Commercial Low-Level Radioactive Waste Disposal Site
Richland, Washington

Application for approval of the final design of the Phase I interim closure cover

April 2010

Washington State Department of Health
Washington State Department of Ecology

ADDENDUM TO EXISTING ENVIRONMENTAL DOCUMENT

This document is an addendum to the following existing environmental document:

> 2004 Final Environmental Impact Statement, Commercial Low-Level Radiological Waste Disposal Site, Richland, Washington

A Final Environmental Impact Statement (FEIS) regarding several actions including closure plan approval was prepared by the departments of Health and Ecology for the commercial low-level radioactive waste disposal site near Richland, Washington. The Close-As-You-Go multi-phased construction schedule was chosen as the preferred construction schedule alternative for closure. US Ecology submitted an application for review of the final design of the Phase 1 interim closure cover to the Department of Health, with a copy to the Department of Ecology on **April 15, 2010**. The Department of Health is responsible for acting on the submittal under RCW 70.98 and WAC 246-250.

As stated in the FEIS, the preferred alternative cover design is performance based. The final cover design must meet the performance criteria that are outlined in the FEIS. Specifically, the criteria are:

- Water infiltration rate through the cover less than or equal to 0.5 mm/yr.
- Radon 222 emanation rate through the cover less than or equal to 0.62 pCi/m^2s.
- Cover depth equal to or greater than five meters.
- Offsite resident dose less than or equal to 22 millirem per year.
- Onsite resident dose less than or equal to 107 millirem per year.
- Compliant with Minimum Technical Requirements for RCRA Landfills as defined in RCRA guidance document—Landfill Design Liner Systems and Final Cover, EPA PB 87-157 657/AS, 1987.

As stated in the FEIS, the cover will be placed in phases in order to accommodate the Department of Ecology's Model Toxics Control Act (MTCA) investigation. During the first phase of cover construction, a low permeability cover will be placed over all existing closed waste trenches (40 acres). Only the bottom layers of the cover design, up to and including the impermeable barrier and its protective soil layer, will be constructed.

The second phase will follow the completion of the MTCA investigation and the U.S. Department of Energy's decisions regarding transuranic retrieval on the central plateau. The

second phase will complete the final cover by constructing the upper layers over the first phase construction. The second phase will be constructed after the MTCA investigation is complete so that results from the MTCA investigation can be used, if necessary, to modify the cover design. Any necessary modifications, such as venting of volatile gases during second phase construction, will not require the first phase of the cover to be removed.

The third phase is ongoing and constructs the final cover in planned phases as waste is disposed into currently active and new trenches.

The final design of the Phase 1 interim closure cover meets the performance criteria described above.

The departments' review includes consideration of whether, under the State Environmental Policy Act (SEPA), there are changes to the approved closure plan that are substantial and/or involve new information, indicating probable significant adverse environmental impacts that were not evaluated in the existing environmental document. The departments' conclusion is that there are not.

The agencies are issuing this Addendum to document the final design of the Phase 1 interim cover, which includes the HDPE piping, and the change in construction start date.

Phase One Cover Design - HDPE Piping

Based on the results of the MTCA investigation to date, it is possible that the venting of volatile gases may be necessary. In order to accommodate this possibility, the phase one cover has been designed to include HDPE piping under the impermeable barrier. If the investigation concludes that venting of volatile gases is required, a vapor extraction system will be designed and attached to the pre-installed HDPE pipes without removal of the cover or penetrating the impermeable barrier. The addition of the HDPE piping does not affect the ability of the cover to meet the performance objectives as stated in the FEIS.

Construction Start Date

One of the conclusions of the FEIS was to install a low permeability cover over the closed trenches in 2005. Construction did not start in 2005 because the MTCA investigation was delayed and sampling was not completed until early 2010. The investigation was conducted to further characterize non-radioactive hazardous contaminants at the site and to determine appropriate remedial actions. Drilling vadose zone monitoring wells as part of the investigation would have interfered with installing the low permeability cover. In addition, in 2009 a source for the soils that will be used for constructing the interim cap was identified, and permission to acquire the soils was obtained.

Construction of the cover will minimize water infiltration through the trenches and is relevant to the performance criteria of onsite resident dose and offsite resident dose. The Department of Health has analyzed the change in start date from 2005 to 2010 with respect to its effect on

meeting the onsite and offsite resident dose criteria, and found no impact[1]. The change in start date does not affect the ability of the preferred alternative cover to meet the performance criteria.

In order to ensure that the onsite resident dose is less than or equal to 107 millirem per year and the offsite resident dose is less than or equal to 22 millirem per year, it is important to install the interim cover by January, 2012. In order to ensure that this goal is met, construction of the cover must start in 2010.

CONCLUSION

US Ecology's application for approval of the final design of the Phase I interim closure cover complies with applicable radiation protection laws and regulations under RCW 70.98 and WAC 246-250. Approval of the application allows US Ecology to proceed with closure in accordance with the approved closure plan. There are no changes to the approved closure plan that indicate any new significant adverse environmental impact.

[1] Washington State Department of Health Office of Radiation Protection, Addendum to the Final Environmental Impact Statement Radiological Risk Assessment, Low-Level Radioactive Waste Disposal Site Richland, Washington, Andrew H. Thatcher, Washington State Department of Health, June 2008.