

# **EXECUTIVE SUMMARY PACKAGE**

## **PRELIMINARY ASSESSMENT/SITE INSPECTION REPORT FOR PER- AND POLYFLUOROALKYL SUBSTANCES AT SACRAMENTO ARMY DEPOT, SACRAMENTO, CALIFORNIA**

*Prepared for:*



**U.S. ARMY**

**ODCS, G-9, ISE BRAC**

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## LIST OF ACRONYMS AND ABBREVIATIONS

AAFES	Army and Air Force Exchange Service
AFFF	Aqueous Film-Forming Foam
AOPI	Area of Potential Interest
Army	U.S. Army
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DERP	Defense Environmental Restoration Program
DoD	U.S. Department of Defense
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid (GenX)
HQ	Hazard Quotient
IWTP	Industrial Wastewater Treatment Plant
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OSD	Office of the Secretary of Defense
PA	Preliminary Assessment
PFAS	Per- and Polyfluoroalkyl Substances
PFBA	Perfluorobutanoic Acid
PFBS	Perfluorobutane Sulfonate
PFHxA	Perfluorohexanoic Acid
PFHxS	Perfluorohexane Sulfonate
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
QSM	Quality Systems Manual
RSL	Regional Screening Level
SAAD	Sacramento Army Depot
SI	Site Inspection
SL	Screening Level
SOP	Standard Operating Procedure
UFP-QAPP	Uniform Federal Policy Quality Assurance Project Plan
U.S.C	United States Code
USEPA	U.S. Environmental Protection Agency

## EXECUTIVE SUMMARY

The U.S. Army (Army) is conducting Preliminary Assessments (PAs) and Site Inspections (SIs) to identify and determine the use, storage, or disposal of per- and polyfluoroalkyl substances (PFAS)-containing materials at multiple Base Realignment and Closure (BRAC) installations, nationwide. This report presents the methodology and results of the PA and SI conducted for PFAS at the BRAC property at the former Sacramento Army Depot (SAAD), Sacramento, California. The PA/SI conducted at SAAD focuses on perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutanoic acid (PFBA), perfluorobutane sulfonate (PFBS), perfluorononanoic acid (PFNA), perfluorohexanoic acid (PFHxA), perfluorohexane sulfonate (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA) and its ammonium salt (“GenX” chemicals). Since PFAS are a large grouping consisting of thousands of individual chemicals, PFOA, PFOS, PFBA, PFBS, PFNA, PFHxA, PFHxS, and HFPO-DA altogether are referred to in this report as “Target PFAS.” SAAD was identified for closure by BRAC in 1991, and most of the property has been transferred outside of the Federal Government except 77 acres retained for Army use.

PA/SI activities were completed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 United States Code [U.S.C.] §9601, et seq.); the Defense Environmental Restoration Program (DERP, 10 U.S.C. §2700, et seq.); the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 Code of Federal Regulations [CFR] Part 300); Army and U.S. Department of Defense (DoD) policy and guidance; and U.S. Environmental Protection Agency (USEPA) guidance.

The PA analysis was conducted to identify areas where PFAS-containing materials were used, stored, and/or disposed of, or areas where known or suspected releases to the environment occurred. These areas are referred to as areas of potential interest (AOPIs). The PA analyzed SAAD for any activity related to PFAS-containing compounds. These activities include, but are not limited to, firefighting operations (e.g., firefighting training and storage of firefighting equipment) and metal plating activities.

The primary components of the PA analysis included records review (e.g., aerial photography, historical maps, reports, Internet searches, and the Army Administrative Records), a 2-day site visit, and interviews with current and former Army personnel. Thirty areas were evaluated for potential PFAS use, storage, or disposal at SAAD. Each evaluated area is described in Table ES-1. Once AOPIs were identified, each AOPI was analyzed further to determine if an SI was required at the AOPI.

Based on analysis of information obtained during the PA analysis, 22 of the evaluated areas were not retained for SI sampling, and the following 8 areas were categorized as AOPIs for investigation through multimedia sampling in an SI to determine whether a release occurred (Figure ES-1):

- Building 330 Former Fire Station
- Oxidation Lagoons
- South Post Burn Pits
- Fire Fighting Training Area
- Building 301 Industrial Wastewater Treatment Plant (IWTP)
- Building 320 Metal Plating Facility
- Building 420 Metal Plating Facility
- Building 416 IWTP.

The SI field investigation at SAAD was conducted in accordance with the Programmatic Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) (Leidos 2022) and SAAD UFP-QAPP Addendum (Leidos 2023). Soil and groundwater samples were collected from the eight AOPIs. Samples collected during the SI were analyzed for PFAS using procedures compliant with the DoD Quality Systems Manual (QSM) Version 5.4, Table B-15 (DoD 2021) and the laboratory standard operating procedure (SOP).



Target PFAS concentrations from samples collected during the SI were compared to risk-based screening levels (SLs) established as the residential scenario SLs calculated using the USEPA regional screening level (RSL) calculator for soil and the tap water criteria for groundwater and published in the 2023 Office of the Secretary of Defense (OSD) Memorandum (DoD 2023). If Target PFAS concentrations at an AOPI exceed SLs, then further investigation is recommended for that AOPI.

PFAS concentrations exceeded SLs in soil at one AOPI and in groundwater at four AOPIs (Table ES-2). Target PFAS also exceeded SLs in two existing perimeter wells on the western boundary. Of the Target PFAS, concentrations of PFOS, PFOA, and PFHxS exceeded SLs. Concentrations of PFBA, PFBS, PFHxA, and PFNA were detected at concentrations less than the SLs, and HFPO-DA was not detected at any AOPI. Figure ES-2 depicts the facility-wide map of Target PFAS groundwater results, including the distribution of SL exceedances and proximity to facility boundaries. Target PFAS results for individual AOPIs are presented in Tables ES-3 through ES-10 and Figures ES-3 through ES-9. Target PFAS results for perimeter wells are presented in Table ES-11 and Figure ES-2.

A summary of AOPIs and recommendations for further investigation are presented in Table ES-2. The following four AOPIs are recommended for further investigation based on Target PFAS concentrations greater than the SLs:

- Building 330 Former Fire Station
- Oxidation Lagoons
- South Post Burn Pits
- Building 301 IWTP.

In addition to the four AOPIs recommended for further investigation, it is also recommended to further investigate the presence of PFAS potentially migrating offsite, due to the presence of Target PFAS above SLs in groundwater near the western boundary of the installation.

**Table ES-1. Summary of Areas Evaluated at SAAD**

<b>Area Description</b>	<b>Dates of Operation</b>	<b>Relevant Site History</b>	<b>AOPI for SI</b>	<b>Rationale</b>
Building 330 Former Fire Station	1980s to 1990s	Based on an interview with a former Army employee, the building was used as a fire station in the 1980s and 1990s. The records review confirmed existence of a Depot Fire Brigade, and one source identifies Building 330 as a Fire Finder Building.	Yes	Former Fire Station with suspected AFFF storage.
Oxidation Lagoons (Site 001)	1950 to 1972	Waste holding ponds used for disposal of plating shop wastes.	Yes	Metal plating waste with potential PFAS-containing surfactants likely used as a mist suppressant.
South Post Burn Pits (Site 002)	1950s to 1966	Two burn pits used for disposal and burning of plating shop wastes.	Yes	Metal plating waste with potential PFAS-containing surfactants likely used as a mist suppressant.
Fire Fighting Training Area (Site 006)	1958 to 1963	The Fire Training Area consisted of a shallow, unlined pit into which gasoline, oil, or jet propulsion fuel No. 4 was poured and ignited. Fire training exercises were conducted several times a year from 1958 to 1963. Based on an interview with a former Army employee, fire extinguisher training was conducted at the same location in the late 1980s and early 1990s.	Yes	Fire Training Area with possible AFFF use. It is uncertain if the Fire Training Area was used from 1963 to the late 1980s.
Building 301 – IWTP	1946 to 1972	Building 301 operated as an IWTP. Received wastewater from metal plating operations.	Yes	Received potentially PFAS-impacted wastewater.
Building 320 – Metal Plating Facility (Site 034)	1952 to 1970s	Metal plating operations were conducted in Building 320 from 1953 to 1977. Plating operations were then relocated to Building 420.	Yes	Metal plating with potential PFAS-containing surfactants likely used as a mist suppressant.
Building 420 – Metal Plating Facility	1978 to 1993	Metal plating operations were conducted at Building 420 from 1978 to 1993.	Yes	Metal plating with potential PFAS-containing surfactants likely used as a mist suppressant.
Building 416 – IWTP	1978 to 1998	Building 416 operated as an IWTP. Received wastewater from metal plating operations.	Yes	Received potentially PFAS-impacted wastewater.
Building 251 Metal Plating Facility	1946 to 1994	Metal plating operations were conducted in Bay 6 of Building 251 from 1950 to 1953.	No	Metal plating operations were conducted; however, the time frame is before common use of PFAS.
Hazardous Storage (Buildings 241, 310, 352, 358, 370, 412, 415, 426, 427)	1946 to 1994	Hazardous materials and hazardous waste were stored in large quantities.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.

**Table ES-1. Summary of Areas Evaluated at SAAD (Continued)**

<b>Area Description</b>	<b>Dates of Operation</b>	<b>Relevant Site History</b>	<b>AOPI for SI</b>	<b>Rationale</b>
Maintenance Shops (Railyard Engine Shed [Site 028] and Buildings 300, 348, 355, 360, 382, 423, 439, 452, 555, 601)	1946 to 1994	Vehicle, locomotive, and equipment maintenance activities were conducted. Petroleum products, antifreeze, solvents, and paints were stored in small quantities.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Wash Facility (Building 381)	1946 to 1994	Facilities included wash areas for vehicles and equipment.	No	No evidence that PFAS-containing materials were used, stored, or disposed of. No evidence that emergency vehicles with AFFF were washed.
Building 300 Old Burn Pits (Site 007)	1945 to Mid-1950s	Two burn pits were used for burning and burying hazardous waste and debris. Plating shop wastes containing primarily acids, alkali, and cyanides were reportedly disposed of in the pits (USACE 1993).	No	Plating shop wastes were disposed of; however, the time frame is before common use of PFAS.
Reed Army Airfield	1960 to Early 1970s	Former airfield for single-engine Otters, Beavers, and helicopters. Airfield consisted of a single 3,125-foot unpaved Runway 7/25, with a single small building adjacent to the northern side of the runway. Sometime between 1968 and 1972, buildings were constructed over the eastern half of the runway.	No	No evidence of use, storage, or disposal of PFAS-containing materials. Although a single small building was present, an AFFF fire suppression system is unlikely based on the dates of operation.
Battery Disposal Area (Site 009)	1946 to 1947	Area used for the disposal of dry cell batteries and other industrial debris.	No	No evidence that PFAS-containing materials were used, stored, or disposed of. The time frame is before common use of PFAS.
Pesticide Mixing Area (Building 362) (Site 008)	1946 to 1982	The Pesticide Mixing Area was located adjacent to Building 362 and consisted of an outdoor utility sink. Until 1982, pesticides were mixing in the area and containers were rinsed in the utility sink in Building 362. Pesticides mixed and rinsed included malathion and dichlorodiphenyltrichloroethane.	No	No evidence that PFAS-containing materials were used, stored, or disposed of. Based on the period of operation for SAAD, the dates of pesticide use at the facility pre-date the use of fluorinated pesticides.
Paint, Residue, and Waste Oil Dump (Site 016)	1946 to 1966	Site was reportedly used as a dump for paints, residues, and waste oils.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Outdoor Storage of Waste (Site 017)	1950s to 1970s	Site was used for the storage of drummed hazardous waste containing metals.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.

**Table ES-1. Summary of Areas Evaluated at SAAD (Continued)**

<b>Area Description</b>	<b>Dates of Operation</b>	<b>Relevant Site History</b>	<b>AOPI for SI</b>	<b>Rationale</b>
Old Morrison Creek (eastern portion) (Site 018)	1940s to 1990s	Portion of Old Morrison Creek that flowed through the eastern portion of the Depot. Potential contaminants that may have leached into the creek are petroleum wastes, oils and lubricants, and byproducts of paint sludges.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Trash Disposal Areas (Site 020)	Early 1950s to Mid-1960s	Trenches located south of Burn Pits with constructions debris.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Cyanide Leach Field at Building 320 (Site 021)	1963 to 1977	Reported leach field from the cyanide sump located east of the site. The leach field was reported to not work due to low permeability of the soil.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Radioactive Waste Disposal Area (Site 022)	Late 1940s	Reported dump area for radioactive material in the southwestern corner of the Depot.	No	No evidence that PFAS-containing materials were used, stored, or disposed of. The time frame is before common use of PFAS.
Dispensary Waste Area (Site 023)	1960s	Reported dump area in the southwestern corner of the Depot.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Petroleum Sludge Disposal Area (Site 024)	Late 1950s	Reported dumping of gasoline tank sludge south of the running track.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Previous Oil Dump Area (Site 025)	Mid-1960s	Reported dumping of oil in the southeastern corner of the Depot.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Building 699 AAFES Gasoline Station (Site 027)	1990s	AAFES operated a gasoline station in the southeastern portion of the installation. A surface drain well was located southeast of the building.	No	No evidence that PFAS-containing materials were used, stored, or disposed of. No evidence that an AFFF-based fire suppression system was installed at the facility.
Sewage Outfall (Site 033)	Late 1950s to Late 1960s	Outfall at western edge of the Depot, north of the Oxidation Lagoons.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Morrison Creek (Site 039)	1940s to Early 1980s	Creek running around southern perimeter of the Depot may have received wastes from industrial processes.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Possible Dump Site (Site 044)	1948 to 1950	Open field used for vehicular activity.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.
Possible Dump Site (Site 048)	Early 1950s	Open storage area for construction debris, northeast of the Oxidation Lagoons.	No	No evidence that PFAS-containing materials were used, stored, or disposed of.

Site identifiers are included in the area description for previously investigated sites (not related to PFAS).

AAFES = Army and Air Force Exchange Service

AFFF = Aqueous Film-Forming Foam

**Table ES-2. Summary of AOPIs and Recommendations for Further Investigation**

AOPI Name	Exceedance of SLs		Recommendation
	Groundwater	Soil	
Building 330 Forner Fire Station	Yes	No	Further investigation recommended
Oxidation Lagoons	Yes	Yes	Further investigation recommended
South Post Burn Pits	Yes	--	Further investigation recommended
Fire Fighting Training Area	No	No	No further investigation recommended
Building 301 IWTP	Yes	No	Further investigation recommended
Building 320 Metal Plating Facility	No	No	No further investigation recommended
Building 420 Metal Plating Facility	No	No	No further investigation recommended
Building 416 IWTP	No	No	No further investigation recommended

Highlighted values indicate AOPIs with a recommendation for further investigation.

-- not collected

**Table ES-3. Target PFAS Results and Screening for the Building 330 Former Fire Station AOP1**

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBA	PFBS	PFHxA	PFHxS	PFNA	PFOA	PFOS
<b>Soil</b>				<b>Units</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>
				<b>Screening Levels</b>	<b>23</b>	<b>7800</b>	<b>1900</b>	<b>3200</b>	<b>130</b>	<b>19</b>	<b>19</b>	<b>13</b>
SAAD-330-01	SA33001-SB02	BORE	6.00-8.00	08/15/2023	2.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	SA33001-SB03	BORE	13.00-15.00	08/15/2023	2.3 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
SAAD-330-02	SA33002-SB02	BORE	6.00-8.00	08/15/2023	2.1 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
	SA33002-SB03	BORE	52.00-54.00	08/15/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
SAAD-330-03	SA33003-SB02	BORE	6.00-8.00	08/05/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
	SA33003-SB03	BORE	50.00-52.00	08/06/2023	2.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	SA33003-SB03FD	BORE	50.00-52.00 (D)	08/06/2023	2.1 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
<b>Groundwater</b>				<b>Units</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>
				<b>Screening Levels</b>	<b>6</b>	<b>1800</b>	<b>600</b>	<b>990</b>	<b>39</b>	<b>5.9</b>	<b>6</b>	<b>4</b>
SAAD-330-02	SA33002-GW01	WELL	55.00-55.00	08/15/2023	3.8 U	1.9 U	1.9 U	<b>1.2 J</b>	1.9 U	1.9 U	1.9 U	1.9 U
SAAD-330-03	SA33003-GW01	WELL	54.00-54.00	08/06/2023	3.7 U	<b>7.1</b>	<b>2.7 J</b>	<b>9.8</b>	<b>6.5</b>	1.9 U	<b>27</b>	1.9 U

The SLs are the Residential Scenario SLs calculated using the USEPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water using an HQ = 0.1.

**Bolded** values denote detected concentrations.

Highlighted values indicate an exceedance of the SL.

(D) = Field duplicate sample.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

Table ES-4. Target PFAS Results and Screening for the Oxidation Lagoons AOP1

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBA	PFBS	PFHxA	PFHxS	PFNA	PFOA	PFOS
Soil				Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
				Screening Levels	23	7800	1900	3200	130	19	19	13
SAAD-OXL-01	SAOXL01-SS01	SURF	0.00-1.00	08/01/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.26 J	0.41 J
	SAOXL01-SB02	BORE	6.00-8.00	08/01/2023	11 U	2.7 U	2.7 U	1.6 J	2.2 J	2.7 U	2.7 U	180
	SAOXL01-SB03	BORE	48.00-50.00	08/02/2023	2.2 U	0.55 U	0.28 J	0.43 J	0.55 U	0.55 U	0.55 U	0.55 U
SAAD-OXL-02	SAOXL02-SS01	SURF	0.00-1.00	07/31/2023	2 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.23 J
	SAOXL02-SB02	BORE	6.00-8.00	07/31/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	SAOXL02-SB03	BORE	58.00-60.00	08/01/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
SAAD-OXL-03	SAOXL03-SS01	SURF	0.00-1.00	08/01/2023	1.8 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U
	SAOXL03-SB02	BORE	6.00-8.00	08/01/2023	2.6 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
	SAOXL03-SB03	BORE	13.00-15.00	08/01/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
SAAD-OXL-04	SAOXL04-SD01	SURF	0.00-1.00	08/01/2023	1.9 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 J
	SAOXL04-SD01FD	SURF	0.00-1.00 (D)	08/01/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.37 J
SAAD-OXL-05	SAOXL05-SD01	SURF	0.00-1.00	08/01/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.65 J
SAAD-OXL-06	SAOXL06-SD01	SURF	0.00-1.00	08/01/2023	1.8 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	1
Groundwater				Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
				Screening Levels	6	1800	600	990	39	5.9	6	4
SAAD-OXL-01	SAOXL01-GW01	WELL	54.00-54.00	08/02/2023	3.8 U	66	59	110	100	1.1 J	17	18
SAAD-OXL-02	SAOXL02-GW01	WELL	53.00-53.00	08/01/2023	3.8 U	76	320	420	180	1.9 U	26	31

The SLs are the Residential Scenario SLs calculated using the USEPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water using an HQ = 0.1.

**Bolded** values denote detected concentrations.

Highlighted values indicate an exceedance of the SL.

(D) = Field duplicate sample.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

**Table ES-5. Target PFAS Results and Screening for the South Post Burn Pits AOP1**

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBA	PFBS	PFHxA	PFHxS	PFNA	PFOA	PFOS
<b>Groundwater</b>					Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
					Screening Levels	<b>6</b>	<b>1800</b>	<b>600</b>	<b>990</b>	<b>39</b>	<b>5.9</b>	<b>6</b>
SAAD-SBP-01	SASBP01-GW01	WELL	81.00-81.00	08/06/2023	3.6 U	<b>21</b>	<b>15</b>	<b>64</b>	<b>330</b>	<b>1.5 J</b>	<b>150</b>	<b>94</b>
SAAD-SBP-MW0005A	SASBP-MW0005A	WELL	116.00-116.00	08/02/2023	3.6 U	<b>8.4 J+</b>	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U

The SLs are the Residential Scenario SLs calculated using the USEPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water using an HQ = 0.1.

**Bolded** values denote detected concentrations.

Highlighted values indicate an exceedance of the SL.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ = The analyte was positively identified; the result is an estimated concentration and may be biased high.

U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.



**Table ES-6. Target PFAS Results and Screening for the Fire Fighting Training Area AOP1**

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBA	PFBS	PFHxA	PFHxS	PFNA	PFOA	PFOS
<b>Soil</b>					<b>Units</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>
					<b>Screening Levels</b>	<b>23</b>	<b>7800</b>	<b>1900</b>	<b>3200</b>	<b>130</b>	<b>19</b>	<b>19</b>
SAAD-FTA-01	SAFTA01-SS01	SURF	0.00-1.00	08/03/2023	2 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	<b>0.6 J</b>
	SAFTA01-SB02	BORE	6.00-8.00	08/04/2023	2.2 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
	SAFTA01-SB02FD	BORE	6.00-8.00 (D)	08/04/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	SAFTA01-SB03	BORE	48.00-50.00	08/04/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
SAAD-FTA-02	SAFTA02-SS01	SURF	0.00-1.00	08/17/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	SAFTA02-SS01FD	SURF	0.00-1.00 (D)	08/17/2023	1.9 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
	SAFTA02-SB02	BORE	6.00-8.00	08/17/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
	SAFTA02-SB03	BORE	48.00-50.00	08/17/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
SAAD-FTA-03	SAFTA03-SS01	SURF	0.00-1.00	08/05/2023	2 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
	SAFTA03-SB02	BORE	6.00-8.00	08/05/2023	1.9 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
	SAFTA03-SB03	BORE	13.00-15.00	08/05/2023	2.1 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
<b>Groundwater</b>					<b>Units</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>
					<b>Screening Levels</b>	<b>6</b>	<b>1800</b>	<b>600</b>	<b>990</b>	<b>39</b>	<b>5.9</b>	<b>6</b>
SAAD-FTA-01	SAFTA01-GW01	WELL	54.00-54.00	08/04/2023	3.7 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
SAAD-FTA-02	SAFTA02-GW01	WELL	55.00-55.00	08/17/2023	3.8 U	<b>1.5 J</b>	<b>1.2 J</b>	<b>4.2</b>	1.9 U	1.9 U	1.9 U	1.9 U
	SAFTA02-GW01FD	WELL	55.00-55.00	08/17/2023(D)	3.6 U	<b>1.5 J</b>	<b>1.2 J</b>	<b>3.9</b>	1.8 U	1.8 U	1.8 U	1.8 U

The SLs are the Residential Scenario SLs calculated using the USEPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water using an HQ = 0.1.

**Bolded** values denote detected concentrations.

(D) = Field duplicate sample.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

**Table ES-7. Target PFAS Results and Screening for the Building 301 IWTP AOPT**

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBA	PFBS	PFHxA	PFHxS	PFNA	PFOA	PFOS
<b>Soil</b>					<b>Units</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>
					<b>Screening Levels</b>	<b>23</b>	<b>7800</b>	<b>1900</b>	<b>3200</b>	<b>130</b>	<b>19</b>	<b>19</b>
SAAD-301-01	SA30101-SS01	SURF	0.00-1.00	08/08/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	<b>0.33 J</b>	<b>0.6 J</b>	<b>0.45 J</b>
	SA30101-SB02	BORE	6.00-8.00	08/08/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	SA30101-SB03	BORE	50.00-52.00	08/08/2023	2.1 U	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ
SAAD-301-02	SA30102-SS01	SURF	0.00-1.00	08/08/2023	1.8 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	<b>0.32 J</b>
	SA30102-SB02	BORE	6.00-8.00	08/08/2023	2.3 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
	SA30102-SB02FD	BORE	6.00-8.00 (D)	08/08/2023	2.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	SA30102-SB03	BORE	13.00-15.00	08/08/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
<b>Groundwater</b>					<b>Units</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>
					<b>Screening Levels</b>	<b>6</b>	<b>1800</b>	<b>600</b>	<b>990</b>	<b>39</b>	<b>5.9</b>	<b>6</b>
SAAD-301-01	SA30101-GW01	WELL	54.00-54.00	08/08/2023	3.9 U	<b>4</b>	2 U	<b>5.5</b>	<b>1.5 J</b>	2 U	<b>6.7</b>	2 U
SAAD-301-MW0073	SA301-MW0073	WELL	89.00-89.00	08/04/2023	3.8 U	<b>1.7 J</b>	1.9 U	<b>1.9 J</b>	<b>1.4 J</b>	1.9 U	<b>2.2 J</b>	1.9 U

The SLs are the Residential Scenario SLs calculated using the USEPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water using an HQ = 0.1.

**Bolded** values denote detected concentrations.

Highlighted values indicate an exceedance of the SL.

(D) = Field duplicate sample.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte.

**Table ES-8. Target PFAS Results and Screening for the Building 320 Metal Plating Facility AOP1**

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBA	PFBS	PFHxA	PFHxS	PFNA	PFOA	PFOS
<b>Soil</b>					<b>Units</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>
					<b>Screening Levels</b>	<b>23</b>	<b>7800</b>	<b>1900</b>	<b>3200</b>	<b>130</b>	<b>19</b>	<b>19</b>
SAAD-320-01	SA32001-SB02	BORE	6.00-8.00	08/07/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	SA32001-SB03	BORE	13.00-15.00	08/07/2023	3.3 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
SAAD-320-02	SA32002-SB02	BORE	6.00-8.00	08/07/2023	2.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	SA32002-SB03	BORE	13.00-15.00	08/07/2023	2.6 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U
SAAD-320-03	SA32003-SB02	BORE	6.00-8.00	08/06/2023	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	SA32003-SB02FD	BORE	6.00-8.00 (D)	08/06/2023	2.3 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
	SA32003-SB03	BORE	13.00-15.00	08/06/2023	2.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
<b>Groundwater</b>					<b>Units</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>
					<b>Screening Levels</b>	<b>6</b>	<b>1800</b>	<b>600</b>	<b>990</b>	<b>39</b>	<b>5.9</b>	<b>6</b>
SAAD-320-MW0077	SA320-MW0077	WELL	100.00-100.00	08/02/2023	3.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	<b>2.1 J</b>
SAAD-320-MW0081	SA320-MW0081	WELL	84.00-84.00	08/05/2023	3.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U

The SLs are the Residential Scenario SLs calculated using the USEPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water using an HQ = 0.1.

**Bolded** values denote detected concentrations.

(D) = Field duplicate sample.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

**Table ES-9. Target PFAS Results and Screening for the Building 420 Metal Plating Facility AOP1**

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBA	PFBS	PFHxA	PFHxS	PFNA	PFOA	PFOS
<b>Soil</b>					<b>Units</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>	<b>µg/kg</b>
					<b>Screening Levels</b>	<b>23</b>	<b>7800</b>	<b>1900</b>	<b>3200</b>	<b>130</b>	<b>19</b>	<b>19</b>
SAAD-420-01	SA42001-SB02	BORE	6.00-8.00	08/09/2023	2 U	<b>0.31 J</b>	0.5 U	<b>0.33 J</b>	<b>0.76 J</b>	<b>0.51 J</b>	<b>0.34 J</b>	<b>11</b>
	SA42001-SB03	BORE	48.00-50.00	08/09/2023	2 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
<b>Groundwater</b>					<b>Units</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>	<b>ng/L</b>
					<b>Screening Levels</b>	<b>6</b>	<b>1800</b>	<b>600</b>	<b>990</b>	<b>39</b>	<b>5.9</b>	<b>6</b>
SAAD-420-01	SA42001-GW01	WELL	52.00-52.00	08/09/2023	3.6 U	<b>1.8 J</b>	1.8 U	<b>2.4 J</b>	<b>2.5 J</b>	1.8 U	<b>2.8 J</b>	1.8 U

The SLs are the Residential Scenario SLs calculated using the USEPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water using an HQ = 0.1.

**Bolded** values denote detected concentrations.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

**Table ES-10. Target PFAS Results and Screening for the Building 416 IWTP AOP1**

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBA	PFBS	PFHxA	PFHxS	PFNA	PFOA	PFOS
<b>Soil</b>				Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
				Screening Levels	23	7800	1900	3200	130	19	19	13
SAAD-416-01	SA41601-SB02	BORE	6.00-8.00	08/16/2023	2 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
<b>Groundwater</b>				Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
				Screening Levels	6	1800	600	990	39	5.9	6	4
SAAD-416-MW0050	SA416-MW0050	WELL	98.00-98.00	08/04/2023	3.7 U	<b>2.5 J</b>	1.9 U	<b>2.9 J</b>	<b>1.7 J</b>	1.9 U	<b>1.8 J</b>	1.9 U
SAAD-416-MW0080	SA416-MW0080	WELL	104.00-104.00	08/04/2023	3.5 U	1.8 U	1.8 U	<b>1.4 J</b>	1.8 U	1.8 U	<b>1 J</b>	1.8 U

The SLs are the Residential Scenario SLs calculated using the USEPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water using an HQ = 0.1.

**Bolded** values denote detected concentrations.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

**Table ES-11. Target PFAS Results and Screening for Perimeter Wells**

Location ID	Sample ID	Sample Type	Depth (ft)	Sample Date	HFPO-DA or GenX	PFBA	PFBS	PFHxA	PFHxS	PFNA	PFOA	PFOS
<b>Groundwater</b>					<b>Units</b>	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
					<b>Screening Levels</b>	<b>6</b>	<b>1800</b>	<b>600</b>	<b>990</b>	<b>39</b>	<b>5.9</b>	<b>6</b>
SAAD-PER-MW0057	SAPER-MW0057	WELL	107.00-107.00	08/04/2023	3.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
SAAD-PER-MW0083	SAPER-MW0083	WELL	95.00-95.00	08/02/2023	3.3 U	<b>6.5 J+</b>	<b>7</b>	<b>23</b>	<b>110</b>	<b>2.9 J</b>	<b>43</b>	<b>220</b>
	SAPER-MW0083FD	WELL	95.00-95.00	08/02/2023(D)	4 U	<b>7.6 J+</b>	<b>8.1</b>	<b>26</b>	<b>130</b>	<b>3 J</b>	<b>51</b>	<b>240</b>

The SLs are the Residential Scenario SLs calculated using the USEPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water using an HQ = 0.1.

**Bolded** values denote detected concentrations.

Highlighted values indicate an exceedance of the SL.

(D) = Field duplicate sample.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ = The analyte was positively identified; the result is an estimated concentration and may be biased high.

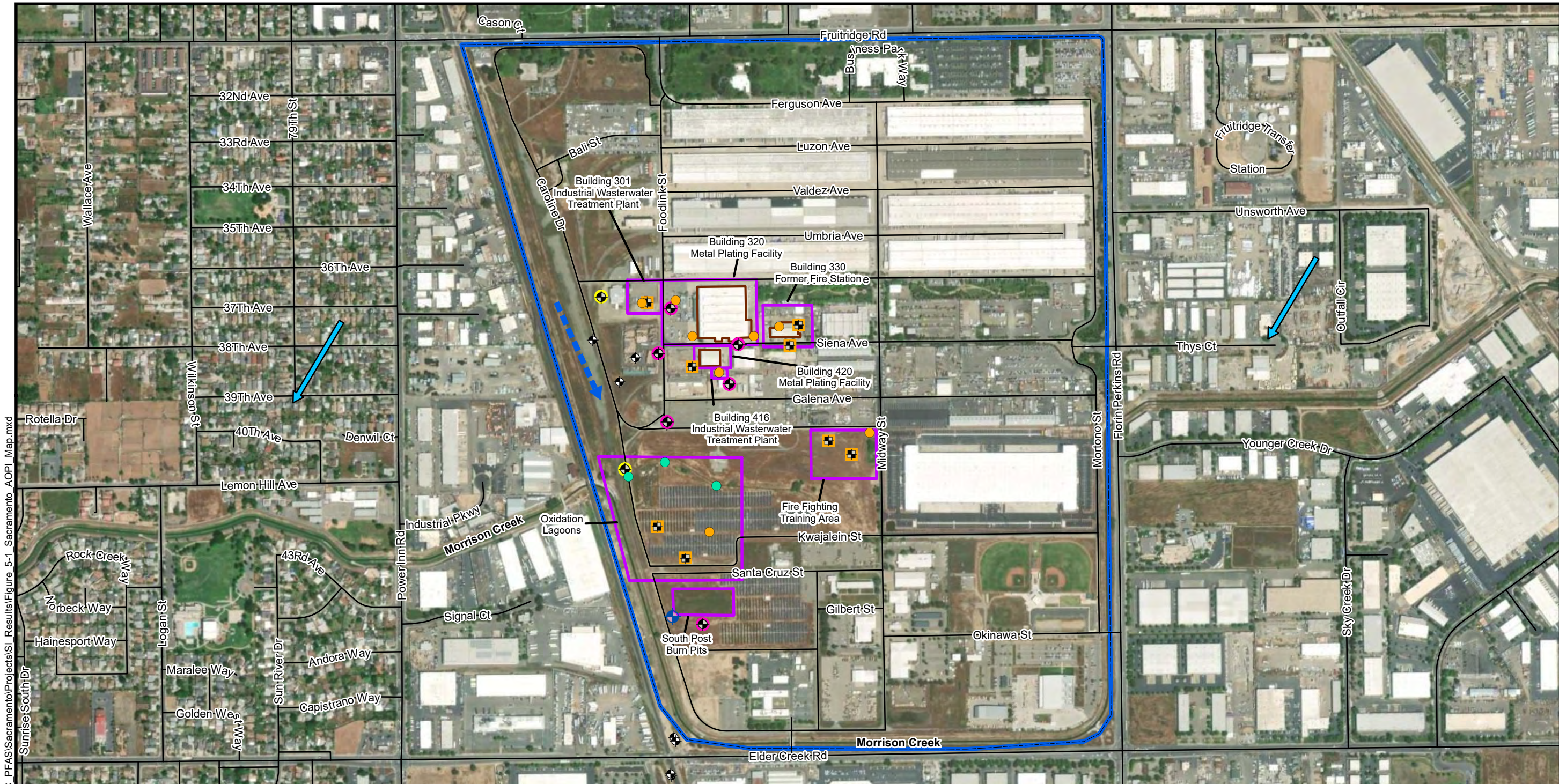
U = The analyte was analyzed for, but not detected above the reported sample quantitation limit.

## REFERENCES

- DoD (U.S. Department of Defense). 2021. *Quality Systems Manual for Environmental Laboratories*. Prepared by the U.S. Department of Defense and U.S. Department of Energy. Version 5.4.
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- Leidos. 2022. *Programmatic Uniform Federal Policy-Quality Assurance Project Plan, Per- and Polyfluoroalkyl Substances Site Inspections at Multiple Base Realignment and Closure Installations, Nationwide*. Final. June.
- Leidos. 2023. *Per- and Polyfluoroalkyl Substances Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum at Sacramento Army Depot, Sacramento, California*. Final. July.
- USACE (U.S. Army Corps of Engineers). 1993. *Environmental Assessment for Sacramento Army Depot*. March.

## **FIGURES**





C:\Data\Civil Transfer\GIS\BRAC PFAS\Sacramento\Projects\SI Results\Figure 5-1 Sacramento AOPI Map.mxd

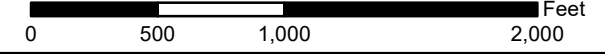
**LEGEND:**

- BRAC Parcel Boundary
- Area of Potential Interest (AOPI)
- Building
- Former Building
- SAAD Monitoring Wells
- Existing Perimeter Monitoring Well (2)
- Surface Soil (3)
- ⊕ New Permanent Monitoring Well (1)
- Soil Boring (8)
- ⊕ Groundwater Sample/Soil Boring (8)
- ⊕ Sample Existing Monitoring Well (6)

- ← Regional Groundwater Flow Direction
- ↙ Inferred Localized Groundwater Flow Direction

**NOTES:**

1. Background Source: ESRI World Imagery (Vivid/Maxar, 4/2020).
2. Buildings, Remediation Areas Source: USACE Reports.
3. Groundwater flow direction as shown in U.S. Army Superfund Record of Decision (1995).
4. Localized groundwater flow direction as shown in Ahna 2021 Annual Groundwater Monitoring Report



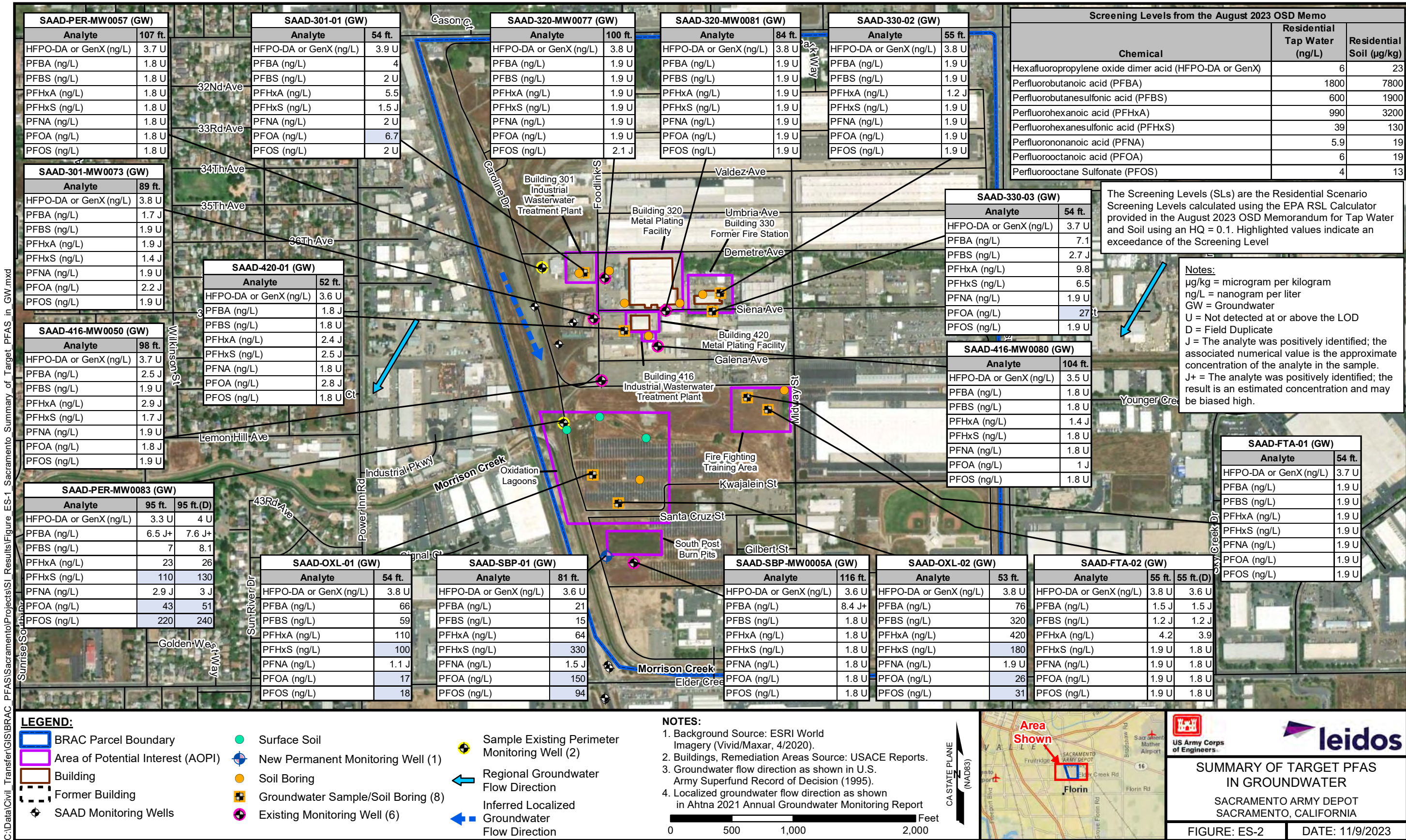
CALIFORNIA STATE PLANE (NAD83)



**AOPI MAP**  
SACRAMENTO ARMY DEPOT  
SACRAMENTO, CALIFORNIA

FIGURE: ES-1
DATE: 11/17/2023





Screening Levels from the August 2023 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (ug/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanoic acid (PFBA)	1800	7800
Perfluorobutanesulfonic acid (PFBS)	600	1900
Perfluorohexanoic acid (PFHxA)	990	3200
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	5.9	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using the EPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level

**Notes:**  
 ug/kg = microgram per kilogram  
 ng/L = nanogram per liter  
 GW = Groundwater  
 U = Not detected at or above the LOD  
 D = Field Duplicate  
 J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  
 J+ = The analyte was positively identified; the result is an estimated concentration and may be biased high.

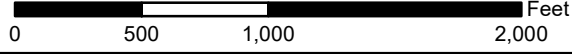
C:\Data\Civil Transfer\GIS\BRAC PFAS\Sacramento\Projects\SI Results\Figure ES-1 Sacramento Summary of Target PFAS in GW.mxd

**LEGEND:**

- BRAC Parcel Boundary
- Area of Potential Interest (AOPI)
- Building
- Former Building
- SAAD Monitoring Wells
- Surface Soil
- New Permanent Monitoring Well (1)
- Soil Boring
- Groundwater Sample/Soil Boring (8)
- Existing Monitoring Well (6)
- ⊕ Sample Existing Perimeter Monitoring Well (2)
- ➔ Regional Groundwater Flow Direction
- ➔ Inferred Localized Groundwater Flow Direction

**NOTES:**

1. Background Source: ESRI World Imagery (Vivid/Maxar, 4/2020).
2. Buildings, Remediation Areas Source: USACE Reports.
3. Groundwater flow direction as shown in U.S. Army Superfund Record of Decision (1995).
4. Localized groundwater flow direction as shown in Ahtna 2021 Annual Groundwater Monitoring Report



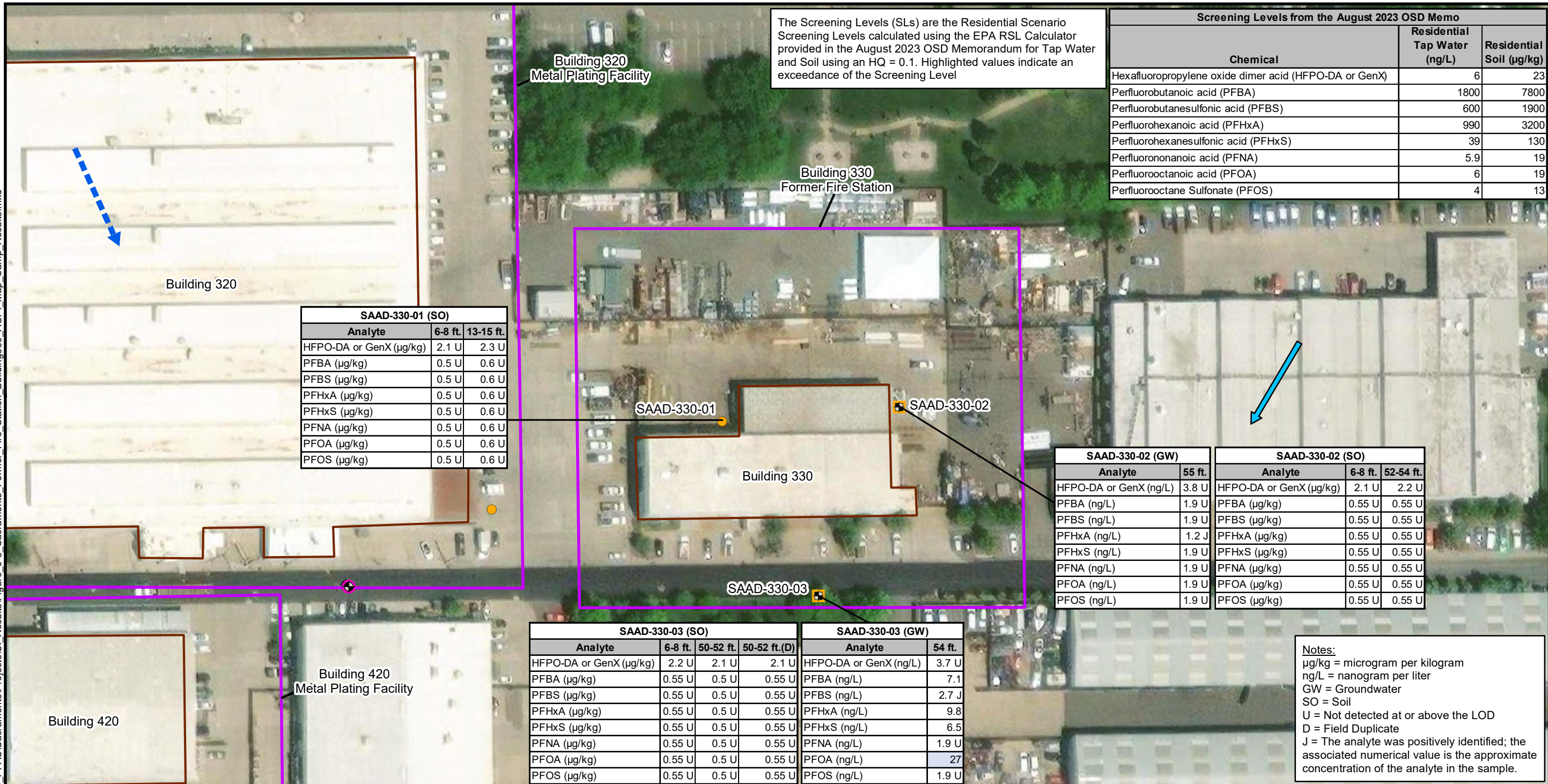
**SUMMARY OF TARGET PFAS  
IN GROUNDWATER**

SACRAMENTO ARMY DEPOT  
SACRAMENTO, CALIFORNIA

FIGURE: ES-2
DATE: 11/9/2023



C:\Data\Civil Transfer\GIS\BRAC PFAS\Sacramento\Projects\SI Results\Figure 6-3 Sacramento Fire Station Buildings330 AOP\Map\_Samp\_Results.mxd



**Notes:**  
 µg/kg = microgram per kilogram  
 ng/L = nanogram per liter  
 GW = Groundwater  
 SO = Soil  
 U = Not detected at or above the LOD  
 D = Field Duplicate  
 J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

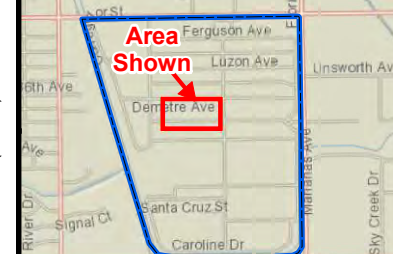
**LEGEND:**

- BRAC Parcel Boundary
- Building
- Area of Potential Interest (AOPI)
- Soil Boring (1)
- Groundwater Sample/Soil Boring (2)
- ⊕ Existing Monitoring Well
- ← Regional Groundwater Flow Direction
- ↙ Inferred Localized Groundwater Flow Direction

**NOTES:**

- Background Source: ESRI World Imagery (Vivid/Maxar, 4/2020).
- Buildings, Remediation Areas Source: Army Corp. of Engineers Reports.
- Groundwater flow direction as shown in U.S. Army Superfund Record of Decision (1995).
- Localized groundwater flow direction as shown in Ahtna 2021 Annual Groundwater Monitoring Report

0      50      100      200 Feet



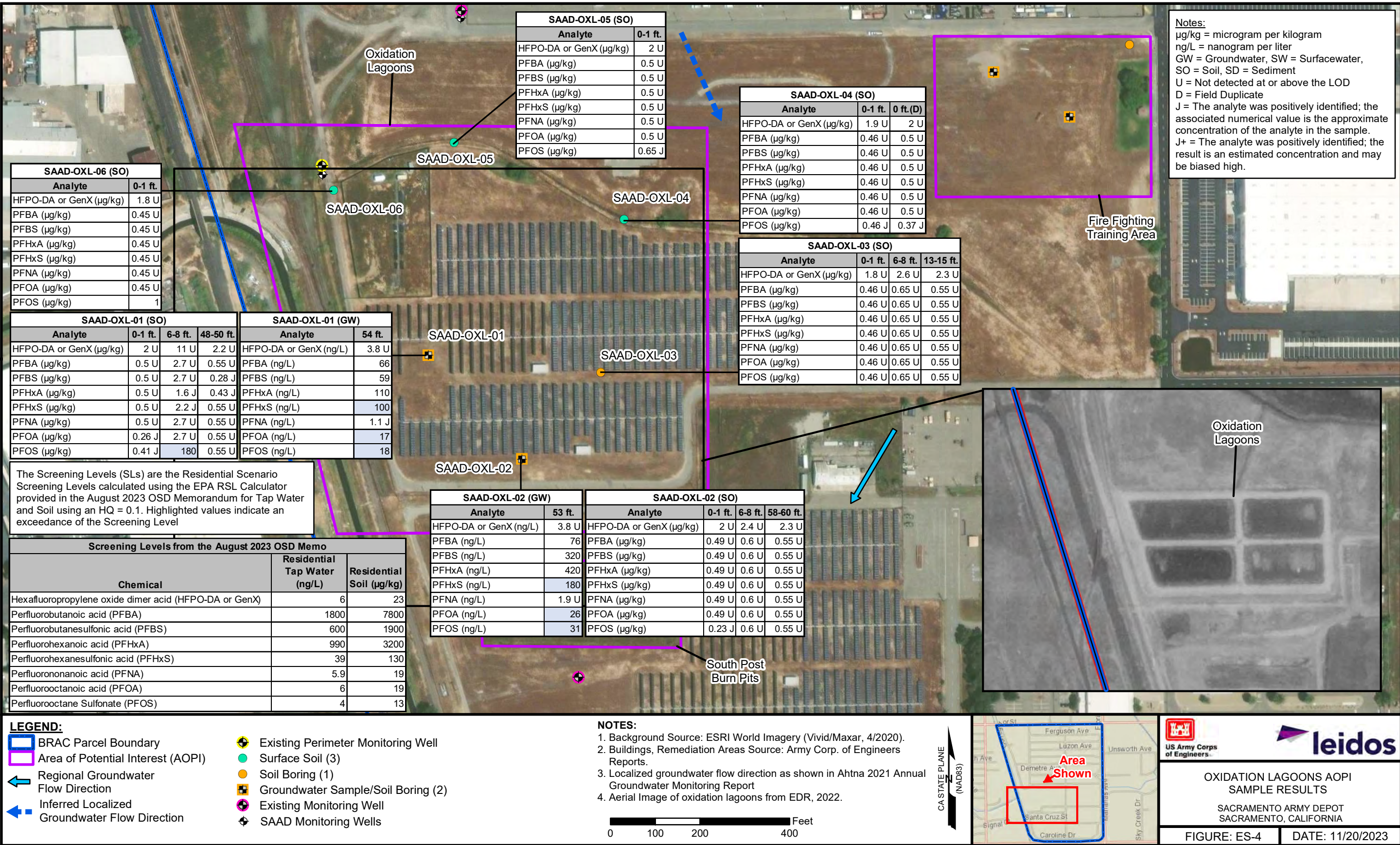
**BUILDING 330 FORMER FIRE STATION AOP  
SAMPLE RESULTS**

SACRAMENTO ARMY DEPOT  
SACRAMENTO, CALIFORNIA

FIGURE: ES-3
DATE: 10/30/2023



C:\Data\Civil Transfer\GIS\BRAC PFAS\Sacramento\Projects\SI Results\Figure 8-5 Sacramento Oxidation Lagoons and Drainage AOP\Map\_Samp\_Results.mxd





C:\Data\Civil Transfer\GIS\BRAC PFAS\Sacramento\Projects\SI Results\Figure 6-9 Sacramento South Post Burn Pits AOP\Map\_Samp\_Results.mxd

**Notes:**  
 ng/L = nanogram per liter  
 GW = Groundwater  
 SO = Soil, SD = Sediment  
 U = Not detected at or above the LOD  
 J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.  
 J+ = The analyte was positively identified; the result is an estimated concentration and may be biased high.

Oxidation Lagoons

SAAD-SBP-01 (GW)	
Analyte	81 ft.
HFPO-DA or GenX (ng/L)	3.6 U
PFBA (ng/L)	21
PFBS (ng/L)	15
PFHxA (ng/L)	64
PFHxS (ng/L)	330
PFNA (ng/L)	1.5 J
PFOA (ng/L)	150
PFOS (ng/L)	94

South Post Burn Pits

SAAD-SBP-01

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using the EPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level

Screening Levels from the August 2023 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanoic acid (PFBA)	1800	7800
Perfluorobutanesulfonic acid (PFBS)	600	1900
Perfluorohexanoic acid (PFHxA)	990	3200
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	5.9	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

MW-0005A

SAAD-SBP-MW0005A (GW)	
Analyte	116 ft.
HFPO-DA or GenX (ng/L)	3.6 U
PFBA (ng/L)	8.4 J+
PFBS (ng/L)	1.8 U
PFHxA (ng/L)	1.8 U
PFHxS (ng/L)	1.8 U
PFNA (ng/L)	1.8 U
PFOA (ng/L)	1.8 U
PFOS (ng/L)	1.8 U

South Post Burn Pits

**LEGEND:**

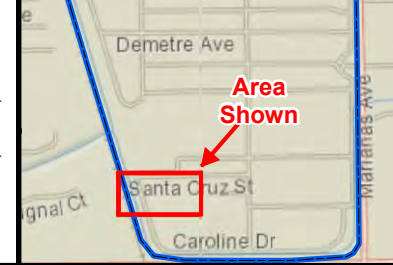
- BRAC Parcel Boundary
- Area of Potential Interest (AOP)
- Regional Groundwater Flow Direction
- Inferred Localized Groundwater Flow Direction
- New Permanent Monitoring Well (1)
- Existing Monitoring Well (1)

**NOTES:**

- Background Source: ESRI World Imagery (Vivid/Maxar, 4/2020).
- Buildings, Remediation Areas Source: Army Corp. of Engineers Reports.
- Localized groundwater flow direction as shown in Ahnta 2021 Annual Groundwater Monitoring Report
- Aerial Image of burn pits from EDR, 2022.

0 50 100 200 Feet

CA STATE PLANE (NAD83)



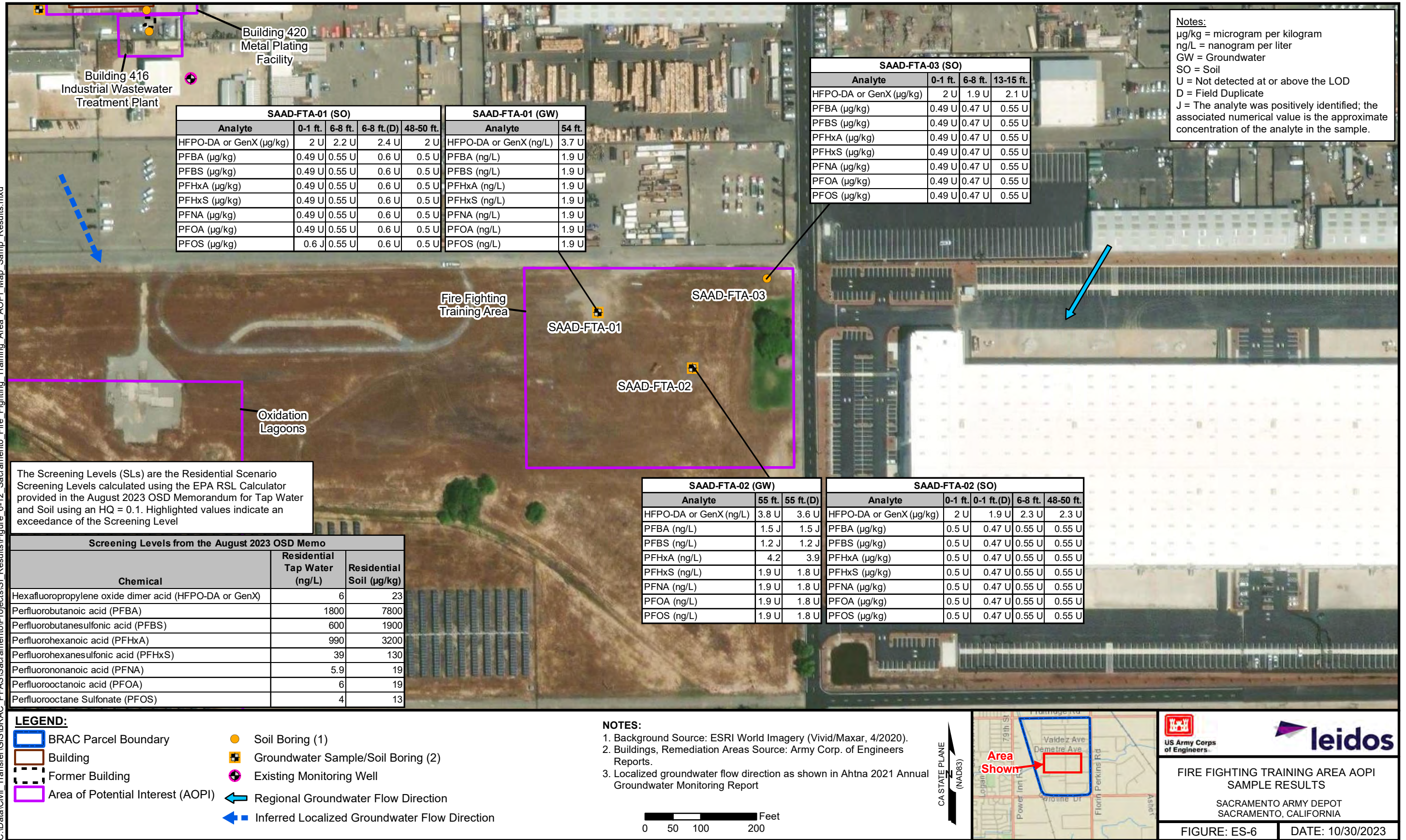
**SOUTH POST BURN PITS AOP  
 SAMPLE RESULTS**

SACRAMENTO ARMY DEPOT  
 SACRAMENTO, CALIFORNIA

FIGURE: ES-5      DATE: 10/30/2023



C:\Data\Civil Transfer\GIS\BRAC PFAS\Sacramento\Projects\SI Results\Figure 6-12 Sacramento Fire Fighting Training Area AOP\Map\_Samp\_Results.mxd



**Notes:**  
 µg/kg = microgram per kilogram  
 ng/L = nanogram per liter  
 GW = Groundwater  
 SO = Soil  
 U = Not detected at or above the LOD  
 D = Field Duplicate  
 J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

SAAD-FTA-01 (SO)					SAAD-FTA-01 (GW)	
Analyte	0-1 ft.	6-8 ft.	6-8 ft.(D)	48-50 ft.	Analyte	54 ft.
HFPO-DA or GenX (µg/kg)	2 U	2.2 U	2.4 U	2 U	HFPO-DA or GenX (ng/L)	3.7 U
PFBA (µg/kg)	0.49 U	0.55 U	0.6 U	0.5 U	PFBA (ng/L)	1.9 U
PFBS (µg/kg)	0.49 U	0.55 U	0.6 U	0.5 U	PFBS (ng/L)	1.9 U
PFHxA (µg/kg)	0.49 U	0.55 U	0.6 U	0.5 U	PFHxA (ng/L)	1.9 U
PFHxS (µg/kg)	0.49 U	0.55 U	0.6 U	0.5 U	PFHxS (ng/L)	1.9 U
PFNA (µg/kg)	0.49 U	0.55 U	0.6 U	0.5 U	PFNA (ng/L)	1.9 U
PFOA (µg/kg)	0.49 U	0.55 U	0.6 U	0.5 U	PFOA (ng/L)	1.9 U
PFOS (µg/kg)	0.6 J	0.55 U	0.6 U	0.5 U	PFOS (ng/L)	1.9 U

SAAD-FTA-03 (SO)			
Analyte	0-1 ft.	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2 U	1.9 U	2.1 U
PFBA (µg/kg)	0.49 U	0.47 U	0.55 U
PFBS (µg/kg)	0.49 U	0.47 U	0.55 U
PFHxA (µg/kg)	0.49 U	0.47 U	0.55 U
PFHxS (µg/kg)	0.49 U	0.47 U	0.55 U
PFNA (µg/kg)	0.49 U	0.47 U	0.55 U
PFOA (µg/kg)	0.49 U	0.47 U	0.55 U
PFOS (µg/kg)	0.49 U	0.47 U	0.55 U

SAAD-FTA-02 (GW)		
Analyte	55 ft.	55 ft.(D)
HFPO-DA or GenX (ng/L)	3.8 U	3.6 U
PFBA (ng/L)	1.5 J	1.5 J
PFBS (ng/L)	1.2 J	1.2 J
PFHxA (ng/L)	4.2	3.9
PFHxS (ng/L)	1.9 U	1.8 U
PFNA (ng/L)	1.9 U	1.8 U
PFOA (ng/L)	1.9 U	1.8 U
PFOS (ng/L)	1.9 U	1.8 U

SAAD-FTA-02 (SO)				
Analyte	0-1 ft.	0-1 ft.(D)	6-8 ft.	48-50 ft.
HFPO-DA or GenX (µg/kg)	2 U	1.9 U	2.3 U	2.3 U
PFBA (µg/kg)	0.5 U	0.47 U	0.55 U	0.55 U
PFBS (µg/kg)	0.5 U	0.47 U	0.55 U	0.55 U
PFHxA (µg/kg)	0.5 U	0.47 U	0.55 U	0.55 U
PFHxS (µg/kg)	0.5 U	0.47 U	0.55 U	0.55 U
PFNA (µg/kg)	0.5 U	0.47 U	0.55 U	0.55 U
PFOA (µg/kg)	0.5 U	0.47 U	0.55 U	0.55 U
PFOS (µg/kg)	0.5 U	0.47 U	0.55 U	0.55 U

The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using the EPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level

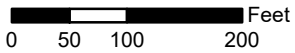
Screening Levels from the August 2023 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanoic acid (PFBA)	1800	7800
Perfluorobutanesulfonic acid (PFBS)	600	1900
Perfluorohexanoic acid (PFHxA)	990	3200
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	5.9	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

**LEGEND:**

- BRAC Parcel Boundary
- Building
- Former Building
- Area of Potential Interest (AOPI)
- Soil Boring (1)
- Groundwater Sample/Soil Boring (2)
- Existing Monitoring Well
- Regional Groundwater Flow Direction
- Inferred Localized Groundwater Flow Direction

**NOTES:**

- Background Source: ESRI World Imagery (Vivid/Maxar, 4/2020).
- Buildings, Remediation Areas Source: Army Corp. of Engineers Reports.
- Localized groundwater flow direction as shown in Ahtna 2021 Annual Groundwater Monitoring Report



CALIFORNIA STATE PLANE (NAD83)



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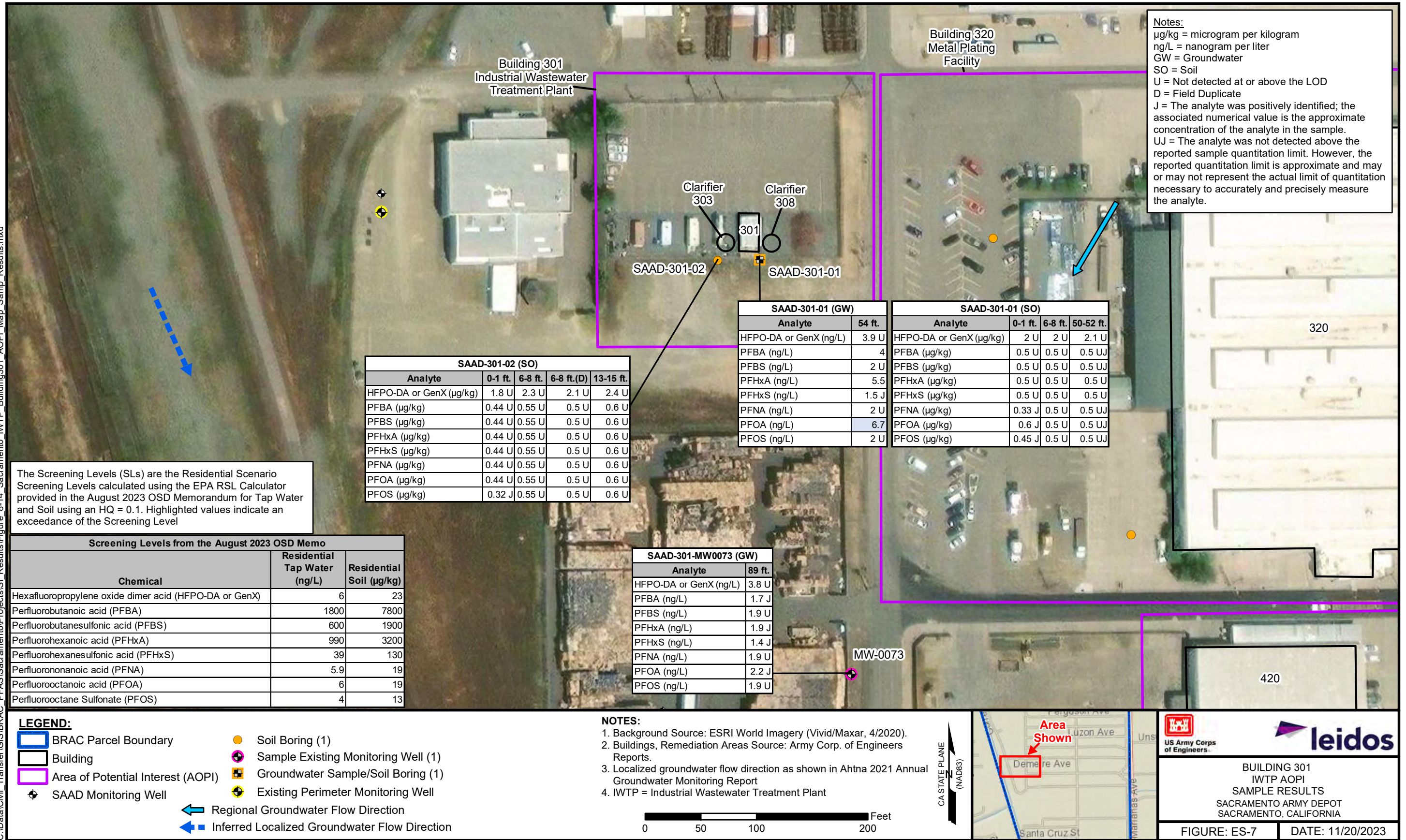
**FIRE FIGHTING TRAINING AREA AOP  
SAMPLE RESULTS**

SACRAMENTO ARMY DEPOT  
SACRAMENTO, CALIFORNIA

FIGURE: ES-6      DATE: 10/30/2023

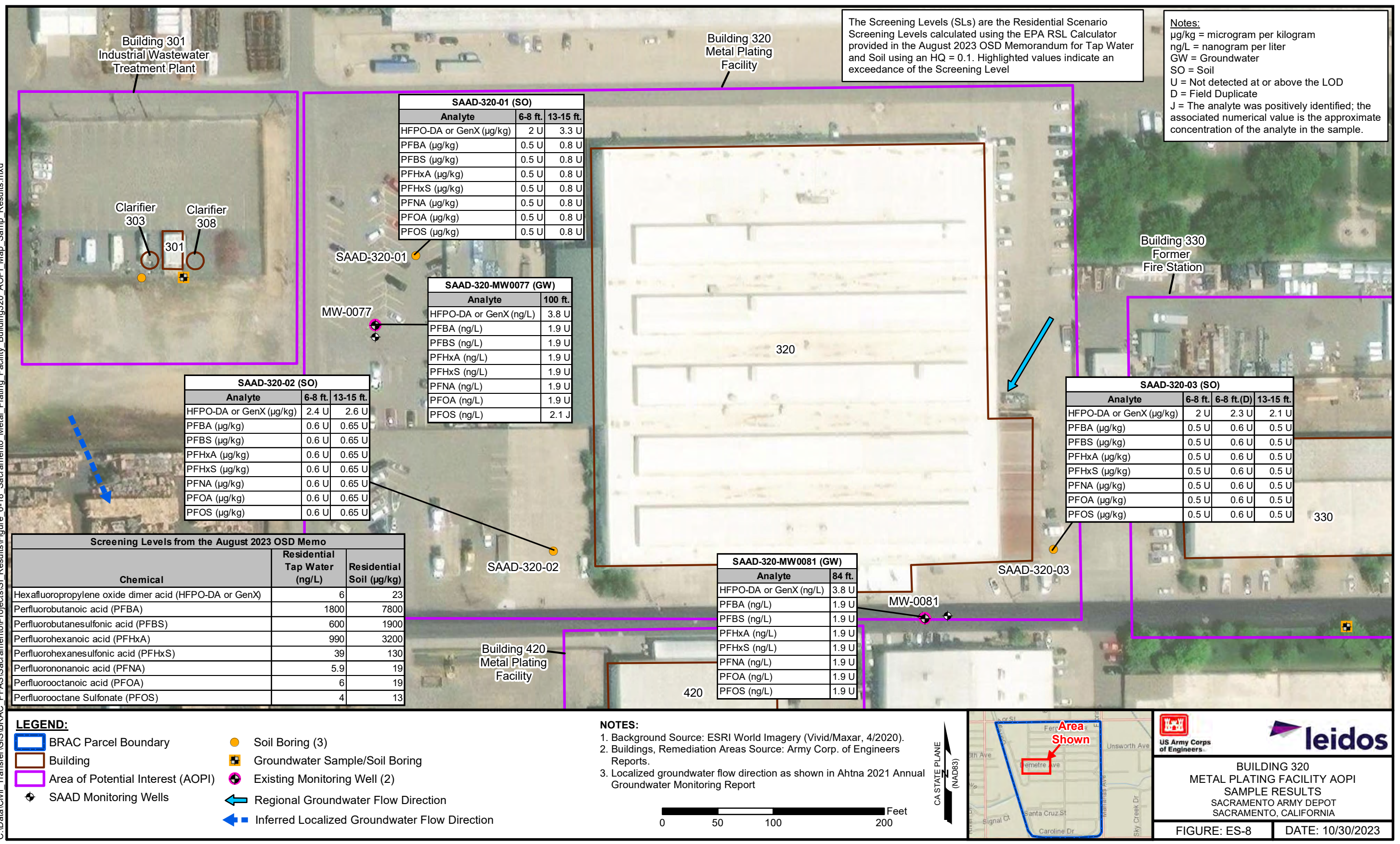


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C:\Data\Civil Transfer\GIS\BRAC PFAS\Sacramento\Projects\SI Results\Figure 6-18 Sacramento Metal Plating Facility Building320 AOPI Map\_Samp\_Results.mxd



The Screening Levels (SLs) are the Residential Scenario Screening Levels calculated using the EPA RSL Calculator provided in the August 2023 OSD Memorandum for Tap Water and Soil using an HQ = 0.1. Highlighted values indicate an exceedance of the Screening Level

**Notes:**  
 µg/kg = microgram per kilogram  
 ng/L = nanogram per liter  
 GW = Groundwater  
 SO = Soil  
 U = Not detected at or above the LOD  
 D = Field Duplicate  
 J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

SAAD-320-01 (SO)		
Analyte	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2 U	3.3 U
PFBA (µg/kg)	0.5 U	0.8 U
PFBS (µg/kg)	0.5 U	0.8 U
PFHxA (µg/kg)	0.5 U	0.8 U
PFHxS (µg/kg)	0.5 U	0.8 U
PFNA (µg/kg)	0.5 U	0.8 U
PFOA (µg/kg)	0.5 U	0.8 U
PFOS (µg/kg)	0.5 U	0.8 U

SAAD-320-MW0077 (GW)	
Analyte	100 ft.
HFPO-DA or GenX (ng/L)	3.8 U
PFBA (ng/L)	1.9 U
PFBS (ng/L)	1.9 U
PFHxA (ng/L)	1.9 U
PFHxS (ng/L)	1.9 U
PFNA (ng/L)	1.9 U
PFOA (ng/L)	1.9 U
PFOS (ng/L)	2.1 J

SAAD-320-02 (SO)		
Analyte	6-8 ft.	13-15 ft.
HFPO-DA or GenX (µg/kg)	2.4 U	2.6 U
PFBA (µg/kg)	0.6 U	0.65 U
PFBS (µg/kg)	0.6 U	0.65 U
PFHxA (µg/kg)	0.6 U	0.65 U
PFHxS (µg/kg)	0.6 U	0.65 U
PFNA (µg/kg)	0.6 U	0.65 U
PFOA (µg/kg)	0.6 U	0.65 U
PFOS (µg/kg)	0.6 U	0.65 U

SAAD-320-03 (SO)			
Analyte	6-8 ft.	6-8 ft.(D)	13-15 ft.
HFPO-DA or GenX (µg/kg)	2 U	2.3 U	2.1 U
PFBA (µg/kg)	0.5 U	0.6 U	0.5 U
PFBS (µg/kg)	0.5 U	0.6 U	0.5 U
PFHxA (µg/kg)	0.5 U	0.6 U	0.5 U
PFHxS (µg/kg)	0.5 U	0.6 U	0.5 U
PFNA (µg/kg)	0.5 U	0.6 U	0.5 U
PFOA (µg/kg)	0.5 U	0.6 U	0.5 U
PFOS (µg/kg)	0.5 U	0.6 U	0.5 U

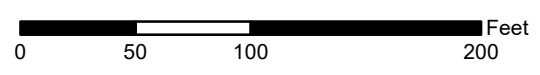
Screening Levels from the August 2023 OSD Memo		
Chemical	Residential Tap Water (ng/L)	Residential Soil (µg/kg)
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	6	23
Perfluorobutanoic acid (PFBA)	1800	7800
Perfluorobutanesulfonic acid (PFBS)	600	1900
Perfluorohexanoic acid (PFHxA)	990	3200
Perfluorohexanesulfonic acid (PFHxS)	39	130
Perfluorononanoic acid (PFNA)	5.9	19
Perfluorooctanoic acid (PFOA)	6	19
Perfluorooctane Sulfonate (PFOS)	4	13

**LEGEND:**

- BRAC Parcel Boundary
- Building
- Area of Potential Interest (AOPI)
- ◆ SAAD Monitoring Wells
- Soil Boring (3)
- Groundwater Sample/Soil Boring
- ⊕ Existing Monitoring Well (2)
- ↔ Regional Groundwater Flow Direction
- ↔ Inferred Localized Groundwater Flow Direction

**NOTES:**

- Background Source: ESRI World Imagery (Vivid/Maxar, 4/2020).
- Buildings, Remediation Areas Source: Army Corp. of Engineers Reports.
- Localized groundwater flow direction as shown in Ahnta 2021 Annual Groundwater Monitoring Report



CAST STATE PLANE (NAD83)

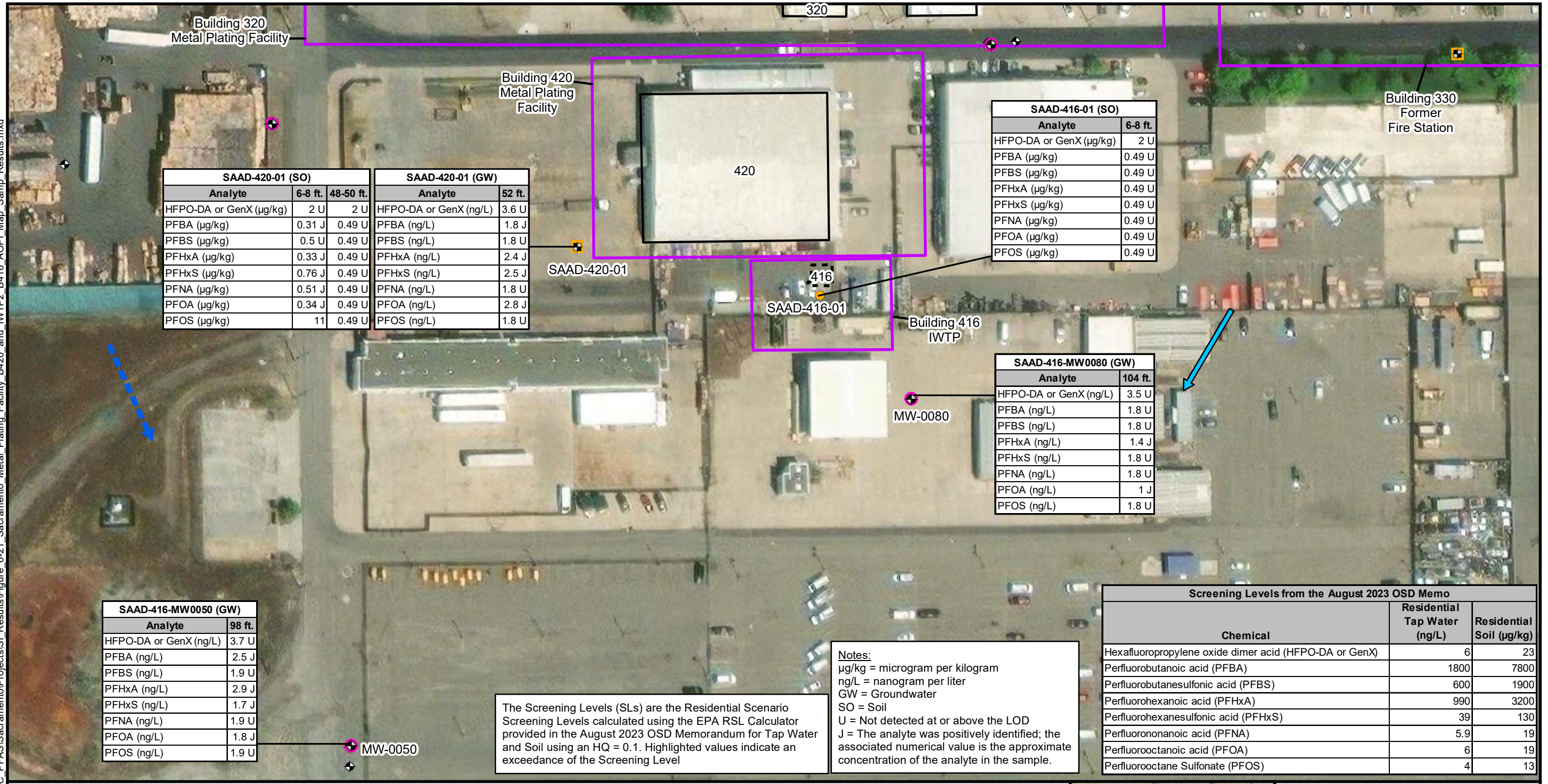


**BUILDING 320  
METAL PLATING FACILITY AOPI  
SAMPLE RESULTS  
SACRAMENTO ARMY DEPOT  
SACRAMENTO, CALIFORNIA**

FIGURE: ES-8
DATE: 10/30/2023



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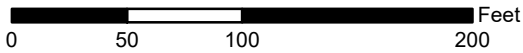


**LEGEND:**

- BRAC Parcel Boundary
- Building
- Former Building
- Area of Potential Interest (AOP1)
- SAAD Monitoring Wells
- Soil Boring (1)
- Groundwater Sample/Soil Boring (1)
- Existing Monitoring Well (2)
- Regional Groundwater Flow Direction
- Inferred Localized Groundwater Flow Direction

**NOTES:**

1. Background Source: ESRI World Imagery (Vivid/Maxar, 4/2020).
2. Buildings, Remediation Areas Source: Army Corp. of Engineers Reports.
3. Localized groundwater flow direction as shown in Ahnta 2021 Annual Groundwater Monitoring Report
4. IWTP = Industrial Wastewater Treatment Plant



CA STATE PLANE  
(NAD83)



**US Army Corps of Engineers**

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**BUILDING 420 METAL PLATING FACILITY AOP1 AND BUILDING 416 IWTP AOP1 SAMPLE RESULTS SACRAMENTO ARMY DEPOT SACRAMENTO, CALIFORNIA**

**FIGURE: ES-9**      **DATE: 10/30/2023**