



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 REGION 10 HANFORD/INL PROJECT OFFICE  
 309 Bradley Boulevard, Suite 115  
 Richland, Washington 99352

January 20, 2011

Mr. Richard A. Holten, Acting Assistant Manager  
 for the Central Plateau  
 Richland Operations Office  
 U.S. Department of Energy  
 P.O. Box 550  
 Richland, Washington 99352

Re: U.S. Environmental Protection Agency (EPA) Comments on the *Proposed Plan to Amend the 200-ZP-1 Groundwater Operable Unit Record of Decision to Include the Remedial Actions for the 200-UP-1 Groundwater Operable Unit (DOE/RL-2010-05, Draft A)*

Dear Mr. Holten,

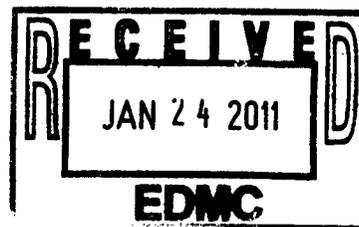
EPA has reviewed the referenced document. Enclosed are EPA's initial comments. We will have more comments pending our legal review, which will occur after these initial comments have been addressed. If you would like to meet to discuss these comments or if there are any questions, please contact me at 509-376-4919.

Sincerely,

Emerald Laija  
 Project Manager

Enclosure

cc: Russell Jim, Yakama Tribe  
 Gabe Bohnee, Nez Perce Tribe  
 Stuart Harris, CTUIR  
 Naomi Bland, DOE  
 Ken Niles, ODOE  
 Jane Hedges, Ecology  
 Nina Menard, Ecology  
 Susan Leckband, HAB  
 Admin. Record: 200-UP-1



200-UP-1, 200-ZP-1

## General Comments

- 1) Treatment of iodine-129 is presented as an interim remedial action using hydraulic containment while DOE "evaluates" potential site-specific treatment technologies. Since there have been no commercial developments for I-129 treatment since the last technology evaluation conducted, EPA expects DOE to commit resources to develop a groundwater treatment technology if there are none currently available.
- 2) The 200-ZP-1 ROD lists nitrate (measured as nitrogen) as a COC with a final cleanup level of 10,000 µg/L, which is the federal drinking water standard (DWS). This Proposed Plan lists nitrate (as NO<sub>3</sub>) with a federal drinking water standard of 45,000 µg/L. To be consistent with the current DWS and the 200-ZP-1 ROD, change the cleanup level for nitrate to 10,000 µg/L.
- 3) MNA is proposed as the remedial action for nitrate. However, the reasoning for why MNA is appropriate needs to be further developed. As currently written there is not enough information provided for the reader to make this conclusion. Strengthen the explanation of why MNA is appropriate for nitrate based on the contaminant information and environmental conditions. This should be done for all contaminants that are addressed through MNA.
- 4) The remedial action alternatives titles are not clear. Clarify the title of each alternative as follows:
  - No Action Alternative
  - Alternative 1—MNA and ICs (greater than 1,000 years)
  - Alternative 2—Restoration through pump-and-treat for technetium-99 (30 years) and uranium (150 years), MNA for other contaminants (150 years), and hydraulic containment of iodine-129
  - Alternative 3—Restoration through pump-and-treat for technetium-99 (30 years) and uranium (80 years), MNA for other contaminants (150 years), and hydraulic containment of iodine-129
  - Alternative 4—Restoration through pump-and-treat for technetium-99 (25 years) and uranium (28 years), MNA for other contaminants (150 years), and hydraulic containment of iodine-129
- 5) A comment was submitted on the 200-UP-1 Remedial Investigation/Feasibility Study (RI/FS) directing the inclusion of chromium as a contaminant of concern. Hexavalent chromium and tetrachloroethene have EPC concentrations greater than the WAC 173-340-720 groundwater cleanup level. Hexavalent chromium also has a hazard quotient greater than 1. Add hexavalent chromium and tetrachloroethene to the COC list.
- 6) A comment was submitted on the 200-UP-1 RI/FS requesting an explanation on the use of the 90<sup>th</sup> percentile value as used for estimating EPCs in risk assessments versus the average 95 percent UCL for estimating EPCs per OSWER 9285.6-10. If the 95 percent UCL is determined to be more conservative, this change will need to be reflected in the Proposed Plan.

- 7) There is agreement between the Tri-Parties that source and groundwater operable units will be addressed through separate CERCLA RI/FS processes. This is briefly explained in the document. Add language to further explain the assumption that source OUs will successfully address source contamination while groundwater OUs are addressing contamination currently present in the aquifer. Also explain that groundwater monitoring programs will be part of final cleanup actions to verify how contaminant concentrations are changing over time and identify new contaminants if any should enter the aquifer.
- 8) Chloroform, 1,4 dioxane, tetrachloroethene, trichloroethene, chromium, and hexavalent chromium were not identified as COCs because their 90<sup>th</sup> percentile groundwater concentrations are less than the WAC 173-340-720 groundwater cleanup level of  $1 \times 10^{-5}$  acceptable target risk level for carcinogens or a hazard quotient of 1 for non-carcinogens. However, WAC 173-340-720 (4)(iii)(B) states that for known or suspected carcinogens, a  $1 \times 10^{-6}$  value should be used for individual contaminants. These contaminants are above state cleanup levels and should be added as COCs for 200-UP-1.

#### Specific Comments

- 1) *Pg. 1, Figure 1:* Label where UP-1 is located in this figure.
- 2) *Pg. 1, Public Comment Period Box:* Provide a general email and postal address where people can provide comments on the document. This should also be listed in the Community Involvement Section on page 48. This is a more direct method of communication than directing readers to send their comments to three different individuals. The points of contact from each agency should be retained.
- 3) *Pg. 1 3<sup>rd</sup> paragraph:* Change the following sentence:
  - “~~The DOE and the U.S. Environmental Protection Agency (EPA)~~ Tri-Parties propose that remedial actions...”
- 4) *Pg. 2, 1st paragraph:* The first sentence states that the 200-UP-1 contains the same COCs as 200-ZP-1 with the addition of uranium. However, the 200-ZP-1 COCs include carbon tetrachloride, chromium (total), hexavalent chromium, and trichloroethylene which are not listed as 200-UP-1 COCs of uranium, nitrate, iodine-129, technetium-99, and tritium. Clarify the paragraph to highlight this distinction.
- 5) *Pg. 2, 3<sup>rd</sup> paragraph:* Revise the paragraph to better clarify why the iodine-129 portion of the preferred alternative is an interim remedial action. Reorder the paragraph as:

“The actions for the 200-UP-1 COCs of uranium, technetium-99, nitrate, and tritium are proposed as final remedies. The 200-UP-1 OU Preferred Alternative uses groundwater pump-and-treat technology for a period of 25 years, coupled with monitored natural attenuation (MNA) for an additional 125 years for cleanup of the uranium, technetium-99 and nitrate plumes and MNA for cleanup of the tritium plume. The iodine-129 portion of the Preferred Alternative is proposed as an interim remedial action (IRA). Currently, there is no remedial technology commercially available that is capable of treating iodine-129 contaminated groundwater present in 200-UP-1 groundwater to the drinking water

standard. Hydraulic containment would be used to contain the iodine-129 plume in-place (rather than extracting and treating it), while DOE evaluates treatment technologies that can remediate the high concentration of the iodine-129 plume to the 1 pCi/L drinking water standard. The ICs component of the Preferred Alternative would restrict access and use of the groundwater until the cleanup levels for all COCs are achieved.”

6) *Pg. 2, last paragraph:* Change the sentence as follows:

- “The treatment system which will be used to treat the extracted groundwater from both OUs is the 200 West Area Pump-and-Treat Facility that was built as part of the 200-ZP-1 OU remedy.

Use this term when referring to the pump-and-treat facility.

7) *Pg. 3, first paragraph:* Delete the following sentence:

- ~~However, the design treatment goal for the 200 West Area Treatment Facility is to treat groundwater to concentrations less than the drinking water standard.~~

8) *Pg. 4, 5th paragraph:* Change the following sentence:

- ~~“...drinking water standard can be performed, within a reasonable time period and for a reasonable cost.~~

9) *Pg. 5, Scope and Role Section:* Move the second and third paragraph in this section to the “What caused the current contamination in the operable unit?” section on page 8. A general comment was made about further explaining the separation between source and groundwater OU processes.

10) *Pg. 5, 6<sup>th</sup> paragraph:* Change the following sentence:

- ~~“The alternative aligns with the overall Central Plateau TPA groundwater remedial strategy, which includes restoring groundwater to beneficial use (where practicable). and uses a common treatment system (200 West Area Treatment Facility) to create cost savings.~~

The Hanford Site Groundwater Strategy (DOE/RL-2002-59) can be cited as the document where the Tri-Parties identified a groundwater strategy to protect and remediate groundwater, including returning groundwater to beneficial use within a reasonable time frame wherever practicable.

11) *Pg. 6, 2<sup>nd</sup> paragraph:* Change the following sentence:

- The preferred remedial alternative presented in this Proposed Plan is ~~the lowest cost alternative~~ cost effective, protective of the environment, ...”

12) *Pg. 6, 3<sup>rd</sup> paragraph:* Change the following sentence:

- ~~“...of the evaluation criteria and uses the common features and attributes associated with both the 200-ZP-1 OU and 200-UP-1 OU remedial strategies~~ same remedial technologies as the 200-ZP-1 OU remedy.

13) Pg. 6, last paragraph: Define WMAs in the definition column. The term is used improperly throughout the document. It is used interchangeably with tank farm complexes.

- Pg. 10, 3<sup>rd</sup> paragraph
- Pg. 11, 1<sup>st</sup> paragraph

14) Pg. 8, 1<sup>st</sup> paragraph: Add a definition of “process liquids” and “low-level effluent” to the definition column.

15) Pg. 12, 1<sup>st</sup> bullet: This bullet states that active water lines were abandoned. Explain what “abandoned” means in the text.

16) Pg. 16, 1<sup>st</sup> paragraph: Change the sentence as follows:

- “...and is expected to remain so for the foreseeable future to ensure...”

17) Pg. 16, 1<sup>st</sup> paragraph: Delete

“and DOE is responsible for designating the land use for the Site. As the lead agency for CERCLA cleanup action on the Site, DOE is also responsible for identifying future land uses that will guide CERCLA risk assessment and cleanup decisions. The Hanford Comprehensive Land-Use Plan ROD (64 FR 61615) and 2008 amended Hanford Comprehensive Land-Use Plan ROD (73 FR 55824) designated land uses for the Site. The land use designation for the Central Plateau is generally Industrial Exclusive. This means the area is suitable for treatment, storage, and disposal of hazardous and/or radioactive wastes under federal control.”

This text can be replaced with language from the 200-ZP-1 Proposed Plan which states the following:

“As part of the Central Plateau, the 200-UP-1 OU resides within a land-use area designated by DOE for industrial purposes for the foreseeable future. The DOE is expected to continue industrial activities within the Central Plateau until at least the year 2050 and, in response to the *Exposure Scenario Task Force on the 200 Area* (response to HAB advice 132), the Tri-Party agencies recognize that the period for waste management and institutional controls on the Central Plateau will last approximately until the year 2150.”

18) Pg. 17, 3<sup>rd</sup> paragraph: Change the following title:

- What ~~geographic, topographic, or other~~ factors had a major impact on remedy selection?

Neither geographic nor topographic features are included in this section.

19) Pg. 17, 3<sup>rd</sup> paragraph: Change the following sentence:

- For the Central Plateau, ~~DOE has~~ the Tri-Parties have established a goal to restore the aquifer to a level that achieves drinking water standards or risk-based levels unless...”

- 20) *Pg. 17, 4th paragraph:* Delete the following sentence:
- ~~Additionally, the ERDF facility prevents direct access to large portions of several contaminant plumes.~~
- 21) *Pg. 18, Summary of Site Risks Section:* Briefly describe the 200-UP-1 RI/FS document (DOE/RL-2009-122) in the introductory paragraph to describe the work that took place.
- 22) *Pg. 19, 4<sup>th</sup> bullet:* Explain what  $1 \times 10^{-4}$  means in terms of probability. For example, 1 in 10,000 chance of developing cancer. Use this explanation in the definition of ELCR. This type of explanation is easier for the average person to understand. This is done on page 20, but it would be more helpful earlier in the document.
- 23) *Pg. 19, Definition Column:* Explain what an “environmental medium” (i.e. soil, groundwater) is in the definition of Exposure Point Concentrations. Also, under Excess Lifetime Cancer Risk, add language that explains that Ecology has established a cancer risk of  $10^{-6}$  for individual contaminants.
- 24) *Pg. 21, Table 1:* The information in this table supports the addition of carbon tetrachloride, hexavalent chromium, and tetrachloroethene as 200-UP-1 COCs. It is difficult to understand why these contaminants are not included. These contaminants should be added as COCs.
- 25) *Pg. 21-22, Table 1& 2:* EPA ROD guidance states that a narrative description rather than a tabular presentation should be used to describe risk in the Proposed Plan. These tables are not useful to the average person. Simplify these tables to make them more straight-forward. Add a footnote to Table 1 describing that a hazard quotient greater than 1 generally indicates that remedial actions may be warranted. Also, describe the ELCR in terms of probabilities for both tables, such as “5.6 in 10,000”.
- 26) *Pg. 23, 3<sup>rd</sup> paragraph:* Change the title as follows:
- Selection of ~~Chemicals~~ Contaminants of Concern
- 27) *Pg. 23, 5<sup>th</sup> paragraph:* The justification of why carbon tetrachloride was not identified as a COC for 200-UP-1 needs to be explained further. Expand this explanation to describe how the 200-ZP-1 remedy will address the carbon tetrachloride plume and how the portions of that plume located in 200-UP-1 will be addressed. Answer questions such as: “Is there carbon tetrachloride contamination in 200-UP-1 above cleanup levels?”; “Will the carbon tetrachloride contamination in 200-UP-1 be addressed through active pump-and-treat and/or MNA?”; Were considerations made for how the 200 West Pump-and-Treat facility would affect contaminant migration in 200-UP-1?”.
- 28) *Pg. 23, 7<sup>th</sup> paragraph:* This paragraph states that contaminants “may be” included in the scope of a future performance monitoring program. Add language that states monitoring programs will sample for contaminants in the 200-UP-1 area to check for changing levels of known contaminants or the possible introduction of new contamination.
- 29) *Pg. 27-29, Table 5:* This table is not a useful summary of remedial alternatives for the average reader. The total approximate time to reach cleanup levels for each remedy can be

misunderstood. Add a line labeled “Overall Approximate Time to Reach All Cleanup Levels” for each remedy. This will show that each remedy presented is expected to take at least 150 years to address nitrate.

30) Pg. 31, 1<sup>st</sup> sentence: Change the sentence as follows:

“Construction of the 200 West Area Pump-and-Treat Facility will be completed and operational by December 30, 2011.”

31) Pg. 31, 1<sup>st</sup> paragraph: This paragraph suggests that there is a potential to treat more than the projected 350 gpm from 200-UP-1 since there is a large difference between the initial 2,500 gpm capacity and the overall 3,750 capacity. Clarify the anticipated capacity for the 200 West Area Pump-and-Treat Facility and how groundwater from 200-UP-1 will be phased into 200-ZP-1 operations. See the proposed language below.

- “Construction of the 200 West Area Pump-and-Treat Facility will be completed and operational by December 30, 2011. The design has 1,323 L (350 gal) per minute allotted for treatment of 200-UP-1 groundwater. Up to 300 L (80 gal) per minute from WMA S-SX will be treated for technetium-99 and up to 1,135 L (300 gal) per minute from the U Plant Area will be treated for uranium. The design also allows for facility expansion in the future if additional capacity for treating 200-UP-1 OU groundwater is needed. Any additional groundwater treatment needs beyond the 1,323 L (350 gal) per minute flow rate would likely require expansion of the facility.”

32) Pg. 32, *Summary of Alternatives Section*: Include a figure of the overlapping contaminant plumes with the suggested extraction and injection well locations for all contaminants. This should be done for each alternative.

33) Pg. 71, 5<sup>th</sup> paragraph: Clarify that nitrate is also addressed through pump-and-treat when co-extracted with other contaminants.

34) Pg. 40, *Cost Section*: Add cost information so the reader can better understand the cost differences for each alternative.

35) Pg. 42, 1<sup>st</sup> paragraph: Elaborate on why Alternatives 3 and 4 were given less favorable rankings than Alternative 2 for sustainable elements. Explain if this is related to the amount of energy required to run a more aggressive pump-and-treat approach and which other factors were considered.

36) Pg. 43, *Last paragraph*: Delete the last paragraph describing the overall Central Plateau cleanup approach as defined in DOE/RL-2009-81 and DOE/RL-2009-10.

37) Pg. 44, 2<sup>nd</sup> paragraph: Rewrite this paragraph as follows:

“An additional uncertainty pertains to future contributions to groundwater contamination from the source area waste sites. Groundwater remedial actions are being implemented in advance of final remedial actions for source OUs to

accelerate the cleanup of existing groundwater contamination and contaminant plumes within the Central Plateau. RI/FS processes for source OUs are underway, as defined in the Tri-Party Agreement.”

38) *Pg. 44, 5<sup>th</sup> paragraph:* This paragraph states that there is a robust groundwater monitoring program. Is this program currently able to assess impacts from the deep vadose and identify the need for further action? Please explain if this is an accurate statement or if changes in groundwater monitoring will be required.

39) *Pg. 46, RCRA Section:* Remove this section. It is not necessary as part of an EPA-lead CERCLA action.

40) *Pg. 49:* The Public Information Repository locations are listed. Will hard and/or electronic copies of this document be sent to each repository? The locations should only be listed if they will have a copy of the document available for public viewing.