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Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

APR 1 1999

Addressees - See Attached:

RESPONSE SUMMARY PACKAGE FOLLOWING PUBLIC REVIEW OF THE 200 AREAS REMEDIAL INVESTIGATION/ FEASIBILITY STUDY (RI/FS) IMPLEMENTATION PLAN, DOE/RL-98-28, Draft B

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Attached please find a complete copy of the response summary package resulting from the public review of the subject document which, was conducted from November 30, 1998, to January 14, 1999. On February 24, 1999, the U.S. Department of Energy, Richland Operations Office, received comments from the Confederated Tribes and Bands of the Yakama Indian Nation (YIN) on Draft A. The responses to the YIN comments on Draft A are also included in this response summary package to ensure a complete perspective is provided on all comments received to date.

On behalf of the 200 Areas Remedial Action Project Team and our regulatory counterparts in the local offices of the U.S. Environmental Protection Agency and the State of Washington Department of Ecology, I would like to extend our appreciation and thanks to all of the comment authors for their time and effort in submitting comments.

If you would like to discuss the comment responses further or if you would like to receive a copy of Rev. 0 of the subject document, please contact me at (509) 376-7087.

Sincerely,

Bryan L. Foley, Project Manager
Remedial Actions Project

RAP:BLF

Attachment

cc w/attach:
J. Donnelly, Ecology
M. J. Graham, BHI
J. Hansen, Geosafe Corporation
L. C. Hulstrom, CHI
A. J. Knepp, BHI
R. G. McCain, MACTEC
T. C. Post, EPA
L. C. Treichel, EM-442
C. D. Wittreich, CHI

APR 1999 RECEIVED EDMC

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Addressees - Letter dated: APR 1 1999

Ms. M. L. Blazek
Department of Consumer and Business Services
Oregon Office of Energy
625 Marion Street N.E., Suite 100
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Mr. Matthew J. Haass
Geosafe Corporation
2952 George Washington Way
Richland, Washington 99352

Mr. Jay McConnaughey
State of Washington
Department of Fish and Wildlife
c/o State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, WA 99336-6018

200 Areas Remedial Investigation/Feasibility Study Implementation Plan
DOE/RL-98-28, Draft B

Comments and Responses

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Oregon Department of Energy 33

Comment Summary: Comments received from the public review of this document have been compiled here with the responses to each comment provided. A range of subjects were included: 1) a request to perform a biological injury assessment; 2) concerns regarding the use of the analogous site approach; 3) a perceived lack of sufficient involvement with organizations such as the Hanford Natural Resources Trustee Council and interactions with Native Americans in the decision making process; 4) recognition of the effects of geologic setting on the waste site grouping logic; 5) lack of sufficient sampling to meet characterization needs; 6) the mechanism for integration of the 200 Area Remedial Action project with other projects, such as the Groundwater/Vadose Zone (GW/VZ), Tank Waste Remediation Systems (TWRS), and Waste Management; and 7) the general approach to the cleanup of the 200 Areas and the rest of the Hanford Site.

The 200 Area Remedial Action project has addressed these comments in the responses and has modified the Implementation Plan where appropriate to incorporate changes that were necessary. The DOE recognizes the need for an integrated evaluation of remediation alternatives and an assessment of cumulative effects. The objectives of the Groundwater/Vadose Zone Integration Project directly address some of the issues raised in these comments regarding the coordination of groundwater and vadose zone activities on the Hanford Site, and open communication with the Native Americans. The 200 Area Remedial Action Project has been identified as a "core project" whose activities are being integrated with TWRS, PNNL, Waste Management, and ER Program activities being directed by Bechtel Hanford, Inc. This process is just beginning and has the active support of the highest levels of DOE RL and HQ management.

The DOE appreciates your comments and looks forward to opportunities for interaction in the future.

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STATE OF WASHINGTON
DEPARTMENT OF FISH AND WILDLIFE
1701 S 24th Avenue Yakima, Washington 98902-5720 (509) 575-2740
FAX (509) 575-2474

c/o Department of Ecology
1315 W 4th Ave, Kennewick, WA 99336

14 January, 1999

Bryan Foley
U.S. Department of Energy
P.O. Box (HO-12)
Richland, WA 993S2

Dear Mr. Foley:

Subject: Comments on the document titled *200 Areas Remedial Investigation/Feasibility Study Implementation Plan (Plan)-Environmental Restoration Program* DOE/RL-98-28, Draft B.

The Washington Department of Fish and Wildlife (WDFW) appreciates the opportunity to provide comments on the Plan. It is our understanding that this Plan is to define the framework for implementing soil characterization activities in the 200 Areas, and providing direction to be followed in developing group-specific work plans for the 23 waste site groups.

Protection of the environment

The WDFW is extremely concerned with the way Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions are proceeding at the Hanford Site. At question is whether remedial actions are, in an overall sense, "protective of the environment," which is one of the nine criteria used to analyze alternatives. We are concerned with the lack of coordination between the U.S. Department of Energy (USDOE) Environmental Restoration Program staff and the federal, state and tribal trustees (CERCLA § 104(b)(2)) with regard to this Plan. In addition, for past remedial actions, the Tri-Parties (i.e. USDOE, U.S. Environmental Protection Agency, and Washington Department of Ecology) have failed to perform adequate environmental evaluations to properly assess threats to the environment while analyzing and selecting remedial alternatives to implement. We have cited below several examples where neither any ecological risk assessment has been performed nor any evaluation has occurred to assess affects from hazardous substance releases to biological receptors. Points raised here are inherent throughout the statutory CERCLA-Executive Order 12580-National Contingency Plan regulation framework. Therefore, we request that dialogue occur between USDOE, the Tri-Parties and the Hanford Natural Resource Trustee Council to address the issue of CERCLA remedial actions being, in an overall sense, "protective of the environment".

Results from a U.S. Fish and Wildlife Service preacquisition survey indicate that several past cleanup efforts by USDOE did not adequately address the criterion of "protection of the environment". The areas identified include the partial de-listing of the 100 National Priority List (NPL) site, i.e. North Slope, and one site in the de-listed 1100 NPL site. These inadequacies can be contributed to: 1) the failure to implement an analogous cleanup approach as described in the applicable remedial documents, and 2) the lack of adequate characterization information. The USDOE did not sample biota that inhabited these waste sites prior to or after completion of the remedial activities. After reviewing the facts from these cleanup efforts and USFWS's findings, we conclude the need for the USDOE and the Tri-Parties to incorporate a biological injury assessment into current and future cleanup activities in the 100, 200 and 300 Area NPL sites. Furthermore, as this plan is intended to provide the framework for soil characterization activities and define injury of that natural resource, we strongly recommend the plan provide the framework for other natural resources (e.g. biota) characterization activities as well.

Establishment of a Biological Injury Assessment

The WDFW strongly recommends the establishment of a biological injury assessment for the 200 Area NPL site. This assessment would assist USDOE and the Tri-Parties in making better informed remedial decisions, and would accomplish 3 objectives: 1) establishment/confirmation of source-receptor contaminant pathways, and documentation of biological injury by releases of hazardous substances at the 200 Area NPL site, 2) identification of areas of concern for biological receptors, such as undocumented waste sites, and prioritization of the 23 waste site groups for response actions, and 3) establishment of soil cleanup criteria that are protective of the environment and trust resources. These 3 objectives, if addressed, would eliminate redundant cleanup efforts (i.e. reduce total life-cycle costs) of the remediated waste site groups in the future, and are consistent with USDOE's Policy on Integration of Natural Resource Concerns into Response Actions.

The WDFW believes that the best biological injury assessment would be holistic in scope (i.e. the 200 Area NPL site) and achieve the above stated objectives. A less cost-effective approach would be implementation of the assessment by individual waste site groups. If USDOE chooses to implement a less successful alternative (i.e. a waste site group biological assessment), then, we request that each waste site group address our comments stated below on suggestions of what a biological injury assessment should include. However, by approaching this problem by waste site group, the objectives mentioned earlier can not be fully addressed.

Finally, Any biological injury assessment that is developed, whether for the 200 Area NPL site or for each waste site group, should have associated milestones to ensure funding and the success of the selected remedial actions.

Quality Assurance Project Plan

In reviewing Appendix A, Quality Assurance Project Plan (QAPP), we noticed the QAPP failed to include a biological injury assessment to characterize wildlife exposure from hazardous substance releases of the 200 NPL site/waste site groups. The USDOE must develop a biological assessment plan as part of the QAPP for the entire 200 Area NPL site to meet the 3 objectives stated earlier. Again, a less successful and more costly approach would be by waste site group. In addition, if USDOE implements this approach, then, we recommend that USDOE develop a biological injury assessment plan for each waste site group data quality objective (DQO) process.

Coordination with the Hanford Natural Resource Trustee Council

The biological injury assessment should be developed in close coordination with the Hanford Natural Resource Trustee Council (Council) of which USDOE is a member. In addition, the Council should be involved in the DQO process(es). Finally, the WDFW would like to see this project's staff brief the Council periodically.

The authors of the document failed to recognize or mention the Council, which indicates the lack of understanding and responsibilities by USDOE to coordinate with the Trustees.

Data Acquisition

Biological data acquisition could be implemented through a tiered approach. Tiering may include a more exhaustive evaluation inside the fenced areas of the 200 East and West Areas and at known wastes sites extending outside, and a cursory screen outside the 200 Area east and west fences. We suggest the evaluation, at minimum, include indicator species, such as ground beetle species, a small mammal (deer mice), and sentinel nest boxes for starling/kestrels, plants/seeds. We suggest the cursory screen outside the 200 East and West Area fences include, at minimum, sentinel nest boxes for starling/kestrels. Potential contaminants of concern for analysis should include a sweep for organic carbons, inorganics, volatile organic carbons, aromatic hydrocarbons, semi volatile organics, and radionuclides. Biological endpoints should include contaminant tissue burden, porphyrin profile, hemotology, histopathology, etc. The natural resource trustees which includes USDOE and Washington Department of Ecology, the responsible party, and the regulatory agencies have a responsibility to restore the natural resources, and the only way to achieve this objective is by evaluating potential injury to biota.

Conclusion

In conclusion, the WDFW believes communication between USDOE's project staff and our agency and the Council needs to occur. We strongly recommend the plan provide the framework for other natural resources (e.g. biota) characterization. This framework would establish and implement a biological injury assessment for the 200 Area NPL site/waste site groups and flesh out the biological sampling design in the QAPP and DQO process. The WDFW asks that the Council be participants in the development of a

biological injury assessment and DQO process(es). Finally, specific comments are attached.

Again, thank you for the opportunity to comment. If you have any questions on these comments, please contact me at (509) 736-3095.

Sincerely

Jay McConnaughey
Habitat Biologist, Hanford Site

CC:
Hanford Natural Resource Trustee Council
Susan Hughs, Vice-Chair
Teri Elzie, Admin. Sec.
Laura Cusack, Ecology
Ron Skinnarland, Ecology
Ted Clausing, WDFW

Enclosure

GENERAL RESPONSE TO WASHINGTON DEPARTMENT OF FISH AND WILDLIFE COMMENTS

1) RL recognizes that many of these general WDFW comments are global, sitewide kinds of issues, which are not limited to just the 200 Area NPL and the Remedial Action project. They affect the entire Hanford Site and projects by all DOE contractors. Also, with regard to a final ecological risk assessment (including a biological injury assessment) this activity is viewed as one which will occur after completion of all major remedial actions in the 200 Areas.

2) The WDFW recommended establishing a biological injury assessment for the 200 Area NPL site, to accomplish 3 objectives:1) establish/confirm a source-receptor contaminant pathway and documentation of biological injury by releases of hazardous substances, 2) identify areas of concern for biological receptors, "such as undocumented waste sites," and prioritize the 23 waste site groups for response actions, and 3) establish soil cleanup criteria that are protective of the environment and trust resources.

The project's remedial action objectives addresses prevention or mitigation of risk to both human and ecological receptors as well as preventing destruction of sensitive wildlife habitat and adverse impacts to threatened and endangered species. Prior to remediation, RL has and will continue to gather information that will assist in making a sound "preliminary" assessment of possible injuries. Given the sitewide applicability of the proposed need to perform biological injury assessments, the 200 Area project will forward the Commenters views and recommendations to the GW/VZ integration project which is responsible for, among other tasks, the development of a sitewide system assessment capability (SAC). The SAC is being designed to capture a cumulative impacts assessment associated with the GW/VZ cleanup activities at the Hanford Site.

With regard to the second objective, the project would like to note that using the assessment to identify areas of concern such as undocumented waste sites, is extremely difficult for either a "holistic" assessment for the 200 Area NPL or for an individual waste site group. As potential new waste sites are discovered they are evaluated following an established procedure that has been reviewed and accepted by the regulators. If judged to be a valid waste site they will be included with other similar sites within the 23 established waste site groups. The logic used to prioritize the 23 waste groups is based on the overall group priority first, followed by other factors such as biological considerations. While the priority for addressing the first six waste groups have been negotiated with established Tri-Party Agreement milestones, the priority for addressing the remaining sixteen waste groups is flexible and can be re-prioritized. Pinpointing where a mobile animal picked up contamination is difficult. Taking sufficient samples of plants across the 200 areas to identify potential new waste sites would involve a very large amount of samples, with results that would still be uncertain (the results might not pick up every or any undocumented sites).

With regard to the third objective, in the 200 Areas where RL expects to conduct waste management operations for the forseeable future, EPA recognizes that the human health protection criteria may be less stringent than the rural residential application, and that perhaps the ecological protection criteria may prove to have a more important, heavier weighting, in establishing cleanup standards for the 200 Areas.

3) We recognize the need for a final ecological risk assessment at the conclusion of CERCLA remedial actions, and the potential usefulness of some ecological sampling to help ensure there

are still not sources of contaminants accessible to the environment. The involvement of the Trustee Council, including WDFW, would be essential in the DQO to plan how to conduct this assessment, particularly so that it would also be useful for the NRTC purposes. It has been noted that at each monthly meeting of the Trustee Council all members of the Council are provided a listing of forthcoming documents to be released and are provided the opportunity to review them. The project views this mechanism as a valuable means of gaining the Council's feedback/input, thus influencing Tri-Party decision-making processes applicable to the Hanford clean-up.

4) RL, as well as representatives from EPA and Ecology, would be happy to meet with WDFW to discuss possible ecological protection criteria in terms of CERCLA based remedial action decisions. Discussion could prove very valuable in examining how human health criteria and possible ecological protection criteria (based on other sites) might be considered on future cleanup decisions. We could also take that opportunity to describe the current DQO process applied to each waste group prior to the start of characterization.

Washington Department of Fish and Wildlife
Specific comments on document DOE/RL-98-28

Section 1.1, last sentence of the section. This statement is incorrect. As our letter on the plan points out, serious flaws have occurred by implementing an analogous site approach. Most of the problem lies with adequate characterization of the waste sites.

Response: The analogous site approach has been selected as an effective means of addressing a large number of waste sites such as that found in the 200 Areas and as demonstrated in the 100 Areas. The analogous site approach does not eliminate the characterization of waste sites but focuses characterization on what is needed to support remedial action decisions. Generally, waste sites will be characterized to the extent necessary to insure appropriate remedial measures are identified. The examples cited as serious flaws are not with respect to the analogous site approach as planned in the 200 Areas, but one of undocumented/unknown waste sites.

Section 1.2.5, sixth bullet. We request that the Hanford Natural Resource Trustee Council be members of the team in developing the DQOs.

Response: Please see the response provided for the general comments.

Section 2.1.2, page 2-3, first bullet. For the Tri-Parties to achieve this general objective, specifically with regards to protect the environment, this plan will need to develop a biological injury assessment.

Response: Please see the response provided for the general comments.

Section 2.4.5, page 2-22, last paragraph to the header CERCLA. If waste is left in place, we recommend that an evaluation include sampling biota to ensure the remedy is indeed protective of wildlife.

Response: As discussed in the general response (item 3), ecological risk assessment at the conclusion of remedial actions may be appropriate. If waste is left in place the potential for biotic intrusion must be properly addressed as part of the remedy selection and design process. Biota is recognized as a potential release mechanism, contaminated media, and receptor that would need to be addressed (see conceptual exposure model, figure 5-2). Surface barriers, for example, can be designed as physical barriers with components that are resistent to biotic intrusion (e.g., asphalt layer). See Appendix D (Post remediation). Whether site specific post-remediation biotic sampling is needed would be contingent on the level of engineering controls in place to eliminate this potential pathway.

Page 2-23, third paragraph, first sentence. The WDFW is completely confused and troubled by this statement. We thought remedy actions at the Hanford Site were intended to abate, prevent, minimize, or eliminate the threat of a hazardous substance release to the public or environment.

Response: The phrase "above protective levels" will be deleted.

Section 5.1, Page 5-2, first full paragraph, first sentence. This statement is incorrect. Two of the land use alternative maps identify some lands within the 200 Areas boundary

line as preservation. These 2 alternatives identify the mature shrub steppe habitat west of the central waste complex as preservation. USDOE can not justify the need for designating all the land within the rectangle as shown in figure 5-1 as industrial (exclusive) use. Please correct the text to reflect this fact.

Response: The sentence will be changed to read: "The DOE preferred alternative in the HRA-EIS proposes industrial (exclusive) use for land located within the 200 Areas land-use boundary line and preservation and conservation uses for land located immediately outside the boundary. Two other alternatives include areas of preservation use within the 200 Areas land-use boundary line, along the west side of the 200 West Area, with the remainder designated as industrial use."

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ENVIRONMENTAL RESTORATION & WASTE MANAGEMENT
P.O. BOX 365 LAPWAI, IDAHO 83540-0365 (208) 843-7375 / FAX: 843-7378

January 14, 1999

Mr. Bryan L. Foley
U.S. Department of Energy,
Richland Operations Office, MS HO-12
P.O. Box 550
Richland, Washington 99352

Re: **200 Areas Remedial Investigation/Feasibility Study Implementation Plan - Environmental Restoration Program, DOE/RL-98-28, Draft B**

Dear Mr. Foley:

The Nez Perce Tribe's Environmental Restoration and Waste Management Program (ERWM) has reviewed a copy of **200 Areas Remedial Investigation/Feasibility Study Implementation Plan - Environmental Restoration** Program, DOE/RL-98-28, Draft B. Attached, for your consideration, are ERWM's specific comments and suggestions on this document.

Since 1855, reserved treaty rights of the Nez Perce Tribe 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 their usual and accustomed resources and resource areas in the Hanford Reach of the Columbia River and elsewhere. Accordingly, ERWM has support from the U.S. Department of Energy (DOE) to participate in and monitor relevant DOE activities.

The Nez Perce Tribe considers the protection of the Columbia River and its ecosystem to be of the utmost priority. ERWM considers remediation of 200 Area waste sites a positive step in the protection of the Columbia River and fully supports the objectives of this plan. However, we have some concerns about this plan that may affect the health and safety of members of our Tribe, workers, public, biota, and cultural resources. Our general comments are as follows:

1) **a)** Why was the Nez Perce Tribe not given an opportunity to provide meaningful input prior to the modification Tri-Party Agreement (TPA) and the public comment period? **b)** Since the regulatory drivers are in-place, do Tribal governments or the public have the opportunity to institute significant changes to this approach?

Response a): The correspondence referenced below documents the opportunities offered by RL to hold meaningful direct discussions with the Nez Perce Tribe on project-specific planning documents, including TPA modifications covering the period from October 1996 to date:

Ltr, dtd 10/25/1996, from Bryan L. Foley to Donna L. Powaukee, *Request for Tribal Consultation Regarding the 200 Areas Soil Remediation Strategy-Environmental Restoration Program, DOE/RL-96-67, Rev. 0, and the waste Site Grouping for 200 Areas Soil Investigations.*

Ltr, dtd 05/01/1997, from Bryan L. Foley to Donna L. Powaukee, *Request for Tribal Consultation Regarding the Agreement-in-Principle for Implementing 200 Areas Soil Investigations for the Environmental Restoration Program.*

Ltr, dtd 04/08/1998, from Bryan L. Foley to Donna L. Powaukee, *Request for Meeting Regarding 200 Area Remedial Investigation/Feasibility Study (RI/FS) Implementation Plan for the Environmental Restoration Project.*

Ltr, dtd 09/25/1998, from Bryan L. Foley to Donna L. Powaukee, *Request for Tribal Consultation Regarding DOE/RL-98-28, Draft A, 200 Areas Remedial Investigation/Feasibility Study Implementation Plan - Environmental Restoration Program.*

In one instance, with regard to the development of the *200 Area Remedial Investigation/Feasibility Study (RI/FS) Implementation Plan for the Environmental Restoration Project,* the project had the opportunity to brief Mr. Stan Sobcyzk, a technical representative for the Nez Perce Tribe, on how the document was being developed, as well as the purpose and value of the document. The primary perspective offered by Mr. Sobczyk at that meeting was the need for the project to adequately consider and account for existing groundwater contamination plumes and the need for integration with other Hanford site groundwater and vadose zone clean-up activities in planning the path forward for characterization of remaining waste sites in the 200 Areas. On another fairly recent occasion, the Project hosted a visit from Mr. Richard Buck who was primarily interested in being notified of when upcoming characterization would be initiated so that he could have an opportunity to monitor activities being performed and any associated potential impact to cultural resources that might be present in the project's planned areas of operation.

Response b) Even though regulatory drivers are in place, both Tribal governments and the public will continue to have an opportunity to propose changes which they believe are significant and would serve to enhance the effectiveness and/or the efficiency of the clean up of the ER Projects waste sites yet to be cleaned up on the Central Plateau of the Hanford site. Such changes could be proposed through various existing mechanisms including through direct discussions with RL and members of the associated lead regulatory agency. For example, with the initiation of more detailed characterization planning on the project's first of 22 waste group-specific workplans, the 200-CW-1, the Gable Mountain/B-Pond and Ditches Cooling Water Waste Group, the project plans to offer all interested Tribal Nations an opportunity to hold direct discussions on that characterization effort. Figures 2-1 and 2-2 in Draft B, *200 Area Remedial Investigation/Feasibility Study (RI/FS) Implementation Plan for the Environmental Restoration Project,* provides additional details on opportunities to provide input to the project within the framework of the regulatory processes that influence how the clean-up activities are performed. Finally, because the 200 Areas Remedial Action Project is a core project under the purview of the Hanford's Groundwater/Vadose Zone Integration Project, RL strongly encourages Tribal Nations to participate in those open project meetings and present any continuing concerns, especially those that connote site-wide applicability, since those meetings provide yet another forum for meaningful involvement in how the groundwater and vadose zone remediation activities are being performed at the Hanford Site. The 200 Areas Remedial Action Project will continue to uphold the Department's commitment to continued sharing of key documentation affecting cleanup activities at the Hanford Site - as early as possible.

2) The grouping of waste sites by historic process information and waste site type minimizes the importance of subsurface geology and ignores the potential for waste migration and mixing (i.e. waste sites located together in close proximity) in the vadose zone. Subsurface geology and geographic location should be factors in how waste sites are grouped together for characterization and remediation.

Response: The commenters view is recognized as a valid point. In the process of reviewing the variables associated with establishing the revised groupings, the geologic setting was recognized as an important characterization variable, well-understood at a regional scale, but with enough local variations to prevent precise prediction of contaminant behavior. Waste stream-soil

column geochemical interaction was recognized as a more critical problem and is less well understood. Some groupings, notably the cooling water pond systems and plutonium contaminated waste groups, are concentrated in more uniform geologic settings associated with either 200 East or 200 West. The Implementation Plan adequately describes both the general geologic setting and current understanding of the geochemical interactions in the 200 Areas, and notes the impact of geologic variations for contaminant distribution.

Subsurface geology and geographic location can be accounted for through proper selection of representative sites. For example the 200-PW-2 Uranium-Rich Process Waste Group has representative waste sites in both 200 East and West. Generally, all non-representative waste sites with a group will be characterized during confirmatory sampling.

3) It appears that insufficient sampling is being proposed to characterize the 200 Area waste sites. Since the transport mechanisms within in the vadose zone are poorly understood, it may be prudent to investigate the soil column of each waste site before remediation begins. Further study, to define the waste sites, would aid the remediation workers in anticipating potential hazards. How can the excavated volume of soil and projected costs be calculated without prior characterization for each waste site?

Response: It is generally recognized that all waste sites will require some degree of sampling which is addressed by the characterization strategy in the Implementation Plan (Section 6.0). The initial remedial investigation will consist of comprehensive investigations of representative waste sites to support remedial decisions. This will be followed by confirmatory sampling of previously uncharacterized waste sites prior to the implementation of remedial actions. This sampling effort confirms that the remedy selected is appropriate and supports site-specific remedial design data needs. Finally site-specific verification sampling or monitoring is performed to demonstrate that remedial action objectives have been met (e.g., removal actions) or continue to be met (e.g. containment in place).

4) The mechanism for fully integrating the data needs of the TWRS Project and Environmental Restoration (ER) Project in the 200 Area is not apparent. It appears that the Groundwater/Vadose Zone Integration Project is not involved in this plan which is driven by the TPA. Since vadose zone contamination is known to have migrated in the subsurface, the processes controlling waste migration needs to be fully understood to support the Tank Waste Remediation System (TWRS). Can a fully characterized crib area be used to estimate the migration of tank wastes due to sluicing? In the 200 Areas, was the origin of groundwater contamination tank leaks, discharges to cribs, or both?

Response: 1) The mechanism to integrate the needs of the TWRS Project and the ER Project in the 200 Area is through the Groundwater/Vadose Zone Integration Project. This Implementation Plan was begun prior to the initiation of the Integration Project but will incorporate integration concepts and practices as they develop. DOE is committed to work toward an integrated approach to the remediation of the 200 Area. Since the inception of this Plan the 200 Area Remediation Project has been incorporated into the Integration Project as a "core Project." The effects of this change will be evident in time in closer coordination of planning and remediation activities. 2) The characterization of a crib can provide insights into estimating the migration of contamination from tank sluicing. The value of the insights would be related to the similarities in geology, types of waste, (pH, salt content, and waste chemistry) and volumes between the tank waste and the crib waste. 3) The origin of most groundwater contamination was discharge of process and evaporator waste streams to cribs. However, leakage from single-shell tanks can

also be a source of groundwater contamination under certain conditions.

We hope that DOE-RL will continue to work with the Indian Tribes and stakeholders in a cooperative manner and become more receptive to our concerns. Accordingly, we are willing to discuss these and other issues with DOE-RL. If you wish to discuss Nez Perce ERWM's comments further please contact Stan Sobczyk at (208) 843-7375, (208) 843-7378 (fax) or stans@nezperce.org (email).

Sincerely,

Jack H. Bell
Department of Natural Resources Manager

cc: Kevin Clarke, DOE-RL, Indian Programs Manager
Mike Wilson, Ecology, Nuclear Waste Program Manager
Douglas Sherwood, EPA, Hanford Project Manager
Russell Jim, YIN, ER/WM Manager
J.R. Wilkinson, CTUIR, SSRP Manager

Attachment

THE NEZ PERCE TRIBE
ENVIRONMENTAL RESTORATION & WASTE MANAGEMENT PROGRAM

SPECIFIC COMMENTS
On The
200 Areas Remedial Investigation/Feasibility Study Implementation Plan - Environmental Restoration Program
DOE/RL-98-28, Draft B

Since 1855 Nez Perce Tribe treaty rights in the Mid-Columbia have been recognized and affirmed through a series of federal and state actions. These actions protect Nez Perce interests to utilize their usual and accustomed resources and resources areas in the Hanford Reach of the Columbia River and elsewhere. Accordingly, the Nez Perce Tribe Department of Environmental Restoration and Waste Management (ERWM) has U.S. Department of Energy (DOE) support to participate in and monitor certain DOE activities. The document review is provided in a format that lists the page number, section number, and comment. Following are the specific comments on the 200 Areas Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program, DOE/RL-98-28, Draft B.

SPECIFIC COMMENTS:

Page 1-3, Section 1.1
Since a change package has already modified the Tri-Party Agreement accepting these waste groupings, what meaningful changes can Tribal Nations and the public cause to occur in this plan?

Response: See the response to General Comment #1. DOE-RL will continue to work with Tribal Nations and the public to keep them informed of key 200 Area activities and offer opportunities for meaningful participation and consultations. The next opportunities for Tribal involvement will be through group-specific work plans.

Page 1-3, Section 1.2.1
ERWM supports the primary objectives of this implementation plan.

Response: The DOE appreciates your support and looks forward to future consultations and input from the Nez Perce Tribe.

Page 1-7, Section 1.2.5
The grouping of waste sites by historic process information and waste site type minimizes the importance of geographic location and ignores the potential for waste migration and mixing in the vadose zone. For example, waste sites in the both 200 East and West Areas are grouped together despite the differences in subsurface geology. Geographic location and subsurface should be factors in how waste sites are grouped together for characterization and remediation.

Since the transport mechanisms within in the vadose zone are poorly understood, it may be prudent to investigate the soil column before remediation begins on every waste site. Further study, to define the waste sites, would aid remediation workers in anticipating potential hazards. How can the excavated volume of soil and projected costs be calculated without prior characterization?

Response: See the response to General Comment #2.

Page 2-25, Section 2.5.1
The "analogous site concept" takes into account geologically similar sites, but the proposed waste site grouping in this plan lumps waste sites together from both 200 East and 200 West Areas despite the differences in subsurface geology between 200 East and West.

Response: See the response to General Comment #2.

Page 2-27, Section 2.5.3
Since each waste site is subject to some form of characterization under this plan, why is it desirable to remediate and issue a ROD before confirmation sampling? "Presumptive" cleanup remedies should be partially based upon field data.

Response: Confirmatory sampling is intended to confirm that the remedy established in a ROD for a waste group is appropriate for all sites within the group. The sampling effort can be more focused and cost effective if 1) the preferred remedial alternative and land use is known, 2) representative site data is available, and 3) the specific decision that needs to be made is known. With respect to Section 2.5.3 "Plug-In Approach", confirmatory sampling is used to determine whether a site fits the criteria for "plug-in" that is established in a ROD.

Page 3-10, Section 3.2.3
a) Why were Tribal representatives excluded from the subteam that developed the waste site categories and criteria? **b)** When is Tribal and stakeholder participation in the decision-making process not applicable?

Response a): A subteam, comprised of RL, ERC, and regulator members from both EPA and the Washington State Department of Ecology, was responsible for preparing the initial drafts for the majority of project planning documents developed between 1996 and 1998. The DOE Project Manager proposed this method of planning because of the primary need to ensure the planning products would meet the regulatory requirements and expectations. The regulator members agreed with RL that given the first-of-its kind nature of the document it would be most appropriate to rough out an initial draft as a subteam and then consult with Tribal nations and other interested stakeholders on the quality, adequacy and usefulness of the document. In fact, Tribal Nations, including the Nez Perce Tribe, were offered opportunities on even the earliest annotated outline of the document as well as the initial draft A version (see Ltr, dtd 04/08/1998, from Bryan L. Foley to Donna L. Powaukee, *Request for Meeting Regarding 200 Area Remedial Investigation/Feasibility Study (RI/FS) Implementation Plan for the Environmental Restoration Project* and Ltr, dtd 09/25/1998, from Bryan L. Foley to Donna L. Powaukee, *Request for Tribal Consultation Regarding DOE/RL-98-28, Draft A, 200 Areas Remedial Investigation/Feasibility Study Implementation Plan - Environmental Restoration Program).* When Draft B was produced, as a result of the formal regulator review, Tribal Nations were also sent copies of that version along with the comments and comment responses provided by both EPA and the Washington State Department of Ecology.

Response b) With regard to the question of when Tribal and stakeholder participation in "...the decision making process" is not applicable, assuming the commenter is referring to such example "decisions" as the composition of the 23 waste groups and the modification of the Environmental Restoration Program's 200 Areas TPA milestones, to date the RL Project Manager for the 200 Areas Remedial Action Project has typically sought to involve Tribal Nations and stakeholders throughout key developmental phases of preparing project planning documents. However, the 200 Area Project has not made a practice of involving Tribal Nations and stakeholders in each of

the many varying tasks typically associated with the day-to-day preparation of draft documents. Opportunities for stakeholder and Tribal Nation participation in the more formal-type cleanup decisions such as a Record of Decision (ROD) is outlined per the existing, and well-established, RCRA/CERCLA regulatory framework. Figures 2-1 and 2-2 in Draft B, *200 Area Remedial Investigation/Feasibility Study (RI/FS) Implementation Plan for the Environmental Restoration Project,* provides additional details on opportunities to provide input to the project within the framework of the regulatory processes that influence how the clean-up activities are performed.

Page 3-13, Section 3.2.3
Why does the 200-LW-02 waste site group contain waste sites in 200 East and West Areas?

Response: The group includes sites that received chemical laboratory wastes commonly associated with the 222 Laboratory buildings. Typically, each of the major plants had their own laboratory. For additional details, refer to Section 3.2.3 and Appendix G in the Implementation Plan. Also see the response to general comment #2.

Why aren't the 200-MW-1 waste sites grouped with nearby waste sites to eliminate this category?

Response: The 200-MW-1 Waste Group includes sites that received moderate-volume equipment decontamination and/or ventilation system wastes, plus small-volume waste streams commonly disposed to french drains, and other unique sites that do not fit well into any of the other waste groups. For additional details, refer to Section 3.2.3 and Appendix G in the Implementation Plan.

Page 3-14, Section 3.2.3
Why does the 200-TW-2 waste site group contain waste sites in 200 East and West Areas?

Response: This group includes sites that received 1) waste streams originating from high-level waste tank farms and 2) intermediate-level waste streams from concentrator tanks and miscellaneous canyon cell drainage generated in the $BiPO_4$ operations at B and T Plants (200E and West Area, respectively). For additional details, refer to Section 3.2.3 and Appendix G in the Implementation Plan. Also see the response to general comment #2.

Why aren't the 200-IS-1 waste sites grouped with nearby waste sites to eliminate this category?

Response: This group includes facilities used in the transfer of high-level liquid wastes from separations plants to tank farm to reprocessing facilities and evaporators. A network of concrete-encased pipelines connects facilities inside each area as well as between areas. Most of these structures are closely associated with tank farm operable units (non-ER operable units) but lie outside the operable unit boundaries and are captured in this group. For additional details, refer to Section 3.2.3 and Appendix G in the Implementation Plan.

Page 3-23, Section 3.3.1.3
References should be listed which support the assumption that "...the highest concentrations of contaminants such as plutonium, cesium, and strontium are expected within 2 to 3 m below the point of discharge..."

Response: The following references will be added to support the statement: (Serne and Wood, 1990; Ames and Rai, 1978; Table 3-11).

Serne, R.J., and Wood, M.I., 1990, Hanford Waste-Form Release and Sediment Interaction, PNL-7297.

Ames, L.L., and Rai, D., 1978, Radionuclide Interactions with Soil and Rock Media, EPA 520/6-78-007, Volume 1, U.S. Environmental Protection Agency, Office of Radiation Programs, Las Vegas, Nevada.

Page 4-1, Section 4.0
Treaties with the Tribal governments need to be treated as applicable or relevant and appropriate requirements (ARARs). Suggested text is as follows.

The most significant written law relating to environmental quality for the Yakama, Umatilla, and Nez Perce Nations are the Treaties of 1855. These treaties between the federal government and the tribal governments ceded hundreds of square miles to the United States, while retaining the core reservation lands and reserving perpetual rights to be exercised on the "open and unclaimed" lands within and beyond the boundaries ("usual and accustomed places") of the ceded area "for as long as the grass shall grow " Hanford lies entirely within this ceded territory. The Treaties are still active, valid, and upheld by courts and the Constitution of the United States, and may not be amended. The Treaties also confirmed that the United States government has a fiduciary trust responsibility to assure that land uses in the ceded areas be maintained in a manner consistent with the treaties. The United States' trust obligations extend to all federal agencies, and all federal actions and the implementation of federal statutory schemes affecting Indian people, Indian land, or Indian resources must be judged by the most exacting fiduciary standard Thus, the federal government and its implementing agencies are obligated to use their expertise and authority ~ in meaningful consultation with the tribes to safe guard natural resources that are of crucial importance to tribal self-government and to prosperity.

These treaty-reserved rights were not granted by the U.S. government to the tribes, but were retained by the original owners of the land (the tribal nations,) and recognized and affirmed by the U.S. government when recorded in the treaties. The treaties protect (or reserve) rights that support the continuity and well-being of the tribal people, and their age-old cultural traditions handed down by their ancestors and established though millennia of interaction with the environment. This traditional culture is resilient and robust, and ensures survival through drought and flood, feast and famine, health and sickness. It is being modified as modern aspects are incorporated into every day life, but the underlying core values and practices are carefully maintained Specific treaty-reserved rights that may be exercised in the ceded areas include hunting, gathering, pasturing, fishing, erecting temporary structures, access to and care of sacred sites, and many other unlisted activities necessary to support the traditional way of life, including religious, social, cultural, and subsistence practices. Impacts to the ability to safely practice these activities on Hanford lands, to the continuity of access and safe use, and to the integrity of the environment form the focus of tribal risk assessment, cleanup, and restoration.

Recent environmental laws such as CERCLA and RCRA did not have treaties in mind when they were promulgated This does not necessarily mean that they are inadequate, but rather that traditional lifestyles, with their higher environmental contact rates, were not recognized at the time. Additionally, the authors of CERCLA and RCRA did not envision that sites as complex as Hanford and with contamination so widespread and long-lived would need to be addressed Thus, the holistic and long-term perspectives of treaties and trusteeship are not really reflected in RCRA and CERCLA closure guidance. Implementing RCRA and CERCLA with respect to treaty rights and trusteeship simply means that resources must be protected on behalf of tribes (and other people) and that cleanup must occur so that their rights can be safely exercised

Response: As the Commenter has noted, and is discussed below, "Recent environmental laws such as CERCLA and RCRA did not have treaties in mind when they were promulgated," and treaties are not explicitly incorporated into the ARARs process. Nevertheless, current and reasonably anticipated land uses are considered in the CERCLA remedy selection process, in addition to ARARs. The Department recommends that the Commenter also present these concerns about the relationship between the Treaties of 1855 and future Hanford Site land use to

the land use designation process currently being carried out through the Hanford Remedial Action Environmental Impact Statement.

It should be noted that, for a CERCLA remedial action taking place within tribal jurisdiction (i.e. tribal reservation lands), so that the tribal government acts with the authority of a state under CERCLA, and where tribal laws concerning environmental protection are based upon the authority of a tribal treaty, it is possible that the tribal laws and regulations would be ARARs for that CERCLA remedial action. Such tribal laws would then be equivalent to those of a jurisdictional state. However, the Treaties of 1855 do not apply to the Hanford Site in this particular way.

Considering treaties as matters of federal rather than "state" law, we note that the CERCLA Section 121 ARARs process is concerned with those laws that are designed to protect the environment in a particular way, namely by setting out discernible, objective standards which can be applied directly to the question of "How much of a hazardous substance can be left in place without harming human health or the environment?" As noted by the Commenter, CERCLA does not recognize as ARARs every law which may in some way affect the environment. Treaties such as the Treaties of 1855 establish rights and privileges related to certain land and may affect the use of that land and its resources, but they are not the kinds of laws that are looked to by the ARARs process.

Page 5-5, Section 5.4 & Page 5-9, Section 5.5.3
In many cases, soil remediation to a depth of only 15 feet will not remove a sufficient portion of the contaminant inventory to prevent further degradation of groundwater.

How will the point of compliance be determined, and will DOE and EPA consult with the Tribes before establishing the point of compliance? Will clean-up standards be developed that account for the cumulative risk from all of the waste sites in the 200 Areas prior to remediation?

Response: The first paragraph of the comment has taken, out of context, language from a discussion of MTCA points of compliance. A point of compliance of 15 ft only relates to protection of human health against direct exposure. As stated in the previous sentence of the same paragraph of Section 5.4 (and in WAC 173-340-760[6][b]) "For soil cleanup levels based on the protection of ground water, the point of compliance shall be established in the soils throughout the site," that is to say, cleanup for protection of groundwater shall be done without respect to depth of contamination.

The point of compliance will be determined by following MTCA Cleanup Regulation WAC 173-340-760[6]. The Tribes will be afforded the opportunity to comment as provided by their status as stakeholders in the Hanford Site cleanup.

A cumulative assessment of all waste sources is currently being planned under the Groundwater Vadose Zone Integration Project. The details of how the effects will be evaluated has not been determined. Current planning indicates that effects would be estimated in 4 primary areas: human health, ecological effects, cultural and quality of life, and social impacts. Methodologies and approaches are active areas of investigation at the present time.

Page 6-1, Section 6.0
The emphasis of data collection efforts should be to understand the extent, concentration, mobility, and behavior of wastes in the subsurface as well as establishing a sound scientific understanding of waste migration in the subsurface.

Response: Accept. This is captured in verifying the conceptual model discussed in the first 2 bullets on Page 6-1 and in the discussion in section 6.2.1. Conceptual models summarize information on the nature and extent of contamination (physical contaminant distribution model) and potential exposure pathways (conceptual exposure model). A sentence will be added to Section 6.2.1 to emphasize that the purpose of data collection efforts should be to understand the extent, concentration, mobility, and behavior of wastes in the subsurface as well as establishing a sound scientific understanding of waste migration in the subsurface.

Page 6-3, Section 6.2.1
Same comment as above.

Response: Accept. See the preceding comment response.

Page 6-4, Section 6.2.1
Analytical models (computer codes) can not be substituted for field data and need to be verified with field data.

Additional data will reduce uncertainty, and it is difficult to envision the collection of enough data to eliminate uncertainty and become redundant.

Response: Accept. Analytical models are not a substitute for field data. As stated in the text we will be using field data with the possible help of computer models to assess the three dimensional distribution and transport of contaminants. The text will be clarified and the word "redundant" removed to acknowledge the role of the DQO process in the optimization of sample collection so that resources are focused on the data most critical to understanding the distribution and transport of contaminants.

Page 6-5, Section 6.2.1
Characterization efforts are needed to determine the lateral distribution as well as the vertical distribution of the contaminants.

Response: Accept. The text will be clarified to acknowledge that where the determination of the lateral distribution of contaminants is required to determine the groundwater impacts, it will be included.

Page 6-6, Section 6.2.2
The statement that "Contaminant transport is primarily vertical beneath liquid waste sites..." is not supported by references and may not be the case in some areas. Appendix G, Groundwater/Vadose Zone Integration Project Specification, DOE/RL-98-48, Draft C, displays few maps of the distribution of contaminants in the horizontal plane in the subsurface.

Response: Accept. The support for this statement is based on fundamental principles of unsaturated flow. Moisture in soils will move in the vertical plane by gravity and capillary forces and move in other planes only by capillary related forces. The large impact of gravity applying only in the vertical direction is the supporting reason for the statement. The statement is only a general statement and is not meant to imply that local geologic features will not substantially facilitate non-vertical movement of liquids under a waste site. The commentator is correct in stating that very few horizontal profiles of soil contamination are shown in the "Integration Project Specification." Very few are available. No change to the text is necessary.

Page 6-6, Section 6.2.3

Same comment as for Page 6-1, Section 6.0.

Response: Accept. See the response to Comment Page 6-1, Section 6.0.

Page 6-8, Section 6.2.5.1
The Hanford Site needs to abandon its antiquated cable tool rigs and embrace modern drilling techniques. The cost savings associated with the ability to drill a borehole in a few days versus a few months will pay for the modern equipment.

Response: Accept. The text in Section 6.2.5.1 acknowledges that there are alternate drilling techniques that are more cost effective, and that the control of the spread of contamination when drilling high activity soils is the main advantage of cable tool. Cable tool is not the most advanced drilling technique but it has and continues to be a viable method for high activity drilling. Air and mud and rotary are much quicker but may not meet DQO's if volatile compounds or moisture content are parameters of interest. Sonic drilling also affects the ability to collect representative samples for volatiles since heat is generated. Cable tool holes do not take a few months to drill as evidenced by the recent 216-B-2-2 borehole completed to 255' in 7 days. Containment of, and exposure to, high activity drill cuttings is a very important consideration for which cable tool drilling works effectively. Other drilling techniques have been used on site when conditions allow. No change to the text is necessary.

Page 7-3, Section 7.2.1.1
Provisions should be made that allow for Nez Perce Tribe and the other affected Tribal governments to provide meaningful input early in the decision making process. Federal agencies have a trust obligation to the affected Tribes and are obligated, in meaningful consultation with the tribes, to protect the interests of the Tribes.

Response: Accept. See the response to General Comment #1 and the response to the specific comment on **Page 3-10, Section 3.2.3:** *Why were Tribal representatives excluded from the subteam that developed the waste site categories and criteria? When is Tribal and stakeholder participation in the decision-making process not applicable?*

Page 7-6, Section 7.3.1
It appears that this plan will be implemented in a manner that is independent of the Groundwater/Vadose Zone Integration Project. The mechanism for fully integrating the data needs of the TWRS program and ER in the 200 Area is not apparent.

Response: See the response to General Comment #4.

Page 7-9, Section 7.3.4
Same comment as for Page 7-3, Section 7.2.1.1

Response: See the response to General Comment #1.

Page 7-9, Section 7.4
Why aren't the affected Tribes invited to work on the schedule with the responsible regulatory agencies?

Response: RL shared the initial draft of this document with the Tribes in September of 1998 to provide input on the schedule, and any other part of the planning document where the Tribes had a concern. RL did offer, on behalf of the regulatory agencies and itself, opportunities to hold direct discussions with the Tribes on the initial draft of the *200 Area Remedial Investigation/Feasibility Study (RI/FS) Implementation Plan for the Environmental Restoration Project (*see Ltr, dtd 09/25/1998, from Bryan L. Foley to Donna L. Powaukee, *Request for Tribal Consultation Regarding DOE/RL-98-28, Draft A, 200*

Areas Remedial Investigation/Feasibility Study Implementation Plan - Environmental Restoration Program). The RL Project Manager followed the letter with phone calls to Tribal representatives and was unable to coordinate opportunities for direct discussion.

Page 7-10, Section 7.5
Why was the Nez Perce Tribe not given an opportunity to provide meaningful input prior to the public comment period? Why is a government-to-government relationship included in this section on public involvement?

Response: The Nez Perce Tribe was given opportunities to provide input prior to a formal public comment period. The letters cited in the general response to comment #1 provide examples of where the RL Project Manager offered to have direct discussions with the Tribes on various planning documents and TPA modification prior to the public comment period. The government-to-government relationship is discussed in this section to recognize that a trust relationship exists between the Federal government and American Indian Tribes and that in keeping with the trust responsibility, DOE acknowledges its willingness to consult with Tribal governments regarding the impact of DOE activities on the environmental and natural resources of American Indian Tribes when carrying out its responsibilities.

Page A-22, Table A-2
The Treaties with the Indian Tribes and the federal trust responsibility to the Indian Tribes should be included in this table.

Response: Please see the response to the Nez Perce Tribe Specific Comment on Page 4-1, Section 4.0.

Page D-2, Section D2.0
Treaties with the Tribal government s need to be treated as ARARs, and the implementation of RCRA and CERCLA with respect to treaty rights and trusteeship means that resources must be protected on behalf of tribes and that cleanup must occur so that their rights can be safely exercised.

Response: See the response to the previous comment.

Page F-11, Section F4.7
The effects of lateral movement and preferential vertical pathways should be considered when considering contaminant travel times in the vadose zone.

Response: Estimating travel times in the vadose zone is a particularly difficult task. As the commentator notes, preferential pathways offer a potential to affect any estimate. Adequate characterization of these features to allow accurate estimates of travel time requires considerable field work and ingenuity. As possible, these types of features will be incorporated into estimates of travel time in the vadose zone.

Page F-35, Figure F-9
This cross-section does not agree with cross-section C-C' shown in K.A. Lindsey's *Miocene- to Pliocene-Aged Suprabasalt Sediment of the Hanford Site, South-Central Washington, BHI-O0184, Rev. 00*, 1995 at 299-W6-1.

Response: The cross sections shown in the Implementation Plan were taken from DOE/RL-96-81, Waste Site Grouping for 200 Areas Soil Investigations. The discussion of geologic units in DOE/RL-96-81 was based on several references, including Lindsey 1995 (DOE/RL-96-81, p. 2-1). Lindsey 1995 is an important reference that will be used as a resource when developing the detailed workplans. Although slight differences -- attributable to differences in selected wells, cross section orientations, and geologic interpretations -- may be

noted between the cross sections in Appendix F of the Implementation Plan and those in Lindsey 1995, the cross sections in Appendix F are adequate for use in discussing the general nature of the 200 Area geologic units in the Implementation Plan.

Page F-36, Figure F-10
This cross-section does not *agree with cross-section E-E' shown in K.A. Lindsey's Miocene-* to Pliocene-Aged Suprabasalt Sediment of the Hanford Site, South-Central Washington, BHI-O0184, Rev. 00, 1995.

Response: See the response to the previous comment.

Page G-16, Section G1.2.1
References should be listed that support the assumptions on radionuclide mobility in Hanford's soil column.

Response: The last sentence on pg G-16 will be altered to read: "Specifically, plutonium was recognized to be generally immobile in the soil and fission products were shown to be somewhat more mobile (Brown and Ruppert 1948, Parker 1954)."

The references are provided at the end of App. G.

SENT BY MAIL AND EMAIL

Mr. Bryan Foley
U.S. DOE- Richland Operations Office
P.O. BOX 550
Richland, WA 99352

COMMENTS ON THE 200 AREA RI/FS STUDY IMPLEMENTATION PLAN

Dear Mr. Foley:

Geosafe Corporation submits the following comments in regard to the 200 Areas Remedial Investigation/Feasibility Study Implementation Plan - Environmental Restoration Program, DOE/RL-98-28 Draft B request for public comment. Geosafe has limited its comments to only Appendix D of this report. Appendix D provides a preliminary list of technologies which may be applicable to the remediation of the 200 Area sites. Geosafe's comments are all related to the discussion of the In Situ Vitrification (ISV) technology for which we are the sole licensed commercial provider.

Geosafe's comments are as follows:

Pg. D-10, Sec. D5.6, 3rd para.- Replace "encapsulates contaminants" with "chemically incorporates most inorganics (including heavy metals and radionuclides) and destroys or removes all organic contaminants". Delete "The process combines thermal treatment with stabilization.". Replace "process depths are limited to less than 6 m" with "process depths are limited to 6 m with existing equipment but deeper depths are possible. Melts may also be started at depths in the subsurface.".

Response: Accept. The treatment technology terms will be clarified. We disagree with adding "deeper depths are possible" because the comment is speculative. The discussion is intended to focus on what is known about a technology.

Pg. D-17, Sec. D6.6, 1st para.- Replace "A large fume hood would be constructed over the site before the start of the vitrification process to collect and treat emissions." with "An off-gas hood would be placed over the area to be treated. Gases generated during vitrification operations are collected in the off-gas hood and processed by an off-gas treatment system before being discharged. During vitrification operations, a large volume reduction will occur resulting in an estimated 2 m of ground subsidence. This subsidence volume can be filled with clean fill material thereby minimizing the potential for inadvertent human or animal contact with the monolith."

Response: Accept. The text will be clarified to address the points provided in the comment.

Pg. D-18, Sec D6.6, 2nd para.- Replace "However this alternative would not reduce the mass or toxicity of the radionuclides present onsite" with "This alternative would eliminate the hazardous characteristics of the waste being treated and would result in radionuclides being incorporated in a durable leach resistant vitrified product having a useful life measured in the thousands of years."

Response: To be consistent in the level of detail with the other technologies the sentence will be modified to read " the alternative would not remove metals or radionuclides from the soil and would likely require addition institutional controls". The points that the product is leach resistant and durable have already been addressed.

Pg. D-21, Sec D 6.7, 4th para.- Replace ", but is not considered a fully mature technology due to a limited experience base" with ". The In Situ Vitrification technology has undergone extensive commercial development in the last four years and has been successfully applied to the treatment of over 20,000 tons of soil contaminated with hazardous constituents and 4,000 tons of mixed-TRU contaminated soil and debris."

Response: The sentence will be revised to state that ISV "is a fully developed technology but has a limited experience base". This is considered to be true relative to the other technologies discussed.

If you have any question concerning these comments, please contact me or Mr. Jim Hansen at (509) 375-0710.

Sincerely,

GEOSAFE CORPORATION

Matthew J. Haass, P.E.
Senior Project & Business Development Engineer

50213

CCN 065450

To: Bryan Foley
US Dept of Energy
P.O. Box 550 (HO-12)
Richland, WA 99352

January 11, 1999

In response to the request for Public Comment on the Implementation Plan for Environmental Restoration Program for Hanford's 200 Areas Waste Sites, I am enclosing my marked-up copies or the Focus Sheet and the Introduction (the only sections I requested). My specific comments are as follows:

Comment 1: This Implementation Plan seems to cover Requirements, Characterization, Risk Assessment, Remedial Actions, and Closure Verification for the cleanup of radioactive solid waste in the 200 Areas. The high priority given to protection of the groundwater and the Columbia River seems integrated with other Hanford environmental restoration efforts by the Groundwater/Vadose Zone Integration Plan. The basis for reduction in number or Waste Site Groups from 32 to 23 makes sense; and providing common or generic information applicable to all waste site groupings in a separate general document is good!

I'm concerned that this Implementation Plan integrated with the total Hanford environmental restoration efforts results in a "too thorough" Hanford Restoration effort that is unsafe and very costly, and takes too long! This is only one of several national manmade nuclear waste sites -- the total effort could bankrupt our country! I believe a realistic Hanford Cleanup is achievable in a timely, safe and cost effective manner.

Response: We are also concerned that the implementation plan results in a work that is safe, timely, cost effective and meets the needs of decision makers. DOE is committed to continual improvement and oversight during the implementation of this plan. As work proceeds, great efforts will be made to keep the plan from becoming "too thorough"... "too long" ... "unsafe and costly."

My version of a "realistic Site Cleanup Plan" would go something like this:
Comment 2: 1. Group waste sites by geographical, process, chemical and physical makeup;

Response: The 200 Area Strategy and Implementation Plan group waste sites by these characteristics.

Comment 3: 2. Establish Characteristics* of each waste site group;

Response: To the extent information is available, characteristics of waste sites have been identified. This supported the grouping of waste sites.

Comment 4: 3. Review and assess original 1940's rad-waste disposal and safety philosophy;

Response: There was little information available in the 1940's on the human health risks and environmental impacts of radioactive wastes and hazardous chemicals. For both radioactive and nonradioactive contaminants, practices and philosophies that might have appeared to be acceptable then are not acceptable today given the current level of knowledge. Current laws and regulations must be considered in the Hanford cleanup.

Comment 5: 4. Apply original philosophy to existing waste status and establish present and future risks;

Response: See response to comment #4.

Comment 6: 5. Assess Government Requirements and select those applicable to Hanford conditions;

Response: The Implementation Plan assesses current government requirements and applies them to the 200 Area cleanup. This assessment is done via the ARARs analysis in Chapter 4 of the Plan and are the key drivers for cleanup.

Comment 7: 6. Re-evaluate the applicable Govt Reqts and confirm realistic for Risk, Cost and Schedule;

Response: It is not within the scope of this project to determine whether the state and national requirements are realistic. However, as part of the cleanup decision-making process (the feasibility study), costs and schedules for

cleanup alternatives will be identified and the public will have an opportunity to comment on the alternatives before a selection is made.

Comment 8: 7. Establish the final Govt Reqts to be met; justify, document and prepare waivers;

Response: Final identification of requirements and preparation of waiver requests, if any, is done in the feasibility study, which will follow characterization of representative waste sites.

Comment 9: 8. Describe Remediation Action* and approve;

Response: The preferred remedial alternative will be identified in a proposed plan after the feasibility study is completed.

Comment 10: 9. Complete Remediation Action* and verify closure of sites.

Response: The selected remedial alternative will be implemented and cleanup verified after the regulatory agencies issue a Record of Decision.

Comment 11: 10. Perform minimal continued surveillance testing, and oversight!

Response: Continued surveillance and monitoring will be implemented as appropriate.

Comment 12: * Exposing waste during Characterization and Remediation actions generates much more additional waste which is released to our environment. Presently its all confined/contained ! (Except for some low-level ground foliage contamination which gets spread by its inhabitants!)

Response: There are several potential options for remediation of the 200 Area waste sites. One option is containment, which would leave waste in place as suggested. Containment might require institutional or engineering controls (e.g., caps) to ensure that contaminants do not spread and that potential site users are not exposed. Removal is another option, and it must be considered because it represents an alternative approach. It might not be practicable or cost-effective to contain wastes under some use scenarios. In general, removal does not generate waste that is released to the environment. Waste that is removed is placed in more protective facilties such as ERDF, where it can be readily contained.

Comment 13: In general, we should consider the Hanford Site as having Rad-Waste in the form or: contamination confined of ground surfaces; contaminated/activated components enclosed in surface facilities; contaminated/ activated solids buried underground; fission product Process Liquids stored in underground containers; and fission product components buried underground or stored in basins/cells. All of these are located in the general area adjacent to the Columbia River. If it were not for possible contamination or the River and groundwater (endangering the public and resources), the radioactive contamination could be considered very well confined as it exists! Has Hanford really been that harmful for its workers and the surrounding areas in the Columbia Basin???

Response: Even if contamination did not present a direct threat to health, it is important to consider protection of the groundwater and Columbia River, and for that reason alone remedial action is often necessary. In addition, the direct threat to human health depends on the land use. While there may be no threat at this time to workers, there could be a threat to future commercial workers, recreational users, or residents. Future land use is considered in establishing cleanup levels. Land use will be evaluated via an Environmental Impact Statement to be issued by DOE for review later this year.

Comment 14: NOW STANDING BACK AND TAKING A BROAD OVERVIEW OF THE HANFORD SITE IN THE COLUMBIA RIVER BASIN, WE MUST ASK:

* What Must We Prevent From Occurring?
* In What Dependable Way Can We Prevent That Occurrence?
* Just How Safe Must Radiation/Contamination Levels Be?
* How Much Risk Exists After 50 Years Decay?
* How Much Risk Exists After 100 Years Decay Before Cleanup Is Completed?
* How Much Of This Contamination is Naturally Present In Our Environment?
* What Is Acceptable Risk In Re-Exposing Presently Confined Radiation/Contamination, Generating

Additional Unsafe Pad-Waste, And Increasing Personnel Exposure?

LET'S ASSUME IT HAPPENS THAT EXCESSIVE RADIATION LEVELS WERE FOUND IN OUR COLUMBIA RIVER AND PUBLIC WATER SUPPLIES RIGHT NOW TODAY! ?--WHAT WOULD BE THE DEPT. OF ENERGY'S ACTION?--HOW MUCH TIME WOULD WE HAVE??? .... THAT D.O.E. ACTION APPEARS TO BE THE APPROACH WHICH SHOULD BE TAKEN RIGHT NOW, TODAY!!

A Feasible and Realistic approach for an expeditious, integrated Hanford Cleanup (not Restoration) would bc as follows:

I. Ensure all Radioactive Waste is dried up:
   * Forget about total tank cleanout and making Glass Logs!(Vitrification is a bad problem!)
   * Stir and pump out tanks in a safe and proven manner -- process the sludge and dryout the mud remaining in the tank!
   * Remove fissile components and process waste from old process areas/buildings/basins and place in surface fuel storage using safe and proven transfer/handling methods!
   * Dispose of contaminated structural and equipment items in the dried--out tanks, areas and old process buildings!
2. Cover/enclose the filled areas, tanks and buildings so rainwater can't contact contamination and leach to groundwater/Columbia River.
3. Install fences around general waste areas/buildings and declare each a FEDERAL MONUMENT (like B-Reactor).
4. This 'Hanford National Manmade Nuclear Site" could contain clean public roads and areas with Federal Monuments scattered around -- each fenced for No Trespassing! --- with audio stations providing Tourist information on Site History, risks to public, etc.
5. Ensure that if existing contamination feeds into the groundwater and Columbia River, that it proceeds at acceptable rates.

I had worked at Hanford in 200 Area Tank Waste Retrieval and Solid Waste Nuclear Safety for about 6 years combined before retiring in December, 1994. Most of my concerns with past and present approaches for Hanford Cleanup (unproven, costly, unsafe and untimely) have been expressed in the form of writeups over those 6 years!! Those writeups consisted of TWRS documents, Great Ideas, Employee Concerns, etc. which should still exist. I have declined to say anything since retirement, and with my experience and interest it's been difficult? Now with the request for Public Comment, continued Tri City Herald news print, and occasional "on the street" discussions with former Peers, I've finally weakened to "speak my piece"--- again with the same concerns and proposed resolutions as 4 Years Ago, l! It seems we continue hearing so much of the same about Hanford Cleanup and seemingly, still with VERY LITTLE SIGNIFICANT CLEANUP ACCOMPLISHED!! (Reference the 1/8/99 TCH article about "Pumping of tanks still weeks away").

Response: This comment addresses issues that are much broader than the scope of the 200 Area Implementation Plan. Most of the issues are more appropriately addressed to the Tank Waste Remediation System or the Hanford Remedial Action Land Use Environmental Impact Statement.

Thank you for considering my comments,

Don Myers
1807 W. 8th PL
Kennewick, WA 99336
Phone: 586-4244

5021

-----Original Message-----
From: RickMcCain@aol.com [SMTP:RickMcCain@aol.com]
Sent: Wednesday, January 13, 1999 4:36 PM
To: bryan_l_foley@rl.gov
Subject: Comments to DOE/RL-98-28

Mr Foley;

Given below are my comments to DOE/RL-98-28 "200 Area Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program"

In general, I felt the document was a good first step in developing a methodology for completing RI/FS work in the 200 Areas. However, I do have the following specific comments:

[p 2-28, sec 2.2.5] In order for the observational approach to be effective, decision authority needs to be delegated down to the level of the individual project. The advantage gained in the observational approach can be quickly lost if all decisions have to be made by EPA, Ecology and DOE unit managers. The implementation plan should include provisions for delegation of decision- making authority to the project level and specific constraints on that authority. Perhaps one means to do this is to prepare a site-specific work plan which defines various alternatives and lays out decision criteria associated with each alternative. Approval of this document by the appropriate regulatory agencies would then constitute limited authority for the project to act within a range of approved alternatives.

Response: We generally agree with the premise that work plans be prepared with sufficient detail to allow remedial actions to proceed in an efficient manner. This mechanism is in place using Remedial Design/Remedial Action work plans which have been effective in implementing the observational approach in the 100 Areas.

[p 3-4, sec 3.1] Some mention should be made in this section of groundwater mounding associated with past liquid waste disposal practices. This is particularly significant in that cessation of large disposal volumes has resulted in dissipation of groundwater mounds, which leads to falling groundwater levels and changing flow directions. These factors will significantly affect the impact of an individual site on groundwater.

Response: Accept. The following text will be added after the 5th paragraph ("The discharge of large volumes… "). Additional details are provided in Appendix F, specifically sections F4.7 and F6.0.

> "Wastewater discharges since 1943 have created local groundwater mounds under the primary wastewater disposal areas in the 200 Areas; the locations and heights of the mounds have changed as wastewater discharge locations and rates have changed. The presence of the mounds has locally affected both the direction of groundwater movement, causing radial flow from the discharge areas, and the rate of groundwater movement, causing increased hydraulic gradients. With the cessation of liquid discharges, the elevations of both the water table and the local groundwater mounds have been declining, resulting in (1) a concomitant increase in the thickness of the vadose zone; and (2)

changes in flow directions and rates that affect the distribution of contaminants in the groundwater and the local definitions of "upgradient" and "downgradient" with respect to groundwater monitoring."

[p 6-8, & 6-9 sec 6.2.5.1, 6.2.5.2 & 6.2.5.3] The borehole methods mentioned here are all oriented toward relatively deep holes. It appears that test pits are the method of choice for collecting shallow samples. As stated, the cone penetrometer and Geoprobe do not generally provide adequate sample volume. While test pits are relatively quick and cheap, and provide a good opportunity to observe shallow stratigraphy, they do result in exposure of the sampling horizon. At least while the hole is open, the soil removed from the hole is generally piled nearby. The test pit spoil is functionally equivalent to borehole cuttings and should be subject to the same restrictions. In cases where a contaminated area is being investigated, the spoil piles may result in worker exposure and possibly also downwind dispersal of particulate contamination. Some consideration should be given to the use of hollow-stem auger with split-spoon sampling for shallow investigations in an around waste sites. This is an accepted method for sampling, particularly above the water table, and an auger rig can generally drill several holes in a day. The cuttings brought to the surface by the auger flights are considerably less in volume than the soil dug up by a test pit. This would make it much easier to contain any contamination encountered in the borehole. Moreover, a large-diameter drive sample could be used to collect adequate sample volume. Finally, auger holes have much less impact to the site, compared to test pits.

Response: Accept. Some additional text in section 6.2.5 will be added to discuss the advantages and disadvantages of auger drilling.

[p 6-9 & 6-10] Under borehole geophysics, mention is made of the RLS, but not the spectral gamma logging system (SGLS). The SGLS is a high- resolution spectral gamma system operated by MACTEC - ERS for the vadose zone baseline characterization in Tank Farms. It could be used in both new and existing boreholes to detect specific man-made gamma-emitting radionuclides such as Cs-137 and Co-60. A further advantage of the SGLS is that it is capable of detecting naturally occurring radionuclides such as K-40, and gamma-emitting daughters in the U-238 and Th-232 decay chains. In the tank farms, variations in natural radionuclide concentrations have been shown to be capable of delineating contacts between backfill and undisturbed soil, and between the various stratigraphic units. It has also been successful in detecting caliche and silt layers that may act as barriers to subsurface flow.

Also, if hollow stem augers are used, it may be possible to install PVC or other non-metallic casing, which would facilitate the use of other borehole geophysical methods, such as induction logs to detect moisture variations.

Response: Accept. Some additional text in section 6.2.5.4 will be added to discuss the advantages and disadvantages the spectral gamma logging system (SGLS).

[p 6-11, sec 6.2.5.7] This section would benefit from a brief discussion (or perhaps a table) discussing specific characterization technology needs.

Response: Accept. Some additional text in section 6.2.5.7 will be added to discuss the process for evaluating technology needs that has been developed through the Site Technology Coordination Group (STCG). This group has been created for each site within the DOE complex to understand, evaluate and support technologies for environmental restoration mission. Their

web site will be referenced as well as the characterization technology needs identified for this year.

Thank you for the opportunity to review and comment on the document.

Rick McCain
MACTEC-ERS
946-3623
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S0461

Confederate Tribes and Bands
of the Yakama Indian Nation

Established by the
Treaty of June 9, 1855

January 20, 1999

Mr. Brian L. Foley
U.S. Department of Energy
Richland Operations Office
3350 George Washington Way
Richland WA 99352

Dear Mr. Foley:

200 AREAS REMEDIAL INVESTIGATION/FEASIBILITY STUDY IMPLEMENTATION PLAN (DOE/RL-98-28, DRAFT A)

Comment 1) Thank you for the opportunity to comment on the 200 Areas Remedial Investigation/Feasibility Study Implementation Plan (RIFSIP). This plan attempts to present a streamlined approach to develop and implement a common regulatory, characterization, documentation, and communication strategy for the 200 Areas, the problem is it falls short in all aspects of remedial planning and implementation. This plan is presumptive and creates an unacceptable remediation and closure remedy. We cannot endorse this fragmented strategy of this implementation plan without a more comprehensive database and total integration of the 200 Areas. There must be a single 200 Area combined Environmental Remediation (ER), Waste Management (WM), and Tank Waste Remediation Systems (TWRS) strategy document with clearly defined endstates. There must be an open dialog on the development of these strategies and endstates as a prerequisite to planning and concurring in individual programs or projects.

Additionally, the approach of reducing the number of operable units from 32 geographical-based groupings to 23 process-based, waste site operable units is flawed. The original grouping of the 32 operable units is both a geographic and process-based grouping, which was developed by WDOE and EPA. Furthermore, the "Analogous Site Approach", "Observational Approach", and "Plug In Approach" cannot be used to support closure activities without actual characterization. Without a complete characterization plan and an understanding of the site source term, development of a conceptual model of expected site conditions and potential pathways is premature.

Comment 2) This strategy also needs to present a total management plan that integrates all the 200 Areas remedial and closure activities. At the present this is a closed process with no Tribal or Stakeholder involvement.

Post Office Box 151, Fort Road, Toppenish, WA.

Specific comments can be addressed and discussed in an open forum with the technical staff at our ER/WM office in Richland or Union gap.

Sincerely,

Russell Jim, Manager
Yakama Nation ER/WM Program

Cc: Linda Bauer, DOE/RL
Kevin Clarke, DOE/RL
Nanci Peters, YIN ER/WM Richland
Doug Houston, Oregon Department of Energy

Response to Comment 1): The original grouping of OU's was primarily based on geography by each of the major plants. The new groupings are primarily based on process similarities. Grouping sites by the type and nature of the waste disposed was considered to be a more efficient approach to characterizing waste sites and reaching remedial decisions. The plan recognizes that the "Analogous Site Approach", "Observational Approach", and "Plug In Approach" all require characterization data. The implementation plan does not eliminate the need for characterization, but outlines a series of characterization steps that are successively more focused and cost effective.

It is generally recognized that all waste sites will require some degree of sampling which is addressed by the characterization strategy in the Implementation Plan (Section 6.0). The initial remedial investigation will consist of comprehensive investigations of representative waste sites to support remedial decisions. This will be followed by confirmatory sampling of previously uncharacterized waste sites prior to the implementation of remedial actions. This sampling effort confirms that the remedy selected is appropriate and supports site-specific remedial design data needs. Finally site-specific verification sampling or monitoring is performed to demonstrate that remedial action objectives have been met (e.g., removal actions) or continue to be met (e.g. containment in place).

Confirmatory sampling is intended to confirm that the remedy established in a ROD for a waste group is appropriate for all sites within the group. The sampling effort can be more focused and cost effective if 1) the preferred remedial alternative and land use is known, 2) representative site data is available, and 3) the specific decision that needs to be made is known. With respect to Section 2.5.3 "Plug-In Approach", confirmatory sampling is used to determine whether a site fits the criteria for "plug-in" that is established in a ROD.

Response to Comment #2: The DOE recognizes the need for an integrated evaluation of remediation alternatives and an assessment of cumulative effects. DOE has recently requested Bechtel Hanford to take the lead of such an effort (Groundwater/Vadose Zone Integration Project

(Project)). The objectives of the Project directly address the issues raised in your transmittal letter regarding the coordination of groundwater and vadose zone activities on the Hanford Site, and open communication with the Native Americans. The 200 Area Remedial Action Project has been identified as a "core project" whose activities are being integrated with TWRS, PNNL and BHI directed activities. This process is just beginning and has the active support of the highest levels of DOE RL and HQ management. The Project conducts bi-weekly meeting with stakeholders and representatives of tribal governments and is available for one on one meetings should it be necessary.

The Project is developing an integrated approach to the management of the core projects. The details of this approach are available from DOE in the following documents:

- Groundwater/Vadose Zone Integration Project Specification, DOE/RL-98-48, Draft C
- Groundwater/Vadose Zone Integration Project Cost and Schedule Baseline, DOE/RL-98-89, Draft A

With regard to the comment on the project being a closed process, the correspondence referenced below documents the opportunities offered by RL to hold meaningful direct discussions with the Yakama Indian Nation (YIN) on project-specific planning documents, including TPA modifications covering the period from October 1996 to date:

Ltr, dtd 10/25/1996, from Bryan L. Foley to Russell Jim, *Request for Tribal Consultation Regarding the 200 Areas Soil Remediation Strategy-Environmental Restoration Program, DOE/RL-96-67, Rev. 0, and the Waste Site Grouping for 200 Areas Soil Investigations, DOE/RL-96-81, Rev. 0.*

Ltr, dtd 05/01/1997, from Bryan L. Foley to Russell Jim, *Request for Tribal Consultation Regarding the Agreement-in-Principle for Implementing 200 Areas Soil Investigations for the Environmental Restoration Program.*

Ltr, dtd 12/01/97, from Bryan L. Foley to Russell Jim, *Response to Comments on the 200 Areas Soil Remediation Strategy-Environmental Restoration Program, DOE/RL-96-67, Rev. 0, and the Waste Site Grouping for 200 Areas Soil Investigations, DOE/RL-96-81, Rev. 0.*

Ltr, dtd 04/08/1998, from Bryan L. Foley to Russell Jim, *Request for Meeting Regarding 200 Area Remedial Investigation/Feasibility Study (RI/FS) Implementation Plan for the Environmental Restoration Project.*

Ltr, dtd 09/29/1998, from Bryan L. Foley to Russell Jim, *Request for Tribal Consultation Regarding DOE/RL-98-28, Draft A, 200 Areas Remedial Investigation/Feasibility Study Implementation Plan - Environmental Restoration Program.*

RL had hoped that the YIN would recognize the numerous attempts to offer direct discussions on key planning documents, including TPA modifications, the project's acceptance of those comments provided, and the project's diligent efforts to provide adequate responses to those comments reflect the project's desire to maintain open and frank communication. RL views these efforts as examples of efforts to maintain an open process. RL regrets that as recently as October, 1998, the YIN was not able to meet with RL, as they had planned, to discuss the most recent initial draft of the *200 Areas Remedial Investigation/Feasibility Study Implementation Plan - Environmental Restoration Program.*

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065550

Jan 25, 1999

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Mr. Brian L. Foley
US Department of Energy
Richland Operations Office
3350 George Washington Way
Richland WA 99352

Re: Oregon Office of Energy's Comments on the 200 Areas Remedial Investigation/Feasibility Study Implementation Plan-Environmental Restoration Program. (RIFSIP)

Dear Mr. Foley,

The Oregon Office of Energy has reviewed the draft RIFSIP and has these comments:

We support efforts to expedite cleanup. However, we are concerned with the lack of management detail in the RIFSIP.

Use of the "Analogous Site Approach" will result in a much less rigorous characterization and remedy selection process than normal for individual sites. The document does not contain sufficient technical justification for this approach and has no discussion of the legality of it versus CERCLA/RCRA requirements. This information should be included in this plan.

Response: The analogous site approach (Section 2.5.1) has been selected as an effective means of addressing a large number of waste sites such as that found in the 200 Areas and as demonstrated in the 100 Areas. The analogous site approach does not eliminate the characterization of waste sites but focuses characterization on what is needed to support remedial action decisions. It is generally recognized that all waste sites will require some degree of sampling, which is addressed by the characterization strategy in the Implementation Plan (Section 6.0). The initial remedial investigation will consist of comprehensive investigations of representative waste sites to support remedial decisions. This will be followed by confirmatory sampling of previously uncharacterized waste sites prior to the implementation of remedial actions. This sampling effort confirms that the remedy selected is appropriate and supports site-specific remedial design data needs. Finally site-specific verification sampling or monitoring is performed to demonstrate that remedial action objectives have been met (e.g., removal actions) or continue to be met (e.g. containment in place). This approach provides adequate characterization and meets the intent of RCRA and CERCLA requirements.

The RIFSIP contains only general criteria for determining if sites are similar. There is no discussion of what will cause a site to be rejected for a given waste group. Either specific criteria for considering a site to be similar to the representative site(s) or specific criteria for rejecting a site should be listed in the RIFSIP or other appropriate document.

Response: As stated in Section 2.5.1, "The ROD will include criteria for post-ROD confirmation sampling and analysis to be used to verify that all remaining sites in the group meet the conceptual model for the waste group. If a waste site fails the meet the conceptual model such that the selected remedy is not appropriate, it will be removed from the group and reassigned to another waste group." The ROD will contain further explanation of these criteria and the mechanisms used to transfer sites.

Page 3-4 states that the maximum depth to which plant roots penetrate is approximately 3 meters. However, Big Sage, and Russian Thistle roots can penetrate to depths much greater than that. We recommend that the plan take into account a conservative possible depth for these species.

Response: The sentence will be changed to "The average maximum depth to which plant roots penetrate is approximately 3 m (10 ft); this is also deeper than the maximum depths reported for animal burrowing (DOE-RL 1995b). (DOE/RL 1995b, *Hanford Site Risk Assessment Methodology*, DOE-91-45, U. S. Department of Energy, Richland, WA). While sagebrush have been reported at much deeper depths in the literature, such as for New Mexico (Foxx, T. S., G. D. Tierney, and J. M Williams, 1984, Rooting Depths of Plants on Low-Level Waste Disposal Sites, LA-10253-MS, Los Alamos National Laboratory, Los Alamos, New Mexico.), the maximum depth reported for the Hanford Site (at the 200 Area) is 2.5 m (Klepper , E. L. K. A. Gano, and L. L. Cadwell, 1985, *Rooting Depth and Distributions of Deep-Rooted Plants in the 200 Area Control Zone of the Hanford Site*, PNL-5247, Pacific Northwest National Laboratory, Richland, WA.) "

Page 3-25 infers that once discharge ceased there was no mechanism to drive contaminants downward to groundwater. This is misleading as normal gravitational head and recharge will slowly move contaminants to groundwater. This should be indicated in this section.

Response: Accept. The second sentence will be changed to: "The absence of a comparable mechanism..." to emphasize that it is the driving mechanism existing in the past due to artificial recharge that has been reduced. The following paragraph will be added after the one beginning "The likelihood..." to acknowledge the continuing presence of a downward driving force: "In the absence of artificial recharge, the potential for recharge from precipitation becomes more important as a downward driving force for remaining vadose zone contamination. Water that infiltrates the vadose zone may leach contaminants from both liquid and solid waste disposal sites and transport them to groundwater. Recharge thus represents a potential long-term mechanism for contaminant migration." Additional discussion of recharge is provided in Appendix F3.5.

Page 5-4, Remedial Action Objectives. Bullets 2 and 3 seem redundant. We recommend the most conservative of the two be chosen.

Response: These RAO's were discussed at length with the Washington State Department of Ecology and the U.S. Environmental Protection Agency and reflect wording that was agreed upon with these agencies.

Page 5-13, Figure 5-2, shows "complete exposure paths," and "incomplete exposure paths," but no explanation of these terms exists in the text or the table. These terms should be defined in the table.

Response: The legend of Figure 5-2 contains symbols for "complete exposure pathway" and "incomplete exposure pathway." A "complete exposure pathway" means that the Tri-Parties have agreed that contaminants are likely to be carried from potentially contaminated media, via the indicated potential exposure routes, to the potential receptors (indicated by the symbol), for a complete exposure pathway. An "incomplete exposure pathway" means contaminants are not believed to be carried from potentially contaminated media, via the indicated potential exposure routes, to the potential receptors, resulting in an incomplete exposure pathway due, for example, to agreed upon land use scenarios or the existence of physical or geographic barriers.

Section 6.2.5.1, borehole drilling, does not discuss the potential problems with drag down contamination, or the possibility of minimizing this via slant drilling. We recommend that these topics be included in this section.

Response: This section was intended as an overview of existing characterization techniques and new technologies being developed. Contamination control is recognized as an issue to be considered, and it will be, at the group specific work plan level as work planning is performed. Slant drilling is another optional drilling technique, where space will allow, that could be considered.

We recommend that the State of Oregon be included specifically in the list of organizations in Section 7.3.4.

Response: Accept. The State of Oregon will be included in the list.

The following typographical errors were discovered in the text:

Page 1-2, first paragraph, second sentence, should be "Records of Decision," not Record of Decisions."
Page 1-5, second paragraph, second sentence, should be "Detailed discussion of these subjects is..."
Page 6-5, third paragraph, second sentence, should be "worst case," not "worst cast."

Response: Accept. These will be corrected.

Should you have any questions on these comments, please contact Doug Huston at (503) 378-4456.

Sincerely

Mary Lou Blazek
Administrator
Nuclear Safety Division
Oregon Office of Energy

cc: Ms. Donna Powaukee - Nez Perce Tribe
Mr. J. R. Wilkerson- CTUIR
Mr. Michael Wilson - Washington Ecology
Mr. Douglas Sherwood - EPA
Mr. Russell Jim - Yakama Nation