

## **APPENDIX A - RCRA FACILITY INVESTIGATION (RFI)**

### **1. OBJECTIVES AND PURPOSE**

The objective of the RFI is to determine if releases of hazardous waste or hazardous waste constituents at any Solid Waste Management Unit (SWMU) or Area of Concern (AOC) pose an unacceptable risk to human health, ecological receptors or natural resources. The RFI has two main parts, including Phase I and Phase II. The purpose of Phase I is to determine if a release has occurred. The purpose of Phase II is to define the nature and extent of any release and to collect enough data to perform risk assessments. Phase II also includes an evaluation of all data collected in Phases I and II and preparation of a Phase II Report. The evaluation of RFI data must be conducted as defined in approved RFI Workplans, Utah Administrative Code (Utah Admin. Code) R315-101 and the documents titled *Final Site-Wide Background Study for US Army Dugway Proving Ground, March 2002* and *Final Phase II RFI Risk Assumptions Document (RAD) for Dugway, February 2002* and subsequent amendments, approved documents describing groundwater management, applicable US Environmental Protection Agency (EPA) guidance and memorandums or other correspondence from the Director, Utah Division of Waste Waste Management and Radiation Control, describing requirements for corrective action and long-term monitoring for landfills. The final RFI report also acts as a final decision document for each site (i.e., no further action, remediation, etc.) and is presented to the public for comment.

#### **1.A PHASE I RFI**

The Permittee has met all the requirements of the Phase I RFI for all the SWMUs currently identified to date through the Director approved document titled *Final Phase I RFI Report* in November of 2001. New sites (SWMUs/AOCs) requiring a Phase I RFI will be added to Table 1.

##### **1.A.1 Phase I RFI Workplan(s) for AOCs and Newly Identified SWMUs**

The Permittee shall submit a Phase I RFI Workplan(s) for AOCs and newly identified SWMUs. The Workplan(s) shall be consistent in scope with the approved Phase I RFI Workplan for SWMUs titled *Final Phase I RFI Workplan, dated November 5, 1993* or as updated and approved by the Director.

##### **1.A.2 Phase I RFI Reports for AOCs and Newly Identified SWMUs**

Upon completing the Phase I investigation for AOCs and newly identified SWMUs, the Permittee shall prepare and submit for approval by the Director a Phase I RFI Report(s). This report(s) shall be consistent in scope with the document titled *Final Phase I RFI Report, November 2001* for SWMUs as approved by the Director. This report shall recommend no further action, additional investigation as part of the Phase II RFI, immediate action under an interim measures plan as outlined in Module IV, or other action as deemed necessary by the Permittee. The Phase I RFI report shall also prioritize AOCs for further investigation based on the actual or potential threat to human health and the environment. The Phase I Report shall be incorporated into the permit as outlined in Utah Admin. Code R315-270-42.

#### **1.B Phase II RFI Workplan**

The Director has approved the Phase II RFI Workplan (*titled Final Phase II RFI Workplan, November, 1998*) for all SWMUs currently identified to date, and the Permittee has satisfactorily

implemented this plan. Plans addressing collection of analytical or other information to fill any data gaps in the Phase II RFI shall be submitted as variances to the approved Phase II RFI Workplan for Director approval.

### **1.B.1 Phase II RFI Workplan for AOCs and Newly Identified SWMUs**

Based on the results of the Phase I RFI Report for AOCs and newly identified SWMUs, the Permittee shall prepare and submit a Phase II RFI Workplan. This plan shall be consistent in scope with the approved document titled *Final Phase II RFI Workplan, November 1998* or as updated and approved by the Director.

### **1.C Phase II RFI Report**

The Permittee shall prepare and submit to the Director for approval in the Phase II RFI Report for all AOCs and SWMUs, an analysis and summary of all Phase I and Phase II RFI results. The objective of the evaluation and report shall be to ensure that the investigations for each AOC and SWMU are sufficient to describe the nature and extent of contamination, potential threats to human health and the environment and to prepare the risk assessment, natural resource assessment and Corrective Measures Study (CMS). The evaluation shall be conducted as outlined in documents listed in paragraph I of this Appendix and other plans and reports as approved by the Director. The final Phase II RFI Report shall be added to the permit after public comment as described in permit Condition IV.C.

#### **1.C.1. Phase II RFI Report Requirements**

The Phase II RFI Report shall, at a minimum, include the following:

- 1.C.1.a The sample analytical results, geophysical results, lithology logs, well logs, data quality assurance and quality control information, maps, survey data and other information as need to describe the nature and extent of contamination;
- 1.C.1.b. The information needed to identify sources of contamination, estimate and describe the mass of contamination contained in sources or in contamination release plumes in groundwater;
- 1.C.1.c The information needed to describe chemical specific contaminant migration;
- 1.C.1.d. The information needed to identify pathways of exposure to humans and ecological receptors and complete risk assessments (see Utah Admin. Code R315-101 and RAD);
- 1.C.1.e. The information needed to evaluate the geological pathways of contaminant migration in air, bedrock, soil or water (see Utah Admin. Code R315-101-3 and RAD);
- 1.C.1.f The information describing background levels of contamination or other protection standards for air, bedrock, groundwater, soil and surface water as described in Section 2 below;

- 1.C.1.g. A CMS Workplan as described in Appendix B and Module IV;
- 1.C.1.h The analytical or other information needed to reproduce conclusions as presented in texts, maps or other formats;
- 1.C.1.i Plans for long-term inspection, monitoring and site management after corrective actions have been implemented or sites have been designated as needing no further action under an industrial risk scenario as defined in Utah Admin. Code R315-101;
- 1.C.1.j Other information as required by the Director

## **2. PROTECTION STANDARDS**

The levels of contamination as identified in the RFI Reports or other reports shall not be allowed to increase beyond the existing contamination levels determined through appropriate monitoring or the use of other data accepted by the Director, in accordance with Utah Admin. Code R315-101-3. The Permittee shall propose site-specific protection standards as outlined in 2a-2c.

### **2.a. Air, Groundwater, Surface Water and Soil Standards**

The Permittee shall propose protection standards for air, groundwater, soil and surface water for approval by the Director. These standards shall include, but are not limited to: statistically derived background concentrations for naturally occurring elements and compounds; human health and ecological risk-based standards as set by Utah Admin. Code R315-101, the United States Environmental Protection Agency (EPA) or other credible organizations acceptable to the Director; technology based limits such as maximum concentration limits (MCL) listed in Utah Admin. Code R315, and other standards as applicable. These standards shall be proposed in the Phase I and Phase II RFI Reports and CMS Workplans or other reports and plans as applicable.

### **2.b. Chemical Agent Standards for Soil**

The Permittee shall assess concentration levels for agents GA, GB, GD, GF, H, HD, HT, L and VX in soil. The “agent free concentration level” shall be defined as the agent concentration in the soils not to exceed the detection limit for determining agent concentrations in soil (i.e., solvent extraction methods). The detection limits for determining agent concentrations in soil is technology driven and shall be evaluated by the Permittee or the Executive Secretary/Director by laboratory audits or other methods as needed.

The Director may also approve an alternate limit. For any proposed alternate limit, the Permittee shall include a justification based upon the criteria specified in Utah Admin. Code R315-101.

### **2.c Other Relevant Protection Standards**

The Permittee shall document all relevant and applicable standards for the protection of human health and the environment including, but not limited to National Ambient Air Quality Standards and state or federal approved water quality standards.

## **3. PROGRESS REPORTS**

Signed quarterly progress reports shall contain the following information:

- i. Work completed in the last quarter,
- ii. Work projected for the next quarter,
- iii. Deviations from approved plans and reports,
- iv. Descriptions of problems involving improper management of waste, and
- v. Summaries of contacts with representatives of local community or public interest groups during the reporting period (this requirement may be met by holding regular Restoration Advisory Board, RAB, meetings).

**4. COMMUNITY RELATIONS PLAN**

In addition to the public comment requirements for the Phase II RFI as described above and in Module IV, the Permittee has prepared and implemented a Community Relations Plan. The purpose of this plan is to inform the public and local community leaders about the Dugway corrective action program including AOCs, HWMUs and SWMUs. If new sites are added to Table 1 and there is sufficient public interest, the Permittee will re-establish the RAB and holding regular RAB meetings. The Permittee shall maintain the RAB and hold regular RAB meetings until such time that the RAB decides that a RAB is no longer necessary.

**5. SITE-WIDE ECOLOGICAL ASSESSMENT**

The Permittee shall complete an ecological assessment (pursuant to UAC R-315-101). The purpose of this assessment shall be to evaluate if the residues from waste management activities at AOCs, HWMUs and SWMUs combined are a threat to ecological receptors. The assessment shall address all presently permitted or formally permitted sites under corrective action (SWMUs), consent order (HWMUs), AOCs, and any units closed under post-closure. This assessment shall be conducted in accordance with applicable USEPA guidance as approved by the Director and as described in Module IV. The assessment shall address each of the plant communities located at DPG, wildlife receptors for each trophic level, and any threatened and endangered species, and may include species-specific toxicity testing.