

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Site Summary, Fort Harrison, Montana

In October 2017, the Montana Army National Guard collected groundwater samples from three on-site monitoring wells to determine if groundwater at Fort Harrison had been impacted by Per- and Polyfluoroalkyl Substances (PFAS). PFAS were detected below the Montana DEQ-7 human health groundwater standard for combined and individual Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) of 70 nanograms per liter (ng/L).

In January 2018, contractors hired by the Army National Guard (ARNG) conducted a Preliminary Assessment at Fort Harrison to determine the potential for past PFAS releases. Interviews with current and former employees confirmed there were 14 potential release areas that warranted further investigation. PFAS releases were attributed to aqueous film forming foam (AFFF) releases from fire training activities, firetruck washing, emergency response, and pest control.

Starting in 2019, ARNG conducted a Site Inspection (SI) to further evaluate potential sources of PFAS and determine the nature and extent of PFAS contamination on-site. The SI was conducted in two mobilizations, February and May 2019 and October 2020.

Twenty-seven (27) soil borings and six new monitoring wells were installed in 2019. Forty-seven (47) soil grab samples were obtained from the 27 boring locations, and 15 groundwater samples were obtained from the six new monitoring wells, eight existing monitoring wells and one irrigation well. The soil and groundwater samples from both mobilizations were analyzed for a subset of 18 PFAS compounds.

Analytical results were compared to the Montana DEQ-7 human health groundwater standard and Department of Defense (DoD) screening levels (SLs) for soil and groundwater listed below.

Table ES-1 Screening Levels (Soil and Groundwater)

Analyte	Residential (Soil) (µg/kg) ^a 0-2 feet bgs	Industrial/ Commercial Composite Worker (Soil) (µg/kg) ^a 2-15 feet bgs	Tap Water (Groundwater) (ng/L) ^a
PFOA	130	1,600	40
PFOS	130	1,600	40
PFBS	130,000	1,600,000	40,000

Notes:

- a.) Assistant Secretary of Defense, 2019. Risk Based Screening Levels Calculated for PFOS, PFOA, PFBS in Groundwater and Soil using United States Environmental Protection Agency's (USEPA's) Regional Screening Level Calculator. HQ=0.1. 15 October 2019.

Soil from 0-2 feet was compared to Residential SLs, 2-15 feet compared to Industrial SLs, and greater than 15 feet was not compared to either SL.

The 2019 PFAS concentrations in soil were all below the Department of Defense (DoD) screening levels (SLs). The highest PFOS concentration in soil was 22 micrograms per kilogram (ug/kg) in soil sample AOI2-S2-0-2-DUP and the most elevated PFOA concentration was 0.473 ug/kg in soil sample AOI3-SB1-0-2. Perfluorobutanesulfonic acid (PFBS) was detected in soil, but at concentrations several orders of magnitude below the SLs.

The 2019 analytical results from monitoring well AOI02-MW1 came back above the Montana DEQ groundwater standard of 70 ng/L for PFOS/PFOA separately or combined with PFOS at 118 nanograms per liter (ng/L), and PFOA at 10.7 ng/L, for a combined total of 128.7 ng/L. The results of the other 14 groundwater samples were below the DEQ-7 standard and DoD SLs. PFBS was detected in groundwater, but at concentrations several orders of magnitude below the SLs.

Private residential drinking water well sampling downgradient of Fort Harrison was performed in 2019. Groundwater samples were obtained from five locations. PFOA, PFOS, and PFBS were detected in groundwater, but were below SLs and the DEQ-7 groundwater standard.

During the second mobilization in 2020, twenty-seven soil borings and five new monitoring wells were installed. Thirty (30) soil grab samples were obtained from twenty-seven (27) soil boring locations and 15 groundwater samples were obtained from the five new monitoring wells and ten existing monitoring well locations.

The 2020 PFAS concentrations in soil were all below DoD SLs. The highest PFOS concentration in soil was 39.9 ug/kg and the most elevated PFOA concentration was estimated at 0.166 ug/kg in soil sample AOI1-SS11-00-02. PFBS was detected in soil, but at concentrations several orders of magnitude below the SLs.

The 2020 analytical results from monitoring well AOI02-MW1 came back above the Montana DEQ groundwater standard of 70 ng/L for PFOS/PFOA separately or combined with PFOS at 110 nanograms per liter (ng/L), and PFOA at 14.6 ng/L, for a combined total of 124.6 ng/L. Monitoring well AOI01-MW03 reported 62.2 ng/L PFOS and 14.3 ng/L PFOA. The combined value of 76.5 ng/L exceeds the DEQ-7 standard, and the PFOS concentration exceeds the DoD SL of 40 ng/L. The results of the other 13 groundwater samples were below the DEQ-7 and DoD SLs. PFBS was detected in groundwater, but at concentrations several orders of magnitude below the SLs.

A Remedial Investigation is scheduled to start during October 2021.