

Radiological Screening Procedures Area I Burn Pit

The following procedures will be used for radiological screening of **excavated material** during the Area I Burn Pit RCRA Interim Measure Project.

1. A preliminary surface scan of the locations proposed for excavation, will be performed. The ambient gamma radiation exposure rate will be measured using a portable Ludlum 1" x 1" NaI (sodium iodide) gamma detector (or equivalent) and/or a GPRS-104 (Global Position Radiation Scanner). Screening results exceeding the instrument MDA¹ will be further investigated by survey and/or soil sampling techniques noted below as appropriate, to identify the cause of the elevated results.
2. **Excavated debris** (metal, concrete, drums, wood, asphalt, etc) which is segregated during this project will be screened using the following techniques.
 - a. Gamma radiation exposure rate of debris will be measured using a portable Ludlum 1" x 1" NaI (sodium iodide) gamma detector.
 - b. Beta-gamma surface contamination levels of debris will be measured using a portable Ludlum thin-window G-M meter.
 - c. Removable alpha and beta surface contamination levels of debris will be measured using wipes. These wipes shall be counted on a low background Tennelec laboratory counter.
3. If any **segregated debris** is identified, in 2 above, as radiologically contaminated above the instrument MDA, the debris will be held for further evaluation.
4. All **soil samples** taken for chemical analysis will be screened using a portable 1" x 1" NaI (sodium iodide) gamma detector. Any sample exceeding the instrument MDA will be analyzed by laboratory gamma spectroscopy. All **soil samples** taken for hazardous waste chemical profiling analysis will be split and analyzed by laboratory gamma spectroscopy. These soil samples will be split three ways; one for chemical analysis, one for radiological analysis, and one to be held by DTSC for possible State analysis.
5. If any **soil samples** contain gamma-emitting radionuclides exceeding background, these samples will be sent to an outside laboratory for additional isotopic analysis, including strontium-90, and alpha emitting radioisotopes.
6. If any **excavated soil** is identified as exceeding background, it will be held for further evaluation. Background levels for soil will be based on the 95th percentile of man-made radionuclides in local soil taken in Bell Canyon. MDAs for laboratory analysis of soil samples will be less than background, if commercially available.
7. If **excavated material** is identified that exceeds the action levels outlined in steps 3 or 6 above, then excavation shall be halted, the State (DTSC and DHS-RHB) will be notified, and the need for

¹ MDA = minimum detectable activity above instrument background. MDAs will be calculated using industry standard practices specified in "Introduction to Health Physics", Herman Cember, 3rd Edition, Chapter 9, pages 396-409, and NUREG-1507, "Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions", USNRC, December 1997.



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further contamination control and survey requirements will be evaluated.

- 8. The proposed procedure above applies solely to the Area I Burn Pit RCRA Interim Measure Project, and does not replace or invalidate survey procedures or cleanup standards used in the DOE cleanup of Area IV.**