

DUGWAY PERMIT

MODULE VII

ATTACHMENT 15

**HWMU 90
POST-CLOSURE PLAN**

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LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

bgs	Below Ground Surface
CFR	Code of Federal Regulations
DPG	Dugway Proving Ground
DSHW	Division of Solid and Hazardous Waste
ft	Feet
FWEC	Foster Wheeler Environmental Corporation
GCL	Geosynthetic Clay Liner
GMA	Groundwater Management Area
HWMU	Hazardous Waste Management Unit
mg/L	Milligrams per Liter
msl	Mean Sea Level
Shaw	Shaw Environmental, Inc.
SWMU	Solid Waste Management Unit
TDS	Total Dissolved Solids
UAC	Utah Administrative Code
UDEQ	Utah Department of Environmental Quality
USGS	United States Geological Survey

1.0 INTRODUCTION

The two objectives of this Post-Closure Plan are; 1) to ensure that Dugway Proving Grounds (DPG or Dugway) complies with the Post-Closure Permit issued by the State of Utah in accordance with 40 Code of Federal Regulations (CFR) §264.117, with respect to post-closure inspection requirements; and, 2) outline the requirements needed to prevent exposure or contact with waste left in place at this landfill site. To meet these objectives this Post-Closure Plan provides detailed information regarding the location, regulatory criteria, and post-closure inspections at Hazardous Waste Management Unit (HWMU) 90. Post-closure requirements will continue for a minimum of 30 years after closure of HWMU 90. The post-closure care period may be extended or shortened, as deemed necessary (40 CFR §265.117(a)(2)).

In accordance with Title 40 CFR §270.28 and Utah Administrative Code (UAC) R315-3-2.19, the Post-Closure Plan is required to include specific information for a closed facility. As applicable to HWMU 90, the information requirements include:

- General description of the facility;
- Description of security procedures;
- General inspection schedule;
- Preparedness and Prevention Plan;
- Facility location information (including seismic and flood plain considerations);
- Closure Plan or Closure Proposal;
- Certificate of Closure;
- Topographic map, with specific scale;
- Summary of groundwater monitoring data; and
- Identification of uppermost aquifer and interconnected aquifers.

Table 1 provides the regulatory citations for the general information requirements and the specific locations in this Post-Closure Plan where the specific information is presented.

Table 1: Summary of HWMU 90 Post-Closure Information Requirements Under 40 CFR §270.14, UAC R315-3-2.19, and UAC R315-3-2.5

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(b)(1) UAC R315-3-2.5(b)(1)	General Description of the Facility	Section 2.0
40 CFR §270.14(b)(4) UAC R315-3-2.5(b)(4)	Description of Security Procedures	Section 3.0
40 CFR §270.14(b)(5) UAC R315-3-2.5(b)(5)	General Inspection Schedule	Section 6.0, Module VII Table VII-3, and Module VII Form B
40 CFR §270.14(b)(6) UAC R315-3-2.5(b)(6)	Preparedness and Prevention	Section 3.0
40 CFR §§270.14(b)(11)(i-ii, v) UAC R315-3-2.5(b)(11) (i-ii, v)	Facility Location Information Applicable Seismic Standard	Section 4.0
40 CFR §§270.14(b)(11) (iii-v) UAC R315-3-2.5(b)(11) (iii-v)	Facility Location Information 100-year Floodplain	Section 5.0

Table 1 (Continued): Summary of HWMU 90 Post-Closure Information Requirements Under 40 CFR §270.14, UAC R315-3-2.19, and UAC R315-3-2.5

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(b)(13) UAC R315-3-2.5(b)(13)	Copy of the Closure Plan	Closure Plan was open for public comment ending on October 14, 2005 with no comments received.
40 CFR §270.14(b)(14) UAC R315-3-2.5(b)(14)	Closure Certification and Notification	Section 2.7 and Appendix A.
40 CFR §270.14(b)(16) UAC R315-3-2.5(b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement.
40 CFR §270.14(b)(18) UAC R315-3-2.5(b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (i)	Topographic Map Map Scale and Date	Figure 2 (1 inch = 1000 feet).
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (ii)	Topographic Map 100-year floodplain area	Section 5.0; HWMU 90 is not located within a verified 100-year floodplain area.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (iii)	Topographic Map Surface Waters Including Intermittent Streams	Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (iv)	Topographic Map Surrounding Land Uses	HWMU 90 is within a military base. There are no nearby operations in the vicinity of HWMU 90.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (v)	Topographic Map A Wind Rose (i.e., prevailing windspeed and direction)	There are no residential populations abutting HWMU 90. The closest residential area is English Village (approximately 8.5 miles away). A wind rose is not deemed necessary for HWMU 90.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (vi)	Topographic Map Orientation of Map, North Arrow	Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (vii)	Topographic Map Legal Boundaries of The Hazardous Waste Management Facility	Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (viii)	Topographic Map Access Control, Fence, Gates	Figure 3. The site is not surrounded by a fence.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (ix)	Topographic Map Injection and Withdrawal Wells	Figure 2.

Table 1 (Continued): Summary of HWMU 90 Post-Closure Information Requirements Under 40 CFR §270.14, UAC R315-3-2.19, and UAC R315-3-2.5

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (xi)	Topographic Map Barriers for Drainage or Flood Control	Figure 4. HWMU 90 is graded to drain surface water away from the engineered covers. There are no barriers to drainage or flood control.
40 CFR §270.14(c) UAC R315-3-2.5(c)(1)	Groundwater Monitoring Information Summary of Groundwater Data	Post-closure groundwater monitoring at HWMU 90 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(2)	Groundwater Monitoring Information Identification of Uppermost Aquifer	Post-closure groundwater monitoring at HWMU 90 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(3)	Groundwater Monitoring Information Delineation of The Waste Management Area	Post-closure groundwater monitoring at HWMU 90 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(4)	Groundwater Monitoring Information Extent of Plume	Post-closure groundwater monitoring at HWMU 90 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(5)	Groundwater Monitoring Information Detailed Plans/Engineering Report for Proposed Groundwater Program	Post-closure groundwater monitoring at HWMU 90 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(i)	Groundwater Monitoring Information Proposed List of Parameters	Post-closure groundwater monitoring at HWMU 90 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(ii)	Groundwater Monitoring Information Proposed Groundwater Monitoring System	Post-closure groundwater monitoring at HWMU 90 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(iii)	Groundwater Monitoring Information Background Values	Post-closure groundwater monitoring at HWMU 90 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(iv)	Groundwater Monitoring Information A Description of The Proposed Sampling	Post-closure groundwater monitoring at HWMU 90 is not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of HWMU 90, also known as the Burning Area East of Carr Facility at DPG, as required by UAC R315-3-2.5(b)(1) (Figures 1 and 2).

2.1 HWMU 90 LOCATION AND HISTORY

HWMU 90, known as the Carr Facility Open Burning Area, is a closed HWMU located approximately 3,000 feet (ft) east of the Carr Facility at DPG, 4,500 ft north of Durand Road, and 1,700 ft northwest of the Old 3X Disposal Site East of the Carr Facility (HWMU 55). Figure 2 shows the location of HWMU 90 with respect to the Carr Facility. This HWMU is located on a relatively flat valley floor at an approximate elevation of 4,369 ft mean sea level (msl) sloping gently towards the northwest, with about 10 to 15 ft of relief per mile. The shallow groundwater is at approximately 39 ft below ground surface (bgs), and flows to the south.

HWMU 90 is located within the former mortar range used during the late 1950s and 1960s and the former high-explosive and chemical munitions impact area used in the 1940s (Foster Wheeler Environmental Corporation [FWEC], 1998). HWMU 90 is composed of three elongated soil mounds (northern southwestern and southeastern mounds) within an oval-shaped area approximately 800 ft long by 400 ft wide (Figure 2-3). These mounds cover a number of trenches and pits that were used for the disposal of range clearance materials and burning of wastes from the Carr Facility and the ranges.

2.2 PAST OPERATIONS

The site itself was active from the early 1960s (possibly as early as 1953) to 1985 (FWEC, 1998). Wastes disposed of at the site consisted of range-clearance activities, ordnance, propellants, decontamination solutions, and miscellaneous 3X debris. Materials were burnt upon placement in pits. In 1994, scattered surface debris was hauled to a gondola (roll-off bin) at DPG-194 and then disposed off-site. The actual quantities of the various wastes and frequency of disposal in HWMU 90 could not be determined from available documentation, as no records were maintained of what was buried or burned in the trenches and pits.

HWMU 90 was one of the 27 sites listed at DPG under the Utah Department of Environmental Quality (UDEQ)/Division of Solid and Hazardous Waste (DSHW) Stipulation and Consent Order No. 8909884 (dated September 19, 1990). This Consent Order directed DPG to determine whether hazardous waste management occurred at these sites. This Stipulation and Consent Order was amended in December 22, 1993 and identified HWMU 90 among the sites to be closed.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

The detailed results of previous soil, and groundwater sampling, and closure information including the risk assessment are available, for HWMU 90, in the DSHW public documents listed below in Table 2 (UAC R315-3-2.5(b)(13)).

Table 2: DSHW Library Documents Detailing HWMU 90 Investigations

Document Title	Received Date	DSHW Library No.
Ebasco Services Incorporated, 1994. <i>Final Nature and Extent Investigation Plan No. 7a – SWMU 90, Carr Facility Open Burning Area</i> . November.	11/94	Archived
Foster Wheeler Environmental Corporation (FWEC), 1995. <i>SWMU Closures at Dugway Proving Ground, Interim Report, Volume 4, Appendix F-Results of Data Validation</i> .	1995	00029
FWEC, 1998. <i>Dugway Proving Ground Closure Plan, Module 3, HWMU 90</i> . Final. August.	08/98	Archived
Shaw Environmental, Inc., 2005. <i>Final Remedial Action Plan and Remedial Design, Hazardous Waste Management Unit 90, Carr Facility Open Burning Area, Dugway Proving Ground, Utah, Revision 0</i> . October.	10/05	00506
Shaw Environmental, Inc., 2006. <i>Final Closure Certification Report for HWMU 90, Dugway Proving Ground, Utah</i> . May.	05/06	00515

2.4 CLOSURE ACTIVITIES

In compliance with UAC R315-7-21 and the Remedial Action Plan and Remedial Design (Shaw, 2005), closure at HWMU 90 has been completed with the construction of an engineered cover system consisting of a geomembrane-supported geosynthetic clay liner (GCL) placed over the identified waste trenches. Approval for the HWMU 90 Final Closure Certification Report (Shaw, 2006) was received in a letter dated August 9, 2006, from Mr. Dennis R. Downs, Utah Solid and Hazardous Waste Control Board. Appendix A includes a copy of the HWMU 90 Closure Certification signed and stamped by a Utah-licensed Professional Engineer.

The final cover system as designed and constructed satisfies the requirements of UAC R315-7-14 and R315-7-21 (by reference 40 CFR §265, Subpart N, 265.310) for the closure and post-closure of HWMU 90, namely:

- Provide long-term minimization of migration of liquids through the closed landfill;
- Function with minimum maintenance;
- Promote drainage and minimize erosion or abrasion of the cover;
- Accommodate settling and subsidence so that the integrity of the cover is maintained; and
- Achieve a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

In meeting the above performance standards, the major closure activities completed at HWMU 90 included:

- Installation of the final engineered cover system; and
- Final grading of the site, including hydroseeding and enhancement of drainage features, to help control erosion and minimize long-term maintenance requirements.

These measures will minimize human contact with the waste and provide for protection of groundwater. A general post-closure inspection checklist for landfill sites (Form B) designed to insure that these objectives are maintained is presented in Module VII.

The investigative and closure activities performed at HWMU 90 are described in detail in the Final Closure Certification Report (Shaw, 2006) and the Final Remedial Action Plan and Remedial Design (Shaw 2005).

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

Human health and ecological risk assessments were conducted and indicated that the remaining residual contamination detected in soil (outside of the covered areas) and in groundwater at HWMU 90 does not pose an unacceptable risk as defined in UAC R315-101. The risk screening was performed for areas outside the cap, but risk screening did take into consideration airborne particulates. In addition, vegetative cover planted on the cap and other previously disturbed areas will minimize the generation of soil particulates. The industrial cancer risk is less than 1E-04 and the Hazard Index is less than one. Ecological risks are expected to be minimal. The human and ecological risk assessments are presented in the Final Remedial Action Plan and Remedial Design (Shaw, 2005).

2.6 SURFACE WATER AND GROUNDWATER

The general direction of surface drainage for the HWMU 90 area is to the northwest. A tributary to Government Creek has formed a relatively well developed drainage channel approximately 2,000 ft south of HWMU 90. This drainage continues to the northwest, passing near the southwestern edge of the Carr Facility (FWEC, 1998).

Groundwater monitoring well data and hydrostratigraphy in the Carr area has shown no significant release to groundwater occurred. HWMU 90 does not represent a threat to potable groundwater in the confined aquifer; post-closure groundwater monitoring for HWMU 90 is not required.

2.7 CLOSURE NOTIFICATIONS

The Certification of Closure (Appendix A) was verified by the Executive Secretary of the Utah Solid and Hazardous Waste Control Board on July 2007.

Federal facilities are exempt from submitting notifications to the local zoning authority as required by 40 CFR §§264.116 and 264.119, which are incorporated by reference in UAC R315-8-7.

3.0 SECURITY REQUIREMENTS

The Permittee shall comply with the following security conditions as applicable to HWMU 90:

1. HWMU 90 is located within a federal, military installation (DPG). As such, the installation is restricted for the common population.
2. In addition at HWMU 90, signs are present warning against unauthorized entry.
3. Verify that Security facilities are maintained and inspected throughout the post-closure care period. The security facilities (i.e., posted signs) to be inspected and the frequency of inspection are listed on

Table 4. DPG shall report to the Division of Solid and Hazardous Waste any decrease of Dugway's Base Security, which could affect the security conditions as applicable to HWMU 90.

4. Damaged security facilities shall be noted in the inspection checklist. Repairs shall be completed as soon as practicable after the problem is discovered, in compliance with R315-8-2.6(c).

4.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

4.1 INTRODUCTION

HWMU 90 has been closed under the interim status landfill closure requirements. Disturbance of the waste will not be allowed. To ensure that the area is not reused or developed, annual site inspections and a biennial post-closure report shall be required. HWMU 90 is no longer receiving waste and there are no structures or other equipment at the site. Although waste was left in place, groundwater and soil sample results do not indicate the need for post-closure groundwater monitoring at HWMU 90. Future monitoring of the groundwater to confirm that the selected remedy is protective of groundwater and meets the requirements of UAC R315-101-3 (non-degradation), will be implemented through the Carr Groundwater Management Area (GMA) Plan.

4.2 ROUTINE SITE INSPECTIONS

During its post closure period general inspections of the former HWMU 90 site shall be conducted annually by November 1st to ensure that the integrity of the engineered caps is maintained and to verify the Dugway Dig Permit process as described in Module VII.I has been followed. A major storm is defined as with one-inch or more of precipitation over a 24-hour period. Any modifications to the frequency of inspections will be in accordance with amendments submitted in the form of proposed permit modifications.

Site inspections will consist of a complete walkthrough and visual inspection of the covered areas as well as surface water drainage features. A general post-closure site inspection checklist for landfill sites (Form B) is included in Module VII. Completed inspection forms shall be filed with the Dugway Environmental Office.

4.2.1 Protective Soil Layer Inspections

Maintenance of the protective soil layer is an essential step in ensuring that the integrity of the final cover system is preserved. During each site visit, observations will be made to ensure that the protective soil layer is functioning as designed (i.e., protecting the underlying GCL). Repairs to the protective soil layer may include removal of vegetation species having tap roots greater than 12 inches, regrading through the placement of fill in areas where a potential for ponding water on the cover exists due to settlement, or repair and stabilization of areas that have been eroded.

If signs of soil erosion are excessive (for example, cracks or rills greater than two inches wide) or continual (recurring in the same area), corrective action may be necessary. Significant cracks or rills that have the potential to impact the functionality of the cover system will be documented on the inspection forms. Corrective action may include filling in the eroded or cracked area, regrading slopes, establishing vegetation (if soil salinity is favorable) or adding mulch to the soil surface. Soil samples will be collected during each inspection for the first two years and analyzed for salinity as a contingency in case erosion control is necessary in the future.

For most routine repairs, corrective action should be initiated as soon as possible after identifying the problem or as directed by DPG. If the corrective action requires substantial effort and/or a technical plan, a brief plan will be prepared to summarize the problem, the potential impacts, and the time-frame in which corrective action will be implemented and the planning involved.

4.2.2 Settlement Marker Inspections

During each visit, the three settlement markers installed during closure (Figure 4) will be inspected to determine if any damage has made its use questionable as a reference point. If missing or badly damaged, it will be replaced as soon as possible after discovery of the problem.

As part of the routine inspection, settlement marker (denoted as SM-1 through SM-3 in Table 3) locations and elevations should be surveyed at least once per year for the first two years after construction. Once a settlement of 0.1 foot or less has been measured for two consecutive years, surveys can be scaled back to once every five years. The baseline northings, eastings, and elevations of the HWMU 90 settlement markers are summarized in Table 3. In addition, the survey coordinates for locations around the perimeter of the cover system shown on Figure 4, are presented for future reference.

Table 3: Survey Monument Coordinates

Description	Location	Northing (ft)	Easting (ft)	Elevation ^a (ft above msl)
HWMU 90 Monument	Southwest corner of site	7,232,051	1,256,346	4369
Settlement Marker (SM-1)	Northern mound	7,232,726	1,256,745	4373
Settlement Marker (SM-2)	South-eastern mound	7,232,367	1,256,616	4373
Settlement Marker (SM-3)	South-central mound	7,232,367	1,256,703	4373

^aThe locations and elevations of the settlement markers are design locations. The final location is provided in the 2008 Biennial report.

4.3 CONTINGENCY INSPECTIONS

This section provides information about emergency response inspection procedures to be implemented in the event of any natural disaster in the DPG area that may affect the soil cover at HWMU 90. The general post-closure site inspection checklist for landfill sites (Form B) is provided in Module VII.

The DPG Emergency Response and Contingency Plan (Part B Permit), where applicable to this site, shall be used to announce and respond to emergency conditions. At a minimum, the site inspector should have a radio or phone and a First Aid kit available during inspections.

4.3.1 Earthquakes

Dugway Proving Ground is located in Seismic Zone 2 with a peak ground acceleration of 0.2 gravity force (Hunt, 1984). HWMU 90 is not located within 200 ft of any active faults. Although Utah is tectonically active, most of the earthquake activity occurs about 65 miles to the east along the Wasatch Range Foothills.

A geologic map completed in a 1988 study by the United States Geological Survey (USGS) (Barnhard and Dodge, 1988), was used to determine the distribution, relative age, and amount and extent of surface rupture on Quaternary fault scarps, in the area of HWMU 90.

The USGS study (Barnhard and Dodge, 1988) concluded that morphologic and geologic data collected along the fault scarps in the area indicate that all were formed during the later Pleistocene era and there is not any clear evidence of Holocene surface rupture. Several faults inferred on geophysical evidence are located at DPG; however, there is no evidence of displacement during Holocene time.

In the event of a 6.5-magnitude or higher earthquake centered within 50 miles of the site, qualified personnel will visually inspect the landfill cap for signs of damage as soon as it is safe and practical to do so. Any damage to the landfill cap will be repaired to ensure the integrity of the cap. If the landfill cap has sustained extensive damage, DPG will implement corrective actions to ensure that contaminants are contained and human health is protected. Post-earthquake site inspection records will be submitted to the Dugway Environmental Department.

Following an earthquake, the landfill and landfill cap will also be inspected for lateral shifting of debris. Settlement markers will be resurveyed to determine any horizontal or vertical movement of the cap.

4.3.2 Floods or Major Storms

HWMU 90 is not located within a 100-year verified floodplain. The National Flood Insurance Rate Map, identifying the boundary of the 100-year flood, does not include DPG. There are no permanent streams or other surface water bodies on DPG.

During the capping of HWMU 90, the site was graded so that surface water from precipitation flows away from the capped areas and to the northwest in the direction of the natural drainage flow. Most of the surface water evaporates rather than percolating into the ground. Like other arid regions, DPG is subject to flash flooding following high-precipitation events. Flash floods have occurred only four times in the history of the installation, in 1944, 1952, 1973, and 1983. The major area affected during flash floods has been the Government Creek drainage channel, which has overflowed and caused minor inundation of roads at the Ditto Technical Center.

In the event of a flood or major storm, DPG will inspect the landfill cap to ensure its integrity within 72 business hours of the event. The general post-closure site inspection checklist for landfill sites (Form B) is provided in Module VII. A major storm is defined in this plan as a storm with 1 inch of precipitation or more over a 24-hour period. Any damage to the landfill cap will be repaired as soon as possible to ensure the integrity of the cap.

4.3.3 Fire

In the event of a surface fire near the landfill cap, the Dugway Fire Department will be notified and the DPG integrated contingency plan will be implemented. In the event of a landfill fire, if the cap is observed to have been breached, other firefighting methods (such as using foam or smothering with dirt) will be considered and used, as appropriate. Following the incident, DPG will perform a thorough inspection of the landfill cap using the general post-closure site inspection checklist for landfill sites (Form B) in Module VII, to ensure that the integrity of the soil cover has not been compromised and

waste is not exposed. If there is fire damage, DPG will implement corrective actions to ensure that contaminants are contained and human health is protected.

Table 4 summarizes the Post-Closure Inspection Schedule for HWMU 90, and lists the items to be inspected and potential problems. Inspection personnel shall note any problems found and shall inform appropriate DPG representatives.

Table 4: HWMU 90 Post-Closure Inspection Schedule

Inspection/Monitoring Item	Method of Documentation	Frequency of Inspection
Landfill Caps	General Post-Closure Site Inspection Checklist for Landfill Sites (Form B, Module VII)	Annual
Settlement Markers	General Post-Closure Site Inspection Checklist for Landfill Sites (Form B, Module VII)	Annual / Five Year Intervals
Protective vegetation	General Post-Closure Site Inspection Checklist for Landfill Sites (Form B, Module VII)	Annual
Signs	General Post-Closure Site Inspection Checklist for Landfill Sites (Form B, Module VII)	Annual
Drainage	General Post-Closure Site Inspection Checklist for Landfill Sites (Form B, Module VII)	Annual
Monitoring Wells	General Post-Closure Site Inspection Checklist for Landfill Sites (Form B, Module VII)	Annual

4.4 INSPECTION FOLLOW-UP

Copies of completed post-closure site inspection checklists (Form B, Module VII) shall be forwarded to the Dugway Environmental Office. The Point-of-Contact for the Dugway Environmental Office is as follows:

Environmental Programs Compliance Representative
 Dugway Proving Ground Environmental Program Office
 Dugway Proving Ground, UT 84022
 Telephone: (435) 831-3560

The Dugway Environmental Office shall notify the appropriate personnel to implement corrective action as needed.

Corrective action shall be initiated as soon as practical after identifying the problem, or as directed by DPG. If the corrective action requires substantial effort, a technical plan shall be prepared to summarize the problem, the potential impacts, the proposed plan for action, and the time-frame in which corrective action shall be implemented as required under this Permit. This plan shall be approved by the Executive Secretary and shall be submitted within 30 days of Dugway’s decision to implement corrective action.

5.0 SUBMITTALS/REPORTING

Based on the evaluation presented in the Final Closure Certification Report for HWMU 90, post-closure inspection is required for HWMU 90. Groundwater monitoring is not required.

5.1 NON-COMPLIANCE REPORTING

The conditions at HWMU 90 are such that the impact to human health and the environment is very unlikely. Hazardous wastes are no longer managed at the site. Nonetheless, if there is any type of non-compliance with any condition of this Permit, notifications shall be submitted per Permit Conditions VII.C.5.

5.2 BIENNIAL POST-CLOSURE REPORT

In accordance with UAC R315-3-3.1(1)(9), a Biennial Post-Closure Report shall be prepared for all DPG closed HWMUs and Solid Waste Management Units (SWMUs) undergoing post-closure care by March 1, of the reporting year. The first Post-Closure report for HWMU 90 shall be due by March 2007. After this initial period, reporting years shall change to odd numbered years, with subsequent biennial reports due by March 1st of even numbered years, beginning in 2008. Specifically for HWMU 90, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions;
- Areas of cap repair or revegetation; and
- Inspection records.

5.3 REQUIRED SUBMITTALS

Table 5 summarizes the requirements for the Biennial Post-Closure Report for HWMU 90 and reporting for any non-compliance.

Table 5: Summary Table of Required Submittals

Required Submittals	Frequency and Submittal Date
<u>Biennial Post-Closure Report</u>	Post-Closure Reports shall be submitted to the DSHW no later than March, of the year the report is due. Reporting years are even numbered years beginning with 2006 and odd numbered years beginning 2007 for the duration of the Post-Closure Monitoring Period.

<u>Non-Compliance Reporting</u>	
Anticipated Non-Compliance	30 days advance notice of any change which may result in noncompliance
24-hour Notification for information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment	Orally within 24 hours of discovery
Five-day written notification for information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment including evidence of groundwater contamination, significant data quality issues, or a request for reduced monitoring frequency. The Executive Secretary may waive the 5-day notice, in favor of a 15-day notice	Within 5 days of discovery
Written notification for information concerning the non-compliance, which does not endanger human health or the environment.	Submitted when the Biennial Post Closure Reports are submitted.

6.0 POST-CLOSURE CERTIFICATION

No later than 60 days after post-closure activities are completed and approved by the Executive Secretary, DPG representatives shall submit a certification to the Board, signed by DPG and an independent professional engineer registered in the State of Utah, stating why post-closure care is no longer needed.

7.0 REFERENCES

Barnhard, T.P. and R.L. Dodge, 1988. *Map of Fault Scarps Formed on Unconsolidated Sediments, Tooele 1° x 2° quadrangle, Northwestern Utah*, United States Geological Survey.

Ebasco Services Incorporated (Ebasco), 1994. *Final Nature and Extent Investigation Plan No. 7a – SWMU 90. Carr Facility Open Burning Area*. November.

Hunt, Roy E, 1984. *Geotechnical Engineering Investigation Manual*. New York : McGraw-Hill.

Foster Wheeler Environmental Corporation (FWEC), 1995. *SWMU Closures at Dugway Proving Ground, Interim Report, Volume 4, Appendix F-Results of Data Validation*.

FWEC, 1998. *Dugway Proving Ground Closure Plan, Module 3, HWMU 90 Final*. August.

Shaw Environmental, Inc. (Shaw), 2003. *Fiscal Year 2002 Annual Report for the Groundwater Monitoring Program, Dugway Proving Ground, Draft*. March.

Shaw, 2005. *Final Remedial Action Plan and Remedial Design, Hazardous Waste Management Unit 90, Carr Facility Open Burning Area, Dugway Proving Ground, Utah. Revision 0*. October.

Shaw, 2006. *Final Closure Certification Report for HWMU 90, Dugway Proving Ground, Utah*. May.

APPENDIX A

COPY OF
CERTIFICATION OF CLOSURE

CERTIFICATION OF CLOSURE

The Closure Certification Report for Hazardous Waste Management Unit (HWMU) 90 at Dugway Proving Ground, Utah has been prepared by Shaw Environmental in accordance with the closure requirements specified under the Utah Administrative Code (UAC) 315-7-14 and 40 Code of Federal Regulations 265, Subpart G. The requirements of UAC R315-101 form the basis for the risk-based criteria in the closure of HWMU 90. The site has been managed in accordance with the specifications in the approved Remedial Action Plan and Remedial Design, except for re-vegetation.

In accordance with 40 CFR 265.115, the signature and seal certify that a licensed professional has reviewed the Closure Certification Report in accordance with the above referenced regulatory requirements.

Respectfully submitted,

Scott Reed
Directorate of Environmental Programs
Dugway Proving Ground

Sunil Kishnani, P.E.
Utah Registered Civil Engineer No. 6027103
Shaw Environmental, Inc.