

## **ATTACHMENT 1-8 CHWSF CLOSURE AND POST-CLOSURE**

### **1.0 INTRODUCTION**

**1.1** This attachment provides the closure and post-closure plans for the U.S. Army Dugway Proving Ground (DPG) Central Hazardous Waste Storage Facility (CHWSF) Part B Permit (the Permit) required by the Utah Administrative Code (Utah Admin. Code) R315-264.110 through 264.120.

**1.2** This attachment is organized in the following sections:

- Closure Plan for the CHWSF,
- Financial Requirements, and
- References.

### **2.0 CLOSURE PLAN FOR THE CENTRAL HAZARDOUS WASTE STORAGE FACILITY: UTAH ADMIN. CODE R315-264-110 THROUGH 120 AND 178**

**2.0.1** This closure plan discusses the activities associated with closure of the hazardous waste container storage units and buildings (Figure 1) within the CHWSF. The CHWSF is a central accumulation point for most satellite and 90 day accumulation storage sites at DPG. All of the other wastes listed in Attachment 1-1 of the permit are subject to land disposal restrictions except for solid P999 and F999 wastes (Utah listed waste). DPG disposes of all hazardous wastes at offsite contracted treatment, storage, and disposal facilities.

**2.0.2** A complete discussion of the operation of the CHWSF is in Attachment 1-9, CHWSF Container Management. The location of the CHWSF is shown in Figure 1.

**2.0.3** The August 30, 1989 version of the permit application indicated three outdoor bermed container storage areas at the CHWSF. The south berm area was used for storage of containers of hazardous materials (product), while the north and middle berm areas were used to store containers of F999 hazardous wastes. In early fall 1990, DPG removed the synthetic liners used to line the north and middle berm areas and placed them in containers for shipment off site for disposal. As suggested by Utah Division Waste Management and Radiation Control (UDWMRC), the soil beneath the liners was sampled, analyzed, and determined to be uncontaminated. The sampling report and analytical data for the soils beneath the liners are presented in File Document 5. No further investigation of the berm areas discussed in the sampling report or closure activity at the Storage Building will be conducted until partial or final closure.

**2.0.4** DPG shall notify the Director, UDWMRC (Director), of its intent to begin partial or final closure at the CHWSF as required by Utah Admin. Code R315-264-110 through 120. Prior to commencing partial or final closure, DPG shall submit for approval, a detailed closure plan and schedule based upon the accepted closure standards and technical practices at the time of closure. Updates to the plan shall require a permit modification request in accordance with Utah Admin. Code R315-270-42 prior to beginning closure activities.

**2.0.5** A description of the approved closure plan requirements is included in the following sections:

- Content of the Closure Plan,
- Closure Performance Standard,

- Partial and Final Closure Activities,
- Schedule for Closure,
- Post-Closure Plan,
- Certification of Closure, and
- Survey Plat.

## **2.1 CONTENT OF THE CLOSURE PLAN: UTAH ADMIN. CODE R315-264-112(b)**

2.1.1 When DPG determines that a partial or final closure of the CHWSF should commence, a detailed up-to-date revised closure plan will be completed and submitted to the UDWRC for approval. Also at this time, DPG will include an updated list of solid waste management units identified at DPG that must undergo closure in accordance with Resource Conservation and Recovery Act (RCRA). Submission of the revised closure plan will require a permit modification request in accordance with Utah Admin. Code R315-270-42 prior to beginning closure activities.

2.1.2 The closure plan will include:

- A description of how the CHWSF will be closed in accordance with the closure performance standard in Utah Admin. Code R315-264-111;
- A description of how partial and final closure of the CHWSF will be conducted to include a schedule for partial and final closure to meet the closure performance standards;
- An estimate of the maximum inventory of hazardous waste that was ever on site;
- Establish Clean-up criteria to meet the requirements of Utah Admin. Code R315-101;
- A description of the methods to be used to decontaminate, remove, transport, treat, store, or dispose of all hazardous wastes generated during partial and final closure;
- A description of the steps needed to decontaminate, or remove all hazardous waste residues and contaminated equipment, system components, structures, and soils; and
- A description of procedures to confirm that hazardous waste or constituents have not been released from the facility or that all hazardous waste has been removed. This will require that a sufficient number of samples are taken that are representative of the facility to include samples of loading and unloading areas. The samples shall be analyzed for the parameters of Figure 2 and meet the analytical quality assurance/quality control requirements outlined in Attachments 1-1 and 1-10 of the Permit.

## **2.2 CLOSURE PERFORMANCE STANDARD: UTAH ADMIN. CODE R315-264-111**

2.2.1 Closure performance standards will be addressed in the closure plan to be submitted prior to partial or final closure to include the following:

### **2.2.2 Establish clean-up criteria for closure performance**

2.2.2.1 Propose clean-up levels or establish clean-up goals to demonstrate closure by removal or meeting the closure criteria of Utah Admin. Code R315-101.

### **2.2.3 Sampling of the Outdoor Loading Area**

- 2.2.3.1 In order to confirm that hazardous wastes or hazardous constituents have not been released during loading or off-loading, samples will be taken at five to ten foot intervals along the perimeter of the paved asphalt off-loading area. These samples will be taken approximately six inches from the edge of the asphalt, at the locations shown in Figure 3. The samples will be taken at the surface and from a depth of six inches using a thin-wall tube sampler.
- 2.2.3.2 The samples shall be analyzed for the parameters of Figure 2 and meet the analytical quality assurance/quality control requirements outlined in Attachments 1-1 and 1-10 of the Permit. The analytical parameters selected for sampling represent the various hazardous wastes, which may be stored in the CHWSF.
- 2.2.3.3 If concentrations in the samples taken from the outdoor loading area do not exceed the clean-up goals proposed for closure, then the outdoor loading area will be considered closed. If, however, the initial sampling indicates that closure clean-up goals have not been met, then further sampling will be required. A second round of samples shall be taken at greater depths at the same locations as the original set of samples. The results of the second sampling round will determine the necessity for further sampling to determine the full extent of any contaminant release.

#### 2.2.4 Methods for Removal, Decontamination, or Disposal of Equipment, Structures and Soil

- 2.2.4.1 Any contaminated materials removed will be containerized and shipped to an approved off-site hazardous waste management facility or treated if applicable. The shipments will be properly manifested.
- 2.2.4.2 All equipment used in the sampling and removal activities shall be decontaminated on-site. This will require management and control of all rinsate generated during closure activities.
- 2.2.4.3 In addition, DPG's general approach for partial or final closure will require that all approved closure plans address the following procedures for closure:
- First, all hazardous waste in storage will be removed or shipped off site for treatment and/or disposal from partial or final closure areas.
  - Second, CHWSF personnel and the Directorate of Environmental Programs (DEP), in order to determine if waste managed at the CHWSF would require additional analytical parameters not listed in Figure 2, will review the operating record. Documentation and certification of this review shall be submitted along with the closure certification report.
  - Third, a review of inspection and spill reports for the CHWSF will be conducted to assist in determining the type of contamination, which may exist, and the best target areas for investigation. After the initial records review, an inspection will be made of the entire Container Storage Building and Storage Building concrete floors to determine the extent of damage or deterioration that exists and the need for decontamination or treatment.
- 2.2.4.4 If after implementing the foregoing procedures and the operating records indicate that no leaks or spills have occurred, the following decontamination and disposal activities will be conducted:
- The floor and berm areas will be decontaminated and washed.
  - The waste water will be analyzed in accordance with a sampling and analysis plan to be submitted at the time of closure.

- Depending on the analytical results, the water will be managed as hazardous or non-hazardous wastewater.

2.2.4.5 If records indicate there have been leaks and spills, the following decontamination and disposal activities will be conducted:

- The nature and extent of the possible contamination will be assessed using a detailed investigation plan to be submitted to UDWRC at the time of closure.
- Decontamination and disposal techniques will be determined based on the results of the nature and extent investigation and standard practices used at the time of closure.

2.2.4.5.1 If cracks are observed. A floor plan will be developed which includes all observed cracks or spilled areas drawn to scale. Core samples shall be taken 6 to 12 inches below the pad at 5-foot intervals along the cracks. The samples shall be analyzed for the analytical parameters shown in Figure 2 and additional parameters based on documented wastes that have been managed at the CHWSF. If contamination of the soil or concrete is found, then further sampling will be done to determine the extent of contamination. The contaminated soil and concrete will be excavated, and shipped to an approved hazardous waste treatment and/or disposal site.

2.2.4.5.2 If no cracks are observed. Random and systematic sampling of the epoxy floor and sump coating system, respectively, will be conducted. Sampling methods will be in accordance with procedures established in EPA Test Methods for Evaluating Solid Waste (SW-846) and Attachment 1-1.

2.2.4.6 Random scrape samples shall be collected from the open floor areas in the Container Storage Building and the Storage Building.

2.2.4.7 If analyses indicate no detectable concentrations of hazardous constituents, no additional decontamination will be conducted. If a hazardous constituent is detected, then additional decontamination and verification analysis steps shall be undertaken.

### **2.3 PARTIAL AND FINAL CLOSURE ACTIVITIES: UTAH ADMIN. CODE R315-264-110 THROUGH 120**

2.3.1 Partial and final closure activities will be performed in accordance with the closure plan submitted at the time of partial or final closure.

### **2.4 SCHEDULE FOR CLOSURE: UTAH ADMIN. CODE R315-264-112(b)(6)**

2.4.1 No specific date for CHWSF closure has been scheduled. When it is determined that closure can begin, a schedule for closure will be submitted to UDWMRC. Partial and final closure activities will not begin until after the final closure plan is approved. It is anticipated that closure can be completed within 180 days of receiving approval of the final closure plan from UDWMRC.

### **2.5 POST-CLOSURE PLAN: UTAH ADMIN. CODE R315-264-117 THROUGH 120**

2.5.1 The CHWSF will be closed according to Utah Admin. Code R315-264-110 through 120: a post-closure plan is not required. The property will remain in the custody of the U.S. Army.

**2.6 CERTIFICATION OF CLOSURE: UTAH ADMIN. CODE R315-264-115**

- 2.6.1 Within 60 days of completion of partial and final closure, DPG shall submit to the Director, a certification that the CHWSF units have been closed in accordance with the approved closure plan. The Installation Commanding Officer and an independent registered professional engineer will sign the certification. Documentation supporting the engineer's certification will be furnished to the Director.

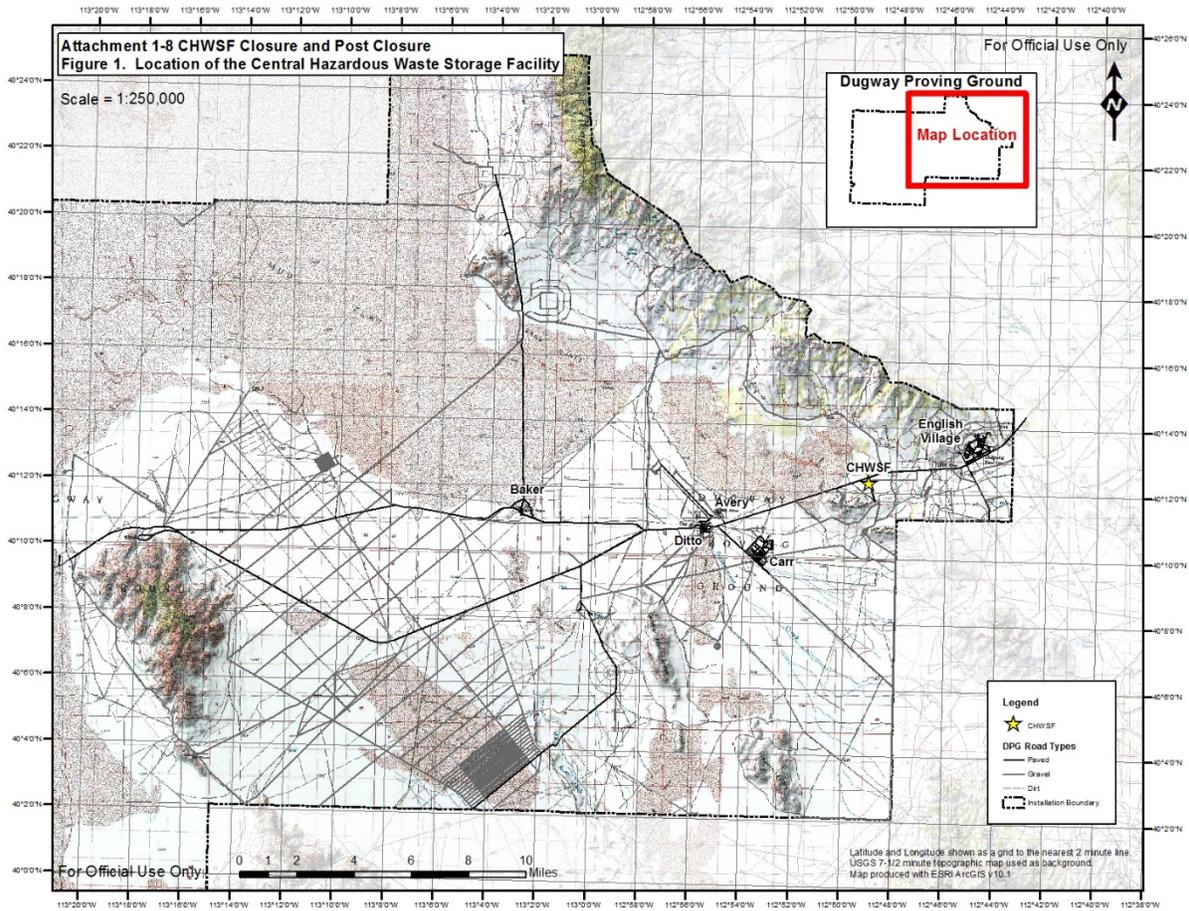
**2.7 SURVEY PLAT: UTAH ADMIN. CODE R315-264-116**

- 2.7.1 The survey plat will not be required if closure has met the closure performance standards of the closure plan.

**3.0 FINANCIAL REQUIREMENTS: UTAH ADMIN. CODE R315-264-145**

- 3.1 A closure cost estimate and financial assurance mechanism are not required for this permit. Utah Admin. Code R315-264-140(c) exempts facilities that are owned by the federal government from these requirements.

**Figure 1. Location of Central Hazardous Waste Storage Facility**



**Figure 2. Analytical Parameters/Methods for Central Hazardous Waste Storage Facility Closure.**

<b>A. Priority Pollutant Metals</b>	<b>Preparation</b>	<b>Analysis</b>	<b>Instrument Detection</b>
(1) Antimony	2005	7040	0.2
(2) Arsenic	3005	7061	0.002
(3) Beryllium	3005	7090	0.005
(4) Cadmium	3005	7130	0.005
(5) Chromium	3005	7190	0.05
(6) Copper	3005	7210	0.02
(7) Lead	3005	7420	0.1
(8) Mercury	3005	7470	0.0002
(9) Nickel	3005	7520	0.04
(10) Selenium	3005	7741	0.002
(11) Silver	3005	7750	0.01
(12) Thallium	3005	7840	0.1
(13) Zinc	3005	7950	0.005
(14) Cyanide			
<b>B. Volatile Organic Compounds</b>	<b>Analysis</b>	<b>Practical Quantitation Limit Water (mg/liter)</b>	<b>Soil (mg/liter)</b>
(1) Chloromethane	8240	0.01	0.01
(2) Bromomethane	8240	0.01	0.01
(3) Vinyl Chloride	8240	0.01	0.01
(4) Chloroethane	8240	0.01	0.01
(5) Methylene Chloride	8240	0.005	0.005
(6) Acetone	8240	0.1	0.1
(7) Carbon Disulfide	8240	0.005	0.005
(8) 1, 1-Dichloroethane	8240	0.005	0.005
(9) 1, 1-Dichloroethene	8240	0.005	0.005
(10) trans-1, 2-Dichloroethene	8240	0.005	0.005
(11) Chloroform	8240	0.005	0.005
(12) 1, 2-Dichloroethane	8240	0.005	0.005
(13) 2-Butanone	8240	0.1	0.1
(14) 1,1,1-Trichloroethane	8240	0.005	0.005
(15) Carbon Tetrachloride	8240	0.005	0.005
(16) Vinyl Acetate	8240	0.05	0.05
(17) Bromodichloromethane	8240	0.005	0.005
(18) 1,1,2,2-Tetrachloroethane	8240	0.005	0.005
(19) 1,2-Dichloropropane	8240	0.005	0.005
(20) trans-1,3-dichloropropene	8240	0.005	0.005
(21) Trichloroethene	8240	0.005	0.005
(22) Dibromochloromethane	8240	0.005	0.005
(23) 1,1,2-Trichloroethane	8240	0.005	0.005
(24) Benzene	8240	0.005	0.005
(25) Cis-1,3-Dichloropropene	8240	0.005	0.005
(26) 2-Chloroethyl Vinyl Ether	8240	0.01	0.01
(27) Bromoform	8240	0.005	0.005
(28) 2-Hexanone	8240	0.05	0.05
(29) 4-ethyl-2-pentanone	8240	0.05	0.05
(30) Tetrachloroethene	8240	0.005	0.005
(31) Toluene	8240	0.005	0.005
(32) Chlorobenzene	8240	0.005	0.005
(33) Ethyl Benzene	8240	0.005	0.005
(34) Styrene	8240	0.005	0.005
(35) Total Xylenes	8240	0.005	0.005
<b>C. Semi-Volatile Organic</b>	<b>Analysis</b>	<b>Practical Quantitation</b>	<b>Soil (mg/liter)</b>

Compounds		Limit Water (mg/liter)	
(1) phenol	8270	0.01	1.0
(2) bis(2-Chloroethyl) ether	8270	0.01	1.0
(3) 2-Chlorophenol	8270	0.01	1.0
(4) 1,3-Dichlorobenzene	8270	0.01	1.0
(5) 1,4-Dichlorobenzene	8270	0.01	1.0
(6) Benzyl Alcohol	8270	0.02	1.3
(7) 1,2-Dichlorobenzene	8270	0.01	1.0
(8) 2-Methylphenol	8270	0.01	1.0
(9) bis(2-Chloroisopropyl) ether	8270	0.01	1.0
(10) 4-Methylphenol	8270	0.01	1.0
(11) N-Nitrosodi-n-propylamine	8270	0.01	1.0
(12) Hexachloroethane	8270	0.01	1.0
(13) Nitrobenzene	8270	0.01	1.0
(14) Isophorone	8270	0.01	1.0
(15) 2-Nitrophenol	8270	0.01	1.0
(51) Di-n-butylphthalate	8270	0.01	1.0
(52) Fluoranthene	8270	0.01	1.0
(53) Pyrene	8270	0.01	1.0
(54) Butyl benzyl phthalate	8270	0.01	1.0
(55) 3,3-Dichlorobenzidine	8270	0.02	1.3
(56) Benzo (a) anthracene	8270	0.01	1.0
(57) bis(2-ethylhexyl)phthalate	8270	0.01	1.0
(58) Chrysene	8270	0.01	1.0
(59) Di-n-octyl phthalate	8270	0.01	1.0
(60) Benzo (b) fluoranthene	8270	0.01	1.0
(61) Benzo (k) fluoranthene	8270	0.01	1.0
(62) Benzo (a) pyrene	8270	0.01	1.0
(63) Indeno (1,2,3-cd) pyrene	8270	0.01	1.0
(64) Dibenz (a,h) anthracene	8270	0.01	1.0
(65) Benzo (g,h,i) perylene	8270	0.01	1.0
<b>D. Chemical Agents</b>			
(1) GA: Ethyl N, N-Dimethylphosphoramidocyanidate			
(2) GB: Isopropyl Methyl Phosphonofluoridate			
(3) GD: Pinacolyl Methyl Phosphonofluoridate			
(4) HD: Bis (2-Chloroethyl) Sulfide			
(5) HL: (Mustard-Lewiste Mixture): 2,2-Dichloro-Diethyl Sulfide & Lewiste			
(6) HT: (Mustard-T Mixture): 2,2-Dichloro-Diethyl Sulfide + T Agent (a sulfur-chlorine compound similar to HD)			
(7) L: (Lewisite) Dichloro 2-Chlorovinyl Arsine			
(8) VX: O-ethyl-S-(diisopropylaminoethyl) methylphosphonothioate			

<b>E. Chemical Agent Breakdown Products</b>	<b>Analysis</b>	<b>Instrument Detection Limits (mg/l)</b>
(1) Thiodiglycol		
(2) Dithiane		
(3) Oxathiane		
(4) Di-isopropylmethylphosphonate	*	*
(5) Fluoride	413D**	*
(6) Total Phosphate	*	*
(7) Isopropyl Amine	*	*
(8) Sulfate	9036	*
(9) Sulfite	428A**	*
(10) Hydrogen cyanide		
(11) Sodium arsenite		
<b>F. Decontamination Solution Compounds</b>		
(1) Ethylene Glycol	*	*
(2) Diethylene triamine	*	*
<b>G. Simulant Compounds</b>	*	*
(1) 1,2,3-Trichloropropane (TOP)		
(2) Polyethylene Glycol		
(3) Tris (2-ethylhexyl) Phosphate, or trioctyl phosphate (TOF)		
(4) Methyl Salicylate (MS)		
(5) Silicone Fluid 96-100 (SF 96-100)		
(6) Tributyl Phosphate (TBP)		
(7) Triethyl Phosphate (TEP)		
(8) Diethyl Malonate (DEM)		
(9) Ethyl Lactate		
(10) Methyl Acetoacetate (MAA)		
(11) Ethyl Acetoacetate (EAA)		
(12) Sulfur Hexafluoride (SF6)		
(13) Triisopropyl Phosphite (TIP)		
(14) Dimethyl Methylphosphonate (DMMP)		
<b>H. Obscurant Hydrolysis Products</b>	*	*
(1) Titanium Hydroxide		
(2) Phosphoric Acid		
* Based on methods and detection limits established by DPG testing protocols. See Attachment 1-10, CHWSF Quality Assurance Program Plan, for analytical methods used for chemical agent detection limits and methodology.		
** Standard Methods for Examination of Water and Wastewater (15 <sup>th</sup> Edition).		

Figure 3. Soil Sampling Locations – Outdoor Loading Areas.

