



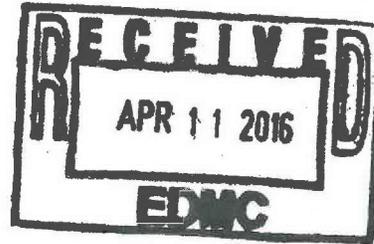
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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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April 5, 2016

16-NWP-063



Mr. Michael W. Cline, Federal Project Director  
Richland Operations Office  
United States Department of Energy  
PO Box 550, MSIN: A5-11  
Richland, Washington 99352

Re: Department of Ecology's (Ecology) Response to the *Groundwater Sampling and Analysis Plan for the 200-BP-5 Groundwater Operable Unit*, Draft A, DOE/RL-2014-33, received May 11, 2015, for the initial 45-day Review Comment Record (RCR) Period

Dear Mr. Cline:

Ecology received the *Groundwater Sampling and Analysis Plan for the 200-BP-5 Groundwater Operable Unit*, Draft A, DOE/RL-2014-33 (SAP) for a 45-day review on May 11, 2015. In accordance with the *Tri-Party Agreement*, Section 9.2.1, we submitted our initial comments to the United States Department of Energy (USDOE) in letter 15-NWP-116, dated June 25, 2015.

However, further work on this SAP was halted due to issues regarding Ecology's review of the related *Remedial Investigation Report for the 200-BP-5 Groundwater Operable Unit*, Draft A, DOE/RL-2009-127 (RI). Since discussions on the 200-BP-5 RI have restarted, we have agreed with USDOE to continue resolution of comments on this SAP.

Ecology has two concerns with the 200-BP-5 SAP that warrant specific consideration.

- The 200-BP-5 SAP eliminated contaminants of potential concern (COPCs) that Ecology considers necessary for inclusion. The enclosed RCR details Ecology's concerns regarding COPCs elimination.

USDOE must explain the rationale for eliminating these COPCs from the SAP. If an acceptable technical basis is not provided, Ecology will not be able to approve this SAP until review of the 200-BP-5 RI Draft A provides the acceptable rationale for eliminating these COPCs.

- Ecology received the *Groundwater Sampling and Analysis Plan for the 200-PO-1 Groundwater Operable Unit*, Revision 0, DOE/RL-2014-33, on April 30, 2015.

The 200-BP-5 and 200-PO-1 Operable Units will merge during the Comprehensive Environmental Response, Compensation, and Liability Act Feasibility Study. Because these units will merge, we compared the two associated SAPs for similar approach and language. Both SAPs have insufficient language supporting monitoring, plume trending, and data analysis. Our comments on the enclosed RCR address inconsistencies between the two SAPs.



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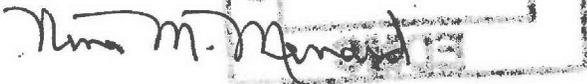
Mr. Michael W. Cline  
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We are submitting a copy of the enclosed RCR to the Administrative Record in accordance with the *Tri-Party Agreement*, Section 9.4.

If you have any questions, please contact me at [nina.menard@ecy.wa.gov](mailto:nina.menard@ecy.wa.gov) or (509) 372-7941 or Kim Welsch, Environmental Specialist at [kim.welsch@ecy.wa.gov](mailto:kim.welsch@ecy.wa.gov) or (509) 372-7882.

Sincerely,



Nina M. Menard  
Environmental Restoration Project Manager  
Nuclear Waste Program.

kw/jt  
Enclosure

cc electronic w/enc:

- Dennis Faulk, EPA
- Rod Lobos, EPA
- James Hansen, USDOE
- James Hanson, USDOE
- Marty Doornbos, CHPRC
- Bill Faught, CHPRC
- Ken Niles, ODOE
- Nina Menard, Ecology
- Kim Welsch, Ecology
- Cheryl Whalen, Ecology
- Environmental Portal
- Hanford Facility Operating Record
- USDOE-RL Correspondence Control

cc w/enc:

- Rod Skeen, CTUIR
- Gabriel Bohnee, NPT
- Russell Jim, YN
- Rex Buck, Wanapum
- Steve Hudson, HAB
- Administrative Record: 100-HR-3
- NWP Central File

cc w/o enc:

- NWP Reader File

Review Comment Record

Washington State Department of Ecology  
Nuclear Waste Program  
Cleanup Section/ER Project

Date April 4, 2016

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Document Title(s)/Number(s):  
Groundwater Sampling and Analysis Plan for the 200-BP-5 Groundwater Operable Unit (DOE/RL-2014-33, Draft A)

Document Lead/Phone #/email: Kim Welsch (509) 372-7882 kiwe461@ecy.wa.gov

Item Page (P) Section (S) Line (L)	Comment and Basis/Justification	Modification Needed	DOE Response	Ecology Response	O/C
Item 1 General	The Sampling and Analysis Plan must contain evidence of how all aspects of compliance monitoring have been performed in accordance with WAC 173-340-720(9). Provide text showing that the assumptions, analysis and interpretation of the trending data are in compliance with WAC 173-340-720(9).  Basis/Justification: Statistical methods for compliance monitoring WAC 173-340-720.	Provide text showing that the assumptions, analysis and interpretation of the trending data are in compliance with WAC 173-340-720(9).			
Item 2 General	Comment: There is a lack of evidence of how the trending was performed in a defensible manner.  Basis/Justification: Statistical methods for compliance monitoring /173-340-720 WAC	Include a section on analysis of monitoring and trending data.			
Item 3 General	Comment: The SAP doesn't state how the information collected is reported to Ecology.  Basis/Justification: The data collected as required by this SAP needs to be tracked by Ecology to determine that the SAP does not need revision based on the flow of the identified plumes. Please add how this information will be reported to Ecology.	Add to appropriate section how the gathered information will be reported to Ecology.			
Item 4 P: 1-1 S: 1 L/¶: 8-10	Comment: The last sentence in this first paragraph is not entirely accurate.  Basis/Justification: Completeness and clarity.	Change the sentence to read as follows: "The monitoring program defined in this plan supports the post-RI monitoring and sampling period and will be used to direct CERCLA routine groundwater monitoring activities until clarifications are discussed and agreed to following review of the RI or after a remedial action decision through a corresponding Record of Decision (ROD) is made for the OU.			
Item 5 P: 1-1 S: 1 L/¶: 11-12	General Comment: The language of this sentence is not totally accurate.  Basis/Justification: Completeness and clarity.	Change the sentence to read as follows: "This SAP supersedes the previous CERCLA groundwater SAP contained in Appendix A of the Remedial Investigation/Feasibility Study Work Plan for the 200-BP-5 Groundwater Operable Unit (DOE/RL-2007-18, Rev. 1)."			
Item 6  P: 1-3 S: 1 L/¶: 11-19	Comment: It would be helpful to group COPCs by those which exceeded the primary drinking water standard (DWS) or MTCA Method B groundwater cleanup levels.  Basis/Justification: Clarity of regulatory basis.	Add additional bullet and separate all COPC exceedances by primary drinking water standard or the MTCA Method B cleanup level.			

O/C = open or closed

**Document Title(s)/Number(s):**  
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**Document Lead/Phone #/email:** Kim Welsch (509) 372-7882 kiwe461@ecy.wa.gov

Item Page (P) Section (S) Line (L)	Comment and Basis/Justification	Modification Needed	DOE Response	Ecology Response	O/C
Item 7 P: 1-3 S: 1 L/¶: 26-32	<p>Comment: "Very slow" or "very high" terms for groundwater flow rates are vague. Provide a range of the specific groundwater flow rates that might cause COPCs to be analyzed at quarterly, semiannual, annual, biennial, or triennial frequency as described. However, the proposed language of sampling frequency does not meet Ecology expectations of applicable COPC trend analysis (e.g. Taking a sample once every two or three years does not support annual trend analysis).</p> <p>Basis/Justification: Completeness and clarity.</p>	Sampling will occur at least once a year, at a minimum for all samples. Revise bullet to provide specific information.			
Item 8 P: 1-3 and 1-19 S: 1.1 and 1.5 L: 33-34 and 8-9	<p>Comment: This first sentence to this paragraph is incorrect. This SAP will be implemented until after the RI and/or FS is completed and Ecology agrees with the path forward for sampling issues. This SAP will not necessarily wait until the associated ROD is issued before it may be modified. This first sentence is also inconsistent with page 1-19, section 1.5, lines 8-9 which states, "This SAP will direct CERCLA and AEA monitoring activities needed for the 200-BP-5 OU until a ROD is approved." Again, this SAP may change after approval of the 200-BP-5 RI and/or FS, and not wait for the ROD.</p> <p>Basis/Justification: Completeness, clarity, and accuracy.</p>	Rewrite both sections with a consistent timeframe.			
Item 9 P: 1-3 S: 1.1 L: 5-6	<p>Comment: Trending from the time period 2007 to 2013 needs to be explained.</p> <p>Basis/Justification: Statistical methods for compliance monitoring /173-340-720 WAC</p>	Provide text explaining the referenced time period in context of this SAP.			
Item 10 P:1-3 S: 1.1 L: 42-44	<p>Comment: Water level monitoring is essential for tracking the flow of groundwater and the path of the plumes. The SGW documents listed are not enforceable and the SAP for GW Surveillance Monitoring only monitors 14 of the approximately 150 wells is not sufficient.</p> <p>Basis/Justification: The water level monitoring provides good data and can be easily accomplished when the sampling is occurring at the well for very little additional cost.</p>	Change document to require water level monitoring whenever a well is being sampled.			
Item 11 P: 1-4 S: 1.1 L: 8-20	<p>Comment: As commented on in the 200-PO-1 SAP, not including wells for monitoring in this SAP because they are also monitored as part of the RCRA TSD Sites is not acceptable.</p> <p>Basis/Justification: The SAP is to justify and describe the sampling that will occur to monitor changing conditions. While it is ok to combine sampling for different</p>	Add all the necessary wells to this SAP and state that one sample will fulfill this SAP requirements and the RCRA SAP requirements			

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Washington State Department of Ecology  
Nuclear Waste Program  
Cleanup Section/ER Project

Date April 4, 2016

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Document Title(s)/Number(s):  
Groundwater Sampling and Analysis Plan for the 200-BP-5 Groundwater Operable Unit (DOE/RL-2014-33, Draft A)

Document Lead/Phone #/email: Kim Welsch (509) 372-7882 kiwe461@ecy.wa.gov

Item Page (P) Section (S) Line (L)	Comment and Basis/Justification	Modification Needed	DOE Response	Ecology Response	O/C
	purposes, it does not preclude adding these wells to this SAP and justifying the monitoring of these wells for the purpose of tracking the contaminate plumes				
Item 12 P: 1-5 S: 1.2.1 L: 22-24	<p>Comment: Is this statement based on quantitative decision information concerning characteristics of contamination in BP-5? "Only" denotes a conclusion based on evidence but what evidence.....drilling data, seismic, or some other form of detailed subsurface investigation. Even though, there are thousands of subsurface monitoring wells (active and inactive) though out the 200 East area, to definitively state that "only a few COPCs still reside in the saturated Ringold sediments from past discharges to ponds" is an expression of "soft information", but you need to better prove the point. There may be preferential pathways in which a drilling or sampling campaign did not intercept. This information would not be conclusive.</p> <p>Basis/Justification: Clarification</p>	Restate the sentence indicating probability of contamination not being in the Ringold formation at this location, i.e. spatial autocorrelation.			
Item 13 P: 1-6 S: 1.2.3 L:	<p>Comment: The bulleted list is not complete since there are other documents available containing GW data. This SAP cannot reduce the COPCs list from the Remedial Investigation/Feasibility Study Work Plan for the 200-BP-5 Groundwater Operable Unit (DOE/RL-2007-18, Rev. 1). Only after Ecology review and approve the language and logic provided in the 200-BP-5 RI may COPCs be reduced from those listed in the WP/DQO.</p> <p>Basis/Justification: Completeness and clarity.</p>	<p>Include all of the COPCs listed in the Remedial Investigation/Feasibility Study Work Plan for the 200-BP-5 Groundwater Operable Unit (DOE/RL-2007-18, Rev. 1) as listed in Table 1-4 "Master List of 200-BP-5 OU COPC" and Table 1-7 "Final List of COPC for Vadose Zone" from WMP-28945(DQO).</p> <p>In addition, include the following reports/data that provide documentation of waste site data that have/are affecting GW quality in the 200-BP-5 OU: the final Tank Closure &amp; Waste Management EIS (DOE/EIS-0391), the 200 Area Composite Analysis, 200-CW-1 OU Remedial Investigation (RI) Report (DOE/RL-2000-35), RI Report for the 200-CW-5 U Pond/Z Ditches Cooling Water Group, the 200-CW-2 S Pond and Ditches Cooling Water Group, the 200-CW-4 T Pond Ditches Cooling Water Group, and the 200-SC-1 Steam Condensate Group OU (DOE/RL-2003-11), RI Activities at Model Group 5 Large Area Ponds Waste Sites Located within the 200-CW-1 OU</p>			

**Document Title(s)/Number(s):**  
**Groundwater Sampling and Analysis Plan for the 200-BP-5 Groundwater Operable Unit (DOE/RL-2014-33, Draft A)**

**Document Lead/Phone #/email:** Kim Welsch (509) 372-7882 kiwe461@ecy.wa.gov

Item Page (P) Section (S) Line (L)	Comment and Basis/Justification	Modification Needed	DOE Response	Ecology Response	O/C
		(DOE/RL-2006-57), and any other GW data sources available to support this SAP.			
Item 14 P: 1-6 S: 1.2.3 L:	<p>Comment: There is not discussion or listing for West Lake and its contribution to the contamination the 200-BP-5 OU.</p> <p>Basis/Justification: West Lake had some significant discharges of contamination that contributed to the plumes identified in the 200-BP-5 Groundwater.</p>	Add a description/history on West Lake to the SAP.			
Item 15 P: 1-8 & 1-9 S: 1.2.3 L: Figure 1-3 & 1-4	<p>Comment: These figures provide assumed direction of groundwater flow through southern Gable Gap into B areas with directional flow arrows. The data set identified were between the years of 2011-2013. It has been noted in literature that the range and timing of seasonal water-level fluctuation may vary in different aquifers in the same geographic area, and depending on the source of recharge to the aquifers and the physical and hydraulic properties of each. In other words, two hydrographs in two different groundwater wells in the same area can show two different arrival time and water level measurement. There are no mention of the accuracy of groundwater level data over time. NWP recent compliance/inspection events clearly denoted several examples of groundwater wells being neglected due to access, mechanical and lack of timeliness.</p> <p>Basis/Justification: Clarification</p>	Based on the accumulative data sets from 2011-2013, what changes will be included in the next SAP or ASAP (Adaptive SAP based on field analytical method for a faster turn around of sampling anomalies) that reflect reduction of sampling issues and provide faster data collection to support a revised SAP or ASAP.			
Item 16 P: 1-9 S: 1.2.3 L: Figure 1-4	<p>Comment: Provide rose diagram or additional figures to depict changes in groundwater flow over time. Groundwater flow arrow (pointing west) in vicinity of 216-B-3 Pond needs to be qualified as to whether this depicts groundwater flow in an unconfined aquifer or confined aquifer.</p> <p>Basis/Justification: Proper representation of groundwater flow conditions.</p>	Add reference to 200-BP-5 test results indicating hydraulic conductivity range.			
Item 17 P: 1-11 & 6-4 S: 1.2.3 & 6 L: 8-9 & 32-36	<p>Comment: Referenced RPP-26744, <i>Hanford Soil Inventory Model</i> needs to be made available in the Administrative Record (AR) and/or available to Ecology personnel.</p> <p>Basis/Justification: Completeness and clarity.</p>	Make RPP-26744 available in the AR.			
Item 18	<p>Comment: Table 1-1 lists derived activities, concentrations, and volumes of contaminants. Please give more details on how these quantities were derived</p>	Please explain how contaminant activities/concentrations and waste volumes in			

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P: 1-12 to 1-13 Table 1-1	(presumably from the Hanford Soil Inventory Model, see Item #10 above). Also, clarify if this table is intended to include all waste sites affecting 200-BP-5 groundwater.  Basis: Data derivation methods should be provided.	Table 1-1 were derived (presumably with the Hanford Soil Inventory Model) and how complete this table is in terms of waste sites affecting 200-BP-5 groundwater.			
Item 19 P: 1-13 S: 1.2.3 L: Table 1-1	Comment: Based on the limited list of COPCs (Tritium and Iodine-129) associated with 216-B-3 Pond, is it USDOE's intent to agree to regulation of all other COPCs for 216-B-3 Pond under WAC 173-303?  Basis/Justification: Regulatory process clarity.	Identify how COPCs from 216-B-3 Pond are expected to be regulated.			
Item 20 P: 1-13 S: 1.2.3 L: Table 1-1	Comment: Explain why 216-B-63 Trench is not included in Table 1-1. Why are the radionuclides identified in RHO-CD-673 (p. 66 of pdf in Administrative Record) not considered as COPCs?  Basis/Justification: Regulatory process clarity.	Re-evaluate COPCs list for 216-B-63 Trench and update text accordingly.			
Item 21 P: 1-15 S: 1.2.4.1 L: 28	Comment: DOE/RL-2011-01 (add Revision 0) is the 2010 Site Groundwater Monitoring Report. Use the most recent Site Groundwater Monitoring Report.  Basis/Justification: Regulatory process clarity.	Revise to most recent Site Groundwater Monitoring Report			
Item 22 P: 1-15 to 1-18 S: subsections under 1.2.4 L:	Comment: Most of these subsections reference DOE/RL-2011-01, <i>Hanford Site GW Monitoring Report for 2010</i> . This report would report groundwater movement moving north through Gable Gap, which it currently does not. Reflections on nitrate, iodine-129, Tech-99, uranium, etc. must be made referencing more recent monitoring where the general GW movement has switched to moving in the general south east direct and NOT through the Gable Gap.  Basis/Justification: Completeness, clarity, and accuracy.	Rewrite this whole section with updated monitoring information.			
Item 23 P: 1-15 & 1-19 & A-2-A-3 S: 1.2.4 & 1.4 & A1.5 L/¶: Table 1-3, and Table A-1	Comment: The contaminant list in this SAP is too short. A number of contaminants that exceed levels of concern have been eliminated from the COPC list, and some wells with contaminants that exceed levels of concern are not going to be monitored. This SAP cannot reduce the COPCs list from the <i>Remedial Investigation/Feasibility Study Work Plan for the 200-BP-5 Groundwater Operable Unit</i> (DOE/RL-2007-18, Rev. 1). Only after reviewing and approving the language and logic provided in the 200-BP-5 RI may COPCs be reduced from those listed in the WP.	Include all of the COPCs listed in the <i>Remedial Investigation/Feasibility Study Work Plan for the 200-BP-5 Groundwater Operable Unit</i> (DOE/RL-2007-18, Rev. 1). Before eliminating contaminants from monitoring, evaluate risk and hazard on a well-by-well basis, and retain contaminants that contribute greater than 1% to risk and/or hazard, and those that exceed action levels. Monitor the associated contaminants and			

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Document Lead/Phone #/email: Kim Welsch (509) 372-7882 kiwe461@ecy.wa.gov

Item Page (P) Section (S) Line (L)	Comment and Basis/Justification	Modification Needed	DOE Response	Ecology Response	O/C
	Basis/Justification: CERCLA process and clarity. Example wells that this SAP describes will not be monitored are 299-E33-57A, -205, -265, -266, -334, -343, -4; 699-62-43F, and 699-70-68.	wells, in addition to those already identified by using action levels.			
Item 24 P: 1-16 S: 1.2.4.3 L: Figure 1-8	Comment: The <i>Hanford Site GW Monitoring Report for 2010</i> (DOE/RL-2011-01, Rev 0), figure in the executive summary (p. xxv) depicts a much greater plume extent for tritium and Iodine-129. Explain why Figure 1-8 depicts a much smaller lateral extent for these constituents. Verify that the plumes depicted in Figure 1-8 are accurate.  Basis/Justification: Regulatory process clarity.	Provide requested information			
Item 25 P: 1-17 S: 1.2.4.8 L: 39-43	Comment: Identify if all chromium in groundwater in the 200-BP-5 area is to be considered hexavalent chromium.  Basis/Justification: COPC identification.	Confirm chromium species for 200-BP-5.			
Item 26 P: 1-18 S: 1.2.4.11 L:21-25	The text states the waste associated with the hydrofluoric acid was neutralized before sending to the ground. Identify the neutralization chemicals that were used to counteract the hydrofluoric acid, and explain if those chemicals have been taken into account during the COPC development process.  Basis/Justification: Completeness and clarity.	Identify the neutralization chemicals that were used to counteract the hydrofluoric acid, and explain if those chemicals have been taken into account during the COPC development process.			
Item 27 P: 1-18 S: 1.3 L: 37-39	Comment: This sentence starts out with, "The objective of this DQO process is to define...." Never has DOE mentioned to Ecology that review of this SAP includes a DQO process. Further, this document does not clearly state that this SAP would contain a DQO to vary from WMP-28945. Ecology should be engaged from the beginning in any DQO proposal where Ecology is the Lead Regulatory Agency of the affected OU.  Basis/Justification: Completeness, clarity, and accuracy.	Delete discussion of this SAP containing a DQO or modifying from the existing DQO (WMP-28945).			
Item 28 P: 1-19 S: 1.5 L: 8-9	Comment: As stated "This SAP will direct CERCLA and AEA monitoring activities needed for the 200-BP-5 OU until the ROD is approved." Does DOE/RL-2014-33, Draft A represent an "adaptive" SAP (based on field analytical method for a faster turn around of sampling anomalies)? And how will it be translated throughout the project schedule?  Basis/Justification: Clarification and accuracy.	Clarify project schedule per comment.			
Item 29 P: 1-19 S:	Comment: Monitoring of BP-5 wells should include all of the contaminants in Table 1-3 of this document plus those in Table 6-14 of the BP-5 RI, and those listed below. The contaminants that should be monitored are ICP-metals, VOCs (which would	Monitor for ICP-metals, VOCs, and hexavalent chromium in the areas where they have been			

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Table 1-3; Appendix A, General	<p>include TCE, PCE, and carbon tetrachloride), hexavalent chromium, and selected radionuclides.</p> <p>Basis/Justification: Ecology has examined the data set provided for BP-5, covering well sampling results from 2008-2013, and has determined a number of wells and associated contaminants that need additional consideration and further monitoring. These wells and contaminants include:</p> <p><u>Well 299-E27-14</u> Associated Unit: WMA C Carcinogens: Arsenic, I-129, Tc-99, tritium Hazards: Arsenic, cobalt, copper, cyanide, nitrate (N), uranium, vanadium</p> <p><u>Well 299-E27-15</u> Associated Unit: WMA C (just outside) Carcinogens: Arsenic, I-129, Tc-99, tritium, methylene chloride Hazards: Arsenic, antimony, selenium, nitrate (N), vanadium, uranium, nickel, methylene chloride</p> <p><u>Well 299-E27-155</u> Associated Unit: WMA C (just outside) Carcinogens: I-129, Pu-239/240, Tc-99, tritium Hazards: Cyanide, hexavalent chromium, nitrate (N), selenium, vanadium</p> <p><u>Well 299-E27-7</u> Associated Unit: WMA C (just outside) Carcinogens: I-129, Tc-99, tritium Hazards: Cyanide, nitrate (N), vanadium</p> <p><u>Well 299-E28-23 and E28-25</u> Associated Unit: 216-B-5 Reverse Well and upgradient (?) from 216-B-59B Carcinogens: Am-241, Cs-137, I-129, Pu-239/240, Pu-238, Sr-90, uranium isotopes, tritium Hazards: Nitrate (N), uranium</p> <p><u>Well 299-E28-24</u> Associated Unit: 216-B-5 Reverse Well and upgradient (?) from 216-B-59B Carcinogens: Cs-137, I-129, Pu-239/240, Sr-90, uranium isotopes, tritium Hazards: Fluoride, nitrate (N), uranium</p>	observed in the past, and include them in risk calculations.			

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	<p><u>Well 299-E28-28</u> Associated Unit: 218-E-10 Carcinogens: Tc-99, tritium Hazards: Cyanide, tetrachlorodibenzo-p-dioxins, nitrate (N)</p> <p><u>Well 299-E33-15</u> Associated Unit: B-BX-BY Carcinogens: Tc-99, tritium, I-129, Co-60 Hazards: Antimony, cyanide, chromium, hexavalent chromium, nitrate (N), strontium, uranium, vanadium</p> <p><u>Well 299-E33-16, E33-17, E33-18, E33-1A</u> Associated Unit: B-BX-BY Carcinogens: Arsenic (E33-16), Co-60, I-129, Tc-99, tritium Hazards: Antimony (E33-16, -17), arsenic (E33-16), chromium, cyanide, hexavalent chromium, nitrate (N), strontium, uranium, zinc (E33-17, -1A), selenium (E33-18), cobalt (E33-1A)</p> <p><u>Well 299-E33-20</u> Associated Unit: B-BX-BY Carcinogens: Co-60, I-129, Tc-99, tritium Hazards: Chromium, cobalt, cyanide, hexavalent chromium, manganese, nitrate (N), strontium, uranium, zinc</p> <p><u>Well 299-E33-205</u> Associated Unit: B-BX-BY Carcinogens: Am-241, C-14, Tc-99, tritium Hazards: Cyanide, hexavalent chromium, nitrate, uranium</p> <p><u>Well 299-E33-265, E33-266</u> Associated Unit: 216-E-10 (?) Carcinogens: I-129, Tc-99, tritium Hazards: Cyanide, nitrate (N), tetrachlorodibenzo-p-dioxins, vanadium, uranium</p> <p><u>Well 299-E33-33</u> Associated Unit: B-BX-BY Carcinogens: Arsenic, I-129, Tc-99 Hazards: Arsenic, cyanide, nitrate (N), vanadium</p> <p><u>Well 299-E33-334</u></p>				

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	<p>Associated Unit: B-BX-BY Carcinogens: N-nitrosodi-n-dipropylamine Tc-99, tritium, I-129 Hazards: Cobalt, cyanide, nitrate (N), uranium</p> <p><u>Well 299-E33-337, E33-338, E33-339</u> Associated Unit: B-BX-BY Carcinogens: Tc-99, tritium, uranium (high – convert to isotopes) Hazards: Chromium, cobalt, copper, cyanide, hexavalent chromium, manganese, nickel, nitrate (N), uranium, vanadium</p> <p><u>Well 299-E33-34</u> Associated Unit: B-BX-BY, 200-E-21 Carcinogens: Co-60, I-129, Tc-99, tritium Hazards: Cyanide, hexavalent chromium, nitrate (N), strontium, uranium, vanadium</p> <p><u>Well 299-E33-341</u> Associated Unit: B-BX-BY Carcinogens: Am-241, C-14, Co-60, I-129, Pu-239/240, Tc-99, Sr-90, tritium Hazards: Chromium, cyanide, hexavalent chromium, mercury, nitrate (N), uranium</p> <p><u>Well 299-E33-342</u> Associated Unit: B-BX-BY Carcinogens: Am-241, C-14, Co-60, I-129, Pu-239/240, Tc-99, Sr-90, tritium Hazards: Antimony, carbon tetrachloride, cyanide, hexavalent chromium, nitrate (N), uranium</p> <p><u>Well 299-E33-343</u> Associated Unit: B-BX-BY Carcinogens: Am-241, C-14, I-129, Np-237, Tc-99, Sr-90, Th-230, tritium, U isotopes Hazards: Methylene chloride, carbon tetrachloride, cyanide, hexavalent chromium, nitrate (N), uranium</p> <p><u>Well 299-E33-345</u> Associated Unit: B-BX-BY Carcinogens: Am-241, Sb-125, C-14, I-129, Pu-239/240, Sr-90, Tc-99, Th-230, tritium, uranium (high – convert to isotopes) Hazards: Chromium, hexavalent chromium, nickel, nitrate (N), uranium</p> <p><u>Well 299-E33-38</u> Associated Unit: B-BX-BY</p>				

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	<p>Carcinogens: Arsenic, I-129, Tc-99, tritium, uranium (high – convert to isotopes) Hazards: Antimony, arsenic, chromium, cobalt, cyanide, hexavalent chromium, mercury, nitrate, selenium, uranium</p> <p><u>Well 299-E33-4</u> Associated Unit: B-BX-BY Carcinogens: Co-60, Tc-99, tritium Hazards: Barium, cobalt, cyanide, manganese, nitrate (N), strontium</p> <p><u>Well 299-E33-42</u> Associated Unit: B-BX-BY Carcinogens: I-129, Tc-99, tritium Hazards: Cyanide, hexavalent chromium, nitrate (N), n-nitrosodi-n-dipropylamine, selenium, silver, uranium</p> <p><u>Well 299-E33-44</u> Associated Unit: B-BX-BY Carcinogens: Arsenic, bis(2-ethylhexyl)phthalate, Co-60, I-129, Tc-99, tritium, uranium (high – convert to isotopes) Hazards: Arsenic, bis(2-ethylhexyl)phthalate, chromate, cyanide, hexavalent chromium, molybdenum, nitrate (N), selenium, uranium</p> <p><u>Well 299-E33-47</u> Associated Unit: B-BX-BY Carcinogens: Arsenic, Co-60, I-129, Tc-99, tritium, uranium Hazards: Arsenic, barium, chromium, cyanide, hexavalent chromium, mercury, nitrate (N), selenium, strontium</p> <p><u>Well 299-E33-48</u> Associated Unit: B-BX-BY Carcinogens: I-129, Tc-99, tritium Hazards: Chromium, cyanide, nickel, nitrate (N), silver, uranium, vanadium</p> <p><u>Well 699-49-57A</u> Associated Unit: BY Cribs and B-BX-BY Carcinogens: Co-60, I-129, Tc-99, tritium, Sr-90 Hazards: Cyanide, nitrate (N), uranium, vanadium</p> <p><u>Well 699-50-56</u></p>				

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	<p>Associated Unit: North of 200-East Carcinogens: Arsenic, Pu-239/240, Tc-99, Sr-90, tritium Hazards: Arsenic, cyanide, hexavalent chromium, nitrate (N), vanadium</p> <p><u>Well 699-50-59</u> Associated Unit: Northwest of 200-East Carcinogens: I-129, Tc-99, tritium Hazards: Cyanide, nitrate (N), uranium, vanadium</p> <p><u>Well 699-52-55</u> Associated Unit: West of Gable Mountain Pond Carcinogens: Am-241, carbon tetrachloride, Np-237, Tc-99, thorium isotopes, tritium Hazards: Cadmium, chromium, cobalt, copper, cyanide, iron, manganese, zinc</p> <p><u>Well 699-53-55B, C</u> Associated Unit: West of Gable Mountain Pond Carcinogens: Co-60, Tc-99, tritium Hazards: Cyanide, nitrate (N), vanadium</p> <p><u>Well 699-54-45A</u> Associated Unit: Gable Mountain Pond Carcinogens: Carbon tetrachloride Hazards: Acrolein, cobalt, iron, zinc</p> <p><u>Well 699-55-57</u> Associated Unit: West of Gable Mountain Pond Carcinogens: Tc-99, tritium Hazards: Cyanide</p> <p><u>Well 699-62-43F</u> Associated Unit: North of Gable Mountain Carcinogens: Arsenic, I-129, Tc-99, tritium Hazards: Arsenic, hexavalent chromium, nitrate (N)</p> <p><u>Well 699-65-50</u> Associated Unit: North of Gable Mountain, near dunes Carcinogens: Am-241, arsenic, I-129, Tc-99, tritium Hazards: Arsenic, hexavalent chromium, nitrate (N)</p>				

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	Well 699-70-68 Associated Unit: South of 100-K Carcinogens: Am-241, trichloroethylene, Tc-99, tritium Hazards: Nitrate (N)				
Item 30 P: 2-1 S: 2.1.1.1 L/¶: 30-34	Comment: This section/paragraph needs a rewrite. Spell out LRA once, and mention Ecology as the LRA. From that point forward, mention Ecology and not a LRA. In addition, this does not explain that Ecology is the 'LRA' for the OU, but USEPA signs off on the SAP with Ecology's concurrence.  Basis/Justification: Completeness, clarity, and accuracy.	Rewrite section.			
Item 31 P: 2-4 S: 2.1.1.11 L:27-35	The text lists that the analytical laboratories are responsible for the following actions: <ul style="list-style-type: none"> <li>• Analyzing samples in accordance with established methods</li> <li>• Providing data packages containing analytical and QC results</li> <li>• Providing explanations in response to resolution of analytical issues</li> <li>• Meeting requirements of this plan</li> <li>• Being on the Mission Support Alliance Evaluated Supplier List</li> <li>• Being accredited by Ecology for the analyses performed for the Soil and Groundwater Remediation Project (S&amp;GRP)</li> </ul> <p>In addition to the listed actions, the following should also be included:</p> <ul style="list-style-type: none"> <li>• Being evaluated under the DOE Consolidated Audit Program (DOECAP) and the Hanford Analytical Services Requirements Document (HASQARD) (DOE/RL-96-68).</li> </ul> <p>Basis/Justification: The HASQARD serves as the quality basis for all sampling and field/laboratory analytical services provided to support the Hanford Site environmental clean-up mission. The HASQARD establishes quality requirements in response to DOE Order 414.1C or 414.1D, "Quality Assurance" (as applicable). The HASQARD satisfies the requirements from the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement [TPA]) Article XXXI and TPA Action Plan Sections 6.5 and 7.8.</p>	Include that the analytical laboratories must be evaluated under the DOE Consolidated Audit Program and the Hanford Analytical Services Requirements Document (DOE/RL-96-68).			
Item 32 P: 2-4 S: 2.1.1.10 L:8-26	The section is intended to state that the SMR organization is responsible for the activities that have been specified. Section 2.2.1 lists that the SMR can approve changes to analytical methods. This task is missing from this section. Please address the discrepancy.	If accurate, include that the SMR can approve changes to analytical methods, per the criteria listed in Section 2.2.1 Analytical Methods Requirements.			

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	Basis/Justification: Completeness and clarity.				
Item 33 P: 2-5 S: 2.1.1.12 L: 2-9	Comment: Explain how samples containing radionuclides are disposed.  Basis/Justification: Specificity of assigned tasks.	See comment			
Item 34 P: 2-5 S: 2.1.1.12 L: 10-30	Comment: These sections define Field Sampling Organization and Well Maintenance as roles but without details of those roles. If these roles are the same as surveillance monitoring then the accuracy of data from groundwater monitoring frequency and timing is based in these roles. The rate at which the water level changes (directions and velocities) is primary compared to the cost associated with taking the water-level measurements.  Basis/Justification: Clarity and accuracy.	These sections should reflect details of the water-level monitoring program.			
Item 35 P: 2-5 S: 2.1.1.13 & 2.1.1.14 L: 27-30	Comment: Identify if the well maintenance manager ensure wells that require replacement are submitted to the project manager for inclusion on the M-24 TPA milestone. Provide typical well maintenance activities.  Basis/Justification: Specificity of assigned tasks.	See comment			
Item 36 P: 2-9 S: 2.1.3 L: 3	Comment: Provide if radiological worker I, II, both, or something else.  Basis/Justification: Verification of level of training.	See comment			
Item 37 P: 2-9 and 2-10 S: 2.1.4 L/¶: 33-37 and Table 2-2	Comment: The contractor OU Project Manager has <u>no</u> authority to change a SAP. Suggested changes are discussed between DOE and Ecology for this OU, with Ecology giving approval before USEPA signature approval. SAPS must follow the approved WP, which is also approved by Ecology. Table 2-2 needs to reflect to correct relationship between an approved SAP with the associated WP, and the authorities approving and concurring with changes to this SAP.  Basis/Justification: Completeness, clarity, and accuracy.	Rewrite this section and Table 2-2.			
Item 38 P: 2-11 S: 2.1.4 L: 8	Comment: Provide if the "Global positioning system data" includes well survey data. If not, add bullet indicating survey data for wells are maintained.  Basis/Justification: Including management of all necessary data.	See comment			

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Item 39 P: 2-11 S: 2.1.4 L:25-29	<p>The text states the laboratory is responsible for maintaining, and having available upon request the following items:</p> <ul style="list-style-type: none"> <li>• Analytical logbooks</li> <li>• Raw data and QC sample records</li> <li>• Standard reference material and/or proficiency test sample data</li> <li>• Instrument calibration information</li> </ul> <p>Also include the following in the list of items:</p> <ul style="list-style-type: none"> <li>• Training records for employees, as they relate to analytical methods. (This will ensure that personnel are qualified to perform the specific analyses.)</li> <li>• Laboratory State Accreditation records.</li> <li>• Laboratory audit records.</li> </ul> <p>Basis/Justification: The regulatory basis for requiring the requested items for laboratories performing analytical work for the Hanford Site is provided in DOE/RL-96-68, Hanford Analytical Services Quality Assurance Requirements Document. The HASQARD serves as the quality basis for all sampling and field/laboratory analytical services provided to support the Hanford Site environmental clean-up mission. Volume 1 includes guidance related to laboratory personnel training records (Section 3.0), laboratory accreditation records (Section 12.0) and laboratory audit records (Sections 5.5, 10.0 and 10.5).</p> <p>The requirement to comply with DOE/RL-96-68 is included in DOE/RL and DOE/ORP contracts with their contracted entities.</p>	<p>Also include the following in the list of items:</p> <ul style="list-style-type: none"> <li>• Training records for employees, as they relate to analytical methods. (This will ensure that personnel are qualified to perform the specific analyses.)</li> <li>• Laboratory State Accreditation records.</li> <li>• Laboratory audit records.</li> </ul>			
Item 40 P: 2-13 S: Table 2-3 L:	<p>Comment: Why is the MCL presented for arsenic 11.8 µg/L when the drinking water standard is 10 µg/L and the MTCA Method A cleanup level is 5.0 µg/L? Why is method 6010 used for arsenic, when method 6020 ensures that the PQL is less than all current regulatory cleanup levels?</p> <p>Basis/Justification: Including management of all necessary data.</p>	Provide requested information			
Item 41 P: 2-13 Table 2-3	<p>Comment: Similar to comment(s) made for the 200-PO-1 OU SAP, Rev 0; Re uranium (U) in Table 2-3, the MTCA Method B CUL for groundwater would default to Hanford groundwater background (9.9 µg/L=90<sup>th</sup> percentile value, DOE/RL-96-61, Rev 0),</p>	Please note that the MCL for U in Table 2-3 (30 µg/L) exceeds the MTCA Method B groundwater CUL for Hanford (9.6 µg/L) which, in turn, would default to Hanford background (9.9 µg/L).			

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	because the MCL (30 µg/L) needs to be adjusted downward to HQ=1 (9.6 µg/L) per WAC 173-340-720[7][b]. This will alter the required quantitation limit too.  Basis: The MTCA Method B noncancer CUL for U in groundwater (9.6 µg/L, corresponding to HQ=1) is derived with an oral RfD=6E-4 mg/kg-d (EPA, Office of Groundwater and Drinking Water) per USEPA memo from Marc Stifelman (dated 8/7/2008).				
Item 42 P: 2-13 S: 2.2.3 L:Table 2-3	The table is missing the MCL for hexavalent chromium. Please include this value.  Basis/Justification: Completeness and clarity.	Include the MCL value for hexavalent chromium.			
Item 43 P: 2-13 Table 2-3	Comment: Similar to comment(s) made for the 200-PO-1 OU SAP, Rev 0; Re Table 2-3, in addition to MCLs, other regulatory criteria (both human and eco) apply, because groundwater ultimately discharges into surface water (Columbia River). For human health, MTCA Method B surface water CULs (WAC 173-340-720[4][b][ii], -720[8][d], and -730[6][b]) should be met, along with criteria specified in the Clean Water Act and National Toxics Rule (WAC 173-340-730[3][b]) for nonrads. For ecological receptors, state surface water quality standards (WAC 173-201A) and criteria specified in the Clean Water Act and National Toxics Rule (WAC 173-340-730[3][b]) for nonrads apply, along with USDOE biota concentration guides (BCGs) for rads in water and sediment (DOE-STD-1153-2002).  Basis: Regulatory criteria for surface water and sediment may apply, because groundwater discharges into surface water.	Re Table 2-3, include surface water and sediment criteria for human health and eco receptors (for rads and nonrads), because groundwater discharges into the Columbia River.			
Item 44 P: 2-16 S: 2.2.3.2 L:19-22	The text states data from samples analyzed outside the holding times are flagged in the HEIS database with an "H". It should be noted that per EPA guidance for laboratory data validation, if holding times are exceeded the reviewer may determine the results to be unusable, and qualified as Rejected.  Basis/Justification: EPA guidance for data validation.	Include that per EPA guidance for laboratory data validation, if holding times are exceeded the reviewer may determine the results unusable, and qualified as Rejected.			
Item 45 P: 2-16 S: 2.2.3.2 L:Table 2-5	The table has referenced an "f" footnote for RPD, however there is not an "f" footnote in the table footer.  Basis/Justification: Completeness and clarity.	Provide the missing "f" footnote in the table footer.			
Item 46 P: 2-18	Comment: Provide footnote that pH is also collected in the field, because pH automatically becomes out of hold time if analyzed at the laboratory.	See comment			

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S: 2.2.3.2 L: Table 2-6	Basis/Justification: Verify that pH is measured in the field.				
Item 47 P: 2-18 to 2-19 Table 2-6	Comment: Re "Holding Time" for rads in Table 2-6, footnote "c" and "NA" appear to be in conflict.  Basis: Tables should be internally consistent.	Re "Holding Time" for rads in Table 2-6, clarify a potential conflict between footnote "c" and "NA."			
Item 48 P: 2-20 S: 2.2.9 L:27	The text states that laboratory errors are reported to the SMR organization on a routine basis. Please provide a greater degree of specificity on this issue. It is important for laboratory errors to be reported immediately as they are encountered. This is especially necessary if the errors have impacted the analytical data.  Basis/Justification: Completeness and clarity.	Provide a greater degree of specificity on the reporting of laboratory errors to the SMR organization.			
Item 49 P: 3-1 S: 3.1 L/¶: 12	Comment: It is stated, "These objectives were accomplished by review of COPCs derived during the past three annual reports." This contrasts with most of the references of subsections under 1.2.4 that only reference the 2010 annual report, not the 'past three annual reports'. In addition, how in the world can the second bullet be true when proposed sampling at some locations occur only once every two or three years? Plume migration trend analysis cannot be made over three years when there is only one sample taken over that time period. Further, not all of WMA C sampling requirements (third bullet) are met for retrieval, as those discussions are still occurring.  Basis/Justification: Completeness, clarity, and accuracy.	Rewrite this section with accurate and agreed upon approaches and methodology with Ecology.			
Item 50 P: 3-1 S: 3.1 L: 12-16	Comment: Provide references to the document(s) or identify a database(s) that has cumulative data sets of all groundwater levels and all analytical results on a per well basis. Reviewing data from 2007 to 2013 only does not take effects of historical activities into account (e.g., groundwater mounding caused by discharge to 216-B-3 Pond).  Basis/Justification: Ability to access data in one location.	Provide requested information			
Item 51 P: 3-1 S: 3.1 L: 12-16	Comment: In the vicinity of 216-B-3 Pond, wells are all screened in the confined aquifer. This SAP does not address sampling in the confined aquifer. Address sampling in the vicinity of 216-B-3 Pond confined aquifer and address if there is perched water sitting atop the Ringold Mud.  Basis/Justification: Determining vertical extent of contamination.	See comment			

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Item 52 P: 3-1 S: 3.2 L: 36-37	<p>Comment: Expound upon how RCRA sampling events will be coordinated with the SMILE process with CERCLA sampling events. In order to coordinate sampling events, dangerous waste sampling requirements have to be considered.</p> <p>Dangerous waste sampling data from current interim status units has to be constantly statistically evaluated per 40 CFR 265, Subpart F, and groundwater sampling of wells on a per dangerous waste management unit have not always been close enough together. Explain how these groundwater monitoring systems are integrated to ensure that the requirements per 40 CFR 265, Subpart F and WAC 173-303 are being met.</p> <p>Basis/Justification: Determining vertical extent of contamination.</p>	See comment			
Item 53 P: 3-1 S: 3.2 L: 25-28	<p>Comment: How do flow rates identified by COPC migration compare to calculated groundwater gradients?</p> <p>Basis/Justification: Determining lateral extent of contamination.</p>	See comment			
Item 54 P: 3-1 S: 3.2 L: Table 3-3	<p>Comment: Identify if any wells which are not WAC 173-160 compliant be added to the M-24 milestone.</p> <p>Basis/Justification: Ensuring proper well construction for data collection.</p>	See comment			
Item 55 P: 3-1 S: 3.2 L: Table 3-3	<p>Comment: Wells 299-E28-23, 299-E28-24, and 299-E28-25 were all drilled in 1979 or 1980. Well 699-42-40A, drilled in 1981, and well 299-E27-7, drilled in 1982, are not WAC 173-160 compliant. Demonstrate how the former three wells are WAC 173-160 compliant.</p> <p>Basis/Justification: Verify wells are compliant with WAC 173-160.</p>	See comment			
Item 56 P: 3-1 S: 3.2 L: Figure 3-4	<p>Comment: Identify additional wells or propose new well locations in order to define the lateral extent of the nitrate plume, especially to the east, south, and southeast.</p> <p>Basis/Justification: Define the extent of contamination in groundwater.</p>	See comment			
Item 57 P: 3-2 S: 3.2.1 L: 1	<p>Comment: "Appendix A Tables A3-1 through A3-14...." should read "Appendix A Tables A-3 through A-15...."</p>	"Appendix A Tables A3-1 through A3-14...." should read "Appendix A Tables A-3 through A-15...."			
Item 58 P: 3-17	<p>Comment:</p>	See comment			

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S: 3.2 L: Figure 3-6	<p>1) Iodine-129 plume crosses unconfined and confined aquifer conditions in the vicinity of 216-B-3 Pond. DOE/RL-2008-59, Rev. 0 and Rev. 1 indicate groundwater contamination would be present in the confined aquifer beneath the Ringold Mud and not on top of the Ringold Mud. Determine the distribution of Iodine-129.</p> <p>2) Iodine-129 plume, as depicted on Figure 3-6, also does not appear to be delineated. Identify proposed wells to delineate the horizontal extent of the Iodine-129 plume in groundwater.</p> <p>3) Well 699-42-40A, as depicted on figure 3-6, is a downgradient well of the Iodine-129 plume. This well needs to be sampled more frequently than every other year.</p> <p>Basis/Justification: Define the extent of contamination in groundwater.</p>				
Item 59 P: 3-18 S: 3.2 L: Figure 3-7	<p>Comment: Identify additional wells or proposed well locations in order to define the lateral extent of the technetium-99 plume, especially to the east, south, and southeast.</p> <p>Basis/Justification: Define the extent of contamination in groundwater.</p>	See comment			
Item 60 P: 3-22 S: 3.2 L: Figure 3-11	<p>Comment:</p> <p>1) Strontium-90 groundwater plume to the southwest of Gable Mountain appears to be undefined. Identify additional wells or propose new wells to delineate this plume laterally.</p> <p>2) Should "Encrouching" be "Encroaching" in the legend?</p> <p>Basis/Justification: Define the extent of contamination in groundwater.</p>	Provide requested information.			
Item 61 P: 3-23 S: 3.2 L: Figure 3-12	<p>Comment:</p> <p>1) Tritium appears to be undefined to the southeast and south. Based on the possibility the tritium plume has already reached the Columbia River and threatens the City of Richland drinking water well field, identify what additional well data or propose new wells to better define the plume laterally and vertically.</p> <p>2) Tritium plume is depicted in the vicinity of 216-B-3 Pond above the Ringold Mud. Is the tritium plume in the vicinity of 216-B-3 Pond only in the confined aquifer? Also in perched water above the Ringold Mud?</p> <p>Basis/Justification: Define the extent of contamination in groundwater.</p>	Provide requested information.			
Item 62 P: 3-24 S: 3.2	<p>Comment: "Encrouching" versus "Encroaching" in legend?</p> <p>Basis/Justification: Editorial.</p>	Revise legend as needed			

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L: Figure 3-13					
Item 63 P: 3-28 S: 3.2 L: Figure 3-17	<p>Comment: One well is depicted, not a well network. Identify additional wells to be sampled or proposed, or revise figure caption if only one well is to be sampled. The labels for 200-BP-5 and 200-PO-1 are incomplete.</p> <p>Basis/Justification: Define the extent of contamination in groundwater.</p>	See comment			
Item 64 P: 3-30 S: 3.3 L:16-17	<p>The text states that samples may require filtering in the field, as noted on the chain-of-custody forms. A joint letter written by the Environmental Protection Agency (EPA) and the Department of Ecology directly addressed the use of filtered samples for groundwater monitoring well at the Hanford Site. Specifically, "...groundwater samples should not be field-filtered unless the turbidity exceeds 5 NTUs. Field-filtering under any circumstance must be specifically requested, with basis provided, and approved by Ecology or EPA in work plans."</p> <p>Provide the basis for the proposal to filter the groundwater samples that are not exceeding a turbidity level of 5 NTUs.</p> <p>Basis/Justification: Direction from Ecology and EPA.</p>	Provide the basis for the proposal to filter the groundwater samples that are not exceeding a turbidity level of 5 NTUs			
Item 65 P: 3-30 S: 3.3 L:25-27	<p>The text states that exceeding required holding times could result in changes in constituent concentrations due to volatilization, decomposition, or other chemical alterations. It should be noted that per EPA guidance for laboratory data validation, if holding times are exceeded the reviewer may determine the results to be unusable, and qualified as Rejected.</p> <p>Basis/Justification: EPA guidance for data validation.</p>	Include that per EPA guidance for laboratory data validation, if holding times are exceeded the reviewer may determine the results unusable, and qualified as Rejected.			
Item 66 P: 3-30 S: 3.3.1 L: 30-39	<p>Comment: Provide specific detail regarding how decontamination prevents cross-contamination.</p> <p>Basis/Justification: Verifying field procedures are sufficient for stated goals.</p>	Provide requested information.			
Item 67 P: 3-30 S: 3.3 L:	<p>Comment: The majority of the sampling methodology focuses on what happens between collection and receipt of analytical results. The following questions regarding the actual groundwater sampling need to be addressed:</p>	Provide requested information.			

O/C = open or closed

Document Title(s)/Number(s):  
Groundwater Sampling and Analysis Plan for the 200-BP-5 Groundwater Operable Unit (DOE/RL-2014-33, Draft A)

Document Lead/Phone #/email: Kim Welsch (509) 372-7882 kiwe461@ecy.wa.gov

Item Page (P) Section (S) Line (L)	Comment and Basis/Justification	Modification Needed	DOE Response	Ecology Response	O/C
	<p>1) At each well, what type of pump is used? 2) In what interval of the monitoring well screen is the intake set for each pump? Why? 3) What is the flow rate of sampling? Is the flow rate of sampling the same for each analyte, or is the sampling flow rate varied during sampling? 4) In what order are analytes collected?</p> <p>If this information is supposed to be in Appendix A (and/or?) B, reference and revise the applicable appendices to answer these questions.</p> <p>Basis/Justification: Verifying field procedures collect valid data.</p>				
<p>Item 68 P: 4-1 S: 4 L: 2-8</p>	<p>Comment: Provide additional detail of how purged groundwater is captured at the time of sampling. Provide additional detail how waste will be managed at wells that are being sampled for RCRA and CERCLA data collection purposes. Ecology's opinion is that groundwater purged for data collected to satisfy 40 CFR 265, Subpart F and WAC 173-303, should be managed under these regulations.</p> <p>Basis/Justification: Regulatory clarity.</p>	<p>Provide requested information.</p>			
<p>Item 69 P: A-1 S: A1.2 L:</p>	<p>Comment: All assumptions for analyzing the data associate with this SAP should be clearly stated.</p> <p>Basis/Justification: Statistical methods for compliance monitoring /173-340-720 WAC</p>	<p>State all applicable assumptions for analyzing the mentioned data.</p>			
<p>Item 70 P: A-1 S: A1.2 L/¶: 34-35</p>	<p>Comment: The document states "Groundwater well results with elevated metals (chromium, cobalt, iron, manganese, nickel, and zinc) are considered associated with well screen corrosion and are not monitored by this SAP." This assumption may not be true.</p> <p>Basis/Justification: Assumptions should not exclude contaminants without supporting data. There are many wells with these constituents that were used in Hanford processes. It is DOE's responsibility to keep well conditions within acceptable standards. RCRA wells are to be maintained per 8C RCRA permit condition II.F.3. Other wells must be maintained per WAC 173-160-430 which states in part, "The casing may not affect or interfere with the chemical, physical, radiological, or biological constituents of interest."</p>	<p>Elevated metals should be evaluated as groundwater COPCs. Continue to monitor for metals (including those listed in the quoted text) at wells where they have been detected. If well screens are corroding that badly they should be replaced.</p> <p>Further, this SAP is not the place to justify possible dropping of COPCs. Acceptable evidence to explain the rationale for eliminating these metals/COPCs must be made in the 200-BP-5 RI, not in this SAP.</p>			

**Review Comment Record**

**Washington State Department of Ecology  
Nuclear Waste Program  
Cleanup Section/ER Project**

Date **April 4, 2016**

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**Document Title(s)/Number(s):  
Groundwater Sampling and Analysis Plan for the 200-BP-5 Groundwater Operable Unit (DOE/RL-2014-33, Draft A)**

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Item Page (P) Section (S) Line (L)	Comment and Basis/Justification	Modification Needed	DOE Response	Ecology Response	O/C
Item 71 P: A-3 Table A-1	Comment: The WAC (MTCA Method B) CUL for U would default to Hanford background (9.9 µg/L).  Basis: Assumptions should not exclude contaminants without supporting data.	The WAC (MTCA Method B) CUL for U would default to Hanford background (9.9 µg/L).			
Item 72 P: A-5 S: A2.3.2 L/¶: 31-32 and 39-41	Comment: The text states “Analyses showing sharply increasing concentrations for previous measurements would initiate a change from biennial sampling to a shorter frequency...” A definition is needed for ‘sharply increasing.’  Basis/Justification: The criteria for use of a shorter frequency appears to be undefined.	Include a definition for ‘sharply increasing,’ and what that means in the context of this SAP. If there is a ‘rule-of-thumb’ logic and/or assumptions associated with this language, it should clearly be stated in the text.			
Item 73 P: A-64 -71 Table A-10	The header for Table A-10 should specify Hexavalent Chromium, not Chromium.  Basis/Justification: Completeness and clarity.	Correct the title to read Hexavalent Chromium, not Chromium.			