



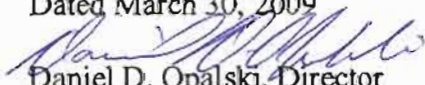
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101-3140

April 17, 2009

Reply To: Coeur d'Alene Field Office

**MEMORANDUM**

**SUBJECT:** OIG Draft Hotline Report – Contaminated Soil Waste Repository at East Mission Flats, Idaho  
OIG Assignment No. OCPL-FY08-0002  
Dated March 30, 2009

**FROM:**   
Daniel D. Opalski, Director  
Office of Environmental Cleanup

**TO:** Eric Lewis,  
Product Line Director, Special Reviews  
Office of Program Evaluation

This memorandum is in response to your draft hotline report on the Contaminated Soil Waste Repository at East Mission Flats, Idaho. Region 10 would like to thank you for your thorough review of the concerns raised by the complainant and the work performed by EPA and the Idaho Department of Environmental Quality (IDEQ). We feel the report fully endorses the extensive public outreach efforts that both agencies have conducted for this repository site.

We also believe the report's technical recommendation is consistent with our remedial design process and the adaptive management approach we are using for this project and others throughout the Bunker Hill Superfund Site. Below you will find our response to the draft recommendation, a discussion of other technical issues contained within your report, and a recommendation from Region 10 on the content of your report.

**Region 10 Response**

Region 10 concurs with the report's recommendation and believes that the analyses recommended by OIG have been completed by the IDEQ and incorporated into the East Mission Flats Repository Draft 90% Design Report. As you are aware, the Draft 90% Design Report was not completed at the time the OIG interviews were conducted. The report is still in draft and is undergoing internal agency review. Once the agency review is complete, IDEQ will provide the Final 90% Design Report to the public.

The Draft 90% Design Report contains two appendices that provide technical support for the geotechnical and hydrogeologic aspects of the design. We are enclosing copies of Appendix G and Q from the Draft 90% Design Report with this response. Appendix G discusses

consolidation of the soils within the footprint of the future repository and Appendix Q addresses multiple geochemistry evaluations. In the interest of brevity, the information contained in this memorandum are summaries of more detailed information contained in appendices G and Q. The following sections summarize the EPA and IDEQ response to the recommendation in the OIG draft Hotline Report, our response to a request noted in the draft report, and a suggested edit to the background section to provide more detail on the existing environmental conditions at the site. Each issue is identified by the page and paragraph it appears in the OIG report.

Recommendation, Page 9 Paragraph 2

*Finish analyzing the geochemical and physical conditions that might lead to contaminants dissolving near the repository base; then confirm the adequacy of the repository design to prevent dissolved contaminants from being released under these conditions.*

Response: OIG staff reviewed design documents up to and including the 60% Design Report. At the 60% design phase geochemical and physical conditions that might influence contaminant mobility near the repository base had not been fully addressed. Contaminant mobility is dependant on the presence of water within the repository to saturate waste material and the geochemical behavior of metals in various geochemical regimes. Both aspects of contaminant mobility were evaluated during the 90% Design Report effort. The results of this evaluation are summarized in Appendix Q of the Draft 90% Design Report.

Three pathways of water influx to the repository were assessed for the 90% Design Report: (1) downward vertical migration through the evapotranspiration (ET) cover; (2) lateral infiltration due to contact with flood water; and (3) upward vertical migration from the first water-bearing zone beneath the site. In addition to the water flux modeling, an assessment of the potential for metals leaching from remedial action-derived soil under oxidizing conditions was performed.

Results of the water influx assessment indicated infiltration through the top surface of the repository will be minimized or eliminated by the construction of an ET cover. Vertical migration of groundwater upward into the base of the repository will not occur due to the low hydraulic conductivity of the underlying soils and lack of sustained driving hydraulic head. Long-term saturation of the base of the repository due to periodic flood events and the development of reducing conditions are not expected. Lateral infiltration model results estimate inundation by surface water due to periodic flooding will saturate a ring approximately 13 to 16 feet wide and 0.3 to 0.5 feet thick at the perimeter of the repository, less than 0.05% of the total repository volume. EPA and IDEQ believe these are conservative estimates for the extent of saturation. The assumptions used in the lateral infiltration model are listed in Appendix Q. Since reducing conditions within the waste soil mass were not anticipated, an evaluation of metals mobility under reducing conditions was not conducted.

Leachate generated from the small volume of water that may penetrate the yard waste soil is not expected to contain elevated levels of metals. The surface water will be saturated with oxygen, unlike the sub-oxic water in the first water-bearing zone. Based on column tests

approximating oxidizing conditions at the proposed repository, arsenic, cadmium, and lead will not be mobilized and low levels of antimony and zinc will be present. The column tests actually indicate that the existing deposits have the potential to generate more metals than yard waste soil, specifically cadmium and zinc. Cadmium, leached from the existing native deposits, may be in the range of the primary drinking water maximum contaminant level (MCL), and zinc could exceed the secondary drinking water MCL. Because the existing soils generate higher levels of metals than the proposed yard waste, the reduction in infiltration beneath the repository footprint should result in an overall decrease in metals leached to shallow groundwater and an improvement in water quality.

The repository design is intended to protect human health and the environment from releases due to reasonably foreseeable events and we believe it is adequate based on the results of the referenced studies. Assessment of the design performance is part of the operations and maintenance program established for the site. One goal of the design is to protect groundwater quality. To help achieve that goal the groundwater monitoring program will continue on a regular basis for as long as it takes to fill the repository to capacity. Currently that monitoring program is conducted quarterly, but that may be revised as appropriate through adaptive management and other means. In addition, the site will be maintained in perpetuity by the State of Idaho to minimize the potential for release of contaminants from the site to the environment. If the water quality data show a trend of increasing dissolved metals concentrations, the first issue would be to identify the cause of the increase. Once the cause of the increase is identified, an appropriate remedy would be developed and implemented. This management approach is based on realistic site characterization assumptions in an effort to produce a cost-effective solution to long-term waste soil storage at the East Mission Flats Repository Site.

#### Third-Party Review Request, Page 9, Paragraph 1

*... we met with Region 10 and IDEQ to discuss the scope of work and the need for the planned work and results to be reviewed. The reviewer ... should be independent of the design team and qualified to assess that the analysis is technically sound and that the repository will protect human health and the environment.*

Response: A review by an independent third party will be conducted in spring 2009. Comments from the third-party reviewer will be incorporated into the Final 90% Design Report.

#### Suggested Edit to the Background section

The selected repository site at EMF is located within the drainage of the South Fork and main stem Coeur D'Alene River. The entire river drainage has been impacted by mine and smelter wastes, including the EMF site and surrounding area. In order to provide a more complete description of the existing environmental conditions at the repository site, the background section on Page 1 should include reference to the pre-existing widespread distribution of metals in soils and groundwater.

**Conclusion**

I'd like to close by saying that Region 10 appreciates the work of your staff during the review of the East Mission Flats Repository. We'd like to work with you to finalize your report as soon as possible. At this time, EPA and IDEQ are planning to finalize the repository design in May 2009. Please feel free to contact Bob Phillips if you have any questions regarding this response.

**Attachments (2)**

cc: Michelle Pirzadeh,  
Acting Regional Administrator, Region 10, ORA 140

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