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## United States Department of the Interior

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January 20, 1995

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**DOE-RL / DCC**

Dear Mr. Foote:

The U.S. Fish and Wildlife Service (Service) is providing comments on the document titled "Risk Evaluation of Remedial Alternatives for the Hanford Site (RERA)," document number DOE/RL-93-54, <sup>38817</sup> Draft A. This document outlines strategies for using risk assessment to evaluate and select remedial alternatives for cleanup of hazardous waste sites at Hanford, and to evaluate impacts during and following remedial actions. The Service greatly appreciates the opportunity to review and provide comments to the RERA early in the development process. Early review of cleanup guidance documents by the Service and other natural resource trustees will result in higher quality and more efficiently prepared guidance.

### GENERAL COMMENTS

The Service strongly supports the emphasis the RERA places on assessment of physical and biological impacts as an element of risk assessment. Adequate assessment of physical and biological impacts by the U.S. Department of Energy (USDOE) and cleanup contractors, and minimization of or mitigation for those impacts, will result in a more efficient and cost effective cleanup, reduction of potential liability under the CERCLA natural resource damage assessment regulations, fulfillment of USDOE natural resource trustee and stewardship roles, and creation of a positive public image. However, the document could be strengthened by specifically stating the components of a cleanup project that should be assessed for physical and biological impacts. These include: the project site, areas disturbed adjacent to the project site (parking, material laydown, etc.), disposal sites, borrow sites, transport routes, and any other impact areas.

The links should be described between RERA and the other sitewide natural resource plans. Unavoidable impacts to habitat and other natural resources identified in the ecological risk assessment might be mitigated under the Biological Resource Mitigation Strategy. The Biological Resources Management Plan (BRMaP) could assist project managers in determining the value or relative rarity of natural resource components, and the database developed under this plan will be critical for creating a landscape level ecological risk assessment, as described in section 3.3.2.2.

USDOE ecological risk assessment exposure modelling to date has primarily included a single species (Great Basin pocket mouse) and a single exposure route (dietary consumption of seeds). This risk assessment is inadequate. The ecological risk assessment should be conducted in greater detail as future land use of much of the site will likely lead to primarily wildlife exposure to any post-remediation contaminants.

In a phone conversation between you and our environmental contaminant specialist, Liz Block, on January 4, 1995, development of a sitewide ecological risk assessment was discussed. The Service strongly supports conducting a sitewide ecological risk assessment, and would welcome the opportunity to be involved in the planning phases of this effort. We anticipate that the greater efficiency of a sitewide assessment would allow a more extensive effort, including evaluating more species and exposure routes.

### DETAILED COMMENTS

**Page 2-5, section 2.3.2.** Generalized equations are provided to calculate the preliminary remediation goal (PRG) for radiological and non-radiological contaminants, but equations are limited to dietary exposure of an herbivore. If dietary exposure to contaminants via plant uptake has been determined to be the primary source of exposure, the data supporting this conclusion should be provided or referenced. If this determination has not been made, examples of other exposure routes and equations should be included. In general, wildlife exposure to radionuclides from soil ingestion is greater than that for plant ingestion.

**Page 2-5, equation 2-6.** It is confusing that the radiological contaminant equation has a variable for deperation or lack of absorption (fraction retained), but this non-radiological equation does not. This apparent deficiency should be corrected, or an explanation should be provided. Several organic and trace element contaminants bioaccumulate in wildlife over time. This equation does not seem to include a variable which would account for the additive effects of exposure as exposure duration increases. For equations 2-6 and 2-7, please state whether the no observed effect limits (NOEL) are based on acute or chronic studies. If the NOEL is based on chronic exposure, and the ecological receptor spends a limited amount of time on the contaminated site (exposure frequency), is it possible for a PRG to be calculated which allows contaminant concentrations to remain in soil which would result in acute exposure?

**Page 2-6, equation 2-7, NOEL definition.** Use of the term "reference dose" is inappropriate here, as reference doses are used only for noncarcinogenic effects, and the U.S. Environmental Protection Agency considers all radionuclides to be carcinogens. A more appropriate term should be used. In addition, is the laboratory work conducted to support the 1 rad/day criteria sufficient and rigorous enough to allow use of the term "NOEL?" If not, the wording should be changed.

**Page 2-7, section 2.3.3.1.** Several combinations of contaminants have been shown to have additive or synergistic negative effects. It is possible that negative effects might occur from exposure to combinations of contaminants when one or more of the contaminants occurs at a concentration lower than the PRG. This situation should be discussed in the RERA, and a database should be prepared which will assist in identifying which combinations of contaminants could be of concern.

**Page 2-7, paragraph 1.** It is confusing that multiple exposure pathways are discussed here, yet equations were only provided for a single exposure pathway. The equations for other pathways should be included.

**Page 2-8, "Public impacts" bullet, items 3, 4, and 5.** These items should be included in the "Ecological impacts" section as well.

**Page 2-9, "Ecological impacts" bullet, item 3.** This item should be reworded to specifically include the primary components of the alternative which would result in habitat destruction: the project area, adjacent to the project area, borrow areas, disposal areas, and transportation corridors.

**Page 3-9, paragraph 2.** It should be clearly stated that several of the physical and biological stressors associated with short-term risk during remediation can only be considered short-term if the post-remediation phase includes adequate habitat restoration activities. In the second sentence, the term "temporary destruction of habitats" is inappropriate. Because of the limited rainfall, the lack of experience, and other difficulties associated with restoring shrub steppe habitat, any destruction of habitat, for all practical purposes, should be considered a long-term effect. Similarly, replacement of native vegetation with nonnative species should also be considered a long-term effect, as it is very difficult to replace nonnative with native species. In the third sentence, the phrase "changes in habitat food quality" should be replaced with "a reduction in habitat quality" since the change is negative, and vegetation provides other habitat components besides food. Two additional physical stressors which cause short-term ecological risks during remediation should be included: reduction in wildlife use of adjacent habitat because of construction disturbances, and increased risk of human-caused fire. Additional biological stressors which cause short-term ecological risks during remediation include: habitat fragmentation; increased probability of stress-related disease, behavioral anomalies, or decreased reproduction due to construction disturbance; and, for low mobility species, reduction in the local population.

**Page 3-9, paragraph 3, sentence 4.** The phrase "consists of" should be replaced with "includes."

**Page 3-9, paragraph 4.** The point should be made that habitat restoration is very expensive, and that cost effective cleanup can be better attained by emphasizing minimization of habitat impacts.

**Page 3-9, paragraph 4, sentence 2.** The statement that methods to evaluate remedial alternatives for restoration constraints and costs do not exist, is inaccurate. In many cases, qualitative or semi-quantitative evaluations could provide valuable information to differentiate between alternatives. Also, in several letters and meetings, the Service and the Hanford Natural Resource Trustee Council (NRTC) have stressed the need to consider habitat restoration costs as part of the total cost of cleanup to ensure a cost effective cleanup. This statement might encourage project managers to ignore restoration costs and issues. Not only is the statement objectionable to the Service, it may end up being detrimental to USDOE in terms of potential liability for injury to natural resources. The sentence should be removed, or reworded to recommend that site-specific methods should be developed as soon as practical.

**Page 3-9, paragraph 4, sentence 3.** The RERA should emphasize that for projects impacting undisturbed areas, these factors should be considered at the site selection phase.

**Page 3-9, item 3 and page 3-10, item 4.** This item should be reworded to specifically include the primary components of the alternative which would result in habitat destruction: the project area, adjacent to the project area, borrow areas, disposal areas, and transportation corridors. We also recommend that the following question be added: Can habitat destruction be mitigated?

**Page 3-10, paragraph 1, sentence 5.** Use of the phrase "several waste sites" implies that concerns are limited to waste sites. Concerns also apply to borrow, disposal, and transport areas. This sentence should be reworded appropriately.

**Page 3-11, paragraph 2, last sentence.** This sentence implies that consistent use of a risk methodology will result in meaningful assessments. A meaningful evaluation of risk is dependent on the quality of the methodology, not the consistency of its use. Consistent use of a poor methodology will result in inaccurate assessment of risk. This sentence should be reworded appropriately.

**Page 3-11, section 3.3.2.** This section should also discuss the following long-term risks. Long-term impacts are associated with the destruction of habitat and invasion of nonnative species. One long-term impact associated with invasion of nonnative species is a decrease in native species diversity. Habitat destruction, as examined on a regional basis, could result in: extinction of local populations, subspecies, or species; reduction in genetic diversity; and reduction in ecological diversity. In arid environments, soil structure and integrity is critical for successful growth of vegetation; disruption of soils is likely to result in long-term impacts to successful reestablishment of vegetation and habitat value.

**Page 3-12, paragraph 2.** The second sentence should be removed, or a more suitable example should be used. The fact that natural loss of vegetation occurs should not be used to justify human destruction of vegetation. The Service considers the loss of high quality habitat, such as mature shrub steppe with an understory of native species, to be unacceptable if less damaging alternatives are available.

**Page 3-12, paragraph 2, last sentence, and paragraph 6, last sentence.** These sentences state that methods for assessment of habitat values have not yet been identified, although the RERA identifies the Service's Habitat Evaluation Procedures (HEP) as a means to accomplish this. If these sentences refer to the lack of Hanford-specific methods to assess habitat values, then they should be reworded to state such. The Service requests that the RERA recommend that site-specific methods be developed as soon as reasonably possible.

**Page 3-12, paragraph 3.** The sentence should be reworded to read, "Site remediation should involve mitigation measures..."

**Page 3-13, paragraph 1, sentence 1.** While shrub-steppe habitat may be valued differently by different stakeholders, it also possesses a value to the wildlife who use it, and intrinsic value as a functioning system and component of the natural world.

**Page 3-13, section 3.3.3.** This section should be expanded in scope and detail. The role and responsibilities of USDOE as a natural resource trustee under the National Contingency Plan and CERCLA should be described. Mitigating impacts identified by the ecological risk assessment during the remediation process has several advantages. The RERA should state these benefits, which include:

minimization of impacts, minimization of the time between impact and restoration, minimization of potential liability associated with injury to natural resources, and increased cost effectiveness of cleanup. It would also be valuable to include the information that any damages collected under natural resource damage assessment provisions of CERCLA must be spent on restoration of natural resources.

**Page 3-13, paragraph 5.** The paragraph should be rewritten so that the main points are clearly stated.

**Page 4-1, section 4.3.** As risk evaluation is to include an evaluation of the physical impacts of the alternative, risk evaluation after site remediation should include monitoring of the restoration/mitigation actions to determine whether natural resources and habitat values are adequately compensated for. This statement should be included in this section.

**Page C-1, section C.1.0.** The Service has previously provided recommendations that procedures to evaluate habitat value include not only HEP species, but additional vegetation parameters such as percent of native understory species and percent cryptogam cover. These recommendations should be considered if habitat is evaluated as part of RERA.

**Page C-1, paragraph 1.** HEP evaluation is usually based on several species, and several habitat variables for each species. The fourth sentence should be reworded to reflect this. Regarding the last sentence, the assumption was made that an engineered facility is a currently existing active or inactive facility. The Service disagrees that HEP evaluation is not appropriate for these types of facilities. Cleanup will involve impacts to areas adjacent to the facility, borrow areas, disposal areas, and transportation corridors. Impacts to these types of areas are all amenable to HEP evaluation. Also, HEP would be valuable for documenting an increase in habitat value if cleanup included restoration (e.g., if a cap were to be revegetated).

**Page C-1, first set of bullets.** For developing Hanford-specific HEP procedures, the following two bullets should be added:

- develop models for those evaluation species without models
- validate new models

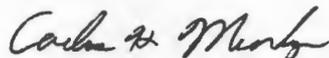
**Page C-1, second set of bullets, bullet 2.** We recommend that the primary criteria used in selecting evaluation species be that they are useful indicators of habitat value (e.g., a species present in native understory, but absent in cheatgrass understory). Political or economic importance should be secondary criteria. Species with economic importance should more appropriately be monitored and managed under BRMaP, unless they are also useful indicators of habitat value. We suggest changing the word "political" to "social" to more adequately reflect the variety of uses of some species. It is not clear what is meant by "ecological prominence."

**Page C-1, second set of bullets, bullet 3.** This bullet is unclear and should be reworded. We suggest it read "It is not appropriate to include threatened or endangered species as evaluation species, because State and Federal laws may prohibit acceptance of habitat losses for these species." This language is used in the HEP Workbook.

**Page C-2, paragraph 1.** This paragraph is difficult to follow. Particularly, use of the terms "defined" and "established by definition" beg the questions of who did the defining and how. We realize that providing a brief explanation of the HEP procedures is difficult; perhaps extracting wording from a HEP manual or providing references would assist the reader.

Thank you for the opportunity to provide comments to this document. Please contact Liz Block at our Moses Lake Suboffice (509-765-6125) with any questions or comments.

Sincerely,



*for* David C. Frederick  
State Supervisor

lb/jmc

c: BLM, Spokane (Jake Jakabosky)  
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