

**PER- AND POLYFLUOROALKYL SUBSTANCES
PHASE I REMEDIAL INVESTIGATION REPORT**

FAIRCHILD AIR FORCE BASE, WASHINGTON

FINAL



**U.S. Air Force
Civil Engineer Center**



**U.S. Army Corps of Engineers
Seattle District**

August 2025

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Final

**Per- and Polyfluoroalkyl Substances
Phase I Remedial Investigation Report**

**Fairchild Air Force Base
Spokane County, Washington**

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Contract No. W912DQ-17-D-3015, Task Order No. W912DW20F2055
EA Project No. 63296-05-2055-LS

August 2025

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LIST OF ACRONYMS AND ABBREVIATIONS

AFCEC	Air Force Civil Engineering Center
AFFF	Aqueous Film Forming Foam
Amec	Amec Foster Wheeler
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CPS	Counts per second
CSM	Conceptual site model
CSEM	Conceptual site exposure model
Cw	Porewater concentration
DO	Delivery Order
DoD	Department of Defense
DOE	Department of Energy
DWPS	Drinking Water Protection Study
EA	EA Engineering, Science, and Technology, Inc., PBC
ECF	Electrochemical Fluorination
EPA	U.S. Environmental Protection Agency
ERPIMS	Environmental Resources Program Information Management Systems
FAFB	Fairchild Air Force Base
FFA	Federal Facilities Agreement
FOSA	Perfluorooctane sulfonamide
FTA	Fire Training Area
FTOH	Fluorotelomer alcohols
FTS	Fluorotelomer Sulfonate
Gen X	hexafluoropropylene oxide dimer acid
GPS	Global positioning system
GW	Groundwater
HA	Health Advisory
ID	Identification
IDW	Investigation derived waste
IRP	Installation Restoration Program
Kd (Kf)	Solid phase partitioning
Kow	Octanol-Water Partition Coefficient
LC-MS/MS	Liquid Chromatography- Mass Spectrometry/Mass Spectrometry
LHA	Lifetime Health Advisory

MCL	Maximum contaminant level
MDL	Method detection limit
mg/kg	Micrograms per kilogram
MW	Monitoring Well
ng/L	Nanogram per liter
No.	Number
PA	Preliminary Assessment
PBC	Public Benefit Corporation
PDT	Project Delivery Team
PFAA	Perfluoroalkyl acids
PFAS	Per- and polyfluoroalkyl substances
PFBA	Perfluorobutanoic acid
PFBS	Perfluorobutanesulfonic acid
PFHxA	Perfluorohexanoic acid
PFHxS	Perfluorohexane sulfonate
PFDA	perfluorodecanoic acid
PFNA	Perfluorononanoic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PFPrA	perfluoropropanoic acid
PSL	Project screening level
PQL	Practical Quantitation Limit
PVC	Polyvinyl chloride
PWS	Performance Work Statement
QA	Quality assurance
QAPP	Quality Assurance Project Plan
QC	Quality control
QSM	Quality Systems Manual
RI	Remedial Investigation
RSL	Regional Screening Level
SI	Site Inspection
SOP	Standard operating procedure
SPLP	Synthetic Precipitation Leaching Procedure
SW	Surface water
T	Transmissivity
TCE	Trichloroethene
TCRA	Time Critical Removal Action
TFSI	bis(trifluoromethylsulfonyl)amine
THQ	Target hazard quotient
TOC	Total organic carbon

UFP	United States Uniform Federal Policy
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
µg/L	Micrograms per liter

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1. INTRODUCTION

1.1 AUTHORITY

The Phase I Remedial Investigation (RI), including preparation of this report, was completed by EA Engineering, Science, and Technology, Inc. (EA), a Public Benefit Corporation (PBC) for the U.S. Army Corps of Engineers (USACE), Seattle District, under Contract Number (No.) W912DQ-17-D-3015, Delivery Order (DO) No. W912DW20F2055, in accordance with the Performance Work Statement (PWS) amended 29 December 2023. The work was executed in accordance with the Uniform Federal Policy (UFP)-Quality Assurance Project Plan (QAPP) dated 30 June 2021 (USACE 2021), Addendum 1 UFP-QAPP dated October 2022 (USACE 2022), and Addendum 2 UFP-QAPP dated June 2024 (USACE 2024). This Phase I RI was completed following the U.S. Environmental Protection Agency (EPA) *Guidance for Conducting Remedial Investigations and Feasibility Studies Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* (EPA 1988).

1.2 PURPOSE AND SCOPE

The work conducted for the Phase I RI had the following primary objectives:

- Determine the nature and extent of Per- and polyfluoroalkyl substances (PFAS) contamination at Sites FT004P, RS003P, SS008P, RS002P, and RS001P at Fairchild Air Force Base (FAFB) from past Aqueous Film-Forming Foam (AFFF) releases
- Determine the nature and extent of PFAS contamination at a secondary release area, identified as No Named Ditch
- Determine the nature and extent of PFAS contamination in groundwater both on and off base
- Develop and/or update the conceptual site model (CSM) based on the collected data.

The Phase I RI did not include human health or ecological risk assessment. Subsequent RI efforts will consist of additional sampling and analysis to quantify human health and ecological risks, per the PWS. The five Installation Restoration Program (IRP) sites, which are the focus of this Phase I RI, are identified as follows:

IRP Site ID	AFFF Area Number	Site Name
FT004P	AFFF Area 1	FTA FT-01
RS003P	AFFF Area 2	Calibration Area
SS008P	AFFF Area 3	KC-135 Aircraft Crash
RS002P	AFFF Area 4	1992 B-52 Crash
RS001P	AFFF Area 5	Fire Station 1 (Building 3)

Notes:

AFFF = Aqueous Film Forming Foam

FTA = Fire Training Area

ID = identification

Phase I RI activities included review of records, collection of on- and off-base groundwater samples from existing wells, completion of soil borings, installation of monitoring wells, geophysical well logging, flow-meter logging, installation of transducers for collection of groundwater elevation data, and collection and analysis of surface and subsurface soil, sediment, surface water, and groundwater samples.

This Phase I RI report presents installation and site background, describes the physical study area characteristics, documents the completed field activities, presents laboratory analytical results, and describes the nature and extent of contamination. An evaluation of contaminant fate and transport is included, providing key elements of the CSM. Potential exposure pathways and receptors are presented, including a conceptual site exposure model (CSEM), to provide scoping information for future human health and ecological risk assessment.

1.3 PROJECT OBJECTIVES

As discussed in the UFP-QAPP Worksheet #11 Project/Data Quality Objectives (USACE 2021), the Phase I RI had the following project goals:

- Develop and continually refine a CSM to acquire a holistic understanding of the PFAS release(s)
- Assess the nature and extent of PFAS of interest in regional groundwater at and surrounding FAFB
- Assess the nature and extent of PFAS of interest in soils at the five known AFFF release areas
- Assess the source strength of residual soil contamination within unsaturated source zones
- Assess if secondary releases occurred from two trichloroethene (TCE) treatment systems downgradient of FT004
- Determine the groundwater potentiometric surface configuration at various times of the year to allow for an evaluation of groundwater-flow directions
- Determine if surface conveyance of stormwater is resulting in transport of PFAS off base
- Identify potential exposure pathways and receptors
- Identify remaining data gaps and recommend additional characterization on follow-up RI efforts

1.4 PFAS OVERVIEW

PFAS are a large class of chemicals found in many consumer products as well as in industrial products, including firefighting agents, such as AFFF. There is significant attention on PFAS releases from Department of Defense (DoD) activities and potential for adverse impacts to human health and the environment. Certain DoD operations and firefighting activities have the potential to release PFAS-containing materials to the environment. When released into the environment, PFAS can enter the soil, leach into and migrate in groundwater, or be transported in surface water (including lakes and rivers) from interactions with shallow groundwater or

overland runoff. In some cases, these surface and groundwater resources serve as sources of drinking water for individuals (private water wells) or a municipality. DoD follows federal CERCLA requirements for the investigation and cleanup of PFAS releases resulting from DoD activities.

1.5 PROJECT BACKGROUND

The purpose of the original Phase I RI scope was to evaluate the nature and extent of contaminated soil and groundwater at five AFFF release sites and to evaluate on and off base groundwater. The original project UFP-QAPP (USACE 2021) was published in June 2021. The scope was then expanded to include the investigation of secondary release areas (i.e., No Name Ditch and the Flowage Easement) and delineate the extent of off-base stormwater conveyances. A UFP-QAPP Addendum 1 (USACE 2022) was published in October 2022 detailing sampling locations for an initial investigation of No Name Ditch requested by Air Force Civil Engineering Center (AFCEC). A UFP-QAPP Addendum 2 (USACE 2024) was published in June 2024 in response to the adjustment of revised project screening levels (PSLs) (see Section 1.6 for further details) and detailing an additional No Name Ditch and flowage easement investigation requested by USACE.

The short timeframe between the significant reduction in PSLs (see Section 1.6) and the end of the contract (a duration slightly more than 1 year), under which this work is being conducted, limited the ability of this Phase I RI to assess the full nature and extent of PFAS under the revised PSLs. Additional investigation will be necessary to delineate soil and groundwater above the PSLs (or potential new PSLs derived from the January 2025 DoD guidance) for PFAS in soil, groundwater, sediment and surface water. To that end, **Section 10** of this report provides a discussion of data gaps related to this investigation's limitations to aid in the evaluation of additional work needed to complete a Phase I RI.

The Phase I RI is considered the first step to completing the RI process for PFAS impacts resulting from AFFF releases at FAFB. It is expected that data gaps will remain as PFAS science, regulations and DoD policies evolve. Additional phases, as needed, will be added as additional sites are validated under the IRP, decisions are made regarding data gaps, and funding is available.

1.6 PROJECT SCREENING LEVELS

Per DoD policy, as EPA updates their Regional Screening Levels (RSLs), based on the most current toxicity values, the DoD evaluates and incorporates the updated RSLs into DoD investigations, as appropriate. Since the time of the original Phase I RI DO award in 2020, there have been several DoD policies issued via memoranda for PFAS investigation and cleanup. Specific to this investigation, DoD policy memoranda have been issued 15 October 2019, 15 September 2021, 6 July 2022, 24 August 2023, and 17 January 2025, which have generally referenced the EPA Regional Screening (RSL) updates in place at those times. The original UFP-QAPP (USACE 2021) developed PSLs under the guidance of the 2019 DoD Memorandum (DoD 2019a).

As documented in the UFP-QAPP Addendum 2 (USACE 2024), the PSLs for seven PFAS established for Phase I RI at FAFB were derived the 24 August 2023 DoD Memorandum (DoD 2023) in place at that time and the May 2023 EPA RSLs cited within the DoD memorandum. The UFP-QAPP Addendum 2 references the November 2023 EPA RSLs, which were published after the 24 August 2023 DoD Memorandum; the November 2023 EPA RSLs were unchanged from the May 2023 EPA RSLs for the project target analyte list and therefore provided the most recent EPA RSL reference at the time of UFP-QAPP Addendum 2 preparation. The 24 August 2023 DoD Memorandum remains the guiding document for the preparation of this Phase I RI Report.

Soil and sediment PSLs are based on the 24 August 2023 DoD Memorandum's screening levels for residential soil (target hazard quotient of 0.1) while groundwater and surface water PSLs are based on the 24 August 2023 DoD Memorandum's tap water screening levels, as established for the following PFAS: perfluorobutanesulfonic acid (PFBS), perfluorobutanoic acid (PFBA), perfluorohexanesulfonic acid (PFHxS), perfluorohexanoic acid (PFHxA), perfluorononanoic acid (PFNA), perfluorooctanesulfonic acid (PFOS), and perfluorooctanoic acid (PFOA). Given that 24 August 2023 DoD Memorandum is specific to residential soil and ground water used as tap water, the extension of these screening levels to other media of the same matrices (i.e., subsurface soil and sediment to residential soil, surface water to tap water) provides PSLs for these media for the purpose of delineation within the RI. The 24 August 2023 DoD Memorandum included a screening level for hexafluoropropylene oxide dimer acid (Gen X); however, the project scope did not include Gen X on the project target analyte list, so it was excluded from UFP-QAPP Addendum 2.

Analyte	Media	
	Water PSL (ng/L)	Soil/Sediment PSL (mg/kg)
PFBS	600	1.9
PFBA	1800	7.8
PFHxS	39	0.13
PFHxA	990	3.2
PFNA	5.9	0.019
PFOS	4	0.013
PFOA	6	0.019

Notes:

mg/kg = micrograms per kilogram

ng/L = nanogram per liter

Since DO modification and UFP-QAPP revision pre-date the DoD policy, issued on 1 May 2024, establishing the use of EPA Method 1633 for analysis of PFAS in matrices other than drinking water, PFAS analyses for the Phase I RI were conducted using liquid chromatography and tandem mass spectrometry (LC/MS/MS) following a modified version of drinking water Method 537.1. More information on laboratory analysis is provided in Section 6.

On 26 April 2024, EPA published their final drinking water regulation for PFAS, applying to public drinking water systems under the Safe Drinking Water Act. This rule established a

Maximum Contaminant Level (MCL) for certain PFAS. On 17 January 2025 the DoD published a policy memorandum (DoD 2025) for investigating PFAS within the DoD cleanup program incorporated the latest November 2024 EPA RSL update as well as the newly established MCLs for compounds with RSLs below the Method 1633 pooled method detection limit (MDL), if an MCL is available, or use of the pooled MDL if no MCL is available. The DoD screening levels in Attachment 1 of the memorandum are to be incorporated into future phases of investigation in this RI. The 17 January DoD Memorandum includes an RSL for perfluorodecanoic acid (PFDA), which is included in the project target analyte list, but for which project screening levels were not developed in UFP-QAPP Addendum 2. The 17 January DoD Memorandum includes RSLs for the following PFAS which are not on the project target analyte list: Gen X, bis(trifluoromethylsulfonyl)amine (TFSI), and perfluoropropanoic acid (PFPrA).

Following the release of the 17 January 2025 DoD Memorandum, the Project Delivery Team (PDT), including AFCEC and USACE representatives, decided to proceed with using the UFP-QAPP-established PSLs (based on the 24 August 2023 DoD Memorandum) for delineation of contaminant nature and extent during the Phase I RI. This decision was based on the relatively short remaining period of performance timeline and current limited RI scope, leaving the resolution of remaining data gaps to the subsequent RI phases, including selection of RI screening levels not defined in the 17 January 2025 DoD Memorandum.

1.7 REPORT ORGANIZATION

This Phase I RI follows the requirements and elements set forth in the EPA *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (1988).

This document is organized as follows:

- **Section 1, Introduction**—Describes the authority, purpose, scope, objectives, and report organization.
- **Section 2, Installation Background**—Describes the study area background and history.
- **Section 3, Site Background**—Describes the specific PFAS release sites and prior investigations into PFAS at FAFB.
- **Section 4, Physical Site Characteristics**—Provides information on the physical characteristics of the study area, including geology, groundwater, land use, and critical and endangered species.
- **Section 5, Phase I Remedial Investigation Activities**—Details the processes, procedures, and locations of field sampling activities.
- **Section 6, Laboratory Analytical Results**—Discusses the laboratory methods used, data validation processes, data quality and usability assessment, and provides a summary of the analytical results.
- **Section 7, Nature and Extent of Contamination**—Describes source areas and the nature and extent of contamination in the soil, sediment, groundwater, and surface water

- **Section 8, Contaminant Fate and Transport**—Evaluates the potential routes of migration, physicochemical properties of contaminants, and fate and transport.
- **Section 9, Potential Exposure Pathways and Receptors**—Evaluates sources, release mechanisms, exposure media and pathways, and receptors.
- **Section 10, Data Gaps and Recommendations**—Provides a summary of key findings, discusses remaining data gaps and provides recommendations for further action.
- **Section 11, References**—Provides references to documents used to create this report.
- **Appendix A.1. Field Book Scans**—Provides scans of field logbooks.
- **Appendix A.2. Data Quality Control Reports**—Provides data quality control (QC) reports generated from data validation.
- **Appendix A.3. Required Documents**—Provides permits and required documentation used in the performance of work.
- **Appendix A.4. Newly Installed Boring, Well Construction Logs, and Gamma Logs**—Provides boring logs generated during field activities and details on well construction for wells installed during this investigation.
- **Appendix A.5. Gamma Logs for Existing Wells**—Contains previous and new gamma logs for wells in the study area.
- **Appendix A.6. Aquifer Testing Summary and Data**—Provides a summary table that includes data from each slug test and data sheets for each successful slug tests.
- **Appendix A.7. Time Displacement Graphs for Unsuccessful Slug Tests**—Provides time displacement graphs for tests that did not provide useful data.
- **Appendix A.8. Soil Sample and Groundwater Grab Collection Forms**—Provides field data sheets for all soil and groundwater grab sampling events.
- **Appendix A.9. Surface Water and Sediment Collection Forms**—Provides field data sheets for sediment samples collected at No Name Ditch.
- **Appendix A.10. Well Development Logs**—Contains well development logs.
- **Appendix A.11. Survey Data**—Provides the surveyor's stamped final report.
- **Appendix A.12. Groundwater Sample Collection Forms**—Provides sample collection sheets completed during groundwater sampling.
- **Appendix A.13. Hydrographs**—Provides individual hydrographs based on transducer data.
- **Appendix A.14. Investigation Derived Waste Disposal Documentation**—Contains waste manifests and disposal documentation.

- **Appendix B.1. Lab Reports**—Provides complete laboratory data summary for each sample delivery group.
- **Appendix B.2. Data Quality Usability Assessment Report**—Provides the Data Quality Usability Assessment Report for analytical data generated during this investigation.

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2. INSTALLATION BACKGROUND

2.1 INSTALLATION DESCRIPTION

FAFB was constructed as a World War II repair and supply depot in the Pacific Northwest, 300 miles from the Pacific Ocean (**Figure 2-1**). In 1947, the installation was transferred to the Strategic Air Command and became the home of the 92nd Bombardment Wing. In 1994, the 92nd Bombardment Wing was redesignated as the 92nd Air Refueling Wing, and the base was transferred to the Air Mobility Command. Since then, it has provided air refueling and wing supporting contingency operations around the world. Today, it represents the backbone of the West Coast tanker fleet, operated by the U.S. Air Force (USAF).

2.2 INSTALLATION AFFF USAGE HISTORY

USAF began using AFFF for firefighting activities in 1970. The date FAFB began using AFFF containing PFAS has not been confirmed; however, previous investigations have established that AFFF containing PFAS was used for firefighting training activities, testing firefighting equipment, and extinguishing petroleum fires at FAFB. A total of 16 potential AFFF release areas were identified during the Preliminary Assessment (PA) research by CH2M Hill (CH2M Hill 2015). Through research and interviews with knowledgeable base personnel, 13 of these potential release areas were determined to be unlikely to have caused a release of AFFF to the environment and were not investigated as part of this Phase I RI. Three potential AFFF release areas were recommended by the PA for a Site Inspection (SI):

- Fire Training Area FT-01 (FT004P)
- Aircraft Crash Location SS008 (SS008P)
- B-52 Crash Location 1994 (RS002P)

Two potential AFFF release areas were also recommended for additional investigation based on SI findings.

- Calibration Area (RS003P)
- Fire Station 1 (Building 3) (RS001P)

These five sites were outlined for investigation in the Phase 1 RI by the PWS and are shown on **Figure 2-2**.

The transition away from PFAS-containing AFFF at FAFB is as follows:

- Fall 2016 – Benchstock C8 disposed of
- December 2016 – C8 removed from firetrucks (replaced with C6)
- February 2017 – C8 removed from firetrucks (replaced with C6)
- July 2018 – C8 drained from hangars/removed from base (replaced with C6)
- August 2018 – All C8 removed from base
- April 2022 – Benchstock C6 disposed of
- May 2022 – C6 removed from Hangar 1012/disposed of
- April 2023 – C6 removed from Building 2044/ disposed of

- June – July 2024 – C6 fire trucks – removed/disposed/phased
- September 2025 – estimated completion date for draining/disposal of 3 remaining hangars
- October 2025 – Project to have all C6 removed from base.

2.3 REGULATORY FRAMEWORK

FAFB's Installation Restoration Program is under a Federal Facilities Agreement (FFA) with the USAF, Washington State Department of Ecology (Ecology), and EPA Region 10 as parties to the FFA. The FFA outlines responsibilities of each of the entities party to the FFA and specifies schedules, including mandated deliverable review times for regulatory agencies, timeframes for USAF responses to review comments, and the completion of subsequent versions of deliverables.

Based on guidance from the 10 June 2016 memorandum from the Secretary of Defense, the USAF has adopted a proactive policy on managing PFAS investigations using the CERCLA process.

The USAF is addressing PFAS as pollutants and contaminants under CERCLA. Therefore, this RI was conducted in accordance with the substantive requirements of the FFA to maintain consistency with past investigations and to offer regulatory involvement in the project.

3. SITE BACKGROUND

3.1 SITE HISTORY

AFFF was first used by the USAF in 1970 for firefighting training activities, testing of firefighting equipment, and extinguishing petroleum fires at FAFB. A total of 16 potential AFFF release areas were identified at FAFB (CH2M Hill 2015); however, 13 of these potential release areas were determined to be unlikely to have caused a release of AFFF to the environment. During the 2019 SI, conducted by Amec Foster Wheeler (Amec) (Amec 2019a), two additional sites were identified as AFFF release areas. This RI report addresses these five AFFF release areas—the three identified in the PA and two identified in the SI. The SI addressed these five release areas and labeled them AFFF Areas 1-5, as noted below. The descriptive names were provided by the PA and the SI, and the IRP site identifications (IDs) were assigned by FAFB following the SI. This report primarily refers to these five source areas using their assigned IRP site IDs. The other names are provided for historical context. The subsections that follow include a summary of information obtained through previous PA and SI (CH2M Hill 2015; Amec 2019a). The site outlines, provided on figures in this Phase I RI, are only approximations based on previous investigations; the exact locations of the releases are not well documented.

3.1.1 FT004P

Site FT004P, formerly Fire Training Area (FTA) FT01, was named AFFF Area 1. The former FTA, located on the eastern boundary of the base, was used from the early 1960s through approximately 1991. During this period, an estimated 125 gallons or more of AFFF concentrate were used during each fire training exercise, which occurred two to three times per month around a mock aircraft in an unlined bermed area. After each exercise, the remaining water, fuel, and foam were drained into an oil-water separator, which discharged effluent water into a low area east of the fire training location, where it likely infiltrated into the soil and groundwater. Site FT004P is shown on **Figure 3-1**.

3.1.2 RS003P

Site RS003P was named AFFF Area 2 and calibration area. AFFF was sprayed onto an old taxiway during equipment and AFFF calibration testing. North of the pavement, surface water flows from the taxiway and into the ditch, which connects to the detention pond. The water in this area is reused in the FTA, however, runoff may flow south to an unpaved area and likely infiltrated directly into soil and groundwater. Site RS003P is shown on **Figure 3-2**.

3.1.3 SS008P

Site SS008P was named AFFF Area 3 and aircraft crash location SS008. An unknown quantity of AFFF was used to extinguish a jet fuel (JP-4) fire in March 1987 that resulted from the crash of a KC-135 aircraft in a grassy field near Buildings 2005 and 2007. Runoff was likely to have infiltrated into groundwater. Site SS008P is shown on **Figure 3-3**.

3.1.4 RS002P

Site RS002P was named AFFF Area 4 and B-52 crash location 1994. An unknown quantity of AFFF was released onto a grassy field, while extinguishing a JP-4 fuel fire, following the crash of a B-52 in 1994. Runoff from this event was likely to have infiltrated the surface soil and groundwater. Site RS002P is shown on **Figure 3-4**.

3.1.5 RS001P

Site RS001P was named AFFF Area 5 and Fire Station 1 (Building 3). Calibration tests using AFFF were conducted on the paved area, directly south of the fire engine garage. The paved area drains through a drainage feature in the curb onto a grassy area between the pavement and a wall that divides the fire station from the airfield. Site RS001P is shown on **Figure 3-5**.

3.1.6 No Name Ditch and Flowage Easement

While not an Installation Restoration Program (IRP) site of concern at the outset of the project, No Name Ditch is an area of interest due to its potential for contaminant transport and to be a secondary release source of PFAS to groundwater. No Name Ditch and its terminus the Flowage Easement is the stormwater drainage for much of built infrastructure of FAFB. No Name Ditch received surface water from a perennial on-base retention pond as it exits the eastern boundary of the base, in the northeast corner of site FT004P. No Name Ditch then flows through private property in an east then southeast direction, first crossing West Thorpe Road then South Craig Road. The final crossing of South Craig Road changed locations when a culvert collapsed on an unknown date. Streamflow rates have decreased over the years, according to nearby residents and FAFB staff. The result of these changing conditions provide the conclusion that the Flowage Easement was the primary flooding and infiltration area during times of high runoff, but this has shifted further north and lessened, due to changes in the culverts and flow strength. No Name Ditch loses water along its length, and all excess water intentionally infiltrates to groundwater within the Flowage Easement and in the property immediately north of the Flowage Easement. Surface water in No Name Ditch does not flow into the regional watershed and is disconnected from the waters of the United States. The Flowage Easement exists on a 38 acre property currently owned by the Spokane Airport. The Flowage Easement is a relatively flat parcel with no external drainage. The easement is granted in perpetuity to FAFB for the purpose of water infiltration (Federal Communications Commission 1959). The No Name Ditch and the Flowage Easement are shown on **Figure 3-6** and **Figure 3-7**, respectively.

3.2 RELEVANT PREVIOUS INVESTIGATIONS AND REPORTS

Prior investigations and reports on the study area included:

- *Preliminary Assessment Report for Perfluorinated Compounds at Fairchild Air Force Base, Spokane, Washington* (CH2M Hill 2015)
- *Action Memorandum for Time-Critical Removal Action Treatment of PFOS- and PFOA-Contaminated Water in Residential Wells Near Fairchild Air Force Base* (USAF 2017)
- *Site Inspection Report, Fairchild Air Force Base, Washington, Site Inspection of Aqueous Film Forming Foam Release Areas* (Amec 2019a)

- *Site Inspection Report Addendum and Time Critical Removal Action Report Fairchild Air Force Base, Washington, Site Inspection of Aqueous Film Forming Foam Release Areas* (Amec 2019b)
- *Technical Memorandum, Data Gaps with Recommended Future Actions to Address Data Gaps at FAFB, Washington* (Tehama LLC. 2019)
- *Drinking Water Protection Study (DWPS) and Hydrogeologic Conceptual Site Model Update* (Tehama 2021)

No remedial action has been taken to reduce the concentration of PFAS in soil or groundwater at the installation. Lifetime drinking water health advisory (HA) values for PFAS were established by the EPA in 2016, replacing the 2009 Preliminary HA values. The City of Airway Heights has experienced drinking water contamination above the EPA Lifetime Health Advisory (LHA) threshold of 0.070 micrograms per liter ($\mu\text{g/L}$) for PFOA and PFOS in residential drinking wells. USAF used these values as benchmarks to determine if response actions were needed. To mitigate this human health risk, the USAF has installed treatment systems at numerous private residences and at the City of Airway Heights Municipal Well #9 groundwater supply well (**Figure 2-2**), where exceedances of the EPA LHA were observed. This effort was conducted as a Time Critical Removal Action (TCRA) in 2019 (Amec 2019b). The USAF performs routine sampling to monitor for additional exceedances in drinking water sources. FAFB has transitioned away from PFAS-containing AFFF as shown in the timeline provided in **Section 2.2**.

3.2.1 Preliminary Assessment Report for Perfluorinated Compounds at Fairchild Air Force Base, Spokane, Washington (CH2M Hill 2015)

In 2015, a PA of PFAS releases, caused by the historical use of AFFF at FAFB, was completed. The assessment reviewed historical documentation, conducted interviews, and performed study-area reconnaissance related to FTAs and usage of AFFF in non-FTAs. A total of 16 areas were screened for potential release and migration pathways. Of these 16 areas, 3 were recommended for further evaluation (**Figure 2-2**). Those three areas were FTA (FT004P) (a grassy field located approximately 1,400 feet east southeast of the current fire training area and south of the main runway), a 1987 crash site of a KC-135, in a grassy field, 300 feet south of Building 2007 (SS008P), and the site of a 1994 B-52 crash, in a grassy field, 900 feet east of the control tower (RS002P). No samples were collected as part of the PA.

3.2.2 Action Memorandum for Time-Critical Removal Action Treatment of PFOS- and PFOA- Contaminated Water in Residential Wells Near Fairchild Air Force Base, Washington (USAF 2017)

In February 2017, the initial SI identified PFOS and PFOA at concentrations above the HA in groundwater from five existing groundwater monitoring wells within the former FTA FT004 (FT01), including four wells at the eastern base boundary. Monitoring Well (MW)-3 had the highest concentration of PFOS and PFOA—55 micrograms per liter ($\mu\text{g/L}$) and 22 $\mu\text{g/L}$, respectively (Amec 2019a).

In April 2017, the sampling of 24 residential wells identified 18 residential wells with water concentrations of PFOS and/or PFOA above the HAs. USAF conducted emergency response action to provide bottled water to affected residents.

In May 2017, the sampling of 27 residential wells, 2 monitoring wells, and 4 municipal supply wells identified 3 residential wells and 2 municipal supply wells with water concentrations of PFOS and/or PFOA above the HA. MW-399, located on base near Fire Station 1 (RS001P) had the highest concentration of PFOS and PFOA—98 µg/L and 6 µg/L, respectively (Amec 2019a).

In June 2017, the sampling of 12 on-base monitoring wells and 5 off-base monitoring wells in the vicinity of the Craig Road Landfill identified three wells on the northern boundary of the base with PFOS and/or PFOA above the HA. Sampling of one additional off-base residential well (north of the City of Airway Heights, near a city water tower) and effluent from the city's wastewater treatment plant also indicated concentrations of PFOS and/or PFOA above the HA.

In May and June 2017, the USAF conducted emergency response action to provide bottled water to residents with private wells exceeding the HA, and bottled water distribution to residents of the City of Airway Heights in cooperation with city efforts. On-base SI activities implemented at five AFFF areas identified the absence or presence of PFAS.

Additional on- and off-base sampling of monitoring wells, residential wells, and/or municipal wells were conducted to evaluate the potential for additional sources of drinking water containing PFOS and/or PFOA above the HA. The sampling of additional residential wells, both north and south of the installation, and periodic resampling of residential wells with detectable PFOS and/or PFOA below the HA were also performed. The USAF developed a conceptual design of in-home water treatment systems for residential wells testing above the HA as presented in the October 2017 Action Memorandum for Time-Critical Removal Action Treatment of PFOS- and PFOA-Contaminated Water in Residential Wells and the Near Action Memorandum and the Conceptual Design, dated 19 July 2017. The USAF program to provide bottled drinking water to residences and businesses testing above the HA has continued through 2025. USAF has since installed several point-of-entry treatment systems on private wells under a separate contract.

The Action Memorandum states that the City of Airway Heights flushed the municipal system with clean water from the City of Spokane. The discharge locations of the municipal system was not stated in the Action Memorandum but is presumed by FAFB to have been discharged to the ground surface. Those discharge locations have not been identified.

3.2.3 Site Inspection Report, Fairchild Air Force Base, Washington, Site Inspection of Aqueous Film Forming Foam Release Areas (Amec 2019a)

In 2019, a SI Report was prepared that continued the investigation initiated by the PA. The SI implemented the PA recommendation of further study of the three previously identified PFAS release areas and added two more: the calibration area (an old taxiway west of fire training area FT004P on which AFFF was sprayed) and Fire Station 1 where AFFF was sprayed on the paved area adjacent to the garage that flows into a grassy strip between the paved area and the runway. Sampling at these five potential source areas confirmed that concentrations in groundwater

exceeded the EPA LHA for PFOS, PFOA, and/or PFOS+PFOA at the five locations. Off-base private residential wells east of FT004 were sampled, and sampling continues semi-annually. Additionally, soil concentrations of PFOS exceeded the EPA RSL of 0.126 milligrams per kilogram (mg/kg) for residential land use (target hazard quotient of 0.1) at every source area except the KC-135 crash site (SS008P). The report concluded that on- and off-base potential receptors exposure for groundwater exists, and on-base workers may be exposed to contaminated soil when performing earth-disturbing activities. The five potential source areas recorded by the SI became IRP sites and the focus of source area investigation for the Phase 1 RI. This Phase I RI does not rely on the historical sampling data collected during the SI.

3.2.4 Site Inspection Report Addendum and Time Critical Removal Action Report Fairchild Air Force Base, Washington, Site Inspection of AFFF Release Areas (Amec 2019b)

In 2019, a TCRA Report was prepared as an addendum to the SI. The TCRA conducted sampling at on- and off-base monitoring wells, municipal wells, and private drinking water wells. The TCRA identified off-base drinking water sources contaminated with PFOS/PFOA above the EPA LHA of 0.070 µg/L. A treatment system on City of Airway Heights Municipal Well #9 was installed as part of the TCRA in 77 residences and bottled water was provided on an as-needed basis to businesses and residences to avoid the use of contaminated drinking water supplies with concentrations of PFOS/PFOA above the EPA LHA.

3.2.5 Technical Memorandum, Data Gaps with Recommended Future Actions to Address Data Gaps at Fairchild Air Force Base, Washington (Tehama LLC. 2019)

In 2019, a technical memorandum was prepared on data gaps identified as part of a drinking water protection study for PFAS for FAFB. This Data Gaps Technical Memorandum identified primary and secondary data gaps that exist in a conceptual model of the study area. The data gaps analysis noted spatial characterization challenges in the spatial distribution of wells, insufficient distribution of PFAS samples, and gaps in available hydrogeologic data, such as hydraulic conductivity.

3.2.6 Drinking Water Protection Study and Hydrogeologic Conceptual Site Model Update (Tehama 2021)

In 2021, a Drinking Water Protection Study (DWPS) was prepared related to PFAS at FAFB and surrounding areas to improve understanding of groundwater flow, contamination migration pathways, and potential impacts to drinking water. The DWPS focused on five main areas, which are located north, northeast, and east of FAFB and northeast and southeast of City of Airway Heights. The area northeast of FAFB had no identified pathways for PFAS originating from FAFB to impact the residential wells. However, PFAS was still identified and leaking sewer pipes associated with FAFB were hypothesized as a potential source. The additional four study areas found numerous off-base impacts to residential wells through ground or surface water transportation.

The DWPS identified remaining data gaps and further recommendations, including the following:

- Further sampling to identify the vertical and lateral extent of groundwater contamination
 - Further investigation of groundwater flow directions, including installing new wells to assess hydraulic gradients and flow directions
 - Sampling to identify secondary sources of PFAS and delineate corresponding plumes
- Further sampling of PFAS at lower detection limits at off-base locations to support migration pathway results

4. PHYSICAL STUDY AREA CHARACTERISTICS

4.1 CLIMATE

In 2024, FAFB received annual rainfall totaling 15.6 inches and annual snowfall of 25.7 inches (NOAA 2025). Precipitation occurred primarily during the winter months. The average annual temperature in 2024 was 50.6 degrees Fahrenheit. The months experiencing the most rainfall are October through December, whereas July through September tend to experience the least. Rainfall typically aligns with the coldest months—November through January—and the hottest months—July through September—of the year. The climate of FAFB is considered a warm summer continental climate or Dfb Köppen climate classification subtype (Amec 2019a). Long term evapotranspiration is approximately 15.7 inches per year (Reitz et. al 2023). Historically, the wind direction within the area of the installation has been from the south to south-southwest with wind gust reaching 19-25 miles per hour (Western Regional Climate Center 2025).

4.2 TOPOGRAPHY

FAFB is situated within the northeastern Columbia Plateau. The ground surface is relatively flat and slopes more towards the northeast and slightly towards the southeast. Elevations range from 2,400 to 2,460 feet above mean sea level (**Figure 4-1**). To the northeast of the base and the City of Airway Heights, the ground surface drops approximately 500 feet down a series of slopes and stepped buttes to Spokane River Valley.

4.3 GEOLOGY

Regional Geology

The West Plains region (including FAFB and vicinity, east to the Spokane River) lies along the northeastern margin of the Columbia Plateau. This region has a long and complex geologic history, though the landscape and water bearing units in the area are dominantly the product of Tertiary (Miocene) volcanism and Quaternary (Pleistocene) glaciation. Consequently, the area is made up of considerable granitic basement rock, unconformably overlain by the generally horizontal basalt flows and interbeds. The granitic basement rock is occasionally exposed at the surface (expressed as a hill above the plain, such as Olson Hill on **Figure 4-2**) but is commonly found at a depth where it is unconformably overlain by basalts of the Miocene Columbia River Basalt Group, including the Wanapum Basalt or Grande Ronde Basalt (GSI et al. 2015). These basalt units are made up of a series of individual flows varying from a few feet to hundreds of feet in thickness. Interbedded layers of sand, silt, and clay occur between individual basalt flows as well as areal extensive volcanic tephra deposits of the Latah Formation. In the West Plains region, the Latah Formation lies between the granitic basement rock and upper section of the lower Grande Ronde Basalt and between the Grande Ronde and the younger Wanapum Basalt. These basalts are then unconformably overlain by Quaternary alluvium, which can vary in thickness from a few feet to a few hundred feet (Pritchard et al. 2020).

Site-Specific Geology

Tertiary basalts of the Columbia River Basalt Group

The uppermost basalt at FAFB has been referred to by previous investigators as “Basalt A.” It is separated from a deeper basalt sequence (Basalt B) by a layer of low-permeability clay (Interbed A). The units “Basalt A,” “Interbed A,” and “Basalt B” correlate to the widely accepted U.S. Geological Survey names of Wanapum Basalt (Basalt A), Latah Formation (Interbed A), and Grande Ronde Basalt (Basalt B). As the Latah Formation refers to all regional interbeds in the Miocene Columbia River Basalt Group, an informal system of numbering of the interbeds (based on the basalts they separate) has been adopted by researchers. Latah “I” specifically correlates to “Interbed A” in the vicinity of FAFB (GSI et al. 2015). Within the immediate vicinity of FAFB, the Wanapum Basalt varies in thickness from about 50 to 160 feet. Previous investigations conducted at the base have provided a detailed characterization of geologic and hydrogeologic conditions within the Wanapum Basalt, and, to a lesser extent, the upper portions of the Grande Ronde Basalt. The top of the Wanapum Basalt is fractured and highly weathered in places. The center portion of Wanapum Basalt is more massive with infrequent fractures and lower permeability. Interbed A generally consists of a laterally extensive, silty claystone that is approximately 5 to 30 feet thick. The Grande Ronde Basalt is generally vesicular at the top, progressively becoming more dense and less vesicular with depth.

Quaternary Alluvium

As described in Deobald and Buchanan (1992) and further discussed in Pritchard et al. (2020), the near-surface geology, underlying the region from FAFB east to the Spokane River, is comprised of (youngest to oldest) a) Holocene surficial deposits of eolian dunes, sand sheets, and loess deposits that occur throughout the area and may range in thickness from a few feet to several tens of feet; b) Pleistocene non-channelized, glacial Lake Missoula outburst mega-flood deposits, including 15 to 30 feet high, straight-to-sinuuous-crested, gravel-cored bedforms (subaqueous dunes) that mantle large portions of the West Plains landscape; c) slightly older Pleistocene sequences of interbedded sand and gravel deposits that can attain thickness of many hundred feet and occur in what has been interpreted as an extensive network of paleochannels, which trend southwest to northeast across the area. These three Quaternary sedimentary sequences unconformably overlie extensive sequences of the Miocene. Wanapum Basalt and (in the deepest portions of the paleochannels) the underlying Grande Ronde basalts.

A CSM of the alluvium-filled paleochannels was developed during the project planning phase and presented in the UFP-QAPP (USACE 2021). Paleochannel depth and configuration were subsequently refined by the DWPS and Updated Hydrogeologic Conceptual Site Model, Fairchild Air Force Base, Washington (Tehama 2021). The borings advanced for the 52 well installations, conducted during this Phase I RI, presented the opportunity to refine this paleochannel model further with additional well-documented intersections. An updated paleochannel contour map is provided on **Figure 4-2**. A geologic cross section that illustrates key features in the CSM is provided on **Figure 4-3**.

In the process of refining paleochannel contours with the newly acquired geologic information, aerial mapping of basalt bedrock outcrops on and north of Deno Road, between the East Deep Creek Paleochannel and the Airway Heights Paleochannel, likely separates these two paleochannels.

Additional insights into the subsurface bedrock topography and alluvial deposits were provided by the drilling program itself and are reported here to assist future drilling efforts. During the field effort, it was noted predicted depths to bedrock were frequently off by considerable margins, despite significant efforts to define subsurface topography by previous investigators. This may be due, in part, to how geologic interpolations are made and visually presented. The various schemes are typically based in geomorphological processes that result in hillslopes and are rendered and visualized as such. However, basalt glacial outburst flood topography famously departs from those processes and landforms and is typified instead by coulees and canyons with vertical basalt cliffs on each side or chaotic scablands, marked with small buttes. Both landforms would result in unexpected jumps in vertical position if uniform slopes are modeled, an outcome which aligns with this investigations' field observations. In one particularly noteworthy example, a boring was unexpectedly advanced through alluvium to a depth of 220 feet. Due to drilling difficulties, the boring had to be abandoned and the hole was moved approximately 10 feet to the west. The new boring, recorded in the drilling log for Monitoring Well (MW)-RI15, encountered basalt bedrock at 73 feet. A difference of 147 vertical feet over 10 horizontal feet is best explained by a cliff, and this boring was planned within a distal portion of the Airway Heights Paleochannel.

One additional, unexpected observation was made concerning bedrock topography and alluvium at MW-RI18. This well was planned as a Wanapum basalt well, based on the regional geology interpretations presented in the UFP-QAPP. Instead, granitic basement rock was encountered directly below unconsolidated deposits. It is presumed this granitic basement rock is a northward subterranean extension of the Olson Hill Steptoe, located south of the base, in Medical Lake. Interestingly, the unconsolidated deposits, located up to 80 feet above this granitic basement rock, contained quartz sand, lithic fragments, and micas. It is possible these soils above the granitic basement are derived directly from that rock, either as a regolith or as colluvium.

Across the project area, basalt boulders were drilled through on multiple occasions in the paleochannels, which provides further evidence of the very high-energy nature of their deposition in glacial outburst Missoula flood events. Several of these are on the order of 3 to 6 feet of drilling; however, one notable case again involves the initial and final boring of MW-RI15. In the initial boring, 17.5 feet of basalt was drilled through from 22.5 to 40 feet below ground surface (bgs) before 160 feet of unconsolidated alluvium were drilled prior to abandonment. To the west 10 feet, in the final boring, 40 feet of basalt was drilled through from 15 feet to 55 feet depth before returning to alluvium for 18 feet further. As can be seen in the final Well Log for MW-RI15, below the alluvium was continuous basalt bedrock of the Wanapum Basalt. Combining this boring with the immediately adjacent perched 20 feet of basalt paints a picture of a very large, house-sized boulder of basalt moved some distance by either ice or the great force of the floodwaters. Boulders of this size are uncommon but do exist regionally, and examples of ice-rafted and flood-deposited basalt boulders of this size can be found across the Columbia Plateau.

4.4 HYDROGEOLOGY

Regional Hydrogeology

The shallow alluvium consists of sands and silts and has localized depositions of clay that cause periodic perching of groundwater and affect horizontal and vertical groundwater movement where present. The saturated thickness of alluvium is insubstantial through much of the base area, but thick deposits of alluvium occur in paleochannels outside the base, where sufficient water storage exists in alluvium to be considered an aquifer (GSI et al. 2015). Pritchard et al. (2020) mapped the substantial Airway Heights Paleochannel as a former north-flowing stream channel in basalt further scoured out by cross-channel flow of the Missoula Floods and backfilled with glacial outburst alluvium. This channel occupies much of downgradient area of FAFB from the southeast to the northwest and lies underneath the City of Airway Heights. Other identified paleochannels lie to the north and west of FAFB.

The facies architecture of Quaternary mega flood and post-flood sediments plays a significant role controlling hydraulic conductivity in the alluvial cover and paleochannel deposits across the area. As pointed out in Pritchard et al. 2020, these deposits were laid down during a sequence of events and can be broken down into at least six distinctive sedimentary facies, based on grain-size distribution, sedimentary structures (in outcrop), and geometry. Porosity and permeability of these deposits varies by several orders of magnitude. Understanding the fabric of these geologic materials can provide significant insights into potential exposure pathways in the Quaternary surficial deposits that underline or are adjacent to known PFAS release areas.

At greater depths, a significant source of potential hydraulic connectivity (and contaminant transport pathways) may have been created by channels incised through the entire thickness of the Priest Rapids member of the Wanapum Basalt as well as Sentinel Bluffs member of the Grande Ronde Basalt, creating potential hydraulic connection to the Wapshilla Ridge member of the Grande Ronde Basalt (Pritchard et al. 2020). Any PFAS plume that makes its way into these paleochannel deposits could, under downward vertical hydraulic gradients, make its way into the lower Grande Ronde regional aquifer.

In addition, hydraulic connectivity (and contaminant transport pathways) may have been created by mechanical means during drilling and completion of several hundred wells and borings in the area. Well construction practices require shallow sanitary seals; however, these seals may not fully isolate PFAS contamination from the borehole to depth. The potential introduction of hydraulic connectivity by poorly completed wells, unlined wells, and wells with multiple screens further compounds questions about the role of paleochannels and their fill (discussed above). Numerous wells are located within and penetrate nearly the entire paleochannel fill sequence as well as the fractured basalt aquifer of the Grande Ronde.

Site-Specific Hydrogeology

The groundwater at FAFB is typically encountered at 3 to 12 feet bgs in alluvium or within the fractured and weathered upper portion of the Wanapum Basalt, under unconfined conditions. Groundwater within both the alluvium and the Wanapum Basalt generally flows west to east across FAFB, except for the very western margin of the base, where a groundwater flow divide

directs groundwater flow toward the west. At the eastern side of the base, groundwater flow in alluvium splits around a basalt high, resulting in flow toward the northeast and southeast. In some areas, a high degree of hydraulic connection exists between alluvium and shallow basalt water bearing zones. In other areas, the shallow alluvium and basalt bedrock water-bearing zones are separated by a low-permeability silt/clay layer. Groundwater flow within the Wanapum Basalt predominantly is within the upper and lower portions of the formation where the number of interconnected fractures is highest. Vertical groundwater movement through the Wanapum Basalt is limited, due to the tightness of fractures within the center of the basalt flows. In areas of the base contaminated with TCE, no substantial migration of TCE from the Wanapum Basalt into the lower basalt aquifer system of the Grande Ronde has been observed.

4.5 SOILS

Soils in the five sources areas are a mix of Cheney ashy silt loam at 0 to 8 percent slopes and Phoebe, dry-Battleplain complex soil at 0 to 8 percent slopes (USDA NRCS 2025). Both soil types are well-drained and are not prone to flooding or ponding. Off-base soils of the West Plains area surrounding FAFB are the same or similar and are typically well-drained.

4.6 SURFACE WATER/HYDROLOGY

No Name Ditch is the primary surface water pathway for runoff at FAFB. No Name Ditch originates from the stormwater retention pond located on the east side of the base, south of the runway. Along the approximate 1-mile flow path of No Name Ditch, surface water infiltrates into the ground and ceases flowing at South Craig Road. No surface water discharges into navigable bodies of water (CH2M Hill 2015; **Figure 4-1**). The stormwater retention pond is perennial, and No Name Ditch is ephemeral.

Surface runoff from the study area, including stormwater conveyances, either flows to swales that run along the inside of the perimeter fence, where the water infiltrates into the ground, or evaporates. Stormwater collected in drains throughout base stormwater basins 1 and 2 empties into the stormwater retention pond located south of the runway near the eastern property boundary (Tehama 2021). Other stormwater basins discharge to wetlands on the eastern edge of the base, south of No Name Ditch, into a tributary of Hog Canyon Creek on the southwest corner of the base, into a ditch near the main gate on the northern boundary of the base and, possibly, into a wetland on the southeastern corner of the base (Tehama 2021). Wetlands occur primarily on the south side of the base, with an on-base wetland with no discharge existing approximately 3,000 feet east of the 1994 B-52 crash location (Site RS002P) (CH2M Hill 2015). There are additional small wetlands in the vicinity of the No Name Ditch base discharge point. Stormwater drainage basins and sewer infrastructure are shown on **Figure 4-4**.

Silver Lake, Medical Lake, and West Medical Lake are 1 to 2 miles south of the base. The Deep Creek watershed drains areas southwest, west, and north of the base into the Nine Mile Reservoir of the Spokane River (**Figure 4-1**).

4.7 CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USE

Currently, the land area affected, or potentially affected, by PFAS contamination is occupied by FAFB and several off-base commercial and residential areas (i.e., City of Airway Heights). The City of Airway Heights and vicinity include both residential and commercial uses as well as farming (including crop irrigation). Groundwater is used as a drinking water source by off-base users, both from private wells and from the City of Airway Heights Municipal Well AH9. As of 2019, there were 370 private drinking water wells, four municipal wells, 14 existing on-base monitoring wells, and seven existing off-base monitoring wells (AMEC 2019a). The on-base water supply comes from two different sources. The majority of water is supplied by Air Force owned wells located off site, in the Spokane Valley-Rathdrum Prairie Aquifer. The Air Force also owns one emergency well located on the base. Land use is not expected to change in the future. While the currently estimated extent of PFAS contamination includes portions of FAFB and the City of Airway Heights, which lies northeast of and hydro-geologically downgradient of FAFB, an accurate and representative delineation of the nature and extent of PFAS contamination has not been established.

4.8 CRITICAL HABITATS AND ENDANGERED/THREATENED SPECIES

No critical habitats for threatened or endangered species are located in the vicinity of FAFB, according to U.S. Fish and Wildlife. Threatened species that are known to inhabit Spokane County and may be found within the boundary of FAFB include Yellow-billed Cuckoo (*Coccyzus americanus*), Spalding's Catchfly (*Silene spaldingii*), and Water Howellia (*Howellia aquatilis*). One species, Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*), is proposed endangered and can potentially be found within the boundary of FAFB. Monarch Butterfly (*Danaus plexippus*) is proposed threatened and known to occur at FAFB. Bald Eagle (*Haliaeetus leucocephalus*) are not listed as threatened but are a protected species and may be found within the boundary of FAFB. Non-threatened ecological receptors may include inland and aquatic plant species, reptiles, birds, soil invertebrates, and mammals that inhabit or migrate through the installation or are in the vicinity of No Name Ditch or the stormwater retention pond on the eastern side of the base, south of the runway.

5. PHASE I REMEDIAL INVESTIGATION ACTIVITIES

The PFAS Phase I RI for FAFB, Spokane County, Washington began 22 June 2021. The program included many mobilizations between the start of fieldwork and the end, with investigation fieldwork concluding on 23 March 2025. The Phase I RI consisted of the development of a CSM and site characterization efforts, including delineation of the nature and extent of PFAS contamination from the identified AFFF release locations at FAFB. Phase 1 sampling for all media was carried out following procedures in the UFP-QAPP (USACE 2021) and UFP-QAPP Addendum 2 (USACE 2024).

The sampling conducted during the PFAS Phase I RI included groundwater, surface water, surface soils, subsurface soils, and sediment. Aqueous (i.e., groundwater and surface water) samples were collected from each location to assess the concentration of PFAS, if present. Groundwater sampling and soil sampling were conducted, in a phased approach, during the initial data collection phase, and data was then discussed by the FFA agencies, including AFCEC and EPA, before executing additional sampling. Field book scans for the events that took place during the PFAS Phase I RI are included in **Appendix A.1**. Data QC reports (i.e., daily reports) are included in **Appendix A.2**.

5.1 PLANNING AND PERMITS

EA secured all required permits and approvals prior to starting any phase of work, including FAFB Dig Permits, FAFB airfield waivers, FAFB restricted area access, and traffic control permits for both Spokane County and City of Airway Heights rights of way. Access agreements were obtained by the PDT for advancing borings and installing monitoring wells on property owned by Spokane County, City of Airway Heights, and private entities. Completed permits are included in **Appendix A.3**.

5.1.1 Property Access

Access to properties was gained through coordination with FAFB and USACE. On-base access was coordinated through the base Remedial Project Manager (RPM). Off-base access agreements were secured by the FAFB RPM with technical assistance from EA. Property access agreements were secured with Spokane County, the City of Airway Heights, and private-property owners for the purpose of installing and sampling new monitoring wells. City and county access agreements are included in **Appendix A.3**.

5.1.2 Coordination with Airfield Operations

Drilling and sampling activities that took place near active airport runways were required to comply with Federal Aviation Administration Regulations, coordination for which was managed by the base RPM and construction oversight representative.

5.1.3 Utility Clearance

Utility clearance and utility-owner coordination was required prior to intrusive activities. Proposed boring locations were field adjusted from planned locations, as necessary, to align with operational logistics, topography, and the built environment, when necessary. A handheld

Trimble global positioning system (GPS) data collector was used to record field-verified boring locations. Subsurface utility clearance was performed at the proposed well locations, following the procedures outlined in EA Standard Operating Procedure (SOP) No. 003. For on-base wells, utility clearances were coordinated through the base. Additional private utility locating was used for on base locations where base-provided marks were absent or wore off. For off-base wells, Washington Utility Notification Center was contacted and private utility locating was conducted for all off-base locations. Adjustments to proposed well locations, based on the presence of utilities, were coordinated with the City of Airway Heights and Spokane County prior to installation. The final location of each boring was collected during sampling and drilling, using the GPS handheld unit. The final location of each installed monitoring well was professionally surveyed (**Section 5.7**).

5.2 GEOPHYSICAL LOGGING

Geophysical logging using natural gamma techniques was performed on a total of 98 monitoring wells between 2022 through 2025: all 52 of the newly installed wells and 46 of the existing pre-RI wells within the study area. Pre-RI wells were selected using the following criteria:

- 1) log wells that had higher concentrations of PFAS in previous water quality sampling;
- 2) log wells that were screened in a variety of aquifers;
- 3) log wells that were spatially dispersed across the site.

To gamma log a well, the gamma probe was suspended downhole and recorded the detection rate of ionization in counts per second (CPS), in the well or open borehole, every .10 of 1 foot bgs. Where bedrock lithology and drilling conditions made it possible, logs were conducted in the open borehole prior to well installation to reduce signal attenuation. When those conditions weren't available, natural gamma logging was performed within the inner polyvinyl chloride (PVC) casing of a completed well. Typically, open borehole conditions were available for basalt borings except for unstable borehole conditions. Open borehole conditions were never available for unconsolidated deposits wells. Regardless of operational technique, natural gamma logging was used to help interpret bedrock lithology. For bedrock wells in which natural gamma logging could be conducted prior to well installation, The log provided lithological information that guided the field team and responsible geologists in determining the appropriate depth for setting the well screen within the Latah Formation.

The Latah Formation, lying between the Wanapum Basalt and the Grande Ronde Basalt, is often composed of clay within the study area. Clay has a higher CPS than basalt, making the Latah Formation often highly visible in the log, which helped to confirm the basalt aquifer the total depth of the boring was located in. This was the most common field use of the natural gamma log, used when targeting the Grande Ronde Basalt aquifer. For all gamma logging, regardless of operational conditions, the boreholes were logged in both directions and deviations were noted, if present. Geophysical logs performed on newly installed wells are located in **Appendix A.4**. The geophysical logs performed on previously installed monitoring wells are in **Appendix A.5** and are listed in **Table 5-9**.

5.3 AQUIFER TESTING

5.3.1 Flow Metering

Twelve monitoring wells were logged, using a flowmeter, between 2024 and 2025. A flowmeter was used on wells that could maintain an open borehole and are listed in **Table 5-10**. A heat pulse flowmeter was used to perform the flowmeter logs, measuring vertical flow rate in gallons per minute. Negative values on a heat pulse flowmeter log represent downward flow and positive values represent upward flow. Each flow assessment was conducted in the open portion of the borehole, below the water table, prior to well installation, to help confirm if the proposed screened lithology by the site geologist would have productive amounts of groundwater. The heat pulse flowmeter probe was connected to a computer running Microsoft HEAT software and lowered downhole to the proposed screened interval. A flow reading was taken, at a minimum, every 5 feet throughout the proposed screened interval. Except for MW-RI18, the wells that were logged with the flowmeter probe were identified as planned to be set in the Wanapum Basalt or Grande Ronde Basalt. MW-RI18 was intended to be screened in the Grande Ronde Basalt aquifer; however, basalt was not encountered at the selected location because granitic basement rock was directly below unconsolidated soils and the well was, thus, alternatively screened in the unconsolidated deposits above the granitic basement rock. No additional wells set in the unconsolidated aquifer were logged with the flowmeter, as they did not provide a stable open borehole.

Four of the wells installed in either the Wanapum or Grande Ronde Basalt aquifers (MW-RI13, MW-RI34, MW-RI42, and MW-RI59) were not flowmeter logged, due to (1) the open hole being unstable, running a risk of the probe getting lost downhole, or (2) lack of water within the borehole at the time of advancement. Additionally, in MW-RI15, MW-RI18, and MW-RI19 no flow was present, according to the flowmeter probe; however, these boreholes had the protective casing downhole, which could have potentially affected the readings.

5.3.2 Slug And Single Well Recovery Aquifer Pumping Tests

Slug tests were conducted on 46 monitoring wells and single well aquifer pump tests were conducted on 5 wells between July 2022 and March 2025. Slug tests were conducted on 42 of the Phase I RI installed monitoring wells and on 4 pre-RI existing monitoring wells between 2022 and 2025. The specific pre-RI wells tested were added to gather additional data, due to lack of water in the installed RI wells earlier in the RI. Constant rate recovery tests were conducted at five locations; there were no nearby observation wells for nearly all locations. Each of the five single well aquifer pumping test was conducted on a newly installed RI well. The wells selected for the single well aquifer pumping tests were selected to fill data gaps in the slug testing results and collect direct measurements of hydraulic conductivity across each of the three aquifers (unconsolidated, Wanapum Basalt, and Grande Ronde Basalt).

5.3.2.1 Slug Tests

To conduct each slug test, the static water level was recorded prior to placing a slug made from plastic into each well. Once the test started, water levels were recorded every 0.5 second, using non-vented In-Situ Inc. Level TROLL 400 Data Logger. Falling head data was collected after

lowering the slug below the static water level. After allowing the static water level to stabilize, rising head data was collected after removing the slug from the well. Two tests were conducted on eight wells (MW-RI15, MW-RI19, MW-RI20, MW-RI27, MW-RI32, MW-RI51, MW-RI55, and MW-RI60) to enhance accuracy or to address any uncertainty regarding the reliability of the initial test.

The transducer data was downloaded and exported to a spreadsheet for evaluation, prior to being imported into AQTESOLV software for analysis. Time-displacement data was plotted on semi-log graphs and analyzed using both the Hvorslev (1951) and Bouwer-Rice (1976) analytical methods built into the AQTESOLV software for both falling and rising head data. Thus, for most wells, two sets of data were analyzed using two analytical methods in AQTESOLV software, providing four hydraulic conductivity values. The wells that were tested twice had four sets of data, providing eight hydraulic conductivity values. The hydraulic conductivity values estimated from the Hvorslev (1951) analytical method typically yield slightly higher values than Bouwer-Rice (1976). The values were averaged to provide a single hydraulic conductivity for each well tested. The time-displacement graphs, generated from AQTESOLV software, are included in **Appendix A.6**.

The hydraulic conductivity values, calculated using the Hvorslev (1951) and Bouwer-Rice (1976) analytical methods, were averaged to generate a value for both the rising and falling head data collected. A total average was then calculated for each well. In general, the rising head data appears to have much less background disturbance and plots as a smoother line than the falling head data. This is likely due to a smaller amount of turbulence in the well casing when the slug is withdrawn compared to when the slug is lowered rapidly below the water table. Thus, the rising head data and resulting estimated hydraulic conductivity is likely to be more representative of actual conditions in the study area.

Data that was collected from 10 wells, 3 from the 2022 tests (MW-RI56, MW-384, MW-434) and 7 from 2025 tests (MW-RI10, MW-RI18, MW-RI25, MW-RI34, MW-RI41, MW-RI42, MW-RI47), was not useful in calculating hydraulic conductivities. This was mostly due to water levels returning to the pre-test static water level within a few seconds or the water level in the well fluctuating erratically without showing a smooth falling or rising head that could be analyzed by the selected analytical methods. Each of these wells were retested and yielded similar results. A summary table, presenting the results for all 46 wells and a table displaying the minimum, maximum, and average hydraulic conductivity value from each aquifer are included in **Appendix A.6**. The 10 wells that did not provide useful data are listed in the table as “data not suitable” and are excluded from the averages, not affecting the results. For those 10 tests, time-displacement graphs, illustrating the data collected during each test, are included in **Appendix A.7**. Data sheets for each of the tests that provided quality data are included in **Appendix A.6**.

5.3.2.2 Single Well Aquifer Pumping Tests

For single well aquifer pumping tests, In-Situ Inc. Level TROLL 400 data loggers were set above the pump and programmed to record depth-to-water measurements logarithmically for initial data; recordings transitioned to linear readings, spaced 1 minute apart for late-time data. A sustainable pumping rate was determined for each well, resulting in drawdown ranging from

0.69 to 15.88 feet. Manual depth-to-water measurements were taken regularly to obtain backup data and compare real-time transducer data. Using the discharge and drawdown recorded from the sustainable pumping rate, the critical time was calculated. The critical time is the minimum time for pumping to overcome casing storage effects to obtain meaningful data for analysis. The pump was turned off after the well was pumped beyond the critical time. Recovery was manually gauged at more frequent intervals during initial recovery, and less frequently toward the end of the recovery period; gauging continued until at least 95 percent recovery was achieved.

The transducer data was downloaded and exported into a spreadsheet to produce recovery plots to be analyzed per Kruseman and de Ridder (1991). Transmissivity (T) and hydraulic conductivity (K) were calculated from each test using the following equations: $T = (264 \cdot Q) / (\Delta s')$ and $K = T/b$, where Q is flow rate in gallons/minute, $\Delta s'$ is drawdown between log cycles in feet, and b is aquifer thickness in feet. **Appendix A.6** includes the data tables, drawdown and recovery plots, and calculations from each test, in addition to a summary table displaying the transmissivity, hydraulic conductivity, and critical time values calculated from each test.

One of the wells subjected to a single-well aquifer pumping test, MW-RI47, was not productive enough to pump at a constant rate. Therefore, once targeted drawdown was achieved (shortly after the pump was started), the pump was turned off, and recovery was gauged with the transducer set to record in step linear. For this test, the data was analyzed in AQTESOLV software, using the Bouwer-Rice (1976) analytical method, to calculate hydraulic conductivity. T was calculated manually from those results. Data sheets from this test, generated from AQTESOLV software as well as drawdown and recovery curves in Excel, are found in **Appendix A.6**.

5.3.3 Aquifer Testing Conclusions

When combining the results from both the slug tests and single-well aquifer pumping tests, the Wanapum Basalt aquifer had the highest average hydraulic conductivity value at 13.79 feet/day with a minimum of 0.45 feet/day and a maximum of 32.32 feet/day. The unconsolidated aquifer displayed the largest range in hydraulic conductivity values with a minimum of 0.02 feet/day, a maximum value of 30.26 feet/day, and an average of 5.87 feet/day. The Grande Ronde aquifer had the least amount of variation in hydraulic conductivity values with an average 2.34 feet/day, a minimum of 0.23 feet/day, and a maximum of 5.15 feet/day. However, these results have limitations. Although each aquifer was tested multiple times, they were not tested an equal number of times. The unconsolidated aquifer had the greatest number of tests, as most newly installed wells were set in this aquifer. The broad range of values produced from the tests conducted within the unconsolidated aquifer were due to differences in grain size and grain-size distribution in the screened lithologies for each well. These lithologies included clay, silt, sand, and gravel.

Aquifer	Hydraulic Conductivity Minimum (feet/day)	Hydraulic Conductivity Average (feet/day)	Hydraulic Conductivity Maximum (feet/day)
Unconsolidated Deposits	0.02	5.87	30.26
Wanapum Basalt	0.45	13.79	32.32
Grande Ronde Basalt	0.23	2.34	5.15

Each single-well aquifer pumping test calculated a transmissivity (T) value. MW-RI18, set in the unconsolidated aquifer yielded a T value of 7498 gallons/feet/day. MW-RI20, also set in the unconsolidated aquifer yielded a T value of 797 gallons/feet/day. MW-RI41 and MW-RI42, both set in the Wanapum Basalt, yielded values of 11,253 gallons/feet/day, and 5,009 gallons/feet/day, respectively. MW-RI47, set in Grande Ronde Basalt and analyzed differently due to the data being recorded in step linear, yielded a T value of 7 gallons/feet/day. These values are also provided with additional detail in Table 2 of **Appendix A.6**.

Monitoring Well	Transmissivity (gallons/feet/day)	Aquifer
MW-RI18	7498	Unconsolidated Deposits
MW-RI20	797	Unconsolidated Deposits
MW-RI41	11,235	Wanapum Basalt
MW-RI42	5,009	Wanapum Basalt
MW-RI47	7	Grande Ronde Basalt

The single-well aquifer pumping test results confirmed the Wanapum Basalt Aquifer is the most transmissive hydrostratigraphic unit studied by this Phase I RI. The Grande Ronde aquifer is the least transmissive, and the unconsolidated aquifer has the widest range of transmissivity, producing the lowest hydraulic conductivity and transmissivity values when set in clay or silt and some of the highest when set in sand or gravel.

5.4 SOIL AND SEDIMENT SAMPLING

Soil samples were representative of field conditions and collected to characterize the sites sufficiently for the purposes of this Phase I RI. Soil sampling was conducted in accordance with the UFP-QAPP (USACE 2021) and subsequent addendums (USACE 2022, USACE 2024). Quality assurance (QA)/QC samples were collected at or above the required rates to demonstrate data quality. All samples were shipped to the laboratory on ice and were accompanied by an unbroken chain of custody, maintained from sampling through analysis. Surface and subsurface soil boring sample locations from FT004P, RS003P, SS008P, RS002P, RS001P, No Name Ditch, and the west and north side of the Flowage Easement are shown on **Figure 5-1** through **Figure 5-7**, respectively. Soil and sediment sample identification, including sample depths, are presented in **Table 5-1** through **Table 5-7**, respectively. Sediment sample locations from No Name Ditch are also shown on **Figure 5-6**. Chemical analytical results of soil and sediment sampling are discussed in **Section 7**.

Surface and subsurface soil samples were also collected from borings advanced during monitoring well installations. Soil sample locations from soil borings advanced during monitoring well installation are shown on **Figure 5-8** and soil sample identification (including sample depths) are presented in **Table 5-8**. Wells installed during the Phase I PFAS RI are discussed in **Section 5.6**. Chemical analytical results of well installation soil sampling are discussed in **Section 7.7**.

Soil sampling was conducted on the following dates, with sampling activity described below:

- **9-10 November 2021**—Surface and subsurface sampling during first round of Phase I PFAS RI monitoring well installation.

- **31 January 2022**—Surface and subsurface sampling at RS002P.
- **1 through 3 February 2022**—Surface and subsurface sampling at FT004P, RS001P, RS003P, and SS008P.
- **17 through 26 May 2022**—Surface and subsurface step-out sampling at FT004P, RS001P, RS002P, RS003P, and SS008P.
- **12 May through 10 June 2022**—Surface and subsurface sampling during second round of Phase I PFAS RI monitoring well installation.
- **10 through 14 October 2022**—Surface and subsurface soil and sediment sampling at No Name Ditch.
- **13 through 24 March 2023**—Surface and subsurface sampling during third round of Phase I PFAS RI monitoring well installation.
- **18 through 21 June 2024**—Surface and subsurface soil and sediment sampling further downstream at No Name Ditch.
- **23 July through 19 December 2024**—Surface and subsurface sampling during third round of monitoring well installation.
- **19 through 20 December 2024**—Surface and subsurface sampling at the west and north side of the Flowage Easement.
- **7 through 9 January 2025**—Surface and subsurface step-out sampling at the west and north side of the Flowage Easement.
- **9 through 24 January 2025**—Surface and subsurface sampling during fourth round of Phase I PFAS RI monitoring well installation.

Step out locations for May 2022 sampling events were based on initial source area sampling results and were discussed with the PDT. Monitoring wells and step outs are discussed in greater detail in **Section 5.6**.

A detailed breakdown of the number of surface and subsurface soil samples collected is discussed in **Section 7**. Groundwater grab samples, collected when groundwater was present at the time of boring advancement, are discussed in **Section 5.8.1**. Field data sheets for all soil and groundwater grab sampling events are located in **Appendix A.8**.

5.4.1 Surface Soil Sampling

Surface or near-surface soil and sediment samples were collected at FT004P, RS001P, RS002P, RS003P, SS008P, No Name Ditch, the west and north side of the Flowage Easement, and at each Phase I PFAS RI monitoring well location (**Figure 5-1** through **Figure 5-7**, respectively). Surface samples were collected using a hand auger from 0 to 0.5 or 0 to 1 foot bgs. During well installation, certain boreholes required surface gravel to be removed before sampling. Those samples were collected from 0.5-1 and 2-2.5 feet bgs. Samples were collected from the boring core, using a decontaminated auger and/or a trowel. Equipment was decontaminated using an Alconox™ wash, potable water rinse, and deionized water rinse. For each day the equipment was

used, an equipment blank was taken from decontaminated equipment to ensure the effectiveness of the decontamination methods.

5.4.2 Subsurface Soil Sampling

Subsurface soil samples were collected from FT004P, RS001P, RS002P, RS003P, SS008P, No Name Ditch, the west and north side of the Flowage Easement, and from borings advanced during monitoring well installation (**Figure 5-1** through **Figure 5-8**, respectively). Samples were collected using a Geoprobe 7822DT and dual-tube sampling methodology. Borings were advanced until the weathered bedrock was encountered. Maximum sample depths were as follows:

- 15 feet bgs at FT004P, RS003P, SS008P, RS002P, and RS001P
- 11 feet bgs along No Name Ditch
- 28 feet bgs on the west and north side of the Flowage Easement
- 325 feet bgs during well installation

Twelve boring advances were scheduled to occur within each release area (USACE 2021); however, the final number was dependent on the amount of step-out samples needed to assess nature and extent and are as follows: 16 boring locations in FT004P and RS003P, 11 boring locations in SS008P, 15 boring locations in RS002P, 14 boring locations in RS001P, 46 boring locations within the No Name Ditch, and 10 boring locations on the west and north side of the Flowage Easement. The variations in sampling rationale between soil borings in the release areas are explained in the UFP-QAPP (USACE 2021) and subsequent addendums (USACE 2022, USACE 2024). The soil from the borings were logged by a Professional Geologist or Geologist under the supervision of a Professional Geologist, licensed in Washington state. In each of the 128 borings, a surface and varying number of subsurface soil samples were collected, dependent on field observations. Subsurface sample depth intervals were determined in the field by the supervising geologist, based on lithological observations and professional judgement.

New PFAS free PVC liners were used for each soil sampling interval, and the drill rods were decontaminated using Alconox™, pressure washer, and a clean-water (per **Section 5.9.1**) rinse after each boring was completed. For each day the equipment was used, an equipment blank was taken from decontaminated equipment to ensure the effectiveness of the decontamination methods. Upon completion, soil borings were abandoned by filling with bentonite chips and adding water to hydrate.

5.4.3 Synthetic Precipitation Leaching Procedure Sampling

The Synthetic Precipitation Leaching Procedure (SPLP) is typically used to establish site-specific leachability values for various contaminants within a study area. To evaluate the potential leachability of PFAS in study area soils from natural precipitation, 30 soil samples were collected at various depth intervals and lateral locations at all five source areas, which were analyzed for total PFAS concentrations in soil. This was followed by leaching of a second aliquot of the sample by using EPA Method 1312, which uses leaching water that has been processed and chemically altered to mimic meteoric rainwater. The leachate was then analyzed

for PFAS. The SPLP is an EPA SW-846 test method that can be used to estimate site-specific adsorption/desorption potential of a chemical contaminant in soil, possibly impacting groundwater resources at a site.

It should be noted, however, that recent advances in scientific understanding of PFAS leachability have shown that the SPLP approach is less than ideal for evaluating PFAS leachability under natural field conditions (Rayner et al. 2022; Navarro et al., 2024). Since the time this contract was initiated, improved methods for assessing PFAS leaching—such as direct porewater monitoring using suction lysimeters—have become more widely adopted.

5.4.4 Sediment Sampling

Twenty-five sediment samples were collected below shallow water from No Name Ditch, using a PFAS-free scoop. Water was decanted slowly to minimize the loss of fine particles, mixed with a PFAS-free spatula and then transferred into sample containers. Sediment sample collection forms are located in **Appendix A.9**.

5.5 SURFACE WATER SAMPLING

Twenty-two surface water samples were collected at No Name Ditch using a peristaltic pump and PFAS-free tubing following the UFP-QAPP Addendum 2. The surface water sampling identification is shown in **onsite 5-6**, and the surface water sampling locations are shown on **Figure 5-6**. Chemical analytical results of surface water sampling are discussed in **Section 7.6.5**. Surface water sample collection forms are located in **Appendix A.9**.

5.6 MONITORING WELL INSTALLATION AND DEVELOPMENT

As part of the Phase I RI, 52 Phase I PFAS RI monitoring wells were installed at and in the vicinity of FAFB. One well, MW-RI53, was destroyed and was re-installed 15 July 2025. MW-RI53 was destroyed sometime between March 2023 and December 2024 due to construction at the main gate. The surface monument was sheared off by an apparent heavy equipment strike and the monitoring well was not usable or repairable after the damage. MW-RI53 was replaced as close to the original location as possible. The locations of PFAS RI installed wells are shown on **Figure 5-9**, and existing monitoring wells, sampled as part of the Phase I RI, are shown on **Figure 5-10**. Monitoring well construction details for existing and additionally installed wells are summarized in **Table 5-9** and **Table 5-10**, respectively.

Monitoring wells were installed at different times as first described in **Section 5.4** in the context of soil sampling during monitoring well installation. Monitoring well locations were chosen to enhance the CSM initially developed in UFP-QAPP Worksheet #10 and follow the guidance of Worksheet #17(USACE 2021). Monitoring well locations were selected iteratively in a process that involved continual communication with the PDT. New monitoring locations were selected based on the following criteria:

- 1) using the assumed groundwater flow directions within each aquifer, select locations that were downgradient of source areas and higher levels for detected PFAS;

- 2) select locations near the edges of the paleochannels to evaluate hydraulic gradients into or out of the paleochannels from the surrounding aquifers;
- 3) select some locations assumed to be hydraulically up-gradient of source areas;
- 4) select locations that are distributed across all aquifers;
- 5) select locations that are spatially distributed across the site; and
- 6) select shallow aquifer locations near deeper aquifer locations to evaluate vertical hydraulic gradients.

5.6.1 Installation

Prior to the beginning of the well installation field effort, well material specifications were discussed with the PDT to determine the optimal well slot screen size appropriate for the anticipated geology encountered. Monitoring wells were installed using air rotary and sonic drilling techniques. Monitoring wells were cased during drilling, when necessary, to prevent cave-in. Borings were advanced through overburden using a sonic drill rig for alluvial wells and an air rotary rig for basalt wells. Subsurface samples were collected from the sonic soil cores or air rotary soil cuttings. The advancing of borings and installation of monitoring wells was supervised by a Professional Geologist or Geologist under the supervision of a Professional Geologist, licensed in Washington state, who logged soils to the Unified Soil Classification System standards with grain size and other pertinent details for environmental sequence stratigraphy analysis noted in boring logs.

Thirty-five monitoring wells were installed in alluvium, nine in Wanapum Basalt, and six in Grande Ronde Basalt. Well installations within unconsolidated deposits focus on installing screens within the saturated zone of the unconfined alluvium. Wells completed in alluvium were constructed of ASTM F480 flush-joint threaded 2-inch-diameter Schedule 40 PVC casing and 2-inch-diameter 0.020-inch slotted well screen. The borehole annulus was filled with #1-2/12 sand pack (similar to historical 10-20 designation) across the screened interval and to 2 to 3 feet above the top of screen, except where noted in the deviations section (5.11). Centralizers were placed below the well screen and every 40 feet to the top of the screen.

For deeper bedrock installations, an air rotary pilot boring was advanced through the unconsolidated deposits, and an 8-inch steel casing was installed for the passage of a nominal 8-inch drill bit. The casing joints were welded, and the casing was set into the weathered bedrock to ensure a watertight seal. Once the alluvial aquifer was sealed, drilling open-hole air rotary boring with an 8-inch bit was advanced until the final boring depth was reached in either the Wanapum or Grande Ronde Basalts. After encountering heaving sands and high yield in the Wanapum Basalt, producing excessive investigation derived waste (IDW), a decision was made that it was necessary for Grande Ronde Basalt wells to start with a 10-inch casing in the unconsolidated deposits, then telescope down to an 8-inch casing in the Wanapum Basalt to shut off productive zones and hold back weak units or sand interbeds, then proceed with an 8-inch open borehole, once in the Grande Ronde Basalt. All casing was removed from every boring, regardless of casing size or targeted formation. A small 5 to 8 foot section of 8-inch steel casing

was left in the top of basalt wells to better anchor the surface monument and protect the inner casing.

Wells completed in basalt were constructed of ASTM F480 threaded flush-joint, 4-inch diameter Schedule 80 PVC, with 0.020-inch screen slot size. Rise pipe was also Schedule 80 PVC. Centralizers were placed below the well screen and every 40 feet to the top of the screen. Silica sand filter pack, appropriate for the respective screen slot size, was placed in the annulus from the base of the borehole to 5 feet above the well screen. The sand-pack size and slotted-screen size was selected by the geologist in consultation with the USAF, based on subsurface conditions encountered.

For both alluvial and basalt wells, bentonite chips and/or equivalent materials were used to fill the well annulus to approximately 40 feet bgs, and from 40 feet bgs to ground surface with cement bentonite grout except where noted in the deviations section (5.11). All well heads were completed with two ports: one for groundwater discharge, and one for sounding depth to water measurements. For basalt wells, water level sounding pipe was completed and extended to a depth that corresponds to the depth of the pump inlet for each respective well. The sounding pipe consists of 3/4-inch Schedule 80 PVC.

Monitoring wells were completed with a traffic-rated, flush-mount vaults, set in concrete, with a protective casing that extends from the surface monument to a minimum of 3 feet bgs and seated into the annular seal. Except for deviations noted in **Section 5.11**, a 3-foot-by-3-foot concrete pad was installed at the surface with a minimum of 4-inch thickness. The protective casing was equipped with a locking cap with a combination lock or a security bolt, depending on the cap type. A metal ID plate was installed at each well with the well ID number. Well ID numbers were provided by the AFCEC RPM and follow Environmental Resources Program Information Management Systems (ERPIMS) guidelines. The ERPIMS database for FAFB assigns each monitoring well a unique well ID.

Except for deviations noted in **Section 5.11**, groundwater wells installed during the Phase I PFAS RI with a depth greater than 25 feet have a dedicated pump installed after development was complete. For 2-inch wells installed in unconsolidated deposits, a 12-volt submersible pump was installed. For 4-inch wells installed in basalt, the installed groundwater pump is a 1.5 Horsepower, 240-volt, single phase pump with a three-prong plug. Both pump types were constructed of PFAS-free materials.

Monitoring well boring logs and construction details are presented in **Appendix A.4**.

5.6.2 Development

Monitoring wells were developed in accordance with **Section 1.7.1.3** of the UFP-QAPP (USACE 2021). Procedures included removing, at a minimum, the amount of water used during well installation and achievement of stable parameters as measured by a water quality meter. Wells were initially surged and bailed to remove large particles, followed by pumping until the required amount of water was removed and stable parameters and the target turbidity of less than 10 NTU were achieved. Well development logs are located in **Appendix A.10**.

5.7 SURVEYING

Surveying for elevation of Phase I PFAS RI wells was performed by a professional land surveyor licensed in the State of Washington. Typical standards for the survey are surveying the well to vertical accuracy of 0.010 United States survey feet, using the 1988 North American Vertical Datum with GEOD09 and a horizontal accuracy to within 0.10 foot tied to site datum (World Geodetic System 1984 Universal Transverse Mercator Zone 11 North). The elevations for the center of the flush mount steel protective casing and the top of the PVC were surveyed. A survey mark will be indicated by a permanent marking in the well-riser casing. The complete survey data report is available in **Appendix A.11**.

5.8 GROUNDWATER SAMPLING

Groundwater sampling was conducted in accordance with the UFP-QAPP (USACE 2021) and subsequent addendums (USACE 2022, USACE 2024). QA/QC samples were collected at or above the required rates to demonstrate data quality. All samples were shipped to the laboratory on ice and were accompanied by an unbroken chain of custody, maintained from sampling through analysis. Field data sheets for groundwater sampling events are in **Appendix A.12**.

5.8.1 Groundwater Grab Samples

If groundwater was encountered, a groundwater grab sample was collected from each boring advanced in the five release areas, No Name Ditch and on the west and north side of the Flowage Easement. The groundwater grab samples were collected by inserting a well screen and collecting a sample using a peristaltic pump.

Groundwater grab samples were collected with each soil boring drilled in FT004P, RS001P, RS002P, RS003P, SS008P, No Name Ditch and on the west and north side of the Flowage Easement. Groundwater grab sample locations are shown on **Figure 5-1** through **Figure 5-7**, respectively and groundwater grab sample identification are presented in **Table 5-1** through **Table 5-7**, respectively. Chemical analytical results of groundwater grab sampling are discussed in **Section 7**.

5.8.2 Groundwater Monitoring Well Sampling

Groundwater sampling was conducted in accordance with the UFP-QAPP (USACE 2021) and subsequent addendums (USACE 2022, USACE 2024). Throughout five sampling events from June 2021 through January 2025, a total of 234 groundwater samples were collected from monitoring wells located both on and off base. All groundwater samples were collected by low-flow purging sample methods. Rounds 1 and 2 of groundwater sampling provided a snapshot of the hydrogeology and PFAS concentrations that were used to refine the location selection process for the 52 Phase I PFAS RI monitoring wells installed on- and off-base. Groundwater samples were collected from 100 existing on- and off-base monitoring wells during Rounds 1 and 2. This included analyzing the dataset for data gaps and using the data gap analysis to determine in which direction(s) and vertical depths to add additional Phase I PFAS RI wells to the sampling set. The selection process involved USACE and USAF scoping sessions to determine the selection criteria and approve the final selection.

Round 3 groundwater sampling consisted of sampling 19 Phase I PFAS RI monitoring wells. The Round 4 sampling event consisted of sampling an additional 7 Phase I PFAS RI monitoring wells and 10 existing monitoring wells. After monitoring well installation was complete, a subsequent round of 84 groundwater samples, including field duplicates, were collected from existing and Phase I PFAS RI monitoring wells.

Groundwater sampling was conducted on the following dates with sampling activity described below:

- **22 through 25 June 2021**—Round 1 preliminary groundwater sampling of 47 existing IRP on-base and off-base monitoring wells.
- **9 through 12 August 2021**—Round 2 preliminary groundwater step-out sampling of 53 existing IRP on-base and off-base monitoring wells.
- **7 through 21 March 2023**—Round 3 groundwater sampling of 19 Phase I PFAS RI groundwater monitoring wells.
- **10 through 14 April 2023**—Round 4 groundwater sampling of 10 existing IRP and 7 Phase I PFAS RI groundwater monitoring wells.
- **6 through 30 January 2025**—Round 5 of groundwater sampling of 29 existing IRP, 42 existing Phase I PFAS RI, and 3 newly installed Phase I PFAS RI groundwater monitoring wells.

For pre-RI existing wells, Round 1 wells were selected to provide an initial understanding of PFAS distribution, and Round 2 wells were selected to improve the understanding of existing PFAS distribution. As noted above, the combination of these two rounds were used to inform the initial location selection of new RI groundwater monitoring wells. As RI monitoring wells were installed, iterative sampling of both RI wells and pre-RI existing wells in Rounds 3 and 4 informed refinement of to-be installed monitoring well locations. Rounds 1-4 were discussed continually with, and approved by, the PDT. Round 5 wells included all RI wells and a selection of pre-RI wells to provide a synoptic sampling event across the site, with locations provided in a memorandum (EA 2024) provided to regulatory agencies for additional review and approval.

Groundwater sample identification is presented in **Table 5-11** through **Table 5-15**, respectively. To better understand the composition of PFAS detected in groundwater for the 2021 through 2025 events, groundwater has been characterized across three hydrostratigraphic units: Unconsolidated Deposits, Wanapum Basalt (aka Basalt A), and Grande Ronde Basalt (aka Basalt B). Round 1 through 4 include groundwater sampling of existing IRP wells and of Phase I PFAS RI wells installed between 2021 through 2024. Rounds 1 through 4 of groundwater sampling have been grouped into one subset of data. The Round 5 groundwater sampling event occurred over a smaller time frame (January 2025) and includes a more comprehensive sampling event of select IRP wells and all Phase I PFAS RI wells. The Round 5 groundwater sampling event is represented as the second subset of data. Groundwater sample locations for Round 1 through 4 of sampling are shown on **Figure 5-11a** through **Figure 5-11c**, respectively, and Round 5 sample locations are shown on **Figure 5-12a** through **Figure 5-12c**, respectively. Chemical analytical results of groundwater sampling are discussed in **Section 7.8**.

5.8.3 Groundwater Level Measurements

Groundwater level measurements were taken using a graduated water level meter to the nearest hundredth of a foot. Where available, data was also downloaded from the dedicated pressure transducers (In-Situ Inc. Level Troll 400), which were installed at more than 100 monitoring well locations. Prior to installation of the pressure transducers, the groundwater level was recorded for reference. Groundwater level measurements occurred concurrently with the phased groundwater sampling events discussed in **Section 5.8.2**. In early July 2021, 50 transducers were installed in the first 50 monitoring wells sampled. In late July 2021, the first round of water level data collection was performed on the 50 transducers installed in early July 2021. After reviewing the first round of water levels to evaluate preliminary trends in groundwater flow direction, an additional 50 transducers were installed (i.e., the balance of the planned 100 transducers) to provide a more comprehensive understanding of groundwater flow and inform locations and depths of the monitoring wells installed at the study area. Additional transducers were installed in Phase I PFAS RI groundwater monitoring wells, as they were constructed to add to the CSM and iteratively inform additional monitoring well installation locations. In 2025, after construction of all 52 groundwater monitoring wells was complete, the transducer network was realigned, so all 52 RI wells and an optimized set of 48 additional existing IRP monitoring wells were left with transducers, a total of 100 permanently installed at the study area.

Groundwater elevations from 4 March 2024 (seasonal high) and 4 November 2024 (seasonal low) for wells with available transducer data throughout the study area are presented in **Table 5-16** and as contours on **Figure 5-13a** through **Figure 5-13c** as well as **Figure 5-14a** and **Figure 5-14b**, respectively, for each aquifer. Dates selected for seasonal high (4 March 2024) and seasonal low (4 November 2024) groundwater elevations were identified as recent approximate dates of maximum and minimum groundwater elevation values within respective seasonally high and low groundwater elevation periods across most of the available transducer data for wells located within Unconsolidated and Basalt A aquifers. The groundwater elevation contours for the Basalt B aquifer was not included due to the limitation of one available points due to transducer well selection and hydrograph screening. Groundwater elevation contours from wells sampled in Round 5, and wells throughout the study area with available transducer data during January 2025, are presented in **Table 5-17** and are shown on **Figure 5-15a** and **Figure 5-15b**, for each aquifer. The groundwater elevations used to represent January 2025 were selected on a three-tier basis to present as much available and representative data for the selected timeframe:

- 1) Transducer groundwater elevations available from the date of sampling,
- 2) If data from (1) is unavailable, then static water levels available from the date of sampling (converted to groundwater elevation values), or
- 3) If data from (1) and (2) is unavailable, then transducer groundwater elevations from 15 January 2025 from wells throughout the study area with available data.

A single barometric pressure sensor collected data contemporaneously with the transducer network and was used to post-process the transducer data and eliminate the influence of atmospheric pressure fluctuations on the groundwater elevation measurements. Pressure transducers and the barometric pressure sensor recorded data once every hour while in operation.

Some of the hydrograph groundwater elevation data was impacted by field data gaps or field conditions that affected the ability of the transducers to collect accurate data. This data was corrected by omitting anomalous data points or adding or subtracting a reasonable groundwater elevation correction value, based on data trends. There may be instances where minor fluctuations in data potentially representing field data gaps or outstanding field conditions were not corrected, as the hydrographs were deemed to accurately reflect groundwater elevation trends and flow directions overall. However, potentiometric maps should be used to assess the usability of individual data points as well.

Transducer data is provided in **Table 5-16** and **Table 5-17**, and individual hydrographs are provided in **Appendix A.13**. Any hydrographs not included in the appendix were deemed to have unusable data due to transducer failures or field data gaps that could not be resolved with certainty.

5.9 DECONTAMINATION

All reusable sampling equipment was decontaminated prior to first use and after every use following to prevent cross-contamination. EA SOP No. 073 from the UFP-QAPP (USACE 2021) was adhered to for all decontamination procedures, including rinsing with laboratory-provided PFAS-free deionized water.

5.9.1 Source Water

Source water for decontamination and drilling was obtained from an on-base source for most of the investigation. An off-base source from the City of Airway Heights was used in January 2025. The on-base fire hydrants are not available during the winter months, and the PDT agreed to the off-base City of Airway Heights source when the on-base source was no longer available. On-base water for comes from two different sources. The majority of water is supplied by Air Force owned wells located off site, in the Spokane Valley-Rathdrum Prairie Aquifer. The Air Force also owns one emergency well located on the base. . Municipal water for the City of Airway Heights is purchased from the City of Spokane, and a supplemental water supply is added from the months of May to November from the City of Airway Heights Municipal Well AH9.

5.10 INVESTIGATION DERIVED WASTE

IDW was containerized in properly labeled containers. Soil IDW was containerized in lined roll-off bins at each drill site. Aqueous IDW from drilling activities, groundwater sampling, and decontamination water was properly stored before being transferred to a central frac tank.

IDW was characterized by sampling for laboratory analysis of volatiles and semivolatiles, and toxicity characteristic leaching procedure for metals as required by the PWS for waste profiling of potentially hazardous waste. The IDW, along with the PFAS results, was deemed non-

hazardous waste through waste profiling. Following characterization, both soil and aqueous IDW were transported and properly disposed by Republic Services at its Grand View Subtitle C disposal facility, per the PWS project requirements for PFAS disposal. The USAF will maintain the IDW disposal records to include the final signed manifests.

Soil and aqueous IDW disposal paperwork is presented in **Appendix A.14**. Laboratory soil characterization results for both solid and aqueous IDW are included in **Appendix B.1**.

5.11 DEVIATIONS FROM PLANNED FIELD ACTIVITIES

The following deviations occurred from planned field activities. The deviations are organized by category.

Well Location and Depth Deviations

MW-RI04 was repositioned several times from an initially planned location on West Thorpe Road. The initial move was to a location onto the Spokane County Right of Way along West Thorpe Road at the intersection with South Craig Road where access was granted. The second move was due to a drilling site issue within the Spokane County Right of Way on West Thorpe Road. This move was to a potential location on West Thorpe Road approximately 50 feet east of South Craig Road. A third move was due to an access denial on the Spokane Airport owned portion of West Thorpe Road east of South Craig Road. The well was eventually placed on private property off South Craig Road approximately 1 mile south of the originally intended location.

MW-RI34 was initially proposed to be screened in the Wanapum Basalt and paired with MW-RI32, which was proposed to be screened in the Grande Ronde Basalt. However, upon drilling MW-RI34, it was discovered that the alluvium filling in the paleochannel was deeper than expected in this area and the first bedrock the drill rig encountered was Grande Ronde Basalt. It was then decided to install MW-RI34 as a well screened in the Grande Ronde Basalt and MW-RI32 would be moved from its planned location to a shallower portion of the paleochannel and be screened in the Wanapum Basalt.

MW-RI32 was initially proposed for a location on North Hayford Road north of Deno Road, within the Spokane County Right of Way, as a Grande Ronde Basalt Well. Upon site inspection by the air rotary driller, it was determined that the overhead high-power lines were still too low to provide a safe vertical offset for the mast of the air rotary drilling rig. The planned location was then moved to a location on Inland Power Property with access secured by AFCEC, in a well pair with MW-RI34 nearby on City of Airway Heights property. Given the aforementioned subsurface conditions encountered in MW-RI34 drilling, a third suitable location had to be identified. A location was found in the southeast corner of the City of Airway Heights property where Wanapum Basalt could be reasonably interpolated as existing above the Latah Formation and below the erosional surface of the Airway Heights Paleochannel, and MW-RI32 was moved to that location, where it was successfully installed in the Wanapum Basalt.

MW-RI14, MW-RI15, and MW-RI27 were initially planned as a triple well set on the same City of Airway Heights property with one well for each hydrostratigraphic unit. The first well, MW-

RI14, was installed in the alluvium and was dry down to bedrock. The well was completed with the hope that water may enter the boring during the wet season of winter and spring. The second well was drilled through a thin 30-foot section of Wanapum Basalt that was completely dry. The decision was made to continue the boring through the Latah Formation and complete the well as MW-RI27 screened in the Grande Ronde Basalt. With this hydrogeologic information known, there was no point in advancing MW-RI15 into the Wanapum Basalt at this location. After discussions with the project team, MW-RI15 was moved to an alternative location on City of Airway Heights property adjacent to West MacFarlane Road in the upgradient area of the Airway Heights Paleochannel. This turned the triple well set into a pair.

Well MW-RI19 was planned as a Wanapum Basalt completion. Due to a significant rapid deepening of the East Deep Creek Paleochannel at the location that was suitable for a drill rig to set up, Grande Ronde was the first basalt unit encountered, and the well was screened in that unit to provide information on PFAS concentrations in basalt interacting with the deep portion of the paleochannel.

MW-RI18 was planned as a basalt well but was converted to an alluvial well with PDT input after granitic basement rock was encountered instead. The deep alluvial well provides information on potential contaminant migration away from the RS001P/SS008P source areas. **Section 4.3** provides additional detail on the geology of this boring.

MW-RI11 was initially planned for the east side of South Christensen Road with the PDT. It was moved to the west side of the road due to a utility corridor.

MW-RI12 moved south approximately 20 feet from its initial location on South Dover Road due to a required offset from a natural gas pipeline. It was then moved 5 feet west for the required safe clearance of the drilling tower with overhead power lines.

Well Construction, Development, and Integrity Deviations

Monitoring wells MW-RI14, MW-RI24, and MW-RI33 were installed dry, as no water was encountered while drilling to bedrock. The approach was discussed with the project team and the wells were installed during the dry season with the hope that sufficient water would enter the wells during the wet seasons. No submersible pumps were installed in these dry wells. Samples were not collected in these three wells during the subsequent groundwater sampling events.

Monitoring well MW-RI13 was installed with cement only from 35 feet bgs to ground surface due to subcontractor supply issues with powdered bentonite.

Monitoring wells MW-RI03, MW-RI22, MW-RI37, MW-RI56, and MW-RI60 were installed with the sand pack less than 2 feet above the screen interval due to shallow groundwater. This change allowed for a thicker bentonite seal above the sand pack/screen interval, which protects the well from surface contamination. No adverse effects to the structural integrity of the well or the representativeness of the samples are anticipated.

The following wells were not fully developed at the time of installation due to insufficient yield: MW-RI04, MW-RI22. These two monitoring wells subsequently produced adequate water, meeting water-quality criteria for sample collection.

The following wells have sufficient water for pumping and had dedicated submersible pumps installed in the summer of 2025: MW-RI06a, MW-RI10, and MW-RI20.

MW-RI53 was destroyed by FAFB activities after construction and initial sampling. MW-RI53 was destroyed by construction equipment during the installation of a new front gate. The well required abandonment and redrilling to restore well integrity for future sampling activity. The replacement well has been designated MW-RI53a.

Well surface monument construction deviations were observed on final inspection, after all drilling was completed. These deviations typically involved the concrete pad and the well cap type. Deviations will be restored to the conditions outlined in **Section 5.6.1** prior to the conclusion of this Phase 1 RI.

Access Deviations

The flowage easement for No Name Ditch was intended for study, as shown in the 2024 UFP-QAPP Addendum 2 (USACE 2024). AFCEC assumed the language of the access agreement allowed for sample collection activities. The current property owner, the Spokane Airport, had a differing interpretation of the language of the access agreement and denied entry to AFCEC and their contractor EA for the purpose of soil, subsurface soil, and groundwater collection. The project was put on hold from the initial mobilization planned for July 2024. An alternative plan was proposed by EA, and discussed numerous times with the project team, and implemented in December 2024 and January 2025. The alternative plan involved collection of the same target data from 10 borings advanced on the west and north side of the flowage easement along South Craig Road, and along the southern boundary of a private residence that granted property access to AFCEC bordering Spokane Airport property that floods during current high water flows in No Name Ditch.

Monitoring Well Name Deviations

MW-RI06 was renamed MW-RI06a after MW-RI06b was installed on 17 December 2024. Before MW-RI06b was drilled, samples collected from MW-RI06a were named MW-RI06.

Monitoring well MW-RI09 was attempted as an unconsolidated deposits well but was abandoned when basalt bedrock was encountered at 5 feet bgs.

The following wells names were initially planned but never utilized: MW-RI28, MW-RI35, MW-RI44, MW-RI45, MW-RI46, MW-RI48. These locations were dropped due to access issues, shifting emphasis of needs as more data was gathered and step out decisions were made with the project team or field vetting of location viability. The required project wells were then moved to new locations with an updated sequential well name, dropping the original name listed above, resulting in non-use of those well names.

Monitoring well MW-RI31 was attempted in the field with a boring advanced, resulting in a dry hole to bedrock. Samples were collected and analyzed from MW-RI31, and the boring was then abandoned without a monitoring well installed. Subsequent to this effort, monitoring wells were installed in all successfully completed borings in an attempt to collect groundwater at wetter times of the year.

Field Conditions Sampling Deviations

A groundwater sample was not collected from the following locations, due to lack of water in the borehole: NND-60.

A surface water sample was not collected from the following locations, due to lack of water in the area: NND-79, NND-80, and NND-81.

During the Round 3 groundwater sampling event, MW-602 and MW-RI53 were not sampled, due to lack of water in the well.

During the Round 5 groundwater sampling event, the following wells had water levels deeper than the peristaltic limit and had insufficient water for dedicated pump installs: MW-RI11, MW-RI12, MW-RI14, MW-RI24, and MW-RI33. MW-RI11 and MW-RI12 were sampled with non-dedicated sampling equipment. MW-RI14, MW-RI24, and MW-RI33 were not sampled because the wells were dry at the time of sampling.

The following wells were sampled with turbidity greater than 10 NTU: MW-003, MW-063, MW-78, MW-94 MW-245, MW-279, MW-303, MW-310, MW-343 (Round 2 and 5), MW-360, MW-384, MW422, MW-RI06A (Round 4), MW-RI06B, MW-RI10 (Round 4), MW-RI18, MW-RI43, MW-RI52 (Round 3 and 5), MW-RI55, and MW-RI56 (Round 3). An evaluation of turbidity and PFOS concentrations across the dataset indicates some samples collected at >10 NTUs exhibit elevated PFOS concentrations (e.g., MW-003: 25,000 ng/L at 22.92 NTUs) while others show moderate PFOS concentrations despite extremely high turbidity (e.g., MW-RI18: 310 ng/L PFOS at 456 NTUs). This indicates no consistent correlation between turbidity and PFAS concentrations. This observation aligns with findings in the peer-reviewed literature:

- Gao et al. (2024) found PFAS partitioning to suspended sediment in estuarine environments decreases with increasing suspended particulate matter due to particle aggregation and reduced surface area, particularly for short-chain PFAS. They observed that elevated turbidity could reduce overall solid phase partitioning (K_d) rather than enhance PFAS concentrations in water.
- Zhao et al. (2016), studying the highly turbid Yellow River, observed a significant negative correlation between suspended particulate matter concentration and PFAS content per mass unit, suggesting that high turbidity can dilute PFAS across more particles and reduce its apparent concentration.
- Munoz et al. (2017) similarly observed in a macrotidal estuary that long-chain PFAS like PFOS tended to associate with suspended particles under high-turbidity conditions, but

this did not translate into higher aqueous PFAS concentrations. Instead, they emphasized the role of sediment resuspension and particle concentration as factors in PFAS fate.

Collectively, these findings support the conclusion that elevated turbidity alone does not bias PFAS concentrations upward and, in some cases, may reduce PFAS levels in the dissolved phase through sorption or dilution.

6. LABORATORY ANALYTICAL RESULTS

This section presents analytical results, discusses how chemical analytical data were analyzed and validated, and provides an assessment of the quality and usability of the chemical analytical results.

Analytical Results are presented in **Table 6-1** through **Table 6-16**.

Field QA/QC analytical results for the soil samples collected within the release areas, No Name Ditch and on the west and north side of the Flowage Easement are summarized in **Table 6-1**. Most sample results were non-detect. The few that were detected were below the applicable screening level.

Results for field blanks associated with soil samples collected from borings advanced during well installation are summarized in **Table 6-2**. Most sample results were non-detect. The few that were detected were below the applicable screening level.

Laboratory QA/QC analytical results are included in laboratory reports presented in **Appendix B.1** and **Appendix B.2**.

6.1 LABORATORY ANALYSIS

Soil, sediment, groundwater, and surface water samples were analyzed for 24 PFAS using liquid chromatography with tandem mass spectrometry (LC-MS/MS) in accordance with a modified version of drinking water Method 537.1 (EPA 2018) with compliance with DoD Quality Systems Manual (QSM) Versions 5.3 and 5.4, Table B-15 (DoD and Department of Energy [DOE] 2019 and 2021). Analyses were performed by Eurofins Lancaster Laboratories Environmental LLC, located in Lancaster, Pennsylvania, and Agriculture and Priority Pollutants Laboratories LLC, located in Clovis, California. Both laboratories are certified through the DoD Environmental Laboratory Accreditation Program to perform analysis of aqueous and soil samples for PFAS, in compliance with DoD QSM Table B-15.

Prior to PFAS analysis, aqueous samples are fortified with isotopically labeled compounds (extracted internal standards) and passed through a solid-phase extraction cartridge. The compounds are eluted from the solid phase sorbent with solvent(s). The extract is concentrated with nitrogen in a heated water bath and adjusted to a specified volume with methanol. An aliquot of the extract is injected into an LC-MS/MS analytical instrument equipped with a C18 or equivalent column. The analytes are separated and identified by comparing the responses and ratios for the quantitation and confirmation ions and retention times to those for reference standards. The concentration of each analyte is determined through comparison to isotopically labeled compounds and calibration standards.

Similarly, soil and sediment samples were fortified with isotopically labeled compounds (extracted internal standards) and subjected to laboratory extraction, using ultrasonic extraction or equivalent. The sample extracts are vortexed and centrifuged, as applicable, concentrated with nitrogen, and reconstituted with solvent. The extract is prepared for injection on an LC-MS/MS instrument, using the same procedures outlined above for PFAS analysis of aqueous samples.

The PDT recognizes DoD has since directed the use of EPA Method 1633 for PFAS site investigations; however, analysis in accordance with DoD QSM Table B-15 was retained throughout this project in accordance with the QAPP and QAPP Addendums (USACE 2021, 2022, and 2024), and per modification scoping discussions with the PDT.

A subset of soil samples were also evaluated for mobility under conditions that simulate rainwater percolating through the samples using EPA Method 1312 (EPA 1994), a synthetic precipitation leaching procedure (SPLP), to aid in the evaluation of source strength and fate and transport in the environment (i.e., leaching into groundwater). Following is a summary of the leaching procedure. For samples containing greater than 0.5 percent solids, the liquid phase, if any, is separated from the solid phase and analyzed separately from the solid phase. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase. The extraction fluid used for soil samples consisted of reagent water, adjusted to pH 5.00 $\pm$ 0.05 with a 60:40 percent weight-percent mixture of sulfuric acid and nitric acid. The liquid extract was separated from the solid phase by filtration through a glass fiber filter. Any initial liquid phase of the sample was combined with the liquid extract for analysis for PFAS analytes by LC-MS/MS in accordance with DoD QSM Table B-15. The SPLP results are presented in **Table 6-10**. Discussion of SPLP and how it applies to the fate and transport of PFAS in the study area is presented in **Section 8.4**. Due to the nature of the SPLP analysis method where the soil sample is fully saturated during the analysis process, SPLP results are likely biased higher than what would be found leaching under ambient conditions. This is due to PFAS affinity to remain at the air-water interface and other complex reactions with soil mineralogy that occurs with variable saturation conditions (Rayner et al 2022).

Laboratory reports containing analytical data for PFAS are presented in **Appendix B.1**.

6.2 DATA REVIEW AND VALIDATION

Data were reviewed and validated by the independent data validation firm, Synectics, located in Sacramento, California. Data were reviewed for compliance with the applicable QAPPs (USACE 2021 and 2024) and DoD QSM Version 5.3 (DoD and DOE 2019) or Version 5.4 (DoD and DOE 2021). Data validation was performed in accordance with the General Data Validation Guidelines (DoD 2019b), associated Module 3 Data Validation Procedure for PFAS Analysis by QSM Table B-15 (DoD 2020), and QAPP Worksheet #36 (USACE 2021 and 2024). Module 3 was followed for blank qualification for data associated with samples collected from 2021 through 2023 rather than QAPP Worksheet #36 Table 36-2. Modules 1, 2, 3, and 4 Revised Table for Sample Qualification in the Presence of Blank Contamination (DoD 2022) were followed for data associated with samples collected in 2024 collected in accordance with QAPP Addendum 2 (USACE 2024).

A total of 73 laboratory reports were received for the aqueous and solid samples collected from 22 June 2021 through 30 January 2025 with 100 percent of the PFAS data validated. Of the 100 percent validated data, a minimum of 10 percent were validated at Stage 4, and the remaining (maximum 90 percent) were validated at Stage 2B. Details of the data validation and the qualified results are provided in the individual data validation reports included in **Appendix B.2**.

6.3 DATA USABILITY ASSESSMENT

The data associated with the soil, sediment, groundwater, and surface water samples were validated as discussed in **Section 6.2**. A data quality and usability assessment was performed to determine if the validated data are suitable for the intended use for the Phase I RI as stated in the QAPP and Addendums (USACE 2021, 2022, and 2024). Details regarding data quality and usability are presented in the Data Quality and Usability Assessment Report, which is provided as **Appendix B.2** and includes the data validation reports as attachments.

As indicated in **Section 5**, the planned samples were collected as outlined in the QAPP and Addendums (USACE 2021, 2022, and 2024) unless otherwise stated in **Section 5.11**. Generally, the data quality indicators met project requirements for the sampling and analytical program identified in the QAPP and Addendums (USACE 2021, 2022, and 2024). Data qualifiers were applied as applicable when QC limits were not met. Unless rejected (as discussed below), sample results accurately indicate the presence and/or absence of target analyte concentrations at sampled locations. Sample results, qualified as applicable, are precise. Because samples were collected in accordance with the QAPP and Addendums (USACE 2021, 2022, and 2024), sample results are considered representative of study area conditions at the time of collection. Results obtained are comparable to industry standards in that collection and analytical techniques followed approved, documented procedures specified in the QAPP and Addendums (USACE 2021, 2022, and 2024). Results are reported in appropriate units of measure (ng/L for water samples and µg/kg or ng/g for soil) that were converted to mg/kg for presentation in Table 6-1 through Table 6-16, as applicable. The conversion rate is 1,000 ng/g to 1 mg/kg. Analytical sensitivity was evaluated by comparing the RSLs with the limits of detection for each sample result. The limits of detection for non-detected sample results are below the applicable RSLs; therefore, the project goal for sensitivity was met. As discussed in **Appendix B.2**, several sample results were qualified as estimated when QC limits were not met, which is typical for a data set of this size and nature. Estimated results are considered potentially inaccurate or imprecise due to a bias or QC criteria exceedances but usable, as discussed in **Appendix B.2**.

Thirteen sample results were rejected during data validation and assessment because the recoveries for isotopically labeled compounds (extracted internal standards) were less than 20 percent. This is not unusual for a data set of this size and nature. None of the rejections were compounds with PSLs. Rejected data should not be used for any purpose but do not affect the conclusions of this investigation. The following is a summary of rejected sample results:

- Perfluorododecanoic acid and perfluorotridecanoic acid for groundwater sample FGW-N-24 and surface water sample NND-41-SW (Note: For groundwater sample FWG-N-24, results for these two analytes were usable for the corresponding field duplicate sample FWG-N-25.)
- Perfluorotetradecanoic acid for field blank FB-072424 and groundwater samples FGW-E-167, FGW-N-14, FGW-N-24, FGW-N-25 (field duplicate of FGW-N-24), NND-05-GW, NND-33-GW, and NND-35-GW; and surface water sample NND-41-SW

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7. NATURE AND EXTENT OF CONTAMINATION

This section discusses the nature and extent of PFAS contamination by specific source area where source is defined by an IRP PFAS site and as installation-wide considerations for secondary releases (i.e., No Name Ditch) and regional groundwater. For visual representation purposes, PFOS has been selected as being representative of the extent of PFAS impacts as it is commonly associated with AFFF usage. A review of PFAS concentrations in **Table 6-12** through **Table 6-16** shows that typically PFOS has the greatest number of PSL exceedances. PFOS has the lowest PSL for groundwater of any PFAS. In the relatively few locations PFHxS has a higher concentration than PFOS. It does so by only a small percentage, and the small exceedance is made irrelevant under the current PSLs. The PSL for PFHxS is 1 order of magnitude higher than PFOS, meaning PFOS remains the best single compound for analyzing the maximum extent of PFAS impact.

7.1 FT004P (AFFF AREA 1)

The source of PFAS at FT004P is historical firefighting training activities. The total quantity of AFFF used during exercises is unknown; however, it is known that approximately 125 gallons of AFFF were used during each fire-training exercise. The AFFF discharged in this area went into an oil-water separator, from which, water was then allowed to run off and infiltrate the soil.

7.1.1 Surface Soil

Of the 18 surface soil samples from FT004P, including duplicates, 8 were further analyzed by SPLP, as discussed in **Section 7.1.3**. Concentrations of PFAS in FT004P ranged from no detection to a maximum concentration of:

- 0.68 mg/kg PFBS
- 0.32 mg/kg PFBA
- 12 mg/kg PFHxS
- 1.9 mg/kg PFHxA
- 0.53 mg/kg PFNA
- 28 mg/kg PFOS
- 3.4 mg/kg PFOA

Of the 18 surface soil samples analyzed from FT004P, including duplicates, 6 samples for PFHxS, 4 samples for PFNA, 12 samples for PFOS, and 6 samples for PFOA had detections above applicable screening levels. Analytes PFBS, PFBA, and PFHxA were not detected above screening values in FT004P surface soil. The maximum detection of all analytes is 28 mg/kg PFOS in surface soil sample SB-RA103-S from location SB-RA103, the most contaminated surface soil sample at FT004P. As shown on **Figure 7-1**, the highest surface soil PFOS detections are in the central east section of the release area, south of the oil-water separator and west of the perimeter road.

Additionally, surface soils from FT004P had detections below screening levels of PFBS (11 samples), PFBA (13 samples), PFHxS (12 samples), PFHxA (17 samples), PFNA (10 samples), PFOS (6 samples), PFOA (12 samples). Finally, there were surface soil samples that

had no detections of PFBS (7 samples), PFBA (5 samples), PFHxA (1 sample), and PFNA (4 samples). FT004P surface soil analytical results are summarized in **Table 6-3** and are shown for PFOS on **Figure 7-1**.

7.1.2 Subsurface Soil

Concentration of PFAS for the 62 subsurface samples at FT004P, including duplicates, ranged from no detection to a maximum concentration of:

- 0.023 mg/kg PFBS
- 0.025 mg/kg PFBA
- 2.0 mg/kg PFHxS
- 0.23 mg/kg PFHxA
- 0.058 J mg/kg PFNA
- 9.1 mg/kg PFOS
- 0.56 mg/kg PFOA

Of the 62 subsurface soil samples analyzed from FT004P, including duplicates, 6 samples for PFHxS, 2 samples for PFNA, 37 samples for PFOS, 9 samples for PFOA had detections above applicable screening levels. Analytes PFBS, PFBA, and PFHxA were not detected above screening values in FT004P subsurface soil. The maximum detection of all analytes was 9.1 mg/kg PFOS in subsurface sample SB-RA111-B from location SB-RA111, the most contaminated subsurface soil sample at FT004P. As shown on **Figure 7-1**, the highest subsurface PFOS detections are in the central section of the release area, south of the oil-water separator and west of the perimeter road.

Additionally, subsurface soils at FT004P had detections below screening levels in PFBS (20 samples), PFBA (22 samples), PFHxS (55 samples), PFHxA (60 samples), PFNA (25 samples), PFOS (23 samples), and PFOA (4 samples). Finally, there were subsurface soil samples that had no detection of PFBS (42 samples), PFBA (40 samples), PFHxS (1 sample), PFHxA (2 samples), PFNA (35 samples), PFOS (2 samples), and PFOA (9 samples). FT004P subsurface soil analytical results are summarized in **Table 6-3** and shown for PFOS on **Figure 7-1**.

7.1.3 Soil Leachability

Eight soil samples, including duplicates, were selectively collected from FT004P for both total and SPLP PFAS analysis. The samples were collected in areas that represent a range of PFAS concentrations in soil to assess the leaching and source strength characteristics of specific PFAS and their potential for migration to groundwater at levels of environmental concern. This data is best evaluated by comparing total PFAS concentrations to the respective SPLP results for each sample location; analysis of the SPLP data, as it relates soil to groundwater migration, is presented in **Section 8.4**.

Total soil concentrations for PFAS analytes in SPLP soil samples from FT004P ranged from non-detect to a maximum concentration of:

- 0.68 mg/kg PFBS

- 0.32 mg/kg PFBA
- 12 mg/kg PFHxS
- 1.9 mg/kg PFHxA
- 0.53 mg/kg PFNA
- 28 mg/kg PFOS
- 3.4 mg/kg PFOA

SPLP concentrations ranged from non-detect to a maximum concentration of:

- 6,800 ng/L PFBS
- 2,800 ng/L PFBA
- 280,000 ng/L PFHxS
- 27,000 ng/L PFHxA
- 10,000 ng/L PFNA
- 350,000 J ng/L PFOS
- 83,000 ng/L PFOA

The soil sample data for PFAS totals and SPLPs is summarized in **Table 6-10**.

7.1.4 Groundwater

Concentrations of PFAS from the FT004P groundwater grab samples have a maximum concentration of:

- 5,200 J ng/L PFBS
- 5,200 ng/L PFBA
- 64,000 J ng/L PFHxS
- 29,000 J ng/L PFHxA
- 2,000 ng/L PFNA
- 73,000 J ng/L PFOS
- 23,000 J ng/L PFOA

All groundwater grab samples from FT004P had detections for all analytes. Of the 16 groundwater grab samples analyzed from FT004P, including duplicates, 13 samples from PFBS, 3 samples for PFBA, and all samples for PFHxS, PFHxA, PFNA, PFOS, and PFOA had detections above applicable screening levels. The maximum detection of the analytes is from two groundwater grab sample SB-RA103-GW and SB-RA111-GW, from location SB-RA103 and SB-RA111 respectively, the most contaminated groundwater grab samples at FT004P. As shown on **Figure 7-2**, the highest groundwater grab PFOS detections are located in the central east section of the release area, south of the oil-water separator and west of the perimeter road.

Additionally, groundwater grab samples from FT004P had detections below screening levels of PFBS (3 samples), and PFBA (13 samples). FT004P groundwater grab samples analytical results are summarized in **Table 6-3** and are shown for PFOS on **Figure 7-2**.

7.1.5 Summary

Surface soil concentrations of PFAS at FT004P are highest south of the road that runs across the center of the release area with a slight decrease to the west. PFAS concentrations then decrease towards the north and south, away from the middle of the site (**Figure 7-1**). This supports the site history of training activities. The highest surface soil PFOS concentration observed was 28 mg/kg from surface soil sample SB-RA103-S, at location SB-RA103. While there are samples with PFHxS, PFNA, and PFOA analytical results above the PSLs in the release and secondary release areas, PFOS is the primary contaminant of concern, detected in more samples than any other analyte and with the greatest exceedances of its 0.013 mg/kg PSL for soil and 4.0 ng/L PSL for groundwater.

Subsurface soil concentrations of PFAS at FT004P are highest south of the road that runs across the center of the release area and slightly decrease from east to west. PFAS concentrations then decrease north and south, away from the center of the site (**Figure 7-1**). The highest subsurface soil PFOS concentration observed was 9.1 mg/kg from subsurface soil sample SB-RA111-B, at location SB-RA111, which is at 2 to 3 feet bgs. The deepest samples were taken at a depth interval of 14 to 15 feet bgs; all the sample collected within this interval were below the PSLs except for SB-RA113-E. The deepest sample with a concentration of PFAS over the PSLs was SB-RA113-E from location SB-RA113 (15 feet bgs), with concentrations of 0.016 mg/kg PFOS. All direct push borings for soil sampling during the Phase I RI at FT004P were advanced until refusal.

Leachate concentrations for SPLP analyses at FT004P are highest south of the road that runs across the center of the release area, corresponding to the highest soil concentrations at the site. The highest leachate concentration observed was 350,000 ng/L PFOS in sample SB-RA103-A from location SB-RA103 (**Table 6-10**).

Groundwater concentrations of PFAS at FT004P are highest at the center of the release area and decrease moving away from the four center points SB-RA110-GW, SB-RA111-GW, SB-RA106-GW, and SB-RA103-GW, from locations SB-RA110, SB-RA111, SB-RA106, and SB-RA103 and sampled at 4, 5, 12, and 14 feet bgs, respectively (**Figure 7-2**). The highest concentration observed was 73,000 J ng/L PFOS at SB-RA103-GW from location SB-RA103.

The highest concentrations observed in each media and SPLP analysis were all at the same location in the center of the site, SB-RA103. Similarly high results across all media and SPLP analysis were seen at location SB-RA111.

The results are as expected for a high AFFF usage site where there are repeated applications of AFFF over many years. The highest concentrations in surface soils are located at the center of the release area and the highest subsurface concentrations located at the center with concentrations above the PSLs towards the east and west, correspond with the groundwater sample data collected.

All soil borings were conducted prior to the reduction in PSLs implemented in UFP-QAPP Addendum 2 (USACE 2024), and as shown on **Figure 7-1**, under the newer PSLs this site is not fully delineated to the soil PSLs horizontally or vertically. Groundwater grab samples greatly

exceed the PSLs, with the lowest concentration at Site FT004P still exceeding the PSL for PFOS by more than 3 orders of magnitude. Groundwater is not delineated to the PSLs at this local scale, and these high soil and groundwater concentrations demonstrate that Site FT004P is likely an ongoing source of PFAS contamination to groundwater.

7.2 RS003P (AFFF AREA 2)

The source of PFAS at RS003P was AFFF sprayed onto an old taxiway several times per year during equipment and AFFF calibration testing (CH2M Hill 2015). This area was used to test equipment and AFFF chemical balance. Runoff flowed south to an unpaved area and likely infiltrated directly into soil and groundwater. The quantity of AFFF used is unknown.

7.2.1 Surface Soil

Of the 18 surface soil samples from RS003P, including duplicates, 11 were further analyzed by SPLP, which is discussed in **Section 7.2.3**. Concentrations of PFAS in RS003P ranged from no detection to a maximum concentration of:

- 0.00044 J mg/kg PFBS
- 0.00096 J mg/kg PFBA
- 0.021 mg/kg PFHxS
- 0.0024 mg/kg PFHxA
- 0.0025 mg/kg PFNA
- 1.3 mg/kg PFOS
- 0.0052 mg/kg PFOA

Of the 18 surface soil samples analyzed from RS003P, including duplicates, 16 samples for PFOS had detections above applicable screening levels. Analytes PFBS, PFBA, PFHxS, PFHxA, PFNA, and PFOA were not detected above screening values in RS003P surface soil. The maximum detection of all analytes is 1.3 mg/kg PFOS in surface soil sample SB-RA203-S from location SB-RA203, the most contaminated surface soil sample at RS003P. As shown on **Figure 7-3**, the highest surface soil PFOS detections are located in the unpaved area along the north edge of the paved taxiway and in the center of the release area along the south edge of the paved taxiway.

Additionally, surface soils from RS003P had detections below screening levels of PFBS (1 sample), PFBA (2 samples), PFHxS (18 samples), PFHxA (17 samples), PFNA (16 samples), PFOS (2 samples), PFOA (18 samples). Finally, there were surface soil samples with no detections of PFBS (17 samples), PFBA (16 samples), PFHxA (1 sample), and PFNA (2 samples). RS003P surface soil analytical results are summarized in **Table 6-4** and are shown for PFOS on **Figure 7-3**.

7.2.2 Subsurface Soil

Concentration of PFAS for the 66 subsurface samples at RS003P, including duplicates, ranged from no detection to a maximum concentration of:

- 0.0021 J mg/kg PFBS
- 0.0017 J mg/kg PFBA
- 0.069 mg/kg PFHxS
- 0.0063 mg/kg PFHxA
- 0.0014 mg/kg PFNA
- 0.65 mg/kg PFOS
- 0.0079 mg/kg PFOA

Of the 66 subsurface soil samples analyzed from RS003P, including duplicates, 26 samples for PFOS had detections above applicable screening levels. Analytes PFBS, PFBA, PFHxS, PFHxA, PFNA, and PFOA were not detected above screening values in RS003P subsurface soil. The maximum detection of all analytes was 0.65 mg/kg PFOS in subsurface sample SB-RA212-B from location SB-RA212, the most contaminated subsurface soil sample at RS003P. As shown on **Figure 7-3**, the highest subsurface soil PFOS detections are located in the unpaved area along the north edge of the old taxiway.

Additionally, subsurface soils at RS003P had detections below screening levels in PFBS (10 samples), PFBA (12 samples), PFHxS (61 samples), PFHxA (54 samples), PFNA (15 samples), PFOS (37 samples), and PFOA (46 samples). Finally, there were subsurface soil samples that had no detection of PFBS (56 samples), PFBA (54 samples), PFHxS (5 sample), PFHxA (12 samples), PFNA (51 samples), PFOS (3 samples), and PFOA (20 samples). RS003P subsurface soil analytical results are summarized in **Table 6-4** and are shown for PFOS on **Figure 7-3**.

7.2.3 Soil Leachability

The team selectively collected 11 soil samples from RS003P, including duplicates, for both total and SPLP PFAS analysis. The samples were collected in areas that represent a range of PFAS concentrations in soil to assess the leaching and source strength characteristics of specific PFAS and their potential for migration to groundwater at levels of environmental concern. This data is best evaluated by comparing total PFAS concentrations to the respective SPLP results for each sample location; analysis of the SPLP data, as it relates soil to groundwater migration, is presented in **Section 8.4**.

Total soil concentrations for PFAS analytes in SPLP soil samples from RS003P ranged from non-detect to a maximum concentration of:

- 0.00044 J mg/kg PFBS
- 0.00096 J mg/kg PFBA
- 0.021 mg/kg PFHxS
- 0.0024 mg/kg PFHxA
- 0.0025 mg/kg PFNA
- 1.3 mg/kg PFOS
- 0.0052 mg/kg PFOA

SPLP concentrations ranged from non-detect to a maximum concentration of:

- 19 J ng/L PFBS
- 35 J ng/L PFBA
- 630 J ng/L PFHxS
- 100 ng/L PFHxA
- 70 J ng/L PFNA
- 24,000 ng/L PFOS
- 130 J ng/L PFOA

The soil sample data for PFAS totals and SPLPs is summarized in **Table 6-10**.

7.2.4 Groundwater

Concentrations of PFAS from the RS003P groundwater grab samples ranged from no detection to a maximum concentration of:

- 850 ng/L PFBS
- 1,700 ng/L PFBA
- 13,000 ng/L PFHxS
- 5,500 ng/L PFHxA
- 470 ng/L PFNA
- 55,000 J ng/L PFOS
- 2,300 ng/L PFOA

All groundwater grab samples from RS003P had detections for all analytes. Of the 13 groundwater grab samples analyzed from RS003P, including duplicates, 3 samples from PFBS, 10 samples for PFHxA, and all samples for PFHxS, PFNA, PFOS, and PFOA had detections above applicable screening levels. The maximum detection of the analytes is 55,000 ng/L PFOS from groundwater grab sample SB-RA204-GW from location SB-RA204, the most contaminated groundwater grab sample at RS003P. As shown on **Figure 7-4**, the highest groundwater grab PFOS detections are in the unpaved areas along the north and the southeast edge of the paved, old taxiway.

Additionally, groundwater grab samples from RS003P had detections below screening levels of PFBS (10 samples), PFBA (13 samples), and PFHxA (3 samples). RS003P groundwater grab sample analytical results are summarized in **Table 6-4** and are shown for PFOS on **Figure 7-4**.

7.2.5 Summary

At RS003P, AFFF was used approximately from 1995 to 2015, and AFFF was sprayed onto old taxiway pavement where it could runoff onto unpaved areas. This area was used several times per year to test equipment and AFFF chemical balance (CH2M Hill 2015). The quantity of AFFF used is unknown.

Surface soil concentrations of PFAS at RS003P are highest within the soils along the taxiway (10 times to 100 times the PSL for PFOS) and continue to exceed north of the taxiway. At location

SB-RA205, sample SB-RA205-S is the only surface sample to not exceed the PSL for PFOS (**Figure 7-3**). This supports the site history of spraying AFFF onto old taxiway pavement and shows surface soil exceedances away from the taxiway, indicating possible runoff contamination. The highest surface soil concentration observed was 1.3 mg/kg PFOS from surface soil sample SB-RA203-S, at location SB-RA203. While there are samples with PFHxS, PFNA, and PFOA analytical results above the PSLs in the release and secondary release areas, PFOS is the primary contaminant of concern, being detected in more samples than any other analyte and with the greatest exceedances of its 0.013 mg/kg PSL for soil and 4.0 ng/L PSL for groundwater.

Subsurface soil concentrations of PFAS at RS003P are highest within the soils along the former taxiway (10 times to 100 times the PSL for PFOS) and continue to exceed north of the former taxiway. PFAS concentrations decrease south of SB-RA213 and SB-RA214 and moving southeast within RS003P (**Figure 7-3**). The highest subsurface soil concentration observed was 0.65 mg/kg PFOS from subsurface soil sample SB-RA212-B from location SB-RA212, 2 to 3 feet bgs. The deepest samples were taken at a depth interval of 14 to 15 feet bgs, and all the samples within this interval were below the PSL for PFOS. The deepest sample with a concentration of PFAS over the PSLs was SB-RA204-12 from location SB-RA204 (12 feet bgs), with a concentration of 0.063 mg/kg PFOS. All direct-push borings for soil sampling during the Phase I RI at RS003P were advanced until refusal.

Leachate concentrations for SPLP analyses at RS003P are highest on either side of the former taxiway that runs across the center of the release area. The highest leachate concentration observed was 11,000 ng/L PFOS at SB-RA210-A.

Groundwater concentrations of PFAS at RS003P are highest at the northeast corner of the release area and decrease towards the west and south of the taxiway (**Figure 7-4**). The highest concentration observed was 55,000 ng/L PFOS in groundwater sample SB-RA204-GW from location SB-RA204.

The highest concentrations observed in each media and SPLP analysis were not all at the same location but are relatively elevated across all media and SPLP analysis where surface soil samples show the highest concentrations.

All soil borings were conducted prior to the reduction in PSLs implemented in UFP-QAPP Addendum 2 (USACE 2024); and, as shown on **Figure 7-3**, this site soil is not fully delineated to the soil PSLs horizontally or vertically. Groundwater grab samples greatly exceed the PSLs, with the lowest concentration at Site RS300P still exceeding the PSL for PFOS by more than 2 orders of magnitude. Groundwater is not delineated to the PSLs, and these high soil and groundwater concentrations demonstrate that Site RS300P is likely an ongoing source of PFAS contamination to groundwater.

7.3 SS008P (AFFF AREA 3)

The source of PFAS contamination at SS008P was a result of a KC-135 crash in a grassy area in March 1987. The amount of AFFF used to extinguish the fire is unknown.

7.3.1 Surface Soil

Of the 14 surface soil samples from SS008P, including duplicates, 2 were further analyzed by SPLP, which is discussed in **Section 7.3.3**.

Concentrations of PFAS in SS008P ranged from no detection to a maximum concentration of:

- 0.00086 mg/kg PFHxS
- 0.00038 J mg/kg PFHxA
- 0.012 mg/kg PFNA
- 0.014 mg/kg PFOS
- 0.0015 mg/kg PFOA

Of the 14 surface soil samples analyzed from SS008P, including duplicates, 1 sample for PFOS had detections above applicable screening levels. All other analytes were not detected above screening values in SS008P surface soil. The maximum detection of all analytes is 0.014 mg/kg PFOS in surface soil sample SB-KC13501-S from location SB-KC13501, the most contaminated surface soil sample at SS008P. As shown on **Figure 7-5**, the highest surface soil PFOS detection is in the western corner of the grassy area, in the central section of the release area.

Additionally, surface soils from SS008P had detections below screening levels of PFHxS (12 samples), PFHxA (4 samples), PFNA (11 samples), PFOS (13 samples), PFOA (11 samples). Finally, there were surface soil samples with no detections of PFBS (14 samples), PFBA (14 samples), PFHxS (2 samples), PFHxA (10 samples), PFNA (3 samples), and PFOS (3 samples). SS008P surface soil analytical results are summarized in **Table 6-5** and shown for PFOS on **Figure 7-5**.

7.3.2 Subsurface Soil

Concentration of PFAS for the 46 subsurface samples at SS008P, including duplicates, ranged from no detection to a maximum concentration of:

- 0.00066 J mg/kg PFBS
- 0.00088 J mg/kg PFBA
- 0.004 mg/kg PFHxS
- 0.0026 mg/kg PFHxA
- 0.0064 mg/kg PFNA
- 0.2 mg/kg PFOS
- 0.0093 mg/kg PFOA

Of the 46 subsurface soil samples analyzed from SS008P, including duplicates, 5 samples for PFOS had detections above applicable screening levels. All other analytes were not detected above screening values in SS008P subsurface soil. The maximum detection of all analytes was 0.2 mg/kg PFOS in subsurface sample SB-KC13505-4 and its duplicate sample SB-KC13505-4-DUP from location SB-KC12505 the most contaminated subsurface soil sample at SS008P. As shown on **Figure 7-5**, the highest subsurface soil PFOS detections are located south of the southern parking area and south of the release area, north and south of O'Malley Avenue.

Additionally, subsurface soils at SS008P had detections below screening levels in PFBS (1 sample), PFBA (2 samples), PFHxS (5 samples), PFHxA (21 samples), PFNA (9 samples), PFOS (26 samples), and PFOA (19 samples). Finally, there were subsurface soil samples that had no detection of PFBS (45 samples), PFBA (44 samples), PFHxS (21 sample), PFHxA (25 samples), PFNA (37 samples), PFOS (15 samples), and PFOA (27 samples). SS008P subsurface soil analytical results are summarized in **Table 6-5** and shown for PFOS on **Figure 7-5**.

7.3.3 Soil Leachability

Two soil samples were selectively collected from SS008P for both total and SPLP PFAS analysis. The samples were collected in areas that represent a range of PFAS concentrations in soil to assess the leaching and source strength characteristics of specific PFAS and their potential for migration to groundwater at levels of environmental concern. This data is best evaluated by comparing total PFAS concentrations to the respective SPLP results for each sample location. Analysis of the SPLP data, as it relates soil to groundwater migration, is presented in **Section 8.4**.

Total soil concentrations for PFAS analytes in SPLP soil samples from SS008P ranged from non-detect to a maximum concentration of:

- 0.00029 J mg/kg PFHxS
- 0.00043 J mg/kg PFNA
- 0.0028 mg/kg PFOS
- 0.00078 mg/kg PFOA

SPLP concentrations ranged from non-detect to a maximum concentration of:

- 24 J ng/L PFBS
- 5.5 J ng/L PFBA
- 350 J ng/L PFHxS
- 35 J ng/L PFHxA
- 20 ng/L PFNA
- 950 ng/L PFOS
- 130 ng/L PFOA

The soil sample data for PFAS totals and SPLPs is summarized in **Table 6-10**.

7.3.4 Groundwater

Concentrations of PFAS from the SS008P groundwater grab samples ranged from no detection to a maximum concentration of:

- 1,300 ng/L PFBS
- 630 ng/L PFBA
- 12,000 ng/L PFHxS
- 2,900 ng/L PFHxA
- 330 ng/L PFNA

- 12,000 ng/L PFOS
- 1,700 ng/L PFOA

All groundwater grab samples from SS008P had detections for all analytes. Of the 8 groundwater grab samples analyzed from SS008P, including duplicates, 2 samples from PFBS, 3 samples for PFHxA, and all samples for PFHxS, PFNA, PFOS, and PFOA had detections above applicable screening levels. The maximum detection of the analytes is 12,000 ng/L PFHxS from groundwater grab sample SB-KC13504-GW at location SB-KC13504 and 12,000 ng/L PFOS from groundwater grab samples SB-KC13502-GW at location SB-KC13502, the two most contaminated groundwater grab samples at SS008P. As shown on **Figure 7-6**, the highest groundwater grab PFOS detection is located north of the release area and north of West Arnold Street.

Additionally, groundwater grab samples from SS008P had detections below screening levels of PFBS (6 samples), PFBA (8 samples), and PFHxA (5 samples). SS008P groundwater grab samples analytical results are summarized in **Table 6-5** and shown for PFOS on **Figure 7-6**.

7.3.5 Summary

Surface soil concentrations of PFAS at SS008P exceeded PSLs south of the north parking lot and parallel to Arnold Street within the release area. Sample SB-KC13501-S from location SB-KC13501 is the only surface soil sample to exceed the PSL for PFOS with a concentration of 0.014 mg/kg (**Figure 7-5**). While there are samples with PFHxS, PFNA, and PFOA analytical results above the PSLs in the release and secondary release areas, PFOS is the primary contaminant of concern and is detected in more samples than any other analyte and with the greatest exceedances of its 0.013 mg/kg PSL for soil and 4.0 ng/L PSL for groundwater.

Subsurface soil concentrations of PFAS at SS008P are highest south of the southern parking lot and parallel to O'Malley Avenue within the release area (10-100 times the PSL for PFOS) and exceed on the right side of the north parking lot within the site (**Figure 7-5**). Sample SB-KC13505-4 from location KC13505 has the highest subsurface soil concentration of 0.2 mg/kg PFOS at 0.5 to 4 feet bgs. The deepest samples were taken at a depth interval of 14 to 15 feet bgs and all the samples collected within this interval were below the PSL for PFOS. All direct push borings for soil sampling during the Phase I RI at RS003P were advanced until refusal.

Of the two samples analyzed by SPLP for leachability, SB-KC13505-S from location SB-KC13505 produced the highest concentration at 950 ng/L for PFOS. The soil sample at SB-KC13505-S did not exceed the soil PSL. The soil sample with the highest concentration of PFOS did not undergo SPLP analysis.

All groundwater concentrations of PFAS at SS008P exceed the PSL for PFOS. Sample SB-KC13502-GW from location SB-KC13502 has the highest groundwater concentration of 12,000 ng/L PFOS at 12 feet bgs (**Figure 7-6**). As shown on **Figure 5-13a** and **Figure 5-14a**, groundwater at sample location SB-KC13502-GW from location SB-KC13502 is potentially hydraulically downgradient of site RS001P, which may explain the lack of correlation between the highest groundwater grab sample at SS008P and the soil samples above it in SB-KC13502

that do not exceed PSLs for any PFAS (as shown on **Figure 7-5** and in **Table 6-5**) The shallowest groundwater sample was collected at 8 feet bgs.

The highest concentrations across all media at SS008P are not well correlated, but where soil media are elevated SPLP analysis and groundwater samples are also elevated.

Although there was just one surface and three subsurface samples that exceed the PSL for PFOS, all soil borings were conducted prior to the reduction in PSLs implemented in UFP-QAPP Addendum 2 (USACE 2024). As shown on **Figure 7-5**, this site soil is not fully delineated to the new soil PSLs horizontally, however, site soil is delineated vertically with subsurface soil values ranging between non-detect and below the PSLs. Groundwater grab samples greatly exceed PSLs. Groundwater is not delineated to the PSLs, and these high soil and groundwater concentrations demonstrate Site SS008P is likely an ongoing source of PFAS contamination to groundwater.

7.4 RS002P (AFFF AREA 4)

The source of PFAS contamination at RS002P was a result of a B-52 crash in a grassy field and the amount of AFFF used to extinguish the fire is unknown.

7.4.1 Surface Soil

Of the 18 surface soil samples from RS002P, including duplicates, 3 were further analyzed by SPLP which is discussed in **Section 7.4.3**. Concentrations of PFAS in RS002P ranged from no detection to a maximum concentration of:

- 0.017 mg/kg PFBS
- 0.0056 mg/kg PFBA
- 0.42 mg/kg PFHxS
- 0.023 mg/kg PFHxA
- 0.038 J mg/kg PFNA
- 6.4 mg/kg PFOS
- 0.017 mg/kg PFOA

Of the 18 surface soil samples analyzed from RS002P, 1 sample for PFHxS, 1 sample for PFNA, and 6 samples for PFOS had detections above applicable screening levels. All other analytes were not detected above screening values in RS002P surface soil. The maximum detection of all analytes is 6.4 mg/kg PFOS in surface soil sample SB-B5206-S from location SB-B5206, the most contaminated surface soil sample at RS002P. As shown on **Figure 7-7**, the highest surface soil PFOS detection is located east of Thorpe Road in the southern section of the release area.

Additionally, surface soils from RS002P had detections below screening levels of PFBS (5 samples), PFBA (6 samples), PFHxS (13 sample), PFHxA (11 samples), PFNA (5 samples), PFOS (12 samples), PFOA (13 samples). Finally, there were surface soil samples that had no detections of PFBS (13 samples), PFBA (12 samples), PFHxS (4 samples), PFHxA (7 samples), PFNA (12 samples), and PFOA (5 samples). RS002P surface soil analytical results are summarized in **Table 6-6** and are shown for PFOS on **Figure 7-7**.

7.4.2 Subsurface Soil

Concentration of PFAS for the 57 subsurface samples at RS002P, including duplicates, ranged from no detection to a maximum concentration of:

- 0.019 mg/kg PFBS
- 0.0059 mg/kg PFBA
- 0.14 mg/kg PFHxS
- 0.027 mg/kg PFHxA
- 0.0095 mg/kg PFNA
- 0.38 mg/kg PFOS
- 0.025 mg/kg PFOA

Of the 57 subsurface soil samples analyzed from RS002P, including duplicates, 2 samples for PFHxS, 5 samples for PFOS, and 1 sample for PFOA had detections above applicable screening levels. All other analytes were not detected above screening values in RS002P subsurface soil. The maximum detection of all analytes was 0.38 mg/kg PFOS in subsurface sample SB-B5207-B from location SB-B5207, the most contaminated subsurface soil sample at RS002P. As shown on **Figure 7-7**, the highest subsurface soil PFOS detection is located east of Thorpe Road, northwest of the release area boundary.

Additionally, subsurface soils at RS002P had detections below screening levels in PFBS (4 samples), PFBA (4 samples), PFHxS (16 samples), PFHxA (12 samples), PFNA (6 samples), PFOS (16 samples), and PFOA (13 samples). Finally, there were subsurface soil samples that had no detection of PFBS (53 samples), PFBA (53 samples), PFHxS (39 samples), PFHxA (45 samples), PFNA (51 samples), PFOS (36 samples), and PFOA (43 samples). RS002P subsurface soil analytical results are summarized in **Table 6-6** and are shown for PFOS on **Figure 7-7**.

7.4.3 Soil Leachability

Three soil samples were selectively collected from RS002P for both total and SPLP PFAS analysis. The samples were collected in areas that represent a range of PFAS concentrations in soil to assess the leaching and source strength characteristics of specific PFAS and their potential for migration to groundwater at levels of environmental concern. This data is best evaluated by comparing total PFAS concentrations to the respective SPLP results for each sample location; analysis of the SPLP data, as it relates soil to groundwater migration, is presented in **Section 8.4**.

Total soil concentrations for PFAS analytes in SPLP soil samples from RS002P ranged from non-detect to a maximum concentration of:

- 0.017 mg/kg PFBS
- 0.0056 mg/kg PFBA
- 0.42 mg/kg PFHxS
- 0.023 mg/kg PFHxA
- 0.038 J mg/kg PFNA
- 6.4 mg/kg PFOS

- 0.017 mg/kg PFOA

SPLP concentrations ranged from non-detect to a maximum concentration of:

- 810 J ng/L PFBS
- 450 UJ ng/L PFBA
- 15,000 J ng/L PFHxS
- 1,200 J ng/L PFHxA
- 1,400 J ng/L PFNA
- 120,000 J ng/L PFOS
- 1,000 J ng/L PFOA

The soil sample data for PFAS totals and SPLPs is summarized in **Table 6-10**.

7.4.4 Groundwater

Concentrations of PFAS from the RS002P groundwater grab samples ranged from no detection to a maximum concentration of:

- 300 ng/L PFBS
- 150 ng/L PFBA
- 3,400 ng/L PFHxS
- 600 ng/L PFHxA
- 170 ng/L PFNA
- 9,900 ng/L PFOS
- 740 ng/L PFOA

All groundwater grab samples from RS002P had detections for all analytes. Of the 4 groundwater grab samples analyzed from RS002P, including duplicates, all samples for PFHxS, PFNA, PFOS, and PFOA had detections above applicable screening levels. The maximum detection of the analytes is 9,900 ng/L PFOS from groundwater grab sample SB-B5206-GW, the most contaminated groundwater grab sample at RS002P. As shown on **Figure 7-8**, the highest groundwater grab PFOS detection is located east of Thorpe Road, near the west edge of the release area boundary.

Additionally, groundwater grab samples from RS002P had detections below screening levels of PFBS (4 samples), PFBA (4 samples), and PFHxA (4 samples). RS002P groundwater grab samples analytical results are summarized in **Table 6-6** and are shown for PFOS on **Figure 7-8**.

7.4.5 Summary

Surface soil concentrations of PFAS at RS002P are highest at the center of the field, within the release area boundary, and decrease away from the center on the field, away from release area boundary (**Figure 7-7**). The highest surface soil concentration observed was 6.4 mg/kg PFOS at SB-B5206-S from location SB-B5206, more than 3 orders of magnitude higher than the PSL for PFOS. From the distribution of PFOS concentrations in surface soil samples shown on **Figure 7-7** (yellow, orange, and red-shaded boxes), concentrations PSL exceedances are grouped

mostly within and just west of the existing IRP site boundary, with the highest concentrations in the south-central portion of the crash site. While there are samples with PFHxS, PFNA, and PFOA analytical results above the PSLs in the release and secondary release areas, PFOS is the primary contaminant of concern, being detected in more samples than any other analyte and with the greatest exceedances of its 0.013 mg/kg PSL for soil and 4.0 ng/L PSL for groundwater.

Subsurface soil concentrations of PFAS at RS002P are highest at the southern end of the field, within the release area boundary, and at SB5207 near metal structures northwest of the release area boundary (**Figure 7-7**). The highest subsurface soil concentration observed was 0.38 mg/kg PFOS at SB-B5207-B, from location SB-B5207, at 2 to 3 feet bgs. The deepest samples were taken at a depth interval of 14 to 15 feet bgs; all the samples collected within this interval were below the PSL for PFOS. All direct push borings for soil sampling during the Phase I RI at RS002P were advanced until refusal.

Leachate concentrations for SPLP analyses at RS002P are highest at the center of the field, within the release area boundary, corresponding to the highest soil concentrations at the site. The highest leachate concentration observed was 120,000 ng/L PFOS at location SB-B5206.

Groundwater grab samples were only collected from three locations towards the southern end of the release area. All groundwater concentrations of PFAS at RS002P exceed the PFOS PSL. Sample SB-B5206-GW from location SB-B5206 has the highest groundwater concentration of 9,900 ng/L PFOS at 15 ft. bgs (**Figure 7-8**).

The highest concentrations observed in surface soil, groundwater and SPLP analysis were all at the same location in the center of the field, SB-B5206. SB-B5206 did not have the highest subsurface soil concentration, however, that occurred at SB-B5207, which had an order of magnitude lower surface soil concentration, and did not have a groundwater sample collected and did not have SPLP analysis performed.

All soil borings were conducted prior to the reduction in PSLs implemented in UFP-QAPP Addendum 2 (USACE 2024), as shown on **Figure 7-7**, site soil is not delineated to the new soil PSLs horizontally; however, site soil is delineated vertically with subsurface soil values ranging between non-detect and below the PSLs. Groundwater grab samples greatly exceed the PSLs, with the lowest concentration at Site RS002P still exceeding the PSL for PFOS near one order of magnitude. Groundwater samples were not collected from all borehole locations at the time of borehole advancement; however, soil sample exceedances occur further north from where the groundwater samples were collected. Groundwater is not delineated to the PSLs, and these high soil and groundwater concentrations demonstrate that Site RS002P could be an ongoing source of PFAS contamination to groundwater.

7.5 RS001P (AFFF AREA 5)

The source of PFAS at RS001P was AFFF used approximately from 1994-2015. According to the Assistant Fire Chief, calibration tests that occurred on the paved area directly south of the AFFF Area 5/Fire Station 1 garage on the west end of the building. The total quantity of AFFF used is unknown, however it is known that the paved area drains through a gap in the curb and

into a grassy area between the pavement and a wall that divides the fire station from the airstrip (shown as pavement drainage area on **Figure 7-9**).

7.5.1 Surface Soil

Of the 14 surface soil samples from RS001P, including duplicates, 9 were further analyzed by SPLP which is discussed in **Section 7.5.3**. Concentrations of PFAS in RS001P ranged from no detection to a maximum concentration of:

- 0.007 mg/kg PFBS
- 0.0036 mg/kg PFBA
- 0.3 mg/kg PFHxS
- 0.031 mg/kg PFHxA
- 0.007 mg/kg PFNA
- 10 mg/kg PFOS
- 0.024 mg/kg PFOA

Of the 15 surface soil samples analyzed from RS001P, including duplicates, 1 sample for PFHxS, 12 samples for PFOS, and 1 sample for PFOA had detections above applicable screening levels. All other analytes were not detected above screening values in RS001P surface soil. The maximum detection of all analytes is 10 mg/kg PFOS in surface soil sample SB-RA511-A from location SB-RA511, the most contaminated surface soil sample at RS001P. As shown on **Figure 7-9**, the highest surface soil PFOS detections are located between the fire station and the airstrip in the grassy area near the pavement drainage.

Additionally, surface soils from RS001P had detections below screening levels of PFBS (7 samples), PFBA (6 samples), PFHxS (14 sample), PFHxA (13 samples), PFNA (13 samples), PFOS (3 samples), PFOA (12 samples). Finally, there were surface soil samples that had no detections of PFBS (8 samples), PFBA (9 samples), PFHxA (2 samples), PFNA (2 samples), and PFOA (2 samples). RS001P surface soil analytical results are summarized in **Table 6-7** and are shown for PFOS on **Figure 7-9**.

7.5.2 Subsurface Soil

Of the 58 subsurface soil samples from RS001P, including duplicates, 4 were further analyzed by SPLP which is discussed in **Section 7.5.3**. Concentration of PFAS for the 58 subsurface samples at RS001P ranged from no detection to a maximum concentration of:

- 0.028 mg/kg PFBS
- 0.02 mg/kg PFBA
- 0.82 mg/kg PFHxS
- 0.16 mg/kg PFHxA
- 0.033 mg/kg PFNA
- 8.8 mg/kg PFOS
- 0.18 mg/kg PFOA

Of the 58 subsurface soil samples analyzed from RS001P, including duplicates, 4 samples for PFHxS, 1 sample for PFNA, 29 samples for PFOS, and 5 samples for PFOA had detections above applicable screening levels. All other analytes were not detected above screening values in RS001P subsurface soil. The maximum detection of all analytes was 8.8 mg/kg PFOS in subsurface sample SB-RA511-B from location SB-RA511 and 0.82 mg/kg PFHxS in subsurface sample SB-RA511-C from location SB-RA511, the two most contaminated subsurface soil samples at RS001P. As shown on **Figure 7-9**, the highest subsurface soil PFOS detections are located between the fire station and the airstrip in the grassy area near the pavement drainage.

Additionally, subsurface soils at RS001P had detections below screening levels in PFBS (16 samples), PFBA (15 samples), PFHxS (47 samples), PFHxA (47 samples), PFNA (21 samples), PFOS (23 samples), and PFOA (37 samples). Finally, there were subsurface soil samples that had no detection of PFBS (42 samples), PFBA (43 samples), PFHxS (7 samples), PFHxA (11 samples), PFNA (36 samples), PFOS (6 samples), and PFOA (16 samples). RS001P subsurface soil analytical results are summarized in **Table 6-7** and are shown for PFOS on **Figure 7-9**.

7.5.3 Soil Leachability

Nine soil samples were selectively collected from RS001P for both total and SPLP PFAS analysis. The samples were collected in areas that represent a range of PFAS concentrations in soil to assess the leaching and source strength characteristics of specific PFAS and their potential for migration to groundwater at levels of environmental concern. This data is best evaluated by comparing total PFAS concentrations to the respective SPLP results for each sample location; analysis of the SPLP data, as it relates soil to groundwater migration, is presented in **Section 8.4**.

Total soil concentrations for PFAS analytes in SPLP soil samples from RS001P ranged from non-detect to a maximum concentration of:

- 0.015 mg/kg PFBS
- 0.020 mg/kg PFBA
- 0.82 mg/kg PFHxS
- 0.16 mg/kg PFHxA
- 0.033 mg/kg PFNA
- 10 mg/kg PFOS
- 0.18 mg/kg PFOA

SPLP concentrations ranged from non-detect to a maximum concentration of:

- 490 J ng/L PFBS
- 710 J ng/L PFBA
- 25,000 J ng/L PFHxS
- 5,500 J ng/L PFHxA
- 820 J ng/L PFNA
- 300,000 J ng/L PFOS
- 4,600 J ng/L PFOA

The soil sample data for PFAS totals and SPLPs is summarized in **Table 6-10**.

7.5.4 Groundwater

Concentrations of PFAS from the RS001P groundwater grab samples ranged from no detection to a maximum concentration of:

- 870 J ng/L PFBS
- 1,300 J ng/L PFBA
- 21,000 J ng/L PFHxS
- 9,000 J ng/L PFHxA
- 220 J ng/L PFNA
- 65,000 J ng/L PFOS
- 3,400 J ng/L PFOA

All groundwater grab samples from RS001P had detections for all analytes. Of the 7 groundwater grab samples analyzed from RS001P, including duplicates, all samples for PFHxS, PFHxA, PFNA, PFOS, and PFOA had detections above applicable screening levels. The maximum detection of the analytes is 65,000 ng/L PFOS from groundwater grab sample SB-RA511-GW from location SB-RA511, the most contaminated groundwater grab samples at RS001P. As shown on **Figure 7-10**, the highest groundwater grab PFOS detections are located between the fire station and the airstrip in the grassy area near the pavement drainage.

Additionally, groundwater grab samples from RS001P had detections below screening levels of PFBS (4 samples) and PFBA (7 samples). RS001P groundwater grab samples analytical results are summarized in **Table 6-7** and are shown for PFOS on **Figure 7-10**.

7.5.5 Summary

Surface soil concentrations of PFAS at RS001P are highest directly south of the fire engine garage and decrease slightly around the fire engine garage (Building 3) (more than 1 order of magnitude for the PSL for PFOS) (**Figure 7-9**). The highest surface soil concentration observed was 10 mg/kg PFOS in surface soil sample SB-RA511-A from location SB-RA511; more than 2 orders of magnitude higher than the PSL for PFOS. While there are samples with PFHxS, PFNA, and PFOA analytical results above the PSLs in the release and secondary release areas, PFOS is the primary contaminant of concern, being detected in more samples than any other analyte and with the greatest exceedances of its 0.013 mg/kg PSL for soil and 4.0 ng/L PSL for groundwater.

Subsurface soil concentrations of PFAS at RS001P are highest directly south of the fire engine garage and decrease slightly around the fire engine garage (more than 1 order of magnitude for the PSL for PFOS) (**Figure 7-9**). The highest subsurface soil concentration observed was 8.8 mg/kg PFOS in subsurface soil sample SB-RA511-B, from location SB-RA511, at 2 to 3 feet bgs. The deepest samples were taken at a depth interval of 14 to 15 feet bgs; all the samples collected within this interval were below the PSL for PFOS. The deepest sample with a concentration of PFAS over the PSLs was SB-RA505-12 from location SB-RA505 (12 feet bgs), with concentrations of 1.0 mg/kg PFOS. All direct push borings for soil sampling during the Phase I RI at RS001P were advanced until refusal.

Leachate concentrations for SPLP analyses at RS001P are highest in the grassy strip located between the paved area and wall that drains the pavement through a gap in the curb, corresponding to the highest soil concentrations at the site. The highest leachate concentration observed was 300,000 ng/L PFOS in surface sample SB-RA511-A from location SB-RA511.

Groundwater grab samples were only collected from six locations along the north, south, and west side of the fire engine garage. All groundwater concentrations of PFAS at RS001P exceed the PSL for PFOS. Sample SB-RA511-GW from location SB-RA511 has the highest groundwater concentration of 65,000 ng/L PFOS (**Figure 7-10**).

The highest concentrations observed in each media and SPLP analysis were all at the same location within the pavement drainage area, SB-RA511. Similarly high results across all media were seen at location SB-RA505, which is also in the pavement drainage area.

All soil borings were conducted prior to the reduction in PSLs implemented in UFP-QAPP Addendum 2 (USACE 2024) and as shown on **Figure 7-9**, this site is not fully delineated to the new soil PSLs horizontally or vertically. Groundwater grab samples greatly exceed the PSLs. Groundwater is not delineated to the PSLs, and these high soil and groundwater concentrations demonstrate that Site RS001P is likely an ongoing source of PFAS contamination to groundwater.

7.6 NO NAME DITCH AND FLOWAGE EASEMENT

No Name Ditch is the primary surface water pathway from runoff at FAFB. No Name Ditch originates from the stormwater retention pond located on the east side of the base (refer to **Figure 7-11b**). Along the approximate 1-mile flow path of No Name Ditch, surface water infiltrates into the ground and ceases flowing at South Craig Road. The flowage easement is a 38-acre property east of South Craig Road that collects discharge from No Name Ditch and one other unnamed stream emanating from the southeast corner of FAFB. It is a low-lying area that pools excess runoff and infiltrates it to groundwater.

7.6.1 No Name Ditch

7.6.1.1 Surface Soil

Concentrations of PFAS in No Name Ditch ranged from no detection to a maximum concentration of:

- 0.013 mg/kg PFBS
- 0.0041 mg/kg PFBA
- 0.079 mg/kg PFHxS
- 0.013 mg/kg PFHxA
- 0.0038 mg/kg PFNA
- 0.14 mg/kg PFOS
- 0.033 mg/kg PFOA

Of the 53 surface soil samples analyzed from No Name Ditch, including duplicates, 42 samples for PFOS, and 2 samples for PFOA had detections above applicable screening levels. All other analytes were not detected above screening values in No Name Ditch surface soil. The maximum detection of all analytes is 0.14 mg/kg PFOS in surface soil sample NND-50-A, the most contaminated surface soil sample at No Name Ditch. As shown on **Figure 7-11d**, the highest surface soil PFOS detection is located east of the FAFB installation boundary, north of West Thorpe Road, and due east of FT004P.

Additionally, surface soils from No Name Ditch had detections below screening levels of PFBS (17 samples), PFBA (22 samples), PFHxS (48 sample), PFHxA (41 samples), PFNA (33 samples), PFOS (11 samples), PFOA (46 samples). Finally, there were surface soil samples that had no detections of PFBS (36 samples), PFBA (31 samples), PFHxS (5 samples), PFHxA (12 samples), PFNA (20 samples), and PFOA (5 samples). No Name Ditch surface soil analytical results are summarized in **Table 6-8a** through **Figure 6-8b** and are shown for PFOS on **Figure 7-11a** through **Figure 7-11e**.

7.6.1.2 Subsurface Soil

Concentration of PFAS for the 87 subsurface samples at No Name Ditch, including duplicates, ranged from no detection to a maximum concentration of:

- 0.0015 mg/kg PFBS
- 0.002 mg/kg PFBA
- 0.04 mg/kg PFHxS
- 0.0067 mg/kg PFHxA
- 0.0019 mg/kg PFNA
- 0.27 mg/kg PFOS
- 0.019 mg/kg PFOA

Of the 87 subsurface soil samples analyzed from No Name Ditch, including duplicates, 24 samples for PFOS, and 1 sample for PFOA, had detections above applicable screening levels. All other analytes were not detected above screening values in No Name Ditch subsurface soil. The maximum detection of all analytes was 0.27 mg/kg PFOS in subsurface sample NND-27-B from location NND-27, the most contaminated subsurface soil sample at No Name Ditch. As shown on **Figure 7-11c**, the highest subsurface PFOS detection is located east of the FAFB installation boundary, north of West Thorpe Road, and due east of FT004P. The highest subsurface soil concentration is upstream, or further west, from the highest surface soil location.

Additionally, subsurface soils at No Name Ditch had detections below screening levels in PFBS (8 samples), PFBA (7 samples), PFHxS (68 samples), PFHxA (46 samples), PFNA (25 samples), PFOS (52 samples), and PFOA (56 samples). Finally, there were subsurface soil samples with no detection of PFBS (79 samples), PFBA (87 samples), PFHxS (19 samples), PFHxA (41 samples), PFNA (62 samples), PFOS (11 samples), and PFOA (30 samples). No Name Ditch subsurface soil analytical results are summarized in **Table 6-8a** and are shown for PFOS on **Figure 7-11a** through **Figure 7-11e**.

7.6.1.3 Sediment

Concentrations of PFAS in No Name Ditch ranged from no detection to a maximum concentration of:

- 0.0087 mg/kg PFBS
- 0.0088 mg/kg PFBA
- 0.13 mg/kg PFHxS
- 0.028 mg/kg PFHxA
- 0.0065 mg/kg PFNA
- 0.6 mg/kg PFOS
- 0.037 mg/kg PFOA

Of the 28 sediment samples analyzed from No Name Ditch, including duplicates, 1 sample for PFHxS, 27 samples for PFOS, and 1 sample for PFOA had detections above applicable screening levels. All other analytes were not detected above screening values in No Name Ditch sediment. The maximum detection of all analytes is 0.6 mg/kg PFOS in sediment sample NND-78-SED from location NND-78, the most contaminated sediment sample at No Name Ditch. As shown on **Figure 7-12e**, the highest sediment PFOS detection is located east of the FAFB installation boundary, south of West Thorpe Road, and west of South Craig Road.

Additionally, sediments from No Name Ditch had detections below screening levels of PFBS (16 samples), PFBA (16 samples), PFHxS (27 sample), PFHxA (28 samples), PFNA (21 samples), PFOS (1 sample), PFOA (25 samples). Finally, there were sediment samples that had no detections of PFBS (12 samples), PFBA (12 samples), PFNA (7 samples), and PFOA (2 samples). No Name Ditch sediment analytical results are summarized in **Table 6-8b** and are shown for PFOS on **Figure 7-12a** through **Figure 7-12e**.

7.6.1.4 Groundwater

Concentrations of PFAS from the No Name Ditch groundwater grab samples ranged from no detection to a maximum concentration of:

- 1,600 ng/L PFBS
- 1,200 ng/L PFBA
- 11,000 ng/L PFHxS
- 4,500 ng/L PFHxA
- 200 ng/L PFNA
- 12,000 ng/L PFOS
- 2,900 ng/L PFOA

Of the 51 groundwater grab samples analyzed from No Name Ditch, including duplicates, 3 samples for PFBS, 50 samples for PFHxS, 14 samples for PFHxA, 49 samples for PFNA, and all samples for PFOS, and PFOA had detections above applicable screening levels. The maximum detection of the analytes is 12,000 ng/L PFOS in groundwater grab sample NND-27-GW from location NND-27, the most contaminated groundwater grab sample at No Name Ditch. As shown

on **Figure 7-13c**, the highest groundwater grab PFOS detections are located east of the FAFB installation boundary, north of West Thorpe Road, and due east of FT004P.

Additionally, groundwater grab samples from No Name Ditch had detections below screening levels of PFBS (48 samples), PFBA (51 samples) PFHxA (37 samples), and PFNA (2 samples). There was one groundwater grab sample that had a non-detect for PFHxS. No Name Ditch groundwater grab samples analytical results are summarized in **Table 6-8a** and are shown for PFOS on **Figure 7-13a** through **Figure 7-13e**.

7.6.1.5 Surface Water

Concentrations of PFAS from the No Name Ditch surface water samples ranged from no detection to a maximum concentration of:

- 220 ng/L PFBS
- 290 ng/L PFBA
- 1,900 ng/L PFHxS
- 1,300 ng/L PFHxA
- 57 ng/L PFNA
- 3,500 ng/L PFOS
- 530 ng/L PFOA

Of the 14 surface water samples analyzed from No Name Ditch, including duplicates, 6 samples for PFHxA and all samples for PFHxS, PFNA, PFOS, and PFOA had detections above applicable screening levels. The maximum detection of the analytes is 3,500 ng/L PFOS from surface water sample NND-77-SW from location NND-77, the most contaminated surface water samples at No Name Ditch. As shown on **Figure 7-14d**, the highest surface water PFOS detection is located east of the FAFB installation boundary, south of West Thorpe Road, and west of South Craig Road.

Additionally, surface water samples from No Name Ditch had detections below screening levels of PFBS (25 samples), PFBA (25 samples), and PFHxA (19 samples). No Name Ditch surface water samples analytical results are summarized in **Table 6-8b** and are shown for PFOS on **Figure 7-14a** through **Figure 7-14e**.

7.6.2 Flowage Easement

7.6.2.1 Surface Soil

Concentrations of PFAS on the west and north side of the Flowage Easement ranged from no detection to a maximum concentration of:

- 0.00024 J mg/kg PFBS
- 0.0014 J mg/kg PFBA
- 0.015 mg/kg PFHxS
- 0.0027 mg/kg PFHxA
- 0.0071 mg/kg PFNA

- 0.26 mg/kg PFOS
- 0.01 mg/kg PFOA

Of the 10 surface soil samples analyzed from the west and north side of the Flowage Easement, including duplicates, 5 samples for PFOS had detections above applicable screening levels. The sample that had the highest exceedance of PFOS was NND-62-A from location NND-62. Analytes PFBS, PFBA, PFHxS, PFHxA, PFNA, and PFOA were not detected above screening values on the west and north side of the Flowage Easement surface soil. As shown on **Figure 7-15**, the highest surface soil PFOS detection is located east of South Craig Road along the northern flow path of the surface drainage.

Additionally, surface soils from the west and north side of the Flowage Easement had detections below screening levels of PFBS (1 sample), PFBA (2 samples), PFHxS (3 samples), PFHxA (1 samples), PFNA (5 samples), PFOS (3 samples), PFOA (5 samples). Finally, there were surface soil samples that had no detections of PFBS (9 samples), PFBA (8 samples), PFHxS (7 samples), PFHxA (9 samples), PFNA (5 samples), PFOS (2 samples) and PFOA (5 samples). The analytical results are summarized in **Table 6-9** and are shown for PFOS on **Figure 7-15**.

7.6.2.2 Subsurface Soil

Concentration of PFAS for the 48 subsurface samples on the west and north side of the Flowage Easement, including duplicates, ranged from no detection to a maximum concentration of:

- 0.00083 J mg/kg PFBA
- 0.0046 mg/kg PFHxS
- 0.001 J mg/kg PFHxA
- 0.002 mg/kg PFNA
- 0.072 mg/kg PFOS
- 0.004 mg/kg PFOA

Of the 48 subsurface soil samples analyzed from the west and north side of the Flowage Easement, including duplicates, 6 samples for PFOS had detections above applicable screening levels. The maximum detection of PFOS was 0.72 mg/kg in subsurface sample NND-64-B from location NND-64. Analytes PFBS, PFBA, PFHxS, PFHxA, PFNA, and PFOA were not detected above screening values on the west and north side of the Flowage Easement subsurface soil. As shown on **Figure 7-15**, the highest subsurface soil PFOS detection is located east of South Craig Road along the northern flow path of the surface drainage.

Additionally, subsurface soils on the west and north side of the Flowage Engagement had detections below screening levels in PFBA (31 samples), PFHxS (26 samples), PFHxA (16 samples), PFNA (7 samples), PFOS (40 samples), and PFOA (11 samples). Finally, there were subsurface soil samples that had no detection of PFBS (48 samples), PFBA (15 samples), PFHxS (18 sample), PFHxA (32 samples), PFNA (41 samples), PFOS (8 samples), and PFOA (37 samples). The analytical results are summarized in **Table 6-9** and are shown for PFOS on **Figure 7-15**.

7.6.2.3 Groundwater

Concentrations of PFAS on the west and north side of the Flowage Engagement groundwater grab samples ranged from no detection to a maximum concentration of:

- 420 ng/L PFBS
- 620 ng/L PFBA
- 4,500 ng/L PFHxS
- 2,200 ng/L PFHxA
- 130 ng/L PFNA
- 6,200 J ng/L PFOS
- 980 ng/L PFOA

Of the 11 groundwater grab samples analyzed from the west and north side of the Flowage Engagement, including duplicates, 7 samples from PFHxA, and all samples for PFHxS, PFNA, PFOS, and PFOA had detections above applicable screening levels. The maximum detection of the analytes is 6,200 J ng/L PFOS from groundwater grab sample NND-65-GW from location NND-65, the most contaminated groundwater grab sample on the west and north side of the Flowage Engagement. As shown on **Figure 7-16**, the highest groundwater grab PFOS detection is located east of South Craig Road, north of the northern flow path of the surface drainage.

Additionally, groundwater grab samples from the west and north side of the Flowage Engagement had detections below screening levels of PFBS (11 samples), PFBA (11 samples), and PFHxA (4 samples). The analytical results are summarized in **Table 6-9** and are shown for PFOS on **Figure 7-16**.

7.6.3 Summary

Most of the surface soil concentrations of PFAS from samples collected in No Name Ditch and on the west and north side of the Flowage Easement exceed the PSL for PFOS by one order magnitude. The surface soil exceedances within No Name Ditch and on the west and north side of the Flowage Easement can be caused by water irrigation from No Name Ditch or seasonal flooding. The highest surface soil concentration observed, sample NND-62-A from location NNS-62, is located at the north end of the Flowage Easement and exceeds the PSL for PFOS by two orders of magnitude with a value of 0.26 mg/kg (**Figure 7-15**). While there are samples with PFHxS, PFNA, and PFOA analytical results above the PSLs, PFOS is the primary contaminant of concern, being detected in more samples than any other analyte and with the greatest exceedances of its 0.013 mg/kg PSL for soil and 4.0 ng/L PSL for groundwater.

Subsurface soil concentrations of PFAS from samples collected in No Name Ditch and on the west and north side of the Flowage Easement begin to exceed the PSL for PFOS at the south end of the retention pond. There is no specific correlation to where subsurface samples exceed closer to the surface or deeper within the ground along No Name Ditch (**Figure 7-11a** through **Figure 7-11e**); however, on the west and north side of the Flowage Easement, subsurface samples only exceed the PSL for PFOS at 2 to 3 feet bgs at certain locations (**Figure 7-15**). The highest subsurface soil concentration observed, sample NND-27-B, was 0.027 mg/kg PFOS at 2 to 3 feet bgs.

All direct push borings for soil sampling during the Phase I RI at No Name Ditch were to be advanced to allow for the collection of two subsurface samples to be collected: one below the surface sample and one within the groundwater interface of the first encountered groundwater or at a depth of 25 feet bgs, whichever comes first.

All groundwater concentrations of PFAS in No Name Ditch and on the west and north side of the Flowage Easement exceed the PSL for PFOS up to 2 orders of magnitude. Sample NND-27-GW from location NND-27 has the highest groundwater concentration of 12,000 ng/L PFOS at 10 feet bgs (**Figure 7-13a** through **Figure 7-13e** and **Figure 7-16**, respectively). Groundwater results are lowest in the “headwaters” of No Name Ditch at the upgradient end of the retention pond, increasing steadily through the southern retention pond (**Figure 7-13a**) and through FT004P to the highest concentrations just off base. Concentrations remain elevated at all groundwater samples collected along No Name Ditch and along the upgradient portions of the South Craig Road ditch system and along property that floods north of the flowage easement.

Sediment and surface water concentrations of PFAS in No Name Ditch exceed the PSL for PFOS up to 2 orders of magnitude. Not all sediment locations have a collocated surface water sample. The highest sediment concentration observed, sample NND-78-SED from location NND-78, was 0.6 mg/kg PFOS and the highest surface water concentration observed, sample NND-77-SW from location NND-77, was 3,500 ng/L PFOS (**Figure 7-12a** through **Figure 7-12e** and **Figure 7-14a** through **Figure 7-14e**). Surface water results reflect groundwater results with the lowest concentration in the upgradient end of the north retention pond, increasing steadily through the ponds and FT004P, and then staying elevated for the entire length of No Name Ditch until water was fully infiltrated and no more surface water was present at the time of sampling. Concentrations of PFOS do increase a bit in the off-base portion downstream to the highest recorded values south of West Thorpe Road. Sediment follows a similar trend to surface water, but two more samples were collected downstream of surface water infiltration that showed lowering concentrations of PFOS in sediment closer to the distal end of No Name Ditch at South Craig Road.

All soil borings were conducted prior to the reduction in PSLs implemented in UFP-QAPP Addendum 2 (USACE 2024), and as shown on **Figure 7-11a** through **Figure 7-11e** and **Figure 7-15**, under the newer PSLs this site is not fully delineated to the soil PSLs horizontally or vertically. Groundwater grab samples greatly exceed the PSLs. Groundwater is not delineated to the PSLs, and high soil concentrations demonstrate that No Name Ditch and on the west and north side of the Flowage Easement is likely an ongoing source of PFAS contamination to groundwater.

7.7 MONITORING WELL SOILS

During the installation of Phase I PFAS RI monitoring wells, one surface and one subsurface sample was collected just above the bedrock.

7.7.1 Surface Soil

Concentrations of PFAS from surface soil samples, collected from borings advanced during well installation events ranged from no detection to a maximum concentration of:

- 0.012 mg/kg PFBS
- 0.011 mg/kg PFBA
- 0.19 mg/kg PFHxS
- 0.039 mg/kg PFHxA
- 0.012 mg/kg PFNA
- 0.51 mg/kg PFOS
- 0.027 mg/kg PFOA

Of the 60 surface soil samples analyzed, 1 sample for PFHxS, 3 samples for PFOS, and 1 sample for PFOA had detections above applicable screening levels (**Table 6-11**). All other analytes were not detected above screening values in the surface soil samples collected during well installation. The maximum detection of all analytes is 0.51 mg/kg PFOS in surface soil sample MW-RI56-S from monitoring well location MW-RI56, the most contaminated surface soil sample collected during well installation. Of the three locations with PSL exceedances, one was on base within site FT004P (MW-RI56) and the other two are co-located on the same parcel of private property (MW-RI04 and MW-RI06b) next to No Name Ditch conveyance to the flowage easement (**Figure 7-17e**).

Additionally, surface soils had detections below screening levels of PFBS (1 sample), PFBA (9 samples), PFHxS (2 samples), PFHxA (1 sample), PFNA (4 samples), PFOS (33 samples), PFOA (4 samples). Finally, there were surface soil samples that had no detections of PFBS (59 samples), PFBA (51 samples), PFHxS (57 samples), PFHxA (59 samples), PFNA (56 samples), and PFOA (55 samples). Well installation surface soil analytical results are summarized in **Table 6-11** and are shown for PFOS on **Figure 7-17a** through **Figure 7-17f**.

7.7.2 Subsurface Soil

Concentration of PFAS for the 50 subsurface samples collected from borings advanced during well installation events ranged from no detection to a maximum concentration of:

- 0.00043 J mg/kg PFBA
- 0.00013 J mg/kg PFOS

Of the 50 subsurface soil samples analyzed, all analytes were not detected above screening values in subsurface soil collected during well installation. The maximum detection of all analytes was 0.00043 mg/kg PFBA in subsurface sample MW-RI47-B from monitoring well location MW-RI47.

Additionally, subsurface soils had detections below screening levels in PFBA (3 samples) and PFOS (1 sample). Finally, there were subsurface soil samples that had no detection of PFBS (50 samples), PFBA (47 samples), PFHxS (50 samples), PFHxA (50 samples), PFNA (50 samples), PFOS (49 samples), and PFOA (50 samples). Well installation subsurface soil analytical results are summarized in **Table 6-11** and are shown for PFOS on **Figure 7-17a** through **Figure 7-17f**.

7.7.3 Summary

The extent of on- and off-base soil contamination discovered while drilling for monitoring well installations is limited to the three surface soil locations that exceed the PSL for PFOS noted in **Section 7.7.1 (Figure 7-17a through Figure 7-17f)**.

No PFAS contamination was observed in the subsurface soils collected at the bottom of the unconsolidated deposits and the delineation of off-base PFAS contamination of surface soil is incomplete.

7.8 MONITORING WELL GROUNDWATER

Throughout five sampling events from June 2021 through January 2025, a total of 234 groundwater samples were collected from monitoring wells located both on and off base.

Sample concentrations in groundwater samples ranged from no detection to a maximum concentration of:

- 15,000 ng/L PFBS
- 23,000 ng/L PFBA
- 88,000 ng/L PFHxS
- 130,000 ng/L PFHxA
- 330 ng/L PFNA
- 210,000 ng/L PFOS,
- 23,000 ng/L PFOA.

Of the 234 groundwater samples analyzed, 10 samples for PFBS, 1 sample for PFBA, 130 samples for PFHxS, 14 samples for PFHxA, 64 samples for PFNA, 189 samples for PFOS and 155 samples for PFOA had detections above applicable screening levels. The maximum detection of the analytes is 210,000 ng/L PFOS from groundwater grab sample FGW-E-170 and from monitoring well location MMW-1012-4 near Hangar 1012 (**Figure 5-12a**), the most contaminated groundwater sample from all monitoring wells sampled across the region.

Additionally, groundwater samples from the five groundwater sampling events had detections below screening levels of PFBS (207 samples), PFBA (197 samples), PFHxS (95 samples), PFHxA (203 samples), PFNA (83 samples), PFOS (34 samples), and PFOA (63 samples). Finally, there were subsurface soil samples that had no detection of PFBS (17 samples), PFBA (36 samples), PFHxS (9 samples), PFHxA (17 samples), PFNA (87 samples), PFOS (11 samples), and PFOA (16 samples). The groundwater sample data for Round 1 through Round 5 is summarized in **Table 6-12** through **Table 6-16**, respectively.

To better understand the composition of PFAS detected in groundwater for the 2021 through 2025 events, groundwater has been characterized across three different hydrostratigraphic units: Unconsolidated Deposits, Wanapum Basalt, and Grande Ronde Basalt. Groundwater sampling of monitoring wells are grouped into two subsets of data; the first subset is data collected from Rounds 1 through 4 of groundwater sampling which included sampling from both wells installed prior to the Phase 1 RI and wells installed between 2021 and 2023 as part of the Phase 1 RI. The

second set of data are from the Round 5 groundwater sampling that occurred over a smaller time frame (January 2025) and includes a more comprehensive sampling event of select existing monitoring wells and all Phase 1 PFAS RI wells. **Figure 7-18a** through **Figure 7-18c** and **Figure 7-19a** through **Figure 19c** show PFAS composition as a pie chart indicating predominant PFAS contaminant type for each subset and hydrostratigraphic unit.

A review of PFAS concentrations in **Table 6-12** through **Table 6-16** shows that typically PFOS has the greatest number of exceedances of the PSL. With groundwater characterized across three different hydrostratigraphic units for a list of seven COCs, this investigation singles out PFOS to be used for visualization on figures, as it represents a surrogate for the PFAS as it was reported the most frequently for individual COC contamination extent. PFAS composition figures (**Figure 7-18a** through **Figure 7-18c** and **Figure 7-19a** through **Figure 19c**) show instances in which the concentration of non-PFOS COC contamination exceeds that of PFOS contamination. The pie charts used for this visualization were created by plotting the results for each analyte with a PSL. Composition is discussed further in **Section 8.7.2.1**. PFOS groundwater concentrations from Rounds 1 – 4 in each of the three primary hydrostratigraphic units are shown on **Figure 7-20a** through **Figure 7-20c**. PFOS groundwater concentrations from January 2025 in each of the three primary hydrostratigraphic units are shown on **Figure 7-21a** through **Figure 7-21c**.

7.9 ON- AND OFF-BASE GROUNDWATER IMPACTS

This section assesses the nature and extent of PFAS (using PFOS as a surrogate for the seven PFAS with screening criteria) across the three hydrostratigraphic lithofacies using all available groundwater data. Groundwater data presented in Table 6-12 through Table 6-16 show that, in most cases, PFOS has the highest concentration out of the PFAS analyzed. In the relatively few locations where PFHxS has a higher concentration than PFOS, it does so by only a small percentage. The small exceedance is made irrelevant under the current PSLs, as the PSL for PFHxS is one order of magnitude higher than PFOS, meaning that PFOS remains the best single compound for analyzing the maximum extent of PFAS impact. PFOS isoconcentration and paleochannel contours are included on **Figure 7-22a** through **Figure 7-22d**. To provide a relative comparison of plume concentration and extent, isoconcentration contours for PFOA are additionally included as Figure 7-22e through 7-22h. Isoconcentration contours consider data from all sampling events and groundwater grab samples shown on prior figures. The following are nature and extent considerations taken from all groundwater data, including both groundwater grab samples discussed previously in **Section 7.1** through **Section 7.6**, and monitoring well samples, discussed in **Section 7.8**.

7.9.1 Unconsolidated Deposits

The unconsolidated deposits both on- and off-base have been interpreted by previous researchers (i.e., Pritchard et. al, 2020) as primarily alluvium deposited by the strong glacial outburst floods of the last ice age known as the Missoula floods, and more quiescent alluvial process of the inter-flood periods. This investigation's drilling program and subsequent boring logs further support this previous characterization. During the investigation effort was made to review geologic information within an environmental sequence stratigraphy framework, but both the alluvial structures were too chaotic from the high-energy flood environment, or the spatial density of

observed subsurface geology locations were too low to make meaningful sequence interpretations about the subsurface alluvial structures. Therefore, this report treats the unconsolidated deposits as a heterogeneous yet undifferentiated hydrostratigraphic unit. The presence of groundwater is variable in this unit, particularly in the hydrologic low of late summer and fall, so monitoring wells were set below the water table within soil types estimated to have the greatest permeability to maximize the probability of successful well development and sample collection.

To interpret the total extent of contamination, all groundwater data was jointly considered regardless of time of collection or sample type (monitoring well vs. groundwater grab sample). This was done to consider the maximum possible amount of spatial distribution information. This collection of all unconsolidated deposits groundwater samples, along with isoconcentration contours and paleochannel contours, is provided on **Figure 7-22a** and **Figure 7-22b**.

As shown on **Figure 7-22a** and **Figure 7-22b**, the five known PFAS source areas appear to be major contributors to on- and off-base groundwater contamination in the unconsolidated deposits.

Beyond the five known PFAS source areas, other potential sources of PFAS to groundwater can be observed when evaluating isoconcentration contours on **Figure 7-22a** and **Figure 7-22b**. An area of groundwater contamination initially 1,000, then 100 times greater than the PSL can be seen to follow the course of No Name Ditch into the flowage easement, supporting this AOI as a secondary release area of surface water to groundwater. In addition to the five known source areas and the No Name Ditch secondary release, a new potential source area can be observed in alluvial groundwater results. Directly east of site SS008P in the tarmac area across from the central areas are two monitoring wells, MMW-1012-4 and MMW-1012-3, that exceed the PSL for PFOS by 10,000 and 1,000 times, respectively. This hot spot is in the vicinity of Hangar 1012, which was identified as a potential PFAS source area in the PA but then ruled out operationally (CH2M Hill 2015). This hangar had two documented releases of 500 gallons of AFFF in the PA, with one occurring in 2008 and one in 2014. AFCEC staff have indicated that two additional releases happened since that report was prepared, with a 235-gallon release of AFFF on 2 January 2015, and a release of 6,000 gallons of 3 percent solution C6 AFFF, occurring on 1 January 2022. The Hangar 1012 building was demolished by FAFB in August 2023. According to AFCEC staff, while installing a new fuel hydrant system in September 2022, a FAFB contractor took soil samples in the excavation that confirmed the presence of PFAS.

Beyond the previously recognized and newly identified primary and secondary source areas, another broad elevated area greater than 100 times the PFOS PSL extends from the sources north of the FAFB runway north towards the East Deep Creek Paleochannel. It is uncertain if this elevated area has a connection to the RS003P/FT004P 100 times PFOS PSL exceedance area underneath the runways, as there is a non-delineated area south of SS008P and west of RS003P between these two elevated zones. Additionally, a few elevated areas of 100 times the PFOS PSL exist in isolated areas around the individual wells MW-278, MW-RI02, and MW-RI10.

Two elevated concentration areas 10 times greater than the PSL appear to follow the paleochannels. The downgradient extent of the 10 times PSL PFOS concentration within the City of Airway Heights and East Deep Creek Paleochannels is unknown. An attempt was made to

characterize distal alluvial PFAS contamination in the downgradient area of the Airway Heights Paleochannel, but despite installing a screen across a thin water bearing zone at 208 to 218 feet depth in MW-RI33, the paleochannel yielded insufficient water to collect an analytical sample. It appears that as the paleochannels deepen northward, the depth to groundwater within the unconsolidated deposits increases significantly with much of, and in places all, the thickness of the unconsolidated deposits unsaturated in the northern distal portions of the paleochannels. Boring logs for wells of all target formations note little water within the northern portion of the paleochannels. The drilling log for MW-RI19 along West Deno Road notably showed no saturated sediments down to the bottom of the paleochannel at depth of 320 feet below the ground surface. The reason for this is presumed to be groundwater movement to deeper bedrock zones. Since elevated PFAS concentrations greater than 100 times the PFOS PSL were discovered in MW-RI10 in the East Deep Creek Paleochannel, and characterization of downgradient PFAS concentrations in the Airway Heights Paleochannel was not achieved with MW-RI33, the downgradient extent of elevated PFAS in these two paleochannels is not fully delineated. Further investigation is needed to determine the lateral extent of groundwater within the sediment-filled paleochannels and of down-paleochannel contaminant migration occurring in the unconsolidated deposits.

Outside of the paleochannels, the total extent of PFOS above the PSL (4.0 ng/L) is unknown, as the number of PSL exceedances expanded considerably when the PSL dropped an order of magnitude with the EPA November 2023 RSLs defined in the 2024 QAPP Addendum 2 (USACE 2024). Some limited areas of delineation exist along the western boundary of the plume. Significant unknowns concerning the total extent of PFOS contamination exist to the south, east, and north, however.

Comparing PFAS ratios as shown in the composition pie charts of **Figure 7-18a** through **Figure 7-19a** shows some variability spatially but also shows considerable temporal variability at some repeatedly sampled wells. This variability appears greatest in wells with low concentrations of PFAS but is not limited to just those wells. Overall, no significant observations are made about PFAS sources, with one exception. MW-RI60 has a uniquely large percentage of PFBS when compared to the ratio typically found in other sample compositions. This may indicate an off-site source. Spatially, limited observations on compositional change from the synoptic sampling event that occurred in January 2025 (**Figure 7-19a** through **Figure 19c**) or in previously collected monitoring well samples (**Figure 7-18a** through **Figure 18c**) can be made, with a moderate apparent increase in relative PFHxS percentage as distance from the known source areas increases. This observation aligns with previous findings that PFHxS (a six-carbon sulfonic acid) exhibits greater mobility in subsurface environments compared to other long-chain PFAS such as PFOS (C8, sulfonic) and PFOA (C8, carboxylic) (Vahedian et al., 2024; Brusseau, 2020). This increased mobility is attributed to its shorter carbon chain and sulfonic acid headgroup, which typically results in lower sorption affinity to soil and higher transport potential in groundwater. To further evaluate spatial relationships of PFAS composition, a figure of the highest concentration water samples collected from each source area and No Name Ditch was made to compare to monitoring well PFAS compositions. **Figure 7-23** shows that groundwater grab samples collected directly beneath source areas at the top of the alluvial water table contain the highest percentages of PFOS, which aligns with the composition of AFFF.

7.9.2 Wanapum Basalt (Basalt A)

The Wanapum Basalt is the first hydrostratigraphic unit to receive PFAS from the alluvial aquifer and is an important drinking water source for many residential wells in the region. Similar to how the total extent of contamination was interpreted in **Section 7.9.1** for the alluvial aquifer, all groundwater data from Wanapum Basalt wells were considered for this evaluation. This was done to consider the maximum possible amount of spatial distribution information. This collection of all Wanapum Basalt groundwater samples, along with isoconcentration contours and paleochannel contours, is provided on **Figure 7-22c**. Paleochannel contours are included as the paleochannels almost exclusively penetrate the Wanapum Basalt and likely influence the downward migration of PFAS from the unconsolidated deposits to the Wanapum Basalt. This downward movement of PFAS into the Wanapum Basalt from the alluvium in the paleochannels, coupled with observations elevated concentrations at lower depths in the Grande Ronde Basalt within the paleochannels, was taken into consideration when evaluating isoconcentration contour extents. Overall, groundwater extent is similar to what is observed in unconsolidated deposits, but with lower maximum concentrations beneath and adjacent to source areas, which indicates downward migration at the source areas. A planned evaluation of hydraulic head between the unconsolidated deposits and the Wanapum Basalt on the side of the Airway Heights Paleochannel did not occur as planned because the installed well MW-RI14 remained dry and MW-RI15 had to be relocated due to insufficient water in the Wanapum Basalt.

The highest concentration of PFAS noted in the Wanapum Basalt was observed directly beneath the FT004P source area, with a PFOS concentration greater than 1,000 times the PSL (in Well MW-154). Exceedances greater than 100 times the PFOS PSL are seen around the FT004P source area, and in an area west of, but not beneath, the RS001P source area. The 100 times PFOS PSL elevated area beneath FT004P is not well delineated, but the 100 times PFOS PSL elevated area adjacent to RS001P is well delineated in every direction except the southeast. There are several broad areas that have PFOS concentrations greater than 10 times the PSL in the Wanapum Basalt. They are listed and discussed individually below:

- A zone that starts beneath the FT004P source area and follows No Name Ditch to an exceedance adjacent to the flowage easement at MW-RI04. A strong source in the alluvial groundwater, derived from No Name Ditch infiltration, and that MW-RI04 is very close to the ditch that carried water from No Name Ditch to the flowage easement, suggest that this elevated zone is continuous along No Name Ditch, between FT004P and the flowage easement. The lateral extent of this exceedance is mostly unknown with a few exceptions: to the north of FT004P, to the south of No Name Ditch at one location of MW-119, and to the southwest of FT004P by a bedrock high (**Figure 4-2**) and a lower concentration observed within the bedrock high at location WP036-MW04D.
- An isolated area in the southwest of FAFB around MW-444, non-delineated in all directions except northeast.
- An area west of RS001P, which surrounds the 100 times exceedance and is similarly well delineated with a sole exception of the southeast.

- An area in that starts in the center of the base at MW-461 and extends northward into the East Deep Creek Paleochannel north of the base boundary. This 10 times exceedance area is well delineated except to the north down the paleochannel.
- A broad area within the Airway Heights Paleochannel. This exceedance is well delineated to the south and west. It is somewhat delineated to the north within the Airway Heights Paleochannel by lower concentrations to the north, and unbound and undefined to the east. The open end to the east is caused by a 10 times PFOS PSL exceedance in MW-RI16, which is well east of the deeper portions of the Airway Heights Paleochannel, east of lower concentrations between FAFB source areas and wells with lower concentrations, and as shown on **Figure 7-21b** is upgradient of the paleochannel.

The total area of exceedance of the PFOS PSL is not well defined in several areas. On the western edge of FAFB, the contamination is delineated by MW-306 and MW-RI18. To the northwest, south, and east of the base it is not delineated. PFOS above the PSL exist in the upper portion of both paleochannels. The Airway Heights Paleochannel exceedance is somewhat delineated to the south by MW-RI42 and MW-117, and along its western edge down-plume by MW-084 and MW-RI59. Presence of PFOS above the 4.0 ng/L PSL has been confirmed in the Wanapum Basalt beneath and adjacent to the distal portion in the Airway Heights Paleochannel by MW-RI32, and is suspected in the Wanapum Basalt beneath the distal portion of the East Deep Creek Paleochannel. The extent of PFOS presence within the Wanapum Basalt above the PSL downgradient of MW-RI32 is unknown. However, downgradient MW-RI32 (North of Deno Road and MW-RI34) the Airway Heights Paleochannel cuts completely through the Wanapum Basalt as mapped by the DWPS (Tehama 2021) and into the Grande Ronde Basalt. As such, a northern boundary to the Wanapum Basalt within the Airway Heights Paleochannel would end the extent of contamination within that unit within that paleochannel. Upgradient of MW-RI19 in the East Deep Creek Paleochannel is a similar cut off, but shallower depths have been mapped by the DWPS around the depression that cuts through the Wanapum Basalt, so PFAS within the Wanapum map persist within the paleochannel area past that structure.

A review of PFAS composition on **Figure 7-21b** suggests the ratio of PFOS to PFHxS may diminish the further a sample is taken from a PFAS source. Aside from the inconclusive finding, the map does not reveal other significant or conclusive spatial trends in PFAS composition ratios.

7.9.3 Grande Ronde Basalt (Basalt B)

The Grande Ronde Basalt has discontinuous connectivity to the Wanapum Basalt as it is separated in many areas by the Latah Formation, which, when present, often presents as an aquitard comprised of several feet of clay. The Latah Formation is discontinuous though and connectivity between the two units does exist. During drilling, it was noted that an unsaturated zone often existed in the Grande Ronde Basalt beneath the Latah Formation. The Grande Ronde Basalt is also used as a drinking water aquifer by residential and municipal wells in the region.

Similar to the Wanapum Basalt figure presented in **Section 7.9.2**; to interpret total extent of contamination in the Grande Ronde Basalt, all groundwater data was equally evaluated, regardless of time of collection. This was done to consider the maximum possible amount of

spatial distribution information. This collection of all Grande Ronde Basalt groundwater samples, along with isoconcentration contour, is provided on **Figure 7-22d**.

The primary goals of the limited number of Grande Ronde Basalt wells installed during the Phase I RI was to investigate contaminant pathways and determine the downward migration of PFAS contamination from the Wanapum Basalt at key locations. Evaluations of hydraulic head between the two units from hydrographs provided in **Appendix A.13** shows a 3.3 feet increase in head on 30 January 2025 between MW-RI06b in the Grande Ronde Basalt and MW-RI04 in the Wanapum Basalt, indicating an upward hydraulic gradient from the Grande Ronde Basalt to the Wanapum Basalt at this location. The boring log of MW-RI06b indicates that the Latah Formation is a thin 5-foot zone of poorly graded sand with gravel at this location, rather than the clays typical of other locations within the study area, allowing for the uninhibited movement of groundwater between the two basalt formations at this location. At the well pair MW-RI42 and MW-RI47, hydrographs on the same day 30 January 2025 show a drop in head of 47.6 feet between the Wanapum Basalt and the Grande Ronde Basalt, indicating a downward hydraulic gradient between the two basalt formations. At this location, the boring log of MW-RI47 shows the Latah formation as an impermeable 8-foot-thick interval of claystone. A comparison of the potentiometric surfaces between the two basalt formations show that at on-base locations water levels are typically 50 feet lower in the Grande Ronde than in the Wanapum Basalt, and in the paleochannels that difference increases to more than 100 feet, indicating a downward gradient in those locations.

Given the limited number of analytical samples collected from the Grande Ronde hydrostratigraphic unit, delineation at the current PSLs was not achieved and all isoconcentration contours, shown on **Figure 7-22d**, are open-ended. The contaminant pathways are individually discussed below:

- North from FAFB: A Phase I PFAS RI well, MW-RI51 was installed at the northern base boundary. Results in this well confirmed presence of PFOS greater than the 4.0 ng/L PSL heading north in the direction of the East Deep Creek Paleochannel. Regional groundwater in the Grande Ronde Basalt flows northeast in this area, which is out of alignment with the East Deep Creek Paleochannel, which heads nearly straight north at this location.
- Near flowage easement: A Phase I PFAS RI well, MW-RI06b, was installed adjacent to the flowage easement. As shown in the geologic log of MW-RI06b (**Appendix A.4**), the Latah Formation at this location is just a thin 5-foot bed of permeable sand with gravel. As a result, MW-RI06b has a nearly identical concentration of PFOS as MW-RI04 in the Wanapum Basalt above it.
- East of FAFB: A Phase I PFAS RI monitoring well, MW-RI47, was installed immediately adjacent to the Wanapum Basalt monitoring well MW-RI42. As can be seen in the geologic log for MW-RI47 (**Appendix A.4**), the Latah Formation is an 8-foot thick interval of claystone at this location. Similar to the Wanapum well above it, PFOS was not detected at concentrations above the 4.0 ng/L PSL.

- Airway Heights Paleochannel: Given the City of Airway Heights area has known contamination in the Grande Ronde Basalt from municipal and residential well sampling conducted by FAFB as part of a Time Critical Removal Action (USAF 2017), existing wells within the paleochannel area were sampled and two Phase I PFAS RI wells were installed (MW-RI27 and MW-RI34). The existing wells MW-101 and MW-115 near the over-deepened head of the paleochannel have exceedances of the PFOS PSL, and a short distance downgradient MW-RI27 exceeds the PFOS PSL by greater than 10 times. In the northern distal portion of the Airway Heights Paleochannel at Deno Rd, MW-RI34 has a PFOS concentration greater than 100 times the PSL.
- An area at the distal portion of the East Deep Creek Paleochannel in a particularly deep depression. MW-RI19 installed within the Grande Ronde Basalt has a PFOS concentration greater than 10 times the PSL.

A review of the Grande Ronde PFAS composition maps presented on **Figure 7-18c** and **Figure 7-19c** do not show clear spatial trends in PFAS ratios but, as in the unconsolidated deposits, do show some temporal variation in PFAS ratios.

7.10 GROUNDWATER TREATMENT SYSTEMS

At the request of AFCEC, a single sample was collected from the influent water to the groundwater treatment plant, located at LF002. This treatment plant was designed to treat chlorinated volatile organic compound contamination (primarily trichloroethylene) using air strippers and GAC for the off-gas. It is unknown if this system retains or treats PFAS. An effluent sample was not able to be collected at the time of the investigation, due to the system being shut down for 1 year for rebound testing. The influent sample is shown in **Table 6-15** (sample FGW-E-133) and exceeds the PFOA and PFHxS PSLs and additionally exceeds the PFOS PSL by more than 10 times.

A second, non-operating, groundwater treatment system is located at IRP site WP003, near the detention ponds and at the head of No Name Ditch (**Figure 2-2**). Construction of a pump-and-treat system, consisting of two extraction wells and a shallow-tray air stripper system with activated carbon adsorption, was completed in February 1996 (CH2M Hill 2001). AFCEC staff indicated this system has been inoperable since 2002.

8. CONTAMINANT FATE AND TRANSPORT

8.1 POTENTIAL ROUTES OF MIGRATION

PFAS contaminants can migrate and be transported by several different mechanisms at FAFB. These mechanisms typically involve air, soil, or water as carrying media, and can be either naturally induced, or due to anthropogenic activities. The following provides a summary of the expected potential routes of migration:

- Aerosol (carrying of fine contaminant mists on air currents during AFFF use)
- Eolian (windblown dust containing adsorbed contaminants)
- Leaching and migration from contaminated soils or rock to deeper layers or to groundwater
- Migration in groundwater within and outside the boundaries of FAFB
 - Water solubility: Water solubility refers to the ability of a compound to dissolve in water. PFAS compounds generally exhibit high water solubility, particularly short-chain PFAS, which makes them more mobile in groundwater systems. High solubility increases the likelihood of migration away from source areas and toward potential receptors.
 - Kow (Octanol-Water Partition Coefficient): The Kow is a measure of a compound's hydrophobicity, indicating how likely it is to partition into organic phases like soil organic matter versus remaining in water. PFAS typically have low Kow values compared to other hydrophobic organic contaminants, suggesting they favor the aqueous phase. However, differences in Kow among PFAS species still influence their relative mobility.
 - Total organic carbon (TOC): TOC in aquifer materials provides a measure of the organic matter available for PFAS sorption. Soils or sediments with higher TOC content can retain PFAS more effectively, reducing mobility.
 - Solid Phase Partitioning Coefficient (Kd or Kf): The partitioning coefficient reflects the degree to which a compound adsorbs to solid media relative to remaining in solution. It is compound-specific and dependent on soil characteristics, such as texture, pH, and organic carbon content. PFAS with higher Kd or Kf values (e.g., PFOS, PFOA) are more likely to persist in soil, while those with lower values (e.g., PFBS) are more prone to migrate in groundwater. These coefficients are critical inputs in modeling PFAS transport and estimating leaching potential.
 - Air-Water Interface Partitioning: At unsaturated conditions, PFAS can adsorb to air-water interfaces in the soil vadose zone, potentially slowing vertical transport. This mechanism is especially important for long-chain PFAS with higher surface activity.
- Surface water runoff with surface water and sediment collection in surface water bodies
- Surface water/groundwater interaction

Aerosol

In addition to mist formation during AFFF use, recent studies have shown that PFAS can migrate through the atmosphere via aerosolization from contaminated aqueous solutions (Kizhakkethil et al. 2024). This process occurs when PFAS, due to their surface-active properties, accumulate at the air–water interface and become incorporated into droplets formed during bubble bursting or mechanical agitation. For example, during activities such as natural turbulence, fine PFAS-laden droplets can become airborne and be transported by wind currents. Longer-chain PFAS and sulfonate species (e.g., 8:2 Fluorotelomer Sulfonate [FTS,] PFDA, PFOS) are especially prone to aerosolization. Importantly, this migration occurs through aerosol formation rather than volatilization, as most PFAS have negligible vapor pressure. These findings suggest that aerosol pathways may be a relevant, though often overlooked, mechanism for off-site transport and atmospheric dispersion of PFAS at locations like FAFB where historical AFFF use or aqueous PFAS handling occurred.

Eolian

Recent research has demonstrated PFAS can migrate through windblown dust, particularly when adsorbed to microplastics or fine soil particles in biosolid-amended soils (Borthakur et al. 2022). PFAS-bound particulates are more easily entrained by wind due to their lower density and surface characteristics, especially under dry or disturbed conditions. Long-chain PFAS, which have a higher affinity for solid surfaces, have been found at elevated concentrations in airborne dust collected near biosolid-applied fields. These particles can be transported off-site via eolian processes and pose potential inhalation risks to nearby human and ecological receptors. This pathway represents a significant mechanism for atmospheric transport that is not reliant on volatilization but instead on physical particle mobilization.

Vadose zone

PFAS can enter the subsurface from a range of sources and migrate through the vadose zone, which often acts as a long-term reservoir of contamination. These compounds tend to accumulate in the upper soil layers, posing ongoing risks to groundwater quality (Brusseau et al. 2020; Vahedian et al. 2024a). Certain PFAS precursors, such as fluorotelomer alcohols (FTOHs), perfluoroalkyl sulfonamides (e.g., perfluorooctane sulfonamide [FOSA]), and polyfluoroalkyl phosphate esters, can biotically or abiotically degrade into terminal perfluoroalkyl acids (PFAAs) through both natural and engineered processes (Lenka et al. 2021). Among PFAAs, short-chain compounds, such as PFHxA and PFBS, are more mobile in the vadose zone and groundwater, due to their lower sorption to soil organic matter. In contrast, long-chain PFAAs such as PFOS and PFOA are more persistent, exhibiting stronger sorption and resistance to degradation, which allows them to accumulate near source zones for extended periods. However, the mechanisms and conditions governing these precursor transformations are still being actively investigated, making it difficult to accurately model PFAA behavior and complicating strategies for effective environmental remediation and risk management.

The fate and transport of PFAS in the vadose zone can be affected by several complex processes and mechanisms, such as partitioning at various interfaces (such as air-water interface and solid phase), tension-driven flow, and the presence of multiple PFAS components (Brusseau 2018). For example, the presence of co-contaminants, such as hydrocarbons or other surfactants found

in AFFF mixtures, can further modify PFAS behavior by altering sorption dynamics and promoting competitive interactions at sorption sites or interfaces (Hakimabadi et al. 2023). These complexities are further intensified by non-linear sorption and non-equilibrium partitioning, which make it difficult to accurately predict PFAS transport using conventional modeling approaches (Stults et al. 2024; Vahedian et al. 2024).

PFAS interactions at different environmental interfaces are also governed by site-specific conditions, including soil texture, organic matter content, water flow patterns, and the chemical properties of each PFAS compound (Adamson et al. 2022; Nguyen et al. 2020). Chain length plays a key role in determining surface activity, sorption affinity to solids, and partitioning at air-water interfaces (Higgins and Luthy 2006). Additionally, fluctuations in soil moisture and groundwater table levels—driven by seasonal weather and climate changes—can dynamically alter the extent of air-water interfaces in the vadose zone, further complicating PFAS transport and retention in field conditions (Divine et al. 2024).

Groundwater

PFAS exhibit complex fate and transport behaviors in groundwater due to their unique physicochemical properties and diverse structures; however, these behaviors are generally less complex than in the vadose zone, primarily due to the absence of an air-water interface. PFAS movement in groundwater is influenced by compound-specific traits such as chain length, functional group, and isomer configuration, with long-chain PFAS showing greater sorption to soil solids, and short-chain PFAS exhibiting higher mobility in the aqueous phase (Ahrens and Bundschuh 2014). PFAS are highly persistent, with limited biodegradation under natural subsurface conditions, although precursors such as fluorotelomer alcohols can transform into PFAAs, contributing to long-term mobility (Houtz et al. 2013; Mejia-Avendaño et al. 2016). Transport is further modulated by sorption processes influenced by environmental factors like pH, ionic strength, mineralogy, and organic matter content (Higgins and Luthy 2006). While sorption to the air-water interface is a key retardation mechanism in the vadose zone, it is absent in saturated systems; however, reversible desorption from soil solids still contributes to delayed contaminant migration and extended plume longevity (Brusseau 2020). These interacting processes result in site-specific PFAS transport behavior in groundwater, underscoring the need for detailed local characterization to support accurate risk assessment and remediation strategies (Adamson et al. 2022, McGarr et al. 2023).

Surface water/groundwater interaction

The interaction between surface water (SW) and groundwater (GW) is a key driver of PFAS transport, transformation, and persistence. Groundwater often serves as a conduit for PFAS migration into surface waters, while impacted surface water can also contaminate groundwater, sometimes miles downstream (Divine et al. 2023). The SW/GW interface actively influences PFAS retention, precursor degradation, and flow-path mixing, yet remains understudied. McFarlan and Lemke (2024) found that groundwater contributed 10 to 30 percent of PFAS in fish-rearing ponds near Rockford, Michigan, with short-chain PFAS migrating more readily than long-chain compounds. Tokranov et al. (2021) observed a decrease in PFAA precursors from 45 percent in lake water to 25 percent in shallow groundwater, with seasonal fluctuations impacting groundwater PFAS concentrations. Rey et al. (2025) identified preferential groundwater

discharge zones in a Cape Cod stream-wetland system where precursor transformation and flow-path convergence influenced PFAS loading. Despite seasonal variability, PFAS mass loading to the stream remained consistent, highlighting the critical role of SW/GW exchange in PFAS fate and ecosystem exposure.

8.2 CONTAMINANT PERSISTENCE: PHYSIOCHEMICAL PROPERTIES AND MOBILITY OF PFAS

PFAS interactions with soils and sediments are influenced by molecular structure, soil organic matter, ionic composition, and key physicochemical properties such as chain length and head group structure. The perfluorinated carbon chains of long-chain PFAS are highly hydrophobic, meaning they are not soluble in water and tend to associate with non-polar substances like organic carbon (ITRC 2023). Long-chain PFAS, such as PFOS, exhibit strong hydrophobic interactions with soil organic matter, whereas shorter-chain PFAS are more mobile and less retained in soils with high organic carbon content. Among PFAS with the same chain length, sorption capacity is further dictated by head group structure, with sulfonate groups exhibiting stronger sorption than carboxylate groups.

Environmental factors such as pH, ionic strength, and the presence of polyvalent cations also play a critical role in PFAS behavior. Sorption generally increases with chain length and decreases with pH, while Fe and Al oxides enhance electrostatic binding, particularly for PFOS. Polyvalent cations (e.g., Ca^{2+} and Mg^{2+}) promote PFAS retention by neutralizing soil surface charges, reducing electrostatic repulsion, and facilitating stronger interactions between PFAS and soil surfaces. Molecular simulations further demonstrated that ionic strength and cation bridging significantly influence PFAS adsorption, especially for long-chain compounds in high-salinity environments.

These processes likely explain the high PFOS concentrations observed in soils within the study area. Given the strong sorption affinity of PFOS due to its long-chain structure and sulfonate head group, it is expected to be retained in the subsurface, particularly in areas with high organic matter and Fe/Al oxides. The presence of polyvalent cations in the study area's soil and groundwater may further enhance PFOS retention through cation bridging mechanisms, reducing its mobility but leading to persistent contamination hotspots. The combination of these factors suggests that natural attenuation within the study area may be slow, and PFOS will remain in the subsurface in the absence of targeted remediation strategies.

8.3 PFAS TRANSFORMATION PROCESSES

PFAS precursors—commonly present in AFFF and industrial discharge—can break down into persistent PFAAs, such as PFOA and PFOS, via microbial activity, chemical reactions, and biological processes. Fluorotelomer-based precursors, such as 6:2 fluorotelomer alcohol (6:2 FTOH) and 6:2 fluorotelomer sulfonate (6:2 FTS), generally degrade into PFCAs like PFOA and PFHxA. In contrast, precursors formed via electrochemical fluorination (ECF), including compounds like N-ethyl perfluorooctane sulfonamidoethanol (N-EtFOSE) and FOSA, tend to degrade into PFSAAs such as PFOS. Some AFFF-associated precursors are thought to endure for centuries, slowly degrading and contributing to long-term contamination of groundwater.

Ruyle et al. (2023) found these precursors made up nearly half the total PFAS at one site and were transforming at a half-life of more than 66 years—posing long-term risks unless remediation is implemented in the vadose zone. The rate and extent of microbial transformation depend on environmental factors such as oxygen levels, the types of microbes present, and co-existing contaminants. These transformations typically involve oxidation, hydrolysis, and sorption. Understanding such mechanisms is essential for accurately predicting PFAS behavior in the environment and designing effective cleanup strategies.

Microorganisms are especially important in breaking down PFAS precursors in AFFF-contaminated soils, groundwater, and bioremediation systems. Studies have reported microbial degradation of FTOHs, FTSs, and sulfonamides, although this often leads to more stable PFAAs. Transformation rates vary widely depending on the microbial environment (Choi et al. 2022; Yan et al. 2024). Beyond microbial processes, abiotic and biotic factors also strongly affect precursor breakdown in soils and water systems. Environmental conditions like pH, redox potential, and the presence of oxidants influence the extent and speed of transformation. While some pathways promote breakdown, they often create semi-stable byproducts that complicate cleanup.

The Total Oxidizable Precursor assay is a common method to quantify oxidizable precursors by converting them into measurable PFAAs, revealing a more complete picture of PFAS loads. Shojaei et al. 2022 showed that more than 90 percent of PFAS mass in AFFF foams consisted of undetected precursors. Liu et al. (2024) confirmed that the Total Oxidizable Precursor assay aligned well with known fluorotelomer-based precursors but also uncovered a significant proportion (18.6–53.0 percent) of unknown precursors in ECF-based AFFFs.

8.4 CONTAMINANT LEACHABILITY

8.4.1 Leachability Evaluation Methodology

At FAFB, a few feet to more than 120 feet of silty to gravelly alluvium predominantly overlies the fractured basalt flows of the Wanapum Basalt Formation, with the exception of a limited area in the southwest near MW-RI18 where alluvium directly overlies granitic basement rock. This presents a site complexity that requires some important assumptions before embarking on an evaluation of PFAS leachability. The main assumptions include:

- **Leachate Similarity to Actual Meteoric Water:** Although the leaching fluids used to extract the SPLP samples are modified to mimic natural rainwater as closely as possible, potential inherent difference between natural and laboratory-prepared solutions may affect the leachability of PFAS from site soils.
- **Leachate Impact to Groundwater:** The SPLP evaluation assumes that the contaminants in the leachate immediately enter the groundwater resource(s) after leaching from the soil sample, without undergoing further processes that would change the concentration(s) in the leachate. With the highest concentrations of PFAS in soil typically observed within 2 feet of the surface, and water bearing alluvial sediments are encountered between 7 and 64 feet below the surface, this situation is not a direct correlation to FAFB.

An SPLP evaluation intended to provide a general indication of the leachability of PFAS from their soil sources and initially approximates soil screening levels for the soil to groundwater pathway based on the SPLP leachability data. It is noted, by the nature of the SPLP analysis in that the soil sample is fully saturated during the analysis process, that SPLP results are likely biased higher than what would be found leaching under ambient conditions (which was identified during this evaluation). This is due to PFAS affinity to remain at the air-water interface, other complex reactions with soil mineralogy that occurs with variable saturation conditions, and the destruction of *in situ* soil structure that comes from the SPLP analysis. See **Section 10.3** for recommendations for future phases of remedial investigation to include additional porewater investigations (such as with lysimeters) for more direct measurement of the leachability of PFAS particularly in unsaturated soils.

8.5 SITE-SPECIFIC CONTAMINANT PERSISTENCE AND MIGRATION

The PWS includes focused investigation of five IRP sites of limited extent and wide on- and off-base investigations into regional groundwater and the suspected contaminant pathway of No Name Ditch. Given the very different scales of these investigation elements, this contaminant persistence and migration evaluation focuses first on the five known on-base source areas (the IRP sites) and then reviews the downgradient impacts of those source areas, helping to inform the CSM for each.

8.5.1 FT004P

Initial deposition of PFAS contaminants at FT004P consisted of infiltration to soil of water used in fire training exercises involving AFFF. The highest surface soil exceedances are greater than 1,000 times the PFOS PSL in two locations and for subsurface soils, greater than 100 times the PFOS PSL in two locations. The subsurface exceedances extending to 15 feet below the surface and were not followed by a PFOS value below exceedance; therefore PFOS exceedances are not delineated. In addition to PFOS, soil exceedances include occasional exceedances of PFHxS, PFNA, and PFOA, with two verifiable instances of PFHxS concentration exceeding the concentration of PFOS (**Table 6-3**- sample SB-RA106-S and sample SB-RA112-B, PDF162-163 of 3608). Based on the SPLP analyses having a maximum PFOS result of 350,000 ng/L (**Table 6-10**), the concentrations in soil at FT004P have a significant potential to leach PFAS at concentrations above the PSL, resulting in soil leachate affecting groundwater. This conclusion is strongly supported by groundwater grab samples in alluvium collected beneath FT004P exceeding the PFOS PSL by greater than 10,000 times, and a monitoring well sample collected from the Wanapum Basalt directly beneath FT004P (MW-154) exceeding the PFOS PSL by greater than 1,000 times. Once in groundwater, PFAS begins traveling east or southeast depending on location (**Figure 7-2**) and would then follow regional groundwater trends and potentially affect receptors as discussed in **Section 8.7.2.1** and **Section 9.3**. A groundwater to surface water contaminant pathway, discharging to the on base portion of No Name Ditch, is possible but has not been confirmed. Excess surface water from this study area has the potential to flow into No Name Ditch.

8.5.2 RS003P

Initial deposition of PFAS contaminants at RS003P consisted of infiltration to soil from AFFF was sprayed onto an old taxiway during equipment and AFFF calibration testing. The highest surface soil exceedances are greater than 10 times the PFOS PSL at 10 locations, with subsurface exceedances of the PFOS PSL extending to a depth of 12 feet. At RS003P, PFOS was the only PFAS to exceed the PSL in soil (**Table 6-4**). Based on the SPLP analyses having a maximum PFOS result of 24,000 ng/L (**Table 6-10**), the concentrations in soil at RS003P have the potential to leach PFAS at concentrations above the PSL, resulting in leachate affecting groundwater. This conclusion is strongly supported by groundwater grab samples in alluvium collected beneath RS003P exceeding the PFOS PSL by greater than 10,000 times. Once in groundwater, PFAS begins traveling southeast (**Figure 7-4**), and would then follow regional groundwater trends and potentially affect receptors as discussed in **Section 8.7.2.1**. A groundwater to surface water contaminant pathway, discharging to the on base portion of No Name Ditch, is possible but has not been confirmed.

8.5.3 SS008P

Initial deposition of PFAS contaminants at SS008P (AKA AFFF Area 3) consisted of infiltration to soil of water used from AFFF used to extinguish a jet fuel (JP-4) fire in March 1987 resulting from the crash of a KC-135 aircraft in a grassy field. The highest surface soil exceeded the PFOS PSL at one location, with subsurface soil exceedances of the PFOS PSL extending to a depth of 8 ft. The highest exceedance of any soil was at 0.5 to 4 feet, exceeding the PFOS PSL greater than 10 times below a surface soil sample that did not exceed the PFOS PSL. At SS008P, PFOS was the only PFAS to exceed the PSL in soil (**Table 6-5**). Based on the SPLP analyses having a maximum PFOS result of 950 ng/L (**Table 6-10**), the concentrations in soil at SS008P have the potential to leach PFAS at concentrations above the PSL, resulting in leachate affecting groundwater. This conclusion is supported by groundwater grab samples in alluvium collected beneath SS008P exceeding the PFOS PSL by greater than 1,000 times. Once in groundwater, PFAS begins traveling northwest to southwest depending on location (**Figure 7-6**), and would then follow regional groundwater trends and potentially affect receptors as discussed in **Section 8.7.2.1** and **Section 9.3**.

8.5.4 RS002P

Initial deposition of PFAS contaminants at RS002P occurred when water with an unknown quantity of AFFF was deposited onto a grassy field while extinguishing a B-52 aircraft fire. The highest surface soil exceedance is greater than 100 times the PFOS PSL at five locations, with subsurface exceedances of the PFOS PSL extending to a depth of 4 feet. At RS002P, PFHxS exceeded the PSL three times, and PFNA and PFOA exceeded the PSL one time, with one of those exceeding the concentration of PFOS in the same sample (**Table 6-6**). Based on the SPLP analyses having a maximum PFOS result of 120,000 ng/L (**Table 6-10**), the concentrations in soil at RS002P have the potential to leach PFAS at concentrations above the PSL, resulting in leachate affecting groundwater. This conclusion is supported by groundwater grab samples in alluvium collected beneath FT004P exceeding the PFOS PSL by greater than 1,000 times. Once in groundwater, PFAS begins traveling east (**Figure 7-8**), and would then follow regional

groundwater trends and potentially affect receptors as discussed in **Section 8.7.2.1** and **Section 9.3**.

8.5.5 RS001P

Initial deposition of PFAS contaminants at RS001P consisted of infiltration to soil of water from Calibration tests using AFFF at the fire station. The highest surface soil exceedance is greater than 100 times the PFOS PSL at two locations, with subsurface exceedances of the PFOS PSL extending to a depth of 12 feet at two locations. The subsurface exceedances extending to 12 feet below the surface and were not followed by a PFOS value below exceedance; therefore, PFOS exceedances are not delineated. At RS001P, PFHxS exceeded the PSL five times, PFNA exceeded the PSL once, and PFOA exceeded the PSL six times. None of these other PFAS PSL exceedances exceeded the concentration of PFOS in the same sample (**Table 6-7**). Based on the SPLP analyses having a maximum PFOS result of 300,000 ng/L (**Table 6-10**), the concentrations in soil at RS001P have significant potential to leach PFAS at concentrations above the PSL, resulting in leachate affecting groundwater. This conclusion is strongly supported by groundwater grab samples in alluvium collected beneath FT004P exceeding the PFOS PSL by greater than 1,000 times. Once in groundwater, PFAS begins traveling northeast (**Figure 7-10**), and would then follow regional groundwater trends and potentially affect receptors as discussed in **Section 8.7.2.1** and **Section 9.3**.

8.6 MECHANISTIC INTERPRETATION OF PFAS TRANSPORT PATHWAYS AT FAFB

Multiple PFAS fate and transport mechanisms, described in **Section 8.5**, are relevant to observed contamination patterns at the five release sites evaluated in this RI. Specifically, the shape and extent of the PFAS plumes, as well as observed concentration profiles in soil and groundwater, reflect contributions from aerosol, eolian, vadose zone, groundwater, and SW/GW interaction pathways.

Aerosolization and Wind-Burst Contributions

Given the open terrain and consistently high wind speeds at the installation, there is a plausible pathway for PFAS transport via aerosolization and wind burst. Historically, the wind direction within the area of the installation has been south to south-southwest with wind gust reaching 19-25 miles per hour (Western Regional Climate Center 2025). During historical AFFF training and spill events, mechanical agitation and bubble bursting likely facilitated the formation of PFAS-laden droplets, which could have become airborne and transported short distances downwind. The surface-active nature of many PFAS, particularly long-chain sulfonates like PFOS enhances their potential to partition at the air–water interface and become incorporated into aerosols. This mechanism could partially account for the lateral distribution of surface soil exceedances around the known release areas (e.g., FT004P, RS003P), particularly where contamination appears more diffuse and not strictly localized to the original AFFF application zones.

Tension-Driven Lateral Transport in the Vadose Zone

The predominantly horizontal plume morphology observed in subsurface soil beneath each release site may be partially attributable to tension-driven flow mechanisms in the vadose zone. Tension-driven flow arises from spatial and temporal variations in capillary pressure, which can

lead to localized redistribution of moisture and PFAS, promoting lateral over vertical movement—particularly during wetting and drying cycles. This process can extend the horizontal footprint of contamination even in the absence of significant vertical migration.

At FAFB, soils in the five source areas are primarily classified as Cheney ashy silt loam and Phoebe, dry-Battleplain complex soils, both with 0 to 8 percent slopes. These soils are well-drained and contain significant silt and fine sand fractions, which influence moisture retention and capillary behavior. In such well-drained soils with moderate to high capillarity, water infiltrating from precipitation or surface releases can redistribute laterally under tension gradients rather than draining vertically—especially when evaporation at the surface or dry zones below create upward or horizontal suction gradients. The fine-grained texture and relatively uniform structure of these soils enhance lateral unsaturated flow by maintaining connected water films across soil pores, supporting extended capillary-driven transport of PFAS. These conditions can prolong PFAS retention in the vadose zone and increase the potential for horizontal migration between adjacent source zones, or toward discharge areas.

However, given the observed asymmetry in PFAS distribution and its potential alignment with surface topographic features, it is also possible historical stormwater runoff contributed to lateral transport near the surface. The influence of surface transport has not been explicitly evaluated in this section but may warrant further investigation to distinguish between subsurface capillary-driven processes and overland flow effects.

PFAS Partitioning Behavior and Chain-Length Dependence

The fate and transport behavior of PFAS at FAFB also reflects strong compound-specific partitioning characteristics. PFAS are commonly categorized by chain length, with "long-chain PFAS" defined as perfluoroalkyl carboxylic acids (PFCAs) with eight or more carbons (e.g., PFOA) and perfluoroalkane sulfonic acids (PFSAs) with six or more carbons (e.g., PFHxS, PFOS). Short-chain PFAS include PFCAs with fewer than eight carbons (e.g., PFBA, PFHxA) and PFSAs with fewer than six carbons (e.g., PFBS).

Long-chain PFAS (e.g., PFOS, PFHxS, PFOA) have higher sorption affinities to soil solids and the air–water interface, resulting in greater accumulation in shallow soil and subsurface layers. This is evidenced by soil sample data at FT004P and RS003P, where surface and vadose zone concentrations of PFOS and PFHxS exceed groundwater concentrations by several orders of magnitude. Conversely, short-chain PFAS such as PFBA and PFBS exhibit greater mobility due to their lower sorption affinity and reduced retention at environmental interfaces. These compounds are detected at higher concentrations in groundwater monitoring wells, especially downgradient of release sites, supporting the assertion that chain length strongly governs vertical transport potential.

Surface Water/Groundwater Interaction Pathways

Across the study area, the interaction between surface water and groundwater presents an additional transport mechanism that may influence plume behavior and risk to downgradient receptors. Several lines of evidence support the potential for a surface water pathway originating from on base and discharging into NND, which flows intentionally and clearly from on base to off base. Surface runoff from impacted soil areas—particularly following precipitation events—may contribute to PFAS loading into surface water, which in turn may recharge underlying

groundwater through infiltration. The bidirectional nature of this SW/GW exchange has been documented in other studies (CH2M HILL 2015, Amec 2019a) and may be relevant to sustaining PFAS mass loading within the aquifer system. Monitoring results downstream and along suspected groundwater flow paths suggest a consistent eastward to southeastward migration pattern (e.g., from FT004P), with the potential for eventual discharge to surface water features like No Name Ditch, groundwater, and associated ecological receptors.

Together, these mechanisms—when considered alongside historical use scenarios and study area hydrogeologic conditions—provide a comprehensive conceptual model for the persistence and migration of PFAS at FAFB. Understanding these specific study area transport processes is essential to accurately delineate contamination, assess exposure risks, and support the development of effective remediation strategies.

8.7 REGIONAL PERSISTENCE AND MIGRATION

Downgradient of the source areas are the FAFB surface water conveyance of No Name Ditch, and the regional groundwater both on and off base. These migration pathways are discussed in this section.

8.7.1 No Name Ditch

No Name Ditch is not an official site but became a secondary release area of interest after PFAS contamination was confirmed in 2022 through optional task sampling selected by AFCEC. No Name Ditch collects stormwater from FAFB Storm Basins 1, 5, and 6 which contain sites FT004P, RS003P, SS008, and RS001P (**Figure 4-4**). It is unknown if shallow groundwater from FT004P and RS003P can discharge directly into the on-base portions of No Name Ditch during high water table periods. No Name Ditch transports PFAS contaminated surface water and sediment from on base downstream before ultimately terminating in the Flowage Easement, where all remaining water infiltrates to groundwater. No Name Ditch is presumed to lose surface water to groundwater along its entire off-base length, as streamflow was observed to diminish steadily along its length during sampling activities, but this has not been confirmed with discharge measurements and field drainage network assessment. Once in groundwater PFAS would follow regional groundwater trends and potentially affect receptors, as discussed in **Section 8.5.7**.

Surface water may have been used by adjacent residences to water fields (a tertiary release mechanism), or flooded fields during times of very high flow, as suggested by exceedances of the PFOS PSL noted in surface soils adjacent to the ditch but higher in elevation. One resident near the Flowage Easement verbally confirmed historical use of No Name Ditch surface water for irrigation purposes. Subsurface soil beneath impacted surface soils adjacent to the ditch (but still higher in elevation than the surface water) was found to contain PFOS at greater than the PSL, but the overall impact to this media was not significant. The presumed mechanism for this exceedance is leaching of PFAS for overlying surface soils. Groundwater grab samples collected from soil borings adjacent to No Name Ditch were collected below the elevation of the stream bed and had significant exceedances, supporting the continuing infiltration of No Name Ditch surface water to groundwater along the entire length of the stream.

8.7.2 Regional Groundwater

8.7.2.1 Groundwater Flow and Direction

Despite its nearly flat surface topography, FAFB sits on a top of a rugged bedrock paleotopography influenced by bedrock highs, flowing to the south, east, and north within the alluvial aquifer. Off base, alluvial aquifer flow direction is primarily controlled by paleochannels, one of which (the East Deep Creek Paleochannel) collects alluvial water flowing north of the base, and the other of which (the Airway Heights Paleochannel) collects alluvial water flowing southeast of the base and redirects it to the north. In addition to the paleochannels, there appears to be a cone of depression south of the City of Airway Heights in the vicinity of MW-RI25 (**Figure 7-21a**). While the origins of this cone of depression are not known, it does coincide with an apparent depression in the basalt bedrock surface at the floor of the Airway Heights Paleochannel. A study of the existing geology CSM, geologic conditions encountered while drilling, alluvial groundwater elevations, and PFAS concentrations reveals that both paleochannels progressively cut through the Wanapum Basalt along their length and at their most distal portions along Deno Road cut through the Latah Formation and into the Grande Ronde Basalt (**Figure 4-3**). The result of this complex 3-dimensional geometry is twofold:

1. The low recharge rate from annual precipitation coupled with the deepening channel results in much of the alluvium in the paleochannels being dry and unsuitable for monitoring wells. This is likely enhanced by areas of significant hydraulic conductivity contrast between the alluvium and the Wanapum Basalt in areas where the hydraulic gradient is such that alluvial groundwater can drain into permeable basalt zones. The best opportunity to intersect groundwater within a paleochannel is in the middle of the channel at elevations that correspond low permeability zones of the “underlying” strata, such as blocky/colonnade sections of the Wanapum Basalt or the clays of the Latah Formation.
2. The cross-cutting relationship of a deepening alluvial channel with primarily horizontal basalt flows means that in areas with a downward hydraulic gradient from the Wanapum Basalt into the paleochannel alluvium, groundwater will flow out of the Wanapum Basalt and into the alluvium. This situation is likely the case at MW-RI10, which is set in deep alluvium in a deepening paleochannel that has cut through much of the Wanapum Basalt by that location. As a result, MW-RI10 shows an increase in PFOS concentration compared to alluvial wells in shallower upgradient portions of the East Deep Creek Paleochannel. Moving further downgradient, the paleochannels then facilitate further downward migration as it crosscuts horizontal layers of lower permeability such as the Latah Formation. This can serve as an effective transport mechanism of groundwater from the Wanapum Basalt to the Grande Ronde Basalt, as the alluvium is typically much coarser in grain size than the many clay areas on the Latah Formation, and thus more permeable. This potential transport mechanism is supported by observations of higher concentrations of PFAS found in the Grande Ronde Basalt downgradient of the paleochannel cutting through the Wanapum Basalt and Latah Formation.

Within the Wanapum Basalt, groundwater primarily flows to the east, southeast and north, with a cone of depression adjacent to RS001P (**Figure 7-21b**). Groundwater flow to the east is

presumed to turn to the north and connect with the Airway Heights Paleochannel. Groundwater flow to the southeast has been previously interpreted to turn to the Northeast, but may turn further to the North and or enter the Airway Heights Paleochannel. Groundwater flow direction east of South Craig Road is not well understood as there is a lack of monitoring wells in that access-restricted area. All non-residential property immediately east of South Craig Road from West McFarlane Road to Highway 902 is owned by Spokane Airport, who has not approved property access to FAFB. Groundwater within the Wanapum Basalt then has a northeasterly trend north of FAFB, but also has the complex continuing interaction with the two paleochannels previously addressed in the alluvial aquifer flow direction discussion.

Within the Grande Ronde Basalt, groundwater flows primarily east and northeast from the base, depending on the point of origin. The Grande Ronde is hydraulically discontinuously connected to the Wanapum Basalt and is connected directly with the alluvial paleochannels at Deno Road.

Across all three hydrostratigraphic units but particularly the two basalt units, groundwater contaminated with PFAS is pumped to the surface by residential and municipal drinking water and irrigation wells.

An evaluation of groundwater migration speed is given below. Average linear velocity of groundwater is commonly known as *seepage velocity*, and is governed by the equation:

$$V_{seepage} = \frac{Ki}{n_e}$$

Where (*K*) is hydraulic conductivity, (*i*) is hydraulic gradient, and (*n_e*) is effective porosity. The term (*Ki*) is also known as Darcy flux, or (*q*). For this Phase I PFAS RI, hydraulic conductivity has been measured in the form of slug and aquifer pumping tests and hydraulic gradient can be measured from the potentiometric surface. Direct measurements of effective porosity have not been made, but they can be estimated from published values.

For hydraulic conductivity, minimum, average, and maximum values are used to calculate the possible range of seepage velocities. Those hydraulic conductivities are:

Aquifer	Number of Wells	Hydraulic Conductivity (K) (feet/day)		
		Minimum	Average	Maximum
Unconsolidated	26	0.03	5.88	30.26
Basalt A	9	0.45	13.80	32.32
Basalt B	5	0.23	2.35	5.16

For hydraulic gradient, the following measurements are used:

- Unconsolidated deposits: MW-384 to MW-RI10, January 2025 (**Figure 7-21a**), 0.0105 feet per foot
- Wanapum Basalt: MW-154 to MW-RI15, January 2025 (**Figure 7-21b**), 0.0097 feet per foot

- Grande Ronde Basalt: MW-RI47 to MW-RI34, January 2025 (**Figure 7-21c**), 0.0154 feet per foot

For effective porosity, the following reference values are used as estimates, with the low, average (or medium), and high values matched to the opposite values for hydraulic conductivity in calculations, to show the maximum possible range:

- Unconsolidated deposits: Silt – 0.20; fine gravel – 0.28; fine sand – 0.33 (Morris and Johnson 1967)
- Wanapum Basalt: Reference values for Wanapum Basalt were not available, but Pacific Northwest National Laboratories (2002) gives a range of 0.07 to 0.3 for the effective porosity of flow tops of the Grande Ronde Basalt. Flow interiors can be lower but typically well screens were placed in fractured zones or other zones with good yield, making this published value an acceptable approximation for the Wanapum Basalt. Low–0.07; average–0.19; high–0.30.
- Grande Ronde Basalt: low–0.07; average–0.19; high–0.30

These input values yield the following seepage velocities, converted from feet per day to feet per year:

Aquifer	Low estimate	Average estimate	High estimate
Unconsolidated Deposits	0.28 feet/year	80 feet/year	580 feet/year
Wanapum Basalt	5.3 feet/year	257 feet/year	1,635 feet/year
Grande Ronde Basalt	4.3 feet/year	69 feet/year	414 feet/year

The conductivity varies greatly by lithology, particularly in the unconsolidated deposits. Hydraulic gradient varies a fair amount too, as can be seen in potentiometric surface maps. In addition to spatial and vertical variability in seepage velocity, vertical migration of groundwater between aquifers and the crosscutting relationship of the paleochannels with the essentially flat basalt units means groundwater could potentially change seepage velocities a number of times as it moves downgradient from source areas as it migrates from unconsolidated deposits to basalt units and then back to unconsolidated deposits in the deepening paleochannels. With enhanced flow in the Wanapum Basalt this can enable lateral transport of PFAS to unconsolidated deposits locations further afield than could be achieved in the same time by transport through unconsolidated deposits alone.

8.7.2.2 On and Off-Base Groundwater PFAS Concentrations

As shown on **Figure 7-22a** through **Figure 7-22d**, groundwater PFAS concentrations are greatest in the alluvium, and then successively less in the Wanapum Basalt and Grande Ronde Basalt. The concentrations are most strongly controlled by distance from the surficial source areas, and then by the complex 3-dimensional geometry of the paleochannels. The paleochannels facilitate downward migration of groundwater and PFAS contamination, as can be seen by increasing concentrations of PFAS in the furthest north groundwater samples collected in the Wanapum and Grande Ronde Basalts.

In addition to PFAS transport from known and previously unidentified FAFB PFAS source areas, and from the surface water to groundwater pathway present at No Name Ditch, the concentration and groundwater flow direction of MW-RI16 shown on **Figure 7-21b** suggest an off-site PFAS source to the east. PFAS contaminated groundwater from this location would flow to the west and come in contact with PFAS contaminated water in the Airway Heights Paleochannel. It is also possible that PFAS from this area is extracted by the City of Airway Heights pumping well. Furthermore, given the potentiometric contours, groundwater flow direction, bedrock elevation contours, and screen depths of the unconsolidated deposits monitoring wells, it's possible that PFAS from MW-RI16 in the Wanapum Basalt could be directly impacting PFAS concentrations in MW-RI55, MW-RI54 and MW-RI25 which are completed in deep unconsolidated deposits on the east side of the Airway Heights Paleochannel. The same cannot be said, however, for MW-RI26 which was completed in unconsolidated deposits of the paleochannel well above the potentiometric surface elevation of the Wanapum Basalt.

Given the potentiometric surface of the unconsolidated deposits (**Figure 7-21a**), the PFAS present in MW-RI60 in the unconsolidated deposits is not likely to have originated from a FAFB source. However, unlike MW-RI16 it is less likely to be directly flowing into the Airway Heights Paleochannel, due to flow direction within unconsolidated deposits in this area. The compositional evaluation presented in **Section 7.9.1** shows that MW-RI60 has a notably different PFAS ratio than any other monitoring well in the region with a higher composition of the short chain PFSA PFBS. However, MW-RI16 does not share this signature, instead looking similar to other compositional ratios in the area, with a higher composition of PFHxS and PFOS. It is unknown if these potential off-site sources are connected, or if the difference in ratio suggests different off-site PFAS sources.

As noted in **Section 7.9.3**, wells installed within the Grande Ronde targeted suspected contaminant pathways.

At MW-RI47, no detections were noted above the PSLs, indicating this is not a major contaminant transport pathway off base. This is reinforced by the similarly low result obtained from MW-074, which is east of the base and west of City of Airway Heights. The same is true for the well pair MW-RI42 and MW-RI47; screened in the Wanapum Basalt (66-106 feet bgs) and the Grande Ronde Basalt (179-199 feet bgs), respectively. Within the Airway Heights Paleochannel, Phase I PFAS RI wells were installed beneath this structure to further assess its influence on all three lithofacies. The increasing PFOS PSL exceedance, by an order of magnitude between MW-115 and MW-RI27, in the down-channel direction confirms downward migration of PFAS contaminants from the Wanapum Basalt into the Grande Ronde Basalt, south of U.S. Highway 2 (**Figure 7-21c**). In the northern distal portion of the Airway Heights Paleochannel at Deno Rd, the PSL exceedance by a factor of 100 at MW-RI34 may be, in part, due to the Wanapum basalt terminating in the significantly deepened paleochannel just south of this location (thus rapidly transporting PFAS across the Latah Formation barrier into the Grande Ronde Basalt), and/or continued enhanced downward migration of groundwater along the length of the paleochannel.

Similar to MW-RI34, MW-RI19, increased concentrations observed in the distal end of the East Deep Creek Paleochannel may be in part due to the Wanapum basalt terminating in the

significantly deepened paleochannel just southwest of this location, and/or enhanced downward migration of groundwater and PFAS along the length of the East Deep Creek Paleochannel.

8.7.2.3 Groundwater Treatment System

Historical use of the LF002 groundwater extraction and treatment system has the potential to have redistributed PFAS from groundwater collected from beneath Landfill 002, as an influent sample collected at the LF002 groundwater treatment system had exceedances of several PFAS PSLs. In order to conduct a rebound study AFCEC turned this system off on 11 January 2023, prior to the collection of the influent sample on 13 April 2023, and as a result of the inoperative system an effluent sample was unable to be collected. It is therefore unknown if the groundwater treatment system redistributed PFAS in groundwater extracted from the Landfill 002 area or if the system effectively treated the PFAS and thus stopped redistribution via this pathway. The LF002 groundwater extraction and treatment system remains off on a temporary basis to assess the LF002 TCE remedy in a system-off state.

It has not been determined if the former WP003 treatment system removed any PFAS from extracted groundwater.

8.7.2.4 Groundwater to Surface Water

A regional groundwater to surface water pathway has not been established but is possible. All three hydrostratigraphic units investigated as part of this Phase I RI have outcrops in the northern portion of the Deep Creek canyon and along the northeast margin of the West Plains physiographic region as bluffs above the Spokane River (**Figure 2-1**). While groundwater emanating from these hydrostratigraphic units along these canyon walls and bluffs would originate as springs, groundwater flowing in deeper portions of the Grande Ronde Basalt may interact directly with Deep Creek surface water though basal flow in gaining reaches of the creek. These potential groundwater to surface water interactions are based solely off of topography and were not investigated further as part of this Phase I RI.

8.8 SUMMARY

The observations from the Phase I RI regarding the nature and extent of PFAS in soil, sediment, surface water, and groundwater, are consistent with the current working CSM for FAFB. PFAS is present in both soil and groundwater in the study area, indicating historical migration from surface applications. However, the extent to which soil continues to contribute significant contamination mass to groundwater remains uncertain and warrants further evaluation. In addition to leaching from soil sources, PFAS contamination has been redistributed by the stormwater system into No Name Ditch, where contaminated surface water, sediment, soil, subsurface soil, and groundwater were observed. This is serving as a secondary release mechanism for PFAS originating at FAFB. The LF002 groundwater treatment system has been collecting water contaminated with PFAS, as shown by the influent sample discussed in **Section 7.9**, and it is unknown if the groundwater system has treated the PFAS from the influent or if PFAS has passed through the system.

Once in groundwater, the PFAS first resides in groundwater of the unconsolidated deposits. These deposits are mostly, but possibly not exclusively, alluvium derived from glacial outburst floods, stream formation, slackwater deposits, and wind deposition. As a result of the wide variety of depositional energy, grain size varies (about as widely as possible), from clays to very large boulders. PFAS contamination in this heterogeneous layer is widespread and appears to both move laterally and preferentially in paleochannels and downwards to the Wanapum Basalt.

Once in the Wanapum Basalt, PFAS contamination appears to continue to follow the paleochannels, although that may be due more to influx from the alluvium above than groundwater flow direction within the Wanapum Basalt, which is regional in nature and not always aligned with the paleochannels, as can be seen on **Figure 7-21b**. Below the Wanapum is the Latah Formation, which is a discontinuous unit that is sometimes but not always an aquiclude and controls downward groundwater movement into the Grande Ronde Basalt. Any PFAS that migrates down into the Grande Ronde Basalt will continue to follow the regional groundwater gradient for that hydrostratigraphic unit an unknown distance downgradient.

Full delineation of PFAS to below the 2024 PSLs was not achieved at the source areas in soil or groundwater. Full delineation of PFAS to below the 2024 PSLs was not achieved in study area groundwater in any of the three hydrostratigraphic units. Full delineation of PFAS was achieved in surface water and sediment within the No Name Ditch watershed as the surface expression of that water course is very limited in extent and infiltrates to the ground in a closed system rather than discharging to any other surface water body.

9. POTENTIAL EXPOSURE PATHWAYS AND RECEPTORS

The scope of the Phase I RI did not include human health or ecological risk assessment. To help provide scoping information for future baseline risk assessment in subsequent RI phases, a graphical CSEM (**Figure 9-1**) was developed that describes complete, potentially complete, or incomplete exposure pathways; current, determined, or reasonably anticipated future use of the property; and potential receptors.

9.1 PRIMARY SOURCES

According to the EPA (2024), a primary source is defined as an area where a hazardous substance has been deposited, stored, disposed, or placed. Based on the data presented in this RI and as detailed in **Section 8.5** (CSM), PFAS contamination at FAFB originated from the infiltration of AFFF into soil at several training and emergency response areas. Specifically, **Section 8.5.1** through **Section 8.5.5** describe five primary source areas—FT004P, RS003P, SS008P, RS002P, and RS001P—where AFFF was historically applied during fire training exercises, aircraft crash response, or equipment calibration.

At FT004P (AFFF Area 1), repeated fire training exercises led to the infiltration of AFFF into surface soils. At RS003P and RS001P (AFFF Area 2 and Area 5), PFAS was released during calibration testing of firefighting equipment on old taxiways and grassy fields. A specific and well-documented release occurred at SS008P (AFFF Area 3), where a KC-135 aircraft crash in March 1987 resulted in the application of AFFF to extinguish a jet fuel (JP-4) fire. At RS002P (AFFF Area 4), AFFF was applied to extinguish a B-52 aircraft fire.

These events—occurring primarily between 1970 and the mid 2010s—resulted in the direct release and infiltration of PFAS to surface and subsurface soils, with leaching confirmed by SPLP results and supported by significant PFAS detections in underlying groundwater.

9.2 RELEASE MECHANISMS, EXPOSURE MEDIA, AND EXPOSURE ROUTES

Historical AFFF operations at FAFB resulted in the release of PFAS to soils, with potential migration of PFAS to surface water/sediment, potable groundwater, irrigation groundwater, surface soil, and subsurface soil through runoff and leaching release mechanisms.

Environmental media impacted by PFAS include surface soil, subsurface soil, groundwater (potable and irrigation), and surface water/sediment—particularly along No Name Ditch, where stormwater and runoff carry contamination from multiple AFFF source areas. Groundwater is a key exposure medium due to its use for off-base drinking water and off-base agricultural irrigation.

PFAS exposure routes for human and ecological receptors include ingestion of contaminated groundwater and crops, dermal contact with irrigation or surface water, and potential inhalation of PFAS-laden water vapor or dust from impacted soil.

9.3 RECEPTORS

9.3.1 Human Health

On-base receptors include military personnel, residents, contractors, and construction workers, all of whom may be exposed through incidental contact with soil and/or surface water/sediment. Construction workers and other base personnel actively working in source areas may have potentially complete exposure pathways via ingestion, dermal contact, and inhalation of subsurface soil disturbed during excavation or study area activity.

While children are not specifically addressed in the SCEM, they are part of the on-base residential population and would be considered a sensitive receptor group in any risk-based evaluation. For on-base residents, exposure routes (e.g., incidental soil ingestion, dermal contact, or inhalation of resuspended particulates) are considered potentially complete based on proximity to source areas and study area activity patterns—but are not confirmed as complete without direct exposure measurements or activity tracking. Trespasser exposures are not considered similar to on-base residents because base access is restricted, and trespassing is not a documented or routine activity. Therefore, incidental or chronic exposure for this group is unlikely to occur under current study area access controls.

PFAS have been detected in the alluvial aquifer, Wanapum Basalt, and Grande Ronde Basalt. Additional migration may occur laterally in groundwater, including through paleochannels that facilitate deeper transport, as discussed in **Section 8.5.7.1**. Groundwater from these hydrostratigraphic units is used for both potable and non-potable purposes, including municipal water supply, residential wells, and agricultural irrigation systems. Notably, **Section 8.5.7.1** states that PFAS-contaminated groundwater is actively pumped to the surface by residential and municipal drinking water and irrigation wells, providing a direct route of exposure via ingestion, dermal contact, and possible inhalation during domestic water use. However, it is important to note that on-base drinking water is currently sourced from Air Force owned wells located off site, in the Spokane Valley-Rathdrum Prairie Aquifer, which provide water with PFAS levels that range from below the MCLs to not detected. As a result, there is no current exposure to PFAS-contaminated groundwater for on-base receptors via drinking water.

Off-base receptors include residents of City of Airway Heights and residents of the surrounding rural areas of Spokane County who rely on groundwater for drinking water or irrigating crops. **Section 8.5.6** documents that No Name Ditch—a stormwater conveyance channel receiving runoff from PFAS source areas—has historically been used by adjacent residents for field irrigation, further suggesting potential for indirect human exposure through consumption of contaminated produce or dermal contact with irrigation water.

9.3.2 Ecological

While ecological receptors are not explicitly addressed in **Section 8.5**, the transport of PFAS-contaminated surface water and sediment from source areas—particularly through No Name Ditch (**Section 8.5.6**)—suggests potential exposure pathways for terrestrial and aquatic species. No Name Ditch collects stormwater runoff from several PFAS-impacted areas and conveys it off base, where PFAS has been detected in both surface water and sediment.

Although substantial aquatic habitat is not documented on base, the presence of ponded water during precipitation events and intermittent surface water flow creates the potential for avian, amphibian, and small mammal species to interact with PFAS-impacted media. Aquatic species, such as fish, may bioaccumulate PFAS through waterborne exposure, and may in turn serve as an exposure route to higher-trophic-level wildlife or human receptors consuming fish tissue. Therefore, the fish-tissue exposure pathway is considered potentially complete, where fish are present in impacted surface water bodies.

In addition to surface water and sediment, terrestrial ecological receptors may also be exposed to PFAS in surface soil via incidental ingestion, dermal contact, or inhalation of dust—particularly near source areas or drainage channels. Burrowing ecological receptors, such as ground squirrels or insects, could experience complete exposure pathways to subsurface soil through direct contact during burrowing activities, including inhalation and ingestion of contaminated soil.

While direct groundwater ingestion by ecological receptors is unlikely, indirect exposure to groundwater may occur where PFAS-contaminated groundwater discharges to surface water bodies or wetlands used by ecological species. These indirect groundwater-to-ecology pathways may be relevant in areas with shallow water tables or natural seeps.

Therefore, ecological exposure pathways involving surface water, sediment, surface soil, subsurface soil, and potentially groundwater discharge zones are considered complete depending on species behavior and environmental conditions.

It is recommended that future investigation phases evaluate whether the soil sampling depths meet ecological risk assessment criteria for surface soil. Additionally, if specific ecological receptors are not currently known, it is recommended that they be identified and considered in future investigation activities.

9.4 SUMMARY OF EXPOSURE PATHWAYS

As shown in the CSEM (**Figure 9-1**), an empty circle represents an incomplete pathway, a half-filled circle represents a potential complete exposure pathway, and a filled in circle represents a complete exposure pathway for future risk management consideration. Exposure pathways are further summarized below, by exposure media:

- **Surface Soil:** On-base receptors at FAFB could contact PFAS contaminants in surface soil via incidental ingestion, dermal contact, or inhalation of particulate soils. A limited number of off-base residents and workers could potentially encounter PFAS contaminants through the same exposure routes. Of all the off-base soil samples collected, only two locations on the same property had exceedances of one PFAS, PFOS. However, it should be noted that soil samples collected off base were a secondary goal of monitoring well installation and determination of nature and extent of off-base soil contamination was not part of the investigation design. The owner of the property mentioned to EA staff that their land used to be irrigated with water from No Name Ditch. On-base and off-base ecological terrestrial/avian receptors (soil invertebrates, plants, birds, and mammals) could be exposed to PFAS contaminants in soil through dermal contact and ingestion of surficial soil.

- **Subsurface Soil:** On-base contractors/construction workers could contact PFAS contaminants in subsurface soil via incidental ingestion, dermal contact, or inhalation of particulate soils. On-base ecological terrestrial/avian receptors could potentially encounter PFAS contaminants in subsurface soil through dermal contact and ingestion. Off-base receptors would have potential exposure to contaminated subsurface soils, identified along No Name Ditch, so this pathway is complete for on- and off-base receptors.
- **Surface Water and Sediment:** The Phase I RI identified No Name Ditch and its on-base retention ponds as a potential transport pathway from soil to surface water and sediment at FAFB, so this is a complete pathway for on-base receptors. Off-base residents, ranchers, and farmers may come into contact with PFAS through ingestion or dermal contact with contaminated surface water/sediment discharged from No Name Ditch, making this a complete exposure pathway for off-base human and ecological receptors. Ingestion of fish tissue from local surface waters is considered a potentially complete pathway for off-base residents, ranchers, and farmers due to possible subsistence or recreational fishing activities. While ranchers and farmers may have differing occupational exposure profiles, both groups may consume locally caught fish, warranting their inclusion. Recreators were not identified as a separate receptor group in this evaluation, but incidental exposure through fishing or contact with surface water may be considered in future assessments. Although contaminated surface water and sediment were found in No Name Ditch, it infiltrates to groundwater along its length and terminally at the Flowage Easement. It does not connect via any surface water pathway to the regional watershed or the waters of the United States.
- **Air:** On- and off-base receptors could contact PFAS contaminants in air via inhalation of airborne soil particulates.
- **Groundwater (Potable/Irrigation):** At FAFB, PFAS contamination has been detected in the regional aquifer across multiple hydrostratigraphic units, including the alluvium, Wanapum Basalt, and Grande Ronde Basalt. These aquifers serve as potable and irrigation water sources for off-base residents and agricultural operations. Off-base receptors may be exposed to PFAS through ingestion of drinking water drawn from production wells screened within the contaminated aquifer zones, as well as through dermal contact and potential inhalation of water vapor during domestic water use. Off-base receptors may include private well users, agricultural workers, and residents who rely on groundwater for drinking and irrigation. Center-pivot irrigation systems surrounding the base, particularly those downgradient of the source areas, may distribute PFAS-contaminated groundwater to crops and soil. This presents potential exposure pathways to farmers and residents through ingestion of contaminated produce, incidental ingestion or dermal contact with irrigation water, and handling of crops. PFAS detected in downgradient wells—particularly within paleochannel-connected zones—supports the potential for migration outside of the study area and exposure through these pathways.

10. DATA GAPS AND RECOMMENDATIONS

10.1 ANALYTICAL METHODS

This Phase I RI was conducted using EPA Method 537.1 modified for compliance with DoD QSM Table B-15. This modified EPA Method 537.1 is intended for use in untreated media such as groundwater, whereas the unmodified Method 537.1 is intended for use on drinking water. Due to new and changing guidance during this Phase I RI, EPA Method 1633 is now the provided guidance for environmental investigations. Given the shift in the prevailing laboratory analytical methodology, further discussion is needed to determine to what extent the data from this Phase I RI should be used for risk assessments and decision documents. Possible considerations for future phases of investigation include:

- Study of the comparability of EPA Method 537.1 modified for compliance with DoD QSM Table B-15 results with EPA Method 1633 results
- Consideration of resampling key locations with sample results obtained by EPA Method 537.1 modified for compliance with DoD QSM Table 5-15 for risk assessment purposes with reanalysis by EPA Method 1633.

In accordance with project plans (USACE 2021, 2022, and 2024), samples for the Phase I RI were analyzed for 24 PFAS. The 17 January 2025 DoD Memorandum indicates use of Method 1633, which includes a target analyte list of 40 PFAS. Sample results for the Phase I RI were not obtained for 16 of the 40 PFAS indicated in Method 1633.

10.2 SCREENING LEVELS

The PSLs established for 7 of the 24 target PFAS for the Phase I RI at FAFB were derived from the 24 August 2023 DoD Memorandum (DoD 2023) which are consistent with EPA RSLs active at that time. The 17 January 2025 DoD Memorandum adopted the November 2024 EPA RSL updates and newly established MCLs for certain PFAS with RSLs below the Method 1633 pooled MDL, or pooled MDL if no MCL is available. The 17 January 2025 DoD Memorandum established screening levels for 11 PFAS out of the 40 analytes identified in Method 1633. Therefore, further evaluation is needed to evaluate the impact of the screening levels provided in the 24 August DoD Memorandum, particularly those that are now lower and those for the 4 additional PFAS not specifically evaluated in this report (Gen X, TFSI, PFDA, and PFPrA). Of the 4 PFAS with new DoD screening levels not addressed in this report, sample results were obtained for 1 PFAS (PFDA). Sample results were not obtained for 3 PFAS (Gen X, TFSI, and PFPrA). Gen X is a target analyte in Method 1633, while PFPrA and TFSI are not.

10.3 PORE WATER INVESTIGATION AND MASS FLUX EVALUATION

Upon discussion with the PDT, the decision was made to proceed with SPLP (Synthetic Precipitation Leaching Procedure) in lieu of a porewater investigation for this phase of the project. As such, the investigation did not include direct porewater sampling, the development of project-specific porewater screening levels, or a quantitative evaluation of PFAS source strength and mass flux from vadose zone soils to groundwater.

While SPLP provides useful leachability data under controlled conditions, it does not fully capture the dynamic processes governing PFAS mobility in situ, such as variable moisture content, air-water interfacial partitioning, and nonlinear sorption. Future phases of remedial investigation could include porewater investigations to enhance understanding of PFAS mobility particularly in unsaturated soils. Mass flux evaluations included in a porewater investigation could aid in understanding the long-term release of PFAS to groundwater and informing risk assessments and remedy selection. A porewater investigation is identified as a current data gap in evaluating PFAS transport potential and source zone persistence.

10.4 RELEASE AREAS

The release areas were sampled with soil borings that analyzed soil, subsurface soil, and groundwater. After the initial round of sampling was complete, optional step out sampling was conducted to attempt to delineate the study area to the original 2021 PSLs active at the time of investigation. Under the 2024 PSLs, the study area is heavily contaminated in soil, subsurface soil, and groundwater. Updates to PFAS analytical methods and DoD screening levels during this multi-phase RI process will need to be considered by future project delivery team(s), as they occur.

- **FT004P:** Has the highest surface soil sample exceedance and the deepest exceedance for subsurface soil noted across the study area, extending 15 feet bgs to groundwater at two locations. This is notable given PFAS' typical affinity for shallow organic-rich soils.
- **RS003P:** Has surface soil sample exceedances in all locations but one at the southwest boundary of this release area and subsurface soil sample exceedances extending 12 feet bgs to groundwater at two locations. Most of the samples have subsurface exceedances north of the taxiway.
- **SS008P:** Has only one surface soil sample exceedance and a subsurface soil sample exceedance extending 8 feet bgs to groundwater at three locations. Most of the subsurface samples exceed in between Kennedy Road and W Arnold Street.
- **RS002P:** Has subsurface soil sample exceedance extending 4 feet bgs to groundwater at one location. The surface and subsurface samples are mostly centered and continue north of the release area.
- **RS001P:** Has surface soil sample exceedances excluding the northeast boundary of the release area and subsurface soil sample exceedance extending 12 feet bgs to groundwater. The highest exceedances are located along the southwest boundary of the release area.

Additional step out investigations into surface soil, shallow subsurface, and groundwater are recommended to fully characterize the source of contaminants at each site. Additional investigation into the vertical extent of groundwater contamination beneath FT004P, RS003P, and RS002P is recommended.

Furthermore, risk assessment frameworks should account for the differing behaviors of PFAS in soil and water, as a one-size-fits-all regulatory threshold may not adequately capture the risks associated with each compound. Site-specific factors such as soil type, pH, organic carbon content, and hydrogeological conditions play a crucial role in determining PFAS fate and should be integrated into leachability-based screening levels and remediation guidelines.

10.5 NO NAME DITCH AND FLOWAGE EASEMENT

The property owner at MW-RI04 and MW-RI06b noted their land was formerly irrigated with No Name Ditch water when discharges were historically higher (more than 20 years ago). This property was the only location off base found to have PFOS and PFOA elevated above PSLs for soil. However, off-base soil sampling was secondary data collection to monitoring well installation, so this is best described as an incidental finding rather than a conclusion of a targeted study. This finding raises the question if other residents along No Name Ditch used ditch water for field irrigation. Further investigation into the history of water usage by property owners adjacent to No Name Ditch and surface soil sampling of potentially affected properties is recommended.

10.6 ON AND OFF-BASE GROUNDWATER

Based on the results of the Phase I Remedial Investigation and the ongoing data gaps identified, several targeted recommendations are proposed to improve the understanding of PFAS distribution, groundwater transport pathways, and source characterization across Fairchild Air Force and surrounding areas.

1. Additional Groundwater Monitoring in Alluvium Under evolving DoD screening levels:

PSLs dropped significantly over the course of this Phase I RI and are poised to evolve again under the latest DoD guidance (DoD 2025). Significantly lower screening thresholds require a refined delineation of groundwater plumes in alluvium. Additional groundwater wells are needed to fully delineate the extent of contamination under these more conservative thresholds.

2. Resolve Access Constraints Near Flowage Easement and Spokane Airport:

Critical hydrogeologic data gaps exist in the Wanapum formation east of Craig Road and around the Flowage Easement. These areas are essential for understanding whether PFAS-impacted groundwater originating from No Name Ditch and the flowage easement flows northeast into currently uninvestigated zones, and whether an eastern migration pathway connects with contaminated monitoring wells in City of Airway Heights. However, access limitations with Spokane International Airport have restricted data collection. Resolving these access issues is a priority for future investigation phases.

3. Surface Water Connectivity and Deep Creek Discharge Evaluation:

PFAS transport from groundwater to a surface water conveyance, particularly to distal discharge points such as Deep Creek and the Spokane River, warrants investigation. Springs and seeps along canyon walls may act as surface water discharge points for elevated regional aquifers such as the Wanapum Basalt and the Grande Ronde Basalt. Sampling and hydrochemical tracing in these areas would help assess exposure potential outside of the study area.

4. Regional Background Study:

Guidance on how to perform a regional background study was issued in April 2025. Such a study is needed for this Site to differentiate between study area PFAS contamination and potential

contributions from other anthropogenic or atmospheric sources. Investigation of other potential anthropogenic sources should include focused investigation into the area east of the Airway Heights Paleochannel around MW-RI16, and should include further evaluation of transducer data from that well, which was installed towards the end of the Phase I RI allowing for only a short data collection time prior to this report. Further evaluation of the potentiometric surface in this area, including MW-RI60 in the unconsolidated deposits, is important because initial groundwater elevation data from the Phase I PFAS RI well MW-RI16 are not in line with prior broad interpolations of Wanapum Basalt potentiometric surface and flow direction conducted under previous studies (i.e., West Plains Hydrogeologic Database [Spokane County Water Resources 2013]). The background study should also include background well installation in hydraulically upgradient areas, as well as surface soil sampling far from potential AFFF release areas. Soil sample data from monitoring well installation conducted under this Phase I RI can be used to supplement this study data because they provide a wide net of regional off-base surface soil values at locations not targeted for suspected soil contamination.

5. Geophysical Characterization of Alluvial Paleochannel Geometry:

Understanding the extent and geometry of paleochannels is crucial for modeling PFAS migration pathways. High-resolution geophysical surveys (e.g., gravity, seismic reflection, resistivity, or ground-penetrating radar) should be conducted and correlated with existing boring logs to enhance the regional hydrogeologic CSM.

6. Verification of Sewer and Stormwater Infrastructure Influence:

Evidence suggests potential transport of PFAS through infrastructure pathways. The pressurized sanitary sewer line above MW-RI02 should be evaluated for integrity and stormwater discharge structures from Basins 1, 5, and 6 leading to No Name Ditch and potential to act as preferential migration conduits. A review of historical construction records for the sewer line, an evaluation of leakage values for storm and sewer pipelines, and a review of surface water and stormwater conveyance pathways in all basins should be conducted. Additionally, the former location of the OWS drain line at FT004 should be further evaluated.

7. Evaluate On-Base Groundwater Treatment:

The LF002 groundwater treatment plant should be sampled at effluent points to assess treatment effectiveness and identify the extent to which PFAS was re-released into the environment. The Phase I RI was only able to sample the influent due to the groundwater treatment plant being shut off at the time of sampling. Further investigation into the defunct WP003 groundwater treatment system should be conducted to determine potential historical redistribution of PFAS in the WP003 area.

8. Investigate Potential New Source Area Near Aircraft Hangars:

Groundwater sampling in the vicinity of former aircraft hangar 1012 strongly suggests the presence of an uncharacterized PFAS source. A detailed investigation should be scoped to include surface soil sampling, soil to groundwater analysis, and groundwater sampling.

9. Evaluate Additional Hot Spot in the Unconsolidated Deposits:

MW-278 has a PFOS concentration 1-3 orders of magnitude greater than nearby monitoring points in the same hydrostratigraphic unit and should be further investigated for potential causes.

10. Evaluate Wanapum Basalt Southwest of RS001P:

As shown on **Figure 7-22c**, an area of higher concentrations exists just southwest of RS001P. This area contains higher concentrations than those found beneath RS001P and SS008P; yet is upgradient of these two sites, within the context of the Wanapum Basalt potentiometric surface (**Figure 7-22c**) and the overlying Unconsolidated Deposits potentiometric surface (**Figure 7-22b**). This anomaly does not have a clear explanation with the data gathered for this Phase I RI and should be considered for further evaluation.

11. Clarify Groundwater Flow from Northwest Area (MW-278 to MW-RI23):

Contaminant flow paths in the northwest portion of the study area, particularly around well MW-278 and trending through MW-RI23, appear inconsistent with previous assumptions. Additional investigation is needed to resolve flow direction uncertainties and plume orientation in this region and evaluate whether a deeper migration pathway exists.

12. Characterize PFAS Compositional Variability and Isoconcentration Trends:

Repeated sampling from wells such as MW-RI49, MW-069, MW-RI03, MW-RI22, and MW-313 has shown variability in PFAS composition and total concentrations. This variability may reflect temporal changes, secondary source influences, or sampling inconsistencies. Targeted temporal sampling and refinement of isoconcentration contours are recommended to enhance understanding of plume evolution.

13. Conduct Additional Single-Well Aquifer Pumping Tests:

Single well constant rate pumping and recovery aquifer tests provide a more precise measurement of hydraulic conductivity than slug tests, and additional aquifer pumping test should be considered for future phases of investigation. Evaluate effective porosity of hydrostratigraphic units to refine future and existing hydraulic conductivity values.

10.7 OVERALL CONCLUSIONS

This Phase I RI Report has established a better understanding of the nature and extent of PFAS contamination at FAFB. PFAS contamination in soil at the five known source areas have been sufficiently characterized and delineated to determine exposure pathways exist for both human and ecological receptors to be exposed to PFAS in surface and subsurface soil.

On and off-base PFAS contamination in groundwater has been sufficiently characterized to determine that pathways exist for human receptors to be exposed to PFAS in groundwater. PFAS contamination from the base is making its way into the Wanapum Basalt and Grande Ronde Basalt, both directly and in enhanced zones of downward migration presented by the paleochannels. The paleochannels themselves are conspicuously devoid of groundwater in many

locations, frustrating drilling efforts to characterize paleochannel water and providing a further line of evidence for enhanced downward migration of groundwater within these structures. The fate of water within or beneath the paleochannels, or within the basalt aquifers, is unknown and further investigation is required to further delineate the fate of groundwater within these units. What is known is that downgradient of the most distal portions of this investigation, the West Plains physiographic province drops off dramatically in elevation to Deep Creek to the northwest and north, and to the Spokane River to the northeast. To the south, groundwater movement is more complex.

Redistribution of PFAS originating at FAFB may be redistributed by several means. The No Name Ditch pathway is the one known secondary release. Other potential redistribution pathways include the groundwater treatment system, irrigation of fields with water derived from No Name Ditch, irrigation of fields from wells screened in any of the three hydrostratigraphic units (although preferentially in the two basalt aquifers, as they are superior water sources to the unconsolidated deposits), and domestic water use from private and municipal systems.

Other sources of PFAS not derived from FAFB appear likely, with sources to the east of the Airway Heights Paleochannel the most clearly defined, hydrogeologically.

Further investigation will be required to fully delineate on-base sources, secondary anthropogenic contaminant pathways such as stormwater systems and groundwater treatment systems, off-base groundwater, and sources outside of the study area. Delineation of some PFAS areas of groundwater and contamination pathway investigations was frustrated by property access denials, which may need to be resolved to fully characterize groundwater. Study area sources may need to be characterized by a regional study into background PFAS values affecting the PFAS release and distribution system present at FAFB.

In addition to field and groundwater sampling, SPLP analysis was conducted to evaluate the potential for PFAS in soil to leach under infiltration conditions relevant to the study area. High SPLP results support the conclusion that soils at these locations have the potential to leach PFAS at concentrations above the PSLs; thereby reinforcing the CSM, which includes downward transport from the vadose zone as a contributing pathway to observed groundwater contamination.

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Table 5-1. FT004P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Media Type	Sampled Interval (feet bgs)
SB-RA101	SB-RA101-S	2/1/22 15:30	Primary	—	Surface Soil	0-0.5
SB-RA101	SB-RA101-4	2/1/22 15:33	Primary	—	Subsurface Soil	0.5-4
SB-RA101	SB-RA101-4-Dup	2/1/22 15:33	Field Duplicate	SB-RA101-4	Subsurface Soil	0.5-4
SB-RA101	SB-RA101-8	2/1/22 15:37	Primary	—	Subsurface Soil	4-8
SB-RA101	SB-RA101-12	2/1/22 15:39	Primary	—	Subsurface Soil	8-12
SB-RA101	SB-RA101-15	2/1/22 15:41	Primary	—	Subsurface Soil	12-15
SB-RA101	SB-RA101-GW	2/1/22 15:30	Primary	—	Groundwater	15
SB-RA102	SB-RA102-S	2/1/22 16:00	Primary	—	Surface Soil	0-0.5
SB-RA102	SB-RA102-4	2/1/22 16:02	Primary	—	Subsurface Soil	0.5-4
SB-RA102	SB-RA102-8	2/1/22 16:05	Primary	—	Subsurface Soil	4-8
SB-RA103	SB-RA103-S	2/1/22 16:38	Primary	—	Surface Soil	0-0.5
SB-RA103	SB-RA103-4	2/1/22 16:40	Primary	—	Subsurface Soil	0.5-4
SB-RA103	SB-RA103-8	2/1/22 16:45	Primary	—	Subsurface Soil	4-8
SB-RA103	SB-RA103-12	2/1/22 16:47	Primary	—	Subsurface Soil	8-12
SB-RA103	SB-RA103-4-Dup	2/1/22 16:40	Field Duplicate	SB-RA103-4	Subsurface Soil	0.5-4
SB-RA103	SB-RA103-15	2/1/22 16:50	Primary	—	Subsurface Soil	12-15
SB-RA103	SB-RA103-GW	2/1/22 16:30	Primary	—	Groundwater	14
SB-RA103	SB-RA103-A	5/24/22 9:40	Primary	—	Surface Soil	0-1
SB-RA103	SB-RA103-AA	5/24/22 9:40	Field Duplicate	SB-RA103-A	Surface Soil	0-1
SB-RA104	SB-RA104-S	2/2/22 10:12	Primary	—	Surface Soil	0-0.5
SB-RA104	SB-RA104-4	2/2/22 10:14	Primary	—	Subsurface Soil	0.5-4
SB-RA104	SB-RA104-7-7.5	2/2/22 10:16	Primary	—	Subsurface Soil	4-7.5
SB-RA104	SB-RA104-GW	2/2/22 10:11	Primary	—	Groundwater	7
SB-RA105	SB-RA105-S	2/2/22 11:04	Primary	—	Surface Soil	0-0.5
SB-RA105	SB-RA105-4	2/2/22 11:06	Primary	—	Subsurface Soil	0.5-4
SB-RA105	SB-RA105-4-Dup	2/2/22 11:06	Field Duplicate	SB-RA105-4	Subsurface Soil	0.5-4
SB-RA105	SB-RA105-8	2/2/22 11:10	Primary	—	Subsurface Soil	4-8
SB-RA105	SB-RA105-12	2/2/22 11:12	Primary	—	Subsurface Soil	8-12
SB-RA105	SB-RA105-GW	2/2/22 10:57	Primary	—	Groundwater	12
SB-RA106	SB-RA106-S	2/2/22 11:45	Primary	—	Surface Soil	0-0.5
SB-RA106	SB-RA106-4	2/2/22 11:47	Primary	—	Subsurface Soil	0.5-4
SB-RA106	SB-RA106-8	2/2/22 11:50	Primary	—	Subsurface Soil	4-8
SB-RA106	SB-RA106-12	2/2/22 11:54	Primary	—	Subsurface Soil	8-12
SB-RA106	SB-RA106-GW	2/2/22 11:47	Primary	—	Groundwater	12
SB-RA106	SB-RA106-A	5/24/22 8:15	Primary	—	Surface Soil	0-1
SB-RA106	SB-RA106-AA	5/24/22 8:15	Field Duplicate	SB-RA106-A	Surface Soil	0-1
SB-RA107	SB-RA107-A	5/23/22 13:35	Primary	—	Surface Soil	0-1
SB-RA107	SB-RA107-B	5/23/22 13:38	Primary	—	Subsurface Soil	2-3
SB-RA107	SB-RA107-C	5/23/22 13:42	Primary	—	Subsurface Soil	4-5
SB-RA107	SB-RA107-D	5/23/22 13:45	Primary	—	Subsurface Soil	9-10
SB-RA107	SB-RA107-E	5/23/22 13:49	Primary	—	Subsurface Soil	13-14
SB-RA107	SB-RA107-GW	5/23/22 13:25	Primary	—	Groundwater	6
SB-RA108	SB-RA108-A	5/23/22 14:17	Primary	—	Surface Soil	0-1
SB-RA108	SB-RA108-B	5/23/22 14:20	Primary	—	Subsurface Soil	2-3

Table 5-1. FT004P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Media Type	Sampled Interval (feet bgs)
SB-RA108	SB-RA108-C	5/23/22 14:23	Primary	—	Subsurface Soil	4-5
SB-RA108	SB-RA108-D	5/23/22 14:28	Primary	—	Subsurface Soil	9-10
SB-RA108	SB-RA108-E	5/23/22 14:31	Primary	—	Subsurface Soil	14-15
SB-RA108	SB-RA108-GW	5/23/22 14:10	Primary	—	Groundwater	6
SB-RA108	SB-RA108-GWA	5/23/22 14:10	Field Duplicate	SB-RA108-GW	Groundwater	6
SB-RA109	SB-RA109-A	5/23/22 15:05	Primary	—	Surface Soil	0-1
SB-RA109	SB-RA109-AA	5/23/22 15:05	Field Duplicate	SB-RA109-A	Surface Soil	0-1
SB-RA109	SB-RA109-B	5/23/22 15:11	Primary	—	Subsurface Soil	2-3
SB-RA109	SB-RA109-C	5/23/22 15:15	Primary	—	Subsurface Soil	4-5
SB-RA109	SB-RA109-D	5/23/22 15:19	Primary	—	Subsurface Soil	9-10
SB-RA109	SB-RA109-E	5/23/22 15:23	Primary	—	Subsurface Soil	13-14
SB-RA109	SB-RA109-GW	5/23/22 14:55	Primary	—	Groundwater	7
SB-RA110	SB-RA110-A	5/23/22 15:55	Primary	—	Surface Soil	0-1
SB-RA110	SB-RA110-B	5/23/22 15:59	Primary	—	Subsurface Soil	2-3
SB-RA110	SB-RA110-C	5/23/22 16:03	Primary	—	Subsurface Soil	4-5
SB-RA110	SB-RA110-CA	5/23/22 16:03	Field Duplicate	SB-RA110-C	Subsurface Soil	4-5
SB-RA110	SB-RA110-D	5/23/22 16:08	Primary	—	Subsurface Soil	9-10
SB-RA110	SB-RA110-GW	5/23/22 15:45	Primary	—	Groundwater	4
SB-RA111	SB-RA111-A	5/24/22 8:35	Primary	—	Surface Soil	0-1
SB-RA111	SB-RA111-B	5/24/22 8:38	Primary	—	Subsurface Soil	2-3
SB-RA111	SB-RA111-C	5/24/22 8:42	Primary	—	Subsurface Soil	4-5
SB-RA111	SB-RA111-D	5/24/22 8:46	Primary	—	Subsurface Soil	9-10
SB-RA111	SB-RA111-E	5/24/22 8:50	Primary	—	Subsurface Soil	12-13
SB-RA111	SB-RA111-GW	5/24/22 8:40	Primary	—	Groundwater	5
SB-RA112	SB-RA112-A	5/24/22 11:50	Primary	—	Surface Soil	0-1
SB-RA112	SB-RA112-B	5/24/22 11:53	Primary	—	Subsurface Soil	2-3
SB-RA112	SB-RA112-C	5/24/22 11:57	Primary	—	Subsurface Soil	4-5
SB-RA112	SB-RA112-D	5/24/22 12:01	Primary	—	Subsurface Soil	9-10
SB-RA112	SB-RA112-E	5/24/22 12:05	Primary	—	Subsurface Soil	14-15
SB-RA112	SB-RA112-GW	5/24/22 11:40	Primary	—	Groundwater	5
SB-RA113	SB-RA113-A	5/24/22 10:51	Primary	—	Surface Soil	0-1
SB-RA113	SB-RA113-B	5/24/22 10:53	Primary	—	Subsurface Soil	2-3
SB-RA113	SB-RA113-C	5/24/22 10:57	Primary	—	Subsurface Soil	4-5
SB-RA113	SB-RA113-CA	5/24/22 10:57	Field Duplicate	SB-RA113-C	Subsurface Soil	4-5
SB-RA113	SB-RA113-D	5/24/22 11:02	Primary	—	Subsurface Soil	9-10
SB-RA113	SB-RA113-E	5/24/22 11:06	Primary	—	Subsurface Soil	14-15
SB-RA113	SB-RA113-GW	5/24/22 11:10	Primary	—	Groundwater	5
SB-RA114	SB-RA114-A	5/24/22 10:03	Primary	—	Surface Soil	0-1
SB-RA114	SB-RA114-AA	5/24/22 10:03	Field Duplicate	SB-RA114-A	Surface Soil	0-1
SB-RA114	SB-RA114-B	5/24/22 10:08	Primary	—	Subsurface Soil	2-3
SB-RA114	SB-RA114-C	5/24/22 10:10	Primary	—	Subsurface Soil	4-5
SB-RA114	SB-RA114-D	5/24/22 10:13	Primary	—	Subsurface Soil	9-10
SB-RA114	SB-RA114-E	5/24/22 10:17	Primary	—	Subsurface Soil	14-15
SB-RA114	SB-RA114-GW	5/24/22 10:28	Primary	—	Groundwater	4

Table 5-1. FT004P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Media Type	Sampled Interval (feet bgs)
SB-RA115	SB-RA115-A	5/24/22 9:17	Primary	—	Surface Soil	0-1
SB-RA115	SB-RA115-B	5/24/22 9:20	Primary	—	Subsurface Soil	2-3
SB-RA115	SB-RA115-C	5/24/22 9:24	Primary	—	Subsurface Soil	4-5
SB-RA115	SB-RA115-D	5/24/22 9:27	Primary	—	Subsurface Soil	8.5-9.5
SB-RA115	SB-RA115-GW	5/24/22 9:15	Primary	—	Groundwater	6
SB-RA116	SB-RA116-A	5/23/22 12:40	Primary	—	Surface Soil	0-1
SB-RA116	SB-RA116-B	5/23/22 12:44	Primary	—	Subsurface Soil	2-3
SB-RA116	SB-RA116-C	5/23/22 12:47	Primary	—	Subsurface Soil	4-5
SB-RA116	SB-RA116-CA	5/23/22 12:47	Field Duplicate	SB-RA116-C	Subsurface Soil	4-5
SB-RA116	SB-RA116-D	5/23/22 12:52	Primary	—	Subsurface Soil	9-10
SB-RA116	SB-RA116-E	5/23/22 12:55	Primary	—	Subsurface Soil	11-12
SB-RA116	SB-RA116-GW	5/23/22 13:00	Primary	—	Groundwater	5

Notes :

bgs = below ground surface

ID = Identification

NR = Not Recorded

Table 5-2. RS003P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
SB-RA201	SB-RA201-S	2/1/22 10:18	Primary	—	Surface Soil	0-0.5
SB-RA201	SB-RA201-S-DUP	2/1/22 10:18	Field Duplicate	SB-RA201-S	Surface Soil	0-0.5
SB-RA201	SB-RA201-4	2/1/22 10:23	Primary	—	Subsurface Soil	0.5-4
SB-RA201	SB-RA201-8	2/1/22 10:25	Primary	—	Subsurface Soil	4-8
SB-RA201	SB-RA201-12	2/1/22 10:35	Primary	—	Subsurface Soil	8-12
SB-RA201	SB-RA201-15	2/1/22 10:38	Primary	—	Subsurface Soil	12-15
SB-RA201	SB-RA201-GW	2/1/22 10:38	Primary	—	Groundwater	13
SB-RA202	SB-RA202-S	2/1/22 11:15	Primary	—	Surface Soil	0-0.5
SB-RA202	SB-RA202-4	2/1/22 11:18	Primary	—	Subsurface Soil	0.5-4
SB-RA202	SB-RA202-8	2/1/22 11:22	Primary	—	Subsurface Soil	4-8
SB-RA202	SB-RA202-12	2/1/22 11:25	Primary	—	Subsurface Soil	8-12
SB-RA202	SB-RA202-15	2/1/22 11:27	Primary	—	Subsurface Soil	12-15
SB-RA202	SB-RA202-GW	2/1/22 11:20	Primary	—	Groundwater	15
SB-RA202	SB-RA202-A	5/19/22 16:05	Primary	—	Surface Soil	0-1
SB-RA202	SB-RA202-AA	5/19/22 16:05	Field Duplicate	SB-RA202-A	Surface Soil	0-1
SB-RA203	SB-RA203-S	2/1/22 11:52	Primary	—	Surface Soil	0-0.5
SB-RA203	SB-RA203-S-DUP	2/1/22 11:52	Field Duplicate	SB-RA203-S	Surface Soil	0-0.5
SB-RA203	SB-RA203-4	2/1/22 11:57	Primary	—	Subsurface Soil	0.5-4
SB-RA203	SB-RA203-8	2/1/22 11:59	Primary	—	Subsurface Soil	4-8
SB-RA203	SB-RA203-12	2/1/22 12:01	Primary	—	Subsurface Soil	8-12
SB-RA203	SB-RA203-15	2/1/22 12:03	Primary	—	Subsurface Soil	12-15
SB-RA203	SB-RA203-GW	2/1/22 11:57	Primary	—	Groundwater	13
SB-RA203	SB-RA203-A	5/19/22 16:00	Primary	—	Surface Soil	0-1
SB-RA204	SB-RA204-S	2/1/22 12:35	Primary	—	Surface Soil	0-0.5
SB-RA204	SB-RA204-4	2/1/22 12:38	Primary	—	Subsurface Soil	0.5-4
SB-RA204	SB-RA204-8	2/1/22 12:42	Primary	—	Subsurface Soil	4-8
SB-RA204	SB-RA204-12	2/1/22 12:45	Primary	—	Subsurface Soil	8-12
SB-RA204	SB-RA204-15	2/1/22 12:47	Primary	—	Subsurface Soil	12-15
SB-RA204	SB-RA204-GW	2/1/22 12:45	Primary	—	Groundwater	14
SB-RA204	SB-RA204-A	5/19/22 16:10	Primary	—	Surface Soil	0-1
SB-RA205	SB-RA205-S	2/1/22 13:40	Primary	—	Surface Soil	0-0.5
SB-RA205	SB-RA205-4	2/1/22 13:42	Primary	—	Subsurface Soil	0.5-4
SB-RA205	SB-RA205-8	2/1/22 13:45	Primary	—	Subsurface Soil	4-8
SB-RA205	SB-RA205-12	2/1/22 13:47	Primary	—	Subsurface Soil	8-12
SB-RA205	SB-RA205-15	2/1/22 13:50	Primary	—	Subsurface Soil	12-15
SB-RA205	SB-RA205-GW	2/1/22 13:44	Primary	—	Groundwater	12
SB-RA206	SB-RA206-S	2/1/22 14:28	Primary	—	Surface Soil	0-0.5
SB-RA206	SB-RA206-4	2/1/22 14:30	Primary	—	Subsurface Soil	0.5-4
SB-RA206	SB-RA206-4-DUP	2/1/22 14:30	Field Duplicate	SB-RA206-4	Subsurface Soil	0.5-4
SB-RA206	SB-RA206-8	2/1/22 14:35	Primary	—	Subsurface Soil	4-8
SB-RA207	SB-RA207-A	5/20/22 12:40	Primary	—	Surface Soil	0-1
SB-RA207	SB-RA207-B	5/20/22 12:43	Primary	—	Subsurface Soil	1-2
SB-RA207	SB-RA207-C	5/20/22 12:46	Primary	—	Subsurface Soil	3-4
SB-RA207	SB-RA207-D	5/20/22 12:48	Primary	—	Subsurface Soil	5-6
SB-RA208	SB-RA208-A	5/20/22 13:45	Primary	—	Surface Soil	0-1

Table 5-2. RS003P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
SB-RA208	SB-RA208-B	5/20/22 13:50	Primary	—	Subsurface Soil	2-3
SB-RA208	SB-RA208-BA	5/20/22 13:50	Field Duplicate	SB-RA208-B	Subsurface Soil	2-3
SB-RA208	SB-RA208-C	5/20/22 13:56	Primary	—	Subsurface Soil	4-5
SB-RA208	SB-RA208-D	5/20/22 13:59	Primary	—	Subsurface Soil	9-10
SB-RA208	SB-RA208-E	5/20/22 14:02	Primary	—	Subsurface Soil	14-15
SB-RA208	SB-RA208-GW	5/20/22 12:41	Primary	—	Groundwater	NR
SB-RA209	SB-RA209-A	5/20/22 15:15	Primary	—	Surface Soil	0-1
SB-RA209	SB-RA209-B	5/20/22 15:18	Primary	—	Subsurface Soil	2-3
SB-RA209	SB-RA209-BA	5/20/22 15:18	Field Duplicate	SB-RA209-B	Subsurface Soil	2-3
SB-RA209	SB-RA209-C	5/20/22 15:24	Primary	—	Subsurface Soil	4-5
SB-RA209	SB-RA209-D	5/20/22 15:27	Primary	—	Subsurface Soil	9-10
SB-RA210	SB-RA210-A	5/23/22 9:40	Primary	—	Surface Soil	0-1
SB-RA210	SB-RA210-B	5/23/22 9:46	Primary	—	Subsurface Soil	2-3
SB-RA210	SB-RA210-C	5/23/22 9:50	Primary	—	Subsurface Soil	4-5
SB-RA210	SB-RA210-D	5/23/22 9:55	Primary	—	Subsurface Soil	9-10
SB-RA211	SB-RA211-A	5/23/22 10:25	Primary	—	Surface Soil	0-1
SB-RA211	SB-RA211-B	5/23/22 10:28	Primary	—	Subsurface Soil	2-3
SB-RA211	SB-RA211-C	5/23/22 10:32	Primary	—	Subsurface Soil	4-5
SB-RA211	SB-RA211-CA	5/23/22 10:32	Field Duplicate	SB-RA211-C	Subsurface Soil	4-5
SB-RA211	SB-RA211-D	5/23/22 10:36	Primary	—	Subsurface Soil	9-10
SB-RA211	SB-RA211-E	5/23/22 10:39	Primary	—	Subsurface Soil	12-13
SB-RA211	SB-RA211-GW	5/23/22 10:02	Primary	—	Groundwater	13
SB-RA212	SB-RA212-A	5/23/22 11:15	Primary	—	Surface Soil	0-1
SB-RA212	SB-RA212-B	5/23/22 11:18	Primary	—	Subsurface Soil	2-3
SB-RA212	SB-RA212-BA	5/23/22 11:18	Field Duplicate	SB-RA212-B	Subsurface Soil	2-3
SB-RA212	SB-RA212-C	5/23/22 11:23	Primary	—	Subsurface Soil	4-5
SB-RA212	SB-RA212-D	5/23/22 11:27	Primary	—	Subsurface Soil	9-10
SB-RA212	SB-RA212-E	5/23/22 11:30	Primary	—	Subsurface Soil	12-13
SB-RA212	SB-RA212-GW	5/23/22 10:57	Primary	—	Groundwater	8
SB-RA212	SB-RA212-GWA	5/23/22 10:57	Field Duplicate	SB-RA212-GW	Groundwater	8
SB-RA213	SB-RA213-A	5/24/22 13:05	Primary	—	Surface Soil	0-1
SB-RA213	SB-RA213-B	5/24/22 13:08	Primary	—	Subsurface Soil	2-3
SB-RA213	SB-RA213-C	5/24/22 13:11	Primary	—	Subsurface Soil	4-5
SB-RA213	SB-RA213-D	5/24/22 13:15	Primary	—	Subsurface Soil	9-10
SB-RA213	SB-RA213-E	5/24/22 13:19	Primary	—	Subsurface Soil	11.5-12.5
SB-RA213	SB-RA213-GW	5/24/22 12:57	Primary	—	Groundwater	6
SB-RA213	SB-RA213-GWA	5/24/22 12:57	Field Duplicate	SB-RA213-GW	Groundwater	6
SB-RA214	SB-RA214-A	5/19/22 16:47	Primary	—	Surface Soil	0-1
SB-RA214	SB-RA214-B	5/19/22 16:49	Primary	—	Subsurface Soil	2-3
SB-RA214	SB-RA214-BA	5/19/22 16:49	Field Duplicate	SB-RA214-B	Subsurface Soil	2-3
SB-RA214	SB-RA214-C	5/19/22 16:51	Primary	—	Subsurface Soil	4-5
SB-RA214	SB-RA214-D	5/19/22 16:53	Primary	—	Subsurface Soil	9-10
SB-RA214	SB-RA214-E	5/19/22 16:55	Primary	—	Subsurface Soil	13-14
SB-RA214	SB-RA214-GW	5/19/22 16:32	Primary	—	Groundwater	NR
SB-RA215	SB-RA215-A	5/20/22 10:25	Primary	—	Surface Soil	0-1

Table 5-2. RS003P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
SB-RA215	SB-RA215-B	5/20/22 10:27	Primary	—	Subsurface Soil	2-3
SB-RA215	SB-RA215-C	5/20/22 10:29	Primary	—	Subsurface Soil	4-5
SB-RA215	SB-RA215-D	5/20/22 10:31	Primary	—	Subsurface Soil	9-10
SB-RA215	SB-RA215-E	5/20/22 10:33	Primary	—	Subsurface Soil	13-14
SB-RA216	SB-RA216-A	5/20/22 11:30	Primary	—	Surface Soil	0-1
SB-RA216	SB-RA216-B	5/20/22 11:33	Primary	—	Subsurface Soil	2-3
SB-RA216	SB-RA216-C	5/20/22 11:36	Primary	—	Subsurface Soil	4-5
SB-RA216	SB-RA216-CA	5/20/22 11:36	Field Duplicate	SB-RA216-C	Subsurface Soil	4-5
SB-RA216	SB-RA216-D	5/20/22 11:39	Primary	—	Subsurface Soil	9-10
SB-RA216	SB-RA216-E	5/20/22 11:42	Primary	—	Subsurface Soil	14-15
SB-RA216	SB-RA216-GW	5/20/22 11:09	Primary	—	Groundwater	12

Notes:

bgs = below ground surface

ID = Identification

NR = Not Recorded

Table 5-3. SS008P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
SB-KC13501	SB-KC13501-S	2/2/22 15:45	Primary	—	Surface Soil	0-0.5
SB-KC13501	SB-KC13501-4	2/2/22 15:48	Primary	—	Subsurface Soil	0.5-4
SB-KC13501	SB-KC13501-4-DUP	2/2/22 15:48	Field Duplicate	SB-KC13501-4	Subsurface Soil	0.5-4
SB-KC13501	SB-KC13501-8	2/2/22 15:52	Primary	—	Subsurface Soil	4-8
SB-KC13501	SB-KC13501-12	2/2/22 15:55	Primary	—	Subsurface Soil	8-12
SB-KC13501	SB-KC13501-15	2/2/22 15:57	Primary	—	Subsurface Soil	12-15
SB-KC13501	SB-KC13501-GW	2/2/22 15:46	Primary	—	Groundwater	14
SB-KC13502	SB-KC13502-A	5/18/22 10:38	Primary	—	Surface Soil	0-1
SB-KC13502	SB-KC13502-AA (Dup)	5/18/22 10:38	Field Duplicate	SB-KC13502-A	Surface Soil	0-1
SB-KC13502	SB-KC13502-B	5/18/22 10:49	Primary	—	Subsurface Soil	2-3
SB-KC13502	SB-KC13502-C	5/18/22 10:51	Primary	—	Subsurface Soil	4-5
SB-KC13502	SB-KC13502-D	5/18/22 10:54	Primary	—	Subsurface Soil	9-10
SB-KC13502	SB-KC13502-E	5/18/22 10:57	Primary	—	Subsurface Soil	14-15
SB-KC13502	SB-KC13502-GW	5/18/22 10:27	Primary	—	Groundwater	12
SB-KC13503	SB-KC13503-S	2/2/22 16:28	Primary	—	Surface Soil	0-0.5
SB-KC13503	SB-KC13503-4	2/2/22 16:30	Primary	—	Subsurface Soil	0.5-4
SB-KC13503	SB-KC13503-8	2/2/22 16:32	Primary	—	Subsurface Soil	4-8
SB-KC13503	SB-KC13503-12	2/2/22 16:34	Primary	—	Subsurface Soil	8-12
SB-KC13503	SB-KC13503-15	2/2/22 16:36	Primary	—	Subsurface Soil	12-15
SB-KC13503	SB-KC13503-GW	2/2/22 16:24	Primary	—	Groundwater	12
SB-KC13504	SB-KC13504-S	2/2/22 15:03	Primary	—	Surface Soil	0-0.5
SB-KC13504	SB-KC13504-4	2/2/22 15:05	Primary	—	Subsurface Soil	0.5-4
SB-KC13504	SB-KC13504-8	2/2/22 15:08	Primary	—	Subsurface Soil	4-8
SB-KC13504	SB-KC13504-12	2/2/22 15:10	Primary	—	Subsurface Soil	8-12
SB-KC13504	SB-KC13504-15	2/2/22 15:12	Primary	—	Subsurface Soil	12-15
SB-KC13504	SB-KC13504-GW	2/2/22 14:58	Primary	—	Groundwater	14
SB-KC13505	SB-KC13505-S	2/2/22 17:22	Primary	—	Surface Soil	0-0.5
SB-KC13505	SB-KC13505-4	2/2/22 17:24	Primary	—	Subsurface Soil	0.5-4
SB-KC13505	SB-KC13505-4-DUP	2/2/22 17:24	Field Duplicate	SB-KC13505-4	Subsurface Soil	0.5-4
SB-KC13505	SB-KC13505-8	2/2/22 17:28	Primary	—	Subsurface Soil	4-8
SB-KC13505	SB-KC13505-12	2/2/22 17:30	Primary	—	Subsurface Soil	8-12
SB-KC13505	SB-KC13505-15	2/2/22 17:32	Primary	—	Subsurface Soil	12-15
SB-KC13505	SB-KC13505-GW	2/2/22 17:16	Primary	—	Groundwater	14
SB-KC13505	SB-KC13505-A	5/24/22 14:45	Primary	—	Surface Soil	0-1
SB-KC13506	SB-KC13506-S	2/3/22 9:00	Primary	—	Surface Soil	0-0.5
SB-KC13506	SB-KC13506-4	2/3/22 9:02	Primary	—	Subsurface Soil	0.5-4
SB-KC13506	SB-KC13506-8	2/3/22 9:05	Primary	—	Subsurface Soil	4-8
SB-KC13506	SB-KC13506-12	2/3/22 9:07	Primary	—	Subsurface Soil	8-12
SB-KC13506	SB-KC13506-15	2/3/22 9:09	Primary	—	Subsurface Soil	12-15
SB-KC13506	SB-KC13506-GW	2/3/22 8:55	Primary	—	Groundwater	14
SB-KC13507	SB-KC13507-A	5/24/22 15:10	Primary	—	Surface Soil	0-1
SB-KC13507	SB-KC13507-AA	5/24/22 15:10	Field Duplicate	SB-KC13507-A	Surface Soil	0-1
SB-KC13507	SB-KC13507-B	5/24/22 15:16	Primary	—	Subsurface Soil	2-3
SB-KC13507	SB-KC13507-C	5/24/22 15:18	Primary	—	Subsurface Soil	4-5
SB-KC13507	SB-KC13507-D	5/24/22 15:21	Primary	—	Subsurface Soil	9-10
SB-KC13507	SB-KC13507-E	5/24/22 15:25	Primary	—	Subsurface Soil	14-15

Table 5-3. SS008P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
SB-KC13507	SB-KC13507-GW	5/24/22 15:30	Primary	—	Groundwater	10
SB-KC13508	SB-KC13508-A	5/24/22 16:10	Primary	—	Surface Soil	0-1
SB-KC13508	SB-KC13508-B	5/24/22 16:13	Primary	—	Subsurface Soil	2-3
SB-KC13508	SB-KC13508-C	5/24/22 16:17	Primary	—	Subsurface Soil	4-5
SB-KC13508	SB-KC13508-D	5/24/22 16:21	Primary	—	Subsurface Soil	9-10
SB-KC13508	SB-KC13508-E	5/24/22 16:24	Primary	—	Subsurface Soil	14-15
SB-KC13508	SB-KC13508-GW	5/24/22 16:00	Primary	—	Groundwater	8
SB-KC13509	SB-KC13509-A	5/24/22 16:55	Primary	—	Surface Soil	0-1
SB-KC13509	SB-KC13509-B	5/24/22 16:58	Primary	—	Subsurface Soil	2-3
SB-KC13509	SB-KC13509-C	5/24/22 17:02	Primary	—	Subsurface Soil	4-5
SB-KC13509	SB-KC13509-D	5/24/22 17:05	Primary	—	Subsurface Soil	9-10
SB-KC13509	SB-KC13509-E	5/24/22 17:08	Primary	—	Subsurface Soil	14-15
SB-KC13510	SB-KC13510-A	5/26/22 10:55	Primary	—	Surface Soil	0-1
SB-KC13510	SB-KC13510-AA	5/26/22 10:55	Field Duplicate	SB-KC13510-A	Surface Soil	0-1
SB-KC13510	SB-KC13510-B	5/26/22 11:05	Primary	—	Subsurface Soil	2-3
SB-KC13510	SB-KC13510-C	5/26/22 11:10	Primary	—	Subsurface Soil	4-5
SB-KC13510	SB-KC13510-D	5/26/22 11:15	Primary	—	Subsurface Soil	9-10
SB-KC13510	SB-KC13510-E	5/26/22 11:20	Primary	—	Subsurface Soil	14-15
SB-KC13511	SB-KC13511-A	5/26/22 9:55	Primary	—	Surface Soil	0-1
SB-KC13511	SB-KC13511-AA	5/26/22 9:55	Field Duplicate	SB-KC13511-A	Surface Soil	0-1
SB-KC13511	SB-KC13511-B	5/26/22 10:15	Primary	—	Subsurface Soil	2-3
SB-KC13511	SB-KC13511-C	5/26/22 10:20	Primary	—	Subsurface Soil	4-5
SB-KC13511	SB-KC13511-D	5/26/22 10:25	Primary	—	Subsurface Soil	9-10
SB-KC13511	SB-KC13511-E	5/26/22 10:30	Primary	—	Subsurface Soil	14-15

Notes:

bgs = below ground surface

ID = Identification

NR = Not Recorded

Table 5-4. RS002P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
SB-B5201	SB-B5201-S	1/31/22 11:45	Primary	—	Surface Soil	0-0.5
SB-B5201	SB-B5201-S-DUP	1/31/22 11:45	Field Duplicate	SB-B5201-S	Surface Soil	0-0.5
SB-B5201	SB-B5201-4	1/31/22 11:55	Primary	—	Subsurface Soil	0.5-4
SB-B5201	SB-B5201-8	1/31/22 12:00	Primary	—	Subsurface Soil	4-8
SB-B5201	SB-B5201-12	1/31/22 12:15	Primary	—	Subsurface Soil	8-12
SB-B5201	SB-B5201-15	1/31/22 12:25	Primary	—	Subsurface Soil	12-15
SB-B5202	SB-B5202-S	1/31/22 12:38	Primary	—	Surface Soil	0-0.5
SB-B5202	SB-B5202-4	1/31/22 12:43	Primary	—	Subsurface Soil	0.5-4
SB-B5202	SB-B5202-8	1/31/22 12:50	Primary	—	Subsurface Soil	4-8
SB-B5202	SB-B5202-12	1/31/22 12:55	Primary	—	Subsurface Soil	8-12
SB-B5202	SB-B5202-15	1/31/22 13:00	Primary	—	Subsurface Soil	12-15
SB-B5203	SB-B5203-S	1/31/22 13:35	Primary	—	Surface Soil	0-0.5
SB-B5203	SB-B5203-S-DUP	1/31/22 13:35	Field Duplicate	SB-B5203-S	Surface Soil	0-0.5
SB-B5203	SB-B5203-4	1/31/22 13:45	Primary	—	Subsurface Soil	0.5-4
SB-B5203	SB-B5203-8	1/31/22 13:50	Primary	—	Subsurface Soil	4-8
SB-B5203	SB-B5203-12	1/31/22 13:52	Primary	—	Subsurface Soil	8-12
SB-B5203	SB-B5203-15	1/31/22 13:55	Primary	—	Subsurface Soil	12-15
SB-B5204	SB-B5204-S	1/31/22 14:10	Primary	—	Surface Soil	0-0.5
SB-B5204	SB-B5204-4	1/31/22 14:12	Primary	—	Subsurface Soil	0.5-4
SB-B5204	SB-B5204-8	1/31/22 14:15	Primary	—	Subsurface Soil	4-8
SB-B5204	SB-B5204-12	1/31/22 14:18	Primary	—	Subsurface Soil	8-12
SB-B5204	SB-B5204-15	1/31/22 14:20	Primary	—	Subsurface Soil	12-15
SB-B5205	SB-B5205-S	1/31/22 14:58	Primary	—	Surface Soil	0-0.5
SB-B5205	SB-B5205-S-DUP	1/31/22 14:58	Field Duplicate	SB-B5205-S	Surface Soil	0-0.5
SB-B5205	SB-B5205-4	1/31/22 15:04	Primary	—	Subsurface Soil	0.5-4
SB-B5205	SB-B5205-8	1/31/22 15:08	Primary	—	Subsurface Soil	4-8
SB-B5205	SB-B5205-12	1/31/22 15:12	Primary	—	Subsurface Soil	8-12
SB-B5205	SB-B5205-15	1/31/22 15:15	Primary	—	Subsurface Soil	12-15
SB-B5205	SB-B5205-GW	1/31/22 16:35	Primary	—	Groundwater	NR
SB-B5206	SB-B5206-S	1/31/22 15:43	Primary	—	Surface Soil	0-0.5
SB-B5206	SB-B5206-4	1/31/22 15:45	Primary	—	Subsurface Soil	0.5-4
SB-B5206	SB-B5206-8	1/31/22 15:48	Primary	—	Subsurface Soil	4-8
SB-B5206	SB-B5206-12	1/31/22 15:53	Primary	—	Subsurface Soil	8-12
SB-B5206	SB-B5206-15	1/31/22 15:55	Primary	—	Subsurface Soil	12-15
SB-B5206	SB-B5206-GW	1/31/22 16:15	Primary	—	Groundwater	NR
SB-B5206	SB-B5206-A	5/20/22 8:15	Primary	—	Surface Soil	0-1
SB-B5207	SB-B5207-A	5/18/22 14:29	Primary	—	Surface Soil	0-1
SB-B5207	SB-B5207-C	5/18/22 14:38	Primary	—	Subsurface Soil	4-5
SB-B5207	SB-B5207-B	5/18/22 14:39	Primary	—	Subsurface Soil	2-3
SB-B5207	SB-B5207-D	5/18/22 14:44	Primary	—	Subsurface Soil	9-10
SB-B5208	SB-B5208-A	5/18/22 15:28	Primary	—	Surface Soil	0-1
SB-B5208	SB-B5208-AA (Dup)	5/18/22 15:28	Field Duplicate	SB-B5208-A	Surface Soil	0-1
SB-B5208	SB-B5208-B	5/18/22 15:37	Primary	—	Subsurface Soil	2-3
SB-B5208	SB-B5208-C	5/18/22 15:40	Primary	—	Subsurface Soil	4-5
SB-B5208	SB-B5208-D	5/18/22 15:43	Primary	—	Subsurface Soil	9-10

Table 5-4. RS002P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
SB-B5209	SB-B5209-A	5/18/22 16:21	Primary	—	Surface Soil	0-1
SB-B5209	SB-B5209-B	5/18/22 16:23	Primary	—	Subsurface Soil	2-3
SB-B5209	SB-B5209-C	5/18/22 16:27	Primary	—	Subsurface Soil	4-5
SB-B5209	SB-B5209-D	5/18/22 16:30	Primary	—	Subsurface Soil	9-10
SB-B5210	SB-B5210-A	5/18/22 18:19	Primary	—	Surface Soil	0-1
SB-B5210	SB-B5210-B	5/18/22 18:21	Primary	—	Subsurface Soil	2-3
SB-B5210	SB-B5210-BA	5/18/22 18:21	Field Duplicate	SB-B5210-B	Subsurface Soil	2-3
SB-B5210	SB-B5210-C	5/18/22 18:30	Primary	—	Subsurface Soil	4-5
SB-B5210	SB-B5210-D	5/18/22 18:33	Primary	—	Subsurface Soil	9-10
SB-B5210	SB-B5210-E	5/18/22 18:35	Primary	—	Subsurface Soil	14-15
SB-B5210	SB-B5210-GW	5/18/22 18:00	Primary	—	Groundwater	NR
SB-B5210	SB-B5210-GWA	5/18/22 18:00	Field Duplicate	SB-B5210-GW	Groundwater	NR
SB-B5211	SB-B5211-A	5/19/22 10:11	Primary	—	Surface Soil	0-1
SB-B5211	SB-B5211-B	5/19/22 10:16	Primary	—	Subsurface Soil	2-3
SB-B5211	SB-B5211-C	5/19/22 10:19	Primary	—	Subsurface Soil	4-5
SB-B5211	SB-B5211-D	5/19/22 10:23	Primary	—	Subsurface Soil	9-10
SB-B5211	SB-B5211-E	5/19/22 10:37	Primary	—	Subsurface Soil	14-15
SB-B5212	SB-B5212-A	5/19/22 12:40	Primary	—	Surface Soil	0-1
SB-B5212	SB-B5212-B	5/19/22 12:42	Primary	—	Subsurface Soil	2-3
SB-B5212	SB-B5212-C	5/19/22 12:44	Primary	—	Subsurface Soil	4-5
SB-B5212	SB-B5212-D	5/19/22 12:46	Primary	—	Subsurface Soil	9-10
SB-B5212	SB-B5212-E	5/19/22 12:48	Primary	—	Subsurface Soil	14-15
SB-B5212	SB-B5212-EA	5/19/22 12:48	Field Duplicate	SB-B5212-E	Subsurface Soil	14-15
SB-B5213	SB-B5213-A	5/18/22 17:18	Primary	—	Surface Soil	0-1
SB-B5213	SB-B5213-B	5/18/22 17:20	Primary	—	Subsurface Soil	2-3
SB-B5213	SB-B5213-C	5/18/22 17:22	Primary	—	Subsurface Soil	4-5
SB-B5213	SB-B5213-D	5/18/22 17:24	Primary	—	Subsurface Soil	9-10
SB-B5213	SB-B5213-E	5/18/22 17:26	Primary	—	Subsurface Soil	14-15
SB-B5214	SB-B5214-A	5/18/22 13:36	Primary	—	Surface Soil	0-1
SB-B5214	SB-B5214-AA (Dup)	5/18/22 13:36	Field Duplicate	SB-B5214-A	Surface Soil	0-1
SB-B5214	SB-B5214-B	5/18/22 13:44	Primary	—	Subsurface Soil	2-3
SB-B5214	SB-B5214-C	5/18/22 13:47	Primary	—	Subsurface Soil	4-5
SB-B5214	SB-B5214-D	5/18/22 13:50	Primary	—	Subsurface Soil	9-10
SB-B5215	SB-B5215-A	5/19/22 13:25	Primary	—	Surface Soil	0-1
SB-B5215	SB-B5215-B	5/19/22 13:27	Primary	—	Subsurface Soil	2-3
SB-B5215	SB-B5215-C	5/19/22 13:29	Primary	—	Subsurface Soil	4-5
SB-B5215	SB-B5215-D	5/19/22 13:31	Primary	—	Subsurface Soil	9-10

Notes:

bgs = below ground surface

ID = Identification

NR = Not Recorded

Table 5-5. RS001P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
SB-RA501	SB-RA501-S	2/3/22 12:27	Primary	—	Surface Soil	0-0.5
SB-RA501	SB-RA501-4	2/3/22 12:29	Primary	—	Subsurface Soil	0.5-4
SB-RA501	SB-RA501-8	2/3/22 13:02	Primary	—	Subsurface Soil	4-8
SB-RA501	SB-RA501-12	2/3/22 13:04	Primary	—	Subsurface Soil	8-12
SB-RA501	SB-RA501-15	2/3/22 13:07	Primary	—	Subsurface Soil	12-15
SB-RA501	SB-RA501-GW	2/3/22 12:24	Primary	—	Groundwater	16
SB-RA501	SB-RA501-A	5/17/22 15:01	Primary	—	Surface Soil	0-1
SB-RA502	SB-RA502-S	2/3/22 10:12	Primary	—	Surface Soil	0-0.5
SB-RA502	SB-RA502-4	2/3/22 10:15	Primary	—	Subsurface Soil	0.5-4
SB-RA502	SB-RA502-4-DUP	2/3/22 10:15	Field Duplicate	SB-RA502-4	Subsurface Soil	0.5-4
SB-RA502	SB-RA502-8	2/3/22 10:20	Primary	—	Subsurface Soil	4-8
SB-RA502	SB-RA502-10	2/3/22 10:22	Primary	—	Subsurface Soil	8-10
SB-RA503	SB-RA503-S	2/2/22 13:46	Primary	—	Surface Soil	0-0.5
SB-RA503	SB-RA503-4	2/2/22 13:49	Primary	—	Subsurface Soil	0.5-4
SB-RA503	SB-RA503-4-Dup	2/2/22 13:49	Field Duplicate	SB-RA503-4	Subsurface Soil	0.5-4
SB-RA503	SB-RA503-8	2/2/22 13:54	Primary	—	Subsurface Soil	4-8
SB-RA503	SB-RA503-12	2/2/22 14:06	Primary	—	Subsurface Soil	8-12
SB-RA503	SB-RA503-15	2/2/22 14:09	Primary	—	Subsurface Soil	12-15
SB-RA504	SB-RA504-S	2/3/22 10:44	Primary	—	Surface Soil	0-0.5
SB-RA504	SB-RA504-4	2/3/22 10:46	Primary	—	Subsurface Soil	0.5-4
SB-RA504	SB-RA504-8	2/3/22 10:48	Primary	—	Subsurface Soil	4-8
SB-RA504	SB-RA504-12	2/3/22 10:50	Primary	—	Subsurface Soil	8-12
SB-RA504	SB-RA504-15	2/3/22 10:53	Primary	—	Subsurface Soil	12-15
SB-RA505	SB-RA505-S	2/3/22 14:25	Primary	—	Surface Soil	0-0.5
SB-RA505	SB-RA505-4	2/3/22 14:28	Primary	—	Subsurface Soil	0.5-4
SB-RA505	SB-RA505-8	2/3/22 14:33	Primary	—	Subsurface Soil	4-8
SB-RA505	SB-RA505-12	2/3/22 14:35	Primary	—	Subsurface Soil	8-12
SB-RA505	SB-RA505-15	2/3/22 14:37	Primary	—	Subsurface Soil	12-15
SB-RA505	SB-RA505-GW	2/3/22 14:14	Primary	—	Groundwater	15
SB-RA506	SB-RA506-S	2/3/22 13:09	Primary	—	Surface Soil	0-0.5
SB-RA506	SB-RA506-4	2/3/22 13:11	Primary	—	Subsurface Soil	0.5-4
SB-RA506	SB-RA506-4-Dup	2/3/22 13:11	Field Duplicate	SB-RA506-4	Subsurface Soil	0.5-4
SB-RA506	SB-RA506-8	2/3/22 13:15	Primary	—	Subsurface Soil	4-8
SB-RA506	SB-RA506-12-12.5	2/3/22 13:17	Primary	—	Subsurface Soil	8-12.5
SB-RA506	SB-RA506-GW	2/3/22 13:11	Primary	—	Groundwater	12
SB-RA507	SB-RA507-A	5/17/22 13:49	Primary	—	Surface Soil	0-1
SB-RA507	SB-RA507-B	5/17/22 14:30	Primary	—	Subsurface Soil	2-3
SB-RA507	SB-RA507-C	5/17/22 14:36	Primary	—	Subsurface Soil	4-5
SB-RA507	SB-RA507-D	5/17/22 14:39	Primary	—	Subsurface Soil	9-10
SB-RA507	SB-RA507-E	5/17/22 14:42	Primary	—	Subsurface Soil	14-15
SB-RA507	SB-RA507-GW	5/17/22 13:19	Primary	—	Groundwater	10
SB-RA508	SB-RA508-A	5/26/22 8:55	Primary	—	Surface Soil	0-1
SB-RA508	SB-RA508-B	5/26/22 9:15	Primary	—	Subsurface Soil	2-3
SB-RA508	SB-RA508-BA	5/26/22 9:15	Field Duplicate	SB-RA508-B	Subsurface Soil	2-3

Table 5-5. RS001P Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
SB-RA508	SB-RA508-C	5/26/22 9:30	Primary	—	Subsurface Soil	4-5
SB-RA508	SB-RA508-D	5/26/22 9:38	Primary	—	Subsurface Soil	9-10
SB-RA508	SB-RA508-E	5/26/22 9:48	Primary	—	Subsurface Soil	14-15
SB-RA509	SB-RA509-A	5/26/22 11:56	Primary	—	Surface Soil	0-1
SB-RA509	SB-RA509-B	5/26/22 11:55	Primary	—	Subsurface Soil	2-3
SB-RA509	SB-RA509-C	5/26/22 12:00	Primary	—	Subsurface Soil	4-5
SB-RA509	SB-RA509-D	5/26/22 12:05	Primary	—	Subsurface Soil	9-10
SB-RA509	SB-RA509-E	5/26/22 12:10	Primary	—	Subsurface Soil	14-15
SB-RA510	SB-RA510-A	5/18/22 8:34	Primary	—	Surface Soil	0-1
SB-RA510	SB-RA510-AA	5/18/22 8:34	Field Duplicate	SB-RA510-A	Surface Soil	0-1
SB-RA510	SB-RA510-B	5/18/22 8:41	Primary	—	Subsurface Soil	2-3
SB-RA510	SB-RA510-C	5/18/22 8:43	Primary	—	Subsurface Soil	4-5
SB-RA510	SB-RA510-D	5/18/22 8:50	Primary	—	Subsurface Soil	9-10
SB-RA511	SB-RA511-A	5/17/22 17:37	Primary	—	Surface Soil	0-1
SB-RA511	SB-RA511-B	5/17/22 17:40	Primary	—	Subsurface Soil	2-3
SB-RA511	SB-RA511-C	5/17/22 17:44	Primary	—	Subsurface Soil	4-5
SB-RA511	SB-RA511-D	5/17/22 17:47	Primary	—	Subsurface Soil	9-10
SB-RA511	SB-RA511-E	5/17/22 17:50	Primary	—	Subsurface Soil	14-15
SB-RA511	SB-RA511-GW	5/17/22 17:18	Primary	—	Groundwater	7
SB-RA511	SB-RA511-GWA	5/17/22 17:18	Field Duplicate	SB-RA511-GW	Groundwater	7
SB-RA512	SB-RA512-A	5/26/22 12:25	Primary	—	Surface Soil	0-1
SB-RA512	SB-RA512-B	5/26/22 12:30	Primary	—	Subsurface Soil	2-3
SB-RA512	SB-RA512-BA	5/26/22 12:30	Field Duplicate	SB-RA512-B	Subsurface Soil	2-3
SB-RA512	SB-RA512-C	5/26/22 12:40	Primary	—	Subsurface Soil	4-5
SB-RA512	SB-RA512-D	5/26/22 12:45	Primary	—	Subsurface Soil	8.5-9.5
SB-RA513	SB-RA513-A	5/26/22 13:00	Primary	—	Surface Soil	0-1
SB-RA513	SB-RA513-B	5/26/22 13:05	Primary	—	Subsurface Soil	2-3
SB-RA513	SB-RA513-BA	5/26/22 13:05	Field Duplicate	SB-RA513-B	Subsurface Soil	2-3
SB-RA513	SB-RA513-C	5/26/22 13:15	Primary	—	Subsurface Soil	4-5
SB-RA513	SB-RA513-D	5/26/22 13:20	Primary	—	Subsurface Soil	9-10
SB-RA513	SB-RA513-E	5/26/22 13:25	Primary	—	Subsurface Soil	14-15
SB-RA514	SB-RA514-A	5/17/22 15:36	Primary	—	Surface Soil	0-1
SB-RA514	SB-RA514-B	5/17/22 16:14	Primary	—	Subsurface Soil	2-3
SB-RA514	SB-RA514-C	5/17/22 16:20	Primary	—	Subsurface Soil	4-5
SB-RA514	SB-RA514-D	5/17/22 16:26	Primary	—	Subsurface Soil	9-10
SB-RA514	SB-RA514-E	5/17/22 16:32	Primary	—	Subsurface Soil	14-15
SB-RA514	SB-RA514-GW	5/17/22 15:50	Primary	—	Groundwater	12

Notes:

bgs = below ground surface

ID = Identification

**Table 5-6. No Name Ditch Soil, Sediment, Surface Water,
and Groundwater Grab Sample Identification Summary**

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
NND-01	NND-01-A	10/12/22 17:20	Primary	—	Surface Soil	0-0.5
NND-01	NND-01-B	10/12/22 17:22	Primary	—	Subsurface Soil	4-5
NND-01	NND-01-C	10/12/22 17:24	Primary	—	Subsurface Soil	10-11
NND-01	NND-01-GW	10/12/22 17:26	Primary	—	Groundwater	10
NND-02	NND-02-A	10/13/22 15:26	Primary	—	Surface Soil	0-0.5
NND-02	NND-02-AA	10/13/22 15:26	Field Duplicate	NND-02-A	Surface Soil	0-0.5
NND-02	NND-02-B	10/13/22 15:28	Primary	—	Subsurface Soil	6-7
NND-02	NND-02-C	10/13/22 15:30	Primary	—	Subsurface Soil	9-10
NND-02	NND-02-GW	10/13/22 15:32	Primary	—	Groundwater	10
NND-03	NND-03-A	10/13/22 14:42	Primary	—	Surface Soil	0-0.5
NND-03	NND-03-B	10/13/22 14:44	Primary	—	Subsurface Soil	4-5
NND-03	NND-03-C	10/13/22 14:46	Primary	—	Subsurface Soil	5-6
NND-03	NND-03-GW	10/13/22 14:48	Primary	—	Groundwater	10
NND-03	NND-03-GWA	10/13/22 14:48	Field Duplicate	NND-03-GW	Groundwater	10
NND-04	NND-04-A	10/13/22 14:06	Primary	—	Surface Soil	0-0.5
NND-04	NND-04-B	10/13/22 14:08	Primary	—	Subsurface Soil	2-3
NND-04	NND-04-C	10/13/22 14:10	Primary	—	Subsurface Soil	4-5
NND-04	NND-04-CA	10/13/22 14:10	Field Duplicate	—	Subsurface Soil	4-5
NND-04	NND-04-GW	10/13/22 14:12	Primary	—	Groundwater	8.5
NND-05	NND-05-A	10/13/22 13:26	Primary	—	Surface Soil	0-0.5
NND-05	NND-05-B	10/13/22 13:28	Primary	—	Subsurface Soil	4-5
NND-05	NND-05-C	10/13/22 13:30	Primary	—	Subsurface Soil	9-10
NND-05	NND-05-GW	10/13/22 13:32	Primary	—	Groundwater	10
NND-06	NND-06-A	10/13/22 12:46	Primary	—	Surface Soil	0-0.5
NND-06	NND-06-B	10/13/22 12:48	Primary	—	Subsurface Soil	5-6
NND-06	NND-06-C	10/13/22 12:50	Primary	—	Subsurface Soil	7-8
NND-06	NND-06-GW	10/13/22 12:52	Primary	—	Groundwater	12.5
NND-07	NND-07-A	10/13/22 11:26	Primary	—	Surface Soil	0-0.5
NND-07	NND-07-B	10/13/22 11:28	Primary	—	Subsurface Soil	5-6
NND-07	NND-07-C	10/13/22 11:30	Primary	—	Subsurface Soil	7-8
NND-07	NND-07-GW	10/13/22 11:32	Primary	—	Groundwater	15
NND-08	NND-08-A	10/12/22 16:28	Primary	—	Surface Soil	0-0.5
NND-08	NND-08-B	10/12/22 16:30	Primary	—	Subsurface Soil	4-5
NND-08	NND-08-C	10/12/22 16:32	Primary	—	Subsurface Soil	9-10
NND-08	NND-08-GW	10/12/22 16:36	Primary	—	Groundwater	12
NND-09	NND-09-A	10/12/22 15:34	Primary	—	Surface Soil	0-0.5
NND-09	NND-09-B	10/12/22 15:36	Primary	—	Subsurface Soil	8-9
NND-09	NND-09-C	10/12/22 15:38	Primary	—	Subsurface Soil	10-11
NND-09	NND-09-GW	10/12/22 15:40	Primary	—	Groundwater	15
NND-10	NND-10-A	10/12/22 14:44	Primary	—	Surface Soil	0-0.5
NND-10	NND-10-B	10/12/22 14:46	Primary	—	Subsurface Soil	5-6
NND-10	NND-10-BA	10/12/22 14:46	Field Duplicate	NND-10-B	Subsurface Soil	5-6
NND-10	NND-10-C	10/12/22 14:48	Primary	—	Subsurface Soil	7-8
NND-10	NND-10-GW	10/12/22 14:50	Primary	—	Groundwater	10
NND-11	NND-11-A	10/12/22 14:06	Primary	—	Surface Soil	0-0.5

**Table 5-6. No Name Ditch Soil, Sediment, Surface Water,
and Groundwater Grab Sample Identification Summary**

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
NND-11	NND-11-B	10/12/22 14:08	Primary	—	Subsurface Soil	4-5
NND-11	NND-11-C	10/12/22 14:10	Primary	—	Subsurface Soil	6-7
NND-11	NND-11-GW	10/12/22 14:14	Primary	—	Groundwater	15
NND-12	NND-12-A	10/12/22 13:38	Primary	—	Surface Soil	0-0.5
NND-12	NND-12-AA	10/12/22 13:38	Field Duplicate	NND-12-A	Surface Soil	0-0.5
NND-12	NND-12-B	10/12/22 13:40	Primary	—	Subsurface Soil	8-9
NND-12	NND-12-C	10/12/22 13:42	Primary	—	Subsurface Soil	9-10
NND-12	NND-12-GW	10/12/22 13:44	Primary	—	Groundwater	10
NND-13	NND-13-A	10/12/22 11:25	Primary	—	Surface Soil	0-0.5
NND-13	NND-13-B	10/12/22 11:27	Primary	—	Subsurface Soil	4-5
NND-13	NND-13-C	10/12/22 11:30	Primary	—	Subsurface Soil	9-10
NND-13	NND-13-GW	10/12/22 11:33	Primary	—	Groundwater	10
NND-14	NND-14-A	10/12/22 10:38	Primary	—	Surface Soil	0-0.5
NND-14	NND-14-B	10/12/22 10:42	Primary	—	Subsurface Soil	7-8
NND-14	NND-14-C	10/12/22 10:45	Primary	—	Subsurface Soil	10-11
NND-14	NND-14-GW	10/12/22 10:50	Primary	—	Groundwater	15
NND-14	NND-14-GWA	10/12/22 10:50	Field Duplicate	NND-14-GW	Groundwater	15
NND-15	NND-15-A	10/12/22 9:55	Primary	—	Surface Soil	0-0.5
NND-15	NND-15-B	10/12/22 10:00	Primary	—	Subsurface Soil	7-8
NND-15	NND-15-C	10/12/22 10:13	Primary	—	Subsurface Soil	10-11
NND-15	NND-15-GW	10/12/22 10:15	Primary	—	Groundwater	15
NND-16	NND-16-A	10/11/22 16:12	Primary	—	Surface Soil	0-0.5
NND-16	NND-16-B	10/11/22 16:14	Primary	—	Subsurface Soil	7-8
NND-16	NND-16-C	10/11/22 16:16	Primary	—	Subsurface Soil	9-10
NND-16	NND-16-GW	10/11/22 16:20	Primary	—	Groundwater	15
NND-17	NND-17-A	10/11/22 15:24	Primary	—	Surface Soil	0-0.5
NND-17	NND-17-AA	10/11/22 15:24	Field Duplicate	NND-17-A	Surface Soil	0-0.5
NND-17	NND-17-B	10/11/22 15:26	Primary	—	Subsurface Soil	5-6
NND-17	NND-17-C	10/11/22 15:28	Primary	—	Subsurface Soil	6-7
NND-17	NND-17-GW	10/11/22 15:34	Primary	—	Groundwater	10
NND-18	NND-18-A	10/11/22 14:40	Primary	—	Surface Soil	0-0.5
NND-18	NND-18-B	10/11/22 14:42	Primary	—	Subsurface Soil	3-4
NND-18	NND-18-C	10/11/22 14:44	Primary	—	Subsurface Soil	6-7
NND-18	NND-18-GW	10/11/22 14:48	Primary	—	Groundwater	10
NND-19	NND-19-A	10/11/22 13:58	Primary	—	Surface Soil	0-0.5
NND-19	NND-19-B	10/11/22 14:00	Primary	—	Subsurface Soil	3-4
NND-19	NND-19-BA	10/11/22 14:00	Field Duplicate	NND-19-B	Subsurface Soil	3-4
NND-19	NND-19-C	10/11/22 14:02	Primary	—	Subsurface Soil	5-6
NND-19	NND-19-GW	10/11/22 14:06	Primary	—	Groundwater	13
NND-20	NND-20-A	10/11/22 12:40	Primary	—	Surface Soil	0-0.5
NND-20	NND-20-B	10/11/22 12:42	Primary	—	Subsurface Soil	4-5
NND-20	NND-20-C	10/11/22 12:46	Primary	—	Subsurface Soil	12-13
NND-20	NND-20-GW	10/11/22 12:50	Primary	—	Groundwater	14
NND-20	NND-20-GWA	10/11/22 12:50	Field Duplicate	NND-20-GW	Groundwater	14
NND-21	NND-21-A	10/11/22 12:02	Primary	—	Surface Soil	0-0.5

Table 5-6. No Name Ditch Soil, Sediment, Surface Water, and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
NND-21	NND-21-B	10/11/22 12:04	Primary	—	Subsurface Soil	2-3
NND-21	NND-21-C	10/11/22 12:06	Primary	—	Subsurface Soil	7-8
NND-21	NND-21-GW	10/11/22 12:10	Primary	—	Groundwater	10
NND-22	NND-22-A	10/13/22 10:38	Primary	—	Surface Soil	0-0.5
NND-22	NND-22-B	10/13/22 10:40	Primary	—	Subsurface Soil	3-4
NND-22	NND-22-C	10/13/22 10:42	Primary	—	Subsurface Soil	4-5
NND-22	NND-22-CA	10/13/22 10:42	Field Duplicate	NND-22-C	Subsurface Soil	4-5
NND-22	NND-22-GW	10/13/22 10:44	Primary	—	Groundwater	10
NND-23	NND-23-A	10/13/22 10:04	Primary	—	Surface Soil	0-0.5
NND-23	NND-23-B	10/13/22 10:06	Primary	—	Subsurface Soil	4-5
NND-23	NND-23-C	10/13/22 10:08	Primary	—	Subsurface Soil	8-9
NND-23	NND-23-GW	10/13/22 10:10	Primary	—	Groundwater	15
NND-24	NND-24-A	10/10/22 12:16	Primary	—	Surface Soil	0-0.5
NND-24	NND-24-B	10/10/22 12:18	Primary	—	Subsurface Soil	3-4
NND-24	NND-24-C	10/10/22 12:20	Primary	—	Subsurface Soil	9-10
NND-24	NND-24-GW	10/10/22 12:24	Primary	—	Groundwater	10
NND-25	NND-25-A	10/10/22 16:06	Primary	—	Surface Soil	0-0.5
NND-25	NND-25-AA	10/10/22 16:06	Field Duplicate	NND-25-A	Surface Soil	0-0.5
NND-25	NND-25-B	10/10/22 16:08	Primary	—	Subsurface Soil	9-10
NND-25	NND-25-C	10/10/22 16:10	Primary	—	Subsurface Soil	10-11
NND-25	NND-25-GW	10/10/22 16:14	Primary	—	Groundwater	11
NND-26	NND-26-A	10/10/22 11:20	Primary	—	Surface Soil	0-0.5
NND-26	NND-26-B	10/10/22 11:22	Primary	—	Subsurface Soil	2-3
NND-26	NND-26-C	10/10/22 11:24	Primary	—	Subsurface Soil	8.5-9.5
NND-26	NND-26-GW	10/10/22 11:30	Primary	—	Groundwater	9.5
NND-27	NND-27-A	10/10/22 15:18	Primary	—	Surface Soil	0-0.5
NND-27	NND-27-B	10/10/22 15:20	Primary	—	Subsurface Soil	3-4
NND-27	NND-27-C	10/10/22 15:22	Primary	—	Subsurface Soil	9-10
NND-27	NND-27-GW	10/10/22 15:25	Primary	—	Groundwater	10
NND-27	NND-27-GWA	10/10/22 15:25	Field Duplicate	NND-27-GW	Groundwater	10
NND-28	NND-28-A	10/10/22 10:36	Primary	—	Surface Soil	0-0.5
NND-28	NND-28-B	10/10/22 10:38	Primary	—	Subsurface Soil	2-3
NND-28	NND-28-C	10/10/22 10:40	Primary	—	Subsurface Soil	7-8
NND-28	NND-28-GW	10/10/22 10:45	Primary	—	Groundwater	8
NND-29	NND-29-A	10/10/22 14:30	Primary	—	Surface Soil	0-0.5
NND-29	NND-29-B	10/10/22 14:34	Primary	—	Subsurface Soil	2-3
NND-29	NND-29-BA	10/10/22 14:34	Field Duplicate	NND-29-B	Subsurface Soil	2-3
NND-29	NND-29-C	10/10/22 14:36	Primary	—	Subsurface Soil	9-10
NND-29	NND-29-GW	10/10/22 14:40	Primary	—	Groundwater	10
NND-30	NND-30-A	10/10/22 9:10	Primary	—	Surface Soil	0-0.5
NND-30	NND-30-B	10/10/22 9:12	Primary	—	Subsurface Soil	2-3
NND-30	NND-30-C	10/10/22 9:16	Primary	—	Subsurface Soil	7-8
NND-30	NND-30-GW	10/10/22 9:18	Primary	—	Groundwater	8
NND-31	NND-31-A	10/13/22 8:56	Primary	—	Surface Soil	0-0.5
NND-31	NND-31-B	10/13/22 8:58	Primary	—	Subsurface Soil	2-3

Table 5-6. No Name Ditch Soil, Sediment, Surface Water, and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
NND-31	NND-31-C	10/13/22 9:00	Primary	—	Subsurface Soil	4-5
NND-31	NND-31-CA	10/13/22 9:00	Field Duplicate	NND-31-C	Subsurface Soil	4-5
NND-31	NND-31-GW	10/13/22 9:02	Primary	—	Groundwater	10
NND-32	NND-32-A	10/13/22 9:30	Primary	—	Surface Soil	0-0.5
NND-32	NND-32-B	10/13/22 9:32	Primary	—	Subsurface Soil	2-3
NND-32	NND-32-C	10/13/22 9:34	Primary	—	Subsurface Soil	4-5
NND-32	NND-32-GW	10/13/22 9:36	Primary	—	Groundwater	10
NND-33	NND-33-A	10/14/22 8:55	Primary	—	Surface Soil	0-0.5
NND-33	NND-33-B	10/14/22 9:00	Primary	—	Subsurface Soil	4-5
NND-33	NND-33-C	10/14/22 9:02	Primary	—	Subsurface Soil	9-10
NND-33	NND-33-GW	10/14/22 9:05	Primary	—	Groundwater	10
NND-34	NND-34-A	10/14/22 9:26	Primary	—	Surface Soil	0-0.5
NND-34	NND-34-AA	10/14/22 9:26	Field Duplicate	NND-34-A	Surface Soil	0-0.5
NND-34	NND-34-B	10/14/22 9:30	Primary	—	Subsurface Soil	8-9
NND-34	NND-34-C	10/14/22 9:32	Primary	—	Subsurface Soil	9-10
NND-34	NND-34-GW	10/14/22 9:34	Primary	—	Groundwater	10
NND-35	NND-35-A	10/14/22 10:03	Primary	—	Surface Soil	0-0.5
NND-35	NND-35-B	10/14/22 10:05	Primary	—	Subsurface Soil	4-5
NND-35	NND-35-C	10/14/22 10:07	Primary	—	Subsurface Soil	7-8
NND-35	NND-35-GW	10/14/22 10:09	Primary	—	Groundwater	10
NND-36	NND-36-A	10/14/22 10:42	Primary	—	Surface Soil	0-0.5
NND-36	NND-36-B	10/14/22 10:45	Primary	—	Subsurface Soil	4-5
NND-36	NND-36-C	10/14/22 10:47	Primary	—	Subsurface Soil	9-10
NND-36	NND-36-GW	10/14/22 10:50	Primary	—	Groundwater	10
NND-37	NND-37-SED	10/10/22 17:20	Primary	—	Sediment	—
NND-37	NND-37-SEDA	10/10/22 17:20	Field Duplicate	NND-37-SED	Sediment	—
NND-37	NND-37-SW	10/10/22 17:10	Primary	—	Surface Water	—
NND-37	NND-37-SWA	10/10/22 17:10	Field Duplicate	NND-37-SW	Surface Water	—
NND-38	NND-38-SED	10/10/22 17:40	Primary	—	Sediment	—
NND-38	NND-38-SW	10/10/22 17:35	Primary	—	Surface Water	—
NND-39	NND-39-SED	10/10/22 17:55	Primary	—	Sediment	—
NND-39	NND-39-SW	10/10/22 17:50	Primary	—	Surface Water	—
NND-40	NND-40-SED	10/14/22 11:52	Primary	—	Sediment	—
NND-40	NND-40-SW	10/14/22 11:50	Primary	—	Surface Water	—
NND-41	NND-41-SED	10/14/22 12:00	Primary	—	Sediment	—
NND-41	NND-41-SW	10/14/22 11:56	Primary	—	Surface Water	—
NND-42	NND-42-SED	10/14/22 12:15	Primary	—	Sediment	—
NND-42	NND-42-SW	10/14/22 12:13	Primary	—	Surface Water	—
NND-43	NND-43-SED	10/14/22 12:22	Primary	—	Sediment	—
NND-43	NND-43-SW	10/14/22 12:20	Primary	—	Surface Water	—
NND-44	NND-44-SED	10/14/22 12:36	Primary	—	Sediment	—
NND-44	NND-44-SW	10/14/22 12:34	Primary	—	Surface Water	—
NND-45	NND-45-SED	10/14/22 12:45	Primary	—	Sediment	—
NND-45	NND-45-SW	10/14/22 12:42	Primary	—	Surface Water	—
NND-46	NND-46-SED	10/14/22 12:55	Primary	—	Sediment	—

Table 5-6. No Name Ditch Soil, Sediment, Surface Water, and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
NND-46	NND-46-SW	10/14/22 12:50	Primary	—	Surface Water	—
NND-47	NND-47-A	6/20/24 12:25	Primary	—	Surface Soil	0-0.5
NND-47	NND-47-AA	6/20/24 12:25	Field Duplicate	NND-47-A	Surface Soil	0-0.5
NND-47	NND-47-B	6/20/24 12:27	Primary	—	Subsurface Soil	1.5-2
NND-47	NND-47-GW	6/20/24 12:46	Primary	—	Groundwater	6
NND-47	NND-47-GWA	6/20/24 12:46	Field Duplicate	NND-47-GW	Groundwater	6
NND-48	NND-48-A	6/20/24 11:53	Primary	—	Surface Soil	0-0.5
NND-48	NND-48-B	6/20/24 11:55	Primary	—	Subsurface Soil	1-1.5
NND-48	NND-48-GW	6/20/24 12:11	Primary	—	Groundwater	3
NND-49	NND-49-A	6/20/24 11:00	Primary	—	Surface Soil	0-0.5
NND-49	NND-49-GW	6/20/24 11:20	Primary	—	Groundwater	6
NND-50	NND-50-A	6/20/24 10:04	Primary	—	Surface Soil	0-0.5
NND-50	NND-50-AA	6/20/24 10:04	Field Duplicate	NND-50-A	Surface Soil	0-0.5
NND-50	NND-50-GW	6/20/24 10:22	Primary	—	Groundwater	3
NND-51	NND-51-A	6/20/24 9:10	Primary	—	Surface Soil	0-0.5
NND-51	NND-51-GW	6/20/24 9:35	Primary	—	Groundwater	2
NND-52	NND-52-A	6/20/24 8:22	Primary	—	Surface Soil	0-0.5
NND-52	NND-52-GW	6/20/24 8:46	Primary	—	Groundwater	3.5
NND-53	NND-53-A	6/19/24 15:19	Primary	—	Surface Soil	0-0.5
NND-53	NND-53-B	6/19/24 15:21	Primary	—	Subsurface Soil	1-1.5
NND-53	NND-53-GW	6/19/24 15:37	Primary	—	Groundwater	3
NND-54	NND-54-A	6/19/24 14:02	Primary	—	Surface Soil	0-0.5
NND-54	NND-54-B	6/19/24 14:05	Primary	—	Subsurface Soil	2-3
NND-54	NND-54-C	6/19/24 14:16	Primary	—	Subsurface Soil	5-5.5
NND-54	NND-54-GW	6/19/24 14:20	Primary	—	Groundwater	9

Table 5-6. No Name Ditch Soil, Sediment, Surface Water, and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
NND-55	NND-55-A	6/19/24 11:05	Primary	—	Surface Soil	0-0.5
NND-55	NND-55-B	6/19/24 11:07	Primary	—	Subsurface Soil	2-2.8
NND-55	NND-55-C	6/19/24 11:12	Primary	—	Subsurface Soil	6-6.8
NND-55	NND-55-GW	6/19/24 12:47	Primary	—	Groundwater	13.5
NND-56	NND-56-A	6/19/24 9:40	Primary	—	Surface Soil	0-0.5
NND-56	NND-56-B	6/19/24 9:45	Primary	—	Subsurface Soil	2-3
NND-56	NND-56-C	6/19/24 9:53	Primary	—	Subsurface Soil	7-8
NND-56	NND-56-GW	6/19/24 10:25	Primary	—	Groundwater	12.5
NND-67	NND-67-SED	6/21/24 13:45	Primary	—	Sediment	—
NND-67	NND-67-SEDA	6/21/24 13:45	Field Duplicate	NND-67-SED	Sediment	—
NND-67	NND-67-SW	6/21/24 13:30	Primary	—	Surface Water	—
NND-67	NND-67-SWA	6/21/24 13:45	Field Duplicate	NND-67-SW	Surface Water	—
NND-68	NND-68-SED	6/21/24 13:12	Primary	—	Sediment	—
NND-68	NND-68-SW	6/21/24 13:00	Primary	—	Surface Water	—
NND-69	NND-69-SED	6/21/24 12:34	Primary	—	Sediment	—
NND-69	NND-69-SW	6/21/24 12:22	Primary	—	Surface Water	—
NND-70	NND-70-SED	6/21/24 12:00	Primary	—	Sediment	—
NND-70	NND-70-SW	6/21/24 11:38	Primary	—	Surface Water	—
NND-71	NND-71-SED	6/21/24 11:17	Primary	—	Sediment	—
NND-71	NND-71-SW	6/21/24 11:07	Primary	—	Surface Water	—
NND-72	NND-72-SED	6/21/24 10:36	Primary	—	Sediment	—
NND-72	NND-72-SW	6/21/24 10:26	Primary	—	Surface Water	—
NND-73	NND-73-SED	6/21/24 10:08	Primary	—	Sediment	—
NND-73	NND-73-SW	6/21/24 10:00	Primary	—	Surface Water	—
NND-74	NND-74-SED	6/21/24 9:41	Primary	—	Sediment	—
NND-74	NND-74-SW	6/21/24 9:35	Primary	—	Surface Water	—
NND-75	NND-75-SED	6/21/24 9:15	Primary	—	Sediment	—
NND-75	NND-75-SW	6/21/24 9:04	Primary	—	Surface Water	—
NND-76	NND-76-SED	6/21/24 8:43	Primary	—	Sediment	—
NND-76	NND-76-SW	6/21/24 8:37	Primary	—	Surface Water	—
NND-77	NND-77-SED	6/18/24 16:00	Primary	—	Sediment	—
NND-77	NND-77-SEDA	6/18/24 16:00	Field Duplicate	NND-77-SED	Sediment	—
NND-77	NND-77-SW	6/18/24 15:55	Primary	—	Surface Water	—
NND-77	NND-77-SWA	6/18/24 16:00	Field Duplicate	NND-77-SW	Surface Water	—
NND-78	NND-78-SED	6/18/24 15:23	Primary	—	Sediment	—
NND-78	NND-78-SW	6/18/24 15:23	Primary	—	Surface Water	—
NND-79	NND-79-SED	6/18/24 14:35	Primary	—	Sediment	—
NND-80	NND-80-SED	6/18/24 14:27	Primary	—	Sediment	—
NND-81	NND-81-SED	6/18/24 14:02	Primary	—	Sediment	—

Notes:

bgs = below ground surface

ID = Identification

Table 5-7. Flowage Easement Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
NND-57	NND-57-A	1/9/25 11:31	Primary	—	Surface Soil	0-0.5
NND-57	NND-57-B	1/9/25 11:36	Primary	—	Subsurface Soil	2-3
NND-57	NND-57-C	1/9/25 11:40	Primary	—	Subsurface Soil	7-8
NND-57	NND-57-D	1/9/25 11:44	Primary	—	Subsurface Soil	12-13
NND-57	NND-57-E	1/9/25 12:17	Primary	—	Subsurface Soil	17-18
NND-57	NND-57-EA	1/9/25 12:20	Field Duplicate	NND-57-E	Subsurface Soil	17-18
NND-57	NND-57-F	1/9/25 12:34	Primary	—	Subsurface Soil	22-23
NND-57	NND-57-G	1/9/25 12:39	Primary	—	Subsurface Soil	27-28
NND-57	NND-57-H	1/9/25 13:46	Primary	—	Subsurface Soil	37-38
NND-57	NND-57-GW	1/9/25 14:01	Primary	—	Groundwater	42.5
NND-58	NND-58-A	1/8/25 9:31	Primary	—	Surface Soil	0-0.5
NND-58	NND-58-B	1/8/25 10:26	Primary	—	Subsurface Soil	2-3
NND-58	NND-58-C	1/8/25 10:31	Primary	—	Subsurface Soil	7-8
NND-58	NND-58-D	1/8/25 10:34	Primary	—	Subsurface Soil	12-13
NND-58	NND-58-E	1/8/25 10:38	Primary	—	Subsurface Soil	17-18
NND-58	NND-58-F	1/8/25 10:49	Primary	—	Subsurface Soil	22-23
NND-58	NND-58-G	1/8/25 10:52	Primary	—	Subsurface Soil	27-28
NND-58	NND-58-H	1/8/25 14:05	Primary	—	Subsurface Soil	42-43
NND-58	NND-58-GW	1/8/25 14:53	Primary	—	Groundwater	47.5
NND-59	NND-59-A	1/7/25 12:01	Primary	—	Surface Soil	0-0.5
NND-59	NND-59-B	1/7/25 12:19	Primary	—	Subsurface Soil	2-3
NND-59	NND-59-C	1/7/25 12:24	Primary	—	Subsurface Soil	6-7
NND-59	NND-59-GW	1/7/25 12:50	Primary	—	Groundwater	11.5
NND-59	NND-59-GWA	1/7/25 12:50	Field Duplicate	NND-59-GW	Groundwater	11.5
NND-60	NND-60-A	12/20/24 14:35	Primary	—	Surface Soil	0-0.5
NND-60	NND-60-B	12/20/24 15:00	Primary	—	Subsurface Soil	2-3
NND-60	NND-60-C	12/20/24 15:02	Primary	—	Subsurface Soil	7-8
NND-60	NND-60-D	12/20/24 15:11	Primary	—	Subsurface Soil	12-13
NND-61	NND-61-A	12/20/24 11:13	Primary	—	Surface Soil	0-0.5
NND-61	NND-61-B	12/20/24 11:15	Primary	—	Subsurface Soil	2-3
NND-61	NND-61-C	12/20/24 12:34	Primary	—	Subsurface Soil	7-8
NND-61	NND-61-CA	12/20/24 12:35	Field Duplicate	NND-61-C	Subsurface Soil	7-8
NND-61	NND-61-D	12/20/24 12:44	Primary	—	Subsurface Soil	10-11
NND-61	NND-61-GW	12/20/24 13:17	Primary	—	Groundwater	14.5
NND-61	NND-61-GWA	12/20/24 13:17	Field Duplicate	NND-61-GW	Groundwater	14.5
NND-62	NND-62-A	12/21/24 8:34	Primary	—	Surface Soil	0-0.5
NND-62	NND-62-B	12/21/24 8:43	Primary	—	Subsurface Soil	2-3
NND-62	NND-62-BA	12/21/24 10:24	Field Duplicate	NND-62-B	Subsurface Soil	2-3
NND-62	NND-62-C	12/21/24 8:54	Primary	—	Subsurface Soil	7-8
NND-62	NND-62-D	12/21/24 8:58	Primary	—	Subsurface Soil	12-13
NND-62	NND-62-E	12/21/24 9:13	Primary	—	Subsurface Soil	17-18
NND-62	NND-62-F	12/21/24 10:05	Primary	—	Subsurface Soil	22-23
NND-62	NND-62-G	12/21/24 10:19	Primary	—	Subsurface Soil	27-28
NND-62	NND-62-GW	12/21/24 11:35	Primary	—	Groundwater	37.5

Table 5-7. Flowage Easement Soil and Groundwater Grab Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
NND-63	NND-63-A	7-Jan-2025	Primary	—	Surface Soil	0-0.5
NND-63	NND-63-B	7-Jan-2025	Primary	—	Subsurface Soil	2-3
NND-63	NND-63-C	7-Jan-2025	Primary	—	Subsurface Soil	7-8
NND-63	NND-63-GW	1/7/25 10:30	Primary	—	Groundwater	12.5
NND-64	NND-64-A	12/20/24 8:03	Primary	—	Surface Soil	0-0.5
NND-64	NND-64-B	12/20/24 8:20	Primary	—	Subsurface Soil	2-3
NND-64	NND-64-C	12/20/24 8:38	Primary	—	Subsurface Soil	7-8
NND-64	NND-64-D	12/20/24 9:03	Primary	—	Subsurface Soil	12-13
NND-64	NND-64-E	12/20/24 9:58	Primary	—	Subsurface Soil	17-18
NND-64	NND-64-F	12/20/24 10:04	Primary	—	Subsurface Soil	22-23
NND-64	NND-64-G	12/20/24 10:12	Primary	—	Subsurface Soil	27-28
NND-64	NND-64-GW	12/20/24 10:56	Primary	—	Groundwater	31.5
NND-65	NND-65-A	12/19/24 12:53	Primary	—	Surface Soil	0-0.5
NND-65	NND-65-B	12/19/24 13:03	Primary	—	Subsurface Soil	2-3
NND-65	NND-65-C	12/19/24 13:08	Primary	—	Subsurface Soil	7-8
NND-65	NND-65-CA	12/19/24 13:14	Field Duplicate	NND-65-C	Subsurface Soil	7-8
NND-65	NND-65-D	12/19/24 13:24	Primary	—	Subsurface Soil	12-13
NND-65	NND-65-GW	12/19/24 14:07	Primary	—	Groundwater	13
NND-66	NND-66-A	12/19/24 8:15	Primary	—	Surface Soil	0-0.5
NND-66	NND-66-B	12/19/24 8:35	Primary	—	Subsurface Soil	2-3
NND-66	NND-66-C	12/19/24 8:40	Primary	—	Subsurface Soil	7-8
NND-66	NND-66-D	12/19/24 8:45	Primary	—	Subsurface Soil	12-13
NND-66	NND-66-E	12/19/24 9:48	Primary	—	Subsurface Soil	15-16
NND-66	NND-66-F	12/19/24 9:51	Primary	—	Subsurface Soil	16-17
NND-66	NND-66-GW	12/19/24 10:44	Primary	—	Groundwater	18

Notes:

bgs = below ground surface

ID = Identification

Table 5-8. Well Installation Soil Sample Identification Summary

Event Time Frame	Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
Fall 2021	MW-RI08	MW-RI08-0.0-0.5	11/9/21 11:30	Primary	—	Surface Soil	0-0.5
Fall 2021	MW-RI08	MW-RI08-A-0.0-0.5	11/9/21 11:30	Field Duplicate	MW-RI08-0.0-0.5	Surface Soil	0-0.5
Fall 2021	MW-RI08	MW-RI08-15.5-16.0	11/9/21 11:57	Primary	—	Subsurface Soil	15.5-16.0
Fall 2021	MW-RI09	MW-RI09-0.0-0.5	11/10/21 13:37	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI22	MW-RI22-S	5/11/22 12:35	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI17	MW-RI17-S	5/11/22 17:38	Primary	—	Surface Soil	2-2.5
Spring 2022	MW-RI17	MW-RI17-B	5/12/22 11:33	Primary	—	Subsurface Soil	46.5-47
Spring 2022	MW-RI29	MW-RI29-S	5/12/22 16:19	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI58	MW-RI58-S	5/13/22 12:30	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI58	MW-RI58-SA	5/13/22 12:30	Field Duplicate	MW-RI58-S	Surface Soil	0-0.5
Spring 2022	MW-RI58	MW-RI58-B	5/16/22 14:43	Primary	—	Subsurface Soil	37-37.5
Spring 2022	MW-RI21	MW-RI21-S	5/17/22 11:30	Primary	—	Surface Soil	0.5-1
Spring 2022	MW-RI21	MW-RI21-B	5/17/22 15:15	Primary	—	Subsurface Soil	5-5.5
Spring 2022	MW-RI37	MW-RI37-S	5/18/22 12:12	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI37	MW-RI37-B	5/18/22 15:27	Primary	—	Subsurface Soil	78-78.5
Spring 2022	MW-RI30	MW-RI30-S	5/19/22 14:32	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI30	MW-RI30-B	5/19/22 17:50	Primary	—	Subsurface Soil	79-79.5
Spring 2022	MW-RI43	MW-RI43-S	5/24/22 9:21	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI43	MW-RI43-B	5/24/22 14:12	Primary	—	Subsurface Soil	64-64.5
Spring 2022	MW-RI43	MW-RI43-BA	5/24/22 14:12	Field Duplicate	MW-RI43-B	Subsurface Soil	64-64.5
Spring 2022	MW-RI56	MW-RI56-S	5/25/22 10:05	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI56	MW-RI56-B	5/25/22 12:13	—	—	Subsurface Soil	39.5-40
Spring 2022	MW-RI57	MW-RI57-S	5/26/22 9:10	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI57	MW-RI57-B	5/26/22 16:40	Primary	—	Subsurface Soil	94-94.5
Spring 2022	MW-RI31	MW-RI31-S	5/27/22 11:19	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI31	MW-RI31-B	5/27/22 13:27	Primary	—	Subsurface Soil	29-29.5
Spring 2022	MW-RI49	MW-RI49-S	5/31/22 13:40	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI49	MW-RI49-B	5/31/22 14:34	Primary	—	Subsurface Soil	20.5-21
Spring 2022	MW-RI49	MW-RI49-BA	5/31/22 14:34	Field Duplicate	MW-RI49-B	Subsurface Soil	20.5-21
Spring 2022	MW-RI02	MW-RI02-S	6/1/22 9:45	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI02	MW-RI02-B	6/1/22 11:30	Primary	—	Subsurface Soil	28-28.5
Spring 2022	MW-RI02	MW-RI02-BA	6/1/22 11:30	Field Duplicate	MW-RI02-B	Subsurface Soil	28-28.5
Spring 2022	MW-RI50	MW-RI50-S	6/1/22 15:57	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI50	MW-RI50-B	6/2/22 11:32	Primary	—	Subsurface Soil	58.5-59
Spring 2022	MW-RI23	MW-RI23-S	6/3/22 9:28	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI23	MW-RI23-SA	6/3/22 9:28	Field Duplicate	MW-RI23-S	Surface Soil	0-0.5
Spring 2022	MW-RI23	MW-RI23-B	6/3/22 11:23	Primary	—	Subsurface Soil	20.5-21
Spring 2022	MW-RI52	MW-RI52-S	6/6/22 10:03	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI52	MW-RI52-B	6/6/22 14:27	Primary	—	Subsurface Soil	52-52.5
Spring 2022	MW-RI39	MW-RI39-S	6/7/22 9:43	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI39	MW-RI39-B	6/7/22 14:25	Primary	—	Subsurface Soil	61-61.5
Spring 2022	MW-RI40	MW-RI40-S	6/7/22 16:38	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI40	MW-RI40-B	6/8/22 10:59	Primary	—	Subsurface Soil	46.5-47
Spring 2022	MW-RI53	MW-RI53-S	6/9/22 10:02	Primary	—	Surface Soil	0-0.5
Spring 2022	MW-RI53	MW-RI53-B	6/9/22 12:30	Primary	—	Subsurface Soil	46-46.5
Spring 2022	MW-RI07	MW-RI07-S	6/10/22 8:49	Primary	—	Surface Soil	2-2.5
Spring 2022	MW-RI07	MW-RI07-B	6/10/22 10:09	Primary	—	Subsurface Soil	10.5-11
Winter 2023	MW-RI06a	MW-RI06-S	3/13/23 15:20	Primary	—	Surface Soil	0.5-1
Winter 2023	MW-RI06a	MW-RI06-B	3/14/23 10:25	Primary	—	Subsurface Soil	61-61.5
Winter 2023	MW-RI06a	MW-RI06-BA	3/14/23 10:35	Field Duplicate	MW-RI06-B	Subsurface Soil	61-61.5
Winter 2023	MW-RI03	MW-RI03-S	3/14/23 14:40	Primary	—	Surface Soil	0-0.5
Winter 2023	MW-RI03	MW-RI03-B	3/14/23 14:55	Primary	—	Subsurface Soil	3.5-4

Table 5-8. Well Installation Soil Sample Identification Summary

Event Time Frame	Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
Winter 2023	MW-RI12	MW-RI12-S	3/15/23 9:58	Primary	—	Surface Soil	0-0.5
Winter 2023	MW-RI12	MW-RI12-SA	3/15/23 10:08	Field Duplicate	MW-RI12-S	Surface Soil	0-0.5
Winter 2023	MW-RI12	MW-RI12-B	3/15/23 10:50	Primary	—	Subsurface Soil	28.5-29
Winter 2023	MW-RI20	MW-RI20-S	3/15/23 15:35	Primary	—	Surface Soil	0-0.5
Winter 2023	MW-RI20	MW-RI20-B	3/16/23 9:48	Primary	—	Subsurface Soil	31-31.5
Winter 2023	MW-RI33	MW-RI33-S	3/20/23 10:36	Primary	—	Surface Soil	0-0.5
Winter 2023	MW-RI10	MW-RI10-S	3/23/23 13:18	Primary	—	Surface Soil	0-0.5
Winter 2023	MW-RI33	MW-RI33-B	3/23/23 16:55	Primary	—	Subsurface Soil	205-205.5
Winter 2023	MW-RI11	MW-RI11-S	3/24/23 15:33	Primary	—	Surface Soil	0-0.5
Winter 2023	MW-RI10	MW-RI10-B	3/24/23 17:01	Primary	—	Subsurface Soil	170-171.5
Winter 2023	MW-RI11	MW-RI11-B	3/24/23 17:15	Primary	—	Subsurface Soil	23-23.5
Fall 2024	MW-RI04	MW-RI04-S	12/17/24 13:45	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI04	MW-RI04-B	12/17/24 15:15	Primary	—	Subsurface Soil	55-60
Fall 2024	MW-RI05	MW-RI05-S	10/2/24 16:30	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI05	MW-RI05-SA	10/2/24 16:30	Field Duplicate	MW-RI05-S	Surface Soil	0-0.5
Fall 2024	MW-RI05	MW-RI05-B	10/2/24 16:59	Primary	—	Subsurface Soil	30-35
Fall 2024	MW-RI06b	MW-RI06B-S	12/4/24 9:58	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI13	MW-RI13-S	12/3/24 7:53	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI14	MW-RI14-S	7/23/24 15:52	Primary	—	Surface Soil	0-1
Fall 2024	MW-RI14	MW-RI14-B	7/24/24 13:48	Primary	—	Subsurface Soil	133-134
Fall 2024	MW-RI16	MW-RI16-S	11/7/24 13:45	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI16	MW-RI16-SA	11/7/24 13:45	Field Duplicate	MW-RI16-S	Surface Soil	0-0.5
Fall 2024	MW-RI16	MW-RI16-B	11/7/24 14:00	Primary	—	Subsurface Soil	35-40
Fall 2024	MW-RI19	MW-RI19-S	11/11/24 13:05	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI19	MW-RI19-B	11/14/24 16:30	Primary	—	Subsurface Soil	320-325
Fall 2024	MW-RI19	MW-RI19-BA	11/14/24 16:30	Field Duplicate	MW-RI19-B	Subsurface Soil	320-325
Fall 2024	MW-RI24	MW-RI24-S	8/2/24 10:04	Primary	—	Surface Soil	0-1
Fall 2024	MW-RI24	MW-RI24-B	8/6/24 15:25	Primary	—	Subsurface Soil	153-154
Fall 2024	MW-RI25	MW-RI25-S	8/7/24 10:35	Primary	—	Surface Soil	0-1
Fall 2024	MW-RI25	MW-RI25-B	8/8/24 9:35	Primary	—	Subsurface Soil	126-127
Fall 2024	MW-RI26	MW-RI26-S	7/30/24 12:45	Primary	—	Surface Soil	0-1
Fall 2024	MW-RI26	MW-RI26-B	7/30/24 13:43	Primary	—	Subsurface Soil	44-45
Fall 2024	MW-RI27	MW-RI27-S	10/15/24 7:10	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI34	MW-RI34-S	11/20/24 7:26	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI36	MW-RI36-S	7/25/24 14:14	Primary	—	Surface Soil	0-1
Fall 2024	MW-RI36	MW-RI36-B	7/25/24 15:20	Primary	—	Subsurface Soil	29-30
Fall 2024	MW-RI38	MW-RI38-S	7/25/24 9:03	Primary	—	Surface Soil	0-1
Fall 2024	MW-RI38	MW-RI38-B	7/25/24 9:55	Primary	—	Subsurface Soil	19-20
Fall 2024	MW-RI41	MW-RI41-S	10/1/24 8:50	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI42	MW-RI42-S	10/18/24 7:30	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI47	MW-RI47-S	10/22/24 14:45	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI47	MW-RI47-B	10/22/24 15:30	Primary	—	Subsurface Soil	25-30
Fall 2024	MW-RI51	MW-RI51-S	10/4/24 8:58	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI51	MW-RI51-B	10/7/24 15:10	Primary	—	Subsurface Soil	55-60
Fall 2024	MW-RI54	MW-RI54-S	7/26/24 8:40	Primary	—	Surface Soil	0-1
Fall 2024	MW-RI54	MW-RI54-B	7/29/24 15:41	Primary	—	Subsurface Soil	118-119
Fall 2024	MW-RI54	MW-RI54-BA	7/29/24 15:41	Field Duplicate	MW-RI54-B	Subsurface Soil	118-119
Fall 2024	MW-RI55	MW-RI55-S	7/30/24 15:55	Primary	—	Surface Soil	0-1
Fall 2024	MW-RI55	MW-RI55-B	8/1/24 13:45	Primary	—	Subsurface Soil	105-106
Fall 2024	MW-RI59	MW-RI59-S	12/19/24 8:10	Primary	—	Surface Soil	0-0.5
Fall 2024	MW-RI59	MW-RI59-B	12/19/24 12:10	Primary	—	Subsurface Soil	60-65
Fall 2024	MW-RI60	MW-RI60-S	7/23/24 9:21	Primary	—	Surface Soil	0-1

Table 5-8. Well Installation Soil Sample Identification Summary

Event Time Frame	Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate	Type of Sample	Sampled Interval (feet bgs)
Fall 2024	MW-RI60	MW-RI60-B	7/23/24 10:20	Primary	—	Subsurface Soil	19-20
January 2025	MW-RI15	MW-RI15-S	1/9/25 9:30	Primary	—	Surface Soil	0-0.5
January 2025	MW-RI18	MWRI18-S	1/16/25 9:25	Primary	—	Surface Soil	0-0.5
January 2025	MW-RI18	MWRI18-B	1/16/25 15:00	Primary	—	Subsurface Soil	153-154
January 2025	MW-RI32	MW-RI32-S	1/23/25 13:55	Primary	—	Surface Soil	0-0.5
January 2025	MW-RI32	MW-RI32-B	1/24/25 11:00	Primary	—	Subsurface Soil	236-237

Notes:

bgs = below ground surface

ID = Identification

Table 5-9. Existing Monitoring Well Construction Details

Well ID	Total Depth (feet btoc)	TOC Elevation (feet msl)	Screen Depth (feet btoc)	Pump Depth (feet btoc)	Casing PVC Diameter (inches)	Installation Date	RI Natural Gamma Log?	Aquifer
1212-MW-10	17.0	2434.88	5.5-15.5	10.5	2	5/21/1996	No	Unconsolidated Deposits
1212-MW-16	22.5	2436.37	5-15	10	2	4/18/2017	Yes	Unconsolidated Deposits
2035-MW-12	30.5	2429.64	17-27	22	2	9/3/2004	No	Unconsolidated Deposits
DP024-MW-01	15.0	2414.67	4.75-14.75	9.75	2	6/29/2016	No	Unconsolidated Deposits
MMW-1012-3	15.0	2431.24	5-15	10	2	8/10/2016	No	Unconsolidated Deposits
MMW-1012-4	15.0	2431.15	5-15	10	2	8/10/2016	No	Unconsolidated Deposits
MMW-1024-3	16.0	2434.60	6-16	11	2	8/3/2016	Yes	Unconsolidated Deposits
MMW-1028-4	15.0	2434.60	5-15	10	2	7/29/2016	Yes	Unconsolidated Deposits
MW-003	11.0	2403.21	3.5-9	9.05	2	10/20/1986	Yes	Unconsolidated Deposits
MW-039	45.0	NA	32.4-43.5	37.95	4	10/17/1988	Yes	Unconsolidated Deposits
MW-050	21.0	NA	6-16	11	2	10/26/1988	No	Unconsolidated Deposits
MW-063	105.0	2403.99	93.5-104	98.75	4	11/27/1988	Yes	Basalt A
MW-069	45.0	2391.23	35	45	4	5/16/1989	Yes	Unconsolidated Deposits
MW-074	185.7	2402.25	173.1-184.66	180.88	4	10/23/1989	No	Basalt B
MW-075	87.5	2394.91	76-87.5	81.75	4	10/26/1989	Yes	Basalt A
MW-077	96.0	2391.57	83.5-95	89.25	4	11/1/1989	No	Basalt A
MW-078	101.3	2405.07	87.5-95	93.15	4	11/6/1989	Yes	Basalt A
MW-082	82.5	2380.28	70-81.5	—	4	11/30/1989	Yes	Basalt A
MW-084	128.1	2414.16	115.4-126.9	121.15	4	12/6/1989	No	Basalt A
MW-094	153.8	2403.60	139.78-150.11	147.445	4	7/20/1990	Yes	Basalt A
MW-095	149.3	2402.59	136.67-147	144.335	4	7/24/1990	No	Basalt A
MW-096	145.5	2396.27	133.67-144	138.835	4	7/27/1990	No	Basalt A
MW-099	76.0	2411.05	65-76	70.5	4	8/8/1990	No	Basalt A
MW-101	201.6	2406.00	191.39-201.64	199.015	4	9/9/1990	No	Basalt B
MW-102	16.6	2411.48	6-16	11	2	8/21/1990	No	Unconsolidated Deposits
MW-115	182.0	2399.47	166-176	171	4	4/7/1991	No	Basalt B
MW-116	273.6	2400.51	240.5-252.4	248.95	4	12/17/1990	Yes	Basalt B
MW-117	166.0	2375.35	151.31-162.81	159.56	4	1/10/1991	No	Basalt A
MW-118	114.0	2384.52	97.5-109	103.25	4	1/13/1991	No	Basalt A
MW-119	204.0	NA	191-201.75	196.375	4	1/24/1991	No	Basalt A
MW-127	199.5	2375.30	177.4-187.4	182.4	4	4/17/1991	Yes	Basalt A
MW-135	221.5	2345.60	211-221.5	218.75	4	5/2/1991	No	Basalt A
MW-141	172.0	2407.30	158-168	163	4	7/24/1991	Yes	Basalt A
MW-151	31.5	NA	20-30	25	4	9/21/1991	Yes	Unconsolidated Deposits
MW-154	31.0	NA	20-30	25	4	9/22/1991	Yes	Basalt A
MW-165	60.0	2455.25	35-45	43.25	2	9/24/1991	No	Basalt A
MW-171	50.0	2461.62	20-30	27.62	2	10/22/1991	Yes	Basalt A
MW-190	17.5	2446.52	7-17	12	3	10/20/2001	No	Basalt A
MW-221	34.6	NA	24.6-34.6	29.6	2	NA	No	Basalt A
MW-232	28.0	2452.67	18-28	25.73	2	11/13/1995	No	Unconsolidated Deposits
MW-244	70.0	2403.15	57-67	62	2	12/1/1995	No	Basalt A
MW-245A	17.0	2399.33	10-15	14.73	2	9/19/2018	No	Unconsolidated Deposits
MW-257	71.0	2399.68	61-71	66	2	12/22/1997	No	Unconsolidated Deposits
MW-276	40.0	2434.16	15-35	25	2	7/7/2000	Yes	Unconsolidated Deposits
MW-278	42.8	2452.06	12.25-42.25	27.25	2	9/18/2001	Yes	Unconsolidated Deposits
MW-279	26.0	2454.01	10.5-25.5	18	2	9/19/2001	Yes	Unconsolidated Deposits
MW-289	17.5	2446.52	7-17	12	2	10/20/2001	No	Unconsolidated Deposits
MW-295	20.0	2439.96	7-17	14.72	2	11/1/2001	Yes	Unconsolidated Deposits
MW-296	50.5	2440.29	40-50	47.94	2	11/7/2001	No	Basalt A
MW-301	85.0	2435.80	75-85	82.8	2	5/9/2002	No	Basalt A
MW-302	56.0	2431.52	45-55	50	2	5/9/2002	No	Basalt A
MW-303	55.0	2437.94	44-54	49	2	5/10/2002	No	Basalt A
MW-306	31.0	NA	21-31	26	2	5/18/2004	No	Basalt A
MW-309	45.0	NA	35-45	40	2	12/13/2004	No	Basalt A
MW-310	47.0	2436.51	37-47	42	2	Unknown	Yes	Unconsolidated Deposits
MW-313	36.0	2427.81	26-36	31	2	7/27/2016	No	Unconsolidated Deposits
MW-324	30.0	2434.20	20-30	25	2	7/20/2016	No	Unconsolidated Deposits
MW-326	33.0	2416.75	23-33	28	2	Unknown	Yes	Unconsolidated Deposits
MW-343	45.0	2443.26	30-45	37.5	2	9/16/2010	Yes	Basalt A

Table 5-9. Existing Monitoring Well Construction Details

Well ID	Total Depth (feet btoc)	TOC Elevation (feet msl)	Screen Depth (feet btoc)	Pump Depth (feet btoc)	Casing PVC Diameter (inches)	Installation Date	RI Natural Gamma Log?	Aquifer
MW-353	36.0	2434.93	29-44	36.5	2	9/21/2010	No	Unconsolidated Deposits
MW-360	35.0	2456.95	25-35	30	2	9/24/2010	Yes	Basalt A
MW-365	40.0	2450.84	24-39	31.5	2	9/29/2010	No	Basalt A
MW-379	38.0	2443.49	28-38	33	2	10/12/2011	No	Basalt A
MW-381	54.0	2446.26	43-53	48	2	10/12/2011	No	Basalt A
MW-384	24.0	2442.98	13-23	18	2	10/14/2011	Yes	Unconsolidated Deposits
MW-385	38.4	2442.85	31.6-38.4	35	2	10/14/2011	No	Basalt A
MW-389	66.0	2435.50	55-65	60	2	10/18/2011	No	Basalt A
MW-398	58.5	2438.86	45.5-55.5	50.5	2	10/24/2011	No	Basalt A
MW-400	60.5	2447.34	48-58	53	2	10/25/2011	No	Basalt A
MW-401	23.5	2447.33	15-23	19	2	10/25/2011	Yes	Unconsolidated Deposits
MW-405	42.0	2436.45	32-42	37	2	10/31/2011	Yes	Basalt A
MW-409	66.0	2436.99	55.5-65.5	60.5	2	11/2/2011	No	Basalt A
MW-410	51.0	2444.21	39-49	44	2	11/3/2011	No	Basalt A
MW-412	60.0	2445.18	46-56	51	2	11/3/2011	Yes	Basalt A
MW-414	45.0	2445.35	34-44	39	2	12/16/2011	No	Basalt A
MW-415	49.9	2451.01	38-48	43	2	5/9/2012	Yes	Basalt A
MW-417	74.5	2437.49	63-73	68	2	5/10/2012	No	Basalt A
MW-421	63.5	2436.15	53-63	58	2	5/11/2012	Yes	Basalt A
MW-422	81.5	2418.57	65-80	72.5	2	5/14/2012	Yes	Unconsolidated Deposits
MW-424	66.0	2423.56	55-65	60	2	5/17/2012	Yes	Unconsolidated Deposits
MW-428	61.3	2435.54	50-60	55	2	5/23/2012	No	Basalt A
MW-430	76.0	2449.60	51-62	56.5	2	5/24/2012	Yes	Basalt A
MW-433	70.5	2434.13	60-70	65	2	5/29/2012	No	Unconsolidated Deposits
MW-434	47.5	2434.17	35-45	40	2	5/29/2012	Yes	Unconsolidated Deposits
MW-437	56.0	2434.83	43-53	48	2	6/1/2012	No	Basalt A
MW-444	14.0	NA	4-14	9	2	7/20/2012	Yes	Basalt A
MW-448	35.5	2447.39	25-35	30	2	7/23/2012	Yes	Basalt A
MW-449	80.5	2417.66	65-80	72.5	2	7/23/2012	No	Basalt A
MW-456	59.0	2444.82	46-56	51	2	5/8/2013	Yes	Basalt A
MW-458	44.0	2459.25	30-40	35	2	5/9/2013	No	Basalt A
MW-461	50.0	2436.40	39-49	44	2	5/15/2013	Yes	Basalt A
MW-467	35.3	2435.92	24.5-34.5	29.5	2	7/24/2013	No	Basalt A
MW-508	80.0	2413.94	69-79	74	2	9/23/2015	Yes	Basalt A
MW-514	104.0	2414.17	94-104	99	2	3/8/2016	No	Basalt A
MW-516	19.0	2425.11	6-19	12.5	2	6/13/2017	Yes	Unconsolidated Deposits
MW-534	26.5	2434.21	15.5-26.5	21	2	4/3/2018	Yes	Unconsolidated Deposits
MW-535	13.5	2428.90	7-12	9.5	2	9/14/2018	No	Unconsolidated Deposits
MW-539	78.0	2415.34	77-67	72	2	3/30/2020	No	Unconsolidated Deposits
MW-540	97.5	2410.93	96.5-86.5	91.5	2	3/20/2020	Yes	Unconsolidated Deposits
MW-543	55.0	2416.71	55-45	50	2	3/24/2020	Yes	Unconsolidated Deposits
MW-557	80.0	2429.94	56-66	61	2	12/6/2016	No	Basalt A
MW-564	32.5	2429.53	16-26	21	2	5/19/2017	Yes	Unconsolidated Deposits
MW-565	35.0	2427.13	21-31	26	2	5/18/2017	No	Unconsolidated Deposits
MW-601	172.0	2404.81	142-162	154.84	2	6/26/2020	No	Basalt A
NDA-03	87.0	2407.33	52-87	69.5	2	2/21/2012	Yes	Basalt A
OW-3	21.0	2409.71	7.5-17.5	12.5	2	1/19/1994	No	Unconsolidated Deposits
SS009-MW-03	14.5	2442.06	7-12	9.5	2	9/18/2018	No	Unconsolidated Deposits

Notes:

btoc = below top of casing

toc = top of casing

msl = mean sea level

ID = Identification

PVC = polyvinyl chloride

RI = Remedial Investigation

Table 5-10. New Monitoring Well Installation Summary

Well ID	Northing	Easting	Inner PVC Casing Elevation (feet amsl)	Monument Elevation (feet amsl)	Total Well Depth (feet bgs)	Well Screen Interval (feet bgs)	Aquifer	Date Completed	Flow Meter Logging
MW-RI02	245713.13	2431124.36	2422.81	2423.25	11.5	5-10	Unconsolidated Deposits	6/1/2022	N
MW-RI03	244700.00	2436484.03	2387.19	2387.78	17	5-15	Unconsolidated Deposits	3/14/2023	N
MW-RI04	237473.85	2435909.57	2368.26	2368.67	139	94-134	Basalt A	12/18/2024	Y
MW-RI05	233427.37	2430819.33	2373.79	2374.25	95	45-85	Basalt A	10/3/2024	Y
MW-RI06a	237136.11	2436027.95	2365.78	2366.16	50.4	40-50	Unconsolidated Deposits	3/14/2023	N
MW-RI06b	237485.62	2435908.51	2367.79	2368.31	314	269-309	Basalt B	12/17/2024	Y
MW-RI07	246305.50	2419974.62	2449.58	2449.91	13	7-12	Unconsolidated Deposits	6/10/2022	N
MW-RI08	238187.15	2429778.95	2405.55	2405.77	20	5-20	Unconsolidated Deposits	11/10/2021	N
MW-RI10	258700.35	2430668.45	2393.60	2394.03	192	180-190	Unconsolidated Deposits	3/23/2023	N
MW-RI11	250951.25	2420298.63	2430.11	2430.54	34	24-34	Unconsolidated Deposits	3/25/2023	N
MW-RI12	252722.72	2425514.58	2408.69	2409.31	36	29-34	Unconsolidated Deposits	3/15/2023	N
MW-RI13	252566.96	2425572.39	2410.31	2410.78	153	105-145	Basalt A	12/4/2024	N
MW-RI14	250712.35	2439053.73	2401.26	2401.78	124	114 -124	Unconsolidated Deposits	7/24/2024	N
MW-RI15	245946.97	2442091.40	2370.96	2371.31	139	94-134	Basalt A	1/23/2025	Y
MW-RI16	251062.87	2444226.03	2367.04	2367.56	109.5	64.5-104.5	Basalt A	11/8/2024	Y
MW-RI17	235759.62	2426405.34	2423.43	2423.92	40	33-38	Unconsolidated Deposits	5/11/2022	N
MW-RI18	238475.12	2423405.96	2438.86	2439.61	109	64-104	Unconsolidated Deposits	1/22/2025	Y
MW-RI19	261660.81	2433680.53	2388.29	2388.83	341	320-340	Basalt B	11/18/2024	Y
MW-RI20	250914.72	2432934.17	2402.31	2402.83	64	53-63	Unconsolidated Deposits	3/16/2023	N
MW-RI21	240158.46	2427002.44	2431.64	2432.05	14	8-13	Unconsolidated Deposits	5/17/2022	N
MW-RI22	248110.64	2433792.24	2400.91	2401.28	34	23-33	Unconsolidated Deposits	5/11/2022	N
MW-RI23	249444.95	2423549.51	2442.28	2442.73	22	11-21	Unconsolidated Deposits	6/3/2022	N
MW-RI24	249827.80	2438991.62	2405.48	2406.07	154.9	144.5-154.5	Unconsolidated Deposits	8/6/2024	N
MW-RI25	247694.61	2440427.69	2376.85	2377.45	124.33	114-124	Unconsolidated Deposits	8/8/2024	N
MW-RI26	250405.63	2440241.01	2396.62	2396.95	46	35-45	Unconsolidated Deposits	7/30/2024	N
MW-RI27	250711.34	2438989.32	2400.95	2401.59	278	233-273	Basalt B	10/17/2024	Y
MW-RI29	239967.55	2431340.68	2402.00	2402.37	18	7-17	Unconsolidated Deposits	5/12/2022	N
MW-RI30	235292.35	2416356.28	2447.18	2447.43	60.6	50-60	Unconsolidated Deposits	5/19/2022	N
MW-RI32	260394.21	2443818.97	2337.99	2338.31	95	58-98	Basalt A	1/28/2025	Y
MW-RI33	262092.67	2443887.39	2305.98	2306.60	218	208-218	Unconsolidated Deposits	3/24/2023	N
MW-RI34	261646.88	2443380.40	2315.51	2316.04	360	335-355	Basalt B	11/20/2024	N
MW-RI36	253647.24	2430851.10	2430.63	2431.03	20	10-20	Unconsolidated Deposits	7/25/2024	N
MW-RI37	236998.76	2419975.96	2439.80	2440.35	72.25	62-72	Unconsolidated Deposits	5/18/2022	N
MW-RI38	248698.87	2420384.60	2470.32	2470.87	20	10-20	Unconsolidated Deposits	7/25/2024	N
MW-RI39	246822.58	2421942.24	2446.86	2447.11	63.3	53-63	Unconsolidated Deposits	6/7/2022	N
MW-RI40	243970.00	2421383.95	2445.97	2446.62	26	15-25	Unconsolidated Deposits	6/8/2022	N
MW-RI41	248368.28	2433893.96	2410.79	2411.31	120	70-110	Basalt A	10/1/2024	Y
MW-RI42	245828.51	2434824.87	2407.92	2408.37	111	66-106	Basalt A	10/22/2024	N
MW-RI43	241775.43	2431198.22	2405.43	2405.70	50.5	40-50	Unconsolidated Deposits	5/24/2022	N
MW-RI47	245828.05	2434818.65	2408.08	2408.50	204	179-199	Basalt B	11/6/2024	Y

Table 5-10. New Monitoring Well Installation Summary

Well ID	Northing	Easting	Inner PVC Casing Elevation (feet amsl)	Monument Elevation (feet amsl)	Total Well Depth (feet bgs)	Well Screen Interval (feet bgs)	Aquifer	Date Completed	Flow Meter Logging
MW-RI49	240496.93	2419496.49	2475.00	2475.32	23	12-22	Unconsolidated Deposits	5/3/2022	N
MW-RI50	245753.97	2422339.66	2450.12	2450.61	22	16-21	Unconsolidated Deposits	6/2/2022	N
MW-RI51	250747.22	2427989.23	2413.86	2414.41	259.5	214-254	Basalt B	10/10/2024	Y
MW-RI52	249056.71	2427216.38	2425.49	2425.86	45	34-44	Unconsolidated Deposits	6/6/2022	N
MW-RI53	Surface monument destroyed prior to survey, well subsequently abandoned and replaced.				18	7-17	Unconsolidated Deposits	6/9/2022	N
MW-RI53	249837.41	2426215.18	2421.15	2421.15	18	7-17	Unconsolidated Deposits	7/15/2025	N
MW-RI54	248699.53	2440453.13	2386.97	2387.49	110.33	100-110	Unconsolidated Deposits	7/30/2024	N
MW-RI55	249309.81	2439926.06	2394.66	2395.25	110.4	100-110	Unconsolidated Deposits	8/1/2024	N
MW-RI56	241059.91	2431220.52	2401.98	2402.26	15.5	4-14	Unconsolidated Deposits	6/9/2022	N
MW-RI57	236075.06	2415967.24	2446.84	2447.26	24	13-23	Unconsolidated Deposits	5/27/2022	N
MW-RI58	245934.01	2429532.49	2427.16	2427.51	34	23 - 33	Unconsolidated Deposits	5/12/2022	N
MW-RI59	256026.74	2438311.12	2380.39	2381.05	145	110-140	Basalt A	1/7/2025	N
MW-RI60	251779.07	2446085.93	2356.17	2356.79	15.5	5-15	Unconsolidated Deposits	7/23/2024	N

Notes:

All wells were completed as flush mount.

amsl = above mean sea level

bgs = below ground surface

btoc = below top of casing

toc = top of casing

amsl = above mean sea level

PVC = polyvinyl chloride

RI = Remedial Investigation

ID = Identification

Table 5-11. Round 1 – Groundwater Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate
1212-MW-16	FGW-E-01	6/24/21 14:06	Primary	—
1212-MW-16	FGW-E-29	6/24/21 14:06	Field Duplicate	FGW-E-01
2035-MW-12	FGW-E-02	6/23/21 14:36	Primary	—
MW-039	FGW-E-33	6/22/21 9:29	Primary	—
MW-050	FGW-E-03	6/23/21 11:24	Primary	—
MW-063	FGW-E-34	6/24/21 14:10	Primary	—
MW-075	FGW-E-35	6/24/21 16:15	Primary	—
MW-077	FGW-E-36	6/24/21 17:09	Primary	—
MW-084	FGW-E-37	6/25/21 13:27	Primary	—
MW-102	FGW-E-04	6/23/21 9:29	Primary	—
MW-102	FGW-E-05	6/23/21 9:29	Field Duplicate	FGW-E-04
MW-115	FGW-E-38	6/25/21 8:27	Primary	—
MW-118	FGW-E-39	6/25/21 12:44	Primary	—
MW-119	FGW-E-40	6/24/21 9:57	Primary	—
MW-127	FGW-E-41	6/25/21 10:48	Primary	—
MW-141	FGW-E-43	6/24/21 12:41	Primary	—
MW-141	FGW-E-44	6/24/21 12:41	Field Duplicate	FGW-E-43
MW-151	FGW-E-06	6/23/21 10:10	Primary	—
MW-154	FGW-E-07	6/23/21 10:53	Primary	—
MW-221	FGW-E-08	6/22/21 9:55	Primary	—
MW-244	FGW-E-45	6/24/21 10:53	Primary	—
MW-257	FGW-E-09	6/24/21 16:24	Primary	—
MW-279	FGW-E-10	6/23/21 15:49	Primary	—
MW-302	FGW-E-46	6/23/21 9:03	Primary	—
MW-303	FGW-E-11	6/22/21 11:20	Primary	—
MW-306	FGW-E-12	6/23/21 16:57	Primary	—
MW-309	FGW-E-47	6/23/21 10:37	Primary	—
MW-310	FGW-E-48	6/22/21 11:35	Primary	—
MW-326	FGW-E-13	6/22/21 16:30	Primary	—
MW-353	FGW-E-49	6/22/21 12:32	Primary	—
MW-360	FGW-E-14	6/23/21 12:27	Primary	—
MW-398	FGW-E-15	6/24/21 10:44	Primary	—
MW-400	FGW-E-16	6/24/21 9:16	Primary	—
MW-401	FGW-E-17	6/24/21 9:51	Primary	—
MW-405	FGW-E-50	6/22/21 13:53	Primary	—
MW-409	FGW-E-18	6/22/21 15:15	Primary	—
MW-414	FGW-E-19	6/24/21 11:31	Primary	—
MW-415	FGW-E-51	6/22/21 15:02	Primary	—
MW-428	FGW-E-21	6/24/21 12:13	Primary	—
MW-428	FGW-E-22	6/24/21 12:13	Field Duplicate	FGW-E-21
MW-433	FGW-E-23	6/23/21 14:43	Primary	—

Table 5-11. Round 1 – Groundwater Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate
MW-434	FGW-E-24	6/23/21 15:32	Primary	—
MW-437	FGW-E-52	6/23/21 13:41	Primary	—
MW-444	FGW-E-25	6/24/21 14:44	Primary	—
MW-444	FGW-E-26	6/24/21 14:44	Field Duplicate	FGW-E-25
MW-448	FGW-E-53	6/23/21 11:56	Primary	—
MW-461	FGW-E-27	6/22/21 14:00	Primary	—
MW-467	FGW-E-28	6/22/21 17:15	Primary	—
MW-540	FGW-E-54	6/25/21 10:51	Primary	—
MW-543	FGW-E-30	6/25/21 9:44	Primary	—
NDA-03	FGW-E-55	6/24/21 15:15	Primary	—
SS009-MW-03	FGW-E-31	6/24/21 8:24	Primary	—

Notes:

ID = Identification

Table 5-12. Round 2 – Groundwater Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate
1212-MW-10	FGW-E-123	8/12/21 11:58	Primary	—
DP024-MW-01	FGW-E-68	8/11/21 12:23	Primary	—
MMW-1024-3	FGW-E-81	8/11/21 16:18	Primary	—
MMW-1028-4	FGW-E-69	8/11/21 14:10	Primary	—
MW-003	FGW-E-65	8/11/21 13:08	Primary	—
MW-003	FGW-E-66	8/11/21 13:08	Field Duplicate	FGW-E-65
MW-074	FGW-E-103	8/12/21 11:25	Primary	—
MW-078	FGW-E-104	8/10/21 15:08	Primary	—
MW-082	FGW-E-106	8/10/21 13:09	Primary	—
MW-082	FGW-E-107	8/10/21 13:09	Field Duplicate	FGW-E-106
MW-094	FGW-E-108	8/12/21 13:58	Primary	—
MW-095	FGW-E-109	8/9/21 17:13	Primary	—
MW-096	FGW-E-105	8/12/21 12:20	Primary	—
MW-099	FGW-E-110	8/12/21 9:11	Primary	—
MW-101	FGW-E-111	8/10/21 15:54	Primary	—
MW-116	FGW-E-112	8/10/21 12:04	Primary	—
MW-117	FGW-E-113	8/10/21 9:15	Primary	—
MW-135	FGW-E-114	8/10/21 11:00	Primary	—
MW-165	FGW-E-70	8/11/21 11:35	Primary	—
MW-165	FGW-E-71	8/11/21 11:35	Field Duplicate	FGW-E-70
MW-171	FGW-E-72	8/11/21 10:20	Primary	—
MW-171	FGW-E-73	8/11/21 10:20	Field Duplicate	FGW-E-72
MW-232	FGW-E-74	8/9/21 17:27	Primary	—
MW-245A	FGW-E-75	8/11/21 15:25	Primary	—
MW-245A	FGW-E-76	8/11/21 15:25	Field Duplicate	FGW-E-75
MW-276	FGW-E-77	8/10/21 10:47	Primary	—
MW-278	FGW-E-115	8/12/21 10:47	Primary	—
MW-295	FGW-E-78	8/10/21 11:50	Primary	—
MW-296	FGW-E-79	8/10/21 12:12	Primary	—
MW-301	FGW-E-80	8/9/21 15:45	Primary	—
MW-313	FGW-E-82	8/9/21 10:47	Primary	—
MW-343	FGW-E-83	8/11/21 17:34	Primary	—
MW-365	FGW-E-84	8/10/21 13:25	Primary	—
MW-379	FGW-E-101	8/11/21 18:20	Primary	—
MW-381	FGW-E-93	8/11/21 17:38	Primary	—
MW-384	FGW-E-85	8/11/21 18:06	Primary	—
MW-385	FGW-E-86	8/9/21 14:07	Primary	—
MW-385	FGW-E-87	8/9/21 14:07	Field Duplicate	FGW-E-86
MW-389	FGW-E-88	8/11/21 15:28	Primary	—
MW-410	FGW-E-89	8/9/21 14:49	Primary	—
MW-412	FGW-E-90	8/9/21 16:44	Primary	—

Table 5-12. Round 2 – Groundwater Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate
MW-417	FGW-E-116	8/11/21 10:26	Primary	—
MW-421	FGW-E-91	8/9/21 11:53	Primary	—
MW-422	FGW-E-117	8/9/21 11:05	Primary	—
MW-424	FGW-E-118	8/9/21 14:50	Primary	—
MW-430	FGW-E-92	8/10/21 12:58	Primary	—
MW-449	FGW-E-119	8/9/21 10:07	Primary	—
MW-456	FGW-E-94	8/9/21 15:38	Primary	—
MW-458	FGW-E-67	8/11/21 11:07	Primary	—
MW-508	FGW-E-95	8/9/21 11:57	Primary	—
MW-514	FGW-E-120	8/9/21 13:00	Primary	—
MW-516	FGW-E-96	8/12/21 8:44	Primary	—
MW-534	FGW-E-97	8/11/21 17:04	Primary	—
MW-539	FGW-E-121	8/9/21 13:51	Primary	—
MW-557	FGW-E-98	8/10/21 9:56	Primary	—
MW-564	FGW-E-99	8/9/21 9:31	Primary	—
MW-565	FGW-E-100	8/10/21 9:18	Primary	—
MW-601	FGW-E-122	8/12/21 10:28	Primary	—
OW-3	FGW-E-102	8/11/21 16:10	Primary	—

Notes:

ID = Identification

Table 5-13. Round 3 – Groundwater Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate
MW-RI02	FGW-N-01	3/9/23 10:11	Primary	—
MW-RI07	FGW-N-02	3/10/23 10:11	Primary	—
MW-RI08	FGW-N-03	3/10/23 13:14	Primary	—
MW-RI17	FGW-N-04	3/9/23 13:02	Primary	—
MW-RI21	FGW-N-05	3/9/23 14:02	Primary	—
MW-RI22	FGW-N-06	3/21/23 8:43	Primary	—
MW-RI23	FGW-N-07	3/7/23 10:15	Primary	—
MW-RI29	FGW-N-08	3/9/23 11:49	Primary	—
MW-RI29	FGW-N-09	3/9/23 11:59	Field Duplicate	FGW-N-08
MW-RI30	FGW-N-10	3/8/23 14:12	Primary	—
MW-RI37	FGW-N-11	3/8/23 12:20	Primary	—
MW-RI39	FGW-N-12	3/10/23 10:42	Primary	—
MW-RI40	FGW-N-13	3/9/23 18:31	Primary	—
MW-RI43	FGW-N-14	3/8/23 8:55	Primary	—
MW-RI49	FGW-N-15	3/8/23 16:47	Primary	—
MW-RI49	FGW-N-21	3/8/23 16:57	Field Duplicate	FGW-N-15
MW-RI50	FGW-N-16	3/8/23 18:15	Primary	—
MW-RI52	FGW-N-17	3/7/23 13:25	Primary	—
MW-RI56	FGW-N-19	3/8/23 10:45	Primary	—
MW-RI57	FGW-N-20	3/8/23 15:40	Primary	—
MW-RI58	FGW-N-22	3/7/23 11:05	Primary	—

Notes:

ID = Identification

Table 5-14. Round 4 – Groundwater Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate
2160-MW12	FGW-E-142	4/10/23 17:03	Primary	—
DP064-MW1	FGW-E-140	4/11/23 17:48	Primary	—
LF002-INF	FGW-E-133	4/13/23 8:43	Primary	—
MW-055	FGW-E-137	4/10/23 15:07	Primary	—
MW-069	FGW-E-134	4/13/23 9:50	Primary	—
MW-166	FGW-E-138	4/14/23 9:10	Primary	—
MW-177	FGW-E-139	4/14/23 8:18	Primary	—
MW-197	FGW-E-141	4/14/23 11:20	Primary	—
MW-289	FGW-E-136	4/11/23 16:28	Primary	—
MW-RI03	FGW-N-23	4/12/23 14:20	Primary	—
MW-RI06a	FGW-N-24	4/13/23 13:00	Primary	—
MW-RI06a	FGW-N-25	4/13/23 13:10	Field Duplicate	FGW-N-24
MW-RI10	FGW-N-26	4/13/23 15:10	Primary	—
MW-RI11	FGW-N-27	4/12/23 12:42	Primary	—
MW-RI12	FGW-N-28	4/13/23 15:56	Primary	—
MW-RI20	FGW-N-29	4/12/23 16:49	Primary	—
WP036-MW04D	FGW-E-145	4/12/23 10:48	Primary	—
WP036-MW04S	FGW-E-143	4/12/23 9:40	Primary	—
WP036-MW04S	FGW-E-144	4/12/23 9:45	Field Duplicate	FGW-E-143

Notes:

ID = Identification

Table 5-15. Round 5 – Groundwater Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate
1212-MW-16	FGW-E-166	1/8/25 13:35	Primary	—
2160-MW-12	FGW-E-167	1/8/25 15:16	Primary	—
MMW-1012-3	FGW-E-169	1/16/25 11:09	Primary	—
MMW-1012-3	FGW-E-179	1/16/25 11:09	Field Duplicate	FGW-E-169
MMW-1012-4	FGW-E-170	1/16/25 12:52	Primary	—
MW-069	FGW-E-146	1/14/25 15:05	Primary	—
MW-074	FGW-E-147	1/14/25 12:32	Primary	—
MW-075	FGW-E-148	1/14/25 13:45	Primary	—
MW-078	FGW-E-149	1/21/25 12:17	Primary	—
MW-101	FGW-E-150	1/13/25 15:46	Primary	—
MW-115	FGW-E-151	1/13/25 14:25	Primary	—
MW-115	FGW-E-152	1/13/25 14:30	Field Duplicate	FGW-E-151
MW-127	FGW-E-153	1/14/25 11:15	Primary	—
MW-141	FGW-E-154	1/13/25 12:15	Primary	—
MW-154	FGW-E-171	1/14/25 14:35	Primary	—
MW-171	FGW-E-172	1/15/25 15:42	Primary	—
MW-190	FGW-E-155	1/29/25 11:10	Primary	—
MW-257	FGW-E-156	1/17/25 9:40	Primary	—
MW-289	FGW-E-173	1/10/25 10:50	Primary	—
MW-301	FGW-E-157	1/16/25 16:24	Primary	—
MW-313	FGW-E-158	1/14/25 17:05	Primary	—
MW-324	FGW-E-159	1/16/25 10:42	Primary	—
MW-343	FGW-E-160	1/12/25 12:02	Primary	—
MW-384	FGW-E-174	1/10/25 12:00	Primary	—
MW-430	FGW-E-161	1/16/25 15:10	Primary	—
MW-444	FGW-E-175	1/10/25 10:33	Primary	—
MW-467	FGW-E-162	1/16/25 12:06	Primary	—
MW-508	FGW-E-164	1/15/25 16:55	Primary	—
MW-508	FGW-N-64	1/15/25 17:00	Field Duplicate	FGW-E-164
MW-535	FGW-E-176	1/16/25 16:10	Primary	—
MW-543	FGW-E-165	1/23/25 12:15	Primary	—
MW-RI02	FGW-N-73	1/15/25 10:00	Primary	—
MW-RI03	FGW-N-69	1/8/25 11:25	Primary	—
MW-RI04	FGW-N-30	1/17/25 11:24	Primary	—
MW-RI05	FGW-N-56	1/16/25 13:12	Primary	—
MW-RI06a	FGW-N-31	1/21/25 16:48	Primary	—
MW-RI06b	FGW-N-32	1/28/25 13:15	Primary	—
MW-RI07	FGW-N-75	1/13/25 15:55	Primary	—
MW-RI10	FGW-N-33	1/10/25 15:08	Primary	—
MW-RI10	FGW-N-40	1/10/25 15:13	Field Duplicate	FGW-N-33
MW-RI13	FGW-N-36	1/16/25 11:03	Primary	—
MW-RI15	FGW-N-38	1/29/25 9:35	Primary	—
MW-RI16	FGW-N-39	1/8/25 15:31	Primary	—

Table 5-15. Round 5 – Groundwater Sample Identification Summary

Location	Sample ID	Sample Date and Time	Sample Type	Primary Sample of Field Duplicate
MW-RI17	FGW-N-57	1/12/25 15:11	Primary	—
MW-RI18	FGW-N-58	1/30/25 10:45	Primary	—
MW-RI19	FGW-N-41	1/28/25 9:40	Primary	—
MW-RI20	FGW-N-42	1/10/25 9:25	Primary	—
MW-RI21	FGW-N-76	1/9/25 15:35	Primary	—
MW-RI21	FGW-N-74	1/9/25 15:40	Field Duplicate	FGW-N-76
MW-RI22	FGW-N-59	1/15/25 13:30	Primary	—
MW-RI23	FGW-N-77	1/9/25 12:25	Primary	—
MW-RI25	FGW-N-44	1/7/25 16:10	Primary	—
MW-RI26	FGW-N-45	1/6/25 15:15	Primary	—
MW-RI27	FGW-N-46	1/28/25 11:15	Primary	—
MW-RI29	FGW-N-78	1/9/25 13:45	Primary	—
MW-RI29	FGW-E-168	1/9/25 13:50	Field Duplicate	FGW-N-78
MW-RI30	FGW-N-60	1/17/25 11:24	Primary	—
MW-RI30	FGW-E-163	1/17/25 11:28	Field Duplicate	FGW-N-60
MW-RI32	FGW-N-47	1/30/25 14:25	Primary	—
MW-RI34	FGW-N-49	1/27/25 14:30	Primary	—
MW-RI36	FGW-N-70	1/8/25 14:14	Primary	—
MW-RI37	FGW-N-61	1/16/25 17:12	Primary	—
MW-RI38	FGW-N-71	1/7/25 14:50	Primary	—
MW-RI39	FGW-N-62	1/11/25 15:22	Primary	—
MW-RI40	FGW-N-79	1/9/25 9:48	Primary	—
MW-RI41	FGW-N-63	1/15/25 15:12	Primary	—
MW-RI42	FGW-N-50	1/9/25 9:22	Primary	—
MW-RI42	FGW-N-51	1/9/25 9:27	Field Duplicate	FGW-N-50
MW-RI43	FGW-N-65	1/16/25 15:16	Primary	—
MW-RI47	FGW-N-52	1/9/25 11:00	Primary	—
MW-RI49	FGW-N-80	1/15/25 13:35	Primary	—
MW-RI49	FGW-N-85	1/15/25 13:35	Field Duplicate	FGW-N-80
MW-RI50	FGW-N-81	1/9/25 11:00	Primary	—
MW-RI51	FGW-N-66	1/28/25 14:55	Primary	—
MW-RI52	FGW-N-67	1/10/25 15:10	Primary	—
MW-RI54	FGW-N-53	1/8/25 12:25	Primary	—
MW-RI55	FGW-N-54	1/6/25 16:23	Primary	—
MW-RI56	FGW-N-83	1/14/25 16:00	Primary	—
MW-RI57	FGW-N-84	1/15/25 16:10	Primary	—
MW-RI59	FGW-N-55	1/15/25 11:29	Primary	—
MW-RI60	FGW-N-68	1/8/25 13:56	Primary	—
MW-RI60	FGW-N-72 ⁽¹⁾	1/8/25 16:02	Primary	—
WP036-MW01S	FGW-E-178	1/30/25 8:45	Primary	—

Notes:

ID = Identification

(1) Unintentional resample

Table 5-16. Seasonal High and Seasonal Low Transducer Groundwater Elevations

Well ID	Seasonal High Groundwater Elevation (feet AMSL) 3/4/2024*	Seasonal Low Groundwater Elevation (feet AMSL) 11/4/2024*	Aquifer
1212- MW-16	2430.48	2428.59	Unconsolidated Deposits
2035-MW-12	2419.95	2418.49	Unconsolidated Deposits
DP024-MW-01	2408.40	2400.81	Unconsolidated Deposits
MMW-1024-3	2424.72	2424.22	Unconsolidated Deposits
MMW-1028-4	2426.38	2425.46	Unconsolidated Deposits
MW-003	2398.46	2393.83	Unconsolidated Deposits
MW-050	NR	2393.39	Unconsolidated Deposits
MW-063	2346.55	2342.91	Basalt A
MW-074	2262.96	2263.17	Basalt B
MW-075	2350.50	2352.60	Basalt A
MW-077	2370.85	2370.23	Basalt A
MW-078	2322.37	NR	Basalt A
MW-082	2346.39	2345.39	Basalt A
MW-084	2331.33	NR	Basalt A
MW-094	2375.48	NR	Basalt A
MW-095	2360.77	2360.47	Basalt A
MW-096	2372.04	2371.97	Basalt A
MW-099	2407.24	2404.04	Basalt A
MW-101	2257.16	NR	Basalt B
MW-102	2405.51	2405.75	Unconsolidated Deposits
MW-115	2252.12	NR	Basalt B
MW-116	2252.71	NR	Basalt B
MW-117	2312.52	2311.03	Basalt A
MW-127	2290.91	2288.81	Basalt A
MW-135	2252.92	2251.07	Basalt A
MW-141	2308.71	2308.19	Basalt A
MW-154	NR	2397.80	Basalt A
MW-165	2446.01	2440.85	Basalt A
MW-171	2457.07	2452.10	Basalt A
MW-232	2442.53	2436.43	Unconsolidated Deposits
MW-244	2392.24	2388.73	Basalt A
MW-245a	2395.02	2392.48	Unconsolidated Deposits
MW-257	2390.27	2387.71	Unconsolidated Deposits
MW-276	2428.61	2426.95	Unconsolidated Deposits
MW-278	2440.01	2436.88	Unconsolidated Deposits
MW-279	2433.72	2431.55	Unconsolidated Deposits
MW-295	2426.69	2425.69	Unconsolidated Deposits
MW-296	2436.22	2433.99	Basalt A
MW-301	2401.63	2400.37	Basalt A
MW-302	2399.86	2395.23	Basalt A

Table 5-16. Seasonal High and Seasonal Low Transducer Groundwater Elevations

Well ID	Seasonal High Groundwater Elevation (feet AMSL) 3/4/2024*	Seasonal Low Groundwater Elevation (feet AMSL) 11/4/2024*	Aquifer
MW-303	2417.95	2415.71	Basalt A
MW-313	2403.21	2398.01	Unconsolidated Deposits
MW-326	2394.99	2392.27	Unconsolidated Deposits
MW-343	2434.21	2432.63	Basalt A
MW-353	2411.31	2410.64	Unconsolidated Deposits
MW-365	2443.44	2439.24	Basalt A
MW-379	2436.74	2434.51	Basalt A
MW-381	2436.94	2434.73	Basalt A
MW-384	2435.21	2433.35	Unconsolidated Deposits
MW-385	2437.29	2435.02	Basalt A
MW-388	2415.89	2413.84	Basalt A
MW-400	2436.55	2434.32	Basalt A
MW-401	2430.82	2429.94	Unconsolidated Deposits
MW-405	2424.59	2423.03	Basalt A
MW-409	2418.40	2416.36	Basalt A
MW-410	2437.93	2435.60	Basalt A
MW-412	2439.75	2437.09	Basalt A
MW-414	2439.42	2436.80	Basalt A
MW-415	2442.84	2438.96	Basalt A
MW-417	2403.31	2403.44	Basalt A
MW-421	2409.52	2409.06	Basalt A
MW-422	2382.63	2382.22	Unconsolidated Deposits
MW-424	2393.54	2394.16	Unconsolidated Deposits
MW-428	2436.58	2434.73	Basalt A
MW-430	2443.13	2439.22	Basalt A
MW-433	2404.64	2404.87	Unconsolidated Deposits
MW-434	2404.20	2404.57	Unconsolidated Deposits
MW-444	2417.98	2413.77	Basalt A
MW-448	2443.17	2440.44	Basalt A
MW-449	2391.09	2380.66	Basalt A
MW-456	2437.53	2435.25	Basalt A
MW-458	2448.13	2440.22	Basalt A
MW-461	2407.79	2407.02	Basalt A
MW-467	2428.34	2427.00	Basalt A
MW-508	2382.57	2383.05	Basalt A
MW-514	2383.21	2383.41	Basalt A
MW-516	2418.35	2415.76	Unconsolidated Deposits
MW-539	2384.45	2384.74	Unconsolidated Deposits
MW-540	2381.99	2381.63	Unconsolidated Deposits
MW-557	2419.02	2417.15	Basalt A

Table 5-16. Seasonal High and Seasonal Low Transducer Groundwater Elevations

Well ID	Seasonal High Groundwater Elevation (feet AMSL) 3/4/2024*	Seasonal Low Groundwater Elevation (feet AMSL) 11/4/2024*	Aquifer
MW-564	2412.57	2410.69	Unconsolidated Deposits
MW-565	2405.69	2405.32	Unconsolidated Deposits
NDA-03	2361.77	2361.62	Basalt A
OW-3	2397.68	2396.15	Unconsolidated Deposits
SS009-MW-03	2434.12	2433.49	Unconsolidated Deposits
MW-601	2320.05	NR	Basalt A
MW-RI26	NR	2371.58	Unconsolidated Deposits

Notes:

ID = Identification

NR = Not Recorded

*Groundwater elevation values were calculated using barometrically corrected transducer water level and surveyed top of casing elevations (feet AMSL) and, in few instances, surveyed ground surface elevations and recorded well installation details; values selected from the first transducer data record from the seasonal high (3/4/2024) and seasonal low (11/4/2024) dates for each well (see additional discussion in Section 5.8.3)

Table 5-17. January 2025 Transducer and Static Groundwater Elevations

Well ID	Sample Date	First Tier⁽¹⁾: Transducer Groundwater Elevation from Sample Date (feet AMSL)	Second Tier: Static Groundwater Elevation from Sample Date (feet AMSL)⁽²⁾	Third Tier: Transducer Groundwater Elevation for 1/15/2025	Aquifer
1212-MW-16	1/8/2025	2430.92	2431.14		Unconsolidated Deposits
2035-MW-12				2420.49	Unconsolidated Deposits
2160-MW-12	1/8/2025		2427.87		Unconsolidated Deposits
DP024-MW-01				2408.20	Unconsolidated Deposits
MMW-1012-3	1/16/2025		2423.36		Unconsolidated Deposits
MMW-1012-4	1/16/2025		2424.76		Unconsolidated Deposits
MMW-1024-3				2424.81	Unconsolidated Deposits
MMW-1028-4				2426.76	Unconsolidated Deposits
MW-003				2397.94	Unconsolidated Deposits
MW-050				2396.22	Unconsolidated Deposits
MW-063				2342.39	Basalt A
MW-069	1/14/2025		2372.26		Unconsolidated Deposits
MW-074	1/14/2025	2262.97	2262.69	2262.98	Basalt B
MW-075	1/14/2025	2354.10	2355.19	2354.38	Basalt A
MW-077				2372.67	Basalt A
MW-078	1/21/2025		2329.95		Basalt A
MW-082				2346.57	Basalt A
MW-095				2361.83	Basalt A
MW-096				2373.85	Basalt A
MW-099				2407.38	Basalt A
MW-101	1/13/2025		2257.93		Basalt B
MW-102				2407.01	Unconsolidated Deposits
MW-115	1/13/2025		2254.68		Basalt B
MW-117				2312.21	Basalt A
MW-127	1/14/2025	2290.96	2291.17	2290.80	Basalt A
MW-135				2255.44	Basalt A
MW-141	1/13/2025	2308.38	2306.40	2308.44	Basalt A
MW-154	1/14/2025	2401.09		2401.06	Basalt A
MW-165				2445.54	Basalt A
MW-171	1/15/2025	2455.30	2455.46	2455.30	Basalt A
MW-190	1/29/2025		2417.91		Basalt A
MW-232				2442.37	Unconsolidated Deposits
MW-244				2391.21	Basalt A
MW-245a				2395.05	Unconsolidated Deposits
MW-257	1/17/2025	2389.47	2389.47	2389.84	Unconsolidated Deposits
MW-276				2428.64	Unconsolidated Deposits
MW-278				2440.13	Unconsolidated Deposits
MW-279				2434.34	Unconsolidated Deposits
MW-289	1/10/2025		2434.64		Unconsolidated Deposits
MW-295				2426.88	Unconsolidated Deposits
MW-296				2436.02	Basalt A
MW-301	1/16/2025	2399.51	2399.41	2401.45	Basalt A
MW-302				2398.86	Basalt A
MW-303				2416.75	Basalt A
MW-313	1/14/2025	2400.80	2401.00	2401.14	Unconsolidated Deposits
MW-324	1/16/2025		2412.07		Unconsolidated Deposits
MW-326				2396.34	Unconsolidated Deposits
MW-343	1/12/2025		2434.32	2434.39	Basalt A
MW-353				2411.07	Unconsolidated Deposits
MW-365				2443.34	Basalt A

Table 5-17. January 2025 Transducer and Static Groundwater Elevations

Well ID	Sample Date	First Tier⁽¹⁾: Transducer Groundwater Elevation from Sample Date (feet AMSL)	Second Tier: Static Groundwater Elevation from Sample Date (feet AMSL)⁽²⁾	Third Tier: Transducer Groundwater Elevation for 1/15/2025	Aquifer
MW-379				2436.50	Basalt A
MW-381				2436.71	Basalt A
MW-384	1/10/2025	2435.63	2435.47	2435.57	Unconsolidated Deposits
MW-385				2436.98	Basalt A
MW-388				2416.25	Basalt A
MW-400				2436.37	Basalt A
MW-401				2430.72	Unconsolidated Deposits
MW-405				2420.70	Basalt A
MW-409				2418.58	Basalt A
MW-410				2437.60	Basalt A
MW-412				2439.25	Basalt A
MW-414				2438.45	Basalt A
MW-415				2442.55	Basalt A
MW-417				2401.68	Basalt A
MW-421				2409.53	Basalt A
MW-422				2382.48	Unconsolidated Deposits
MW-424				2393.74	Unconsolidated Deposits
MW-428				2436.55	Basalt A
MW-430	1/16/2025	2442.98	2442.77	2442.96	Basalt A
MW-433				2403.99	Unconsolidated Deposits
MW-434				2404.41	Unconsolidated Deposits
MW-444	1/10/2025	2418.11		2417.69	Basalt A
MW-448				2443.00	Basalt A
MW-449				2380.86	Basalt A
MW-456				2437.37	Basalt A
MW-458				2447.63	Basalt A
MW-458				2447.63	Basalt A
MW-467	1/16/2025	2427.97	2427.35	2427.93	Basalt A
MW-508	1/15/2025	2382.67	2382.64	2382.67	Basalt A
MW-514				2383.02	Basalt A
MW-516				2418.48	Unconsolidated Deposits
MW-535	1/16/2025		2421.96		Unconsolidated Deposits
MW-539				2484.38	Unconsolidated Deposits
MW-540				2383.69	Unconsolidated Deposits
MW-543	1/23/2025	2380.18	2375.66		Unconsolidated Deposits
MW-557				2419.21	Basalt A
MW-564				2412.46	Unconsolidated Deposits
MW-565				2405.17	Unconsolidated Deposits
MW-RI02	1/15/2025		2414.29		Unconsolidated Deposits
MW-RI03	1/8/2025		2379.27		Unconsolidated Deposits
MW-RI04	1/17/2025		2339.75		Basalt A
MW-RI05	1/16/2025		2362.60		Basalt A
MW-RI06a	1/21/2025		2337.50		Unconsolidated Deposits
MW-RI06b	1/28/2025	2342.92	2343.01		Basalt B
MW-RI07	1/13/2025		2444.68		Unconsolidated Deposits
MW-RI10	1/10/2025		2227.37		Unconsolidated Deposits
MW-RI13	1/16/2025		2373.39		Basalt A
MW-RI15	1/29/2025		2281.14		Basalt A
MW-RI16	1/8/2025		2361.88		Basalt A
MW-RI17	1/12/2025		2401.25		Unconsolidated Deposits

Table 5-17. January 2025 Transducer and Static Groundwater Elevations

Well ID	Sample Date	First Tier⁽¹⁾: Transducer Groundwater Elevation from Sample Date (feet AMSL)	Second Tier: Static Groundwater Elevation from Sample Date (feet AMSL)⁽²⁾	Third Tier: Transducer Groundwater Elevation for 1/15/2025	Aquifer
MW-RI18	1/30/2025		2431.32		Unconsolidated Deposits
MW-RI19	1/28/2025		2113.85		Basalt B
MW-RI20	1/10/2025		2376.78		Unconsolidated Deposits
MW-RI21	1/9/2025		2425.82		Unconsolidated Deposits
MW-RI22	1/15/2025		2385.12		Unconsolidated Deposits
MW-RI23	1/9/2025		2431.05		Unconsolidated Deposits
MW-RI25	1/7/2025		2265.15		Unconsolidated Deposits
MW-RI26	1/6/2025	2385.77	2379.16	2387.73	Unconsolidated Deposits
MW-RI27	1/28/2025		2189.90		Basalt B
MW-RI29	1/9/2025		2399.46		Unconsolidated Deposits
MW-RI30	1/17/2025		2419.12		Unconsolidated Deposits
MW-RI32	1/30/2025		2298.99		Basalt A
MW-RI34	1/27/2025		2061.23		Basalt B
MW-RI36	1/7/2025		2414.67		Unconsolidated Deposits
MW-RI37	1/16/2025		2434.53		Unconsolidated Deposits
MW-RI38	1/7/2025		2462.75		Unconsolidated Deposits
MW-RI39	1/11/2025		2438.40		Unconsolidated Deposits
MW-RI40	1/9/2025		2438.14		Unconsolidated Deposits
MW-RI41	1/15/2025		2383.86		Basalt A
MW-RI42	1/9/2025		2389.36		Basalt A
MW-RI43	1/16/2025		2398.54		Unconsolidated Deposits
MW-RI47	1/9/2025		2342.69		Basalt B
MW-RI49	1/15/2025		2462.46		Unconsolidated Deposits
MW-RI50	1/9/2025		2438.29		Unconsolidated Deposits
MW-RI51	1/28/2025	2357.49	2357.63		Basalt B
MW-RI52	1/10/2025		2396.36		Unconsolidated Deposits
MW-RI54	1/8/2025	2359.89	2334.67		Unconsolidated Deposits
MW-RI55	1/6/2025	2335.50	2324.45		Unconsolidated Deposits
MW-RI56	1/14/2025		2400.15		Unconsolidated Deposits
MW-RI57	1/15/2025		2429.39		Unconsolidated Deposits
MW-RI59	1/15/2025		2309.55		Basalt A
MW-RI60	1/8/2025		2349.72		Unconsolidated Deposits
NDA-03				2362.60	Basalt A
OW-3				2398.30	Unconsolidated Deposits
SS009-MW-03				2433.97	Unconsolidated Deposits
WP036-MW01S	1/30/2025		2404.03		Unconsolidated Deposits

Notes:

AMSL - Above Mean Sea Level

ID - Identification

⁽¹⁾Groundwater elevations used to represent January 2025 were selected on a three-tier basis to present available and representative data for the selected time frame.⁽²⁾Groundwater elevation values were calculated using TOC elevations and manual static water level depths

Table 6-1. Release Area Soil Boring Field QC Water Sampling Analytical Results Summary

Event time Frame	Location	Sample ID	Sample Date	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
				Unit		600		1,800		39		990		5.9		4.0		6.0	
				(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Soil Boring Sampling 2022	Field Blank	SB-FB-052022	05/20/22	0.99	U	3.9	U	0.99	U	0.99	U	0.99	U	1.0	J	0.99	U		
Soil Boring Sampling 2022	Field Blank	SB-FB-052322	05/23/22	0.84	U	3.4	U	0.84	U	0.84	U	0.84	U	1.7	U	0.84	U		
Soil Boring Sampling 2022	Field Blank	SB-FB-052422	05/24/22	0.87	UJ	3.5	UJ	0.87	U	0.87	UJ	0.87	U	0.87	U	0.87	UJ		
Soil Boring Sampling 2022	Field Blank	SB-FB-052522	05/25/22	0.89	UJ	3.6	UJ	0.89	U	0.89	UJ	0.89	U	1.8	U	0.89	UJ		
Soil Boring Sampling 2022	Equipment Blank	SB-EB-052522	05/25/22	0.87	UJ	3.5	UJ	0.87	U	0.87	UJ	0.87	U	0.87	U	0.87	UJ		
Soil Boring Sampling 2022	Field Blank	SB-FB-101022	10/10/22	0.92	U	3.7	U	0.92	U	0.92	U	0.92	U	1.8	U	0.92	U		
Soil Boring Sampling 2022	Field Blank	SB-FB-101122	10/11/22	0.98	U	3.9	U	0.98	U	0.98	U	0.98	U	2.0	U	0.98	U		
Soil Boring Sampling 2022	Field Blank	SB-FB-101222	10/12/22	0.90	U	3.6	U	0.90	U	0.90	U	0.90	U	1.8	U	0.90	U		
Soil Boring Sampling 2022	Field Blank	SB-FB-101322	10/13/22	0.89	U	3.6	U	0.89	U	0.89	U	0.89	U	1.2	J	0.89	U		
Soil Boring Sampling 2022	Field Blank	SB-FB-101422	10/14/22	0.83	U	3.3	U	0.83	U	0.83	U	0.83	U	1.7	U	0.83	U		
Soil Boring Step-Out Sampling 2024	Field Blank	SB-FB-061824	06/18/24	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.56	U	0.56	U		
Soil Boring Step-Out Sampling 2024	Field Blank	SB-FB-061924	06/19/24	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.53	U	0.53	U		
Soil Boring Step-Out Sampling 2024	Equipment Blank	SB-EB-062024AM	06/20/24	0.36	U	1.4	U	0.36	U	0.36	U	0.36	U	0.54	U	0.54	U		
Soil Boring Step-Out Sampling 2024	Field Blank	SB-FB062024	06/20/24	0.33	U	1.3	U	0.33	U	0.33	U	0.33	U	0.50	U	0.50	U		
Soil Boring Step-Out Sampling 2024	Equipment Blank	SB-EB-062024PM	06/20/24	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.51	U	0.51	U		
Soil Boring Step-Out Sampling 2024	Field Blank	SB-FB-062124	06/21/24	0.32	U	1.3	U	0.32	U	0.32	U	0.32	U	0.49	U	0.49	U		
Soil Boring Step-Out Sampling 2024	Field Blank	FB-121924	12/19/24	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.53	U
Soil Boring Step-Out Sampling 2024	Equipment Blank	EB-121924	12/19/24	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.55	U
Soil Boring Step-Out Sampling 2024	Equipment Blank	EB-122024	12/20/24	0.36	U	1.4	U	0.20	J	0.36	U	0.36	U	0.62	J	0.54	U		
Soil Boring Step-Out Sampling 2024	Field Blank	FB-122024	12/20/24	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.53	U
Soil Boring Step-Out Sampling 2024	Field Blank	FB-122124	12/21/24	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.52	U
Soil Boring Step-Out Sampling 2024	Equipment Blank	EB-122124	12/21/24	0.37	U	1.5	U	0.15	J	0.37	U	0.37	U	0.58	J	0.55	U		

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

ID = identification

ng/L= nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

UJ = The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

Table 6-2. Well Installation Soil Sampling Field QC Analytical Results Summary

Event time Frame	Location	Sample ID	Sample Date	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
						600		1,800		39		990		5.9		4.0		6.0	
				Unit		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Spring 2022	Field Blank	FB-051122	05/11/22	0.45	J	3.6	U	0.91	U	0.91	U	0.91	U	1.8	U	0.91	U		
Spring 2022	Field Blank	FB-051222	05/12/22	0.90	U	3.6	U	0.90	U	0.57	J	0.90	U	0.90	U	0.90	U	0.90	U
Spring 2022	Field Blank	FB-051322	05/13/22	0.89	U	3.5	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U
Spring 2022	Field Blank	FB-051622	05/16/22	0.89	U	3.6	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U
Spring 2022	Field Blank	FB-051722	05/17/22	0.89	U	3.6	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U
Spring 2022	Field Blank	FB-051822	05/18/22	0.89	U	3.6	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U	0.89	U
Spring 2022	Field Blank	FB-051922	05/19/22	0.90	U	3.6	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U
Spring 2022	Field Blank	FB-052722	05/27/22	0.90	U	3.6	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U	0.90	U
Spring 2022	Field Blank	FB-053122	05/31/22	0.86	U	3.5	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U
Spring 2022	Field Blank	FB-060122	06/01/22	0.88	U	3.5	U	0.88	U	0.88	U	0.88	U	0.88	U	0.50	J	0.88	U
Spring 2022	Field Blank	FB-060222	06/02/22	0.49	J	3.4	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U
Spring 2022	Field Blank	FB-060322	06/03/22	0.51	J	3.9	U	0.98	U	0.98	U	0.98	U	0.98	U	0.98	U	0.98	U
Spring 2022	Field Blank	FB-060622	06/06/22	0.92	U	3.7	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U	0.92	U
Spring 2022	Field Blank	FB-060722	06/07/22	0.86	U	3.4	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U	0.86	U
Spring 2022	Field Blank	FB-060822	06/08/22	0.96	U	3.8	U	0.96	U	0.96	U	0.96	U	0.96	U	0.96	U	0.96	U
Spring 2022	Field Blank	FB-060922	06/09/22	0.91	U	3.6	U	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U
Spring 2022	Field Blank	FB-061022	06/10/22	0.91	U	3.6	U	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U	0.91	U
Winter 2023	Field Blank	FB-031423	03/14/23	0.90	U	3.6	U	0.90	U	0.90	U	0.90	U	1.8	U	0.90	U		
Winter 2023	Field Blank	FB-031523	03/15/23	0.86	U	3.4	U	0.86	U	0.86	U	0.86	U	1.7	U	0.86	U		
Winter 2023	Field Blank	FB-031623	03/16/23	0.94	U	3.8	U	0.94	U	0.94	U	0.94	U	1.9	U	0.94	U		
Winter 2023	Field Blank	FB-032023	03/20/23	0.83	U	3.3	U	0.83	U	0.83	U	0.83	U	1.7	U	0.83	U	0.83	UJ
Winter 2023	Field Blank	FB-032123	03/21/23	0.91	U	3.7	U	0.91	U	0.91	U	0.91	U	1.8	U	0.91	U	0.91	UJ
Winter 2023	Field Blank	FB-032323	03/23/23	0.86	U	3.4	U	0.86	U	0.86	U	0.86	U	1.7	U	0.86	U	0.86	U
Winter 2023	Field Blank	FB-032423	03/24/23	0.92	UJ	3.7	UJ	0.92	UJ	0.92	UJ	0.92	UJ	1.8	UJ	0.92	UJ	0.92	UJ
Fall 2024	Field Blank	FB-072324	07/23/24	0.36	U	1.4	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.54	U
Fall 2024	Field Blank	FB-072424	07/24/24	0.38	U	1.5	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.56	U
Fall 2024	Field Blank	FB-072524	07/25/24	0.33	U	1.3	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.49	U
Fall 2024	Field Blank	FB-072624	07/26/24	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.52	U
Fall 2024	Field Blank	FB-072924	07/29/24	0.35	U	0.74	J	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.52	U
Fall 2024	Field Blank	FB-073024	07/30/24	0.36	U	1.5	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.55	U
Fall 2024	Field Blank	FB-080124	08/01/24	0.36	U	1.4	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.53	U
Fall 2024	Field Blank	FB-080224	08/02/24	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.52	U
Fall 2024	Field Blank	FB-080624	08/06/24	0.36	U	1.5	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.55	U
Fall 2024	Field Blank	FB-080724	08/07/24	0.36	U	1.4	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.54	U
Fall 2024	Field Blank	FB-080824	08/08/24	0.38	U	1.5	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.56	U
Fall 2024	Field Blank	FB-100124	10/01/24	0.37	U	0.76	J	0.37	U	0.37	U	0.37	U	0.26	J	0.56	U		
Fall 2024	Field Blank	FB-100224	10/02/24	0.36	U	0.76	J	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.55	U
Fall 2024	Field Blank	FB-100424	10/04/24	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.22	J	0.55	U		
Fall 2024	Field Blank	FB-100724	10/07/24	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.19	J	0.56	U		
Fall 2024	Field Blank	FB-101524	10/15/24	0.36	U	1.5	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.55	U
Fall 2024	Field Blank	FB-101824	10/18/24	0.36	U	1.4	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.54	U
Fall 2024	Field Blank	FB-102224	10/22/24	0.34	U	1.3	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.5	U
Fall 2024	Field Blank	FB-110724	11/07/24	0.39	U	1.5	U	0.39	U	0.39	U	0.39	U	0.39	U	0.39	U	0.58	U
Fall 2024	Field Blank	FB-111124	11/11/24	0.36	U	1.5	U	0.36	U	0.36	U	0.36	U	0.2	J	0.55	U		
Fall 2024	Field Blank	FB-111424	11/14/24	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.37	U	0.37	U	0.55	U

Table 6-2. Well Installation Soil Sampling Field QC Analytical Results Summary

				PSLs ⁽¹⁾		PSLs ⁽¹⁾		PSLs ⁽¹⁾		PSLs ⁽¹⁾		PSLs ⁽¹⁾		PSLs ⁽¹⁾		PSLs ⁽¹⁾	
				600		1,800		39		990		5.9		4.0		6.0	
				Unit		Unit		Unit		Unit		Unit		Unit		Unit	
				(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
Event time	Location	Sample ID	Sample Date	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fall 2024	Field Blank	FB-112024	11/20/24	0.36	U	1.4	U	0.36	U	0.36	U	0.36	U	0.84	J	0.54	U
Fall 2024	Field Blank	FB-120324	12/03/24	0.39	U	1.6	U	0.39	U	0.39	U	0.39	U	0.39	U	0.59	U
Fall 2024	Field Blank	FB-120424	12/04/24	0.38	U	1.5	U	0.38	U	0.38	U	0.38	U	0.38	U	0.57	U
Fall 2024	Field Blank	FB-121724	12/17/24	0.38	U	1.5	U	0.38	U	0.38	U	0.38	U	0.38	U	0.56	U
January 2025	Field Blank	FB-010725	01/07/25	0.36	U	1.4	U	0.36	U	0.36	U	0.36	U	0.24	J	0.53	U
January 2025	Field Blank	FB-010825	01/08/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.34	U	0.51	U
January 2025	Field Blank	FB-010925A	01/09/25	0.38	U	1.5	U	0.38	U	0.38	U	0.38	U	0.22	J	0.57	U
January 2025	Field Blank	FB-010925	01/09/25	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.37	U	0.55	U
January 2025	Field Blank	FB-011625	01/16/25	0.34	U	1.3	U	0.34	U	0.34	U	0.34	U	0.34	U	0.51	U
January 2025	Field Blank	FB-012325	01/23/25	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.72	J	0.55	U
January 2025	Field Blank	FB-012425	01/24/25	0.33	U	1.3	U	0.33	U	0.33	U	0.33	U	0.33	U	0.49	U

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

ID = identification

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

UJ = The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

Table 6-3. FT004P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾ Unit				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L	
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
SB-RA101	SB-RA101-S	02/01/22	Surface Soil	0.0021	U			0.0021	U			0.00032	J			0.00063	U			0.00063	U			0.0033				0.00024	J		
SB-RA101	SB-RA101-4	02/01/22	Subsurface Soil	0.0022	U			0.0022	U			0.0042				0.00058	J			0.0017				0.042				0.0024			
SB-RA101	SB-RA101-4-Dup	02/01/22	Subsurface Soil	0.0022	U			0.0022	U			0.0036				0.00052	J			0.0015				0.037				0.0020			
SB-RA101	SB-RA101-8	02/01/22	Subsurface Soil	0.0024	U			0.0024	U			0.011				0.0011				0.00072	U			0.00072	U			0.0059			
SB-RA101	SB-RA101-12	02/01/22	Subsurface Soil	0.0023	U			0.0023	U			0.0076				0.00089				0.0011				0.019				0.0048			
SB-RA101	SB-RA101-15	02/01/22	Subsurface Soil	0.0022	U			0.0022	U			0.00041	J			0.00066	U			0.00066	U			0.0024				0.00066	U		
SB-RA101	SB-RA101-GW	02/01/22	Groundwater			130				390				2400				1100				100					5000			460	
SB-RA102	SB-RA102-S	02/01/22	Surface Soil	0.0025	U			0.0025	U			0.0031				0.00052	J			0.0018				0.031				0.0042			
SB-RA102	SB-RA102-4	02/01/22	Subsurface Soil	0.0024	U			0.0024	U			0.0035				0.0011				0.00073	U			0.00037	J			0.00064	J		
SB-RA102	SB-RA102-8	02/01/22	Subsurface Soil	0.0021	U			0.0021	U			0.00061	J			0.00026	J			0.00063	U			0.0037				0.00063	U		
SB-RA103	SB-RA103-S	02/01/22	Surface Soil	0.68				0.32				12				1.9				0.53				28				3.4			
SB-RA103	SB-RA103-4	02/01/22	Subsurface Soil	0.00092	J			0.00088	J			0.019				0.0045				0.0016				0.12				0.0070			
SB-RA103	SB-RA103-4-Dup	02/01/22	Subsurface Soil	0.0012	J			0.0011	J			0.021				0.0059				0.0020				0.15				0.0081			
SB-RA103	SB-RA103-8	02/01/22	Subsurface Soil	0.00058	J			0.0023	U			0.0089				0.0033				0.00068	U			0.020				0.0034			
SB-RA103	SB-RA103-12	02/01/22	Subsurface Soil	0.00076	J			0.00091	J			0.012				0.0048				0.0007	U			0.029				0.0046			
SB-RA103	SB-RA103-15	02/01/22	Subsurface Soil	0.0022	U			0.0022	U			0.0080				0.0026				0.00022	J			0.047				0.0038			
SB-RA103	SB-RA103-GW	02/01/22	Groundwater			4500				5200				46000	J			23000				2000					73000	J		21000	
SB-RA104	SB-RA104-S	02/02/22	Surface Soil	0.0035				0.0017	J			0.036				0.0072				0.00068	U			0.0036				0.0038			
SB-RA104	SB-RA104-4	02/02/22	Subsurface Soil	0.0022	U			0.0022	U			0.0012				0.00066				0.00065	U			0.018				0.00022	J		
SB-RA104	SB-RA104-7-7.5	02/02/22	Subsurface Soil	0.0022	U			0.0022	U			0.00088				0.00053	J			0.00066	U			0.0017				0.00066	U		
SB-RA104	SB-RA104-GW	02/02/22	Groundwater			1500				970				9600				3800				140					8100			1300	
SB-RA105	SB-RA105-S	02/02/22	Surface Soil	0.0022	U			0.00079	J			0.0017				0.0014				0.00067	U			0.0028				0.00063	J		
SB-RA105	SB-RA105-4	02/02/22	Subsurface Soil	0.0020	U			0.0020	U			0.0021				0.00068				0.00061	U			0.029				0.00032	J		
SB-RA105	SB-RA105-4-Dup	02/02/22	Subsurface Soil	0.0021	U			0.0021	U			0.0018				0.00061	J			0.00064	U			0.032				0.00026	J		
SB-RA105	SB-RA105-8	02/02/22	Subsurface Soil	0.0022	U			0.0022	U			0.0011				0.00045	J			0.00065	U			0.0038				0.00065	U		
SB-RA105	SB-RA105-12	02/02/22	Subsurface Soil	0.0023	U			0.0023	U			0.00068	U			0.00068	U			0.00068	U			0.00068	U			0.00068	U		
SB-RA105	SB-RA105-GW	02/02/22	Groundwater			870				570				9700				2700				120					24000			990	
SB-RA106	SB-RA106-S	02/02/22	Surface Soil	0.015				0.013				0.39				0.083				0.0049				0.11				0.11			
SB-RA106	SB-RA106-4	02/02/22	Subsurface Soil	0.0024	U			0.0024	U			0.011				0.0022				0.0032				0.37				0.0061			
SB-RA106	SB-RA106-8	02/02/22	Subsurface Soil	0.0023	U			0.0023	U			0.0061				0.0018				0.00031	J			0.045				0.0027			
SB-RA106	SB-RA106-12	02/02/22	Subsurface Soil	0.0022	U			0.0022	U			0.0015				0.00058	J			0.00065	U			0.0035				0.00048	J		
SB-RA106	SB-RA106-GW	02/02/22	Groundwater			1200				1500				28000				8100				1800	J				56000	J		12000	
SB-RA107	SB-RA107-A	05/23/22	Surface Soil	0.0017	U			0.00079	J			0.011				0.0017				0.027				0.18				0.0084			
SB-RA107	SB-RA107-B	05/23/22	Subsurface Soil	0.0019	U			0.0009	J			0.014				0.0020				0.015				0.060				0.017			
SB-RA107	SB-RA107-C	05/23/22	Subsurface Soil	0.0017	U			0.0007	J			0.017				0.0016				0.022				0.058				0.0099			
SB-RA107	SB-RA107-D	05/23/22	Subsurface Soil	0.0016	U			0.0016	U			0.00093				0.00036	J			0.00041	U			0.0060				0.00025	J		
SB-RA107	SB-RA107-E	05/23/22	Subsurface Soil	0.0018	U			0.0018	U			0.0010				0.00038	J			0.00044	U			0.0036				0.00022	J		
SB-RA107	SB-RA107-GW	05/23/22	Groundwater			730				730				6800				3100				84					9700			910	
SB-RA108	SB-RA108-A	05/23/22	Surface Soil	0.0025				0.0009	J			0.28				0.0097				0.0040	J			3.9				0.044	J		
SB-RA108	SB-RA108-B	05/23/22	Subsurface Soil	0.00061	J			0.0012	J			0.054				0.0095				0.0036				1.5				0.028			
SB-RA108	SB-RA108-C	05/23/22	Subsurface Soil	0.0018	J			0.0037				0.21				0.028				0.0011				0.32				0.15			
SB-RA108	SB-RA108-D	05/23/22	Subsurface Soil	0.0017	U			0.0017	U			0.0084				0.0023				0.00044	U			0.026				0.0044			
SB-RA108	SB-RA108-E	05/23/22	Subsurface Soil	0.0019	U			0.0019	U			0.0016				0.0009				0.00047	U			0.0059				0.00033	J		

Table 6-3. FT004P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾	Unit	PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
		1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0
		mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
SB-RA108	SB-RA108-GW	05/23/22	Groundwater			800	J			920	J			14000	J
SB-RA108	SB-RA108-GWA (Dup)	05/23/22	Groundwater			780	J			870	J			13000	J
SB-RA109	SB-RA109-A	05/23/22	Surface Soil	0.0018	U			0.0018	U			0.0018		0.00052	J
SB-RA109	SB-RA109-AA (Dup)	05/23/22	Surface Soil	0.0017	U			0.0017	U			0.0017		0.00065	J
SB-RA109	SB-RA109-B	05/23/22	Subsurface Soil	0.0018	U			0.0018	J			0.0018		0.00064	J
SB-RA109	SB-RA109-C	05/23/22	Subsurface Soil	0.00049	J			0.00049	J			0.00049		0.00019	J
SB-RA109	SB-RA109-D	05/23/22	Subsurface Soil	0.0018	U			0.0018	U			0.0018		0.00011	J
SB-RA109	SB-RA109-E	05/23/22	Subsurface Soil	0.0018	U			0.0018	U			0.0018		0.00063	J
SB-RA109	SB-RA109-GW	05/23/22	Groundwater			250	J			450	J			5700	J
SB-RA110	SB-RA110-A	05/23/22	Surface Soil	0.013				0.013				0.013		0.059	J
SB-RA110	SB-RA110-B	05/23/22	Subsurface Soil	0.0068				0.0068				0.0068		0.037	J
SB-RA110	SB-RA110-C	05/23/22	Subsurface Soil	0.0017	J			0.0017	J			0.0017		0.010	J
SB-RA110	SB-RA110-CA (Dup)	05/23/22	Subsurface Soil	0.0015	J			0.0015	J			0.0015		0.00066	J
SB-RA110	SB-RA110-D	05/23/22	Subsurface Soil	0.0017	U			0.0017	U			0.0017		0.00058	J
SB-RA110	SB-RA110-GW	05/23/22	Groundwater			1100	J			1700	J			0.00042	J
SB-RA111	SB-RA111-A	05/24/22	Surface Soil	0.078				0.078				0.078		0.00085	J
SB-RA111	SB-RA111-B	05/24/22	Subsurface Soil	0.023				0.023				0.023		0.00042	J
SB-RA111	SB-RA111-C	05/24/22	Subsurface Soil	0.0045				0.0045				0.0045		0.00042	J
SB-RA111	SB-RA111-D	05/24/22	Subsurface Soil	0.0017	U			0.0017	U			0.0017		0.00042	J
SB-RA111	SB-RA111-E	05/24/22	Subsurface Soil	0.0017	U			0.0017	U			0.0017		0.00054	J
SB-RA111	SB-RA111-GW	05/24/22	Groundwater			5200	J			3800	J			64000	J
SB-RA112	SB-RA112-A	05/24/22	Surface Soil	0.0012	J			0.0012	J			0.0012		29000	J
SB-RA112	SB-RA112-B	05/24/22	Subsurface Soil	0.0043				0.0043				0.0043		1000	J
SB-RA112	SB-RA112-C	05/24/22	Subsurface Soil	0.002	J			0.002	J			0.002		42000	J
SB-RA112	SB-RA112-D	05/24/22	Subsurface Soil	0.002	U			0.002	U			0.002		2000	J
SB-RA112	SB-RA112-E	05/24/22	Subsurface Soil	0.002	U			0.002	U			0.002		42000	J
SB-RA112	SB-RA112-GW	05/24/22	Groundwater			970	J			1,300	J			20,000	J
SB-RA113	SB-RA113-A	05/24/22	Surface Soil	0.0048				0.0048				0.0048		4,200	J
SB-RA113	SB-RA113-B	05/24/22	Subsurface Soil	0.02				0.02				0.02		0.0008	J
SB-RA113	SB-RA113-C	05/24/22	Subsurface Soil	0.018				0.018				0.018		0.00089	J
SB-RA113	SB-RA113-CA (Dup)	05/24/22	Subsurface Soil	0.019				0.019				0.019		0.00075	J
SB-RA113	SB-RA113-D	05/24/22	Subsurface Soil	0.00073	J			0.00073	J			0.00073		0.00073	J
SB-RA113	SB-RA113-E	05/24/22	Subsurface Soil	0.0018	U			0.0018	U			0.0018		0.00065	J

Table 6-3. FT004P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾				PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA															
				1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0														
				Unit	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L													
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q				
SB-RA113	SB-RA113-GW	05/24/22	Groundwater			1,800	J			1,900	J			33,000	J			12,000	J			330	J			30,000	J			17,000	J
SB-RA114	SB-RA114-A	05/24/22	Surface Soil	0.0008	J			0.00073	J			0.027				0.0025				0.00045	U			0.01				0.0046			
SB-RA114	SB-RA114-AA (Dup)	05/24/22	Surface Soil	0.00055	J			0.00076	J			0.027				0.0017				0.00024	J			0.0095				0.0048			
SB-RA114	SB-RA114-B	05/24/22	Subsurface Soil	0.002	J			0.00099	J			0.0048				0.0032				0.00029	J			0.039				0.0007			
SB-RA114	SB-RA114-C	05/24/22	Subsurface Soil	0.0016	U			0.0016	U			0.0016				0.00073				0.00039	U			0.0046				0.00027	J		
SB-RA114	SB-RA114-D	05/24/22	Subsurface Soil	0.0017	U			0.0017	U			0.00095				0.0004	J			0.00043	U			0.0039				0.00021	J		
SB-RA114	SB-RA114-E	05/24/22	Subsurface Soil	0.0018	U			0.0018	U			0.0013				0.00065	J			0.00045	U			0.002				0.00045	U		
SB-RA114	SB-RA114-GW	05/24/22	Groundwater			600	J			590	J			5200	J			2400	J			41	J			7200	J			710	J
SB-RA115	SB-RA115-A	05/24/22	Surface Soil	0.0015	U			0.0015	U			0.0063				0.0011				0.00025	J			0.03				0.002			
SB-RA115	SB-RA115-B	05/24/22	Subsurface Soil	0.0016	U			0.0016	U			0.0014				0.00024	J			0.00041	U			0.015				0.00046	J		
SB-RA115	SB-RA115-C	05/24/22	Subsurface Soil	0.0017	U			0.0017	U			0.0017				0.00046	J			0.00042	U			0.0069				0.00045	J		
SB-RA115	SB-RA115-D	05/24/22	Subsurface Soil	0.0018	U			0.0018	U			0.0011				0.00041	J			0.00046	U			0.0028				0.00046	U		
SB-RA115	SB-RA115-GW	05/24/22	Groundwater			550	J			600	J			5700	J			2600	J			49	J			8700	J			870	J
SB-RA116	SB-RA116-A	05/23/22	Surface Soil	0.0011	J			0.0012	J			0.012				0.0027				0.0003	J			0.01				0.0014			
SB-RA116	SB-RA116-B	05/23/22	Subsurface Soil	0.00085	J			0.00078	J			0.0083				0.0023				0.00029	J			0.047				0.0016			
SB-RA116	SB-RA116-C	05/23/22	Subsurface Soil	0.0019	U			0.0019	U			0.0026				0.00084				0.00047	U			0.033				0.00066	J		
SB-RA116	SB-RA116-CA (Dup)	05/23/22	Subsurface Soil	0.0018	U			0.0018	U			0.0038				0.0011				0.00045	U			0.054				0.00094			
SB-RA116	SB-RA116-D	05/23/22	Subsurface Soil	0.0019	U			0.0019	U			0.0013				0.00058	J			0.00047	U			0.0066				0.00032	J		
SB-RA116	SB-RA116-E	05/23/22	Subsurface Soil	0.0018	U			0.0018	U			0.0011				0.00054	J			0.00046	U			0.0016				0.00046	U		
SB-RA116	SB-RA116-GW	05/23/22	Groundwater			800				780				7400				3500				64				11000				890	

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1, and U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

mg/kg = milligram(s) per kilogram

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

Table 6-4. RS003P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				Unit		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg	
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
SB-RA201	SB-RA201-S	02/01/22	Surface soil	0.0021	U			0.0021	U			0.0012				0.00024	J			0.00061	J			0.083				0.00022	J		
SB-RA201	SB-RA201-S-DUP	02/01/22	Surface soil	0.0021	U			0.0021	U			0.0012				0.00026	J			0.00069				0.081				0.00021	J		
SB-RA201	SB-RA201-4	02/01/22	Subsurface soil	0.00056	J			0.0021	U			0.010				0.0013				0.00062	U			0.0058	J			0.0014			
SB-RA201	SB-RA201-8	02/01/22	Subsurface soil	0.0010	J			0.00067	J			0.012				0.0033				0.00066	U			0.0056	J			0.0015			
SB-RA201	SB-RA201-12	02/01/22	Subsurface soil	0.0024	U			0.0024	U			0.0032				0.00096				0.00071	U			0.0083				0.00043	J		
SB-RA201	SB-RA201-15	02/01/22	Subsurface soil	0.0030	U			0.0030	U			0.00069	J			0.00032	J			0.00089	U			0.0021				0.00089	U		
SB-RA201	SB-RA201-GW	02/01/22	Groundwater			120				100			1400				310					15				1400			140		
SB-RA202	SB-RA202-S	02/01/22	Surface soil	0.0022	U			0.0022	U			0.0063				0.00055	J			0.0015				0.60				0.0015			
SB-RA202	SB-RA202-4	02/01/22	Subsurface soil	0.0024	U			0.0024	U			0.0096				0.0010				0.00046	J			0.13				0.0013			
SB-RA202	SB-RA202-8	02/01/22	Subsurface soil	0.00089	J			0.0021	U			0.0038				0.0020				0.00063	U			0.00063	U			0.00063	U		
SB-RA202	SB-RA202-12	02/01/22	Subsurface soil	0.00081	J			0.0023	U			0.016				0.0020				0.00070	U			0.0049				0.00065	J		
SB-RA202	SB-RA202-15	02/01/22	Subsurface soil	0.0027	U			0.0027	U			0.00049	J			0.00031	J			0.00082	U			0.0012				0.00082	U		
SB-RA202	SB-RA202-GW	02/01/22	Groundwater			130				110			1500				370				20				2100				180		
SB-RA203	SB-RA203-S	02/01/22	Surface soil	0.0022	U			0.0022	U			0.021				0.0011				0.0023				1.3				0.0034			
SB-RA203	SB-RA203-S-DUP	02/01/22	Surface soil	0.0023	U			0.0023	U			0.015				0.00079				0.0016				0.97				0.0026			
SB-RA203	SB-RA203-4	02/01/22	Subsurface soil	0.0020	U			0.0020	U			0.00073				0.00047	J			0.00085				0.00073				0.0071			
SB-RA203	SB-RA203-8	02/01/22	Subsurface soil	0.0021	U			0.0021	U			0.00062	U			0.00056	J			0.00062	U			0.019				0.00062	U		
SB-RA203	SB-RA203-12	02/01/22	Subsurface soil	0.0019	U			0.0019	U			0.0029				0.00030	J			0.00057	U			0.044				0.00022	J		
SB-RA203	SB-RA203-15	02/01/22	Subsurface soil	0.0021	U			0.0021	U			0.00035	J			0.00063	U			0.00063	U			0.00076				0.00063	U		
SB-RA203	SB-RA203-GW	02/01/22	Groundwater			260				270			2600				900				12	J			1900				290		
SB-RA204	SB-RA204-S	02/01/22	Surface soil	0.0022	U			0.0022	U			0.014				0.00092				0.0025				0.60				0.0052			
SB-RA204	SB-RA204-4	02/01/22	Subsurface soil	0.0022	U			0.00084	J			0.017				0.0020				0.00075				0.22				0.0034			
SB-RA204	SB-RA204-8	02/01/22	Subsurface soil	0.0022	U			0.00078	J			0.0098				0.0029				0.00025	J			0.076				0.0015			
SB-RA204	SB-RA204-12	02/01/22	Subsurface soil	0.0024	U			0.0024	U			0.0045				0.0011				0.00072	U			0.063				0.00070	J		
SB-RA204	SB-RA204-15	02/01/22	Subsurface soil	0.0024	U			0.0024	U			0.0025				0.0013				0.00072	U			0.0062				0.00041	J		
SB-RA204	SB-RA204-GW	02/01/22	Groundwater			850				1700			13000				5500				470				55000	J			2300		
SB-RA205	SB-RA205-S	02/01/22	Surface soil	0.0022	U			0.0022	U			0.00028	J			0.00023	J			0.00066	U			0.0025				0.00029	J		
SB-RA205	SB-RA205-4	02/01/22	Subsurface soil	0.0024	U			0.0024	U			0.00044	J			0.00072	U			0.00072	U			0.0010				0.00072	U		
SB-RA205	SB-RA205-8	02/01/22	Subsurface soil	0.0020	U			0.0020	U			0.00060	U			0.00060	U			0.00060	U			0.0030				0.00060	U		
SB-RA205	SB-RA205-12	02/01/22	Subsurface soil	0.0022	U			0.0022	U			0.00063	J			0.00024	J			0.00066	U			0.0041				0.00066	U		
SB-RA205	SB-RA205-15	02/01/22	Subsurface soil	0.0021	U			0.0021	U			0.00070				0.00028	J			0.00063	U			0.0016				0.00063	U		
SB-RA205	SB-RA205-GW	02/01/22	Groundwater			360				390			3400				1500				46				5500				440		
SB-RA206	SB-RA206-S	02/01/22	Surface soil	0.0020	U			0.0020	U			0.00062				0.00060	U			0.00030	J			0.034				0.00027	J		
SB-RA206	SB-RA206-4	02/01/22	Subsurface soil	0.0021	U			0.0021	U			0.00098				0.00064	U			0.00064	U			0.0025				0.00064	U		
SB-RA206	SB-RA206-4-DUP	02/01/22	Subsurface soil	0.0021	U			0.0021	U			0.0016				0.00064	U			0.00064	U			0.0034				0.00064	U		
SB-RA206	SB-RA206-8	02/01/22	Subsurface soil	0.0021	U			0.0021	U			0.00062	U			0.00062	U			0.00062	U			0.00062	U			0.00062	U		
SB-RA207	SB-RA207-A	05/20/22	Surface soil	0.0016	U			0.0016	U			0.0011				0.00023	J			0.00040	U			0.0075				0.00036	J		
SB-RA207	SB-RA207-B	05/20/22	Subsurface soil	0.0018	U			0.0018	U			0.0038				0.00024	J			0.00044	U			0.015				0.00065	J		
SB-RA207	SB-RA207-C	05/20/22	Subsurface soil	0.00063	J			0.0019	U			0.030				0.00068	J			0.00048	U			0.0013	J			0.0040			
SB-RA207	SB-RA207-D	05/20/22	Subsurface soil	0.0021	J			0.0022	U			0.069				0.0017				0.00031	J			0.070				0.0035			
SB-RA208	SB-RA208-A	05/20/22	Surface soil	0.0016	U			0.0016	U			0.0050				0.0013				0.00079				0.29				0.0014			
SB-RA208	SB-RA208-B	05/20/22	Subsurface soil	0.0016	U			0.0016	U			0.0024				0.00034	J			0.00046	J			0.33				0.00090			
SB-RA208	SB-RA208-BA (Dup)	05/20/22	Subsurface soil	0.0017	U			0.0017	U			0.0024				0.00053	J			0.00066				0.33				0.0013			

Table 6-4. RS003P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾ Unit				PFBS			PFBA			PFHxS			PFHxA			PFNA			PFOS			PFOA			
				1.9		600	7.8		1800	0.13		39	3.2		990	0.019		5.9	0.013		4.0	0.019		6.0	
				mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg	
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
SB-RA208	SB-RA208-C	05/20/22	Subsurface soil	0.0016	U			0.0016	U			0.0048				0.00068				0.00041	U			0.00067	
SB-RA208	SB-RA208-D	05/20/22	Subsurface soil	0.0018	U			0.0018	U			0.0032				0.00053	J			0.00022	J			0.083	
SB-RA208	SB-RA208-E	05/20/22	Subsurface soil	0.0019	U			0.0019	U			0.00066	J			0.00047	U			0.00047	U			0.0019	
SB-RA208	SB-RA208-GW	05/20/22	Groundwater			400				270				4400				1100			76			12000	
SB-RA209	SB-RA209-A	05/20/22	Surface soil	0.00044	J			0.0016	U			0.0071				0.0012				0.00057	J			0.15	J
SB-RA209	SB-RA209-B	05/20/22	Subsurface soil	0.00048	J			0.00087	J			0.0037				0.0015				0.00095				0.15	
SB-RA209	SB-RA209-BA (Dup)	05/20/22	Subsurface soil	0.0018	U			0.00080	J			0.0029				0.0012				0.0011				0.13	
SB-RA209	SB-RA209-C	05/20/22	Subsurface soil	0.0017	U			0.0017	U			0.0020				0.00073				0.00068				0.18	
SB-RA209	SB-RA209-D	05/20/22	Subsurface soil	0.0018	U			0.0018	U			0.00088				0.00089				0.00044	U			0.0055	
SB-RA210	SB-RA210-A	05/23/22	Surface soil	0.0016	U			0.00096	J			0.0095				0.0024				0.0015				0.36	
SB-RA210	SB-RA210-B	05/23/22	Subsurface soil	0.0017	U			0.0012	J			0.017				0.0036				0.0014				0.099	
SB-RA210	SB-RA210-C	05/23/22	Subsurface soil	0.00062	J			0.0017	J			0.018				0.0063				0.00044	U			0.00070	
SB-RA210	SB-RA210-D	05/23/22	Subsurface soil	0.0018	U			0.00072	J			0.0053				0.0018				0.00044	U			0.0096	
SB-RA211	SB-RA211-A	05/23/22	Surface soil	0.0017	U			0.00080	J			0.014				0.0024				0.00053	J			0.043	
SB-RA211	SB-RA211-B	05/23/22	Subsurface soil	0.0017	U			0.0017	U			0.016				0.0021				0.00041	U			0.012	
SB-RA211	SB-RA211-C	05/23/22	Subsurface soil	0.0018	U			0.00086	J			0.0092				0.0014				0.00044	U			0.018	
SB-RA211	SB-RA211-CA (Dup)	05/23/22	Subsurface soil	0.0017	U			0.00095	J			0.0096				0.0017				0.00043	U			0.018	
SB-RA211	SB-RA211-D	05/23/22	Subsurface soil	0.0017	U			0.0017	U			0.0011				0.00049	J			0.00041	U			0.025	
SB-RA211	SB-RA211-E	05/23/22	Subsurface soil	0.0018	U			0.0018	U			0.0011				0.00076				0.00045	U			0.0030	
SB-RA211	SB-RA211-GW	05/23/22	Groundwater			790				1200				6900				3900			240			22000	
SB-RA212	SB-RA212-A	05/23/22	Surface soil	0.0018	U			0.0018	U			0.0022				0.00064	J			0.0014				0.80	
SB-RA212	SB-RA212-B	05/23/22	Subsurface soil	0.0018	U			0.0018	U			0.0092				0.00088				0.00091				0.65	
SB-RA212	SB-RA212-BA (Dup)	05/23/22	Subsurface soil	0.0017	U			0.0017	U			0.0087				0.00087				0.00085				0.59	
SB-RA212	SB-RA212-C	05/23/22	Subsurface soil	0.00065	J			0.00095	J			0.039				0.0037				0.00043	U			0.013	J
SB-RA212	SB-RA212-D	05/23/22	Subsurface soil	0.00054	J			0.0018	U			0.0024				0.0014				0.00045	U			0.034	
SB-RA212	SB-RA212-E	05/23/22	Subsurface soil	0.0017	U			0.0017	U			0.0013				0.00045	J			0.00043	U			0.0072	
SB-RA212	SB-RA212-GW	05/23/22	Groundwater			560	J			670	J			6900				2600	J		110			12000	J
SB-RA212	SB-RA212-GWA (Dup)	05/23/22	Groundwater			620	J			680	J			6500				2800	J		110			13000	
SB-RA213	SB-RA213-A	05/24/22	Surface soil	0.0018	U			0.0018	U			0.0019				0.00038	J			0.00023	J			0.016	
SB-RA213	SB-RA213-B	05/24/22	Subsurface soil	0.0018	U			0.0018	U			0.0034				0.00029	J			0.00045	U			0.0049	
SB-RA213	SB-RA213-C	05/24/22	Subsurface soil	0.0019	U			0.0019	U			0.0087				0.00040	J			0.00047	U			0.00047	U
SB-RA213	SB-RA213-D	05/24/22	Subsurface soil	0.0017	U			0.0017	U			0.00071				0.00024	J			0.00043	U			0.010	
SB-RA213	SB-RA213-E	05/24/22	Subsurface soil	0.0017	U			0.0017	U			0.00048	J			0.00043	U			0.00043	U			0.0018	
																								0.00043	U

Table 6-4. RS003P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾ Unit				PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA															
				1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0														
				mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L														
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q						
SB-RA213	SB-RA213-GW	05/24/22	Groundwater			300	J			380	J			3800	J			1600	J			38	J			7800	J			480	J
SB-RA213	SB-RA213-GWA (Dup)	05/24/22	Groundwater			280	J			370	J			3800				1600	J			38				8200				470	J
SB-RA214	SB-RA214-A	05/19/22	Surface soil	0.0018	U			0.0018	U			0.0030				0.00053	J			0.0012				0.22				0.0012			
SB-RA214	SB-RA214-B	05/19/22	Subsurface soil	0.0017	U			0.0017	U			0.0093				0.00069			0.00043	U			0.012				0.0025				
SB-RA214	SB-RA214-BA (Dup)	05/19/22	Subsurface soil	0.0017	U			0.0017	U			0.0099				0.00077			0.00042	U			0.011				0.0020				
SB-RA214	SB-RA214-C	05/19/22	Subsurface soil	0.0019	U			0.00081	J			0.017				0.0020			0.00047	U			0.0046	J			0.0017				
SB-RA214	SB-RA214-D	05/19/22	Subsurface soil	0.0017	U			0.0017	U			0.0012				0.00063			0.00041	U			0.0058				0.00041	U			
SB-RA214	SB-RA214-E	05/19/22	Subsurface soil	0.0018	U			0.0018	U			0.00089				0.00042	J		0.00045	U			0.0014				0.00045	U			
SB-RA214	SB-RA214-GW	05/19/22	Groundwater			320				420				5,300				1,500				44				12,000				500	
SB-RA215	SB-RA215-A	05/20/22	Surface soil	0.0016	U			0.0016	U			0.0034				0.00046	J		0.001				0.16				0.00082				
SB-RA215	SB-RA215-B	05/20/22	Subsurface soil	0.0016	U			0.0016	U			0.00098				0.00039	U		0.00037	J			0.092				0.00035	J			
SB-RA215	SB-RA215-C	05/20/22	Subsurface soil	0.0016	U			0.0016	U			0.0008				0.00039	U		0.00039	U			0.022				0.0003	J			
SB-RA215	SB-RA215-D	05/20/22	Subsurface soil	0.0017	U			0.0017	U			0.00044	U			0.00044	U		0.00044	U			0.0028				0.00044	U			
SB-RA215	SB-RA215-E	05/20/22	Subsurface soil	0.0018	U			0.0018	U			0.00046	U			0.00046	U		0.00046	U			0.00028	J			0.00046	U			
SB-RA216	SB-RA216-A	05/20/22	Surface soil	0.0018	U			0.0018	U			0.0013				0.0003	J		0.00066	J			0.13				0.00058	J			
SB-RA216	SB-RA216-B	05/20/22	Subsurface soil	0.0016	U			0.0016	U			0.0045				0.0003	J		0.00041	U			0.0027				0.00071				
SB-RA216	SB-RA216-C	05/20/22	Subsurface soil	0.0017	U			0.0017	U			0.0032				0.00029	J		0.00041	U			0.017				0.00045	J			
SB-RA216	SB-RA216-CA (Dup)	05/20/22	Subsurface soil	0.0017	U			0.0017	U			0.0047				0.00036	J		0.00044	U			0.011				0.00061	J			
SB-RA216	SB-RA216-D	05/20/22	Subsurface soil	0.0016	U			0.0016	U			0.0037				0.00048	J		0.00041	U			0.0018				0.00043	J			
SB-RA216	SB-RA216-E	05/20/22	Subsurface soil	0.0017	U			0.0017	U			0.00093				0.00028	J		0.00044	U			0.00063	J			0.00044	U			
SB-RA216	SB-RA216-GW	05/20/22	Groundwater			260				580				9,700				2,000				57				9,300				1,500	

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1, and U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

mg/kg = milligram(s) per kilogram

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

Table 6-5. SS008P Soil and Groundwater Grab Analytical Results Summary

Location	Sample ID	Sample Date	Sample Type	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
						1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0
				Unit		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
						Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
SB-KC13501	SB-KC13501-S	02/02/22	Surface Soil			0.0021	U			0.0021	U			0.0022	J			0.012	
SB-KC13501	SB-KC13501-4	02/02/22	Subsurface Soil			0.0023	U			0.0023	U			0.0010				0.0012	
SB-KC13501	SB-KC13501-4-DUP	02/02/22	Subsurface Soil			0.0023	U			0.0023	U			0.00095				0.0011	
SB-KC13501	SB-KC13501-8	02/02/22	Subsurface Soil			0.0021	U			0.0021	U			0.0040				0.00092	
SB-KC13501	SB-KC13501-12	02/02/22	Subsurface Soil			0.0022	U			0.0022	U			0.00051	J			0.00063	U
SB-KC13501	SB-KC13501-15	02/02/22	Subsurface Soil			0.0022	U			0.0022	U			0.00065	J			0.00067	U
SB-KC13501	SB-KC13501-GW	02/02/22	Groundwater					570				340							
SB-KC13502	SB-KC13502-A	05/18/22	Surface Soil			0.0017	U			0.0017	U			0.0044				0.00044	U
SB-KC13502	SB-KC13502-AA (Dup)	05/18/22	Surface Soil			0.0016	U			0.0016	U			0.0004	U			0.00044	U
SB-KC13502	SB-KC13502-B	05/18/22	Subsurface Soil			0.0016	U			0.0016	U			0.0040	U			0.00044	U
SB-KC13502	SB-KC13502-C	05/18/22	Subsurface Soil			0.0016	U			0.0016	U			0.0004	U			0.00044	U
SB-KC13502	SB-KC13502-D	05/18/22	Subsurface Soil			0.0017	U			0.0017	U			0.0004	U			0.00044	U
SB-KC13502	SB-KC13502-E	05/18/22	Subsurface Soil			0.0017	U			0.0017	U			0.0004	U			0.00044	U
SB-KC13502	SB-KC13502-GW	05/18/22	Groundwater					870				490							
SB-KC13503	SB-KC13503-S	02/02/22	Surface Soil			0.0023	U			0.0023	U			0.00069	U			0.00069	U
SB-KC13503	SB-KC13503-4	02/02/22	Subsurface Soil			0.0020	U			0.0020	U			0.00059	U			0.00059	U
SB-KC13503	SB-KC13503-8	02/02/22	Subsurface Soil			0.0019	U			0.0019	U			0.00057	U			0.00057	U
SB-KC13503	SB-KC13503-12	02/02/22	Subsurface Soil			0.0023	U			0.0023	U			0.00068	U			0.00068	U
SB-KC13503	SB-KC13503-15	02/02/22	Subsurface Soil			0.0024	U			0.0024	U			0.00068	U			0.00068	U
SB-KC13503	SB-KC13503-GW	02/02/22	Groundwater					15				29							
SB-KC13504	SB-KC13504-S	02/02/22	Surface Soil			0.0022	U			0.0022	U			0.00069	U			0.00069	U
SB-KC13504	SB-KC13504-4	02/02/22	Subsurface Soil			0.00066	J			0.00066	J			0.00069	U			0.00069	U
SB-KC13504	SB-KC13504-8	02/02/22	Subsurface Soil			0.0022	U			0.0022	U			0.00069	U			0.00069	U
SB-KC13504	SB-KC13504-12	02/02/22	Subsurface Soil			0.0025	U			0.0025	U			0.00069	U			0.00069	U
SB-KC13504	SB-KC13504-15	02/02/22	Subsurface Soil			0.0024	U			0.0024	U			0.00069	U			0.00069	U
SB-KC13504	SB-KC13504-GW	02/02/22	Groundwater					1300				630							
SB-KC13505	SB-KC13505-S	02/02/22	Surface Soil			0.0020	U			0.0020	U			0.00069	U			0.00069	U
SB-KC13505	SB-KC13505-4	02/02/22	Subsurface Soil			0.0025	U			0.0025	U			0.00069	U			0.00069	U
SB-KC13505	SB-KC13505-4-DUP	02/02/22	Subsurface Soil			0.0025	U			0.0025	U			0.00069	U			0.00069	U
SB-KC13505	SB-KC13505-8	02/02/22	Subsurface Soil			0.0024	U			0.0024	U			0.00069	U			0.00069	U
SB-KC13505	SB-KC13505-12	02/02/22	Subsurface Soil			0.0024	U			0.0024	U			0.00069	U			0.00069	U
SB-KC13505	SB-KC13505-15	02/02/22	Subsurface Soil			0.0024	U			0.0024	U			0.00069	U			0.00069	U
SB-KC13505	SB-KC13505-GW	02/02/22	Groundwater					14				54							
SB-KC13506	SB-KC13506-S	02/03/22	Surface Soil			0.0022	U			0.0022	U			0.00069	U			0.00069	U
SB-KC13506	SB-KC13506-4	02/03/22	Subsurface Soil			0.0023	U			0.0023	U			0.00069	U			0.00069	U
SB-KC13506	SB-KC13506-8	02/03/22	Subsurface Soil			0.0022	U			0.0022	U			0.00069	U			0.00069	U
SB-KC13506	SB-KC13506-12	02/03/22	Subsurface Soil			0.0025	U			0.0025	U			0.00069	U			0.00069	U
SB-KC13506	SB-KC13506-15	02/03/22	Subsurface Soil			0.0023	U			0.0023	U			0.00069	U			0.00069	U
SB-KC13506	SB-KC13506-GW	02/03/22	Groundwater					220				190							
SB-KC13507	SB-KC13507-A	05/24/22	Surface Soil			0.0018	U			0.0018	U			0.00069	U			0.00069	U
SB-KC13507	SB-KC13507-AA (Dup)	05/24/22	Surface Soil			0.0018	U			0.0018	U			0.00069	U			0.00069	U
SB-KC13507	SB-KC13507-B	05/24/22	Subsurface Soil			0.0017	U			0.0017	U			0.00069	U			0.00069	U
SB-KC13507	SB-KC13507-C	05/24/22	Subsurface Soil			0.0016	U			0.0016	U			0.00069	U			0.00069	U
SB-KC13507	SB-KC13507-D	05/24/22	Subsurface Soil			0.0018	U			0.0018	U			0.00069	U			0.00069	U
SB-KC13507	SB-KC13507-E	05/24/22	Subsurface Soil			0.0019	U			0.0019	U			0.00069	U			0.00069	U
SB-KC13507	SB-KC13507-GW	05/24/22	Groundwater					9.3	J			29	J						
SB-KC13508	SB-KC13508-A	05/24/22	Surface Soil			0.0018	U			0.0018	U			0.00069	U			0.00069	U

Table 6-5. SS008P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				Unit		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg	
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
SB-KC13508	SB-KC13508-B	05/24/22	Subsurface Soil	0.0019	U			0.0019	U			0.0011				0.00028	J			0.00046	U			0.00040	J			0.00046	U		
SB-KC13508	SB-KC13508-C	05/24/22	Subsurface Soil	0.0018	U			0.0018	U			0.00035	J			0.00042	J			0.00045	U			0.00036	J			0.00026	J		
SB-KC13508	SB-KC13508-D	05/24/22	Subsurface Soil	0.0018	U			0.0018	U			0.00046	U			0.00046	U			0.00046	U			0.00046	U			0.00046	U		
SB-KC13508	SB-KC13508-E	05/24/22	Subsurface Soil	0.0020	U			0.0020	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U		
SB-KC13508	SB-KC13508-GW	05/24/22	Groundwater			4.1	J			21	J		43				55	J		8.3				140				40	J		
SB-KC13509	SB-KC13509-A	05/24/22	Surface Soil	0.0018	U			0.0018	U			0.00058	J			0.00045	U			0.00025	J			0.0045				0.00050	J		
SB-KC13509	SB-KC13509-B	05/24/22	Subsurface Soil	0.0017	U			0.0017	U			0.00041	U			0.00041	U			0.00041	U			0.00066				0.00041	U		
SB-KC13509	SB-KC13509-C	05/24/22	Subsurface Soil	0.0018	U			0.0018	U			0.00044	U			0.00044	U			0.00044	U			0.00065	J			0.00044	U		
SB-KC13509	SB-KC13509-D	05/24/22	Subsurface Soil	0.0019	U			0.0019	U			0.00048	U			0.00048	U			0.00048	U			0.00048	U			0.00048	U		
SB-KC13509	SB-KC13509-E	05/24/22	Subsurface Soil	0.0019	U			0.0019	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U		
SB-KC13510	SB-KC13510-A	05/26/22	Surface Soil	0.0017	U			0.0017	U			0.00077				0.00033	J			0.0013				0.0062				0.0012			
SB-KC13510	SB-KC13510-AA (Dup)	05/26/22	Surface Soil	0.0017	U			0.0017	U			0.00086				0.00038	J			0.00087				0.0042				0.0013			
SB-KC13510	SB-KC13510-B	05/26/22	Subsurface Soil	0.0017	U			0.0017	U			0.00088				0.00030	J			0.00031	J			0.0019				0.0010			
SB-KC13510	SB-KC13510-C	05/26/22	Subsurface Soil	0.0019	U			0.0019	U			0.00046	U			0.00060	J			0.00046	U			0.00046	U			0.00046	U		
SB-KC13510	SB-KC13510-D	05/26/22	Subsurface Soil	0.0019	U			0.0019	U			0.00047	U			0.00047	U			0.00047	U			0.00031	J			0.00047	U		
SB-KC13510	SB-KC13510-E	05/26/22	Subsurface Soil	0.0019	U			0.0019	U			0.00047	U			0.00047	U			0.00047	U			0.00047	U			0.00047	U		
SB-KC13511	SB-KC13511-A	05/26/22	Surface Soil	0.0017	U			0.0017	U			0.00031	J			0.00043	U			0.00027	J			0.0041	U			0.00043	U		
SB-KC13511	SB-KC13511-AA (Dup)	05/26/22	Surface Soil	0.0018	U			0.0018	U			0.00035	J			0.00044	U			0.00044	U			0.0021	J			0.00027	J		
SB-KC13511	SB-KC13511-B	05/26/22	Subsurface Soil	0.0018	U			0.0018	U			0.00057	J			0.00046	U			0.00046	U			0.00079				0.00032	J		
SB-KC13511	SB-KC13511-C	05/26/22	Subsurface Soil	0.0018	U			0.0018	U			0.0013				0.00046	U			0.00046	U			0.00036	J			0.00042	J		
SB-KC13511	SB-KC13511-D	05/26/22	Subsurface Soil	0.002	U			0.002	U			0.00051	U			0.00051	U			0.00051	U			0.00051	U			0.00051	U		
SB-KC13511	SB-KC13511-E	05/26/22	Subsurface Soil	0.002	U			0.002	U			0.0005	U			0.0005	U			0.0005	U			0.0005	U			0.0005	U		

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1, and U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

mg/kg = milligram(s) per kilogram

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

Table 6-6. RS002P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				Unit		mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
SB-B5201	SB-B5201-S	01/31/22	Surface Soil	0.0024	U			0.0024	U			0.0022				0.00047	J			0.00071	U			0.0031				0.00061	J		
SB-B5201	SB-B5201-S-DUP	01/31/22	Surface Soil	0.0026	U			0.0026	U			0.0026				0.00051	J			0.00078	U			0.0029				0.00064	J		
SB-B5201	SB-B5201-4	01/31/22	Subsurface Soil	0.0021	U			0.0021	U			0.00062	U			0.00062	U			0.00062	U			0.00025	J			0.00062	U		
SB-B5201	SB-B5201-8	01/31/22	Subsurface Soil	0.0026	U			0.0026	U			0.00077	U			0.00077	U			0.00077	U			0.00077	U			0.00077	U		
SB-B5201	SB-B5201-12	01/31/22	Subsurface Soil	0.0025	U			0.0025	U			0.00076	U			0.00076	U			0.00076	U			0.00076	U			0.00076	U		
SB-B5201	SB-B5201-15	01/31/22	Subsurface Soil	0.0024	U			0.0024	U			0.00072	U			0.00072	U			0.00072	U			0.00072	U			0.00072	U		
SB-B5202	SB-B5202-S	01/31/22	Surface Soil	0.0028	U			0.0028	U			0.00083	U			0.00083	U			0.00083	U			0.00075	J			0.00083	U		
SB-B5202	SB-B5202-4	01/31/22	Subsurface Soil	0.0020	U			0.0020	U			0.00059	U			0.00059	U			0.00059	U			0.00059	U			0.00059	U		
SB-B5202	SB-B5202-8	01/31/22	Subsurface Soil	0.0021	U			0.0021	U			0.00063	U			0.00063	U			0.00063	U			0.00063	U			0.00063	U		
SB-B5202	SB-B5202-12	01/31/22	Subsurface Soil	0.0024	U			0.0024	U			0.00072	U			0.00072	U			0.00072	U			0.00072	U			0.00072	U		
SB-B5202	SB-B5202-15	01/31/22	Subsurface Soil	0.0025	U			0.0025	U			0.00075	U			0.00075	U			0.00075	U			0.00075	U			0.00075	U		
SB-B5203	SB-B5203-S	01/31/22	Surface Soil	0.0023	U			0.0023	U			0.00070	U			0.00070	U			0.00070	U			0.00092				0.00070	U		
SB-B5203	SB-B5203-S-DUP	01/31/22	Surface Soil	0.0022	U			0.0022	U			0.00066	U			0.00066	U			0.00066	U			0.00060	J			0.00066	U		
SB-B5203	SB-B5203-4	01/31/22	Subsurface Soil	0.0021	U			0.0021	U			0.00063	U			0.00063	U			0.00063	U			0.00063	U			0.00063	U		
SB-B5203	SB-B5203-8	01/31/22	Subsurface Soil	0.0025	U			0.0025	U			0.00074	U			0.00074	U			0.00074	U			0.00074	U			0.00074	U		
SB-B5203	SB-B5203-12	01/31/22	Subsurface Soil	0.0023	U			0.0023	U			0.00069	U			0.00069	U			0.00069	U			0.00069	U			0.00069	U		
SB-B5203	SB-B5203-15	01/31/22	Subsurface Soil	0.0023	U			0.0023	U			0.00069	U			0.00069	U			0.00069	U			0.00069	U			0.00069	U		
SB-B5204	SB-B5204-S	01/31/22	Surface Soil	0.00055	J			0.0012	J			0.026				0.0019				0.00045	J			0.23				0.0031			
SB-B5204	SB-B5204-4	01/31/22	Subsurface Soil	0.0024	U			0.0024	U			0.0072				0.00096				0.00072	U			0.0050				0.0010			
SB-B5204	SB-B5204-8	01/31/22	Subsurface Soil	0.0026	U			0.0026	U			0.0049				0.0011				0.00077	U			0.00053	J			0.00046	J		
SB-B5204	SB-B5204-12	01/31/22	Subsurface Soil	0.0025	U			0.0025	U			0.00074	U			0.00074	U			0.00074	U			0.00074	U			0.00074	U		
SB-B5204	SB-B5204-15	01/31/22	Subsurface Soil	0.0024	U			0.0024	U			0.00073	U			0.00073	U			0.00073	U			0.00073	U			0.00073	U		
SB-B5205	SB-B5205-S	01/31/22	Surface Soil	0.0017	J			0.0018	J			0.0080				0.0041				0.00077	U			0.0020				0.00039	J		
SB-B5205	SB-B5205-S-DUP	01/31/22	Surface Soil	0.0022	J			0.0015	J			0.0094				0.0045				0.00072	U			0.0023				0.00037	J		
SB-B5205	SB-B5205-4	01/31/22	Subsurface Soil	0.0022	U			0.0022	U			0.00066	U			0.00066	U			0.00066	U			0.00087				0.00066	U		
SB-B5205	SB-B5205-8	01/31/22	Subsurface Soil	0.0027	U			0.0027	U			0.00080	U			0.00080	U			0.00080	U			0.00080	U			0.00080	U		
SB-B5205	SB-B5205-12	01/31/22	Subsurface Soil	0.0026	U			0.0026	U			0.00078	U			0.00078	U			0.00078	U			0.00078	U			0.00078	U		
SB-B5205	SB-B5205-15	01/31/22	Subsurface Soil	0.0023	U			0.0023	U			0.00070	U			0.00070	U			0.00070	U			0.00039	J			0.00070	U		
SB-B5205	SB-B5205-GW	01/31/22	Groundwater			84				120			1600					320			48				1300				270		
SB-B5206	SB-B5206-S	01/31/22	Surface Soil	0.0026	U			0.0026	U			0.030				0.00095				0.038	J			6.4				0.0068			
SB-B5206	SB-B5206-4	01/31/22	Subsurface Soil	0.0023	U			0.0023	U			0.0066				0.00036	J			0.00033	J			0.015				0.0018			
SB-B5206	SB-B5206-8	01/31/22	Subsurface Soil	0.0025	U			0.0025	U			0.00075	U			0.00075	U			0.00075	U			0.00075	U			0.00075	U		
SB-B5206	SB-B5206-12	01/31/22	Subsurface Soil	0.0024	U			0.0024	U			0.00072	U			0.00072	U			0.00072	U			0.00072	U			0.00072	U		
SB-B5206	SB-B5206-15	01/31/22	Subsurface Soil	0.0023	U			0.0023	U			0.00023	J			0.00069	U			0.00069	U			0.00070				0.00069	U		
SB-B5206	SB-B5206-GW	01/31/22	Groundwater			59				120			3000					400			170				9900				740		
SB-B5207	SB-B5207-A	05/18/22	Surface Soil	0.0030				0.0024	J			0.050				0.012				0.011				0.42				0.011			
SB-B5207	SB-B5207-C	05/18/22	Subsurface Soil	0.0018	U			0.0018	U			0.00047	J			0.00045	U			0.00045	U			0.0036				0.00045	U		
SB-B5207	SB-B5207-B	05/18/22	Subsurface Soil	0.0015	J			0.0059				0.082				0.0076				0.0095				0.38				0.025			
SB-B5207	SB-B5207-D	05/18/22	Subsurface Soil	0.0019	U			0.0019	U			0.00028	J			0.00049	U			0.00049	U			0.00083				0.00049	U		
SB-B5208	SB-B5208-A	05/18/22	Surface Soil	0.0019	U			0.0019	U			0.00044	J			0.00030	J			0.00047	U			0.0021				0.00030	J		
SB-B5208	SB-B5208-AA (Dup)	05/18/22	Surface Soil	0.0019	U			0.0019	U			0.00047	J			0.00029	J			0.00047	U			0.0024				0.00037	J		
SB-B5208	SB-B5208-B	05/18/22	Subsurface Soil	0.0017	U			0.0017	U			0.00041	U			0.00036	J			0.00041	U			0.00041	U			0.00041	U		
SB-B5208	SB-B5208-C	05/18/22	Subsurface Soil	0.0018	U			0.0018	U			0.00044	U			0.00044	U			0.00044	U			0.00044	U			0.00044	U		
SB-B5208	SB-B5208-D	05/18/22	Subsurface Soil	0.0019	U			0.0019	U			0.00048	U			0.00048	U			0.00048	U			0.00048	U			0.00048	U		
SB-B5209	SB-B5209-A	05/18/22	Surface Soil	0.0019	U			0.0019	U																						

Table 6-6. RS002P Soil and Groundwater Grab Analytical Results Summary

PSL ⁽¹⁾ Unit				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
SB-B5210	SB-B5210-D	05/18/22	Subsurface Soil	0.0018	U			0.0018	U			0.00061	J			0.00023	J			0.00046	U			0.00046	U			0.00046	U		
SB-B5210	SB-B5210-E	05/18/22	Subsurface Soil	0.0018	U			0.0018	U			0.00044	U			0.00044	U			0.00044	U			0.00044	U			0.00044	U		
SB-B5210	SB-B5210-GW	05/18/22	Groundwater			260				130			2900				550			46				2500				320			
SB-B5210	SB-B5210-GWA (Dup)	05/18/22	Groundwater			300				150			3400				660			53				2900				350			
SB-B5211	SB-B5211-A	05/19/22	Surface Soil	0.0021	U			0.0021	U			0.00038	J			0.00052	U			0.00052	U			0.0035				0.00052	U		
SB-B5211	SB-B5211-B	05/19/22	Subsurface Soil	0.0018	U			0.0018	U			0.00057	J			0.00046	U			0.00046	U			0.00041	J			0.00036	J		
SB-B5211	SB-B5211-C	05/19/22	Subsurface Soil	0.0016	U			0.0016	U			0.00039	U			0.00039	U			0.00039	U			0.00039	U			0.00039	U		
SB-B5211	SB-B5211-D	05/19/22	Subsurface Soil	0.0020	U			0.0020	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U		
SB-B5211	SB-B5211-E	05/19/22	Subsurface Soil	0.0019	U			0.0019	U			0.00047	U			0.00047	U			0.00047	U			0.00047	U			0.00047	U		
SB-B5212	SB-B5212-A	05/19/22	Surface Soil	0.0020	U			0.0020	U			0.00052	J			0.00051	U			0.00051	U			0.00045	J			0.00051	U		
SB-B5212	SB-B5212-B	05/19/22	Subsurface Soil	0.0020	U			0.0020	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U		
SB-B5212	SB-B5212-C	05/19/22	Subsurface Soil	0.0018	U			0.0018	U			0.00044	U			0.00044	U			0.00044	U			0.00044	U			0.00044	U		
SB-B5212	SB-B5212-D	05/19/22	Subsurface Soil	0.0018	U			0.0018	U			0.00045	U			0.00045	U			0.00045	U			0.00045	U			0.00045	U		
SB-B5212	SB-B5212-E	05/19/22	Subsurface Soil	0.0018	U			0.0018	U			0.00044	U			0.00044	U			0.00044	U			0.00044	U			0.00044	U		
SB-B5212	SB-B5212-EA (Dup)	05/19/22	Subsurface Soil	0.0020	U			0.0020	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U		
SB-B5213	SB-B5213-A	05/18/22	Surface Soil	0.0020	U			0.0020	U			0.0041				0.00041	J			0.0019				0.067				0.0014			
SB-B5213	SB-B5213-B	05/18/22	Subsurface Soil	0.00061	J			0.00065	J			0.027				0.0036				0.0015				0.038				0.0074			
SB-B5213	SB-B5213-C	05/18/22	Subsurface Soil	0.0019	U			0.0019	U			0.0023				0.00042	J			0.00048	U			0.0048				0.00077			
SB-B5213	SB-B5213-D	05/18/22	Subsurface Soil	0.0018	U			0.0018	U			0.00046	U			0.00046	U			0.00046	U			0.00046	U			0.00046	U		
SB-B5213	SB-B5213-E	05/18/22	Subsurface Soil	0.0020	U			0.0020	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U		
SB-B5214	SB-B5214-A	05/18/22	Surface Soil	0.0021	U			0.00092	J			0.018				0.0026				0.0085				0.30				0.0045			
SB-B5214	SB-B5214-AA (Dup)	05/18/22	Surface Soil	0.00058	J			0.0022	J			0.022				0.0031				0.012				0.39				0.0061			
SB-B5214	SB-B5214-B	05/18/22	Subsurface Soil	0.0018	U			0.0018	U			0.00064	J			0.00045	U			0.00026	J			0.0065				0.00065	J		
SB-B5214	SB-B5214-C	05/18/22	Subsurface Soil	0.0019	U			0.0019	U			0.00047	U			0.00047	U			0.00047	U			0.00076				0.00031	J		
SB-B5214	SB-B5214-D	05/18/22	Subsurface Soil	0.0019	U			0.0019	U			0.00048	U			0.00048	U			0.00048	U			0.00048	U			0.00048	U		
SB-B5215	SB-B5215-A	05/19/22	Surface Soil	0.002	U			0.002	U			0.00039	J			0.00049	U			0.00049	U			0.00054	J			0.00029	J		
SB-B5215	SB-B5215-B	05/19/22	Subsurface Soil	0.0017	U			0.0017	U			0.00042	U			0.00042	U			0.00042	U			0.00042	U			0.00042	U		
SB-B5215	SB-B5215-C	05/19/22	Subsurface Soil	0.002	U			0.002	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U			0.00049	U		
SB-B5215	SB-B5215-D	05/19/22	Subsurface Soil	0.0019	U			0.0019	U			0.00048	U			0.00048	U			0.00048	U			0.00048	U			0.00048	U		

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1 (November 2023), and U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

mg/kg = milligram(s) per kilogram

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

Table 6-7. RS001P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾ Unit				PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA							
				1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0						
				mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L						
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
SB-RA501	SB-RA501-S	02/03/22	Surface Soil	0.0021	U			0.00095	J			0.0031				0.0016		0.077		0.0011			
SB-RA501	SB-RA501-4	02/03/22	Subsurface Soil	0.0023	U			0.0023	U			0.030				0.00098		0.14		0.0076			
SB-RA501	SB-RA501-8	02/03/22	Subsurface Soil	0.0020	U			0.0020	U			0.00056	J			0.00035	J			0.00061	U		
SB-RA501	SB-RA501-12	02/03/22	Subsurface Soil	0.0022	U			0.0022	U			0.00053	J			0.00037	J			0.00065	U		
SB-RA501	SB-RA501-15	02/03/22	Subsurface Soil	0.0025	U			0.0025	U			0.00080				0.00043	J			0.00076	U		
SB-RA501	SB-RA501-GW	02/03/22	Groundwater			340				570			3600			2300			180		12000		860
SB-RA502	SB-RA502-S	02/03/22	Surface Soil	0.0020	U			0.0020	U			0.00024	J			0.00060	U			0.00060	U		
SB-RA502	SB-RA502-4	02/03/22	Subsurface Soil	0.0023	U			0.0023	U			0.0037				0.00068	U			0.00068	U	0.00099	
SB-RA502	SB-RA502-4-DUP	02/03/22	Subsurface Soil	0.0023	U			0.0023	U			0.0038				0.00070	U			0.00070	U	0.0011	
SB-RA502	SB-RA502-8	02/03/22	Subsurface Soil	0.0024	U			0.0024	U			0.00036	J			0.00032	J			0.00071	U		
SB-RA502	SB-RA502-10	02/03/22	Subsurface Soil	0.0021	U			0.0021	U			0.0041				0.00071				0.00063	U	0.033	
SB-RA503	SB-RA503-S	02/02/22	Surface Soil	0.0022	U			0.0022	U			0.0018				0.00054	J			0.00069		0.012	
SB-RA503	SB-RA503-4	02/02/22	Subsurface Soil	0.0023	U			0.0023	U			0.00074				0.00033	J			0.00070	U	0.0030	J
SB-RA503	SB-RA503-4-Dup	02/02/22	Subsurface Soil	0.0024	U			0.0024	U			0.00060	J			0.00033	J			0.00072	U	0.0025	
SB-RA503	SB-RA503-8	02/02/22	Subsurface Soil	0.0023	U			0.0023	U			0.00068	U			0.00068	U			0.00068	U	0.0012	J
SB-RA503	SB-RA503-12	02/02/22	Subsurface Soil	0.0022	U			0.0022	U			0.00071				0.00025	J			0.00067	U	0.0019	
SB-RA503	SB-RA503-15	02/02/22	Subsurface Soil	0.0023	U			0.0023	U			0.00070	U			0.00070	U			0.00070	U	0.00070	U
SB-RA504	SB-RA504-S	02/03/22	Surface Soil	0.0023	U			0.0023	U			0.0034				0.00058	J			0.00071		0.034	
SB-RA504	SB-RA504-4	02/03/22	Subsurface Soil	0.0023	U			0.0023	U			0.0037				0.00046	J			0.00068		0.32	
SB-RA504	SB-RA504-8	02/03/22	Subsurface Soil	0.0025	U			0.0025	U			0.0025				0.00058	J			0.00076	U	0.020	
SB-RA504	SB-RA504-12	02/03/22	Subsurface Soil	0.0023	U			0.0023	U			0.0024				0.00063	J			0.00069	U	0.045	
SB-RA504	SB-RA504-15	02/03/22	Subsurface Soil	0.00073	J			0.0023	U			0.0070				0.0020				0.00070	U	0.0081	
SB-RA505	SB-RA505-S	02/03/22	Surface Soil	0.0070	J			0.024	U			0.30				0.031				0.0063	J	4.5	
SB-RA505	SB-RA505-4	02/03/22	Subsurface Soil	0.028				0.013				0.63				0.13				0.0063	J	6.5	
SB-RA505	SB-RA505-8	02/03/22	Subsurface Soil	0.0049				0.0033				0.10				0.022				0.0012		0.49	
SB-RA505	SB-RA505-12	02/03/22	Subsurface Soil	0.0074				0.0055				0.16				0.051				0.0014		1	
SB-RA505	SB-RA505-15	02/03/22	Subsurface Soil	0.0023	U			0.0023	U			0.00054	J			0.00026	J			0.00069	U	0.0069	
SB-RA505	SB-RA505-GW	02/03/22	Groundwater			660				490			8900			2300			120			26000	
SB-RA506	SB-RA506-S	02/03/22	Surface Soil	0.0021	U			0.0021	U			0.00031	J			0.00063	U			0.00063	U	0.018	
SB-RA506	SB-RA506-4	02/03/22	Subsurface Soil	0.0022	U			0.0022	U			0.0030				0.00033	J			0.00056	J	0.042	
SB-RA506	SB-RA506-4-Dup	02/03/22	Subsurface Soil	0.0021	U			0.0021	U			0.0031				0.00044	J			0.00057	J	0.043	
SB-RA506	SB-RA506-8	02/03/22	Subsurface Soil	0.0029	U			0.0029	U			0.029				0.0014				0.00086	U	0.00086	U
SB-RA506	SB-RA506-12-12.5	02/03/22	Subsurface Soil	0.0029	U			0.0029	U			0.00055	J			0.00047	J			0.00087	U	0.0023	
SB-RA506	SB-RA506-GW	02/03/22	Groundwater			290				350			2600			1800			32			4100	
SB-RA507	SB-RA507-A	05/17/22	Surface Soil	0.0011	J			0.0012	J			0.0063	J			0.0020				0.0028		0.88	
SB-RA507	SB-RA507-B	05/17/22	Subsurface Soil	0.0046				0.00086	J			0.035				0.0068				0.00092		0.96	
SB-RA507	SB-RA507-C	05/17/22	Subsurface Soil	0.0012	J			0.0015	U			0.018				0.0021				0.00093		0.82	
SB-RA507	SB-RA507-D	05/17/22	Subsurface Soil	0.0019	U			0.0019	U			0.00047	U			0.00047	U			0.00047	U	0.0018	
SB-RA507	SB-RA507-E	05/17/22	Subsurface Soil	0.0019	U			0.0019	U			0.00047	U			0.00047	U			0.00047	U	0.00047	U
SB-RA507	SB-RA507-GW	05/17/22	Groundwater			610				480			7000			2700			67			16000	
SB-RA508	SB-RA508-A	05/26/22	Surface Soil	0.0018	U			0.0018	U			0.00052	J			0.00047	J			0.00061	J	0.0093	
SB-RA508	SB-RA508-B	05/26/22	Subsurface Soil	0.0018	U			0.0018	U			0.00023	J			0.00035	J			0.00046	U	0.0030	
SB-RA508	SB-RA508-BA (Dup)	05/26/22	Subsurface Soil	0.0018	U			0.0018	U			0.00024	J			0.00038	J			0.00045	U	0.0032	
SB-RA508	SB-RA508-C	05/26/22	Subsurface Soil	0.0020	U			0.0020	U			0.00031	J			0.00039	J			0.00036	J	0.0042	
SB-RA508	SB-RA508-D	05/26/22	Subsurface Soil	0.0020	U			0.0020	U			0.0011				0.00031	J			0.00051	U	0.0039	
SB-RA508	SB-RA508-E	05/26/22	Subsurface Soil	0.0020	U			0.0020	U			0.00050	U			0.00050	U			0.00050	U	0.00050	U
SB-RA509	SB-RA509-A	05/26/22	Surface Soil	0.00045	J			0.00065	J			0.018				0.0036				0.0041		0.25	J
SB-RA509	SB-RA509-B	05/26/22	Subsurface Soil	0.00087	J			0.0013	J			0.034				0.0075				0.0020		0.059	
SB-RA509	SB-RA509-C	05/26/22	Subsurface Soil	0.0017	U			0.0017	U			0.022				0.0023				0.00042	U	0.00026	J
SB-RA509	SB-RA509-D	05/26/22	Subsurface Soil	0.0021	U			0.0021	U			0.0028				0.00054	J			0.00052	U	0.019	
SB-RA509	SB-RA509-E	05/26/22	Subsurface Soil	0.0020	U			0.0020	U			0.00063	J			0.00037	J			0.00050	U	0.0028	
SB-RA510	SB-RA510-A	05/18/22	Surface Soil	0.00083	J			0.0017	U			0.044				0.0038				0.0015		1	

Table 6-7. RS001P Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				Unit		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg	
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
SB-RA510	SB-RA510-AA (Dup)	05/18/22	Surface Soil	0.0011	J			0.00095	J			0.047				0.0054				0.0020				0.93				0.012			
SB-RA510	SB-RA510-B	05/18/22	Subsurface Soil	0.0016	U			0.0016	U			0.0018				0.00030	J			0.00034	J			0.19				0.0014			
SB-RA510	SB-RA510-C	05/18/22	Subsurface Soil	0.0016	U			0.0016	U			0.0010				0.00037	J			0.00040	U			0.12				0.00080			
SB-RA510	SB-RA510-D	05/18/22	Subsurface Soil	0.00055	J			0.00086	J			0.0065				0.0059				0.00046	U			0.047				0.0033			
SB-RA511	SB-RA511-A	05/17/22	Surface Soil	0.0015	J			0.0036				0.077				0.020				0.0038	J			10				0.010			
SB-RA511	SB-RA511-B	05/17/22	Subsurface Soil	0.0020	J			0.0031				0.19				0.019				0.0053	J			8.8				0.025			
SB-RA511	SB-RA511-C	05/17/22	Subsurface Soil	0.015				0.020				0.82				0.16				0.033				7.7				0.18			
SB-RA511	SB-RA511-D	05/17/22	Subsurface Soil	0.0013	J			0.0020	U			0.020				0.0027				0.00049	U			0.037				0.0020			
SB-RA511	SB-RA511-E	05/17/22	Subsurface Soil	0.0019	U			0.0019	U			0.00047	U			0.00047	U			0.00047	U			0.0014				0.00047	U		
SB-RA511	SB-RA511-GW	05/17/22	Groundwater			870	J			1300	J			21000	J			9000	J			220	J			65000	J			3400	J
SB-RA511	SB-RA511-GWA (Dup)	05/17/22	Groundwater			350	J			440	J			6100	J			3000	J			96	J			39000	J			1100	J
SB-RA512	SB-RA512-A	05/26/22	Surface Soil	0.0013	J			0.0019	J			0.025				0.0029				0.0070				0.87				0.011			
SB-RA512	SB-RA512-B	05/26/22	Subsurface Soil	0.0018	U			0.0014	J			0.021				0.0029				0.0057				1.5				0.013			
SB-RA512	SB-RA512-BA (Dup)	05/26/22	Subsurface Soil	0.0018	U			0.0014	J			0.025				0.0030				0.0069				1.8				0.016			
SB-RA512	SB-RA512-C	05/26/22	Subsurface Soil	0.0014	J			0.0026				0.092				0.0092				0.0012				0.048				0.028			
SB-RA512	SB-RA512-D	05/26/22	Subsurface Soil	0.0018	U			0.0018	U			0.00086				0.00027	J			0.00046	U			0.0042				0.00046	U		
SB-RA513	SB-RA513-A	05/26/22	Surface Soil	0.0017	U			0.0017	U			0.012				0.0012				0.0041				1.2				0.0068			
SB-RA513	SB-RA513-B	05/26/22	Subsurface Soil	0.00091	J			0.00098	J			0.012	J			0.0016				0.0019	J			1.9	J			0.0045	J		
SB-RA513	SB-RA513-BA (Dup)	05/26/22	Subsurface Soil	0.00080	J			0.00082	J			0.0063	J			0.0013				0.0010	J			1.1	J			0.0026	J		
SB-RA513	SB-RA513-C	05/26/22	Subsurface Soil	0.025				0.0063				0.021				0.020				0.00096	J			2.4				0.0060			
SB-RA513	SB-RA513-D	05/26/22	Subsurface Soil	0.0017	U			0.0017	U			0.00057	J			0.00043	U			0.00043	U			0.0083				0.00043	U		
SB-RA513	SB-RA513-E	05/26/22	Subsurface Soil	0.0017	U			0.0017	U			0.00043	U			0.00043	U			0.00043	U			0.0014				0.00043	U		
SB-RA514	SB-RA514-A	05/17/22	Surface Soil	0.0017	U			0.0017	U			0.0043				0.00038	J			0.00079				0.22				0.0015			
SB-RA514	SB-RA514-B	05/17/22	Subsurface Soil	0.0018	U			0.0018	U			0.025				0.0028				0.0034				1.8				0.0052			
SB-RA514	SB-RA514-C	05/17/22	Subsurface Soil	0.00087	J			0.0012	J			0.06				0.0044				0.0042				1.8				0.012			
SB-RA514	SB-RA514-D	05/17/22	Subsurface Soil	0.0017	U			0.0017	U			0.00082				0.00024	J			0.00044	U			0.0029				0.00044	U		
SB-RA514	SB-RA514-E	05/17/22	Subsurface Soil	0.0017	U			0.0017	U			0.001				0.00042	U			0.00042	U			0.0026				0.00042	U		
SB-RA514	SB-RA514-GW	05/17/22	Groundwater			580	J			330	J			7,300	J			1,300	J			110	J			25,000				680	J

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1, and U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

mg/kg = milligram(s) per kilogram

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

Table 6-8a. No Name Ditch Soil and Groundwater Grab Analytical Results Summary

Location	Sample ID	Sample Date	Sample Type	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
						1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0
				Unit		mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L
Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
NND-01	NND-01-A	10/12/22	Surface Soil	0.0015	U			0.0015	U			0.00051	J			0.00038	U		
NND-01	NND-01-B	10/12/22	Subsurface Soil	0.0016	U			0.0016	U			0.00048	J			0.00039	U		
NND-01	NND-01-C	10/12/22	Subsurface Soil	0.0016	U			0.0016	U			0.00040	U			0.00040	U		
NND-01	NND-01-GW	10/12/22	Groundwater			17			89			180			350		16		600
NND-02	NND-02-A	10/13/22	Surface Soil	0.0017	U			0.0017	U			0.0044			0.00057	J		0.053	
NND-02	NND-02-AA (Dup)	10/13/22	Surface Soil	0.0017	U			0.0017	U			0.0045			0.00060	J		0.058	
NND-02	NND-02-B	10/13/22	Subsurface Soil	0.0017	U			0.0017	U			0.00037	J			0.00042	U		0.00070
NND-02	NND-02-C	10/13/22	Subsurface Soil	0.0018	U			0.0018	U			0.00045	U			0.00045	U		0.00025
NND-02	NND-02-GW	10/13/22	Groundwater			13	J		62	J		360			160	J		5.3	J
NND-03	NND-03-A	10/13/22	Surface Soil	0.0017	U			0.0017	U			0.00026	J			0.00042	U		0.021
NND-03	NND-03-B	10/13/22	Subsurface Soil	0.0018	U			0.0018	U			0.0098			0.00042	J		0.00046	U
NND-03	NND-03-C	10/13/22	Subsurface Soil	0.0019	U			0.0019	U			0.00033	J			0.00048	U		0.00048
NND-03	NND-03-GW	10/13/22	Groundwater			12			40	J		390			84		7.6	J	
NND-03	NND-03-GWA (Dup)	10/13/22	Groundwater			10			39	J		360			82		6.3	J	
NND-04	NND-04-A	10/13/22	Surface Soil	0.0015	U			0.0015	U			0.0011			0.00042	J		0.00038	U
NND-04	NND-04-B	10/13/22	Subsurface Soil	0.0017	U			0.0017	U			0.0018			0.00031	J		0.00043	U
NND-04	NND-04-C	10/13/22	Subsurface Soil	0.0022	U			0.0022	U			0.0029			0.00030	J		0.00054	U
NND-04	NND-04-CA (Dup)	10/13/22	Subsurface Soil	0.0017	U			0.0017	U			0.0024			0.00026	J		0.00043	U
NND-04	NND-04-GW	10/13/22	Groundwater			12			26			460			69		6.1		270
NND-05	NND-05-A	10/13/22	Surface Soil	0.0017	U			0.0017	U			0.0010			0.00043	U		0.00043	U
NND-05	NND-05-B	10/13/22	Subsurface Soil	0.0019	U			0.0019	U			0.0039			0.00046	U		0.00046	U
NND-05	NND-05-C	10/13/22	Subsurface Soil	0.0017	U			0.0017	U			0.00043	U			0.00043	U		0.00055
NND-05	NND-05-GW	10/13/22	Groundwater			12	J		25	J		260			52		11	J	
NND-06	NND-06-A	10/13/22	Surface Soil	0.0018	U			0.0018	U			0.0015			0.00045	U		0.00045	U
NND-06	NND-06-B	10/13/22	Subsurface Soil	0.0020	U			0.0020	U			0.00050	U			0.00050	U		0.00050
NND-06	NND-06-C	10/13/22	Subsurface Soil	0.0022	U			0.0022	U			0.0013			0.00055	U		0.00055	U
NND-06	NND-06-GW	10/13/22	Groundwater			23			53			370			210		11		520
NND-07	NND-07-A	10/13/22	Surface Soil	0.0015	U			0.0015	U			0.00023	J			0.00038	U		0.00021
NND-07	NND-07-B	10/13/22	Subsurface Soil	0.0018	U			0.0018	U			0.0022			0.00048	J		0.00044	U
NND-07	NND-07-C	10/13/22	Subsurface Soil	0.0019	U			0.0019	U			0.0010			0.00049	U		0.00049	U
NND-07	NND-07-GW	10/13/22	Groundwater			85			150			960			600		27		2800
NND-08	NND-08-A	10/12/22	Surface Soil	0.0016	U			0.0012	J			0.0017			0.0021			0.0013	
NND-08	NND-08-B	10/12/22	Subsurface Soil	0.0018	U			0.0018	U			0.00046	U			0.00046	U		0.00046
NND-08	NND-08-C	10/12/22	Subsurface Soil	0.0020	U			0.0020	U			0.00049	U			0.00049	U		0.00049
NND-08	NND-08-GW	10/12/22	Groundwater			21			140			230			410		28		470
NND-09	NND-09-A	10/12/22	Surface Soil	0.0016	U			0.0016	U			0.0016			0.00029	J		0.00041	U
NND-09	NND-09-B	10/12/22	Subsurface Soil	0.0016	U			0.0016	U			0.00054	J			0.00041	U		0.00053
NND-09	NND-09-C	10/12/22	Subsurface Soil	0.0017	U			0.0017	U			0.00042	U			0.00042	U		0.00042
NND-09	NND-09-GW	10/12/22	Groundwater			16			82			140			330		9.7		320
NND-10	NND-10-A	10/12/22	Surface Soil	0.0018	U			0.0018	U			0.0023			0.00022	J		0.00028	J
NND-10	NND-10-B	10/12/22	Subsurface Soil	0.0017	U			0.0017	U			0.0037			0.00043	U		0.00043	U
NND-10	NND-10-BA (Dup)	10/12/22	Subsurface Soil	0.0017	U			0.0017	U			0.0057			0.00043	U		0.00043	U
NND-10	NND-10-C	10/12/22	Subsurface Soil	0.0017	U			0.0017	U			0.00043	U			0.00043	U		0.00095
NND-10	NND-10-GW	10/12/22	Groundwater			37			100			300			400		13		830
																			110

Table 6-8a. No Name Ditch Soil and Groundwater Grab Analytical Results Summary

Location	Sample ID	Sample Date	Sample Type	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
						1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0
				Unit		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg	
						Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
NND-11	NND-11-A	10/12/22	Surface Soil			0.0017	U			0.0017	U			0.00038	J			0.00037	J
NND-11	NND-11-B	10/12/22	Subsurface Soil			0.0017	U			0.0017	U			0.00043	U			0.00042	U
NND-11	NND-11-C	10/12/22	Subsurface Soil			0.0018	UJ			0.0018	UJ			0.0015	J			0.00045	UJ
NND-11	NND-11-GW	10/12/22	Groundwater					66				130		690		500		19	
NND-12	NND-12-A	10/12/22	Surface Soil			0.0018	U			0.0018	U			0.0020		0.00043	J	0.00045	U
NND-12	NND-12-AA (Dup)	10/12/22	Surface Soil			0.0017	U			0.0017	U			0.0013		0.00028	J	0.00042	U
NND-12	NND-12-B	10/12/22	Subsurface Soil			0.0016	U			0.0016	U			0.00038	J			0.00040	U
NND-12	NND-12-C	10/12/22	Subsurface Soil			0.0018	U			0.0018	U			0.00044	U			0.00044	U
NND-12	NND-12-GW	10/12/22	Groundwater					71				140		670		510		22	
NND-13	NND-13-A	10/12/22	Surface Soil			0.0017	U			0.0017	U			0.00042	U			0.00042	U
NND-13	NND-13-B	10/12/22	Subsurface Soil			0.0018	U			0.0018	U			0.00044	U			0.00044	U
NND-13	NND-13-C	10/12/22	Subsurface Soil			0.0018	U			0.0018	U			0.00044	U			0.00044	U
NND-13	NND-13-GW	10/12/22	Groundwater					75				200		920		720		20	J
NND-14	NND-14-A	10/12/22	Surface Soil			0.0017	U			0.0017	U			0.00043	U			0.00043	U
NND-14	NND-14-B	10/12/22	Subsurface Soil			0.0017	U			0.0017	U			0.00043	U			0.00043	U
NND-14	NND-14-C	10/12/22	Subsurface Soil			0.0017	U			0.0017	U			0.00043	U			0.00043	U
NND-14	NND-14-GW	10/12/22	Groundwater					69				160		780		600		28	
NND-14	NND-14-GWA (Dup)	10/12/22	Groundwater					69				150		750		590		26	
NND-15	NND-15-A	10/12/22	Surface Soil			0.0017	U			0.0017	U			0.00043	U			0.00043	U
NND-15	NND-15-B	10/12/22	Subsurface Soil			0.0018	U			0.0018	U			0.00092	J			0.00047	J
NND-15	NND-15-C	10/12/22	Subsurface Soil			0.0018	U			0.0018	U			0.00031	J			0.00045	U
NND-15	NND-15-GW	10/12/22	Groundwater					100				180		1200		810		36	
NND-16	NND-16-A	10/11/22	Surface Soil			0.0017	U			0.0017	U			0.00043	U			0.00043	U
NND-16	NND-16-B	10/11/22	Subsurface Soil			0.0017	U			0.0017	U			0.00043	U			0.00043	U
NND-16	NND-16-C	10/11/22	Subsurface Soil			0.0017	U			0.0017	U			0.00026	J			0.00043	U
NND-16	NND-16-GW	10/11/22	Groundwater					71				130		700		550		21	
NND-17	NND-17-A	10/11/22	Surface Soil			0.0016	U			0.0016	UJ			0.00040	U			0.00040	UJ
NND-17	NND-17-AA (Dup)	10/11/22	Surface Soil			0.0017	U			0.0017	U			0.00021	J			0.00042	U
NND-17	NND-17-B	10/11/22	Subsurface Soil			0.0017	U			0.0017	U			0.00035	J			0.00041	U
NND-17	NND-17-C	10/11/22	Subsurface Soil			0.0016	U			0.0016	U			0.00027	J			0.00024	J
NND-17	NND-17-GW	10/11/22	Groundwater					47				150		520		450		27	
NND-18	NND-18-A	10/11/22	Surface Soil			0.0016	U			0.0016	U			0.0023	J			0.00030	J
NND-18	NND-18-B	10/11/22	Subsurface Soil			0.00051	J			0.0018	U			0.0079				0.0010	U
NND-18	NND-18-C	10/11/22	Subsurface Soil			0.0022	U			0.0022	U			0.0047	J			0.00064	J
NND-18	NND-18-GW	10/11/22	Groundwater					62				120		670		450		22	
NND-19	NND-19-A	10/11/22	Surface Soil			0.0016	U			0.0021				0.0056				0.00083	
NND-19	NND-19-B	10/11/22	Subsurface Soil			0.0018	U			0.0018	U			0.019				0.0012	U
NND-19	NND-19-BA (Dup)	10/11/22	Subsurface Soil			0.0018	U			0.0018	U			0.018				0.00046	U
NND-19	NND-19-C	10/11/22	Subsurface Soil			0.0020	U			0.0020	U			0.0048				0.0011	J
NND-19	NND-19-GW	10/11/22	Groundwater					65				130		610		430		28	
NND-20	NND-20-A	10/11/22	Surface Soil			0.0017	U			0.00069	J			0.0034				0.0017	
NND-20	NND-20-B	10/11/22	Subsurface Soil			0.0018	U			0.0018	U			0.018				0.00090	U
NND-20	NND-20-C	10/11/22	Subsurface Soil			0.0019	U			0.0019	U			0.00093	J			0.00049	U
NND-20	NND-20-GW	10/11/22	Groundwater					59				120		620	J	400		24	

Table 6-8a. No Name Ditch Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L	
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
NND-20	NND-20-GWA (Dup)	10/11/22	Groundwater			57				120				650				440		23				1900				160			
NND-21	NND-21-A	10/11/22	Surface Soil	0.0010	J			0.0010	J			0.0016				0.0013				0.00063				0.011			0.00055	J			
NND-21	NND-21-B	10/11/22	Subsurface Soil	0.00057	J			0.0018	U			0.012				0.0017				0.00046	U			0.0089			0.0022				
NND-21	NND-21-C	10/11/22	Subsurface Soil	0.0023	U			0.0023	U			0.0019				0.00043	J			0.00059	U			0.022			0.00054	J			
NND-21	NND-21-GW	10/11/22	Groundwater			86				140				1000				510		34				3100				230			
NND-22	NND-22-A	10/13/22	Surface Soil	0.0017	U			0.0017	U			0.013				0.00067				0.00049	J			0.088			0.0024				
NND-22	NND-22-B	10/13/22	Subsurface Soil	0.0017	U			0.0017	U			0.017				0.00084				0.00043	U			0.0049			0.0025				
NND-22	NND-22-C	10/13/22	Subsurface Soil	0.0021	U			0.0021	U			0.0071	J			0.00056	J			0.00041	J			0.065			0.0013				
NND-22	NND-22-CA (Dup)	10/13/22	Subsurface Soil	0.0021	U			0.0021	U			0.0036	J			0.00051	U			0.00032	J			0.049			0.00066	J			
NND-22	NND-22-GW	10/13/22	Groundwater			100				110	J			2000				320		38	J			3000				280			
NND-23	NND-23-A	10/13/22	Surface Soil	0.0018	U			0.0018	U			0.00098				0.00027	J			0.00056	J			0.014			0.00043	J			
NND-23	NND-23-B	10/13/22	Subsurface Soil	0.0017	U			0.0017	U			0.010				0.00086				0.00046	J			0.030			0.0011				
NND-23	NND-23-C	10/13/22	Subsurface Soil	0.0018	U			0.0018	U			0.0046				0.00048	J			0.00055	J			0.040			0.00081				
NND-23	NND-23-GW	10/13/22	Groundwater			100				160				1700				480		51				3500				300			
NND-24	NND-24-A	10/10/22	Surface Soil	0.0014	J			0.0014	J			0.017				0.0045				0.00045	U			0.0056			0.0021				
NND-24	NND-24-B	10/10/22	Subsurface Soil	0.0019	U			0.0019	U			0.0022				0.00042	J			0.00031	J			0.022			0.00083				
NND-24	NND-24-C	10/10/22	Subsurface Soil	0.0018	U			0.0018	U			0.00028	J			0.00045	U			0.00045	U			0.0015			0.00045	U			
NND-24	NND-24-GW	10/10/22	Groundwater			140				230				2000				730		65				4400				450			
NND-25	NND-25-A	10/10/22	Surface Soil	0.0016	U			0.00076	J			0.0067				0.00067				0.00034	J			0.017	J		0.0033				
NND-25	NND-25-AA (Dup)	10/10/22	Surface Soil	0.0017	U			0.0017	U			0.0060				0.00061	J			0.00052	J			0.031	J		0.0025				
NND-25	NND-25-B	10/10/22	Subsurface Soil	0.0016	U			0.0016	U			0.0018				0.00033	J			0.00034	J			0.026			0.00084				
NND-25	NND-25-C	10/10/22	Subsurface Soil	0.0019	U			0.0019	U			0.00027	J			0.00048	U			0.00048	U			0.0017			0.00048	U			
NND-25	NND-25-GW	10/10/22	Groundwater			180				280				2500				1000		79				5200				570			
NND-26	NND-26-A	10/10/22	Surface Soil	0.0027				0.0020	J			0.066				0.0087				0.0012				0.094			0.033				
NND-26	NND-26-B	10/10/22	Subsurface Soil	0.0014	J			0.0016	J			0.040				0.0067				0.0018				0.15			0.019				
NND-26	NND-26-C	10/10/22	Subsurface Soil	0.0020	U			0.0020	U			0.0036				0.00083				0.00049	U			0.0046			0.0010				
NND-26	NND-26-GW	10/10/22	Groundwater			210				270			0.88	U				950		44				3100				590			
NND-27	NND-27-A	10/10/22	Surface Soil	0.0022				0.0012	J			0.012				0.0030				0.00053	J			0.042			0.0017				
NND-27	NND-27-B	10/10/22	Subsurface Soil	0.00089	J			0.00093	J			0.037				0.0046				0.0019				0.27			0.012				
NND-27	NND-27-C	10/10/22	Subsurface Soil	0.0016	U			0.0016	U			0.0014				0.00052	J			0.00041	U			0.0033			0.00057	J			
NND-27	NND-27-GW	10/10/22	Groundwater			1100				1100				11000				4300		200				12000				2900			
NND-27	NND-27-GWA (Dup)	10/10/22	Groundwater			1100				1100				11000				4500		190				11000				2800			
NND-28	NND-28-A	10/10/22	Surface Soil	0.0033	U			0.0033	U			0.0034				0.0029				0.00051	J			0.051			0.0012				
NND-28	NND-28-B	10/10/22	Subsurface Soil	0.0022	U			0.0022	U			0.00072	J			0.00038	J			0.00054	U			0.012			0.00054	U			
NND-28	NND-28-C	10/10/22	Subsurface Soil	0.0017	U			0.0017	U			0.00043	U			0.00043	U			0.00043	U			0.00083			0.00043	U			
NND-28	NND-28-GW	10/10/22	Groundwater			99				180				1100				660		31				2900				270			
NND-29	NND-29-A	10/10/22	Surface Soil	0.013				0.0020	J			0.023				0.013				0.0013				0.070			0.0033				
NND-29	NND-29-B	10/10/22	Subsurface Soil	0.0019	U			0.00082	J			0.014				0.0035				0.00031	J			0.027			0.0038				
NND-29	NND-29-BA (Dup)	10/10/22	Subsurface Soil	0.0020	U			0.0020	U			0.012				0.0025				0.00028	J			0.021			0.0041				
NND-29	NND-29-C	10/10/22	Subsurface Soil	0.0019	U			0.0019	U			0.00039	J			0.00027	J			0.00047	U			0.0022			0.00047	U			
NND-29	NND-29-GW	10/10/22	Groundwater			250				260				1600				1200		53				4400				340			
NND-30	NND-30-A	10/10/22	Surface Soil	0.0023	U			0.0017	J			0.0090				0.0048				0.0011				0.086			0.0021				
NND-30	NND-30-B	10/10/22	Subsurface Soil	0.0024	U			0.0024	U			0.0032				0.0019				0.00048	J			0.053			0.0010				
NND-30	NND-30-C	10/10/22	Subsurface Soil	0.0017	U			0.0017	U			0.00042	U			0.00042	U			0.00042	U			0.00049	J		0.00042	U			

Table 6-8a. No Name Ditch Soil and Groundwater Grab Analytical Results Summary

Location	Sample ID	Sample Date	Sample Type	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
				Unit		1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0
						mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L
				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
NND-30	NND-30-GW	10/10/22	Groundwater				94				190		1100		700		39		2700
NND-31	NND-31-A	10/13/22	Surface Soil	0.0017	U			0.0017	U			0.0022		0.00076		0.00082		0.016	0.0014
NND-31	NND-31-B	10/13/22	Subsurface Soil	0.0019	U			0.0019	U			0.0069		0.0013		0.00028	J	0.022	0.0015
NND-31	NND-31-C	10/13/22	Subsurface Soil	0.0020	U			0.0020	U			0.0045		0.0010		0.00025	J	0.032	0.00096
NND-31	NND-31-CA (Dup)	10/13/22	Subsurface Soil	0.0019	U			0.0019	U			0.0048		0.00098		0.00030	J	0.033	0.0010
NND-31	NND-31-GW	10/13/22	Groundwater				68				140		750		520		46	J	2100
NND-32	NND-32-A	10/13/22	Surface Soil	0.0017	U			0.0017	U			0.00075		0.00025	J			0.018	0.00088
NND-32	NND-32-B	10/13/22	Subsurface Soil	0.0017	U			0.0017	U			0.0016		0.00028	J		0.00043	U	0.00064
NND-32	NND-32-C	10/13/22	Subsurface Soil	0.0019	U			0.0019	U			0.0020		0.00074		0.00047	U	0.0011	0.00081
NND-32	NND-32-GW	10/13/22	Groundwater				130				180		1800		520		57		4200
NND-33	NND-33-A	10/14/22	Surface Soil	0.0016	U			0.0016	U			0.0019		0.00037	J		0.00041	U	0.018
NND-33	NND-33-B	10/14/22	Subsurface Soil	0.0017	U			0.0017	U			0.0023		0.00043	U		0.0047	J	0.00097
NND-33	NND-33-C	10/14/22	Subsurface Soil	0.0016	U			0.0016	U		0.00041	U		0.00041	U		0.00041	U	0.00041
NND-33	NND-33-GW	10/14/22	Groundwater				9.7				38		280		89		3.6		190
NND-34	NND-34-A	10/14/22	Surface Soil	0.0017	U			0.0017	U			0.0047		0.00048	J		0.00042	U	0.030
NND-34	NND-34-AA (Dup)	10/14/22	Surface Soil	0.0017	U			0.0017	U			0.0039		0.00040	J		0.00041	U	0.029
NND-34	NND-34-B	10/14/22	Subsurface Soil	0.0016	U			0.0016	U			0.0029		0.00040	U		0.00040	U	0.0015
NND-34	NND-34-C	10/14/22	Subsurface Soil	0.0016	U			0.0016	U		0.00022	J		0.00041	U		0.00041	U	0.00065
NND-34	NND-34-GW	10/14/22	Groundwater				79				270	J	1400		720		11		750
NND-35	NND-35-A	10/14/22	Surface Soil	0.0017	U			0.0017	U			0.0012		0.00029	J		0.00041	U	0.030
NND-35	NND-35-B	10/14/22	Subsurface Soil	0.0016	U			0.0016	U			0.0011		0.00040	U		0.00040	U	0.0091
NND-35	NND-35-C	10/14/22	Subsurface Soil	0.0018	U			0.0018	U		0.00045	U		0.00045	U		0.00045	U	0.00038
NND-35	NND-35-GW	10/14/22	Groundwater				16				55		510		150		10		490
NND-36	NND-36-A	10/14/22	Surface Soil	0.0017	U			0.0017	U			0.0018		0.00031	J		0.00043	U	0.020
NND-36	NND-36-B	10/14/22	Subsurface Soil	0.0016	U			0.0016	U		0.00035	J		0.00022	J		0.00041	U	0.0018
NND-36	NND-36-C	10/14/22	Subsurface Soil	0.0018	U			0.0018	U		0.00045	U		0.00045	U		0.00045	U	0.00088
NND-36	NND-36-GW	10/14/22	Groundwater				15				79		130		340		9		320
NND-47	NND-47-A	06/20/24	Surface Soil	0.0021				0.0027				0.079		0.0055		0.00082	J	0.046	0.019
NND-47	NND-47-AA (Dup)	06/20/24	Surface Soil	0.0019				0.0024				0.063		0.0041		0.00073	J	0.043	0.016
NND-47	NND-47-B	06/20/24	Subsurface Soil	0.0015				0.002				0.035		0.0047		0.0014		0.088	0.01
NND-47	NND-47-GW	06/20/24	Groundwater				550				570		6,000		2,300		110		4,900
NND-47	NND-47-GWA (Dup)	06/20/24	Groundwater				490				530		4,700		1,900		110		5,100
NND-48	NND-48-A	06/20/24	Surface Soil	0.0024				0.0041				0.05		0.0068		0.0011		0.044	0.012
NND-48	NND-48-B	06/20/24	Subsurface Soil	0.0013				0.0014				0.022		0.0034		0.00058	J	0.044	0.0053
NND-48	NND-48-GW	06/20/24	Groundwater				1,600				1,200		9,300		4,100		85		5,000
NND-49	NND-49-A	06/20/24	Surface Soil	0.00093	J			0.00082	J			0.0065		0.0019		0.00048	J	0.032	0.00075
NND-49	NND-49-GW	06/20/24	Groundwater				310				320		3,300		1,200		65		4,100
NND-50	NND-50-A	06/20/24	Surface Soil	0.00074	J			0.0022				0.021		0.0055		0.0025		0.14	0.0054
NND-50	NND-50-AA (Dup)	06/20/24	Surface Soil	0.00074	J			0.0021				0.019		0.0052		0.0025		0.12	0.0048
NND-50	NND-50-GW	06/20/24	Groundwater				180				250		2,200		1,000		76		3,600
NND-51	NND-51-A	06/20/24	Surface Soil	0.00041	J			0.0013				0.012		0.0036		0.002		0.11	0.0051
NND-51	NND-51-GW	06/20/24	Groundwater				170				230		1,700		980		79		4,300
NND-52	NND-52-A	06/20/24	Surface Soil	0.00033	J			0.0018				0.017		0.0032		0.0017		0.1	0.0049
NND-52	NND-52-GW	06/20/24	Groundwater				210				310		3,000		1,200		120		5,400

Table 6-8a. No Name Ditch Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾ Unit				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L	
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
NND-53	NND-53-A	06/19/24	Surface Soil	0.00029	J			0.0025				0.01				0.004				0.0015				0.11				0.0048			
NND-53	NND-53-B	06/19/24	Subsurface Soil	0.00044	U			0.00044	U			0.003				0.0011				0.00073	J			0.044				0.0014			
NND-53	NND-53-GW	06/19/24	Groundwater			250				330	J		2,000					1,400			84					5,000			570		
NND-54	NND-54-A	06/19/24	Surface Soil	0.00016	J			0.001	J			0.0051				0.0017				0.002				0.093				0.0026			
NND-54	NND-54-B	06/19/24	Subsurface Soil	0.00041	U			0.00041	U			0.00057	J			0.00032	J			0.00038	J			0.012				0.00035	J		
NND-54	NND-54-C	06/19/24	Subsurface Soil	0.00038	U			0.00038	U			0.0011				0.00043	J			0.0005	J			0.02				0.00067	J		
NND-54	NND-54-GW	06/19/24	Groundwater			300				390			2,800					1,600			99					3,400			700		
NND-55	NND-55-A	06/19/24	Surface Soil	0.00026	J			0.0014				0.0074				0.0028				0.00098	J			0.053				0.0028			
NND-55	NND-55-B	06/19/24	Subsurface Soil	0.00014	J			0.00062	J			0.0033				0.0014				0.00063	J			0.026				0.0015			
NND-55	NND-55-C	06/19/24	Subsurface Soil	0.00036	U			0.00036	U			0.00035	J			0.00013	J			0.00036	U			0.0024				0.00014	J		
NND-55	NND-55-GW	06/19/24	Groundwater			280				400			2,700					1,500			64					2,300			730		
NND-56	NND-56-A	06/19/24	Surface Soil	0.00016	J			0.0014				0.013				0.00071	J			0.0038				0.12				0.0063			
NND-56	NND-56-B	06/19/24	Subsurface Soil	0.00015	J			0.00044	J			0.0053				0.00093				0.00079	J			0.039				0.0018			
NND-56	NND-56-C	06/19/24	Subsurface Soil	0.00032	U			0.00032	U			0.00054	J			0.00012	J			0.00013	J			0.0011				0.00019	J		
NND-56	NND-56-GW	06/19/24	Groundwater			280				410			3,400					1,700			87					4,000			820		

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1, and U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

mg/kg = milligram(s) per kilogram

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

UJ = The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

Table 6-8b. No Name Ditch Sediment and Surface Water Analytical Results Summary

PSLs ⁽¹⁾				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L		mg/kg		ng/L	
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
NND-37	NND-37-SED	10/10/22	Sediment	0.0040	U			0.0040	U			0.0077	J			0.0028	J			0.00069	J			0.14				0.0021	J		
NND-37	NND-37-SEDA (Dup)	10/10/22	Sediment	0.0079	U			0.0079	U			0.013	J			0.0074	J			0.0013	J			0.23				0.0048	J		
NND-37	NND-37-SW	10/10/22	Surface Water			94				160				1100				620				31				2700				230	
NND-37	NND-37-SWA (Dup)	10/10/22	Surface Water			98				170				1000				640				31				2800				230	
NND-38	NND-38-SED	10/10/22	Sediment	0.0037	U			0.0037	U			0.0049				0.0024				0.00092	U			0.061				0.0011	J		
NND-38	NND-38-SW	10/10/22	Surface Water			92				170				1100				660				33				2900				240	
NND-39	NND-39-SED	10/10/22	Sediment	0.0061	U			0.0031	J			0.016				0.0081				0.0022	J			0.20				0.0049			
NND-39	NND-39-SW	10/10/22	Surface Water			88				150				940				580				22				1900				200	
NND-40	NND-40-SED	10/14/22	Sediment	0.0036	U			0.0036	U			0.0046				0.0085				0.00090	U			0.10				0.0016			
NND-40	NND-40-SW	10/14/22	Surface Water			77				120				710				490				19	J			2,400	J			170	
NND-41	NND-41-SED	10/14/22	Sediment	0.0045	U			0.0045	U			0.0057				0.0027				0.00058	J			0.13				0.0018			
NND-41	NND-41-SW	10/14/22	Surface Water			75				130				720				480				18	J			2,700	J			160	
NND-42	NND-42-SED	10/14/22	Sediment	0.0095	U			0.0095	U			0.0075				0.0046				0.0024	U			0.12				0.0024	U		
NND-42	NND-42-SW	10/14/22	Surface Water			66				150				680				530				23	J			1,800	J			170	
NND-43	NND-43-SED	10/14/22	Sediment	0.011	U			0.011	U			0.008				0.0042				0.0026	U			0.13				0.0026	U		
NND-43	NND-43-SW	10/14/22	Surface Water			73				120				780				480				21	J			1,900	J			190	
NND-44	NND-44-SED	10/14/22	Sediment	0.0083	U			0.0083	U			0.0091				0.0047				0.0021	U			0.1				0.0021	J		
NND-44	NND-44-SW	10/14/22	Surface Water			84				120				840				500				23				2,700				180	
NND-45	NND-45-SED	10/14/22	Sediment	0.0069	U			0.0069	U			0.0078				0.0033				0.0017	U			0.089				0.0032			
NND-45	NND-45-SW	10/14/22	Surface Water			95				130				920				490				16				1,900				180	
NND-46	NND-46-SED	10/14/22	Sediment	0.0034	U			0.0034	U			0.00085	J			0.0014				0.00085	U			0.011				0.00085	J		
NND-46	NND-46-SW	10/14/22	Surface Water			14				73				120				340				7.8				260				93	
NND-67	NND-67-SED	06/21/24	Sediment	0.00073	J			0.00099	J			0.016	J			0.0054	J			0.0014	J			0.17				0.0049	J		
NND-67	NND-67-SEDA (Dup)	06/21/24	Sediment	0.00033	J			0.00046	J			0.0077	J			0.0024	J			0.00081	J			0.11				0.0026	J		
NND-67	NND-67-SW	06/21/24	Surface Water			88				170				1,100				740				31				2,200				260	
NND-67	NND-67-SWA (Dup)	06/21/24	Surface Water			90				180	J			1,100				780				30				2,100				260	
NND-68	NND-68-SED	06/21/24	Sediment	0.0087				0.0088				0.13				0.028				0.004	J			0.39				0.037			
NND-68	NND-68-SW	06/21/24	Surface Water			110				180				1,300				820				31				2,400				300	
NND-69	NND-69-SED	06/21/24	Sediment	0.003	J			0.0029	J			0.05				0.013				0.0023	J			0.37				0.01			
NND-69	NND-69-SW	06/21/24	Surface Water			140				200	J			1,500				880				31				2,400				350	
NND-70	NND-70-SED	06/21/24	Sediment	0.0023	J			0.0055				0.037				0.016	J			0.0054				0.32				0.015	J		
NND-70	NND-70-SW	06/21/24	Surface Water			140				200				1,300				940				31				2,300				330	
NND-71	NND-71-SED	06/21/24	Sediment	0.00028	J			0.00058	J			0.0082				0.0029				0.00065	J			0.11				0.0023			
NND-71	NND-71-SW	06/21/24	Surface Water			140				200				1,500				890				34				2,500				330	
NND-72	NND-72-SED	06/21/24	Sediment	0.0006	J			0.0007	J			0.016				0.0052				0.0012	J			0.24				0.0041			
NND-72	NND-72-SW	06/21/24	Surface Water			140				200				1,500				890				33				2,500				310	
NND-73	NND-73-SED	06/21/24	Sediment	0.00035	J			0.00049	J			0.0083				0.0032				0.00088	J			0.14				0.0025			
NND-73	NND-73-SW	06/21/24	Surface Water			140				200				1,400				870				37				2,700				310	
NND-74	NND-74-SED	06/21/24	Sediment	0.00096	J			0.0013	J			0.03				0.0065				0.0021	J			0.4				0.0062			
NND-74	NND-74-SW	06/21/24	Surface Water			140				230				1,400				1,000				42				2,800				350	
NND-75	NND-75-SED	06/21/24	Sediment	0.00024	J			0.00044	J			0.0058				0.0019				0.0006	J			0.093				0.0017			
NND-75	NND-75-SW	06/21/24	Surface Water			140				210				1,600				1,000				45				3,000				400	
NND-76	NND-76-SED	06/21/24	Sediment	0.00036	J			0.00097	J			0.0079				0.0033				0.00094	J			0.11				0.0027			
NND-76	NND-76-SW	06/21/24	Surface Water			160				240				1,600				1,100				45				3,400				380	

Table 6-8b. No Name Ditch Sediment and Surface Water Analytical Results Summary

PSLs ⁽¹⁾ Unit				PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA			
				1.9		600		7.8		1800		0.13		39		3.2		990		0.019		5.9		0.013		4.0		0.019		6.0	
				mg/kg	Q	ng/L	Q	mg/kg	Q	ng/L	Q	mg/kg	Q	ng/L	Q	mg/kg	Q	ng/L	Q	mg/kg	Q	ng/L	Q	mg/kg	Q	ng/L	Q	mg/kg	Q	ng/L	Q
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
NND-77	NND-77-SED	06/18/24	Sediment	0.00064	J			0.00075	J			0.017				0.0047				0.0012	J			0.25				0.004			
NND-77	NND-77-SEDA (Dup)	06/18/24	Sediment	0.00053	J			0.00074	U			0.012				0.0035				0.001	J			0.17				0.0028			
NND-77	NND-77-SW	06/18/24	Surface Water			220				290			1,900				1,300			51						3,500			530		
NND-77	NND-77-SWA (Dup)	06/18/24	Surface Water			210				270			1,900				1,200			48						3,200			470		
NND-78	NND-78-SED	06/18/24	Sediment	0.0013	J			0.0045	J			0.04				0.013				0.0062				0.6				0.015			
NND-78	NND-78-SW	06/18/24	Surface Water			180				250			1,900				1,200			57						2,900	J			480	
NND-79	NND-79-SED	06/18/24	Sediment	0.0001	J			0.00079	J			0.0029				0.0015				0.001				0.072				0.0018			
NND-80	NND-80-SED	06/18/24	Sediment	0.0004	U			0.0004	U			0.00120				0.000400	J			0.000510	J			0.0250				0.000590	J		
NND-81	NND-81-SED	06/18/24	Sediment	0.00087	J			0.00720				0.0230				0.0130				0.00650				0.3				0.0140			

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1, and U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

mg/kg = milligram(s) per kilogram

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

Table 6-9. Flowage Easement Soil and Groundwater Grab Analytical Results Summary

Location	Sample ID	Sample Date	Sample Type	PSLs ⁽¹⁾ Unit		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
						1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0
						mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L
				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
NND-57	NND-57-A	01/09/25	Surface Soil	0.00047	U			0.00047	U			0.00047	U			0.00044	J	0.017	0.00022
NND-57	NND-57-B	01/09/25	Subsurface Soil	0.00041	U			0.00021	J			0.0036	J			0.00018	J	0.017	0.0018
NND-57	NND-57-C	01/09/25	Subsurface Soil	0.00040	U			0.00013	J			0.00022	J			0.00030	J	0.00040	U
NND-57	NND-57-D	01/09/25	Subsurface Soil	0.00040	U			0.00018	J			0.00049	J			0.00042	J	0.0011	0.00040
NND-57	NND-57-E	01/09/25	Subsurface Soil	0.00040	U			0.00040	U			0.00040	U			0.00040	U	0.00019	0.00040
NND-57	NND-57-EA (Dup)	01/09/25	Subsurface Soil	0.00039	U			0.00039	U			0.00039	U			0.00039	U	0.00020	0.00039
NND-57	NND-57-F	01/09/25	Subsurface Soil	0.00040	U			0.000099	J			0.00017	J			0.00011	J	0.00033	0.00040
NND-57	NND-57-G	01/09/25	Subsurface Soil	0.00041	U			0.00013	J			0.00041	U			0.00010	J	0.00041	U
NND-57	NND-57-H	01/09/25	Subsurface Soil	0.00039	U			0.00039	U			0.00039	U			0.00039	U	0.00011	0.00039
NND-57	NND-57-GW	01/09/25	Groundwater			410			620			2500		1100		20		820	380
NND-58	NND-58-A	01/08/25	Surface Soil	0.00040	U			0.00040	U			0.00040	U			0.00040	U	0.00040	U
NND-58	NND-58-B	01/08/25	Subsurface Soil	0.00039	U			0.00039	U			0.00039	U			0.00039	U	0.00032	0.00039
NND-58	NND-58-C	01/08/25	Subsurface Soil	0.00041	U			0.00041	U			0.00041	U			0.00041	U	0.00023	0.00041
NND-58	NND-58-D	01/08/25	Subsurface Soil	0.00040	U			0.00040	U			0.00040	U			0.00040	U	0.00010	0.00040
NND-58	NND-58-E	01/08/25	Subsurface Soil	0.00039	U			0.00039	U			0.00039	U			0.00039	U	0.00039	U
NND-58	NND-58-F	01/08/25	Subsurface Soil	0.00039	U			0.00039	U			0.00039	U			0.00039	U	0.00028	0.00039
NND-58	NND-58-G	01/08/25	Subsurface Soil	0.00040	U			0.00040	U			0.00040	U			0.00040	U	0.00013	0.00040
NND-58	NND-58-H	01/08/25	Subsurface Soil	0.00040	U			0.00040	U			0.00040	U			0.00040	U	0.00040	U
NND-58	NND-58-GW	01/08/25	Groundwater			390			270			2200		820		19		690	380
NND-59	NND-59-A	01/07/25	Surface Soil	0.00039	U			0.00039	U			0.00039	U			0.00039	U	0.00018	0.00039
NND-59	NND-59-B	01/07/25	Subsurface Soil	0.00040	U			0.00040	U			0.00018	J			0.00040	U	0.0018	0.00040
NND-59	NND-59-C	01/07/25	Subsurface Soil	0.00044	U			0.00014	J			0.00058	J			0.00036	J	0.011	0.00027
NND-59	NND-59-GW	01/07/25	Groundwater			160			240			1700		940		72		4000	430
NND-59	NND-59-GWA (Dup)	01/07/25	Groundwater			160			230			1700		870		80		3500	440
NND-60	NND-60-A	12/20/24	Surface Soil	0.00037	U			0.00037	U			0.00037	U			0.00037	U	0.0057	0.00037
NND-60	NND-60-B	12/20/24	Subsurface Soil	0.00031	U			0.00031	U			0.00031	U			0.00031	U	0.00076	0.00031
NND-60	NND-60-C	12/20/24	Subsurface Soil	0.00027	U			0.00027	U			0.00027	U			0.00027	U	0.00051	0.00027
NND-60	NND-60-D	12/20/24	Subsurface Soil	0.00035	U			0.00035	U			0.00035	U			0.00035	U	0.00015	0.00035
NND-61	NND-61-A	12/20/24	Surface Soil	0.00046	U			0.00022	J			0.00048	J			0.00046	U	0.0013	0.0045
NND-61	NND-61-B	12/20/24	Subsurface Soil	0.00045	U			0.00083	J			0.0046	U			0.0010	J	0.0011	0.0035
NND-61	NND-61-C	12/20/24	Subsurface Soil	0.00038	U			0.00013	J			0.00053	J			0.00019	J	0.00038	0.0024
NND-61	NND-61-CA (Dup)	12/20/24	Subsurface Soil	0.00039	U			0.00011	J			0.00027	J			0.00010	J	0.00039	0.0018
NND-61	NND-61-D	12/20/24	Subsurface Soil	0.00038	U			0.00012	J			0.00033	J			0.00017	J	0.00038	0.0019
NND-61	NND-61-GW	12/20/24	Groundwater			310			590			3000		1800		53		2500	720
NND-61	NND-61-GWA (Dup)	12/20/24	Groundwater			320			580			3100		1800		50		2200	680
NND-62	NND-62-A	12/21/24	Surface Soil	0.00024	J			0.0014	J			0.015		0.0027		0.0071		0.26	0.010
NND-62	NND-62-B	12/21/24	Subsurface Soil	0.00043	U			0.00042	J			0.0015		0.00066	J			0.00021	0.013
NND-62	NND-62-BA (Dup)	12/21/24	Subsurface Soil	0.00033	U			0.00040	J			0.0013		0.00066	J			0.00022	0.013
NND-62	NND-62-C	12/21/24	Subsurface Soil	0.00034	U			0.00015	J			0.00054	J			0.00024	J	0.00034	0.0019
NND-62	NND-62-D	12/21/24	Subsurface Soil	0.00035	U			0.00035	U			0.00035	U			0.00035	U	0.00011	0.00035
NND-62	NND-62-E	12/21/24	Subsurface Soil	0.00037	U			0.00037	U			0.00037	U			0.00037	U	0.00037	0.00037
NND-62	NND-62-F	12/21/24	Subsurface Soil	0.00034	U			0.00034	U			0.00034	U			0.00034	U	0.00010	0.00034
NND-62	NND-62-G	12/21/24	Subsurface Soil	0.00035	U			0.00035	U			0.00035	U			0.00035	U	0.00012	0.00035

Table 6-9. Flowage Easement Soil and Groundwater Grab Analytical Results Summary

PSLs ⁽¹⁾				PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA														
				1.9	600	7.8	1800	0.13	39	3.2	990	0.019	5.9	0.013	4.0	0.019	6.0													
				Unit	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L	mg/kg	ng/L												
Location	Sample ID	Sample Date	Sample Type	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
NND-62	NND-62-GW	12/21/24	Groundwater			280				420				2900				1600				75				3300				800
NND-63	NND-63-A	01/07/25	Surface Soil	0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U	
NND-63	NND-63-B	01/07/25	Subsurface Soil	0.00042	U			0.00042	U			0.00037	J			0.00018	J			0.00042	U			0.0039				0.00042	U	
NND-63	NND-63-C	01/07/25	Subsurface Soil	0.00041	U			0.00041	U			0.00030	J			0.00014	J			0.00041	U			0.00086	J			0.00041	U	
NND-63	NND-63-GW	01/07/25	Groundwater			160				250				1700				940				58				3400				490
NND-64	NND-64-A	12/20/24	Surface Soil	0.00050	U			0.00050	U			0.00032	J			0.00050	U			0.00092	J			0.038				0.00052	J	
NND-64	NND-64-B	12/20/24	Subsurface Soil	0.00045	U			0.00031	J			0.0031				0.00026	J			0.0020				0.072				0.0020		
NND-64	NND-64-C	12/20/24	Subsurface Soil	0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U	
NND-64	NND-64-D	12/20/24	Subsurface Soil	0.00041	U			0.00041	U			0.00019	J			0.00041	U			0.00041	U			0.00020	J			0.00041	U	
NND-64	NND-64-E	12/20/24	Subsurface Soil	0.00039	U			0.00039	U			0.00039	U			0.00039	U			0.00039	U			0.00013	J			0.00039	U	
NND-64	NND-64-F	12/20/24	Subsurface Soil	0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.000095	J			0.00038	U	
NND-64	NND-64-G	12/20/24	Subsurface Soil	0.00039	U			0.00039	U			0.00015	J			0.00039	U			0.00039	U			0.00020	J			0.00039	U	
NND-64	NND-64-GW	12/20/24	Groundwater			320				310				2900				1200				63				3500				770
NND-65	NND-65-A	12/19/24	Surface Soil	0.00050	U			0.00050	U			0.00050	U			0.00050	U			0.00023	J			0.015				0.00019	J	
NND-65	NND-65-B	12/19/24	Subsurface Soil	0.00041	U			0.00018	J			0.00057	J			0.00041	U			0.00086	J			0.052				0.00021	J	
NND-65	NND-65-C	12/19/24	Subsurface Soil	0.00038	U			0.00038	U			0.00023	J			0.00038	U			0.00038	U			0.00048	J			0.00038	U	
NND-65	NND-65-CA (Dup)	12/19/24	Subsurface Soil	0.00039	U			0.00039	U			0.00018	J			0.00039	U			0.00039	U			0.00039	J			0.00039	U	
NND-65	NND-65-D	12/19/24	Subsurface Soil	0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00018	J			0.00038	U	
NND-65	NND-65-GW	12/19/24	Groundwater			330				570				4,500				1,900				130				6,200	J			980
NND-66	NND-66-A	12/19/24	Surface Soil	0.00047	U			0.00047	U			0.00047	U			0.00047	U			0.00047	U			0.0041				0.00047	U	
NND-66	NND-66-B	12/19/24	Subsurface Soil	0.00042	U			0.00042	U			0.00039	J			0.00042	U			0.00042	U			0.00064	J			0.00032	J	
NND-66	NND-66-C	12/19/24	Subsurface Soil	0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U			0.00038	U	
NND-66	NND-66-D	12/19/24	Subsurface Soil	0.0004	U			0.0004	U			0.0004	U			0.0004	U			0.0004	U			0.0004	U			0.0004	U	
NND-66	NND-66-E	12/19/24	Subsurface Soil	0.0004	U			0.0004	U			0.0004	U			0.0004	U			0.0004	U			0.0001	J			0.0004	U	
NND-66	NND-66-F	12/19/24	Subsurface Soil	0.00039	U			0.00039	U			0.00039	U			0.00039	U			0.00039	U			0.00039	U			0.00039	U	
NND-66	NND-66-GW	12/19/24	Groundwater			420				560				3,600				2,200				90				4,400				800

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1, and U.S. Environmental Protection Agency (EPA) Tapwater Project Screening, Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

mg/kg = milligram(s) per kilogram

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

Table 6-10. SPLP Data Summary

PSLs ⁽¹⁾						PFBS				PFBA				PFHxS				PFHxA				PFNA				PFOS				PFOA				
						Total		SPLP		Total		SPLP		Total		SPLP		Total		SPLP		Total		SPLP		Total		SPLP		Total		SPLP		
						1.9				7.8				0.13				3.2				0.019				0.013				0.019				
						Unit		(mg/kg)		(ng/L)		(mg/kg)		(ng/L)		(mg/kg)		(ng/L)		(mg/kg)		(ng/L)		(mg/kg)		(ng/L)		(mg/kg)		(ng/L)		(mg/kg)		(ng/L)
Release Area	Location	Soil Sample ID	SPLP Sample ID	Sample Date	SPLP Sampled Interval (ft bgs)	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q					
RS002P	SB-B5206	SB-B5206-S	SB-B5206-A	05/20/22	0-1	0.0026	U	110	UJ	0.0026	U	450	UJ	0.030		5,600	J	0.00095		110	UJ	0.038	J	1,400	J	6.4		120,000	J	0.0068		1,000	J	
	SB-B5210	SB-B5210-A	SB-B5210-A	05/18/22	0-1	0.017		810	J	0.0056		180	J	0.42		15,000	J	0.023		1,200	J	0.0032		91	J	0.35		7,200	J	0.017		720	J	
	SB-B5213	SB-B5213-A	SB-B5213-A	05/18/22	0-1	0.0020	U	2.9	J	0.0020	U	25	J	0.0041		150	J	0.00041	J	13	J	0.0019		52	J	0.067		1,600	J	0.0014		40	J	
SS008P	SB-KC13505	SB-KC13505-S	SB-KC13505-A	05/24/22	0-1	0.0020	U	24	J	0.0020	U	5.5	J	0.00025	J	350	J	0.00061	U	35	J	0.00043	J	20		0.0028		950		0.00078		130		
	SB-KC13508	SB-KC13508-A	SB-KC13508-A	05/24/22	0-1	0.0018	U	7.0		0.0018	U	5.4	J	0.00029	J	10		0.00046	U	2.8		0.00046	U	4.2		0.0021		46		0.00059	J	16		
FT004P	SB-RA103	SB-RA103-S	SB-RA103-A	05/24/22	0-1	0.68		6,400		0.32		2,800	J	12		280,000		1.9		20,000		0.53		9,600		28		350,000	J	3.4		83,000		
	SB-RA103	SB-RA103-S	SB-RA103-AA (Dup)	05/24/22	0-1	0.68		6,800		0.32		2,800		12		250,000		1.9		20,000		0.53		10,000		28		320,000	J	3.4		82,000		
	SB-RA106	SB-RA106-S	SB-RA106-A	05/24/22	0-1	0.015		23		0.013		58		0.39		460		0.083		49		0.0049		71		0.11		2,100		0.11		99		
	SB-RA106	SB-RA106-S	SB-RA106-AA (Dup)	05/24/22	0-1	0.015		26		0.013		58		0.39		570		0.083		52		0.0049		71		0.11		2,200		0.11		100		
	SB-RA110	SB-RA110-A	SB-RA110-A	05/23/22	0-1	0.013		470		0.011		490		0.45		19,000		0.059		2,200		0.073		2,800	J	2.9		85,000	J	0.2		7,600		
	SB-RA111	SB-RA111-A	SB-RA111-A	05/24/22	0-1	0.078		2,400		0.073		2,500		6.2		160,000		0.82		27,000		0.15		4,000		15	J	250,000	J	1.8		49,000		
	SB-RA113	SB-RA113-A	SB-RA113-A	05/24/22	0-1	0.0048		250		0.0031		150		0.21		6,200		0.013		590		0.0063		170		0.36		8,100		0.079		2,300		
	SB-RA115	SB-RA115-A	SB-RA115-A	05/24/22	0-1	0.0015	U	9.9		0.0015	U	6.2		0.0063		230		0.0011		50		0.00025	J	8.3		0.030		1,100		0.0020		69		
	SB-RA202	SB-RA202-S	SB-RA202-A	05/19/22	0-1	0.0022	U	8.6	J	0.0022	U	8.2	J	0.0063		30	J	0.00055	J	11	J	0.0015		17	J	0.60		1,100	J	0.0015		22	J	
RS003P	SB-RA202	SB-RA202-S	SB-RA202-AA (Dup)	05/19/22	0-1	0.0022	U	8.0	J	0.0022	U	9.8	J	0.0063		25	J	0.00055	J	9.3	J	0.0015		15	J	0.60		1,100	J	0.0015		20	J	
	SB-RA203	SB-RA203-S	SB-RA203-A	05/19/22	0-1	0.0022	U	19	J	0.0022	U	25	J	0.021		630	J	0.0011		77	J	0.0023		70	J	1.3		9,700	J	0.0034		130	J	
	SB-RA204	SB-RA204-S	SB-RA204-A	05/19/22	0-1	0.0022	U	13	J	0.0022	U	35	J	0.014		150	J	0.00092		87	J	0.0025		25	J	0.60		3,900	J	0.0052		70	J	
	SB-RA208	SB-RA208-A	SB-RA208-A	05/20/22	0-1	0.0016	U	12	J	0.0016	U	14	J	0.0050		130	J	0.0013		46	J	0.00079		28	J	0.29		8,900	J	0.0014		47	J	
	SB-RA210	SB-RA210-A	SB-RA210-A	05/23/22	0-1	0.0016	U	4.7	J	0.00096	J	17	J	0.0095		190	J	0.0024		52	J	0.0015		45	J	0.36		11,000	J	0.0033		84	J	
	SB-RA211	SB-RA211-A	SB-RA211-A	05/23/22	0-1	0.0017	U	7.7		0.00080	J	26		0.014		580		0.0024		100		0.00053	J	20		0.043		1,400		0.0022		81		
	SB-RA212	SB-RA212-A	SB-RA212-A	05/23/22	0-1	0.0018	U	7.4		0.0018	U	14		0.0022		89		0.00064	J	29		0.0014		45	J	0.80		24,000		0.0011		44		
	SB-RA214	SB-RA214-A	SB-RA214-A	05/19/22	0-1	0.0018	U	6.8	J	0.0018	U	19	J	0.0030		110	J	0.00053	J	20	J	0.0012		43	J	0.22		6,400	J	0.0012		43	J	
	SB-RA215	SB-RA215-A	SB-RA215-A	05/20/22	0-1	0.0016	U	8.3	J	0.0016	U	6.1	J	0.0034		120	J	0.00046	J	20	J	0.0010		41	J	0.16		5,200	J	0.00082		34	J	
	SB-RA216	SB-RA216-A	SB-RA216-A	05/20/22	0-1	0.0018	U	7.2	J	0.0018	U	9.9	J	0.0013		43	J	0.00030	J	9.4	J	0.00066	J	17	J	0.13		2,900	J	0.00058	J	18	J	
	RS001P	SB-RA501	SB-RA501-S	SB-RA501-A	05/17/22	0-1	0.0021	U	9.5	J	0.00095	J	30	J	0.0031		230	J	0.00069		53	J	0.0016		89	J	0.077		3,900	J	0.0011		73	J
		SB-RA511	SB-RA511-A	SB-RA511-A	05/17/22	0-1	0.0015	J	64	J	0.0036		160	J	0.077		3,100	J	0.020		1,000	J	0.0038	J	140	J	10		300,000	J	0.010		420	J
SB-RA511		SB-RA511-B	SB-RA511-B	05/17/22	2-3	0.0020	J	110	J	0.0031		160	J	0.19		8,500	J	0.019		1,100	J	0.0053	J	190	J	8.8		230,000	J	0.025		1,100	J	
SB-RA511		SB-RA511-C	SB-RA511-C	05/17/22	4-5	0.015		490	J	0.020		710	J	0.82		25,000	J	0.16		5,500	J	0.033		820	J	7.7		150,000	J	0.18		4,600	J	
SB-RA511		SB-RA511-D	SB-RA511-D	05/17/22	9-10	0.0013	J	58	J	0.0020	U	20	J	0.020		680	J	0.0027		110	J	0.00049	U	4.8	J	0.037		1,200	J	0.0020		65	J	
SB-RA511		SB-RA511-E	SB-RA511-E	05/17/22	14-15	0.0019	U	7.0	J	0.0019	U	3.1	J	0.00047	U	5.8	J	0.00047	U	2.7	J	0.00047	U	1.1	UJ	0.0014		55	J	0.00047	U	1.0	J	
SB-RA512		SB-RA512-A	SB-RA512-A	05/26/22	0-1	0.0013	J	17	J	0.0019	J	77		0.025		670		0.0029		110		0.0070		240		0.87		21,000		0.011		430		
SB-RA513		SB-RA513-A	SB-RA513-A	05/26/22	0-1	0.0017	U	19	J	0.0017	U	52	U	0.012		420		0.0012		54		0.0041		120		1.2		22,000	J	0.0068		230		
SB-RA514		SB-RA514-A	SB-RA514-A	05/17/22	0-1	0.0017	U	8.5	J	0.0017	U	45	J	0.0043		200	J	0.00038	J	30	J	0.00079		35	J	0.22		8,200	J	0.0015		69	J	
-	Field Blank	SB-FB052622	-	05/26/22	-			0.85	UJ			3.4	UJ			0.85	U			0.85	UJ			0.85	U			1.9	J			0.85	UJ	

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1, and U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

mg/kg = milligram(s) per kilogram

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

UJ = The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

Table 6-11. Well Installation Soil Sampling Analytical Results Summary

Event time Frame	Well No.	Sample ID	Sample Date	Sampled Interval (ft bgs)	Sample Type	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
						Unit		1.9		7.8		0.13		3.2		0.019		0.013		0.019	
						mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fall 2021	MW-RI09	MW-RI09-0.0-0.5	11/10/21	0-0.5	Surface	0.0023	U	0.0023	U	0.00068	U	0.00068	U	0.00068	U	0.00048	J	0.00068	U		
Fall 2021	MW-RI08	MW-RI08-0.0-0.5	11/09/21	0-0.5	Surface	0.0021	U	0.0021	U	0.00062	U	0.00062	U	0.00062	U	0.00044	J	0.00062	U		
Fall 2021	MW-RI08	MW-RI08-A-0.0-0.5 (Dup)	11/09/21	0-0.5	Surface	0.0020	U	0.0020	U	0.00061	U	0.00061	U	0.00061	U	0.00059	J	0.00061	U		
Fall 2021	MW-RI08	MW-RI08-15.5-16.0	11/09/21	15.5-16	Subsurface	0.0021	U	0.0021	U	0.00064	U	0.00064	U	0.00064	U	0.00064	U	0.00064	U		
Spring 2022	MW-RI02	MW-RI02-S	06/01/22	0-0.5	Surface	0.0015	U	0.0015	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U		
Spring 2022	MW-RI02	MW-RI02-B	06/01/22	28-28.5	Subsurface	0.0015	U	0.0015	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U		
Spring 2022	MW-RI02	MW-RI02-BA (Dup)	06/01/22	28-28.5	Subsurface	0.0015	U	0.0015	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U		
Spring 2022	MW-RI07	MW-RI07-S	06/10/22	2-2.5	Surface	0.0017	U	0.0017	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U		
Spring 2022	MW-RI07	MW-RI07-B	06/10/22	10.5-11	Subsurface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U		
Spring 2022	MW-RI17	MW-RI17-S	05/11/22	2-2.5	Surface	0.0021	U	0.0021	U	0.00053	U	0.00053	U	0.00053	U	0.00030	J	0.00053	U		
Spring 2022	MW-RI17	MW-RI17-B	05/12/22	46.5-47	Subsurface	0.0017	U	0.0017	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U		
Spring 2022	MW-RI21	MW-RI21-S	05/17/22	0.5-1	Surface	0.0017	U	0.0017	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U		
Spring 2022	MW-RI21	MW-RI21-B	05/17/22	5-5.5	Subsurface	0.0017	U	0.0017	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U		
Spring 2022	MW-RI22	MW-RI22-S	05/11/22	0-0.5	Surface	0.0017	U	0.0017	U	0.00043	U	0.00043	U	0.00043	U	0.0011		0.00043	U		
Spring 2022	MW-RI23	MW-RI23-S	06/03/22	0-0.5	Surface	0.0017	U	0.0016	J	0.00043	U	0.00043	U	0.00043	U	0.00037	J	0.00043	U		
Spring 2022	MW-RI23	MW-RI23-SA (Dup)	06/03/22	0-0.5	Surface	0.0017	U	0.00075	J	0.00042	U	0.00042	U	0.00042	U	0.00027	J	0.00042	U		
Spring 2022	MW-RI23	MW-RI23-B	06/03/22	20.5-21	Subsurface	0.0015	U	0.0015	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U		
Spring 2022	MW-RI29	MW-RI29-S	05/12/22	0-0.5	Surface	0.0019	U	0.0019	U	0.00047	U	0.00047	U	0.00047	U	0.00071		0.00047	U		
Spring 2022	MW-RI30	MW-RI30-S	05/19/22	0-0.5	Surface	0.0016	U	0.0016	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U		
Spring 2022	MW-RI30	MW-RI30-B	05/19/22	79-79.5	Subsurface	0.0018	U	0.0018	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U		
Spring 2022	MW-RI31	MW-RI31-S	05/27/22	0-0.5	Surface	0.0019	U	0.0019	U	0.00047	U	0.00047	U	0.00047	U	0.00067	J	0.00036	J		
Spring 2022	MW-RI31	MW-RI31-B	05/27/22	29-29.5	Subsurface	0.0017	U	0.0017	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U		
Spring 2022	MW-RI37	MW-RI37-S	05/18/22	0-0.5	Surface	0.0020	U	0.0020	U	0.00051	U	0.00051	U	0.00051	U	0.00026	J	0.00051	U		
Spring 2022	MW-RI37	MW-RI37-B	05/18/22	78-78.5	Subsurface	0.0020	U	0.0020	U	0.00050	U	0.00050	U	0.00050	U	0.00050	U	0.00050	U		
Spring 2022	MW-RI39	MW-RI39-S	06/07/22	0-0.5	Surface	0.0018	U	0.0018	U	0.00045	U	0.00045	U	0.00045	U	0.00029	J	0.00045	U		
Spring 2022	MW-RI39	MW-RI39-B	06/07/22	61-61.5	Subsurface	0.0018	U	0.0018	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U		
Spring 2022	MW-RI40	MW-RI40-S	06/07/22	0-0.5	Surface	0.0017	U	0.0017	U	0.00042	U	0.00042	U	0.00042	U	0.00031	J	0.00042	U		
Spring 2022	MW-RI40	MW-RI40-B	06/08/22	46.5-47	Subsurface	0.0017	U	0.0017	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U		
Spring 2022	MW-RI43	MW-RI43-S	05/24/22	0-0.5	Surface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.0025		0.00040	U		
Spring 2022	MW-RI43	MW-RI43-B	05/24/22	64-64.5	Subsurface	0.0018	U	0.0018	U	0.00045	U	0.00045	U	0.00045	U	0.00045	U	0.00045	U		
Spring 2022	MW-RI43	MW-RI43-BA (Dup)	05/24/22	64-64.5	Subsurface	0.0018	U	0.0018	U	0.00045	U	0.00045	U	0.00045	U	0.00045	U	0.00045	U		
Spring 2022	MW-RI49	MW-RI49-S	05/31/22	0-0.5	Surface	0.0019	U	0.0019	U	0.00047	U	0.00047	U	0.00047	U	0.00037	J	0.00047	U		
Spring 2022	MW-RI49	MW-RI49-B	05/31/22	20.5-21	Subsurface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U		
Spring 2022	MW-RI49	MW-RI49-BA (Dup)	05/31/22	20.5-21	Subsurface	0.0016	U	0.0016	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U		

Table 6-11. Well Installation Soil Sampling Analytical Results Summary

Event time Frame	Well No.	Sample ID	Sample Date	Sampled Interval (ft bgs)	Sample Type	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
						Unit		1.9		7.8		0.13		3.2		0.019		0.013		0.019	
						Result	Q	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Spring 2022	MW-RI50	MW-RI50-S	06/01/22	0-0.5	Surface	0.0017	U	0.0017	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U
Spring 2022	MW-RI50	MW-RI50-B	06/02/22	58.5-59	Subsurface	0.0016	U	0.0016	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U
Spring 2022	MW-RI52	MW-RI52-S	06/06/22	0-0.5	Surface	0.0018	U	0.0018	U	0.00045	U	0.00045	U	0.00045	U	0.00045	U	0.00045	U	0.00045	U
Spring 2022	MW-RI52	MW-RI52-B	06/06/22	52-52.5	Subsurface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
Spring 2022	MW-RI53	MW-RI53-S	06/09/22	0-0.5	Surface	0.0019	U	0.0019	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	J
Spring 2022	MW-RI53	MW-RI53-B	06/09/22	46-46.5	Subsurface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
Spring 2022	MW-RI56	MW-RI56-S	05/25/22	0-0.5	Surface	0.012		0.011		0.19		0.039		0.012		0.51		0.027			
Spring 2022	MW-RI56	MW-RI56-B	05/25/22	39.5-40	Subsurface	0.0020	U	0.0020	U	0.00050	U	0.00050	U	0.00050	U	0.00050	U	0.00050	U	0.00050	U
Spring 2022	MW-RI57	MW-RI57-S	05/26/22	0-0.5	Surface	0.0018	U	0.0018	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U
Spring 2022	MW-RI57	MW-RI57-B	05/26/22	94-94.5	Subsurface	0.0019	U	0.0019	U	0.00048	U	0.00048	U	0.00048	U	0.00048	U	0.00048	U	0.00048	U
Spring 2022	MW-RI58	MW-RI58-S	05/13/22	0-0.5	Surface	0.0016	U	0.0016	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U
Spring 2022	MW-RI58	MW-RI58-SA (Dup)	05/13/22	0-0.5	Surface	0.0017	U	0.0017	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U
Spring 2022	MW-RI58	MW-RI58-B	05/16/22	37-37.5	Subsurface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
Winter 2023	MW-RI03	MW-RI03-S	03/14/23	0-0.5	Surface	0.0018	U	0.0018	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U
Winter 2023	MW-RI03	MW-RI03-B	03/14/23	3.5-4	Subsurface	0.0016	U	0.0016	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U
Winter 2023	MW-RI06a ⁽²⁾	MW-RI06-S	03/13/23	0.5-1	Surface	0.0017	U	0.0017	U	0.00043	U	0.00043	U	0.00043	U	0.00043	U	0.00043	J	0.00043	U
Winter 2023	MW-RI06a ⁽²⁾	MW-RI06-B	03/14/23	61-61.5	Subsurface	0.0017	U	0.0017	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U
Winter 2023	MW-RI06a ⁽²⁾	MW-RI06-BA (Dup)	03/14/23	61-61.5	Subsurface	0.0017	U	0.0017	U	0.00043	U	0.00043	U	0.00043	U	0.00043	U	0.00043	U	0.00043	U
Winter 2023	MW-RI10	MW-RI10-S	03/23/23	0-0.5	Surface	0.0016	U	0.0016	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U
Winter 2023	MW-RI10	MW-RI10-B	03/24/23	170-171.5	Subsurface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
Winter 2023	MW-RI11	MW-RI11-S	03/24/23	0-0.5	Surface	0.0019	U	0.0019	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U
Winter 2023	MW-RI11	MW-RI11-B	03/24/23	23-23.5	Subsurface	0.0016	U	0.0016	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U
Winter 2023	MW-RI12	MW-RI12-S	03/15/23	0-0.5	Surface	0.0020	U	0.0020	U	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00049	J	0.00049	U
Winter 2023	MW-RI12	MW-RI12-SA (Dup)	03/15/23	0-0.5	Surface	0.0019	U	0.0019	U	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00049	J	0.00049	U
Winter 2023	MW-RI12	MW-RI12-B	03/15/23	28.5-29	Subsurface	0.0018	U	0.0018	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U	0.00046	U
Winter 2023	MW-RI20	MW-RI20-S	03/15/23	0-0.5	Surface	0.0019	U	0.0019	U	0.00048	U	0.00048	U	0.00048	U	0.00048	U	0.00048	J	0.00048	J
Winter 2023	MW-RI20	MW-RI20-B	03/16/23	31-31.5	Subsurface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
Winter 2023	MW-RI33	MW-RI33-S	03/20/23	0-0.5	Surface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
Winter 2023	MW-RI33	MW-RI33-B	03/23/23	205-205.5	Subsurface	0.0016	U	0.0016	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
Fall 2024	MW-RI04	MW-RI04-S	12/17/24	0-0.5	Surface	0.00035	U	0.00012	J	0.00036	J	0.00035	U	0.00031	J	0.023		0.00021	J		J
Fall 2024	MW-RI04	MW-RI04-B	12/17/24	55-60	Subsurface	0.00033	U	0.00033	U	0.00033	U	0.00033	U	0.00033	U	0.00033	U	0.00033	U	0.00033	U
Fall 2024	MW-RI05	MW-RI05-S	10/02/24	0-0.5	Surface	0.00037	U	0.00018	J	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00014	J	0.00037	U
Fall 2024	MW-RI05	MW-RI05-SA (Dup)	10/02/24	0-0.5	Surface	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.000095	J	0.00018	J	0.00037	U
Fall 2024	MW-RI05	MW-RI05-B	10/02/24	30-35	Subsurface	0.00047	U	0.00035	J	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U

Table 6-11. Well Installation Soil Sampling Analytical Results Summary

Event time Frame	Well No.	Sample ID	Sample Date	Sampled Interval (ft bgs)	Sample Type	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
								1.9		7.8		0.13		3.2		0.019		0.013		0.019	
						Unit		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fall 2024	MW-RI06b	MW-RI06B-S	12/04/24	0-0.5	Surface	0.00042	U	0.00018	J	0.00024	J	0.00042	U	0.00019	J	0.022	U	0.00042	U		
Fall 2024	MW-RI13	MW-RI13-S	12/03/24	0-0.5	Surface	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00023	J	0.00041	U
Fall 2024	MW-RI14	MW-RI14-S	07/23/24	0-1	Surface	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	UJ	0.00041	U	0.00041	U
Fall 2024	MW-RI14	MW-RI14-B	07/24/24	133-134	Subsurface	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	UJ	0.00038	U	0.00038	U
Fall 2024	MW-RI16	MW-RI16-S	11/07/24	0-0.5	Surface	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U
Fall 2024	MW-RI16	MW-RI16-SA (Dup)	11/07/24	0-0.5	Surface	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U
Fall 2024	MW-RI16	MW-RI16-B	11/07/24	35-40	Subsurface	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U
Fall 2024	MW-RI19	MW-RI19-S	11/11/24	0-0.5	Surface	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U
Fall 2024	MW-RI19	MW-RI19-B	11/14/24	320-325	Subsurface	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00049	U
Fall 2024	MW-RI19	MW-RI19-BA (Dup)	11/14/24	320-325	Subsurface	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U
Fall 2024	MW-RI24	MW-RI24-S	08/02/24	0-1	Surface	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00020	J	0.00038	U
Fall 2024	MW-RI24	MW-RI24-B	08/06/24	153-154	Subsurface	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U
Fall 2024	MW-RI25	MW-RI25-S	08/07/24	0-1	Surface	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U
Fall 2024	MW-RI25	MW-RI25-B	08/08/24	126-127	Subsurface	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U
Fall 2024	MW-RI26	MW-RI26-S	07/30/24	0-1	Surface	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00016	J	0.00039	U
Fall 2024	MW-RI26	MW-RI26-B	07/30/24	44-45	Subsurface	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00013	J	0.00049	U
Fall 2024	MW-RI27	MW-RI27-S	10/15/24	0-0.5	Surface	0.00035	U	0.00035	U	0.00035	U	0.00035	U	0.00035	U	0.00035	U	0.00028	J	0.00035	U
Fall 2024	MW-RI34	MW-RI34-S	11/20/24	0-0.5	Surface	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U
Fall 2024	MW-RI36	MW-RI36-S	07/25/24	0-1	Surface	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	U	0.00041	UJ	0.00020	J	0.00041	U
Fall 2024	MW-RI36	MW-RI36-B	07/25/24	29-30	Subsurface	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	UJ	0.00038	U	0.00038	U
Fall 2024	MW-RI38	MW-RI38-S	07/25/24	0-1	Surface	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	UJ	0.00069	J	0.00040	U
Fall 2024	MW-RI38	MW-RI38-B	07/25/24	19-20	Subsurface	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	UJ	0.00039	U	0.00039	U
Fall 2024	MW-RI41	MW-RI41-S	10/01/24	0-0.5	Surface	0.00036	U	0.00029	J	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U
Fall 2024	MW-RI42	MW-RI42-S	10/18/24	0-0.5	Surface	0.00034	U	0.00034	U	0.00034	U	0.00034	U	0.00034	U	0.00034	U	0.00034	U	0.00034	U
Fall 2024	MW-RI47	MW-RI47-S	10/22/24	0-0.5	Surface	0.00038	U	0.00040	J	0.00038	U	0.00038	U	0.00038	U	0.00038	UJ	0.00038	U	0.00038	U
Fall 2024	MW-RI47	MW-RI47-B	10/22/24	25-30	Subsurface	0.00042	U	0.00043	J	0.00042	U	0.00042	U	0.00042	U	0.00042	UJ	0.00042	U	0.00042	U
Fall 2024	MW-RI51	MW-RI51-S	10/04/24	0-0.5	Surface	0.00039	U	0.00030	J	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00075	J	0.00039	U
Fall 2024	MW-RI51	MW-RI51-B	10/07/24	55-60	Subsurface	0.00039	U	0.00028	J	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U
Fall 2024	MW-RI54	MW-RI54-S	07/26/24	0-1	Surface	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	U	0.00037	UJ	0.00037	U	0.00037	U
Fall 2024	MW-RI54	MW-RI54-B	07/29/24	118-119	Subsurface	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U
Fall 2024	MW-RI54	MW-RI54-BA (Dup)	07/29/24	118-119	Subsurface	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U
Fall 2024	MW-RI55	MW-RI55-S	07/30/24	0-1	Surface	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00092	J	0.00038	U
Fall 2024	MW-RI55	MW-RI55-B	08/01/24	105-106	Subsurface	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U
Fall 2024	MW-RI59	MW-RI59-S	12/19/24	0-0.5	Surface	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00046	J	0.00047	U

Table 6-11. Well Installation Soil Sampling Analytical Results Summary

Event time Frame	Well No.	Sample ID	Sample Date	Sampled Interval (ft bgs)	Sample Type	PSLs ⁽¹⁾		Unit		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
										1.9		7.8		0.13		3.2		0.019		0.013		0.019	
										mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
						Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fall 2024	MW-RI59	MW-RI59-B	12/19/24	60-65	Subsurface	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U	0.00039	U
Fall 2024	MW-RI60	MW-RI60-S	07/23/24	0-1	Surface	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	U	0.00038	UJ	0.00038	U	0.00038	U	0.00038	U
Fall 2024	MW-RI60	MW-RI60-B	07/23/24	19-20	Subsurface	0.00027	U	0.00027	U	0.00027	U	0.00027	U	0.00027	U	0.00027	UJ	0.00027	U	0.00027	U	0.00027	U
January 2025	MW-RI15	MW-RI15-S	01/09/25	0-0.5	Surface	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U	0.00044	U
January 2025	MW-RI18	MWRI18-S	01/16/25	0-0.5	Surface	0.00035	U	0.00035	U	0.00035	U	0.00035	U	0.00035	U	0.00035	U	0.00035	U	0.00035	U	0.00035	U
January 2025	MW-RI18	MWRI18-B	01/16/25	153-154	Subsurface	0.00034	U	0.00034	U	0.00034	U	0.00034	U	0.00034	U	0.00034	U	0.00034	U	0.00034	U	0.00034	U
January 2025	MW-RI32	MW-RI32-S	01/23/25	0-0.5	Surface	0.00032	U	0.00032	U	0.00032	U	0.00032	U	0.00032	U	0.00032	U	0.00032	U	0.00032	U	0.00032	U
January 2025	MW-RI32	MW-RI32-B	01/24/25	236-237	Subsurface	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U	0.00036	U

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Residential Soil Project Screening Levels, target hazard quotient = 0.1.

(2) MW-RI06a - named MW-RI06 prior to the installation of MW-RI06b. MW-RI06 is permanently referred to as MW-RI06a

Dup = Field duplicate

ft bgs = feet below ground surface

ID = identification

mg/kg = milligram(s) per kilogram

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

UJ = The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

Table 6-12. Round 1 Groundwater Sampling Analytical Results Summary

Location	Sample ID	Sample Date	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			Unit		600		1,800		39		990		5.9		4.0		6.0	
			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1212-MW-16	FGW-E-01	06/24/21	41		330		830		880		6.0		310		120			
1212-MW-16	FGW-E-29 (Dup)	06/24/21	40		350		780		830		5.6	J	290		110			
2035-MW-12	FGW-E-02	06/23/21	5.7		18		46		60		1.8	U	5.8	J	22			
NDA-03	FGW-E-55	06/24/21	15		31		280		98		2.7		110		110			
MW-039	FGW-E-33	06/22/21	0.60	J	4.4	U	1.2	J	1.7	U	1.7	U	1.7	U	1.7	U		
MW-050	FGW-E-03	06/23/21	740		720		7,600	J	3,000		74		9,100	J	1,700			
MW-063	FGW-E-34	06/24/21	19		22		210		69		7.0		230		110			
MW-075	FGW-E-35	06/24/21	12		13		130		42		3.2		130		63			
MW-077	FGW-E-36	06/24/21	3.3		4.2	J	20		7.8		1.8	U	16		11			
MW-084	FGW-E-37	06/25/21	0.91	J	2.9	J	6.0		4.6		1.9	U	0.91	J	1.5	J		
MW-102	FGW-E-04	06/23/21	65		95		870		420		21		2,300		270			
MW-102	FGW-E-05 (Dup)	06/23/21	68		92		910		450		21		2,300		280			
MW-115	FGW-E-38	06/25/21	2.7		3.6	J	15		14		0.59	J	14		6.7			
MW-118	FGW-E-39	06/25/21	19		19		180		60		1.7	J	100		35			
MW-119	FGW-E-40	06/24/21	0.49	J	4.7	U	2.0		1.9	U	1.9	U	4.6		0.53	J		
MW-127	FGW-E-41	06/25/21	1.2	J	1.8	J	4.7		2.8		1.8	U	16		2.9			
MW-141	FGW-E-43	06/24/21	22		16		160		59		1.8		72		44			
MW-141	FGW-E-44 (Dup)	06/24/21	24		19		190		71		2.4		88		54			
MW-151	FGW-E-06	06/23/21	1,500		1,300		8,300		5,600		82		10,000		1,800			
MW-154	FGW-E-07	06/23/21	880		840		7,200	J	3,200		63		9,900		1,500			
MW-221	FGW-E-08	06/22/21	1.4	J	4.5	U	5.1		3.2	J	1.8	U	6.9		1.2	J		
MW-244	FGW-E-45	06/24/21	2.7		5.7		32		11		1.8	U	19		6.0			
MW-257	FGW-E-09	06/24/21	18		20		240		76		1.5	J	310		70			
MW-279	FGW-E-10	06/23/21	5.3		6.4		190		15		0.67	J	140		19			
MW-302	FGW-E-46	06/23/21	1.4	J	1.7	J	27		4.2	J	1.7	U	16		4.7			
MW-303	FGW-E-11	06/22/21	11		7.0		210		45	J	1.6	J	32	J	45			
MW-306	FGW-E-12	06/23/21	1.8	U	4.6	U	0.70	J	1.3	J	1.8	U	3.4		1.5	J		
MW-309	FGW-E-47	06/23/21	1.7	U	70		4.1		11		1.8		8.0		4.1			
MW-310	FGW-E-48	06/22/21	7.4		65		120		240		11		160		220			
MW-326	FGW-E-13	06/22/21	6.4		9.5		120		24		2.0		91		30			
MW-353	FGW-E-49	06/22/21	5.2		65		70		130		3.6		2.9	J	60			
MW-360	FGW-E-14	06/23/21	5.8	J	19		170		38		4.5		450		27			
MW-398	FGW-E-15	06/24/21	1.0	J	6.5		14		14		1.8	U	23		2.3			
MW-400	FGW-E-16	06/24/21	3.6		2.4	J	10		6.2		1.8	U	4.5		1.4	J		
MW-401	FGW-E-17	06/24/21	43		72		530		200		22		640		170			
MW-405	FGW-E-50	06/22/21	2.0		2.2	J	17		5.2		1.7	U	7.9		7.7			
MW-409	FGW-E-18	06/22/21	1.8	U	4.6	U	0.71	J	1.8	U	1.8	U	0.64	J	0.84	J		
MW-414	FGW-E-19	06/24/21	35		24		18		26		1.9	U	6.0	J	4.3			
MW-415	FGW-E-51	06/22/21	86		29		1,200		210		0.47	J	720		120			
MW-428	FGW-E-21	06/24/21	1.8		4.5	U	7.5		4.2		1.8	U	4.6		0.64	J		
MW-428	FGW-E-22 (Dup)	06/24/21	2.1		2.8	J	8.9		5.0		1.8	U	5.7		0.79	J		
MW-433	FGW-E-23	06/23/21	120		260		1,100		880		26		1,400		430			

Table 6-12. Round 1 Groundwater Sampling Analytical Results Summary

Location	Sample ID	Sample Date	PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			600		1,800		39		990		5.9		4.0		6.0	
			Unit		Unit		Unit		Unit		Unit		Unit		Unit	
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
MW-434	FGW-E-24	06/23/21	130		210		1,200		800		21		1,400		330	
MW-437	FGW-E-52	06/23/21	2.0		3.5	J	10		7.7		1.7	U	7.4		1.5	J
MW-444	FGW-E-25	06/24/21	24		43		230		130		2.4		130		41	
MW-444	FGW-E-26 (Dup)	06/24/21	23		43		240		130		2.6		130		42	
MW-448	FGW-E-53	06/23/21	12		120		260		280		18		460		140	
MW-461	FGW-E-27	06/22/21	6.5		74		100		260		11		120		230	
MW-467	FGW-E-28	06/22/21	2.6		6.7		29		11		1.8	U	15		8.6	
MW-540	FGW-E-54	06/25/21	6.6		12		100		40		1.8	U	57		42	
MW-543	FGW-E-30	06/25/21	22		15		140		43		3.6		160		45	
SS009-MW-03	FGW-E-31	06/24/21	7.4		4.8	UJ	7.9		2.1	J	1.9	U	5.4		5.1	
Equipment Blank	FGW-E-61	06/22/21	1.7	U	4.3	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Equipment Blank	FGW-E-62	06/23/21	1.8	U	4.5	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Equipment Blank	FGW-E-63	06/24/21	1.7	U	4.3	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Equipment Blank	FGW-E-64	06/25/21	1.7	U	4.4	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Field Blank	FGW-E-56	06/22/21	2.0	U	5.1	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Field Blank	FGW-E-57	06/23/21	1.9	U	4.7	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
Field Blank	FGW-E-58	06/24/21	1.8	U	4.6	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Field Blank	FGW-E-59	06/25/21	1.7	U	4.3	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

ng/L = nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

UJ = The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

Table 6-13. Round 2 Groundwater Sampling Analytical Results Summary

PSLs ⁽¹⁾ Unit			PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			600		1,800		39		990		5.9		4.0		6.0	
			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
Location	Sample ID	Sample Date	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1212-MW-10	FGW-E-123	08/12/21	4.2		14		41		25		1.1	J	41		9.6	
DP024-MW-01	FGW-E-68	08/11/21	64		76		870		230		11		1,100		85	
MMW-1024-3	FGW-E-81	08/11/21	1.5	J	6.1		10		12		1.9	U	2.6		3.8	
MMW-1028-4	FGW-E-69	08/11/21	73		86		880		260		8.3		440		160	
MW-003	FGW-E-65	08/11/21	930		1,100		24,000		7,200		320		25,000	J	6,500	
MW-003	FGW-E-66 (Dup)	08/11/21	950		1,100		25,000		7,100		330		37,000	J	7,400	
MW-074	FGW-E-103	08/12/21	1.6	U	4.0	U	1.6	U	1.6	U	1.6	U	1.6	U	0.40	J
MW-078	FGW-E-104	08/10/21	15		15		140		46		4.6		160		42	
MW-082	FGW-E-106	08/10/21	16		19		200		67		3.0		91		65	
MW-082	FGW-E-107 (Dup)	08/10/21	15		18		190		64		2.3		78		66	
MW-094	FGW-E-108	08/12/21	1.3	J	4.3	U	2.5		7.3		1.7	U	11		3.1	
MW-095	FGW-E-109	08/09/21	9.6		6.4		68		20		1.8	U	14		20	
MW-096	FGW-E-105	08/12/21	3.2		2.8	J	35		9.1		1.7	U	17		22	
MW-099	FGW-E-110	08/12/21	3.5		4.7		37		16		1.7	U	14		6.9	
MW-101	FGW-E-111	08/10/21	1.6	U	3.9	U	2.1		0.93	J	1.6	U	3.3		1.7	
MW-116	FGW-E-112	08/10/21	7.6		7.2		93		25		1.4	J	79		19	
MW-117	FGW-E-113	08/10/21	1.6	U	4.0	U	1.6	U	1.6	U	1.6	U	1.6	U	0.53	J
MW-135	FGW-E-114	08/10/21	1.8	U	4.5	U	1.8	U	1.8	U	1.8	U	1.9	J	0.57	J
MW-165	FGW-E-70	08/11/21	5.7		42		30		53		5.6		11		53	
MW-165	FGW-E-71 (Dup)	08/11/21	5.8		41		30		57		5.4		12		51	
MW-171	FGW-E-72	08/11/21	14		390		86		930		120		180		790	
MW-171	FGW-E-73 (Dup)	08/11/21	12		340		80		830		110		170		730	
MW-232	FGW-E-74	08/09/21	56		9.4		57		78		1.7	U	1.7	U	45	
MW-245A	FGW-E-75	08/11/21	77		95		860		360		4.9		1,200		240	
MW-245A	FGW-E-76 (Dup)	08/11/21	76		95		820		350		4.7		1,200		230	
MW-276	FGW-E-77	08/10/21	7.1		23		32		38		1.8	U	15		4.7	
MW-278	FGW-E-115	08/12/21	15		15		580		57		0.71	J	650	J	130	
MW-295	FGW-E-78	08/10/21	14		28		81		44		1.6	J	51		15	
MW-296	FGW-E-79	08/10/21	0.44	J	4.3	U	1.7		1.7	U	1.7	U	0.70	J	1.7	U
MW-301	FGW-E-80	08/09/21	14		83		210		270		10		190		180	
MW-313	FGW-E-82	08/09/21	26		110		100		400		0.58	J	19		7.7	
MW-343	FGW-E-83	08/11/21	53	J	88		690		300		9.3		720		200	
MW-365	FGW-E-84	08/10/21	4.8		130		53		230		130		42		280	
MW-379	FGW-E-101	08/11/21	0.72	J	4.5	U	4.7		1.8		1.8	U	2.5	J	1.8	U
MW-381	FGW-E-93	08/11/21	18		12		52		37		1.8	U	25		7.8	
MW-384	FGW-E-85	08/11/21	51		91		780		270		10		890		200	
MW-385	FGW-E-86	08/09/21	9.8		5.4		12		9.2		1.7	U	4.4	J	1.4	J
MW-385	FGW-E-87 (Dup)	08/09/21	9.8		5.6		13		9.9		1.8	U	4.4	J	1.7	J
MW-389	FGW-E-88	08/11/21	0.75	J	4.3	U	6.7		2.4		1.7	U	1.3	J	1.4	J
MW-410	FGW-E-89	08/09/21	35		18		100		60		0.61	J	46		12	
MW-412	FGW-E-90	08/09/21	710		240		4,600		1,300		4.3		1,900		300	
MW-417	FGW-E-116	08/11/21	3.1		5.6		58		20		0.50	J	40		16	
MW-421	FGW-E-91	08/09/21	8.9		79		130		310		16		160		300	
MW-422	FGW-E-117	08/09/21	6.9		10		180		45		0.50	J	120		63	
MW-424	FGW-E-118	08/09/21	9.2		22		220		72		2.2		150		61	

Table 6-13. Round 2 Groundwater Sampling Analytical Results Summary

PSLs ⁽¹⁾ Unit			PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			600		1,800		39		990		5.9		4.0		6.0	
			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
Location	Sample ID	Sample Date	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
MW-430	FGW-E-92	08/10/21	160		150		1,900		580		63		3,900		280	
MW-449	FGW-E-119	08/09/21	0.85	J	4.6	U	10		2.4		1.8	U	12		5.6	
MW-456	FGW-E-94	08/09/21	480		220		1,500		740		29		1,000		210	
MW-458	FGW-E-67	08/11/21	3.0		8.1		41		9.0		1.7	U	7.0		7.9	
MW-508	FGW-E-95	08/09/21	9.5		18		170		55		2.1		110		56	
MW-514	FGW-E-120	08/09/21	5.2		9.9		68		34		0.55	J	35		22	
MW-516	FGW-E-96	08/12/21	5.4		80		190		160		35		160		97	
MW-534	FGW-E-97	08/11/21	160		330		1,500		1,600	J	45		2,100		720	
MW-539	FGW-E-121	08/09/21	1.8	U	4.4	U	25		5.6		1.8	U	3.4	J	13	
MW-557	FGW-E-98	08/10/21	2.9		5.6		23		11		0.65	J	23		15	
MW-564	FGW-E-99	08/09/21	6.9		19		41		42		1.4	J	45		24	
MW-565	FGW-E-100	08/10/21	3.7		4.4		20		16		1.2	J	34		16	
MW-601	FGW-E-122	08/12/21	10		6.7		62		26		1.6	U	13		17	
OW-3	FGW-E-102	08/11/21	42		93		810		340		16		620		200	
Field Blank	FGW-E-124	08/09/21	1.8	U	4.4	U	1.3	J	0.46	J	1.8	U	0.90	J	1.8	U
Field Blank	FGW-E-125	08/10/21	1.7	U	4.2	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Field Blank	FGW-E-126	08/11/21	1.7	U	4.3	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Field Blank	FGW-E-127	08/12/21	1.7	U	4.4	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Equipment Blank	FGW-E-129	08/09/21	1.6	U	3.9	U	1.6	U	1.6	U	1.6	U	0.39	J	1.6	U
Equipment Blank	FGW-E-130	08/10/21	1.7	U	4.2	U	1.7	U	1.7	U	1.7	U	0.45	J	1.7	U
Equipment Blank	FGW-E-131	08/11/21	1.7	U	4.2	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
Equipment Blank	FGW-E-132	08/12/21	1.9	U	4.7	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

ng/L= nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

Table 6-14. Round 3 Groundwater Sampling Analytical Results Summary

Location	Sample ID	Sample Date	PSLs ⁽¹⁾		Unit		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			600		1,800		39		990		5.9		4.0		6.0					
			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
MW-RI02	FGW-N-01	03/09/23	28		44		510	J	180	J	13		1,300	J	68					
MW-RI07	FGW-N-02	03/10/23	2.7		3.9	J	2.6		4.0		0.97	J	7.3		7.4					
MW-RI08	FGW-N-03	03/10/23	19		12		220		43		1.1	J	310		23					
MW-RI17	FGW-N-04	03/09/23	19		6.6		82		20		0.95	U	100		17					
MW-RI21	FGW-N-05	03/09/23	1.4	J	4.6	J	6.1		1.0	J	0.99	U	1.9	J	1.0	J				
MW-RI22	FGW-N-06	03/21/23	16	J	25	J	21	J	45	J	1.0	J	5.4	J	2.8	J				
MW-RI23	FGW-N-07	03/07/23	2.4	J	2.9	J	5.4	J	3.6	J	0.57	J	1.6	UJ	3.7	J				
MW-RI29	FGW-N-08	03/09/23	320		190		2,400	J	680		14		1,900	J	180	J				
MW-RI29	FGW-N-09 (Dup)	03/09/23	310		190		2,300	J	750	J	13		2,000	J	180	J				
MW-RI30	FGW-N-10	03/08/23	0.50	J	2.3	J	1.3	J	1.9		0.87	UJ	2.6	J	0.87	U				
MW-RI37	FGW-N-11	03/08/23	0.66	J	1.7	J	2.0		2.3		0.56	J	2.2		1.1	J				
MW-RI39	FGW-N-12	03/10/23	8.6		3.0	J	17		5.1		0.96	U	3.7	J	0.96	U				
MW-RI40	FGW-N-13	03/09/23	12		3.7	U	14		3.0		0.93	U	6.3		2.4					
MW-RI43	FGW-N-14	03/08/23	25		22	J	220		78	J	1.7		180		37	J				
MW-RI49	FGW-N-15	03/08/23	4.3		3.9	U	0.97	U	0.97	U	0.97	U	1.9	U	0.97	U				
MW-RI49	FGW-N-21 (Dup)	03/08/23	4.1		3.8	U	0.53	J	0.94	U	0.94	U	1.9	U	0.94	U				
MW-RI50	FGW-N-16	03/08/23	28		45		210		130	J	0.53	J	2.6		28					
MW-RI52	FGW-N-17	03/07/23	4.5	J	3.2	J	25	J	5.9	J	0.66	J	40	J	5.7	J				
MW-RI56	FGW-N-19	03/08/23	1,500		1,700		22,000		8,100		280		27,000		9,400					
MW-RI57	FGW-N-20	03/08/23	0.91	U	3.6	U	0.91	U	0.91	U	0.91	U	1.8	U	0.91	U				
MW-RI58	FGW-N-22	03/07/23	2.3	J	5.3	J	16	J	3.0	J	0.89	UJ	9.9	J	1.8	J				
Field Blank	FGW-FB-030723	03/07/23	0.83	UJ	3.3	UJ	0.83	UJ	0.83	UJ	0.83	UJ	1.7	UJ	0.83	UJ				
Field Blank	FGW-FB-030823	03/08/23	0.94	U	3.8	U	0.94	U	0.94	U	0.94	U	1.9	U	0.94	U				
Field Blank	FGW-FB-030923	03/09/23	0.98	U	3.9	U	0.98	U	0.98	U	0.98	U	2.0	U	0.98	U				
Field Blank	FGW-FB-031023	03/10/23	0.96	U	3.8	U	0.96	U	0.96	U	0.96	U	1.9	U	0.96	U				

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

Dup = Field duplicate

ID = identification

ng/L= nanogram(s) per liter

Table 6-14. Round 3 Groundwater Sampling Analytical Results Summary

			PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
PSLs ⁽¹⁾			600		1,800		39		990		5.9		4.0		6.0	
Unit			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
Location	Sample ID	Sample Date	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

UJ = The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

Table 6-15. Round 4 Groundwater Sampling Analytical Results Summary

Location	Sample ID	Sample Date	PSLs ⁽¹⁾		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			Unit		600		1,800		39		990		5.9		4.0		6.0	
			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2160-MW-12	FGW-E-142	04/10/23	3.7		17		10		4.3		1.4	J	15		4.4			
DP064-MW-01	FGW-E-140	04/11/23	0.84	J	40		0.60	J	59		7.6		1.7	U	90			
MW-055	FGW-E-137	04/10/23	37		150		270		710		7.7		1,300		75			
MW-069	FGW-E-134	04/13/23	1.3	J	2.6	J	7.7		1.6	J	0.85	U	45		2.9			
MW-166	FGW-E-138	04/14/23	1.2	J	4.1	J	7.7	J	3.5	J	0.70	J	12	J	4.6	J		
MW-177	FGW-E-139	04/14/23	0.63	J	45	J	6.5	J	150	J	2.7	J	62	J	5.1	J		
MW-197	FGW-E-141	04/14/23	0.84	UJ	3.3	UJ	0.84	UJ	0.84	UJ	0.84	UJ	5.1	J	1.1	J		
MW-289	FGW-E-136	04/11/23	5.1		7.8		21		10		0.64	J	26		5.8			
MW-RI03	FGW-N-23	04/12/23	0.67	J	3.5	U	1.7	J	0.88	UJ	0.88	U	2.1	J	0.88	U		
MW-RI06a ⁽²⁾	FGW-N-24	04/13/23	110		140		1,300		380		18		1,800	J	330			
MW-RI06a ⁽²⁾	FGW-N-25 (Dup)	04/13/23	110		140		1,300		440		17		1,700	J	330			
MW-RI10	FGW-N-26	04/13/23	39		66		300		220		6.4		280		92			
MW-RI11	FGW-N-27	04/12/23	1.3	J	2.0	J	1.9		0.52	J	0.86	U	2.2	J	0.80	J		
MW-RI12	FGW-N-28	04/13/23	0.96	U	2.9	J	3.8		3.6		0.96	U	7.8	J	2.4			
MW-RI20	FGW-N-29	04/12/23	3.3		3.4	U	12		3.6	J	0.85	U	7.2	J	8.0			
WP036-MW04D	FGW-E-145	04/12/23	4.1		4.0	J	23		7.6	J	0.89	U	20	J	2.7			
WP036-MW04S	FGW-E-143	04/12/23	6.4		4.6		32		9.2	J	0.87	U	14	J	2.7			
WP036-MW04S	FGW-E-144 (Dup)	04/12/23	6.2		4.5		31		9.5	J	0.88	U	13	J	2.9			
LF002-INF ⁽³⁾	FGW-E-133	04/13/23	11	J	11	J	99	J	29	J	2.4	J	66	J	40	J		
Equipment Blank	FGW-EB-041323	04/13/23	0.94	U	3.7	U	0.94	U	0.94	U	0.94	U	1.9	U	0.94	U		
Field Blank	FGW-FB-041023	04/10/23	0.84	U	3.4	U	0.84	U	0.84	U	0.84	U	1.7	U	0.84	U		
Field Blank	FGW-FB-041123	04/10/23	0.95	U	3.8	U	0.95	U	0.95	U	0.95	U	1.9	U	0.95	U		
Field Blank	FGW-FB-041223	04/12/23	0.88	UJ	3.5	UJ	0.88	UJ	0.88	UJ	0.88	UJ	1.8	UJ	0.88	UJ		
Field Blank	FGW-FB-041323	04/13/23	0.92	UJ	3.7	UJ	0.92	UJ	0.92	UJ	0.92	UJ	1.8	UJ	0.92	UJ		
Field Blank	FGW-FB-041423	04/14/23	0.87	UJ	3.5	UJ	0.87	UJ	0.87	UJ	0.87	UJ	1.7	UJ	0.87	UJ		

Notes:

Results shown with bold and blue shade exceed the PSLs

(1) U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).

(2) MW-RI06a - named MW-RI06 prior to the installation of MW-RI06b. MW-RI06 is permanently referred to as MW-RI06a

(3) Treatment plant influent sample.

Table 6-15. Round 4 Groundwater Sampling Analytical Results Summary

			PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
PSLs ⁽¹⁾			600		1,800		39		990		5.9		4.0		6.0	
Unit			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
Location	Sample ID	Sample Date	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q

Dup = Field duplicate

ID = identification

ng/L= nanogram(s) per liter

PFBA = Perfluorobutanoic acid

PFBS = Perfluorobutanesulfonic acid

PFHxA = Perfluorohexanoic acid

PFHxS = Perfluorohexanesulfonic acid

PFNA = Perfluorononanoic acid

PFOA = Perfluorooctanoic acid

PFOS = Perfluorooctanesulfonic acid

PSLs = Project Screening Levels

Q = qualifier

Qualifiers:

J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.

U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.

UJ = The analyte was not detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

Table 6-16. Round 5 Groundwater Sampling Analytical Results Summary

Location	Sample ID	Sample Date	PSLs ⁽¹⁾		Unit		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			600		1,800		39		990		5.9		4.0		6.0					
			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1212-MW-16	FGW-E-166	01/08/25	96		580		1,200		1,400		10		340		170					
2160-MW-12	FGW-E-167	01/08/25	2.8		31		7.9		5.0		1.4		14		7.0					
MMW-1012-3	FGW-E-169	01/16/25	270		1,400		5,000	J	5,300	J	21		8,300	J	1,500					
MMW-1012-3	FGW-E-179 (Dup)	01/16/25	270		1,400		4,600	J	5,100	J	21		8,200	J	1,400					
MMW-1012-4	FGW-E-170	01/16/25	15,000		23,000		88,000		130,000		200		210,000		23,000					
MW-069	FGW-E-146	01/14/25	4.7		7.0		30		8.0		0.35	U	28		10					
MW-074	FGW-E-147	01/14/25	0.34	U	1.4	U	0.34	U	0.26	J	0.34	U	0.78	J	0.51	U				
MW-075	FGW-E-148	01/14/25	9.0		24		200		54		8.7		230		120					
MW-078	FGW-E-149	01/21/25	4.9		4.8		45		13		1.8		92		27					
MW-101	FGW-E-150	01/13/25	0.24	J	1.4	U	2.9		1.2		0.34	U	4.1		2.3					
MW-115	FGW-E-151	01/13/25	0.95		1.4	U	4.3		1.7		0.51	J	8.1		4.2					
MW-115	FGW-E-152 (Dup)	01/13/25	1.0		1.4	U	4.5		1.7		0.51	J	7.8		4.2					
MW-127	FGW-E-153	01/14/25	1.4		3.9		6.5		5.6		0.34	U	16		3.8					
MW-141	FGW-E-154	01/13/25	35		25		220		89		2.7		78		64					
MW-154	FGW-E-171	01/14/25	900	J	850		8,600	J	3,600	J	84		12,000	J	1,500					
MW-171	FGW-E-172	01/15/25	12		470		63		980		96		150		660					
MW-190	FGW-E-155	01/29/25	2.1		20		13		31		2.1		11		9.9					
MW-257	FGW-E-156	01/17/25	23		24		280		83		1.8		280		78					
MW-289	FGW-E-173	01/10/25	3.2		3.4		18		5.2		0.80		22		3.7					
MW-301	FGW-E-157	01/16/25	22		100		250		310		17		220		230					
MW-313	FGW-E-158	01/14/25	22		85		100		260		0.62	J	11		27					
MW-324	FGW-E-159	01/16/25	17		95		500		220		12		34		210					
MW-343	FGW-E-160	01/12/25	88		120		820		340		15		810		240					
MW-384	FGW-E-174	01/10/25	38	J	94		550		230		11		1,100		180					
MW-430	FGW-E-161	01/16/25	100	J	150		1,200		470		83		2,800		260					
MW-444	FGW-E-175	01/10/25	100		39		170		140		4.3		86		39					
MW-467	FGW-E-162	01/16/25	3.7		7.1		34		10		0.34	U	15		8.2					
MW-508	FGW-E-164	01/15/25	13		22		160		49		2.6		92		56					
MW-508	FGW-N-64 (Dup)	01/15/25	11		20		140		45		2.4		85		50					
MW-535	FGW-E-176	01/16/25	8.1		210		190		820		18		200		190					
MW-543	FGW-E-165	01/23/25	6.8		6.1		42		10		1.2		49		12					
MW-RI02	FGW-N-73	01/15/25	26		54		480		240		12		900		79					
MW-RI03	FGW-N-69	01/08/25	0.73	J	0.96	J	2.2		0.20	J	0.37	U	1.5		0.42	J				
MW-RI04	FGW-N-30	01/17/25	81		43		780		150		6.4		200		180					
MW-RI05	FGW-N-56	01/16/25	9.5		5.4		48		4.6		0.35	U	11		3.8					
MW-RI06a ⁽²⁾	FGW-N-31	01/21/25	140		180		1,600		530		19		1,500		480					
MW-RI06b	FGW-N-32	01/28/25	62		40		540		140		5.5		200		130					
MW-RI07	FGW-N-75	01/13/25	1.9		5.3		5.2		2.9		0.75		11		4.9					

Table 6-16. Round 5 Groundwater Sampling Analytical Results Summary

Location	Sample ID	Sample Date	PSLs ⁽¹⁾		Unit		PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			600		1,800		39		990		5.9		4.0		6.0					
			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
MW-RI10	FGW-N-33	01/10/25	55		130		630		400		13		500		190					
MW-RI10	FGW-N-40 (Dup)	01/10/25	58		130		590		450		14		540		190					
MW-RI13	FGW-N-36	01/16/25	1.6		2.5	J	18		12		0.35	U	5.4		4.8					
MW-RI15	FGW-N-38	01/29/25	3.5		9.9		28		11		0.83		32		6.1					
MW-RI16	FGW-N-39	01/08/25	35		25		250		76		6.0		280		74					
MW-RI17	FGW-N-57	01/12/25	25		13		87		26		0.56	J	99		22					
MW-RI18	FGW-N-58	01/30/25	1.9	U	7.4	U	1.9	U	1.9	U	1.9	U	1.9	U	2.8	U				
MW-RI19	FGW-N-41	01/28/25	24		40		230		140		4.8		180		65					
MW-RI20	FGW-N-42	01/10/25	6.5		6.0		25		5.3		0.33	U	15		8.5					
MW-RI21	FGW-N-76	01/09/25	1.8		5.4		10		1.6		0.36	U	2.0		2.3					
MW-RI21	FGW-N-74 (Dup)	01/09/25	2.1		5.9		10		1.9		0.36	U	2.1		2.5					
MW-RI22	FGW-N-59	01/15/25	10		17		51		22		0.59	J	10		28					
MW-RI23	FGW-N-77	01/09/25	3.1		1.7	J	7.0		3.5		0.39	J	0.66	J	3.1					
MW-RI25	FGW-N-44	01/07/25	57		98		490		290		7.5		150		120					
MW-RI26	FGW-N-45	01/06/25	14		20		110		36		4.9		240		50					
MW-RI27	FGW-N-46	01/28/25	19		19		140		61		3.4		110		34					
MW-RI29	FGW-N-78	01/09/25	410		220		2,400		760		19		1,800		260					
MW-RI29	FGW-E-168 (Dup)	01/09/25	340		210		2,600		760		17		1,800		240					
MW-RI30	FGW-N-60	01/17/25	0.27	J	1.4	U	0.66	J	0.64	J	0.35	U	1.6		0.62	J				
MW-RI30	FGW-E-163 (Dup)	01/17/25	0.22	J	1.4	U	0.69		0.62	J	0.34	U	1.6		0.57	J				
MW-RI32	FGW-N-47	01/30/25	2.4		2.9		17		6.2		0.37	U	11		6.3					
MW-RI34	FGW-N-49	01/27/25	45		45		420		160		9.3		410		97					
MW-RI36	FGW-N-70	01/08/25	0.70		0.76	J	0.43		3.4		0.18	U	3.2		6.0					
MW-RI37	FGW-N-61	01/16/25	0.35	U	1.4	U	0.18	J	0.22	J	0.35	U	0.74	J	0.52	U				
MW-RI38	FGW-N-71	01/07/25	7.5		34		28		29	J	1.8		16		21					
MW-RI39	FGW-N-62	01/11/25	4.7		1.8		10		3.5		0.17	U	2.6		1.2					
MW-RI40	FGW-N-79	01/09/25	23		6.4		23		9.5		0.36	U	7.8		3.5					
MW-RI41	FGW-N-63	01/15/25	8.3		8.9		48		14		0.36	U	6.2		11					
MW-RI42	FGW-N-50	01/09/25	0.84		1.4	U	2.8		0.34	U	0.34	U	0.61	J	0.51	U				
MW-RI42	FGW-N-51 (Dup)	01/09/25	0.77		1.4	U	2.8		0.35	U	0.35	U	0.61	J	0.52	U				
MW-RI43	FGW-N-65	01/16/25	32		32		300		100		2.4		220		52					
MW-RI47	FGW-N-52	01/09/25	0.35	U	2.4	J	0.28	J	0.35	U	0.35	U	0.24	J	0.53	U				
MW-RI49	FGW-N-80	01/15/25	18		2.6		2.0		2.8		0.33	U	0.37	J	0.43	J				
MW-RI49	FGW-N-85 (Dup)	01/15/25	18		2.4	J	1.8		3.0		0.35	U	0.49	J	0.46	J				
MW-RI50	FGW-N-81	01/09/25	28		66		280		150		0.38	J	1.6		56					
MW-RI51	FGW-N-66	01/28/25	1.7		6.2		20		10		0.41	J	13		8.0					
MW-RI52	FGW-N-67	01/10/25	27		21		130		47		4.6		180		43					
MW-RI54	FGW-N-53	01/08/25	54		43		390		140		8.7		310		120					

Table 6-16. Round 5 Groundwater Sampling Analytical Results Summary

PSLs ⁽¹⁾ Unit			PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			600		1,800		39		990		5.9		4.0		6.0	
			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
Location	Sample ID	Sample Date	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
MW-RI55	FGW-N-54	01/06/25	69		46		490		140		9.9		290		150	
MW-RI56	FGW-N-83	01/14/25	650		880		7,500	J	3,400		110		10,000	J	1,800	
MW-RI57	FGW-N-84	01/15/25	0.34	U	1.4	U	1.7		1.1		0.34	U	20		0.74	
MW-RI58	NS	NS	--		--		--		--		--		--		--	
MW-RI59	FGW-N-55	01/15/25	0.36	U	1.4	U	0.36	U	0.36	U	0.36	U	0.36	U	0.54	U
MW-RI60	FGW-N-68	01/08/25	43		16		50		43		0.66	J	53		22	
MW-RI60	FGW-N-72 ⁽³⁾	01/06/25	71		11		19		22		0.64	J	25		16	
WP036-MW01S	FGW-E-178	01/30/25	23		25		150		64		0.83		45		13	
Equipment Blank	EB-010725	01/07/25	0.38	U	1.5	U	0.21	J	0.38	U	0.38	U	0.79		0.56	U
Equipment Blank	FGW-EB-010725	01/08/25	1.0	U	4.1	U	0.97	J	0.55	J	1.0	U	1.0	U	1.5	U
Equipment Blank	EB-010825	01/08/25	0.38	U	1.5	U	0.38	U	0.38	U	0.38	U	0.38	U	0.56	U
Equipment Blank	FGW-EB-010825	01/08/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.17	J	0.51	U
Equipment Blank	FGW-EB-010925	01/09/25	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.52	U
Equipment Blank	FGW-EB-011025	01/10/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.34	U	0.52	U
Equipment Blank	FGW-EB-011225	01/12/25	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.19	J	0.56	U
Equipment Blank	FGW-EB-011325	01/13/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.20	J	0.52	U
Equipment Blank	FGW-EB-011525	01/15/25	0.33	U	1.3	U	0.33	U	0.33	U	0.33	U	0.33	U	0.50	U
Equipment Blank	FGW-EB-011425	01/15/25	0.33	U	1.3	U	0.33	U	0.33	U	0.33	U	0.46	J	0.50	U
Equipment Blank	FGW-EB-011625	01/16/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.34	U	0.52	U
Equipment Blank	FGW-EB-012125	01/21/25	0.33	U	1.3	U	0.23	J	0.23	J	0.33	U	3.1		0.50	U
Equipment Blank	FGW-EB-012325	01/23/25	0.31	U	1.3	U	0.31	U	0.31	U	0.31	U	0.23	J	0.47	U
Equipment Blank	FGW-EB-012425	01/24/25	0.33	U	1.3	U	0.33	U	0.33	U	0.33	U	0.36	J	0.49	U
Equipment Blank	FGW-EB-012725	01/27/25	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.52	U
Equipment Blank	FGW-EB-012825	01/28/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.34	U	0.52	U
Equipment Blank	FGW-EB-012925	01/29/25	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.31	J	0.53	U
Equipment Blank	FGW-EB-013025	01/30/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.34	U	0.52	U
Field Blank	FGW-FB-010625	01/06/25	0.38	U	1.5	U	0.38	U	0.38	U	0.38	U	0.38	U	0.57	U
Field Blank	FGW-FB-010725	01/07/25	0.34	U	1.3	U	0.34	U	0.34	U	0.34	U	0.34	U	0.50	U
Field Blank	FGW-FB-010825	01/08/25	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.37	U	0.56	U
Field Blank	FGW-FB-010925	01/09/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.34	U	0.52	U
Field Blank	FGW-FB-010925B	01/09/25	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.37	U	0.56	U
Field Blank	FGW-FB-011025	01/10/25	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.53	U
Field Blank	FGW-FB-011225	01/12/25	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.53	U
Field Blank	FGW-FB-011325	01/13/25	0.34	U	0.89	J	0.34	U	0.34	U	0.34	U	0.34	U	0.50	U
Field Blank	FGW-FB-011425	01/14/25	0.35	U	1.4	U	0.28	J	0.35	U	0.35	U	0.52	J	0.53	U
Field Blank	FGW-FB-011525	01/15/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.54	J	0.52	U
Field Blank	FGW-FB-011625	01/16/25	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.21	J	0.55	U
Field Blank	FGW-FB-011625A	01/16/25	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.28	J	0.56	U

Table 6-16. Round 5 Groundwater Sampling Analytical Results Summary

PSLs ⁽¹⁾ Unit			PFBS		PFBA		PFHxS		PFHxA		PFNA		PFOS		PFOA	
			600		1,800		39		990		5.9		4.0		6.0	
			(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)		(ng/L)	
			Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Location	Sample ID	Sample Date														
Field Blank	FGW-FB-011725	01/17/25	0.34	U	1.3	U	0.34	U	0.34	U	0.34	U	0.34	U	0.50	U
Field Blank	FGW-FB-012125	01/21/25	0.31	U	1.3	U	0.31	U	0.31	U	0.31	U	0.25	J	0.47	U
Field Blank	FGW-FB-012325	01/23/25	0.32	U	1.3	U	0.32	U	0.32	U	0.32	U	0.32	U	0.48	U
Field Blank	FGW-FB-012425	01/24/25	0.32	U	1.3	U	0.32	U	0.32	U	0.32	U	0.32	U	0.48	U
Field Blank	FGW-FB-012725	01/27/25	0.34	U	1.4	U	0.34	U	0.34	U	0.34	U	0.34	U	0.52	U
Field Blank	FGW-FB-012825	01/28/25	0.37	U	1.5	U	0.37	U	0.37	U	0.37	U	0.37	U	0.56	U
Field Blank	FGW-FB-012925	01/29/25	0.35	U	1.4	U	0.35	U	0.35	U	0.35	U	0.35	U	0.53	U
Field Blank	FGW-FB-013025	01/30/25	0.36	U	1.4	U	0.36	U	0.36	U	0.36	U	0.36	U	0.54	U

Notes:

Results shown with bold and blue shade exceed the PSLs

- (1) U.S. Environmental Protection Agency (EPA) Tapwater Project Screening Levels, target hazard quotient = 0.1 (November 2023).
- (2) MW-RI06a - named MW-RI06 prior to the installation of MW-RI06b. MW-RI06 is permanently referred to as MW-RI06a
- (3) Unintentional resample
- Dup = Field duplicate
- ID = identification
- ng/L= nanogram(s) per liter
- PFBA = Perfluorobutanoic acid
- PFBS = Perfluorobutanesulfonic acid
- PFHxA = Perfluorohexanoic acid
- PFHxS = Perfluorohexanesulfonic acid
- PFNA = Perfluorononanoic acid
- PFOA = Perfluorooctanoic acid
- PFOS = Perfluorooctanesulfonic acid
- PSLs = Project Screening Levels
- Q = qualifier
- Qualifiers:
- J = The analyte was positively identified; the quantitation is estimated because the result is below the limit of quantitation or discrepancies in meeting certain analyte-specific quality control criteria.
- U = The analyte was analyzed for, but not detected or is qualified as non-detect because of blank contamination.