitigation actions. The effectiveness of our safety program can be seen in our industry-leading Experience Modification Rating (EMR) listed in table below.

Year	Total Hours	EMR
2024	193,337	0.72
2023	193,433	0.67
2022	189,458	0.73
2021	125,592	0.71

RRS safety tailgate meetings and HASP will include the following:

- Site map .
- List of personnel and contact information for employees on-site and supporting the project.
- Route to the nearest occupational treatment facility and hospital along with contact information.
- Job Hazard Analysis (JHA) detailing each job task on-site with its potential hazards and best practices to avoid those hazards.
- Description and hazards of the contaminants of concern (COC) with appropriate Personal Protection Equipment (PPE) requirements.
- List and description of REGENESIS chemicals on-site including a Safety Data Sheet (SDS) for each chemical.
- Checklist of site safety equipment including fire extinguishers, eyewash station, first aid kit, spill prevention kit and any site-specific equipment needed.
- Daily tailgate safety meeting sheet with identified hazards and risks associated with the site and job tasks for that day, along with shared learning observations from the previous day.



Pricing

Below is the cost estimate to provide the remediation technologies and execute the scope of work provided in this proposal.

Description	Subtotal
Remediation Products (58,000 lbs of PlumeStop) Includes shipping and tax	$428,993.64
REGENESIS Remediation Services (RRS) Application Services (RRS) for 16-days, including the acceptance of the product, the injection, and a forklift for the duration. **DPT contractor not included**	$238,104.91
Total	**$667,098.55**

The cost provided above is inclusive of all products, estimated product freight, product mixing, injection services as outlined within this proposal, tax, and materials to complete the work. We will submit invoice(s) when the product ships and upon project completion or end of the calendar month for RRS services. **Payment terms are Net 30 days upon invoice submittal. Should payment terms be extended beyond 30 days, finance charges may be applied.**

Please note that this pricing is contingent upon the completion of this scope of work without delays or work stoppages once mobilization occurs. RRS has allotted one (1) day to accept product and seventeen (15) on-site working days (10-hr days, Monday through Friday). RRS believes the scope of work provided above can be completed in this timeframe proposed, however, if the project is delayed due to circumstances beyond our control, RRS will utilize a daily rate of $6,000.00 plus applicable tax to the invoice price. Should the project be completed ahead of schedule, a portion of the daily rate may be credited to the final invoice after review. RRS reserves the right to modify the design and associated cost if additional information gathered warrants modification.

COST ESTIMATE DISCLAIMER: The cost listed assumes conditions set forth within the proposed scope of work and assumptions and qualifications. Changes to either could impact the final cost of the project. This may include final shipping arrangements, sales tax, or application-related tasks such as product storage and handling, access to water, etc. If the items listed need to be modified, please contact REGENESIS for further evaluation.

REGENESIS developed this Scope of Work in reliance upon the data and professional judgments provided by those who completed the earlier environmental site assessment(s) and in reliance upon REGENESIS' prior experience on similar project sites. The fees and charges associated with the Scope of Work were generated through REGENESIS' proprietary formulas and thus may not conform to billing guidelines, constraints, or other limits on fees. REGENESIS does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where REGENESIS may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by REGENESIS, it is the sole responsibility of the entity seeking reimbursement to ensure the Scope of Work and associated charges are in compliance with and acceptable to the Government before submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from Government, REGENESIS does not knowingly present or cause to be presented any claim for payment to the government.

PROFESSIONAL JUDGEMENT: In generating this estimate, REGENESIS relied upon professional judgment and site-specific information provided by others. Using this information as input, we performed calculations based upon the known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to effect the remediation of the site.

Terms & Conditions

1. **PAYMENT TERMS.** Net 30 Days. Accounts outstanding after 30 days will be assessed 1.5% monthly interest. Volume discount pricing will be rescinded on all accounts outstanding over 90 days. An early payment discount of 1.5% Net 10 is available for cash or check payments only. We accept Master Card, Visa and American Express.
2. **RETURN POLICY.** A 15% re-stocking fee will be charged for all returned goods. All requests to return product must be pre-approved by seller. Returned product must be in original condition and no product will be accepted for return after a period of 90 days.
3. **FORCE MAJEURE.** Seller shall not be liable for delays in delivery or services or failure to manufacture or deliver due to causes beyond its reasonable control, including but not limited to acts of God, acts of buyer, acts of military or civil authorities, fires, strikes, flood, epidemic, war, riot, delays in transportation or car shortages, or inability to obtain necessary labor, materials, components or services through seller's usual and regular sources at usual and regular prices. In any such event Seller may, without notice to buyer, at any time and from time to time, postpone the delivery or service dates under this contract or make partial delivery or performance or cancel all or any portion of this and any other contract with buyer without further liability to buyer. Cancellation of any part of this order shall not affect Seller's right to payment for any product delivered or service performed hereunder.
4. **LIMITED WARRANTY.** Seller warrants the product(s) sold and services provided as specified on face of invoice, solely to buyer. Seller makes no other warranty of any kind respecting the product and services, and expressly DISCLAIMS ALL OTHER WARRANTIES OF WHATEVER KIND RESPECTING THE PRODUCT AND SERVICES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AND NON-INFRINGEMENT.
5. **DISCLAIMER.** Where warranties to a person other than buyer may not be disclaimed under law, seller extends to such a person the same warranty seller makes to buyer as set forth herein, subject to all disclaimers, exclusions and limitations of warranties, all limitations of liability and all other provisions set forth in the Terms and Conditions herein. Buyer agrees to transmit a copy of the Terms and Conditions set forth herein to any and all persons to whom buyer sells, or otherwise furnishes the products and/or services provided buyer by seller and buyer agrees to indemnify seller for any liability, loss, costs and attorneys' fees which seller may incur by reason, in whole or in part, of failure by buyer to transmit the Terms and Conditions as provided herein.
6. **LIMITATION OF SELLER'S LIABILITY AND LIMITATION OF BUYER'S REMEDY.** Seller's liability on any claim of any kind, including negligence, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair or use of any goods or performance of any services covered by or furnished hereunder, shall in no case exceed the lesser of (1) the cost of repairing or replacing goods and repeating the services failing to conform to the foregoing warranty or the price of the goods and/or services or part thereof which gives rise to the claim. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, OR FOR DAMAGES IN THE NATURE OF PENALTIES.
7. **INDEMNIFICATION.** Buyer agrees to defend and indemnify seller of and from any and all claims or liabilities asserted against seller in connection with the manufacture, sale, delivery, resale or repair or use of any goods, and performance of any services, covered by or furnished hereunder arising in whole or in part out of or by reason of the failure of buyer, its agents, servants, employees or customers to follow instructions, warnings or recommendations furnished by seller in connection with such goods and services, by reason of the failure of buyer, its agents, servants, employees or customers to comply with all federal, state and local laws applicable to such goods and services, or the use thereof, including the Occupational Safety and Health Act of 1970, or by reason of the negligence or misconduct of buyer, its agents, servants, employees or customers.

8. **EXPENSES OF ENFORCEMENT.** In the event seller undertakes any action to collect amounts due from buyer, or otherwise enforce its rights hereunder, Buyer agrees to pay and reimburse Seller for all such expenses, including, without limitation, all attorneys and collection fees.
9. **TAXES.** Liability for all taxes and import or export duties, imposed by any city, state, federal or other governmental authority, shall be assumed and paid by buyer. Buyer further agrees to defend and indemnify seller against any and all liabilities for such taxes or duties and legal fees or costs incurred by seller in connection therewith.
10. **ASSISTANCE AND ADVICE.** Upon request, seller in its discretion will furnish as an accommodation to buyer such technical advice or assistance as is available in reference to the goods and services. Seller assumes no obligation or liability for the advice or assistance given or results obtained, all such advice or assistance being given and accepted at buyer's risk.
11. **SITE SAFETY.** Buyer shall provide a safe working environment at the site of services and shall comply with all applicable provisions of federal, state, provincial and municipal safety laws, building codes, and safety regulations to prevent accidents or injuries to persons on, about or adjacent to the site.
12. **INDEPENDENT CONTRACTOR.** Seller and Buyer are independent contractors and nothing shall be construed to place them in the relationship of partners, principal and agent, employer/employee or joint ventures. Neither party will have the power or right to bind or obligate the other party except as may be expressly agreed and delegated by other party, nor will it hold itself out as having such authority.
13. **REIMBURSEMENT.** Seller shall provide the products and services in reliance upon the data and professional judgments provided by or on behalf of buyer. The fees and charges associated with the products and services thus may not conform to billing guidelines, constraints or other limits on fees. Seller does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where seller may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by seller, it is the sole responsibility of the buyer or other entity seeking reimbursement to ensure the products and services and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from the Government, seller does not knowingly present or cause to be presented any claim for payment to the Government.
14. **APPLICABLE LAW/JURISDICTION AND VENUE.** The rights and duties of the parties shall be governed by, construed, and enforced in accordance with the laws of the State of California (excluding its conflict of laws rules which would refer to and apply the substantive laws of another jurisdiction). Any suit or proceeding hereunder shall be brought exclusively in state or federal courts located in Orange County, California. Each party consents to the personal jurisdiction of said state and federal courts and waives any objection that such courts are an inconvenient forum.
15. **ENTIRE AGREEMENT.** This agreement constitutes the entire contract between buyer and seller relating to the goods or services identified herein. No modifications hereof shall be binding upon the seller unless in writing and signed by seller's duly authorized representative, and no modification shall be effected by seller's acknowledgment or acceptance of buyer's purchase order forms containing different provisions. Trade usage shall neither be applicable nor relevant to this agreement, nor be used in any manner whatsoever to explain, qualify or supplement any of the provisions hereof. No waiver by either party of default shall be deemed a waiver of any subsequent default.

PFAS TECHNICAL LIBRARY

Case Studies

- PlumeStop® Case Study: Martha's Vineyard Airport Successfully Treated Using PlumeStop to Eliminate PFAS Risk
- PlumeStop® Case Study: NY Brownfield PFAS + CVOC Remediation
- PlumeStop® Case Study: PFAS Treatment at Camp Grayling Army Airfield
- PlumeStop® Case Study: Remedy Addresses PFAS Risk at Superfund Site
- PlumeStop® Case Study: Successful Remediation of PFAS at Fairbanks Alaska Airport

Technical Bulletins

- PlumeStop® Technical Bulletin 1.1: Distribution Through a Permeable Medium
- PlumeStop® Technical Bulletin 2.2: Sorption of Contaminants from Solution-Column Study
- PlumeStop® Technical Bulletin 5.1: In-Situ Containment of PFOA and PFOS Using Liquid Activated Carbon
- Colloidal Activated Carbon (CAC) Sampling Guidance Document

3rd Party Journal Articles

- In-Situ Treatment of TCE and PFAS in Groundwater within a Silty Sand Aquifer-Wiley's Remediation Journal
- The Effect of Heterogeneity on the Distribution and Treatment of PFAS: Frontiers in Environmental Chemistry
- Evaluating the Longevity of a PFAS In Situ Colloidal Activated Carbon Remedy
- Six Pilot Scale Studies Evaluating the In-Situ Treatment of PFAS in Groundwater

Videos

- PlumeStop® Treats PFAS and Protects Island Community Resources
- Identifying PFAS as a CERCLA Hazardous Substance: Are You Ready for This?

Other

- Podcast: Talking Under Water: Interview with Scott Wilson
- FluxTracer® Flux Mapping Tool
- PlumeShield® Performance Warranty Program

Intellectual Property

REGENESIS is the developer of PlumeStop® colloidal activated carbon technology and holds a patent portfolio related to the use of colloidal activated carbon for in situ remediation:

- Patent controlling the injection of activated carbon particles into subsurface media under low pressure:
  - US Patent #7,585,132
- Patents covering the use of colloidal activated carbon to treat heterogeneous media to stop matrix back-diffusion:
  - US Patent # 9,776,898
  - US Patent # 10,005,684
  - Europe Patent # 3,105,190
- Patent controlling the engineering of subsurface hydrophobicity in order to sorb contaminants from aquifer waters:
  - US Patent # 10,478,876
  - Europe Patent # 17813929 (pending)
- Patent covering chemistries to suspend and disperse colloidal activated carbon particles for optimum distribution within subsurface media
  - US Patent #9,770,743
  - Europe Patent # 3,027,562

REGENESIS Indemnification

The use of PlumeStop® is free from infringement of any other intellectual property. REGENESIS will indemnify customers, who have purchased and properly applied PlumeStop, against claims of infringement of any other intellectual property.

SAFETY DATA SHEET

1. Identification

Product identifier **PlumeStop® Liquid Activated Carbon™**

Other means of identification None.

Recommended use Soil and Groundwater Remediation.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company Name REGENESIS

Address 1011 Calle Sombra
San Clemente, CA 92673 USA

General information 949-366-8000

E-mail CustomerService@regenesis.com

Emergency phone number For Hazardous Materials Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC 24/7 at:

USA, Canada 1-800-424-9300

International 1-703-527-3887

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement The mixture does not meet the criteria for classification.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash hands after handling.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Water	7732-18-5	>75
Colloidal activated carbon ≤2.5 µm	7440-44-0	<25
Proprietary additives		≤3

Composition comments All concentrations are in percent by weight unless otherwise indicated.

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Rinse with water. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Carbon dioxide, alcohol-resistant foam, dry chemical, water spray, or water fog.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed. Combustion products may include: carbon monoxide, carbon dioxide, sodium oxides, metal oxides.
Special protective equipment and precautions for firefighters	Use protective equipment appropriate for surrounding materials.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials. Use water spray to keep fire-exposed containers cool.
General fire hazards	This material will not burn until the water has evaporated. Residue can burn. When dry may form combustible dust concentrations in air.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Avoid contact with spilled material. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	This product is miscible in water. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Avoid contact with skin and eyes. Avoid prolonged exposure. Observe good industrial hygiene practices. Wash thoroughly after handling. Wear appropriate personal protective equipment (See Section 8).
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Protect from freezing.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Colloidal activated carbon ≤2.5 µm (CAS 7440-44-0)	TWA	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Colloidal activated carbon ≤2.5 µm (CAS 7440-44-0)	TWA	2 mg/m3	Respirable fraction.

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear approved chemical safety goggles.
Skin protection	
Hand protection	Rubber, neoprene or PVC gloves are recommended. Wash hands after handling.
Other	Avoid contact with the skin. Wear suitable protective clothing.
Respiratory protection	Not normally needed. In case of insufficient ventilation, wear suitable respiratory equipment. If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Aqueous suspension.
Color	Black.
Odor	Odorless.
Odor threshold	Not available.
pH	8 - 11
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not flammable.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	1 - 1.2 (Water = 1)
Solubility(ies)	
Solubility (water)	Miscible.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials. Keep from freezing.
Incompatible materials	Strong oxidizing agents. Water reactive materials.

Hazardous decomposition products Combustion may produce: carbon monoxide, carbon dioxide, sodium oxides, metal oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation Prolonged inhalation may be harmful.

Skin contact Prolonged or repeated skin contact may result in minor irritation.

Eye contact Direct contact with eyes may cause temporary irritation.

Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

Components	Species	Test Results
Colloidal activated carbon ≤2.5 µm (CAS 7440-44-0)		
Acute		
Oral		
LD50	Rat	> 10000 mg/kg

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product		Species	Test Results
PlumeStop® (CAS Mixture)			
Aquatic			
Chronic			
Fish	LC50	Fathead minnow	> 100 mg/l, 96 hr, static renewal

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil Expected to be temporarily highly mobile in soil.

Other adverse effects None known.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Toxic Substances Control Act (TSCA) All components of the mixture on the TSCA 8(b) inventory are designated “active”.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Not regulated.

US. New Jersey Worker and Community Right-to-Know Act

Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law

Not listed.

US. Rhode Island RTK

Colloidal activated carbon ≤2.5 µm (CAS 7440-44-0)

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 26-February-2015

Revision date 24-October-2021

Version # 04

Further information HMIS® is a registered trade and service mark of the American Coatings Association (ACA).

HMIS® ratings

Health: 0
Flammability: 0
Physical hazard: 0

NFPA ratings

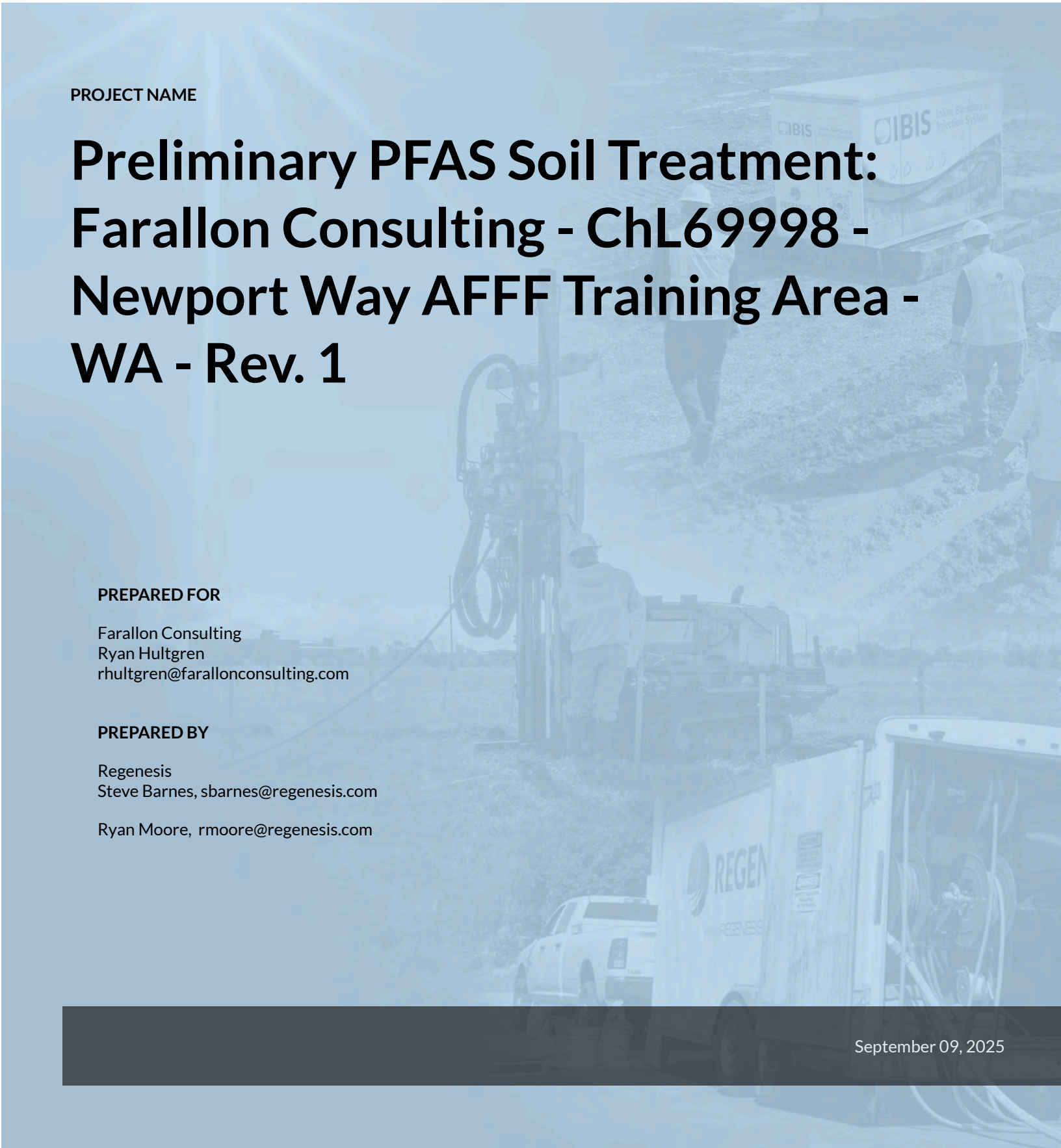


Disclaimer Regenesis cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

REGENESIS®

PROJECT NAME

Preliminary PFAS Soil Treatment: Farallon Consulting - ChL69998 - Newport Way AFFF Training Area - WA - Rev. 1



PREPARED FOR

Farallon Consulting
Ryan Hultgren
rhultgren@farallonconsulting.com

PREPARED BY

Regenesis
Steve Barnes, sbarnes@regenesis.com

Ryan Moore, rmoore@regenesis.com

September 09, 2025

Project Treatment Plan

In this document, REGENESIS outlines a comprehensive approach, encompassing the proposed solution, project objectives, recommended treatment technology, a concise application design summary, and a treatment area depiction.

Treatment Approach Overview

This proposal focuses on the stabilization of per- and poly-fluoroalkyl substances (PFAS) in impacted soils. It outlines our approach to achieving long-term immobilization of PFAS-impacted soils through soil mixing techniques utilizing a site-specific dose of SourceStop® (SourceStop) to reduce the impacts of the contaminated soils on the underlying groundwater.

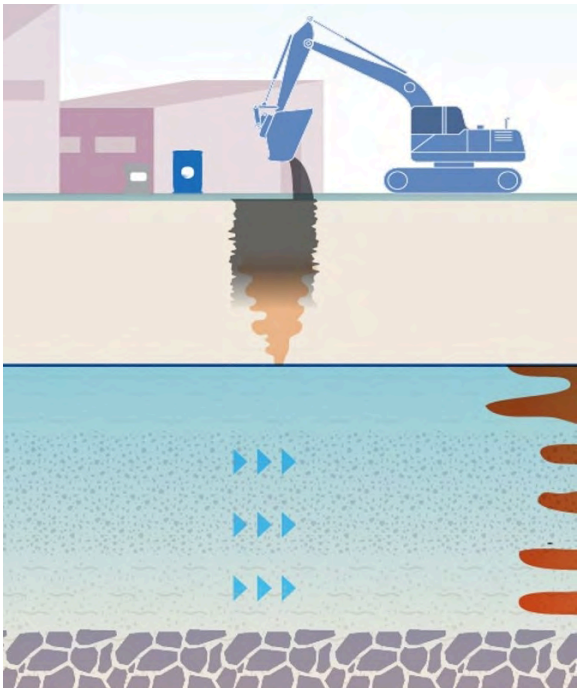
Treatment Objectives and Scope

- Evaluate and confirm amendment dosage required for the soil type, moisture, and contaminant composition and concentrations prior to treatment to reach the expected leachability criteria. Current design is based on a dose rate range with a target of 95% reduction of leachability per the soil data provided to REGENESIS. Treatment effectiveness will be determined via SPLP analysis using 3 ratios based on baseline results.
- Provide on-site turn-key support in conducting soil stabilization and other site-specific work. Specific responsibilities between Farallon and REGENESIS have not been finalized, and therefore, will be determined once a finalized treatment approach has been established. Site-specific work includes:
- Reduce PFAS mass discharge from the source soils to groundwater by:
    - Reducing PFAS leachability through the addition of SourceStop into target soils via soil stabilization approach.
    - Homogenously mix the SourceStop within the designated treatment area(s) measuring approximately 3,270 cubic yards:
        - 12,960 square feet (sqft) from surface to 5.0 ft. below ground surface (bgs) - 2,400 cubic yards
        - 4,482 sqft from 5.0 to 10 ft bgs - 830 cubic yards
        - 360 sqft from 10 to 13 ft bgs - 40 cubic yards
    - Spray application of SourceStop at the base of the 10 ft and 13 ft treatment interval areas (approximately 4,842 sqft).
- General site setup to include utility locate, mobilize all labor and equipment to the site to perform the services described above, storm water best management practices, and receive/unloading project related materials and supplies.
- Assist in the collection of samples from the treatment area during the stabilization process.
- Demobilize all labor and equipment.

Treatment Approach Details

Based on our discussions and review of the site soil and groundwater data, the treatment approach will comprise in-situ soil stabilization featuring our patented SourceStop technology. The treatment approach will create a significant and long-term reduction in the leachability of PFAS on the soils, preventing further discharge to underlying groundwater. The treatment is a sustainable, passive solution with no ongoing operational cost, zero waste, and a safe and easy application.

In-Situ Soil Stabilization – The PFAS-impacted soils within the designated treatment area will be amended with a site-specific dose of SourceStop to reduce the leachability of the contaminated soils. The material will be mechanically broadcast and distributed into the soils using standard yellow-iron type construction equipment (i.e., bucket mixing or auger-type mixing). SourceStop particles are designed to disintegrate during the physical mixing process and when in contact with water, releasing the CAC. This enhances distribution through improved contact, further coating the soil with a thin activated carbon layer and minimizing application time. The CAC will also help to penetrate low-permeability soils not already influenced by the physical distribution process to optimize the treatment. Once in place, the SourceStop particles will absorb PFAS contamination, thereby eliminating further PFAS mass flux below the soils and into the groundwater zone.





Treatment Approach Details - Cont'd

In addition to the soil stabilization aspects described above, SourceStop will also be spray applied at the base and sidewalls of the open excavation, at the based of the 10 ft and 13 ft treatment interval areas. This spray application will allow for the material to migrate downward as it infiltrates into the native underlining soils to capture any residual PFAS contaminated soils below this interval.

The process will incorporate diluting the SourceStop material with water and evenly distributing over the impacted soils at the base of the excavation. The SourceStop should be diluted with water at a ratio appropriate for the fill material (1:5 to 1:10). The addition of water will enhance the treatment by helping facilitate infiltration and percolation of the SourceStop. The spray application should be performed in a continuous manner and evenly distributed at the base.





Treatment Technology Details

SourceStop is a highly effective treatment for PFAS-contaminated soil and groundwater in source areas that works by preventing the leaching of soil contamination and halting the migration of PFAS in groundwater, eliminating the risk to downgradient receptors. SourceStop is available in two formulations: liquid and solid. Both formulations utilize REGENESIS' colloidal activated carbon (CAC) technology, allowing unsurpassed distribution into the target soils and aquifer materials. This results in rapid and highly effective sorption of PFAS for a quicker and more complete treatment. For this project, SourceStop Solid is proposed to be used for the stabilization approach.



SourceStop Solid is a composite material that can be mechanically broadcast and distributed into soils with conventional yellow-iron-type equipment. The solid format generates minimal dust during the physical mixing process, making it safe and easy to handle. When the SourceStop Solid particles come into contact with water, they will release the CAC. This process enhances the distribution through improved contact, further coating the soil with a thin activated carbon layer and minimizing application time. Due to the tiny particle size, the colloidal activated carbon will penetrate low-permeability soils that are not already influenced by the physical distribution process.

Additional Resources:

- SourceStop® Brochure
- SourceStop® Liquid Spec Sheet
- SourceStop® Solid Spec Sheet
- Why Target PFAS Source Zones?
- SourceStop® Technical Bulletin
- SourceStop® Soil Stabilization Technical Bulletin
- SourceStop® Safety Data Sheet
- Safety Data Sheet - SourceStop® Solid

SourceStop®

REGENESIS®

SourceStop®

SourceStop® Soil Treatment Summary

Site Name: Newport Way AFFF Training Area

Prepared For: Farallon Consulting

Regenesis Project ID: ChL69998

Source Soil Base Spray Application Summary			
Treatment Location Name	Treatment Location Area (Square Feet)	Total Quantity (Pounds)	Base Spray Treatment (Pounds/Square Feet)
NWN-R15, R19, R20 & R24 - Low Dose, 5-10'	4,482	6,000	1.3
NWN-R20 - Low Dose, 10-13'	360	800	2.2

Source Soil Treatment Application Summary						
Treatment Location Name	Treatment Location Dimensions (L'xW'xD')		Treatment Location Area (Square Feet)	Treatment Location Volume (Cubic Yards)	Total Quantity (Pounds)	Soil Treatment Amendment (Pounds/Cubic Yard)
Low Dose, 0-5'	L (Feet)	135	12,960	2,400	45,600	19
	W (Feet)	96				
	D (Feet)	5.0				
NWN-R15, R19, R20 & R24 - Low Dose, 5-10'	L (Feet)	107	4,482	830	15,600	19
	W (Feet)	42				
	D (Feet)	10				
NWN-R20 - Low Dose, 10-13'	L (Feet)	30	360	40	1,200	30
	W (Feet)	12				
	D (Feet)	13				
High Dose, 0-5'	L (Feet)	135	12,960	2,400	90,000	38
	W (Feet)	96				
	D (Feet)	5				
NWN-R15, R19, R20 & R24 - High Dose, 5-10'	L (Feet)	107	4,482	830	32,400	39
	W (Feet)	42				
	D (Feet)	10				
NWN-R20 - High Dose, 10-13'	L (Feet)	30	360	40	2,400	60
	W (Feet)	12				
	D (Feet)	13				

PROJECT SEQUENCE

The table below outlines the sequence of steps toward final design and project implementation.

Description
☐ **Establish Performance Expectations and Monitoring Requirements** Confirm leachability performance objectives and frequency of monitoring requirements using SPLP analysis.
☐ **Evaluate SourceStop Loading Rates Through Bench Testing** Complete a preliminary assessment of the effectiveness of SourceStop through bench testing to evaluate amendment dose concentration to reach PFAS leachability performance objectives. • Execute Product Sample Agreement • Send appropriate sample quantity to selected testing laboratory/facility • Review and confirm testing approach • Review test results and develop recommendations that can be applied to field-scale soil mixing implementation activities
☐ **Finalize Design, Scope, and Cost Estimate** REGENESIS submits the final design, scope, and cost estimate.
☐ **Project Implementation** • Finalize contract documents • Confirm account credit status • Complete remediation services logistics evaluation • Confirm delivery address and date • Schedule application and ship product • Initiate project application • Post remedy sampling • Performance evaluation

Pricing

Below is the preliminary estimate to provide the remediation technologies and execute the work provided in this proposal.

Description	Subtotal
Soil Stab. Remediation Products (Low Dose to High Dose Range)	**$202,800 - $405,600**
Base Spray Remediation Products	**$35,656**
Bench Study	**$11,500**
Turn-Key Remediation Services ~15 - 18 Days to perform installation	**$195,000 - $215,000**
Tax and Shipping Range (~18%)	**$80,092.08 - $120,196.08**
Total Range	**$525,048.08 - $787,952.08**

The cost provided above is inclusive of all product, estimated product freight, turn-key installation services, tax, and materials to complete the work. We will submit invoice(s) when product ships and upon project completion or end of calendar month for remediation services. **Payment terms are Net 30 days upon invoice submittal. Should payment terms be extended beyond 30 days, finance charges may be applied.**

COST ESTIMATE DISCLAIMER: The cost listed assumes conditions set forth within the proposed scope of work and assumptions and qualifications. Changes to either could impact the final cost of the project. This may include final shipping arrangements, sales tax or application related tasks such as product storage and handling, access to water, etc. If the items listed need to be modified, please contact RRS for further evaluation.

REGENESIS developed this Scope of Work in reliance upon the data and professional judgements provided by those whom completed the earlier environmental site assessment(s), and in reliance upon REGENESIS' prior experience on similar project sites. The fees and charges associated with the Scope of Work were generated through REGENESIS' proprietary formulas and thus may not conform to billing guidelines, constraints or other limit on fees. REGENESIS does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where REGENESIS may serve as a supplier or subcontractor to an entity which seeks reimbursement from the Government for all or part of the services performed or products provided by REGENESIS, it is the sole responsibility of the entity seeking reimbursement to ensure the Scope of Work and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity which seeks reimbursement from Government, REGENESIS does not knowingly present or cause to be presented any claim for payment to the government.

PROFESSIONAL JUDGEMENT: In generating this estimate, REGENESIS relied upon professional judgement and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

Terms & Conditions

1. **PAYMENT TERMS.** Net 30 Days. Accounts outstanding after 30 days will be assessed 1.5% monthly interest. Volume discount pricing will be rescinded on all accounts outstanding over 90 days. An early payment discount of 1.5% Net 10 is available for cash or check payments only. We accept Master Card, Visa and American Express.
2. **RETURN POLICY.** A 15% re-stocking fee will be charged for all returned goods. All requests to return product must be pre-approved by seller. Returned product must be in original condition and no product will be accepted for return after a period of 90 days.
3. **FORCE MAJEURE.** Seller shall not be liable for delays in delivery or services or failure to manufacture or deliver due to causes beyond its reasonable control, including but not limited to acts of God, acts of buyer, acts of military or civil authorities, fires, strikes, flood, epidemic, war, riot, delays in transportation or car shortages, or inability to obtain necessary labor, materials, components or services through seller's usual and regular sources at usual and regular prices. In any such event Seller may, without notice to buyer, at any time and from time to time, postpone the delivery or service dates under this contract or make partial delivery or performance or cancel all or any portion of this and any other contract with buyer without further liability to buyer. Cancellation of any part of this order shall not affect Seller's right to payment for any product delivered or service performed hereunder.
4. **LIMITED WARRANTY.** Seller warrants the product(s) sold and services provided as specified on face of invoice, solely to buyer. Seller makes no other warranty of any kind respecting the product and services, and expressly DISCLAIMS ALL OTHER WARRANTIES OF WHATEVER KIND RESPECTING THE PRODUCT AND SERVICES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AND NON-INFRINGEMENT.
5. **DISCLAIMER.** Where warranties to a person other than buyer may not be disclaimed under law, seller extends to such a person the same warranty seller makes to buyer as set forth herein, subject to all disclaimers, exclusions and limitations of warranties, all limitations of liability and all other provisions set forth in the Terms and Conditions herein. Buyer agrees to transmit a copy of the Terms and Conditions set forth herein to any and all persons to whom buyer sells, or otherwise furnishes the products and/or services provided buyer by seller and buyer agrees to indemnify seller for any liability, loss, costs and attorneys' fees which seller may incur by reason, in whole or in part, of failure by buyer to transmit the Terms and Conditions as provided herein.
6. **LIMITATION OF SELLER'S LIABILITY AND LIMITATION OF BUYER'S REMEDY.** Seller's liability on any claim of any kind, including negligence, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair or use of any goods or performance of any services covered by or furnished hereunder, shall in no case exceed the lesser of (1) the cost of repairing or replacing goods and repeating the services failing to conform to the foregoing warranty or the price of the goods and/or services or part thereof which gives rise to the claim. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, OR FOR DAMAGES IN THE NATURE OF PENALTIES.
7. **INDEMNIFICATION.** Buyer agrees to defend and indemnify seller of and from any and all claims or liabilities asserted against seller in connection with the manufacture, sale, delivery, resale or repair or use of any goods, and performance of any services, covered by or furnished hereunder arising in whole or in part out of or by reason of the failure of buyer, its agents, servants, employees or customers to follow instructions, warnings or recommendations furnished by seller in connection with such goods and services, by reason of the failure of buyer, its agents, servants, employees or customers to comply with all federal, state and local laws applicable to such goods and services, or the use thereof, including the Occupational Safety and Health Act of 1970, or by reason of the negligence or misconduct of buyer, its agents, servants, employees or customers.

8. **EXPENSES OF ENFORCEMENT.** In the event seller undertakes any action to collect amounts due from buyer, or otherwise enforce its rights hereunder, Buyer agrees to pay and reimburse Seller for all such expenses, including, without limitation, all attorneys and collection fees.
9. **TAXES.** Liability for all taxes and import or export duties, imposed by any city, state, federal or other governmental authority, shall be assumed and paid by buyer. Buyer further agrees to defend and indemnify seller against any and all liabilities for such taxes or duties and legal fees or costs incurred by seller in connection therewith.
10. **ASSISTANCE AND ADVICE.** Upon request, seller in its discretion will furnish as an accommodation to buyer such technical advice or assistance as is available in reference to the goods and services. Seller assumes no obligation or liability for the advice or assistance given or results obtained, all such advice or assistance being given and accepted at buyer's risk.
11. **SITE SAFETY.** Buyer shall provide a safe working environment at the site of services and shall comply with all applicable provisions of federal, state, provincial and municipal safety laws, building codes, and safety regulations to prevent accidents or injuries to persons on, about or adjacent to the site.
12. **INDEPENDENT CONTRACTOR.** Seller and Buyer are independent contractors and nothing shall be construed to place them in the relationship of partners, principal and agent, employer/employee or joint ventures. Neither party will have the power or right to bind or obligate the other party except as may be expressly agreed and delegated by other party, nor will it hold itself out as having such authority.
13. **REIMBURSEMENT.** Seller shall provide the products and services in reliance upon the data and professional judgments provided by or on behalf of buyer. The fees and charges associated with the products and services thus may not conform to billing guidelines, constraints or other limits on fees. Seller does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where seller may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by seller, it is the sole responsibility of the buyer or other entity seeking reimbursement to ensure the products and services and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from the Government, seller does not knowingly present or cause to be presented any claim for payment to the Government.
14. **APPLICABLE LAW/JURISDICTION AND VENUE.** The rights and duties of the parties shall be governed by, construed, and enforced in accordance with the laws of the State of California (excluding its conflict of laws rules which would refer to and apply the substantive laws of another jurisdiction). Any suit or proceeding hereunder shall be brought exclusively in state or federal courts located in Orange County, California. Each party consents to the personal jurisdiction of said state and federal courts and waives any objection that such courts are an inconvenient forum.
15. **ENTIRE AGREEMENT.** This agreement constitutes the entire contract between buyer and seller relating to the goods or services identified herein. No modifications hereof shall be binding upon the seller unless in writing and signed by seller's duly authorized representative, and no modification shall be effected by seller's acknowledgment or acceptance of buyer's purchase order forms containing different provisions. Trade usage shall neither be applicable nor relevant to this agreement, nor be used in any manner whatsoever to explain, qualify or supplement any of the provisions hereof. No waiver by either party of default shall be deemed a waiver of any subsequent default.

SAFETY DATA SHEET

1. Identification

Product identifier **SourceStop® Liquid**

Other means of identification None.

Recommended use Soil and Groundwater Remediation.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company Name REGENESIS

Address 1011 Calle Sombra
San Clemente, CA 92673 USA

General information 949-366-8000

E-mail CustomerService@regenesis.com

Emergency phone number For Dangerous Goods Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC 24/7 at:

USA, Canada 1-800-424-9300

International +1 703-741-5970

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement The mixture does not meet the criteria for classification.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash hands after handling.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information Contact with acids liberates toxic gas.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Activated Carbon <10 µm	7440-44-0	30 - 40
Proprietary Additives	-	≤ 4
Sodium bisulfite	7631-90-5	≤ 2

Composition comments All concentrations are in percent by weight unless otherwise indicated.
Components not listed are either non-hazardous or are below reportable limits.
The specific identities of some of the components of this product are being withheld as trade secrets. However, all pertinent hazards are addressed in this SDS.

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed. Combustion products may include: carbon oxides, sulfur oxides. Dust accumulation from dried product may form combustible dust concentrations in air.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	This material will not burn until the water has evaporated. Residue can burn.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Avoid prolonged exposure. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Activated Carbon <10 µm (CAS 7440-44-0)	TWA	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Activated Carbon <10 µm (CAS 7440-44-0)	TWA	2 mg/m3	Respirable fraction.
Sodium bisulfite (CAS 7631-90-5)	TWA	5 mg/m3	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium bisulfite (CAS 7631-90-5)	TWA	5 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. Glove material: Rubber or vinyl-coated. Use gloves with breakthrough time of >480 minutes. Minimum glove thickness >0.11 mm.

Skin protection

Other Wear suitable protective clothing.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Aqueous suspension.

Color Black.

Odor Odorless.

Odor threshold Property has not been measured.

pH 7 - 9

Melting point/freezing point Property has not been measured.

Initial boiling point and boiling range Property has not been measured.

Flash point Property has not been measured.

Evaporation rate Property has not been measured.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Explosive limit - lower (%) Property has not been measured.

Explosive limit - upper (%) Property has not been measured.

Vapor pressure Property has not been measured.

Vapor density Property has not been measured.

Relative density Property has not been measured.

Solubility(ies)

Solubility (water) Miscible

Partition coefficient (n-octanol/water) Property has not been measured.

Auto-ignition temperature Property has not been measured.

Decomposition temperature Property has not been measured.

Viscosity Property has not been measured.

Other information

Explosive properties Not explosive.

Kinematic viscosity Property has not been measured.

Oxidizing properties Not oxidizing.

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous reactions Contact with acids liberates toxic gas.

Conditions to avoid Contact with incompatible materials.

Incompatible materials Acids. Chlorine. Strong oxidizing agents.

Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation Spray mist may irritate the respiratory system. For dry material: Dust may irritate respiratory system.

Skin contact Prolonged or repeated exposure may cause minor irritation.

Eye contact Direct contact with eyes may cause temporary irritation.

Ingestion May cause discomfort if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

Components	Species	Test Results
Activated Carbon <10 µm (CAS 7440-44-0)		
Acute		
Oral		
LD50	Rat	> 10000 mg/kg

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Sodium bisulfite (CAS 7631-90-5) 3 Not classifiable as to carcinogenicity to humans.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Further information Contains an ingredient known to produce adverse effects in a small percentage of hypersensitive individuals exhibited as respiratory distress and allergic skin reactions.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulative potential No data available.

Mobility in soil The product is miscible with water. May spread in water systems.

Other adverse effects No data available.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium bisulfite (CAS 7631-90-5) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Toxic Substances Control Act (TSCA) All components of the mixture on the TSCA 8(b) inventory are designated “active”.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Sodium bisulfite (CAS 7631-90-5)

US. New Jersey Worker and Community Right-to-Know Act

Sodium bisulfite (CAS 7631-90-5)

US. Pennsylvania Worker and Community Right-to-Know Law

Sodium bisulfite (CAS 7631-90-5)

US. Rhode Island RTK

Activated Carbon <10 µm (CAS 7440-44-0)
Sodium bisulfite (CAS 7631-90-5)

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 25-May-2022

Revision date -

Version # 01

HMIS® ratings Health: 0
Flammability: 1
Physical hazard: 0
Personal protection: B

Disclaimer Regenesis cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

ATTACHMENT C
MONITORING WELL LOGS

EFR HQ SOURCE AREA INTERIM ACTION
Eastside Fire and Rescue
175 Newport Way Northwest
Issaquah, Washington

Farallon PN: 1754-009

FARALLON CONSULTING

Log of Boring: NWN-MW04

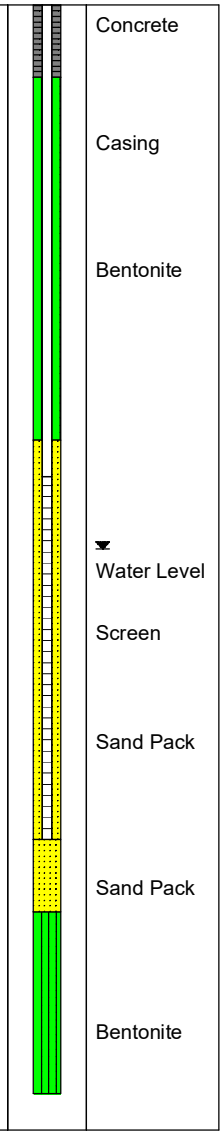
Client: Eastside Fire & Rescue
Project: PFAS Characterization
Location: Issaquah, WA

Farallon PN: 1754-002

Logged By: A. Burns

Date/Time Started:	10/19/18 @ 9:30	**Sampler Type:**	4" Core Barrel
Date/Time Completed:	10/19/18 @ 12:00	**Drive Hammer (lbs.):**	NA
Equipment:	TerraSonic CC 150	**Depth of Water ATD (ft bgs):**	15.0
Drilling Company:	Holt Drilling	**Total Boring Depth (ft bgs):**	30.0
Drilling Foreman:	Dave Dickerson	**Total Well Depth (ft bgs):**	23.0
Drilling Method:	Sonic		

Depth (feet bgs.)	Lithologic Description	USCS	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed
0	0.0-1.5': Cleared for drilling. No recovery. Cleared 0.0-5.0' bgs for utilities.						
	1.5-2.5': Silty SAND (70% sand, 25% silt, 5% gravel) fine to coarse gravel, fine to medium sand, brown and black, moist, organic odor. Organics present.	SM / ML					
5	2.5-7.0': SILT with sand (75% silt, 15% sand, 5% gravel) fine sand and gravel, gray and brown, moist, no odor.		100			NWN-MW04-181019-5 NWN-MW04-181019-DUP	X X
	7.0-8.0': SILT with sand (75% silt, 15% sand, 5% gravel) fine sand and gravel, gray and brown mottling, moist, no odor.	ML / SP					
10	8.0-10.0': Poorly graded SAND with silt (90% sand, 10% silt) fine to medium sand, brown, moist, no odor.	SP-SM					
	10.0-11.0': Poorly graded SAND with silt and gravel (70% sand, 20% gravel, 10% silt) fine to medium sand, fine gravel, gray, moist, no odor.	SP					
	11.0-12.0': Poorly graded SAND (100% sand) fine to medium sand, gray and brown, moist, no odor.	GW				NWN-MW04-181019-13	X
15	12.0-15.0': Well-graded GRAVEL and sand (60% gravel, 40% sand) trace silt, fine to coarse sand and gravel, brown, moist, wet at ~15' bgs, no odor.	GW	90				
	15.0-19.0': Well-graded GRAVEL and sand (80% gravel, 20% sand) fine to coarse gravel, medium to coarse sand, brown, brown-black from 16 to 17' bgs, wet, no odor. Cobbles present.						
20	19.0-20.0': No recovery.	GW					
	20.0-21.0': Well-graded GRAVEL and sand (60% gravel, 40% sand) trace silt, fine to coarse sand and gravel, brown, wet, no odor.	GW					
	21.0-23.0': Well-graded GRAVEL with sand (80% gravel, 15% sand, 5% silt) fine to coarse gravel, fine to medium sand, wet, no odor. Cobbles present.	ML					
25	23.0-30.0': SILT (100% silt) gray, moist, no odor, dense. Trace gravel 23 to 26' bgs. Trace sand lenses 26 to 30' bgs.		100				
30							



Well Construction Information

Monument Type:	Flush Mount	**Filter Pack:**	12-20 Sand Pack	**Ground Surface Elevation (ft):**	90.68
Casing Diameter (inches):	2	**Surface Seal:**	Concrete	**Top of Casing Elevation (ft):**	90.41
Screen Slot Size (inches):	0.010	**Annular Seal:**	Bentonite	**Surveyed Location:**	**X:** NA
Screened Interval (ft bgs):	13-23	**Boring Abandonment:**	NA		**Y:** NA

FARALLON CONSULTING

Log of Boring: NWN-MW10

Client: Eastside Fire & Rescue
Project: 175 Newport Way
Location: Issaquah, WA

Farallon PN: 1754-005

Logged By: G. McKenney

Date/Time Started: 6/15/21 @ 1450
Date/Time Completed: 6/15/21 @ 1535
Equipment: Geoprobe 3230 WT
Drilling Company: AEC
Drilling Foreman: Levi Maynard
Drilling Method: Direct Push

Sampler Type: 5' Acetate Sleeve
Drive Hammer (lbs.): Auto
Depth of Water ATD (ft bgs): 19.0
Total Boring Depth (ft bgs): 28.0
Total Well Depth (ft bgs): 28.0

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-7.0': Poorly graded SAND with silt (80% sand, 10% silt, 10% gravel), fine sand, fine gravel, brown, moist, no odor, no staining. Hand cleared 0.0-5.0' bgs for utilities.	SP-SM				0.1	NWN-MW10-3		Well Monument; Cement; Bentonite
5					100		0.1	NWN-MW10-5		Well Casing
		7.0-14.0': Well graded GRAVEL with silt and sand (60% gravel, 30% sand, 10% silt), fine to coarse gravel, subangular to subrounded, light brown to brown, dry to moist, no odor, no staining.	GW-GM							
10					100		0.0	NWN-MW10-10		Well Screen
		14.0-15.0': No recovery.			80					
15		15.0-19.0': Well graded GRAVEL with silt and sand (60% gravel, 30% sand, 10% silt), fine to coarse gravel, subangular to subrounded, brown, moist, no odor, no staining.	GW-GM							Sand Pack
		19.0-27.0': Well graded GRAVEL with silt and sand (60% gravel, 30% sand, 10% silt), fine to coarse gravel, subangular to	GW-GM							
20										

Well Construction Information

Monument Type: Steel Riser
Casing Diameter (inches): 2"
Screen Slot Size (inches): 0.020
Screened Interval (ft bgs): 10.0-25.0

Filter Pack: 12/20 Sand
Surface Seal: Cement
Annular Seal: Bentonite
Boring Abandonment: NA

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: X: NA Y: NA
Unique Well ID: NA

FARALLON CONSULTING

Log of Boring: NWN-MW10

Client: Eastside Fire & Rescue
Project: 175 Newport Way
Location: Issaquah, WA

Farallon PN: 1754-005

Logged By: G. McKenney

Date/Time Started: 6/15/21 @ 1450
Date/Time Completed: 6/15/21 @ 1535
Equipment: Geoprobe 3230 WT
Drilling Company: AEC
Drilling Foreman: Levi Maynard
Drilling Method: Direct Push

Sampler Type: 5' Acetate Sleeve
Drive Hammer (lbs.): Auto
Depth of Water ATD (ft bgs): 19.0
Total Boring Depth (ft bgs): 28.0
Total Well Depth (ft bgs): 28.0

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
25		subrounded, brown, wet, no odor, no staining.			100					
					100					
		27.0-28.0': SILT (100% silt), very dense, gray, moist, no odor, no staining.	ML							
30					100					

Well Construction Information

Monument Type: Steel Riser
Casing Diameter (inches): 2"
Screen Slot Size (inches): 0.020
Screened Interval (ft bgs): 10.0-25.0

Filter Pack: 12/20 Sand
Surface Seal: Cement
Annular Seal: Bentonite
Boring Abandonment: NA

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: X: NA Y: NA
Unique Well ID: NA

FARALLON CONSULTING

Log of Boring: NWN-MW12

Client: Eastside Fire & Rescue
Project: 175 Newport Way
Location: Issaquah, WA

Farallon PN: 1754-005

Logged By: G. McKenney

Date/Time Started: 6/15/21 @ 1350
Date/Time Completed: 6/15/21 @ 1430
Equipment: Geoprobe 3230 WT
Drilling Company: AEC
Drilling Foreman: Levi
Drilling Method: Direct Push

Sampler Type: 5' Acetate Sleeve
Drive Hammer (lbs.): Auto
Depth of Water ATD (ft bgs): 15.0
Total Boring Depth (ft bgs): 26.0
Total Well Depth (ft bgs): 26.0

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-5.0': Poorly graded SAND with silt (80% sand, 10% silt, 10% gravel), fine to medium sand, fine gravel, dark gray-black, moist, no odor, dark staining and dark stained wood fragments throughout. Hand cleared 0.0-5.0' bgs for utilities.	SP-SM				0.1	NWN-MW12-3		Well Monument; Cement; Bentonite
5		5.0-6.5': SILT (100% silt), gray-green, moist, no odor, no staining.	ML		100		0.1	NWN-MW12-5		Well Casing
		6.5-7.0': Well-graded GRAVEL with silt and sand (50% gravel, 40% sand, 10% silt), fine to coarse gravel, fine to medium sand, gray-green, moist, no odor.	GW-GM		40					
		7.0-10.0': No recovery.								
10		10.0-13.0': SILT (100% silt), gray-green, moist, no odor, no staining.	ML				0.0	NWN-MW12-10		Well Screen
		13.0-14.0': Poorly graded SAND with gravel and silt.	SP-SM							
		14.0-15.0': Well-graded GRAVEL.	GW							
15		15.0-20.0': Well-graded GRAVEL with silt and sand (50% gravel, 40% sand, 10% silt), fine to coarse gravel, subrounded to subangular, fine sand, brown with orange mottling, wet, no odor, no staining.	GW-GM		100					Water Level; Sand Pack
20										

Well Construction Information

Monument Type: Steel Riser
Casing Diameter (inches): 2"
Screen Slot Size (inches): 0.020
Screened Interval (ft bgs): 8.0-23.0

Filter Pack: 12/20 Sand
Surface Seal: Cement
Annular Seal: Bentonite
Boring Abandonment: NA

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: X: NA Y: NA
Unique Well ID: NA

FARALLON CONSULTING

Log of Boring: NWN-MW12

Client: Eastside Fire & Rescue
Project: 175 Newport Way
Location: Issaquah, WA

Farallon PN: 1754-005

Logged By: G. McKenney

Date/Time Started: 6/15/21 @ 1350
Date/Time Completed: 6/15/21 @ 1430
Equipment: Geoprobe 3230 WT
Drilling Company: AEC
Drilling Foreman: Levi
Drilling Method: Direct Push

Sampler Type: 5' Acetate Sleeve
Drive Hammer (lbs.): Auto
Depth of Water ATD (ft bgs): 15.0
Total Boring Depth (ft bgs): 26.0
Total Well Depth (ft bgs): 26.0

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
25		20.0-25.0': Well-graded GRAVEL with silt and sand (60% gravel, 30% sand, 10% silt), fine to coarse gravel, subrounded to subangular, fine to medium sand, brown, wet, no odor, no staining.	GW-GM		100					
		25.0-26.0': SILT (100% silt), very dense, gray, moist, no odor, no staining.	ML		100					

Well Construction Information

Monument Type: Steel Riser
Casing Diameter (inches): 2"
Screen Slot Size (inches): 0.020
Screened Interval (ft bgs): 8.0-23.0

Filter Pack: 12/20 Sand
Surface Seal: Cement
Annular Seal: Bentonite
Boring Abandonment: NA

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: X: NA Y: NA
Unique Well ID: NA

FARALLON CONSULTING

Log of Boring: NWN-MW13

Client: Eastside Fire & Rescue
Project: 175 Newport Way
Location: Issaquah, WA

Farallon PN: 1754-005

Logged By: G. McKenney

Date/Time Started: 6/15/21 @ 1210
Date/Time Completed: 6/15/21 @ 1230
Equipment: Geoprobe 3230 WT
Drilling Company: AEC
Drilling Foreman: Levi Maynard
Drilling Method: Direct Push

Sampler Type: 5' Acetate Sleeve
Drive Hammer (lbs.): Auto
Depth of Water ATD (ft bgs): 12.0
Total Boring Depth (ft bgs): 20.0
Total Well Depth (ft bgs): 18.0

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-5.0': SILT with sand (80% silt, 10% sand, 10% gravel), fine sand, fine gravel, dark brown, moist, no odor, no staining, root fibers throughout. Hand cleared 0.0-5.0' bgs for utilities.	ML				0.1	NWN-MW13-3		Steel Riser; Cement Bentonite; Well Screen
5		5.0-8.0': SILT (100% silt), brown with orange mottling, moist, no odor, no staining.	ML		100		0.1	NWN-MW13-5		
		8.0-12.0': SILTY SAND with gravel (70% sand, 15% silt, 15% gravel), fine to medium sand, fine to coarse gravel, brown, moist, no odor, no staining.	SM		100		0.0	NWN-MW13-10		
10		12.0-16.0': Well graded GRAVEL with silt and sand (50% gravel, 40% sand, 10% silt), fine to coarse gravel, subangular to subrounded, brown, wet, no odor, no staining.	GW-GM							
15		16.0-17.5': Poorly graded SAND (95% sand, 5% silt), fine sand, gray, wet, no odor, no staining.	SP		100					
		17.5-19.0': Well graded GRAVEL with sand (60% gravel, 40% sand), fine to coarse gravel, brown, wet, no odor, no staining.	GW							Sand Pack
		19.0-20.0': No recovery.			80					
20										

Well Construction Information

Monument Type: Steel Riser
Casing Diameter (inches): 2"
Screen Slot Size (inches): 0.020
Screened Interval (ft bgs): 3.0-18.0

Filter Pack: 12/20 Sand
Surface Seal: NA
Annular Seal: Bentonite
Boring Abandonment: NA

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Surveyed Location: X: NA Y: NA
Unique Well ID: NA

Log of Boring: NWN-MW17

Client: Eastside Fire and Rescue
Project: 175 NWN Data Gap Eval
Location: Issaquah, WA
Farallon PN: 1754-006
Logged By: G. Peters
Reviewed By: S. Brown

Date/Time Started:	8/15/22 @1345	**Depth to Water ATD (ft bgs):**	18.65
Date/Time Completed:	8/15/22 @1700	**Boring Diameter (in):**	8.0
Drilling Company:	Holt	**Total Boring Depth (ft bgs):**	25.0
Drilling Method:	Sonic	**Constructed Well Depth (ft bgs):**	25.0
Drilling Equipment:	Terra Sonic		
Drilling Operator:	Jeff Johnson		
Sampler Type:	10" Core Barrel		

DRAFT

Depth (ft bgs)	Sample Interval	Lithologic Description	USCS	USCS Graphic	% Recovery	PID (ppmv)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		0.0-0.1': Airknife to 5.0' bgs to clear for utilities. Soil not logged.							Cement
5		5.0-10.0': Poorly-graded SAND with gravel (80% sand, 15% gravel, 5% silt), medium to coarse sand, fine gravel, brown, moist, no odor, no staining.	SP		100				Bentonite
10		10.0-15.0': Poorly-graded SAND with gravel (80% sand, 15% gravel, 5% silt), medium to coarse sand, fine gravel, brown, moist, no odor, no staining.	SP		100				Sandpack
15		15.0-20.0': Poorly-graded SAND with gravel (80% sand, 15% gravel, 5% silt), medium to coarse sand, fine gravel, brown, moist, no odor, no staining.	SP		100				Screen
20		20.0-25.0': Poorly-graded GRAVEL with sand (70% gravel, 30% sand), coarse sand, fine and coarse gravel, brown, wet, no odor, no staining,	GP		100				Water Level
25									

Well Construction Information

Monument Type:	Flush	**Filter Pack:**	12/20 Sand	**Ground Surface Elevation (ft):**	N/A
Casing Diameter (in):	2.0	**Surface Seal:**	Bentonite	**Top of Casing Elevation (ft):**	N/A
Screen Slot Size (in):	0.010	**Annular Seal:**	Cement	**Surveyed Location: X:** N/A	**Y:** N/A
Screened Interval (ft bgs):	10.0-25.0'	**Boring Abandonment:**	N/A	**Unique Well ID:** BPK-738	

APPENDIX B
INJECTION AND IN-SITU STABILIZATION DESIGN DOCUMENTS

ENGINEERING DESIGN REPORT
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

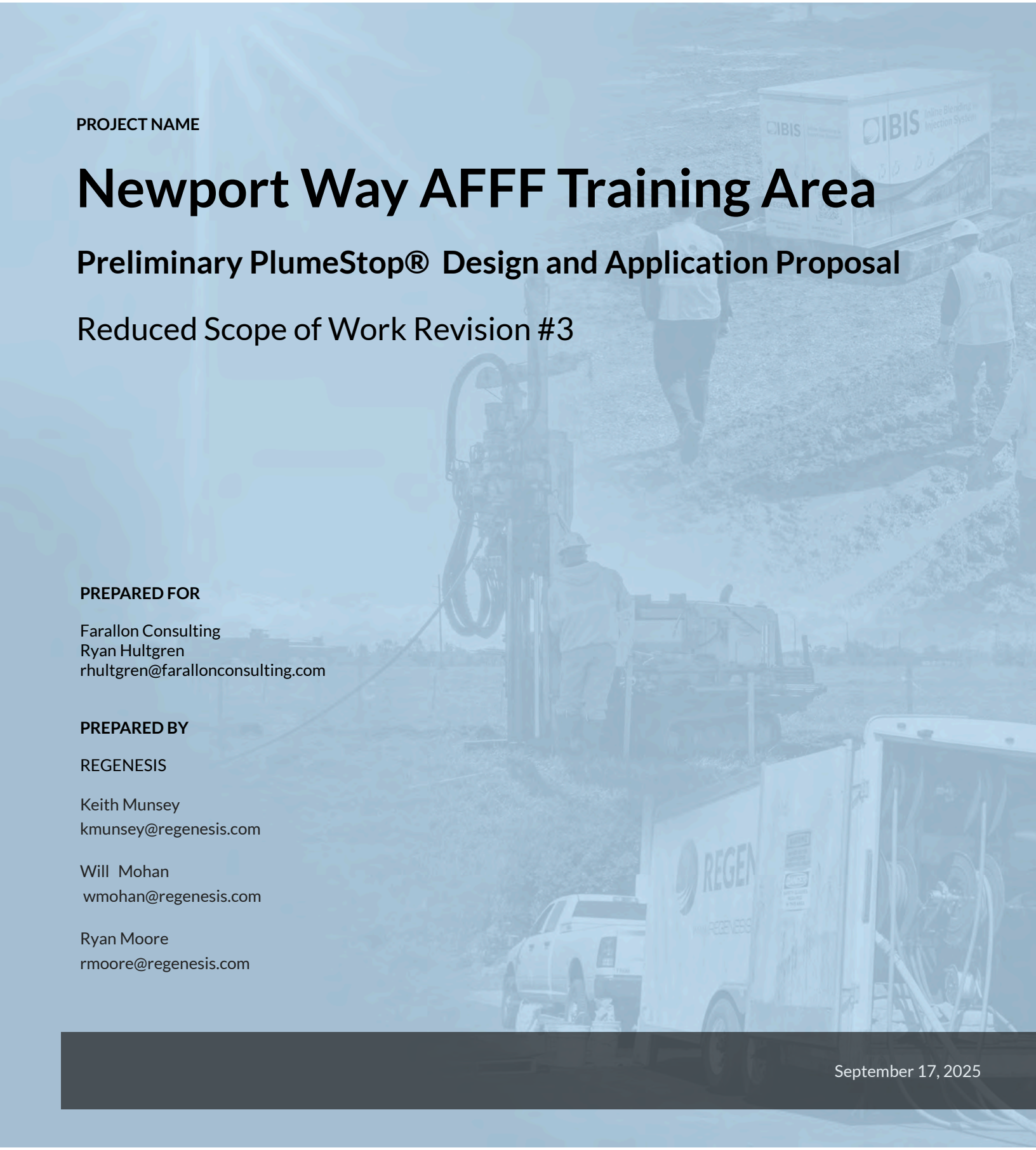
REGENESIS®

PROJECT NAME

Newport Way AFFF Training Area

Preliminary PlumeStop® Design and Application Proposal

Reduced Scope of Work Revision #3



PREPARED FOR

Farallon Consulting
Ryan Hultgren
rhultgren@farallonconsulting.com

PREPARED BY

REGENESIS

Keith Munsey
kmunsey@regenesis.com

Will Mohan
wmohan@regenesis.com

Ryan Moore
rmoore@regenesis.com

September 17, 2025

Project Summary

In this document, REGENESIS outlines a comprehensive approach, encompassing the proposed solution, project objectives, recommended technologies, a concise application design summary, and a treatment area depiction.

Proposed Approach

REGENESIS Remediation Services (RRS) will install a PlumeStop® Colloidal Activated Carbon™ (PlumeStop) permeable adsorptive barrier (PAB) to stop per- and polyfluoroalkyl substances (PFAS) from migrating off-site. The PlumeStop PRB will remove PFAS from the aqueous phase by greatly enhancing PFAS sorption onto the aquifer matrix, preventing further plume migration and eliminating the potential exposure risk.

This proposal provides remedial designs and cost estimates for the following:

- Installation of a 273-foot long PRB with an estimated treatment depth generally between 6' to 26' below ground surface (bgs), but variable throughout the proposed barrier. See Figures 1 and 2.
- The design accounts for spatial and seasonal variations in water table depth, performance well screen intervals, and estimated depth to refusal on the hard silt layer. See Figure 1 and the Remedial Design Table on page 4.
- A portion of the PRB will provide a single row of points to fortify the previous pilot test barrier segment.
- Regenesis will do some initial site testing during the first few field days. RRS will conduct injection testing in the vadose zone to optimize PlumeStop distribution.
- The proposed barrier is designed to provide PFAS treatment for decades.

Treatment Objective

- The treatment objectives are based on the State of Washington MTCA Method B for PFAS Compounds for perfluorooctane sulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), and perfluorohexane sulfonic acid (PFHxS).

Projected Cost

- **$667,098.55**
- *A 10-year PlumeShield® Performance Warranty may be included upon review of the final site conceptual model and remedial baseline data review at an additional cost.

Case Studies

- PlumeStop Case Study: Martha's Vineyard Airport Successfully Treated Using PlumeStop to Eliminate PFAS
- PlumeStop Case Study: NY Brownfield PFAS + CVOC Remediation
- PlumeStop Case Study: PFAS Treatment at Camp Grayling Army Airfield
- PlumeStop Case Study: Successful Remediation of PFAS at Fairbanks Alaska Airport

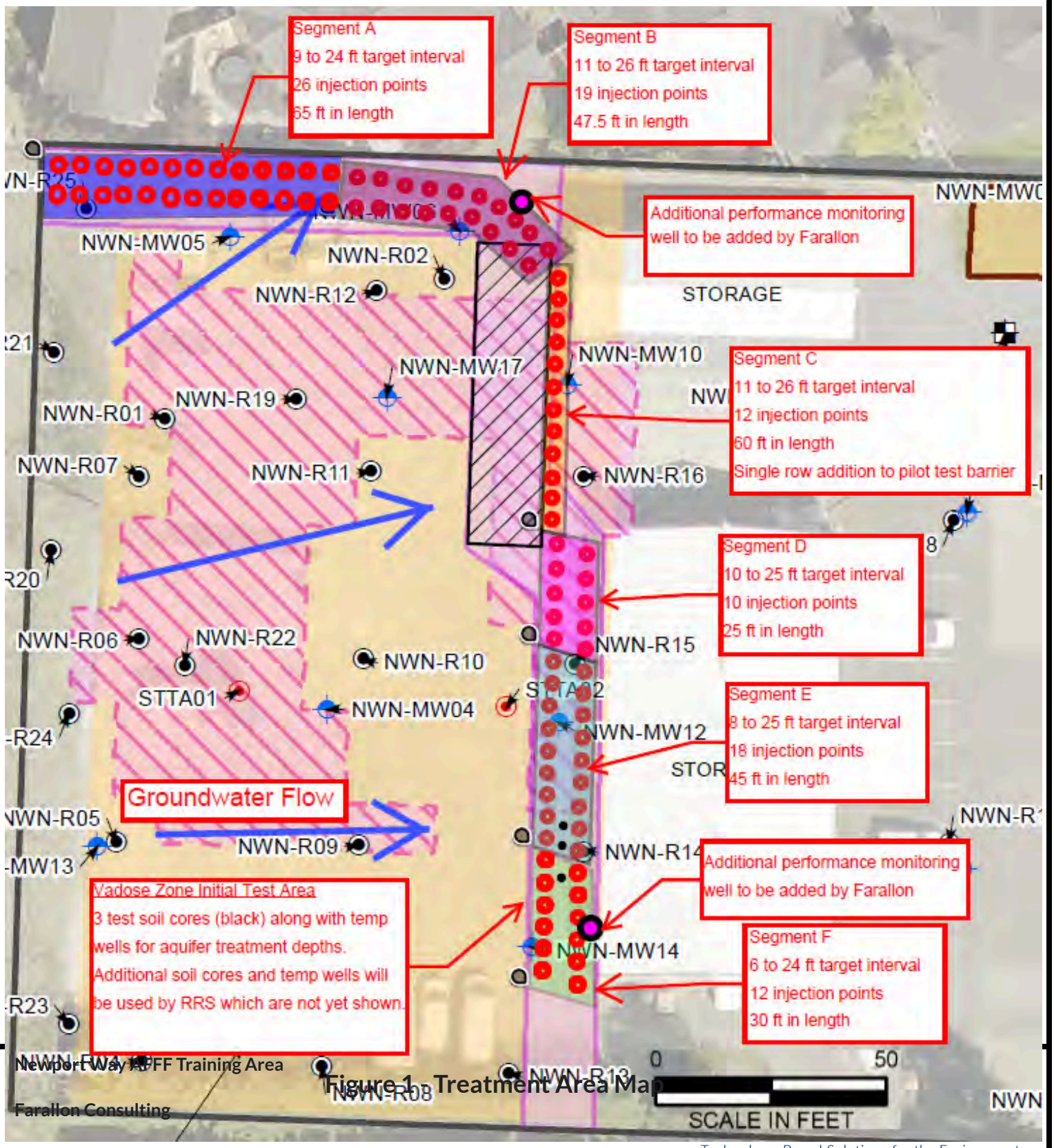
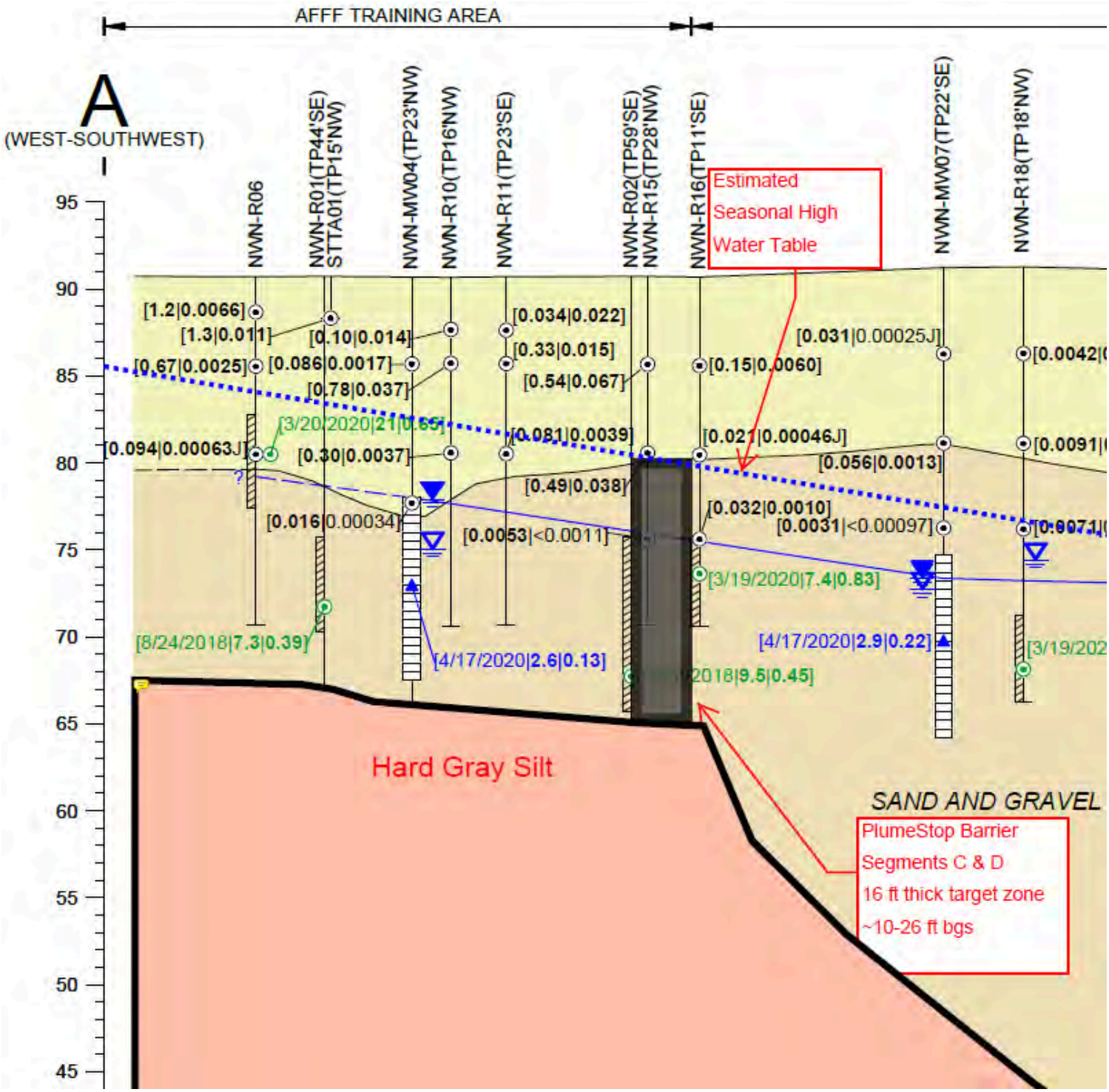


Figure 1. Treatment Area Map

Newport Way AFFF Training Area

Farallon Consulting

September 17, 2025



Newport Way AFFF Training Area

Farallon Consulting

September 17, 2025

Figure 2 - Generalized Cross Section of Treatment Zone

REGENESIS
Technology-Based Solutions for the Environment

Project Info

EFR HQ IVES Site - 175 Newport Way NW

Issaquah, WA

Full Scale PlumeStop Barrier Design - Dissolved Phase PFAS Plume

Prepared For:

Farallon Consulting

Design Information	Segment A	Segment B	Segment C	Segment D	Segment E	Segment F	Totals
PlumeStop lbs	14,813	10,825	6,837	5,697	11,623	8,204	58000
Number of Pts	26	19	12	10	18	12	97
Row Type	Double	Double	Single	Double	Double	Double	Double
Injection Spacing (ft)	5	5	5	5	5	5	5
Total Length (ft)	65	47.5	60	25	45	30	273
Vadose Zone Interval (ft)	9 to 13	11 to 15	11 to 15	10 to 14	8 to 12	6 to 10	
Aquifer Zone Interval (ft)	13 to 24	15 to 26	15 to 26	14 to 25	12 to 25	10 to 24	
Vadose Injection Concentration (mg/L)	16,551	16,551	16,551	16,551	16,551	16,551	
Aquifer Injection Concentration (mg/L)	22,758	22,758	22,758	22,758	22,758	22,758	
Gallons Per Foot - Vadose Zone*	55.00	55.00	55.00	55.00	55.00	55.00	
Gallons Per Foot - Aquifer Zone	40.00	40.00	40.00	40.00	40.00	40.00	
Total Gallons Injected	17,086	12,486	7,886	6,572	13,406	9,463	66900

PlumeStop is to be applied via DPT injection using bottom up injections with 2 ft retractable screens. Actual target interval to be adjusted based on inj pt location, depth to refusal and seasonal high groundwater depth. Proposed target intervals are shown on Figure 1. Product may be shifted to other intervals or nearest borings to compensate for drilling or injection conditions throughout the barrier. The barrier is to be a staggard double row, with the exception along the pilot test section, (Segment C) which is to be a single row. The upper 4 feet of the target interval is to be injected at 55 gallons per ft @16,551 mg/L and the lower sections injected at 40 gallons per ft @22,758 mg/L. The total barrier length, when installed, will be about 273 linear ft.

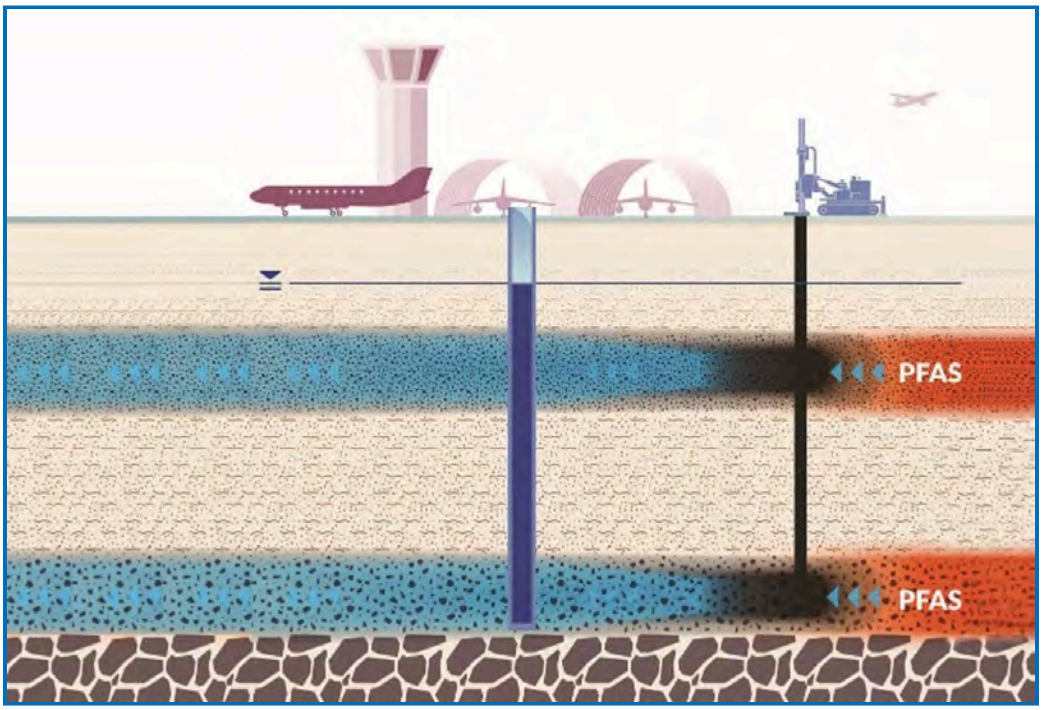
Technical Approach

RRS will apply PlumeStop in a PAB configuration across the plume to intercept and treat the PFAS mass flux zones, thereby removing the PFAS contaminants in groundwater. Deploying this approach will prevent the further expansion of the contamination plume, significantly reducing the potential exposure risk to downgradient receptors. This PRB will be applied as indicated in Figure 1 above.

PlumeStop's patented CAC formula* contains organic polymers that maintain blood-cell-sized (i.e., 1 to 2 microns) carbon particles in suspension without clumping. This key material innovation of PlumeStop allows it to move through the much larger soil/rock pore throats while uniformly painting the subsurface materials with highly reactive carbon. Without this innovation, the carbon particles aggregate and cannot be injected into a treatment area without creating significant gaps in the treatment that render it ineffective.

With the aquifer matrix transformed into a vast sorption surface totaling 100 acres per pound of CAC, this groundbreaking technology facilitates rapid contaminant sorption. PlumeStop routinely eliminates groundwater contaminants within a treatment area by the first post-injection monitoring event, making it a solution that can quickly achieve the most stringent cleanup goals.

*US Patents: 7,585,132; 9,770,743; 9,776,898; 10,005,684. Europe Patents: 3,027,562 and 3,105,190.



PlumeStop is applied as a permeable barrier transecting a contaminant mass flux zone.

Qualifiers (Design Considerations)

A list of pertinent qualifiers has been provided below to define the performance expectations for this remedy. REGENESIS will be happy to discuss these with you in detail.

- Seepage velocity/mass flux is a primary driver in determining the required PlumeStop dosing of a treatment zone. Passive flux meters have already been installed at the site during the pilot test to confirm the contaminant mass flux rates and groundwater velocity.
- Farallon Consulting is responsible for determining the groundwater flow direction, which guides the placement/orientation of the proposed barrier to ensure it is perpendicular to flow throughout the hydrologic cycle. The PRB's location and orientation, as presented in this proposal, are to be confirmed by Farallon Consulting.
- PFAS contaminants located beyond the proposed barrier before implementation may be left untreated. Areas downgradient the PlumeStop barrier are subject to matrix back-diffusion of contaminants, subsurface heterogeneities, and groundwater flow anomalies.
- This design assumes that the overall trend in PFAS concentration is not increasing.
- This design assumes that there is not a significant amount of soil-bound mass near the target area.
- This design assumes that no other incompatible treatments have been applied or will be applied near this barrier in the future.
- The designation of In-Area Performance Monitoring Wells assumes they will be positioned within five (5) feet and downgradient of the PRB.

Performance Objectives and Monitoring

The proposed remedy is intended to inhibit the migration of PFAS compounds emanating downgradient of the installed PRB. Prior to implementation, REGENESIS will work with Farallon Consulting to determine site-specific performance objectives and the applicability of a PlumeShield Performance Warranty.

To measure performance at your site, we recommend that the following analytical parameters be collected at key wells within the zone of influence of treatment. COCs at the site are PFAS compounds.

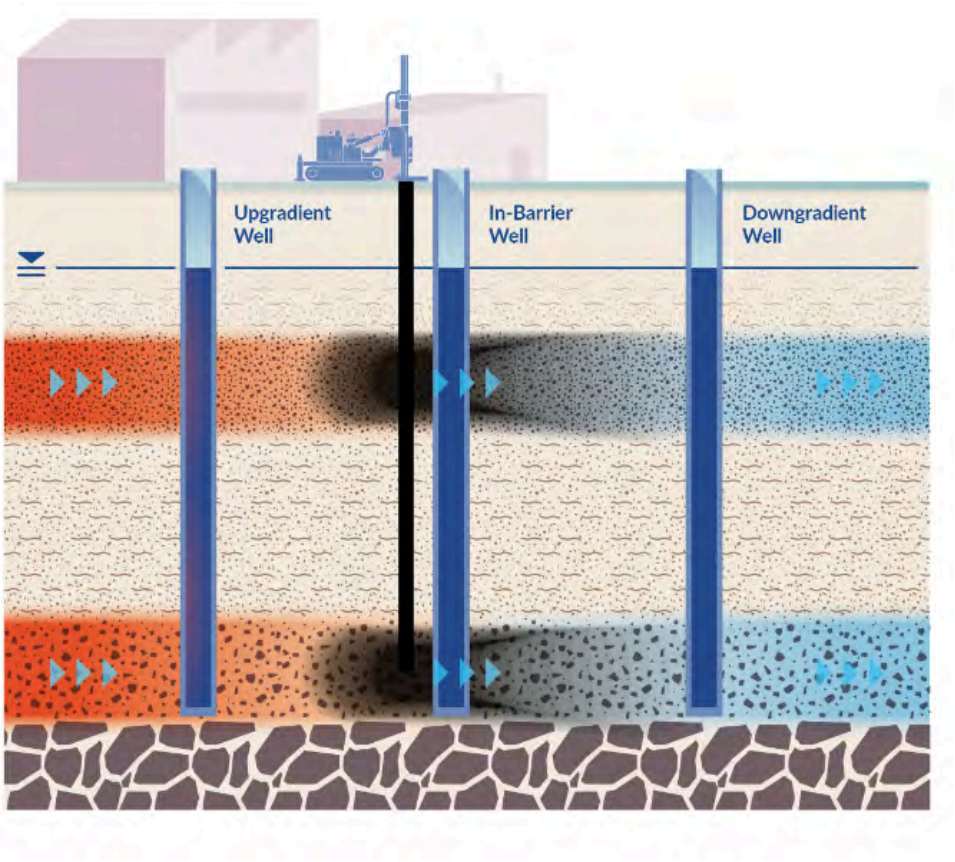
In-Situ Performance Monitoring Parameters	
Analytical Parameter	**Method**
Contaminants of Concern (COC's)	Varies
pH	Meter reading taken in flow-through cell (DO can also be measured with a Hach kit)
Dissolved Oxygen (DO)	
Oxidation Reduction Potential (ORP)	
Total Organic Carbon (TOC)	EPA 415.1 or EPA 9060

The recommended monitoring frequency is quarterly.

REGENESIS recommends that monitoring wells be installed by Farallon and adequately positioned to assess the performance of this remedy. These wells will serve as crucial instruments for reflecting the effectiveness of our treatment process and ensuring regulatory compliance. Additional monitoring wells are shown on Figure 1 near MW-05 and MW-14 and positioned to measured PFAS concentrations from within the barrier treatment.. Note that the new wells should be located within 5 feet and downgradient of the PlumeStop injection points and screened similarly to the nearby upgradient wells.

The figure below visually represents the ideal monitoring well placement to assess the barrier performance.

Recommended Performance Monitoring Well Network



PROJECT SEQUENCE

The table below outlines the sequence of steps toward the final design, warranty applicability, and project implementation.

PROJECT SEQUENCE
☐ **Establish Performance Expectations and Monitoring Requirements** Performance monitoring well network, regulatory targets, and remedial timeframes shall be established before developing a final scope of work.
☐ **Evaluate PlumeShield Performance Warranty Program** Once Performance expectations and monitoring requirements are well understood, REGENESIS will work with Farallon Consulting to determine the applicability and terms of the PlumeShield Warranty Program.
☐ **Finalize Design and Cost Estimate** REGENESIS submits the final design and cost estimate with PlumeShield Warranty Program if applicable.
☐ **Project Implementation** • Sign acceptance of the proposal • Finalize contract documents • Confirm account credit status • Complete remediation services logistics evaluation • Complete Design Verification Testing • Confirm delivery address and date • Schedule application and ship product • Initiate project application • Post remedy sampling • Performance evaluation

RRS Statement of Qualifications

RRS provides turn-key remediation planning, design, and application services. RRS field scientists are college degreed professionals who understand the details of each remediation design, the conceptual site model, the remediation chemistry being applied, the significance of the designed amendment dosing and achieving subsurface distribution, and how a breakdown of any one of these and other factors can result in poor remediation performance. They have the unique background and experience to understand the significance of modifications made in the field.

RRS' direct management of the injection program optimizes the design and ultimately, the overall remedy performance. No one has more professional experience handling and applying *in situ* remediation products than RRS personnel.

RRS has been offering industry-leading application services combined with excellence in field activity management for over a decade. We succeed by meeting the cleanup objectives established by the environmental engineering firms who contract our services. To produce this outcome, we employ field-experienced, disciplined, and dedicated project teams who work with our clients to address the unique requirements of each project site. Astute technical insight and timely, direct, and honest communication are hallmarks of RRS. Our reputation for meeting or exceeding clients' objectives has been proven in project successes throughout North America.

Further information on what sets RRS apart is provided in the following technical resources:

- RRS: Performance Driven, Results Based
- The RRS Difference
- RRS Project Experience

With decades of application experience, RRS is strategically located across the country to mobilize and assist on a wide range of sites throughout the US.

RRS consistently completes over 100 Projects annually across the US. For a current map of projects completed please click t



RRS Scope of Services

RRS, as part of its role, will operate under the guidance of Farallon Consulting to execute the remedial actions in the field, employing the chosen remediation methodologies. The collaboration between RRS and Farallon Consulting will entail joint responsibilities in carrying out this scope of services. The distribution of responsibilities is elaborated upon in this section as well as under the Assumptions/Qualification segment.

Site Preparation and Setup

RRS will commence work with an initial health and safety site orientation with all personnel present for the site work. A site reconnaissance will be conducted to familiarize the project site and treatment area as part of the site orientation. Notable observations will include vehicle and pedestrian traffic, proximity to sensitive receptors, visual confirmation of private and public utilities located within the treatment area, location of the water source, and product staging area. Once complete, the injection and support equipment will be staged and secured at the most optimal location to conduct the work. Additional site preparation and setup activities may be required based on the final scope of work that are not included here.

At the outset of each day, RRS will convene a safety tailgate meeting to discuss the day's objectives, procedures, and assigned roles and review health and safety concerns. All personnel on-site will be required to participate and acknowledge the information discussed prior to commencing that day's work activities. This proposal's health and safety section provides additional information regarding our health and safety mindset. All on-site personnel will comply with the Occupational Safety and Health Administration (OSHA) 1910.120 HAZWOPER training requirements.

General Means and Methods

A custom-built injection system (see below) will be utilized to handle and deliver the remediation technologies into the contaminated soil and groundwater. The system is designed to mix and provide the remediation solution at the specified solution concentration while allowing our experienced personnel to make on-site modifications to the design if needed.

RRS will be outfitted with various injection tool alternatives compatible with the selected diameter Direct Push Technology (DPT) rods. The injection tool configuration will be advanced to the upper or lower extent of the target treatment zone, and injections will be conducted utilizing either a bottom-up or top-down technique based on the subsurface lithology. The remediation solution will be injected at discrete intervals to cover the entire treatment zone. Injection volumes will be applied at intervals designated by the final remedial design as the injection rods are pushed/pulled through the vertical treatment interval. This process will be repeated until the prescribed injection volumes are completed per injection location. To the extent practical, active injection locations will be spread out over the work area to limit overfilling of the aquifer's pore volume, resulting in unnecessary surfacing of the remediation solution. These procedures may be modified in the field based on observations of the injected remediation technologies.

Pressure, flow rate, and overall volume will be closely monitored and digitally recorded for each injection interval. Simultaneous injections at multiple locations may be performed to enhance efficiencies on-site. RRS will vigilantly monitor the injection locations and surroundings for any surfacing indications, and a spill response kit will remain on standby.

Reagent Distribution Monitoring

Throughout the application, RRS will implement a site-specific Placement Validation (PV) plan utilizing a series of test to monitoring distribution and influence of the remediation technologies. The field tests may include pre-injection soil cores to view the lithology and confirm vertical treatment as designed; installation of temporary piezometers to monitor water level, groundwater parameters, and groundwater color; and any other field test deemed viable for distribution and influence monitoring. Ultimately, real-time data will be collected and analyzed to corroborate design assumptions and the dispersion of the reagents in the subsurface (particularly PlumeStop).

Additionally, groundwater parameters will be monitored in any nearby monitoring wells and temporary piezometers in the immediate area of the injection activities. Monitoring will be conducted utilizing a downhole water quality meter, well bailers, and water level indicator before, during, and after the application. The following parameters will be monitored: depth to water, color (PlumeStop concentration kits), temperature, conductivity, dissolved oxygen (DO), and oxidation-reduction potential (ORP).

Guided by the collected information, the project team may introduce adjustments to the remediation design to enhance the injection application's efficacy. These adjustments might involve alterations in injection concentrations and volume per location.

Application Summary Report Deliverable

Upon the conclusion of the injection operation, RRS will demobilize all equipment and personnel from the site. A comprehensive injection summary report, encompassing details of injection points (interval depths, injection pressure/flow rates, reagent volume, time elapsed, and surfacing occurrences), on-site observations, and any notable information, will be prepared and submitted to Farallon Consulting.



Inline Blending and Injection System

The remediation technologies will be mixed and delivered to the target treatment zone using our Inline Blending and Injection System (IBIS).



IBIS is a self-contained and compact unit configured on a small skid-based frame allowing for easy handling and injection of liquid amendments. The injection system mixes water with up to four liquid remediation amendments in formulated ratios and mechanically blends them through an inline static mixer to produce a final solution for direct application into a treatment zone.

IBIS is equipped with several positive displacement pumps that connect directly to bulk reagent storage containers and a water supply. These pumps are used in combination with mass flow meters in programmable ratios for proper remediation solution ratio control with onboard electronic automation protecting against out-of-ratio mixing. Using mass flow measurements in formulated ratios, IBIS ensures near perfect amendment dosing and blending while eliminating the need for batch tank mixing.

The accurate dosing and blending process is based on the final remedial design dose ratios, which, as part of the initial setup, is programmed into the system by the RRS field scientist through an interactive and fully viewable touch screen.

IBIS can process up to four remediation amendments to deliver a final blended mixture for injection at up to six separate delivery discharge lines simultaneously. IBIS's electronic control features auto-adjust to regulate and maintain safe operating injection flow rates and pressures throughout the delivery system.



Injection flow rates, pressures and volume totals at each line are logged by IBIS continuously during operation. These and other pertinent injection data can be accessed in real-time to keep project stakeholders informed and guide remedial decision-making in the field without communication delays.

IBIS requires an approximate footprint of 15 feet by 15 feet, which includes a designated area for the connection to bulk reagent containers and a dedicated power supply provided by RRS. The system can easily be moved through conventional skid means using a forklift or similar equipment. Discharge lines can reach well beyond the system footprint through the addition of 100 linear-foot injection hose sections.

Benefits of IBIS

The automated features of IBIS simplify labor-intensive and repetitive tasks, such as mixing reagents and collecting data. This efficiency saves valuable time and allows our field scientists to focus on strategic thinking and problem-solving. By streamlining these processes, our field scientists can leverage their strengths to enhance monitoring of reagent distribution, confirm influences, and improve remediation outcomes. Some specific advantages of using IBIS include:

- Electronic programming of pressure and flow transducers within the system captures relevant injection data at a higher frequency (every 30 seconds) with no manual entry or potential for accidental errors.
- The automated data acquisition is easily downloadable for improved backend analysis and can be provided to clients daily, enhancing communication with stakeholders.
- Programming and shutdown alarms prevented out-of-ratio reagent mixing to guarantee reliability and repeatability, ensuring reagent application consistency throughout the project implementation schedule.
- The automated process eliminates the need to manually weigh, measure, and transfer raw reagents, reducing labor, errors, and waste.
- Mix water and raw reagents are metered and mixed directly from the source, streamlining the process and reducing space requirements.
- Improve Health and Safety through reduced material handling, noise reduction, and reduced spill risks.

IBIS was specifically designed and built to increase onsite efficiencies, reduce labor requirements, and improve reagent dose delivery ratios to the remediation sites through advanced mechanical instrumentation and automated controls. For additional information on IBIS please click the link: **Download IBIS Brochure & IBIS Webpage.**

IBIS Key Benefits

Efficient & Streamlined



Accuracy



Reat-Time Data Collection



Project Responsibilities

RRS will work with Farallon Consulting to implement the scope of work associated with the application of the selected remediation technologies. Responsibilities for the implementation of this project will be shared between RRS and Farallon Consulting. Responsibilities for each are listed below and further under the Assumptions/Qualifications section.

RRS Responsibilities:

- RRS will provide and ship the specified quantities of the remediation technologies to the site address provided by Farallon Consulting. RRS will coordinate with Farallon Consulting prior to any shipment of product.
- RRS will provide qualified and experienced 40-hour HAZWOPER-certified personnel to implement and manage the remediation application scope of work.
- RRS will take delivery of the remediation technology and stage inside a secure location where the material will not be affected by inclement weather and is accessible by forklift or other equivalent means.
- RRS will provide the means to maneuver the product around the site (forklift or equivalent) as needed during the application activities.
- RRS will provide a custom-built injection system and other miscellaneous support equipment to handle, prepare, and apply the remediation technologies during the application process.
- RRS will perform site reconnaissance and pre-application activities that include H&S orientation, sensitive receptor identification and protection, treatment area identification, and equipment staging.
- RRS will prepare a site-specific health and safety plan.
- RRS will provide site safety equipment, including cones and caution tape, to delineate the immediate work area while making efforts to limit the impact on business operations at the site.
- RRS will perform real-time reagent distribution diagnostics during injection activities to allow for field modifications, as needed, to ensure optimal results.
- RRS will monitor the injection flow rates and pressures and observe signs of reagent surfacing around active injection areas. If surfacing is detected, RRS will stop or slow down injection activities at that location to stop additional surfacing and remove/vacuum up recoverable surfaced fluid.
- RRS will work directly with our design team to fill any data gaps identified during the injection application, thereby more effectively maintaining the project objectives and goals.
- RRS will generate a detailed injection summary report upon completion of the injection event. Items to be incorporated will include injection depths, material quantities, injection flow rates and pressures, an injection location map, implementation pictures, and other noteworthy field observations.

Farallon Consulting Responsibilities:

- Farallon Consulting will coordinate project schedule and remediation technology order with REGENESIS to ensure adequate shipping and mobilization time.
- Farallon Consulting will coordinate site access with property owner to coincide with project schedule and identify a secure product staging area.
- Farallon Consulting will provide a water source (e.g., hydrant) capable of producing at least 30 gpm for the duration of the project within 300 ft. of the project staging area, at no cost to RRS. Farallon Consulting will coordinate and provide a backflow preventer for on-site hydrant utilization.
- Farallon Consulting will subcontract a Direct Push Technology contractor with a qualified operator and crew of sufficient size to advance the appropriate tooling to the targeted treatment depth. The Direct Push Technology contractor will be equipped with:
    - Track-mounted DPT rig (Geoprobe 7822 or similar) with two-person crew
    - 150 feet of 1.5-inch Geoprobe threaded rods and 30 feet of quick-link extension rods
    - Bentonite (granular and hole plug)
    - Thread tape to seal rods
- Farallon Consulting will coordinate with the Direct Push Technology contractor and request a public utility locate through the nationwide “811 call before you dig” resource to approximate the location of buried public utilities at the site.
- Should private underground utilities be within or near the treatment area, Farallon Consulting will contract with a private utility locating service provider to identify and mark the approximate location prior to RRS mobilization.
- Farallon Consulting will procure any necessary permits needed to complete the project including right of way, UIC and municipal.
- Farallon Consulting is responsible for all soil, air and groundwater sampling and analysis.
- Should surfaced/short-circuited remediation technology material need to be containerized, Farallon Consulting is responsible for the classification, transportation and disposal of the waste.
- Farallon Consulting will provide a depth to water meter and multiprobe with low-flow pump and a flow-through cell capable of reaching the water table and well screen interval while on-site for injection activities.
- Farallon Consulting will provide access to a restroom during on-site hours.
- All empty product containers will be the responsibility of Farallon Consulting for proper disposal/recycling. General refuse will be collected and disposed of in a Farallon Consulting provided refuse container on-site.
- Any traffic control requirement beyond providing cones and caution tape is the responsibility of Farallon Consulting.

RRS Assumptions and Qualifications

In generating this proposal, RRS relied upon professional judgment and site-specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to estimate product quantities and subsurface placement required to achieve the remedial goals. The attached design summary tables specify the assumptions used to complete the remedial design. We request that these modeling input assumptions be verified by your firm before injection. Other assumptions and qualifications are as follows:

- The product and services cost outlined will be valid for 60 days from the proposal date. If beyond 60 days, RRS reserves the right to update the cost.
- The freight charges included for product delivery above are estimated at the time of proposal generation. Actual freight charges are neither set nor guaranteed by RRS and are calculated when the product order is placed. This price may vary from what is estimated above. Actual freight charges for product delivery will be invoiced.
- Freight delivery time frames cannot be guaranteed and RRS will not be responsible for any delays or increased costs associated with those delays.
- If applicable, sales tax charges for product, freight, and services are considered estimated at the time of proposal submittal. The appropriate sales tax category (i.e., product, freight, and services) and actual sales tax rate are finalized at the time of invoice and may change from date of proposal submittal.
- RRS will have access to the site for equipment operation and secure storage of materials and equipment throughout the project duration. Access to each work area location will be clear and free of obstructions. RRS also assumes the injection system can be staged within 80 feet of the furthest injection point location.
- For safety reasons, access to the treatment area will be limited to RRS and Farallon Consulting personnel.
- RRS is not responsible for treatment chemistry infiltration into undesired locations beyond our visible control. The remediation design and injection procedures contain the necessary precautions to minimize the likelihood of surfacing of the treatment chemistry.
- RRS personnel will have access to the site for work up to 12 hours per day, Monday through Friday (daylight hours). However, the standard workday does not exceed 10 hours, with travel time Monday through Friday. A 10-hour workday does not mean 10 hours on-site and/or injection pumping. Additional charges may apply for work completed on Saturday and Sunday.
- RRS is not responsible for damage to unmarked utilities and subsurface structures. Farallon Consulting will review as-built drawings with RRS and confirm clearance prior to injection activities and the remedial fluids being distributed throughout the subsurface.
- Ground surface restoration costs have not been included. Additional charges will apply if surface restoration is needed.
- Site conditions can change over time and should be monitored post-injection. RRS is not responsible for changing site conditions after completing the scope of work and demobilizing. Such changes include but are not limited to changes related to applicable borehole abandonment (i.e., swelling of backfill material), surface restoration, well conditions, and on-site utilities.

Health and Safety Plan

RRS is committed to providing a safe and healthy working environment for all on-site employees, including Farallon Consultings and contractors on-site. Before mobilization, RRS will develop a site-specific Health and Safety Plan (HASP) and designate an on-site safety officer. All personnel on-site are required to participate in daily safety tailgate meetings to proactively identify potential hazards and mitigate risks to the full extent possible.

In addition to the hours of rigorous safety training courses all personnel are required to complete, RRS also incorporates a behavior-based safety program by utilizing our DoneSafe mobile application (app) interface on every site. This app encourages our personnel to actively search for potential on-site risks and document mitigation actions. The effectiveness of our safety program can be seen in our industry-leading Experience Modification Rating (EMR) listed in table below.

Year	Total Hours	EMR
2024	193,337	0.72
2023	193,433	0.67
2022	189,458	0.73
2021	125,592	0.71

RRS safety tailgate meetings and HASP will include the following:

- Site map .
- List of personnel and contact information for employees on-site and supporting the project.
- Route to the nearest occupational treatment facility and hospital along with contact information.
- Job Hazard Analysis (JHA) detailing each job task on-site with its potential hazards and best practices to avoid those hazards.
- Description and hazards of the contaminants of concern (COC) with appropriate Personal Protection Equipment (PPE) requirements.
- List and description of REGENESIS chemicals on-site including a Safety Data Sheet (SDS) for each chemical.
- Checklist of site safety equipment including fire extinguishers, eyewash station, first aid kit, spill prevention kit and any site-specific equipment needed.
- Daily tailgate safety meeting sheet with identified hazards and risks associated with the site and job tasks for that day, along with shared learning observations from the previous day.



Pricing

Below is the cost estimate to provide the remediation technologies and execute the scope of work provided in this proposal.

Description	Subtotal
Remediation Products (58,000 lbs of PlumeStop) Includes shipping and tax	$428,993.64
REGENESIS Remediation Services (RRS) Application Services (RRS) for 16-days, including the acceptance of the product, the injection, and a forklift for the duration. **DPT contractor not included**	$238,104.91
Total	**$667,098.55**

The cost provided above is inclusive of all products, estimated product freight, product mixing, injection services as outlined within this proposal, tax, and materials to complete the work. We will submit invoice(s) when the product ships and upon project completion or end of the calendar month for RRS services. **Payment terms are Net 30 days upon invoice submittal. Should payment terms be extended beyond 30 days, finance charges may be applied.**

Please note that this pricing is contingent upon the completion of this scope of work without delays or work stoppages once mobilization occurs. RRS has allotted one (1) day to accept product and seventeen (15) on-site working days (10-hr days, Monday through Friday). RRS believes the scope of work provided above can be completed in this timeframe proposed, however, if the project is delayed due to circumstances beyond our control, RRS will utilize a daily rate of $6,000.00 plus applicable tax to the invoice price. Should the project be completed ahead of schedule, a portion of the daily rate may be credited to the final invoice after review. RRS reserves the right to modify the design and associated cost if additional information gathered warrants modification.

COST ESTIMATE DISCLAIMER: The cost listed assumes conditions set forth within the proposed scope of work and assumptions and qualifications. Changes to either could impact the final cost of the project. This may include final shipping arrangements, sales tax, or application-related tasks such as product storage and handling, access to water, etc. If the items listed need to be modified, please contact REGENESIS for further evaluation.

REGENESIS developed this Scope of Work in reliance upon the data and professional judgments provided by those who completed the earlier environmental site assessment(s) and in reliance upon REGENESIS' prior experience on similar project sites. The fees and charges associated with the Scope of Work were generated through REGENESIS' proprietary formulas and thus may not conform to billing guidelines, constraints, or other limits on fees. REGENESIS does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where REGENESIS may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by REGENESIS, it is the sole responsibility of the entity seeking reimbursement to ensure the Scope of Work and associated charges are in compliance with and acceptable to the Government before submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from Government, REGENESIS does not knowingly present or cause to be presented any claim for payment to the government.

PROFESSIONAL JUDGEMENT: In generating this estimate, REGENESIS relied upon professional judgment and site-specific information provided by others. Using this information as input, we performed calculations based upon the known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to effect the remediation of the site.

Terms & Conditions

1. **PAYMENT TERMS.** Net 30 Days. Accounts outstanding after 30 days will be assessed 1.5% monthly interest. Volume discount pricing will be rescinded on all accounts outstanding over 90 days. An early payment discount of 1.5% Net 10 is available for cash or check payments only. We accept Master Card, Visa and American Express.
2. **RETURN POLICY.** A 15% re-stocking fee will be charged for all returned goods. All requests to return product must be pre-approved by seller. Returned product must be in original condition and no product will be accepted for return after a period of 90 days.
3. **FORCE MAJEURE.** Seller shall not be liable for delays in delivery or services or failure to manufacture or deliver due to causes beyond its reasonable control, including but not limited to acts of God, acts of buyer, acts of military or civil authorities, fires, strikes, flood, epidemic, war, riot, delays in transportation or car shortages, or inability to obtain necessary labor, materials, components or services through seller's usual and regular sources at usual and regular prices. In any such event Seller may, without notice to buyer, at any time and from time to time, postpone the delivery or service dates under this contract or make partial delivery or performance or cancel all or any portion of this and any other contract with buyer without further liability to buyer. Cancellation of any part of this order shall not affect Seller's right to payment for any product delivered or service performed hereunder.
4. **LIMITED WARRANTY.** Seller warrants the product(s) sold and services provided as specified on face of invoice, solely to buyer. Seller makes no other warranty of any kind respecting the product and services, and expressly DISCLAIMS ALL OTHER WARRANTIES OF WHATEVER KIND RESPECTING THE PRODUCT AND SERVICES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AND NON-INFRINGEMENT.
5. **DISCLAIMER.** Where warranties to a person other than buyer may not be disclaimed under law, seller extends to such a person the same warranty seller makes to buyer as set forth herein, subject to all disclaimers, exclusions and limitations of warranties, all limitations of liability and all other provisions set forth in the Terms and Conditions herein. Buyer agrees to transmit a copy of the Terms and Conditions set forth herein to any and all persons to whom buyer sells, or otherwise furnishes the products and/or services provided buyer by seller and buyer agrees to indemnify seller for any liability, loss, costs and attorneys' fees which seller may incur by reason, in whole or in part, of failure by buyer to transmit the Terms and Conditions as provided herein.
6. **LIMITATION OF SELLER'S LIABILITY AND LIMITATION OF BUYER'S REMEDY.** Seller's liability on any claim of any kind, including negligence, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair or use of any goods or performance of any services covered by or furnished hereunder, shall in no case exceed the lesser of (1) the cost of repairing or replacing goods and repeating the services failing to conform to the foregoing warranty or the price of the goods and/or services or part thereof which gives rise to the claim. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, OR FOR DAMAGES IN THE NATURE OF PENALTIES.
7. **INDEMNIFICATION.** Buyer agrees to defend and indemnify seller of and from any and all claims or liabilities asserted against seller in connection with the manufacture, sale, delivery, resale or repair or use of any goods, and performance of any services, covered by or furnished hereunder arising in whole or in part out of or by reason of the failure of buyer, its agents, servants, employees or customers to follow instructions, warnings or recommendations furnished by seller in connection with such goods and services, by reason of the failure of buyer, its agents, servants, employees or customers to comply with all federal, state and local laws applicable to such goods and services, or the use thereof, including the Occupational Safety and Health Act of 1970, or by reason of the negligence or misconduct of buyer, its agents, servants, employees or customers.

8. **EXPENSES OF ENFORCEMENT.** In the event seller undertakes any action to collect amounts due from buyer, or otherwise enforce its rights hereunder, Buyer agrees to pay and reimburse Seller for all such expenses, including, without limitation, all attorneys and collection fees.
9. **TAXES.** Liability for all taxes and import or export duties, imposed by any city, state, federal or other governmental authority, shall be assumed and paid by buyer. Buyer further agrees to defend and indemnify seller against any and all liabilities for such taxes or duties and legal fees or costs incurred by seller in connection therewith.
10. **ASSISTANCE AND ADVICE.** Upon request, seller in its discretion will furnish as an accommodation to buyer such technical advice or assistance as is available in reference to the goods and services. Seller assumes no obligation or liability for the advice or assistance given or results obtained, all such advice or assistance being given and accepted at buyer's risk.
11. **SITE SAFETY.** Buyer shall provide a safe working environment at the site of services and shall comply with all applicable provisions of federal, state, provincial and municipal safety laws, building codes, and safety regulations to prevent accidents or injuries to persons on, about or adjacent to the site.
12. **INDEPENDENT CONTRACTOR.** Seller and Buyer are independent contractors and nothing shall be construed to place them in the relationship of partners, principal and agent, employer/employee or joint ventures. Neither party will have the power or right to bind or obligate the other party except as may be expressly agreed and delegated by other party, nor will it hold itself out as having such authority.
13. **REIMBURSEMENT.** Seller shall provide the products and services in reliance upon the data and professional judgments provided by or on behalf of buyer. The fees and charges associated with the products and services thus may not conform to billing guidelines, constraints or other limits on fees. Seller does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where seller may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by seller, it is the sole responsibility of the buyer or other entity seeking reimbursement to ensure the products and services and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from the Government, seller does not knowingly present or cause to be presented any claim for payment to the Government.
14. **APPLICABLE LAW/JURISDICTION AND VENUE.** The rights and duties of the parties shall be governed by, construed, and enforced in accordance with the laws of the State of California (excluding its conflict of laws rules which would refer to and apply the substantive laws of another jurisdiction). Any suit or proceeding hereunder shall be brought exclusively in state or federal courts located in Orange County, California. Each party consents to the personal jurisdiction of said state and federal courts and waives any objection that such courts are an inconvenient forum.
15. **ENTIRE AGREEMENT.** This agreement constitutes the entire contract between buyer and seller relating to the goods or services identified herein. No modifications hereof shall be binding upon the seller unless in writing and signed by seller's duly authorized representative, and no modification shall be effected by seller's acknowledgment or acceptance of buyer's purchase order forms containing different provisions. Trade usage shall neither be applicable nor relevant to this agreement, nor be used in any manner whatsoever to explain, qualify or supplement any of the provisions hereof. No waiver by either party of default shall be deemed a waiver of any subsequent default.

PFAS TECHNICAL LIBRARY

Case Studies

- PlumeStop® Case Study: Martha's Vineyard Airport Successfully Treated Using PlumeStop to Eliminate PFAS Risk
- PlumeStop® Case Study: NY Brownfield PFAS + CVOC Remediation
- PlumeStop® Case Study: PFAS Treatment at Camp Grayling Army Airfield
- PlumeStop® Case Study: Remedy Addresses PFAS Risk at Superfund Site
- PlumeStop® Case Study: Successful Remediation of PFAS at Fairbanks Alaska Airport

Technical Bulletins

- PlumeStop® Technical Bulletin 1.1: Distribution Through a Permeable Medium
- PlumeStop® Technical Bulletin 2.2: Sorption of Contaminants from Solution-Column Study
- PlumeStop® Technical Bulletin 5.1: In-Situ Containment of PFOA and PFOS Using Liquid Activated Carbon
- Colloidal Activated Carbon (CAC) Sampling Guidance Document

3rd Party Journal Articles

- In-Situ Treatment of TCE and PFAS in Groundwater within a Silty Sand Aquifer-Wiley's Remediation Journal
- The Effect of Heterogeneity on the Distribution and Treatment of PFAS: Frontiers in Environmental Chemistry
- Evaluating the Longevity of a PFAS In Situ Colloidal Activated Carbon Remedy
- Six Pilot Scale Studies Evaluating the In-Situ Treatment of PFAS in Groundwater

Videos

- PlumeStop® Treats PFAS and Protects Island Community Resources
- Identifying PFAS as a CERCLA Hazardous Substance: Are You Ready for This?

Other

- Podcast: Talking Under Water: Interview with Scott Wilson
- FluxTracer® Flux Mapping Tool
- PlumeShield® Performance Warranty Program

Intellectual Property

REGENESIS is the developer of PlumeStop® colloidal activated carbon technology and holds a patent portfolio related to the use of colloidal activated carbon for in situ remediation:

- Patent controlling the injection of activated carbon particles into subsurface media under low pressure:
  - US Patent #7,585,132
- Patents covering the use of colloidal activated carbon to treat heterogeneous media to stop matrix back-diffusion:
  - US Patent # 9,776,898
  - US Patent # 10,005,684
  - Europe Patent # 3,105,190
- Patent controlling the engineering of subsurface hydrophobicity in order to sorb contaminants from aquifer waters:
  - US Patent # 10,478,876
  - Europe Patent # 17813929 (pending)
- Patent covering chemistries to suspend and disperse colloidal activated carbon particles for optimum distribution within subsurface media
  - US Patent #9,770,743
  - Europe Patent # 3,027,562

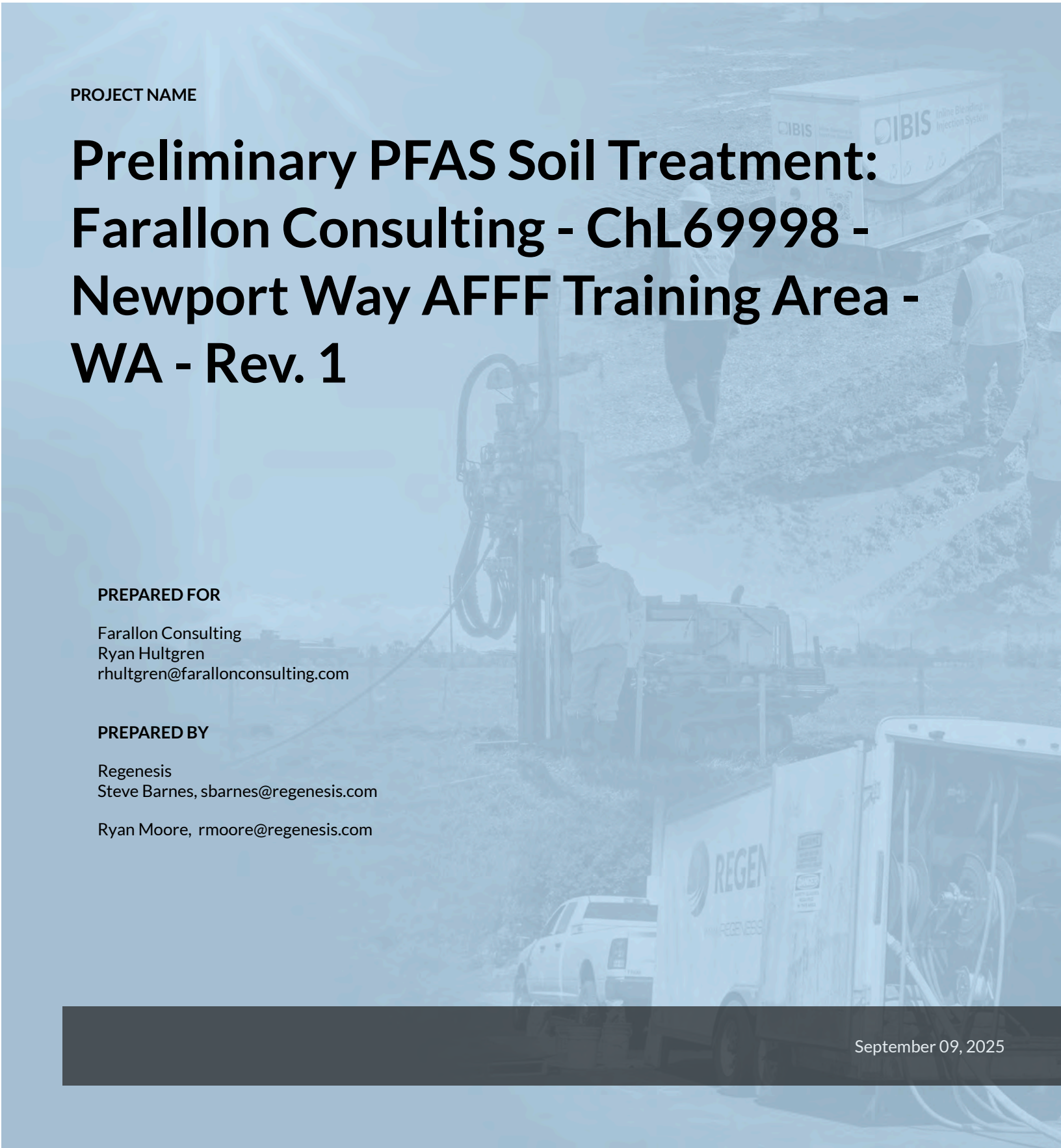
REGENESIS Indemnification

The use of PlumeStop® is free from infringement of any other intellectual property. REGENESIS will indemnify customers, who have purchased and properly applied PlumeStop, against claims of infringement of any other intellectual property.

REGENESIS®

PROJECT NAME

Preliminary PFAS Soil Treatment: Farallon Consulting - ChL69998 - Newport Way AFFF Training Area - WA - Rev. 1



PREPARED FOR

Farallon Consulting
Ryan Hultgren
rhultgren@farallonconsulting.com

PREPARED BY

Regenesis
Steve Barnes, sbarnes@regenesis.com

Ryan Moore, rmoore@regenesis.com

September 09, 2025

Project Treatment Plan

In this document, REGENESIS outlines a comprehensive approach, encompassing the proposed solution, project objectives, recommended treatment technology, a concise application design summary, and a treatment area depiction.

Treatment Approach Overview

This proposal focuses on the stabilization of per- and poly-fluoroalkyl substances (PFAS) in impacted soils. It outlines our approach to achieving long-term immobilization of PFAS-impacted soils through soil mixing techniques utilizing a site-specific dose of SourceStop® (SourceStop) to reduce the impacts of the contaminated soils on the underlying groundwater.

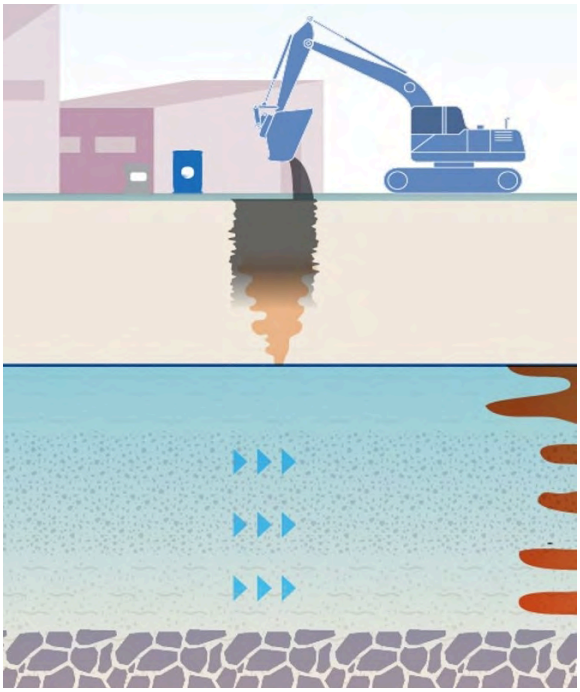
Treatment Objectives and Scope

- Evaluate and confirm amendment dosage required for the soil type, moisture, and contaminant composition and concentrations prior to treatment to reach the expected leachability criteria. Current design is based on a dose rate range with a target of 95% reduction of leachability per the soil data provided to REGENESIS. Treatment effectiveness will be determined via SPLP analysis using 3 ratios based on baseline results.
- Provide on-site turn-key support in conducting soil stabilization and other site-specific work. Specific responsibilities between Farallon and REGENESIS have not been finalized, and therefore, will be determined once a finalized treatment approach has been established. Site-specific work includes:
- Reduce PFAS mass discharge from the source soils to groundwater by:
    - Reducing PFAS leachability through the addition of SourceStop into target soils via soil stabilization approach.
    - Homogenously mix the SourceStop within the designated treatment area(s) measuring approximately 3,270 cubic yards:
        - 12,960 square feet (sqft) from surface to 5.0 ft. below ground surface (bgs) - 2,400 cubic yards
        - 4,482 sqft from 5.0 to 10 ft bgs - 830 cubic yards
        - 360 sqft from 10 to 13 ft bgs - 40 cubic yards
    - Spray application of SourceStop at the base of the 10 ft and 13 ft treatment interval areas (approximately 4,842 sqft).
- General site setup to include utility locate, mobilize all labor and equipment to the site to perform the services described above, storm water best management practices, and receive/unloading project related materials and supplies.
- Assist in the collection of samples from the treatment area during the stabilization process.
- Demobilize all labor and equipment.

Treatment Approach Details

Based on our discussions and review of the site soil and groundwater data, the treatment approach will comprise in-situ soil stabilization featuring our patented SourceStop technology. The treatment approach will create a significant and long-term reduction in the leachability of PFAS on the soils, preventing further discharge to underlying groundwater. The treatment is a sustainable, passive solution with no ongoing operational cost, zero waste, and a safe and easy application.

In-Situ Soil Stabilization – The PFAS-impacted soils within the designated treatment area will be amended with a site-specific dose of SourceStop to reduce the leachability of the contaminated soils. The material will be mechanically broadcast and distributed into the soils using standard yellow-iron type construction equipment (i.e., bucket mixing or auger-type mixing). SourceStop particles are designed to disintegrate during the physical mixing process and when in contact with water, releasing the CAC. This enhances distribution through improved contact, further coating the soil with a thin activated carbon layer and minimizing application time. The CAC will also help to penetrate low-permeability soils not already influenced by the physical distribution process to optimize the treatment. Once in place, the SourceStop particles will absorb PFAS contamination, thereby eliminating further PFAS mass flux below the soils and into the groundwater zone.





Treatment Approach Details - Cont'd

In addition to the soil stabilization aspects described above, SourceStop will also be spray applied at the base and sidewalls of the open excavation, at the based of the 10 ft and 13 ft treatment interval areas. This spray application will allow for the material to migrate downward as it infiltrates into the native underlining soils to capture any residual PFAS contaminated soils below this interval.

The process will incorporate diluting the SourceStop material with water and evenly distributing over the impacted soils at the base of the excavation. The SourceStop should be diluted with water at a ratio appropriate for the fill material (1:5 to 1:10). The addition of water will enhance the treatment by helping facilitate infiltration and percolation of the SourceStop. The spray application should be performed in a continuous manner and evenly distributed at the base.





Treatment Technology Details

SourceStop is a highly effective treatment for PFAS-contaminated soil and groundwater in source areas that works by preventing the leaching of soil contamination and halting the migration of PFAS in groundwater, eliminating the risk to downgradient receptors. SourceStop is available in two formulations: liquid and solid. Both formulations utilize REGENESIS' colloidal activated carbon (CAC) technology, allowing unsurpassed distribution into the target soils and aquifer materials. This results in rapid and highly effective sorption of PFAS for a quicker and more complete treatment. For this project, SourceStop Solid is proposed to be used for the stabilization approach.



SourceStop Solid is a composite material that can be mechanically broadcast and distributed into soils with conventional yellow-iron-type equipment. The solid format generates minimal dust during the physical mixing process, making it safe and easy to handle. When the SourceStop Solid particles come into contact with water, they will release the CAC. This process enhances the distribution through improved contact, further coating the soil with a thin activated carbon layer and minimizing application time. Due to the tiny particle size, the colloidal activated carbon will penetrate low-permeability soils that are not already influenced by the physical distribution process.

Additional Resources:

- SourceStop® Brochure
- SourceStop® Liquid Spec Sheet
- SourceStop® Solid Spec Sheet
- Why Target PFAS Source Zones?
- SourceStop® Technical Bulletin
- SourceStop® Soil Stabilization Technical Bulletin
- SourceStop® Safety Data Sheet
- Safety Data Sheet - SourceStop® Solid

SourceStop®

REGENESIS®

SourceStop®

SourceStop® Soil Treatment Summary

Site Name: Newport Way AFFF Training Area

Prepared For: Farallon Consulting

Regenesis Project ID: ChL69998

Source Soil Base Spray Application Summary			
Treatment Location Name	Treatment Location Area (Square Feet)	Total Quantity (Pounds)	Base Spray Treatment (Pounds/Square Feet)
NWN-R15, R19, R20 & R24 - Low Dose, 5-10'	4,482	6,000	1.3
NWN-R20 - Low Dose, 10-13'	360	800	2.2

Source Soil Treatment Application Summary						
Treatment Location Name	Treatment Location Dimensions (L'xW'xD')		Treatment Location Area (Square Feet)	Treatment Location Volume (Cubic Yards)	Total Quantity (Pounds)	Soil Treatment Amendment (Pounds/Cubic Yard)
Low Dose, 0-5'	L (Feet)	135	12,960	2,400	45,600	19
	W (Feet)	96				
	D (Feet)	5.0				
NWN-R15, R19, R20 & R24 - Low Dose, 5-10'	L (Feet)	107	4,482	830	15,600	19
	W (Feet)	42				
	D (Feet)	10				
NWN-R20 - Low Dose, 10-13'	L (Feet)	30	360	40	1,200	30
	W (Feet)	12				
	D (Feet)	13				
High Dose, 0-5'	L (Feet)	135	12,960	2,400	90,000	38
	W (Feet)	96				
	D (Feet)	5				
NWN-R15, R19, R20 & R24 - High Dose, 5-10'	L (Feet)	107	4,482	830	32,400	39
	W (Feet)	42				
	D (Feet)	10				
NWN-R20 - High Dose, 10-13'	L (Feet)	30	360	40	2,400	60
	W (Feet)	12				
	D (Feet)	13				

PROJECT SEQUENCE

The table below outlines the sequence of steps toward final design and project implementation.

Description
☐ **Establish Performance Expectations and Monitoring Requirements** Confirm leachability performance objectives and frequency of monitoring requirements using SPLP analysis.
☐ **Evaluate SourceStop Loading Rates Through Bench Testing** Complete a preliminary assessment of the effectiveness of SourceStop through bench testing to evaluate amendment dose concentration to reach PFAS leachability performance objectives. • Execute Product Sample Agreement • Send appropriate sample quantity to selected testing laboratory/facility • Review and confirm testing approach • Review test results and develop recommendations that can be applied to field-scale soil mixing implementation activities
☐ **Finalize Design, Scope, and Cost Estimate** REGENESIS submits the final design, scope, and cost estimate.
☐ **Project Implementation** • Finalize contract documents • Confirm account credit status • Complete remediation services logistics evaluation • Confirm delivery address and date • Schedule application and ship product • Initiate project application • Post remedy sampling • Performance evaluation

Pricing

Below is the preliminary estimate to provide the remediation technologies and execute the work provided in this proposal.

Description	Subtotal
Soil Stab. Remediation Products (Low Dose to High Dose Range)	**$202,800 - $405,600**
Base Spray Remediation Products	**$35,656**
Bench Study	**$11,500**
Turn-Key Remediation Services ~15 - 18 Days to perform installation	**$195,000 - $215,000**
Tax and Shipping Range (~18%)	**$80,092.08 - $120,196.08**
Total Range	**$525,048.08 - $787,952.08**

The cost provided above is inclusive of all product, estimated product freight, turn-key installation services, tax, and materials to complete the work. We will submit invoice(s) when product ships and upon project completion or end of calendar month for remediation services. **Payment terms are Net 30 days upon invoice submittal. Should payment terms be extended beyond 30 days, finance charges may be applied.**

COST ESTIMATE DISCLAIMER: The cost listed assumes conditions set forth within the proposed scope of work and assumptions and qualifications. Changes to either could impact the final cost of the project. This may include final shipping arrangements, sales tax or application related tasks such as product storage and handling, access to water, etc. If the items listed need to be modified, please contact RRS for further evaluation.

REGENESIS developed this Scope of Work in reliance upon the data and professional judgements provided by those whom completed the earlier environmental site assessment(s), and in reliance upon REGENESIS' prior experience on similar project sites. The fees and charges associated with the Scope of Work were generated through REGENESIS' proprietary formulas and thus may not conform to billing guidelines, constraints or other limit on fees. REGENESIS does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where REGENESIS may serve as a supplier or subcontractor to an entity which seeks reimbursement from the Government for all or part of the services performed or products provided by REGENESIS, it is the sole responsibility of the entity seeking reimbursement to ensure the Scope of Work and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity which seeks reimbursement from Government, REGENESIS does not knowingly present or cause to be presented any claim for payment to the government.

PROFESSIONAL JUDGEMENT: In generating this estimate, REGENESIS relied upon professional judgement and site specific information provided by others. Using this information as input, we performed calculations based upon known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to affect remediation of the site.

Terms & Conditions

1. **PAYMENT TERMS.** Net 30 Days. Accounts outstanding after 30 days will be assessed 1.5% monthly interest. Volume discount pricing will be rescinded on all accounts outstanding over 90 days. An early payment discount of 1.5% Net 10 is available for cash or check payments only. We accept Master Card, Visa and American Express.
2. **RETURN POLICY.** A 15% re-stocking fee will be charged for all returned goods. All requests to return product must be pre-approved by seller. Returned product must be in original condition and no product will be accepted for return after a period of 90 days.
3. **FORCE MAJEURE.** Seller shall not be liable for delays in delivery or services or failure to manufacture or deliver due to causes beyond its reasonable control, including but not limited to acts of God, acts of buyer, acts of military or civil authorities, fires, strikes, flood, epidemic, war, riot, delays in transportation or car shortages, or inability to obtain necessary labor, materials, components or services through seller's usual and regular sources at usual and regular prices. In any such event Seller may, without notice to buyer, at any time and from time to time, postpone the delivery or service dates under this contract or make partial delivery or performance or cancel all or any portion of this and any other contract with buyer without further liability to buyer. Cancellation of any part of this order shall not affect Seller's right to payment for any product delivered or service performed hereunder.
4. **LIMITED WARRANTY.** Seller warrants the product(s) sold and services provided as specified on face of invoice, solely to buyer. Seller makes no other warranty of any kind respecting the product and services, and expressly DISCLAIMS ALL OTHER WARRANTIES OF WHATEVER KIND RESPECTING THE PRODUCT AND SERVICES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AND NON-INFRINGEMENT.
5. **DISCLAIMER.** Where warranties to a person other than buyer may not be disclaimed under law, seller extends to such a person the same warranty seller makes to buyer as set forth herein, subject to all disclaimers, exclusions and limitations of warranties, all limitations of liability and all other provisions set forth in the Terms and Conditions herein. Buyer agrees to transmit a copy of the Terms and Conditions set forth herein to any and all persons to whom buyer sells, or otherwise furnishes the products and/or services provided buyer by seller and buyer agrees to indemnify seller for any liability, loss, costs and attorneys' fees which seller may incur by reason, in whole or in part, of failure by buyer to transmit the Terms and Conditions as provided herein.
6. **LIMITATION OF SELLER'S LIABILITY AND LIMITATION OF BUYER'S REMEDY.** Seller's liability on any claim of any kind, including negligence, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair or use of any goods or performance of any services covered by or furnished hereunder, shall in no case exceed the lesser of (1) the cost of repairing or replacing goods and repeating the services failing to conform to the foregoing warranty or the price of the goods and/or services or part thereof which gives rise to the claim. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, OR FOR DAMAGES IN THE NATURE OF PENALTIES.
7. **INDEMNIFICATION.** Buyer agrees to defend and indemnify seller of and from any and all claims or liabilities asserted against seller in connection with the manufacture, sale, delivery, resale or repair or use of any goods, and performance of any services, covered by or furnished hereunder arising in whole or in part out of or by reason of the failure of buyer, its agents, servants, employees or customers to follow instructions, warnings or recommendations furnished by seller in connection with such goods and services, by reason of the failure of buyer, its agents, servants, employees or customers to comply with all federal, state and local laws applicable to such goods and services, or the use thereof, including the Occupational Safety and Health Act of 1970, or by reason of the negligence or misconduct of buyer, its agents, servants, employees or customers.

8. **EXPENSES OF ENFORCEMENT.** In the event seller undertakes any action to collect amounts due from buyer, or otherwise enforce its rights hereunder, Buyer agrees to pay and reimburse Seller for all such expenses, including, without limitation, all attorneys and collection fees.
9. **TAXES.** Liability for all taxes and import or export duties, imposed by any city, state, federal or other governmental authority, shall be assumed and paid by buyer. Buyer further agrees to defend and indemnify seller against any and all liabilities for such taxes or duties and legal fees or costs incurred by seller in connection therewith.
10. **ASSISTANCE AND ADVICE.** Upon request, seller in its discretion will furnish as an accommodation to buyer such technical advice or assistance as is available in reference to the goods and services. Seller assumes no obligation or liability for the advice or assistance given or results obtained, all such advice or assistance being given and accepted at buyer's risk.
11. **SITE SAFETY.** Buyer shall provide a safe working environment at the site of services and shall comply with all applicable provisions of federal, state, provincial and municipal safety laws, building codes, and safety regulations to prevent accidents or injuries to persons on, about or adjacent to the site.
12. **INDEPENDENT CONTRACTOR.** Seller and Buyer are independent contractors and nothing shall be construed to place them in the relationship of partners, principal and agent, employer/employee or joint ventures. Neither party will have the power or right to bind or obligate the other party except as may be expressly agreed and delegated by other party, nor will it hold itself out as having such authority.
13. **REIMBURSEMENT.** Seller shall provide the products and services in reliance upon the data and professional judgments provided by or on behalf of buyer. The fees and charges associated with the products and services thus may not conform to billing guidelines, constraints or other limits on fees. Seller does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where seller may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by seller, it is the sole responsibility of the buyer or other entity seeking reimbursement to ensure the products and services and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from the Government, seller does not knowingly present or cause to be presented any claim for payment to the Government.
14. **APPLICABLE LAW/JURISDICTION AND VENUE.** The rights and duties of the parties shall be governed by, construed, and enforced in accordance with the laws of the State of California (excluding its conflict of laws rules which would refer to and apply the substantive laws of another jurisdiction). Any suit or proceeding hereunder shall be brought exclusively in state or federal courts located in Orange County, California. Each party consents to the personal jurisdiction of said state and federal courts and waives any objection that such courts are an inconvenient forum.
15. **ENTIRE AGREEMENT.** This agreement constitutes the entire contract between buyer and seller relating to the goods or services identified herein. No modifications hereof shall be binding upon the seller unless in writing and signed by seller's duly authorized representative, and no modification shall be effected by seller's acknowledgment or acceptance of buyer's purchase order forms containing different provisions. Trade usage shall neither be applicable nor relevant to this agreement, nor be used in any manner whatsoever to explain, qualify or supplement any of the provisions hereof. No waiver by either party of default shall be deemed a waiver of any subsequent default.

APPENDIX C
INADVERTENT DISCOVERY PLAN

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

INADVERTENT DISCOVERY PLAN

PLAN AND PROCEDURES FOR THE DISCOVERY OF CULTURAL RESOURCES AND HUMAN SKELETAL REMAINS

To request ADA accommodation, including materials in a format for the visually impaired, call Ecology at 360-407-6000 or visit https://ecology.wa.gov/accessibility. People with impaired hearing may call Washington Relay Service at 711. People with a speech disability may call TTY at 877-833-6341.

Site Name(s): Eastside Fire & Rescue – IA Location: 175 Newport Way NW, Issaquah, WA

Project Lead/Organization: Sarah Snyder / Farallon Consulting County: King

If this Inadvertent Discovery Plan (IDP) is for multiple (batched) projects, ensure the location information covers all project areas.

1. INTRODUCTION

The IDP outlines procedures to perform in the event of a discovery of archaeological materials or human remains, in accordance with applicable state and federal laws. An IDP is required, as part of Agency Terms and Conditions for all grants and loans, for any project that creates disturbance above or below the ground. An IDP is not a substitute for a formal cultural resource review (Executive 21-02 or Section 106).

Once completed, **the IDP should always be kept at the project site** during all project activities. All staff, contractors, and volunteers should be familiar with its contents and know where to find it.

2. CULTURAL RESOURCE DISCOVERIES

A cultural resource discovery could be prehistoric or historic. Examples include (see images for further examples):

- An accumulation of shell, burned rocks, or other food related materials.
- Bones, intact or in small pieces.
- An area of charcoal or very dark stained soil with artifacts.
- Stone tools or waste flakes (for example, an arrowhead or stone chips).
- Modified or stripped trees, often cedar or aspen, or other modified natural features, such as rock drawings.
- Agricultural or logging materials that appear older than 50 years. These could include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, and many other items.
- Clusters of tin cans or bottles, or other debris that appear older than 50 years.
- Old munitions casings. ***Always assume these are live and never touch or move.***
- Buried railroad tracks, decking, foundations, or other industrial materials.
- Remnants of homesteading. These could include bricks, nails, household items, toys, food containers, and other items associated with homes or farming sites.

The above list does not cover every possible cultural resource. When in doubt, assume the material is a cultural resource.

3. ON-SITE RESPONSIBILITIES

If any employee, contractor, or subcontractor believes that they have uncovered cultural resources or human remains at any point in the project, take the following steps to ***Stop-Protect-Notify***. **If you suspect that the discovery includes human remains, also follow Sections 5 and 6.**

STEP A: Stop Work.

All work must stop immediately in the vicinity of the discovery.

STEP B: Protect the Discovery.

Leave the discovery and the surrounding area untouched and create a clear, identifiable, and wide boundary (30 feet or larger) with temporary fencing, flagging, stakes, or other clear markings. Provide protection and ensure integrity of the discovery until cleared by the Department of Archaeological and Historical Preservation (DAHP) or a licensed, professional archaeologist.

Do not permit vehicles, equipment, or unauthorized personnel to traverse the discovery site. Do not allow work to resume within the boundary until the requirements of this IDP are met.

STEP C: Notify Project Archaeologist (if applicable).

If the project has an archaeologist, notify that person. If there is a monitoring plan in place, the archaeologist will follow the outlined procedure.

STEP D: Notify Project and Washington Department of Ecology (Ecology) contacts.

Project Lead Contacts

Primary Contact		Alternate Contact	
Name:	Sarah Snyder	Name:	Jon Klem
Organization:	Farallon Consulting	Organization:	WA State Dept of Ecolog
Phone:	(717) 395-0268	Phone:	(206) 556-5584
Email:	ssnyder@farallonconsulting.com	Email:	jon.klem@ecy.wa.gov

Ecology Contacts (completed by Ecology Project Manager)

Ecology Project Manager		Alternate or Cultural Resource Contact	
Name:		Name:	
Program:		Program:	
Phone:		Phone:	
Email:		Email:	

STEP E: Ecology will notify DAHP.

Once notified, the Ecology Cultural Resource Contact or the Ecology Project Manager will contact DAHP to report and confirm the discovery. To avoid delay, the Project Lead/Organization will contact DAHP if they are not able to reach Ecology.

DAHP will provide the steps to assist with identification. DAHP, Ecology, and Tribal representatives may coordinate a site visit following any necessary safety protocols. DAHP may also inform the Project Lead/Organization and Ecology of additional steps to further protect the site.

Do not continue work until DAHP has issued an approval for work to proceed in the area of, or near, the discovery.

DAHP Contacts:

Name: Rob Whitlam, PhD
Title: State Archaeologist
Cell: 360-890-2615
Email: Rob.Whitlam@dahp.wa.gov
Main Office: 360-586-3065

Human Remains/Bones:

Name: Guy Tasa, PhD
Title: State Anthropologist
Cell: 360-790-1633 (24/7)
Email: Guy.Tasa@dahp.wa.gov

4. TRIBAL CONTACTS

In the event cultural resources are discovered, the following tribes will be contacted. See Section 10 for Additional Resources.

Tribe:	Muckleshoot Indian Tribe	Tribe:	Suquamish Tribe
Name:	Laura Murphy	Name:	Stephanie Trudel
Title:	Archaeologist	Title:	THPO
Phone:	(253) 876-3272	Phone:	(360) 394-8533
Email:	laura.murphy@muckleshoot.nsn.us	Email:	strudel@Suquamish.nsn.us
Tribe:	Snoqualmie Indian Tribe	Tribe:	Tulalip Tribes
Name:	Adam Osbekoff	Name:	Richard Young
Title:	Compliance Manager	Title:	Cultural Resources Manager
Phone:	NA	Phone:	(425) 239-0182
Email:	adam@snoqualmietribe.us	Email:	ryoung@tulaliptribes-nsn.gov

Please provide contact information for additional tribes within your project area, if needed, in Section 11.

5. FURTHER CONTACTS (if applicable)

If the discovery is confirmed by DAHP as a cultural or archaeological resource, or as human remains, and there is a partnering federal or state agency, Ecology or the Project Lead/Organization will ensure the partnering agency is immediately notified.

Federal Agency:		State Agency:	
Agency:		Agency:	Ecology
Name:		Name:	Vance Atkins, LG, LHG
Title:		Title:	Hydrogeologist 4
Phone:		Phone:	425-324-1438
Email:		Email:	VATK461@ECY.WA.GOV

6. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL MATERIAL

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect. Follow the steps under ***Stop-Protect-Notify.*** For specific instructions on how to handle a human remains discovery, see: *RCW 68.50.645: Skeletal human remains—Duty to notify—Ground disturbing activities—Coroner determination—Definitions*.

Suggestion: If you are unsure whether the discovery is human bone or not, contact Guy Tasa with DAHP, for identification and next steps. Do not pick up the discovery.

Guy Tasa, PhD State Physical Anthropologist
Guy.Tasa@dahp.wa.gov
(360) 790-1633 (Cell/Office)

For discoveries that are confirmed or suspected human remains, follow these steps:

1. Notify law enforcement and the Medical Examiner/Coroner using the contacts below. **Do not call 911** unless it is the only number available to you.

   Enter contact information below (required):
   - Local Medical Examiner or Coroner name and phone: Dr. Matthew Lacy; 206-731-3232, Ext 4
   - Local Law Enforcement main name and phone: Issaquah Police Department; 425-837-3200
   - Local Non-Emergency phone number (911 if without a non-emergency number): 425-837-3200
2. The Medical Examiner/Coroner (with assistance of law enforcement personnel) will determine if the remains are human or if the discovery site constitutes a crime scene and will notify DAHP.
3. **DO NOT speak with the media, allow photography or disturbance of the remains, or release any information about the discovery on social media.**
4. If the remains are determined to be non-forensic, Cover the remains with a tarp or other materials (not soil or rocks) for temporary protection and to shield them from being photographed by others or disturbed.

Further activities:

- Per RCW 27.44.055, RCW 68.50, and RCW 68.60, DAHP will have jurisdiction over non-forensic human remains. Ecology staff will participate in consultation. Organizations may also participate in consultation.
- Documentation of human skeletal remains and funerary objects will be agreed upon through the consultation process described in RCW 27.44.055, RCW 68.50, and RCW 68.60.
- When consultation and documentation activities are complete, work in the discovery area may resume as described in Section 8.

If the project occurs on federal lands (such as a national forest or park or a military reservation) the provisions of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) apply and the responsible federal agency will follow its provisions. Note that state highways that cross federal lands are on an easement and are not owned by the state.

If the project occurs on non-federal lands, the Project Lead/Organization will comply with applicable state and federal laws, and the above protocol.

7. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS

Archaeological resources discovered during construction are protected by state law RCW 27.53 and assumed eligible for inclusion in the National Register of Historic Places under Criterion D until a formal Determination of Eligibility is made.

The Project Lead/Organization must ensure that proper documentation and field assessment are made of all discovered cultural resources in cooperation with all parties: the federal agencies (if any), DAHP, Ecology, affected tribes, and the archaeologist.

The archaeologist will record all prehistoric and historic cultural material discovered during project construction on a standard DAHP archaeological site or isolate inventory form. They will photograph site overviews, features, and artifacts and prepare stratigraphic profiles and soil/sediment descriptions for minimal subsurface exposures. They will document discovery locations on scaled site plans and site location maps.

Cultural features, horizons, and artifacts detected in buried sediments may require the archaeologist to conduct further evaluation using hand-dug test units. They will excavate units in a controlled fashion to expose features, collect samples from undisturbed contexts, or to interpret complex stratigraphy. They may also use a test unit or trench excavation to determine if an intact occupation surface is present. They will only use test units when necessary to gather information on the nature, extent, and integrity of subsurface cultural deposits to evaluate the site's significance. They will conduct excavations using standard archaeological techniques to precisely document the location of cultural deposits, artifacts, and features.

The archaeologist will record spatial information, depth of excavation levels, natural and cultural stratigraphy, presence or absence of cultural material, and depth to sterile soil, regolith, or bedrock for each unit on a standard form. They will complete test excavation unit level forms, which will include plan maps for each excavation level and artifact counts and material types, number, and vertical provenience (depth below

surface and stratum association where applicable) for all recovered artifacts. They will draw a stratigraphic profile for at least one wall of each test excavation unit.

The archaeologist will screen sediments excavated for purposes of cultural resources investigation through 1/8-inch mesh, unless soil conditions warrant 1/4-inch mesh.

The archaeologist will analyze, catalogue, and temporarily curate all prehistoric and historic artifacts collected from the surface and from probes and excavation units. The ultimate disposition of cultural materials will be determined in consultation with the federal agencies (if any), DAHP, Ecology, and the affected tribe(s).

Within 90 days of concluding fieldwork, the archaeologist will provide a technical report describing any and all monitoring and resultant archaeological excavations to the Project Lead/Organization, who will forward the report to Ecology, the federal agencies (if any), DAHP, and the affected tribe(s) for review and comment.

If assessment activities expose human remains (burials, isolated teeth, or bones), the archaeologist and Project Lead/Organization will follow the process described in **Section 6**.

8. PROCEEDING WITH WORK

The Project Lead/Organization shall work with the archaeologist, DAHP, and affected tribe(s) to determine the appropriate discovery boundary and where work can continue.

Work may continue at the discovery location only after the process outlined in this plan is followed and the Project Lead/Organization, DAHP, any affected tribe(s), Ecology, and the federal agencies (if any) determine that compliance with state and federal laws is complete.

9. ORGANIZATION RESPONSIBILITY

The Project Lead/Organization is responsible for ensuring:

- This IDP has complete and accurate information.
- This IDP is immediately available to all field staff at the sites and available by request to any party.
- This IDP is implemented to address any discovery at the site.
- That all field staff, contractors, and volunteers are instructed on how to implement this IDP.

10. ADDITIONAL RESOURCES

Informative Video

Ecology recommends that all project staff, contractors, and volunteers view this informative video explaining the value of IDP protocol and what to do in the event of a discovery. The target audience is anyone working on the project who could unexpectedly find cultural resources or human remains while excavating or digging. The video is also posted on DAHP's inadvertent discovery language website.

Ecology's IDP Video (https://www.youtube.com/watch?v=ioX-4cXfbDY)

Informational Resources

DAHP (https://dahp.wa.gov)

Washington State Archeology (DAHP 2003)
(https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

Association of Washington Archaeologists (https://www.archaeologyinwashington.com)

Potentially Interested Tribes

Interactive Map of Tribes by Area
(https://dahp.wa.gov/archaeology/tribal-consultation-information)

WSDOT Tribal Contact Website
(https://wsdot.wa.gov/tribal/TribalContacts.htm)

11. ADDITIONAL INFORMATION

Please add any additional contact information or other information needed within this IDP.

Step E.4 Tribal Contacts Cont.
Tribe: Duwamish Tribe
Name: Nancy Sackman
Title: Cultural Preservation Officer
Phone: NA
Email: preservationdept@duwamishtribe.org

Implement the IDP if you see…

Chipped stone artifacts.

Examples are:

- Glass-like material.
- Angular material.
- “Unusual” material or shape for the area.
- Regularity of flaking.
- Variability of size.



Stone artifacts from Oregon.



Stone artifacts from Washington.



Biface-knife, scraper, or pre-form found in NE Washington. Thought to be a well knapped object of great antiquity. Courtesy of Methow Salmon Rec. Foundation.

Implement the IDP if you see…

Ground stone artifacts.

Examples are:

- Unusual or unnatural shapes or unusual stone.
- Striations or scratching.
- Etching, perforations, or pecking.
- Regularity in modifications.
- Variability of size, function, or complexity.



Above: Fishing Weight - credit CRITFC Treaty Fishing Rights website.



Artifacts from unknown locations (left and right images).



Implement the IDP if you see…

Bone or shell artifacts, tools, or beads.

Examples are:

- Smooth or carved materials.
- Unusual shape.
- Pointed as if used as a tool.
- Wedge shaped like a “shoehorn”.
- Variability of size.
- Beads from shell (dentalium) or tusk.









Upper Left:*Bone Awls from Oregon.*

Upper Center: *Bone Wedge from California.*

Upper Right: *Plateau dentalium choker and bracelet, from Nez Perce National Historical Park, 19th century, made using Antalis pretiosa shells Credit: Nez Perce - Nez Perce National Historical Park, NEPE 8762, Public Domain.*

Above: *Tooth Pendants. Right: Bone Pendants. Both from Oregon and Washington.*



Implement the IDP if you see…

Culturally modified trees, fiber, or wood artifacts.

Examples are:

- Trees with bark stripped or peeled, carvings, axe cuts, de-limbing, wood removal, and other human modifications.
- Fiber or wood artifacts in a wet environment.
- Variability of size, function, and complexity.











Left and Below: *Culturally modified tree and an old carving on an aspen (Courtesy of DAHP).*

Right, Top to Bottom: *Artifacts from Mud Bay, Olympia: Toy war club, two strand cedar rope, wet basketry*.

Implement the IDP if you see…

Strange, different, or interesting looking dirt, rocks, or shells.

Human activities leave traces in the ground that may or may not have artifacts associated with them. Examples are:

- "Unusual" accumulations of rock (especially fire-cracked rock).
- "Unusual" shaped accumulations of rock (such as a shape similar to a fire ring).
- Charcoal or charcoal-stained soils, burnt-looking soils, or soil that has a "layer cake" appearance.
- Accumulations of shell, bones, or artifacts. Shells may be crushed.
- Look for the "unusual" or out of place (for example, rock piles in areas with otherwise few rocks).



Shell Midden pocket in modern fill discovered in sewer trench.



Underground oven. Courtesy of DAHP.

Shell midden with fire cracked rock.





Hearth excavated near Hamilton, WA.

Implement the IDP if you see…

Historic period artifacts (historic archaeology considered older than 50 years).

Examples are:

- Agricultural or logging equipment. May include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, etc.
- Domestic items including square or wire nails, amethyst colored glass, or painted stoneware.





Left: Top to Bottom: *Willow pattern serving bowl and slip joint pocket knife discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*

Right: *Collections of historic artifacts discovered during excavations in eastern Washington cities.*





Implement the IDP if you see…

Historic period artifacts (historic archaeology considered older than 50 years).

Examples are:

- Railway tokens, coins, and buttons.
- Spectacles, toys, clothing, and personal items.
- Items helping to understand a culture or identity.
- Food containers and dishware.



Main Image: *Dishes, bottles, workboot found at the North Shore Japanese bath house (ofuro) site, Courtesy Bob Muckle, Archaeologist, Capilano University, B.C. This is an example of an above ground resource.*





Right, from Top to Bottom: *Coins, token, spectacles and Montgomery Ward pitchfork toy discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*





Implement the IDP if you see…

- Old munition casings – if you see ammunition of any type – ***always assume they are live and never touch or move!***
- Tin cans or glass bottles with an older manufacturer's technique – maker's mark, distinct colors such as turquoise, or an older method of opening the container.



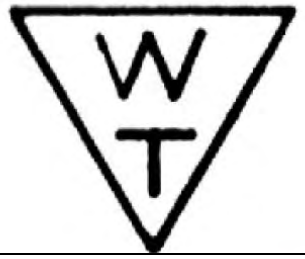


Far Left: .303 British cartridge found by a WCC planting crew on Skagit River. Don't ever touch something like this!
Left: Maker's mark on bottom of old bottle.

Right: *Old beer can found in Oregon. ACME was owned by Olympia Brewery. Courtesy of Heather Simmons.*







Logo employed by Whithall Tatum & Co. between 1924 to 1938 (Lockhart et al. 2016).



Can opening dates, courtesy of W.M. Schroeder.

Implement the IDP if you see…

You see historic foundations or buried structures.

Examples are:

- Foundations.
- Railroad and trolley tracks.
- Remnants of structures.









Counter Clockwise, Left to Right: *Historic structure 45KI924, in WSDOT right of way for SR99 tunnel. Remnants of Smith Cove shantytown (45-KI-1200) discovered during Ecology CSO excavation, City of Spokane historic trolley tracks uncovered during stormwater project, intact foundation of historic home that survived the Great Ellensburg Fire of July 4, 1889, uncovered beneath parking lot in Ellensburg.*

Implement the IDP if you see...

Potential human remains.

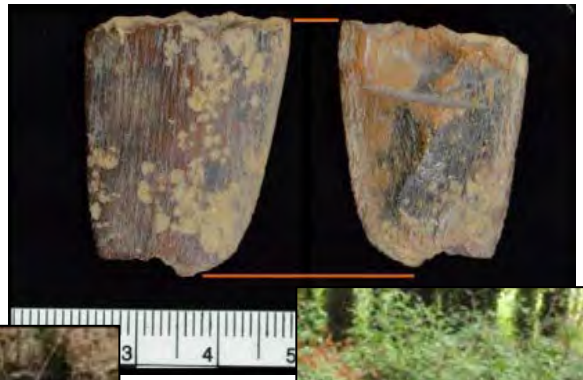
Examples are:

- Grave headstones that appear to be older than 50 years.
- Bones or bone tools--intact or in small pieces. It can be difficult to differentiate animal from human so they must be identified by an expert.
- These are all examples of animal bones and are not human.



Center: *Bone wedge tool, courtesy of Smith Cove Shantytown excavation (45KI1200).*

Other images (Top Right, Bottom Left, and Bottom) Center: Courtesy of DAHP.









Directly Above: This is a real discovery at an Ecology sewer project site.

What would you do if you found these items at a site? Who would be the first person you would call?

Hint: *Read the plan!*

APPENDIX D
CLIMATE CHANGE EVALUATION

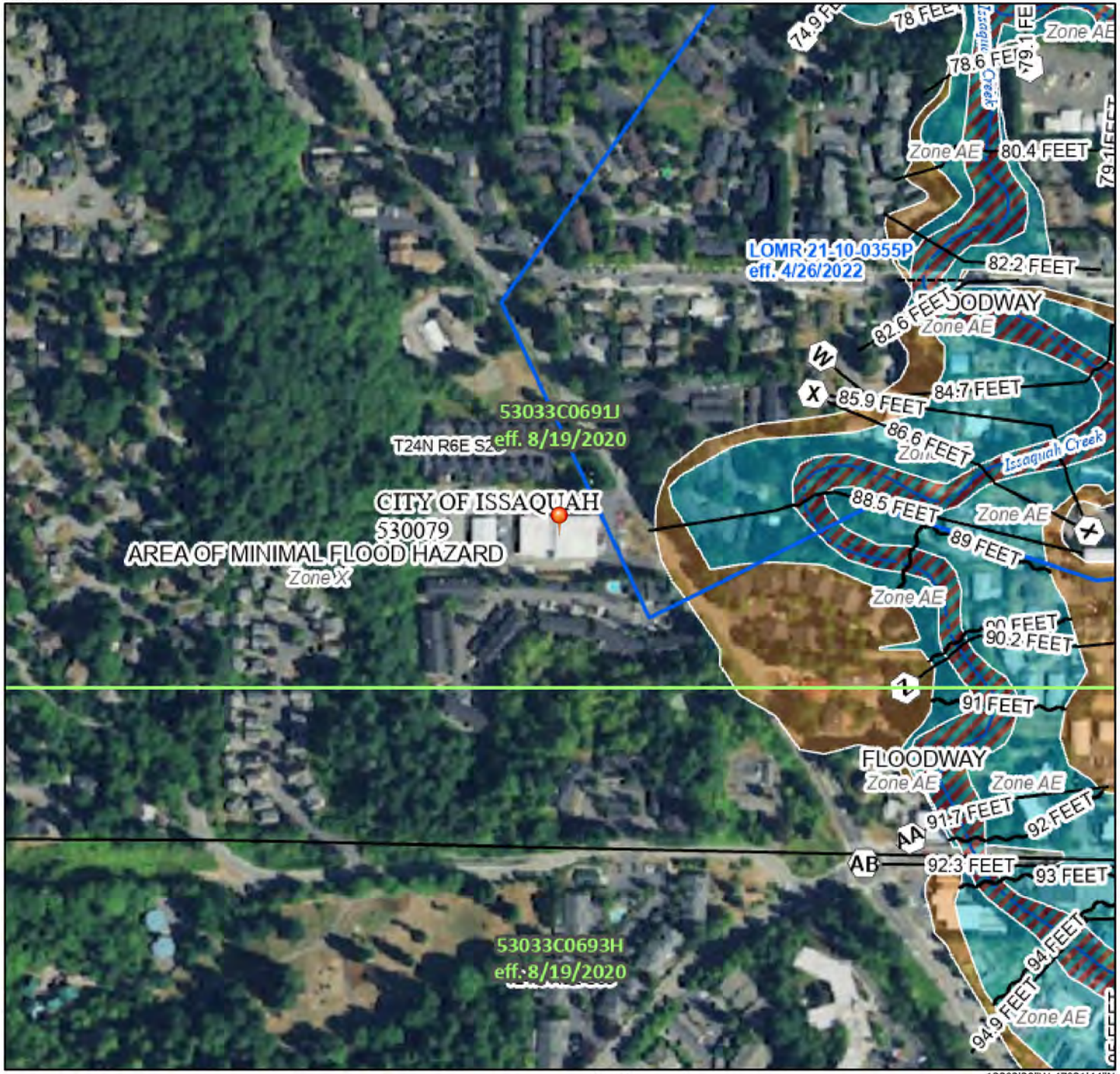
INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

National Flood Hazard Layer FIRMette

FEMA

122°2'57"W 47°32'8"N



122°2'20"W 47°31'44"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/27/2025 at 4:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

King County iMap - Flood Hazard



The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

Date: 5/27/2025 Notes:

N

King County

King County iMap - Landslides and Erosion



The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

Date: 6/10/2025 Notes:

N

King County

APPENDIX E
HEALTH AND SAFETY PLAN

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

SITE-SPECIFIC HEALTH AND SAFETY PLAN

PROJECT NO.:	1754-009	**START DATE:**	TBD
PROJECT NAME:	EFR HQ IVES Site – Interim Action	**EXPECTED DURATION:**	1 year
PROJECT ADDRESS, CITY, STATE:	175 Newport Way Northwest Issaquah, Washington	**CLIENT NAME:**	Eastside Fire & Rescue

(HASP expires 1 year from start date)

Fieldwork that Farallon Consulting, L.L.C. (Farallon) employees perform is conducted under the Farallon health and safety program, which includes the corporate Accident Prevention Plan and Hazardous Waste Operations Program. The program and these plans provide the basis upon which safety decisions should be made by Farallon personnel to maintain a safe and healthy work environment.

A site-specific Health and Safety Plan (HASP) is created to serve as a tool by which information about a project can be communicated to employees prior to field activities. As allowed under 29 CFR 1910.120(b)(1)(ii)(C), this HASP supplements the Farallon health and safety program and does not repeat standard operating procedures for safety and health. The information contained in this HASP is site-specific and directly applicable to the proposed scope of work.

Due to the potentially hazardous nature of the site and the activities occurring thereon, it is not possible to discover, evaluate, or provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but does not eliminate, the potential for injury. The health and safety guidelines in this HASP are prepared specifically for this site and its known or suspected conditions, and the HASP must be amended if conditions change.

This HASP has been prepared for the use of Farallon and its employees. Farallon personnel working at the job site must review and be responsible for complying with and implementing the provisions in this HASP. Safety briefings at the job site should include discussion of the HASP, and Farallon employees will sign Attachment 1.

PREPARED BY: Iris Hernandez
Print name

REVIEWED BY:
Sarah Snyder
Project Manager

DRAFT
Signature

June 13, 2025
Date

APPROVED BY:

Kevin Halpin
State Health and Safety Coordinator

DRAFT
Signature

June 13, 2025
Date

TABLE OF CONTENTS

1.0 CONTACT AND EMERGENCY INFORMATION 1-1
- 1.1 PROJECT CONTACTS 1-1
- 1.2 LOCAL EMERGENCY CONTACT TELEPHONE NUMBERS 1-1
- 1.3 NEAREST HOSPITAL / EMERGENCY MEDICAL CENTER 1-2
- 1.4 EMERGENCY RESPONSE AND EVACUATION PLAN 1-3

2.0 PROJECT INFORMATION 2-1
- 2.1 SITE LOCATION AND CURRENT USE 2-1
- 2.2 SITE HISTORY 2-1
- 2.3 SCOPE OF WORK 2-1

3.0 JOB HAZARD ANALYSIS 3-1
- 3.1 TASK-SPECIFIC HAZARDS 3-1
- 3.2 SITE- OR PROJECT-SPECIFIC HAZARDS 3-2

4.0 SITE CONTAMINANTS AND MONITORING REQUIREMENTS 4-1
- 4.1 SITE CONTAMINANTS 4-1
- 4.2 MONITORING REQUIREMENTS 4-1
  - 4.2.1 Air Monitoring – Volatile Organic Vapors 4-2
  - 4.2.2 Personnel Monitoring 4-3

5.0 PERSONAL PROTECTIVE EQUIPMENT 5-1

6.0 UTILITIES 6-1
- 6.1 INVESTIGATION LOCATIONS AND UTILITIES 6-1

7.0 INCIDENTS / NEAR MISSES 7-1

8.0 SITE CONTROLS 8-1
- 8.1 WORK ZONE CONTROL 8-2
- 8.2 TRAFFIC CONTROL 8-2
- 8.3 DECONTAMINATION 8-3

9.0 ADDITIONAL ELEMENTS 9-1
- 9.1 EMPLOYEE TRAINING 9-1
- 9.2 MEDICAL SURVEILLANCE 9-2
- 9.3 CONFINED SPACE ENTRY 9-2
- 9.4 DRUM/CONTAINER HANDLING AND SPILL CONTAINMENT 9-3
- 9.5 WORKPLACE VIOLENCE 9-3

10.0 LIMITATIONS 10-1

ATTACHMENTS

Attachment 1	Health and Safety Plan Acknowledgment and Agreement Form Daily Health and Safety Briefing Log
Attachment 2	Standard Job Site Protocols
Attachment 3	Task-Specific Job Hazard Analyses
Attachment 4	Health-Based and Monitoring Information for Potential Site Contaminants
Attachment 5	Air Monitoring Log Calibration/Check Log – Air Monitoring Equipment
Attachment 6	Utility Clearance Log
Attachment 7	Incident Report Form
Attachment 8	Near Miss Report Form

1.0 CONTACT AND EMERGENCY INFORMATION

1.1 PROJECT CONTACTS

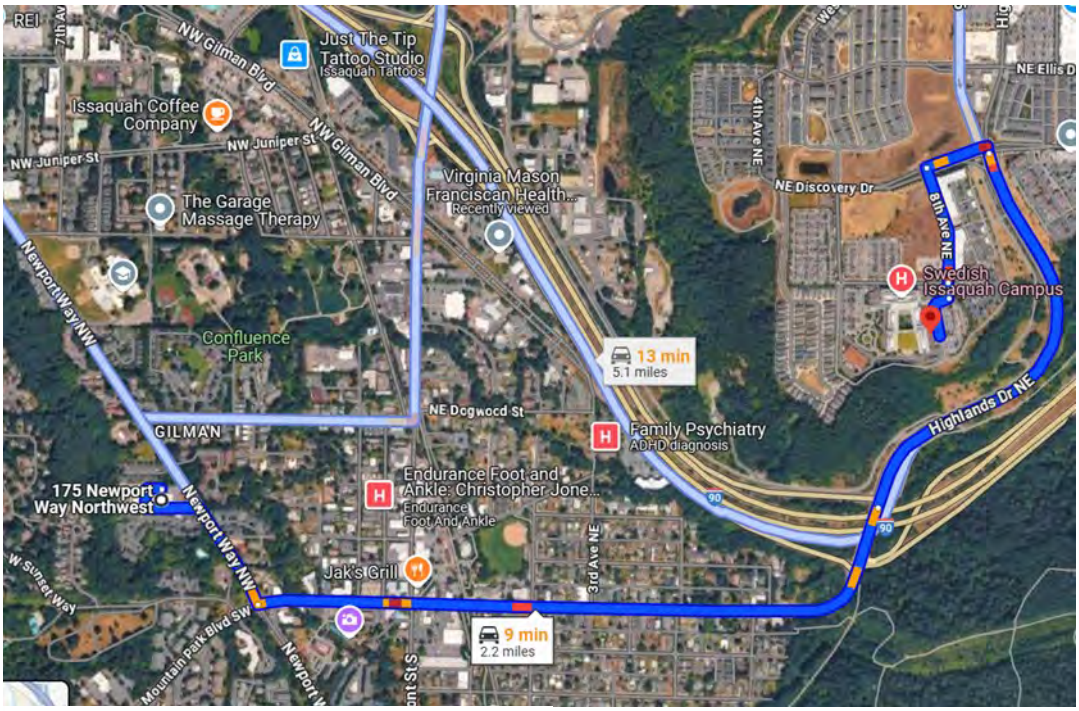
TITLE NAME	CONTACT INFORMATION	GENERAL PROJECT RESPONSIBILITIES
Site Health and Safety Officer Iris Hernandez	Cell: (509) 520-8680	Implements HASP and conducts ongoing inspections of site conditions to identify visible or potential hazards. Initiates actions to mitigate or eliminate hazards. Provides health and safety support to other on-site personnel. Communicates regularly with project management team.
Project Manager Sarah Snyder	Cell: (717) 395-0268	Ensures that field personnel have sufficient training and qualifications to perform tasks. Communicates with field team to confirm that identified health and safety protocols are implemented. Provides support for incidents, near misses, and other safety issues.
State Health and Safety Coordinator Kevin Halpin	Cell: (626) 329-8052	Reviews and approves HASP. Provides support in implementing HASP. Provides support for incidents, near misses, and other safety issues.
Client Contact Ben Lane (EFR) Julie Wartes (City of Issaquah)	Office: (425) 313-3201 Cell: (425) 677-3554 Cell: (206) 945-4295	Provides 1) knowledge of known or suspected site hazards; 2) access to the site; 3) information regarding available emergency supplies or protocols at the site; and 4) known analytical data from work performed by others.

1.2 LOCAL EMERGENCY CONTACT TELEPHONE NUMBERS

EMERGENCY CONTACT	TELEPHONE NO.
Issaquah Police Department	**Emergency:** 911 **Non-Emergency:** (425) 837-3200
Eastside Fire & Rescue	**Emergency:** 911 **Non-Emergency:** (425) 313-3200
Poison Control Center ..... (800) 222-1222 National Response Center ..... (800) 424-8802 Utility Notification Center (Washington) .....(811) or (800) 424-5555 Washington Ecology Spill Reporting ..... (800) 258-5990	

1.3 NEAREST HOSPITAL / EMERGENCY MEDICAL CENTER

Facility Name:	Swedish Emergency Room- Issaquah
Street Address:	751 Northeast Blakely Drive
City, State:	Issaquah, Washington
Phone No. :	425-394-0610



175 Newport Way NW
Issaquah, WA 98027

- Continue to Newport Way NW
  51 sec (0.1 mi)
- Follow W Sunset Way and Highlands Dr NE to NE Discovery Dr
  6 min (1.7 mi)
- Continue on NE Discovery Dr to your destination
  3 min (0.3 mi)

Swedish Emergency Room - Issaquah
751 NE Blakely Dr, Issaquah, WA 98029

1.4 EMERGENCY RESPONSE AND EVACUATION PLAN

Farallon personnel and subcontractors working on the site are to be aware of site-specific emergency and evacuation procedures, including alarm systems and evacuation plans and routes. If an incident occurs that requires emergency response, such as a fire or spill, **CALL 911 and request assistance**. Farallon staff, subcontractors, and/or others working in an area where an emergency occurs are to evacuate to a safe location away from the incident area, preferably upwind, and take attendance. Farallon staff, subcontractors, and/or contractors may not reenter the scene of the emergency without specific approval from emergency response personnel.

Subcontractors have the responsibility to account for their own employees and provide requested information to emergency response personnel immediately upon request.

For this project, the emergency evacuation gathering location is in the parking lot in front of the main building as marked by the red star in the figure below.

If the emergency causes the route to be obstructed, Farallon personnel and subcontractors are to move to an open area upwind of the hazard area, and remain there until instructed by emergency response personnel (e.g., police, fire, ambulance personnel, paramedics) to do otherwise.



2.0 PROJECT INFORMATION

2.1 SITE LOCATION AND CURRENT USE

The site is at 175 Newport Way Norwest in Issaquah, Washington (herein referred to as the Site). The Site consists of King County Parcel No. 282406-9165, which is a 109,730-square-foot (2.52 acres) lot containing several fire station buildings and an office building used by Eastside Fire & Rescue (EFR).

2.2 SITE HISTORY

According to historical information reviewed by Farallon, EFR historically conducted firefighting training exercises at the Site which included lawful deployment of aqueous film-forming foam (AFFF) containing perfluorooctane sulfonate (PFOS) and additional per- and poly-fluorinated alkyl substances (PFAS). The known releases have impacted vadose zone soil at the EFR Headquarters (HQ) Source Area at 175 Newport Way Northwest; and impacted groundwater which is a source for the City's drinking water.

AFFF training was performed at two locations on the EFR HQ Source Area:

- An area that currently is covered with lawn near the fire hydrant on the north-central portion (Median Strip); and
- The western gravel-surfaced area of the EFR Headquarters Property (Newport Way Northwest AFFF training area).

2.3 SCOPE OF WORK

Farallon's role in the next phase of work is to remediate PFAS contaminated soil and groundwater in accordance with the requirements of Agreed Order No. DE 23520 (AO) between the Washington State Department of Ecology (Ecology), EFR, and the City (Scope of Work). The specific activities that Farallon will perform are listed below:

- Monitoring well decommissioning;
- Borings with soil samples using a drill rig;
- Vadose zone soil excavation and in-situ stabilization;
- Subsurface injections to install a permeable reactive barrier (PRB);
- Observe excavation and collect soil samples;
- Monitoring well installation; and
- Groundwater monitoring.

3.0 JOB HAZARD ANALYSIS

A job hazard analysis (JHA) is a formal process that helps identify the most hazardous tasks at a job site, determine what the hazards and potential consequences of these tasks are, and develop corrective and preventative measures to eliminate or reduce the likelihood of accidents, injuries, and illnesses. A hazard is anything in the workplace that has the potential to cause harm to workers. JHAs should consider physical, chemical, biological, radiological, and other hazards that may be present. Conducting regular JHAs will help reduce worker injuries, illnesses, and unsafe work practices.

3.1 TASK-SPECIFIC HAZARDS

Many of the activities that Farallon personnel perform at job sites are routine in nature with well-known hazards. Farallon has prepared JHAs for common activities to support evaluation of site-specific hazards. All Farallon field work will be performed in accordance with the Standard Job Site Protocols found in Attachment 2.

Additionally, when checked below, the applicable JHAs must be included in Attachment 3 and will be reviewed with Site personnel prior to conducting field work:

Investigation Activities

☒ Environmental drilling with soil sampling

☒ Groundwater sampling – reconnaissance and monitoring wells

☐ Excavation activities

☐ Soil gas and subslab soil gas sampling

☐ Soil sampling with hand tools (no drilling)

☐ Other:

Cleanup Activities

☐ Underground storage tank decommissioning

☒ Excavation/construction observation

☐ Remediation systems installation, pilot tests, and operation and maintenance

☒ Remedial injections

☒ Other: in-situ soil stabilization

3.2 SITE- OR PROJECT-SPECIFIC HAZARDS

In addition to hazards inherent in the work to be performed, Farallon has identified these Site- and/or project-specific hazard(s):

- Transient debris, including drug paraphernalia;
- Lone worker concerns;
- Biological hazards;
- Vehicular traffic; and
- Heavy equipment traffic from current Site activity.

To mitigate risk from Site- and/or project-specific hazard(s), employees should:

- Do not pick up or handle transient debris, including drug paraphernalia;
- Check in with the project manager at start and end of work day;
- Wear sturdy footwear and remove trip hazards;
- Wear hi-visibility vest and block work area with safety cones/barricades; and
- Communicate work areas with EFR staff and keep line of sight towards drive lanes.

4.0 SITE CONTAMINANTS AND MONITORING REQUIREMENTS

4.1 SITE CONTAMINANTS

The following chemicals or compounds ("Site contaminants") may be present at the Site due to current Site activities or the presence of known or suspected contamination and may pose a risk to workers during performance of the scope of work:

- Perfluorobutanoic Acid (PFBA);
- Perfluorobutane Sulfonic Acid (PFBS);
- Perfluorohexanoic Acid (PFHxA);
- Perfluorohexane Sulfonic Acid (PFHxS);
- Perfluorooctanoic Acid (PFOA);
- Perfluorooctane Sulfonic Acid (PFOS);
- Perfluorononanoic Acid (PFNA);
- Perfluorodecanoic Acid (PFDA);
- 6:2 Fluorotelomer Sulfonic Acid (6:2 FTS); and
- Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX).

The table included in Attachment 4 provides health-based and air monitoring information for a variety of contaminants. This table should be reviewed for the identified Site contaminants prior to the start of work and any questions directed to the Site Health and Safety Officer.

4.2 MONITORING REQUIREMENTS

Based on the potential presence of the Site contaminants, the following monitoring protocols will be implemented.

4.2.1 Air Monitoring – Volatile Organic Vapors

As identified in Section 4.1, volatile organic vapors may be present in the breathing zone of Farallon personnel during field activities, which should be evaluated through air monitoring. Air monitoring equipment will consist of the following:

☐ Photoionization detector (PID)

☐ Colorimetric Detector Tubes; type (fill-in): _____

☒ Air monitoring not required: As applicable, justification for no air monitoring at the project site: Vapor inhalation is not applicable based on chemical properties of PFAS.

The following table provides general protocols for conducting air monitoring in the breathing zone for Farallon personnel.

Period when monitoring is required	The duration of field activities that can generate and/or sustain volatile organic vapors in the breathing zone of Farallon personnel.
Monitoring Frequency and Location	Sampling should be continuous during the project while disturbing potentially contaminated soil, uncovering and/or removing tanks and piping, drilling, or managing other contaminated media such as groundwater or soil gas. Breathing zone: take measurements at least every 15 minutes. Exclusion zone boundaries: take measurements every 30 minutes. When collecting soil and groundwater samples, take measurements continuously.
Action Levels if using PID only	10 parts per million (ppm) in breathing zone, sustained for at least 2 minutes: Stop work (including shutting down equipment if warranted), step away from zone for 15 minutes, and then take new readings. If PID measurements remain sustained at 10 ppm or greater, contact the project manager to discuss how to proceed.
Action Levels if using PID and colorimetric detector tubes	10 ppm in breathing zone, sustained for at least 2 minutes: collect a colorimetric detector tube for appropriate contaminant of concern (typically benzene or vinyl chloride are used as indicator chemicals). Stop work if tube indicates > 0.5 ppm for benzene or vinyl chloride and contact the project manager to discuss how to proceed. Stop work if PID reaches or exceeds 50 ppm above background in breathing zone and there is no discoloration of colorimetric detector tubes.
Respirator Use	If the air monitoring results suggest that the use of respirators is warranted to mitigate hazardous levels of volatile organic vapors in breathing zones, the project manager is responsible for updating this HASP to confirm the type of respirator cartridge, rest intervals, decontamination procedures, and other applicable topics. The use of respirators must be coordinated with Farallon's medical monitoring program and include yearly respirator fit testing.

Logs for recording air monitoring measurements and air monitoring equipment calibration are found in Attachment 5.

4.2.2 Personnel Monitoring

Personnel monitoring will not need to be conducted.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment (PPE) is selected based on the contaminant type(s), concentration(s) in applicable matrix (soil, water, air) and the known route(s) of entry into the human body. Project personnel are not permitted to use lower levels of protection from the specified levels of protection without the prior approval of the Site Health and Safety Officer.

PPE Level:	Modified Level D that adheres to PFAS sampling requirements
Safety Boots:	Required
Hard Hat:	Required when working around heavy equipment or locations where there is risk for head injury
Safety Vest:	Required when personal visibility is necessary or there's any vehicular traffic in the vicinity.
Safety Glasses:	Required
Hearing Protection:	Required when working around loud equipment
Gloves:	Nitrile gloves are used during contact with potentially contaminated media and surfaces Work gloves (leather or otherwise) for handling debris, heavy tools, or using hand tools
Additional Site-Specific/Client-Requirements:	Non-PFAS containing PPE
Level C PPE (respirator and chemical-resistant clothing):	Not required for this project. If air monitoring readings exceed action levels, this HASP must be modified to reflect requirements for proceeding under more protective PPE.

6.0 UTILITIES

When conducting subsurface or ground disturbing activities such as drilling or excavation, Farallon project tasks include overseeing subsurface surveys for underground utilities and structures. This is accomplished by filing a public utility notification request and by hiring a private utility locate service. When Farallon files the public utility notification, this alerts the underground utilities owners to mark the facilities on public property as required by law. Owners of underground utilities are **not required** to mark existing service laterals or utilities installed by the property owner. Therefore, private utility locate services must be hired to scan for service laterals and other buried utilities (e.g., on-Site electric distribution lines, irrigation pipes) on private property.

Public utility notification can be filed as early as 14 days prior to conducting the work, and typically is required to be filed at least 2 business days before the field work will occur (varies by state). Please provide the following information:

For projects requiring ground disturbance activities Farallon requires the Utility Locate Clearance Log to be completed and saved to the project folder (Attachment 6). In addition to the Log, please provide the following information:

Public Utility Notification Ticket No.:	TBD
Date that **private** utility locate will be performed:	

A copy of the public utility notification ticket should be included with paperwork kept on the Site during field activities.

Before starting work, identify and discuss the locations of utility and product line shutoff valves and switches on the job site with other field personnel.

6.1 INVESTIGATION LOCATIONS AND UTILITIES

Farallon's project team should identify suitable location(s) of borings and other subsurface work through a thorough review of available construction drawings and known utilities, tanks, product lines, and other known or suspected subsurface obstructions. Additionally, at least the upper 5 feet of each boring will be cleared by one of the following methods:

- Hand auger; or
- Vactor truck and air knife.

Occasionally, project, Site, or regulatory requirements may not allow for hand-clearing the upper 5 feet of a boring. The project team will consult with the Farallon State Health and Safety Coordinator to request a variance to deviate from this subsurface work-related requirement.

7.0 INCIDENTS / NEAR MISSES

Farallon employees are required to report any injury sustained while performing project work or work-related illness to the Project Manager, their Group Manager, and the Corporate Health and Safety Officer, regardless of the seriousness of the incident. The employee will complete an Incident Report form to report the incident, provided in Attachment 7.

A "near miss" is defined as an incident in which no personal injury was sustained and no property damage was incurred, but where personal injury and/or property damage could have occurred, given a slight change in time or position. Employees are encouraged to complete a Near Miss Report form, provided in Attachment 8.

8.0 SITE CONTROLS

8.1 WORK ZONE CONTROL

Farallon personnel will secure and mark work zones so that the zones are visible to site occupants and visitors and are accessible only to personnel scheduled to be in the work zone. This is intended to prevent undesirable interface between pedestrian traffic and project workers and equipment. Devices to secure zones may include:

- Cones;
- Tubular markers; and
- Barricade tape.

If site conditions, such as hazardous levels of Site contaminants, warrant separate work zones, this HASP must be modified to identify Exclusion (Hot), Contamination Reduction (Warm), and Support (Cold) Zones. Modifications must include decontamination procedures for personnel and equipment.

8.2 TRAFFIC CONTROL

Work on the Site will be conducted in areas in or near parking lots and private roadways/lanes. Traffic control/warning devices will be placed around the work area to prevent undesirable interface between pedestrian and automotive traffic and project workers and equipment. These devices may include:

- Cones;
- Tubular markers (construction candles);
- Barricades;
- Temporary fencing; and
- Barricade tape.

The traffic control/warning devices will be placed around the work in such a way that traffic access is inhibited (i.e., place cones less than 8 feet apart so cars cannot easily drive through work area without moving a cone). Barricade tape or temporary fencing will be used to inhibit access to the work area in locations where pedestrians will be encountered.

Within driveways and sidewalks, use minimum of four delineators (e.g. cones with flags, stacker cones, looper tubes, grabber tubes, etc) to surround work zone, minimum 3.5 feet in total height and maximum 4 feet distance between delineators. Use caution tape, pennant strings or barricade boards between delineators. Workers should position at least 5 feet between the delineators and work location and should face the direction of oncoming traffic as much as possible. Stop work and move out of the area if needed until truck traffic clears.

8.3 DECONTAMINATION

Farallon personnel are directed to conduct field work in a manner that minimizes employee contact with hazardous substances or with equipment that has contacted hazardous substances. Typical site decontamination procedures include the use of Alconox or a similar product to clean field equipment prior to and following use at a job site. Farallon personnel use disposable gloves to minimize cross contamination between sample locations.

If site conditions warrant upgraded decontamination procedures, this HASP must be modified to describe the equipment and personnel procedures. The corporate Hazardous Waste Operations Program provides detailed procedures for this purpose.

9.0 ADDITIONAL ELEMENTS

Information contained in this section is required under OSHA HAZWOPER rule 29 CFR 1910.120.

9.1 EMPLOYEE TRAINING

Farallon maintains an employee training program for safety-related topics. Employees will be assigned to perform project tasks for which they have been provided training. Employees are encouraged and empowered to speak up if they believe they need training or additional instruction in order to safely perform a task.

Farallon employees who perform field work at sites that may fall within the definition of 29 CFR 1910.120 will receive training that will include:

- Names of personnel and alternates responsible for Site safety and health;
- Safety, health, and other hazards present on the Site;
- Use of PPE;
- Work practices by which the employee can minimize risks from hazards;
- Safe use of engineering controls and equipment on the Site;
- Medical surveillance requirements, including recognition of symptoms and signs that might indicate overexposure to hazards; and
- Instruction on how to review and implement the Site-specific HASP.

Additional safety training is provided in many venues, including:

- New-hire orientation;
- Annual safety training;
- Project-specific instruction;
- Safety moments during staff meetings; and
- Tailgate safety briefings.

Training records and employee training certificates are maintained by the corporate health and safety management team. These records are available upon request for project-specific purposes.

9.2 MEDICAL SURVEILLANCE

Farallon conducts a medical surveillance program for employees engaged in hazardous waste field operations. The following employees (at a minimum) are covered by the medical surveillance program:

- Employees who are or may be exposed to hazardous substances or health hazards at or above an OSHA Permissible Exposure Level (PEL), or above the published exposure levels for a substance for which there is no PEL, without regard to respirator use, for 30 days or more per year;
- Employees who wear a respirator for 30 days or more per year, or as required by state-specific rules; and
- Employees who are injured, become ill, or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from a hazardous waste operation.

The corporate Hazardous Waste Operations Program provides additional information on Farallon's medical surveillance program. The Corporate Health and Safety Officer works with Farallon Human Resource to manage medical surveillance and maintain confidential records.

9.3 CONFINED SPACE ENTRY

A confined space is defined as a space meeting all of the following criteria:

- The space is large enough and arranged so as to allow an employee to fully enter the space and conduct work;
- The space has limited or restricted entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, excavations, pits); and
- The space is not designed primarily for human occupancy.

Farallon personnel occasionally encounter confined-space entry conditions when performing environmental media sample collection from excavations, or when performing in-place underground storage tank closure work. In such situations, the work must be conducted in accordance with Farallon's Confined-Space Entry Program, which requires specialized training for employees performing such work.

Farallon does not perform permit-required confined space (PRCS) entry work. Exceptions to this rule must be approved in advance by the Corporate Health and Safety Officer and prior to fieldwork commencing.

9.4 DRUM/CONTAINER HANDLING AND SPILL CONTAINMENT

It is Farallon's policy to minimize the number of situations in which employees could come into contact with drums or containers that may contain unknown chemicals or substances. Typical situations in which Farallon field personnel handle drums are waste-handling procedures following boring or monitoring well installation and sampling activities. Soil cuttings, monitoring well purge and development water, and equipment decontamination water typically are placed into drums pending disposal. In these instances, the contaminants and the range of potential concentrations typically are known. The Site-specific HASP, Work Plan, Sampling and Analysis Plan, or Waste Management Plan should present specific procedures for sampling the contents of the drums or containers. In instances where drums or containers having unknown contents are discovered at a site, Farallon typically hires a subcontractor with expertise in sampling and characterizing drum and container contents.

9.5 WORKPLACE VIOLENCE

Farallon is committed to providing employees with a safe work environment and does not tolerate any type of workplace violence committed by or against employees or other personnel at a site. Workplace violence is any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behavior that occurs at the work site. It ranges from verbal abuse to physical assaults and even homicide.

If a Farallon employee feels threatened or unsafe at a project site, the employee should remove themselves from the situation and notify the project manager immediately. Employees who experience actual or threatened violent behavior should immediately report it to the appropriate authorities.

In the event of an active shooter situation, employees are encouraged to follow guidelines provided by the U.S. Department of Homeland Security.

Active Shooter Guidance

1. Run	2. Hide	3. Fight
• Have an escape route and plan in mind. • Leave your belongings behind. • Keep your hands visible.	• Hide in an area out of the active shooter's view. • Block entry to your hiding place and lock the doors.	• As a last resort and only when your life is in imminent danger. • Attempt to incapacitate the active shooter. • Act with physical aggression and throw items at the active shooter.
CALL 911 WHEN IT IS SAFE TO DO SO		

10.0 LIMITATIONS

This Health and Safety Plan has been prepared by and for the sole use of Farallon Consulting, L.L.C. and its employees. Use of the information or protocols contained herein by any individual or entity other than the intended user is at the sole risk of that individual or entity. Entities and individuals other than Farallon and its employees must rely on their own safety programs and Health and Safety Plans. Laws, regulations, and standards pertaining to the information or protocols contained in this Health and Safety Plan may differ for other states or localities and other types of work. Any individuals or entities other than the intended users who consult this Health and Safety Plan are encouraged to independently review the pertinent laws, regulations, and standards. Under no circumstances shall Farallon Consulting, L.L.C., its officers, or employees be liable for any consequential, indirect, special, incidental, or punitive damages arising out of or related to the use of this Health and Safety Plan by anyone other than its intended user(s).

ATTACHMENT 1

Health and Safety Plan Acknowledgement and Agreement Form
Daily Health and Safety Briefing Log

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT AND AGREEMENT FORM

(All Farallon and subcontractor personnel must sign this form prior to commencing work.)

Farallon Employees: In signing this document, you indicate that you have reviewed the contents of this HASP and will work to implement and comply with the requirements in the HASP.

Farallon Subcontractors and others on the site: In signing this document, you indicate acknowledgement that:

- Non-Farallon personnel are expected to develop and work under their own safety program.
- The Farallon HASP provides general information about potential hazards at the job site but does NOT provide information pertaining to all of the hazards that a contractor's employees may be exposed to as a result of their work.
- You are required to coordinate activities and practices with the project Site Health and Safety Officer (SHSO).
- You are required to inform Farallon of any hazards you are aware of or that your work on the site might possibly pose to Farallon employees.
- You can be prohibited by the SHSO or other Farallon personnel from working on this project for unsafe work practices or failure to comply with Farallon jobsite requirements.

✓ SHSO	Company Name	Name (Print)	Signature	Date

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT AND AGREEMENT FORM

(All Farallon and subcontractor personnel must sign this form prior to commencing work.)

Farallon Employees: In signing this document, you indicate that you have reviewed the contents of this HASP and will work to implement and comply with the requirements in the HASP.

Farallon Subcontractors and others on the site: In signing this document, you indicate acknowledgement that:

- Non-Farallon personnel are expected to develop and work under their own safety program.
- The Farallon HASP provides general information about potential hazards at the job site but does NOT provide information pertaining to all of the hazards that a contractor's employees may be exposed to as a result of their work.
- You are required to coordinate activities and practices with the project Site Health and Safety Officer (SHSO).
- You are required to inform Farallon of any hazards you are aware of or that your work on the site might possibly pose to Farallon employees.
- You can be prohibited by the SHSO or other Farallon personnel from working on this project for unsafe work practices or failure to comply with Farallon jobsite requirements.

✓ SHSO	Company Name	Name (Print)	Signature	Date

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT AND AGREEMENT FORM

(All Farallon and subcontractor personnel must sign this form prior to commencing work.)

Farallon Employees: In signing this document, you indicate that you have reviewed the contents of this HASP and will work to implement and comply with the requirements in the HASP.

Farallon Subcontractors and others on the site: In signing this document, you indicate acknowledgement that:

- Non-Farallon personnel are expected to develop and work under their own safety program.
- The Farallon HASP provides general information about potential hazards at the job site but does NOT provide information pertaining to all of the hazards that a contractor's employees may be exposed to as a result of their work.
- You are required to coordinate activities and practices with the project Site Health and Safety Officer (SHSO).
- You are required to inform Farallon of any hazards you are aware of or that your work on the site might possibly pose to Farallon employees.
- You can be prohibited by the SHSO or other Farallon personnel from working on this project for unsafe work practices or failure to comply with Farallon jobsite requirements.

✓ SHSO	Company Name	Name (Print)	Signature	Date

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT AND AGREEMENT FORM

(All Farallon and subcontractor personnel must sign this form prior to commencing work.)

Farallon Employees: In signing this document, you indicate that you have reviewed the contents of this HASP and will work to implement and comply with the requirements in the HASP.

Farallon Subcontractors and others on the site: In signing this document, you indicate acknowledgement that:

- Non-Farallon personnel are expected to develop and work under their own safety program.
- The Farallon HASP provides general information about potential hazards at the job site but does NOT provide information pertaining to all of the hazards that a contractor's employees may be exposed to as a result of their work.
- You are required to coordinate activities and practices with the project Site Health and Safety Officer (SHSO).
- You are required to inform Farallon of any hazards you are aware of or that your work on the site might possibly pose to Farallon employees.
- You can be prohibited by the SHSO or other Farallon personnel from working on this project for unsafe work practices or failure to comply with Farallon jobsite requirements.

✓ SHSO	Company Name	Name (Print)	Signature	Date

FARALLON CONSULTING

DAILY HEALTH AND SAFETY BRIEFING LOG

PROJECT INFORMATION	
Farallon PN:	Project Name:
Site Address:	City/State:
MEETING INFORMATION	
Conducted By:	Weather:
Major Job Task:	Date:

DAILY EQUIPMENT CHECKLIST		
☐ Site Check In	☐ First Aid Kit Location(s)	☐ Ear Plugs (if required)
☐ Proper ID/Safety Credentials	☐ Fire Extinguisher Location(s)	☐ Hand Protection (if required)
☐ Hard Hat	☐ Eye Wash Station	☐ Face Shield (if required)
☐ Safety Glasses	☐ Traffic Control (if needed)	☐ Respirator (if required)
☐ Orange Reflective Vest	☐ Safety Toe Boots	☐ _____

UTILITY CLEARANCE LOG – initial when markings confirmed		
_____Electric = Red	_____Gas-Oil-Steam = Yellow	_____Water = Blue
_____Sewer = Green	_____Communications = Orange	_____Temporary Survey = Pink
_____Irrigation/non-potable = Purple	_____No Utility Clearance required	

HEALTH AND SAFETY BRIEFING	
☐ Head Count (No. of employees:)	☐ Chemical/Contaminant Hazards
☐ Emergency Response	☐ Health Hazards
☐ Who will…? (Provide names below.) Call 911: Alternate to call 911: Provide First Aid/CPR:	☐ Environmental Hazards
	☐ Physical Hazards
	☐ Slips, Trips, and Falls
	☐ Utility Locates
☐ Emergency Exits/Rally Points/Hospital Route	☐ Utility/Product Shut-Off Valves/Switches
☐ Site Security and Exclusion Zone	☐ Near Miss Reporting (reminder to look)
☐ Vehicle/Equipment-Specific Safety Practices	☐ Incident Reporting (procedures and forms)
☐ Stop Work Authority	☐ Traffic Control
☐ Excavation Safety (if applicable)	☐ HASP Reviewed and Signed

OTHER SITE-SPECIFIC HEALTH AND SAFETY ISSUES DISCUSSED	
1)	3)
2)	4)

DAILY HEALTH AND SAFETY BRIEFING ATTENDEES		
NAME	COMPANY	SIGNATURE

ATTACHMENT 2

Standard Job Site Protocols

Job Hazard Analysis – Standard Job Site Protocols
Issued September 23, 2020

Farallon developed this Job Hazard Analysis to address typical hazards associated with performing field work. Farallon expects each employee to be safety-focused and to consider safety the top priority when working at a job site.

Safety Briefing	A safety briefing will be held at the job site at the beginning of each day and documented in field notes. On multiple-day projects on the same job site, a safety briefing is required each day.

The following hazards may be present at any type of Farallon job site:

Potential Hazards	Preventive Measures
Inclement weather (e.g., hard rain, snow, ice, high winds, electrical storms, extreme temperatures)	• Check weather reports daily. Evaluate appropriateness of proceeding with field work during inclement weather. • Before driving, be sure that all windows of vehicles are clear of snow and other debris or obstructions. • Drive at the speed limit or less, as needed, to keep a safe distance from any vehicles ahead. Allow enough space between vehicles for braking and slowing. • Stop work and shut down the job site if high winds, lightning, or other adverse weather conditions may pose a risk to site workers.
Exposure to chemicals and contaminants	• Wash hands before eating, drinking, using tobacco products, or otherwise touching one's face. • Before beginning the project, evaluate whether it is safe to wear contact lenses. Most hazards related to eye protection require personal protective equipment upgrades regardless of contact lens use. • Before conducting field work, evaluate whether respirators may be used, to determine whether facial hair may need to be removed so it does not interfere with proper respirator fit.
Cold stress	• See page 2 for OSHA Quick Card.
Heat stress	• See page 3 for OSHA Quick Card.
Lone worker	• During HASP preparation, evaluate risks of working alone at a job site. Implement measures to mitigate risks. • Use the buddy system or re-evaluate tasks if the threat of personal harm cannot be mitigated. • Carry a cell phone or radio on person at all times. • Carry a whistle or other noise-making device if necessary. • In remote areas, carry a GPS-enabled beacon (set up reporting in office prior to field work). • Know the route to the closest hospital.
Plants and insects	• Be aware of poisonous plants. • Apply insect repellant. • Carry first-aid ointment or barrier cream. • Do not wear cologne or other scented products. • Avoid eating in areas where bees or wasps are located.

OSHA® QUICK CARD™

Protecting Workers from Cold Stress

Cold temperatures and increased wind speed (wind chill) cause heat to leave the body more quickly, putting workers at risk of cold stress. Anyone working in the cold may be at risk, e.g., workers in freezers, outdoor agriculture and construction.

Common Types of Cold Stress

Hypothermia

- Normal body temperature (98.6°F) drops to 95°F or less.
- **Mild Symptoms:** alert but shivering.
- **Moderate to Severe Symptoms:** shivering stops; confusion; slurred speech; heart rate/breathing slow; loss of consciousness; death.

Frostbite

- Body tissues freeze, e.g., hands and feet. Can occur at temperatures above freezing, due to wind chill. May result in amputation.
- **Symptoms:** numbness, reddened skin develops gray/white patches, feels firm/hard, and may blister.

Trench Foot (also known as Immersion Foot)

- Non-freezing injury to the foot, caused by lengthy exposure to wet and cold environment. Can occur at air temperature as high as 60°F, if feet are constantly wet.
- **Symptoms:** redness, swelling, numbness, and blisters.

Risk Factors

- Dressing improperly, wet clothing/skin, and exhaustion.

For Prevention, Your Employer Should:

- Train you on cold stress hazards and prevention.
- Provide engineering controls, e.g., radiant heaters.
- Gradually introduce workers to the cold; monitor workers; schedule breaks in warm areas.

For more information:

OSHA® Occupational Safety and Health Administration

U.S. Department of Labor

www.osha.gov (800) 321-OSHA (6742)

OSHA 3156-02R 2014

OSHA® QUICK CARD™

How to Protect Yourself and Others

- Know the symptoms; monitor yourself and co-workers.
- Drink warm, sweetened fluids (no alcohol).
- Dress properly:
  - Layers of loose-fitting, insulating clothes
  - Insulated jacket, gloves, and a hat (waterproof, if necessary)
  - Insulated and waterproof boots

What to Do When a Worker Suffers from Cold Stress

For Hypothermia:

- Call 911 immediately in an emergency.
- To prevent further heat loss:
  - Move the worker to a warm place.
  - Change to dry clothes.
  - Cover the body (including the head and neck) with blankets, and with something to block the cold (e.g., tarp, garbage bag). Do **not** cover the face.
- If medical help is more than 30 minutes away:
  - Give warm, sweetened drinks if alert (no alcohol).
  - Apply heat packs to the armpits, sides of chest, neck, and groin. Call 911 for additional rewarming instructions.

For Frostbite:

- Follow the recommendations "**For Hypothermia**".
- Do not rub the frostbitten area.
- Avoid walking on frostbitten feet.
- Do not apply snow/water. Do not break blisters.
- Loosely cover and protect the area from contact.
- Do not try to rewarm the area unless directed by medical personnel.

For Trench (Immersion) Foot:

- Remove wet shoes/socks; air dry (in warm area); keep affected feet elevated and avoid walking. Get medical attention.

For more information:

OSHA® Occupational Safety and Health Administration

U.S. Department of Labor

www.osha.gov (800) 321-OSHA (6742)

OSHA® QUICK CARD™

Protecting Workers from Heat Stress

Heat Illness

Exposure to heat can cause illness and death. The most serious heat illness is heat stroke. Other heat illnesses, such as heat exhaustion, heat cramps and heat rash, should also be avoided.

There are precautions that can be taken any time temperatures are high and the job involves physical work.

Risk Factors for Heat Illness

- High temperature and humidity, direct sun exposure, no breeze or wind
- Heavy physical labor
- No recent exposure to hot workplaces
- Low liquid intake
- Waterproof clothing

Symptoms of Heat Exhaustion

- Headache, dizziness, or fainting
- Weakness and wet skin
- Irritability or confusion
- Thirst, nausea, or vomiting

Symptoms of Heat Stroke

- May be confused, unable to think clearly, pass out, collapse, or have seizures (fits)
- May stop sweating

To Prevent Heat Illness:



- Establish a complete heat illness prevention program.
- Provide training about the hazards leading to heat stress and how to prevent them.
- Provide a lot of cool water to workers close to the work area. At least one pint of water per hour is needed.

For more information:
OSHA® Occupational Safety and Health Administration
www.osha.gov (800) 321-OSHA (6742)

OSHA 3154-08R 2017

OSHA® QUICK CARD™



- Modify work schedules and arrange frequent rest periods with water breaks in shaded or air-conditioned areas.
- Gradually increase workloads and allow more frequent breaks for workers new to the heat or those that have been away from work to adapt to working in the heat (acclimatization).
- Designate a responsible person to monitor conditions and protect workers who are at risk of heat stress.
- Consider protective clothing that provides cooling.

How to Protect Workers





- Know signs/symptoms of heat illnesses; monitor yourself; use a buddy system.
- Block out direct sun and other heat sources.
- Drink plenty of fluids. Drink often and BEFORE you are thirsty. Drink water every 15 minutes.
- Avoid beverages containing alcohol or caffeine.
- Wear lightweight, light colored, loose-fitting clothes.

What to Do When a Worker is Ill from the Heat

- Call a supervisor for help. If the supervisor is not available, call 911.
- Have someone stay with the worker until help arrives.
- Move the worker to a cooler/shaded area.
- Remove outer clothing.
- Fan and mist the worker with water; apply ice (ice bags or ice towels).
- Provide cool drinking water, if able to drink.

IF THE WORKER IS NOT ALERT or seems confused, this may be a heat stroke. CALL 911 IMMEDIATELY and apply ice as soon as possible.

For more information:
OSHA® Occupational Safety and Health Administration
www.osha.gov (800) 321-OSHA (6742)

ATTACHMENT 3

Task-Specific Job Hazard Analyses

Job Hazard Analysis – Excavation Observation, Including Construction Projects
Issued September 23, 2020

Farallon developed this Job Hazard Analysis (JHA) to address typical hazards associated with the noted activity. For each project, the project team should evaluate the listed hazards and update the JHA accordingly to note additional site-specific or project-specific hazards. Field work may be performed in conjunction with other JHAs, depending on project scope.

Farallon employees are responsible for being knowledgeable about general site conditions and associated preventive measures as noted in the Job Hazard Analysis – General Site Conditions.

Key Pre-Field Tasks	Utility notification (Section 6 of site-specific Health and Safety Plan [HASP]). Review of as-built and engineering drawings for the property. Review of air monitoring requirements (Section 4.2 of site-specific HASP).
Personal Protective Equipment (PPE)	Level D – safety boots, high-visibility clothing (vest if exposed to vehicular traffic), safety glasses with side shields, hard hat, appropriate gloves, hearing protection.
Safety Data Sheets Needed	Sample preservative(s), equipment decontamination chemicals.
Safety Briefing	A safety briefing will be held at the job site at the beginning of each day and documented in field notes. On multiple-day projects on the same job site, a safety briefing is required each day.

Many hazards encountered during excavation projects are related to activities performed by the contractor. Farallon employees typically serve in an observation role and should not be participating in the physical activities required for excavation activities. Farallon employees should be knowledgeable of the hazards related to excavation activities and be able to identify when a hazard is present and how to mitigate it.

Primary health and safety hazards during excavation activities are the risk of being struck by the excavator, specifically the excavator bucket; entering an excavation that has sidewalls that are not properly sloped or supported with the proper bracing or shoring; and being exposed to chemical vapors or contaminated particulates via inhalation. Key measures that the excavation operator should take to mitigate these hazards are:

- Know location of overhead and subgrade utilities.
- If excavation exceeds 4 feet below ground surface (Washington) or 5 feet below ground surface (Oregon and California), implement proper sloping or shoring; some excavations may warrant shoring at shallower depths.
- Maintain required excavation setbacks for workers and equipment. Monitor the condition of sidewalls and surrounding ground conditions.
- Work with Farallon personnel to conduct air-monitoring within the excavation as warranted based on chemicals present.
- Have spill containment supplies readily available.

Job Hazard Analysis – Excavation Observation, Including Construction Projects
Issued September 23, 2020

The following table provides a Job Hazard Analysis for tasks that Farallon employees typically perform during observation of excavation activities.

Job Steps	Potential Hazards	Preventive Measures
Mobilize to site with equipment/supplies suitable for excavation oversight.	Vehicle and pedestrian traffic. Strain from lifting and carrying. Slips, trips, or falls.	• Follow safe driving procedures. • Employ safe lifting procedures. Evaluate walking path before proceeding. Use hand truck or cart to avoid carrying heavy or awkward loads. • Be aware of surroundings.
Set up job site, including any site and traffic controls, and conduct on-site utility clearance.	Vehicle and pedestrian traffic. Pedestrian interactions (unfriendly). Slips, trips, or falls.	• Begin with safety briefing. • Implement traffic control through cones or other barriers when working in parking lots or other on-site, low-speed vehicle traffic areas. • When conducting work within road right-of-way, subcontract a traffic control company to develop and implement traffic-control plans if warranted. • Use a traffic control subcontractor for implementing their traffic-control plan, such as setting out cones and tape in the road to define the safety area and/or conduct flagging operations. • Stand clear of vehicular traffic. • Be aware of surroundings. • Establish exclusion zone for job site. • Be aware of pedestrian traffic entering the exclusion zone.
Observe soil excavation activities, including removal of contaminated soil, creation of temporary soil stockpiles, and filling of trucks for off-site transport and disposal of soil.	Vehicle and pedestrian traffic. Exposure to chemicals and contaminants. Open excavation, including sidewall cave-in. Equipment failure. Slips, trips, or falls.	• Stand clear of equipment operation zone, including swing radius. • Stand clear of temporary storage areas and travel paths for dump trucks. • Monitor Farallon personnel breathing zone in accordance with the air monitoring protocol presented in site-specific HASP. Stop work and reevaluate PPE if monitoring indicates respiratory protection is warranted. Have respirator at hand as identified in site-specific HASP. • Keep work area clear of hazards.

Job Hazard Analysis – Excavation Observation, Including Construction Projects
Issued September 23, 2020

Job Steps	Potential Hazards	Preventive Measures
Collect samples in accordance with sampling plan.	Vehicle/heavy-equipment traffic, including dump trucks. Open excavation, including sidewall cave-in. Exposure to chemicals and contaminants. Contact with sample preservative (acid). Sample-container breakage. Slips, trips, or falls.	• Avoid entering excavation; collect samples from backhoe bucket. • Use agreed-upon hand signals with heavy-equipment operators. • Stand clear of equipment operation zone, including swing radius. • Monitor Farallon personnel breathing zone in accordance with the air monitoring protocol presented in site-specific HASP. Stop work and reevaluate PPE if monitoring indicates respiratory protection is warranted. Have respirator at hand as identified in site-specific HASP. • Evaluate soil samples at arm's length. Place soil inside a resealable plastic bag if closer evaluation is warranted. Avoid inhaling odors from samples. • Wear nitrile or other suitable gloves. • Handle sample containers carefully to avoid spilling preservative. • Handle and store sample containers carefully. • Keep work area clear of hazards.
Observe backfill of excavation.	Open excavation, including sidewall cave-in. Vehicle/heavy-equipment traffic, including dump trucks. Slips, trips, or falls.	• Avoid entering excavation. • Stand clear of equipment operation zone, including swing radius; use agreed-upon hand signals with heavy-equipment operators. • Stand away from the travel path for dump trucks. • Keep work area clear of hazards.
Clean the site; demobilize.	Vehicle and pedestrian traffic. Strain from lifting and carrying. Slips, trips, or falls.	• Use buddy system to remove traffic control in parking lots or other similar low-speed vehicle traffic areas, as necessary. • Employ safe lifting procedures. • Keep work area clear of hazards.
Package and deliver samples to laboratory.	Sample-container breakage. Strain from lifting. Vehicle and pedestrian traffic.	• Handle and pack sample containers carefully. • Employ safe lifting procedures. Evaluate walking path before proceeding. Use hand truck or cart to avoid carrying heavy or awkward loads. • Follow safe driving procedures.

Job Hazard Analysis – Groundwater Sampling, including Monitoring Wells
Issued September 23, 2020

Farallon developed this Job Hazard Analysis (JHA) to address typical hazards associated with the noted activity. For each project, the project team should evaluate the listed hazards and update the JHA accordingly to note additional site-specific or project-specific hazards. Field work may be performed in conjunction with other JHAs, depending on project scope.

Farallon employees are responsible for being knowledgeable about general site conditions and associated preventive measures as noted in the Job Hazard Analysis – General Site Conditions.

Personal Protective Equipment (PPE)	Level D – safety boots, high-visibility clothing (vest if exposed to vehicular traffic), safety glasses with side shields, hard hat, appropriate gloves, hearing protection. Face shield may be warranted depending on contaminant(s).
Safety Data Sheets Needed	Sample preservative(s), equipment decontamination chemicals.
Safety Briefing	A safety briefing will be held at the job site at the beginning of each day and documented in field notes. On multiple-day projects on the same job site, a safety briefing is required each day.

Job Steps	Potential Hazards	Preventive Measures
Mobilize with equipment/supplies suitable for sampling.	Vehicle and pedestrian traffic. Strain from lifting and carrying. Slips, trips, or falls.	• Follow safe driving procedures. • Employ safe lifting procedures. Evaluate walking path before proceeding. Use hand truck or cart to avoid carrying heavy or awkward loads. • Be aware of surroundings.
Set up job site, including any site and traffic controls.	Vehicle and pedestrian traffic. Pedestrian interactions (unfriendly). Slips, trips, or falls.	• Begin with safety briefing. • Implement traffic control through cones or other barriers when working in parking lots or other on-site, low-speed vehicle traffic areas. • When conducting work within road right-of-way, subcontract a traffic control company to develop and implement traffic-control plans if warranted. • Use a traffic control subcontractor for implementing their traffic-control plan, such as setting out cones and tape in the road to define the safety area and/or conduct flagging operations. • Stand clear of vehicular traffic. • Be aware of surroundings. • Establish exclusion zone for job site. • Be aware of pedestrian traffic entering the exclusion zone.

Job Hazard Analysis – Groundwater Sampling, including Monitoring Wells
Issued September 23, 2020

Job Steps	Potential Hazards	Preventive Measures
Gauge water levels and product thickness (where applicable) in well(s).	Exposure to chemicals and contaminants. Strain and repetitive motion. Slips, trips, or falls.	• Monitor breathing zone in accordance with the air monitoring protocol presented in site-specific HASP. Stop work and re-evaluate PPE if monitoring indicates respiratory protection is warranted. Have respirator at hand as identified in site-specific HASP. • Wear nitrile or other suitable gloves. • Wear protective clothing if contaminants pose a dermal hazard. • Employ safe lifting procedures. • Keep work area clear of trip or fall hazards.
Purge well(s) and collect purge water.	Exposure to chemicals and contaminants. Strain and repetitive motion from bailing, pulling pumps, and carrying full containers of purge water. Slips, trips, or falls.	• Monitor breathing zone in accordance with the air monitoring protocol presented in site-specific HASP. Stop work and re-evaluate PPE if monitoring indicates respiratory protection is warranted. Have respirator at hand as identified in site-specific HASP. • Wear nitrile or other suitable gloves. • Wear protective clothing if contaminants pose a dermal hazard. • Employ safe lifting procedures. • Keep work area clear of trip or fall hazards.
Collect samples in accordance with sampling plan.	Exposure to chemicals and contaminants. Contact with sample preservative (acid). Sample-container breakage. Slips, trips, or falls.	• Monitor breathing zone in accordance with the air monitoring protocol presented in site-specific HASP. Stop work and re-evaluate PPE if monitoring indicates respiratory protection is warranted. Have respirator at hand as identified in site-specific HASP. • Wear nitrile or other suitable gloves. • Wear protective clothing if contaminants pose a dermal hazard. • Handle sample containers carefully. • Keep work area clear of trip or fall hazards.
Dispose of or store purge water on the site.	Exposure to chemicals and contaminants. Strain and repetitive motion from carrying and lifting full containers of purge water. Slips, trips, or falls.	• Monitor breathing zone in accordance with the air monitoring protocol presented in site-specific HASP. Stop work and re-evaluate PPE if monitoring indicates respiratory protection is warranted. Have respirator at hand as identified in site-specific HASP. • Wear nitrile or other suitable gloves. • Wear protective clothing if contaminants pose a dermal hazard. • Use suitable equipment to transport water (e.g., pumps, drum dollies). • Keep work area clear of trip or fall hazards.

Job Steps	Potential Hazards	Preventive Measures
Clean the site; demobilize.	Vehicle and pedestrian traffic. Strain from lifting. Slips, trips, or falls.	• Use buddy system to remove traffic control in parking lots or other similar low-speed vehicle traffic areas, as necessary. • Employ safe lifting procedures. • Keep work area clear of hazards.
Package and deliver samples to laboratory.	Sample-container breakage. Strain from lifting. Vehicle and pedestrian traffic.	• Handle and pack sample containers carefully. • Employ safe lifting procedures. Evaluate walking path before proceeding. Use hand truck or cart to avoid carrying heavy or awkward loads. • Follow safe driving procedures.

Job Hazard Analysis – Injection Activities
Issued September 23, 2020

Farallon developed this Job Hazard Analysis (JHA) to address typical hazards associated with the noted activity. For each project, the project team should evaluate the listed hazards and update the JHA accordingly to note additional site-specific or project-specific hazards. Field work may be performed in conjunction with other JHAs, depending on project scope.

Farallon employees are responsible for being knowledgeable about general site conditions and associated preventive measures as noted in the Job Hazard Analysis – General Site Conditions.

Key Pre-Field Tasks	Utility notification (Section 6 of site-specific Health and Safety Plan [HASP]). Applicable underground injection control approval from regulatory agency. Review of as-built and engineering drawings for the property.
Personal Protective Equipment (PPE)	Level D – safety boots, high-visibility clothing (vest if exposed to vehicular traffic), safety glasses with side shields, hard hat, appropriate gloves, hearing protection.
Safety Data Sheets Needed	Injection or amendment chemicals and/or products.
Safety Briefing	A safety briefing will be held at the job site at the beginning of each day and documented in field notes. On multiple-day projects on the same job site, a safety briefing is required each day.

Many hazards encountered during remedial injection projects are related to activities performed by contractors. Farallon employees typically serve in an observation role during contractor-performed activities. Farallon employees should be knowledgeable of the hazards related to these activities and be able to identify when a hazard is present and how to mitigate it.

Job Steps	Potential Hazards	Preventive Measures
Mobilize to site with equipment/supplies suitable for injection observation tasks.	Vehicle and pedestrian traffic. Strain from lifting and carrying. Slips, trips, or falls.	• Follow safe driving procedures. • Employ safe lifting procedures. Evaluate walking path before proceeding. Use hand truck or cart to avoid carrying heavy or awkward loads. • Be aware of surroundings.

Job Hazard Analysis – Injection Activities
Issued September 23, 2020

Job Steps	Potential Hazards	Preventive Measures
Set up job site, including any site and traffic controls, and conduct on-site utility clearance.	Vehicle and pedestrian traffic. Pedestrian interactions (unfriendly). Slips, trips, or falls.	• Begin with safety briefing. • Implement traffic control through cones or other barriers when working in parking lots or other on-site, low-speed vehicle traffic areas. • When conducting work within road right-of-way, subcontract a traffic control company to develop and implement traffic-control plans if warranted. • Use a traffic control subcontractor for implementing their traffic-control plan, such as setting out cones and tape in the road to define the safety area and/or conduct flagging operations. • Stand clear of vehicular traffic. • Be aware of surroundings. • Establish exclusion zone for job site. • Be aware of pedestrian traffic entering the exclusion zone.
Coordinate injection drill rig setup; establish workstation and exclusion zone if needed.	Accident or injury from rig movement or equipment failure. Contact with overhead utilities or obstructions. Soft terrain. Unexpected rig movement. Slips, trips, or falls.	• Ensure that all staff know the location of the kill switch for the drilling rig. • Visually inspect rig (e.g., fire extinguisher on board, no oil or other fluid leaks, cabling and associated equipment in good condition, pressurized hoses secured with whip-checks or adequate substitute, jacks in good condition). • Verify a clear pathway to the drilling location and clearance for raising mast. • Provide hand signals and guidance to the driver, as needed, to place rig. • Use wooden blocks under jacks to spread load, if necessary. Chock wheels if on slope. • Set up workstations with clear walking paths to and from rig. Use safety tape and cones.

Job Hazard Analysis – Injection Activities
Issued September 23, 2020

Job Steps	Potential Hazards	Preventive Measures
Observe injection activities. Includes clearing upper 5 feet of drilling location by hand auger.	Accident or injury from rig movement or equipment failure. Contact with overhead utilities or obstructions. Injection compound splash hazard. Daylighting of injection material. Strain from lifting and carrying. Exposure to chemicals and contaminants. Slips, trips, or falls. Noise.	• Stand clear of operating equipment. • Wear eye and hearing protection. • Stand upwind to minimize exposure when possible. • Re-inspect utility markings at each drilling location before proceeding with injection boring. • If drilling within 3 feet of marked utilities, daylight the utility (hand-shovel) to verify its location. • Keep work area clear of trip or fall hazards. • Perform periodic visual inspections of drill rig. • Employ safe lifting procedures. • Contact Corporate Health and Safety Coordinator if variance for utility clearing is required. • Maintain spill kit and PPE appropriate for the injection compound at the site in the event of daylighting or spillage.
Observe injection borehole abandonment.	Exposure to chemicals and contaminants. Eye injury from splashing or release of pressurized grout. Strain from lifting bags of bentonite/grout (if Farallon employee is performing the backfill task). Slips, trips, or falls.	• Wear goggles and/or splash shield if standing within splash zone of grout. • Wear nitrile or other suitable gloves. • Keep work area clear of hazards. • Employ safe lifting procedures.
Clean the site; demobilize.	Strain from lifting. Vehicle and pedestrian traffic. Slips, trips, or falls.	• Use buddy system to remove traffic control in parking lots or other similar low-speed vehicle traffic areas, as necessary. • Employ safe lifting procedures. • Keep work area clear of hazards.

Job Hazard Analysis – Soil Sampling With Hand Tools
Issued September 23, 2020

Farallon developed this Job Hazard Analysis (JHA) to address typical hazards associated with the noted activity. For each project, the project team should evaluate the listed hazards and update the JHA accordingly to note additional site-specific or project-specific hazards. Field work may be performed in conjunction with other JHAs, depending on project scope.

Farallon employees are responsible for being knowledgeable about general site conditions and associated preventive measures as noted in the Job Hazard Analysis – General Site Conditions.

Key Pre-Field Tasks	Utility notification (Section 6 of site-specific Health and Safety Plan [HASP]).
Personal Protective Equipment (PPE)	Level D – safety boots, high-visibility clothing (vest if exposed to vehicular traffic), safety glasses with side shields, hard hat, appropriate gloves, hearing protection.
Safety Data Sheets Needed	Sample preservative(s), equipment decontamination chemicals.
Safety Briefing	A safety briefing will be held at the job site at the beginning of each day and documented in field notes. On multiple-day projects on the same job site, a safety briefing is required each day.

Job Steps	Potential Hazards	Preventive Measures
Mobilize to site with equipment/supplies suitable for soil sampling.	Vehicle and pedestrian traffic. Strain from lifting and carrying. Slips, trips, or falls.	• Follow safe driving procedures. • Employ safe lifting procedures. Evaluate walking path before proceeding. Use hand truck or cart to avoid carrying heavy or awkward loads. • Be aware of surroundings.
Set up job site, including any site and traffic controls, and conduct on-site utility clearance.	Vehicle and pedestrian traffic. Pedestrian interactions (unfriendly). Slips, trips, or falls.	• Begin with safety briefing. • Implement traffic control through cones or other barriers when working in parking lots or other on-site, low-speed vehicle traffic areas. • When conducting work within road right-of-way, subcontract a traffic control company to develop and implement traffic-control plans if warranted. • Use a traffic control subcontractor for implementing their traffic-control plan, such as setting out cones and tape in the road to define the safety area and/or conduct flagging operations. • Stand clear of vehicular traffic. • Be aware of surroundings. • Establish exclusion zone for job site. • Be aware of pedestrian traffic entering the exclusion zone.

Job Hazard Analysis – Soil Sampling With Hand Tools
Issued September 23, 2020

Job Steps	Potential Hazards	Preventive Measures
Use hand tools to collect soil samples in accordance with sampling plan. Include managing cuttings.	Exposure to chemicals and contaminants. Strain and repetitive motion. Hitting an underground or overhead utility or other obstruction. Eye injury from flying debris. Contact with sample preservative (acid). Sample-container breakage. Strain from lifting and carrying soil cores and buckets. Slips, trips, or falls.	• Monitor breathing zone in accordance with the air monitoring protocol presented in site-specific HASP. Stop work and re-evaluate PPE if monitoring indicates respiratory protection is warranted. Have respirator at hand as identified in site-specific HASP. • Wear nitrile or other suitable gloves. • Handle and store sample containers carefully to avoid spilling preservative. • Employ safe lifting procedures and good body posture when using hand tools. • Keep work area clear of hazards. • Evaluate soil samples at arm's length. Place soil inside a resealable plastic bag if closer evaluation is warranted. Avoid inhaling odors from samples. • Evaluate utility maps and mark out locations of underground utilities on ground surface. Do not locate or modify sample locations to be near marked utilities.
Clean the site; demobilize.	Strain from lifting. Vehicle and pedestrian traffic. Slips, trips, or falls.	• Use buddy system to remove traffic control in parking lots or other similar low-speed vehicle traffic areas, as necessary. • Employ safe lifting procedures. • Keep work area clear of hazards.
Package and deliver samples to laboratory.	Sample-container breakage. Strain from lifting. Vehicle and pedestrian traffic.	• Handle and pack sample containers carefully. • Employ safe lifting procedures. Evaluate walking path before proceeding. Use hand truck or cart to avoid carrying heavy or awkward loads. • Follow safe driving procedures.

ATTACHMENT 4

Health-Based and Monitoring Information for Potential Site Contaminants

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Farallon job sites may contain one or more of the chemicals or compounds provided in the following table. These substances may be present due to historical site use, current Site activities, or the presence of contamination from unknown sources. This table should be reviewed prior to the start of work and questions directed to the Site Health and Safety Officer. Air monitoring may be required at a Site based on the scope of work for the project. Refer to the site-specific Health and Safety Plan to determine whether air or personnel monitoring will be required for the scope of work.

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
Petroleum Compounds and Petroleum Additives						
Benzene	PEL – 1 ppm TLV – 0.5 ppm (skin)	PEL STEL – 5 ppm IDLH – 500 ppm	Characteristic benzene odor.	Inhalation; dermal; ingestion; eye contact.	Skin (dermatitis); eye, respiratory tract irritant; headache; dizziness; nausea.	Carcinogen; CNS; eye damage; bone marrow; blood; skin; leukemia.
Coal tar pitch volatiles (aka polycyclic aromatic hydrocarbons pyrene, phenanthrene, chrysene, anthracene, and benzo[a]pyrene)	PEL – 0.2 mg/m^3	NIOSH REL – 0.1 mg/m^3 (cyclohexane-extractable fraction) IDLH – 80 mg/m^3	Black or dark-brown amorphous residue.	Inhalation; dermal; ingestion; eye contact.	Irritation to eyes, skin; nose, throat irritation that may cause difficulty breathing.	Skin and lung cancer; damage to the reproductive system; thickening and darkening of the skin.
Ethylbenzene	PEL – 100 ppm TLV – 100 ppm	PEL STEL – 125 ppm TLV STEL – 125 ppm NIOSH REL – 100 ppm REL STEL – 125 ppm IDLH – 800 ppm	Pungent, aromatic odor.	Inhalation; dermal; ingestion; eye contact.	Skin, eye, mucous membrane irritant; headache; dizziness; drowsiness.	Eyes; respiratory tract; skin; CNS; blood; kidneys; liver.
2-Methylnaphthalene	Not established. 2-Methylnaphthalene is part of the naphthalenes family, but is not considered as hazardous as naphthalene. Limits for naphthalene should be used as a conservative approach.		Normally crystalline.	Inhalation; dermal; ingestion; eye contact.	Intoxication is most common following ingestion, but can occur after dermal or inhalation exposure. Eye irritant; conjunctivitis; superficial injury to cornea; diminished visual acuity; dermatitis; hypersensitivity; nausea and vomiting; skin irritation; headache; vomiting; fever; photosensitization; restlessness; lethargy; acute renal failure possible.	Anorexia; hemolysis; methemoglobinemia; hyperkalemia; anemia; cataracts. Seizures, coma may develop in severe intoxications.

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
Methyl tertiary-butyl ether (MTBE)	No PEL established. TLV – 40 ppm	AIHA WEEL – 100 ppm	Flammable liquid with a distinctive, disagreeable odor.	Inhalation; dermal; ingestion.	Irritated nose, throat; headache; dizziness; nausea; sleepiness.	CNS, liver, kidney, gastrointestinal damage; potential carcinogen.
Naphthalene	PEL – 10 ppm TLV – 10 ppm	TLV STEL – 15 ppm NIOSH REL – 10 ppm REL STEL – 15 ppm IDLH – 250 ppm	Mothball-like odor.	Inhalation; dermal; ingestion; eye contact.	Skin, eye, mucous membrane irritant, nausea.	Eyes, blood, skin, liver, kidney, RBC, CNS.
Toluene	PEL – 100 ppm TLV – 50 ppm	NIOSH REL – 100 ppm TWA; 150 ppm STEL ILDH – 500 ppm	Sweet, pungent, benzene-like odor.	Eye contact.	Skin (dermatitis); eye, respiratory tract irritant; headache; dizziness; weakness; fatigue.	CNS; liver; kidneys; skin.
Xylenes	PEL – 100 ppm TLV – 100 ppm	TLV STEL – 500 ppm NIOSH REL – 100 ppm NIOSH REL STEL – 100 ppm IDLH – 900 ppm	Aromatic odor.	Inhalation; dermal; ingestion; eye contact.	Throat, skin irritant (dermatitis); headache; nausea; drowsiness; fatigue.	CNS, liver, kidneys, skin, gastrointestinal damage; eye damage.
Chlorinated Volatile Organic Compounds						
Carbon Tetrachloride	PEL – 2 ppm C – 25 ppm TLV – 5 ppm	IDLH – 300 ppm	Colorless liquid with a characteristic ether-like odor.	Inhalation, skin absorption, ingestion, skin and/or eye contact.	Irritation to eyes and skin; CNS depression; nausea, vomiting; liver and kidney injury; drowsiness, dizziness, incoordination.	Cancerous – liver. Liver and/or kidney damage. CNS, eyes, lungs, liver, kidneys, skin.
Chloroethane	PEL – 1,000 ppm TLV – 1,000 ppm	IDLH – 3,800 ppm	Colorless gas or liquid (below 54°F) with a pungent, ether-like odor.	Inhalation, skin absorption, ingestion, skin and/or eye contact.	Incoordination, inebriation, abdominal cramps.	Cardiac arrhythmias, cardiac arrest, liver and/or kidney damage. Liver, kidneys, respiratory system, CVS, CNS.
Chloroform	PEL – 2 ppm C – 50 ppm TLV – 10 ppm	WA STEL – 4 ppm IDLH – 500 ppm	Colorless liquid with a pleasant odor.	Inhalation, skin absorption, ingestion, skin and/or eye contact.	Irritation to eyes and skin, dizziness, mental dullness, nausea, confusion, headache, lassitude, anesthesia.	Cancerous – liver and kidneys. Anesthesia, damage to liver, damage to kidneys. Liver, kidneys, heart, eyes, skin, CNS.

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
1,4-Dichlorobenzene	PEL – 75 ppm (450 mg/m^3) TLV – 10 ppm	IDLH – 1,000 ppm	Colorless or white crystalline solid with a mothball-like odor. Reacts to strong oxidizers.	Inhalation, skin absorption, ingestion, skin and/or eye contact.	Eye irritation, swelling periorbital, profuse rhinitis, headache, anorexia, nausea, vomiting, weight loss, jaundice, cirrhosis.	Cancerous – liver and kidney. Liver and/or kidney damage. Liver, respiratory system, eyes, kidneys, and skin.
Dichlorodifluoromethane	PEL – 1,000 ppm TLV – 1,000 ppm	IDLH – 15,000 ppm	Colorless gas with an ether-like odor at extremely high concentrations.	Inhalation, skin and/or eye contact.	Dizziness, tremor, asphyxia, unconsciousness, cardiac arrhythmias, cardiac arrest, frostbite.	CVS, peripheral nervous system.
1,1-Dichloroethane	PEL – 100 ppm (400 mg/m^3) TLV – 100 ppm	WA STEL – 150 ppm IDLH – 3,000 ppm	Colorless, oily liquid with a chloroform-like odor.	Inhalation, ingestion, skin and/or eye contact.	Irritation to skin, CNS depression, liver damage, kidney damage, lung damage.	Liver, kidney, and/or lung damage. Skin, liver, kidneys, lungs, CNS.
1,2-Dichloroethane	PEL – 1 ppm C – 100 ppm TLV – 10 ppm	WA STEL – 2 ppm IDLH – 1,000 ppm	Colorless liquid with a pleasant, chloroform-like odor. Decomposes slowly, becomes acidic and darkens in color.	Inhalation, ingestion, skin absorption, skin and/or eye contact.	Irritation to eyes, corneal opacity, CNS depression, nausea, vomiting, dermatitis.	Liver, kidney, and/or CVS damage. Eyes, skin, kidneys, liver, CNS, CVS.
1,1-Dichloroethene (vinylidene chloride)	No PEL TLV – 5 ppm	NIOSH considers this compound to be a carcinogen.	Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor.	Inhalation; skin absorption; ingestion; eye contact.	Irritation to eyes, skin, throat; dizziness; headache; nausea; dyspnea (breathing difficulty).	Liver, kidney dysfunction; pneumonitis; potential occupational liver and kidney carcinogen. **Target Organs:** Eyes, skin, respiratory system, CNS, liver, kidneys.
1,2-Dichloroethene (dichloroethylene)	PEL – TWA 200 ppm TLV – TWA 200 ppm	WA STEL – 250 ppm IDLH – 1,000 ppm	Solvent odor.	Inhalation; skin absorption; ingestion; eye contact.	Typical solvent symptoms.	Liver, kidney, CNS symptoms.

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
Methylene chloride	PEL – 25 ppm TLV – 50 ppm	WA STEL – 125 ppm	Colorless liquid with a chloroform-like odor.	Inhalation; dermal; ingestion; eye contact.	Irritation to eyes, skin; fatigue; weakness; somnolence (sleepiness, unnatural drowsiness); lightheadedness; numbness; tingling limbs; nausea.	Potential occupational carcinogen. **Target Organs:** Eyes, skin, CVS, CNS.
Tetrachloroethene (perchloroethylene)	PEL – 25 ppm TLV – 25 ppm	WA STEL – 38 ppm TLV STEL – 100 ppm IDLH – 150 ppm NIOSH considers this compound to be a carcinogen.	Colorless liquid with a mild, chloroform-like odor.	Inhalation; skin absorption; ingestion; eye contact.	Irritation to eyes, skin, nose, throat, respiratory system; nausea; flushed face, neck; vertigo (an illusion of movement); dizziness; lack of coordination; headache; skin erythema (redness).	Somnolence (sleepiness, unnatural drowsiness); liver damage; potential occupational liver carcinogen. **Target Organs:** Eyes, skin, respiratory system, liver, kidneys, CNS.
1,1,1-Trichloroethane (methyl chloroform)	PEL – TWA 350 ppm TLV – 350 ppm STEL – 450 ppm	NIOSH C – 350 ppm	Colorless liquid with a mild, chloroform-like odor.	Inhalation; skin absorption; ingestion; eye contact.	Irritation to eyes, skin; headache; CNS depressant; poor equilibrium; lassitude (weakness, exhaustion); depression; dermatitis.	Cardiac arrhythmias; liver damage. **Target Organs:** Eyes, skin, CNS, CVS, liver.
1,1,2-Trichloroethane	PEL TWA – 10 ppm (45 mg/m^3) (skin) TLV – 10 ppm	WA STEL – 20 ppm REL TWA – 10 ppm (45 mg/m^3) (skin)	Colorless liquid with a sweet, chloroform-like odor.	Inhalation; skin absorption; ingestion; eye contact.	Irritation to eyes, nose; CNS depressant; depression; dermatitis.	Liver, kidney damage; potential occupational liver carcinogen. **Target Organs**: Eyes, respiratory system, CNS, liver, kidneys.
Trichloroethene (trichloroethylene)	PEL – 50 ppm TLV – 50 ppm	WA STEL – 200 ppm PEL C – 200 ppm NIOSH considers trichloroethylene to be a carcinogen.	Colorless liquid (unless dyed blue) with a chloroform-like odor.	Inhalation; dermal; ingestion; eye contact.	Irritation to eyes, skin; headache; vertigo (an illusion of movement); visual disturbance; fatigue; giddiness; tremor; nausea; somnolence (sleepiness, unnatural drowsiness); vomiting; dermatitis.	Cardiac arrhythmias; paresthesia; liver injury; potential occupational carcinogen of liver, kidney.
Vinyl chloride	PEL – 1 ppm TLV – 1 ppm	WA STEL – 5 ppm WA action level is 0.5 ppm TWA 8 hrs NIOSH considers this material to be a carcinogen.	Liquid with a pleasant odor at high concentrations.	Inhalation; dermal; eye contact.	Weakness; abdominal pain; pallor or cyanosis of extremities; liquid frostbite.	Gastrointestinal bleeding; enlarged liver; potential occupational liver carcinogen; damage to CNS, blood, respiratory system, lymphatic system.

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
Other Organic Compounds						
Acetone	PEL – 750 ppm TLV – 500 ppm	WA STEL – 1,000 ppm NIOSH REL – 250 ppm TLV STEL – 750 ppm IDLH – 2,500 ppm	Fragrant, mint-like odor.	Inhalation; dermal; ingestion; eye contact.	Irritation to eyes, nose, throat; headache; dizziness; dermatitis.	CNS depressant; depression; liver, kidney damage.
Benzo(a)pyrene equivalent	PEL – TWA 0.2 mg/m^3	WA STEL – 0.6 mg/m^3	Solid powder, dark-yellow, aromatic	Inhalation; ingestion; dermal; eye contact	Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing	Carcinogen
Bromoform	PEL – 0.5 ppm (5 mg/m^3) TLV – 0.5 ppm	WA STEL – 1.5 ppm IDLH – 850 ppm	Colorless to yellow liquid with a chloroform-like odor.	Inhalation, skin absorption, ingestion, skin and/or eye contact.	Irritation to eyes, skin, and respiratory system; CNS depression; liver and kidney damage.	Liver and/or kidney damage. Eyes, skin, respiratory system, CNS, liver, and kidneys.
2-Butanone (methyl ethyl ketone)	PEL – 200 ppm TLV – 200 ppm	WA STEL – 300 ppm NIOSH REL – 200 ppm REL STEL – 300 ppm TLV STEL – 300 ppm	Colorless liquid with a moderately sharp, fragrant, mint- or acetone-like odor.	Inhalation; dermal; ingestion; eye contact.	Irritation to eyes, skin, nose; headache; dizziness; vomiting; dermatitis.	Eyes; skin; respiratory system; CNS.
Carbon disulfide	PEL – 4 ppm TLV – 10 ppm	WA STEL – 12 ppm PEL C – 30 ppm	Colorless to faint yellow liquid with a sweet ether-like odor.	Inhalation; dermal; ingestion; eye contact.	Dizziness; headache; poor sleep; fatigue; nervousness; eye, skin burns; dermatitis.	Anorexia; weight loss; ocular changes; psychosis; polyneuropathy; Parkinson-like syndrome; coronary heart disease; gastritis; kidney, liver injury; reproductive effects.
Dioxins and Furans	**OSHA and other health monitoring organizations have not established health-based action levels.** 2,3,7,8-tetrachloro-p-dibenzo-dioxin (2,3,7,8 TCDD) is considered the most toxic of the dioxins and furans group of compounds and is the indicator compound.		Colorless to white crystalline solid.	Inhalation; dermal; ingestion; eye contact.	Irritation eyes; allergic dermatitis, chloracne; porphyria; gastrointestinal disturbance.	Possible reproductive or teratogenic effects.

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
2-Hexanone (methyl n-butyl ketone)	PEL – 5ppm TLV – 5 ppm	WA STEL – 10 ppm NIOSH REL – 1 ppm IDLH – 1,600 ppm	Colorless liquid with an acetone-like odor.	Inhalation; dermal; ingestion; eye contact.	Irritation to eyes, nose; dermatitis; headache; drowsiness.	Damages to eyes, skin, respiratory system, CNS, peripheral nervous system (peripheral neuropathy: weakness, paresthesia).
Methane	None	Explosive limits: LEL: 5% by volume UEL: 15% by volume	Flammable gas that may displace oxygen	Risk of explosion or asphyxiation	Mood changes, slurred speech, vision problems, memory loss, nausea, vomiting, facial flushing and headache	None identified
Pentachlorophenol (PCP)	PEL – 0.5 mg/m^3	WA STEL – 1.5 mg/m^3 NIOSH REL – 0.5 mg/m^3 IDLH – 2.5 mg/m^3	Colorless to white crystalline solid with a benzene-like odor.	Inhalation; skin absorption; ingestion; skin, eye contact.	Irritation to eyes, nose, throat; sneezing; cough; lassitude (weakness, exhaustion); anorexia; weight loss; sweating; headache; dizziness; nausea; vomiting; dyspnea (breathing difficulty); chest pain; high fever; dermatitis.	Eyes; skin; respiratory system; CNS; CVS; liver; kidneys.
Per- and polyfluoroalkyl substances (PFAS)	**OSHA and other health monitoring organizations have not established health-based action levels.** Perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), perfluorobutanesulfonic acid (PFBS), and hexafluoropropylene oxide dimer acid hexafluoropropylene oxide (HFPO) are indicator compounds for the PFAS group of compounds.		Found in various forms.	Inhalation; dermal; eye; ingestion.	Irritation to eyes, skin, respiratory tract.	Possible carcinogen.
Polychlorinated biphenyls (PCBs)	PEL 0.5 – 1 mg/m^3 TLV 0.5 – 1 mg/m^3, depending on the species	WA STEL – 1.5 - 3 mg/m^3 NIOSH REL – 0.001 mg/m^3 NIOSH considers this material to be a carcinogen. IDLH – 5 mg/m^3	Pale or dark yellow odorless liquid.	Inhalation; dermal; ingestion. Skin absorption is a significant mode of exposure.	Irritation to eyes, skin, respiratory tract; chloroacne.	May cause reproductive, CNS, CVS, skin, eye, liver effects; cancer (leukemia).
Styrene	PEL – 50 ppm TLV – 20 ppm	WA STEL – 100 ppm PEL C – 200 ppm TLV STEL – 40 ppm NIOSH REL – 50 ppm	Colorless to yellow oily liquid with a sweet, floral odor.	Inhalation; dermal; ingestion; eye contact.	Irritation to eyes, nose, respiratory system; headache; fatigue; dizziness; confusion; malaise (vague feeling of discomfort); drowsiness; weakness; unsteady gait; narcosis.	Defatting dermatitis; possible liver injury; reproductive effects.

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
2,4,6-Trinitrotoluene (TNT)	PEL 0.5 mg/m^3 TWA	WA STEL –1.5 mg/m^3	Colorless to pale yellow, odorless solid or crushed flakes.	Inhalation, skin absorption, ingestion, skin and/or eye contact.	Irritation to skin and mucous membranes; liver damage/jaundice; cyanosis; sneezing; cough and/or sore throat; peripheral neuropathy; muscle pain; kidney damage; cataract; sensitization dermatitis; leukocytosis (increased blood leukocytes); anemia; cardiac irregularities.	Eyes, skin, respiratory system, blood, liver, cardiovascular system, CNS, kidneys.
Pesticides and Herbicides						
Dieldrin	PEL – 0.25 mg/m^3 TWA – 0.25 mg/m^3	WA STEL – 0.75 mg/m^3 IDLH – 50 mg/m^3	Insecticide, colorless to light tan crystals with a mild, chemical odor.	Inhalation, skin absorption, ingestion, skin and eye contact.	Headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; clonic-tonic convulsions; coma.	CNS, liver, kidneys, skin.
Metals and Other Inorganic Materials						
Arsenic	PEL – 0.010 mg/m^3	NIOSH REL – CA C 0.002 mg/m^3 [15-minutes]	Metal: Silver-gray or tin-white, brittle, odorless solid.	Inhalation; skin absorption; skin and/or eye contact; ingestion.	Ulceration of nasal septum; peripheral neuropathy; gastrointestinal disturbances; dermatitis; respiratory irritation; hyperpigmentation of skin (potential occupational carcinogen).	Lung and lymphatic cancer; liver; kidneys; skin; lungs; lymphatic system.
Asbestos	Per Part 1910.1001 of Title 29 of the Code of Federal Regulations and NIOSH: PEL and REL – 0.1 fiber per cubic centimeter of air (0.1 fiber/cm^3)	OSHA considers asbestos to be a carcinogen.	White or greenish (chrysotile), blue (crocidolite), or gray-green (amosite) fibrous, odorless solids.	Inhalation; ingestion; skin, eye contact.	Eye irritation; breathing difficulty; gastrointestinal issues.	Eye irritation; asbestosis; mesothelioma; lung cancer; dyspnea; cancer of the gastrointestinal tract. **Target Organs**: Respiratory system, eyes.

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
Beryllium	PEL – 0.0002 mg/m^3 STEL – 0.002 mg/m^3 TLV – 0.002 mg/m^3	IDLH – 4 mg/m^3	Metal – hard, brittle, gray-white solid.	Inhalation, skin and/or eye contact.	Irritation to eyes, dermatitis.	Cancerous – lung. Berylliosis: anorexia, weight loss, lassitude, chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency. Eyes, skin, respiratory system.
Barium	PEL – 0.5 mg/m^3 TLV – 0.5 mg/m^3	IDLH – 50 mg/m^3	White, colorless solid.	Inhalation, ingestion, skin and/or eye contact.	Irritation to eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasms.	Slow pulse, extrasystoles, hypokalemia. Eyes, skin, respiratory system, heart, CNS.
Cadmium	PEL – 0.005 mg/m^3		Odorless, yellow-brown, finely divided particulate dispersed in air.	Inhalation.	Pulmonary edema; dyspnea (breathing difficulty); cough; chest tightness; substernal (occurring beneath the sternum) pain; headache; chills; muscle aches; nausea; vomiting; diarrhea; emphysema; proteinuria; anosmia (loss of the sense of smell); mild anemia; potential occupational carcinogen.	Prostate and lung cancer; respiratory system; kidneys; blood.
Chromium	PEL – 0.5 mg/m^3 Cr (VI) – 0.005 mg/m^3	IDLH – 250 mg/m^3	Blue-white to steel-gray, lustrous, brittle, hard, odorless solid.	Inhalation, ingestion, skin and/or eye contact.	Irritation to eyes and skin.	Lung fibrosis. Eyes, skin, respiratory system.
Cobalt	PEL – 0.05 mg/m^3 TLV – 0.05 mg/m^3	WA STEL – 0.15 mg/m3 IDLH – 20 mg/m^3	Odorless, silver-gray to black solid.	Inhalation, ingestion, skin and/or eye contact.	Cough, dyspnea, wheezing, decreased pulmonary function, weight loss, dermatitis.	Diffuse nodular fibrosis, respiratory hypersensitivity, asthma. Skin, respiratory system.
Copper	PEL – 1 mg/m^3 TLV – 1 mg/m^3	WA STEL – 3 mg/m3 IDLH – 100 mg/m^3	Reddish, lustrous, malleable, odorless solid.	Inhalation, ingestion, skin and/or eye contact.	Irritation to eyes, nose, and pharynx, nasal septum perforation; metallic taste; dermatitis.	Lung, liver, and/or kidney damage; anemia. Eyes, skin, respiratory system, liver, kidneys.

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
Cyanide (as CN)	PEL – 5 mg/m3	WA STEL – 10 mg/m3 NIOSH REL – 5 mg/m3	Usually joined with other chemicals, ranging from colorless gas to a white solid. Faint to bitter almond-like odor.	Inhalation; dermal; ingestion; eye contact.	Headache, lightheadedness, dizziness, nausea, vomiting, agitation, drowsiness, and irritation of the eyes, nose, throat, and respiratory tract, and rapid breathing with a sense of suffocation.	Nose bleeds and sores; thyroid function
Lead	PEL – 0.05 mg/m^3 TLV – 0.05 mg/m^3	IDLH – 100 mg/m^3	A heavy, flexible, soft, gray solid.	Inhalation; dermal; ingestion; eye contact.	Lassitude (weakness, exhaustion); abdominal pain; gingival lead line; tremor; irritation to eyes; hypotension.	Insomnia; facial pallor; anorexia; weight loss; malnutrition; constipation; colic; anemia; paralysis of wrist, ankles; kidney disease; encephalopathy; potential for damage to eyes, gastrointestinal tract, CNS, kidneys, blood, gingival tissue.
Mercury	PEL – 0.1 mg/m^3	NIOSH REL – Mercury vapor: TWA – 0.05 mg/m^3 [skin] Other: C – 0.1 mg/m^3 [skin]	Metal: Silver-white, heavy, odorless liquid. "Other" mercury compounds include all inorganic and aryl mercury compounds except (organo) alkyls.	Inhalation; skin absorption; ingestion; skin and/or eye contact.	Irritation to eyes, skin; cough; chest pain; dyspnea (breathing difficulty); bronchitis; pneumonitis; tremor; lassitude (weakness, exhaustion); insomnia; irritability; indecision; headache; stomatitis; salivation; gastrointestinal disturbance; anorexia; weight loss; proteinuria.	Eyes; skin; respiratory system; CNS; kidneys.
Nickel	PEL – 1 mg/m^3 TLV – 1 mg/m^3	WA STEL – 3 mg/m3 IDLH – 10 mg/m^3	Metal: lustrous, silvery, odorless solid.	Inhalation, ingestion, skin and/or eye contact.	Sensitization dermatitis, allergic asthma.	Cancerous – Lung and nasal. Pneumonitis. Nasal cavities, lungs, skin.
Selenium	PEL – 0.2 mg/m^3 TLV – 0.2 mg/m^3	WA STEL – 0.6 mg/m3 IDLH – 1 mg/m^3	Amorphous or crystalline, red to gray solid.	Inhalation, ingestion, skin and/or eye contact.	Irritation to eyes, skin, nose, throat; visual disturbance; headache; shills, fever; dyspnea, bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye and skin burns.	Anemia, liver necrosis, cirrhosis, kidney and/or spleen damage. Eyes, skin, respiratory system, liver, kidneys, blood, spleen.

HEALTH-BASED AND MONITORING INFORMATION FOR POTENTIAL SITE CONTAMINANTS

Chemical (or Class)	WA/OSHA PEL ACGIH TLV	Other Pertinent Limits	Properties	Routes of Exposure or Irritation	Acute Health Effects	Chronic Health Effects/ Target Organs
Vanadium	PEL – 0.05 mg/m^3	WA STEL – 0.15 mg/m^3 IDLH – 35 mg/m^3 C – 0.5 mg/m^3	Yellow-orange powder.	Inhalation, ingestion, skin and/or eye contact.	Irritation to eyes, skin, throat; green tongue; metallic taste; eczema; cough; wheezing; fine rales.	Bronchitis, dyspnea. Eyes, skin, respiratory system.

ATTACHMENT 5

Air Monitoring Log
Calibration/Check Log – Air Monitoring Equipment

AIR MONITORING LOG

Date	Time	Location	Source/Area/ Breathing Zone	Instrument	Concentration/Units	Sampled by

CALIBRATION/CHECK LOG – AIR MONITORING EQUIPMENT

Date	Instrument/ Model No.	Serial No.	Battery Check OK?	Zero Adjust OK?	Calibration Gas (ppm)	Reading (ppm)	Leak Check	Performed By	Comments

ATTACHMENT 6

Utility Clearance Log

UTILITY CLEARANCE LOG

Project Name: _____ **Project Number:** _____

Location: _____ **Date of Work:** _____

Completed by: _____

Instructions. This log must be completed by a Farallon staff member **before** any Farallon-directed ground disturbing activities (e.g., test pit excavation or drilling operations). This form must be completed by the team member who conducts the utility locate for the project scope of work (SOW), and used by the field crew who will be executing the ground disturbance activities.

GROUND DISTURBANCE ACTIVITIES MAY NOT COMMENCE UNTIL UTILITY LOCATES HAVE BEEN COMPLETED

Farallon is responsible for having underground utilities and structures located and marked when completing ground disturbance activities. All soil disturbing activities (e.g., drilling or excavation) within 2 feet of a known utility must be completed using hand tools.

Public utility searches are required for all projects via state-specific 811 dig tickets. Private utility locate services must be hired to locate service laterals and other buried utilities (e.g., on-site electric distribution lines, irrigation pipes) on private property.

Utility Locate Information and Checklist

☐ Attach map showing drilling and/or excavation sites and found utilities

☐ One-Call Utility Notification Ticket Number: _____

Utilities notified via One-Call ticket:

Company Name	Utility Responsible for (e.g., electrical, sewer)	Contact Information	Date Response Received

☐ Private Locate Information

Company name: _____

Date of locate: _____

Equipment used:_____

☐ Anticipated lithology at the site: _____

Type of pre-clearance to be used (hand-auger or air knife/vac truck):

_____

☐ Photograph all soil disturbance locations and download to project file

☐ Review historical site information

☐ Review utilities and SOW locations with the Site Contact:

Name: _____ Phone: _____

Utilities and Structures found within the project area at the Site

Utility Type	Utility Name	Public Utilities Marked (Y/N)	Private Utilities/Laterals Marked (Y/N)	Marking Method (Flags, paint on pavement, wooden stakes, etc.)	Location, Depth Marked on Attached Map (Y/N)
Petroleum product lines					
Natural gas line					
Water line					
Sewer line					
Storm drain					
Telephone cable					
Electric power line					
Product tank					
Septic tank/drain field					
Overhead lines					
Other					

Include applicable items in this table with the attached map to document found utilities at your site. Be sure to include the site features, SOW locations, scale bar (e.g., 1 square = 5 feet), directional indicator (North arrow), description, distances, and depths of found utilities or other aboveground, overhead, or subsurface structures, including anomalies or unknowns.

Variance Request Review and Approval

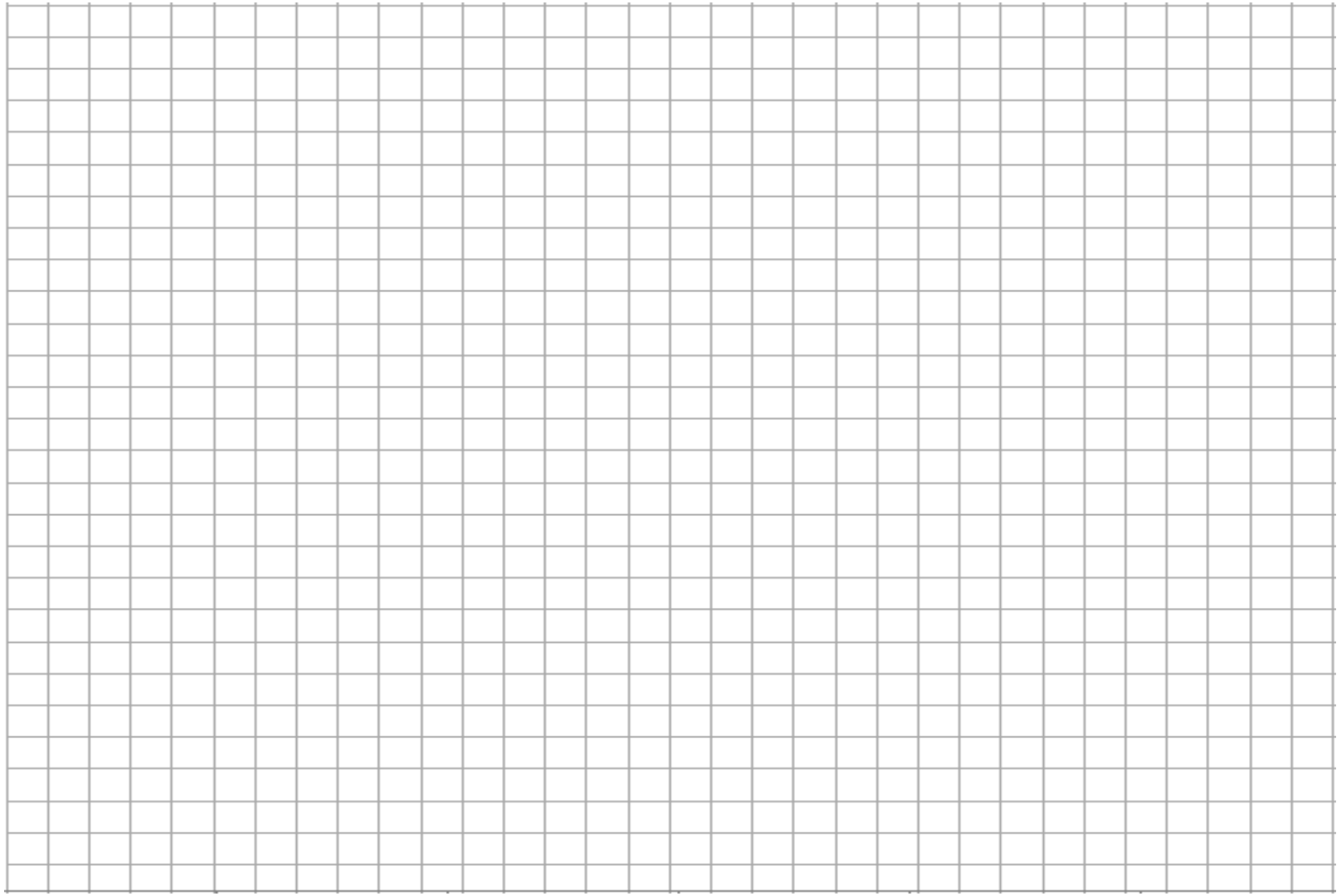
If applicable, document the requested variance information below, and include the approval date and signatures of the Project Manager and Safety Team members.

Type of variance requested	Applicable locations, and justification	PM Review	Safety Team review and approval
Request to not pre-clear location to 5 feet below ground surface			
Request to work within 5 feet of a known utility			
Other, please describe			

Electric = **RED**	*Gas-Oil-Steam* = **YELLOW**	*Comm-CATV* = **ORANGE**	*Water* = **BLUE/PURPLE**	*Sewer* = **GREEN**	*Temp Survey* = **PINK**

Project Utility and Subsurface Structure Map

Project Name:
Date:
Scale:



Use this page to document found utilities at your site. Be sure to include the site features, SOW locations, scale bar (e.g., 1 square = 5 feet), directional indicator (North arrow), description, distances, and depths of found utilities or other aboveground, overhead, or subsurface structures, including anomalies or unknowns.

ATTACHMENT 7

Incident Report Form

FARALLON CONSULTING

INCIDENT REPORT FORM INSTRUCTIONS

The following process should be followed to submit an Incident Report Form to the Health and Safety Committee at Farallon Consulting, L.L.C.

1. Enter information into the form in Microsoft Word and save the draft document into the project folder under P:/Project/Field_Lab/Safety.

2. Email a link for the completed draft Incident Report Form to safety@farallonconsulting.com. The Corporate Health and Safety Coordinator (HSC) will review the form and provide comments or questions back to you.

3. Address any comments or questions and either resubmit to the HSC for additional review, if requested, or provide the HSC with the final signed and dated copy of the completed Incident Report Form. Attach photos on a separate document.

4. The HSC will route the completed Incident Report Form through the injured employee's Group Manager and the applicable Regional Operations Manager for signature.

INCIDENT REPORT FORM

This report must be completed promptly after the incident. Within 24 hours of the incident, the completed report must be reviewed and signed by the employee's Group Manager and submitted to safety@farallonconsulting.com. This should occur even if the employee is not available to review and sign.

Document the incident with photographs if possible (place in separate document). For environmental releases, discuss possible regulatory spill reporting with the Project Principal.

If there is an injury or fatality, immediately call your Health and Safety Coordinator.

INCIDENT REPORT INFORMATION	
Date of incident, injury, or onset of illness: Click or tap to enter a date.	Time of incident, injury, or onset of illness: ☐ AM ☐ PM
Date Farallon notified of incident: Click or tap to enter a date.	Time Farallon notified: ☐ AM ☐ PM
Date of this report: Click or tap to enter a date.	Project Number (if applicable):
Farallon employee reporting incident:	To whom reported at Farallon?

WHO WAS INVOLVED IN INCIDENT (list names and note company if not Farallon employee)		
Farallon Employee(s)	☐ None	
Non-Farallon Employee(s)	☐ None	

INCIDENT DESCRIPTION		
Location of Incident	Address (street, city, state)	
	Location on property (building, floor, GPS coordinates, etc.)	
	Other description information	
Provide detailed description of incident. Include specific activities during incident (lifting, pushing, walking, etc.)		
Describe the equipment, materials, or chemicals that directly caused the incident or injury		
Describe actions taken/to be taken to avoid future incidents from same cause		

INJURY OR ILLNESS INFORMATION ☐ No Injury or Illness	
Describe the specific injury or illness (e.g., puncture, cut, contusion, strain, fracture, skin rash, etc.):	
Body part(s) affected (e.g., back, left wrist, right eye, etc.):	
If seen by Health Care Provider, please provide:	Name: Address: Phone No.:
Treated in Emergency Room: ☐ Yes ☐ No	Hospitalized Overnight as Inpatient: ☐ Yes ☐ No

INCIDENT REPORT FORM

MOTOR VEHICLE ACCIDENT (MVA) Please provide photos ☐ Not a Motor Vehicle Accident
If the incident involved two or more vehicles (at least one moving), including parking lot collisions, please also complete the Farallon Motor Vehicle Accident Report found in G:\Forms and Templates\Health and Safety\Forms Logs Checklist.

PROPERTY DAMAGE/THEFT (Including utilities) ☐ No Damage/Theft (Please provide photos. Do not use this section for incidents involving moving vehicle(s).	
Owner Name of Damaged/Stolen Property	
Owner address (if not incident location)	
Phone No. / Email address	
Description of Damage or Stolen Property:	
Property Owner Insurance information:	
Was (or will) a police report be filed? ☐ Yes ☐ No	

Witness Name:	Address:	Phone No.:
Witness Name:	Address:	Phone No.:

SIGNATURES OF EMPLOYEE AND REVIEWERS				
FARALLON PERSONNEL ROLES	NAME (PRINT)	SIGNATURE	TITLE	DATE
Employee				
Project Manager				

HEALTH AND SAFETY FINDINGS AND RECOMMENDED ACTIONS				
	NAME (PRINT)	SIGNATURE	TITLE	DATE
Corporate Health and Safety Officer				

Distribution List: Group Manager of Farallon employee(s) involved in incident
Regional Operations Manager

ATTACHMENT 8

Near Miss Report Form

NEAR MISS AND SAFETY OBSERVATION REPORT INSTRUCTIONS

The following process should be followed to submit a Near Miss and Safety Observation Report to the Health and Safety Committee at Farallon Consulting, L.L.C.

1. Enter information into the form in Microsoft Word and save the draft document into the project folder under P:/Project/Field_Lab/Safety.

2. Email a link for the completed draft Near Miss and Safety Observation Report to safety@farallonconsulting.com. The Corporate Health and Safety Coordinator (HSC) will review the form and provide comments or questions back to you.

3. Address any comments or questions and either resubmit to the HSC for additional review, if requested, or provide the HSC with the final signed and dated copy of the completed Near Miss and Safety Observation Report.

NEAR MISS REPORT

Employees involved in or witnessing a near miss or making a safety observation should complete this form. These are important indicators of potentially harmful future accidents, and they can provide valuable insights to preventing personal injury and/or property damage on future projects. Please submit the form to safety@farallonconsulting.com

- A near miss is an occurrence that did not result in any personal injury, property damage, environmental release, or production interruption, but could have under slightly different circumstances.
- A safety observation is witnessing any activity that places a person or property at risk of injury, accident, or damage but may not fit the definition of a near miss. For the purposes of this report, a safety observation is considered a near miss.

PROJECT INFORMATION			
Farallon PN:		Project Name:	
Site Address:		City/State:	
NEAR MISS INFORMATION			
Date of near miss: Click or tap to enter a date.		Time of near miss: ☐AM ☐ PM	
Near Miss Category: Choose an item.			
Employee or Non-Employees Involved in Near Miss:			
Exact Location Onsite where Incident Occurred:			
Description of Near Miss			
Corrective Action Taken			
Lessons Learned			
To whom did employee first report the near miss?		Date reported:	Click or tap to enter a date.
		Time reported:	☐ AM ☐ PM

SIGNATURES			
FARALLON PERSONNEL ROLES	NAME AND TITLE	SIGNATURE	DATE
Farallon employee completing form			
Corporate Health and Safety Coordinator			

APPENDIX F
SAMPLING AND ANALYSIS PLAN

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

Sampling and Analysis Plan

Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street Issaquah, WA

Farallon PN: 1754-009

September 26, 2025

Prepared by:

DRAFT
Sarah Snyder
Senior Geologist

Reviewed by:

DRAFT
Eric Buer
Principal Hydrogeologist

For:
Eastside Fire and Rescue
and
City of Issaquah

Submitted by:
Farallon Consulting, L.L.C.
1809 7th Avenue, Suite 1111
Seattle, Washington 98101

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1
1.1 PURPOSES 1-2

2.0 PROJECT DESCRIPTION 2-1
2.1 SCOPE OF WORK 2-1
2.1.1 Bench Testing 2-1
2.1.2 In-Situ Soil Stabilization 2-1
2.1.3 PRB Expansion 2-1
2.1.4 Shallow Compliance Monitoring Well Installation 2-1
2.1.5 Compliance Monitoring 2-2

3.0 SAMPLING EQUIPMENT AND PROCEDURES 3-1
3.1 SAMPLING EQUIPMENT 3-1
3.2 SAMPLING PROCEDURES 3-1
3.2.1 Soil Sampling 3-1
3.2.2 Compliance Groundwater Monitoring 3-2
3.3 MONITORING WELL DECOMMISSIONING 3-3
3.4 MONITORING WELL INSTALLATION 3-3
3.5 PRB EXPANSION 3-3
3.6 SAMPLE DESIGNATION 3-4
3.6.1 Soil Sampling 3-4
3.6.2 Groundwater Sampling 3-4

4.0 LABORATORY ANALYSIS 4-1
4.1 LABORATORY ANALYSES 4-1

5.0 SAMPLE HANDLING 5-1
5.1 SAMPLE CONTAINERS, PRESERVATION PROCEDURES, AND HOLD TIMES 5-1
5.2 SAMPLE PACKAGING AND SHIPMENT 5-2
5.3 SAMPLE DOCUMENTATION 5-2
5.4 FIELD QUALITY ASSURANCE/QUALITY CONTROL SAMPLES 5-3
5.5 EXCAVATED SOIL 5-1
5.6 SOIL CUTTINGS 5-1
5.7 WASTEWATER 5-1
5.8 DISPOSABLES 5-2

6.0 FIELD DOCUMENTATION 6-1
6.1 FIELD REPORT FORM 6-1
6.2 LOG OF BORING FORM 6-1
6.3 LOW-FLOW WELL PURGING AND SAMPLING DATA FORM 6-1
6.4 SOIL SAMPLE DATA LOG 6-2
6.5 SAMPLE LABEL 6-2
6.6 WASTE MATERIAL LABEL 6-2
6.7 WASTE INVENTORY FORM 6-2

6.8 CHAIN OF CUSTODY FORM 6-2

7.0 REFERENCES 7-1

FIGURES

Figure 1 *Lower Issaquah Valley Vicinity Map*

Figure 2 *EFR HQ Source Area Plan*

Figure 3 *EFR HQ Source Area Proposed Interim Action Elements and Extents*

TABLES

Table 1 *Soil Screening Levels*

Table 2 *Groundwater Screening Levels*

ATTACHMENTS

Attachment A Standard Operating Procedures

Attachment B Field Forms

ACRONYMS AND ABBREVIATIONS

AO	Agreed Order No. DE 23520
AFFF	aqueous film-forming foam
ALS	ALS Environmental
bgs	below ground surface
°C	degrees Celsius
City	City of Issaquah
Ecology	Washington State Department of Ecology
EFR	Eastside Fire and Rescue
EPA	U.S. Environmental Protection Agency
EQuIS database	EQuIS environmental data management system database
Farallon	Farallon Consulting, L.L.C.
HQ	Headquarters

IAWP	Interim Action Work Plan
IVES	Issaquah Valley Elementary School
µg/l	micrograms per liter
MTCA	Washington State Model Toxics Control Act Cleanup Regulation
NWN	Newport Way Northwest
PFAS	per- and poly-fluorinated alkyl substances
PFOS	perfluorooctane sulfonate
PLPs	potentially liable persons
QA/QC	quality assurance/quality control
RCW	Revised Code of Washington
SAP	Sampling and Analysis Plan
SOPs	standard operating procedures
USCS	Unified Soil Classification System
WAC	Washington Administrative Code

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Sampling and Analysis Plan (SAP) on behalf of Eastside Fire and Rescue (EFR) and the City of Issaquah (the City) for the EFR Headquarters (HQ) and Issaquah Valley Elementary School (IVES) Site (Site) (Figure 1). EFR and the City were identified as the potentially liable persons (PLPs) for the Site.

This SAP documents the specific requirements for sample collection and analysis for the remedial investigation activities to be completed in accordance with the requirements of Agreed Order No. DE 23520 (AO) between the Washington State Department of Ecology (Ecology) and the PLPs.

As described in the AO, EFR historically conducted firefighting training exercises at the Site, which included lawful deployment of aqueous film-forming foam (AFFF) containing perfluorooctane sulfonate (PFOS) and additional per- and poly-fluorinated alkyl substances (PFAS). The historical training activities are considered releases to the environment. The confirmed releases have impacted vadose zone soil at two source areas, the EFR HQ Source Area at 175 Newport Way Northwest and IVES Source Area at 555 Northwest Holly Street in Issaquah, Washington (collectively referred to as the Source Areas). The confirmed releases have impacted shallow groundwater at the Source Areas. The City withdraws groundwater from production wells at locations down-gradient of the Site and a completed exposure pathway for groundwater has been confirmed. Ecology believes the actions required by the AO are in the public's interest.

AFFF training was performed at two locations on the EFR HQ Source Area (Figure 2):

- An area that currently is covered with lawn near the fire hydrant on the north-central portion (Median Strip AFFF Training Area); and
- The western gravel-surfaced area of the EFR Headquarters Source Area (Newport Way Northwest [NWN] AFFF Training Area).

This SAP has been prepared in accordance with the Washington State Model Toxics Control Act, Chapter 70A.305 if the Revised Code of Washington (RCW), and its implementing regulations, Chapter 173-340 of the Washington Administrative Code (WAC) (collectively, MTCA), and the *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies* revised December 2016, prepared by the Washington State Department of Ecology (Ecology) (2004). Additionally, this SAP was prepared in accordance with the *Guidance for*

Investigating and Remediating PFAS Contamination in Washington State dated June 2023, prepared by Ecology.

1.1 PURPOSES

The purposes of this SAP are to:

- Summarize the scope of work for the interim action being performed under the AO between Ecology and the PLPs;
- Identify sample locations and media, sample quantities, analytical methods, and documentation protocols for the sampling program;
- Describe standard operating procedures (SOPs) for field activities that will be conducted as part of the remedial investigation; and

Provide quality assurance (QA) and quality control (QC) protocols for field activities and laboratory analysis to ensure collection of representative and useable data.

The objectives of the scope of work presented herein were developed with Ecology and include:

- Completion of an interim action at the EFR HQ Source Area that will meet the requirements of Washington State Model Toxics Control Act, Chapter 70A.305 of the Revised Code of Washington, and its implementing regulations, Chapter 173-340 of the Washington Administrative Code (WAC) (collectively, MTCA);
- Excavation and in-situ soil stabilization of a portion of the NWN AFFF Training Area to treat accessible soil contamination with high concentrations of PFAS above the water table to remove vadose zone sources to groundwater; and
- Expand the existing PRB to further reduce exposure risk from the soil leaching to groundwater pathway downgradient of the NWN AFFF Training Area.

2.0 PROJECT DESCRIPTION

This section provides a summary of the scope of work and Farallon's project organization and schedule.

2.1 SCOPE OF WORK

A detailed description of the scope of work for the interim action at the Site is provided in the Interim Action Work Plan (IAWP). The proposed sample locations are shown on Figure 3. The proposed screening levels for soil and groundwater are shown on Tables 1 and 2. The scope of work for the interim action, as detailed in the IAWP, is summarized below.

2.1.1 Bench Testing

- Drill up to 2 borings to 10 feet below ground surface (bgs) within the proposed source treatment area (Figure 3). Borings will be advanced during the mobilization for the remedial investigation activities to be performed under the Ecology-approved Remedial Investigation Work Plan. The borings will be located within the 10 feet bgs stabilization areas. Two soil samples will be collected from each boring at 5 and 10 feet bgs. Soil samples will be submitted to the remediation contractor for bench testing.

2.1.2 In-Situ Soil Stabilization

- Decommission five existing monitoring wells (NWN-MW04, NWN-MW10, NWN-MW12, NWN-MW13, and NWN- MW17) located within the stabilization area.

Complete excavation and in-situ soil stabilization in accordance with the Ecology-approved Engineering Design Report (EFR).

2.1.3 PRB Expansion

Expand the existing PRB in accordance with the Ecology-approved EDR.

2.1.4 Shallow Compliance Monitoring Well Installation

Install up to five shallow compliance monitoring wells to a depth of approximately 25 to 30 feet bgs using a sonic drill rig (Figure 3). No soil samples will be collected for laboratory analysis.

2.1.5 Compliance Monitoring

The efficacy of the interim action will be evaluated through compliance groundwater monitoring in accordance with the Compliance Monitoring Plan (CMP).

3.0 SAMPLING EQUIPMENT AND PROCEDURES

This section summarizes the protocols and procedures that will be followed for the field data collection. Farallon SOPs for fieldwork, including detailed step-by-step protocols, are provided in Attachment A.

3.1 SAMPLING EQUIPMENT

Every effort will be made to use sampling equipment free of PFAS. The following materials will not be allowed to come into contact with sample media:

- Teflon (polytetrafluoroethylene);
- Gore-Tex and other waterproof coatings, unless shown to be free of PFAS;
- Waterproof paper, unless shown to be free of PFAS ("Rite in the Rain" paper is acceptable);
- Coated Tyvek (plain Tyvek is acceptable);
- Fluorinated ethylene propylene;
- Ethylene tetrafluoroethylene;
- Polyvinylidene fluoride; and

Any other fluorinated materials.

Equipment blanks will be periodically collected from low-density polyethylene sampling equipment such as drop tubing to confirm they are PFAS-free, described in Section 5.4, Field Quality Assurance/Quality Control Samples, and the Quality Assurance Project Plan (QAPP). Sample containers will be certified by the laboratory as PFAS-free.

3.2 SAMPLING PROCEDURES

The field sampling procedures for collecting soil and groundwater samples are discussed below. Field sampling data will be documented on Field Report forms (Attachment B).

3.2.1 Soil Sampling

Soil samples will be collected from discrete depth intervals during boring advancement. Up to two borings will be advanced to 10 feet bgs within the proposed excavation soil excavation and stabilization area (Figure 3). Borings will be advanced during the mobilization for the remedial investigation activities to be performed under the Ecology-approved Remedial Investigation Work Plan. The borings will be located within the 10-foot

bgs stabilization areas. Final locations may be adjusted as necessary based on access and utilities. Farallon will use the one-call and private utility location services to confirm the location of subsurface utilities in accordance with Farallon SOP GN-02 (Attachment A).

Two soil samples will be collected from each boring at 5 and 10 feet bgs. The upper 5 feet of each drilling location will be cleared either by hand or with an air knife. Borings will be advanced using a sonic drill rig.

Soil samples will be collected in accordance with Section 2.1 (Scope of Work). Soil samples will be collected and handled in accordance with the requirements of SOP SL-01 (Attachment A), and as described in Section 5 (Sample Handling) and Section 7 (Field Documentation). Soil samples will be submitted to Regenesis for bench-scale testing.

No laboratory QA/QC samples will be collected as part of sample collection for bench scale testing.

3.2.2 Compliance Groundwater Monitoring

Compliance groundwater monitoring events will include collecting depth to groundwater measurements at all EFR HQ Source Area monitoring wells and recording water level measurements from existing stream gauging locations on the Main fork of Issaquah Creek (Figure 2). Groundwater and water level measurements will be used to prepare groundwater contour maps for both semi-annual groundwater monitoring events. Additionally, pressure and temperature data from existing transducers already installed at select monitoring wells will be downloaded during both events.

Groundwater purging and sampling will be performed using a PFAS-free submersible pump. Procedures for measuring the depth to groundwater and low-flow groundwater sampling are provided in Farallon SOPs GW-03 and GW-04 (Attachment A).

Groundwater samples will be collected in accordance with Section 2.1 (Scope of Work). Groundwater samples will be collected and handled in accordance with the requirements of SOP GW-04 (Attachment A), and as described in Section 5 (Sample Handling) and Section 7 (Field Documentation). Groundwater samples will be analyzed in accordance with Section 4 (Laboratory Analysis).

- Laboratory QA/QC samples will be submitted as described in Section 5.4, Field Quality Assurance/Quality Control Samples.

3.3 MONITORING WELL DECOMMISSIONING

Farallon field staff will observe the monitoring well decommissioning and will document observations. Monitoring wells will be decommissioned by a licensed well driller in accordance with the Minimum Standards for Construction and Maintenance of Wells as established in WAC 173-160.

3.4 MONITORING WELL INSTALLATION

Farallon field staff will observe the monitoring well drilling and installation, and will document observations. Monitoring wells will be constructed in accordance with WAC 173-160-400. Monitoring well screen intervals will be set to intersect across the target water-bearing zone, as specified in Section 2.1 (Scope of Work). Each monitoring well will be constructed with a 10 foot screen across the target water-bearing zone. Monitoring well construction will be performed in accordance with SOP GW-01 (Attachment A).

The new monitoring wells will be developed using a submersible pump. Each monitoring well will be developed until the majority of fine-grained sediment has been removed from the well screen and adjacent sand pack. Monitoring well development will be performed in accordance with SOP GW-02 (Attachment A).

The new wells will be surveyed using the Washington State Plane North coordinates system and measuring the top of casing elevations in North American Vertical Datum of 1988 by a Washington State Professionally Licensed Land Surveyor.

3.5 PRB EXPANSION

- The subsurface injections to expand the existing PRB will be performed in accordance with the EDR. Farallon field staff will observe the subsurface injections and will document observations, including:
- Groundwater conditions immediately prior to beginning pilot test;
- Final pilot test design installation;
- Flow rates, treatment solution concentration, and total volume for injected treatment;
- Any field observations, including surface returns, elevated injection pressure, or other relevant information; and
- Contractor performance, work hours, and equipment use and configuration.

3.6 SAMPLE DESIGNATION

Each sample collected during the cleanup action will be assigned a unique sample identifier and number. The sample identifier and number will be filled out in indelible ink and affixed to appropriate containers immediately prior to sample collection. In addition to the sample identifier and number, the sample labels will include the client name, project name and number, date and time of sample collection, sampler's initials, analytical method, and analyte preservative(s), if any. A Soil Sample Data Log (Attachment B) will be maintained as each sample is collected, which will include the sample location and depth, sample number and identifier, and other observations regarding the sample. The sample designation procedures for soil and groundwater samples collected during the cleanup action are detailed below.

3.6.1 Soil Sampling

Soil samples collected from the borings will be assigned a unique sample identifier that will include the components listed below:

- The location (e.g., NWN-B01);
- The sample date (e.g., 090125); and
- The depth of the sample interval stated in feet bgs (e.g., 5.0).

For example, a soil sample collected from the east sidewall of an excavation at a depth of 5.0 feet bgs on September 1, 2025 would be assigned the identifier NWN-B01-090125. The sample identifier will be placed on the sample label, Field Report form, Soil Sample Data Log, and Chain of Custody form. Field forms are provided in Attachment B.

3.6.2 Groundwater Sampling

The groundwater samples collected from monitoring wells will be assigned a unique sample identifier that will include the well identification (e.g., NWN-MW10) and the sample date (e.g., 090125).

For example, the groundwater sample collected from monitoring well NWN-MW10 during the groundwater monitoring event on September 1, 2025 would be numbered NWN-MW10-090125. The sample identifier will be placed on the sample label, Field Report form, Soil Sample Data Log, and Chain of Custody form. Field forms are provided in Attachment B.

4.0 LABORATORY ANALYSIS

This section presents the details for the laboratory analysis associated with the soil, groundwater, surface water, sediment, and sediment porewater samples that will be collected during the remedial investigation activities. Laboratory analyses will be conducted by ALS, which is accredited by Ecology, and meets the QA/QC requirements of Ecology and EPA.

QA/QC samples will be collected for data validation as detailed in the Quality Assurance Project Plan. Details pertaining to the types and frequencies of QA/QC samples are provided in Section 5.4, Field Quality Assurance/Quality Control Samples.

4.1 LABORATORY ANALYSES

Samples will be analyzed for PFAS using EPA Method 1633.

5.0 SAMPLE HANDLING

This section discusses the sample handling methods to be used for the remedial investigation. The protocols discussed include sample containers, preservation procedures, and hold times; sample packaging and shipment; sample documentation; and collection of QA/QC samples.

Upon transferring the samples to laboratory personnel or arrival of the samples at the laboratory facility, the laboratory will assume responsibility for custody of the samples. Laboratory personnel will document the status of shipping and handling containers and will adhere to standard chain-of-custody procedures to track each sample through all of the stages of laboratory processing.

5.1 SAMPLE CONTAINERS, PRESERVATION PROCEDURES, AND HOLD TIMES

Sample containers, preservation procedures, and hold times for each medium are described below:

- **Soil Samples:** Solid samples will be placed into a wide-mouth non-preserved 8-ounce laboratory-supplied PFAS-free high-density polyethylene container with liner-less high-density polyethylene or polypropylene lid. Containers will be filled no more than three quarters full. Once sealed, the container will be stored in a cooler at approximately 4 degrees Celsius (°C). The samples will be submitted to the laboratory for analysis for PFAS by EPA Method 1633 in accordance with this SAP. Samples will be analyzed within the selected analytical method's holding time. The typical hold time for this type of sample chilled at 0 to 6ºC and protected from light or chilled at -20ºC is 90 days. Samples will be analyzed within the selected analytical methods' holding time.
- **Groundwater Samples:** Aqueous samples will be collected directly into two non-preserved 500 milliliter laboratory-supplied PFAS-free high-density polyethylene containers with liner-less high-density polyethylene or polypropylene lids. Containers will not be filled past the shoulder. Once sealed, the containers will be stored in a cooler at approximately 4 °C. The samples will be submitted to the laboratory for analysis for PFAS by EPA Method 1633 in accordance with this SAP. The typical hold time for this type of sample chilled at 0 to 6ºC is 28 days or chilled at -20ºC and protected from light is 90 days. Samples will be analyzed within the selected analytical methods' holding time.

5.2 SAMPLE PACKAGING AND SHIPMENT

The samples shipped for laboratory analysis will be packaged according to applicable regulations and the recommendations of the laboratory performing the analysis. Samples will be expeditiously transported to the analytical laboratory after being sealed in coolers.

The following procedures (representing the minimum shipping and handling requirements) will be used for sample packaging:

- A sample label will be affixed to the corresponding sample container at the time of sample collection.
- Bubble-wrap bags or an equivalent will be used to protect glass sample containers.
- Sample containers will be placed into a cooler and checked against the Chain of Custody form to ensure that all samples are listed and are placed into the correct cooler.
- One copy of the Chain of Custody form will be detached and retained by the Farallon Field Staff.
- Remaining paperwork will be sealed in a resealable plastic bag and taped to the inside of the cooler lid.
- One to three resealable bags will be filled with ice and/or chemical equivalent and included in the cooler. Ice will be double-bagged in heavy-duty bags.
- The cooler will be sealed with a chain-of-custody seal.
- The cooler will be taped shut using strapping tape.
- The laboratory address will be affixed to the cooler.
- Extraneous stickers will be removed from the cooler.
- The cooler will be examined to ensure that Farallon's return address is affixed.

5.3 SAMPLE DOCUMENTATION

Sample containers will be identified with a durable label, and the sample identifier (Section 3.6) will be recorded in the Soil Sample Data Log and the Field Report forms (Attachment B). Other sample documentation to be maintained by field personnel includes Purging and Sampling forms, Chain of Custody forms and seals, sample labels, and shipment bills. Examples of these forms are provided in Attachment B.

Sample containers will be labeled with the client name, project name and number, date and time sampled, sample identifier, sampler's initials, analysis, and analyte preservative(s), if any.

At the time of sampling, the appropriate sample containers will be selected, and the sample number for each sample will be recorded on the Soil Sample Data Log and on the Field Report form. A chain-of-custody seal will be used to seal the cooler shut before shipping. The chain of-custody seal is used to show that no tampering occurred between the time the cooler was relinquished by field personnel and the time it arrived at the laboratory. The chain of custody seal will be attached so that it must be broken in order to open the shipping container. Information recorded on the seals will be checked against sample summary log entries, and the samples will be recounted before leaving the Site to verify that no samples were misplaced. Entries for all samples will be made on the Chain of Custody form prior to the transfer of the samples off the Site.

Each Chain of Custody form will contain the medium, date, time sampled, sample identification and number, project name, project number, sampler's initials, and analyte preservative(s) if any.

5.4 FIELD QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

QA/QC samples will include field duplicate samples, equipment rinsate blanks, and trip blanks. Field duplicate samples will be used to evaluate the accuracy and precision of the field sampling techniques.

Field duplicate samples will be collected in the same manner and at the same location as the original sample. Equipment rinsate blanks will be collected by rinsing non-dedicated sampling equipment with laboratory-supplied certified PFAS-free water following decontamination, and collecting the rinsate for analysis to evaluate the efficacy of the decontamination procedures.

Laboratory-prepared trip blanks will be included in each sample cooler. Analysis of the trip blanks may be performed to evaluate potential contamination or exposure of samples to PFAS during transit if the reported concentrations of PFAS or field observations suggest this analysis is warranted. Field duplicate samples will be collected at a rate of one field duplicate per 10 samples collected. Equipment rinsate samples will be collected as needed to ensure sampling equipment is PFAS-free.

Waste soil, water, and other products generated during the cleanup action may be contaminated and will be containerized and stored on the Site pending receipt of analytical results for selection of a disposal method. The specific criteria for tracking the sampling and analysis of the wastes to identify appropriate disposal options for each of the expected waste streams are discussed below.

5.5 EXCAVATED SOIL

It is likely that excess soil will remain following in-situ stabilization based on the expansion of the mixed soil. Excess soil not used for stabilization and backfill will be direct loaded into rolloff containers for off-Site disposal. If needed, excess soil may be temporarily stockpiled ontop of plastic sheeting and covered with plastic sheeting when not in use.

Excavated soil will be tracked using a Waste Inventory Tracking Sheet (Attachment B). Existing soil analytical results will be used to generate waste disposal profiles. Excavated soil will be transported and disposed of at an approved disposal facility.

5.6 SOIL CUTTINGS

Waste soil will be generated during drilling to collect soil samples and install proposed monitoring wells. Soil cuttings will be temporarily stored in 55-gallon drums or similar U.S. Department of Transportation–approved containers pending receipt of analytical results and profiling. The waste soil will be segregated based on its generation location(s).

Soil cuttings drums used for waste storage will be labeled with content, date, and origin. Soil cuttings drums and locations will be tracked using a Waste Inventory Tracking Sheet (Attachment B). Soil analytical results will be used to generate waste disposal profiles. Once the profiles have been approved for a licensed permanent disposal facility, the drums will be removed by a contractor.

5.7 WASTEWATER

Wastewater will be generated during monitoring well purging and equipment decontamination. Wastewater will be temporarily stored in 55-gallon drums or similar U.S. Department of Transportation–approved containers at the same location as the waste soil drums.

Wastewater drums will be labeled with content, date, and origin and/or generating activity. Wastewater drums will be tracked using a Waste Inventory Tracking Sheet (Attachment B). Analytical results will be used to generate a profile for disposal. Once the profiles have been

approved for a licensed permanent disposal facility, the drums will be removed by a contractor.

5.8 DISPOSABLES

Disposable personal protective clothing (e.g., Tyvek suits, rubber gloves, boot covers) and disposable sampling devices (e.g., plastic scoops and bailers) will be cleaned, placed into plastic garbage bags, and disposed of as nonhazardous waste.

6.0 FIELD DOCUMENTATION

Documentation of field activities will be provided on Field Report forms, Log of Boring forms, Low Flow Well Purging and Sampling Data forms, Soil Sample Data logs, sample and waste material labels, Waste Inventory forms, and Chain of Custody forms. Documentation generated during the field program will be retained in the project file and included in the reports generated, as appropriate.

6.1 FIELD REPORT FORM

Field personnel will be required to keep a daily field log on a Field Report form. Field notes will be as descriptive and inclusive as possible, enabling independent parties to reconstruct the sampling situation from the recorded information. Language will be objective, factual, and free of inappropriate terminology.

A summary of each day's events will be provided on the Field Report form. At a minimum, field documentation will include the date, job number, project identification and location, weather conditions, sample collection data, personnel present and responsibilities, field equipment used, and any activities performed in a manner other than as specified in the SAP. In addition, if other forms or documents such as well-head surveys or maps are completed or used, they will be cited in and attached to the Field Report form. Field personnel will sign the completed Field Report form.

6.2 LOG OF BORING FORM

A Log of Boring form will be prepared by Farallon Field Staff for each boring drilled during the remedial investigation activities. The log includes hydrologic conditions, lithologic descriptions using the USCS, information on the potential presence of contamination, and well construction details, if applicable.

6.3 LOW-FLOW WELL PURGING AND SAMPLING DATA FORM

A Low-Flow Well Purging and Sampling Data form will be used to record the depth to groundwater, well purging information, and other pertinent hydrologic measurements and supplementary information collected during groundwater sampling at each monitoring well during the groundwater sampling event. The form will be completed by Field Staff at the time of sample collection. These forms will be maintained in the project files.

6.4 SOIL SAMPLE DATA LOG

A Soil Sample Data Log will be used by the Field Staff during soil sampling activities to record information pertaining to the soil samples being collected. This form includes entries for the sample location, identification, and depth; the time sampled; field-screening results; the types and number of containers collected; and a brief lithologic description. These forms will be maintained in the project files.

6.5 SAMPLE LABEL

A sample label is filled out and affixed to appropriate sample containers immediately prior to sample collection. The label is filled out in indelible ink and includes the medium, date, time sampled, sample identification and number, project name, project number, sampler's initials, and analyte preservative(s) if any.

6.6 WASTE MATERIAL LABEL

A waste material label is filled out and affixed to the appropriate waste container immediately upon filling. The label is filled out in indelible ink and includes the job number and name, the address where the waste was generated, container contents, date, consultant's name and phone number, and sampler's initials.

6.7 WASTE INVENTORY FORM

A Waste Inventory form will be used to document and track the wastes generated during the cleanup action. The form will include information on the waste container, the origin of the waste, the type of waste, the date generated, the date removed from the Site, the transporter, and the disposal location.

6.8 CHAIN OF CUSTODY FORM

The written procedures that are followed whenever samples are collected, transferred, stored, analyzed, or destroyed are designed to create an accurate written record that can be used to trace the possession and handling of the sample from the moment of its collection through analysis and reporting of analytical values. This written record, the Chain of Custody form, will be filled out by field sampling personnel at the time a sample is obtained.

The samples submitted to the laboratory are accompanied by the Chain of Custody form. This form is checked for accuracy and completeness, signed, and dated by the laboratory sample custodian accepting the sample. At the laboratory, each sample is assigned a

unique, sequential laboratory identification number that is stamped or written on the Chain of Custody form.

Samples are held under internal chain of custody in the Sample Control room under the appropriate storage conditions (e.g., ambient, refrigeration, frozen). The laboratory Project Manager assigned to a particular client is responsible for tracking the status of the samples throughout the laboratory. Samples are signed out of the Sample Control room in a sample control logbook by the analyst who will prepare the samples for analysis.

The Chain of Custody form includes the client name, project name and number, date and time sampled, sample identifier, sampler's initials, analysis, and analyte preservative(s), if any.

7.0 REFERENCES

U.S. Environmental Protection Agency (EPA) Region 4 Laboratory Services & Applied Science Division. 2023. *Porewater Sampling,*< https://www.epa.gov/quality/pore-water-sampling >, (May 20, 2025.)

U.S. Environmental Protection Agency (EPA). 2024. *Method 1633, Revision A. Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS.* EPA 820-R-24-007. December.

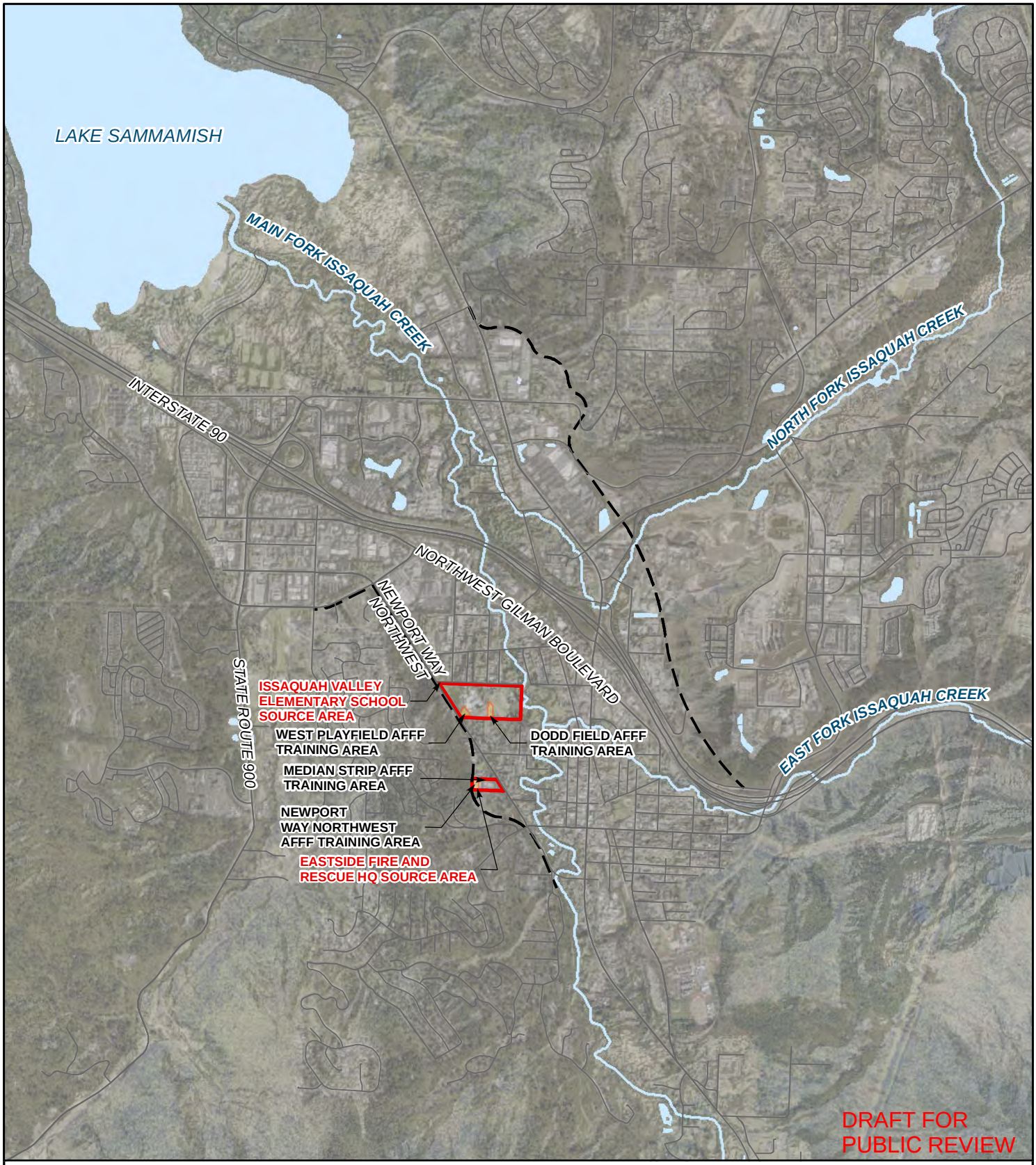
Washington State Department of Ecology (Ecology). 2004. *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies.* Publication No. 04-03-030. Revised December 2016. July.

———. 2022. *Guidance for Investigating and Remediating PFAS Contamination in Washington State.* Publication No. 22-09-058. Revised June 2023. December.

FIGURES

SAMPLING AND ANALYSIS PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009



LEGEND

- CREEK
- LOWER ISSAQUAH VALLEY
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- SOURCE AREA

0 2,500

SCALE IN FEET

N

FARALLON CONSULTING

Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

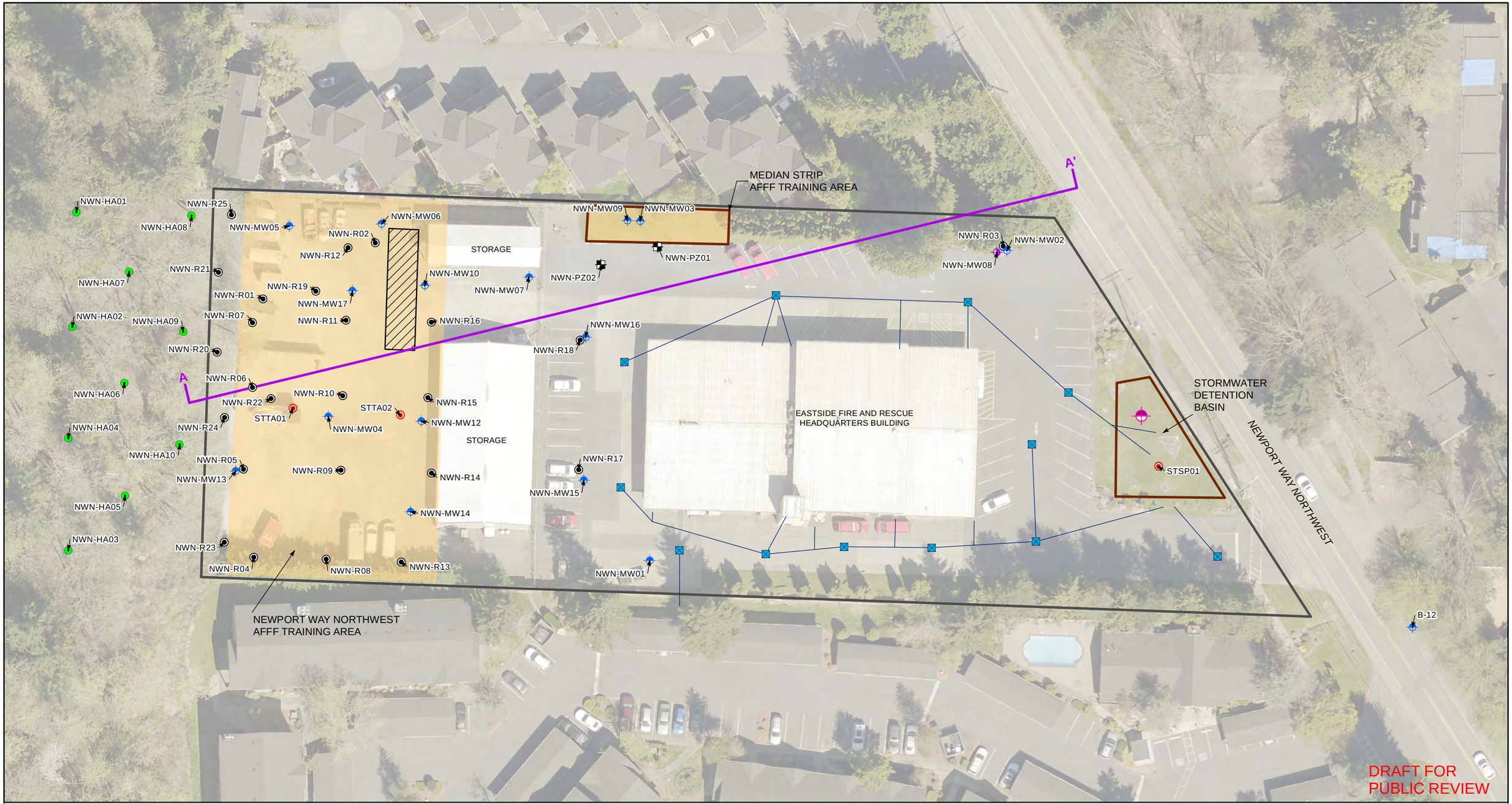
FIGURE 1

LOWER ISSAQUAH VALLEY VICINITY MAP
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-008

Drawn By: lmurock | Checked By: SS | Date: 5/29/2025 | Disc Reference:

Document Path: Q:\Projects\1754 EastsideFireRescue\008 Remedial Inv\001\Figure-01_Vicinity.mxd



LEGEND

- PROPOSED SHALLOW MONITORING WELL
- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- CATCH BASIN
- STORMWATER LINE
- LINE OF CROSS-SECTION
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

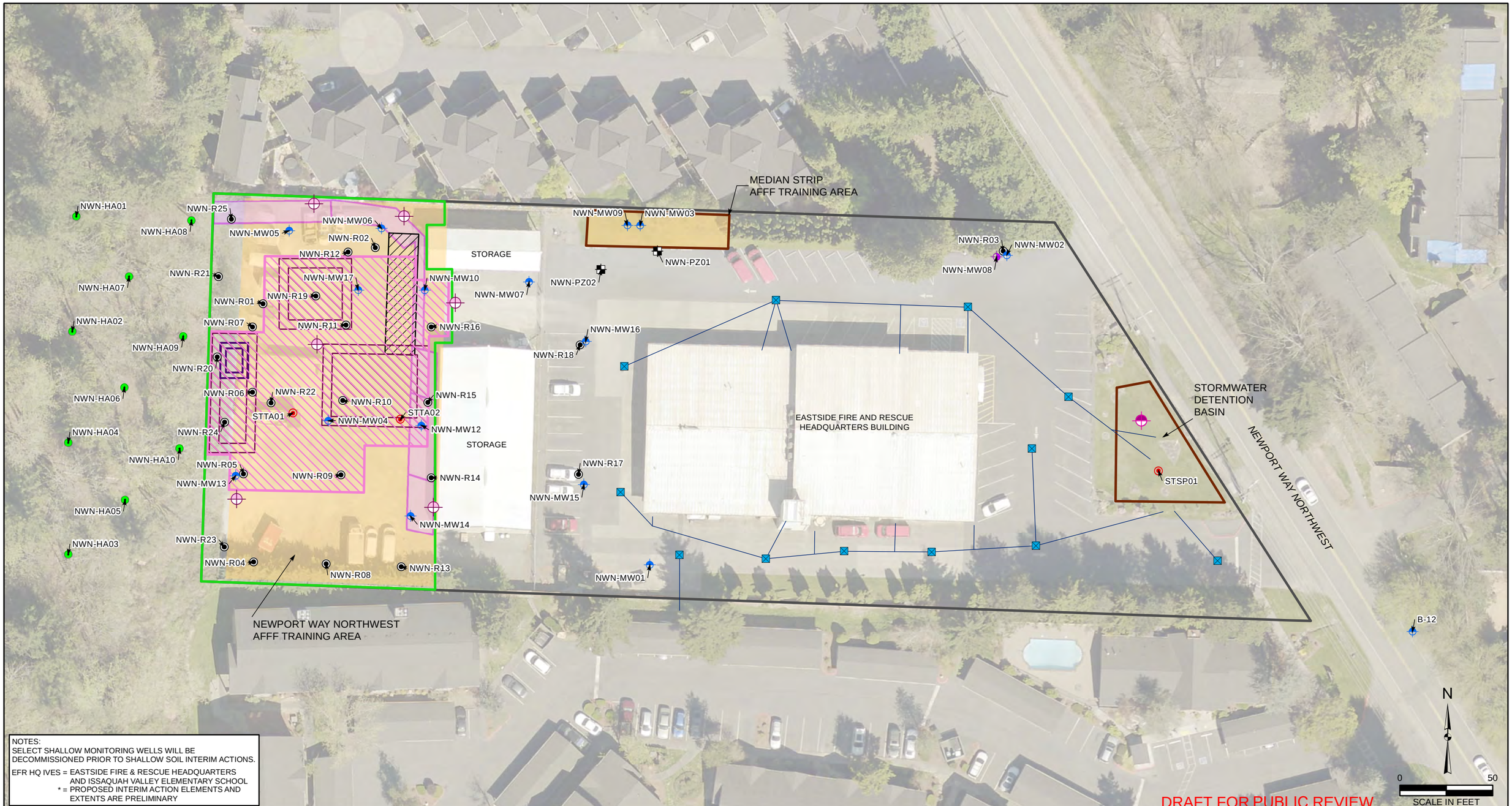
California
Oakland | Irvine

FIGURE 2

EFR SOURCE AREA PLAN
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-02_EFR-HQ-Plan.mxd



NOTES:
SELECT SHALLOW MONITORING WELLS WILL BE DECOMMISSIONED PRIOR TO SHALLOW SOIL INTERIM ACTIONS.

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
* = PROPOSED INTERIM ACTION ELEMENTS AND EXTENTS ARE PRELIMINARY

LEGEND

- PROPOSED SHALLOW MONITORING WELL (REMEDIAL INVESTIGATION)
- PROPOSED SHALLOW COMPLIANCE MONITORING WELL
- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- CATCH BASIN
- STORMWATER LINE
- PROPOSED AREA TO RESTORE WITH ASPHALT PAVEMENT CAP
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT (0 TO 5 FEET BELOW GROUND SURFACE)
- PROPOSED VADOSE ZONE SOIL TREATMENT AREA (5 TO 10 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPOSED VADOSE ZONE SOIL TREATMENT AREA (10 TO 13 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPOSED FULL SCALE PERMEABLE REACTIVE BARRIER*
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIGURE 3

EFR HQ SOURCE AREA PROPOSED
INTERIM ACTION ELEMENTS AND EXTENTS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: rbates | Checked By: SS | Date: 9/23/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-11_Proposed_IA_Extents.mxd

TABLES

SAMPLING AND ANALYSIS PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

Table 1
Soil Screening Levels
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Constituent of Potential Concern	Soil Screening Levels										
			Protection of Groundwater (mg/kg)[1]		Adjustment Factors	Proposed Soil Screening Level (mg/kg)					
	Method B Direct Contact (mg/kg)[1]	Method C Direct Contact (mg/kg)[1]	Vadose Zone Protection of Groundwater	Saturated Zone Protection of Groundwater	Laboratory Method Reporting Limit (mg/kg)	Vadose Zone	Saturated Zone	Maximum Reported Value (mg/kg)	Property	Sample Identification	Retained as Soil COPC
Per– and Polyfluoroalkyl Substances											
Perfluorobutanoic Acid (PFBA)	80	3,500	0.044	0.0029	0.00010	0.044	0.0029	**0.010**	Eastside Fire & Rescue	NWN-R10-200320-3.0	**No**
Perfluorobutane Sulfonic Acid (PFBS)	24	1,100	0.025	0.0017	0.00010	0.025	0.0017	**0.025**	Eastside Fire & Rescue	NWN-MW12-3	**No**
Perfluorohexanoic Acid (PFHxA)	40	1,800	0.035	0.0025	0.00010	0.035	0.0025	**0.066**	Eastside Fire & Rescue	NWN-R10-200320-3.0	**Yes**
Perfluorohexane Sulfonic Acid (PFHxS)	0.000032	0.0014	0.00000004	0.0000000026	0.00010	0.0001	0.0001	**0.21**	Eastside Fire & Rescue	NWN-MW12-3	**Yes**
Perfluorooctanoic Acid (PFOA)	0.000034	0.0045	0.000025	0.0000016	0.00010	0.0001	0.0001	**0.094**	Eastside Fire & Rescue	NWN-MW10-3	**Yes**
Perfluorooctane Sulfonic Acid (PFOS)	0.008	0.35	0.000046	0.0000026	0.00010	0.0001	0.0001	**3.6**	Eastside Fire & Rescue	NWN-R19-3	**Yes**
Perfluorononanoic Acid (PFNA)	0.20	8.8	0.000089	0.0000053	0.00010	0.0001	0.0001	**1.4**	Eastside Fire & Rescue	NWN-R15-200319-5.0	**Yes**
Perfluorodecanoic Acid (PFDA)	0.00016	0.0070	0.00000038	0.000000022	0.00010	0.0001	0.0001	**0.013**	Eastside Fire & Rescue	NWN-MW12-3	**Yes**
6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	16	700	0.074	0.004	0.00010	0.074	0.004	**0.48**	Eastside Fire & Rescue	NWN-R09-200320-3.0	**Yes**
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	0.24	11	0.00012	0.0000069	0.00010	0.00012	0.0001	**0.0014**	Eastside Fire & Rescue	NWN-R15-200319-10.0	**Yes**

NOTES:

Values highlighted in mint green are selected soil screening level.

Bold values exceed proposed screening level

[1]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State MTCA, Standard Method B and C Values for Soil from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC.

COPC = constituent of potential concern

mg/kg = milligrams per kilogram

Table 2
Groundwater Screening Levels
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Constituent of Potential Concern	Groundwater Screening Levels							
	Method B Groundwater Noncancer (µg/l)[1]	Federal Maximum Contaminant Levels (MCLs) (µg/l)[2]	Adjustment Factors: Laboratory Method Reporting Limit (µg/l)	Proposed Groundwater Screening Level (µg/l)	Reported Maximum Value (µg/l)	Property	Sample Identification	Retained as Groundwater COPC
Per– and Polyfluoroalkyl Substances								
Perfluorobutanoic Acid (PFBA)	8.0	NE	0.0020	8.0	0.46	Eastside Fire & Rescue	NWN-MW44-102920	No
Perfluorobutane Sulfonic Acid (PFBS)	4.8	Note 2	0.0020	4.8	**0.49**	Eastside Fire & Rescue	NWN-MW07-121422	**Yes**
Perfluorohexanoic Acid (PFHxA)	8.0	NE	0.0020	8.0	1.6	Eastside Fire & Rescue	NWN-MW14-20220118	No
Perfluorohexane Sulfonic Acid (PFHxS)	0.0000064	0.01	0.0020	0.0020	**2.0**	Eastside Fire & Rescue	NWN-MW06-200417	**Yes**
Perfluorooctanoic Acid (PFOA)	0.000003	0.004	0.0010	0.004	**1.0**	Eastside Fire & Rescue	NWN-MW12-20220118	**Yes**
Perfluorooctane Sulfonic Acid (PFOS)	0.0016	0.004	0.0010	0.004	**8.6**	Eastside Fire & Rescue	NWN-MW06-200417	**Yes**
Perfluorononanoic Acid (PFNA)	0.04	0.01	0.0020	0.01	**0.64**	Eastside Fire & Rescue	NWN-MW07-20220118	**Yes**
Perfluorodecanoic Acid (PFDA)	0.000032	NE	0.0020	0.0050	**0.14**	Eastside Fire & Rescue	NWN-R06-200320-10.0W	**Yes**
6:2 Fluorotelomer Sulfonic Acid (6:2 FTS)	3.2	NE	0.0020	3.2	2.4	Eastside Fire & Rescue	NWN-MW12-20220118	No
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	0.024	0.01	0.0020	0.01	ND	---	---	No

NOTES:

Values highlighted in mint green are selected groundwater screening level.

Bold values exceed proposed screening level

--- denotes criteria is not applicable

NE = Not established

ND = reported non-detect at the laboratory method reporting limit

[1]Washington State Cleanup Levels and Risk Calculations (CLARC) under Washington State MTCA, Standard Method B and C Values for Soil from CLARC Master spreadsheet, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC, unless otherwise noted.

[2]U.S. Environmental Protection Agency (EPA) National Primary Drinking Water Regulations, 40 Code of Federal Regulations Part 141. The EPA set a Hazard Index MCL of 1 for PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS to account for the combined and co-occurring levels of these PFAS in drinking water.

ATTACHMENT A
STANDARD OPERATING PROCEDURES

SAMPLING AND ANALYSIS PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

STANDARD OPERATING PROCEDURE EQ-01
EQUIPMENT DECONTAMINATION PROCEDURES

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for decontaminating sampling equipment during various field activities. The step-by-step guidelines provided in this SOP are to be followed by the field crew during all site visits, as applicable.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly decontaminate field equipment during various field tasks:

- Rinse water or distilled water.
- Deionized water.
- Liquinox or other phosphate-free detergent.
- Paper towels.
- Labeled squirt bottles.
- Long-handled hard-bristle brushes (for sediment and soil).
- Cotton swabs.
- Plastic sheeting, garbage bags, and aluminum foil (for sediment and soil).
- Core liner caps or plastic wrap and rubber bands (for sediment and soil).
- Extension arm for cleaning core liners (for sediment and soil).
- Plastic 5-gallon bucket.
- U.S. Department of Transportation-approved drum(s) for decontamination water unless other water-handling arrangements have been made. Separate drums are needed for liquid and solid wastes (see Farallon SOP WM-01, Field-Handling of Investigation-Derived Waste). Liquid wastes should not be added to drums containing solid wastes.

Dilute Liquinox with distilled water in a squirt bottle in accordance with the instructions on the Liquinox package, and label the bottle. Fill another squirt bottle with distilled water, and label the bottle.

FIELD EQUIPMENT TO BE DECONTAMINATED AFTER USE

Decontaminate the following field equipment at the conclusion of field work each day, in accordance with the procedures outlined in this SOP:

- Water-level meter.
- Horiba/YSI multiparameter probe.
- Bladder pump.
- Submersible pump.
- Sediment and soil collection and processing equipment.

WATER-LEVEL METER DECONTAMINATION

Decontaminate the water-level meter after measuring the water level at a monitoring well before moving to a new monitoring well, using the following procedures:

- Spray the bottom half of a paper towel with the diluted Liquinox solution, and the upper half with deionized water.
- Grip the measuring tape of the water-level meter with the paper towel in one hand with the Liquinox side down toward the monitoring well casing.
- Begin slowly reeling up the water-level meter while maintaining firm contact between the measuring tape and the paper towel.
- Ensure that no debris or contamination remains on the measuring tape of the water-level meter once it has been reeled up.
- Use a clean new paper towel for each successive decontamination of the measuring tape of the water-level meter.

HORIBA/YSI MULTIPARAMETER PROBE DECONTAMINATION

Decontaminate the Horiba/YSI multiparameter probe at the end of each workday or after sampling a monitoring well with high concentrations of contamination, using the following procedures:

- Remove the multiparameter probe from the flow-through cell, and thoroughly spray each component with deionized water.
- Use a cotton swab to gently clean around each sensor probe, ensuring that all contaminated water and material has been washed away.
- Refill the protective dissolved oxygen and pH probe caps with deionized water, and replace prior to storage.
- Once the multiparameter probe has been adequately cleaned, replace the protective shield, and return the probe to the case. If the device appears to be overly wet, allow it to air-dry with the case open.

- Do not use Liquinox to clean any probes on the Horiba multiparameter probe, as it may damage the device.

BLADDER PUMP DECONTAMINATION

Decontaminate the bladder pump after sampling a well and at the end of each workday, using the following procedures:

- After extracting the bladder pump from the well, break down the pump, remove and dispose of the used bladder, and spray each component with the diluted Liquinox solution, followed by deionized water.
- Wipe away any visible contamination or debris with a paper towel.
- Capture cleaning water in a liquid waste drum for proper disposal in accordance with Farallon SOP WM-01, Field-Handling of Investigation-Derived Waste.
- Ensure that all contamination and Liquinox solution is washed off all components before reassembling the device, installing a new bladder, and moving to sample a new well.

SUBMERSIBLE PUMP DECONTAMINATION

Decontaminate the submersible pump after purging water from any well, using the following procedures:

- After extracting the submersible pump from the well, thoroughly spray down the pump with the diluted Liquinox solution, followed by deionized water.
- Wipe away any visible contamination or debris with a paper towel.
- Purge clean water through the pump and tubing to ensure that contaminated water has been cleared from all lines.
- Capture cleaning water in a liquid waste drum for proper disposal in accordance with Farallon SOP WM-01, Field-Handling of Investigation-Derived Waste.

SEDIMENT AND SOIL SAMPLING AND PROCESSING EQUIPMENT DECONTAMINATION

Decontaminate sampling equipment used to collect and process sediment and soil samples, using the following procedures:

- Place contaminated equipment and decontamination tools on plastic sheeting.
- Thoroughly rinse all used equipment with distilled water in a 5-gallon bucket to remove excess sediment or soil.
- Pour one capful of Liquinox solution into a 5-gallon bucket filled with tap water or distilled water.
- Using a long-handled hard-bristle brush, thoroughly scrub the equipment with the Liquinox solution until no sediment or soil particles remain.

- Holding the equipment over a 5-gallon bucket, double-rinse the equipment with distilled water until no Liquinox solution remains. Do not allow clean equipment to come into contact with a contaminated surface.
- Drain the equipment and place it in a clean, dry place to prevent recontamination.
- If decontaminated equipment will not be re-used immediately, wrap stainless steel equipment (e.g., bowls, spoons) in aluminum foil with the dull side facing the equipment. Seal polycarbonate core liners with core caps or cellophane plastic. Rubber-band ends to ensure a proper seal.
- After decontamination has been completed, place disposable items into a garbage bag, and store decontamination water in a drum in accordance with Farallon SOP WM-01, Field-Handling of Investigation-Derived Waste.

STANDARD OPERATING PROCEDURE EQ-04

YSI PRO DSS EQUIPMENT CALIBRATION

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology to properly use, operate, and handle YSI Pro DSS Water Quality Meter.

RESPONSIBILITIES AND QUALIFICATIONS

All personnel performing these actions are required to be familiar with the procedures described herein. Personnel performing or overseeing procedures described herein must also be familiar with health and safety requirements in the project-specific Health and Safety Plan (HASP).

SUPPORTING SOPS

List of all supporting SOPs referenced within this SOP.

SOP EQ-01 Equipment Decontamination

EQUIPMENT AND SUPPLIES

The following equipment is necessary to calibrate and operate the PID:

- The YSI Water Quality Meter
- Spray Bottle with Deionized Water (DI Water)
- Calibration Solutions
    - pH: 4, 7 and 10
    - ORP
    - Conductivity
    - Turbidity (Pre-mixed or Mixed to Standard)
- Calibration Solution Waste Bucket (Collects used calibration solution throughout calibration process)

YSI CALIBRATION FREQUENCY

YSI calibration should be completed before each groundwater monitoring event and as needed if values seem uncharacteristic of the site. If a groundwater monitoring event lasts multiple days, the equipment doesn't need to be calibrated each day.

YSI CALIBRATION PROCEDURES

Verify all five calibration solutions have not expired. Each solution should be labeled with a month and a year.

Turn on the YSI by pressing the power button. Wait for the YSI to complete automatic check and bring up the low flow parameter reading display.

Loosen the low flow cup retaining nut holding the YSI and the low flow cup securely together. Pull the YSI water quality meter from the low flow cup and inspect for any obvious build up or goop on any of the sensors. Place any water from low flow cup into the calibration solution waste bucket. Rinse both the low flow cup and the YSI water quality sensors using DI water.

pH Calibration

Push the calibration [Cal] key to access the calibration menu. Fill the low flow cup to the Fill Line #1 with pH 7 solution. Place the water quality meter into the low flow cup and tighten the low flow cup retaining nut so that a seal is created. The pH probe and the temperature probe should appear submerged inside the low flow cup. Select pH/ORP from the submenu and then select pH from the 2nd submenu. The 3-point calibration will begin. The suggested calibration value should appear at the top of the screen in brackets and match the calibration solution being used. Allow the Actual Readings and Post Cal Values to stabilize by becoming parallel on the small graph at the bottom of the screen. When the lines are parallel select [Accept Calibration]. Verify that the YSI has accepted the readings and the bottom of the screen states *Ready for cal point 2*.

Loosen the low flow cup retaining nut holding the YSI and the low flow cup securely together. Pull the YSI water quality meter from the low flow cup and place the calibration solution from low flow cup into the calibration solution waste bucket. Rinse both the low flow cup and the YSI water quality sensors using DI water.

Repeat the process using the pH 4 or 10 calibration solution. Ensure the suggested calibration value at the top of the screen. Allow for the readings to stabilize before selecting [Accept Calibration]. Verify that the YSI has accepted the readings and the bottom of the screen states *Ready for cal point 3.*

Repeat the process using the last pH calibration solution. Ensure the suggested calibration value at the top of the screen. Allow for the readings to stabilize before selecting [Accept Calibration]. If calibration has been successful it will flash *Calibration successful!* at the bottom of the screen.

Loosen the low flow cup retaining nut holding the YSI and the low flow cup securely together. Pull the YSI water quality meter from the low flow cup and place the calibration solution from low flow cup into the calibration solution waste bucket. Rinse both the low flow cup and the YSI water quality sensors using DI water.

If during the calibration process the meter needs to be reset, select [Esc] and resume the calibration process.

If during the calibration process the suggested calibration value doesn't match the calibration solution select the up arrow and adjust the value accordingly. After selecting [Enter] the calibration /parameter stabilization process will start over automatically.

ORP Calibration

Push the calibration [Cal] key to access the calibration menu. Fill the low flow cup to the Fill Line #1 with ORP solution. Place the water quality meter into the low flow cup and tighten the low flow cup retaining nut so that a seal is created. The ORP probe and the temperature probe should appear submerged inside the low flow cup. Select pH/ORP from the submenu and then select ORP from the 2nd submenu. The calibration will begin. The suggested calibration value should appear at the top of the screen in brackets. Verify the suggested calibration value by reading the measured temperature of the calibration solution and the suggested value. A table should be affixed to the calibration bottle showing the logarithmic relationship between temperature and ORP values for the calibration solution being used. If the value seems appropriate, allow the Actual Readings and Post Cal Values to stabilize by becoming parallel on the small graph at the bottom of the screen. When the lines are parallel select [Accept Calibration]. Verify that the YSI has accepted the readings and the bottom of the screen states *Calibration successful!*

Loosen the low flow cup retaining nut holding the YSI and the low flow cup securely together. Pull the YSI water quality meter from the low flow cup and place the calibration solution from low flow cup into the calibration solution waste bucket. Rinse both the low flow cup and the YSI water quality sensors using DI water.

Conductivity Calibration

Push the calibration [Cal] key to access the calibration menu. Fill the low flow cup to the Fill Line #2 with Conductivity solution. Place the water quality meter into the low flow cup and tighten the low flow cup retaining nut so that a seal is created. The conductivity probe and the tprobe should appear submerged inside the low flow cup. Gently rotate the low flow cup around to remove any bubbles from the conductivity cell. Select Conductivity from the submenu and then select Spec. Cond. from the 2nd submenu. The calibration will begin. The suggested calibration value should appear at the top of the screen in brackets. If the suggested value matched the calibration standard being used, allow the Actual Readings and Post Cal Values to stabilize by becoming parallel on the small graph at the bottom of the screen. When the lines are parallel select [Accept Calibration]. Verify that the YSI has accepted the readings and the bottom of the screen states *Calibration successful!*

Loosen the low flow cup retaining nut holding the YSI and the low flow cup securely together. Pull the YSI water quality meter from the low flow cup and place the calibration solution from low flow cup into the calibration solution waste bucket. Rinse both the low flow cup and the YSI water quality sensors using DI water.

Dissolved Oxygen Calibration

Push the calibration [Cal] key to access the calibration menu. Spray a small amount of DI water into the low flow calibration cup so that the bottom of the covered. Place the water quality meter into the low flow cup and tighten the low flow cup retaining nut so that a seal is created. Allow the YSI water quality meter to sit for approximately 1 minute before selecting ODO from the submenu and then select ODO% from the 2nd submenu. The calibration will begin. The suggested calibration value of [100.0] should appear at the top of the screen in brackets. If the suggested value is +/- 1%, allow the Actual Readings and Post Cal Values to stabilize by becoming parallel on the small graph at the bottom of the screen. When the lines are parallel select [Accept Calibration]. Verify that the YSI has accepted the readings and the bottom of the screen states *Calibration successful!*

The calibration process is now complete.

If needed, Turbidity 3-Point Calibration

Follow the User's Manual Instruction for mix or using pre-mixed turbidity solutions.

Thoroughly clean the low flow cup and water quality probes to ensure proper calibration. Fill the low flow cup to the Fill Line #1 with deionized water or 0 NTU solution. Place the water quality meter into the low flow cup and tighten the low flow cup retaining nut so that a seal is created. The turbidity probe should appear submerged inside the low flow cup. Push the calibration [Cal] key to access the calibration menu. Select turbidity from the submenu. The 3-point calibration will begin. Enter 0.00 into the suggested calibration value box at the top of the screen in brackets. Allow the Actual Readings and Post Cal Values to stabilize by becoming parallel on the small graph at the bottom of the screen. When the lines are parallel select [Accept Calibration]. Verify that the YSI has accepted the readings and the bottom of the screen states *Ready for cal point 2*.

Loosen the low flow cup retaining nut holding the YSI and the low flow cup securely together. Pull the YSI water quality meter from the low flow cup and place the calibration solution from low flow cup into the calibration solution waste bucket. Rinse both the low flow cup and the YSI water quality sensors using DI water.

Repeat the process using the 2nd prepared calibration solution. Ensure the suggested calibration value at the top of the screen. Allow for the readings to stabilize before selecting [Accept Calibration]. Verify that the YSI has accepted the readings and the bottom of the screen states *Ready for cal point 3.*

Repeat the process using the last turbidity calibration solution. Ensure the suggested calibration value at the top of the screen. Allow for the readings to stabilize before selecting [Accept Calibration]. If calibration has been successful it will flash *Calibration successful!* at the bottom of the screen.

Loosen the low flow cup retaining nut holding the YSI and the low flow cup securely together. Pull the YSI water quality meter from the low flow cup and place the calibration solution from low flow cup into the calibration solution waste bucket. Rinse both the low flow cup and the YSI water quality sensors using DI water.

YSI OPERATION

The instructions below are to be followed for YSI use to measure water quality parameter and determine stabilization:

- Ensure that the YSI handheld controller is kept dry and out of direct sunlight while in use. Rain can damage the handheld controller and hot summer days can make it difficult to read.
- During hot sunny days cover the YSI and tubing from the monitoring well. Direct sun can cause the temperature in the low flow cup to rise and can result inaccurate readings.
- Ensure the O-ring seals around the water quality meter and each probe are secure. If the pressure on the bladder pump is turned up very high it can cause the o-ring seals to fail.
- The YSI Pro DSS storage box allows to the YSI water quality meter to stay assembled at all times. Do not disassemble the handheld from the probes except when performing cleaning. Keeping it assembled will prevent moisture from getting into the electronic connections.

DOCUMENTATION

Document groundwater quality readings using the Low Flow Groundwater Sampling Form.

REFERENCES

https://www.ysi.com/File%20Library/Documents/Manuals/YSI_ProDSS_User_Manual_English.pdf

Attachments: Attachment A, Figures
Attachment B, Field Forms

ATTACHMENT A
FIGURES

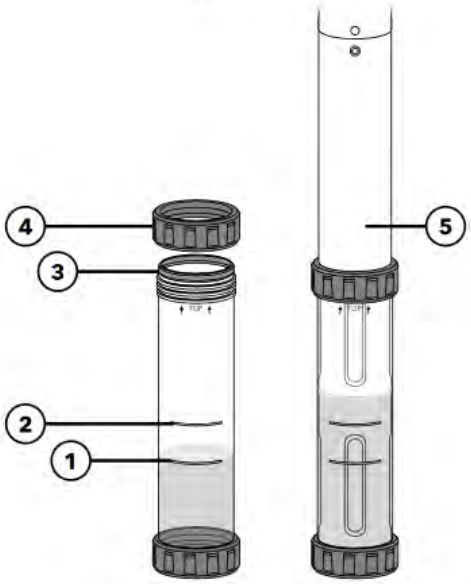
[NAME OF DOCUMENT]
[Site Name]
[Site Address]
[City, State]

Farallon PN: [xxxx-xxx]

ATTACHMENT B
FIELD FORMS

[NAME OF DOCUMENT]
[Site Name]
[Site Address]
[City, State]

Farallon PN: [xxxx-xxx]



1	Fill line one (for all calibration solutions except for conductivity)
2	Fill line two (for conductivity calibration solution)
3	Gasket
4	Retaining nut
5	Calibration cup installed

It takes 170 mL of solution to fill the calibration cup to line 1, while it takes 225 mL to fill to line 2.

Figure 45 Calibration cup standard volume (4-port cable)

STANDARD OPERATING PROCEDURE GN-01
FIELD NOTE PROCEDURES

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the information needed to document site and sampling activities during field work. The step-by-step guidelines provided in this SOP are to be followed by the field personnel during field work.

GENERAL FIELD NOTE INSTRUCTIONS

- Use a blue or black pen.
- Always document time in military time.
- Record your full name and the names of other Farallon employees present. Initials of personnel can be used after the full names have been provided in the field notes.
- Don't leave line spaces between field note entries.
- Keep handwriting neat.
- Be concise.

ITEMS TO INCLUDE IN FIELD NOTES

At Start of Workday:

- Document when and where you started the field day and when you arrived at the site.
- Note any stops along the way to the site.

Upon Arrival at Site:

- Note the reason for the site visit/site work.
- Document the weather on page 1, and throughout the day if the weather changes.
- Document the time personnel arrive at the site and the name of the company/agency they are affiliated with.
- Document the time subcontractors arrive, the tasks they are conducting, and the time they leave the Site.
- Conduct the Health and Safety (H&S) meeting, ensure all participants sign the H&S form, and include the signed H&S form in the field notes.
- Calibrate equipment: document equipment model number/serial number, calibration method, and results. Be specific (e.g., "Calibrated Horiba for pH using 4.0 standard." "Calibrated PID using 100 ppm isobutylene span gas and ambient air as zero gas."). Note whether the instrument is Farallon's or a rental. If using a rental, include in the field notes the calibration sheet that should have come with the equipment. If using two sets of

equipment, note on the field forms which equipment was used for each location. For example, label "Horiba 1" and "Horiba 2" on the groundwater sampling sheets, and document the serial numbers of the instruments in the field notes. Make sure to document the calibration results for Farallon equipment in the Rite-in-the-Rain notebook kept in each field equipment case.

- Document when work starts at a specific task location (e.g., well or boring), and document what equipment Farallon or the subcontractors are using at that location.
- Measure out and record the sample locations (using a rolling wheel, or GPS if available), and mark utilities on a field map if applicable.
- If media samples will be collected, complete the appropriate documentation form, or record the information in the field notes. For example, record field sampling methods (e.g., grab, composite), the type of media (e.g., soil, groundwater, stormwater), the time the sample was collected, sample location and ID, analytical method(s), the laboratory conducting the analysis, the size of the sample container, the number of containers used, and the preservative included in the sample container. If a composite sample is collected, record how many composite points make up the sample, and document where the composite samples were collected.
- If multiple samples are collected using the same methods and the same type of sample containers, simply document that a sample was collected the same as previous samples.
- Document when work is complete at each location.
- If conducting groundwater monitoring, note the condition of monitoring well monuments (e.g., bolts missing, gasket needed).
- Throughout the workday, note any relevant information (e.g., QC-sampling discrepancies, unexpected conditions, abnormal sampling events).

At End of Workday:

- Decontaminate equipment and note the decontamination method (e.g., Alconox and towels).
- Review the field notes, and complete sketches of any relevant features and sample locations if necessary.
- Record whether wastes were generated. If so, record how much was generated, whether the waste was sampled, and where the waste is stored.
- Place an "Analysis Pending" label on drums of waste, and fill out the label completely.
- Complete a drum inventory sheet and note the drum/container sizes and how much waste was accumulated.
- Document when you left the site;

- Document when you returned to the office or when the field day ended.
- Note any additional work performed after returning to the office (e.g., finished field notes, downloaded field photos).

Make sure to include any of the following forms relevant for the type of field work conducted:

- Daily Field Notes
- Health and Safety Meeting form
- Water Level Summary form
- Low Flow Well Purging and Sampling Data form
- Boring and/or test pit logs
- Monitoring Well Construction Data form
- Soil Sample Data form
- SVE Monitoring form
- Any site-specific operation and maintenance or pilot test forms
- Elevation Survey Data form
- Utility Clearance Log
- Waste Inventory Tracking Sheet
- Copy of the laboratory Chain of Custody form for any samples collected
- Copies of subcontractor daily log sheets (e.g., utility locate, drilling)
- Copies of rental equipment calibration sheets
- Near Miss form (if applicable)
- Incident Report form (if applicable)

Assemble all field forms used each day, scan, save to the electronic project Field Notes folder, and give the hard copy of the forms to the Project Manager.

Refer to the Farallon Field Documentation Checklist and the *Doc Reqs by Field Task list.*

STANDARD OPERATING PROCEDURE (SOP) GENERAL-02
UTILITY LOCATE

PURPOSE AND APPLICATION

The purpose of this SOP is to provide Farallon Consulting, L.L.C. (Farallon) personnel with the specific information needed to identify and locate utilities on sites where drilling or excavation activities will occur. Excavation is defined by Section 20 of Chapter 19.122 of the Revised Code of Washington (RCW 19.122.020) as "any operation, including the installation of signs, in which earth, rock, or other material on or below the ground is moved or otherwise displaced by any means." For the purposes of this SOP, the excavation area refers to the area of an excavation or a perimeter around all proposed borings, test pits, soil gas sampling locations, and subslab soil gas sampling locations. Identifying utilities within the boundaries of a proposed excavation area prior to any digging is required by law and is necessary for the safety of Farallon personnel and contractors.

The guidelines provided in this SOP are to be followed by Farallon personnel who coordinate utility locating, mark locate boundaries, and/or observe field work that involves any type of excavation.

EQUIPMENT AND SUPPLIES

The following equipment and supplies are necessary to arrange and conduct utility locating:

- A map of the site with the proposed excavation area(s);
- Readable side sewer card figures, if applicable;
- Geographic information system (GIS) utility figures, if applicable;
- Readable American Land Title Association (ALTA) survey figures, if applicable;
- Any previous utility figures associated with the site;
- White marking products (e.g., paint, flags, stakes, grease marking pen, tape, chalk);
- Materials necessary to provide required documentation (e.g., Field Report form, camera, measuring wheel, global positioning system); and
- Personal protective equipment (PPE) as described in the site-specific Health and Safety Plan, or Level D PPE at a minimum.

PROCEDURES

The following utility locating procedures have been developed for use before excavation occurs on a site. The procedures are divided into the following four parts:

- Call Before You Dig System;

- Private Utility Locating Services;
- Hand-Clearing Proposed Excavation Areas; and
- Maintaining Public Utility Locate Marks.

The Project Manager should discuss the scope of work, details of the project location, and any essential information with the project field team before any of the procedures described below commence. When practicable, an on-site kickoff meeting involving a member of the field team and the Project Manager should be conducted to discuss the work to be performed, mark the boundaries of the excavation area, and mark potential boring locations, if applicable.

Call Before You Dig System

According to RCW 19.122.030, excavators are required to mark the boundary of a proposed excavation area using white marking products. Marking products include paint, flags, and stakes. Boundary marks should conform to the following guidelines:

- A continuous line, hashed line, dots, or corner marks with arrows are acceptable ways to mark the boundary.
- Flags and stakes can be used if paint is not adequate.

The location(s) of the proposed excavation area(s) must be reviewed to verify that no visible utilities that would interfere with the proposed excavation area(s) are present. If utilities are present, the Project Manager and field personnel should communicate the changes to the excavation that are area necessary before the boundaries are marked with white paint.

After marking the boundaries of the proposed excavation area, Farallon personnel must provide notice of the scheduled excavation to the owner/operators of buried utilities at least 2 but no more than 10 business days in advance by calling 811 or 1-800-424-5555, or using the online tool at www.callbeforeyoudig.org. Use of the online tool is preferred.

A map with the excavation area boundaries depicted and/or photos of the white paint marks is helpful in conveying the scope of work to the Call Before You Dig service.

The following information should be available to provide the Call Before You Dig service at the time of initial contact:

- Scope of work, including the start date and time.
- Contact information for the Project Manager and a field person able to answer questions from public utility locators regarding project details.
- Site address, township/range/section quarter, and name of property owner.

Once the Call Before You Dig system has been notified of the upcoming work, the system provides a ticket number, which

- Should be referenced whenever the Call Before You Dig service is contacted about the job.
- Provides proof that the Call Before You Dig system was notified prior to excavation. Public utility locators, inspectors, and law enforcement personnel may ask for the ticket number.
- Should be supplied to any subcontractors doing work on the site for reference when contacting the system for their own ticket number.

Call Before You Dig personnel will provide a list of public utilities present on the site, and will notify public utility operators of the planned work.

Public utility operators have 2 full business days after the day notification was received to locate and mark their lines, or to provide reasonable information on lines that they are not able to locate. The day notice is given is not included as 1 of these 2 days. Therefore, if excavation work is planned to start on a Monday, for example, the Call Before You Dig system must be notified by Wednesday the week before.

Two full business days must elapse between Call Before You Dig notification and the start of excavation. No excavation is to take place until all known utilities are marked or otherwise accounted for with information provided by the facility operator.

Locators mark their lines with colored hash marks. The American Public Works Association determines the colors to be used to denote different kinds of lines:

Red: Power Lines and Cable	Yellow: Gas, Oil, Petroleum
Orange: Telephone and Cable	Blue: Drinking Water
Green: Sewer (Storm and Sanitary)	Purple: Non-Potable Water
Pink: Survey Marks	White: Excavator Marks

Public utility operators are required to mark their lines only to the meter. Utility lines located beyond the meter are the responsibility of the property owner. Public utility operators should indicate by marking if no public utilities are present.

Public utility locators are required to mark their lines with reasonable accuracy. According to RCW 19.122.020, “reasonable accuracy means location within twenty-four inches of the outside dimensions of both sides of an underground facility.”

At this time, public utility companies are not required to mark abandoned or deactivated lines in Washington.

An individual not following the protocols established by the Call Before You Dig system can be held liable for up to three times the cost to repair a utility line damaged during excavation.

Records of ticket numbers and communications with the Call Before You Dig service should be stored in the project folder and supplied to on-site project personnel.

Before any excavation work is started, Farallon personnel should verify that all public utility marks are present on the site. The public utility company (companies) listed on the Call Before You Dig system ticket should be contacted if marks for that utility (utilities) are not present.

Private Utility Locating Services

After the public utility companies have marked their lines and before excavation begins, it is standard practice to have a private utility locating service clear areas that will be excavated.

Private locates generally are scheduled for the day before or the morning of the start of excavation.

Areas where excavation will occur must be cleared for conductible utilities by a private locator. Depending on the nature of the site and the proximity of utility lines, the private locator may also mark non-conductible utilities.

If possible, the excavation contractor should be on the site during the private utility locating to verify with the private locator that all proposed excavation areas are accessible.

When working with private utility locators, Farallon personnel should:

- Study existing figures of the site, noting the locations of known utilities.
- Use available side sewer cards or geographic information system utility figures to verify utility locations at the site.
- Verify that all public utilities have been marked by physically verifying that colored paint marks are present for all of the public utility companies listed on the One Call Before You Dig ticket. If any public utilities have not been marked, the utility company must be contacted and requested to mark the area, or to provide confirmation that the area is clear of their utility.
- Discuss the scope of work/excavation areas with the private locator.
- Document the name of the locating company and the name of the locator.
- Observe the locator clear the excavation area(s).
- Document the locate marks with photos, and note any uncertainties in the Field Report form.
- Identify the locations of shut-off valves for utilities such as water and natural gas.

- Contact the Project Manager or Principal to discuss relocating the excavation area if a proposed excavation area is in conflict with a utility identified by the private locator.
- Sign the locator's paperwork, if necessary, and depart the site if no additional field work is to be performed that day.

Private location of conductible utilities should sweep the excavation area in two perpendicular directions.

Private location of non-conductible utilities (typically storm and sanitary sewer) can use either a probe or a camera for accessible lines. Appropriately colored paint marks are applied by the private locator based on a signal sent from the probe or camera. For inaccessible lines, a ground-penetrating radar or magnetometer can be used to approximate the line locations. Marks based on this method should be considered approximate.

Hand-Clearing Excavation Areas

Prior to conducting certain excavation activities, excavators will clear the proposed excavation area to verify that no utilities are present. This can be accomplished through use of an air knife/vacuum truck, post-hole digging, hand-augering, or use of other hand tools that allow the excavation location to be explored sufficiently to verify that no utilities are present. Farallon Project Managers will confirm the method of clearing and depths with the field team before the excavation work is performed. Farallon Project Managers also need to discuss shallow soil sampling needs with the field team if clearing activities are being performed. Clearing activities should be conducted according to the following guidelines:

- Hollow-Stem Auger Drilling: Hand-clear to a minimum depth of 5 feet below ground surface (bgs) using an air knife/vacuum truck whenever possible. Alternative methods such as post-hole digging or hand-augering also may be used.
- Sonic Drilling: Hand-clear to a minimum depth of 5 feet bgs using an air knife/vacuum truck whenever possible. Alternative methods such as post-hole digging or hand-augering also may be used.
- Geoprobe Drilling: Clearing activity requirements are dependent on known utilities and results of the public and private utility location procedures completed above. Hand-clear using a post-hole digger or hand-auger to a maximum depth of 5 feet bgs is necessary. An air knife/vacuum truck may be used to hand clear each boring location to a maximum depth of 5 feet bgs, if available.
- Test Pit Excavation: No hand-clearing is necessary. Excavation contractors should be directed to dig cautiously in the upper 5 feet bgs in the event an unknown utility is present. A test pit excavation or regular excavation using machinery (e.g., track hoe, backhoe) should include using a spotter to watch for unidentified utility lines. Ideally, the spotter should be provided by the excavation contractor.
- Rotary Hammer for Soil Gas Sampling: No hand-clearing is necessary.

- Rotary Hammer for Subslab Soil Gas Sampling: No-hand clearing is necessary.

Some drilling contractors require that a utility line be exposed prior to drilling if the proposed drilling location is within a certain distance of the utility line. Farallon personnel should confirm drilling contractor requirements prior to conducting drilling activities.

If a utility line is encountered during clearing, excavators should verify that the utility has not been damaged, and Farallon personnel should document the encounter on the Field Report form with photos and details. RCW 19.122.020 states that "damage" includes the substantial weakening of structural or lateral support of an underground facility, penetration, impairment, or destruction of any underground protective coating, housing, or other protective device, or the severance, partial or complete, of any underground facility to the extent that the owner of the affected facility determines that repairs are required. The Project Manager or Principal should be notified immediately if a utility line is encountered during hand-clearing, and an alternate location will be proposed. A hand-cleared area having an exposed utility line should be backfilled with a bentonite seal and finished to match existing grade.

Maintaining Public Utility Locate Marks

According to RCW 19.122.030, "public utility locate marks expire 45 days from the date the excavator provides notice," and "it is the responsibility of the excavator to maintain the public utility marks for 45 days, or for the length of the project–whichever is shortest. In any case, the public utility locate marks expire after 45 days."

Locate marks can be maintained digitally through both photos and figures drawn to scale.

Locate marks can be maintained in the field using white paint. White paint can be applied between original hash marks, on either side of the hash marks, or on both ends. Offset paint or staking can be used if placed a uniform distance from the original marks with a clear indication of the direction and distance from the original marks. The original marks should not be painted over, and white paint should never be applied over colored paint. White marks should include a letter identifying the type of buried line.

UTILITY LINE DAMAGE

A utility line does not need to be ruptured or severed to be considered damaged. Scratching or denting a utility line or its protective tape also is considered damage, as the integrity of the line may have damaged even if the damage does not appear to be significant. Before excavation work begins, shut-off valve locations for applicable utilities should be documented. If a utility is believed to be damaged, the utility should be shut down if practicable and safe to do so. According to RCW 19.122.053, "all facility operators and excavators who observe or cause damage to an underground facility must report the damage event to the Washington State Utilities and Transportation Commission."

If a utility line is hit and public safety is a concern, 911 should be the first call made after the immediate area has been evacuated. If a utility line is hit and the public is not at risk, the field team should notify the Project Manager, who will notify the Principal and the corporate Health and Safety Coordinator immediately. The Project Manager should then contact the utility that owns the damaged line, and report to the field team any instructions issued by the utility owner, and an expected timeframe for arrival of a utility owner representative at the site. Repairs to a utility line will not be attempted by Farallon personnel or contractors.

Damage must be reported through the Common Ground Alliance Damage Information Reporting Tool website, hosted by the Washington State Utilities and Transportation Commission: http://www.utc.wa.gov/publicSafety/pipelineSafety/Pages/Damagereportingrequirements.aspx

Access to damaged utility lines should be maintained to allow inspection by the utility company. An exposed utility should not be backfilled or patched until instruction to do so has been provided by the Project Manager or Principal.

DOCUMENTATION

Farallon personnel should document in the Field Report form the work performed and methods used by private utility locators, and photos from multiple angles with good reference points for each utility line in the excavation area(s).

REFERENCES

Washington Utilities Coordinating Council. 2014. *Guide to Safe Digging, Washington State Law and Industry Best Practices.*

STANDARD OPERATING PROCEDURE GN-03
SAMPLE SHIPPING

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology to ensure consistent and good quality sample shipment. This SOP is a supplement to site-specific work plans.

RESPONSIBILITIES AND QUALIFICATIONS

All personnel performing these actions are required to be familiar with the procedures described herein. Personnel performing or overseeing procedures described herein also must be familiar with health and safety requirements in the project-specific Health and Safety Plan (HASP).

EQUIPMENT AND SUPPLIES

Supplies needed to ship samples:

- Coolers – appropriate number and size;
- Custody seals;
- Bubble wrap;
- 1-gallon Ziploc bags for ice and samples;
- Ice;
- Samples and COC;
- Shipping labels; and
- Heavy-duty shipping tape.

PROCEDURES

It is critical to prepare samples for shipment at the end of the day to minimize the amount of time the samples will have to spend on ice in transport. Evaluate number of samples and coolers needed to ship the samples collected. If samples are in glass containers, consider shipping additional coolers to allow more room for bubble wrapping and padding sample containers.

Remember to provide enough ice to meet preservation requirements; the general ice to cooler rule is 20 pounds of ice per cooler. Line the cooler with a clean trash bag prior to packing, double-bag all ice using 1-gallon Ziploc bags, and close the trash bag last by “goose necking” and sealing with duct tape to prevent leakage.

The following procedures (representing the minimum shipping and handling requirements) will be used for sample packaging:

- A sample label will be affixed to the corresponding sample container at the time of sample collection.
- Bubble-wrap bags or an equivalent will be used to protect sample containers.
- Sample containers will be placed into a cooler and checked against the Chain of Custody form to ensure that all samples are listed and are placed into the correct cooler.
- One copy of the Chain of Custody form will be detached and retained by the Farallon field personnel.
- Remaining paperwork will be sealed in a resealable plastic bag and taped to the inside of the cooler lid.
- One to three resealable bags will be filled with ice and/or a chemical equivalent and included in the cooler. Ice will be double-bagged in heavy-duty bags.
- The cooler will be sealed with a chain-of-custody seal and taped shut using strapping tape.
- The laboratory address will be affixed to the cooler.
- Extraneous stickers will be removed from the cooler.
- The cooler will be examined to ensure that Farallon's return address is affixed.

Upon transfer of the samples to laboratory personnel or arrival of the samples at the laboratory facility, the laboratory will assume responsibility for custody of the samples.

Laboratory personnel will document the status of shipping and handling containers and will adhere to standard chain-of-custody procedures to track each sample through all of the stages of laboratory processing.

DOCUMENTATION

Retain a copy of the chain-of-custody to be scanned into the project files. List the project number and task number on the shipping label. Scan a copy of the receipt and send to the administrative staff.

STANDARD OPERATING PROCEDURE GW-01
MONITORING WELL CONSTRUCTION

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for monitoring well construction and installation. Monitoring well construction ultimately is at the discretion of the Project Manager, and is based on the geology at the site and the use of the monitoring well. Groundwater monitoring wells in the Puget Sound region, for example, typically are constructed using 2-inch-diameter Schedule 40 polyvinyl chloride well casing with 0.010-inch slotted screens because of the finer-grained materials prevalent in the region. Slot and sand sizes may be increased at the discretion of the Project Manager, depending on local geology. Monitoring wells must be installed and decommissioned by a licensed well driller, and constructed in general accordance with Chapter 173-360, Minimum Standards for Construction and Maintenance of Wells, of the Washington Administrative Code in Washington; with Rule 0410 of Division 240 of Chapter 690, Well Construction Standards – General, of the Oregon Administrative Rules in Oregon; with Bulletins 74-81 and 74-90, California Well Standards, from the California Department of Water Resources in California; and with the federal and/or state standards established for well construction specified in the project-specific field sampling plan in other states.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary for the construction and installation of monitoring wells:

- Monitoring well construction equipment (e.g., water-level meter, photoionization detector, tape measure, camera, plastic sheeting), as applicable.
- Monitoring well construction materials (e.g., well casing [screened and blank], filter pack sand, bentonite and/or Volclay Grout annular seal material, concrete, locking casing cap, well-head monument [flush-mounted or stove-pipe monument, as appropriate] complete with locking top, bollards for placement around well-head monument as applicable), provided by the driller.
- Materials necessary to provide required documentation, including Boring Log, Monitoring Well Construction Data form, and Field Report form.
- Personal protective equipment as described in the site-specific Health and Safety Plan.
- Decontamination equipment as specified in Farallon SOP EQ-01, Equipment Decontamination Procedures.
- U.S. Department of Transportation-approved drum(s) for decontamination wastewater and excess soil cuttings. Separate drums are needed for liquid and solid wastes (refer to Farallon SOP WM-01, Field-Handling of Investigation-Derived Waste). Liquid wastes should not be added to drums containing solid wastes.

DECONTAMINATION

Before arrival at the site, upon relocation at the site, and upon demobilization from the site, decontaminate equipment that will come into contact with potentially contaminated soil and groundwater, in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures.

PROCEDURES

Follow the instructions below for monitoring well construction and installation:

- Don appropriate personal protective equipment as described in the site-specific Health and Safety Plan.
- Before installing the casing, discuss the geology and groundwater conditions at the site with the Project Manager to confirm the depth the monitoring well screen should be placed at, and the length of screen to be used.
- Measure the depth to the bottom of the borehole to calculate the appropriate placement and length of the screened interval, filter pack, annular seal, and concrete surface seal. Calculate the approximate volumes of the filter pack and the seal material required for the specific monitoring well bore annulus and monitoring well casing diameter. Ensure that the filter pack extends from the bottom of the monitoring well intake to approximately 2 to 5 feet above the top of the monitoring well intake, and is approximately 2 to 4 inches thick. The monitoring well casing should be centered in the borehole. Ensure that the annular seal is a minimum of 2 feet thick above the top of the filter pack, and that the concrete seal is a minimum of 2 feet in depth from the surface.
- Prior to installation, measure and check the lengths of the monitoring well screen and the blank casing, and confirm the slot size and the sand filter pack size, the type of bentonite seal and/or Volclay Grout seal, and the monitoring well-head monument. For boreholes completed to depths deeper than the planned installation depth of the monitoring well casing, backfill the borehole with bentonite, sand, or pea gravel. Record the type and brand of the monitoring well construction materials used on a Monitoring Well Construction Data form.
- Record on a Field Report form the start and completion times for the various stages of monitoring well construction such as installation of the monitoring well casing into the borehole, filter pack and seal emplacement, and well-head monument placement.
- Record on a Monitoring Well Construction Data form the volumes of filter pack, the bentonite seal, and the concrete used to construct the monitoring well, and check against calculated volumes to confirm proper placement and amount. During the construction process, record any irregularities such as bridging of the filter pack or seal material that could indicate construction problems.
- Upon completion of monitoring well installation, measure the total monitoring well depth and the depth to groundwater, and record the measurements on the Monitoring Well Construction Data form.

- Place a mark or notch on the northern side of the top of the monitoring well casing to provide a monument for the measurement of water levels.

DOCUMENTATION

Document monitoring well construction activities on the Monitoring Well Construction Data form and the Field Report form.

REFERENCES

U.S. Environmental Protection Agency. 1991. *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells*. EPA160014-891034. March.

———. 1996. *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*. EPA/540/S-95/504. April.

MONITORING WELL CONSTRUCTION DATA

WELL/BORING NO:

PROJECT NO: | PROJECT NAME: | PERMIT NO:

DATE: | SITE ADDRESS:

WELL SITE LOCATION PLAN:

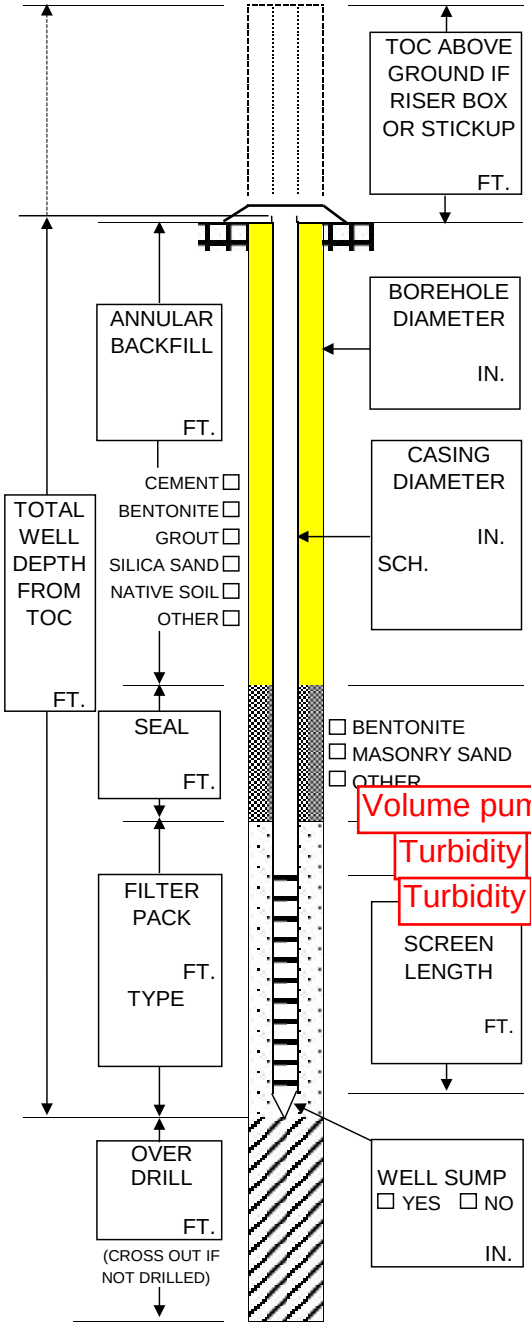
SEC: TWN: RGE: LAT: LONG:

DRILLING CO:

DRILL CREW:

WELL TYPE: ☐ SHALLOW ☐ SINGLE CASED ☐ MONITORING
☐ PERMANENT ☐ INTERMEDIATE ☐ DOUBLE CASED ☐ RECOVERY
☐ TEMPORARY ☐ DEEP ☐ OTHER ☐ OTHER

WELL SCHEMATIC



INSTALLATION DATA

DECON. ☐ STEAM CLEAN ☐ HIGH PRESSURE WASH ☐ SOAP WASH ☐ OTHER

CASING TYPE: ☐ PVC ☐ STAINLESS ☐ TEFLON ☐ OTHER
JOINTS: ☐ THREADED ☐ WELDED ☐ COUPLED ☐ SCREWED ☐ OTHER
PIT CASING: ☐ YES ☐ NO ☐ DESCRIBE

WELL SCREEN: ☐ PVC ☐ STAINLESS ☐ TEFLON ☐ OTHER
DIAMETER: ☐ 2" ☐ 4" ☐ 6" ☐ OTHER ____ IN
SLOT: ☐ 0.010 ☐ 0.020 ☐ OTHER ____ IN

DRILLING METHOD: ☐ SOLID STEM ☐ HOLLOW STEM ☐ MUD ROTARY ☐ AIR ROTARY ☐ DIRECT PUSH ☐ HAND AUGER ☐ OTHER
BIT SIZE: ☐ 2" ☐ 4" ☐ 6" ☐ 8" ☐ 12" ☐ OTHER ____ IN
DRILLING MUD: ☐ NONE ☐ WATER ☐ BENTONITE ☐ OTHER
CENTRALIZER: ☐ YES ☐ NO

COMPLETION: ☐ FLUSH MOUNT ☐ STICKUP ☐ RISER BOX
LOCK TYPE: ☐ DOLPHIN ☐ MASTER KEY NO. ☐ OTHER
PAD: ☐ 2'X2' ☐ 4'X4' ☐ OTHER

CUTTINGS: ☐ DRUMMED NUMBER OF DRUMS ☐ SPREAD ☐ OTHER

DEVELOPMENT METHOD: ☐ NONE ☐ BAILING ☐ PUMPING ☐ AIR LIFT ☐ SURGE & BLOCK ☐ OTHER
TIME: ☐ 10 MIN ☐ 20 MIN ☐ OTHER ____ MIN
~~AMOUNT~~ ☐ 5 GAL ☐ 10 GAL ☐ OTHER ____ GAL
~~WATER~~ BEFORE: ☐ SILTY ☐ TURBID ☐ OPAQUE ☐ CLEAR
~~WATER~~ AFTER: ☐ SILTY ☐ TURBID ☐ OPAQUE ☐ CLEAR
EVIDENT ODOR: ☐ YES ☐ NO TYPE

DEVELOPMENT WATER: ☐ DRUMMED NUMBER OF DRUMS ☐ SPREAD ☐ TREATED ☐ POTW ☐ OTHER

Well Screen Surge Interval___FT
Number of times total well screen was Surged___
Total amount of time well screen was Surged___Mins
Water Level: Initial ___FT BTOC Date and Time___
Water Level: Final ___FT BTOC Date and Time___

PREPARED BY:

STANDARD OPERATING PROCEDURE GW-02
MONITORING WELL DEVELOPMENT

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for monitoring well development. All monitoring wells should be developed to create an effective filter pack around the monitoring well screen, rectify damage to the formation caused by drilling, remove fine particulates from the formation near the borehole, and assist in restoring the natural water quality of the aquifer in the vicinity of the monitoring well. The step-by-step guidelines provided in this SOP are to be followed by the field crew performing or overseeing monitoring well development.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly develop a groundwater monitoring well:

- Monitoring well key, socket wrench or speed wrench, socket set, padlock key, or other monitoring well-access equipment.
- Electric water-level meter long enough to reach the bottom of the monitoring well, calibrated to 0.01 foot.
- Two-inch-diameter (or appropriately sized) surge block.
- Monitoring well-purging equipment (e.g., silicone line, polyvinyl chloride pipe, plug, submersible or non-submersible pump, tubing, power supply, extension cord), as applicable.
- U.S. Department of Transportation-approved drum(s) for decontamination wastewater unless other water-handling arrangements have been made. Separate drums are needed for liquid and solid wastes (see Farallon SOP WM-01, Field Handling of Investigation-Derived Waste). Liquid wastes should not be added to drums containing solid wastes.
- Materials necessary to provide required documentation (e.g., Field Report form, Monitoring Well Construction Data form, and Waste Inventory Tracking Sheet).
- Personal protective equipment as described in the site-specific Health and Safety Plan.
- Decontamination equipment as specified in Farallon SOP EQ-01, Equipment Decontamination Procedures.

DECONTAMINATION

Before arrival at the site, upon relocation at the site, and upon demobilization from the site, decontaminate equipment that will come into contact with groundwater, in accordance with SOP EQ-01, Equipment Decontamination Procedures.

PROCEDURES

Follow the instructions below for each monitoring well:

- Don appropriate personal protective equipment as described in the site-specific Health and Safety Plan.
- Brush away soil and vegetation, and pump standing water away from the monitoring well opening.
- Open the monitoring well cap.
- Measure the depth to water and the total depth of the monitoring well to the nearest 0.01 foot using a decontaminated water-level meter in accordance with Farallon SOP GW-03, Groundwater Level Measurements in Monitoring Wells. Record the measurements on the Monitoring Well Construction Data form.
- Calculate the unit purge volume using the formula and the input values from the table below:

$$V = [X(monitoring\ well\ depth - water\ level)] + [Y(monitoring\ well\ depth - bottom\ of\ seal\ or\ water\ level, whichever\ is\ lowest\ in\ depth)]$$

Where:
V = monitoring well volume, including annular space
X = internal casing volume per unit length (gallons per linear foot)
Y = annular volume per unit length (gallons per linear foot)

Borehole Diameter (inches)	Casing Diameter (inches)	$Volume_{casing}$ (X) (gallons per linear foot)	$Volume_{annulus}$ (Y) (gallons per linear foot)
7	2	0.17	0.68
8	2	0.17	0.98
10	4	0.65	1.34
12	4	0.65	2.07
12	6	1.47	1.70
14	8	2.61	1.98

Development Procedures – Existing and New Monitoring Wells

Existing wells in a monitoring well network may require redevelopment if an excessive amount of fines are present in the monitoring well casing that could interfere with stabilization of water-quality parameters or collection of representative water-quality samples.

The instructions below are to be followed for development of existing and new monitoring wells:

For existing monitoring wells only:

- Remove the pump and/or any dedicated tubing from the monitoring well.

For existing and new monitoring wells:

- Attach one length of twine to the decontaminated surge block (or use a drill rig or tripod) and lower the surge block to within 0.25 foot of the bottom of the monitoring well.
- Surge the monitoring well by vigorously moving the surge block up and down from 0.25 foot from the bottom of the monitoring well to 1 foot above the top of the screened interval for a minimum of 5 minutes to create a surging action across the screened interval, which will bring finer-grained material into suspension. Move the surge block up and down in 3-foot sections until the entire monitoring well screen length has been surged. Record on the Monitoring Well Construction Data form the number of times the surge block is raised and lowered, and total surge time.
- Remove the surge block.
- If a submersible pump is to be used for monitoring well development, gently lower the pump into the monitoring well to within 1 foot of the bottom of the screened interval. If a non-submersible pump is to be used, lower the tubing to within 1 foot of the bottom of the screened interval.
- Begin purging the monitoring well at a rate sufficient to remove fines without pumping the monitoring well dry. Record on the Monitoring Well Construction Data form the volume of water pumped from the monitoring well.
- Surge and pump the monitoring well, including saturated annular space, a minimum of three and a maximum of five monitoring well volumes. If the monitoring well runs dry, let the monitoring well recharge. Then commence purging until a minimum of three monitoring well volumes have been purged. If this event is the first time the monitoring well has been developed and water was added during the drilling process, remove the volume of water introduced during drilling and monitoring well construction. Purging has been completed when *one* of the following has occurred:
    - The minimum purge volume has been removed; OR
    - Five purge volumes and the drilling process water volume have been removed.
- Measure the total depth of the monitoring well after development, and record on the Monitoring Well Construction Data form the total volume of water pumped from the monitoring well.
- Record on the Monitoring Well Construction Data form a description of the suspended particle content, and additional information such as unique odor or water color.

- Containerize the purge water in a U.S. Department of Transportation-approved drum(s) unless other water-handling arrangements have been made. Separate drums are needed for liquid and solid wastes (refer to Farallon SOP WM-01, Field-Handling of Investigation-Derived Waste). Liquid wastes should not be added to drums containing solid wastes.
- Upon completion of monitoring well development, properly seal, secure, and label the drums in accordance with Farallon SOP WM-01, Field-Handling of Investigation-Derived Waste. Record the number and contents of the drums on a Waste Inventory Tracking Sheet. At a minimum, the drum label(s) should include:
    - Boring/monitoring well ID.
    - Facility name.
    - Drum contents.
    - Date.
    - Drum number.
- Close the monitoring well and record any monitoring well-integrity concerns on the Field Report form and the Monitoring Well Construction Data form.
- Decontaminate all equipment in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures.

DOCUMENTATION

Document monitoring well development activities on the Monitoring Well Construction Data form. Record the number and contents of the drums on a Waste Inventory Tracking Sheet.

REFERENCE

U.S. Environmental Protection Agency. 1991. *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells.* Document No. 160014-891034. March.

STANDARD OPERATING PROCEDURE GW-03
GROUNDWATER LEVEL MEASUREMENT IN MONITORING WELLS

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for measuring and documenting the depth to groundwater in monitoring wells. The step-by-step guidelines provided in this SOP are to be followed by the field crew to ensure consistent and representative measurements of depth to groundwater in monitoring wells. When multiple wells are present at a site, all water-level measurements typically are taken as quickly as possible to aid in the creation of potentiometric surface maps that are representative of a "single" point in time.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly measure the depth to groundwater in monitoring wells:

- Monitoring well key, hand drill, socket set, Allen wrench, speed handle, padlock key, or other monitoring well-access equipment specific to the monitoring well monument cover plate.
- Electronic water-level meter (Solinst or equivalent) narrow enough to fit in the monitoring well, calibrated to 0.01 foot, with sufficient line to reach the bottom of the monitoring well.
- Oil-water interface probe, if light nonaqueous-phase liquid (LNAPL) is known or suspected to be present.
- Disposable bailer if LNAPL is known or suspected to be present, and the Project Manager requests that LNAPL be bailed from the well.
- Tape measure.
- Materials necessary to provide required documentation, including Groundwater Level Measurement Summary Forms and Field Report forms.
- Personal protective equipment as described in the site-specific Health and Safety Plan.
- Decontamination equipment as specified in Farallon SOP EQ-01, Equipment Decontamination Procedures.

DECONTAMINATION

Before arrival at the site, upon relocation at the site, and upon demobilization from the site, decontaminate equipment that will come into contact with groundwater, in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures.

PROCEDURES

Follow the instructions below for measuring water levels at each monitoring well:

- Don appropriate personal protective equipment as described in the site-specific Health and Safety Plan.
- Check the operation of the water-level meter by turning on the indicator switch and pressing the test button.
- Remove soil or vegetation from the monitoring well site.
- Open the monitoring well-head enclosure, and use a bilge pump or cup to remove standing water inside the monitoring well monument before opening the monitoring well cap. Dispose of standing water to the ground surface.
- Open the monitoring well cap.
- Monitor air quality at the monitoring well-head if volatile contaminants are suspected to be present, or if it is unknown whether volatile contaminants are present.
- Repeat above procedure until all monitoring wells are open.
- Allow the water level to equilibrate with ambient atmospheric pressure for approximately 15 minutes before measuring.
- Before taking any measurements, carefully measure the length of the sonde to the nearest 0.01 foot. The additional 2 to 3 inches from the zero point of the sonde to the tip of the sonde **must be discounted** for **all** total depth measurements.
- Measure and record the depth to water using a water-level meter that has been decontaminated in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures. With the water-level meter turned on to a medium level of sensitivity, slowly lower the meter into the monitoring well casing until it reaches the groundwater table. The probe will beep when it reaches the interface of the groundwater table (when the electronic circuit is first completed). Stop lowering the probe, hold the graduated water-level cable to the notch or mark on the northern side of the top of the monitoring well casing, and note the length measurement. Repeat this process to collect a second water-level measurement. If the two readings differ by more than 0.01 foot, repeat the measurements until the readings stabilize. Repeat the process until three consecutive stabilized readings have been measured. Record the water-level measurement **only** in relation to the probe being lowered into the monitoring well, *not* as it is raised out of the monitoring well. If you cannot see the top of the monitoring well casing when the water level beeps, grasp the tape with your thumb and index finger exactly at the measuring point corresponding with the notch or mark at the top of the monitoring well casing. Slowly pull the cable out of the monitoring well and read the measurement. Repeat until readings stabilize.
- Remove the cable from the monitoring well, and record the stabilized depth-to-water measurement on the Groundwater Level Measurement Summary Form to the nearest 0.01 foot.

- Measure the total monitoring well depth. **NOTE:** If groundwater samples are to be collected, measure the total monitoring well depth **after** all groundwater samples have been collected, to avoid resuspension of settled solids in the monitoring well, impacting the samples. If the monitoring well does not have a dedicated pump, lower the water-level indicator probe to the bottom of the monitoring well to measure the total depth of the monitoring well. Gently bounce the probe on the monitoring well bottom, and pull the slack in the cord to read the total monitoring well depth. Repeat three times to ensure that the monitoring well depth measurement is reproducible, and is representative of the true depth. Note on the Groundwater Level Measurement Summary Form whether the bottom of the monitoring well is hard or soft.
- Remove the cable from the monitoring well, and record the monitoring well depth measurement on the Groundwater Level Measurement Summary Form to the nearest 0.01 foot.
- Decontaminate the water-level meter in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures.
- If the presence of LNAPL is suspected or if site conditions are unknown, check for the presence of LNAPL by one of two methods:
    - Use of a bailer: Use a new 3-foot-long disposable bailer attached to a nylon rope. Slowly lower the bailer until the bottom of the bailer is approximately 2 feet below the water surface. Slowly retrieve the bailer, and measure the product thickness using a tape measure. Record the information on the Groundwater Level Measurement Summary Form. Dispose of the bailer and product or wastewater in accordance with Farallon SOP WM-01, Field Handling of Investigation-Derived Waste.
    - Use of an oil-water interface probe: Decontaminate the oil-water interface probe in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures. With the oil-water interface probe meter turned on to a medium level of sensitivity, slowly lower the probe into the monitoring well casing until it reaches the top of the LNAPL. The probe will have a steady beep when it reaches the interface of the LNAPL (when the electronic circuit is first completed). Stop lowering the probe, hold the graduated oil-water interface cable to the notch or mark on the northern side of the top of the monitoring well casing, and note the length measurement. Repeat this process to collect a second LNAPL measurement. If the two readings differ by more than 0.01 foot, repeat the measurements until the readings stabilize. Repeat the process until three consecutive stabilized readings have been measured. Record the depth to LNAPL measurement **only** in relation to the probe being lowered into the monitoring well, *not* as it is raised out of the monitoring well. If you cannot see the top of the monitoring well casing when the oil-water interface probe beeps, grasp the tape with your thumb and index finger exactly at the measuring point corresponding with the notch or mark at the top of the monitoring well casing. Slowly pull the cable out of the monitoring well and read the

measurement. Repeat until readings stabilize. Once the depth to LNAPL has been recorded, collect the water-level measurement as described above using the oil-water interface probe. Once the depth to LNAPL and the depth to the groundwater table have been determined, subtract the depth to LNAPL from the depth to the groundwater table to determine LNAPL thickness.

- Close the monitoring well as appropriate based on monitoring well-head construction. Record any concerns about monitoring well integrity on the Groundwater Level Measurement Summary Form and on the Field Report form.

DOCUMENTATION

Document monitoring well water-level measurements on the Groundwater Level Measurement Summary Form. Document any additional information on the Field Report form.

REFERENCE

U.S. Environmental Protection Agency. 1992. *RCRA Ground-Water Monitoring: Draft Technical Guidance.* Office of Solid Waste. November.

STANDARD OPERATING PROCEDURE GW-04
LOW-FLOW GROUNDWATER SAMPLING PROCEDURES

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for collecting and documenting groundwater samples from monitoring wells using U.S. Environmental Protection Agency (EPA) low-flow groundwater sampling procedures (EPA 1996, 2017) for chemical analysis to ensure consistent and representative sampling. The step-by-step guidelines provided in this SOP are to be followed by the field crew conducting groundwater sampling.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly purge and sample a monitoring well:

- Monitoring well key, hand drill, socket set, padlock key, or other monitoring well-access equipment.
- Electronic water-level meter long enough to reach the bottom of the monitoring well, calibrated to 0.01 foot. Alternatively, to measure for light nonaqueous-phase liquid thickness in addition to groundwater, use an oil-water interface probe.
- Monitoring well purging and sampling equipment:
    - Submersible pump (bladder or Grundfos): the pump, control box, and power source (typically a portable generator or a 12-volt battery); or
    - Peristaltic pump: the pump with pump head, silicone tubing, tubing connectors (as needed), and power source (typically a 12-volt battery).
- Sample tubing of project- and site-specific type and length.
- Bailer, if a pump is not used, or if light nonaqueous-phase liquid requires removal.
- Sufficient number of 55-gallon drums, including lids, gaskets, and fasteners, to contain all purge water, unless other water-handling arrangements have been made.
- Flow-through water-quality meter(s) to measure temperature, pH, specific conductivity, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity.
- Air-space monitoring equipment if required (photoionization detector or multi-gas meter).
- Decontamination equipment and supplies (e.g., buckets, scrub brushes, deionized or distilled water, potable water, Liquinox detergent).
- Materials necessary to provide required documentation, (e.g., sample labels, Field Report forms, Low-Flow Well Purging and Sampling Data form, Chain of Custody form, Waste Inventory Tracking Sheet).

- Sample containers with the chemical preservatives appropriate for the samples, as described in project-specific plans, or as required by the analytical laboratory at a minimum.
- Personal protective equipment as described in the site-specific Health and Safety Plan (HASP).
- Sampling-support equipment (e.g., sample coolers, ice, bubble wrap, clear tape, duct tape, resealable plastic bags, garbage bags, paper towels, distilled water, nitrile gloves, shipping supplies).
- U.S. Department of Transportation-approved drum(s) for purge water, unless other water-handling arrangements have been made. Separate drums are needed for liquid and solid wastes (Refer to Farallon SOP WM-01, Field Handling of Investigation-Derived Waste). Liquid wastes should not be added to drums containing solid wastes.

DECONTAMINATION

Before arrival at the site, upon relocation at the site, and upon demobilization from the site, decontaminate reusable equipment that will come into contact with the monitoring well(s) and/or be used to acquire samples, in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures.

PROCEDURES FOR LOW-FLOW GROUNDWATER SAMPLING

Low-flow groundwater sampling procedures have been developed for monitoring wells with a dedicated pump (dedicated monitoring wells) and for monitoring wells without a dedicated pump (non-dedicated monitoring wells). Setup, purging, sample collection, and post-sampling procedures for dedicated and non-dedicated monitoring wells are presented below.

Setup

Setup procedures differ slightly for dedicated versus non-dedicated monitoring wells. Follow the instructions below for the monitoring wells as indicated:

- Calibrate the water-quality meter for the field parameters specified in the project-specific plans. At a minimum, collect temperature, pH, and specific conductivity during purging and prior to sampling. Record on the Field Report form the equipment calibration and maintenance performed. Decontaminate the water-quality meter between monitoring wells by rinsing with distilled or deionized water. Manage the rinsate water used in collecting these measurements in the same manner as for purge water, as defined in project-specific plans, and in accordance with Farallon SOP WM-01, Field Handling of Investigation-Derived Waste.
- Don appropriate personal protective equipment as described in the site-specific HASP, including nitrile gloves for activities that might involve contact with groundwater or equipment. Change gloves between each monitoring well at a minimum, or when

contaminants could be introduced into a monitoring well or onto decontaminated equipment.

- Brush away soil and/or vegetation, and pump standing water away from the monitoring well opening. If necessary, place a plastic drop cloth around the monitoring well-head to prevent sampling equipment from contacting the ground surface.
- Inspect the condition of the monitoring well (e.g., locked monitoring well cap, tightness of monitoring well cap, well-marked measuring point on casing, disturbance of surface casing, straightness of monitoring well casing, condition of concrete pad). Indicate the monitoring well condition on the Low-Flow Well Purging and Sampling Data form.
- Open the monitoring well cap. If the site-specific HASP identifies organic compounds as potential contaminants of concern, screen the monitoring well headspace and the breathing zone headspace (if specified in the HASP) for organic vapors using the appropriate field monitoring instrument (e.g., photoionization detector, multi-gas meter).
- Measure and record the depth to water using a decontaminated water-level meter in accordance with Farallon SOP GW-03, Groundwater Level Measurements in Monitoring Wells.
- If light nonaqueous-phase liquid may be present (see site-specific plans), obtain a sample from the monitoring well using a bailer (if a dedicated pump is not in use), as specified in Farallon SOP GW-03, Groundwater Level Measurements in Monitoring Wells. Alternatively, measure free-floating product thickness using an oil-water interface probe.
- Calculate the monitoring well casing volume as follows:

  Monitoring well casing volume in gallons = $(\pi * r^2) * h$(7.48 gallons/cubic foot)

  Where:

  r = radius of the inside of the monitoring well casing in feet

  h = length of the water column in the monitoring well casing (i.e., the depth to the bottom of the monitoring well minus the depth to water, both measured from the mark at the top of the monitoring well casing), in feet

- **For monitoring wells with dedicated pumps and tubing**: Set up a flow-through cell in preparation for purging. Connect dedicated tubing from the monitoring well to the flow-through cell. Set tubing and/or pump to the correct water depth in accordance with the constituents being sampled for, as described in project-specific plans. **DO NOT IMMERSE water-quality probes or meters in purge water containing nonaqueous-phase liquids, which could damage the probes.** Turn the pump controller to its lowest setting, set the memory in the flow-through cell to record readings every 3 minutes, and turn on the pump. Begin purging slowly (i.e., less than 500 milliliters per minute [ml/min]) to prevent drawing down the water table.

- **For monitoring wells with non-dedicated pumps**: Connect dedicated silicon tubing to the peristaltic pump. Place the tubing intake at the midpoint of the screen, or at the depth pre-determined in the project-specific plans. If using a bladder pump, insert the bladder pump and attach the dedicated polyethylene tubing so the pump intake is at the approximate midpoint of the screened interval, or set the pump intake to the depth pre-determined in the project-specific plans.

Purging Procedures

The purging instructions below are to be followed for dedicated and non-dedicated monitoring wells:

- Begin purging, and initiate water-quality testing for temperature, pH, specific conductivity, dissolved oxygen, ORP, and turbidity. Purge monitoring wells using a peristaltic or bladder pump, and dedicated polyethylene and silicon tubing. Record water-quality parameters every 3 minutes.
- Record water levels every 3 minutes, as possible. It is imperative that the water level not drop by more than 0.33 foot during the low-flow purging process. If the water level drops more than 0.33 foot during purging, reduce the flow rate on the pump. Recommended purge rates generally are less than 500 ml/min. Actual purge rates will vary based on aquifer material and monitoring well construction. If the water level continues to drop by more than 0.33 foot during the low-flow purging at a rate less than 100 ml/min, notify and consult with the Project Manager on how to proceed.
- Record flow rates every 3 minutes. Ensure that the flow rate does not exceed 500 ml/min during the low-flow purging process.

Purging Requirements

Continue purging at a constant rate until the water-quality parameters have stabilized for three successive measurements according to the stability criteria provided in the table below. Before samples can be collected from each monitoring well, the groundwater must stabilize according to following criteria:

- Drawdown is no greater than 0.33 foot for low-flow sampling, and
- The water-quality parameters should stabilize according to the criteria specified below:

Water-Quality Parameter	Stability Criterion
Turbidity (if required)	10% for values greater than 5 NTU or three consecutive values < 5 NTU
Dissolved oxygen	10% for values greater than 0.5 mg/l, or three consecutive values <0.5 mg/l
Specific conductivity	3%
Oxidation-reduction potential	+/- 10 millivolts
pH	+/- 0.1 unit
Temperature	3%

Notes:
mg/l = milligrams per liter
NTU = nephelometric turbidity unit

Although under some circumstances, a monitoring well may not stabilize according to the above criteria, the monitoring well can still be sampled if the monitoring well does not meet stability criteria due to the instrument accuracy, or the water level drops below the minimum value using low-flow sampling procedures. For example, a fluctuation in ORP greater than 10 millivolts does not meet the stability criterion. However, because the accuracy range of the ORP instrument is ±20 millivolt, the stability criterion would be considered satisfied and within the range of instrument accuracy. Consult the manual for the instrument to determine the accuracy range.

Also, if the water level drops below the minimum value using low-flow sampling procedures (i.e., the pump intake, or the top of the screen if the aquifer is confined) during purging and one monitoring well volume of groundwater has been removed from the monitoring well, or the monitoring well runs dry during the purging procedure, sample the monitoring well as soon as the water level has recovered sufficiently to allow collection of the volume of groundwater necessary for all samples. Use the following equation to determine the minimum volume of groundwater to remove before sampling:

Minimum purge volume = 2*[500 milliliters + M*(length of tubing in feet)]

Where: M = volume (in milliliters) contained in a 1-foot length of tubing

The value of M is provided below for the inner diameters of tubing listed:

Inner Diameter (inches)	M (milliliters)
0.125	2.4
0.25	9.7
0.5	39

Record on the Field Report form and the Low-Flow Well Purging and Sampling Data form if any monitoring well did not meet the drawdown and stability criteria and explain the rationale for sampling the monitoring well at the time it was sampled. If stability criteria have not been achieved following completion of all entries in the Low-Flow Well Purging and Sampling Data form, notify

and consult with the Project Manager whether to continue purging until stability criteria have been achieved or begin sample collection.

Sample Collection

During low-flow sampling, do not stop pumping once the purging requirements have been met. Turn down the flow rate on the pump so the water flow is minimal, but maintain sufficient pressure in the system to prevent water from the tubing or flow-through cell from flowing back into the monitoring well. Disconnect the pump discharge hose from the flow-through cell, or cut the tubing just before the connection to the flow-through cell. It is imperative not to lower the water table or disturb the water column. Fill pre-cleaned laboratory-supplied sample containers directly from the pump discharge tube into the proper sample container, and fill to capacity. Place a bucket beneath the sampling tube to catch any unsampled water between filling the sample jars. When collecting groundwater samples for multiple analyses, collect the samples in the order listed below per the EPA (1992) groundwater sampling technical guidance:

- Volatile organic compounds (VOCs);
- Dissolved gases and total organic carbon;
- Semivolatile organic compounds;
- Metals and cyanide;
- Major water quality cations and anions;
- Radionuclides; and
- Dissolved (filtered) inorganics (if required).

When collecting samples for VOCs, adjust the flow rate as low as possible without introducing air bubbles into the system. When filling the VOC containers, hold the cap in hand to minimize contamination, and direct the flow from the pump discharge tubing down the side of the sample container to minimize aeration. Fill all VOC sample containers to the top, ensuring a positive meniscus when the cap is screwed down on the container. Tap the filled VOC container, and invert several times to ensure no air bubbles are present in the sample container. If an air bubble is present, the VOC sample must be recollected using a fresh VOC sample container. If sampling for other analytes, the flow rate may be increased.

If dissolved inorganics are required, attach a new disposable 0.45-micrometer filter cartridge to the discharge line. Collect filtered samples last. Pre-rinse the disposable filter cartridges by running a minimum of 0.25 gallon of groundwater through them (collecting the groundwater into a waste bucket) prior to collecting the samples directly into the sample container. Alternate field filtration methods may be specified in the project-specific plans. Remove the pump and/or tubing from the monitoring well.

Post-Sampling

- Record the depth to water of well to determine whether the water level changed from the original reading.
- Close and lock the monitoring well or tap and record any monitoring well integrity concerns on the Field Report form and the Low-Flow Well Purging and Sampling Data form.
- Transfer purge, wash, and rinse water into a U.S. Department of Transportation-approved drum(s) and label. Separate drums are needed for liquid and solid wastes, in accordance with SOP WM-01, Field Handling of Investigation-Derived Waste. Do not add liquid wastes to drums containing solid wastes.

PROCEDURES FOR RECONNAISSANCE GROUNDWATER SAMPLING

Collect reconnaissance groundwater samples from borings using direct-push or hollow-stem auger drilling methods and 0.75- or 2-inch-inside-diameter temporary monitoring well casing and 0.010-inch slotted screen. In some cases, alternate well casing diameters or screen slot sizes may be appropriate based on the drilling equipment or project-specific requirements. Follow the instructions below for reconnaissance groundwater sample collection:

- Withdraw the drill casing when the desired sampling depth has been reached, so the temporary monitoring well screen is exposed to water-bearing material.
- Insert disposable polyethylene tubing to the approximate midpoint of the temporary monitoring well screen. Attach the appropriate length of pre-cleaned disposable silicon tubing from the polyethylene tubing to connect with the peristaltic or bladder pump.
- Set up the peristaltic or bladder pump in preparation for purging. Turn the pump to its lowest setting and turn on the pump. Begin purging slowly to prevent drawing down the water table.
- Purge each temporary monitoring well point using a peristaltic or bladder pump until visual turbidity is as low as possible, or until the temporary monitoring well is purged dry of water.
- Purge a minimum of 1 to 2 liters before sample collection, if possible. If the temporary monitoring well is completely dewatered during purging, collect samples when sufficient recharge has occurred to allow filling of the sample containers.
- Slow the pumping rate to less than 500 ml/min to reduce the potential for volatilization of chemicals during sample collection.
- Collect the sample as described above.
- If insufficient groundwater is available to collect a sample using a peristaltic or bladder pump (i.e., the boring pumps dry or cannot maintain a sufficient flow of less than 100 ml/min) or if the depth to groundwater exceeds the maximum practicable limit for sampling using a peristaltic or bladder pump, use a disposable polyethylene bailer lowered

into the monitoring well screen to collect a groundwater sample from the screened interval, if possible.

DOCUMENTATION

Document the monitoring well purging and sampling activities on the Low-Flow Well Purging and Sampling Data form and on the Field Report form. Track samples on a Chain of Custody form. Track waste generated during groundwater sampling on a Waste Inventory Tracking Sheet.

REFERENCES

U.S. Environmental Protection Agency (EPA). 1992. *RCRA Ground-Water Monitoring: Draft Technical Guidance.* Office of Solid Waste. November.

———. 1996. *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures.* EPA/540/S-95/504. April.

———. 2017. *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells.* EQASOP-GW4. September.

STANDARD OPERATING PROCEDURE SL-01
SOIL CORE SAMPLING

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for collecting and documenting soil core samples collected during environmental drilling. All drilling operations will be conducted by a licensed drilling subcontractor. This SOP presents the procedures that will be performed by Farallon field staff once the soil core or sampler has been collected by the drilling subcontractor. The step-by-step guidelines provided in this SOP are to be followed by the field crew conducting subsurface soil sampling.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly collect soil samples from borings:

- Personal protective equipment (PPE) as described in the site-specific Health and Safety Plan.
- Differential global positioning system, if required in project-specific plans. Discuss the methodology for recording the location of the sample point with the Project Manager before conducting the field work.
- Photoionization detector (PID) to monitor and record soil headspace readings.
- Appropriate soil sampling equipment, including:
    - Stainless steel hand-auger.
    - Wooden or steel stakes to stabilize cores on table while sampling.
    - Folding table.
    - Utility knife.
    - Stainless steel spoons or scoops.
    - Six-mil plastic sheeting.
    - Resealable plastic bags.
    - Duct tape.
    - Tape measure.
    - Laboratory-provided certified pre-cleaned sample containers.
    - Soil sample plunger and syringes for sampling volatile organic compounds (VOCs) using U.S. Environmental Protection Agency (EPA) Method 5035A.
- Materials necessary to provide required documentation including sample labels, field report forms, boring logs, and laboratory chain-of-custody forms.

- U.S. Department of Transportation-approved drum(s) for decontamination wastewater and excess soil cuttings. Wastewater and soil cuttings should be handled in accordance with Farallon SOP WM-01.
- Decontamination equipment as specified in Farallon SOP EQ-01, Equipment Decontamination Procedures.
- Sampling support equipment (e.g., sample coolers, ice, bubble wrap, clear packing tape, heavy resealable plastic bags, garbage bags, paper towels, distilled water, nitrile gloves).

DECONTAMINATION

Reusable equipment that will come into contact with soil boring samples or will be used to acquire soil samples is to be decontaminated before arrival at the site, between soil samples collected, upon relocation at the site, and upon demobilization from the site, in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures.

PROCEDURES

Prior to drilling, all underground utilities must be located, and cleared with an air-knife or other method approved by the Farallon Health and Safety Coordinator.

Collect soil samples from areas known or suspected to have the lowest concentrations of constituents of concern first, with areas of higher concentrations of constituents of concern sampled last, unless the Project Manager indicates a different project-specific sampling protocol. **At a minimum, soil samples should be collected and retained in laboratory-supplied glassware every 5 vertical feet. Additional samples should be collected at observed major changes in lithology, such as sand-silt contacts, or where odor, staining, or high PID readings are observed.**

The procedures listed below may be modified as appropriate with approval from the field team lead and/or the Project Manager. Any modifications must be identified in the project-specific sampling plans or, at a minimum, details must be noted on the Field Report form.

Soil core collection methods differ for hollow-stem-auger, direct-push, and sonic drilling techniques, each summarized below:

- Hollow-stem-auger: Collect soil core samples using a standard 18-inch-length (6-inch waste barrel) Dames & Moore split-spoon sampler with a 2.5-inch inner diameter that can be used with or without brass or stainless steel liners.
- Direct-push: Collect soil core samples using 5-foot macrocore samplers with acetate sample liners.
- Sonic: Collect soil core samples using a standard 6-inch-diameter stainless steel sampling rod. Use a 2.5-, 5.0-, or 10-foot polyethylene liner inside the sampling rod for soil sample collection.

Record the specific drilling and soil sampling equipment used on the Boring Log form and on the Field Report form.

Setup

The instructions below are to be followed at each boring site:

- Don appropriate PPE as described in the site-specific Health and Safety Plan.
- Ensure that each borehole has been cleared to a minimum depth of 5 feet below ground surface using an air knife, per the Farallon health and safety policy.
- Set up a temporary sampling table adjacent to the drill rig to log and collect soil samples from the soil cores as they are recovered during drilling. Lay plastic sheeting over the table to keep the surface clean and to prevent potential cross-contamination between borings and soil samples. Designate clean areas for decontaminated sampling equipment and laboratory-provided certified pre-cleaned soil sample containers.
- Set up a separate decontamination area if appropriate (Refer to Farallon SOP EQ-01, Equipment Decontamination Procedures.)
- Calibrate the PID to monitor headspace for selected soil core samples in accordance with the equipment manual.

Sample Collection and Processing

The instructions listed below are to be followed for collecting samples using lined and unlined split-spoon and tube samplers:

- Don a new pair of nitrile sampling gloves for each individual soil sample collected, and prior to decontaminating sampling equipment to avoid potential cross-contamination.
- Ensure that the drillers have properly decontaminated all drill shoes and caps prior to initiating drilling operations. At a minimum drill shoes and caps must be decontaminated between sampling locations in accordance with Farallon SOP EQ-01. If highly contaminated media is encountered, decontamination between sampling intervals may be required. Replace dirty or ineffective decontamination water as needed throughout the workday.
- Report subsurface and drilling conditions on Boring Logs. Include the number of blow counts (if applicable) or any resistance encountered during drilling operations.
- Place the core tube, core liner, or split spoon on a new piece of aluminum foil on the sample logging/processing table. If necessary, use wood or metal stakes as shims to stabilize the tube, liner, or split spoon on the sample logging/processing table.
- If a core liner is used, split the liner open with a decontaminated utility knife, taking care not to penetrate the soil in the liner with the blade or knife.

- Briefly examine the soil sample visually for obvious signs of contamination, and take PID readings.
- Take care to:
    - **Always** collect soil from the center of the sampler or liner; not from sidewalls.
    - **Always** use decontaminated stainless-steel spoons or scoops to handle the soil within a given sample interval.
    - **Always** don a new pair of nitrile gloves before processing each sample interval in each soil core to prevent cross-contamination in the soil core.
- When sampling for VOCs, collect them immediately after opening the core tube, split spoon, or core liner. Use a decontaminated stainless steel spoon to collect the VOC samples directly into the laboratory-provided VOC sample container with no headspace, and seal it tightly. Follow the sample collection guidelines provided by the manufacturer or the analytical laboratory when using a plunger-type sampling device in accordance with EPA Method 5035A.
- Perform a headspace test using a PID:
    - Retain approximately 100 grams of the soil sample in a heavy resealable plastic bag or glass sample container, shake the sealed bag to volatilize the contaminants in the soil;
    - Wait approximately 5 minutes before measuring for headspace analysis using the PID (Washington State Department of Ecology 2011);
    - Insert the PID probe tip into a small opening in the top of the bag and record the PID units on the Boring Log form. **Do not puncture the resealable plastic bag to obtain headspace readings.**
    - Reseal the bag after taking the headspace reading in case further assessment of the sample is needed.
- If specified in the project-specific plans, photograph each section of the boring, including in the photograph notations on a white board documenting sample location identifier, date, orientation, depth, and site markers.
- Describe the soil samples in accordance with ASTM International Standard D-2488-00, *Standard Practice for Description and Identification of Soils*.
- Record on the Field Report form any deviations from the project-specified sampling procedures or from this SOP, or any obstacle encountered.
- Record the observed lithology on the Boring Log form using the Unified Soil Classification System and reported depths below ground surface using a tape measure.

- Discard excess soil cuttings in a labeled waste drum or a soil bin in accordance with Farallon SOP WM-01, Field Handling of Investigation-Derived Waste. Do not add soil to a liquid waste drum.
- Backfill the borehole, as appropriate.
- Record the boring location using a differential global positioning system or offset measurements from a permanent hard point on the Site.
- Decontaminate the soil sampling equipment, and don a new pair of sampling gloves before collecting each new soil sample.

DOCUMENTATION

Document the soil sampling activities on the Boring Log form, the Chain of Custody form, and the Field Report form.

REFERENCE

American Society for Testing Materials. 1989. *Standard Method for Penetration Test and Split-Barrel Sampling of Soils.* Method D-1586-11.

U.S. Environmental Protection Agency. 1987. *A Compendium of Superfund Field Operation Methods.* EPA Document No. 540-P-87-001. December 1.

Washington State Department of Ecology. 2011. *Guidance for Remediation of Petroleum Contaminated Sites.* Ecology Publication No. 10-09-057. Toxics Cleanup Program. September.

STANDARD OPERATING PROCEDURE WM-01
FIELD HANDLING OF INVESTIGATION-DERIVED WASTE

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for containerizing, labeling, and tracking investigation-derived waste (IDW), and for exchanging information with the Project Manager. IDW may include soil cuttings, purge water, development water, and/or decontamination water.

This SOP has been developed in compliance with Washington State Dangerous Waste Regulations (Chapter 173-303 of the Washington Administrative Code), Oregon Hazardous Waste Management Rules (Division 100 of Chapter 340 of the Oregon Administrative Record), Environmental Health Standards for the Management of Hazardous Waste (Division 4.5 of Title 22 of the California Code of Regulations), and the U.S. Environmental Protection Agency Resource Conservation and Recovery Act (Parts 239 through 282 of Title 40 of the Code of Federal Regulations).

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly containerize, label, and track IDW:

- U.S. Department of Transportation-approved drum(s) constructed of a material that does not react with the contaminants of concern for the project. Farallon typically uses lined open-top steel drums. Use a polyethylene drum for a material suspected to be corrosive.
- Labels appropriate to the characteristics of the IDW as indicated by the Project Manager:
    - Non-Hazardous Waste Labels: For IDW known to be nonhazardous based on previous data and waste profiles.
    - Hazardous Waste or Washington State Dangerous Waste Labels: For IDW known to be hazardous/dangerous based on previous data and waste profiles.
    - On Hold Pending Analysis Labels: For waste not previously characterized, pending receipt of analytical results. On Hold Pending Analysis labels are temporary, and should be replaced with the applicable waste label once the waste has been characterized.
    - Major risk labels associated with the waste characteristics.
- Waste Inventory Tracking Sheet.
- Grease marking pencil or paint pen.
- Indelible ink pen.
- Crescent wrench, speed wrench, socket wrench, or other hand tool to seal the drum(s).

- Sampling supplies, if needed, including:
  - Stainless steel or plastic bowls and spoons for homogenizing soil and/or solids samples, depending on the analysis to be performed;
  - Glass or stainless steel container for homogenizing liquid samples, depending on the analysis to be performed; and
  - Stainless steel hand-auger or a glass tube, depending on the medium being sampled (i.e., soil/solids or liquid).

PROCEDURES

Follow the instructions below to inspect, label, and inventory IDW drums, and to containerize IDW:

- Inspect new drums brought to the site to ensure that they do not have dents or corrosion, and are in good condition. Lined or coated drums are preferred.
- Inspect drums remaining at the site from previous project work. Notify the Project Manager if a drum is leaking, damaged, or improperly labeled.
- Place soil and solids into separate drums from those containing liquids such as purge water, development water, and decontamination water. Do not add liquid IDW to drums containing soil or solids. Do not fill drums containing liquid IDW above 85 percent capacity, particularly in areas known to reach freezing temperatures.
- Discuss with the Project Manager whether chlorinated solvents or other contaminants of concern detected in areas of the site would cause IDW from that area to be characterized as hazardous/dangerous waste. Hazardous/dangerous waste should be drummed separate from nonhazardous/dangerous waste, where possible, to minimize the amount of hazardous/dangerous waste generated.
- Use a grease pencil or paint pen to clearly mark the lid and the label of each drum with a unique identifier such as a number or a letter. Verify that no two drums have the same identifier marked on the lid or label, including drums remaining from previous project work.
- Inventory each Farallon-generated drum and its contents on a Waste Inventory Tracking Sheet.
- Track any waste added to an existing drum on a Waste Inventory Tracking Sheet.
- Label each drum with a completed Non-Hazardous Waste, Hazardous Waste/Washington State Dangerous Waste, On Hold Pending Analysis, or other appropriate waste label. List the client's name as the Shipper or Generator, and the accumulation start date as the date when waste was first placed into the drum. If waste was added to an existing drum, add that date to the accumulation dates on the drum label. If the waste in the drum has been designated as hazardous/dangerous, add a major risk label(s) pertaining to the waste characteristics associated with that designation (e.g. flammable, reactive, corrosive,

toxic). Consult the Project Manager with questions about appropriate major risk labels. All labels should be placed with the top of the label toward the top of the drum. Do not place a drum label sideways or upside down.

Use care when drumming, labeling, and tracking IDW. Mistakes in the disposal of waste can result in serious legal and financial repercussions for Farallon and the client.

DRUM SAMPLING

Sampling and analysis of wastes for hazardous/dangerous waste characterization purposes is to be conducted in accordance with U.S. Environmental Protection Agency Publication No. SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. Samples collected in California for hazardous waste characterization are to adhere to the requirements specified in California Code of Regulations Sections 66261.21 to 66261.24 of Title 22, Characteristics of Hazardous Waste. Discuss with the Project Manager the specific analyses to be performed prior to sample collection. The instructions below are to be followed for drum sampling, using composite sampling techniques to sample soil, solids, and liquid wastes:

- Collect soil/solids samples from various locations and depths in the drum using a hand-auger or other decontaminated apparatus. Place all samples into a single decontaminated stainless steel bowl using decontaminated stainless steel tools, or into a plastic bowl using plastic spoons, depending on the analyses to be performed. Homogenize the samples in the bowl.
- Place samples of the homogenized soil/solids from the bowl into sample jars for analysis.
- Collect liquid samples from the drum using a glass sampling tube. Insert the tube to the base of the drum to fill the entire tube with liquid. Place the liquid into sample jars for analysis.

DRUM STORAGE

Follow the instructions below for drum storage:

- Label and store the drums in an area approved by the client.
- Store hazardous/dangerous waste drums in a secured area.

DOCUMENTATION

Document IDW drums on the Waste Inventory Tracking Sheet as described above. Provide the original Waste Inventory Tracking Sheet and the original field notes to the Project Manager.

REFERENCE

U.S. Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. Publication No. SW-846. Third Edition, Final Updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), and V (2015).

ATTACHMENT B
FIELD FORMS

SAMPLING AND ANALYSIS PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

FARALLON CONSULTING

Log of Boring:

Client:	**Date/Time Started:**	**Sampler Type:**
Project:	**Date/Time Completed:**	**Drive Hammer (lbs.):**
Location:	**Equipment:**	**Depth of Water ATD (feet bgs):**
Farallon PN:	**Drilling Company:**	**Total Boring Depth (feet bgs):**
Logged By:	**Drilling Operator:**	**Total Well Depth (feet bgs):**
	Drilling Method:	

Depth (feet bgs)	Sample Interval	Lithologic Description Soil Constituents; Grain size; Color; Density; Moisture; Odor; Other	USCS	% Recovery	Blow Counts 8/8/8	PID (ppm*)	Sample ID	Well Construction Details
0								
5								
10								
15								
20								

Notes

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIELD REPORT

Page ___ of ___

Date: _____ **Project #:** _____ **Task #:** _____

Project: _____ **Site Address:** _____

Client: _____ **Contractor:** _____

Weather: _____ **Temp:** _____

Equipment Used: _____

Project Manager: _____

Prepared By: _____ **Reviewed By:** _____

Comments:

FIELD REPORT (continued)

Project: _____ **Date:** _____ **Project #:** _____ **Task #:**___

LOW-FLOW WELL PURGING AND SAMPLING DATA

		WELL NO:
DATE:	PROJECT NAME:	PROJECT NO:
WEATHER CONDITIONS:		
WELL DIAMETER (IN.) ☐ 1 ☒ 2 ☐ 4 ☐ 6 ☐ OTHER _____		
SAMPLE TYPE: ☒ GROUNDWATER ☐ WASTEWATER ☐ SURFACE WATER ☐ OTHER		
WELL DEPTH (TOC) FT.	DEPTH TO WATER BEFORE PURGING (TOC) FT.	
LENGTH OF WATER FT.	CALCULATED ONE WELL VOLUME[1]: __ GAL.	
DEPTH OF SAMPLE POINT FT.	ESTIMATED VOLUME PURGED GAL.	
EQUIP. DECON. ☒ ALCONOX WASH ☐ LIQUINOX WASH ☐ DIST/DEION 1 RINSE ☐ DIST/DEION 2 RINSE ☐ OTHER		
CONTAINER PRESERVATION: ☐ LAB PRESERVED ☐ FIELD PRESERVED		
WATER ANALYZER: YSI Pro DSS	PUMP TYPE: Peristaltic	TUBING: 1/4" P.E.

ACTUAL TIME (min)	FLOW RATE (ml/min)	DEPTH TO WATER (feet)	TEMP ☐ °F ☒ °C 3%	SPECIFIC CONDUCT. (mS/cm) 3%	pH +/- 0.1	DISS. OXYGEN (mg/l) <0.5 mg/L or 10% for > 0.5 mg/L	TURBIDITY (NTU) <5 NTU or 10% for > 5 NTU	ORP (mV) +/- 10 mV	REMARKS (EVIDENT ODOR, COLOR, PID)
	INITIAL		--	--	--	--	--	--	

DEPTH TO WATER AFTER PURGING (TOC) FT.	SAMPLE FILTERED ☐ YES ☒ NO SIZE _____
NOTES:	SAMPLE TIME: ID# __ __
	DUPLICATE ☐ TIME: ID#:
	EQUIP. BLANK: ☐ TIME: ID#:
	PREPARED BY:

[1] A 1 FOOT LENGTH OF WATER = 0.05 GAL IN 1" DIA. PIPE 0.17 GAL IN 2" DIA PIPE 0.65 GAL IN 4" DIA PIPE 1.5 GAL IN 6" DIA PIPE

MONITORING WELL CONSTRUCTION DATA

WELL/BORING NO:

PROJECT NO: | PROJECT NAME: | PERMIT NO:

DATE: | SITE ADDRESS:

WELL SITE LOCATION PLAN:

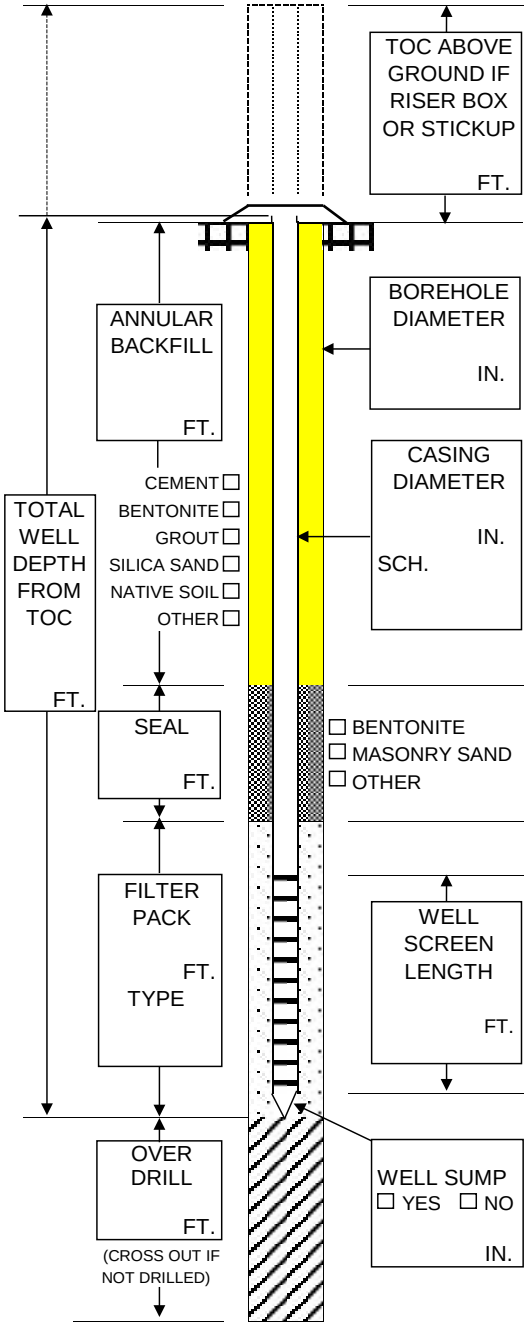
SEC: TWN: RGE: LAT: LONG:

DRILLING CO:

DRILL CREW:

WELL TYPE: ☐ SHALLOW ☐ SINGLE CASED ☐ MONITORING
☐ PERMANENT ☐ INTERMEDIATE ☐ DOUBLE CASED ☐ RECOVERY
☐ TEMPORARY ☐ DEEP ☐ OTHER ☐ OTHER

WELL SCHEMATIC



INSTALLATION DATA

DECON. ☐ STEAM CLEAN ☐ HIGH PRESSURE WASH ☐ SOAP WASH ☐ OTHER _____

CASING TYPE: ☐ PVC ☐ STAINLESS ☐ TEFLON ☐ OTHER
JOINTS: ☐ THREADED ☐ WELDED ☐ COUPLED ☐ SCREWED ☐ OTHER _____
PIT CASING: ☐ YES ☐ NO ☐ DESCRIBE _____

WELL SCREEN: ☐ PVC ☐ STAINLESS ☐ TEFLON ☐ OTHER
DIAMETER: ☐ 2" ☐ 4" ☐ 6" ☐ OTHER _____ IN
SLOT: ☐ 0.010 ☐ 0.020 ☐ OTHER _____ IN

DRILLING METHOD: ☐ SOLID STEM ☐ HOLLOW STEM ☐ MUD ROTARY ☐ AIR ROTARY ☐ DIRECT PUSH ☐ HAND AUGER ☐ OTHER _____
BIT SIZE: ☐ 2" ☐ 4" ☐ 6" ☐ 8" ☐ 12" ☐ OTHER ____ IN
DRILLING MUD: ☐ NONE ☐ WATER ☐ BENTONITE ☐ OTHER _____
CENTRALIZER: ☐ YES ☐ NO

COMPLETION: ☐ FLUSH MOUNT ☐ STICKUP ☐ RISER BOX
LOCK TYPE: ☐ DOLPHIN ☐ MASTER KEY NO. _____ ☐ OTHER
PAD: ☐ 2'X2' ☐ 4'X4' ☐ OTHER _____

CUTTINGS: ☐ DRUMMED NUMBER OF DRUMS _____ ☐ SPREAD ☐ OTHER _____

DEVELOPMENT METHOD: ☐ NONE ☐ BAILING ☐ PUMPING ☐ AIR LIFT ☐ SURGE & BLOCK ☐ OTHER _____
TIME: ☐ 10 MIN ☐ 20 MIN ☐ OTHER _____ MIN
AMOUNT ☐ 5 GAL ☐ 10 GAL ☐ OTHER _____ GAL
WATER BEFORE: ☐ SILTY ☐ TURBID ☐ OPAQUE ☐ CLEAR
WATER AFTER: ☐ SILTY ☐ TURBID ☐ OPAQUE ☐ CLEAR
EVIDENT ODOR: ☐ YES ☐ NO TYPE _____

DEVELOPMENT WATER: ☐ DRUMMED NUMBER OF DRUMS _____ ☐ SPREAD ☐ TREATED ☐ POTW ☐ OTHER

WATER LEVEL: INITIAL _____ FT ☐ BTOC ☐ BLS

DATE: _____ _____ FT BELOW TOC

DATE: _____ _____ FT BELOW TOC

NOTES: (DESCRIBE ALL NON-STANDARD METHODS & MATERIALS)

PREPARED BY:

SOIL SAMPLE DATA

PROJECT NAME: | PROJECT NO: | SHEET OF

PROJECT LOCATION:

PID MODEL & SERIAL NO: | CALIBRATION DATE/STANDARD:

SAMPLE METHOD: ☐ SONIC ☐ HAND AUGER ☐ HOLLOW STEM ☐ SPLIT SPOON ☐ GEOPROBE ☐ BACKHOE BUCKET

EQUIP DECON:

LOCATION	DATE	SAMPLE NAME	DISCRETE OR COMPOSITE	DEPTH	TIME	STAINING	ODOR	PID	SHEEN	LITHOLOGIC DESCRIPTION/NOTES

PREPARED BY:

FARALLON CONSULTING

Washington
Issaquah | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Folsom | Irvine

UTILITY CLEARANCE LOG

Project Name: _____ **Project Number:** _____

Location: _____ **Date of Work:** _____

Instructions. This log must be completed by a Farallon staff member **before** any Farallon-directed excavation (e.g., test pit excavation) or drilling operation.

DRILLING OR EXCAVATION WORK MAY NOT COMMENCE UNTIL UTILITY LOCATES HAVE BEEN COMPLETED

(See the One-Call Utility Locate Request Procedure on reverse side of this form)

Farallon is responsible for having underground utilities and structures located and marked when drilling or directing test pit excavation operations. Any drilling or excavation within 2 feet of a marked utility must be done with hand tools.

Owners of underground utilities are required by law to mark underground facilities on public and private property. Owners of underground utilities are **not required** to mark existing service laterals or appurtenances. Utility owners in Washington are required to subscribe to the One-Call service.

Private utility locate services must be hired to locate service laterals and other buried utilities (e.g., on-site electric distribution lines, irrigation pipes) on private property.

Re-mark after 10 days or maintain as appropriate.

Utility Locate Checklist

☐ Attach map showing drilling and/or excavation sites and known utilities

☐ Attach copy of One-Call Utility Notification Ticket (http://www.searchandstatus.com/)

One-Call Utility Notification Ticket Number: _____

☐ Attach copy of Side Sewer Card (available for City of Seattle; check municipality for availability)

☐ Attach copy of Private Locate Receipt

☐ Photograph all excavation and/or drilling locations and download to project file

☐ Review utilities with Site Contact:

Name: _____ Phone: _____

Utilities and Structures

Utility Type	Utility Name	Public Utilities Marked (Y/N)	Private Utilities/Laterals Marked (Y/N)	Marking Method (Flags, paint on pavement, wooden stakes, etc.)
Petroleum product lines				
Natural gas line				
Water line				
Sewer line				
Storm drain				
Telephone cable				
Electric power line				
Product tank				
Septic tank/drain field				
Other				

Farallon Consulting, L.L.C.

Field Team Leader: _____ Date: _____

ONE-CALL UTILITY LOCATE REQUEST PROCEDURE

THE ONE-CALL UTILITY NOTIFICATION CENTER REQUIRES 48 HOURS NOTICE TO MARK UTILITIES BEFORE YOU CAN DIG OR DRILL

Washington: 1-800-424-5555
Oregon: 1-800-332-2344

Washington state law states that "before commencing **any** excavation," the excavator or driller must provide notice to all owners of underground utilities by use of the One-Call locator service, and that the excavator or driller shall not dig or drill until all known utilities are marked. To fully comply with the law, you **must** take the following steps:

1. **Call before you dig or drill:** Notify the One-Call Utility Notification Center (OCUNC) a minimum of 48 hours (two full business days) before digging or drilling. Provide the following **required** information:
    a. Your name and phone number, company name and mailing address, and Farallon Account Number 25999.
    b. The type of work being done.
    c. Who the work is being done for.
    d. The county and city where the work is being done.
    e. The address or street where the work is being done.
    f. Marking Instructions: "Generally locate entire site including rights-of-way and easements"

    Provide the following information if applicable or requested:
    a. The name and phone number of an alternate contact person.
    b. If the work is being done within 10 feet of any overhead power lines.
    c. The nearest cross street.
    d. The distance and direction of the work site from the intersection.
    e. Township, range, section, and quarter section of the work site.
2. **Record the utilities that will be notified:** OCUNC will tell you the utilities that are on or adjacent to the site, based on their database. Record the name(s) of the utility on the reverse side of this form.
3. **After the 48-hour waiting period, confirm that the utility locations have been marked:** Before digging or drilling, walk the site and confirm that the utility companies have marked the utility locations in the field.
4. **If a locate appears to be missing:** If a utility locate appears to be missing and the utility company has not notified you that there are no utilities in the area, call OCUNC and:
    a. **Provide the OCUNC locate number.**
    b. **Clearly state which utility has not been marked. The call is being recorded.**
    c. **Ask for a contact person at that utility.**
    d. **Call the contact person for the missing utility locate:** Determine why there is no utility locate in the field.
    e. **Record the reason(s) for the missing locate(s):** There are valid reasons that locates do not appear in the field (e.g., there are no utilities located on the site or the utility has been abandoned). However, IF THEY ARE LATE, **YOU MUST WAIT** TO DRILL OR DIG. If the utility fails to mark a locate within the required 48 hours (two full business days), the utility is liable for delay costs.
5. **Hand dig within 2 feet of a marked utility:** When digging or drilling within 2 feet of any marked utility, the utility must be exposed first by using hand tools.

Electric = **RED**	*Gas-Oil-Steam* = **YELLOW**	*Comm-CATV* = **ORANGE**	*Water* = **BLUE/PURPLE**	*Sewer* = **GREEN**	*Temp Survey* = **PINK**

WASTE INVENTORY TRACKING SHEET

Project Number: _____ **Page:** _____ **of** _____

Project Name: _____ **Project Manager:** _____

Project Address: _____ **Field Work Description:** _____

Prepared By: _____ **Waste Transporter:** _____

Inventory Date: _____ **Waste Disposal Location:** _____

Unique Container ID	Container Size	% Capacity Used	Contents (Soil/GW/Decon Water)/ Origin (Boring or Well ID)	Date(s) Accumulated	Labeling (Contents Under Test/ Haz/Non-Haz/Other-Specify)	Sampled (Y/N)	Comments / Drum Condition

NOTES:

Contents should be specified and include identification of well/boring, media, source, depth of soil (if applicable), and any other helpful information.

Container ID should be unique when compared against other nearby containers. Special waste labels may include flammable, corrosive, dangerous when wet, and/or oxidizer.

Location of Drums (sketch or describe):

FARALLON CONSULTING

FARALLON CONSULTING

Groundwater Level Measurement Summary Form

Date:		**Project Name:**
Project Number:	**Task:**	**Project Location:**
Equipment Used:		**Project Manager:**

Well ID	Time Opened	Time Measured	Depth to Water (feet)	Total Well Depth (feet)	Depth to NAPL (feet)	NAPL Thickness (feet)	Comments / Well Condition
					Prepared By:		

APPENDIX G
QUALITY ASSURANCE PROJECT PLAN

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

QUALITY ASSURANCE PROJECT PLAN

Eastside Fire and Rescue Headquarters and
Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, WA

Farallon PN: 1754-008

September 26, 2025

Prepared by:

DRAFT
Sarah Snyder, L.G.
Senior Geologist

Reviewed by:

DRAFT
Eric Buer, L.G. L.H.G.
Principal Hydrogeologist

For:
Eastside Fire and Rescue
and
City of Issaquah

Submitted by:
Farallon Consulting, L.L.C.
1809 7th Avenue, Suite 1111
Seattle, Washington 98101

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1

2.0 DATA QUALITY OBJECTIVES 2-1
- 2.1 PRECISION 2-1
- 2.2 ACCURACY 2-2
- 2.3 COMPLETENESS 2-3
- 2.4 COMPARABILITY 2-3
- 2.5 REPRESENTATIVENESS 2-4

3.0 SAMPLING PROCEDURES 3-1

4.0 ANALYTICAL PROCEDURES 4-1

5.0 DATA MANAGEMENT, REDUCTION, REVIEW, AND REPORTING 5-1
- 5.1 DATA TYPES 5-1
- 5.2 DATA TRANSFER 5-1
  - 5.2.1 Receipt of Data and Reports 5-1
  - 5.2.2 Outgoing Data and Reports 5-2
- 5.3 DATA INVENTORY 5-2
  - 5.3.1 Document Filing and Storage 5-2
  - 5.3.2 Access to Project Files 5-2
- 5.4 DATA REDUCTION AND ANALYSIS 5-3
  - 5.4.1 Summary Tables 5-3
  - 5.4.2 Figures 5-3
  - 5.4.3 Environmental Information System 5-3
  - 5.4.4 Meeting, Telephone, and Field Notes 5-4
  - 5.4.5 Electronic Mailings 5-4

6.0 QUALITY CONTROL PROCEDURES 6-1
- 6.1 FIELD QUALITY CONTROL 6-1
- 6.2 LABORATORY QUALITY CONTROL 6-1
- 6.3 DATA QUALITY CONTROL 6-1

7.0 PERFORMANCE AND SYSTEM AUDITS 7-1

8.0 DATA ASSESSMENT PROCEDURES 8-1

9.0 CORRECTIVE ACTION 9-1

10.0 QUALITY ASSURANCE REPORTS 10-1

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) identifies the data quality objectives (DQOs) to be implemented in accordance with the Interim Action Work Plan (IAWP) prepared for the Eastside Fire and Rescue (EFR) Headquarters (HQ) and Issaquah Valley Elementary School (IVES) Site (Site) (Figure 1). EFR and the City of Issaquah (City) were identified as the potentially liable persons (PLPs) for the Site.

This QAPP documents the specific requirements for sample collection and analysis for the interim action activities to be completed in accordance with the requirements of Agreed Order No. DE 23520 (AO) between the Washington State Department of Ecology (Ecology) and the PLPs.

As described in the AO, EFR historically conducted firefighting training exercises at the Site, which included lawful deployment of aqueous film-forming foam (AFFF) containing perfluorooctane sulfonate (PFOS) and additional per- and poly-fluorinated alkyl substances (PFAS). The historical training activities are considered releases to the environment. The confirmed releases have impacted vadose zone soil at two source areas, the EFR HQ Source Area at 175 Newport Way Northwest and IVES Source Area at 555 Northwest Holly Street in Issaquah, Washington (collectively referred to as the Source Areas). The confirmed releases have impacted shallow groundwater at the Source Areas. The City withdraws groundwater from production wells at locations down-gradient of the Site and a completed exposure pathway for groundwater has been confirmed. Ecology believes the actions required by the AO are in the public's interest.

The interim action will be performed at the EFR HQ Source Area. AFFF training was performed at two locations on the EFR HQ Source Area (Figure 2):

- An area that currently is covered with lawn near the fire hydrant on the north-central portion (Median Strip AFFF Training Area); and
- The western gravel-surfaced area of the EFR Headquarters Source Area (Newport Way Northwest [NWN] AFFF Training Area).

Work performed during the interim action at the Site will be conducted in accordance with the Washington State Model Toxics Control Act Cleanup Regulation (MTCA), as established in Section 810 of Chapter 173-340 of the Washington Administrative Code. As set forth in the Washington State Department of Ecology (Ecology) *Guidelines for Preparing Quality*

Assurance Project Plans for Environmental Studies dated July 2004, the purpose of a QAPP is to:

- Help the project manager and project team focus on the factors affecting data quality during the planning stage of the project;
- Facilitate communication among field, laboratory, and management staff as the project progresses; and
- Provide a record of the project to facilitate final report preparation.

The QAPP provides the specifications for sample collection procedures, analytical methods, quality assurance/quality control (QA/QC) procedures, and data quality reviews. The QAPP describes both quantitative and qualitative measures of data quality to ensure that the DQOs are achieved.

2.0 DATA QUALITY OBJECTIVES

The DQOs for PFAS characterization work will be used to develop and implement procedures to ensure that project data are of sufficient quality to be scientifically defensible based on the current state of knowledge regarding PFAS. Observations and measurements will be made and recorded in a manner that will yield results representative of the media of interest.

The quality of the field sampling methods and laboratory data will be assessed using the parameters of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS). QC procedures for PARCCS are described in the following sections. Quantitative DQOs for applicable parameters (i.e., precision, accuracy, and completeness) are provided following their definition. Laboratory DQOs have been established by the analytical laboratories and are specified in the individual analytical laboratory Quality Assurance Manuals. The applicable analytical laboratory Quality Assurance Manual for samples analyzed under the IAWP and this QAPP will be kept on file at the Farallon corporate office in Issaquah, Washington.

2.1 PRECISION

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, precision is a quantitative measure of the variability of two or more measurements compared to their average values. Precision is calculated from the results of duplicate sample analysis and is quantitatively expressed as the relative percent difference (RPD). Precision is calculated as follows:

$$RPD = \frac{(C_1 - C_2)}{(C_1 + C_2)/2} x\,100$$

Where:

RPD = relative percent difference

C_1 = the larger of the two duplicate results (i.e., the higher detected concentration)

C_2 = the smaller of the two duplicate results (i.e., the lower detected concentration)

Quantitative RPD criteria for laboratory duplicate results have been developed by the U.S. Environmental Protection Agency (EPA) for analysis of inorganic compounds. The criteria are

±20 percent for water samples and ±35 percent for soil. Because there are no specific RPD criteria for analysis of organic compounds, precision will be evaluated using the criteria for analysis of inorganic compounds.

2.2 ACCURACY

Accuracy is a measure of the closeness (bias) of the measured value to the true value. The accuracy of chemical analytical results is assessed by "spiking" samples in the laboratory with known standards (i.e., surrogates or matrix spikes of known concentration) and determining the percent recovery. Accuracy is measured as the percent recovery (%R) and is calculated as follows:

$$\%R = \frac{(M_{sa} - M_{ua})}{C_{sa}} x\ 100$$

Where:

%R	=	percent recovery
M_{sa}	=	measured concentration in spiked aliquot
M_{ua}	=	measured concentration in unspiked aliquot
C_{sa}	=	actual concentration of spike added

Analysis of laboratory matrix spikes and surrogates will be performed by the analytical laboratory in accordance with the requirements for organic analysis set forth in EPA publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. Quantitative percent recovery criteria have been developed by EPA for laboratory matrix spikes for analysis of inorganic compounds. The criteria are 75 to 125 percent when the sample concentration exceeds the spike concentration by a factor of four or more. There are no specific accuracy criteria for analysis of organic compounds. Laboratory-derived control limits will be used to assess surrogate recovery and matrix spike results where EPA and Ecology have not provided data validation guidelines.

The accuracy of sample results can be affected by sample contamination (which can occur because of improperly cleaned sampling equipment), exposure of the samples to chemical concentrations in the field or during transport to the laboratory, or the presence of chemical concentrations in the laboratory. To confirm that the samples collected are not contaminated, several types of blank samples will be analyzed. The laboratory will run method blanks at a minimum frequency of one per batch (or 5 percent) to assess sample contamination in the laboratory.

Trip blanks will be used to check for procedural contamination, cross-contamination, and contamination during shipment and storage of solid and aqueous samples collected for volatile organic compound analysis. One trip blank will be submitted to the project laboratory for each cooler containing soil samples for analysis of volatile compounds. A trip blank filled with analyte-free deionized water and preserved with hydrochloric acid will be included when a cooler contains water or soil samples collected for analysis. After their preparation, the sample containers are not to be opened until they have been returned to the laboratory.

In addition, one field equipment rinsate blank will be used to evaluate whether the decontamination procedures were adequate to prevent cross-contamination between samples or introduction of PFAS into samples from the materials in the sampling equipment. One rinsate blank will be collected for each type of sampling equipment that comes into contact with sample material (e.g., hand-coring device, drill bit, hollow-stem-auger flight, peristaltic pump tubing, protective gloves).

2.3 COMPLETENESS

Completeness is defined as the percentage of measurements judged to be valid. Results are considered valid if they are not rejected during data validation (see Section 5, Data Management, Reduction, Review, and Reporting). Completeness is calculated as presented below.

The target completeness goal for the work at the Site will be 90 percent for a given analysis.

$$Completeness = \frac{(Number\ of\ Valid\ Measurements)}{(Total\ Number\ of\ Measurements)}\ x\ 100$$

2.4 COMPARABILITY

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. The use of standard EPA and Ecology methods and procedures for both sample collection and laboratory analysis will make the data collected comparable to internal and other data generated.

Prior samples collected at the Site were analyzed by Modified EPA Method 537. Draft EPA Method 1633 for non-drinking water matrices was issued in November 2021, and final EPA Method 1633A for non-drinking water, soils, biosolids, landfill leachate, and fish tissue matrices was issued in December 2024. The Department of Defense Environmental Data Quality Workgroup subsequently determined that draft EPA Method 1633 meets precision,

accuracy, and limits of quantitation requirements to "support sound decision-making," and that all future analysis should be performed using draft Method 1633 for non-drinking water matrices. Therefore, samples will be analyzed by U.S. EPA Method 1633.

2.5 REPRESENTATIVENESS

Representativeness is a qualitative measure of how closely the measured results reflect the actual concentration or distribution of the constituent concentrations in the medium sampled. The sampling plan design, collection techniques, sample handling protocols, analytical methods, and data review procedures have been developed to ensure that the results obtained are representative of Site conditions. These issues are addressed in detail in the Sampling and Analysis Plan (SAP).

3.0 SAMPLING PROCEDURES

Procedures that will be used to collect, preserve, transport, handle, and analyze samples are described in the SAP.

4.0 ANALYTICAL PROCEDURES

Chemical and physical analyses to be performed during the interim action at the Site are discussed in the SAP.

5.0 DATA MANAGEMENT, REDUCTION, REVIEW, AND REPORTING

This section outlines the procedures to be followed for the inventory, control, storage, and retrieval of data collected during performance of the interim action. The procedures described in the IAWP are designed to ensure that the integrity of the collected data is maintained for subsequent use. In addition, project tracking data (e.g., schedules, progress reports) will be maintained to monitor, manage, and document the progress of the interim action.

Farallon will maintain project files in accordance with MTCA and the procedures outlined in the QAPP. Data generated during field activities and laboratory analyses will be submitted directly to Farallon. Laboratory documentation from the analytical laboratories will be maintained in Farallon's project files to validate analytical data collected during the interim action.

5.1 DATA TYPES

A variety of data will be generated during the interim action, including sampling and analytical data and calculation results based on mathematical expressions. Laboratory analytical data will be transmitted to Farallon as an electronic file and in hard copy format. These formats will facilitate subsequent validation and analysis of these data while avoiding transcription errors that may occur with computer data entry. Calculations pertaining to the interim action will be reviewed and verified by an independent reviewer, and calculation sheets will be retained in the project file.

5.2 DATA TRANSFER

Procedures for controlling the receipt and distribution of incoming data packages to Farallon and outgoing data reports from Farallon are outlined below.

5.2.1 Receipt of Data and Reports

Incoming documents will be date-stamped and filed in accordance with established procedures. Correspondence and transmittal letters for reports, maps, and data will be filed chronologically. Data packages such as those from field personnel, laboratories, and surveyors (e.g., soil analytical data, survey data, geologic observations) will be filed by project task, subject heading, and date. If distribution of a document is required, the required number of copies will be made and distributed to the appropriate persons or

agencies. The original document will not be distributed to project personnel and will be retained in the project file.

5.2.2 Outgoing Data and Reports

A transmittal sheet will be attached to outgoing project data and reports. A copy of each transmittal sheet will be kept in the project files. All outgoing reports and maps will be reviewed by the Project Manager and the QA/QC Officer prior to being sent.

Reports, data, and other documentation sent via electronic mailing also will be tracked. Copies of electronic mailings will be maintained in the electronic project files. Farallon is required to submit data generated during the interim action to Ecology via their Environmental Information Management system. This information is input by Farallon and maintained by Ecology in their Environmental Information Management system database.

5.3 DATA INVENTORY

Procedures for filing, storing, and retrieving project files are described below.

5.3.1 Document Filing and Storage

Project files and raw data files will be maintained at the Farallon office. Files will be organized by project number and document type and maintained by the Document Control Clerk and the Project Manager. Electronic copies of final documents, email messages, boring logs, laboratory data, drafted project content, correspondence, and other project documentation will be maintained in Farallon's electronic project files. Draft documents and data will be removed from Farallon project files once final versions have been completed and distributed.

5.3.2 Access to Project Files

Access to project files will be controlled by and limited to authorized agents of Eastside Fire & Rescue, the City of Issaquah, Ecology, and Farallon. Authorized agents may direct Farallon to provide project-related information to others, as appropriate and agreed to by other authorized agents. Project documents will be assigned a document control number/identifier, and a log will be maintained for all documents contained in the file. When a document is removed for use, a sign-out procedure will be used to track custody. Access to Farallon's electronic project files is restricted to Farallon personnel. Final documents will be converted to electronic files that cannot be altered or deleted by anyone but the Document Control Clerk.

5.4 DATA REDUCTION AND ANALYSIS

The Project Manager and the Project QA/QC Officer are responsible for data review and validation. Data validation parameters are outlined in Section 2, Data Quality Objectives. The particular type of analysis and presentation method selected for any given data set will depend on the type, quantity, quality, and prospective use of the data. Analysis of the project data likely will require data reduction for preparation of tables, charts, and maps. To ensure that data are accurately transferred during the reduction process, all reduced data will be checked by a second party, who will initial and date the reviewed data. Any incorrect transfer of data will be highlighted and corrected.

The physical and chemical characterization information developed for soil and groundwater at the Site in connection with the IAWP will be presented in the final report using the format described in the following sections.

5.4.1 Summary Tables

Laboratory reports will be categorized according to various parameters to summarize the information for easier assimilation and presentation. Soil sampling and analysis data will be categorized several ways, including by sample point number, constituent, and date of sample collection. The parameters chosen for categorizing soil and groundwater data will be determined based on the most appropriate format and the utility of the format in demonstrating the physical and chemical characteristics of interest.

5.4.2 Figures

Figures needed to illustrate the results of the IAWP will be assembled or prepared. Figures may include but are not limited to plan maps of the Site depicting sampling locations and chemical concentrations for individual and groups of chemicals.

5.4.3 Environmental Information System

Farallon will transfer laboratory and field measurement data into the Ecology Environmental Information Management System, as required under MTCA. Farallon will directly transfer the analytical data provided by the laboratory into the database, thus eliminating the likelihood of data entry errors inherent with manual data entry. Field measurements and other data requiring manual entry will be reviewed by Farallon personnel other than the data entry staff prior to submission to the Environmental Information Management System. Ecology's confirmation of receipt of the data will be maintained in Farallon electronic project files.

5.4.4 Meeting, Telephone, and Field Notes

Notes from project meetings and telephone conversations will be maintained in the project files by the Project Manager. Field notes will be retained by project field personnel until the conclusion of the field program, at which time the notes will be filed with the other project documents. Field notes also will be scanned into PDF file format and maintained in Farallon electronic project files.

5.4.5 Electronic Mailings

Electronic mailings associated with the project will be placed in Farallon electronic project files. These mailings typically include routine correspondence, laboratory data, and transmissions of reports or other project documentation. Electronic mailings that include draft versions of any project document will be deleted once the document has been issued in final format.

6.0 QUALITY CONTROL PROCEDURES

6.1 FIELD QUALITY CONTROL

Field QC samples (e.g., duplicate samples, equipment rinsate blanks) to be collected during this project are described in the SAP. The purpose of the field QC samples is discussed in Section 2 herein, Data Quality Objectives.

6.2 LABORATORY QUALITY CONTROL

Analytical laboratory QA/QC procedures are described in the laboratory Quality Assurance Manual, which is on file at the Farallon office.

6.3 DATA QUALITY CONTROL

Data will undergo two levels of QA/QC evaluation: one by the laboratory and one by Farallon. Initial data reduction, evaluation, and reporting will be performed by the laboratory, as specified in the laboratory Quality Assurance Manual. The analytical data will then be validated by Farallon under the supervision of the QA/QC Officer. The following types of QC information will be reviewed, as appropriate:

- Method deviations;
- Sample extraction and hold times;
- Method reporting limits;
- Blank samples (e.g., equipment rinsate, laboratory method);
- Duplicate samples;
- RPD (for precision);
- Matrix spike/matrix spike duplicate samples (for accuracy);
- Surrogate recoveries; and
- Percent completeness.

Farallon will review field records and the results of field observations and measurements to ensure that procedures were properly performed and documented. Field procedures will be reviewed for the following elements:

- Completeness and legibility of field logs;
- Preparation and frequency of field QC samples;
- Equipment calibration and maintenance; and
- Chain of Custody forms.

7.0 PERFORMANCE AND SYSTEM AUDITS

Performance audits will be completed for both sampling and analysis work. Field performance will be monitored through regular review of field notebooks, field measurements, and Chain of Custody forms. Periodic on-Site review of work in progress will be performed by the Project Manager and/or the Project QA/QC Officer.

Ecology accreditation for each of the analyses conducted by a laboratory demonstrates the laboratory's ability to properly perform requested methods. Therefore, a system audit of the analytical laboratory will not be conducted during the course of this project.

The Project Manager and/or the Project QA/QC Officer will oversee communication with the analytical laboratory on an ongoing basis during sample processing and analysis. This oversight will allow Farallon to assess progress toward achieving the DQOs and take corrective measures if problems are encountered. Corrective measures will be the joint responsibility of the Project Manager and the Project QA/QC Officer.

The analytical laboratory will be responsible for identifying any deviation from the performance standards described in the laboratory Quality Assurance Plan, and for taking appropriate corrective action. The laboratory will communicate to the Project Manager or the Project QA/QC Officer any deviation from the performance standards during sample analysis, and the corrective action taken. Corrective actions are discussed in Section 9, Corrective Action.

8.0 DATA ASSESSMENT PROCEDURES

The Project Manager and the Project QA/QC Officer are responsible for data review and validation of field documentation, laboratory data, and other documentation generated during completion of the interim action. Upon receipt of each data package from the laboratory, calculations for precision, accuracy, and completeness will be performed using the equations presented in Section 2, Data Quality Objectives. Results obtained will be compared to the qualitative DQOs. The data validation parameters also are outlined in Section 2. The Project Manager and/or the Project QA/QC Officer also will validate data transferred to summary tables, figures, and other documentation prepared for the interim action.

9.0 CORRECTIVE ACTION

Corrective action will be the joint responsibility of the Project Manager and the Project QA/QC Officer. Corrective procedures may include:

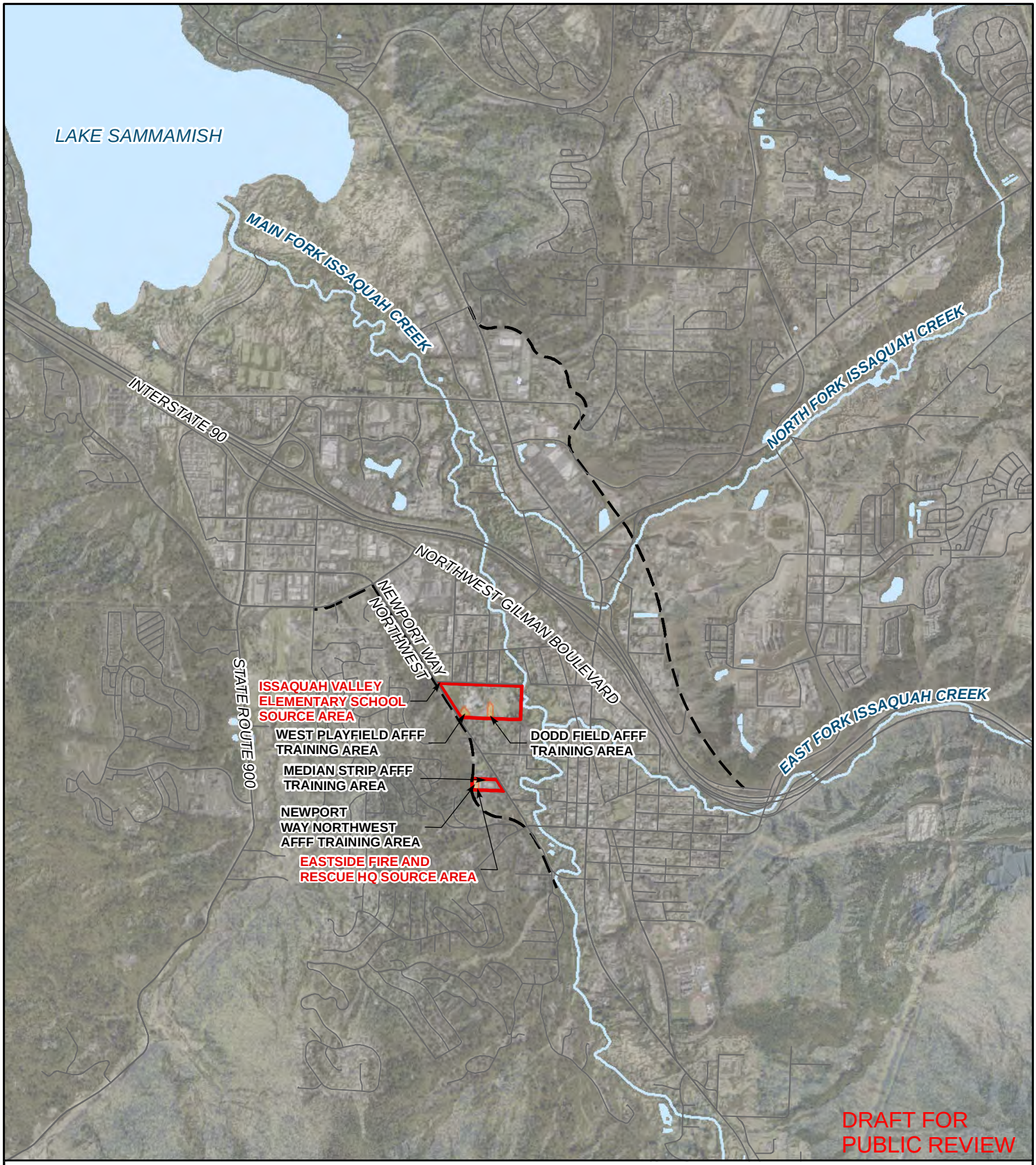
- Identifying the source of deviation from the quality standards set forth in the IAWP and its supporting documents;
- Re-analyzing soil and/or groundwater samples if hold-time criteria permit;
- Re-sampling and analyzing soil and/or groundwater if necessary to meet the quality standards set forth in the IAWP and its supporting documents;
- Evaluating and amending sampling, analytical, and/or data transfer procedures; and/or
- Qualifying data to indicate the level of uncertainty.

During field operations and sampling procedures, field team members will be responsible for identifying and correcting equipment malfunctions and documenting sampling procedures in a manner that will enable the Project Manager or the Project QA/QC Officer to evaluate whether corrective action is warranted. Equipment malfunctions, variances in sampling protocols, and corrective actions taken by field team members will be documented in the field notes. The Project Manager or the Project QA/QC Officer will evaluate the field notes upon submittal to determine whether the corrective action taken was adequate to meet project quality standards or whether additional corrective action is required.

10.0 QUALITY ASSURANCE REPORTS

The Remedial Investigation Report will include a quality assurance section that summarizes data quality information. The summary will include:

- An assessment of data accuracy and completeness;
- The results of performance and/or system audits; and
- Significant quality assurance problems, if any, and their impact on the DQOs.



LEGEND

- CREEK
- LOWER ISSAQUAH VALLEY
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- SOURCE AREA

0 2,500

SCALE IN FEET

N

FARALLON CONSULTING

Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

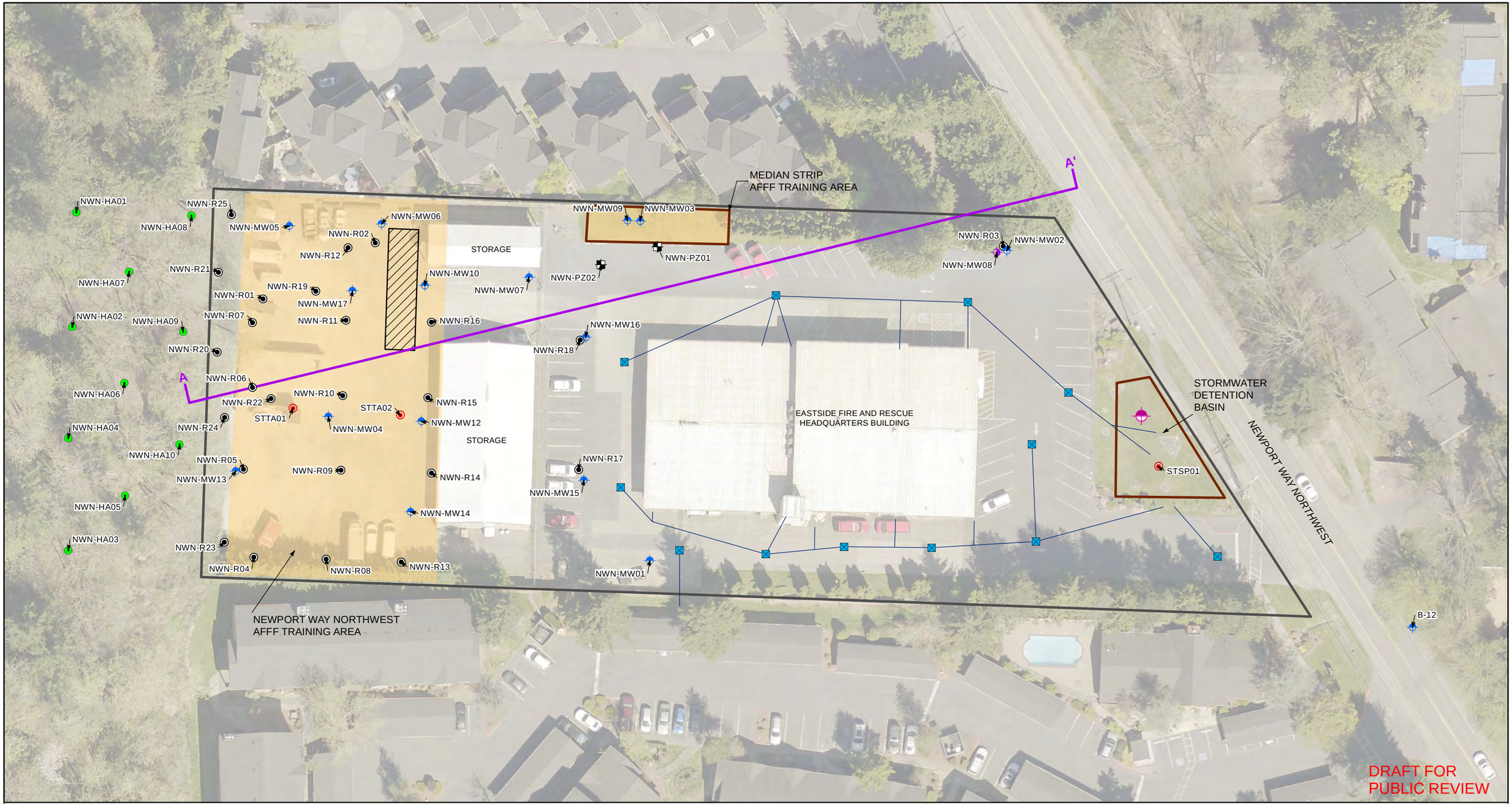
FIGURE 1

LOWER ISSAQUAH VALLEY VICINITY MAP
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 5/29/2025 | Disc Reference:

Document Path: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-01_Vicinity.mxd



LEGEND

- PROPOSED SHALLOW MONITORING WELL
- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- CATCH BASIN
- STORMWATER LINE
- LINE OF CROSS-SECTION
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL

0 50
SCALE IN FEET

N

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIGURE 2

EFR SOURCE AREA PLAN
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 3/20/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-02_EFR-HQ-Plan.mxd

APPENDIX H
COMPLIANCE MONITORING PLAN

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

COMPLIANCE MONITORING PLAN

Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street Issaquah, Washington

Farallon PN: 1754-009

September 26, 2025

Prepared by:

DRAFT
James Welles, L.H.G.
Senior Hydrogeologist

Reviewed by:

DRAFT
Sarah Snyder, L.G.
Senior Geologist

For:
Eastside Fire and Rescue
and
The City of Issaquah

Submitted by:
Farallon Consulting, L.L.C.
1809 7th Avenue, Suite 1111
Seattle, Washington 98101

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1
1.1 REPORT ORGANIZATION 1-1

2.0 COMPLIANCE GROUNDWATER MONITORING 2-1
2.1 GROUNDWATER MONITORING SCHEDULE 2-1
2.2 GROUNDWATER MONITORING PROCEDURES 2-1

3.0 REPORTING 3-1

4.0 REFERENCES 4-1

FIGURES

Figure 1 *Lower Issaquah Valley Vicinity Map*

Figure 2 *EFR HQ Source Area Proposed Interim Action Elements and Extents*

TABLE

Table 1 *Monitoring Well Construction Details*

APPENDIX

Appendix A Farallon Standard Operating Procedures

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Interim Action Work Plan (IAWP) on behalf of Eastside Fire and Rescue (EFR) and the City of Issaquah (the City) for the EFR Headquarters (HQ) and Issaquah Valley Elementary School (IVES) Site (Site) (Figure 1). EFR and the City were identified as the potentially liable persons (PLPs) for the Site.

This Compliance Monitoring Plan documents the proposed groundwater performance monitoring for the planned interim action at the EFR HQ Source Area at 175 Newport Way Northwest in Issaquah, Washington (EFR HQ Source Area).

The planned interim action to address per- and poly-fluorinated alkyl substances (PFAS) at the EFR HQ Source Area is summarized in the Interim Action Work Plan (IAWP). The interim action proposed in the IAWP includes in-situ soil stabilization, installation of a permeable reactive barrier (PRB), and capping.

Relevant background information for the Site and EFR HQ Source Area relating to sources and mechanisms of release of PFAS and the results of previous investigations are summarized in the IAWP. EFR HQ Source Area features, former contaminant sources, locations of previous investigation and proposed interim action, and proposed locations for installation of additional groundwater monitoring wells are depicted on Figure 2.

1.1 REPORT ORGANIZATION

This compliance monitoring plan has been organized into the following sections:

Section 2, Compliance Groundwater Monitoring, describes the performance and compliance groundwater monitoring program to monitor the effectiveness for the planned interim action.

Section 3, Reporting, describes documentation and reporting of the compliance monitoring activities that will be conducted within the EFR HQ Source Area.

Section 4, References, provides a list of the documents cited in this report.

2.0 COMPLIANCE GROUNDWATER MONITORING

Following completion of remedial injections for installation of the PRB and completion of in-situ soil stabilization at the EFR HQ Source Area as described in the IAWP, Farallon will implement a performance and compliance groundwater monitoring program to evaluate the effectiveness of the interim action.

2.1 GROUNDWATER MONITORING SCHEDULE

The performance and compliance groundwater monitoring program will begin approximately 3 months following completion of both the PRB and in-situ soil stabilization activities. The monitoring schedule for performance and compliance monitoring of the interim action at the EFR HQ Source Area will consist of one year of semi-annual groundwater monitoring.

It is expected that following completion of the semi-annual monitoring, additional performance and compliance monitoring of interim actions completed within the EFR HQ Source Area will be performed as part of the compliance monitoring program for the EFR HQ IVES Site.

2.2 GROUNDWATER MONITORING PROCEDURES

The performance and compliance groundwater monitoring events will include measuring depth to groundwater and collecting groundwater samples from existing monitoring wells NWN-MW05, NWN-MW06, NWN-MW07, NWN-MW14, NWN-MW15, NWN-MW16, along with the 6 new shallow compliance groundwater monitoring wells proposed for installation at the EFR HQ Source Area (Figure 2). Monitoring well construction details for the existing monitoring wells are summarized in Table 1.

During each performance and compliance groundwater monitoring event, Farallon field personnel will remove the locking well cap from each monitoring well and allow groundwater levels to equilibrate to atmospheric pressure. The depth to groundwater will be measured to the nearest 0.01 foot using a water level meter from the top of the well casing. Water level measurements will be performed in accordance with Farallon Standard Operating Procedures (SOPs, Appendix A). Reusable equipment will be decontaminated between each location.

Groundwater samples will be collected from the monitoring wells in accordance with standard EPA low-flow groundwater sampling procedures and Farallon SOPs (Appendix B). During purging, the temperature, pH, specific conductance, dissolved oxygen, oxidation-

reduction potential, and turbidity will be monitored to determine when stabilization of these parameters occurs. Following stabilization of the parameters, groundwater samples will be collected directly from the low-flow pump outlet. Groundwater samples will be transported to a Washington State-certified analytical laboratory under standard chain-of-custody protocols for the following analysis of PFAS by U.S. Environmental Protection Agency (EPA) Method 1633.

Groundwater samples will be collected in accordance with the Quality Assurance Project Plan (QAPP), Sampling and Analysis Plan (SAP), and Washington State Department of Ecology's Guidance for Investigating and Remediating PFAS Contamination in Washington State (Ecology 2022).

3.0 REPORTING

Farallon will prepare semi-annual groundwater monitoring reports following completion of each compliance and performance groundwater monitoring event. The semi-annual reports will include the following elements:

- A brief summary of interim actions conducted at the EFR HQ Source Area;
- Plan maps and summary tables summarizing completed groundwater monitoring activities and analytical results for performance and confirmation samples collected during the semi-annual groundwater monitoring events; and
- Preliminary conclusions regarding the effectiveness of the interim action in accordance with MTCA requirements.

4.0 REFERENCES

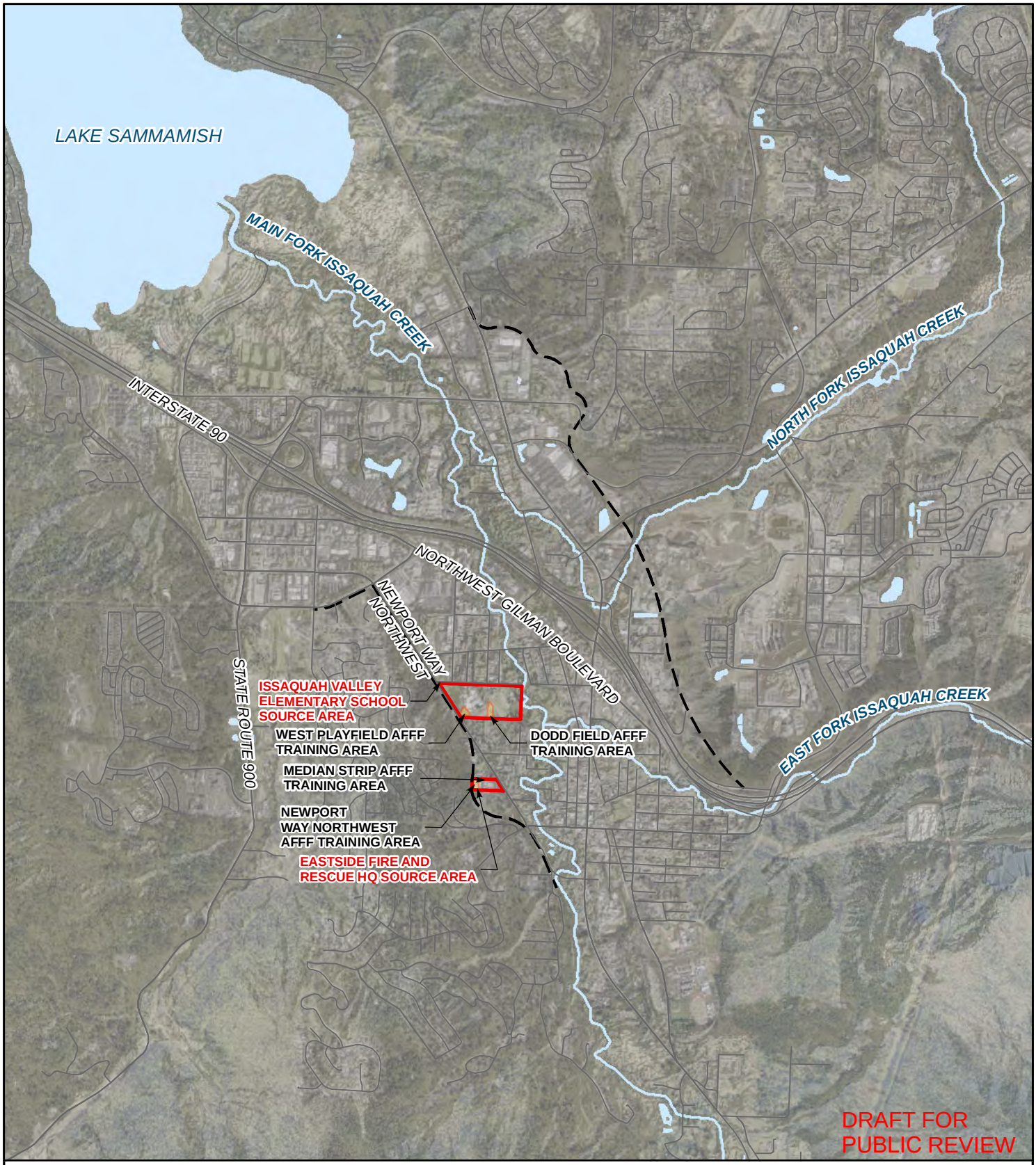
U.S. Environmental Protection Agency (EPA). 2024. *Method 1633, Revision A. Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS.* EPA 820-R-24-007. December.

Washington State Department of Ecology. 2022. *Guidance for Investigating and Remediating PFAS Contamination in Washington State.* Publication No. 22-09-058. Revised June 2023. December.

FIGURES

COMPLIANCE MONITORING PLAN
Eastside Fire and Rescue Headquarters Source Area
175 Newport Way Northwest
Issaquah, Washington

Farallon PN: 1745-009



LEGEND

- CREEK
- LOWER ISSAQUAH VALLEY
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- SOURCE AREA

0 2,500

SCALE IN FEET

N

FARALLON CONSULTING

Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

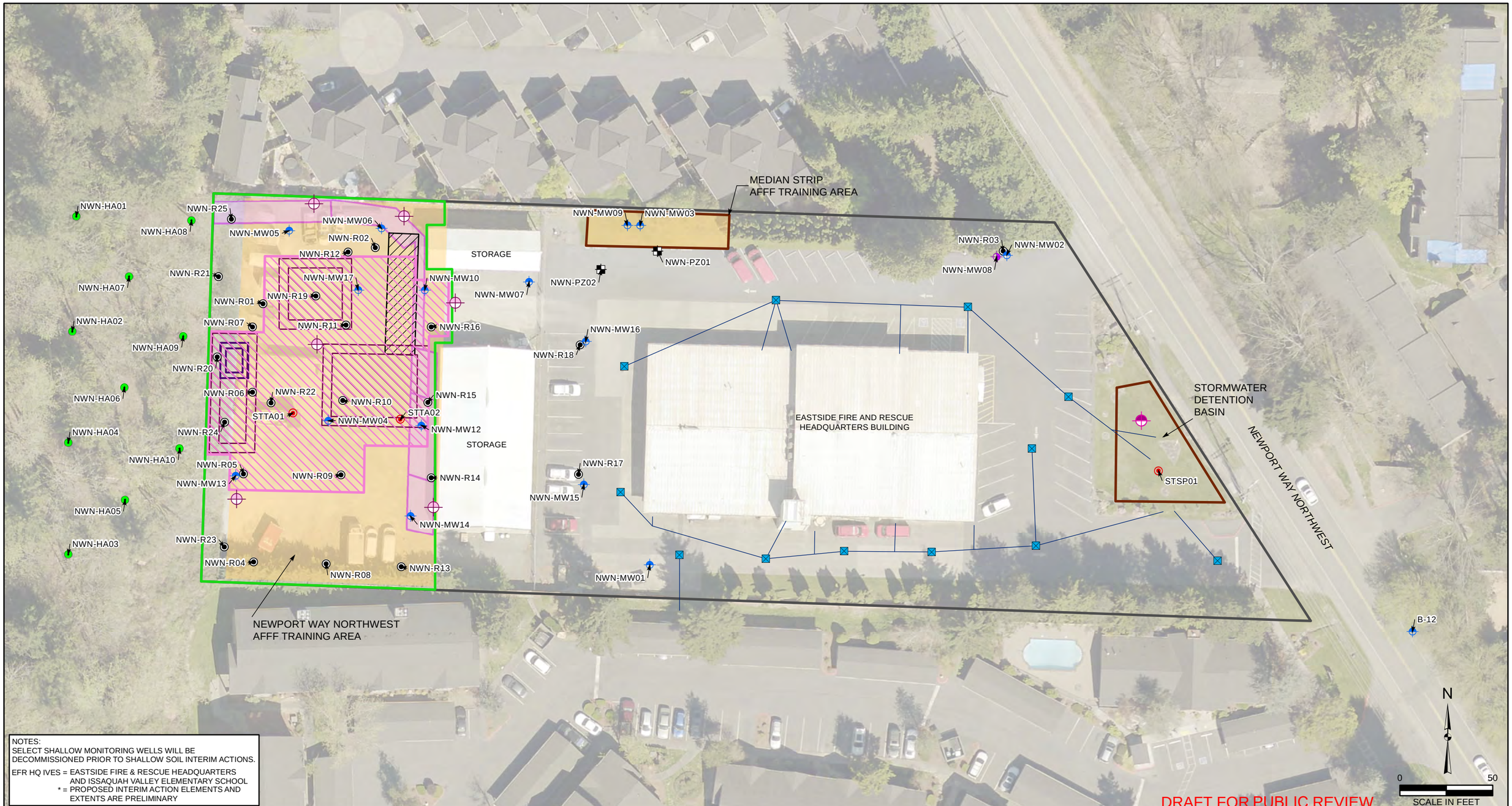
FIGURE 1

LOWER ISSAQUAH VALLEY VICINITY MAP
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: lmurock | Checked By: SS | Date: 5/29/2025 | Disc Reference:

Document Path: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-01_Vicinity.mxd



NOTES:
SELECT SHALLOW MONITORING WELLS WILL BE DECOMMISSIONED PRIOR TO SHALLOW SOIL INTERIM ACTIONS.

EFR HQ IVES = EASTSIDE FIRE & RESCUE HEADQUARTERS AND ISSAQUAH VALLEY ELEMENTARY SCHOOL
* = PROPOSED INTERIM ACTION ELEMENTS AND EXTENTS ARE PRELIMINARY

LEGEND

- PROPOSED SHALLOW MONITORING WELL (REMEDIAL INVESTIGATION)
- PROPOSED SHALLOW COMPLIANCE MONITORING WELL
- HAND AUGER LOCATION
- BORING
- GEOSYNTEC SAMPLE
- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- PIEZOMETER
- CATCH BASIN
- STORMWATER LINE
- PROPOSED AREA TO RESTORE WITH ASPHALT PAVEMENT CAP
- PROPOSED SOIL EXCAVATION AND STABILIZATION EXTENT (0 TO 5 FEET BELOW GROUND SURFACE)
- PROPOSED VADOSE ZONE SOIL TREATMENT AREA (5 TO 10 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPOSED VADOSE ZONE SOIL TREATMENT AREA (10 TO 13 FEET BELOW GROUND SURFACE) WITH 1:1 SLOPE BACK
- PROPOSED FULL SCALE PERMEABLE REACTIVE BARRIER*
- PROPERTY BOUNDARY
- MULTI-INCREMENTAL SAMPLING DECISION UNIT
- AQUEOUS FIREFIGHTING FOAM (AFFF) TRAINING AREA
- PILOT TEST PERMEABLE REACTIVE BARRIER

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

FARALLON CONSULTING
Your Challenges. Our Priority. | farallonconsulting.com

Washington
Bellevue | Bellingham | Seattle

Oregon
Portland | Baker City

California
Oakland | Irvine

FIGURE 2

EFR HQ SOURCE AREA PROPOSED
INTERIM ACTION ELEMENTS AND EXTENTS
EFR HQ IVES SITE
175 NEWPORT WAY NORTHWEST AND
555 NORTHWEST HOLLY STREET
ISSAQUAH, WASHINGTON

FARALLON PN: 1754-009

Drawn By: rbates | Checked By: SS | Date: 9/23/2025 | Disc Reference: Q:\Projects\1754 EastsideFireRescue\009\001\Figure-11_Proposed_IA_Extents.mxd

TABLES

COMPLIANCE MONITORING PLAN
Eastside Fire and Rescue Headquarters Source Area
175 Newport Way Northwest
Issaquah, Washington

Farallon PN: 1745-009

Table 1
Monitoring Well Construction Details
EFR HQ IVES Site
Issaquah, Washington
Farallon PN: 1754-009

Well ID	Previous Monitoring Well ID	Well Owner	Ground Surface Elevation (feet NAVD88)	Top of Casing Elevation (feet NAVD88)	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Screened Length (feet)	Screen Top Elevation (feet NAVD88)	Screen Bottom Elevation (feet NAVD88)
Resource Protection Monitoring Wells									
Eastside Fire & Rescue Headquarters Source Area									
NWN-MW01	---	Eastside Fire & Rescue	90.93	90.69	15	30	15	75.69	60.69
NWN-MW02	---	Eastside Fire & Rescue	90.04	89.84	15	30	15	74.84	59.84
NWN-MW03	---	Eastside Fire & Rescue	91.60	91.35	15	30	15	76.35	61.35
NWN-MW04	---	Eastside Fire & Rescue	90.68	90.41	13	23	10	77.41	67.41
NWN-MW05	---	Eastside Fire & Rescue	90.65	90.34	7	17	10	83.34	73.34
NWN-MW06	---	Eastside Fire & Rescue	91.19	90.98	15	25	10	75.98	65.98
NWN-MW07	---	Eastside Fire & Rescue	91.28	90.89	16.5	26.5	10	74.39	64.39
NWN-MW08	---	Eastside Fire & Rescue	90.37	89.95	70	80	10	19.95	9.95
NWN-MW09	---	Eastside Fire & Rescue	91.63	91.29	45	50	5	46.29	41.29
NWN-MW10	---	Eastside Fire & Rescue	91.04	90.66	10	25	15	80.66	65.66
NWN-MW12	---	Eastside Fire & Rescue	91.04	90.56	8	23	15	82.56	67.56
NWN-MW13	---	Eastside Fire & Rescue	90.28	89.80	3	18	15	86.80	71.80
NWN-MW14	---	Eastside Fire & Rescue	91.01	90.68	8	23	15	82.68	67.68
NWN-MW15	---	Eastside Fire & Rescue	90.77	90.37	15	30	15	75.37	60.37
NWN-MW16	---	Eastside Fire & Rescue	90.87	90.55	15	30	15	75.55	60.55
NWN-MW17	---	Eastside Fire & Rescue	91.04	90.74	10	25	15	80.74	65.74
NWN-PZ01	---	Eastside Fire & Rescue	91.20	90.76	20	30	10	70.76	60.76
NWN-PZ02	---	Eastside Fire & Rescue	90.99	90.44	20	30	10	70.44	60.44

NOTES:
— denotes not applicable.
[1]TOC elevation calculated by Geosyntec, 2016

bgs = below ground surface
NAVD88 = North American Vertical Datum of 1988
NM = not measured

APPENDIX A
FARALLON STANDARD OPERATING PROCEDURES

COMPLIANCE MONITORING PLAN
Eastside Fire and Rescue Headquarters Source Area
175 Newport Way Northwest
Issaquah, Washington

Farallon PN: 1745-009

STANDARD OPERATING PROCEDURE GW-03
GROUNDWATER LEVEL MEASUREMENT IN MONITORING WELLS

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for measuring and documenting the depth to groundwater in monitoring wells. The step-by-step guidelines provided in this SOP are to be followed by the field crew to ensure consistent and representative measurements of depth to groundwater in monitoring wells. When multiple wells are present at a site, all water-level measurements typically are taken as quickly as possible to aid in the creation of potentiometric surface maps that are representative of a "single" point in time.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly measure the depth to groundwater in monitoring wells:

- Monitoring well key, hand drill, socket set, Allen wrench, speed handle, padlock key, or other monitoring well-access equipment specific to the monitoring well monument cover plate.
- Electronic water-level meter (Solinst or equivalent) narrow enough to fit in the monitoring well, calibrated to 0.01 foot, with sufficient line to reach the bottom of the monitoring well.
- Oil-water interface probe, if light nonaqueous-phase liquid (LNAPL) is known or suspected to be present.
- Disposable bailer if LNAPL is known or suspected to be present, and the Project Manager requests that LNAPL be bailed from the well.
- Tape measure.
- Materials necessary to provide required documentation, including Groundwater Level Measurement Summary Forms and Field Report forms.
- Personal protective equipment as described in the site-specific Health and Safety Plan.
- Decontamination equipment as specified in Farallon SOP EQ-01, Equipment Decontamination Procedures.

DECONTAMINATION

Before arrival at the site, upon relocation at the site, and upon demobilization from the site, decontaminate equipment that will come into contact with groundwater, in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures.

PROCEDURES

Follow the instructions below for measuring water levels at each monitoring well:

- Don appropriate personal protective equipment as described in the site-specific Health and Safety Plan.
- Check the operation of the water-level meter by turning on the indicator switch and pressing the test button.
- Remove soil or vegetation from the monitoring well site.
- Open the monitoring well-head enclosure, and use a bilge pump or cup to remove standing water inside the monitoring well monument before opening the monitoring well cap. Dispose of standing water to the ground surface.
- Open the monitoring well cap.
- Monitor air quality at the monitoring well-head if volatile contaminants are suspected to be present, or if it is unknown whether volatile contaminants are present.
- Repeat above procedure until all monitoring wells are open.
- Allow the water level to equilibrate with ambient atmospheric pressure for approximately 15 minutes before measuring.
- Before taking any measurements, carefully measure the length of the sonde to the nearest 0.01 foot. The additional 2 to 3 inches from the zero point of the sonde to the tip of the sonde **must be discounted** for **all** total depth measurements.
- Measure and record the depth to water using a water-level meter that has been decontaminated in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures. With the water-level meter turned on to a medium level of sensitivity, slowly lower the meter into the monitoring well casing until it reaches the groundwater table. The probe will beep when it reaches the interface of the groundwater table (when the electronic circuit is first completed). Stop lowering the probe, hold the graduated water-level cable to the notch or mark on the northern side of the top of the monitoring well casing, and note the length measurement. Repeat this process to collect a second water-level measurement. If the two readings differ by more than 0.01 foot, repeat the measurements until the readings stabilize. Repeat the process until three consecutive stabilized readings have been measured. Record the water-level measurement **only** in relation to the probe being lowered into the monitoring well, *not* as it is raised out of the monitoring well. If you cannot see the top of the monitoring well casing when the water level beeps, grasp the tape with your thumb and index finger exactly at the measuring point corresponding with the notch or mark at the top of the monitoring well casing. Slowly pull the cable out of the monitoring well and read the measurement. Repeat until readings stabilize.
- Remove the cable from the monitoring well, and record the stabilized depth-to-water measurement on the Groundwater Level Measurement Summary Form to the nearest 0.01 foot.

- Measure the total monitoring well depth. **NOTE:** If groundwater samples are to be collected, measure the total monitoring well depth **after** all groundwater samples have been collected, to avoid resuspension of settled solids in the monitoring well, impacting the samples. If the monitoring well does not have a dedicated pump, lower the water-level indicator probe to the bottom of the monitoring well to measure the total depth of the monitoring well. Gently bounce the probe on the monitoring well bottom, and pull the slack in the cord to read the total monitoring well depth. Repeat three times to ensure that the monitoring well depth measurement is reproducible, and is representative of the true depth. Note on the Groundwater Level Measurement Summary Form whether the bottom of the monitoring well is hard or soft.
- Remove the cable from the monitoring well, and record the monitoring well depth measurement on the Groundwater Level Measurement Summary Form to the nearest 0.01 foot.
- Decontaminate the water-level meter in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures.
- If the presence of LNAPL is suspected or if site conditions are unknown, check for the presence of LNAPL by one of two methods:
    - Use of a bailer: Use a new 3-foot-long disposable bailer attached to a nylon rope. Slowly lower the bailer until the bottom of the bailer is approximately 2 feet below the water surface. Slowly retrieve the bailer, and measure the product thickness using a tape measure. Record the information on the Groundwater Level Measurement Summary Form. Dispose of the bailer and product or wastewater in accordance with Farallon SOP WM-01, Field Handling of Investigation-Derived Waste.
    - Use of an oil-water interface probe: Decontaminate the oil-water interface probe in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures. With the oil-water interface probe meter turned on to a medium level of sensitivity, slowly lower the probe into the monitoring well casing until it reaches the top of the LNAPL. The probe will have a steady beep when it reaches the interface of the LNAPL (when the electronic circuit is first completed). Stop lowering the probe, hold the graduated oil-water interface cable to the notch or mark on the northern side of the top of the monitoring well casing, and note the length measurement. Repeat this process to collect a second LNAPL measurement. If the two readings differ by more than 0.01 foot, repeat the measurements until the readings stabilize. Repeat the process until three consecutive stabilized readings have been measured. Record the depth to LNAPL measurement **only** in relation to the probe being lowered into the monitoring well, *not* as it is raised out of the monitoring well. If you cannot see the top of the monitoring well casing when the oil-water interface probe beeps, grasp the tape with your thumb and index finger exactly at the measuring point corresponding with the notch or mark at the top of the monitoring well casing. Slowly pull the cable out of the monitoring well and read the

measurement. Repeat until readings stabilize. Once the depth to LNAPL has been recorded, collect the water-level measurement as described above using the oil-water interface probe. Once the depth to LNAPL and the depth to the groundwater table have been determined, subtract the depth to LNAPL from the depth to the groundwater table to determine LNAPL thickness.

- Close the monitoring well as appropriate based on monitoring well-head construction. Record any concerns about monitoring well integrity on the Groundwater Level Measurement Summary Form and on the Field Report form.

DOCUMENTATION

Document monitoring well water-level measurements on the Groundwater Level Measurement Summary Form. Document any additional information on the Field Report form.

REFERENCE

U.S. Environmental Protection Agency. 1992. *RCRA Ground-Water Monitoring: Draft Technical Guidance.* Office of Solid Waste. November.

STANDARD OPERATING PROCEDURE GW-04
LOW-FLOW GROUNDWATER SAMPLING PROCEDURES

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for collecting and documenting groundwater samples from monitoring wells using U.S. Environmental Protection Agency (EPA) low-flow groundwater sampling procedures (EPA 1996, 2017) for chemical analysis to ensure consistent and representative sampling. The step-by-step guidelines provided in this SOP are to be followed by the field crew conducting groundwater sampling.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly purge and sample a monitoring well:

- Monitoring well key, hand drill, socket set, padlock key, or other monitoring well-access equipment.
- Electronic water-level meter long enough to reach the bottom of the monitoring well, calibrated to 0.01 foot. Alternatively, to measure for light nonaqueous-phase liquid thickness in addition to groundwater, use an oil-water interface probe.
- Monitoring well purging and sampling equipment:
    - Submersible pump (bladder or Grundfos): the pump, control box, and power source (typically a portable generator or a 12-volt battery); or
    - Peristaltic pump: the pump with pump head, silicone tubing, tubing connectors (as needed), and power source (typically a 12-volt battery).
- Sample tubing of project- and site-specific type and length.
- Bailer, if a pump is not used, or if light nonaqueous-phase liquid requires removal.
- Sufficient number of 55-gallon drums, including lids, gaskets, and fasteners, to contain all purge water, unless other water-handling arrangements have been made.
- Flow-through water-quality meter(s) to measure temperature, pH, specific conductivity, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity.
- Air-space monitoring equipment if required (photoionization detector or multi-gas meter).
- Decontamination equipment and supplies (e.g., buckets, scrub brushes, deionized or distilled water, potable water, Liquinox detergent).
- Materials necessary to provide required documentation, (e.g., sample labels, Field Report forms, Low-Flow Well Purging and Sampling Data form, Chain of Custody form, Waste Inventory Tracking Sheet).

- Sample containers with the chemical preservatives appropriate for the samples, as described in project-specific plans, or as required by the analytical laboratory at a minimum.
- Personal protective equipment as described in the site-specific Health and Safety Plan (HASP).
- Sampling-support equipment (e.g., sample coolers, ice, bubble wrap, clear tape, duct tape, resealable plastic bags, garbage bags, paper towels, distilled water, nitrile gloves, shipping supplies).
- U.S. Department of Transportation-approved drum(s) for purge water, unless other water-handling arrangements have been made. Separate drums are needed for liquid and solid wastes (Refer to Farallon SOP WM-01, Field Handling of Investigation-Derived Waste). Liquid wastes should not be added to drums containing solid wastes.

DECONTAMINATION

Before arrival at the site, upon relocation at the site, and upon demobilization from the site, decontaminate reusable equipment that will come into contact with the monitoring well(s) and/or be used to acquire samples, in accordance with Farallon SOP EQ-01, Equipment Decontamination Procedures.

PROCEDURES FOR LOW-FLOW GROUNDWATER SAMPLING

Low-flow groundwater sampling procedures have been developed for monitoring wells with a dedicated pump (dedicated monitoring wells) and for monitoring wells without a dedicated pump (non-dedicated monitoring wells). Setup, purging, sample collection, and post-sampling procedures for dedicated and non-dedicated monitoring wells are presented below.

Setup

Setup procedures differ slightly for dedicated versus non-dedicated monitoring wells. Follow the instructions below for the monitoring wells as indicated:

- Calibrate the water-quality meter for the field parameters specified in the project-specific plans. At a minimum, collect temperature, pH, and specific conductivity during purging and prior to sampling. Record on the Field Report form the equipment calibration and maintenance performed. Decontaminate the water-quality meter between monitoring wells by rinsing with distilled or deionized water. Manage the rinsate water used in collecting these measurements in the same manner as for purge water, as defined in project-specific plans, and in accordance with Farallon SOP WM-01, Field Handling of Investigation-Derived Waste.
- Don appropriate personal protective equipment as described in the site-specific HASP, including nitrile gloves for activities that might involve contact with groundwater or equipment. Change gloves between each monitoring well at a minimum, or when

contaminants could be introduced into a monitoring well or onto decontaminated equipment.

- Brush away soil and/or vegetation, and pump standing water away from the monitoring well opening. If necessary, place a plastic drop cloth around the monitoring well-head to prevent sampling equipment from contacting the ground surface.
- Inspect the condition of the monitoring well (e.g., locked monitoring well cap, tightness of monitoring well cap, well-marked measuring point on casing, disturbance of surface casing, straightness of monitoring well casing, condition of concrete pad). Indicate the monitoring well condition on the Low-Flow Well Purging and Sampling Data form.
- Open the monitoring well cap. If the site-specific HASP identifies organic compounds as potential contaminants of concern, screen the monitoring well headspace and the breathing zone headspace (if specified in the HASP) for organic vapors using the appropriate field monitoring instrument (e.g., photoionization detector, multi-gas meter).
- Measure and record the depth to water using a decontaminated water-level meter in accordance with Farallon SOP GW-03, Groundwater Level Measurements in Monitoring Wells.
- If light nonaqueous-phase liquid may be present (see site-specific plans), obtain a sample from the monitoring well using a bailer (if a dedicated pump is not in use), as specified in Farallon SOP GW-03, Groundwater Level Measurements in Monitoring Wells. Alternatively, measure free-floating product thickness using an oil-water interface probe.
- Calculate the monitoring well casing volume as follows:

  Monitoring well casing volume in gallons = $(\pi * r^2) * h$(7.48 gallons/cubic foot)

  Where:

  r = radius of the inside of the monitoring well casing in feet

  h = length of the water column in the monitoring well casing (i.e., the depth to the bottom of the monitoring well minus the depth to water, both measured from the mark at the top of the monitoring well casing), in feet

- **For monitoring wells with dedicated pumps and tubing**: Set up a flow-through cell in preparation for purging. Connect dedicated tubing from the monitoring well to the flow-through cell. Set tubing and/or pump to the correct water depth in accordance with the constituents being sampled for, as described in project-specific plans. **DO NOT IMMERSE water-quality probes or meters in purge water containing nonaqueous-phase liquids, which could damage the probes.** Turn the pump controller to its lowest setting, set the memory in the flow-through cell to record readings every 3 minutes, and turn on the pump. Begin purging slowly (i.e., less than 500 milliliters per minute [ml/min]) to prevent drawing down the water table.

- **For monitoring wells with non-dedicated pumps**: Connect dedicated silicon tubing to the peristaltic pump. Place the tubing intake at the midpoint of the screen, or at the depth pre-determined in the project-specific plans. If using a bladder pump, insert the bladder pump and attach the dedicated polyethylene tubing so the pump intake is at the approximate midpoint of the screened interval, or set the pump intake to the depth pre-determined in the project-specific plans.

Purging Procedures

The purging instructions below are to be followed for dedicated and non-dedicated monitoring wells:

- Begin purging, and initiate water-quality testing for temperature, pH, specific conductivity, dissolved oxygen, ORP, and turbidity. Purge monitoring wells using a peristaltic or bladder pump, and dedicated polyethylene and silicon tubing. Record water-quality parameters every 3 minutes.
- Record water levels every 3 minutes, as possible. It is imperative that the water level not drop by more than 0.33 foot during the low-flow purging process. If the water level drops more than 0.33 foot during purging, reduce the flow rate on the pump. Recommended purge rates generally are less than 500 ml/min. Actual purge rates will vary based on aquifer material and monitoring well construction. If the water level continues to drop by more than 0.33 foot during the low-flow purging at a rate less than 100 ml/min, notify and consult with the Project Manager on how to proceed.
- Record flow rates every 3 minutes. Ensure that the flow rate does not exceed 500 ml/min during the low-flow purging process.

Purging Requirements

Continue purging at a constant rate until the water-quality parameters have stabilized for three successive measurements according to the stability criteria provided in the table below. Before samples can be collected from each monitoring well, the groundwater must stabilize according to following criteria:

- Drawdown is no greater than 0.33 foot for low-flow sampling, and
- The water-quality parameters should stabilize according to the criteria specified below:

Water-Quality Parameter	Stability Criterion
Turbidity (if required)	10% for values greater than 5 NTU or three consecutive values < 5 NTU
Dissolved oxygen	10% for values greater than 0.5 mg/l, or three consecutive values <0.5 mg/l
Specific conductivity	3%
Oxidation-reduction potential	+/- 10 millivolts
pH	+/- 0.1 unit
Temperature	3%

Notes:
mg/l = milligrams per liter
NTU = nephelometric turbidity unit

Although under some circumstances, a monitoring well may not stabilize according to the above criteria, the monitoring well can still be sampled if the monitoring well does not meet stability criteria due to the instrument accuracy, or the water level drops below the minimum value using low-flow sampling procedures. For example, a fluctuation in ORP greater than 10 millivolts does not meet the stability criterion. However, because the accuracy range of the ORP instrument is ±20 millivolt, the stability criterion would be considered satisfied and within the range of instrument accuracy. Consult the manual for the instrument to determine the accuracy range.

Also, if the water level drops below the minimum value using low-flow sampling procedures (i.e., the pump intake, or the top of the screen if the aquifer is confined) during purging and one monitoring well volume of groundwater has been removed from the monitoring well, or the monitoring well runs dry during the purging procedure, sample the monitoring well as soon as the water level has recovered sufficiently to allow collection of the volume of groundwater necessary for all samples. Use the following equation to determine the minimum volume of groundwater to remove before sampling:

Minimum purge volume = 2*[500 milliliters + M*(length of tubing in feet)]

Where: M = volume (in milliliters) contained in a 1-foot length of tubing

The value of M is provided below for the inner diameters of tubing listed:

Inner Diameter (inches)	M (milliliters)
0.125	2.4
0.25	9.7
0.5	39

Record on the Field Report form and the Low-Flow Well Purging and Sampling Data form if any monitoring well did not meet the drawdown and stability criteria and explain the rationale for sampling the monitoring well at the time it was sampled. If stability criteria have not been achieved following completion of all entries in the Low-Flow Well Purging and Sampling Data form, notify

and consult with the Project Manager whether to continue purging until stability criteria have been achieved or begin sample collection.

Sample Collection

During low-flow sampling, do not stop pumping once the purging requirements have been met. Turn down the flow rate on the pump so the water flow is minimal, but maintain sufficient pressure in the system to prevent water from the tubing or flow-through cell from flowing back into the monitoring well. Disconnect the pump discharge hose from the flow-through cell, or cut the tubing just before the connection to the flow-through cell. It is imperative not to lower the water table or disturb the water column. Fill pre-cleaned laboratory-supplied sample containers directly from the pump discharge tube into the proper sample container, and fill to capacity. Place a bucket beneath the sampling tube to catch any unsampled water between filling the sample jars. When collecting groundwater samples for multiple analyses, collect the samples in the order listed below per the EPA (1992) groundwater sampling technical guidance:

- Volatile organic compounds (VOCs);
- Dissolved gases and total organic carbon;
- Semivolatile organic compounds;
- Metals and cyanide;
- Major water quality cations and anions;
- Radionuclides; and
- Dissolved (filtered) inorganics (if required).

When collecting samples for VOCs, adjust the flow rate as low as possible without introducing air bubbles into the system. When filling the VOC containers, hold the cap in hand to minimize contamination, and direct the flow from the pump discharge tubing down the side of the sample container to minimize aeration. Fill all VOC sample containers to the top, ensuring a positive meniscus when the cap is screwed down on the container. Tap the filled VOC container, and invert several times to ensure no air bubbles are present in the sample container. If an air bubble is present, the VOC sample must be recollected using a fresh VOC sample container. If sampling for other analytes, the flow rate may be increased.

If dissolved inorganics are required, attach a new disposable 0.45-micrometer filter cartridge to the discharge line. Collect filtered samples last. Pre-rinse the disposable filter cartridges by running a minimum of 0.25 gallon of groundwater through them (collecting the groundwater into a waste bucket) prior to collecting the samples directly into the sample container. Alternate field filtration methods may be specified in the project-specific plans. Remove the pump and/or tubing from the monitoring well.

Post-Sampling

- Record the depth to water of well to determine whether the water level changed from the original reading.
- Close and lock the monitoring well or tap and record any monitoring well integrity concerns on the Field Report form and the Low-Flow Well Purging and Sampling Data form.
- Transfer purge, wash, and rinse water into a U.S. Department of Transportation-approved drum(s) and label. Separate drums are needed for liquid and solid wastes, in accordance with SOP WM-01, Field Handling of Investigation-Derived Waste. Do not add liquid wastes to drums containing solid wastes.

PROCEDURES FOR RECONNAISSANCE GROUNDWATER SAMPLING

Collect reconnaissance groundwater samples from borings using direct-push or hollow-stem auger drilling methods and 0.75- or 2-inch-inside-diameter temporary monitoring well casing and 0.010-inch slotted screen. In some cases, alternate well casing diameters or screen slot sizes may be appropriate based on the drilling equipment or project-specific requirements. Follow the instructions below for reconnaissance groundwater sample collection:

- Withdraw the drill casing when the desired sampling depth has been reached, so the temporary monitoring well screen is exposed to water-bearing material.
- Insert disposable polyethylene tubing to the approximate midpoint of the temporary monitoring well screen. Attach the appropriate length of pre-cleaned disposable silicon tubing from the polyethylene tubing to connect with the peristaltic or bladder pump.
- Set up the peristaltic or bladder pump in preparation for purging. Turn the pump to its lowest setting and turn on the pump. Begin purging slowly to prevent drawing down the water table.
- Purge each temporary monitoring well point using a peristaltic or bladder pump until visual turbidity is as low as possible, or until the temporary monitoring well is purged dry of water.
- Purge a minimum of 1 to 2 liters before sample collection, if possible. If the temporary monitoring well is completely dewatered during purging, collect samples when sufficient recharge has occurred to allow filling of the sample containers.
- Slow the pumping rate to less than 500 ml/min to reduce the potential for volatilization of chemicals during sample collection.
- Collect the sample as described above.
- If insufficient groundwater is available to collect a sample using a peristaltic or bladder pump (i.e., the boring pumps dry or cannot maintain a sufficient flow of less than 100 ml/min) or if the depth to groundwater exceeds the maximum practicable limit for sampling using a peristaltic or bladder pump, use a disposable polyethylene bailer lowered

into the monitoring well screen to collect a groundwater sample from the screened interval, if possible.

DOCUMENTATION

Document the monitoring well purging and sampling activities on the Low-Flow Well Purging and Sampling Data form and on the Field Report form. Track samples on a Chain of Custody form. Track waste generated during groundwater sampling on a Waste Inventory Tracking Sheet.

REFERENCES

U.S. Environmental Protection Agency (EPA). 1992. *RCRA Ground-Water Monitoring: Draft Technical Guidance.* Office of Solid Waste. November.

———. 1996. *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures.* EPA/540/S-95/504. April.

———. 2017. *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells.* EQASOP-GW4. September.

APPENDIX I
PRELIMINARY PROJECT SCHEDULE

INTERIM ACTION WORK PLAN
Eastside Fire and Rescue Headquarters and Issaquah Valley Elementary School Site
175 Newport Way Northwest and 555 Northwest Holly Street
Issaquah, Washington

Farallon PN: 1754-009

EFR HQ IVES Site - Preliminary Interim Action Schedule
Draft - Issued for Agency Review

Task Name	Start	Finish	Schedule Notes	% Complete	Status
Current Date	09/26/25	09/26/25			
Grant Execution	01/22/25	02/21/25		100%	Complete
Final Grant Execution	01/22/25	01/22/25		100%	
Submit previous costs	01/23/25	02/21/25		100%	
AO Execution	01/21/25	02/24/25		100%	Complete
City Council Meeting	01/21/25	01/21/25		100%	
EFR Board Meeting	02/13/25	02/13/25		100%	
Final AO Execution	02/24/25	02/24/25		100%	
IAWP	02/25/25	01/03/26		74%	In Progress
Draft Outline	02/25/25	03/03/25		100%	Complete
Draft Annotated Outline	03/04/25	03/20/25	PLP Extension - Original Schedule 3/13/25	100%	Complete
Ecology Review of Annotated Outline	03/21/25	04/16/25	Ecology Extension - Original Schedule 4/3/25	100%	Complete
Agency Review Draft IAWP	04/17/25	06/15/25	Deviation - Ecology requested IAWP be submitted concurrently with RIWP.	100%	Complete
Ecology Review	06/16/25	08/08/25	Ecology Extension - Original Schedule 7/30/25	100%	Complete
Public Review Draft IAWP	08/09/25	09/26/25		100%	Complete
Ecology Public Comment Period	10/20/25	11/19/25		0%	
Final IAWP	11/20/25	01/03/26		0%	
SEPA Compliance & Construction Contractor Competitive Bid	11/20/25	04/03/26		0%	Not Started
Draft SEPA Checklist	11/20/25	12/04/25	Deviation - Performed ahead of schedule to meet public comment period.	0%	In Progress
Ecology Review	12/05/25	01/18/26		0%	
Final SEPA Checklist	01/19/26	01/25/26		0%	
UIC Permit Application	11/20/25	12/04/25		0%	
UIC Permit Application Due to EAGL	12/05/25	12/11/25		0%	
UIC TAT	12/05/25	04/03/26		0%	
Site Work Permit Application to City of Issaquah	11/20/25	12/04/25		0%	
Site Work Permit Application Due to EAGL	12/05/25	12/11/25		0%	
EFR Competitive Bid Process	01/04/26	02/17/26		0%	
Draft Competitive Bid Process Summary Due to EAGL	02/18/26	03/04/26		0%	
Final Competitive Bid Process Summary Due to EAGL	03/05/26	03/11/26		0%	
Interim Action	04/04/26	05/30/27		0%	Not Started
PRB Injections	04/04/26	05/03/26		0%	
Soil Excavation and In-situ Stabilization	09/01/26	09/30/26		0%	
Compliance Monitoring Well Installation	10/01/26	10/15/26		0%	
Compliance Groundwater Monitoring Event	01/04/27	01/05/27			
Laboratory TAT for Groundwater Results	01/06/27	01/20/27			
Lab Reports Due to EAGL	01/21/27	01/27/27		0%	
Draft Data Tables and Figures Due to EAGL	01/28/27	03/13/27		0%	
Compliance Groundwater Monitoring Event	04/06/27	04/07/27			
Laboratory TAT for Groundwater Results	04/08/27	04/08/27			
Lab Reports Due to EAGL	04/09/27	04/15/27			
Draft Data Tables and Figures Due to EAGL	04/16/27	05/30/27			
Interim Action Report	04/09/27	09/20/27		0%	Not Started
Agency Review Draft Interim Action Report	04/09/27	06/07/27		0%	
Ecology Review	06/08/27	07/22/27		0%	
Final Interim Action Report	07/23/27	08/21/27		0%	
EIM Data Submittal	08/22/27	09/20/27			

