

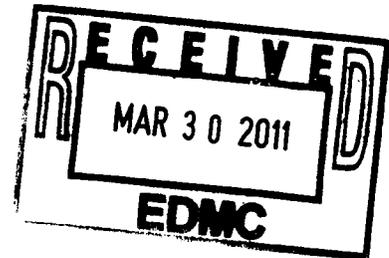


March 24, 2011

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Re: Review Comments on the *Proposed Plan for the Remediation of the 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units, DOE/RL-2009-117, Draft A and Feasibility Study for the Remediation of the 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units, DOE/RL-2007-27, Draft C.*

Dear Mr. Holten:

The Yakama Nation ERWM Program appreciates the opportunity to review and provide comments on the *Proposed Plan for the Remediation of the 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units, DOE/RL-2009-117, Draft A and Feasibility Study for the Remediation of the 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units, DOE/RL-2007-27, Draft C.*

The Confederated Tribes and Bands of the Yakama Nation is a federally recognized sovereign pursuant of the Treaty of June 9, 1855 made with the United States of America (12Stat. 951). The U.S. Department of Energy's Hanford site was developed on land ceded by the Yakama Nation under the 1855 Treaty with the United States. The Yakama Nation retains reserved rights to this land under the Treaty.

There is no issue of greater importance to the Yakama Nation than protection of, and respect for the treaty-reserved rights. The Hanford Site lies within ceded area of the Confederated Tribes & Bands of the Yakama Nation. Within this ceded area, the Yakama Nation retains the rights to natural and cultural resources including but not limited to areas of ancestral use, archaeological sites and burial grounds. These resources are sacred and sensitive to the Yakama Nation, and

must be managed to preserve, protect and perpetuate the resources that are inseparable from our way of life.

The majority of our comments are based on issues identified in the *Feasibility Study for the Remediation of the 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units, DOE/RL-2007-27, Draft C*. This brings into question how a Preferred Alternative can be selected based upon an unapproved feasibility study.

Given the various characterization uncertainties (including use/substitutions of data collected at similar sites in evaluations) for both radiological and non-radiological contaminants; the amount of effluent volumes and inventories and their mobility which indicate potential for deeper and lateral contaminations, the lack (in some instances) of appropriate locations of wells used to evaluate impacts to groundwater; the acknowledged potential ecological impacts; and the acknowledged direct contact risks for *future Native Americans*, the ERWM Program requests USDOE apply the Remove, Treat and Dispose Alternative for these waste sites. We request the RTD Alternative to remove 90% or more of the contaminants. See our waste site specific comments. Some of these waste sites showed large quantities of contamination at depths greater than the excavation limits established for the RTD alternative. Any excavations must be in compliance with applicable federal/state regulations and to the depth that removes the mass quantity of contamination. We request USDOE use an observational approach to sampling and removal contaminated soils with greater than a 10^{-6} risk level for individual non-radiological contaminants. We anticipate all structural and piping components will be similarly remediated along with their associated waste sites. We do not support deferral of any associated pipelines to the 200-IS-1 OU.

We do not agree that the biologically active zone is limited to ten (10) feet below ground surface or to an alternate point of compliance for protection of human health or the environment.

NEPA Evaluation: The Feasibility Study for the 200- PW- 1, -3, -6 waste sites for which this evaluation was performed is incomplete. Whether there are significant impacts remains questionable. The ERWM Program requests USDOE prepare an Environmental Assessment on these actions to assist decision-making.

The ERWM Program identified seven areas that have significant concerns.

Mixed Low-Level and Transuranic Mixed Waste Cleanup: Most of the waste sites in the 200-PW-1 and 200-PW-6 OUs have transuranic contaminants (or transuranic constituents) in the soil at various depths. The contaminated soil and debris excavated from these sites that contain alpha-emitting transuranic isotopes with half-lives exceeding 20 years in concentrations that exceed 100 nCi/g require disposal offsite at WIPP. Such soil must be managed and disposed in accordance with ARARs. Remedies that may generate transuranic waste must be planned and implemented in coordination with the Hanford Transuranic Waste Certification Program – a step that should be documented during the remedial design phase.

The ERWM Program does not support construction of waste storage facilities that are in violation of USDOE Orders or RCRA or CERCLA regulatory obligations and/or will result in long-term/permanent storage of such wastes on the Hanford site.

Deferral of Remediation of Contaminates to Deep Vadose Zone Operable Unit: The RI and FS evaluations concluded that the majority of the waste sites pose a current or potential risk to human health and the environment (plants, animals, or groundwater) via direct contact or

contaminant migration into the underlying groundwater from unrestricted land use. Statements are made that remediation of some contaminants (i.e. Nitrate, technetium-99) will be addressed under the Deep Vadose Zone OU, 200-DV-1. The ERWM Program does not support this approach. Under the CERCLA process, there must be a remedy to deal with all contaminants above soil protection of groundwater values for a final ROD. We request USDOE include remediation of all contaminants associated with the 200-PW-1, 3, 6 and 200-CW-5 OUs within the same decision document (DOE/RL-2009-117, Draft A).

Sampling and Modeling: Generally stated, there appears to be a reliance on professional judgments to decide on the need for action that will be refined with additional characterization (confirmatory sampling) activities planned during remedial design and implementation of chosen alternative. Additional post-ROD sampling for mobile contaminants is suggested to improve the approximations of the distribution of these contaminants in the vadose zone and to improve estimates of the potential threat to groundwater. The ERWM Program requests USDOE conduct sampling at waste sites where none were done, that analysis include Technetium-99, nitrate, PCBs, boron, mercury, TCE, hexavalent chromium as well as carbon tetrachloride and methylene chloride.

Migration of contaminants, including plutonium, from the waste sites to groundwater should be considered and addressed in the proposed plan. Data acquired within the last 5 years indicate that significant plutonium contamination remains within the 200 Area and, in particular, in the vicinity of the 216-Z-9 covered trench. In less than 50 years, plutonium has migrated to depths of approximately one hundred and twenty (120) feet at concentrations that exceed EPA standards for geologic disposal (100 nCi/g). Such data provide strong evidence for the need to include plutonium as a contaminant of concern in the vadose zone and groundwater at these Operable Units (OUs).

Moreover, DOE's draft Tank Waste EIS (Appendix U, Table U-2) indicates that plutonium migration in groundwater from the Central Plateau will reach the near shore of the Columbia River at levels more than three times the EPA drinking water limits.

Institutional Controls: The FS makes statements about USDOE retaining institutional controls over these waste sites for 1,000 years (High and Low Salt Waste Sites) and 350 years (Cs-137 Waste Sites), where residual risks would remain above acceptable levels. IC may be feasible in the short-term, but to assume long-term institutional control (over 1000 years) is in conflict with U.S. Nuclear Regulatory Commission regulations in 10 CFR 61.59 which limit reliance upon ICs to 100 years after transfer of radioactive disposal facility property to a new owner.

Land Use Designations: The Hanford CLUP-EIS anticipated the possibility of transfer of Hanford land parcels, as did USDOE's 2012 Vision. Assumptions on the entire inner area (including the 200-PW-1, 200-PW-3, 200-PW-6, and 200-CW-5 OU sites) remaining exclusive industrial and thus serving as the basis for exposure scenarios (which are used to establish cleanup levels) are faulty. The FS and PP state the Central Plateau will be an Industrial Land-Use area. This is possible in the short-term (100 years), but is impossible to predict in the long-term. USDOE needs to evaluate unrestricted use of the Central Plateau after 100 years, including the full exercise of Yakama Treaty rights, to assess the protectiveness of cleanup remedies.

Barriers: Monofill Evapotranspiration (ET) Barriers are currently under consideration for application at the 200-PW-1, 3, and 6 and 200-CW-5 waste sites because they are simple in design and construction, demonstrated effectiveness in arid and semiarid climates, and relatively

low cost. Unfortunately, these statements are not supported by the existing facts. This proposed action appears to establish a bias toward minimizing and reducing near-term closure costs and long-term protection. The preferred alternative for this feasibility study should place little or no reliance on Evapotranspiration Barriers or institutional controls for long term protection. Instead, the preferred alternative should be removal, treat, and disposal of all shallow contaminated soils.

- Reference: "Alternative Covers: Enhanced Soil Water Storage and Evapotranspiration in the Source Zone." W.H Albright, W.J. Waugh, and C.H. Benson, May 2007.

Cancer Risk: USDOE indicates excess cancer risk is unacceptable if it is greater than the CERCLA risk range of 1×10^{-4} to 1×10^{-6} and continues on to say cumulative excess lifetime cancer risk from non-radiological carcinogens greater than 1×10^{-5} . The ERWM Program requests clarification as to why there is not a more stringent cancer risk used for radionuclides given that it is unacceptable to have a risk greater than 1×10^{-5} for multiple non-radiological contaminants.

- Proposed RTD Options 3A & 3B: Ecological direct-contact exposure to non-radionuclides is to be evaluated at fifteen (15) feet below ground surface unless Ecology grants permission (in compliance with WAC 173-340 regulations). Neither of these options reflects this requirement nor was a complete baseline risk assessment conducted. Post-ROD confirmatory sampling does not substitute for a complete ecological assessment. Delay of sampling until development of a Work Plan is inconsistent with the CERCLA process which requires a baseline risk assessment (human health and environmental receptors) during the Remedial Investigation phase.
- ELCR of 1×10^{-4} is for individual and is presented as EPA's target risk threshold; however EPA uses the general 10^{-4} to 10^{-6} risk range within which the Agency strives to manage risks as a part of a CERCLA cleanup, with a preference for cleanups achieving the more protective end of the range (i.e., the point of departure, 10^{-6}). Human health direct-contact exposure to non-radionuclides within fifteen (15) feet of ground surface risk to multiple carcinogens cannot exceed 1×10^{-5} in compliance with WAC 173-340. The more stringent values should be used.
- Table 5: Human Health (Industrial Exposure Scenario) does not include Carbon Tetrachloride, Methylene Chloride, Technetium-99, or Nitrate. We do not support USDOE's use of risk threshold of 10^{-4} for these contaminants.

Waste Groups Specific Comments:

216-Z-Ditches Waste Group: The ERWM Program requests the preferred alternative be RTD of all shallow zone contaminated soils. We support and encourage USDOE to dig below fifteen (15) feet in places where deeper excavation completely or nearly eliminates (90% or more) of waste site residuals by removing them.

- 216-Z-1D Ditch (Northern Portion): Our review of the *Feasibility Study for the 200-CW-5 Cooling Water Operable Unit-DOE/RL-2004-24, Draft C, REISSUE*, found high values near the northern head wall of the ditches which may indicate that Plutonium metal particles were included in one or more of the area's accidental releases. Particulates would have dropped out relatively quickly and would have accumulated near the head of the ditches. If this occurred the presumed outlier may in reality represent a significant source of plutonium.

The proposed No Action alternative for this portion of the 216-Z Ditches does not support unrestricted use and unlimited exposure; IC would be required to ensure this. Combine this with concerns regarding the incompleteness of chemical contaminate data and USDOE's stated need for confirmatory sampling, the ERWM Program requests the

preferred alternative be RTD of all shallow contaminated soils should confirmatory sampling indicate exceedances of industrial cleanup levels.

Remediation of the U-Pond is unclear. The ERWM Program requests clarification. The ERWM Program requests RTD of shallow zone contaminated soils. We support and encourage USDOE to dig below fifteen (15) feet in places where deeper excavation completely or nearly eliminates (90% or more) of waste site residuals by removing them.

Cesium-137 Waste Group: The USDOE preferred alternative, is a modified barrier as the remedy for the Cesium-137 waste sites, leaving contamination in place. The ERWM Program does not support this alternative. The ERWM Program requests the preferred alternative be RTD of all shallow contaminated soils. We support and encourage USDOE to dig below fifteen (15) feet in places where deeper excavation completely or nearly eliminates (90% or more) of waste site residuals by removing them.

High-Salt Waste Group: The USDOE preferred alternative is RTD Option A, removal of the highest concentration of contaminated soils two (2) feet below the base of the waste site and a barrier. Characterization information presented in DOE/RL-2007-27, DRAFT C indicates excavation of the 'mass' source of long-lived radionuclide wastes to a depth of forty (40) feet removes approximately ninety-six (96) percent of wastes. The ERWM Program requests the RTD Option 3C-removal (to at least forty (40) feet below ground surface) of contaminated soils. We anticipate removal of structures associated with these waste sites, placement of an appropriately designed soil barrier, and continuation, as needed, of the SVE system will be included in this option.

Low-Salt Waste Group: The USDOE preferred alternative is RTD Option C, which removes a significant portion of plutonium contamination, two (2) feet beyond that for Option A.

No soil characterization was performed for some of the cribs. Given this uncertainty, the ERWM Program does not support this alternative. We request the preferred alternative is Option 3C with modification, i.e., removal to at least forty (40) feet below ground surface of contaminated soils. We request USDOE conduct soil sampling within the crib boundaries to identify the type, concentration and extent of the contaminants. We anticipate removal of structures associated with these waste sites, placement of an appropriately designed soil barrier, and as needed, a SVE system will be included in this option.

Settling Tanks Waste Group: Investigation information identified no significant contamination in the soil column, suggesting that no leaks occurred. However, this remains uncertain. The preferred alternative only removes contaminated tank contents but would require long-term IC to prevent intrusions. The ERWM Program does not support any actions (i.e. tank stabilization) which preclude decontamination and removal of tanks on the Hanford Facility. The ERWM Program supports characterization and removal of tank contents and its disposal either at WIPP or in ERDF. We request subsequent tank(s) removal(s) (including associated tank systems equipment) with soil sampling beneath the tanks to confirm no leaks.

Other Waste Sites Group: Although there are no direct measurements of plutonium concentrations available, the 216-Z-10 Injection/Reverse Well received significant amounts of plutonium containing liquids. The 216-Z-8 French Drain received several magnitudes less volume of plutonium. Characterization data indicates the transuranic constituents are located within sixteen (16) feet of the bottom of the drain structure. The preferred No Action Alternative ignores requirements that the implementations of remedies that eliminate, reduce, or control the

risks to human health and the environment. The ERWM Program requests removal, treatment, and disposal of the 216-Z-8 French Drain and associated structures and pipeline. The ERWM Program recommends further technical evaluations of reverse well closure alternatives and plutonium stabilization (e.g. jet grouting).

The Yakama Nation ERWM Program looks forward to dialog on these concerns and comments. If you have any questions, please contact me at (509) 945-6741, or Dave Rowland at (509) 582-3466 or (509) 945-4488.

Sincerely,



Russell Jim, Manager
Yakama Nation
ERWM Program

Attachment 1:

cc: Paula Call, U. S. Department of Energy
Ken Niles, Oregon Department of Energy
Gabriel Bohnee, NPT
Stuart Harris, CTUIR
Wade Riggsbee, Yakama Nation ERWM
Dave Rowland, Yakama Nation ERWM
Jean Vanni, Yakama Nation ERWM
John Beckstrom, Yakama Nation ERWM
Marlene Shavehead, Yakama Nation ERWM
Kristian Callahan, Ridolfi Engineering, Inc.
Administrative Record

Attachment 1:

Review Comments on the *Feasibility Study for the Remediation of the 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units, DOE/RL-2009-117, Draft A*

The Yakama Nation ERWM Program identified eight areas that have significant concerns.

Characterization: There is considerable uncertainty associated with how sampling and data represents contaminant conditions in the vadose zone. Issues include:

- Assumption of similar and/or maximum future concentration values and lack of quantification and uncertainties in estimations.
- Spatial and temporal difference may have influenced sample bias.
- Plutonium and Americium radionuclides have been located at depths below 37 meters, indicating mobility not clearly defined.
- Limited or no data identified regarding the concentration or distribution of nonradiological contaminants in soils at some waste sites. The quantity of nitrate received some sites suggest it probably contributed in the past, and could have future impacts, to nitrate contamination in the unconfined aquifer.
- It is suggested that, rather than attempt to reduce uncertainties through design of alternatives which include groundwater impact mitigation efforts, efforts should focus on additional post-ROD site-specific vadose zone sampling with adjustments to the selected alternative. This is over-simplistic. Changes to alternatives cannot simply be done using this approach. Should decisions regarding whether the soil is protective of groundwater require changes be made to the chosen remedy, is USDOE going to follow the CERCLA modification process with an ESD or ROD amendment? Both would require Tribal/public review opportunities. The ERWM Program requests clarification on this issue.
- Sampling and Modeling: Generally stated, there appears to be a reliance on professional judgments to decide on the need for action that will be refined with additional characterization (confirmatory sampling) activities planned during remedial design and implementation of chosen alternative. Additional post-ROD sampling for mobile contaminants is suggested to improve the approximations of the distribution of these contaminants in the vadose zone and to improve estimates of the potential threat to groundwater.
 - Use of the 'analogous site' approach is only appropriate when the representative sites have been thoroughly characterized. Admittedly, the 216-Z-9 Trench did not have complete sampling.

To reduce uncertainties regarding the long-term reliability of management controls (including ICs) for providing continued protection from residuals, the ERWM Program requests USDOE perform necessary soil sampling within this Feasibility Study's activities.

The ERWM Program requests USDOE conduct sampling at waste sites where none were done and that analysis include Technetium-99, nitrate, PCBs, boron, mercury, TCE, hexavalent chromium as well as carbon tetrachloride and methylene chloride.

Groundwater: The RI and FS evaluations concluded that the majority of the waste sites pose a current or potential risk to human health and the environment (plants, animals, or groundwater) via direct contact or contaminant migration into the underlying groundwater from unrestricted land use. The National Contingency Plan expectation for groundwater is that usable groundwater will be returned to the highest beneficial use (i.e., drinking water)

“...wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site” (40 CFR 300.430[a][1][iii][F]).

- It was stated that the majority of sampling and data uncertainties stem from the estimation of source term amounts, from sparse data, difficulties in understanding contaminant release/retention in the vadose zone, and/or data bias resulting from the tendency for preferential sampling of the more contaminated portions of contaminant plumes and associated sampling and measurement frequency bias.
- Statements are made that some remediation of some contaminants (i.e. Nitrate and Technetium-99) will be addressed under the Deep Vadose Zone OU, 200-DV-1.
- Clarification needed as to why soil concentration value for Carbon Tetrachloride (.0031 mg/kg) was not used in place of less stringent groundwater values of 3.4ug/L.
- Borehole C3427 (DOE/RL-2006-51, 2007, Rev. 0) was drilled adjacent to the 216-Z-9 covered trench from February to May of 2006. At the time of construction, a maximum concentration of 254,000 pCi/g plutonium-239/240 was measured in Borehole C3427 at a depth of seventy (70) to seventy-two (72) feet below the ground surface. In less than fifty (50) years, plutonium has migrated to depths of approximately one hundred and twenty (120) feet at concentrations that exceed EPA standards for geologic disposal (100 nCi/g). Such data provide strong evidence for the need to include plutonium as a contaminant of concern in the vadose zone and groundwater at these Operable Units (OUs).

The ERWM Program requests USDOE perform additional groundwater site-specific sampling on the 200-PW-1, -3, -6, and 200-CW-5 waste sites under current Feasibility Study actions. Additionally, as filtered data for metals potentially underestimates the concentrations present in the groundwater, the ERWM Program requests USDOE perform unfiltered groundwater sampling to reflect a more accurate risk assessment.

The ERWM Program does not support deferral of remediation of contaminants to the Deep Vadose Zone OU. We request USDOE include remediation of all contaminants associated with the 200-PW-1, -3, and -6 OUs within the same decision document (DOE/RL-2009-117, Draft A).

We reiterate our concern that USDOE still lacks a comprehensive, integrated approach to the vadose zone. We believe that USDOE should perform interim and concurrent actions concerning the groundwater and the vadose zone to ensure that the cleanup of the source sites reduces risks to levels that are protective of Tribal subsistence uses without relying on long-term stewardship and permanent institutional controls.

We reiterate our recommendation that USDOE consider the following in developing a systematic approach to vadose zone cleanup:

- Potential future impacts from the deep vadose zone to groundwater and to the confined aquifer in 200 areas
- Use of more publically available and advanced models for doing modeling to determine potential level of risk to human health and the environment.
- Pursue an independent review of treatability technologies to apply to the deep vadose zone contamination problem.
- DOE should ensure that sufficient and additional funding is directed to address the vadose zone contamination problem.

Human Health Risk: Risks to Native American populations from both soil and groundwater exposure indicates exceedances. Results indicate Yakama Nation non-cancer hazards would remain above 1HQ for the tap water and produce pathways due to hexavalent chromium and TCE, and risks would remain above 10^{-4} for the produce pathway due to technetium-99.

- The contaminant of potential concern list is too limited, and requires further explanation as to the process for how they were selected.
- Native American exposure scenarios should be applied to the development of Preliminary Remediation Goals (PRGs). The proposed plan provides no indication that Native Americans are factored into the decision-making process.
- Irrigation should be included in the evaluation, as the irrigation scenario will affect contamination in soil and groundwater beneath the waste sites.
- Particulate inhalation and dermal contact should be included for the soil pathway, not just ingestion.
- 100% risk to the Yakama Nation from waste sites, soils, and groundwater, is unacceptable and should be addressed in the proposed plan. Appendix G, Native American Human Health Risk Assessment, from the Feasibility Study for the 200 Area Process Water (DOE/RL-2007-27, Draft C) concluded (page G-vii) that *"Risks to Native American populations are at the maximum risk possible (approaching 1, or 100 percent), indicating that exposures to soil at the two waste sites and groundwater beneath the waste sites represent a significant risk should they occur in the future."*

Cancer Risk: USDOE indicates excess cancer risk is unacceptable if it is greater than the CERCLA risk range of 1×10^{-4} to 1×10^{-6} and continues on to say cumulative excess lifetime cancer risk from non-radiological carcinogens greater than 1×10^{-5} . Why isn't there a more stringent CERCLA cancer risk value for radiological contaminants given that it is unacceptable to have a risk greater than 1×10^{-5} for total excess cancer risks for non-radiological contaminants?

- Proposed RTD Options 3A & 3B: Ecological direct-contact exposure to non-radionuclides is evaluated at 15 ft below ground surface unless Ecology grants permission (in compliance with WAC 173-340 regulations). Neither of these options reflects this requirement nor was a complete baseline risk assessment conducted. Post-ROD confirmatory sampling does not substitute for a complete ecological assessment. Delay until development of a Work Plan is inconsistent with the CERCLA process.
- ELCR of 1×10^{-4} is for individual and is presented as EPA's target risk threshold; however EPA uses the general 10^{-4} to 10^{-6} risk range within which the Agency strives to manage risks as a part of a CERCLA cleanup, with a preference for cleanups achieving the more protective end of the range (i.e., the point of departure, 10^{-6}). Human health direct-contact exposure to non-radionuclides within fifteen (15) feet of ground surface cumulative risk to carcinogens cannot exceed 10^{-5} in compliance with WAC 173-340. The more stringent values should be used.

The ERWM Program disagrees with the statement that there are no significant differences in risks or hazards between the subsistence farmer and the two Native American exposure scenarios. They have unique exposure pathways and exposure rates, and much higher risks (as shown in DOE/RL-2007-27, Draft C, Appendix G). Furthermore we disagree with the statement 'Although not quantified, future concentration reductions will be significant for all contaminants due to the planned groundwater remediation activities.'

A disconnect appears between industrial worker and future subsistence farmer scenario exposure durations. Text states industrial worker scenario long-term duration is from 25-70 years and future subsistence farmer scenario occurs in 150 years. The ERWM Program requests USDOE recalculate future subsistence farmer scenario risks as occurring in 50 years. Include the inhalation pathway along with direct contact and ingestion.

Ecological Risk: The Executive Summary states that there is no identified or projected ecological risk. Other text states a screening level ecological risk assessment (SLERA) ruled out further consideration of sites with regard to ecological risk potential; therefore no final COPCs were identified by the ecological risk assessment process. Yet, discussion in Section 3.3 states ecological exposures are likely present at twelve of the sixteen waste sites.

- The working hypothesis for the purposes of the SLERA is that biological activity at these 200-PW-1, -3, and -6 waste sites are limited largely to the top eight (8) to ten (10) feet. This is an erroneous assumption. We do not agree that the biologically active zone is limited to ten (10) feet below ground surface or to an alternate point of compliance for protection of human health or the environment. Ecological direct-contact exposure to non-radionuclides is to be evaluated at fifteen (15) feet below ground surface unless Ecology grants permission (in compliance with WAC 173-340 regulations).
- Statements are made that at least one of the remedial alternatives would address contaminants potentially posing a threat to ecological receptors (i.e., RTD of soils to a depth of 4.6 meters [15feet] for protection of human health or groundwater) and that demonstration that remediation will also protect ecological receptors will be addressed as a part of the remedial design/remedial actions post-ROD. Unless USDOE intends to RTD soils to at least fifteen (15) feet at each waste site, this assumption is invalid.
- Furthermore, delay of sampling until development of a Work Plan is inconsistent with the CERCLA process which requires a baseline risk assessment (human health and ecological receptors) during the Remedial Investigation phase. Identifying ecological screening values or preliminary remediation goals (PRGs) in the Work Plan is unacceptable.
- We also request USDOE clarify the decision-making process and what is the screening level for Tc-99.

The ERWM Program requests USDOE perform a complete ecological risk assessment, identify all pathways, and characterize current and potential threats to the environment and ecological receptors, and include results in this Feasibility Study. Consider animals consuming contaminated plants in the assessment. Note Federal maximum contaminant levels (MCLs) are NOT risk levels. Although an evaluation of how MCLs compare to risk levels can be made (and MCLs may be used for screening) they are not the same as risk levels.

Cost Analysis: Costs are not fully represented. Several proposed alternatives will include post-ROD sampling activities. These costs are not included. Uncertainty regarding the extent of contamination at each waste site is so high; impact is expected to affect both costs and duration of remedial alternatives. The ERWM Program requests USDOE revise cost analysis to include sampling activity costs where alternatives state they would be required. We would like to see a realistic life-cycle cost analysis (1000 years) which includes IC failures.

Remedial Alternatives: Statements that implementation of remedy(s) will require careful planning due to waste site location or infer that some technologies will have additional implementability issues is mute. Please provide just the facts. Issues of concern include:

- Use of terminology of ‘*remove significant portion of plutonium based on an evaluation of soil contaminant concentration with depth*’ is misleading. It appears that USDOE has decided removal of a significant portion can be only 51% waste removal.
- Piping components are presented as separate waste site groups.
- None of the RTD options presented clearly identifies excavation depths to meet requirement of no cumulative excess lifetime cancer risk from multiple non-radiological carcinogens greater than 1×10^{-5} risk levels.
- Transuranic Waste Cleanup: We note that the SVE system would continue to operate at present waste sites containing transuranic wastes (216-Z-1A Tile Field, 216-Z-9 Trench, and 216-Z-18 Crib) yet RTD activities would not commence until after completion of SVE.
- Preliminary Remediation Goals: It is not adequate to calculate PRGs based only an industrial worker exposure scenario. PRGs should also be determined for Native American and other residential scenarios to properly factor these groups into the decision-making process.
- What is an individual HQ? Does that refer to an individual species, contaminant, etc.?
- It is not clear when screening or background concentrations are used; these may be very different values. Clarify the usage and be explicit about the uncertainty associated with selecting these values.
- The calculation of PRGs is inadequate. It is not appropriate that certain contaminants are not calculated / presented (Table 5) because they were either not detected, not above screening levels, or did not exceed EPA’s less-protective target risk threshold of 10^{-4} for the subsistence farmer scenario because:
 - This does not represent (and therefore) protect Native Americans.
 - Some contaminants were not even evaluated at certain sites.
 - It is not clear whether detection limits were below screening levels.

The ERWM Program considers removal of a significant portion to be at least 90% to 96% waste removal. We request USDOE edit RTD options to reflect a more stringent risk level and to define ‘remove significant portion’ as *removal of at least 90% of waste*. We request all structural and piping components to be similarly remediated along with their associated waste sites. Additionally, we request USDOE use an observational approach to sampling and removal contaminated soils with greater than a 10^{-6} risk level for individual hazardous substances.

It is not acceptable to the ERWM Program that RDT activities would not commence until after completion of SVE as this could jeopardize completion of the M-16 milestone requirements.

The preferred alternatives for this feasibility study should place little or no reliance on evapotranspiration barriers or institutional controls for long term protection. In some instances, barrier components would include impossible to replace components (i.e., physical concrete component). It is unclear how there can be any reliance on the long-term effectiveness and performance of maintaining an alternative which requires institutional controls for a thousand 1000 years. The five (5) year CERCLA reviews should be conducted to evaluate the effectiveness of the remedy selected not simply to evaluate the need for continued ICs as implied.

The ERWM Program requests any future land use decisions will need to assume that the Yakama Nation ERWM will exercise its treaty rights on the land.

NEPA Evaluation: The Feasibility Study for the 200- PW- 1, -3, -6 waste sites for which this evaluation was performed is incomplete. Whether there are significant impacts remains questionable. The ERWM Program does not believe sections 6.6.2.3 *Natural, Cultural, and Historical Resources* and 6.6.2.7 *Irreversible and Irretrievable Commitment of Resources* have adequately met the NHPA (and other Acts) or NEPA requirements. There is no discussion provided in previous sections which detail how compliance with ARARs will be met or source of backfill soils. The ERWM Program requests USDOE prepare an Environmental Assessment on these actions to assist decision-making.