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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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February 4, 2016

16-NWP-025

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 *Interim Status Groundwater Monitoring Plan for the 216-A-29 Ditch*, DOE/RL-2008-58, Draft Revision 1, Received December 10, 2015, for the Initial 45-day Review Comment Record (RCR) Period

Dear Mr. Cline:

In accordance with the *Tri-Party Agreement*, Section 9.2.1, Ecology reviewed the referenced document. The United States Department of Energy – Richland Operations Office (USDOE-RL) and Ecology agreed that Ecology's initial comments to USDOE-RL would be submitted in early February 2016.

Enclosed is the RCR with Ecology's comments. Ecology is submitting a copy of the RCR to the Administrative Record in accordance with the *Tri-Party Agreement*, Section 9.4.

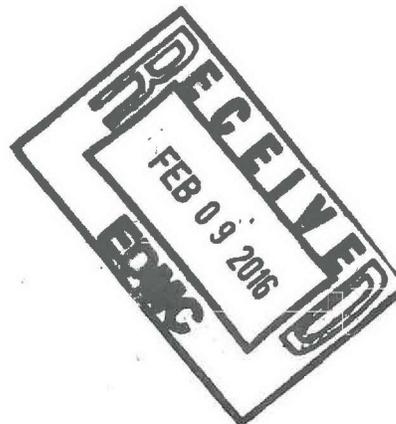
If you have any questions, please contact me at nina.menard@ecy.wa.gov or (509) 372-7941, or Kim Welsch, Environmental Specialist, at kim.welsch@ecy.wa.gov or (509) 372-7882.

Sincerely,

Nina M. Menard
Environmental Restoration Project Manager
Nuclear Waste Program

kw/aa
Enclosure

cc: See page 2



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cc electronic w/enc:

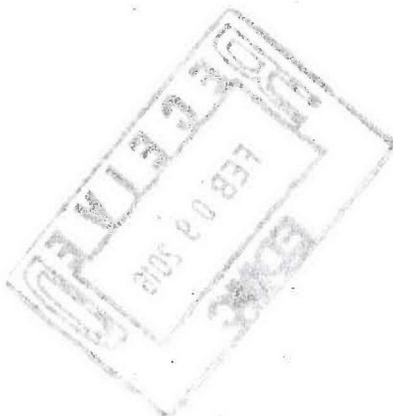
Dave Bartus, EPA
Dennis Faulk, EPA
Jim Hanson, USDOE
Marty Doornbos, CHPRC
Jon Perry, MSA
Ken Niles, ODOE
Dib Goswami, Ecology
Nina Menard, Ecology
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Administrative Record
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Document Title(s)/Number(s): *Interim Status Groundwater Monitoring Plan for the 216-A-29 Ditch, DOE/RL-2008-58, Draft Revision 1*

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

| Item # Page # Section # Line/¶ #s | Comment and Basis/Justification | Modification Needed | DOE Response | Ecology Response | O/C |
|--|--|--|--------------|------------------|-----|
| Item P: General S: L: | <p>Comment: All references must be in the AR. The following references were not in the AR or PNNL Publications/Library: DOE, 1987; Luttrell, S.P., 1988; PNL-10285; WHC-SD-EN-EV-032, 1995; and DOE/RL-96-68, 2014.</p> <p>In addition, the method of referencing is inconsistent. For example, 'DOE, 2002' should be referenced by DOE/RL-2002-39; or 'Reidel, S.P., K.A. Lindsey, and K.R. Fecht, 1992' should be referenced by WHC-MR-039 as they are referenced in the TPA AR.</p> <p>Basis/Justification: Consistency, clarity, and accuracy.</p> | Verify that all references are in the TPA Administrative Record; and reference documents correctly and consistently. | | | |
| Item P: General S: L: | Though this an interim status groundwater monitoring plan, it is worth keeping in mind final status requirements per WAC 173-303-645 in order that this unit can proceed towards closure. | N/A | | | |
| Item P: General S: L: | Field procedures should include more details regarding exact field activities or standard operating procedures. For instance, section B2, identifies sampling methods that "may include, but are not limited to" – all sampling methods should be identified here. Section B6 lacks details regarding how generator and transport standards are to be met. Section B7 doesn't specify security protocols and specific training requirements for individuals completing field sampling. Add standard operating procedures for field sampling and calibration where available. | Add additional details and standard operating procedures where applicable. | | | |
| Item 1 P: 1-1 S: 1 L: 25 | <p>Comment: The statements: "Closure of the 216-A-29 Ditch will be coordinated with the <i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i> (CERCLA) as part of the 200-EA-1 Operable Unit (OU). It is anticipated that the site will be clean-closed, and post-closure groundwater monitoring will be addressed under the 200-PO-1 Groundwater OU."</p> <p>These are inaccurate at this time. No approved decision and associated document(s) regarding RCRA-CERCLA integration have been finalized, and cannot be speculated about in this document. "the site" is inaccurate as well, as this could be interpreted to refer to the entire Hanford Site.</p> <p>Basis/Justification: 216-A-29 Ditch is a RCRA Operable Unit/Dangerous Waste Management Unit and RCRA/WAC 173-303 determines the regulatory authority for the dangerous waste in the unit at this time. WAC 173-303-610 "clean closure" is an unlikely probability based on current data and Ecology's current perspective based on that data, and shouldn't be assumed.</p> | Delete the statements. | | | |
| Item 2 | The statement is made, "All discharges ceased in 1991, and...." | Check and verify the date that 216-A-29 stopped receiving liquid discharges. | | | |

O/C = open or closed

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| P: 1-1 and 2-1 S: 1 and 2 L: 31-32 and 29-30 | This contradicts lines 19- 21 on page 2-7 which states, "...water table level near the 216-A-29 Ditch. This increase was the result of artificial recharge from liquid disposal operations (e.g., PUREX Cribs and B Pond) between the mid-1940s and 1997." Basis/Justification: Consistency, clarity, and accuracy. | | | | |
| Item 3 P: 1-1, S: 1 L: 32-33 | Provide more information on the "interim stabilization measures". Provide why interim stabilization measures were needed and what they were. | See comment | | | |
| Item 4 P: 1-1 S: 1 L: 36 | Add "under interim status" at the end of the sentence | See comment | | | |
| Item 5 P: 1-1 S: 1 L: 38 | Provide more information that shows or discusses groundwater flow changes, gradient changes over the history of the unit. This is required by 40 CFR 265 Subpart F and WAC 173-303. | See comment | | | |
| Item 6 P: 1-1 S: 1 L:39 | Change 40 CFR 265.92 to 40 CFR 265 Subpart F that includes all of groundwater monitoring requirements under 40 CFR 265 (Parts 90-94). This is the primary requirements for groundwater monitoring for an interim status unit. It is not limited to just 40 CFR 265.92. | See comment | | | |
| Item 7 P: 1-1 S: 1 L: 39 | Comment: Statement "This monitoring plan is the principal controlling document for conducting groundwater monitoring at the 216-A-29 Ditch" is accurate if considered at this time. However, this groundwater monitoring plan should be moving to a final status situation, and the groundwater monitoring plan that goes into the Permit will be the principal controlling document. Add "Currently" Basis/Justification: Unit is no longer operating and should be thought of as progressing to final status. Simple solution is to point out that this document is the groundwater monitoring plan for now, not forever. | "Currently, this monitoring plan is the principal controlling document for conducting groundwater monitoring at the 216-A-29 Ditch." | | | |
| Item 8 P: 1-1 S: 1 L:44-45 | Provide the regulatory citation that supports the sentence, "Site-specific constituents are identified for the 216-A-29 Ditch and will be sampled and analyzed annually." | See comment | | | |
| Item 9 P: 1-3 S: 1 L: 1-2 | Comment: Point of information: please clarify on Figure 1-1 what is the facility and what is the "former operational area" It appears that the 216-A-29 Ditch is outside the operational area, and each facility is actually a plant or unit, and want to avoid confusion with the "Hanford Federal Facility" designation for the entire Site. | | | | |

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Nuclear Waste Program
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| | Basis/Justification: Clarification for public reading groundwater monitoring plans. | | | | |
| Item 10 P: 1-3 S: 1 L: Figure 1-1 | Show the "B Pond" on the map for completeness. It is a large feature that has influence groundwater flow in the area. | See comment | | | |
| Item 11 P: 2-1 S: 2.1 L: 25 | It is stated, "...sewer line (CSL) to the 216-B-3-1, 216-3-2, or 216-3-3 Ditches." The second and third ditch needs to have to correct designations referenced like 216-B-3-1 is correctly referenced. Basis/Justification: Consistency, clarity, and accuracy. | Change 216-3-2 and 216-3-3 to 216-B-3-2 and 216-B-3-3. | | | |
| Item 12 P: 2-1 S: 2.1 L:31 | Please provide whether this is Rev. 0 or Rev. 0A for WHC-SD-DD-TI-060. Both are listed in the reference section. | See comment | | | |
| Item 13 P: 2-2 S: 2.1 L: 7-12 | The first sentence of this paragraph states, "216-A-29 Ditch is currently backfilled with material from the ditch sides and spoils piles in the bottom." Later in the paragraph, there is mention of topping the ditch both inside and outside of the security fence with "clean material". Is the material from the 'ditch sides and the spoils piles' also clean material? Basis/Justification: Consistency, clarity, and accuracy. | Please clarify if the ditch sides and spoils piles materials used to fill the ditch were clean or not. | | | |
| Item 14 P: 2-2 S: 2.1 L: 11-12 | The signage language does not appear to meet the requirements of the dangerous waste regulations | See comment | | | |
| Item 15 P: 2-2 S: 2.2 L: 14-19 | This paragraph is extremely confusing with the various dates. Explain how Ecology has regulation of mixed waste in August, yet EPA authorized Ecology some 3 months later. Rewrite this paragraph simply stating that Ecology has regulatory authority over mixed waste. | See comment | | | |
| Item 16 P: 2-2 S: 2.2 L: 33-36 | Provide why two separate documents were needed for groundwater monitoring. It is unclear why the Effluent Monitoring Plan is part of the groundwater monitoring program. | See comment | | | |
| Item 17 P: 2-2 S: 2.2 L: 37-38 | Comment: "potentially hazardous spilled chemical materials from the PUREX Plant." This is confusing - reword. Basis/Justification: Editorial. | Reword phrase | | | |

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| Item 18 P: 2-2 S: 2.2 L: 40 | The last sentence on the page states, "The ditch also received spills from the PUREX Plant CSL." There needs to be further discussion and/or definition of 'spills.' Some UPRs are spills, various constituents accidentally spill within facilities, or there may be spills onto soils that are not necessarily reported as UPRs or a spill. This statement of 'spills' need clarification in context of this ditch. Basis/Justification: Consistency, clarity, and accuracy. | Please clarify and add definition to the use of the word 'spills.' | | | |
| Item 19 P: 2-3 S: L: Figure 2.1 | Label more waste sites upgradient from A-29 Ditch. Many upgradient sources could have contributed to the contamination now present in the groundwater underneath A-29 Ditch. These upgradient sources help understand potential dangerous waste constituents present under A-29 Ditch. | See comment | | | |
| Item 20 P: 2-4 S: 2.2 L: 1-5 | Provide why calcium, sulfate, and sodium are elevated from a waste disposal perspective. These contaminants are by-products of the dangerous waste and dangerous waste constituents disposed in the A-29 Ditch. | See comment | | | |
| Item 21 P: 2-4 S: 2.2 L: 4 | WHC-SD-EN-EV-032 is not in the Administrative Record. It needs to be available for Ecology to reference. Basis/Justification: Consistency, clarity, and accuracy. | Put WHC-SD-EN-EV-032 into in the TPA Administrative Record, and provide Ecology with a copy of this document. | | | |
| Item 22 P: 2-4 S: 2.2 and 2.3 L: 4-8 and 18-21 | It is stated, "DOE issued WHC-SD-EN-EV-032 in 1995, which identified sodium, sulfate, and calcium as causes of elevated specific conductance. Because these constituents are not regulated as dangerous wastes, the report concluded that the groundwater had not been adversely impacted. Furthermore, no known or suspected cause of the elevated concentrations was identified." This conflicts and is inconsistent with the statements made in the following section that states, "The 216-A-29 Ditch received corrosive dangerous waste from the PUREX Plant. The discharges consisted of acidic (sulfuric acid) and caustic (sodium hydroxide) backwashes from the regeneration of demineralizer columns in the PUREX Plant. From 1955 to 1986, discharges of sodium hydroxide and sulfuric acid solutions occurred on a daily basis." Basis/Justification: Consistency, clarity, and accuracy. | Clarify this issue, and change the document to reflect a consistent 'story.' | | | |
| Item 23 P: 2-4 S: 2.2 L: 12-16 | It is stated that, "An indicator evaluation program that monitors parameters required for groundwater contamination detection continues to this day under a monitoring plan published in 2010 (DOE/RL-2008-58, Rev. 0). More recently, elevated levels of specific conductance were also attributed to widely distributed plumes of nitrate and sulfate in the area (DOE/RL-2008-01)." This statement, as written, is incorrect since the second document cited DOE/RL-2008-01 was published in 2007, and DOE/RL-2008-58 was published after 2007. Basis/Justification: Consistency, clarity, and accuracy. | Please clarify this situation, and correct language in the text. | | | |

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| Item 24 P: 2.4 S: 2.2 L: 14-16 | Provide where the source for the nitrate and sulfate is located and how this is being remediated. Clarity of upgradient source terms is needed to understand and contrast the chemistry associated with A-29 Ditch. | See comment | | | |
| Item 25 P: 2.4 S: 2.2, 2.3 L:14-16, 18-24 | Sulfuric acid with sulfate being measured in the groundwater indicates a release from the unit. Sulfate is a by-product of sulfuric acid; therefore a release of dangerous waste is being indicated. This unit should be in assessment monitoring. | See comment | | | |
| Item 26 P: 2-4 S: 2.3 L: 1-5 | Waste Characteristics section does not note that 216-A-29 was an open unlined ditch running east across 200 East Area, then entered an underground clay pipeline before discharged to a land depression known as "Snow's Canyon". | Include a sentence relating how discharge moved from the 284-E Powerhouse and the water treatment system. | | | |
| Item 27 P:2-4 S: 2.3 L: 23-26 | The amount of wastewater discharged into the vadose zone was difficult to estimate because the flows from the ditches leading to B Pond was not differentiated. | Include the inventory list from WHC-SD-EN-AP-045 | | | |
| Item 28 P: 2-4 S: 2.3 L: 26 | Change "crib" to "ditch" to read, "Table 2-1 provides a summary of hazardous discharges to the ditch. | See comment | | | |
| Item 29 P: 2-4 S: 2.3 L:28 | Comment: Why is the Hanford Site-wide permit referenced at the end of this sentence? Basis/Justification: Editorial. | Delete or explain reference | | | |
| Item 30 P: 2-4 and 2-5 S: 2.3 L: Table 2-1. | Comment: As the 216-A-29 Ditch was not closed and dangerous wastes removed or landfill closure completed before the effective date of RCRA (August 19, 1987), all dangerous wastes discharged to the ditch must be considered. The unit is a non-operating surface impoundment (TSD), and still "storing" dangerous waste. Basis/Justification: 216_A-29 Ditch is regulated as a TSD/surface impoundment under RCRA/WAC 173-303. | Delete all references to "CERCLA reportable release" | | | |
| Item 31 P: 2-4 and 2-5 S: 2.3 L:Table 2-1 | Table 2-1 appears to be incomplete and does not list all of the hazardous and/or dangerous waste associated with 216-A-29. Basis/Justification: Consistency, clarity, and accuracy. | Update the table with a complete list of hazardous and/or dangerous waste associated with this ditch. | | | |

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|--|--|---|--------------|------------------|-----|
| Item 32 P: 2-5 S:2.4 L: 1-16 | Geologic Studies of the Columbia Plateau 1979 (BWIP) was the original body of work which have been the bases for the listed documents and other subject matter documents referenced in the "Geology and Hydrology" section. | The original document (BWIP) should be referenced. | | | |
| Item 33 P: 2-6 S: 2.4.1 L: 3-4 | Comment: "within the vicinity of the 216-A-29 Ditch are listed in order from upper to lower (DOE/RL-2009-85):" Provide whether its units, formations, or something else. Basis/Justification: Stratigraphic components should be ordered by time. | Revise sentence/paragraph. | | | |
| Item 34 P:2-6 S:2.4.1 L:2-28 | The Ringold formation within the Pasco Basin is divided into 5 units based on texture. The middle, upper, and fanglomerate units crop out in the Pasco Basin. This section in document DOE/RL-2008-58 appears to be written based heavily on references to other dated documents. | Reference the paleomagnetic investigation or magnetostratigraphy work relating to this reference. | | | |
| Item 35 P:2-6 S: 2-4.1 L:19-29 | The Hanford formation was described without any indication of the presence of numerous and varying sizes of unconformities, i.e. clastic dikes. It has been documented in all three facies of the Hanford formation. These near-vertical stratified sediments cut across those zones. | Include language identifying "clastic dikes". | | | |
| Item 36 P:2-6 S: 2.4.1 L:29-31 | Document states "Units 4-8 are not present under ditch. Figures 2-3 and 2-4 depict A-29 ditch approximately located between wells, 299-E25-35 and 299-E25-47 according to elevation but without lateral distant between the wells. Earlier A-29 documents indicate "Unit E has been removed from the Gable Gap and most of 200 East to approximately the May Junction Fault". Then again other references indicate the middle Ringold conglomerate is present throughout most of the center Pasco Basin, except in the area north of Gable Mountain. | Clarify based on drilling log data. | | | |
| Item 37 P: 2-6 S: 2.4.2 L: 33-39 | Comment: Identify the uppermost aquifer. RCRA and WAC 173-303 regulate to the uppermost aquifer, and some folks will draw the logical conclusion that the unconfined aquifer is the uppermost aquifer. However, for clarity, should call out the "uppermost aquifer" as that is the regulatory term. Basis/Justification: Clear use of terminology. | Add sentence identifying the uppermost aquifer that is regulated. | | | |
| Item 38 P: 2-7 S: 2.4.2 L: 2 | Comment: 17,000 m/day (55,800 ft/day) as a hydraulic conductivity value seems high. Recalculate. Basis/Justification: Accurate values. | Revise value based on recalculation. | | | |
| Item 39 P: 2-7 S: 2.4.2 | Provide a map that shows the paleochannels and how hydraulic conductivity varies in the units. | See comment | | | |

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| L: 1-4 | | | | | |
| Item 40 P: 2-7 S: 2.4.2 L: 1-4 | Provide if these hydraulic conductivities are based on a model or field measurements. As written, they are based on a numerical model. Provide the field hydraulic conductivities. | See comment | | | |
| Item 41 P: 2-7 S: 2.4.2 L: 4-5 | Explain in more detail how high hydraulic conductivity influences hydraulic gradients. A flat water table does constitute "an extremely low hydraulic gradient." Provide this detail as it relates to the equation: $Q=KIA$. Provide if this statement is true. | See comment | | | |
| Item 42 P: 2-7 S: 2.4.3 L: 7-8 and 18-25 | The opening sentence states, "Currently, the unconfined aquifer in the 200 East Area has a very low hydraulic gradient, making it difficult to determine groundwater flow direction." And yet, the second paragraph contradicts this opening sentence by describing the changed flow, being specific in stating, "...a radial flow pattern around B Pond that impeded flow towards the east and redirecting it to the southwest. After discharges to B Pond ceased, the mound at B Pond subsided, and groundwater flow directions in the southeastern portion of the 200 East Area and vicinity..." Basis/Justification: Consistency, clarity, and accuracy. | This section needs to be updated and state a consistent 'story.' | | | |
| Item 43 P: 2-9 and 2-10 S: 2.4.3 L: Figures 2-3 and 2-4 | Comment: For Figure 2-3, are the Ringold Unit A and lower CCU contacts and thickness inferred? There doesn't appear to be sufficient borehole data to determine contacts and thicknesses. Basis/Justification: Accurate representation of available data. | Add questions marks for inferred or discuss when and how this approximation was agreed upon. | | | |
| Item 44 P: 2-9 and 2-10 S: 2.4.3 L: Figures 2-3 and 2-4 | Comment: For Well 299-E25-32, the well screens for P and Q nested wells are not represented on cross-section. Basis/Justification: Accurate representation of available data. | Please add Q well screen. | | | |
| Item 45 P: 2-10 S: L: Figure 2-4 | Provide the basis for the water level indicated in borehole C4996 | See comment | | | |
| Item 46 P: 2-11 S: | This figure is severely incorrectly contoured based on shown data points. The contouring needs to be redone honoring the data points. If so, it will reflect a strong influence still present from B Pond and eastward flow on the west side. Provide the level of uncertainty with measurement data. Measuring to .001 cm (0.1 mm) | See comment | | | |

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| L: Figure 2-5 | | | | | |
| Item 47 P: 2-11 S: L: Figure 2-5 | Comment: Figure caption should be "Groundwater Contour Map for 200 East and the 216-A-29 Ditch Area." As this figure displays groundwater contours and flow direction. Additionally, it appears some groundwater elevations are "above" their respective contour lines (e.g., E24-18, E24-21, E24-24). Basis/Justification: Accurate representation of available data. | Re-contour map and revise figure caption. | | | |
| Item 48 P: 2-12 S: L: Figure 2-6 | This figure does not support local flow directions. Provide water level measurements for all the wells and overlay the water table contour map over this figure to support local flow directions. Another arrow is needed on the "current groundwater flow." The 160 degree mark should be most emphasized followed by the two 20 degrees from 160 degrees marked (due south and 140 degree mark). | See comment | | | |
| Item 49 P: 2-12 S: 2.4.3 L: Figure 2-6 | Comment: On one of these figures, a rose diagram would visually depict the change in flow direction from the B-3 Pond discharge (and associated groundwater mounding) to the historical flow direction towards the river. Basis/Justification: Easier to see the historical primary flow directions and the change in flow directions. | Add a rose diagram to Figure 2-6 or to another suitable figure. | | | |
| Item 50 P: 2-12 S: 2.5 L: Figure 2-6 | The map figure does not clearly show the 'line' separating 200-BP-5 OU and 200-PO-1 OU. Basis/Justification: Consistency, clarity, and accuracy. | Add a line clearly showing the line that separates 200-BP-5 OU and 200-PO-1 OU. | | | |
| Item 51 P: 2-13 S: 2.5 L: Table 2-2 | Several of the previous monitoring plans listed within this table are not in the Administrative Record; including <i>40 CFR 265 Interim Status Detection-Level Ground-Water Monitoring Compliance Plan for 216-A-29 Ditch</i> (DOE, 1987), <i>Effluent Monitoring Plan for 216-A-29 Ditch Monitoring Wells</i> (Luttrell, 1988), and Appendix C of <i>Results of Groundwater Quality Assessment Program at the 216-A-29 Ditch RCRA Facility</i> (WHC-SD-EN-EV-032, Rev. 0). Basis/Justification: Consistency, clarity, and accuracy. | Add all references to the TPA Administrative Record. | | | |
| Item 52 P: 2-13 S: 2.5 L: 5 | Provide why the groundwater monitoring plan was supplemented. Clarity and regulatory understanding. | See comment | | | |

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| Item 53 P: 2-14 S: 2.5 L: 7-9 | Provide the previous results of the halogenated compounds. Several of these compounds are associated with the waste disposed in the ditch. Lot more explanation is needed for this discussion. | See comment | | | |
| Item 54 P: 2-14 S: 2.5 L: 10 | Provide which direction the groundwater flow is occurring. It is inaccurate to state, "Flow direction in the network changed" without informing the reader where it changed from to its new direction. 40 CFR 265 subpart F and WAC 173-303-645 requires groundwater flow direction to be indicated and groundwater flow changes in the network | See comment | | | |
| Item 55 P: 2-14 S: 2.5 L: 16-21 | Provide what the report states for these three constituents, sulfate, sodium, and calcium, the reason their concentrations are "elevated." These are associated with dangerous waste being released from the A-29 regulated unit. | See comment | | | |
| Item 56 P: 2-14 S: 2.5 L: 23, editorial | Change well number "299-E25-12, 299-E25-13" to "299-E26-12, 299-E26-13" (bold for emphasis). | See comment | | | |
| Item 57 P: 2-14 S: 2.5 L: 31 | Explain why phenols added back after being dropped in the previous plan (WHC-SD-EN-EV-032, Appendix C) and well 299-E25-32P was removed. | See comment | | | |
| Item 58 P: 2-14 S: 2.5 L: 35 | Provide who approved the revised monitoring plan (DOE/RL-2008-58, Rev, 0). | See comment | | | |
| Item 59 P: 2-14 S: 2.5 L: 36 | Provide why monitoring well 299-E25-32P was added back into the monitoring network. | See comment | | | |
| Item 60 P: 2-14 S: 2.5 L: 38-40 | Provide which direction the groundwater flow is occurring. It is inaccurate to state "Flow direction in the network changed" without informing the reader where it changed from to its new direction. | See comment | | | |
| Item 61 P: 2-14 S: 2.5 L: 41-45 | Provide why increased levels are not occurring in other "200 East Area and adjacent area" wells and only in 299-E25-35, E25-48, E25-32P and E26-13. | See comment | | | |

O/C = open or closed

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|---|--|--|--------------|------------------|-----|
| Item 62 P: 2-14 S: 2.4.3 L: 41-42 | <p>Comment: Rather than referencing another document, elaborate why historical specific conductance exceedances did not result in a groundwater assessment program and specific dangerous waste component data collection. Currently the reference is to DOE/RL-2008-01.</p> <p>Basis/Justification: Providing relevant information.</p> | Add additional detail | | | |
| Item 63 P: 2-14 and 2-15 S: 2.5 L: several | <p>The discussion of wells in this section seems inconsistent concerning well 299-E25-32P. On page 2-14, line 13 says the well was replace in 1990. Line 31 says the well was removed in 1999. Yet in 2010, line 36 says the well is part of the network and dowgradient. On page 2-15, lines 1 and 14 list the well as being used, which contradicts the first two references above. In any case, the 'story' concerning this well is not clear.</p> <p>Basis/Justification: Consistency, clarity, and accuracy.</p> | Clarify language in this section, particularly for well 299-E25-32P. | | | |
| Item 64 P: 2-15 S: 2.5 L: 1-11 | <p>Provide more detail on the overall monitoring history related to exceedances of the critical mean. Provide more discussion on wells 299-E26-13, and 299-E25-32P related to halogenated volatile organics and other constituents, like chloride. This information is required as a part of 40 CFR 265 Subpart F</p> | See comment | | | |
| Item 65 P: 2-15 S: 2.5 L: 9-11 | <p>Comment: Statement: "Well 299-E25-2, located directly upgradient of Well 299-E25-35, is a good indicator of the higher sulfate and nitrate levels that are encroaching from the northwest and affecting the 216-A-29 Ditch from upgradient source(s)." What are the upgradient sources? When did Ecology agree to these other units as the sources of the higher sulfate and nitrate levels? Why is the sulfate and nitrate not indicative of sulfuric acid and nitric acid discharged to the 216-A-29 Ditch and now disassociated in the groundwater?</p> <p>Basis/Justification: Identifying approved claims.</p> | Elaborate on sources from other units and logic used, or delete text. | | | |
| Item 66 P: 2-15 S: 2.5 L: 13 | <p>Well 299-E25-2 does not meet WAC 173-160 requirements and is a downgradient well (or was) for the SST WMA A-AX. This well has known contamination flowing through. Recommend more representative upgradient wells for the ditch.</p> | See comment | | | |
| Item 67 P: 2-15 S: 2.6 L: 25-27 | <p>Add "where high calcium, sodium, and sulfate concentrations exists in surrounding monitoring wells from byproducts of past disposal of dangerous waste" to the end of the bullet.</p> | See comment | | | |
| Item 68 P: 2-15 | <p>Comment: Of potential dangerous wastes discharged to the 216-A-29 Ditch, are any likely to behave as a DNAPL in the uppermost aquifer?</p> | Identify which constituents might act as DNAPL in the uppermost aquifer, or rule out DNAPL | | | |

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| S: 2.6 L: 30-32 | Basis/Justification: Evaluation of transport and risks | based on dangerous wastes discharges to the ditch. In this case, citing a particular reference might be the best way to go. | | | |
| Item 69 P: 2-15 S: 2.6 L: 37-43 | The low—gradient water level measurement network still shows a component from the northeast direction related to B Pond. Recontour the low-gradient water level measurement network map (Figure 2-5). Call-out figure 2-5, not Figure 2-6. | See comment | | | |
| Item 70 P: 2-20 S: 2.6 L: Figure 2-8. | Comment: Plots show a subset of wells sampled for the 216-A-29 Ditch. Revise caption to reflect this change. Basis/Justification: Editorial. | “Figure 2-8. Time Series Plot Showing Nitrate, Sulfate, and Specific Conductance Concentration Trends from Selected Upgradient and Downgradient wells from this plan” | | | |
| Item 71 P: 2-21 S: L: Figure 2-9 | Provide date of measurements. Values do not match Figure 2-8 maximum values. | See comment | | | |
| Item 72 P: 2-21 S: 2.6 L: Figure 2-9 | Comment: Concerning the legend, “Waste Site” is a CERCLA term, and needs to be revised to reflect RCRA. Suggest “Dangerous Waste Unit”; additionally, to which reference does the (2013) refer? Basis/Justification: Correct terminology. | Change “Waste Site” and clarify (2013) reference. | | | |
| Item 73 P: 2-22 S: L: Table 2-3 | Missing the following citations: 40 CFR 265.90, 265.92(a), 265.93(a) and 265.93(c)(1), 265.94(a)(2)(iii) and Appendix IV. | Add the missing citations. | | | |
| Item 74 P: 2-22 S: 2.7 L: 9-12 | Provide if the site-specific constituent analysis is part of this document and reporting. It is unclear. I would encourage Stiff diagrams and other tools for geochemical analysis of groundwater. | See comment | | | |
| Item 75 P: 2-25 S: 2.7 L: Table 2-4 | Table 2-4 lists the Additional Monitoring Objectives and the Site-Specific Constituent or Measurement. However, the table does not provide the analytical methods that will be employed to conduct the monitoring. For technical completeness, list the analytical method that will be used for each constituent or measurement that has been identified on the table. | For technical completeness, list the analytical method that will be used for each constituent or measurement that has been identified on the table | | | |

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| Item 76 P: 3-1 S: 3 L: 6-9 | <p>Comment: The 216-A-29 ditch does not have an approved closure plan. All closure activities will be through a closure plan. Clean closure cannot be “anticipated.” This paragraph needs to be rewritten or deleted. It is not relevant to a groundwater monitoring plan and is based solely on an option and hopeful wishes. A groundwater monitoring plan may be required, even if soils meet closure performance standards. These claims are speculative and are not approved actions by Ecology.</p> <p>Basis/Justification: Stating current agreements.</p> | Revise this paragraph to indicate a closure plan was submitted in accordance with TPA Milestone M-037-10. Delete the speculative text. | | | |
| Item 77 P: 3-1 S: 3 L: 8-9 | Provide what this sentence means in the context of this monitoring plan. As written, it means a release has occurred which would put the groundwater monitoring program in assessment monitoring and not indicator parameter monitoring. | See comment | | | |
| Item 78 P: 3-1 S: 3.1 L:13-14 | <p>Comment: If new wells are being sampled for establishing background, then the entire network should be resampled to established new background data, given the historical changes in flow direction and upgradient and downgradient well locations.</p> <p>Basis/Justification: 40 CFR 265.92(c)(1)</p> | Revise plan to indicate network wide quarterly background sampling after new wells are installed. | | | |
| Item 79 P: 3-1 S: 3.1 L: 28-30 | Provide why “evaluate potential reducing conditions are no longer needed and the single deeper well (299-E25-28) was dropped from the well network”. | See comment | | | |
| Item 80 P: 3-1 S: 3.1 L: 22-30 | <p>Comment: Proposed new well network doesn’t seem to be sufficient to fully characterize 216-A-29 Ditch groundwater to determine if a release has occurred.</p> <p>Basis/Justification: Determining if a release has occurred.</p> | Propose more downgradient wells. | | | |
| Item 81 P: 3-1, S: 3.1 L: 31-38 | This paragraph does not provide a clear understanding how it applies to groundwater monitoring frequency and providing representative samples. Samples should be collected over a one week period to be representative of groundwater conditions. If a sample from one well is taken over a month apart from another well, it is not representative for statistical analysis or groundwater quality comparison. Provide clearly how missing a sampling event will be resolved in this paragraph to ensure representative sample collection and analysis. | See comment | | | |

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| Item 82 P: 3-2 S: 3.2 L: 3-4 | Based on Figure 3-1 in Rev. 0, well 299-E25-34 is displayed as an upgradient well in regard to groundwater flow direction. Provide a discussion of this flow regime in more detail in this document with supportive information (e.g. engineering report). | See comment | | | |
| Item 83 P: 3-2 S: 3.2 L: 7 | Figure 2-6 shows groundwater flow more south-southeast (160 degree ±20 degrees) than southeast (120 degrees). Change to "south-southeast". If changes in flow direction from this azimuth, then a new groundwater monitoring plan will be required. | See comment | | | |
| Item 84 P: 3-2 S: 3.2 L:5-10 | Comment: When well data is used across units to satisfy upgradient/downgradient requirements for different units, how is this being tracked? Seems easy to assign a well to a unit and then forget that these data need to be used in another unit. Basis/Justification: Ensuring completeness of data collected to satisfy 40 CFR 265.92 Subpart F and WAC 173-303-400. | Identify if cross unit well data are intended (or not) for making decisions related to groundwater monitoring for the 216-A-29 Ditch. | | | |
| Item 85 P: 3-2 S: 3.2 L: 13-16 | Comment: Why is the deep well (299-E25-28) being dropped? Well 299-E25-34 evaluates a different part of the uppermost aquifer completely. Because of the TOX, and phenols, well 299-E25-28 provides an important role in heavy metals and DNAPL contaminants. Provide the results of well E25-28 over its monitoring period. This well is needed. Place this well back into the monitoring well network. The information is required based on 40 CFR 265 Subpart F as well as its monitoring capabilities. Basis/Justification: Confirming appropriate sampling requirements to determine if a release has occurred. | Elaborate on why deep well can be removed from sampling regimen. | | | |
| Item 86 P: 3-2, S3.2: L: 20-30 | This well (E25-2) is a noncompliant WAC well that has shown contamination from SST WMA A-AX. It is not a representative upgradient background well for the purposes of groundwater monitoring according to RCRA/HWMA. Selection of a more appropriate upgradient well is needed. | See comment | | | |
| Item 87 P: 3-3 S: L: Figure 3.1 | Provide a more suitable upgradient well than 299-E25-2. This well does not provide a good indication of initial background groundwater quality through the middle portion of the Ditch as required by 40 CFR 265 Subpart F. | See comment | | | |
| Item 88 P: 3-4 S: 3.2 L:Table 3-1 | Table 3-1 lists Filtered and Unfiltered parameters will be obtained for Iron, Manganese, Sodium, and Metals. 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 | Provide the basis for the proposal to filter the groundwater samples for the Monitoring Well Network for the 216-A-29 Ditch. | | | |

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| | exceeds 5 NTUs. Field-filtering under any circumstance must be specifically requested, with basis provided, and approved by Ecology or EPA in work plans.” Provide the basis for the proposal to filter the groundwater samples for the Monitoring Well Network for the 216-A-29 Ditch. | | | | |
| Item 89 P: 3-4 S: 3.2 L: Table 3-1 | Table 3-1 lists Sulfate separately from the Anions listed in footnote c. Explain why sulfate analysis has not been included with nitrate. They are both included within the same analytical method. | Explain why sulfate analysis has not been included with nitrate. They are both included within the same analytical method. | | | |
| Item 90 P: 3-5 S: 3.1 L: Table 3-1 | Comment: NA is abbreviated elsewhere as “N/A” Basis/Justification: Editorial | Revise to “N/A” | | | |
| Item 91 P: 3-5 S: L: Table 3.2 | Editorial. Swap Easting and Northing for Well #2. | See comment | | | |
| Item 92 P: 3-6 S: 3.2 L: 1-4 | It is stated, “Some wells are co-sampled with other monitoring programs (e.g., monitored to meet CERCLA requirements). Monitoring requirements for those other monitoring programs are described in separate plans. The reported data from those other monitoring programs are supplementary to information gathered under this plan.” In what context are ‘these other monitoring programs’ supplementary to gathering information under this plan? For what purpose? Basis/Justification: Consistency, clarity, and accuracy. | Clarify this paragraph. | | | |
| Item 93 P: 3-7 S: 3.3 L: Table 3.3 | Comment: What is the status of well 299-E25-43? Basis/Justification: Determining appropriate well network. | Please identify why this well is not to be sampled. | | | |
| Item 94 P: 3-8 S: L: Table 3-3 | The background is supposed to use the student t-test based on Appendix IV of 40 CFR 265. Use the appropriate statistical method and cite this in this table. | See comment | | | |
| Item 95 P: 3-8 S: 3.4 L: | Provide information about drilling and sampling equipment decontamination as required by 40 CFR 265.92. | See comment | | | |
| Item 96 | Insert “initial” between “upgradient” and “(background)” | See comment | | | |

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| P: 4-1 S: 4.2 L: 16 | | | | | |
| Item 97 P: 4-1 S: 4.2 L: 18/19 & 23 | Insert "initial" in front of "background" | See comment | | | |
| Item 98 P: 4-1 S: 4.2 L: 23 | Rewrite the last part of the sentence to read, "...decreases, in the case of pH), over initial background (40 CFR 265.93[b]) concentration." | See comment | | | |
| Item 99 P: 4-1 S: 4.2 L: 25-26 | Background statistical data is not allowed to be updated for interim monitoring. It is set at the initial background concentration levels based on 40 CFR 265.92(c)(2) and 40 CFR 265.93(b). These initial background values do not change. Please place in this document the initial background values established for this unit. Provide if these values have been exceeded in the past. | See comment | | | |
| Item 100 P: 4-1 S: 4.2 L: 25-27 | Comment: Can't use rolling mean to establish background conditions for statistical comparison for interim monitoring. Must use initial 4 quarters of background data for comparison and evaluation of values for statistical significance. Basis/Justification: Requirements under 40 CFR 265.92(c)(1) | Revise plan to compare to initial values. | | | |
| Item 101 P: 4-1 S: 4.2 L: 26-27 | This "rolling mean" is not allowed by the regulations for interim monitoring, nor does the rationale for a "rolling mean" applicable. The "groundwater remedial actions currently being implemented" do not occur in 200 East Area that would affect groundwater quality. Delete this sentence and do not practice a "rolling mean." | See comment | | | |
| Item 102 P: 4-2 S: 4.5 L: 23-24 | Change "statistical comparison value," to "relative to the initial background value, that information ..." This wording will meet the 40 CFR 265 language in the regulations. | See comment | | | |
| Item 103 P: 4-2 S: 4.5 L: 29-32 | Provide where the sentence, "In some instances, it is possible to determine immediately that the statistical finding is not the result of contamination from the facility. In that case, Ecology is notified, and a groundwater quality program is not instituted" is located in the regulations, either 40 CFR 265 or WAC 173-303. If not in regulations, delete this sentence. | See comment | | | |
| Item 104 P: 5-1 | Insert "initial" in front of "background" | See comment | | | |

O/C = open or closed

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| S: 5 L: 3 | | | | | |
| Item 105 P:5-1 to 5-2 S: 5 L: 1-22 and Table 5-1 | <p>Comment: The Section 5 outline must match the format and elements provided in the <i>216-A-29 Ditch Interim Status Groundwater Quality Assessment Monitoring Plan</i> (DOE/RL-2016-23, Rev. 0) received by Ecology in late January 2016.</p> <p>Basis/Justification: Consistency, clarity, and accuracy.</p> | Ensure language provides consistency between documents. | | | |
| Item 106 P: A-6 S: A2.1.11 L:5-6 | In addition to the evaluation under the DOECAP and being State accredited, the text should also state that the laboratories must be evaluated under the Hanford Analytical Services Quality Assurance Requirements Document (HASQARD). 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>Edit the text as follows:</p> <p>"The laboratories are evaluated under the DOE Consolidated Audit Program, <u>the Hanford Analytical Services Requirements Document</u> and must be accredited by Ecology for the analyses performed for S&GRP.</p> | | | |
| Item 107 P: A-12 S: A2.6 L:1-5 | <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"> • Analytical logbooks • Raw data and QC sample records • Standard reference material and/or proficiency test sample data • Instrument calibration information. <p>Also include the following in the list of items:</p> <ul style="list-style-type: none"> • Training records for employees, as they relate to analytical methods. (This will ensure that personnel are qualified to perform the specific analyses.) • Laboratory State Accreditation records. • Laboratory audit records. <p>The regulatory basis for requiring the requested items for laboratories performing analytical work for the Hanford Site is provided in <i>Hanford Analytical Services Quality Assurance Requirements Document</i> (DOE/RL-96-68). 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</p> | <p>Also include the following in the list of items:</p> <ul style="list-style-type: none"> • Training records for employees, as they relate to analytical methods. (This will ensure that personnel are qualified to perform the specific analyses.) • Laboratory State Accreditation records. • Laboratory audit records. | | | |

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| | 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). The requirement to comply with DOE/RL-96-68 is included in DOE/RL and DOE/ORP contracts with their contracted entities. | | | | |
| Item 108 P: A-23 S: A4 L: | Provide when and where DOE and Ecology get notified of assessment findings. Clarification is needed. | See comment | | | |
| Item 109 P: A-25 S: A5.2 L:21-22 | The text states, "If performed, data validation activities will be based on EPA functional guidelines." Please explain how it will be determined if data validation will be required, and what percentage of the data will be validated. | Please explain how it will be determined if data validation will be required, and what percentage of the data will be validated. | | | |
| Item 110 P: B-3 S: B2 L:13-14 | The text states, "...wells are purged utilizing the three borehole volume method." Please explain the process of this method, as it is not intuitive for all reviewers. | Please explain the process of the three borehole volume method, as it is not intuitive for all reviewers. | | | |
| Item 111 P: B-3 S: B2 L: 25-31 | The text discusses the use of filtered and unfiltered samples. 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." Provide the basis for the proposal to filter the groundwater samples that are not exceeding a turbidity level of 5 NTU's for the Monitoring Well Network for the 216-A-29 Ditch. | Provide the basis for the proposal to filter the groundwater samples that are not exceeding a turbidity level of 5 NTU's for the Monitoring Well Network for the 216-A-29 Ditch. | | | |
| Item 112 P: B-4 S: B2 L: 9-10 | The text states, "Exceeding required holding times could result in changes in constituent concentrations due to volatilization." It should also be noted that data that do not meet holding time requirements may be deemed Rejected. | Include that data that do not meet holding time requirements may be deemed Rejected. | | | |
| Item 113 P: B-4 S: B.2.1 L: | This section is missing significant details/information on: "Decontamination of sampling equipment". No information is provided on the procedures to ensure "decontamination of sampling equipment". Add detail. This section is required by WAC 173-303-645(8) and 40 CFR 265.92. | See comment | | | |

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| Item 114 P: B-7 S: B4 L: | <p>Comment: This section is calibration of field equipment, and is generic. Isn't there more of a standard operating procedure that is available for groundwater sampling equipment calibration?</p> <p>Basis/Justification: Sufficient detail for field procedures.</p> | | | | |
| Item 115 P: B-11 S: B6 L: | Provide why dangerous waste requirements are not used. CERCLA requirements are inappropriate for dangerous waste management. | See comment | | | |
| Item 116 P: B-11 S: B6 L: 6-7 | <p>Comment: Don't offsite laboratory have to follow the applicable facility acceptance criteria? And don't they return rad contaminated samples? This section seems to lack sufficient detail. Isn't there a SOP that can be included and not just reference the Waste Control Plan in its entirety?</p> <p>Basis/Justification: Sufficient detail for field procedures.</p> | Clarify this situation. | | | |
| Item 117 P: B-13 S: B7 L: | <p>Comment: Again, seems to be short, vague, and generic descriptions. Sufficient detail isn't present, even to satisfy interim status requirements as referenced for 40 CFR 265.14 and 40 CFR 265.16. For future plans, level of detail is insufficient for final status groundwater monitoring plan submissions.</p> <p>Basis/Justification: Sufficient detail for field procedures.</p> | Add details per the comment. | | | |
| Item 118 P: C-1 S: L: Table C-2 | <p>The open intervals for one of the wells (E25-2) are miscalculated according to the elevation tops and bottoms.</p> <p>Provide Depth to Water (DTW) in elevation (meters and feet) to determine the remaining water in these wells on this table. Based on 40 CFR 265 Subpart F, the amount of water remaining in the well is required to provide reliable groundwater quality.</p> | See comment | | | |
| Item 119 P: C-1 S: C1 L: Table C-2 | <p>Comment: Table is titled "Sampling Interval Information for Wells within the 216-A-29 Ditch Network"</p> <p>As listed, these are all screen intervals for the wells. Change to "Screen/Perforated Interval Information for Wells within the 216-A-29 Ditch Network"</p> | Make edit as described | | | |

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| | Basis/Justification: Editorial. | | | | |
| Item 120 P: C-1 S: C1 L: Table C-2 | Comment: Well screen interval for 299-E25-35 measurement in feet needs to be recalculated. Basis/Justification: Ensuring accurate information | Recalculated well screen interval in feet | | | |