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Actionee: Cliff Clark
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Title: REVIEW OF THE DRAFT CERCLA FIVE-YEAR REVIEW REPORT FOR THE HANFORD SITE

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Comments:

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June 15, 2006

Nez Perce

TRIBAL EXECUTIVE COMMITTEE

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Mr. Cliff Clark
U.S. Department of Energy
P.O. Box 550, Mailstop A3-04
Richland, Washington 99352

Re: Review of the Draft *CERCLA Five-Year Review Report for the Hanford Site*

Dear Mr. Clark:

The technical staff of the Nez Perce Tribe (NPT) Environmental Restoration and Waste Management Program (ERWM) has completed a review of the draft CERCLA Five-Year Review Report for the Hanford Site. Our comments are included in this letter.

Since 1855, reserved treaty rights of the NPT in the Mid-Columbia have been recognized and affirmed through a series of Federal and State actions. These actions protect Nez Perce rights to utilize our usual and accustomed resources and resource areas in the Hanford Reach of the Columbia River and elsewhere. Accordingly, the NPT ERWM Program responds to actions that impact the Hanford ecosystem.

The NPT recognizes the CERCLA Five-Year Review process as one of the few which currently offer a more integrated overview of the status of the Hanford Site as a whole. With that in mind, we offer below as a reminder of the interests of the NPT, a copy of Tribal Resolution NP-05-4111, *Nez Perce Hanford End-State Vision*. It is towards that vision that our comments relative to the Five-Year Review are directed.

Nez Perce Hanford End-State Vision

Policy Statement and Conditions

The Nez Perce Tribe believes that the Endstate Vision of the Hanford Site should allow for Nez Perce Tribal members to utilize the area in compliance with the Usual and Accustomed treaty rights reserved and guaranteed in the 1855 treaty between the United State Government and the Nez Perce Tribe.

The Nez Perce Tribe believes that the ultimate goals of the Hanford cleanup should be to restore the land to uncontaminated pre-Hanford conditions for unrestricted use. This includes air, soil, groundwater, and surface water. Tribal members, ecological resources, and cultural resources within Usual and Accustomed areas should not be exposed to any potential adverse risk above that which has always existed for the tribe prior to the establishment of the federal government projects and facilities at Hanford in 1942.

To accomplish this long term cleanup goal the Nez Perce Tribe recognizes the following:

- 1. The Nez Perce Tribe will continue to work with DOE via its cooperative agreement on cleanup issues to ensure that treaty rights and cultural and natural resources are being protected and that interim cleanup decisions are protective of human health and the environment.**
- 2. This goals will require the responsibility of future generations until it is finally completed.**

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3. Technology to cleanup or dispose of some contaminants may not be currently available, but as it becomes available the Nez Perce Tribe will work with the Federal government to further reduce the levels of any residual contamination.

4. Based on the history of man, we do not believe that institutional controls are necessarily a viable option to be used until land and water can be cleaned up.

General Comments -

The NPT recognizes that by regulation the Five-Year Review is limited to operable units described in the Tri-Party Agreement as past practice units, remediated under CERCLA. By regulation, the review is to ensure the long-term effectiveness of engineered or institutional measures placed to protect human health and the environment; and it is to serve to optimize the effectiveness and implementation of remedy requirements.

However, the CERCLA Five-Year Review process is the only site-wide view of status of efforts towards cleanup that currently exists of which the NPT is aware. In order to encompass the problems in an integrated manner, the NPT recommends that the Five Year Review process at Hanford be expanded beyond its currently limited regulatory scope. It is otherwise difficult to maintain an overview of the status of the site as a whole.

For example, RCRA corrective action should be taken to begin the remediation of the groundwater plumes resulting from past leaks in the single-shell tank farms. The remediation of these plumes should not be postponed because of their assignment to CERCLA groundwater units. At a minimum, remediation of groundwater plumes caused by tank leaks in A, BX, BY, C, SX, T and TX single shell tank farms should begin immediately. In the case of the BX-102 tank leak, uranium contamination, which first violated drinking water standards in 1994, has gone un-remediated for 12 years.

The health of the environment and the associated progress towards clean up should not be held hostage to the integration issue between CERCLA and RCRA units and operations, between RL and ORP responsibilities, and/or between various contractor baselines.

The NPT acknowledges the guidelines both EPA and DOE have developed for the Five Year Review process, which asks and/or states the following:

Is the selected remedy operational and functional?

Are assumptions critical to the effectiveness of the measures or protections still valid?

What may be needed to address any current remedial deficiencies?

Opportunities to optimize long-term performance of measures or reduction of life-cycle cost need to be evaluated.

In addition, referencing the NPT end-state vision stated above, the NPT will also utilize the CERCLA Five-Year Review process as a tool to determine to what degree the sites are being or have been remediated so as to be usable for tribal Usual and Accustomed rights by treaty. It would appear general that Lessons Learned for DOE since the first Five-Year Review should include the recognition of the inadequacy of their knowledge of extent of contamination and how to deal with it. The NPT remains concerned about remediation efforts which rely heavily on attenuation and dilution concepts.

Future Issue

One of the main concerns is how does one evaluate a site in the Five-Year Review process and make assertions about protectiveness to the environment when in most cases there is no biological data to back that assertion up.

At the last Five-Year Review the ERWM had some concerns with how these statements were made regarding the persistent low levels of DDT that existed at the Horse Shoe Landfill. The resolution to that situation was that Horse Shoe Landfill be added to PNNL's annual surveillance and monitoring program. The results of that effort would then determine if any future action was warranted. Based on that effort, more contaminated soil was removed from that site. The concern is that there could be other sites similar to Horse Shoe Landfill that might have levels of contamination that may be incorporated into the food chain. The only way to assure the public in a Five-Year Review that this is not the case is to actually have some biological sampling results that show levels of protectiveness.

Resolution

We are not advocating that all the sites that are included in the Five-Year Review need to be samples, but we think sampling at selected sites would be appropriate. We suggest DOE select 3-5 sites per year and have PNNL, as part of their annual program, do some biological sampling (burrows, insects, plants etc) for one year at these sites. Each year pick 3-5 new sites. At the next Five-Year Review DOE would be able to report that over the past 5 years biological monitoring was done at 15-25 sites. Results could then be shared which would hopefully show that there is not a problem and that indeed the remedy is protective of the environment.

From our perspective this would be cost effective and would go a long ways in developing some positive public relations and credibility. We have talked this over with EPA staff and the response has been positive. This is actually an action item that could be put into the current Five-Year Review. For example, "Action Item: DOE plans on doing some biological monitoring at selective sites to address concerns raised by stakeholders and tribes for the next Five-Year Review."

Specific Comments –

100 Area –

P. 1.27 – What is the status of the remediation efforts for the 118-K-1 burial ground?

P. 1.30 – The NPT encourages additional consideration of the ESD issued in 2004 for 116-N-1 trench. Institutional controls as a remedy for Sr⁹⁰ at this location are inappropriate when ambient water quality criteria for aquatic organisms for strontium (and most if not all radionuclides) are still unavailable to assess risk.

P. 131 – It is the understanding of the ERWM that the TPA required ecological impact assessment for the 100-N has not been finalized (draft issued in 10/05), and in fact is currently undergoing massive rewrites to comply with the needs of the regulators.

P. 1.36 – The reservoir 182-D in D-Area still leaks and may be adding to the chromium movement in the plume. Suggestions for resolving this are to quit using the reservoir and obtain fire protection water directly from the river; or consider maintaining the reservoir in a reductive state, which would enhance the permeable reactive barrier on site.

200 Area -

The NPT acknowledges that the Hanford tank farms are not currently included in the CERCLA five year review. However, the Tribe, as well as the preparers of the CERCLA Five-Year Review, recognizes the need to include those items from the tank farm areas for review that relate to the groundwater operable units which are currently under Interim ROD action, and/or already contain active groundwater plumes.

P. 2.7 Section 2.3.2 Tank Farms - The evidence that supports the claim that soil contamination resulting from tank leaks and discharges to the cribs and trenches have commingled should be stated and referenced. In fact, visualizations in an un-issued document (DOE/GJO, 2004. B-BX-BY WMA and Adjacent Waste Sites Summary Report [draft], control number: GJO-2003-545-TAC prepared by S.M. Stoller Corp. for the Grand Junction Office, Grand Junction, Colorado) clearly demonstrate that these waste streams have not commingled in the vadose zone in the B-BX-BY area.

P. 2.19 Table 2. - The Z cribs and trenches are potential sources of transuranic contaminants. The single shell tank farms are potential sources of uranium, tritium, nitrate, chromium and iodine-129.

P. 2.21 & Progress Since Last Review - Since the measurements of the concentrations have been collected at the top of the aquifer, it is premature to claim that the declining concentrations at the top of the aquifer is due solely to the pump and treat. The contaminated area of lower concentration has increased dramatically in size, suggesting dispersion. The apparent decline in the concentrations could also be attributed to this DNAPL plume moving deeper into the aquifer past the screened interval of the groundwater monitoring wells. DOE does not yet have a good three-dimensional understanding of this plume.

P. 2.22 Technical Assessment Summary #1 - Same as above - , it is premature to claim that the declining concentrations at the top of the aquifer are due solely to the pump and treat.

P. 2.22 Technical Assessment Summary #3 - The recent discoveries of Tc-99 and carbon tetrachloride at depth within the 200 West Area should not be attributed to changes in water-table elevations without supporting evidence.

P. 2.24 Section 2.4.3.2 - The S, SX and U single shell tank farms should be identified as sources of groundwater contamination.

It is important to remember that the RAOs for uranium and Tc⁹⁹ were somewhat tentatively established as “ten times MCLs” (480 ug/L and 9,000 pCi/L) in the Interim ROD for UP-1 in 1997. It should be recognized that these standards exceed drinking water standards and that the remediation efforts have not restored the groundwater to its highest beneficial use.

P. 2.25 Technical Assessment Summary – A reference should be given that lists the data needs for the groundwater operable unit. It would appear that the source units haven’t been fully characterized yet. The report published in September 2004 should also be referenced, as it is unclear what report this is.

P. 2.27 Section 2.4.3.3 - Tank leaks (i.e. the leak from tank A-105) should be listed as contributing to groundwater contamination. This tank’s history is documented and must be included in any review document attempting to maintain an overview of the site’s remediation.

P. 2.27, 200 UP-1 - Source control remedies are needed for 200-UP-1 OU.

P. 2.27, 200-PO-1 - Operable Unit 200-PO-1 is contaminated primarily with tritium and iodine¹²⁹, yet no decision document is in place, and allegedly there are no technologies available to deal with the contaminants. However, potential remediation technologies applicable to the groundwater in 200-PO-1 has not been evaluated since the Corrective Measures Study in 1996. A DQO is underway for the 200-PO-1 Operable Unit, and this DQO should be mentioned in the text.

P. 2.28 Section 2.4.3.3 - Given the limited amount of data, it is premature to report that the trend is decreasing concentrations of Tc-99 near A tank farm.

P. 2.32, Table 2.8 - The symbol m² is generally equated with “meters squared”, as is, therefore, confusing when used as “miles squared” in the table. A comparison of the plumes between 1996 and 2004 should be given.

P. 2.32, Remedial Action Chronology - The statement that “The aquifer conditions did not allow meaningful removal of contaminants from the aquifer to justify continuation of treatability test operations” is misleading as it suggests that the entire aquifer in the northern half of 200 East is unsuitable.

P. 2.32 & 2.34, Tc-99 and Uranium - According to Figures K-9 and K-10 (DOE-RL, 1993c, *Phase I Remedial Investigation Report for 200-BP-1 Operable Unit*, DOE/RL-92-70, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington), Tc-99 and uranium were not reported above the DWS in the northern portion of 200 East Area. Thus, these are new groundwater plumes that have developed concurrently since 1992

while the environmental cleanup at Hanford was ongoing. In the B-BX-BY area, the only identified source of the uranium (as detailed in an un-issued report control # DOE/GJO-2003-545-TAC) in groundwater is the 1951 tank leak from BX-102.

The wording in the text (third paragraph on page 2.34) suggests by their physical location that the BY Cribs and the 216-B-7A and B Cribs are potential sources of uranium in groundwater; however, there is no field evidence that supports this inference (as detailed in an unissued report control # DOE/GJO-2003-545-TAC).

The text claims makes claims about the lateral extent of the uranium plume in 1997 while the Hanford Site Annual Monitoring Reports for FY 1996, FY 1997, FY 1998, and 1999 (PNNL-11470, -11793, -12086, -13116) don't include maps of the uranium plume in the B-BX-BY area. Please provide a reference for the 1997 map of uranium groundwater concentrations.

In regards to the Tc-99 and uranium plume, the text states that the “patterns of contamination in this area indicate multiple sources and contaminant migration pathways in the vadose zone”. The text should be clarified to indicate that the sources of the new Tc-99 and uranium plumes in 200-BP-5 OU are past leaks from single-shell tanks.

P. 2.37, Tritium - Contrary to the text, the distribution of tritium in 200-BP-5 OU differs substantially between 1996 and 2004. Compare Plate 3 (PNNL-11470) and Figure 2.10-4 (PNNL-15070), the distribution of tritium is substantially different in the northeast portion of 200 East Area. Comparing Plate 3 (PNNL-11470) and Figure 2.10-4 (PNNL-15670), the concentrations of tritium have increased in the B-BX-BY area since 1996. The text should be rewritten to accurately describe the changes in tritium distribution in the 200-BP-5 OU since 1996.

P. 2.37, Cobalt-60 and Cyanide - The present cobalt-60 and cyanide groundwater contamination probably has resulted from past tank leaks in BY tank farm rather than the BY Cribs, which contaminated groundwater in the 1950s.

P. 2.39, Progress Since Last Review - Unfortunately, only one of the nine groundwater monitoring wells, installed in the B-BX-BY area, have been located down gradient of the tank farms, which has severely restricted the usefulness of groundwater data in the area to identify the vadose zone sources. In this document, the uranium groundwater plume is reported as moving “some in the northwest direction while the “nitrate contamination migrated north”. The text should be revised so that the migration of the various contaminants is consistent with the groundwater flow direction. An opportunity was missed to place monitoring wells in optimal locations.

P. 2.39, Technical Assessments Discussion - The text should be revised to include the groundwater and vadose modeling done in RPP-10098 and DOE/RL-2002-42 with an explanation of why these two modeling efforts failed to model uranium reaching groundwater in the B-BX-BY area.

P. 2.40, Technical Assessments Discussion, third bullet - Refer to the previous comment for P. 2.39, Progress Since Last Review.

2.6 Issues, 2.7 Recommendations & 2.8 Action Items - The ongoing degradation of groundwater quality underneath the tank farms in 200 East Area should be addressed. These groundwater plumes caused by tank leaks in A, BX, BY and C single shell tank farms will not dissipate by natural attenuation. From the NPT perspective, the continued growth of the Tc-99 and uranium groundwater plumes near these tank farms is a higher priority than an interpreted soil conductivity anomaly based upon indirect geophysical measurements collected in the B/C Cribs and Trenches area.

300 Area –

P. 3.6 – 300-FF-1 – A summary of the evaluation of the completion of remedial actions is important, specifically if there remain institutional controls and monitoring efforts in the area. Citing the remedial action report does not give the reader an overview of what that report concludes. In other words, other than citing the report, what has the CERCLA Five-Year Review process done to ascertain that RAO's have been met? By regulation, the review is to ensure the long-term effectiveness of engineered or institutional measures placed to protect human

health and the environment; and it is to serve to optimize the effectiveness and implementation of remedy requirements.

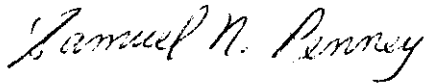
P. 3.11 – Technical Assessment Summary, fifth paragraph – This paragraph strongly states that the federal government will use the *Hanford Comprehensive Land Use Plan* (DOE, 1999) as its legal tool for determining cleanup levels in the 300 Area, and that use determinations are not subject to local and regional plans. As such, it would seem that RAOs based on CLUP have already been determined, and that Tribal nations and stakeholders will have little meaningful input. If this is the case, the NPT questions why DOE sponsors end-state workshops for this and other areas on the Hanford Site.

P. 3.12 , Section 3.5.1., second paragraph – The NPT is pleased to see that DOE recognizes that drinking water standards for uranium may not be appropriate regarding uranium toxicity to aquatic organisms, and recognizes that no standards have evolved upon which to base ecological risk. This begs the question as to how well the risk to the environment is understood with respect to uranium toxicity, either chemically or radiologically.

P. 3.14 - Based on computer simulations of future plume behavior, the tritium plume at 618-11 is not expected to create an exposure risk to the Columbia River. Such an expectation is premature. The potential for “more surprises” and thus future high peaks certainly exists, and this could change the simulations dramatically.

The NPT appreciates the opportunity to review the draft *CERCLA Five-Year Review for the Hanford Site*. In our efforts to maintain an overview of Hanford Site cleanup relative to the protection of tribal treaty rights, we see our participation as vital. The NPT will assist in all possible ways to help this process be a successful and useful review of the Hanford Site condition. Please contact Gabriel Bohnee, Director of ERWM, (208)-843-7376, should you have questions regarding our comments.

Sincerely,



Rebecca Miles
Chairman

Cc: Briant Charboneau, DOE
Steve Wisness, DOE
Jane Hedges, Ecology
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