Responses to Comments for the

Draft Final Site Inspection (SI) QAPP, Rees Training Center, Hermiston, OR

Response Code: A = Agree with comment D = Disagree with comment C = Comment requires clarification

Comment Number	Commenter	Page(s)	Section	Line(s)	Comment	Response Code	Response
TECHNICAL COMMENTS							
1	dh			221-227	While Ann Farris remains POC for DEQ, DEQ PM for site is Alyssa Leidel with peer/hydro support from Dan Hafley. Project-specific queries should be directed to Leidel or Hafley.	A	Alyssa Leidel and Dan Hafley will be included on all correspondence. No change recommended.
2	dh		Geology/Hydrogeology	384 and 407	The work plan would benefit from the inclusion and discussion of well logs from the investigation area vicinity, which are abundant, with respect to both geology that is expected to be encountered in groundwater investigation work, depth to groundwater, etc.	A	Basic geology is presented and groundwater directional flow patterns are discuss in lines 406-424. There are not an abundance of well logs in the vicinity of the PFAS investigation. Geology is fairly straight forward in these areas, consisting of unconsolidated silts, sand and gravel overlying basalt. Well reports are available on the OWRD website. No change recommended.
3	dh			929-930	Monitoring well are temporary and designated for one-time sampling as opposed to, for example, permanent wells at Pendleton. The basis for this approach is unclear. Given the level of effort that is going into the site investigation work and the likelihood of PFAS release, DEQ recommends permanent wells and a minimum of four quarterly or two semiannual monitoring events to support SI decision-making. Also gauging of wells during all monitoring events for evaluation of groundwater flow direction.	A	a) The revised QAPP prescribes the installation of four permanent monitoring wells within AOI01/AOI02 and four within AOI03. b) A goal of the Site Inspection is to determine presence or absence of PFOA, PFOS, PFBS, PFHxS, and PFNA at the potential release locations. Quarterly or semiannual monitoring is not included during an SI but would implemented during a Remedial Investigation, if the site moves to that phase. No change recommended.
4	dh		Figures 17-2 and 17-4		DEQ appreciates your providing updated sampling location maps for AOI 1 and AOI 3. In general, locations appear to be acceptable. We defer to OMD's Kelly Toynton regarding the specific positioning of sample locations/borings in the field.	A	Comment is acknowledged. No change recommended.
EDITORIAL COMMENTS							
1	dh				Please confirm that field work will be completed, and the SI report prepared, under the direction of an Oregon-registered geologist.	A	As indicated in QAPP Worksheets #4, #7 & #8, both the SI Task Lead is an Oregon-Registered Geologist. No change to text.
2	dh				Please keep DEQ appraised of schedule as we would like to be on-site for some of the work. Please identify the expected length of field work. If extending for more than one week, weekly progress reports are requested.	A	As per Worksheets #14 & #16, field work is expected to take less than one month. DEQ will be notified of the final schedule and any subsequent schedule changes. Weekly status updates will be provided by the Oregon Army National Guard. No change recommended.
3	dh				We appreciate your coordination with DEQ regarding IDW management. In general, we recommend disposal at a Hazardous Waste (Subtitle C) facility if detectable concentrations of PFAS are present. Per DOD guidance	A	IDW will be disposed in accordance with OAR Chapter 340 and the Army Guidance for Addressing Releases of PFAS. No change recommended.

3	dh				Note that Oregon Health Authority has established drinking water health advisory levels for PFOS, PFOA, PFNA, and PFHxS, individually and collectively, of 30 ppt.	A	The health advisory levels are acknowledged, but will not be utilized for the SI. The ARNG program under which this SI will be performed follows the DoD policy outlined in the Memorandum from the Office of the Secretary of Defense (OSD) dated 6 July 2022 regarding screening levels. All PFAS compounds will be analyzed, but at this time, the DOD is limiting the decision based on PFOA, PFOS, PFBS, PFHxS, and PFNA. HFPO-DA (commonly referred to as GenX) is not included as an analyte for this SI. HFPO-DA has primarily been used as a replacement for PFOA in the manufacturing of fluoropolymers, so it is not likely to have been released at the vast majority of DoD properties. However, ARNG will add HFPO-DA to the list of constituents sampled during the next phase of CERCLA if warranted. No change recommended.
4	al			455-465	Please explain how groundwater flow direction was calculated based on groundwater monitoring well data of the 120 groundwater monitoring wells.	A	USACE and Oregon Water Resources Department has a network of transducers that record water levels on a daily basis throughout the Depot, Rees and the surrounding area. USACE works in cooperation with OWRD (Jen Woody) to track the groundwater elevations. USACE provided AECOM with a generalized flow direction based on season. Since these AOI's are south of the infiltration fields for the pump and treat system for the Washout Lagoon, these areas are less impacted by the infiltration fields based on their location. As stated in revised Technical Comment #1, a total of eight permanent monitoring wells will now be installed during this SI. No change recommended.
5	al				Please consider alternative sampling methods like ISM for the burn pit area. This area was not found during DEQ's site inspection; thus, a structeured composite sampling protocol may reduce the data variability for this portion of the investigation.	A	The QAPP has been revised to prescribe a total of 27 surface soil samples (0" to 6") distributed amongst the two AO101 burn areas, with deeper soil samples (6" to 12" and 12" to 24") precribed at 19 of those locations. At AOI03, at total of 14 surface soil samples (0" to 6") are now prescribed within the former WWTP sludge drying bed, with deeper soil samples (6" to 12" and 12" to 24") precribed at 9 of those locations. Text, tables, and figures have been revised to include the additional sample locations.
EPA GENERAL COMMENTS							
I.01					In general, the level of sampling proposed in this draft SI workplan for soil and groundwater at each of the source areas is extremely sparse and does not provide sufficient data for regulatory decision making purposes. One or two discrete soil samples per AOC does not provide sufficient data to calculate the mean, median, maximum or statistical upper confidence limits (UCLs) on analytical data. As such, the proposed sampling approach is not scientifically defensible for comparison to risk based screening levels for soils, only for determining the presence/absence of PFAS at a specific sampling location.	A	Please see responses to DEQ Technical Comment #1 and Editorial Comment #5. The QAPP has been revised to included the installation of eight permanent groundwater monitoring wells and significantly more surface soil samples within the AOIs.

I.02					The proposed sampling approach for groundwater has an insufficient number of wells to determine the groundwater flow direction for each of the AOCs. A minimum number of 3 wells per AOC source area are necessary to determine groundwater flow direction and velocity. Given the presumed groundwater flow direction of NW to SE, or SE to NW depending on irrigation pumping season, it appears that the placement of the monitoring wells is not optimized with regard to the presumed upgradient and downgradient flow directions at the AOCs. The use of temporary wells does not provide sufficient information to determine groundwater flow direction or velocity over a seasonal time frame, where changes is groundwater flow and velocity are expected to occur. In addition, sampling of off-site groundwater wells in the presumed groundwater flow direction does not appear to be considered. A more detailed hydrogeology analysis of potential off-site well sampling is provided in the separate attached analysis by EPA's site hydrogeologist.	A	Please see response to DEQ Technical Comment #4. USACE has collected decades of information regarding the groundwater flow directions and seasonal fluctuations. AOI 1 and AOI 2 are essentially collocated, and combined there are 3 temporary monitoring wells within the two AOIs. AOI 3 has includes three temporary monitoring wells. Temporary well distribution is adequate to determine groundwater flow direction at AOI 1 and AOI 2 (combined) and at AOI 3. Programmatically, off-site samples are not collection during the SI stage.
I.03					It appears that no surface soil sampling (other than from the monitoring well locations) is proposed for the sewage sludge drying beds. This is a significant data gap, since land application of sewage sludge (i.e. biosolids) are known sources of PFAS to vadose zone soils (Pepper et al. 2021, Johnson 2022). Additional surface soil sampling should be added to the SI workplan for the sewage sludge drying beds.	A	Two additional surface soil samples have been added to the vicinity of the former sludge drying beds within AOI 3. Text, tables, and figures have been revised to include the additional sample locations.
I.04					Based on sparse discrete soil sampling proposed, EPA strongly recommends the NGB/ORNG utilize the Incremental Sampling Methodology (ISM) to obtain mean concentrations of PFAS in surface soils over the entire AOC source areas (ITRC 2020). The ISM sampling method has successfully been used in the past in the ADA Operable Unit for explosives and metals in soils and will be used in the future in the upcoming ADA OU Remedial Action contract.	A	Four additional surface soil samples were added to AOI 1 to increase data distribution and density within the AOI. The mean concentrations of PFOA, PFOS, PFBS, PFHxS, and PFNA within an AOI is of less value than collecting a discrete sample from directly from a potential release location. ISM will be considered if an AOI progresses to the RI phase. Text, tables, and figures have been revised to include the additional sample locations.
I.05					It is unclear what the rationale is for the 13 to 15 foot depth vadose zone soil samples. Is this designed to be the presumed upper limit of vadose zone migration of PFAS? Previous studies have shown that the majority of PFAS in the vadose zone is in the top 1 meter (~3 feet) for long chain PFAS, and 2 meters (~6 ft) for short chain PFAS. The majority of depth-profile data sets show high concentrations present at shallow depths and exponential decreases at greater depths (Brusseau et al. 2020).	A	As indicated on Worksheet (WS) #17, up to three soil samples per boring will be collected as follows: - surface soil = 0 to 2 feet below ground surface (bgs) with results compared to OSD Residential soil SLs (WS #15). - subsurface soil = the midpoint between the ground surface and groundwater if groundwater is encountered at 30 feet bgs or shallower. Because groundwater is not anticipated at depths greater than 30 feet bgs, a subsurface soil sample will be collected from the 13 to 15 feet bgs interval. This depth interval is the maximum depth with an applicable OSD SL: Industrial/Commercial Composite Worker. -subsurface soil = above the water table will not be compared to SLs. No change to text.
I.06					The draft workplan did not address the potential of munitions OB/OD disposal practices as source of PFAS to soil and groundwater in the ADA OU. Specifically, PFAS polymers are used as binders in plastic/polymer bonded explosives (PBX) and in munition components such as gaskets, wiring sheaths, tubing, and seals, with the most prevalent materials being PTFE, vinylidene difluoride/hexafluoropropylene copolymer (Viton A, and Viton B), and polychlorotrifluoroethylene (Kel-F 800) (Olsavsky et al. 2020). EPA recommends initial sampling for PFAS in all existing monitoring wells at the ADA OU as the initial SI screening step, as active MEC and MC soil remediation is still on-going in the ADA.	D	Programmatically, the ARNG is assessing the potential environmental impacts primarily from AFFF and similar chemical releases suspected at their properties related to processes that used PFAS (e.g., fire training, firefighting, and metal plating). At this time, ordinance disposal areas are not included under the scope of this SI. Guidance will be forecoming from OSD in the future. No change to text.

I.07					EPA has recently promulgated draft EPA Method 1663, designed for the analysis of PFAS compounds in soil, biosolids, groundwater, wastewaters and tissues for non-drinking water sources. For non-drinking water matrices, draft Method 1633 should be utilized for PFAS analysis (EPA 2021). DOD has also directed the use of this method after Jan 2022 (DOD 2021).	A	The ARNG G9 is the lead agency in performing Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide. Site inspections within this program began in 2020, prior to EPA Method 1663. To maintain consistency between sites nationwide, EPA Method 1663 will not be used during this SI. Additionally, because EPA Method 1663 is relatively new, there is only limited number of laboratories accredited for the method. If the site move to RI, Method 1633 will be considered. No change to text.
EPA SPECIFIC COMMENTS							
II.01					QAPP Worksheet #10, p. 6 of 12 – See General Comments No. 1,2,3, and 6 concerning potential sources of PFAS.	A	The referred General Comments do not affect the conceptual site model (WS #10) or facility background information included on WS #10. Refer to individual responses to the referenced General Comments. No change to text.
II.02					Figure 10-3, Legend, “Surface Water Flow Direction” – This figure is misleading, there is no surface water flow on the Umatilla Depot.	A	If rates of precipitation, irrigation, or other planned or unplanned application of water (e.g., broken water pipe) exceed the maximum infiltration rate, water would flow in the direction(s) indicated. No change to text or figures.
II.03					Table 11-1 – See General Comments No. 1 and 2.	A	Refer to individual responses to the referenced General Comments. No change to text or table.
II.04					Table 11-2 – See General Comment No. 1.	A	Refer to the response to referenced General Comment. No change to text or table.
II.05					Final PQAPP Worksheet #15 – See General Comment No. 7 regarding use of draft EPA Method 1633.	A	Refer to the response to referenced General Comment. No change to text.
II.06					Table 17-1 – See General Comment No. 1 and 2.	A	Refer to individual responses to the referenced General Comments. No change to text or table.
II.07					Table 17-2 – See General Comment No. 1 and 5.	A	Refer to individual responses to the referenced General Comments. No change to text or table.
II.08					Table 17-3 – See General Comment No. 2.	A	Refer to the response to referenced General Comment. No change to text or table.

II.09					Figure 17-1 – There appears to be no upgradient or downgradient wells for AOI1 or AOI2, see General Comment No. 2. There also appears to be no surface soil samples for AOI3, see General Comment No. 3.	A	Plase see responses to DEQ Technical Comment #1 and Editorial Comment #5. The QAPP has been revised to included the installation of eight permanent groundwater monitoring wells and significantly more surface soil samples within the AOIs.
II.10					Figure 17-2 – There are no upgradient or downgradient wells at FTA01 or the Burn Pit. The single discrete soil sample in the Burn Pit is located at the very edge of the potential source area. See General Comment No. 4 concerning EPA's recommended sampling method for surface soils.	A	Plase see responses to DEQ Technical Comment #1 and Editorial Comment #5. The QAPP has been revised to included the installation of eight permanent groundwater monitoring wells and significantly more surface soil samples within the AOIs.
II.11					Figure 17-3 – AOI2 has no upgradient or downgradient monitoring wells. Soil samples are not even located within the potential PFAS release area. See General Comment No. 4 concerning EPA's recommended sampling method for surface soils.	A	Plase see responses to DEQ Technical Comment #1 and Editorial Comment #5. The QAPP has been revised to included the installation of eight permanent groundwater monitoring wells and significantly more surface soil samples within the AOIs.
II.12					Figure 17-4 – It is unclear what are the presumed upgradient and downgradient monitoring wells are at AOI3.	A	Plase see responses to DEQ Technical Comment #1 and Editorial Comment #5. The QAPP has been revised to included the installation of eight permanent groundwater monitoring wells and significantly more surface soil samples within the AOIs.
II.13					QAPP Worksheet #18 – See General Comment No. 5.	A	Refer to the response to referenced General Comment. No change to text.
II.14					Final PQAPP Worksheet #19 and 30. – See General Comment No. 7.	A	Refer to the response to referenced General Comment. No change to text.
II.15					Final PQAPP Worksheet #23 – See General Comment No. 7.	A	Refer to the response to referenced General Comment. No change to text.
EPA FINAL PA COMMENTS RELEVANT TO THE QAPP							
PA.01					...However, as stated in the DRAFT Final Site Inspection Quality Assurance Project Plan Addendum, there are no plans to sample any of the off-site wells for potential exposure in this SI.	A	Currently, there is no data confirming the presence of PFOA, PFOS, PFBS, PFHxS, or PFNA in groundwater at or adjacent to the AOIs. The SI report will include an updated CSM, based on data, refining potential onsite and off-site receptors and potential pathways. Refer to Comment I.02 response regarding off-facility sampling.

PA.02					...Since the time of use of the PFAS, it is likely the PFAS has migrated to these off-site wells. This AFFF water has potentially been applied on these irrigated crops.	D	Currently, there is no data confirming the presence of PFOA, PFOS, PFBS, PFHxS, or PFNA in soil or groundwater at or adjacent to the AOIs. The SI report will include an updated CSM, based on data, refining potential onsite and off-site receptors and potential pathways.
PA.03					Section 1.5.2 Hydrogeology, Page 7 “Groundwater flow in the unconfined aquifer generally is to the northwest, seen in Figure 1-2 (Dames and Moore, 1992).” I don’t see northwest flow displayed in this figure.	A	Groundwater flow in these areas changes based on the recharge programs to the south of the AOIs and the infiltration fields to the north associated with the Explosive Washout Lagoon. Refer to QAPP Figure 10-2.
PA.04					Section 1.5.3 Hydrology, Page 9 “Domestic wastewater is run through an oil water separator (OWS) and then routed to the sewage treatment plant at the south-center part of the facility (Figure 1.3).” The sewage treatment plant is not displayed on this figure.	A	Refer to QAPP Figure 10-2 and Figure 10-4.
PA.05					Section 1.5.4 Climate, Page 9 “Highs in can reach 100°F…”Delete the “in”.		The PA is Final.
PA.06					In the document DRAFT Final Site Inspection Quality Assurance Project Plan Addendum Camp Umatilla Hermiston, Oregon, Figure 10-4 shows a number of irrigation wells and domestic wells that are directly down-gradient of AOI 1,2, and 3. These are active wells that influence the piezometric surface since “Groundwater flow beneath Camp Umatilla exhibits seasonal variation due to groundwater extraction for irrigation and recharge from agricultural canals in the vicinity. In the summer and fall, groundwater flow direction is generally to the east and south, while in the winter and early spring, groundwater flow direction is generally to the northwest”. And “drinking water wells are located within the facility boundary (a domestic well is located approximately 1,000 feet to the northwest and hydrologically downgradient of AOI 1), an irrigation well is located outside the facility boundary (approximately 2,000 feet south of AOI 1)”.	A	This is correct. No change to text.
PA.07					According to OMD, plans have been established to utilize three on-site wells and re-drill two additional wells in the immediate future for additional drinking water. Thus, the groundwater needs to be adequately characterized before any of these wells are used for a domestic supply.	A	As indicated on WS #10, drinking water wells at RTC draw water from confined basalt aquifer, not the unconsolidated alluvial aquifer. Also, as indicated in WS #10, RTC drinking water from on-facility supply wells has been sampled and analyzed for selected PFAS, including PFOS, PFOA, and PFBS. No change to text.
PA.08					The Burn Pit for the site was used daily or multiple times a week, and foam was used to control these burns. It is known that PFAS was used on the site. Thus, it is likely this has reached the aquifer.	D	It is unknown if PFAS-containing foam was used and if so, accurate estimates of the volume or frequency of use are not available. Currently, there is no data indicating that PFOA, PFOS, PFBS, PFHxS, and PFNA are present in soil or groundwater as a result of a release at any of the AOIs included in this Site Inspection. A goal of this SI is to determine absence or presence of PFOA, PFOS, PFBS, PFHxS, and PFNA in soil and groundwater at the potential release areas. The SI report will include an updated CSM, based on data, refining potential onsite and off-site receptors and potential pathways. No change to text.

PA.09					It is concerning that the nozzle testing area locations are also unknown, and the type, quantity, and concentration of AFFF potentially released during the testing events are unknown. Even if water was only used in this testing, it is likely that remnant PFAS within these trucks was not completely removed prior to any of these tests. Thus, the PFAS contamination may be more pervasive than just the three investigated release areas.	A	As an unregulated substance, historical recording nozzle test locations, volumes, materials, etc. was not common practice until AFFF became a PFAS concern. Although limited, the information from interviewees indicates the nozzle tests were conducted at locations with the areas designated as AOI 2. If the reviewer has information about potential nozzle test locations outside the current AOIs, please provide them so that they can be considered for sample locations. No change to text.
PA.10					The monitoring wells that are planned to be placed in these release areas are too few to adequately characterize this site. In fact, the ones that will be constructed will only be temporary monitoring wells where PFAS was potentially released. These “temporary wells” may not be representative of conditions found in the aquifer if there is not sufficient time for natural flow conditions to reestablish even with the purging before sampling. These are essentially groundwater grab samples that are potentially influenced by the drilling and by the seasonal flow direction.	A	Plase see responses to DEQ Technical Comment #1 and Editorial Comment #5. The QAPP has been revised to included the installation of eight permanent groundwater monitoring wells, four within the AOI01/02 area and four with the AOI03 area.
PA.11					Although they are planning to collect water level data to generate a piezometric surface, this doesn't make sense to make these temporary wells since the surface changes with the season. These need to be long-term monitoring wells with measurements in both concentrations and water levels taken at least twice a year. How and when the aquifer changes and the flow directions are currently unknown due to the lack of data. The report states they are only assuming flow directions. Collecting only one or two groundwater samples and soil in locations with known/suspected AFFF discharge and with changing groundwater flow directions will leave significant data gaps.	A/D	Plase see responses to DEQ Technical Comment #1 and Editorial Comment #5. The QAPP has been revised to included the installation of eight permanent groundwater monitoring wells, four within the AOI01/02 area and four with the AOI03 area. The data will show groundwater flow direction at the time of the site inspection and will be useful if a future investigation is planned at an AOI (during an RI, if warranted by SI data). The seasonal groundwater flow direction variation documented. Long term monitoring wells will be considered in the RI phase if PFOA, PFOS, PFBS, PFHxS, and PFNA are present at an AOI.